



Natural Resources Conservation Service In cooperation with Michigan Department of Agriculture, Michigan Agricultural Experiment Station, Michigan State University Extension, and Michigan Technological University

Soil Survey of Keweenaw County Area, Michigan



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.

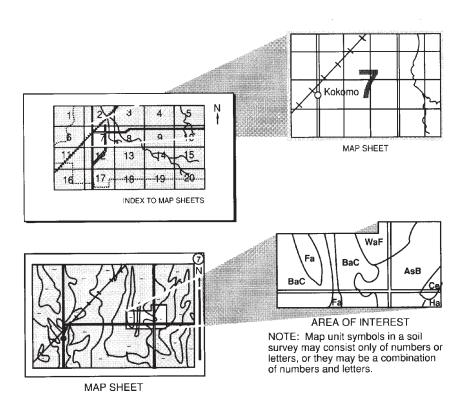
Detailed Soil Maps

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.



National Cooperative Soil Survey

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (formerly the Soil Conservation Service) has leadership for the Federal part of the National Cooperative Soil Survey. This survey was made cooperatively by the Natural Resources Conservation Service, the Michigan Department of Agriculture, the Michigan Agricultural Experiment Station, Michigan State University Extension, and Michigan Technological University. The survey is part of the technical assistance furnished to the Houghton-Keweenaw County Soil and Water Conservation District. The Keweenaw County Board of Commissioners provided financial assistance.

Major fieldwork for this soil survey was completed in 2002. Soil names and descriptions were approved in 2003. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 2002. The most current official data are available on the Internet.

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

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Cover Photo Caption

An Area of Arcadian-Michigamme-Rock outcrop complex, 35 to 70 percent slopes, extremely bouldery, overlooking Lake Superior and the Village of Copper Harbor on the left and Lake Fanny Hooe on the right.

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

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Foreword

Soil surveys contain information that affects land use planning in survey areas. They include predictions of soil behavior for selected land uses. The surveys highlight soil limitations, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

Soil surveys are designed for many different users. Farmers, foresters, and agronomists can use the surveys 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 surveys 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 surveys 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 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, and information on specific uses is given. 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.

Ronald Williams State Conservationist Natural Resources Conservation Service

Soil Survey of Keweenaw County Area, Michigan

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United States Department of Agriculture, Natural Resources Conservation Service, in cooperation with the Michigan Department of Agriculture, Michigan Agricultural Experiment Station, Michigan State University Extension, and Michigan Technological University

KEWEENAW COUNTY is in the northwestern tip of Michigan's Upper Peninsula (fig. 1). It is bordered on the south by Houghton County. The Isle Royale archipelago in northwestern Lake Superior is not included in this survey. The survey area has an area of 365 square miles, or about 237,453 acres. Eagle River is the county seat of Keweenaw County. The population concentration is in the southern part of Allouez Township. In 2000, the population of Keweenaw County was 2,301. Most income is derived from employment in education, government services, tourism, and retail trade. Timber management and recreation are large economic enterprises in the county.

Soil scientists have determined that there are about 46 kinds of soil in the survey area. The soils range widely in natural drainage, slope, depth, and other characteristics.

The undulating to steep soils in the survey area are dominantly well drained to moderately well drained and are shallow to deep over bedrock. The level and nearly level soils are dominantly very deep and somewhat poorly drained to very poorly drained. Textures range from sand to loam. Erosion generally is a severe hazard in unprotected areas, and measures are needed to control erosion and minimize sedimentation in lakes and streams. In most areas the soil resource is used for forest products. The well drained soils, which make up about one-third of the county, are used for recreation and building site development.

General Nature of the Survey Area

This section provides general information about the survey area. It describes history and development, climate, lakes and streams, and physiography and geology.

History and Development

Keweenaw County has a history dating back before the arrival of European settlers. There is evidence of past Native American activity in the area, including villages, burial grounds, camps, mounds, and mining pits. The Native Americans in Keweenaw County have been predominantly the Chippewa and Ojibway peoples. Most of their early settlements and structures were located near the Gratiot, Montreal, and Tobacco



Figure 1.—Location of the survey area in Michigan.

Rivers and Lake Superior. They established the first routes in the county in the form of trails, paths, and portages, which connected their activities. These activities included the mining of copper in shallow excavations in surface deposits for local use and trade abroad. Many of these same routes serve as roads and highways in Keweenaw County today. The area was referred to by the Native people as "Kee-wee-naw," meaning the crossing or portage. The Keweenaw Peninsula was used as a shorter route from the presentday Keweenaw Bay to western Lake Superior. The 1836 Treaty of Washington and the 1842 Treaty of La Pointe ceded some 30,000 square miles of land rights to the United States Government. This treaty included all land in Keweenaw County, which was then part of the Wisconsin Territory.

The first attempts by Europeans to visit the area were made by the French around 1614. In 1730, following reports of copper ore deposits in the area, French businessmen from the East Coast and southern Michigan tried but failed to make a profit in copper extraction. Michigan became a State in 1837, thereby gaining control of the Upper Peninsula. After Douglas Houghton surveyed the area in 1840 and confirmed the presence of copper, there was an influx of settlers. In 1843, a land office was established in Copper Harbor. With the issuing of the first mineral leases that same year, the modern mining era began.

The earliest successful commercial mining took place in 1844 at Fort Wilkins and in 1845 at the Cliff Mine south of Eagle River. With the growth of the mining industry came the need for transportation of mineral ore, timber, and supplies for workers and their families. Eagle River, Copper Harbor, and Eagle Harbor served as the first shipping ports for minerals and supplies for nearby mines.

The current boundaries of Keweenaw County were established on March 11, 1861. In the years immediately following the Civil War, the lakes, rivers, and streams of Keweenaw County served as highways for the transportation of copper and lumber out

of the county to sawmills on Portage Lake in Houghton County. By 1873, narrow-gauge railroads served the mining and lumbering industry and related settlements south of Keweenaw County.

The bulk of the mining took place from 1870 to 1930. Mining served as the main economic enterprise until the 1930s, when mines south of Keweenaw County supplanted the local mining industry. Timber management and harvesting, along with the more recent tourist and recreational industry, continue to be major enterprises in the county.

The first census of population, in 1870, showed 4,205 residents in Keweenaw County. From 1845 to 1910, the population grew at a steady pace until it peaked at 7,156 residents in 1910. After 1910, mines started to close and the population growth reversed. The population decreased by an average of 70 individuals per year until 1990, when a low of 1,701 residents was recorded. In more recent years, tourism, recreation, and retirement settlement have reversed this trend.

Forest fires in the 1900s prompted the private land companies and the Public Domain Commission to institute fire patrols and other conservation measures. From 1933 to 1941, conservation measures were applied in conjunction with the Civilian Conservation Camps. This program contributed much of the local park system, reforestation, recreation, and lodging facilities available to the public.

Climate

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

In winter, the average temperature is 17.3 degrees F and the average daily minimum temperature is 11.2 degrees. The lowest temperature on record, which occurred at Houghton on January 21, 1984, was -26 degrees. In summer, the average temperature is 63.4 degrees and the average daily maximum temperature is 73.1 degrees. The highest temperature, which occurred at Houghton on July 7, 1988, was 102 degrees.

Growing degree days are shown in table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (40 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The average annual total precipitation is 33.68 inches. Of this total, 14.28 inches, or about 42 percent, usually falls in May through September. The growing season for most crops falls within this period. The heaviest 1-day rainfall during the period of record was 3.23 inches on August 30, 1995. Thunderstorms occur on about 29 days each year, and most occur between June and September.

The average seasonal snowfall is 218.5 inches. The greatest snow depth at any one time was 57 inches recorded on January 27, 1957. On average, 148 days per year have at least 1 inch of snow on the ground. The heaviest 1-day snowfall on record was 26.5 inches recorded on January 18, 1996.

The average relative humidity in midafternoon is about 55 percent in May and nearly 75 percent in December. Humidity is higher at night, and the average at dawn is about 80 percent in most months, except from June to September, when it is nearly 90 percent. The sun shines 60 percent of the time possible in summer and 34 percent in winter. The prevailing wind is from the northwest for much of the year, but it is from the south during much of the summer. Average windspeed is highest, around 12 miles per hour, during March and April.

Lakes and Streams

There are three watersheds in the survey area. These are the Gratiot, Montreal, and Tobacco Rivers, which drain into Lake Superior. The Gratiot watershed is in the southwest corner of Keweenaw County, north of Ahmeek and Mohawk. The Montreal watershed is in the east-central part of the county from the settlement of Delaware to Bete Grise Bay. The Tobacco watershed encompasses the area south and east of Mohawk in Sherman Township and ends by the Village of Gay in the southwest corner of Keweenaw County. Other waterways are the Trap Rock River, the Betsy River, the Silver River, Squatters Creek, Jacobs Creek, and Black Creek.

There are about 10,158 acres of water in Keweenaw County. The three largest lakes are Gratiot Lake, Lake Medora, and Lac La Belle. Gratiot Lake and Lake Medora are landlocked, and Lac La Belle, to the east, is connected to Lake Superior and Keweenaw Bay by a short canal (fig. 2).

Physiography and Geology

The topography of the survey area is dramatic, characterized by steep bedrock cliffs, ridges, and dissected moraines occurring in stark contrast to Lake Superior and various inland lakes, swamps, and marshes. Elevation ranges from 1,540 feet above sea level to 597 feet above sea level at the Lake Superior shore. The physiography of the region is the result of continental glaciation (strongly influenced by the bedrock) and the subsequent deposition of soil parent materials by ice, water, wind, and gravity.



Figure 2.—Typical building site development along Lac La Belle.

Bedrock geology consists of five major stratigraphic units: the Portage Lake Lava Series, Copper Harbor conglomerate, Nonesuch shale, Freda sandstone, and Jacobsville sandstone (fig. 3).

The Portage Lake Lava Series is of Middle Keweenawan age. It consists primarily of basalt and andesite lava flows interbedded with conglomerates. Copper has filled cavities in the series, forming the largest deposit of native copper in the world. The Copper Harbor conglomerate overlies the Portage Lake Lava Series. The Nonesuch shale and Freda sandstone are of Late Keweenawan age and overlie the Copper Harbor conglomerate.

The Jacobsville sandstone is generally considered to be Early and Middle Cambrian in age. It consists of feldspathic and quartzose sandstone with layers of shale and conglomerate. Along the Lake Superior shore at Point Isabelle, cliffs of Jacobsville sandstone exhibit beautiful red and white streaks resulting from oxidation, reduction, and leaching of iron.

The Keweenawan rocks represent sequences of lava flows, erosion, and sedimentation. They were folded to form the Lake Superior Syncline. The crust sagged as material accumulated, tilting the rock layers, which now dip downward from the Keweenaw Peninsula to the northwest under Lake Superior and reemerge on Isle Royale to form a mirror image of the tilted bedrock. Faults developed as the outer layers were thrust up. The Keweenaw Fault is a major reverse fault that separates the Portage Lake Lava Series from the more or less flat-lying Jacobsville sandstone. The highland on the upthrust side of the Keweenaw Fault comprises the Copper Range.

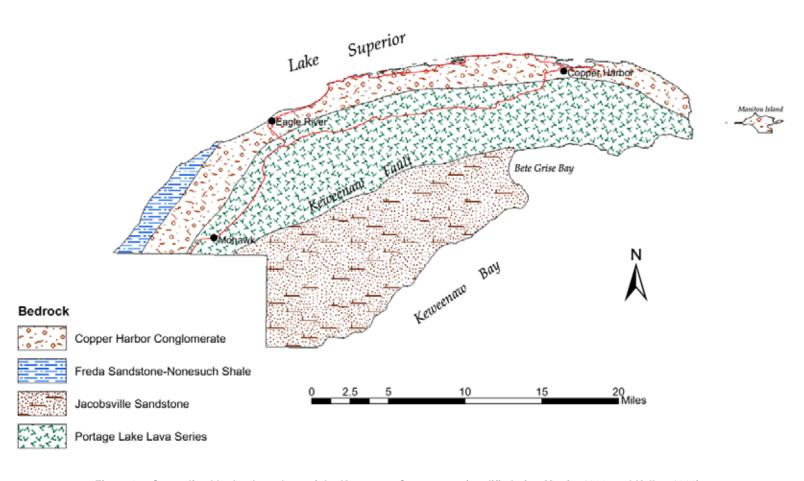
The rugged hills of the Copper Range, including Brockway Mountain, Mount Bohemia, and Mount Lookout, are characterized by bedrock escarpments on the southeast faces, where the edges have been beveled by erosion, and gentler slopes to the northwest as the rocks dip into the Lake Superior Syncline. Differential rates of erosion have allowed stream valleys and depressions to be cut into the exposed edges of the softer layers while the more resistant layers remained to form long, parallel ridges that extend the length of the Keweenaw Peninsula.

During the Pleistocene Ice Age, Keweenaw County was repeatedly covered by glacial ice. The glacial landforms and deposits of the region are the result of the last major glacial stage, the Greatlakean, and almost all traces of earlier glaciation have been obliterated. The dominant features are rocky ridges, dissected ground moraines, and valleys with various thicknesses of glacial deposits from the last decay and retreat of continental glaciers about 10,000 years ago (fig. 4).

The ground moraine on the Keweenaw Lowland southeast of the Copper Range is characterized by reddish sandy loam till derived from the Jacobsville sandstone. Upland portions of the moraine are typically dissected by parallel and dendritic ravines. The lower portions of the moraine are seepy and commonly poorly drained. The till is generally less than 50 feet thick and gradually thins eastward to sandstone cliffs along Keweenaw Bay. A thin layer of till covers the preglacial bedrock valley slopes of the Traprock River Valley, which developed along the Keweenaw Fault.

The moraine on the Keweenaw Upland of the Copper Range is bedrock controlled. The till deposits are very thin or absent on the bedrock ridges. They are thicker in the valleys between ridges. This till tends to be more cobbly and gravelly than that over the Jacobsville sandstone. Stones, boulders, and rock outcrops are common. The deeper deposits are dissected by dendritic and parallel ravines.

The area including the northernmost part of the Keweenaw Peninsula, especially the northeastern side, has a very thin soil mantle and extensive areas of exposed bedrock. There is a parallel ridge and swale topography resulting from differential glacial abrasion of the alternating softer and harder rock layers that have been tilted on end. The stream courses are generally narrow and have a trellis drainage pattern. Postglacial lake activity has left a thin till mixed with conglomerate residuum and superimposed with gravelly and cobbly beaches, strand lines, and terraces.



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Figure 3.—Generalized bedrock geology of the Keweenaw County area (modified after Martin, 1936, and Kelley, 1968).

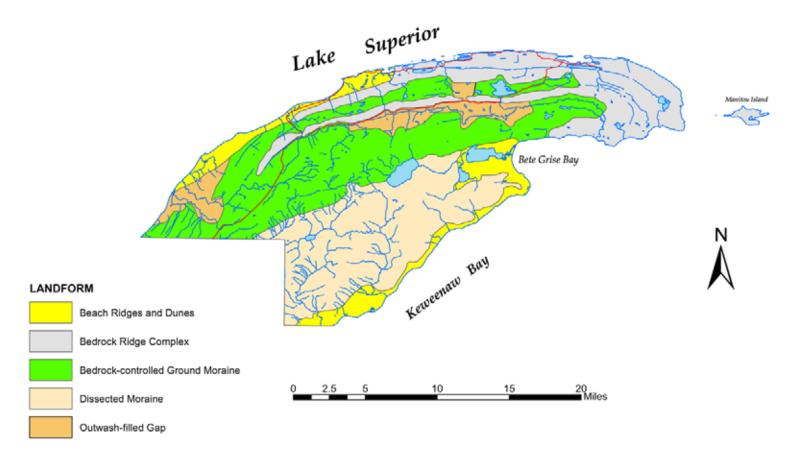


Figure 4.—Dominant glacial landforms in the survey area.

With the ablation of the continental glacier came a variety of glaciofluvial and glaciolacustrine deposits. A good example of an esker can be seen at Clear Lake near Mandan. The flow of meltwater was controlled by existing topographic features, such as gaps in the Copper Range or where meltwater streams formed kame terraces between the ice and steep side slopes. Outwash-filled gaps occur near Ahmeek, Mandan, and Eagle River. Sand and gravel deposits as much as 200 feet thick occur in a buried channel northwest of Ahmeek. Outwash terraces occur along the major streams, including the Traprock, Gratiot, Tobacco, and Montreal Rivers.

After the removal of the ice, the crust of the earth began to rebound. As the land rose, the water levels of the Great Lakes fluctuated as outlets changed. Once the outlets of the Great Lakes stabilized, around 6,000 years ago, the level of ancestral Lake Superior rose to the Nipissing level of 605 feet. Wave-cut cliffs and beaches of the former Nipissing shore are now at 640 feet as a result of the rebound. Examples of Nipissing shore features can be seen all along Lake Superior and include sandstone benches at Point Isabelle, conglomerate ridges at Copper Harbor, sand dunes at Eagle River, and gravel bars at Lac La Belle.

After the ice age ended, numerous lakes and streams remained as remnants of glacial erosion, ablation, and drainage. Scenic harbors, such as Copper Harbor, Eagle Harbor, and Rock Harbor, formed where waters of Lake Superior extend through narrow inlets across the upturned edges of more resistant rock strata and then expand into areas of less resistant rock that have been more deeply eroded. Several landlocked lakes, including Lake Fanny Hooe and Lake Bailey, formed in a similar manner by glacial abrasion of softer bedrock. Lac La Belle and Schlatter Lake are former embayments of Lake Nipissing that were uplifted by rebound and cut off from Lake Superior. The streams of Keweenaw County that once drained glacial meltwater still carry impressive volumes of spring runoff. In some areas the streams cascade down steep gradients to Lake Superior. The lower Montreal River and Eagle River have rapids and waterfalls. Other areas along the Montreal River and Traprock River feature marshes, flood plains, and terraces.

In postglacial times, erosion and deposition continued to modify the landscape. Rock surfaces were exposed by erosion. Areas of scree, talus, and colluvium accumulated on the faces and at the bases of cliffs. Shorelines were modified by waves and currents. Eroded silts and sands were deposited, dried, blown by the wind, and redeposited. Alluvial soils were deposited on flood plains, and organic deposits accumulated in swamps. Small, shallow lakes filled with vegetation and became bogs. In time, as vegetation began to stabilize the soil, the various ecosystems of today began to form, reflecting the physiography of Keweenaw County (Wikgren, 1991).

How This Survey Was Made

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

The soils and miscellaneous areas in the survey area are in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous

areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

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

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

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

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

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

General Soil Map Units

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

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

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

1. Arcadian-Michigamme-Rock Outcrop Association

Rock outcrop and strongly sloping to very steep, shallow and moderately deep, well drained, loamy soils on rocky ridges and bedrock-controlled moraines

Setting

Landform: Rocky ridges and bedrock-controlled moraines (fig. 5)

Slope range: 4 to 90 percent

Composition

Extent of the association: 12 percent of the survey area

Extent of the soils in the association:

Arcadian and similar soils—35 percent Michigamme and similar soils—15 percent

Rock outcrop—15 percent

Soils of minor extent—35 percent

Soil Properties and Qualities

Arcadian

Depth class: Shallow to basalt or conglomerate bedrock

Drainage class: Well drained

Position on the landform: Hills, escarpments, side slopes, and ridgetops Parent material: Gravelly or cobbly loamy material overlying bedrock

Texture of the surface layer: Very gravelly fine sandy loam

Slope: Gently sloping to very steep

Michigamme

Depth class: Moderately deep to basalt or conglomerate bedrock

Drainage class: Well drained

Position on the landform: Hills, escarpments, side slopes, and ridgetops Parent material: Silty or loamy mantle over loamy till underlain by bedrock

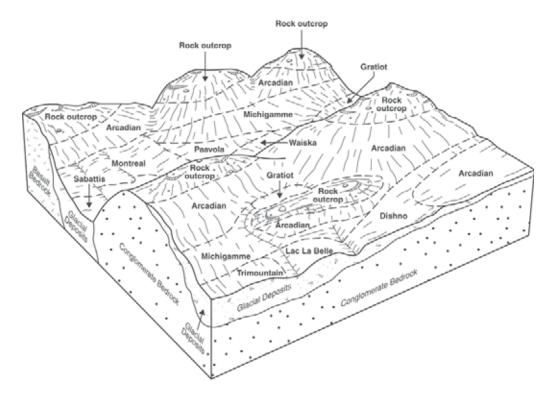


Figure 5.—Typical pattern of soils and parent material in the Arcadian-Michigamme-Rock outcrop association.

Texture of the surface layer: Cobbly very fine sandy loam Slope: Strongly sloping to very steep

Soils of Minor Extent

- Trimountain and Lac La Belle soils on dissected side slopes
- Montreal, Dishno, Paavola, and Waiska soils in the slightly lower landscape positions
- · Gratiot and Sabattis soils in depressions and drainageways

Use and Management

Land use: Major use—woodland; other uses—wildlife habitat, idle land, building site development

Woodland

Major management concerns: Arcadian—erosion, surface boulders, rock fragments, seedling mortality, windthrow hazard, slope, rock outcrops; Michigamme—erosion, surface boulders, rock fragments, clayey textures, seedling mortality, soil rutting, slope, rock outcrops

Building site development

Major management concerns: Arcadian—surface stones, surface boulders, depth to bedrock, slope, rock outcrops; Michigamme—surface stones, surface boulders, cutbanks cave, depth to bedrock, slope, rock outcrops

Septic tank absorption fields

Major management concerns: Arcadian—surface stones, surface boulders, slope, restricted permeability, depth to bedrock, rock outcrops; Michigamme—surface stones, surface boulders, slope, restricted permeability, depth to bedrock, rock outcrops

2. Arcadian-Nipissing-Rock Outcrop Association

Rock outcrop and nearly level to very steep, shallow and moderately deep, well drained, loamy-skeletal soils on bedrock benches and abandoned shorelines

Setting

Landform: Bedrock benches and abandoned shorelines on moraines (fig. 6) Slope range: 0 to 70 percent

Composition

Extent of the association: 7 percent of the survey area

Extent of the soils in the association:

Arcadian and similar soils—27 percent Nipissing and similar soils—17 percent

Rock outcrop—12 percent

Soils of minor extent—44 percent

Soil Properties and Qualities

Arcadian

Depth class: Shallow to conglomerate or basalt bedrock

Drainage class: Well drained

Position on the landform: Hills, escarpments, side slopes, and ridgetops Parent material: Gravelly or cobbly loamy material overlying bedrock

Texture of the surface layer: Very gravelly fine sandy loam

Slope: Gently sloping to very steep

Nipissing

Depth class: Moderately deep to conglomerate or basalt bedrock

Drainage class: Well drained

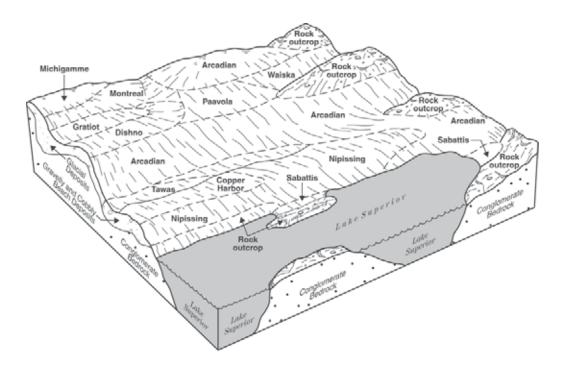


Figure 6.—Typical pattern of soils and parent material in the Arcadian-Nipissing-Rock outcrop association.

Position on the landform: Ridges, knolls, and side slopes

Parent material: Gravelly or cobbly loamy and sandy material overlying bedrock

Texture of the surface layer: Very cobbly silt loam

Slope: Nearly level to steep

Soils of Minor Extent

- · Waiska soils in landscape positions similar to those of the Nipissing soils
- Michigamme soils in landscape positions similar to those of the Arcadian soils
- Copper Harbor, Paavola, Dishno, and Montreal soils in the slightly lower landscape positions
- Bete Grise, Gratiot, Sabattis, and Tawas soils in depressions and drainageways

Use and Management

Land use: Major use—woodland; other uses—wildlife habitat, idle land, building site development

Woodland

Major management concerns: Arcadian—erosion, surface stones, rock fragments, seedling mortality, windthrow hazard, slope, dissected slopes, rock outcrops; Nipissing—erosion, surface stones, rock fragments, seedling mortality, slope, dissected slopes, rock outcrops

Building site development

Major management concerns: Arcadian—surface stones, depth to bedrock, slope, rock outcrops; Nipissing—surface stones, large stones, depth to bedrock, slope, rock outcrops

Septic tank absorption fields

Major management concerns: Arcadian—surface stones, slope, restricted permeability, depth to bedrock, rock outcrops; Nipissing—surface stones, large stones, slope, poor filtering capacity, restricted permeability, depth to bedrock, rock outcrops

3. Montreal-Paavola-Gratiot Association

Nearly level to moderately steep, very deep, moderately well drained and somewhat poorly drained, loamy and sandy soils on till plains and dissected moraines

Setting

Landform: Till plains and dissected moraines (fig. 7)

Slope range: 0 to 30 percent

Composition

Extent of the association: 5 percent of the survey area

Extent of the soils in the association:

Montreal and similar soils—40 percent Paavola and similar soils—20 percent Gratiot and similar soils—15 percent Soils of minor extent—25 percent

Soil Properties and Qualities

Montreal

Depth class: Very deep

Drainage class: Moderately well drained

Position on the landform: Knolls, ridges, and side slopes

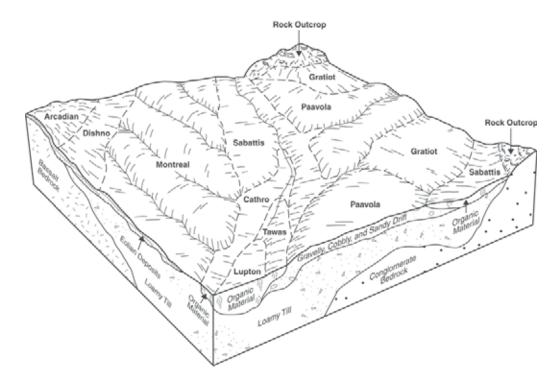


Figure 7.—Typical pattern of soils and parent material in the Montreal-Paavola-Gratiot association.

Parent material: Loamy eolian mantle overlying loamy or sandy till

Texture of the surface layer: Cobbly fine sandy loam

Slope: Nearly level to moderately steep

Paavola

Depth class: Very deep

Drainage class: Moderately well drained

Position on the landform: Knolls, ridges, and side slopes

Parent material: Gravelly or cobbly sandy deposits overlying loamy or sandy till

Texture of the surface layer: Cobbly loamy sand

Slope: Nearly level to moderately steep

Gratiot

Depth class: Very deep

Drainage class: Somewhat poorly drained

Position on the landform: Footslopes, depressions, and drainageways *Parent material:* Cobbly or gravelly deposits overlying loamy or sandy till

Texture of the surface layer: Very cobbly fine sandy loam

Slope: Nearly level to gently sloping

Soils of Minor Extent

- Dishno soils in landscape positions similar to those of the Montreal and Paavola soils
- Rock outcrop and Arcadian soils on rocky knolls and ridges
- Sabattis, Cathro, Tawas, and Lupton soils in the lowest depressions and drainageways

Use and Management

Land use: Major use—woodland; other uses—wildlife habitat, building site development

Woodland

Major management concerns: Montreal—surface boulders, rock fragments, seedling mortality, soil rutting, windthrow hazard, seasonal wetness; Paavola—surface boulders, rock fragments, seedling mortality, soil rutting, windthrow hazard, depth to bedrock, seasonal wetness; Gratiot—surface boulders, rock fragments, clayey textures, seedling mortality, windthrow hazard

Building site development

Major management concerns: Montreal—surface stones, surface boulders, cutbanks caving, slope, seasonal wetness; Paavola—surface stones, surface boulders, cutbanks caving, slope, seasonal wetness, depth to bedrock; Gratiot—surface stones, surface boulders, large stones, seasonal wetness

Septic tank absorption fields

Major management concerns: Montreal—surface stones, surface boulders, slope, restricted permeability, depth to a fragipan, severe wetness; Paavola—surface stones, surface boulders, slope, poor filtering capacity, restricted permeability, depth to bedrock, severe wetness, depth to a fragipan; Gratiot—surface stones, surface boulders, large stones, restricted permeability, depth to a fragipan, seasonal wetness

4. Skanee-Munising-Gay Association

Nearly level to moderately steep, very deep, moderately well drained to very poorly drained, loamy soils on till plains and dissected moraines

Setting

Landform: Till plains and dissected moraines (fig. 8)

Slope range: 0 to 30 percent

Composition

Extent of the association: 22 percent of the survey area

Extent of the soils in the association:
Skanee and similar soils—38 percent
Munising and similar soils—34 percent
Gay and similar soils—18 percent
Soils of minor extent—10 percent

Soil Properties and Qualities

Skanee

Depth class: Very deep

Drainage class: Somewhat poorly drained

Position on the landform: Footslopes, depressions, and drainageways

Parent material: Loamy till

Texture of the surface layer: Loamy sand Slope: Nearly level to gently sloping

Munising

Depth class: Very deep

Drainage class: Moderately well drained

Position on the landform: Knolls, ridges, and side slopes

Parent material: Loamy till

Texture of the surface layer: Fine sandy loam Slope: Nearly level to moderately steep

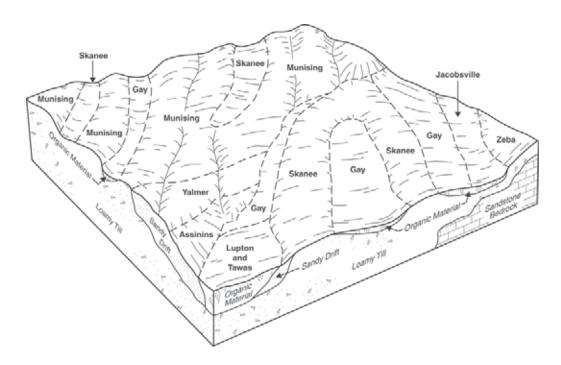


Figure 8.—Typical pattern of soils and parent material in the Skanee-Munising-Gay association.

Gay

Depth class: Very deep

Drainage class: Poorly drained

Position on the landform: Depressions and drainageways

Parent material: Loamy till Texture of the surface layer: Muck

Slope: Nearly level

Soils of Minor Extent

- Lupton and Tawas soils in the lowest depressions and drainageways
- Yalmer and Assinins soils, which have sandy deposits over the till
- Zeba and Jacobsville soils, which are underlain by sandstone bedrock at a depth of 20 to 60 inches

Use and Management

Land use: Major use—woodland; other use—wildlife habitat

Woodland

Major management concerns: Munising—seedling mortality, soil rutting, windthrow hazard, seasonal wetness, erosion, slope; Skanee—seedling mortality, windthrow hazard; Gay—seedling mortality, windthrow hazard, severe wetness

Building site development

Major management concerns: Munising—surface stones, cutbanks caving, slope, seasonal wetness; Skanee—surface stones, seasonal wetness; Gay—ponding, severe wetness

Septic tank absorption fields

Major management concerns: Munising—surface stones, slope, restricted

permeability, depth to a fragipan, severe wetness, slope; Skanee—surface stones, restricted permeability, depth to a fragipan, seasonal wetness; Gay—ponding

5. Dawson-Au Gres-Croswell Association

Nearly level to strongly sloping, very deep, very poorly drained to moderately well drained, sandy soils on beach ridges and swales

Setting

Landform: Beach ridges and swales on outwash plains and lake plains (fig. 9)

Slope range: 0 to 12 percent

Composition

Extent of the association: 8 percent of the survey area

Extent of the soils in the association:

Dawson and similar soils—35 percent Au Gres and similar soils—20 percent

Croswell and similar soils—15 percent Soils of minor extent—30 percent

Soil Properties and Qualities

Dawson

Depth class: Very deep

Drainage class: Very poorly drained

Position on the landform: Depressions and swales

Parent material: Organic material overlying sandy deposits

Texture of the surface layer: Peat

Slope: Nearly level

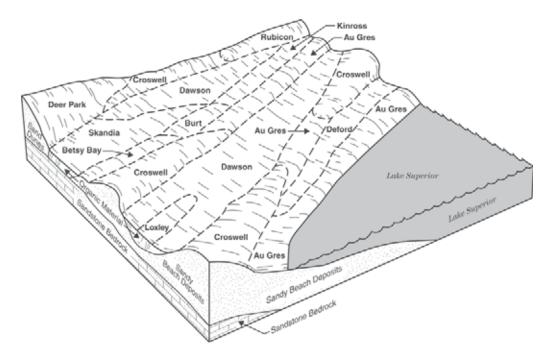


Figure 9.—Typical pattern of soils and parent material in the Dawson-Au Gres-Croswell association.

Au Gres

Depth class: Very deep

Drainage class: Somewhat poorly drained Position on the landform: Low ridges and swales

Parent material: Sandy deposits
Texture of the surface layer: Sand
Slope: Nearly level to gently sloping

Croswell

Depth class: Very deep

Drainage class: Moderately well drained

Position on the landform: Knolls, ridges, side slopes, and footslopes

Parent material: Sandy deposits
Texture of the surface layer: Sand
Slope: Nearly level to strongly sloping

Soils of Minor Extent

- Deer Park and Rubicon soils on the highest beach ridges and dunes
- Loxley, Kinross, and Deford soils in landscape positions similar to those of the Dawson soils
- Burt, Betsy Bay, and Skandia soils, which are underlain by sandstone bedrock at a depth of 10 to 60 inches

Use and Management

Land use: Major use-woodland; other use-wildlife habitat

Woodland

Major management concerns: Dawson—seedling mortality, windthrow hazard, excess humus, low strength; Au Gres—seedling mortality, windthrow hazard, seasonal wetness; Croswell—sandy textures, seedling mortality

Building site development

Major management concerns: Dawson—cutbanks cave, ponding, severe wetness, low strength, subsidence; Au Gres—cutbanks caving, seasonal wetness; Croswell—cutbanks caving, slope, seasonal wetness

Septic tank absorption fields

Major management concerns: Dawson—poor filtering capacity, ponding, low strength, subsidence, severe wetness; Au Gres—poor filtering capacity, severe wetness; Croswell—slope, poor filtering capacity, seasonal wetness

6. Lupton-Tawas-Deford Association

Nearly level, very deep, very poorly drained, mucky soils in swamps on lake plains, outwash plains, and moraines

Setting

Landform: Swamps on lake plains, outwash plains, and moraines (fig. 10) Slope range: 0 to 3 percent

Composition

Extent of the association: 3 percent of the survey area
Extent of the soils in the association:
Lupton and similar soils—40 percent
Tawas and similar soils—35 percent

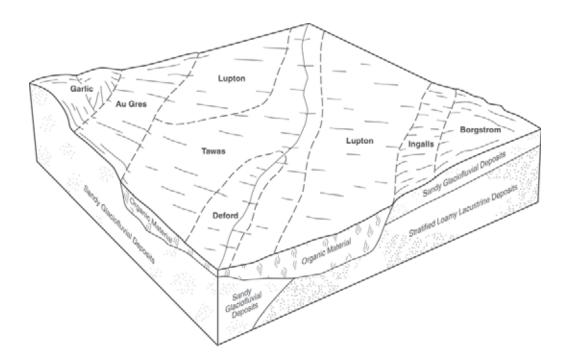


Figure 10.—Typical pattern of soils and parent material in the Lupton-Tawas-Deford association.

Deford and similar soils—15 percent Soils of minor extent—10 percent

Soil Properties and Qualities

Lupton

Depth class: Very deep

Drainage class: Very poorly drained

Position on the landform: Broad, flat depressions and drainageways

Parent material: Thick organic deposits Texture of the surface layer: Muck

Slope: Nearly level

Tawas

Depth class: Very deep

Drainage class: Very poorly drained

Position on the landform: Depressions and drainageways Parent material: Organic material overlying sandy deposits

Texture of the surface layer: Muck

Slope: Nearly level

Deford

Depth class: Very deep

Drainage class: Poorly drained

Position on the landform: Depressions and drainageways

Parent material: Sandy glaciofluvial deposits

Texture of the surface layer: Muck

Slope: Nearly level

Soils of Minor Extent

- · Au Gres and Ingalls soils on slight rises and ridges
- Borgstrom and Garlic soils on isolated knolls and ridges and in transitional areas adjoining other map units

Use and Management

Land use: Major use—woodland; other use—wetland wildlife habitat

Woodland

Major management concerns: Seedling mortality, windthrow hazard, excess humus, low strength

Building site development

Major management concerns: Lupton—ponding, severe wetness, low strength, subsidence; Tawas—cutbanks caving, ponding, severe wetness, low strength; Deford—cutbanks caving, ponding, severe wetness

Septic tank absorption fields

Major management concerns: Lupton—ponding, low strength, subsidence, severe wetness; Tawas—poor filtering capacity, ponding, low strength, severe wetness; Deford—poor filtering capacity, ponding, severe wetness

7. Montreal-Paavola-Arcadian Association

Gently sloping to very steep, very deep and shallow, moderately well drained and well drained, loamy and sandy soils on dissected, bedrock-controlled moraines

Setting

Landform: Dissected, bedrock-controlled moraines (fig. 11)

Slope range: 1 to 70 percent

Composition

Extent of the association: 30 percent of the survey area

Extent of the soils in the association:

Montreal and similar soils—43 percent

Paavola and similar soils—16 percent Arcadian and similar soils—16 percent Soils of minor extent—25 percent

Soil Properties and Qualities

Montreal

Depth class: Very deep

Drainage class: Moderately well drained

Position on the landform: Knolls, ridges, and side slopes

Parent material: Loamy eolian mantle overlying loamy or sandy till

Texture of the surface layer: Cobbly fine sandy loam

Slope: Gently sloping to steep

Paavola

Depth class: Very deep

Drainage class: Moderately well drained

Position on the landform: Knolls, ridges, and side slopes

Parent material: Gravelly or cobbly sandy deposits overlying loamy or sandy till

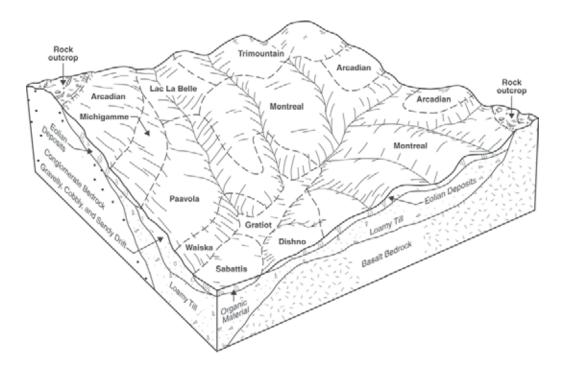


Figure 11.—Typical pattern of soils and parent material in the Montreal-Paavola-Arcadian association.

Texture of the surface layer: Cobbly loamy sand

Slope: Gently sloping to steep

Arcadian

Depth class: Shallow

Drainage class: Well drained

Position on the landform: Hills, escarpments, side slopes, and ridgetops Parent material: Gravelly or cobbly loamy material overlying bedrock

Texture of the surface layer: Very gravelly fine sandy loam

Slope: Gently sloping to very steep

Soils of Minor Extent

- Dishno and Waiska soils in landscape positions similar to those of the Montreal and Paavola soils
- Trimountain and Lac La Belle soils on the steeper dissected side slopes
- Rock outcrop and Michigamme soils in landscape positions similar to those of the Arcadian soils
- Gratiot and Sabattis soils in depressions and drainageways

Use and Management

Land use: Major use—woodland; other uses—wildlife habitat, idle land, building site development

Woodland

Major management concerns: Montreal—erosion, surface boulders, rock fragments, seedling mortality, soil rutting, windthrow hazard, slope, seasonal wetness, dissected slopes; Paavola—erosion, surface boulders, rock fragments, seedling mortality, soil rutting, windthrow hazard, slope, seasonal wetness, dissected slopes; Arcadian—erosion, surface boulders, rock fragments, seedling mortality, windthrow hazard, slope, rock outcrops

Building site development

Major management concerns: Montreal—surface stones, surface boulders, cutbanks caving, slope, seasonal wetness; Paavola—surface stones, surface boulders, cutbanks caving, slope, seasonal wetness; Arcadian—surface stones, surface boulders, depth to bedrock, slope

Septic tank absorption fields

Major management concerns: Montreal—surface stones, surface boulders, slope, restricted permeability, depth to a fragipan, severe wetness; Paavola—surface stones, surface boulders, slope, poor filtering capacity, restricted permeability, depth to a fragipan, severe wetness; Arcadian—surface stones, surface boulders, slope, restricted permeability, depth to bedrock

8. Garlic-Waiska-Alcona Association

Gently sloping to very steep, very deep, well drained to excessively drained, sandy and loamy soils on dissected outwash terraces, deltas, eskers, outwash plains, stream terraces, and lake plains

Setting

 ${\it Land form:}\ {\tt Dissected\ outwash\ terraces}, \ {\tt deltas}, \ {\tt lake\ plains}, \ {\tt outwash\ plains}, \ {\tt stream}$

terraces, and eskers (fig. 12) Slope range: 1 to 60 percent

Composition

Extent of the association: 7 percent of the survey area Extent of the soils in the association: Garlic and similar soils—40 percent

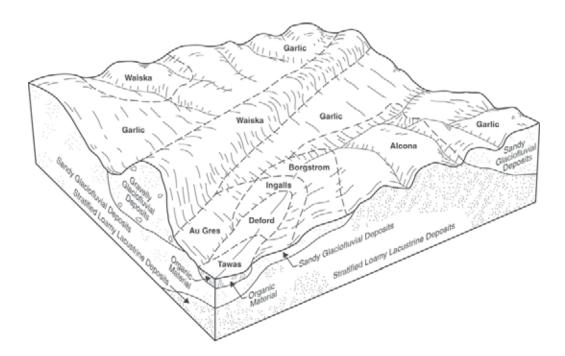


Figure 12.—Typical pattern of soils and parent material in the Garlic-Waiska-Alcona association.

Waiska and similar soils—25 percent Alcona and similar soils—15 percent Soils of minor extent—20 percent

Soil Properties and Qualities

Garlic

Depth class: Very deep Drainage class: Well drained

Position on the landform: Knolls, ridges, escarpments, and side slopes

Parent material: Sandy glaciofluvial deposits Texture of the surface layer: Loamy fine sand

Slope: Gently sloping to very steep

Waiska

Depth class: Very deep

Drainage class: Excessively drained

Position on the landform: Knolls, ridges, escarpments, and side slopes

Parent material: Gravelly or cobbly sandy material Texture of the surface layer: Cobbly loamy sand

Slope: Gently sloping to very steep

Alcona

Depth class: Very deep Drainage class: Well drained

Position on the landform: Knolls, ridges, and side slopes Parent material: Sandy and loamy glaciofluvial deposits Texture of the surface layer: Very fine sandy loam

Slope: Gently sloping to steep

Soils of Minor Extent

- Borgstrom soils in the slightly lower landscape positions
- Ingalls and Au Gres soils in depressions and along drainageways
- Tawas and Deford soils in the lowest depressions and drainageways

Use and Management

Land use: Major use—woodland; other uses—wildlife habitat, building site development

Woodland

Major management concerns: Garlic—erosion, surface boulders, seedling mortality, slope, dissected slopes; Waiska—erosion, surface boulders, rock fragments, seedling mortality, slope, dissected slopes; Alcona—erosion, seedling mortality, soil rutting, slope, dissected slopes

Building site development

Major management concerns: Garlic—cutbanks caving, slope; Waiska—surface stones, surface boulders, cutbanks caving, slope; Alcona—cutbanks caving, slope

Septic tank absorption fields

Major management concerns: Garlic—slope, poor filtering capacity; Waiska—surface stones, surface boulders, slope, poor filtering capacity; Alcona—slope

9. Munising-Yalmer-Garlic Association

Gently sloping to very steep, very deep, moderately well drained and well drained, loamy and sandy soils on dissected moraines

Setting

Landform: Dissected moraines (fig. 13)

Slope range: 1 to 60 percent

Composition

Extent of the association: 4 percent of the survey area

Extent of the soils in the association:

Munising and similar soils—40 percent Yalmer and similar soils—20 percent Garlic and similar soils—20 percent Soils of minor extent—20 percent

Soil Properties and Qualities

Munising

Depth class: Very deep

Drainage class: Moderately well drained

Position on the landform: Knolls, ridges, and side slopes

Parent material: Loamy till

Texture of the surface layer: Fine sandy loam

Slope: Gently sloping to steep

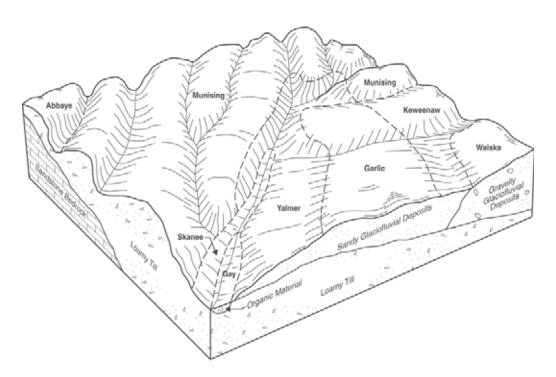


Figure 13.—Typical pattern of soils and parent material in the Munising-Yalmer-Garlic association.

Yalmer

Depth class: Very deep

Drainage class: Moderately well drained

Position on the landform: Knolls, ridges, and side slopes

Parent material: Sandy outwash over loamy till Texture of the surface layer: Loamy sand

Slope: Gently sloping to steep

Garlic

Depth class: Very deep Drainage class: Well drained

Position on the landform: Knolls, ridges, terraces, escarpments, and side slopes

Parent material: Sandy glaciofluvial deposits Texture of the surface layer: Loamy fine sand

Slope: Gently sloping to very steep

Soils of Minor Extent

- · Abbaye soils in landscape positions similar to those of the Munising and Yalmer soils
- Keweenaw and Waiska soils in landscape positions similar to those of the Garlic soils
- Skanee and Gay soils in depressions and drainageways

Use and Management

Land use: Major use—woodland; other uses—wildlife habitat, building site development

Woodland

Major management concerns: Munising—erosion, seedling mortality, soil rutting, windthrow hazard, slope, seasonal wetness, dissected slopes; Yalmer—erosion, seedling mortality, soil rutting, windthrow hazard, slope, seasonal wetness, dissected slopes; Garlic—seedling mortality

Building site development

Major management concerns: Munising—surface stones, cutbanks caving, slope, seasonal wetness; Yalmer—surface stones, cutbanks caving, slope, seasonal wetness; Garlic—cutbanks caving, slope

Septic tank absorption fields

Major management concerns: Munising—surface stones, slope, restricted permeability, depth to a fragipan, severe wetness; Yalmer—surface stones, slope, poor filtering capacity, restricted permeability, depth to a fragipan, severe wetness; Garlic—slope, poor filtering capacity

10. Deer Park-Rubicon-Croswell Association

Nearly level to very steep, excessively drained to moderately well drained, sandy soils on beaches and dunes

Setting

Landform: Beaches and dunes (fig. 14)

Slope range: 0 to 70 percent

Composition

Extent of the association: 2 percent of the survey area

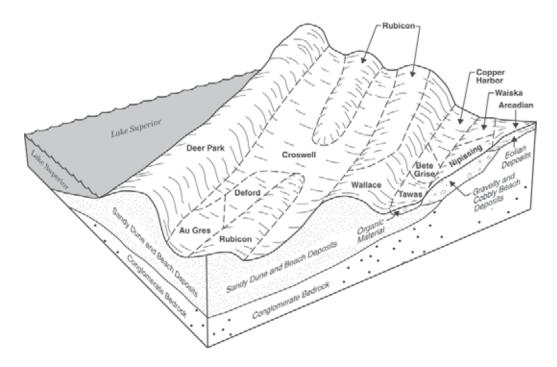


Figure 14.—Typical pattern of soils and parent material in the Deer Park-Rubicon-Croswell association.

Extent of the soils in the association:

Deer Park and similar soils—40 percent Rubicon and similar soils—20 percent Croswell and similar soils—20 percent Soils of minor extent—20 percent

Soil Properties and Qualities

Deer Park

Depth class: Very deep

Drainage class: Excessively drained

Position on the landform: Knolls, ridges, escarpments, and side slopes Parent material: Sandy eolian deposits and sandy lacustrine deposits

Texture of the surface layer: Fine sand Slope: Nearly level to very steep

Rubicon

Depth class: Very deep

Drainage class: Excessively drained

Position on the landform: Knolls, ridges, and side slopes

Parent material: Sandy deposits
Texture of the surface layer: Sand
Slope: Nearly level to steep

Croswell

Depth class: Very deep

Drainage class: Moderately well drained

Position on the landform: Knolls, ridges, side slopes, and footslopes

Parent material: Sandy deposits
Texture of the surface layer: Sand
Slope: Nearly level to gently sloping

Soils of Minor Extent

- Wallace and Waiska soils in landscape positions similar to those of the Rubicon soils
- Copper Harbor soils in landscape positions similar to those of the Croswell soils
- Au Gres and Bete Grise soils on low ridges and in swales
- Tawas and Deford soils in the lowest depressions and swales
- · Nipissing and Arcadian soils on rocky ridges and knolls

Use and Management

Land use: Major use—woodland; other uses—wildlife habitat, building site development

Woodland

Major management concerns: Deer Park—erosion, seedling mortality, slope; Rubicon—sandy textures, seedling mortality; Croswell—sandy textures, seedling mortality

Building site development

Major management concerns: Deer Park—cutbanks caving, slope; Rubicon—cutbanks caving, slope; Croswell—cutbanks caving, slope, seasonal wetness

Septic tank absorption fields

Major management concerns: Deer Park—slope, poor filtering capacity; Rubicon—slope, poor filtering capacity; Croswell—slope, poor filtering capacity, seasonal wetness

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, Garlic fine sand, 0 to 8 percent slopes, is a phase of the Garlic 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. Arcadian-Michigamme-Rock outcrop complex, 8 to 35 percent slopes, extremely bouldery, 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. Histosols and Aquents, ponded, 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, borrow, 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.

2—Lupton and Tawas soils, 0 to 1 percent slopes

Setting

Landform: Depressions and drainageways on lake plains, moraines, and outwash plains

Map Unit Composition

Major components:

Lupton and similar soils: 50 to 100 percent Tawas and similar soils: 25 to 45 percent

Minor components:

Deford and similar soils (0 to 8 percent of the map unit) in landscape positions similar to those of the Tawas soil

Au Gres and similar soils (0 to 3 percent of the map unit) on slight rises and ridges Ingalls and similar soils (0 to 1 percent of the map unit) on slight rises and ridges

Typical Profile

Lupton

Oi—0 to 8 inches; black muck

Oa—8 to 80 inches; black and very dark brown muck

Tawas

Oa1—0 to 6 inches; black muck Oa2—6 to 25 inches; black muck

Cg—25 to 80 inches; dark grayish brown sand

Soil Properties and Qualities

Parent material: Lupton—herbaceous organic material; Tawas—organic material over sandy drift

Slope: 0 to 1 percent

Surface runoff class: Negligible Potential for frost action: High

Depth to restrictive feature: More than 80 inches

Drainage class: Very poorly drained

Available water capacity: Lupton—about 3.1 inches to a depth of 60 inches; Tawas—

about 11.5 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Lupton—moderately rapid; Tawas—moderately rapid over rapid

Flooding: None

Depth to seasonal high water table: At the surface (January, February, March, April, May, June, October, November, December)

Months in which ponding does not occur: January, February, July, August, September, December

Depth and most likely period of ponding: 0.2 foot (March, April, May, June, October, November)

Use and Management

Land use: Major use—woodland; other use—wildlife habitat

Woodland

Major management concerns: Seedling mortality, windthrow hazard, excess humus, low strength

Building site development

Major management concerns: Lupton—ponding, severe wetness, low strength, subsidence; Tawas—cutbanks caving, ponding, severe wetness, low strength

Septic tank absorption fields

Major management concerns: Lupton—ponding, low strength, subsidence, severe wetness; Tawas—poor filtering capacity, ponding, low strength, severe wetness

Interpretive Groups

Land capability classification: 6w

Michigan soil management group: Lupton—Mc; Tawas—M/4c

Prime farmland category: Not prime farmland

Hydric soil status: Hydric Forest habitat type: TTM, TTS

3—Dawson and Loxley soils, 0 to 1 percent slopes

Setting

Landform: Bogs and depressions on lake plains, moraines, and outwash plains

Map Unit Composition

Major components:

Dawson and similar soils: 40 to 65 percent Loxley and similar soils: 30 to 50 percent

Minor components:

Kinross and similar soils (0 to 7 percent of the map unit) in landscape positions similar to those of the Dawson soil

Au Gres and similar soils (0 to 5 percent of the map unit) on slight rises and ridges Croswell and similar soils (0 to 3 percent of the map unit) on slight rises and ridges

Typical Profile

Dawson

Oi—0 to 6 inches; dark brown and brown peat Oa—6 to 38 inches; black and very dark gray muck

C-38 to 80 inches; very dark grayish brown, dark grayish brown, and brown sand

Loxley

Oi—0 to 5 inches; dark yellowish brown peat

Oa1—5 to 26 inches; black and very dark brown and dark brown muck

Oa2—26 to 45 inches; very dark brown and dark brown muck

Oe—45 to 60 inches; brown mucky peat

Soil Properties and Qualities

Parent material: Dawson—herbaceous organic material over sandy glaciolacustrine deposits; Loxley—organic material

Slope: 0 to 1 percent

Surface runoff class: Negligible Potential for frost action: High

Depth to restrictive feature: More than 80 inches

Drainage class: Very poorly drained

Available water capacity: Dawson—about 17.8 inches to a depth of 60 inches;

Loxley—about 18.9 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Loxley—moderately rapid; Dawson—moderately rapid or rapid

Flooding: None

Depth to seasonal high water table: At the surface (January, February, March, April,

May, June, September, October, November, December)

Months in which ponding does not occur: July, August, September

Depth and most likely period of ponding: 0.5 foot (April, May)

Use and Management

Land use: Major use—woodland; other use—wildlife habitat

Woodland

Major management concerns: Seedling mortality, windthrow hazard, excess humus, low strength

Building site development

Major management concerns: Dawson—cutbanks caving, ponding, severe wetness, low strength, subsidence; Loxley—severe wetness, low strength, subsidence

Septic tank absorption fields

Major management concerns: Dawson—poor filtering capacity, ponding, low strength, subsidence, severe wetness; Loxley—ponding, low strength, subsidence, severe wetness

Interpretive Groups

Land capability classification: 7w

Michigan soil management group: Dawson—Mc-a; Loxley—7w

Prime farmland category: Not prime farmland

Hydric soil status: Hydric Forest habitat type: PCS

6—Skandia-Burt complex, 0 to 2 percent slopes

Setting

Landform: Bogs and depressions and drainageways on lake benches

Map Unit Composition

Major components:

Skandia and similar soils: 50 to 70 percent Burt and similar soils: 25 to 40 percent

Minor components:

Dawson and similar soils (0 to 9 percent of the map unit) in landscape positions similar to those of the Skandia soil

Betsy Bay and similar soils (0 to 7 percent of the map unit) on slight rises and ridges

Jacobsville, stony, and similar soils (0 to 5 percent of the map unit) in landscape positions similar to those of the Burt soil

Typical Profile

Skandia

Oa1—0 to 5 inches; dark grayish brown and brown mucky peat

Oa2—5 to 33 inches; dark reddish gray, very dark grayish brown, and very dark brown muck

2Cr-33 to 41 inches; brown very channery sand

2R—41 inches; unweathered sandstone bedrock

Burt

Oa—0 to 4 inches; black muck

A—4 to 6 inches; very dark gray mucky sand Cg—6 to 12 inches; grayish brown sand

C-12 to 17 inches; brown sand

R—17 inches; brown, unweathered sandstone bedrock

Soil Properties and Qualities

Parent material: Skandia—herbaceous organic material over sandstone; Burt—sandy residuum over sandstone

Slope: 0 to 2 percent

Surface runoff class: Negligible Potential for frost action: Moderate

Depth to restrictive feature: Skandia—30 to 46 inches to bedrock (lithic); Burt—12 to

20 inches to bedrock (lithic)

Drainage class: Skandia—very poorly drained; Burt—poorly drained

Available water capacity: Skandia—about 14.0 inches to a depth of 60 inches; Burt—about 2.4 inches to a depth of 60 inches

Shrink-swell potential: Skandia—low; Burt—moderate

Permeability: Skandia—moderate or moderately rapid; Burt—moderately rapid

Flooding: None

Depth to seasonal high water table: Skandia—at the surface (January, February, March, April, May, June, October, November, December); Burt—at the surface (January, February, March, April, May, October, November, December)

Months in which ponding does not occur: Skandia—January, February, July, August, September, December; Burt—January, February, June, July, August, September, December

Depth and most likely period of ponding: Skandia—0.2 foot (March, April, May, June, October, November); Burt—0.5 foot (March, April, May, October, November)

Use and Management

Land use: Major use—woodland; other use—wildlife habitat

Woodland

Major management concerns: Skandia—seedling mortality, windthrow hazard, depth to bedrock, excess humus, low strength; Burt—seedling mortality, windthrow hazard, depth to bedrock, severe wetness

Building site development

Major management concerns: Skandia—ponding, severe wetness, low strength; Burt—ponding, severe wetness

Septic tank absorption fields

Major management concerns: Skandia—restricted permeability, ponding, low strength, depth to bedrock, severe wetness; Burt—restricted permeability, ponding, depth to bedrock

Interpretive Groups

Land capability classification: 7w

Michigan soil management group: Skandia—M/Rc; Burt—Rbc

Prime farmland category: Not prime farmland

Hydric soil status: Hydric Forest habitat type: PCS, TTS

10—Cathro-Sabattis complex, 0 to 2 percent slopes, stony

Setting

Landform: Drainageways and depressions on lake benches and till plains

Map Unit Composition

Major components:

Cathro, stony, and similar soils: 45 to 75 percent Sabattis, stony, and similar soils: 25 to 45 percent

Minor components:

Tawas and similar soils (0 to 9 percent of the map unit) in landscape positions similar to those of the Cathro soil

Lupton and similar soils (0 to 8 percent of the map unit) in landscape positions similar to those of the Cathro soil

Gratiot and similar soils (0 to 5 percent of the map unit) on slight rises and ridges

Typical Profile

Cathro

Oa—0 to 34 inches; black, highly decomposed plant material

Cg-34 to 80 inches; black and dark reddish brown very fine sandy loam

Sabattis

Oa—0 to 8 inches; black, highly decomposed plant material

A—8 to 12 inches; black very cobbly very fine sandy loam

Bg—12 to 17 inches; dark grayish brown cobbly very fine sandy loam

C1—17 to 32 inches; brown cobbly very fine sandy loam

2C2—32 to 37 inches; brown cobbly fine sandy loam

2C3—37 to 80 inches; dark grayish brown very cobbly sandy loam

Soil Properties and Qualities

Parent material: Cathro—herbaceous organic material over loamy drift; Sabattis—coarse-loamy till and colluvium

Slope: 0 to 2 percent

Surface runoff class: Negligible Potential for frost action: High

Depth to restrictive feature: More than 80 inches

Drainage class: Very poorly drained

Available water capacity: Cathro—about 10.9 inches to a depth of 60 inches;

Sabattis—about 8.5 inches to a depth of 60 inches Shrink-swell potential: Cathro—moderate; Sabattis—low

Permeability: Cathro—moderately slow to moderately rapid in the upper part and moderate in the lower part; Sabattis—moderate in the upper part and moderately slow or moderate in the lower part

Flooding: None

Depth to seasonal high water table: Cathro—at the surface (January, February, March, April, May, June, October, November, December); Sabattis—at the surface (January, February, March, April, May, October, November, December)

Months in which ponding does not occur: Cathro—January, February, July, August, September, December; Sabattis—January, February, June, July, August, September, December

Depth and most likely period of ponding: Cathro—0.2 foot (March, April, May, June, October, November); Sabattis—0.5 foot (March, April, May, November)

Use and Management

Land use: Major use—woodland; other use—wetland wildlife habitat

Woodland

Major management concerns: Cathro—seedling mortality, windthrow hazard, excess humus, low strength; Sabattis—surface stones, rock fragments, clayey textures, seedling mortality, windthrow hazard, severe wetness

Building site development

Major management concerns: Cathro—ponding, severe wetness, low strength

Septic tank absorption fields

Major management concerns: Cathro—ponding, low strength, severe wetness; Sabattis—surface stones, ponding, severe wetness

Interpretive Groups

Land capability classification: Cathro—6w; Sabattis—5w Michigan soil management group: Cathro—M/3c; Sabattis—3c

Prime farmland category: Not prime farmland

Hydric soil status: Hydric Forest habitat type: TTM, FI

13—Tawas-Deford complex, 0 to 4 percent slopes

Setting

Landform: Swamps, depressions, and drainageways on outwash plains, moraines, and lake plains

Map Unit Composition

Major components:

Tawas and similar soils: 45 to 90 percent Deford and similar soils: 20 to 45 percent

Minor components:

Lupton and similar soils (0 to 9 percent of the map unit) in landscape positions similar to those of the Tawas soil

Au Gres and similar soils (0 to 8 percent of the map unit) on slight rises and ridges Ingalls and similar soils (0 to 3 percent of the map unit) on slight rises and ridges

Typical Profile

Tawas

Oa1—0 to 6 inches; black muck Oa2—6 to 25 inches; black muck

Cg—25 to 80 inches; dark grayish brown sand

Deford

Oa—0 to 6 inches; black and very dark brown muck

A—6 to 8 inches; light gray dark brown sand C—8 to 80 inches; light gray and brown sand

Soil Properties and Qualities

Parent material: Tawas—organic material over sandy drift; Deford—sandy glaciofluvial deposits

Surface runoff class: Negligible

Slope: Tawas—0 to 4 percent; Dawson—0 to 2 percent Potential for frost action: Tawas—high; Dawson—moderate

Depth to restrictive feature: More than 80 inches

Drainage class: Tawas—very poorly drained; Deford—poorly drained

Available water capacity: Tawas—about 11.5 inches to a depth of 60 inches; Deford—about 5.6 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Tawas—moderately rapid over rapid; Deford—rapid

Flooding: None

Depth to seasonal high water table: At the surface (January, February, March, April, May, June, October, November, December); Tawas—at the surface (January, February, March, April, May, October, November, December)

Months in which ponding does not occur: January, February, July, August, September, December

Depth and most likely period of ponding: Tawas—0.2 foot (March, April, May, June, October, November); Deford—0.2 foot (all year)

Use and Management

Land use: Major use—woodland; other use—wetland wildlife habitat

Woodland

Major management concerns: Seedling mortality, windthrow hazard, excess humus, low strength

Building site development

Major management concerns: Tawas—cutbanks caving, ponding, severe wetness, low strength; Deford—cutbanks caving, ponding, severe wetness

Septic tank absorption fields

Major management concerns: Tawas—poor filtering capacity, ponding, low strength, severe wetness; Deford—poor filtering capacity, ponding, severe wetness

Interpretive Groups

Land capability classification: Tawas—6w; Deford—5w Michigan soil management group: Tawas—M/4c; Deford—4

Prime farmland category: Not prime farmland

Hydric soil status: Hydric

Forest habitat type: Tawas—TTM, TTS; Deford—TTS, TTM

15B—Dawson-Croswell complex, 0 to 8 percent slopes

Setting

Landform: Depressions, bogs, low ridges, and knolls on outwash plains, moraines, and lake plains

Map Unit Composition

Major components:

Dawson and similar soils: 45 to 75 percent Croswell and similar soils: 25 to 40 percent

Minor components:

Kinross and similar soils (0 to 7 percent of the map unit) in landscape positions similar to those of the Dawson soil

Au Gres and similar soils (0 to 5 percent of the map unit) on low beach ridges Loxley and similar soils (0 to 3 percent of the map unit) in landscape positions similar to those of the Dawson soil

Typical Profile

Dawson

Oi—0 to 6 inches; dark brown and brown peat

Oa—6 to 38 inches; black and very dark gray muck

C-38 to 80 inches; very dark grayish brown, dark grayish brown, and brown sand

Croswell

Oa—0 to 1 inch; black, highly decomposed plant material

E-1 to 11 inches; pinkish gray sand

Bs—11 to 21 inches; dark brown and dark yellowish brown sand

BC—21 to 34 inches; yellowish brown sand

C-34 to 80 inches; brown sand

Soil Properties and Qualities

Parent material: Dawson—organic herbaceous material over sandy glaciolacustrine deposits; Croswell—sandy glaciolacustrine and glaciofluvial deposits

Slope: Dawson—0 to 1 percent; Croswell—0 to 8 percent

Surface runoff class: Negligible

Potential for frost action: Dawson—high; Croswell—low

Depth to restrictive feature: More than 80 inches

Drainage class: Dawson—very poorly drained; Croswell—moderately well drained Available water capacity: Dawson—about 17.8 inches to a depth of 60 inches;

Croswell—about 4.3 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Dawson—moderately rapid over rapid; Croswell—rapid

Flooding: None

Depth to seasonal high water table: Dawson—at the surface (January, February, March, April, May, June, September, October, November, December); Croswell—2.0 to 6.7 feet (April, May)

Months in which ponding does not occur: Dawson—July, August, September; Croswell—all year

Depth and most likely period of ponding: Dawson—0.5 foot (April, May)

Use and Management

Land use: Major use—woodland; other use—wildlife habitat

Woodland

Major management concerns: Dawson—seedling mortality, windthrow hazard, excess humus, low strength; Croswell—sandy textures, seedling mortality

Building site development

Major management concerns: Dawson—cutbanks caving, ponding, severe wetness, low strength, subsidence; Croswell—cutbanks caving, slope, seasonal wetness

Septic tank absorption fields

Major management concerns: Dawson—poor filtering capacity, ponding, low strength, subsidence, severe wetness; Croswell—slope, poor filtering capacity, seasonal wetness

Interpretive Groups

Land capability classification: Dawson—7w; Croswell—6s

Michigan soil management group: Dawson—M/4c-a; Croswell—5a

Prime farmland category: Not prime farmland

Hydric soil status: Dawson—hydric; Croswell—not hydric

Forest habitat type: Dawson—PCS, TMC-Vac; Croswell—AQV, TMC-Vac

20E—Rock outcrop, gently sloping to steep

Setting

Landform: Upland rocky knolls and ridges to lakeshore complexes

Map Unit Composition

Major components:

Rock outcrop: 90 to 100 percent

Minor components:

Arcadian and similar soils (0 to 7 percent of the map unit) on ridges, knolls, and hillslopes

Nipissing and similar soils (0 to 6 percent of the map unit) on ridges, knolls, and hillslopes

Properties and Qualities

Kind of bedrock: Conglomerate, basalt, and sandstone

Slope: 2 to 35 percent

Surface runoff class: Very high

Use and Management

Land use: Major use—idle land; other use—wildlife habitat

Note: Onsite investigation is needed to determine the suitability for specific uses.

Interpretive Groups

Land capability classification: Not applicable Michigan soil management group: Not applicable

Prime farmland category: Not applicable

Hydric soil status: Not applicable Forest habitat type: Not applicable

21G—Rock outcrop-Arcadian complex, 40 to 90 percent slopes, extremely bouldery

Setting

Landform: Rocky knolls and ridges on bedrock-controlled moraines

Map Unit Composition

Major components:

Rock outcrop: 45 to 85 percent

Arcadian, extremely bouldery, and similar soils: 20 to 40 percent

Minor components:

Michigamme and similar soils (0 to 9 percent of the map unit) in landscape positions similar to those of the Arcadian soil

Typical Profile

Arcadian

Oa—0 to 3 inches; black, highly decomposed plant material E—3 to 5 inches; dark brown very gravelly fine sandy loam

Bhs—5 to 12 inches; dark reddish brown very gravelly fine sandy loam

2R—12 inches; conglomerate bedrock

Properties and Qualities of the Arcadian Soil

Parent material: Loamy-skeletal drift over basalt and conglomerate bedrock

Slope: 40 to 90 percent Surface runoff class: High

Potential for frost action: Moderate

Depth to restrictive feature: 10 to 20 inches to bedrock (lithic)

Drainage class: Well drained

Available water capacity: About 2.0 inches to a depth of 60 inches

Shrink-swell potential: Low Permeability: Moderate

Flooding: None

Depth to seasonal high water table: More than 6.5 feet

Ponding: None

Use and Management

Land use: Major use—idle land; other use—wildlife habitat

Note: Onsite investigation is needed to determine the suitability for specific uses.

Woodland

Major management concerns: Arcadian—erosion, surface boulders, rock fragments, seedling mortality, windthrow hazard, slope, rock outcrops

Building site development

Major management concerns: Arcadian—surface stones, surface boulders, depth to bedrock, slope

Septic tank absorption fields

Major management concerns: Arcadian—surface stones, surface boulders, slope, restricted permeability, depth to bedrock

Interpretive Groups

Land capability classification: Arcadian—7s
Michigan soil management group: Arcadian—Ra
Prime farmland category: Not prime farmland

Hydric soil status: Not hydric

Forest habitat type: Arcadian—TMC-Vac, AQVac

39A—Betsy Bay-Burt-Deford complex, 0 to 3 percent slopes

Setting

Landform: Beach ridges and depressions on lakeshore complexes and depressions on lake plains

Map Unit Composition

Major components:

Betsy Bay and similar soils: 40 to 75 percent Burt and similar soils: 20 to 30 percent Deford and similar soils: 10 to 25 percent

Minor components:

Assinins and similar soils (0 to 8 percent of the map unit) in landscape positions similar to those of the Betsy Bay soil

Zeba, stony, and similar soils (0 to 6 percent of the map unit) in landscape positions similar to those of the Betsy Bay soil

Au Gres and similar soils (0 to 5 percent of the map unit) in landscape positions similar to those of the Betsy Bay soil

Typical Profile

Betsy Bay

Oa—0 to 1 inch; very dark brown, highly decomposed plant material

E—1 to 18 inches; light brownish gray sand

Bw—18 to 26 inches; bark brown sand

Cr—26 to 43 inches; brown flaggy sand

2R—43 inches; yellowish, unweathered sandstone bedrock

Burt

Oa—0 to 4 inches; muck

A—4 to 6 inches; very dark gray mucky sand

Cg—6 to 12 inches; grayish brown sand

C-12 to 17 inches; brown sand

R—17 inches; brown, unweathered sandstone bedrock

Deford

Oa—0 to 6 inches; black and very dark brown, highly decomposed plant material

A—6 to 8 inches; light gray dark brown sand

C-8 to 80 inches; light gray and brown sand

Soil Properties and Qualities

Parent material: Betsy Bay—sandy glaciofluvial and glaciolacustrine deposits; Burt—sandy residuum over sandstone; Deford—sandy glaciofluvial deposits

Slope: Betsy Bay—0 to 3 percent; Burt—0 to 3 percent; Deford—0 to 2 percent

Surface runoff class: Negligible Potential for frost action: Moderate

Depth to restrictive feature: Betsy Bay—30 to 50 inches to bedrock (lithic); Burt—12 to 20 inches to bedrock (lithic); Deford—more than 80 inches

Drainage class: Betsy Bay—somewhat poorly drained; Burt and Deford—poorly drained

Available water capacity: Betsy Bay—about 3.6 inches to a depth of 60 inches; Burt—about 2.4 inches to a depth of 60 inches; Deford—about 5.6 inches to a depth of 60 inches

Shrink-swell potential: Betsy Bay—low; Burt—moderate; Deford—low

Permeability: Betsy Bay—rapid over moderately slow; Burt—moderately rapid; Deford—rapid

Flooding: None

Depth to seasonal high water table: Betsy Bay—0.5 foot to 6.7 feet (April, May); Burt—at the surface (January, February, March, April, May, October, November, December); Deford—at the surface (January, February, March, April, May, October, November, December)

Months in which ponding does not occur: Burt—January, February, June, July, August, September, December; Betsy Bay—all year

Depth and most likely period of ponding: Burt—0.5 foot (March, April, May, October, November); Deford—0.2 foot (all year)

Use and Management

Land use: Major use—woodland; other use—wildlife habitat

Woodland

Major management concerns: Betsy Bay—seedling mortality, windthrow hazard, seasonal wetness; Burt—seedling mortality, windthrow hazard, depth to bedrock, severe wetness; Deford—seedling mortality, windthrow hazard, severe wetness

Building site development

Major management concerns: Betsy Bay—cutbanks caving, depth to bedrock, seasonal wetness; Burt—ponding, severe wetness; Deford—cutbanks caving, ponding, severe wetness

Septic tank absorption fields

Major management concerns: Betsy Bay—poor filtering capacity, restricted permeability, depth to bedrock, severe wetness; Burt—restricted permeability, ponding, depth to bedrock; Deford—poor filtering capacity, ponding, severe wetness

Interpretive Groups

Land capability classification: Betsy Bay—3w; Burt—7w; Deford—5w Michigan soil management group: Betsy Bay—4/Rbc; Burt—Rbc; Deford—4c Prime farmland category: Not prime farmland

Hydric soil status: Betsy Bay—not hydric; Burt and Deford—hydric

Forest habitat type: Betsy Bay—TMC-Vac, TTS; Burt and Deford—TTS, TTM

47A—Zeba-Jacobsville complex, 0 to 3 percent slopes, stony

Setting

Landform: Depressions and drainageways on ground moraines and knolls on lake benches

Map Unit Composition

Major components:

Zeba, stony, and similar soils: 45 to 65 percent Jacobsville, stony, and similar soils: 20 to 35 percent

Minor components:

Chocolay and similar soils (0 to 8 percent of the map unit) on ridges and knolls Abbaye and similar soils (0 to 8 percent of the map unit) on ridges and knolls Burt and similar soils (0 to 5 percent of the map unit) in landscape positions similar to those of the Jacobsville soil

Typical Profile

Zeba

Oa—0 to 2 inches; black, highly decomposed plant material

E-2 to 3 inches; brown fine sandy loam, loamy sand

Bs—3 to 9 inches; dark reddish brown fine sandy loam

E/B—9 to 14 inches; reddish brown loamy sand and fine sandy loam

B/E—14 to 25 inches; reddish brown fine sandy loam and loamy sand

2Cr—25 to 27 inches; reddish brown very channery fine sandy loam and very channery loamy coarse sand

2R—27 inches; reddish brown and pinkish gray, unweathered sandstone bedrock

Jacobsville

Oa—0 to 5 inches; very dark gray, highly decomposed plant material

Eg—5 to 12 inches; brown fine sandy loam

Bw—12 to 20 inches; reddish brown gravelly fine sandy loam

C-20 to 21 inches; reddish brown channery fine sandy loam

2Cr-21 to 22 inches; weathered sandstone bedrock

2R—22 inches; sandstone bedrock

Soil Properties and Qualities

Parent material: Zeba—loamy drift over sandstone; Jacobsville—loamy till deposits over sandstone

Slope: Zeba—0 to 3 percent; Jacobsville—0 to 2 percent Surface runoff class: Zeba—low; Jacobsville—very low

Potential for frost action: High

Depth to restrictive feature: 26 to 36 inches to bedrock (lithic)

Drainage class: Zeba—somewhat poorly drained; Jacobsville—poorly drained Available water capacity: Zeba—about 4.8 inches to a depth of 60 inches;

Jacobsville—about 4.5 inches to a depth of 60 inches

Shrink-swell potential: Low Permeability: Moderate

Flooding: None

Depth to seasonal high water table: Zeba—0.5 foot to 2.8 feet (May); Jacobsville—at the surface (January, February, March, April, May, October, November, December) Months in which ponding does not occur: Jacobsville—January, February, June, July, August, September, December; Zeba—all year

Depth and most likely period of ponding: Jacobsville—0.5 foot (March, April, May, October, November)

Use and Management

Land use: Major use—woodland; other use—wildlife habitat

Woodland

Major management concerns: Zeba—surface channers, surface stones, seedling mortality, windthrow hazard, depth to bedrock, seasonal wetness; Jacobsville—surface channers, surface stones, rock fragments, seedling mortality, windthrow hazard, depth to bedrock, severe wetness

Building site development

Major management concerns: Zeba—surface channers, surface stones, depth to bedrock, seasonal wetness; Jacobsville—surface channers, surface stones, ponding, severe wetness

Septic tank absorption fields

Major management concerns: Zeba—surface channers, surface stones, restricted permeability, depth to bedrock, severe wetness; Jacobsville—surface channers, surface stones, ponding, depth to bedrock, severe wetness

Interpretive Groups

Land capability classification: Zeba—3w; Jacobsville—5w

Michigan soil management group: Zeba—3/Rbc; Jacobsville—3/Rbc

Prime farmland category: Not prime farmland

Hydric soil status: Zeba—not hydric; Jacobsville—hydric

Forest habitat type: Zeba—TMC-D, TMC; Jacobsville—TTM, TMC-Vac

51C—Arcadian-Nipissing-Rock outcrop complex, dissected, 1 to 12 percent slopes, very stony

Setting

Landform: Ridges and hills on lake bench ridges and moraines

Map Unit Composition

Major components:

Arcadian, dissected, very stony, and similar soils: 35 to 60 percent Nipissing, dissected, very stony, and similar soils: 25 to 35 percent

Rock outcrop: 10 to 25 percent

Minor components:

Gratiot and similar soils (0 to 8 percent of the map unit) in depressions and drainageways

Copper Harbor and similar soils (0 to 7 percent of the map unit) in the slightly lower landscape positions

Paavola and similar soils (0 to 6 percent of the map unit) in the slightly lower landscape positions

Typical Profile

Arcadian

Oa—0 to 3 inches; black, highly decomposed plant material

E—3 to 5 inches; dark brown very gravelly fine sandy loam

Bhs—5 to 12 inches; dark reddish brown very gravelly fine sandy loam

2R—12 inches; conglomerate bedrock

Nipissing

Oi—0 to 1 inch; black, moderately decomposed plant material

Oa—1 to 3 inches; black, highly decomposed plant material

E-3 to 4 inches; dark reddish gray very cobbly fine sandy loam

Bhs1—4 to 20 inches; dark reddish brown extremely cobbly fine sandy loam

Bhs2—20 to 29 inches; very dusky red extremely cobbly fine sandy loam

Bs—29 to 35 inches; dark reddish brown extremely cobbly fine sandy loam

2C-35 to 39 inches; fragmental material

3R—39 inches; conglomerate and basalt bedrock

Soil Properties and Qualities

Parent material: Arcadian—loamy-skeletal drift over basalt and conglomerate bedrock; Nipissing—loamy-skeletal over fragmental drift over conglomerate and basalt bedrock

Slope: 1 to 12 percent

Surface runoff class: Arcadian—medium; Nipissing—low

Potential for frost action: Moderate

Depth to restrictive feature: Arcadian—10 to 20 inches to bedrock (lithic); Nipissing—

20 to 40 inches to bedrock (lithic)

Drainage class: Well drained

Available water capacity: Arcadian—about 2.0 inches to a depth of 60 inches;

Nipissing—about 3.1 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Arcadian—moderate; Nipissing—moderately rapid over very rapid

Flooding: None

Depth to seasonal high water table: More than 6.5 feet

Ponding: None

Use and Management

Land use: Major use—woodland; other use—wildlife habitat

Note: Onsite investigation is needed to determine the suitability for specific uses.

Woodland

Major management concerns: Arcadian—surface stones, rock fragments, seedling mortality, windthrow hazard, depth to bedrock, rock outcrops; Nipissing—surface stones, rock fragments, seedling mortality, depth to bedrock

Building site development

Major management concerns: Arcadian—surface stones, depth to bedrock, slope; Nipissing—surface stones, large stones, depth to bedrock, slope

Septic tank absorption fields

Major management concerns: Arcadian—surface stones, slope, depth to bedrock; Nipissing—surface stones, large stones, slope, poor filtering capacity, depth to bedrock

Interpretive Groups

Land capability classification: 7s

Michigan soil management group: Arcadian—Ra; Nipissing—G/Ra

Prime farmland category: Not prime farmland

Hydric soil status: Not hydric Forest habitat type: TMV, ATD

51E—Arcadian-Nipissing-Rock outcrop complex, dissected, 8 to 35 percent slopes, very stony

Setting

Landform: Ridges, escarpments, and hills on lake benches; escarpments and ridges on moraines

Map Unit Composition

Major components:

Arcadian, dissected, very stony, and similar soils: 40 to 80 percent Nipissing, dissected, very stony, and similar soils: 10 to 40 percent

Rock outcrop: 10 to 20 percent

Minor components:

Waiska and similar soils (0 to 9 percent of the map unit) in landscape positions similar to those of the Nipissing soil

Paavola and similar soils (0 to 4 percent of the map unit) in landscape positions similar to those of the Nipissing soil

Gratiot and similar soils (0 to 3 percent of the map unit) in depressions and drainageways

Typical Profile

Arcadian

Oa—0 to 3 inches; black, highly decomposed plant material

E—3 to 5 inches; dark brown very gravelly fine sandy loam

Bhs—5 to 12 inches; dark reddish brown very gravelly fine sandy loam

2R—12 inches; conglomerate bedrock

Nipissing

Oi—0 to 1 inch; black, moderately decomposed plant material

Oa—1 to 3 inches; black, highly decomposed plant material

E—3 to 4 inches; dark reddish gray very cobbly fine sandy loam

Bhs1—4 to 20 inches; dark reddish brown extremely cobbly fine sandy loam

Bhs2—20 to 29 inches; very dusky red extremely cobbly fine sandy loam

Bs—29 to 35 inches; dark reddish brown extremely cobbly fine sandy loam

2C—35 to 39 inches; fragmental material

3R—39 inches; conglomerate and basalt bedrock

Soil Properties and Qualities

Parent material: Arcadian—loamy-skeletal drift over conglomerate and basalt bedrock; Nipissing—loamy-skeletal over fragmental drift over conglomerate and basalt bedrock

Slope: 8 to 35 percent

Surface runoff class: Arcadian—high; Nipissing—low

Potential for frost action: Moderate

Depth to restrictive feature: Arcadian—10 to 20 inches to bedrock (lithic); Nipissing—20 to 40 inches to bedrock (lithic)

Drainage class: Well drained

Available water capacity: Arcadian—about 2.0 inches to a depth of 60 inches;

Nipissing—about 3.1 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Arcadian—moderate; Nipissing—moderately rapid over very rapid

Flooding: None

Depth to seasonal high water table: More than 6.5 feet

Ponding: None

Use and Management

Land use: Major uses—wetland; other uses—wildlife habitat, idle land Note: Onsite investigation is needed to determine the suitability for specific uses.

Woodland

Major management concerns: Arcadian—erosion, surface stones, rock fragments, seedling mortality, windthrow hazard, slope, dissected slopes; Nipissing—erosion, surface stones, rock fragments, seedling mortality, slope, dissected slopes, rock outcrops

Building site development

Major management concerns: Arcadian—surface stones, depth to bedrock, slope; Nipissing—surface stones, large stones, depth to bedrock, slope

Septic tank absorption fields

Major management concerns: Arcadian—surface stones, slope, depth to bedrock; Nipissing—surface stones, large stones, slope, poor filtering capacity, depth to bedrock

Interpretive Groups

Land capability classification: 7s

Michigan soil management group: Arcadian—Ra; Nipissing—G/Ra

Prime farmland category: Not prime farmland

Hydric soil status: Not hydric Forest habitat type: TM, TMV

52C—Arcadian-Dishno-Rock outcrop complex, dissected, 1 to 12 percent slopes, very bouldery

Setting

Landform: Ridges, escarpments, and hills on moraines and lake plains

Map Unit Composition

Major components:

Arcadian and similar soils: 40 to 55 percent Dishno and similar soils: 20 to 35 percent

Rock outcrop: 10 to 25 percent

Minor components:

Gratiot and similar soils (0 to 8 percent of the map unit) in depressions and drainageways

Montreal and similar soils (0 to 7 percent of the map unit) in landscape positions similar to those of the Dishno soil

Paavola and similar soils (0 to 5 percent of the map unit) in landscape positions similar to those of the Dishno soil

Typical Profile

Arcadian

Oa—0 to 3 inches; black, highly decomposed plant material E—3 to 5 inches; dark brown very gravelly fine sandy loam

Bhs—5 to 12 inches; dark reddish brown very gravelly fine sandy loam 2R—12 inches; conglomerate bedrock

Dishno

Oe—0 to 1 inch; dark reddish brown, moderately decomposed plant material

A—1 to 3 inches; dark reddish brown cobbly very fine sandy loam

E—3 to 4 inches; reddish gray cobbly very fine sandy loam

Bhs—4 to 8 inches; dark brown cobbly very fine sandy loam

Bs—8 to 26 inches; dark brown and brown cobbly very fine sandy loam

2BC—26 to 31 inches; brown very cobbly loamy sand

2C—31 to 42 inches; brown very cobbly loamy sand

3R—42 inches; unweathered basalt bedrock

Soil Properties and Qualities

Parent material: Arcadian—loamy-skeletal drift over basalt and conglomerate bedrock; Dishno—loamy and silty eolian deposits over coarse-loamy and sandy or sandy-skeletal till deposits over conglomerate and basalt bedrock

Slope: 1 to 12 percent

Surface runoff class: Arcadian—medium; Dishno—low

Potential for frost action: Moderate

Depth to restrictive feature: Arcadian—10 to 20 inches to bedrock (lithic); Dishno—40 to 60 inches to bedrock (lithic)

Drainage class: Arcadian—well drained; Dishno—moderately well drained

Available water capacity: Arcadian—about 2.0 inches to a depth of 60 inches;

Dishno—about 6.3 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Arcadian—moderate; Dishno—moderate over moderately rapid

Flooding: None

Depth to seasonal high water table: Arcadian—more than 6.5 feet; Dishno—1.0 to 3.8 feet (April, October)

Ponding: None

Use and Management

Land use: Major use—woodland; other uses—wildlife habitat, building site development, idle land

Note: Onsite investigation is needed to determine the suitability for specific uses.

Woodland

Major management concerns: Arcadian—surface boulders, rock fragments, seedling mortality, windthrow hazard, depth to bedrock, rock outcrops; Dishno—surface boulders, rock fragments, clayey textures, seedling mortality, soil rutting, seasonal wetness, rock outcrops

Building site development

Major management concerns: Arcadian—surface stones, surface boulders, depth to bedrock, slope; Dishno—surface stones, surface boulders, depth to bedrock, slope, seasonal wetness

Septic tank absorption fields

Major management concerns: Arcadian—surface stones, surface boulders, slope, depth to bedrock; Dishno—surface stones, surface boulders, slope, depth to bedrock, severe wetness

Interpretive Groups

Land capability classification: Arcadian—7s; Dishno—6s Michigan soil management group: Arcadian—Ra; Dishno—3a

Prime farmland category: Not prime farmland

Hydric soil status: Not hydric

Forest habitat type: Arcadian—AVO, ATD; Dishno—ATD, AVO

52E—Arcadian-Dishno-Rock outcrop complex, dissected, 8 to 35 percent slopes, very bouldery

Setting

Landform: Ridges, escarpments, and hills on moraines and lake plains

Map Unit Composition

Major components:

Arcadian, dissected, very bouldery, and similar soils: 40 to 55 percent Dishno, dissected, very bouldery, and similar soils: 20 to 35 percent

Rock outcrop: 10 to 25 percent

Minor components:

Montreal and similar soils (0 to 5 percent of the map unit) in landscape positions similar to those of the Dishno soil

Paavola and similar soils (0 to 5 percent of the map unit) in landscape positions similar to those of the Dishno soil

Gratiot and similar soils (0 to 3 percent of the map unit) in depressions and drainageways

Typical Profile

Arcadian

Oa—0 to 3 inches; black, highly decomposed plant material

E—3 to 5 inches; dark brown very gravelly fine sandy loam

Bhs—5 to 12 inches; dark reddish brown very gravelly fine sandy loam

2R—12 inches; conglomerate bedrock

Dishno

Oe—0 to 1 inch; dark reddish brown, moderately decomposed plant material

A—1 to 3 inches; dark reddish brown cobbly very fine sandy loam

E—3 to 4 inches; reddish gray cobbly very fine sandy loam

Bhs—4 to 8 inches; dark brown cobbly very fine sandy loam

Bs—8 to 26 inches; dark brown and brown cobbly very fine sandy loam

2BC-26 to 31 inches; brown very cobbly loamy sand

2C—31 to 42 inches; brown very cobbly loamy sand

3R—42 inches; unweathered basalt bedrock

Soil Properties and Qualities

Parent material: Arcadian—loamy-skeletal drift over basalt and conglomerate bedrock; Dishno—silty eolian deposits or coarse-loamy over sandy or sandy-skeletal till deposits over conglomerate and basalt bedrock

Slope: 8 to 35 percent

Surface runoff class: Arcadian—high; Dishno—medium

Potential for frost action: Moderate

Depth to restrictive feature: Arcadian—10 to 20 inches to bedrock (lithic); Dishno—40

to 60 inches to bedrock (lithic)

Drainage class: Moderately well drained

Available water capacity: Arcadian—about 2.0 inches to a depth of 60 inches;

Dishno—about 6.3 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Arcadian—moderate; Dishno—moderate over moderately rapid

Flooding: None

Depth to seasonal high water table: Arcadian—more than 6.5 feet; Dishno—1.0 to 3.8

feet (April, October)

Ponding: None

Use and Management

Land use: Major use—woodland; other uses—wildlife habitat, idle land Note: Onsite investigation is needed to determine the suitability for specific uses.

Woodland

Major management concerns: Arcadian—erosion, surface boulders, rock fragments, seedling mortality, windthrow hazard, slope, dissected slopes; Dishno—erosion, surface boulders, rock fragments, clayey textures, seedling mortality, soil rutting, slope, dissected slopes, rock outcrops

Building site development

Major management concerns: Arcadian—surface stones, surface boulders, depth to bedrock, slope; Dishno—surface stones, surface boulders, cutbanks caving, depth to bedrock, slope, seasonal wetness

Septic tank absorption fields

Major management concerns: Arcadian—surface stones, surface boulders, slope, depth to bedrock; Dishno—surface stones, surface boulders, slope, depth to bedrock, severe wetness

Interpretive Groups

Land capability classification: Arcadian—7s; Dishno—7e Michigan soil management group: Arcadian—Ra; Dishno—3a

Prime farmland category: Not prime farmland Hydric soil status: Arcadian and Dishno—not hydric Forest habitat type: Arcadian and Dishno—AVO, ATD

53E—Arcadian-Michigamme-Rock outcrop complex, 8 to 35 percent slopes, extremely bouldery

Setting

Landform: Ridges, escarpments, and hills on moraines

Map Unit Composition

Major components:

Arcadian, extremely bouldery, and similar soils: 40 to 55 percent Michigamme, extremely bouldery, and similar soils: 20 to 30 percent

Rock outcrop: 15 to 30 percent

Minor components:

Dishno and similar soils (0 to 4 percent of the map unit) in the slightly lower landscape positions

Montreal and similar soils (0 to 3 percent of the map unit) in the slightly lower landscape positions

Paavola and similar soils (0 to 3 percent of the map unit)

Typical Profile

Arcadian

Oa—0 to 3 inches; black, highly decomposed plant material

E—3 to 5 inches; dark brown very gravelly fine sandy loam

Bhs—5 to 12 inches; dark reddish brown very gravelly fine sandy loam

2R—12 inches; conglomerate bedrock;

Michigamme

Oa—0 to 1 inch; black, highly decomposed plant material

E—1 to 4 inches; dark reddish gray cobbly very fine sandy loam

Bhs—4 to 10 inches; dark brown cobbly very fine sandy loam

Bs—10 to 22 inches; dark brown and brown very cobbly very fine sandy loam

2B/E-22 to 30 inches; brown cobbly loamy sand and bouldery loamy sand

3R—30 inches; unweathered basalt bedrock

Soil Properties and Qualities

Parent material: Arcadian—loamy-skeletal drift over basalt over conglomerate bedrock; Michigamme—silty and loamy eolian deposits over coarse-loamy till over basalt or conglomerate bedrock

Slope: 8 to 35 percent Surface runoff class: High

Potential for frost action: Moderate

Depth to restrictive feature: Arcadian—10 to 20 inches to bedrock (lithic);

Michigamme—22 to 40 inches to bedrock (lithic)

Drainage class: Well drained

Available water capacity: Arcadian—about 2.0 inches to a depth of 60 inches;

Michigamme—about 4.3 inches to a depth of 60 inches

Shrink-swell potential: Low Permeability: Moderate

Flooding: None

Depth to seasonal high water table: More than 6.5 feet

Ponding: None

Use and Management

Land use: Major use—woodland; other use—wildlife habitat

Note: Onsite investigation is needed to determine the suitability for specific uses.

Woodland

Major management concerns: Arcadian—erosion, surface boulders;,rock fragments, seedling mortality, windthrow hazard, slope, rock outcrops; Michigamme—erosion, surface boulders, rock fragments, clayey textures, seedling mortality, soil rutting, slope, rock outcrops

Building site development

Major management concerns: Arcadian—surface stones, surface boulders, depth to bedrock, slope; Michigamme—surface stones, surface boulders, cutbanks caving

Septic tank absorption fields

Major management concerns: Arcadian—surface stones, surface boulders, slope, depth to bedrock; Michigamme—surface stones, surface boulders, slope, depth to bedrock

Interpretive Groups

Land capability classification: Arcadian—7s; Michigamme—7s

Michigan soil management group: Arcadian—Ra; Michigamme—3/Ra

Prime farmland category: Not prime farmland

Hydric soil status: Arcadian and Michigamme—not hydric

Forest habitat type: Arcadian—ATD, TMV; Michigamme—ATD, TMV

53F—Arcadian-Michigamme-Rock outcrop complex, 35 to 70 percent slopes, extremely bouldery

Setting

Landform: Ridges, escarpments, and hills on moraines

Map Unit Composition

Major components:

Arcadian, extremely bouldery, and similar soils: 40 to 55 percent Michigamme, extremely bouldery, and similar soils: 20 to 35 percent

Rock outcrop: 10 to 30 percent

Minor components:

Trimountain and similar soils (0 to 7 percent of the map unit) in landscape positions similar to those of the Michigamme soil

Lac La Belle and similar soils (0 to 5 percent of the map unit) in landscape positions similar to those of the Michigamme soil

Typical Profile

Arcadian

Oa—0 to 3 inches; black, highly decomposed plant material

E-3 to 5 inches; dark brown very gravelly fine sandy loam

Bhs—5 to 12 inches; dark reddish brown very gravelly fine sandy loam

2R—12 inches; conglomerate bedrock

Michigamme

Oa—0 to 1 inch; black, highly decomposed plant material

E—1 to 4 inches; dark reddish gray cobbly very fine sandy loam

Bhs—4 to 10 inches; dark brown cobbly very fine sandy loam

Bs—10 to 22 inches; dark brown and brown very cobbly very fine sandy loam

2B/E-22 to 30 inches; brown cobbly loamy sand and bouldery loamy sand

3R—30 inches: unweathered basalt bedrock

Soil Properties and Qualities

Parent material: Arcadian—loamy-skeletal drift over basalt and conglomerate bedrock; Michigamme—silty and loamy eolian deposits over coarse-loamy till deposits over basalt and conglomerate bedrock

Slope: 35 to 70 percent

Surface runoff class: Arcadian—high; Michigamme—medium

Potential for frost action: Moderate

Depth to restrictive feature: Arcadian—10 to 20 inches to bedrock (lithic);

Michigamme—20 to 40 inches to bedrock (lithic)

Drainage class: Well drained

Available water capacity: Arcadian—about 2.0 inches to a depth of 60 inches;

Michigamme—about 4.3 inches to a depth of 60 inches

Shrink-swell potential: Low Permeability: Moderate

Flooding: None

Depth to seasonal high water table: More than 6.5 feet

Ponding: None

Use and Management

Land use: Major use—woodland; other uses—wildlife habitat, idle land

Note: Onsite investigation is needed to determine the suitability for specific uses.

Woodland

Major management concerns: Arcadian—erosion, surface boulders, rock fragments, seedling mortality, windthrow hazard, slope, rock outcrops; Michigamme—erosion, surface boulders, rock fragments, seedling mortality, soil rutting, slope, rock outcrops

Building site development

Major management concerns: Surface stones, surface boulders, depth to bedrock, slope

Septic tank absorption fields

Major management concerns: Surface stones, surface boulders, slope, depth to bedrock

Interpretive Groups

Land capability classification: Arcadian and Michigamme—7s

Michigan soil management group: Arcadian—Ra; Michigamme—3/Ra

Prime farmland category: Not prime farmland

Hydric soil status: Arcadian and Michigamme—not hydric Forest habitat type: Arcadian and Michigamme—TMV, ATD

55B—Chocolay very cobbly fine sandy loam, 1 to 8 percent slopes, very flaggy

Setting

Landform: Ridges and knolls on lake benches

Map Unit Composition

Major components:

Chocolay and similar soils: 85 to 95 percent

Minor components:

Zeba, stony, and similar soils (0 to 8 percent of the map unit) in depressions and drainageways

Jacobsville, stony, and similar soils (0 to 8 percent of the map unit) in depressions and drainageways

Burt and similar soils (0 to 7 percent of the map unit) in depressions and drainageways

Typical Profile

Chocolay

Oa—0 to 2 inches; black, highly decomposed plant material E—2 to 11 inches; pinkish gray gravelly very fine sandy loam

Bhs—11 to 13 inches; dark reddish brown very gravelly fine sandy loam

Bs—13 to 18 inches; brown very gravelly very fine sandy loam

Cr—18 to 21 inches; brown very flaggy fine sandy loam

2R—21 inches; unweathered sandstone bedrock

Soil Properties and Qualities

Parent material: Loamy-skeletal till deposits over sandstone

Slope: 1 to 8 percent Surface runoff class: Low

Potential for frost action: Moderate

Depth to restrictive feature: 20 to 40 inches to bedrock (lithic)

Drainage class: Moderately well drained

Available water capacity: About 2.1 inches to a depth of 60 inches

Shrink-swell potential: Low Permeability: Moderate

Flooding: None

Depth to seasonal high water table: 1.0 to 2.3 feet (April, October)

Ponding: None

Use and Management

Land use: Major use—woodland; other uses—wildlife habitat, building site development

Woodland

Major management concerns: Surface flagstones, rock fragments, seedling mortality, depth to bedrock

Building site development

Major management concerns: Surface channers, surface flagstones, large stones, depth to bedrock, slope, seasonal wetness

Septic tank absorption fields

Major management concerns: Surface channers, surface flagstones, large stones, slope, depth to bedrock, wetness

Interpretive Groups

Land capability classification: 6s Michigan soil management group: 3/Ra Prime farmland category: Not prime farmland

Hydric soil status: Not hydric Forest habitat type: ATD

100B—Waiska cobbly loamy sand, 0 to 8 percent slopes Setting

Landform: Ridges, hillslopes, and knolls on outwash plains, stream terraces, kames, and eskers

Map Unit Composition

Major components:

Waiska and similar soils: 85 to 95 percent

Minor components:

Copper Harbor and similar soils (0 to 8 percent of the map unit) in the slightly lower landscape positions

Garlic and similar soils (0 to 6 percent of the map unit) in landscape positions similar to those of the Waiska soil

Bete Grise and similar soils (0 to 6 percent of the map unit) in depressions and drainageways

Typical Profile

Waiska

Oi—0 to 1 inch; dark reddish brown, moderately decomposed plant material

E—1 to 7 inches; brown cobbly loamy sand

Bhs—7 to 23 inches; dark brown very gravelly loamy sand

Bs—23 to 35 inches; dark brown extremely gravelly coarse sand

BC—35 to 60 inches; dark brown extremely gravelly coarse sand C—60 to 80 inches; brown extremely gravelly coarse sand

Soil Properties and Qualities

Parent material: Sandy-skeletal glaciofluvial and glaciolacustrine deposits

Slope: 0 to 8 percent

Surface runoff class: Negligible Potential for frost action: Low

Depth to restrictive feature: More than 80 inches

Drainage class: Excessively drained

Available water capacity: About 2.3 inches to a depth of 60 inches

Shrink-swell potential: Low Permeability: Rapid Flooding: None

Depth to seasonal high water table: More than 6.5 feet

Ponding: None

Use and Management

Land use: Major use—woodland; other uses—wildlife habitat, building site development

Woodland

Major management concerns: Rock fragments, seedling mortality

Building site development

Major management concerns: Surface stones, cutbanks caving, slope

Septic tank absorption fields

Major management concerns: Surface stones, slope, poor filtering capacity

Interpretive Groups

Land capability classification: 6s
Michigan soil management group: Ga
Prime farmland category: Not prime farmland

Hydric soil status: Not hydric Forest habitat type: ATD

100D—Waiska cobbly loamy sand, 8 to 15 percent slopes

Setting

Landform: Ridges, hillslopes, and knolls on outwash plains, stream terraces, kames, and eskers

Map Unit Composition

Major components:

Waiska and similar soils: 85 to 95 percent

Minor components:

Copper Harbor and similar soils (0 to 8 percent of the map unit) in the slightly lower landscape positions

Garlic and similar soils (0 to 6 percent of the map unit) in landscape positions similar to those of the Waiska soil

Paavola and similar soils (0 to 6 percent of the map unit) in the slightly lower landscape positions

Typical Profile

Waiska

Oi—0 to 1 inch; dark reddish brown, moderately decomposed plant material

E—1 to 7 inches; brown cobbly loamy sand

Bhs—7 to 23 inches; dark brown very gravelly loamy sand

Bs—23 to 35 inches; dark brown extremely gravelly coarse sand BC—35 to 60 inches; dark brown extremely gravelly coarse sand

C-60 to 80 inches; brown extremely gravelly coarse sand

Soil Properties and Qualities

Parent material: Sandy-skeletal glaciofluvial and glaciolacustrine deposits

Slope: 8 to 15 percent

Surface runoff class: Very low Potential for frost action: Low

Depth to restrictive feature: More than 80 inches

Drainage class: Excessively drained

Available water capacity: About 2.3 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Rapid Flooding: None

Depth to seasonal high water table: More than 6.5 feet

Ponding: None

Use and Management

Land use: Major use—woodland; other use—wildlife habitat

Woodland

Major management concerns: Rock fragments, seedling mortality

Building site development

Major management concerns: Surface stones, cutbanks caving, slope

Septic tank absorption fields

Major management concerns: Surface stones, slope, poor filtering capacity

Interpretive Groups

Land capability classification: 6s Michigan soil management group: Ga

Prime farmland category: Not prime farmland

Hydric soil status: Not hydric Forest habitat type: ATD

102C—Waiska-Garlic complex, dissected, 1 to 12 percent slopes, very bouldery

Setting

Landform: Knolls, ridges, and hillslopes on outwash plains, stream terraces, and lake plains

Map Unit Composition

Major components:

Waiska, dissected, very bouldery, and similar soils: 40 to 75 percent Garlic, dissected, very bouldery, and similar soils: 20 to 50 percent

Minor components:

Borgstrom and similar soils (0 to 9 percent of the map unit) in the slightly lower landscape positions

Copper Harbor and similar soils (0 to 7 percent of the map unit) in the slightly lower landscape positions

Bete Grise and similar soils (0 to 5 percent of the map unit) in depressions and drainageways

Typical Profile

Waiska

Oi—0 to 1 inch; dark reddish brown, moderately decomposed plant material

E—1 to 7 inches; brown cobbly loamy sand

Bhs—7 to 23 inches; dark brown very gravelly loamy sand

Bs—23 to 35 inches; dark brown extremely gravelly coarse sand

BC—35 to 60 inches; dark brown extremely gravelly coarse sand

C-60 to 80 inches; brown extremely gravelly coarse sand

Garlio

Oa-0 to 1 inch; black, highly decomposed plant material

E—1 to 7 inches; brown loamy fine sand Bhs—7 to 13 inches; dark brown fine sand Bs1—13 to 20 inches: dark brown fine sand

Bs2—20 to 27 inches; brown sand BC—27 to 46 inches; brown sand C—46 to 80 inches; brown sand

Soil Properties and Qualities

Parent material: Waiska—sandy-skeletal glaciofluvial and glaciolacustrine deposits; Garlic—sandy glaciofluvial and sandy-skeletal glaciofluvial and glaciolacustrine deposits

Slope: 1 to 12 percent

Surface runoff class: Very low Potential for frost action: Low

Depth to restrictive feature: More than 80 inches

Drainage class: Waiska—excessively drained; Garlic—well drained

Available water capacity: Waiska—about 2.3 inches to a depth of 60 inches; Garlic—

about 4.4 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Waiska—very rapid; Garlic—moderately rapid

Flooding: None

Depth to seasonal high water table: More than 6.5 feet

Ponding: None

Use and Management

Land use: Major use—woodland; other uses—wildlife habitat, building site development

Woodland

Major management concerns: Waiska—surface boulders, rock fragments, seedling mortality; Garlic—seedling mortality

Building site development

Major management concerns: Waiska—surface boulders, cutbanks caving, slope; Garlic—cutbanks caving, slope

Septic tank absorption fields

Major management concerns: Waiska—surface stones, surface boulders, slope, poor filtering capacity; Garlic—slope, poor filtering capacity

Interpretive Groups

Land capability classification: Waiska—6s; Garlic—6s

Michigan soil management group: Waiska—Ga; Garlic—5.3a

Prime farmland category: Not prime farmland

Hydric soil status: Not hydric

Forest habitat type: Waiska—ATD, AVO; Garlic—ATD

102E—Waiska-Garlic complex, dissected, 8 to 35 percent slopes, very bouldery

Setting

Landform: Hillslopes, knolls, and ridges on stream terraces, kames, eskers, and outwash plains

Map Unit Composition

Major components:

Waiska, dissected, very bouldery, and similar soils: 40 to 95 percent Garlic, dissected, very bouldery, and similar soils: 10 to 45 percent

Minor components:

Borgstrom and similar soils (0 to 8 percent of the map unit) in the slightly lower landscape positions

Copper Harbor and similar soils (0 to 6 percent of the map unit) in the slightly lower landscape positions

Paavola and similar soils (0 to 5 percent of the map unit) in the slightly lower landscape positions

Typical Profile

Waiska

Oi—0 to 1 inch; moderately decomposed plant material

E-1 to 7 inches; cobbly loamy sand

Bhs—7 to 23 inches; very gravelly loamy sand

Bs—23 to 35 inches; extremely gravelly coarse sand

BC-35 to 60 inches; extremely gravelly coarse sand

C-60 to 80 inches; extremely gravelly coarse sand

Garlic

Oa—0 to 1 inch; black, highly decomposed plant material

E—1 to 7 inches; brown loamy fine sand

Bhs—7 to 13 inches; dark brown fine sand

Bs1-13 to 20 inches: dark brown fine sand

Bs2—20 to 27 inches; brown sand

BC—27 to 46 inches: brown sand

C-46 to 80 inches: brown sand

Soil Properties and Qualities

Parent material: Waiska—sandy-skeletal glaciofluvial and glaciolacustrine deposits; Garlic—sandy glaciofluvial deposits and glaciolacustrine deposits

Slope: 8 to 35 percent

Surface runoff class: Low Potential for frost action: Low

Depth to restrictive feature: More than 80 inches

Drainage class: Waiska—excessively drained; Garlic—well drained

Available water capacity: Waiska—about 2.3 inches to a depth of 60 inches; Garlic—

about 4.4 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Waiska—very rapid; Garlic—rapid

Flooding: None

Depth to seasonal high water table: More than 6.5 feet

Ponding: None

Use and Management

Land use: Major use—woodland; other uses—wildlife habitat

Woodland

Major management concerns: Waiska—erosion, surface boulders, rock fragments, seedling mortality, slope, dissected slopes; Garlic—erosion, surface boulders, seedling mortality, slope, dissected slopes

Building site development

Major management concerns: Waiska—surface stones, surface boulders, cutbanks caving, slope; Garlic—cutbanks caving, slope

Septic tank absorption fields

Major management concerns: Waiska—surface stones, surface boulders, slope, poor filtering capacity; Garlic—slope, poor filtering capacity

Interpretive Groups

Land capability classification: 7s

Michigan soil management group: Waiska—Ga; Garlic—5.3a

Prime farmland category: Not prime farmland

Hydric soil status: Not hydric

Forest habitat type: Waiska—ATD, AVO; Garlic—ATD

102F—Waiska-Garlic complex, dissected, 15 to 60 percent slopes, very bouldery

Setting

Landform: Ridges, knolls, and hillslopes on stream terraces, outwash plains, kames, and eskers

Map Unit Composition

Major components:

Waiska, dissected, very bouldery, and similar soils: 45 to 75 percent Garlic, dissected, very bouldery, and similar soils: 20 to 50 percent

Minor components:

Lac La Belle and similar soils (0 to 6 percent of the map unit) in ravines and in areas of bottom land

Alcona and similar soils (0 to 4 percent of the map unit) in ravines and in areas of bottom land

Typical Profile

Waiska

Oi—0 to 1 inch; dark reddish brown, moderately decomposed plant material

E—1 to 7 inches; brown cobbly loamy sand

Bhs—7 to 23 inches; dark brown very gravelly loamy sand

Bs—23 to 35 inches; dark brown extremely gravelly coarse sand

BC—35 to 60 inches; dark brown extremely gravelly coarse sand

C-60 to 80 inches; brown extremely gravelly coarse sand

Garlic

Oa—0 to 1 inch; black, highly decomposed plant material

E—1 to 7 inches; brown loamy fine sand

Bhs—7 to 13 inches; dark brown fine sand Bs1—13 to 20 inches; dark brown fine sand

Bs2—20 to 27 inches: brown sand

BC—27 to 46 inches; brown sand C—46 to 80 inches; brown sand

Soil Properties and Qualities

Parent material: Waiska—sandy-skeletal glaciofluvial and glaciolacustrine deposits;

Garlic—sandy glaciofluvial and glaciolacustrine deposits

Slope: 15 to 60 percent Surface runoff class: Low Potential for frost action: Low

Depth to restrictive feature: More than 80 inches

Drainage class: Waiska—excessively drained; Garlic—well drained

Available water capacity: Waiska—about 2.3 inches to a depth of 60 inches; Garlic—

about 4.4 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Waiska—very rapid; Garlic—rapid

Flooding: None

Depth to seasonal high water table: More than 6.5 feet

Ponding: None

Use and Management

Land use: Major use-woodland; other use-wildlife habitat

Woodland

Major management concerns: Waiska—erosion, surface boulders, rock fragments, seedling mortality, slope, dissected slopes; Garlic—erosion, seedling mortality, slope, dissected slopes

Building site development

Major management concerns: Waiska—surface stones, surface boulders, cutbanks caving, slope; Garlic—cutbanks caving, slope

Septic tank absorption fields

Major management concerns: Waiska—surface stones, surface boulders, slope, poor filtering capacity; Garlic—slope, poor filtering capacity

Interpretive Groups

Land capability classification: 7s

Michigan soil management group: Waiska—Ga; Garlic—5.3a

Prime farmland category: Not prime farmland

Hydric soil status: Not hydric

Forest habitat type: Waiska—AVO, ATD; Garlic—ATD

110B—Shelldrake-Croswell complex, 0 to 8 percent slopes

Setting

Landform: Dunes, beaches, and beach ridges on lakeshore complexes

Map Unit Composition

Major components:

Shelldrake and similar soils: 55 to 85 percent Croswell and similar soils: 10 to 35 percent

Minor components:

Deer Park and similar soils (0 to 6 percent of the map unit) in the higher landscape positions

Au Gres and similar soils (0 to 4 percent of the map unit) in depressions and drainageways

Kinross and similar soils (0 to 3 percent of the map unit) in depressions and drainageways

Typical Profile

Shelldrake

Oe—0 to 1 inch; black, moderately decomposed plant material

E-1 to 6 inches; brown sand

Bw—6 to 13 inches; light brown sand BC—13 to 23 inches; light brown sand

C-23 to 80 inches; pink sand

Croswell

Oa-0 to 1 inch; black, highly decomposed plant material

E—1 to 11 inches; pinkish gray sand

Bs—11 to 21 inches; dark brown and dark yellowish brown sand

BC—21 to 34 inches; yellowish brown sand

C-34 to 80 inches; brown sand

Soil Properties and Qualities

Parent material: Shelldrake—beach sand on lakeshore deposits; Croswell—sandy glaciolacustrine and glaciofluvial deposits

Slope: 0 to 8 percent

Surface runoff class: Shelldrake—very low; Croswell—negligible

Potential for frost action: Low

Depth to restrictive feature: More than 80 inches

Drainage class: Shelldrake—excessively drained; Croswell—moderately well drained Available water capacity: Shelldrake—about 2.5 inches to a depth of 60 inches;

Croswell—about 4.3 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Shelldrake—very rapid; Croswell—rapid

Flooding: None

Depth to seasonal high water table: Shelldrake—more than 6.5 feet; Croswell—2.0 to

6.7 feet (April, May)

Ponding: None

Use and Management

Land use: Major use—woodland; other uses—wildlife habitat, recreation, building site development

Woodland

Major management concerns: Sandy soils, seedling mortality

Building site development

Major management concerns: Shelldrake—cutbanks caving, slope; Croswell—cutbanks caving, slope, seasonal wetness

Septic tank absorption fields

Major management concerns: Shelldrake—slope, poor filtering capacity; Croswell—slope, poor filtering capacity, seasonal wetness

Interpretive Groups

Land capability classification: 6s

Michigan soil management group: Shelldrake—5.3a; Croswell—5a

Prime farmland category: Not prime farmland

Hydric soil status: Not hydric

Forest habitat type: Shelldrake—PVC; Croswell—QAE

111B—Deer Park sand, 0 to 8 percent slopes

Setting

Landform: Beach ridges and dunes on dune fields and lakeshore complexes

Map Unit Composition

Major components:

Deer Park and similar soils: 85 to 100 percent

Minor components:

Rubicon and similar soils (0 to 8 percent of the map unit) in landscape positions similar to those of the Deer Park soil

Shelldrake and similar soils (0 to 7 percent of the map unit) in the higher landscape positions

Croswell and similar soils (0 to 3 percent of the map unit) in the slightly lower landscape positions and in the lowest positions on the landscape

Typical Profile

Deer Park

Oe—0 to 1 inch; black, moderately decomposed plant material

E-1 to 8 inches; grayish brown sand

Bs1—8 to 17 inches; dark yellowish brown fine sand Bs2—17 to 24 inches; yellowish brown fine sand

BC—24 to 35 inches; brown fine sand C—35 to 80 inches; pale brown fine sand

Soil Properties and Qualities

Parent material: Eolian and beach sands on lakeshore deposits

Slope: 0 to 8 percent

Surface runoff class: Negligible Potential for frost action: Low

Depth to restrictive feature: More than 80 inches

Drainage class: Excessively drained

Available water capacity: About 4.6 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Rapid Flooding: None

Depth to seasonal high water table: More than 6.5 feet

Ponding: None

Use and Management

Land use: Major use—woodland; other uses—wildlife habitat, building site development

Woodland

Major management concerns: Seedling mortality

Building site development

Major management concerns: Cutbanks caving, slope

Septic tank absorption fields

Major management concerns: Slope, poor filtering capacity

Interpretive Groups

Land capability classification: 6s
Michigan soil management group: 5.3a
Prime farmland category: Not prime farmland

Hydric soil status: Not hydric Forest habitat type: AQV, QAE

111D—Deer Park sand, 6 to 18 percent slopes

Setting

Landform: Dunes and beach ridges on lakeshore complexes and dune fields

Map Unit Composition

Major components:

Deer Park and similar soils: 85 to 100 percent

Minor components:

Rubicon and similar soils (0 to 9 percent of the map unit) in landscape positions similar to those of the Deer Park soil

Croswell and similar soils (0 to 8 percent of the map unit) in the slightly lower landscape positions and in the lowest positions on the landscape

Typical Profile

Deer Park

Oe—0 to 1 inch; black, moderately decomposed plant material

E—1 to 8 inches; grayish brown sand

Bs1—8 to 17 inches; dark yellowish brown fine sand Bs2—17 to 24 inches; yellowish brown fine sand

BC—24 to 35 inches; brown fine sand C—35 to 80 inches; pale brown fine sand

Soil Properties and Qualities

Parent material: Eolian and beach sands on lakeshore deposits

Slope: 6 to 18 percent Surface runoff class: Very low Potential for frost action: Low

Depth to restrictive feature: More than 80 inches

Drainage class: Excessively drained

Available water capacity: About 4.6 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Rapid Flooding: None

Depth to seasonal high water table: More than 6.5 feet

Ponding: None

Use and Management

Land use: Major use—woodland; other uses—wildlife habitat, building site

development

Woodland

Major management concerns: Erosion, seedling mortality, slope

Building site development

Major management concerns: Cutbanks caving, slope

Septic tank absorption fields

Major management concerns: Slope, poor filtering capacity

Interpretive Groups

Land capability classification: 7s Michigan soil management group: 5.3a Prime farmland category: Not prime farmland

Hydric soil status: Not hydric Forest habitat type: QAE, AQV

111E—Deer Park sand, 8 to 35 percent slopes

Setting

Landform: Dunes and beach ridges on dune fields and lakeshore complexes

Map Unit Composition

Major components:

Deer Park and similar soils: 85 to 100 percent

Minor components:

Rubicon and similar soils (0 to 10 percent of the map unit) in landscape positions similar to those of the Deer Park soil

Typical Profile

Deer Park

Oe—0 to 1 inch; black, moderately decomposed plant material

E—1 to 8 inches; grayish brown sand

Bs1—8 to 17 inches; dark yellowish brown fine sand Bs2—17 to 24 inches; yellowish brown fine sand

BC—24 to 35 inches; brown fine sand C—35 to 80 inches; pale brown fine sand

Soil Properties and Qualities

Parent material: Eolian and beach sand on lakeshore deposits

Slope: 8 to 35 percent Surface runoff class: Low Potential for frost action: Low

Depth to restrictive feature: More than 80 inches

Drainage class: Excessively drained

Available water capacity: About 4.6 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Rapid Flooding: None

Depth to seasonal high water table: More than 6.5 feet

Ponding: None

Use and Management

Land use: Major use—woodland; other uses—wildlife habitat, building site development

Woodland

Major management concerns: Erosion, seedling mortality, slope

Building site development

Major management concerns: Cutbanks caving, slope

Septic tank absorption fields

Major management concerns: Slope, poor filtering capacity

Interpretive Groups

Land capability classification: 7s
Michigan soil management group: 5.3a
Prime farmland category: Not prime farmland

Hydric soil status: Not hydric Forest habitat type: AQV, QAE

111F—Deer Park sand, 35 to 70 percent slopes

Setting

Landform: Dunes and beach ridges on lakeshore complexes and dune fields

Map Unit Composition

Major components:

Deer Park and similar soils: 80 to 95 percent

Minor components:

Rubicon and similar soils (0 to 10 percent of the map unit) in landscape positions similar to those of the Deer Park soil

Typical Profile

Deer Park

Oe—0 to 1 inch; black, moderately decomposed plant material

E—1 to 8 inches; grayish brown sand

Bs1—8 to 17 inches; dark yellowish brown fine sand

Bs2—17 to 24 inches; yellowish brown fine sand

BC—24 to 35 inches; brown fine sand

C-35 to 80 inches; pale brown fine sand

Soil Properties and Qualities

Parent material: Eolian and beach sand on lakeshore deposits

Slope: 35 to 70 percent Surface runoff class: Low Potential for frost action: Low

Depth to restrictive feature: More than 80 inches

Drainage class: Excessively drained

Available water capacity: About 4.6 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Rapid Flooding: None

Depth to seasonal high water table: More than 6.5 feet

Ponding: None

Use and Management

Land use: Major use—woodland; other use—wildlife habitat

Woodland

Major management concerns: Erosion, seedling mortality, slope

Building site development

Major management concerns: Cutbanks caving, slope

Septic tank absorption fields

Major management concerns: Slope, poor filtering capacity

Interpretive Groups

Land capability classification: 7s

Michigan soil management group: 5.3a

Prime farmland category: Not prime farmland

Hydric soil status: Not hydric Forest habitat type: QAE, AQV

112C—Deer Park-Croswell complex, 1 to 12 percent slopes

Setting

Landform: Low sand ridges and dunes on lakeshore complexes

Map Unit Composition

Major components:

Deer Park and similar soils: 40 to 85 percent Croswell and similar soils: 10 to 25 percent

Minor components:

Rubicon and similar soils (0 to 10 percent of the map unit) in landscape positions similar to those of the Deer Park soil

Au Gres and similar soils (0 to 8 percent of the map unit) in depressions and drainageways

Kinross and similar soils (0 to 6 percent of the map unit) in depressions and drainageways

Typical Profile

Deer Park

Oe—0 to 1 inch; black, moderately decomposed plant material

E—1 to 8 inches; grayish brown fine sand

Bs1—8 to 17 inches; dark yellowish brown fine sand Bs2—17 to 24 inches; yellowish brown fine sand

BC—24 to 35 inches; brown fine sand

C—35 to 80 inches; pale brown fine sand

Croswell

Oa-0 to 1 inch; black, highly decomposed plant material

E—1 to 11 inches; pinkish gray sand

Bs—11 to 21 inches; dark brown and dark yellowish brown sand

BC-21 to 34 inches; yellowish brown sand

C—34 to 80 inches; brown sand

Soil Properties and Qualities

Parent material: Deer Park—beach sand on lakeshore deposits; Croswell—sandy glaciolacustrine and glaciofluvial deposits

Slope: 1 to 12 percent

Surface runoff class: Deer Park—very low; Croswell—negligible

Potential for frost action: Low

Depth to restrictive feature: More than 80 inches

Drainage class: Deer Park—excessively drained; Croswell—moderately well drained Available water capacity: Deer Park—about 4.6 inches to a depth of 60 inches;

Croswell—about 4.3 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Deer Park—rapid; Croswell—moderately rapid

Flooding: None

Depth to seasonal high water table: Deer Park—more than 6.5 feet; Croswell—2.0 to

6.7 feet (April, May)

Ponding: None

Use and Management

Land use: Major use—woodland; other uses—wildlife habitat, building site development

Woodland

Major management concerns: Deer Park—seedling mortality; Croswell—sandy textures, seedling mortality

Building site development

Major management concerns: Deer Park—cutbanks caving, slope; Croswell—cutbanks caving, slope, seasonal wetness

Septic tank absorption fields

Major management concerns: Deer Park—slope, poor filtering capacity; Croswell—slope, poor filtering capacity, seasonal wetness

Interpretive Groups

Land capability classification: Deer Park—7s; Croswell—7s Michigan soil management group: Deer Park—5.3a; Croswell—5a

Prime farmland category: Not prime farmland

Hydric soil status: Not hydric

Forest habitat type: Deer Park—QAE; Croswell—QAE, TMC-Vac

113C—Rubicon-Croswell complex, 1 to 12 percent slopes

Setting

Landform: Beach ridges and dunes on lakeshore complexes and dune fields

Map Unit Composition

Major components:

Rubicon and similar soils: 30 to 75 percent Croswell and similar soils: 10 to 35 percent

Minor components:

Wallace and similar soils (0 to 10 percent of the map unit) in landscape positions similar to those of the Rubicon soil

Au Gres and similar soils (0 to 8 percent of the map unit) in depressions and drainageways

Deford and similar soils (0 to 5 percent of the map unit) in depressions and drainageways

Typical Profile

Rubicon

Oa—0 to 1 inch; black, highly decomposed plant material

E-1 to 7 inches; brown sand

Bs—7 to 34 inches; dark brown sand BC—34 to 44 inches; brown sand C—44 to 80 inches; light brown sand

Croswell

Oa—0 to 1 inch; black, highly decomposed plant material

E-1 to 11 inches; pinkish gray sand

Bs—11 to 21 inches; dark brown and dark yellowish brown sand

BC—21 to 34 inches; yellowish brown sand

C-34 to 80 inches; brown sand

Soil Properties and Qualities

Parent material: Rubicon—sandy glaciolacustrine and eolian deposits; Croswell—sandy glaciolacustrine and glaciofluvial deposits

Slope: 1 to 12 percent

Surface runoff class: Rubicon—very low; Croswell—negligible

Potential for frost action: Low

Depth to restrictive feature: More than 80 inches

Drainage class: Rubicon—excessively drained; Croswell—moderately well drained

Available water capacity: About 4.3 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Rapid Flooding: None

Depth to seasonal high water table: Rubicon—more than 6.5 feet; Croswell—2.0 to 6.7

feet (April, May)
Ponding: None

Use and Management

Land use: Major use—woodland; other uses—wildlife habitat, building site development

Woodland

Major management concerns: Sandy textures, seedling mortality

Building site development

Major management concerns: Rubicon—cutbanks caving, slope; Croswell—cutbanks caving, slope, seasonal wetness

Septic tank absorption fields

Major management concerns: Rubicon—slope, poor filtering capacity; Croswell—slope, poor filtering capacity, seasonal wetness

Interpretive Groups

Land capability classification: Rubicon—7s; Croswell—6s
Michigan soil management group: Rubicon—5.3a; Croswell—5a

Prime farmland category: Not prime farmland

Hydric soil status: Not hydric

Forest habitat type: Rubicon—AQVac, TMC; Croswell—AQV, TMC-Vac

120B—Garlic fine sand, 0 to 8 percent slopes

Setting

Landform: Knolls, hillslopes, and ridges on stream terraces and till-floored lake plains

Map Unit Composition

Major components:

Garlic and similar soils: 85 to 100 percent

Minor components:

Waiska and similar soils (0 to 10 percent of the map unit) in landscape positions similar to those of the Garlic soil

Alcona and similar soils (0 to 7 percent of the map unit) in landscape positions similar to those of the Garlic soil

Rubicon and similar soils (0 to 3 percent of the map unit) in landscape positions similar to those of the Garlic soil

Typical Profile

Garlic

Oa—0 to 1 inch; black, highly decomposed plant material

E—1 to 7 inches; brown loamy fine sand Bhs—7 to 13 inches; dark brown fine sand Bs1—13 to 20 inches; dark brown fine sand

Bs2—20 to 27 inches; brown sand BC—27 to 46 inches; brown sand C—46 to 80 inches; brown sand

Soil Properties and Qualities

Parent material: Sandy glaciofluvial and glaciolacustrine deposits

Slope: 0 to 8 percent

Surface runoff class: Negligible Potential for frost action: Low

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Available water capacity: About 4.4 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Rapid Flooding: None

Depth to seasonal high water table: More than 6.5 feet

Ponding: None

Use and Management

Land use: Major use—woodland; other uses—wildlife habitat, building site development

Woodland

Major management concerns: Seedling mortality

Building site development

Major management concerns: Cutbanks caving, slope

Septic tank absorption fields

Major management concerns: Slope, poor filtering capacity

Interpretive Groups

Land capability classification: 4s
Michigan soil management group: 5.3a
Prime farmland category: Not prime farmland

Hydric soil status: Not hydric Forest habitat type: TM, ATD-D

120D—Garlic fine sand, 8 to 15 percent slopes

Setting

Landform: Hillslopes, ridges, and knolls on stream terraces and till-floored lake plains

Map Unit Composition

Major components:

Garlic and similar soils: 85 to 100 percent

Minor components:

Waiska and similar soils (0 to 10 percent of the map unit) in landscape positions similar to those of the Garlic soil

Alcona and similar soils (0 to 7 percent of the map unit) in landscape positions similar to those of the Garlic soil

Rubicon and similar soils (0 to 3 percent of the map unit) in landscape positions similar to those of the Garlic soil

Typical Profile

Garlic

Oa—0 to 1 inch; black, highly decomposed plant material

E—1 to 7 inches; brown loamy fine sand Bhs—7 to 13 inches; dark brown fine sand Bs1—13 to 20 inches; dark brown fine sand

Bs2—20 to 27 inches; brown sand BC—27 to 46 inches; brown sand C—46 to 80 inches; brown sand

Soil Properties and Qualities

Parent material: Sandy glaciofluvial and glaciolacustrine deposits

Slope: 8 to 15 percent

Surface runoff class: Very low Potential for frost action: Low

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Available water capacity: About 4.4 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Rapid Flooding: None

Depth to seasonal high water table: More than 6.5 feet

Ponding: None

Use and Management

Land use: Major use—woodland; other uses—wildlife habitat, building site development

Woodland

Major management concerns: Seedling mortality

Building site development

Major management concerns: Cutbanks caving, slope

Septic tank absorption fields

Major management concerns: Slope, poor filtering capacity

Interpretive Groups

Land capability classification: 6s
Michigan soil management group: 5.3a
Prime farmland category: Not prime farmland

Hydric soil status: Not hydric Forest habitat type: TM, ATD-D

120E—Garlic fine sand, 15 to 35 percent slopes

Setting

Landform: Hillslopes, ridges, and knolls on stream terraces and till-floored lake plains

Map Unit Composition

Major components:

Garlic and similar soils: 80 to 95 percent

Minor components:

Waiska and similar soils (0 to 10 percent of the map unit) in landscape positions similar to those of the Garlic soil

Alcona and similar soils (0 to 7 percent of the map unit) in landscape positions similar to those of the Garlic soil

Rubicon and similar soils (0 to 5 percent of the map unit) in landscape positions similar to those of the Garlic soil

Typical Profile

Garlic

Oa-0 to 1 inch; black, highly decomposed plant material

E—1 to 7 inches; brown loamy fine sand Bhs—7 to 13 inches; dark brown fine sand Bs1—13 to 20 inches; dark brown fine sand

Bs2—20 to 27 inches; brown sand BC—27 to 46 inches; brown sand C—46 to 80 inches; brown sand

Soil Properties and Qualities

Parent material: Sandy glaciofluvial and glaciolacustrine deposits

Slope: 15 to 35 percent Surface runoff class: Low Potential for frost action: Low

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Available water capacity: About 4.4 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Rapid Flooding: None

Depth to seasonal high water table: More than 6.5 feet

Ponding: None

Use and Management

Land use: Major use—woodland; other use—wildlife habitat

Woodland

Major management concerns: Erosion, seedling mortality, slope

Building site development

Major management concerns: Cutbanks caving, slope

Septic tank absorption fields

Major management concerns: Slope, poor filtering capacity

Interpretive Groups

Land capability classification: 7s

Michigan soil management group: 5.3a

Prime farmland category: Not prime farmland

Hydric soil status: Not hydric Forest habitat type: TM, ATD-D

125A—Croswell-Au Gres complex, 0 to 3 percent slopes

Setting

Landform: Ridges and knolls on outwash plains and stream terraces; dunes on beach ridges, lake plains, and shoreline complexes

Map Unit Composition

Major components:

Croswell and similar soils: 45 to 80 percent Au Gres and similar soils: 10 to 35 percent

Minor components:

Rubicon and similar soils (0 to 8 percent of the map unit) in the higher landscape positions

Deford and similar soils (0 to 6 percent of the map unit) in depressions and drainageways

Kinross and similar soils (0 to 5 percent of the map unit) in depressions and drainageways

Typical Profile

Croswell

Oa—0 to 1 inch; black, highly decomposed plant material

E-1 to 11 inches; pinkish gray sand

Bs—11 to 21 inches; dark brown and dark yellowish brown sand

BC—21 to 34 inches; yellowish brown sand

C—34 to 80 inches; brown sand

Au Gres

Oa—0 to 4 inches; black, highly decomposed plant material

E—4 to 13 inches; pinkish gray sand Bhs—13 to 19 inches; dark brown sand

Bs—19 to 28 inches; dark brown sand BC—28 to 34 inches; brown sand C—34 to 80 inches; brown sand

Soil Properties and Qualities

Parent material: Croswell—sandy glaciolacustrine and glaciofluvial deposits; Au Gres—sandy glaciofluvial and glaciolacustrine deposits

Slope: 0 to 3 percent

Surface runoff class: Negligible

Potential for frost action: Croswell—low; Au Gres—moderate

Depth to restrictive feature: More than 80 inches

Drainage class: Croswell—moderately well drained; Au Gres—somewhat poorly

drained

Available water capacity: Croswell—about 4.3 inches to a depth of 60 inches; Au

Gres—about 5.6 inches to a depth of 60 inches

Shrink-swell potential: Low Permeability: Moderately rapid

Flooding: None

Depth to seasonal high water table: Croswell—2.0 to 6.7 feet (April, May); Au Gres—

0.5 foot to 6.7 feet (April, May)

Ponding: None

Use and Management

Land use: Major uses—woodland; other uses—wildlife habitat, building site development

Woodland

Major management concerns: Croswell—sandy textures, seedling mortality; Au Gres—seedling mortality, windthrow hazard, seasonal wetness

Building site development

Major management concerns: Croswell—cutbanks caving, seasonal wetness; Au Gres—cutbanks caving, seasonal wetness

Septic tank absorption fields

Major management concerns: Croswell—poor filtering capacity, seasonal wetness; Au Gres—poor filtering capacity, wetness

Interpretive Groups

Land capability classification: Croswell—4s; Au Gres—4w Michigan soil management group: Croswell—5a; Au Gres—5b

Prime farmland category: Not prime farmland;

Hydric soil status: Croswell—not hydric; Au Gres—not hydric Forest habitat type: Croswell—AQVac; Au Gres-TMC-Vac

126B—Au Gres-Deford-Croswell complex, 0 to 6 percent slopes

Setting

Landform: Beach ridges and depressions on lake plains and shoreline complexes

Map Unit Composition

Major components:

Au Gres and similar soils: 40 to 60 percent

Deford and similar soils: 20 to 40 percent Croswell and similar soils: 10 to 25 percent

Minor components:

Tawas and similar soils (0 to 8 percent of the map unit) in landscape positions similar to those of the Deford soil

Rubicon and similar soils (0 to 7 percent of the map unit) in the higher landscape positions

Kinross and similar soils (0 to 4 percent of the map unit) in landscape positions similar to those of the Deford soil

Typical Profile

Au Gres

Oa—0 to 4 inches; black, highly decomposed plant material

E—4 to 13 inches; pinkish gray sand Bhs—13 to 19 inches; dark brown sand Bs—19 to 28 inches; dark brown sand BC—28 to 34 inches; brown sand C—34 to 80 inches; brown sand

Deford

Oa—0 to 6 inches; black and very dark brown, highly decomposed plant material

A—6 to 8 inches; light gray dark brown sand C—8 to 80 inches; light gray and brown sand

Croswell

Oa—0 to 1 inch; black, highly decomposed plant material

E—1 to 11 inches; pinkish gray sand

Bs—11 to 21 inches; dark brown and dark yellowish brown sand

BC—21 to 34 inches; yellowish brown sand

C-34 to 80 inches; brown sand

Soil Properties and Qualities

Parent material: Au Gres and Croswell—sandy glaciofluvial and glaciolacustrine deposits; Deford—sandy glaciofluvial deposits

Slope: Au Gres and Croswell—0 to 6 percent; Deford—0 to 2 percent Surface runoff class: Au Gres and Deford—negligible; Croswell—very low Potential for frost action: Au Gres and Deford—moderate; Croswell—low

Depth to restrictive feature: More than 80 inches

Drainage class: Au Gres—somewhat poorly drained; Deford—poorly drained;

Croswell—moderately well drained

Available water capacity: Au Gres and Deford—about 5.6 inches to a depth of 60 inches; Croswell—about 4.3 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Rapid Flooding: None

Depth to seasonal high water table: Au Gres—0.5 foot to 6.7 feet (April, May);

Deford—at the surface (January, February, March, April, May, October, November,

December); Croswell—2.0 to 6.7 feet (April, May)

Ponding: None

Use and Management

Land use: Major use—woodland; other use—wildlife habitat

Woodland

Major management concerns: Au Gres and Deford—seedling mortality, windthrow hazard, seasonal wetness; Croswell—sandy textures, seedling mortality

Building site development

Major management concerns: Au Gres and Croswell—cutbanks caving, seasonal wetness; Deford—cutbanks caving, ponding, wetness

Septic tank absorption fields

Major management concerns: Au Gres—poor filtering capacity, wetness; Deford—poor filtering capacity, ponding, wetness; Croswell—poor filtering capacity, seasonal wetness

Interpretive Groups

Land capability classification: Au Gres—4w; Deford—5w; Croswell—6s Michigan soil management group: Au Gres—5b; Deford—4c; Croswell—5a

Prime farmland category: Not prime farmland

Hydric soil status: Au Gres and Croswell—not hydric; Deford—hydric

Forest habitat type: Au Gres—TMC-Vac; Deford—TMC-Vac, AQVac; Croswell—TMC-Vac, AQVac

127A—Au Gres-Kinross complex, 0 to 3 percent slopes

Setting

Landform: Beach ridges and depressions on shoreline complexes and lake plains

Map Unit Composition

Major components:

Au Gres and similar soils: 40 to 70 percent Kinross and similar soils: 20 to 40 percent

Minor components:

Croswell and similar soils (0 to 10 percent of the map unit) in the slightly higher landscape positions

Dawson and similar soils (0 to 5 percent of the map unit) in landscape positions similar to those of the Kinross soil

Typical Profile

Au Gres

Oa—0 to 4 inches; black, highly decomposed plant material

E—4 to 13 inches; pinkish gray sand Bhs—13 to 19 inches; dark brown sand Bs—19 to 28 inches; dark brown sand BC—28 to 34 inches; brown sand C—34 to 80 inches; brown sand

Kinross

Oi—0 to 2 inches; brown peat
Oa—2 to 6 inches; brown muck
E—6 to 16 inches; pinkish gray sand
Bhs—16 to 32 inches; dark brown sand
C—32 to 80 inches; dark grayish brown sand

Soil Properties and Qualities

Parent material: Sandy glaciofluvial and glaciolacustrine deposits

Slope: 0 to 3 percent

Surface runoff class: Negligible Potential for frost action: Moderate

Depth to restrictive feature: More than 80 inches

Drainage class: Au Gres—somewhat poorly drained; Kinross—very poorly drained Available water capacity: Au Gres—about 5.6 inches to a depth of 60 inches;

Kinross—about 6.4 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Rapid Flooding: None

Depth to seasonal high water table: Au Gres—0.5 foot to 6.7 feet (April, May); Kinross—at the surface (January, February, March, April, May, October, November, December)

Months in which ponding does not occur: Kinross—January, February, June, July, August, September, December; Au Gres—all year

Depth and most likely period of ponding: Kinross—0.5 foot (March, April, May, November)

Use and Management

Land use: Major use—woodland; other uses—wildlife habitat, building site development

Woodland

Major management concerns: Au Gres—seedling mortality, windthrow hazard, seasonal wetness; Kinross—seedling mortality, windthrow hazard, wetness

Building site development

Major management concerns: Au Gres—cutbanks caving, seasonal wetness; Kinross—seedling mortality, windthrow hazard, wetness

Septic tank absorption fields

Major management concerns: Au Gres—poor filtering capacity, wetness; Kinross—poor filtering capacity, ponding, wetness

Interpretive Groups

Land capability classification: Au Gres—4w; Kinross—6w Michigan soil management group: Au Gres—5b; Kinross—5c-a

Prime farmland category: Not prime farmland

Hydric soil status: Au Gres—not hydric; Kinross—hydric Forest habitat type: Au Gres—TMC-Vac; Kinross—TTS, PCS

130C—Garlic-Alcona complex, dissected, 1 to 12 percent slopes

Setting

Landform: Ridges, knolls, and hillslopes on till-floored lake plains and stream terraces

Map Unit Composition

Major components:

Garlic, dissected, and similar soils: 45 to 75 percent Alcona, dissected, and similar soils: 25 to 40 percent

Minor components:

Borgstrom and similar soils (0 to 10 percent of the map unit) in the slightly lower landscape positions

Ingalls and similar soils (0 to 8 percent of the map unit) in depressions and drainageways

Typical Profile

Garlic

Oa—0 to 1 inch; black, highly decomposed plant material

E—1 to 7 inches; brown loamy fine sand Bhs—7 to 13 inches; dark brown fine sand Bs1—13 to 20 inches; dark brown fine sand

Bs2—20 to 27 inches; brown sand BC—27 to 46 inches; brown sand C—46 to 80 inches; brown sand

Alcona

Oa—0 to 1 inch; black, highly decomposed plant material

E—1 to 4 inches; reddish gray very fine sandy loam

Bhs—4 to 7 inches; dark reddish brown very fine sandy loam

Bs—7 to 29 inches; brown very fine sandy loam

B/E—29 to 40 inches; dark reddish brown very fine sandy loam and reddish brown loamy very fine sand

C1—40 to 46 inches; reddish brown very fine sandy loam, loamy very fine sand, and fine sand

2C2—46 to 69 inches; reddish brown, stratified fine sand to loamy fine sand

2C3-69 to 80 inches; reddish brown fine sand

Soil Properties and Qualities

Parent material: Garlic—sandy glaciofluvial and glaciolacustrine deposits; Alcona—coarse-loamy glaciofluvial and glaciolacustrine deposits

Slope: 1 to 12 percent

Surface runoff class: Garlic—very low; Alcona—medium Potential for frost action: Garlic—low; Alcona—moderate

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Available water capacity: Garlic—about 4.4 inches to a depth of 60 inches; Alcona—about 8.6 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Garlic-rapid; Alcona-moderate

Floodina: None

Depth to seasonal high water table: More than 6.5 feet

Ponding: None

Use and Management

Land use: Major use—woodland; other use—wildlife habitat

Woodland

Major management concerns: Garlic—seedling mortality; Alcona—seedling mortality, soil rutting

Building site development

Major management concerns: Garlic—surface stones, surface boulders, cutbanks caving, slope; Alcona—cutbanks caving, slope

Septic tank absorption fields

Major management concerns: Garlic—slope, poor filtering capacity; Alcona—surface stones, surface boulders, slope

Interpretive Groups

Land capability classification: Garlic—6s; Alcona—3e

Michigan soil management group: Garlic—5.3a; Alcona—3a-s

Prime farmland category: Not prime farmland

Hydric soil status: Garlic—not hydric; Alcona—not hydric

Forest habitat type: Garlic—ATD-D; Alcona—ATD

130E—Garlic-Alcona complex, dissected, 8 to 35 percent slopes

Setting

Landform: Ridges, knolls, and hillslopes on stream terraces and till-floored plains

Map Unit Composition

Major components:

Garlic, dissected, and similar soils: 50 to 70 percent Alcona, dissected, and similar soils: 20 to 45 percent

Minor components:

Borgstrom and similar soils (0 to 10 percent of the map unit) in the slightly lower landscape positions

Waiska and similar soils (0 to 5 percent of the map unit) in landscape positions similar to those of the major soils

Typical Profile

Garlic

Oa—0 to 1 inch; black, highly decomposed plant material

E—1 to 7 inches; brown loamy fine sand

Bhs—7 to 13 inches; dark brown fine sand

Bs1—13 to 20 inches: dark brown fine sand

Bs2—20 to 27 inches; brown sand

BC—27 to 46 inches; brown sand

C—46 to 80 inches; brown sand

Alcona

Oa—0 to 1 inch; black, highly decomposed plant material

E—1 to 4 inches; reddish gray very fine sandy loam

Bhs—4 to 7 inches; dark reddish brown very fine sandy loam

Bs—7 to 29 inches; brown very fine sandy loam

B/E—29 to 40 inches; dark reddish brown very fine sandy loam and reddish brown loamy very fine sand

C—40 to 46 inches; reddish brown very fine sandy loam, loamy very fine sand, and fine sand

2C1-46 to 69 inches; reddish brown, stratified fine sand to loamy fine sand

2C2-69 to 80 inches; reddish brown fine sand

Soil Properties and Qualities

Parent material: Garlic—sandy glaciofluvial deposits and glaciolacustrine deposits; Alcona—coarse-loamy glaciofluvial and glaciolacustrine deposits

Slope: 8 to 35 percent

Surface runoff class: Garlic—low; Alcona—high

Potential for frost action: Garlic—low; Alcona—moderate

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Available water capacity: Garlic—about 4.4 inches to a depth of 60 inches; Alcona—

about 8.6 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Garlic—rapid; Alcona—moderate

Flooding: None

Depth to seasonal high water table: More than 6.5 feet

Ponding: None

Use and Management

Land use: Major use—woodland; other use—wildlife habitat

Woodland

Major management concerns: Garlic—erosion, seedling mortality, slope, dissected slopes; Alcona—erosion, seedling mortality, soil rutting, slope, dissected slopes

Building site development

Major management concerns: Garlic—cutbanks caving, slope; Alcona—slope

Septic tank absorption fields

Major management concerns: Garlic—slope, poor filtering capacity; Alcona—slope

Interpretive Groups

Land capability classification: Garlic-7s; Alcona-6e

Michigan soil management group: Garlic—5.3a; Alcona—3a-s

Prime farmland category: Not prime farmland

Hydric soil status: Not hydric

Forest habitat type: Garlic—ATD-D; Alcona—ATD

133C—Keweenaw-Garlic complex, 1 to 12 percent slopes

Setting

Landform: Knolls and ridges on outwash plains and hillslopes; knolls and ridges on ground moraines

Map Unit Composition

Major components:

Keweenaw, dissected, and similar soils: 40 to 60 percent Garlic, dissected, and similar soils: 20 to 40 percent

Minor components:

Waiska and similar soils (0 to 10 percent of the map unit) in landscape positions similar to those of the major soils

Yalmer and similar soils (0 to 7 percent of the map unit) in the slightly lower landscape positions

Borgstrom and similar soils (0 to 3 percent of the map unit) in the slightly lower landscape positions

Typical Profile

Keweenaw

Oa-0 to 1 inch; black, highly decomposed plant material

E—1 to 11 inches; reddish gray loamy sand

Bhs—11 to 17 inches; dark reddish brown loamy sand

Bs—17 to 39 inches; dark brown and brown loamy sand

B/E—39 to 61 inches; reddish brown fine sandy loam and loamy sand E and B—61 to 80 inches; reddish brown loamy sand and fine sandy loam

Garlic

Oa—0 to 1 inch; black, highly decomposed plant material

E—1 to 7 inches; brown loamy fine sand Bhs—7 to 13 inches; dark brown fine sand Bs1—13 to 20 inches; dark brown fine sand

Bs2—20 to 27 inches; brown sand BC—27 to 46 inches; brown sand C—46 to 80 inches; brown sand

Soil Properties and Qualities

Parent material: Keweenaw—sandy drift; Garlic—sandy glaciofluvial deposits sandy

glaciolacustrine deposits *Slope:* 1 to 12 percent

Surface runoff class: Keweenaw—medium; Garlic—low

Potential for frost action: Low

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Available water capacity: Keweenaw—about 5.3 inches to a depth of 60 inches;

Garlic—about 4.4 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Keweenaw—moderately rapid; Garlic—rapid

Flooding: None

Depth to seasonal high water table: More than 6.5 feet

Ponding: None

Use and Management

Land use: Major use—woodland; other use—wildlife habitat

Woodland

Major management concerns: Seedling mortality

Building site development

Major management concerns: Keweenaw—slope; Garlic—cutbanks caving, slope

Septic tank absorption fields

Major management concerns: Keweenaw—slope; Garlic—slope, poor filtering capacity

Interpretive Groups

Land capability classification: Keweenaw—3e; Garlic—6s

Michigan soil management group: Keweenaw—4a-a; Garlic—5.3a

Prime farmland category: Not prime farmland

Hydric soil status: Keweenaw—not hydric; Garlic—not hydric *Forest habitat type:* Keweenaw—ATD-D, TM; Garlic—TM, ATD

133E—Keweenaw-Garlic complex, 8 to 35 percent slopes

Setting

Landform: Ridges, knolls, and hillslopes on outwash plains, terraces, and moraines

Map Unit Composition

Major components:

Keweenaw, dissected, and similar soils: 40 to 60 percent Garlic, dissected, and similar soils: 20 to 40 percent

Minor components:

Waiska and similar soils (0 to 10 percent of the map unit) in landscape positions similar to those of the major soils

Yalmer and similar soils (0 to 7 percent of the map unit) in the slightly lower landscape positions

Borgstrom and similar soils (0 to 3 percent of the map unit) in the slightly lower landscape positions

Typical Profile

Keweenaw

Oa—0 to 1 inch; black, highly decomposed plant material

E—1 to 11 inches; reddish gray loamy sand

Bhs—11 to 17 inches; dark reddish brown loamy sand

Bs—17 to 39 inches; dark brown and brown loamy sand

B/E—39 to 61 inches; reddish brown fine sandy loam and loamy sand E and B—61 to 80 inches; reddish brown loamy sand and fine sandy loam

Garlic

Oa-0 to 1 inch; black, highly decomposed plant material

E—1 to 7 inches; brown loamy fine sand Bhs—7 to 13 inches; dark brown fine sand Bs1—13 to 20 inches; dark brown fine sand

Bs2—20 to 27 inches; brown sand BC—27 to 46 inches; brown sand C—46 to 80 inches; brown sand

Soil Properties and Qualities

Parent material: Keweenaw—sandy drift; Garlic—sandy glaciofluvial and

glaciolacustrine deposits

Slope: 8 to 35 percent

Surface runoff class: Keweenaw—high; Garlic—low

Potential for frost action: Low

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Available water capacity: Keweenaw—about 5.3 inches to a depth of 60 inches;

Garlic—about 4.4 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Keweenaw—moderately rapid; Garlic—rapid

Flooding: None

Depth to seasonal high water table: More than 6.5 feet

Ponding: None

Use and Management

Land use: Major use—woodland; other use—wildlife habitat

Woodland

Major management concerns: Erosion, seedling mortality, slope

Building site development

Major management concerns: Keweenaw—slope; Garlic—cutbanks caving, slope

Septic tank absorption fields

Major management concerns: Keweenaw—surface stones, surface boulders, slope; Garlic—surface stones, surface boulders, slope, poor filtering capacity

Interpretive Groups

Land capability classification: Keweenaw—7e; Garlic—7s

Michigan soil management group: Keweenaw—4a-a; Garlic—5.3a

Prime farmland category: Not prime farmland

Hydric soil status: Keweenaw—not hydric; Garlic—not hydric *Forest habitat type:* Keweenaw—ATD-D, TM; Garlic—ATD-D, TM

133F—Keweenaw-Garlic complex, 15 to 60 percent slopes

Setting

Landform: Knolls, ridges, and hillslopes on ground moraines

Map Unit Composition

Major components:

Keweenaw, dissected, and similar soils: 40 to 60 percent Garlic, dissected, and similar soils: 20 to 40 percent

Minor components:

Waiska and similar soils (0 to 10 percent of the map unit) in landscape positions similar to those of the major soils

Yalmer and similar soils (0 to 7 percent of the map unit) in the slightly lower landscape positions

Borgstrom and similar soils (0 to 3 percent of the map unit) in the slightly lower landscape positions

Typical Profile

Keweenaw

Oa—0 to 1 inch; black, highly decomposed plant material

E—1 to 11 inches; reddish gray loamy sand

Bhs—11 to 17 inches; dark reddish brown loamy sand

Bs—17 to 39 inches; dark brown and brown loamy sand

B/E-39 to 61 inches; reddish brown fine sandy loam and loamy sand

E and B—61 to 80 inches; reddish brown loamy sand and fine sandy loam

Garlic

Oa—0 to 1 inch; black, highly decomposed plant material

E—1 to 7 inches; brown loamy fine sand

Bhs—7 to 13 inches; dark brown fine sand

Bs1—13 to 20 inches; dark brown fine sand

Bs2—20 to 27 inches; brown sand

BC—27 to 46 inches; brown sand

C—46 to 80 inches: brown sand

Soil Properties and Qualities

Parent material: Keweenaw—sandy drift; Garlic—sandy glaciofluvial and glaciolacustrine deposits

Slope: 15 to 60 percent

Surface runoff class: Keweenaw—high; Garlic—low

Potential for frost action: Low

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Available water capacity: Keweenaw—about 5.3 inches to a depth of 60 inches;

Garlic—about 4.4 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Keweenaw—moderately rapid; Garlic—rapid

Flooding: None

Depth to seasonal high water table: More than 6.5 feet

Ponding: None

Use and Management

Land use: Major use—woodland; other use—wildlife habitat

Woodland

Major management concerns: Erosion, seedling mortality, slope

Building site development

Major management concerns: Keweenaw—slope; Garlic—cutbanks caving, slope

Septic tank absorption fields

Major management concerns: Keweenaw—slope; Garlic—slope, poor filtering capacity

Interpretive Groups

Land capability classification: Keweenaw—7e; Garlic—7s

Michigan soil management group: Keweenaw—4a-a; Garlic—5.3a

Prime farmland category: Not prime farmland

Hydric soil status: Keweenaw—not hydric; Garlic—not hydric *Forest habitat type:* Keweenaw—TM, ATD-D; Garlic—ATD

136B—Borgstrom-Ingalls complex, 0 to 6 percent slopes

Settina

Landform: Knolls and ridges on lake plains, stream terraces, and outwash plains

Map Unit Composition

Major components:

Borgstrom and similar soils: 50 to 70 percent Ingalls and similar soils: 25 to 50 percent

Minor components:

Deford and similar soils (0 to 8 percent of the map unit) in depressions and drainageways

Garlic and similar soils (0 to 6 percent of the map unit) in the slightly higher landscape positions

Alcona and similar soils (0 to 5 percent of the map unit) in the slightly higher landscape positions

Typical Profile

Borgstrom

Oa—0 to 1 inch; black, highly decomposed plant material

E—1 to 8 inches; brown fine sand

Bhsm—8 to 11 inches; dark brown fine sand Bsm—11 to 18 inches; dark brown fine sand

Bs—18 to 21 inches: brown fine sand

BC-21 to 24 inches; dark yellowish brown fine sand

2C—24 to 80 inches; dark reddish brown and reddish brown, stratified loamy fine sand to loamy very fine sand to fine sand to very fine sandy loam to silt loam

Ingalls

Oa—0 to 4 inches; black, highly decomposed plant material

A—4 to 5 inches; very dark brown sand

E—5 to 14 inches; reddish gray loamy sand

Bhs—14 to 16 inches; dark reddish brown loamy sand

Bs—16 to 35 inches; reddish brown fine sand

2C—35 to 80 inches; light reddish brown silt loam, loamy fine sand, and loamy very fine sand

Soil Properties and Qualities

Parent material: Sandy glaciofluvial deposits over loamy glaciolacustrine deposits

Slope: Borgstrom—0 to 6 percent; Ingalls—0 to 4 percent

Surface runoff class: Low

Potential for frost action: Borgstrom—low; Ingalls—moderate

Depth to restrictive feature: Borgstrom—8 to 18 inches to ortstein; Ingalls—more than

80 inches

Drainage class: Borgstrom—moderately well drained; Ingalls—somewhat poorly drained

Available water capacity: Borgstrom—about 6.4 inches to a depth of 60 inches;

Ingalls—about 9.1 inches to a depth of 60 inches Shrink-swell potential: Borgstrom—low; Ingalls—moderate

Permeability: Borgstrom—rapid over moderately rapid over moderately slow; Ingalls—rapid over moderately slow

Flooding: None

Depth to seasonal high water table: Borgstrom—2.0 to 6.7 feet (April, May); Ingalls—0.5 foot to 6.7 feet (April, May)

Ponding: None

Use and Management

Land use: Major use—woodland; other use—wildlife habitat

Woodland

Major management concerns: Borgstrom—seedling mortality; Ingalls—seedling mortality, windthrow hazard, seasonal wetness

Building site development

Major management concerns: Cutbanks caving, seasonal wetness

Septic tank absorption fields

Major management concerns: Borgstrom—poor filtering capacity, depth to a restrictive feature, seasonal wetness; Ingalls—poor filtering capacity, restricted permeability, wetness

Interpretive Groups

Land capability classification: Borgstrom—6s; Ingalls—3w

Michigan soil management group: Borgstrom—4/2a-hs; Ingalls—4/2b

Prime farmland category: Not prime farmland

Hydric soil status: Borgstrom—not hydric; Ingalls—not hydric

Forest habitat type: Borgstrom—TM; Ingalls—TMC

142C—Wallace-Rubicon complex, 1 to 12 percent slopes

Setting

Landform: Dunes and beach ridges on dune fields and lakeshore complexes

Map Unit Composition

Major components:

Wallace and similar soils: 40 to 75 percent Rubicon and similar soils: 15 to 40 percent

Minor components:

Croswell and similar soils (0 to 10 percent of the map unit) in the lower landscape positions

Au Gres and similar soils (0 to 6 percent of the map unit) in depressions and drainageways

Typical Profile

Wallace

Oa—0 to 4 inches; reddish black and very dusky red, highly decomposed plant material

A—4 to 5 inches; black sand

E—5 to 22 inches; pinkish gray and light brown sand Bhsm—22 to 31 inches; dark reddish brown sand

Bsm—31 to 37 inches; brown sand Bs—37 to 62 inches; strong brown sand

BC-62 to 74 inches; dark yellowish brown sand

C—74 to 80 inches; yellowish brown sand

Rubicon

Oa-0 to 1 inch; black, highly decomposed plant material

E-1 to 7 inches; brown sand

Bs—7 to 34 inches; dark brown sand BC—34 to 44 inches; brown sand C—44 to 80 inches; light brown sand

Soil Properties and Qualities

Parent material: Wallace—eolian sands and sandy glaciolacustrine deposits;

Rubicon—sandy glaciolacustrine and eolian deposits

Slope: 1 to 12 percent

Surface runoff class: Wallace—low; Rubicon—very low

Potential for frost action: Low

Depth to restrictive feature: Wallace—18 to 25 inches to ortstein; Rubicon—more than

80 inches

Drainage class: Wallace—well drained; Rubicon—excessively drained

Available water capacity: Wallace—about 5.4 inches to a depth of 60 inches;

Rubicon—about 4.3 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Wallace—moderately rapid over rapid; Rubicon—rapid

Floodina: None

Depth to seasonal high water table: More than 6.5 feet

Ponding: None

Use and Management

Land use: Major use—woodland; other uses—wildlife habitat, building site development

Woodland

Major management concerns: Wallace—seedling mortality, windthrow hazard; Rubicon—sandy textures, seedling mortality

Building site development

Major management concerns: Cutbanks caving, slope

Septic tank absorption fields

Major management concerns: Wallace—slope, poor filtering capacity, depth to a restrictive feature; Rubicon—slope, poor filtering capacity

Interpretive Groups

Land capability classification: Wallace—6s; Rubicon—7s

Michigan soil management group: Wallace—5a-h; Rubicon—5.3a

Prime farmland category: Not prime farmland

Hydric soil status: Wallace—not hydric; Rubicon—not hydric *Forest habitat type:* Wallace—TMC; Rubicon—AQVac, TMC

142F—Wallace-Rubicon complex, 12 to 50 percent slopes

Setting

Landform: Dunes and beach ridges on dune fields and shoreline complexes

Map Unit Composition

Major components:

Wallace and similar soils: 45 to 75 percent Rubicon and similar soils: 20 to 45 percent

Minor components:

Croswell and similar soils (0 to 5 percent of the map unit) in the lower landscape positions

Typical Profile

Wallace

Oa—0 to 4 inches; reddish black and very dusky red, highly decomposed plant material

A—4 to 5 inches; black sand

E—5 to 22 inches; pinkish gray and light brown sand

Bhsm—22 to 31 inches; dark reddish brown sand

Bsm-31 to 37 inches; brown sand

Bs—37 to 62 inches; strong brown sand

BC-62 to 74 inches; dark yellowish brown sand

C—74 to 80 inches; yellowish brown sand

Rubicon

Oa-0 to 1 inch; black, highly decomposed plant material

E—1 to 7 inches; brown sand

Bs—7 to 34 inches; dark brown sand

BC—34 to 44 inches; brown sand

C—44 to 80 inches; light brown sand

Soil Properties and Qualities

Parent material: Wallace—eolian sands and sandy glaciolacustrine deposits;

Rubicon—sandy glaciolacustrine and eolian deposits

Slope: 12 to 50 percent

Surface runoff class: Wallace—medium; Rubicon—low

Potential for frost action: Low

Depth to restrictive feature: Wallace—18 to 25 inches to ortstein; Rubicon—more than

80 inches

Drainage class: Wallace—well drained; Rubicon—excessively drained Available water capacity: Wallace—about 5.4 inches to a depth of 60 inches;

Rubicon—about 4.3 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Wallace—moderately rapid over rapid; Rubicon—rapid

Flooding: None

Depth to seasonal high water table: More than 6.5 feet

Ponding: None

Use and Management

Land use: Major use—woodland; other use—wildlife habitat

Woodland

Major management concerns: Wallace—erosion, seedling mortality, windthrow hazard, slope; Rubicon—erosion, sandy textures, seedling mortality, slope

Building site development

Major management concerns: Cutbanks caving, slope

Septic tank absorption fields

Major management concerns: Wallace—slope, poor filtering capacity, depth to a restrictive feature; Rubicon—slope, poor filtering capacity

Interpretive Groups

Land capability classification: Wallace—7s; Rubicon—7s

Michigan soil management group: Wallace—5a-h; Rubicon—5.3a

Prime farmland category: Not prime farmland

Hydric soil status: Wallace—not hydric; Rubicon—not hydric *Forest habitat type:* Wallace—TMC; Rubicon—AQVac, TMC

155C—Montreal-Paavola-Waiska complex, dissected, 1 to 12 percent slopes, rocky, very bouldery

Setting

Landform: Hillslopes, ridges, and knolls on moraines

Map Unit Composition

Major components:

Montreal and similar soils: 35 to 50 percent Paavola and similar soils: 25 to 35 percent Waiska and similar soils: 10 to 25 percent

Minor components:

Gratiot, rocky, very bouldery, and similar soils (0 to 10 percent of the map unit) in depressions and drainageways

Dishno, dissected, very rocky, very bouldery, and similar soils (0 to 4 percent of the map unit) in landscape positions similar to those of the Montreal soil

Garlic, dissected, and similar soils (0 to 3 percent of the map unit) in landscape positions similar to those of the Waiska soil

Typical Profile

Montreal

Oa—0 to 2 inches; black, highly decomposed plant material

E—2 to 6 inches; brown cobbly fine sandy loam

Bhs—6 to 11 inches; dark brown cobbly fine sandy loam

Bs—11 to 20 inches; dark brown cobbly fine sandy loam

E/Bx—20 to 33 inches; brown very cobbly loamy fine sand and reddish brown very cobbly fine sandy loam

B/Ex—33 to 51 inches; reddish brown very cobbly fine sandy loam and very cobbly loamy fine sand

E/B—51 to 80 inches; light brown cobbly loamy fine sand and reddish brown cobbly fine sandy loam

Paavola

Oa—0 to 2 inches; black, highly decomposed plant material

E-2 to 6 inches; brown cobbly loamy sand

Bhs—6 to 12 inches; dark brown cobbly loamy sand

Bs—12 to 27 inches; brown very gravelly sand

2E/Bx—27 to 35 inches; brown very gravelly loamy fine sand and brown gravelly fine sandy loam

2Btx—35 to 46 inches; reddish brown gravelly fine sandy loam

2C—46 to 80 inches; reddish brown gravelly sandy loam

Waiska

Oi—0 to 1 inch; dark reddish brown, moderately decomposed plant material

E-1 to 7 inches; brown cobbly loamy sand

Bhs—7 to 23 inches; dark brown very gravelly loamy sand

Bs—23 to 35 inches; dark brown extremely gravelly coarse sand

BC-35 to 60 inches; dark brown extremely gravelly coarse sand

C-60 to 80 inches; brown extremely gravelly coarse sand

Soil Properties and Qualities

Parent material: Montreal—coarse-loamy eolian deposits over coarse-loamy or sandy till deposits; Paavola—sandy-skeletal drift over loamy or sandy till deposits;

Waiska—sandy-skeletal glaciofluvial and glaciolacustrine deposits

Slope: 1 to 12 percent

Surface runoff class: Montreal—high; Waiska and Paavola—very low

Potential for frost action: Montreal—moderate; Paavola and Waiska—low

Depth to restrictive feature: Montreal—14 to 41 inches to a fragipan; Paavola—20 to 30 inches to bedrock (lithic); Waiska—more than 80 inches

Drainage class: Montreal and Paavola—moderately well drained; Waiska—excessively drained

Available water capacity: Montreal and Paavola—about 4.6 inches to a depth of 60 inches; Waiska—about 2.3 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Montreal—moderate in the upper part, very slow in the fragipan, and moderate in the lower part; Paavola—very rapid in the upper part and very slow in the fragipan; Waiska—very rapid

Floodina: None

Depth to seasonal high water table: Montreal—1.0 to 1.7 feet (April); Paavola—1.0 to 2.6 feet (April); Waiska—more than 6.5 feet

Ponding: None

Use and Management

Land use: Major use—woodland; other use—wildlife habitat

Woodland

Major management concerns: Montreal—surface boulders, rock fragments, seedling mortality, soil rutting, windthrow hazard, seasonal wetness; Paavola—surface boulders, rock fragments, seedling mortality, soil rutting, windthrow hazard, depth to bedrock, seasonal wetness; Waiska—surface boulders, rock fragments, seedling mortality

Building site development

Major management concerns: Montreal—surface stones, surface boulders, cutbanks caving, slope, seasonal wetness; Paavola—surface stones, surface boulders, cutbanks caving, depth to bedrock, slope, seasonal wetness; Waiska—surface stones, surface boulders, cutbanks caving, slope

Septic tank absorption fields

Major management concerns: Montreal—surface stones, surface boulders, slope, restricted permeability, depth to a fragipan, wetness; Paavola—surface stones, surface boulders, slope, poor filtering capacity, restricted permeability, depth to bedrock, wetness; Waiska—surface stones, surface boulders, slope, poor filtering capacity

Interpretive Groups

Land capability classification: 6s

Michigan soil management group: Montreal—3a-af; Paavola—Ga; Waiska—Ga

Prime farmland category: Not prime farmland

Hydric soil status: Montreal—not hydric; Paavola—not hydric; Waiska—not hydric *Forest habitat type:* Montreal and Waiska—ATD, AVO; Paavola—AVO, ATD

155E—Montreal-Paavola-Waiska complex, dissected, 8 to 35 percent slopes, rocky, very bouldery

Settina

Landform: Ridges, knolls, and hillslopes on moraines

Map Unit Composition

Major components:

Montreal and similar soils: 35 to 50 percent Paavola and similar soils: 25 to 35 percent Waiska and similar soils: 10 to 25 percent

Minor components:

Dishno, dissected, very rocky, very bouldery, and similar soils (0 to 10 percent of the map unit) in landscape positions similar to those of the Montreal soil

Garlic, dissected, and similar soils (0 to 5 percent of the map unit) in landscape positions similar to those of the Waiska soil

Michigamme, extremely bouldery, and similar soils (0 to 5 percent of the map unit) in the higher landscape positions

Typical Profile

Montreal

Oa—0 to 2 inches; black, highly decomposed plant material

E—2 to 6 inches; brown cobbly fine sandy loam

Bhs—6 to 11 inches; dark brown cobbly fine sandy loam

Bs—11 to 20 inches; dark brown cobbly fine sandy loam

E/Bx—20 to 33 inches; brown very cobbly loamy fine sand and reddish brown very cobbly fine sandy loam

B/Ex—33 to 51 inches; reddish brown very cobbly fine sandy loam and very cobbly loamy fine sand

E/B—51 to 80 inches; light brown cobbly loamy fine sand and reddish brown cobbly fine sandy loam

Paavola

Oa—0 to 2 inches; black, highly decomposed plant material

E—2 to 6 inches; brown cobbly loamy sand

Bhs—6 to 12 inches; dark brown cobbly loamy sand

Bs—12 to 27 inches; brown very gravelly sand

2E/Bx—27 to 35 inches; brown very gravelly loamy fine sand and brown gravelly fine sandy loam

2Btx—35 to 46 inches; reddish brown gravelly fine sandy loam

2C-46 to 80 inches; reddish brown gravelly sandy loam

Waiska

Oi—0 to 1 inch; dark reddish brown, moderately decomposed plant material

E-1 to 7 inches; brown cobbly loamy sand

Bhs—7 to 23 inches; dark brown very gravelly loamy sand

Bs—23 to 35 inches; dark brown extremely gravelly coarse sand

BC-35 to 60 inches; dark brown extremely gravelly coarse sand

C-60 to 80 inches; brown extremely gravelly coarse sand

Soil Properties and Qualities

Parent material: Montreal—coarse-loamy eolian deposits over coarse-loamy or sandy till deposits; Paavola and Waiska—sandy-skeletal drift over loamy or sandy till deposits

Slope: 8 to 35 percent Surface runoff class: Low Potential for frost action: Low

Depth to restrictive feature: Montreal—14 to 41 inches to a fragipan; Paavola—20 to 30 inches to a fragipan; Waiska—more than 80 inches

Drainage class: Montreal and Paavola—moderately well drained; Waiska—excessively drained

Available water capacity: Montreal and Paavola—about 4.6 inches to a depth of 60 inches; Waiska—about 2.3 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Montreal—moderate in the upper part, very slow in the fragipan, and moderate in the lower part; Paavola—very rapid in the upper part and very slow in the fragipan; Waiska—very rapid

Flooding: None

Depth to seasonal high water table: Montreal—1.0 to 1.7 feet (April); Paavola—1.0 to 2.6 feet (April); Waiska—more than 6.5 feet

Ponding: None

Use and Management

Land use: Major use—woodland; other use—wildlife habitat

Woodland

Major management concerns: Montreal and Paavola—erosion, surface boulders, rock fragments, seedling mortality, soil rutting, windthrow hazard, slope, seasonal wetness, dissected slopes; Waiska—erosion, surface boulders, rock fragments, seedling mortality, slope, dissected slopes

Building site development

Major management concerns: Montreal and Paavola—surface stones, surface boulders, cutbanks caving, slope, seasonal wetness; Waiska—surface stones, surface boulders, cutbanks caving, slope

Septic tank absorption fields

Major management concerns: Montreal—surface stones, surface boulders, slope, restricted permeability, depth to a fragipan, wetness; Paavola—surface stones, surface boulders, slope, poor filtering capacity, restricted permeability, depth to a fragipan, wetness; Waiska—surface stones, surface boulders, slope, poor filtering capacity

Interpretive Groups

Land capability classification: Montreal—7e; Paavola—7e; Waiska—7s Michigan soil management group: Montreal—3a-af; Paavola and Waiska—Ga

Prime farmland category: Not prime farmland

Hydric soil status: Montreal—not hydric; Paavola—not hydric; Waiska—not hydric *Forest habitat type:* Montreal and Waiska—AVO, ATD; Paavola—ATD, AVO

158A—Arnheim-Sturgeon-Pelkie complex, 0 to 3 percent slopes

Setting

Landform: Oxbow lakes and backswales on flood plains

Map Unit Composition

Major components:

Arnheim and similar soils: 35 to 50 percent Sturgeon and similar soils: 25 to 35 percent Pelkie and similar soils: 10 to 25 percent

Minor components:

Tawas and similar soils (0 to 7 percent of the map unit) in landscape positions similar to those of the Arnheim soil

Ingalls and similar soils (0 to 5 percent of the map unit) in landscape positions similar to those of the Sturgeon soil

Deford and similar soils (0 to 5 percent of the map unit) in landscape positions similar to those of the Arnheim soil

Typical Profile

Arnheim

A—0 to 4 inches; dark reddish brown mucky very fine sandy loam

Cg—4 to 9 inches; dark reddish gray very fine sandy loam

C1—9 to 22 inches; dark reddish gray silt loam

C2—22 to 35 inches; reddish brown, stratified very fine sandy loam to silt loam

2C3—35 to 50 inches; dark reddish gray fine sandy loam

2C4—50 to 60 inches; reddish brown loamy sand

Sturgeon

Oa—0 to 2 inches; black, highly decomposed plant material

Cg1—2 to 16 inches; brown silt loam

Cg2—16 to 42 inches; brown loamy sand, loamy fine sand, and loamy very fine sand

Cg3—42 to 48 inches; brown fine sandy loam

Cg4—48 to 60 inches; brown loamy sand

Pelkie

A-0 to 6 inches; dark brown loamy fine sand

C1—6 to 22 inches; brown loamy fine sand

C2-22 to 80 inches; brown loamy fine sand

Soil Properties and Qualities

Parent material: Arnheim—loamy alluvium; Sturgeon—coarse-silty alluvium over sandy alluvium; Pelkie—sandy alluvium

Slope: Arnheim and Sturgeon—0 to 1 percent; Pelkie—0 to 3 percent

Surface runoff class: Arnheim and Pelkie—negligible; Sturgeon—low

Potential for frost action: Arnheim and Sturgeon—high; Pelkie—low

Depth to restrictive feature: More than 80 inches

Drainage class: Arnheim—poorly drained; Sturgeon—somewhat poorly drained; Pelkie—moderately well drained

Available water capacity: Arnheim—about 10.1 inches to a depth of 60 inches; Sturgeon—about 8.5 inches to a depth of 60 inches; Pelkie—about 6.7 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Arnheim—moderate; Sturgeon—moderate over rapid; Pelkie—rapid Frequency and most likely period of flooding: Arnheim—frequent (March, April, May); Sturgeon and Pelkie—occasional (March, April, May)

Depth to seasonal high water table: Arnheim—at the surface (January, February, March, April, May, November, December); Sturgeon—0.5 foot to 6.7 feet (April, May); Pelkie—2.0 to 6.7 feet (April, May)

Ponding depth: Arnheim—0.2 foot all year; Sturgeon and Pelkie—none

Use and Management

Land use: Major use—wildlife habitat; other use—woodland

Woodland

Major management concerns: Arnheim—seedling mortality, soil rutting, windthrow hazard, seasonal wetness, flooding; Sturgeon—seedling mortality, soil rutting, windthrow hazard, flooding; Pelkie—seedling mortality, flooding

Building site development

Major management concerns: Arnheim—cutbanks caving, ponding, flooding, wetness; Sturgeon—cutbanks caving, flooding, seasonal wetness; Pelkie—cutbanks caving, flooding, seasonal wetness

Septic tank absorption fields

Major management concerns: Arnheim—flooding; Sturgeon—poor filtering capacity, flooding; Pelkie—poor filtering capacity, flooding, seasonal wetness

Interpretive Groups

Land capability classification: Arnheim—5w; Sturgeon—3w; Pelkie—4s

Michigan soil management group: Arnheim—L-2c; Sturgeon—L-2b; Pelkie—L-2a

Prime farmland category: Not prime farmland

Hydric soil status: Arnheim—hydric; Sturgeon and Pelkie—not hydric

Forest habitat type: Arnheim—FMC, FI; Sturgeon—AVO-CI; Pelkie—AVO

161F—Trimountain-Lac La Belle-Waiska complex, dissected, 15 to 60 percent slopes, rocky, very bouldery

Setting

Landform: Hills, hillslopes, and ridges on moraines

Map Unit Composition

Major components:

Trimountain, dissected, rocky, very bouldery, and similar soils: 35 to 50 percent Lac La Belle, dissected, rocky, very bouldery, and similar soils: 25 to 35 percent Waiska, dissected, rocky, very bouldery, and similar soils: 10 to 25 percent

Minor components:

Montreal and similar soils (0 to 9 percent of the map unit) in the slightly lower landscape positions

Paavola and similar soils (0 to 7 percent of the map unit) in the slightly lower landscape positions

Keweenaw and similar soils (0 to 5 percent of the map unit) in landscape positions similar to those of the Waiska soil

Typical Profile

Trimountain

Oa—0 to 2 inches; black, highly decomposed plant material

E—2 to 6 inches; brown cobbly very fine sandy loam

Bhs—6 to 11 inches; dark brown cobbly very fine sandy loam

Bs—11 to 20 inches; dark brown cobbly very fine sandy loam

2E/Bx—20 to 33 inches; brown very cobbly loamy fine sand and reddish brown very cobbly fine sandy loam

2B/Ex—33 to 51 inches; reddish brown very cobbly fine sandy loam and reddish brown very cobbly loamy fine sand

2E/B—51 to 80 inches; light brown cobbly loamy fine sand and reddish brown cobbly fine sandy loam

Lac La Belle

Oa—0 to 1 inch; reddish black, highly decomposed plant material

E—1 to 5 inches; reddish gray very stony loamy sand

Bhs—5 to 12 inches; dark reddish brown extremely stony loamy sand

Bs—12 to 36 inches; dark reddish brown and brown extremely cobbly loamy sand

2E/Bx—36 to 42 inches; brown very cobbly loamy sand and brown very cobbly sandy loam

2Btx-42 to 50 inches; reddish brown very cobbly loamy sand

2B/Ex—50 to 62 inches; reddish brown very cobbly sandy loam and brown very cobbly loamy sand

2C-62 to 80 inches; reddish brown very cobbly loamy sand

Waiska

Oi—0 to 1 inch; dark reddish brown, moderately decomposed plant material

E—1 to 7 inches; brown cobbly loamy sand

Bhs—7 to 23 inches; dark brown very gravelly loamy sand

Bs—23 to 35 inches; dark brown extremely gravelly coarse sand

BC—35 to 60 inches; dark brown extremely gravelly coarse sand C—60 to 80 inches; brown extremely gravelly coarse sand

Soil Properties and Qualities

Parent material: Trimountain—coarse-loamy eolian deposits over coarse-loamy or sandy till deposits; Lac La Belle—cobbly and gravelly drift over loamy or sandy till deposits; Waiska—sandy-skeletal glaciofluvial and glaciolacustrine deposits Slope: 15 to 60 percent

Surface runoff class: Trimountain and Lac La Belle—high; Waiska—low Potential for frost action: Trimountain—moderate; Lac La Belle—high; Waiska—low Depth to restrictive feature: Trimountain—16 to 28 inches to a fragipan; Lac La Belle—25 to 40 inches to a fragipan; Waiska—more than 80 inches

Drainage class: Trimountain and Lac La Belle—well drained; Waiska—excessively drained

Available water capacity: Trimountain—about 4.6 inches to a depth of 60 inches; Lac La Belle—about 2.9 inches to a depth of 60 inches; Waiska—about 2.3 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Trimountain—moderate in the upper part, very slow in the fragipan, and moderate in the lower part; Lac La Belle—rapid in the upper part, very slow in the fragipan, and moderately rapid in the lower part; Waiska—very rapid

Flooding: None

Depth to seasonal high water table: More than 6.5 feet

Ponding: None

Use and Management

Land use: Major use—woodland; other use—wildlife habitat

Woodland

Major management concerns: Trimountain—erosion, surface boulders, rock fragments, seedling mortality, windthrow hazard, slope, dissected slopes; Lac La Belle and Waiska—erosion, surface boulders, rock fragments, seedling mortality, slope, dissected slopes

Building site development

Major management concerns: Surface stones, surface boulders, cutbanks caving, slope

Septic tank absorption fields

Major management concerns: Trimountain—surface stones, surface boulders, slope, restricted permeability, depth to a fragipan; Lac La Belle—surface stones, surface boulders, slope, poor filtering capacity, restricted permeability, depth to a fragipan; Waiska—surface stones, surface boulders, slope, poor filtering capacity

Interpretive Groups

Land capability classification: Trimountain—7e; Lac La Belle—7s; Waiska—7s

Michigan soil management group: Trimountain—3a-af; Lac La Belle and Waiska—Ga

Prime farmland category: Not prime farmland

Hydric soil status: Trimountain—not hydric; Lac La Belle—not hydric; Waiska—not hydric

Forest habitat type: Trimountain and Waiska—AVO, ATD; Lac La Belle—ATD, AVO

162F—Trimountain-Lac La Belle-Michigamme complex, dissected, 15 to 60 percent slopes, very rocky, extremely bouldery

Setting

Landform: Hills, ridges, and hillslopes on moraines

Map Unit Composition

Major components:

Trimountain, dissected, very rocky, extremely bouldery, and similar soils: 45 to 55 percent

Lac La Belle, dissected, very rocky, extremely bouldery, and similar soils: 15 to 35 percent

Michigamme, dissected, very rocky, extremely bouldery, and similar soils: 10 to 20 percent

Minor components:

Arcadian and similar soils (0 to 10 percent of the map unit) in landscape positions similar to those of the Michigamme soil

Montreal and similar soils (0 to 7 percent of the map unit) in the slightly lower landscape positions

Paavola and similar soils (0 to 4 percent of the map unit) in the slightly lower landscape positions

Typical Profile

Trimountain

Oa—0 to 2 inches; black, highly decomposed plant material

E—2 to 6 inches; brown cobbly very fine sandy loam

Bhs—6 to 11 inches; dark brown cobbly very fine sandy loam

Bs—11 to 20 inches; dark brown cobbly very fine sandy loam

2E/Bx—20 to 33 inches; brown very cobbly loamy fine sand and reddish brown very cobbly fine sandy loam

2B/Ex—33 to 51 inches; reddish brown very cobbly fine sandy loam and reddish brown very cobbly loamy fine sand

2E/B—51 to 80 inches; light brown cobbly loamy fine sand and reddish brown cobbly fine sandy loam

Lac La Belle

Oa—0 to 1 inch; reddish black, highly decomposed plant material

E—1 to 5 inches; reddish gray very stony loamy sand

Bhs—5 to 12 inches; dark reddish brown extremely stony loamy sand

Bs—12 to 36 inches; dark reddish brown and brown extremely cobbly loamy sand

2E/Bx—36 to 42 inches; brown very cobbly loamy sand and brown very cobbly sandy loam

2Btx-42 to 50 inches; reddish brown very cobbly loamy sand

2B/Ex—50 to 62 inches; reddish brown very cobbly sandy loam and brown very cobbly loamy sand

2C-62 to 80 inches; reddish brown very cobbly loamy sand

Michigamme

Oa—0 to 1 inch; black, highly decomposed plant material

E—1 to 4 inches; dark reddish gray cobbly very fine sandy loam

Bhs—4 to 10 inches; dark brown cobbly very fine sandy loam

Bs—10 to 22 inches; dark brown and brown very cobbly very fine sandy loam

2B/E—22 to 30 inches; brown cobbly loamy sand and bouldery loamy sand 3R—30 inches; unweathered basalt bedrock

Soil Properties and Qualities

Parent material: Trimountain—coarse-loamy eolian deposits over coarse-loamy or sandy till deposits; Lac La Belle—cobbly and gravelly drift over loamy or sandy till deposits; Michigamme—coarse-loamy glacial till over loamy glacial till over igneous or metamorphic bedrock

Slope: 15 to 60 percent

Surface runoff class: Trimountain and Lac La Belle—high; Michigamme—medium Potential for frost action: Trimountain—moderate; Lac La Belle—low; Michigamme—moderate

Depth to restrictive feature: Trimountain—16 to 28 inches to a fragipan; Lac La Belle—25 to 40 inches to a fragipan; Michigamme—22 to 40 inches to bedrock (lithic) Drainage class: Well drained

Available water capacity: Trimountain—about 4.6 inches to a depth of 60 inches; Lac La Belle—about 2.9 inches to a depth of 60 inches; Michigamme—about 4.3 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Trimountain—moderate in the upper part, very slow in the fragipan, and moderate in the lower part; Lac La Belle—rapid in the upper part, very slow in the fragipan, and moderately rapid in the lower part; Michigamme—moderate

Flooding: None

Depth to seasonal high water table: More than 6.5 feet

Ponding: None

Use and Management

Land use: Major use—woodland; other use—wildlife habitat

Woodland

Major management concerns: Trimountain—erosion, surface boulders, rock fragments, seedling mortality, windthrow hazard, slope, dissected slopes; Lac La Belle—erosion, surface boulders, rock fragments, seedling mortality, slope, dissected slopes; Michigamme—erosion, surface boulders, rock fragments, clayey textures, seedling mortality, soil rutting, slope, dissected slopes

Building site development

Major management concerns: Trimountain and Lac La Belle—surface stones, surface boulders, slope; Michigamme—surface stones, surface boulders, depth to bedrock, slope

Septic tank absorption fields

Major management concerns: Trimountain—surface stones, surface boulders, slope, restricted permeability, depth to a fragipan; Lac La Belle—surface stones, surface boulders, slope, poor filtering capacity, restricted permeability, depth to a fragipan; Michigamme—surface stones, surface boulders, slope, restricted permeability, depth to bedrock

Interpretive Groups

Land capability classification: Trimountain—7e; Lac La Belle—7s; Michigamme—7e

Michigan soil management group: Trimountain—3a-af; Lac La Belle—Ga;

Michigamme—3/Ra

Prime farmland category: Not prime farmland

Hydric soil status: Trimountain—not hydric; Lac La Belle—not hydric; Michigamme—not hydric

Forest habitat type: Trimountain, Lac La Belle, and Michigamme—ATD, AVO

166B—Gratiot-Sabattis complex, 0 to 4 percent slopes, rocky, very bouldery

Setting

Landform: Depressions, drainageways, and knolls on moraines

Map Unit Composition

Major components:

Gratiot, rocky, very bouldery, and similar soils: 50 to 60 percent Sabattis, rocky, very bouldery, and similar soils: 30 to 40 percent

Minor components:

Dishno and similar soils (0 to 8 percent of the map unit) in the higher landscape positions

Montreal and similar soils (0 to 6 percent of the map unit) in the higher landscape positions

Paavola and similar soils (0 to 4 percent of the map unit) in the higher landscape positions

Typical Profile

Gratiot

Oa—0 to 1 inch; dark reddish brown, highly decomposed plant material

A—1 to 4 inches; black very cobbly fine sandy loam

Bhs—4 to 7 inches; dark reddish brown very cobbly loamy sand

Bs1—7 to 12 inches; dark reddish brown very cobbly loamy sand

Bs2—12 to 20 inches; reddish brown very cobbly fine sandy loam

B/Ex—20 to 30 inches; reddish brown cobbly fine sandy loam and cobbly loamy fine sand

C-30 to 80 inches; reddish brown cobbly fine sandy loam

Sabattis

Oa—0 to 8 inches: black muck

A—8 to 12 inches; black very cobbly very fine sandy loam

Bg—12 to 17 inches; dark grayish brown cobbly very fine sandy loam

C1—17 to 32 inches; brown cobbly very fine sandy loam

2C2—32 to 37 inches; brown cobbly fine sandy loam

2C3—37 to 80 inches; dark grayish brown very cobbly sandy loam

Soil Properties and Qualities

Parent material: Gratiot—loamy-skeletal till deposits; Sabattis—coarse-loamy till deposits

Slope: 0 to 4 percent

Surface runoff class: Gratiot—high; Sabattis—negligible

Potential for frost action: High

Depth to restrictive feature: Gratiot—15 to 20 inches to a fragipan; Sabattis—more than 80 inches

Drainage class: Gratiot—somewhat poorly drained; Sabattis—very poorly drained Available water capacity: Gratiot—about 6.7 inches to a depth of 60 inches; Sabattis—about 8.5 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Gratiot—moderate in the upper part, very slow in the fragipan, and moderate in the lower part; Sabattis—moderate

Flooding: None

Depth to seasonal high water table: Gratiot—0.5 foot to 1.7 feet (April, May); Sabattis—at the surface (January, February, March, April, May, October, November, December)

Months in which ponding does not occur: Sabattis—January, February, June, July, August, September, December

Depth and most likely period of ponding: Sabattis—0.5 foot (March, April, May, November); Gratiot—none

Use and Management

Land use: Major use—woodland; other use—wildlife habitat

Woodland

Major management concerns: Gratiot—surface boulders, rock fragments, seedling mortality, windthrow hazard; Sabattis—surface boulders, rock fragments, clayey textures, seedling mortality, windthrow hazard, wetness

Building site development

Major management concerns: Gratiot—surface stones, surface boulders, large stones, seasonal wetness; Sabattis—ponding, wetness

Septic tank absorption fields

Major management concerns: Gratiot—surface stones, surface boulders, large stones, restricted permeability, depth to a fragipan, seasonal wetness; Sabattis—surface stones, surface boulders, ponding, wetness

Interpretive Groups

Land capability classification: Gratiot—7s; Sabattis—5w Michigan soil management group: Gratiot—3b-af; Sabattis—3c Prime farmland category: Not prime farmland

Hydric soil status: Gratiot—not hydric; Sabattis—hydric

Forest habitat type: Gratiot—AVO-CI, TMC-D; Sabattis—FI, TTM

173C—Montreal-Paavola-Dishno complex, dissected, 1 to 12 percent slopes, very rocky, very bouldery

Setting

Landform: Hillslopes, ridges, and knolls on moraines

Map Unit Composition

Major components:

Montreal, dissected, very rocky, very bouldery, and similar soils: 45 to 55 percent Paavola, dissected, very rocky, very bouldery, and similar soils: 20 to 30 percent Dishno, dissected, very rocky, very bouldery, and similar soils: 10 to 25 percent

Minor components:

Gratiot and similar soils (0 to 7 percent of the map unit) in depressions and drainageways

Arcadian and similar soils (0 to 5 percent of the map unit) in the higher landscape positions

Typical Profile

Montreal

Oa—0 to 2 inches; black, highly decomposed plant material

E—2 to 6 inches; brown cobbly fine sandy loam

Bhs—6 to 11 inches; dark brown cobbly fine sandy loam

Bs—11 to 20 inches; dark brown cobbly fine sandy loam

2E/Bx—20 to 33 inches; brown very cobbly loamy fine sand and reddish brown very cobbly fine sandy loam

2B/Ex—33 to 51 inches; reddish brown very cobbly fine sandy loam and very cobbly loamy fine sand

2E/B—51 to 80 inches; light brown cobbly loamy fine sand and reddish brown cobbly fine sandy loam

Paavola

Oa—0 to 2 inches; black, highly decomposed plant material

E—2 to 6 inches; brown cobbly loamy sand

Bhs—6 to 12 inches; dark brown cobbly loamy sand

Bs—12 to 27 inches; brown very gravelly sand

2E/Bx—27 to 35 inches; brown very gravelly loamy fine sand and brown gravelly fine sandy loam

2Btx—35 to 46 inches; reddish brown gravelly fine sandy loam

2C-46 to 80 inches; reddish brown gravelly sandy loam

Dishno

Oe—0 to 1 inch; dark reddish brown, moderately decomposed plant material

A—1 to 3 inches; dark reddish brown cobbly very fine sandy loam

E-3 to 4 inches; reddish gray cobbly very fine sandy loam

Bhs—4 to 8 inches; dark brown cobbly very fine sandy loam

Bs-8 to 26 inches; dark brown and brown cobbly very fine sandy loam

2BC-26 to 31 inches; brown very cobbly loamy sand

2C-31 to 42 inches; brown very cobbly loamy sand

3R—42 inches; unweathered basalt bedrock

Soil Properties and Qualities

Parent material: Montreal—coarse-loamy eolian deposits over coarse-loamy or sandy till deposits; Paavola—sandy-skeletal drift over loamy or sandy till deposits; Dishno—loamy and silty eolian deposits over coarse-loamy and sandy or sandy-skeletal till deposits over conglomerate and basalt bedrock

Slope: 1 to 12 percent

Surface runoff class: Montreal—high; Paavola—very low; Dishno—low Potential for frost action: Montreal and Dishno—moderate; Paavola—low

Depth to restrictive feature: Montreal—14 to 41 inches to a fragipan; Paavola—20 to 30 inches to a fragipan; Dishno—40 to 60 inches to bedrock (lithic)

Drainage class: Moderately well drained

Available water capacity: Montreal and Paavola—about 4.6 inches to a depth of 60 inches; Dishno—about 6.3 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Montreal—moderate in the upper part, very slow in the fragipan, and moderate in the lower part; Paavola—very rapid over very slow; Dishno—moderate over moderately rapid

Flooding: None

Depth to seasonal high water table: Montreal—1.0 to 1.7 feet (April); Paavola—1.0 to 2.6 feet (April); Dishno—1.0 to 3.8 feet (April, October)

Ponding: None

Use and Management

Land use: Major use—woodland; other uses—wildlife habitat, building site development

Woodland

Major management concerns: Montreal and Paavola—surface boulders, rock

fragments, seedling mortality, soil rutting, windthrow hazard, seasonal wetness; Dishno—surface boulders, rock fragments, clayey textures, seedling mortality, soil rutting, seasonal wetness

Building site development

Major management concerns: Montreal and Paavola—surface stones, surface boulders, cutbanks caving, slope, seasonal wetness; Dishno—surface stones, surface boulders, cutbanks caving, depth to bedrock, slope, seasonal wetness

Septic tank absorption fields

Major management concerns: Montreal—surface stones, surface boulders, slope, restricted permeability, depth to a fragipan, wetness; Paavola—surface stones, surface boulders, slope, poor filtering capacity, restricted permeability, depth to a fragipan, wetness; Dishno—surface stones, surface boulders, slope, depth to bedrock, wetness

Interpretive Groups

Land capability classification: 6s

Michigan soil management group: Montreal—3a-af; Paavola—Ga; Dishno—3a

Prime farmland category: Not prime farmland

Hydric soil status: Montreal—not hydric; Paavola—not hydric; Dishno—not hydric *Forest habitat type:* Montreal and Dishno—AVO, ATD; Paavola—ATD, AVO

173E—Montreal-Paavola-Dishno complex, dissected, 8 to 35 percent slopes, very rocky, very bouldery

Setting

Landform: Hillslopes, ridges, and knolls on moraines

Map Unit Composition

Major components:

Montreal, dissected, very rocky, very bouldery, and similar soils: 45 to 55 percent Paavola, dissected, very rocky, very bouldery, and similar soils: 20 to 30 percent Dishno, dissected, very rocky, very bouldery, and similar soils: 10 to 25 percent

Minor components:

Arcadian and similar soils (0 to 6 percent of the map unit) in the higher landscape positions

Michigamme and similar soils (0 to 4 percent of the map unit) in the higher landscape positions

Typical Profile

Montreal

Oa—0 to 2 inches; black, highly decomposed plant material

E—2 to 6 inches; brown cobbly fine sandy loam

Bhs—6 to 11 inches; dark brown cobbly fine sandy loam

Bs—11 to 20 inches; dark brown cobbly fine sandy loam

2E/Bx—20 to 33 inches; brown very cobbly loamy fine sand and reddish brown very cobbly fine sandy loam

2B/Ex—33 to 51 inches; reddish brown very cobbly fine sandy loam and very cobbly loamy fine sand

2E/B—51 to 80 inches; light brown cobbly loamy fine sand and reddish brown cobbly fine sandy loam

Paavola

Oa—0 to 2 inches; black, highly decomposed plant material

E—2 to 6 inches; brown cobbly loamy sand

Bhs—6 to 12 inches; dark brown cobbly loamy sand

Bs—12 to 27 inches; brown very gravelly sand

2E/Bx—27 to 35 inches; brown very gravelly loamy fine sand and brown gravelly fine sandy loam

2Btx—35 to 46 inches; reddish brown gravelly fine sandy loam

2C-46 to 80 inches; reddish brown gravelly sandy loam

Dishno

Oe—0 to 1 inch; dark reddish brown, moderately decomposed plant material

A—1 to 3 inches; dark reddish brown cobbly very fine sandy loam

E—3 to 4 inches; reddish gray cobbly very fine sandy loam

Bhs—4 to 8 inches; dark brown cobbly very fine sandy loam

Bs—8 to 26 inches; dark brown and brown cobbly very fine sandy loam

2BC-26 to 31 inches; brown very cobbly loamy sand

2C-31 to 42 inches; brown very cobbly loamy sand

3R—42 inches; unweathered basalt bedrock

Soil Properties and Qualities

Parent material: Montreal—coarse-loamy eolian deposits over coarse-loamy or sandy till deposits; Paavola—sandy-skeletal drift over loamy or sandy till deposits; Dishno—loamy and silty eolian deposits over coarse-loamy and sandy or sandy-skeletal till deposits over conglomerate and basalt bedrock

Slope: 8 to 35 percent

Potential surface Montreal—high; Paavola—low; Dishno—medium

Potential for frost action: Montreal and Paavola—low; Dishno—moderate

Depth to restrictive feature: Montreal—14 to 41 inches to a fragipan; Paavola—20 to 30 inches to bedrock (lithic); Dishno—40 to 60 inches to bedrock (lithic)

Drainage class: Moderately well drained

Available water capacity: Montreal and Paavola—about 4.6 inches to a depth of 60 inches; Dishno—about 6.3 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Montreal—moderate in the upper part, very slow in the fragipan, and moderate in the lower part; Paavola—very rapid over very slow; Dishno—moderate over moderately rapid

Floodina: None

Depth to seasonal high water table: Montreal—1.0 to 1.7 feet (April); Paavola—1.0 to 2.6 feet (April); Dishno—1.0 to 3.8 feet (April, October)

Ponding: None

Use and Management

Land use: Major use—woodland; other use—wildlife habitat

Woodland

Major management concerns: Montreal and Paavola—erosion, surface boulders, rock fragments, seedling mortality, soil rutting, windthrow hazard, slope, seasonal wetness, dissected slopes; Dishno—erosion, surface boulders, rock fragments, seedling mortality, slope, seasonal wetness, dissected slopes

Building site development

Major management concerns: Montreal—surface stones, surface boulders, cutbanks caving, slope, seasonal wetness; Paavola and Dishno—surface stones, surface boulders, cutbanks caving, depth to bedrock, slope, seasonal wetness

Septic tank absorption fields

Major management concerns: Montreal—surface stones, surface boulders, slope, restricted permeability, depth to a fragipan, wetness; Paavola—surface stones, surface boulders, slope, poor filtering capacity, restricted permeability, depth to bedrock, wetness; Dishno—surface stones, surface boulders, slope, depth to bedrock, wetness

Interpretive Groups

Land capability classification: 7e

Michigan soil management group: Montreal—3a-af; Paavola—Ga; Dishno—3a

Prime farmland category: Not prime farmland

Hydric soil status: Montreal—not hydric; Paavola—not hydric; Dishno—not hydric

Forest habitat type: Montreal, Paavola, and Dishno-AVO, ATD

174B—Montreal-Dishno-Gratiot complex, 0 to 8 percent slopes, rocky, very bouldery

Setting

Landform: Hillslopes on moraines; ridges and knolls on moraines

Map Unit Composition

Major components:

Montreal, rocky, very bouldery, and similar soils: 45 to 60 percent Dishno, rocky, very bouldery, and similar soils: 15 to 30 percent Gratiot, rocky, very bouldery, and similar soils: 10 to 25 percent

Minor components:

Paavola and similar soils (0 to 6 percent of the map unit) in landscape positions similar to those of the Montreal soil

Sabattis and similar soils (0 to 3 percent of the map unit) in depressions and drainageways

Arcadian and similar soils (0 to 3 percent of the map unit) in the higher landscape positions

Typical Profile

Montreal

Oa—0 to 2 inches; black, highly decomposed plant material

E—2 to 6 inches; brown cobbly fine sandy loam

Bhs—6 to 11 inches; dark brown cobbly fine sandy loam

Bs—11 to 20 inches; dark brown cobbly fine sandy loam

2E/Bx—20 to 33 inches; brown very cobbly loamy fine sand and reddish brown very cobbly fine sandy loam

2B/Ex—33 to 51 inches; reddish brown very cobbly fine sandy loam and very cobbly loamy fine sand

2E/B—51 to 80 inches; light brown cobbly loamy fine sand and reddish brown cobbly fine sandy loam

Dishno

Oe—0 to 1 inch; dark reddish brown, moderately decomposed plant material

A—1 to 3 inches; dark reddish brown cobbly very fine sandy loam

E—3 to 4 inches; reddish gray cobbly very fine sandy loam

Bhs—4 to 8 inches; dark brown cobbly very fine sandy loam

Bs—8 to 26 inches; dark brown and brown cobbly very fine sandy loam

2BC—26 to 31 inches; brown very cobbly loamy sand

2C-31 to 42 inches; brown very cobbly loamy sand

3R—42 inches; unweathered basalt bedrock

Gratiot

Oa—0 to 1 inch; dark reddish brown, highly decomposed plant material

A—1 to 4 inches; black very cobbly fine sandy loam

Bhs—4 to 7 inches; dark reddish brown very cobbly loamy sand

Bs1—7 to 12 inches; dark reddish brown very cobbly loamy sand

Bs2—12 to 20 inches; reddish brown very cobbly fine sandy loam

B/Ex—20 to 30 inches; reddish brown cobbly fine sandy loam and cobbly loamy fine sand

C-30 to 80 inches; reddish brown cobbly fine sandy loam

Soil Properties and Qualities

Parent material: Montreal—coarse-loamy eolian deposits over coarse-loamy or sandy till deposits; Dishno—loamy and silty eolian deposits over coarse-loamy and sandy or sandy-skeletal till deposits over conglomerate and basalt deposits; Gratiot—loamy-skeletal till deposits

Slope: Montreal and Dishno—0 to 8 percent; Gratiot—0 to 4 percent

Surface runoff class: Montreal and Gratiot-high; Dishno-low

Potential for frost action: Montreal and Dishno—moderate; Gratiot—high

Depth to restrictive feature: Montreal—14 to 41 inches to a fragipan; Dishno—40 to 60 inches to bedrock (lithic); Gratiot—15 to 20 inches to a fragipan

Drainage class: Montreal and Dishno—moderately well drained; Gratiot—somewhat poorly drained

Available water capacity: Montreal—about 4.6 inches to a depth of 60 inches; Dishno—about 6.3 inches to a depth of 60 inches; Gratiot—about 6.7 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Montreal—moderate in the upper part, very slow in the fragipan, and moderate in the lower part; Dishno—moderate over moderately rapid; Gratiot—moderate in the upper part, very slow in the fragipan, and moderate in the lower part

Flooding: None

Depth to seasonal high water table: Montreal—1.0 to 1.7 feet (April); Dishno—1.0 to 3.8 feet (April, October); Gratiot—0.5 foot to 1.7 feet (April, May) Ponding: None

Use and Management

Land use: Major use-woodland; other use-wildlife habitat

Woodland

Major management concerns: Montreal—surface boulders, rock fragments, seedling mortality, soil rutting, windthrow hazard, seasonal wetness; Dishno—surface boulders, rock fragments, clayey textures, seedling mortality, soil rutting; Gratiot—surface boulders, rock fragments, clayey textures, seedling mortality, windthrow hazard

Building site development

Major management concerns: Montreal—surface stones, surface boulders, slope, seasonal wetness; Dishno—surface stones, surface boulders, depth to bedrock, slope, seasonal wetness; Gratiot—surface stones, surface boulders, large stones, seasonal wetness

Septic tank absorption fields

Major management concerns: Montreal—surface stones, surface boulders, slope,

restricted permeability, depth to a fragipan, wetness; Dishno—surface stones, surface boulders, slope, restricted permeability, depth to bedrock, wetness; Gratiot—surface stones, surface boulders, large stones, restricted permeability, depth to a fragipan, seasonal wetness

Interpretive Groups

Land capability classification: Montreal and Dishno—6s; Gratiot—7s

Michigan soil management group: Montreal—3a-af; Dishno—3a; Gratiot—3b-af

Prime farmland category: Not prime farmland

Hydric soil status: Montreal—not hydric; Dishno—not hydric; Gratiot—not hydric Forest habitat type: Montreal and Dishno—ATD, AVO; Gratiot—AVO-CI, ATD-CI

177A—Assinins sand, 0 to 4 percent slopes

Setting

Landform: Drainageways and depressions on till plains and ground moraines

Map Unit Composition

Major components:

Assinins and similar soils: 75 to 100 percent

Minor components:

Yalmer and similar soils (0 to 10 percent of the map unit) in the higher landscape positions

Skanee and similar soils (0 to 7 percent of the map unit) in landscape positions similar to those of the Assinins soil

Gay and similar soils (0 to 6 percent of the map unit) in depressions and drainageways

Typical Profile

Assinins

Oa—0 to 2 inches; black, highly decomposed plant material A—2 to 11 inches; pinkish gray and light brownish gray sand

Bhs—11 to 15 inches; dark brown sand

Bs—15 to 24 inches; brown sand

B/E—24 to 37 inches; dark yellowish brown sandy loam

C-37 to 80 inches; reddish brown sandy loam

Soil Properties and Qualities

Parent material: Sandy drift over coarse-loamy till

Slope: 0 to 4 percent

Surface runoff class: Medium Potential for frost action: High

Depth to restrictive feature: More than 80 inches Drainage class: Somewhat poorly drained

Available water capacity: About 7.1 inches to a depth of 60 inches

Shrink-swell potential: Low Permeability: Moderate

Flooding: None

Depth to seasonal high water table: 0.5 foot to 6.7 feet (April, May)

Ponding: None

Use and Management

Land use: Major use—woodland; other use—wildlife habitat

Woodland

Major management concerns: Seedling mortality, windthrow hazard, seasonal wetness

Building site development

Major management concerns: Cutbanks caving, seasonal wetness

Septic tank absorption fields

Major management concerns: Poor filtering capacity, wetness

Interpretive Groups

Land capability classification: 3w Michigan soil management group: 4b

Prime farmland category: Not prime farmland

Hydric soil status: Not hydric Forest habitat type: TMC

183C—Munising-Abbaye-Yalmer complex, dissected, 1 to 12 percent slopes, stony

Setting

Landform: Hillslopes, ridges, and knolls on ground moraines

Map Unit Composition

Major components:

Munising, dissected, stony, and similar soils: 35 to 55 percent Abbaye, dissected, stony, and similar soils: 20 to 35 percent Yalmer, dissected, stony, and similar soils: 10 to 25 percent

Minor components:

Skanee and similar soils (0 to 7 percent of the map unit) in depressions and drainageways

Zeba and similar soils (0 to 5 percent of the map unit) in depressions and drainageways

Waiska and similar soils (0 to 3 percent of the map unit) in the higher landscape positions

Typical Profile

Munising

Oe—0 to 2 inches; brown, moderately decomposed plant material

Oa—2 to 4 inches; black, highly decomposed plant material

E-4 to 11 inches; brown fine sandy loam

Bhs—11 to 13 inches; dark brown fine sandy loam

Bs—13 to 18 inches; dark brown fine sandy loam

B/Ex—18 to 31 inches; reddish brown sandy loam and light brown loamy sand

Bt—31 to 51 inches; reddish brown sandy loam

C—51 to 80 inches; brown sandy loam

Abbave

Oa—0 to 1 inch; black, highly decomposed plant material

E—1 to 5 inches; reddish brown fine sandy loam

Bhs—5 to 11 inches; dark reddish brown fine sandy loam

Bs—11 to 18 inches; reddish brown gravelly fine sandy loam

B/Ex—18 to 28 inches; reddish brown gravelly fine sandy loam and gravelly fine sandy loam

2Cr—28 to 30 inches; reddish brown extremely flaggy fine sandy loam

2R—30 inches; reddish brown and pinkish gray, unweathered sandstone bedrock

Yalmer

Oa—0 to 1 inch; black, highly decomposed plant material

E-1 to 6 inches; reddish gray loamy sand

Bhs—6 to 13 inches; dark reddish brown loamy sand

Bs—13 to 28 inches; reddish brown loamy sand

2E/Bx—28 to 43 inches; reddish brown loamy sand and sandy loam

2B/Ex—43 to 52 inches; reddish brown sandy loam and loamy sand

2C—52 to 80 inches; reddish brown sandy loam

Soil Properties and Qualities

Parent material: Munising—loamy till deposits; Abbaye—loamy till deposits over sandstone; Yalmer—sandy outwash over loamy till deposits

Slope: 1 to 12 percent Surface runoff class: Low

Potential for frost action: Munising and Abbaye—moderate; Yalmer—low

Depth to restrictive feature: Munising—15 to 22 inches to a fragipan; Abbaye—20 to 40

inches to bedrock (lithic); Yalmer—20 to 30 inches to a fragipan

Drainage class: Moderately well drained

Available water capacity: Munising—about 7.6 inches to a depth of 60 inches;

Abbaye—about 4.2 inches to a depth of 60 inches; Yalmer—about 5.1 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Munising—moderate in the upper part, very slow in the fragipan, and moderate in the lower part; Abbaye—moderate; Yalmer—rapid in the upper part, very slow in the fragipan, and moderate in the lower part

Flooding: None

Depth to seasonal high water table: Munising—1.0 to 1.7 feet (April); Abbaye—1.0 to 2.7 feet (April, October); Yalmer—1.0 to 2.0 feet (April)

Ponding: None

Use and Management

Land use: Major use—woodland; other uses—wildlife habitat, building site development

Woodland

Major management concerns: Munising—seedling mortality, soil rutting, windthrow hazard, seasonal wetness; Abbaye—surface stones, seedling mortality, depth to bedrock; Yalmer—surface stones, seedling mortality, soil rutting, windthrow hazard, seasonal wetness

Building site development

Major management concerns: Munising—surface stones, cutbanks caving, slope, seasonal wetness; Abbaye—surface stones, large stones, depth to bedrock, slope, seasonal wetness; Yalmer—surface stones, cutbanks caving, slope, seasonal wetness

Septic tank absorption fields

Major management concerns: Munising—surface stones, slope, restricted permeability, depth to a fragipan, wetness; Abbaye—surface stones, large stones, slope, depth to bedrock, wetness; Yalmer—surface stones, slope, poor filtering capacity, restricted permeability, depth to a fragipan, wetness

Interpretive Groups

Land capability classification: Munising—6e; Abbaye—6e; Yalmer—7s

Michigan soil management group: Munising—3a-af; Abbaye—3/Ra; Yalmer—4a-a

Prime farmland category: Not prime farmland

Hydric soil status: Munising—not hydric; Abbaye—not hydric; Yalmer—not hydric

Forest habitat type: Munising and Yalmer—TM, ATD; Abbaye—ATD

183E—Munising-Abbaye-Yalmer complex, dissected, 8 to 35 percent slopes, stony

Setting

Landform: Hillslopes, ridges, and knolls on ground moraines

Map Unit Composition

Major components:

Munising, dissected, stony, and similar soils: 35 to 55 percent Abbaye, dissected, stony, and similar soils: 20 to 35 percent Yalmer, dissected, stony, and similar soils: 10 to 25 percent

Minor components:

Waiska and similar soils (0 to 7 percent of the map unit) in landscape positions similar to those of the Munising soil

Keweenaw and similar soils (0 to 4 percent of the map unit) in landscape positions similar to those of the Yalmer soil

Zeba, stony, and similar soils (0 to 2 percent of the map unit) in depressions and drainageways

Typical Profile

Munising

Oe—0 to 2 inches; brown, moderately decomposed plant material

Oa—2 to 4 inches; black, highly decomposed plant material

E-4 to 11 inches; brown fine sandy loam

Bhs—11 to 13 inches; dark brown fine sandy loam

Bs—13 to 18 inches; dark brown fine sandy loam

B/Ex—18 to 31 inches; reddish brown sandy loam and light brown loamy sand

Bt—31 to 51 inches; reddish brown sandy loam

C-51 to 80 inches; brown sandy loam

Abbaye

Oa—0 to 1 inch; black, highly decomposed plant material

E—1 to 5 inches; reddish brown fine sandy loam

Bhs—5 to 11 inches; dark reddish brown fine sandy loam

Bs—11 to 18 inches; reddish brown gravelly fine sandy loam

B/Ex—18 to 28 inches; reddish brown gravelly fine sandy loam and gravelly fine sandy loam

2Cr—28 to 30 inches; reddish brown extremely flaggy fine sandy loam

2R—30 inches; reddish brown and pinkish gray, unweathered sandstone bedrock

Yalmer

Oa—0 to 1 inch; black, highly decomposed plant material

E—1 to 6 inches; reddish gray loamy sand

Bhs—6 to 13 inches; dark reddish brown loamy sand

Bs—13 to 28 inches; reddish brown loamy sand

2E/Bx—28 to 43 inches; reddish brown loamy sand and sandy loam

2B/Ex—43 to 52 inches; reddish brown sandy loam and loamy sand

2C—52 to 80 inches; reddish brown sandy loam

Soil Properties and Qualities

Parent material: Munising—loamy till deposits; Abbaye—loamy till deposits over sandstone; Yalmer—sandy outwash over loamy till

Slope: 8 to 35 percent

Surface runoff class: Munising—high; Abbaye—medium; Yalmer—low

Potential for frost action: Munising—moderate; Abbaye—moderate; Yalmer—low

Depth to restrictive feature: Munising—15 to 22 inches to a fragipan; Abbaye—20 to 40

inches to bedrock (lithic); Yalmer—20 to 30 inches to a fragipan

Drainage class: Moderately well drained

Available water capacity: Munising—about 7.6 inches to a depth of 60 inches; Abbaye—about 4.2 inches to a depth of 60 inches; Yalmer—about 5.1 inches to a

depth of 60 inches

Shrink-swell potential: Low

Permeability: Munising—moderate in the upper part, very slow in the fragipan, and moderate in the lower part; Abbaye—moderate; Yalmer—rapid in the upper part, very slow in the fragipan, and moderate in the lower part

Flooding: None

Depth to seasonal high water table: Munising—1.0 to 1.7 feet (April); Abbaye—1.0 to 2.7 feet (April, October); Yalmer—1.0 to 2.0 feet (April)

Ponding: None

Use and Management

Land use: Major use—woodland; other use—wildlife habitat

Woodland

Major management concerns: Munising—erosion, seedling mortality, soil rutting, windthrow hazard, slope, seasonal wetness, dissected slopes; Abbaye—seedling mortality, slope, dissected slopes; Yalmer—erosion, seedling mortality, soil rutting, windthrow hazard, slope, seasonal wetness, dissected slopes

Building site development

Major management concerns: Munising—surface stones, cutbanks caving, slope, seasonal wetness; Abbaye—surface stones, large stones, depth to bedrock, slope, seasonal wetness; Yalmer—surface stones, cutbanks caving, slope, seasonal wetness

Septic tank absorption fields

Major management concerns: Munising—surface stones, slope, restricted permeability, depth to a fragipan, wetness; Abbaye—surface stones, large stones, slope, depth to bedrock, wetness; Yalmer—surface stones, slope, poor filtering capacity, restricted permeability, depth to a fragipan, wetness

Interpretive Groups

Land capability classification: Munising and Abbaye—7e; Yalmer—7s
Michigan soil management group: Munising—3a-af; Abbaye—3/Ra; Yalmer—4a-a
Prime farmland category: Not prime farmland

Hydric soil status: Munising—not hydric; Abbaye—not hydric; Yalmer—not hydric *Forest habitat type:* Munising—TM, ATD; Abbaye—ATD; Yalmer—ATD, TM

184C—Munising-Yalmer complex, dissected, 1 to 12 percent slopes

Setting

Landform: Knolls, ridges, and hillslopes on ground moraines

Map Unit Composition

Major components:

Munising, dissected, and similar soils: 55 to 90 percent Yalmer, dissected, and similar soils: 10 to 35 percent

Minor components:

Skanee and similar soils (0 to 5 percent of the map unit) in depressions and drainageways

Keweenaw and similar soils (0 to 3 percent of the map unit) in landscape positions similar to those of the Munising soil

Abbaye and similar soils (0 to 2 percent of the map unit) in landscape positions similar to those of the Yalmer soil

Typical Profile

Munising

Oe-0 to 2 inches; brown, moderately decomposed plant material

Oa—2 to 4 inches; black, highly decomposed plant material

E-4 to 11 inches; brown fine sandy loam

Bhs—11 to 13 inches; dark brown fine sandy loam

Bs—13 to 18 inches; dark brown fine sandy loam

B/Ex—18 to 31 inches; reddish brown sandy loam and light brown loamy sand

Bt—31 to 51 inches; reddish brown sandy loam

C—51 to 80 inches; brown sandy loam

Yalmer

Oa—0 to 1 inch; black, highly decomposed plant material

E—1 to 6 inches; reddish gray loamy sand

Bhs—6 to 13 inches; dark reddish brown loamy sand

Bs—13 to 28 inches; reddish brown loamy sand

2E/Bx—28 to 43 inches; reddish brown loamy sand and sandy loam

2B/Ex—43 to 52 inches; reddish brown sandy loam and loamy sand

2C—52 to 80 inches; reddish brown sandy loam

Soil Properties and Qualities

Parent material: Munising—loamy till deposits; Yalmer—sandy outwash over loamy till deposits

Slope: 1 to 12 percent

Surface runoff class: Munising—high; Yalmer—low

Potential for frost action: Munising—moderate; Yalmer—low

Depth to restrictive feature: Munising—15 to 22 inches to a fragipan; Yalmer—20 to 30

inches to a fragipan

Drainage class: Moderately well drained

Available water capacity: Munising—about 7.6 inches to a depth of 60 inches; Yalmer—

about 5.1 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Munising—moderate in the upper part, very slow in the fragipan, and moderate in the lower part; Yalmer—rapid in the upper part, very slow in the fragipan, and moderate in the lower part

Flooding: None

Depth to seasonal high water table: Munising—1.0 to 1.7 feet (April); Yalmer—1.0 to

2.0 feet (April) Ponding: None

Use and Management

Land use: Major use-woodland; other use-wildlife habitat

Woodland

Major management concerns: Seedling mortality, soil rutting, windthrow hazard, seasonal wetness

Building site development

Major management concerns: Munising—surface stones, slope, seasonal wetness; Yalmer—seedling mortality, soil rutting, cutbanks caving, windthrow hazard, seasonal wetness

Septic tank absorption fields

Major management concerns: Munising—surface stones, slope, restricted permeability, depth to a fragipan, wetness; Yalmer—surface stones, slope, poor filtering capacity, restricted permeability, depth to a fragipan, wetness

Interpretive Groups

Land capability classification: Munising—7e; Yalmer—4e

Michigan soil management group: Munising—3a-af; Yalmer—4a-a

Prime farmland category: Not prime farmland

Hydric soil status: Munising—not hydric; Yalmer—not hydric *Forest habitat type:* Munising—TM, ATD; Yalmer—ATD, TM

184E—Munising-Yalmer complex, dissected, 8 to 35 percent slopes

Setting

Landform: Knolls, ridges, and hillslopes on ground moraines

Map Unit Composition

Major components:

Munising, dissected, and similar soils: 55 to 90 percent Yalmer, dissected, and similar soils: 10 to 35 percent

Minor components:

Keweenaw and similar soils (0 to 5 percent of the map unit) in landscape positions similar to those of the Yalmer soil

Garlic and similar soils (0 to 3 percent of the map unit) in landscape positions similar to those of the Yalmer soil

Abbaye and similar soils (0 to 2 percent of the map unit) in landscape positions similar to those of the Munising soil

Typical Profile

Munising

Oe—0 to 2 inches; brown, moderately decomposed plant material

Oa—2 to 4 inches; black, highly decomposed plant material

E-4 to 11 inches; brown fine sandy loam

Bhs—11 to 13 inches; dark brown fine sandy loam Bs—13 to 18 inches; dark brown fine sandy loam

B/Ex—18 to 31 inches; reddish brown sandy loam and light brown loamy sand

Bt—31 to 51 inches; reddish brown sandy loam

C—51 to 80 inches; brown sandy loam

Yalmer

Oa—0 to 1 inch; black, highly decomposed plant material

E-1 to 6 inches; reddish gray loamy sand

Bhs—6 to 13 inches; dark reddish brown loamy sand

Bs—13 to 28 inches; reddish brown loamy sand 2E/Bx—28 to 43 inches; reddish brown loamy sand and sandy loam

2B/Ex-43 to 52 inches; reddish brown sandy loam and loamy sand

2C-52 to 80 inches; reddish brown sandy loam

Soil Properties and Qualities

Parent material: Munising—loamy till deposits; Yalmer—sandy outwash over loamy till

deposits

Slope: 8 to 35 percent Surface runoff class: High

Potential for frost action: Munising—moderate; Yalmer—low

Depth to restrictive feature: Munising—15 to 22 inches to a fragipan; Yalmer—20 to 30

inches to a fragipan

Drainage class: Moderately well drained

Available water capacity: Munising—about 7.6 inches to a depth of 60 inches; Yalmer—

about 5.1 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Munising—moderate in the upper part, very slow in the fragipan, and moderate in the lower part; Yalmer—rapid in the upper part, very slow in the fragipan, and moderate in the lower part

Flooding: None

Depth to seasonal high water table: Munising—1.0 to 1.7 feet (April); Yalmer—1.0 to

2.0 feet (April) Ponding: None

Use and Management

Land use: Major use—woodland; other use—wildlife habitat

Woodland

Major management concerns: Erosion, seedling mortality, soil rutting, windthrow hazard, slope, seasonal wetness, dissected slopes

Building site development

Major management concerns: Surface stones, cutbanks caving, slope, seasonal wetness

Septic tank absorption fields

Major management concerns: Munising—surface stones, slope, restricted permeability, depth to a fragipan, wetness; Yalmer—surface stones, slope, poor filtering capacity, restricted permeability, depth to a fragipan, wetness

Interpretive Groups

Land capability classification: 7e

Michigan soil management group: Munising—3a-af; Yalmer—4a-a

Prime farmland category: Not prime farmland

Hydric soil status: Munising—not hydric; Yalmer—not hydric

Forest habitat type: Munising and Yalmer—ATD, TM

185B—Munising-Skanee complex, dissected, 1 to 8 percent slopes

Setting

Landform: Knolls, ridges, and hillslopes on ground moraines

Map Unit Composition

Major components:

Munising, dissected, and similar soils: 45 to 80 percent Skanee, dissected, and similar soils: 10 to 45 percent

Minor components:

Gay and similar soils (0 to 5 percent of the map unit) in depressions and drainageways

Yalmer and similar soils (0 to 5 percent of the map unit) in landscape positions similar to those of the Munising soil

Assinins and similar soils (0 to 3 percent of the map unit) in landscape positions similar to those of the Skanee soil

Typical Profile

Munising

Oe-0 to 2 inches; brown, moderately decomposed plant material

Oa—2 to 4 inches; black, highly decomposed plant material

E-4 to 11 inches; brown fine sandy loam

Bhs—11 to 13 inches; dark brown fine sandy loam

Bs—13 to 18 inches; dark brown fine sandy loam

B/Ex—18 to 31 inches; reddish brown sandy loam and light brown loamy sand

Bt—31 to 51 inches; reddish brown sandy loam

C-51 to 80 inches; brown sandy loam

Skanee

Oa—0 to 2 inches; black, moderately decomposed plant material

E—2 to 8 inches; pinkish gray and reddish gray loamy sand

Bhs—8 to 15 inches; dark reddish brown and reddish brown sandy loam

E/Bx—15 to 29 inches; reddish brown sandy loam and weak red loamy sand

Bt-29 to 44 inches; reddish brown sandy loam

C—44 to 80 inches; reddish brown sandy loam

Soil Properties and Qualities

Parent material: Loamy till deposits

Slope: Munising—1 to 8 percent; Skanee—1 to 6 percent

Surface runoff class: Munising—medium; Skanee—very high

Potential for frost action: Munising—moderate; Skanee—high

Depth to restrictive feature: Munising—15 to 22 inches to a fragipan; Skanee—12 to 18 inches to a fragipan

Drainage class: Munising—moderately well drained; Skanee—somewhat poorly drained

Available water capacity: Munising—about 7.6 inches to a depth of 60 inches;

Skanee—about 3.5 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Moderate in the upper part, very slow in the fragipan, and moderate in the lower part

Flooding: None

Depth to seasonal high water table: Munising—1.0 to 1.7 feet (April); Skanee—0.5 foot to 1.2 feet (April, May)

Ponding: None

Use and Management

Land use: Major use—woodland; other use—wildlife habitat

Woodland

Major management concerns: Munising—seedling mortality, soil rutting, windthrow hazard, seasonal wetness; Skanee—seedling mortality, windthrow hazard

Building site development

Major management concerns: Munising—surface stones, cutbanks caving, slope, seasonal wetness; Skanee—surface stones, seasonal wetness

Septic tank absorption fields

Major management concerns: Surface stones, slope, restricted permeability, depth to a fragipan, wetness; Skanee—surface stones, restricted permeability, depth to a fragipan, seasonal wetness

Interpretive Groups

Land capability classification: Munising—6s; Skanee—2e

Michigan soil management group: Munising—3a-af; Skanee—3b-a

Prime farmland category: Not prime farmland

Hydric soil status: Munising—not hydric; Skanee—not hydric *Forest habitat type:* Munising—ATD, TM; Skanee—TMC, TMC-D

185C—Munising-Skanee complex, dissected, 4 to 18 percent slopes

Setting

Landform: Knolls, ridges, and hillslopes on ground moraines

Map Unit Composition

Major components:

Munising, dissected, and similar soils: 55 to 80 percent Skanee, dissected, and similar soils: 20 to 35 percent

Minor components:

Yalmer and similar soils (0 to 5 percent of the map unit) in ravines and in areas of bottom land

Assinins and similar soils (0 to 5 percent of the map unit) in the slightly lower landscape positions

Gay and similar soils (0 to 3 percent of the map unit) in depressions and drainageways

Typical Profile

Munisina

Oe—0 to 2 inches; brown, moderately decomposed plant material Oa—2 to 4 inches; black, highly decomposed plant material

E-4 to 11 inches; brown fine sandy loam

Bhs—11 to 13 inches; dark brown fine sandy loam Bs—13 to 18 inches; dark brown fine sandy loam

B/Ex—18 to 31 inches; reddish brown sandy loam and light brown loamy sand

Bt-31 to 51 inches; reddish brown sandy loam

C—51 to 80 inches; brown sandy loam

Skanee

Oa—0 to 2 inches; black, moderately decomposed plant material

E-2 to 8 inches; pinkish gray and reddish gray loamy sand

Bhs—8 to 15 inches; dark reddish brown and reddish brown sandy loam

E/Bx—15 to 29 inches; reddish brown sandy loam and weak red loamy sand

Bt—29 to 44 inches; reddish brown sandy loam

C—44 to 80 inches; reddish brown sandy loam

Soil Properties and Qualities

Parent material: Loamy till deposits

Slope: Munising—4 to 18 percent; Skanee—4 to 6 percent Surface runoff class: Munising—high; Skanee—very high

Potential for frost action: Munising—moderate; Skanee—high

Depth to restrictive feature: Munising—15 to 22 inches to a fragipan; Skanee—12 to 18 inches to a fragipan

Drainage class: Munising—moderately well drained; Skanee—somewhat poorly drained

Available water capacity: Munising—about 7.6 inches to a depth of 60 inches; Skanee—about 3.5 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Moderate in the upper part, very slow in the fragipan, and moderate in the lower part

Flooding: None

Depth to seasonal high water table: Munising—1.0 to 1.7 feet (April); Skanee—0.5 foot to 1.2 feet (April, May)

Ponding: None

Use and Management

Land use: Major use—woodland; other use—wildlife habitat

Woodland

Major management concerns: Munising—erosion, seedling mortality, soil rutting, windthrow hazard, slope, seasonal wetness; Skanee—seedling mortality, windthrow hazard

Building site development

Major management concerns: Munising—surface stones, cutbanks caving, slope, seasonal wetness; Skanee—surface stones, surface boulders, seasonal wetness

Septic tank absorption fields

Major management concerns: Munising—surface stones, slope, restricted permeability, depth to a fragipan, wetness; Skanee—surface stones, restricted permeability, depth to a fragipan, wetness

Interpretive Groups

Land capability classification: Munising—6s; Skanee—2e

Michigan soil management group: Munising—3a-af; Skanee—3b-a

Prime farmland category: Not prime farmland

Hydric soil status: Munising—not hydric; Skanee—not hydric Forest habitat type: Munising—ATD, TM; Skanee—TM, TMC, ATD

187A—Skanee-Gay complex, 0 to 3 percent slopes

Setting

Landform: Depression, drainageways, and knolls on ground moraines

Map Unit Composition

Major components:

Skanee and similar soils: 50 to 65 percent Gay and similar soils: 20 to 40 percent

Minor components:

Assinins and similar soils (0 to 6 percent of the map unit) in landscape positions similar to those of the Skanee soil

Cathro and similar soils (0 to 5 percent of the map unit) in landscape positions similar to those of the Gay soil

Munising and similar soils (0 to 3 percent of the map unit) in the higher landscape positions

Typical Profile

Skanee

Oa—0 to 2 inches; black, moderately decomposed plant material

E—2 to 8 inches; pinkish gray and reddish gray loamy sand

Bhs—8 to 15 inches; dark reddish brown and reddish brown sandy loam

E/Bx—15 to 29 inches; reddish brown sandy loam and weak red loamy sand

Bt—29 to 44 inches; reddish brown sandy loam C—44 to 80 inches; reddish brown sandy loam

Gay

Oa—0 to 4 inches; very dark gray muck

A—4 to 7 inches; dark gray fine sandy loam

Eg—7 to 11 inches; light brownish gray sandy loam

Bw—11 to 16 inches; brown sandy loam

BC—16 to 30 inches; reddish brown sandy loam

C—30 to 60 inches; reddish brown sandy loam

Soil Properties and Qualities

Parent material: Loamy till deposits

Slope: 0 to 3 percent

Surface runoff class: Skanee—very high; Gay—negligible

Potential for frost action: High

Depth to restrictive feature: Skanee—12 to 18 inches to a fragipan; Gay—more than

80 inches

Drainage class: Skanee—somewhat poorly drained; Gay—poorly drained

Available water capacity: Skanee—about 3.5 inches to a depth of 60 inches; Gay—about 8.1 inches to a depth of 60 inches

about 6.1 inches to a depth of

Shrink-swell potential: Low Permeability: Skanee—moderate in the upper part, very slow in the fragipan, and moderate in the lower part; Gay—moderate

Floodina: None

Depth to seasonal high water table: Skanee—0.5 foot to 1.2 feet (April, May); Gay—at the surface (January, February, March, April, May, October, November, December)

Months in which ponding does not occur: Gay—January, February, June, July, August, September, December; Skanee—all year

Depth and most likely period of ponding: Gay—0.5 foot (March, April, May, November)

Use and Management

Land use: Major use—woodland; other use—wildlife habitat

Woodland

Major management concerns: Skanee—seedling mortality, windthrow hazard; Gay—seedling mortality, windthrow hazard, wetness

Building site development

Major management concerns: Skanee—seasonal wetness; Gay—ponding, wetness

Septic tank absorption fields

Major management concerns: Skanee—restricted permeability, depth to a fragipan, seasonal wetness; Gay—ponding, wetness

Interpretive Groups

Land capability classification: Skanee—2e; Gay—5w Michigan soil management group: Skanee—3b-a; Gay—3c Prime farmland category: Not prime farmland Hydric soil status: Skanee—not hydric; Gay—hydric Forest habitat type: Skanee—TMC, TMC-D; Gay—TTS

192B—Nipissing-Arcadian-Rock outcrop complex, 0 to 8 percent slopes, very stony

Setting

Landform: Knolls, ridges, and hillslopes on lake benches and beach terraces on moraines

Map Unit Composition

Major components:

Nipissing, very stony, and similar soils: 40 to 90 percent Arcadian, very stony, and similar soils: 10 to 25 percent

Rock outcrop: 10 to 15 percent

Minor components:

Copper Harbor and similar soils (0 to 10 percent of the map unit) in the lower landscape positions

Bete Grise and similar soils (0 to 8 percent of the map unit) in depressions and drainageways

Gratiot and similar soils (0 to 5 percent of the map unit) in depressions and drainageways

Typical Profile

Nipissing

Oi—0 to 1 inch; black, moderately decomposed plant material

Oa—1 to 3 inches; black, highly decomposed plant material

E—3 to 4 inches; dark reddish gray very cobbly fine sandy loam

Bhs1—4 to 20 inches; dark reddish brown extremely cobbly fine sandy loam

Bhs2—20 to 29 inches; very dusky red extremely cobbly fine sandy loam

Bs—29 to 35 inches; dark reddish brown extremely cobbly fine sandy loam

2C—35 to 39 inches; fragmental material

3R—39 inches; conglomerate and basalt bedrock

Arcadian

Oa—0 to 3 inches; black, highly decomposed plant material

E—3 to 5 inches; dark brown very gravelly fine sandy loam

Bhs—5 to 12 inches; dark reddish brown very gravelly fine sandy loam

2R—12 inches; conglomerate bedrock

Soil Properties and Qualities

Parent material: Nipissing—loamy-skeletal over fragmental drift over conglomerate deposits over basalt bedrock; Arcadian—loamy-skeletal drift over basalt and conglomerate bedrock

Slope: 0 to 8 percent

Surface runoff class: Nipissing—negligible; Arcadian—low

Potential for frost action: Moderate

Depth to restrictive feature: Nipissing—20 to 40 inches to bedrock (lithic); Arcadian—

10 to 20 inches to bedrock (lithic)

Drainage class: Well drained

Available water capacity: Nipissing—about 3.1 inches to a depth of 60 inches;

Arcadian—about 2.0 inches to a depth of 60 inches

Shrink-swell potential: Low

Permeability: Nipissing—moderately rapid over very rapid; Arcadian—moderate

Flooding: None

Depth to seasonal high water table: More than 6.5 feet

Ponding: None

Use and Management

Land use: Major use—woodland; other uses—wildlife habitat, building site development, idle land

Note: Onsite investigation is needed to determine the suitability for specific uses.

Woodland

Major management concerns: Nipissing—rock fragments, seedling mortality, depth to bedrock, rock outcrops; Arcadian—surface stones, rock fragments, seedling mortality, windthrow hazard, depth to bedrock, rock outcrops

Building site development

Major management concerns: Nipissing—surface stones, large stones, depth to bedrock, slope; Arcadian—surface stones, depth to bedrock, slope

Septic tank absorption fields

Major management concerns: Nipissing—surface stones, large stones, slope, poor filtering capacity, depth to bedrock; Arcadian—surface stones, slope, depth to bedrock

Interpretive Groups

Land capability classification: 7s

Michigan soil management group: Nipissing—G/Ra; Arcadian—Ra

Prime farmland category: Not prime farmland

Hydric soil status: Nipissing—not hydric; Arcadian—not hydric Forest habitat type: Nipissing and Arcadian—TMC, AQVac

194B—Copper Harbor extremely gravelly sandy loam, 0 to 4 percent slopes, very stony

Setting

Landform: Knolls and beach ridges on lake bench terraces, outwash plains, and stream terraces

Map Unit Composition

Major components:

Copper Harbor, very stony, and similar soils: 85 to 95 percent

Minor components:

Nipissing and similar soils (0 to 10 percent of the map unit) in the higher landscape positions

Bete Grise and similar soils (0 to 7 percent of the map unit) in depressions and drainageways

Waiska and similar soils (0 to 5 percent of the map unit) in the slightly higher landscape positions

Typical Profile

Copper Harbor

Oa—0 to 1 inch; black, highly decomposed plant material

E—1 to 5 inches; dark reddish brown very gravelly loamy coarse sand

Bhs—5 to 14 inches; dark reddish brown extremely gravelly loamy coarse sand

Bs—14 to 30 inches; dark reddish brown and brown extremely gravelly coarse sand

BC—30 to 40 inches; brown very gravelly coarse sand and very gravelly loamy coarse sand

C-40 to 60 inches; reddish brown very gravelly sand

2C—60 to 80 inches; reddish brown very cobbly loamy coarse sand

Soil Properties and Qualities

Parent material: Sandy-skeletal glaciolacustrine and glaciofluvial deposits over sandy-skeletal or loamy-skeletal till deposits

Slope: 0 to 4 percent

Surface runoff class: Negligible Potential for frost action: Low

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

Available water capacity: About 4.2 inches to a depth of 60 inches

Shrink-swell potential: Moderate

Permeability: Very rapid

Flooding: None

Depth to seasonal high water table: 2.0 to 6.7 feet (April, May)

Ponding: None

Use and Management

Land use: Major use—woodland; other uses—wildlife habitat, building site development

Woodland

Major management concerns: Rock fragments, seedling mortality

Building site development

Major management concerns: Surface stones, cutbanks caving, seasonal wetness

Septic tank absorption fields

Major management concerns: Surface stones, poor filtering capacity, seasonal wetness

Interpretive Groups

Land capability classification: 6s Michigan soil management group: Ga

Prime farmland category: Not prime farmland

Hydric soil status: Not hydric Forest habitat type: ATD

195B—Copper Harbor-Bete Grise complex, 0 to 4 percent slopes, stony

Setting

Landform: Beach ridges and knolls on beach terraces, stream terraces, and outwash plains

Map Unit Composition

Major components:

Copper Harbor, stony, and similar soils: 45 to 60 percent Bete Grise, stony, and similar soils: 35 to 45 percent

Minor components:

Gratiot and similar soils (0 to 10 percent of the map unit) in landscape positions similar to those of the Bete Grise soil

Paavola and similar soils (0 to 7 percent of the map unit) in landscape positions similar to those of the Copper Harbor soil

Nipissing and similar soils (0 to 5 percent of the map unit) in the higher landscape positions

Typical Profile

Copper Harbor

Oa—0 to 1 inch; black, highly decomposed plant material

E—1 to 5 inches; dark reddish brown very gravelly loamy coarse sand

Bhs—5 to 14 inches; dark reddish brown extremely gravelly loamy coarse sand

Bs—14 to 30 inches; dark reddish brown and brown extremely gravelly coarse sand

BC—30 to 40 inches; brown very gravelly coarse sand, very gravelly loamy coarse sand

C-40 to 60 inches; reddish brown very gravelly sand

2C-60 to 80 inches; reddish brown very cobbly loamy coarse sand

Bete Grise

Oa—0 to 2 inches; dark reddish brown, highly decomposed plant material

E—2 to 5 inches; dark reddish gray very gravelly loamy sand

Bhs—5 to 17 inches; dark reddish brown very gravelly loamy coarse sand

Bs—17 to 32 inches; dark reddish brown and brown very gravelly coarse sand

BC—32 to 36 inches; brown extremely gravelly coarse sand

C-36 to 59 inches; reddish brown very gravelly sand

2C—59 to 80 inches; reddish brown very cobbly sand

Soil Properties and Qualities

Parent material: Copper Harbor—sandy-skeletal glaciolacustrine and glaciofluvial deposits over sandy-skeletal or loamy-skeletal till deposits; Bete Grise—sandy-skeletal glaciolacustrine and glaciofluvial deposits over sandy-skeletal or loamy-skeletal till deposits

Slope: 0 to 4 percent

Surface runoff class: Copper Harbor—negligible; Bete Grise—very low

Potential for frost action: Low

Depth to restrictive feature: More than 80 inches

Drainage class: Copper Harbor—moderately well drained; Bete Grise—somewhat

poorly drained

Available water capacity: Copper Harbor—about 4.2 inches to a depth of 60 inches;

Bete Grise—about 2.9 inches to a depth of 60 inches

Shrink-swell potential: Moderate

Permeability: Very rapid

Flooding: None

Depth to seasonal high water table: Copper Harbor—2.0 to 6.7 feet (April, May); Bete

Grise—0.5 foot to 6.7 feet (April, May)

Ponding: None

Use and Management

Land use: Major use—woodland; other uses—wildlife habitat, building site development

Woodland

Major management concerns: Copper Harbor—rock fragments, seedling mortality;

Bete Grise—surface stones, rock fragments, seedling mortality, windthrow hazard

Building site development

Major management concerns: Surface stones, cutbanks caving, seasonal wetness

Septic tank absorption fields

Major management concerns: Copper Harbor—surface stones, poor filtering capacity, seasonal wetness; Bete Grise—surface stones, poor filtering capacity, wetness

Interpretive Groups

Land capability classification: Copper Harbor—6s; Bete Grise—4w

Michigan soil management group: Copper Harbor—Ga; Bete Grise—Gbc

Prime farmland category: Not prime farmland

Hydric soil status: Copper Harbor—not hydric; Bete Grise—not hydric

Forest habitat type: Copper Harbor—ATD; Bete Grise—TMC-D

196B—Bete Grise-Tawas complex, 0 to 4 percent slopes, stony

Setting

Landform: Depressions and beach ridges on outwash plains, stream terraces, and lake bench terraces

Map Unit Composition

Major components:

Bete Grise, stony, and similar soils: 35 to 50 percent Tawas, stony, and similar soils: 35 to 45 percent

Minor components:

Gratiot and similar soils (0 to 9 percent of the map unit) in landscape positions similar to those of the Bete Grise soil

Sabattis and similar soils (0 to 8 percent of the map unit) in landscape positions similar to those of the Tawas soil

Deford and similar soils (0 to 7 percent of the map unit) in landscape positions similar to those of the Tawas soil

Typical Profile

Bete Grise

Oa—0 to 2 inches; highly decomposed plant material

E—2 to 5 inches; very gravelly loamy sand

Bhs—5 to 17 inches; very gravelly loamy coarse sand Bs—17 to 32 inches; very gravelly coarse sand

BC-32 to 36 inches; extremely gravelly coarse sand

C—36 to 59 inches; very gravelly sand 2C—59 to 80 inches; very cobbly sand

Tawas

Oa1—0 to 6 inches; black muck Oa2—6 to 25 inches; black muck

Cg—25 to 80 inches; dark grayish brown sand

Soil Properties and Qualities

Parent material: Bete Grise—sandy-skeletal glaciolacustrine and glaciofluvial deposits over sandy-skeletal or loamy-skeletal till deposits; Tawas—organic material over sandy drift

Slope: Bete Grise—0 to 4 percent; Tawas—0 to 1 percent

Surface runoff class: Negligible

Potential for frost action: Bete Grise—low; Tawas—high

Depth to restrictive feature: More than 80 inches

Drainage class: Bete Grise—somewhat poorly drained; Tawas—very poorly drained Available water capacity: Bete Grise—about 2.9 inches to a depth of 60 inches;

Tawas—about 11.5 inches to a depth of 60 inches Shrink-swell potential: Bete Grise—moderate; Tawas—low Permeability: Bete Grise—very rapid; Tawas—moderately rapid

Flooding: None

Depth to seasonal high water table: Bete Grise—0.5 foot to 6.7 feet (April, May); Tawas—at the surface (January, February, March, April, May, June, October, November, December)

Months in which ponding does not occur: Tawas—January, February, July, August, September, December

Depth and most likely period of ponding: Tawas—0.2 foot (March, April, May, June, October, November); Bete Grise—none

Use and Management

Land use: Major use—woodland; other use—wildlife habitat

Woodland

Major management concerns: Bete Grise—rock fragments, seedling mortality, windthrow hazard, seasonal wetness; Tawas—seedling mortality, windthrow hazard, excess humus, low strength

Building site development

Major management concerns: Bete Grise—surface stones, cutbanks caving, seasonal wetness; Tawas—cutbanks caving, ponding, wetness, low strength

Septic tank absorption fields

Major management concerns: Bete Grise—surface stones, poor filtering capacity, wetness; Tawas—surface stones, poor filtering capacity, ponding, low strength, wetness

Interpretive Groups

Land capability classification: Bete Grise—4w; Tawas—6w Michigan soil management group: Bete Grise—M/4c; Tawas—Gbc

Prime farmland category: Not prime farmland

Hydric soil status: Bete Grise—not hydric; Tawas—hydric Forest habitat type: Bete Grise—TMC-D; Tawas—TTM

301—Udorthents-Udipsamments, nearly level to very steep

Setting

Landform: Borrow areas, filled land, mine spoil, road cuts, and rail cuts on outwash plains, lake plains, and moraines

Map Unit Composition

Major components:

Udorthents and similar soils: 40 to 60 percent Udipsamments and similar soils: 40 to 45 percent

Typical Profile

Udorthents

C—0 to 80 inches; gravelly sandy loam

Udipsamments

C-0 to 80 inches; sand

Use and Management

Land use: Major uses—source of cut and fill for construction sites; other uses—idle

land

Note: Onsite investigation is needed to determine the suitability for specific uses.

Interpretive Groups

Land capability classification: None assigned Michigan soil management group: None assigned Prime farmland category: Not prime farmland

Hydric soil status: Not applicable Forest habitat type: None assigned

302—Histosols and Aquents, ponded

Setting

Landform: Marshes, bogs, swamps, and edges of lakes on outwash plains and lake plains; depressions on moraines

Map Unit Composition

Major components:

Histosols and similar soils: 40 to 60 percent Aquents and similar soils: 40 to 60 percent

Minor components:

Water (0 to 3 percent of the map unit)

Tawas and similar soils (0 to 3 percent of the map unit) in the slightly higher landscape positions

Typical Profile

Histosols

Oa—0 to 51 inches; black muck C—51 to 80 inches; variable

Aquents

C-0 to 80 inches; variable

Use and Management

Land use: Major use—wildlife habitat; other uses—idle land

Note: Onsite investigation is needed to determine the suitability for specific uses.

Interpretive Groups

Land capability classification: None assigned Michigan soil management group: None assigned Prime farmland category: Not prime farmland

Hydric soil status: Not applicable Forest habitat type: None assigned

303—Aquents and Dumps, stamp sand

Setting

Landform: Marshes, bogs, swamps, and edges of lakes on outwash plains and lake plains; depressions on moraines

Map Unit Composition

Major components:

Aquents and similar soils: 40 to 65 percent Dumps, stamp sand: 25 to 35 percent

Minor components:

Tawas and similar soils (0 to 10 percent of the map unit) in the slightly higher

landscape positions

Water (0 to 7 percent of the map unit)

Use and Management

Land use: Major uses—idle land; other use—wildlife habitat

Note: Onsite investigation is needed to determine the suitability for specific uses.

Interpretive Groups

Land capability classification: None assigned Michigan soil management group: None assigned Prime farmland category: Not prime farmland

Hydric soil status: Aquents—hydric; Dumps—not hydric

Forest habitat type: None assigned

310—Dumps, mine

Map Unit Composition

Major components:

Dumps, mine: 100 percent

General Definition

• This map unit occurs as areas of waste material from mining activities.

Use and Management

Land use: Major use—idle land

Note: Onsite investigation is needed to determine the suitability for specific uses.

Interpretive Groups

Land capability classification: None assigned Michigan soil management group: None assigned Prime farmland category: Not prime farmland

Hydric soil status: Not applicable Forest habitat type: None assigned

311—Dumps, stamp sand

Map Unit Composition

Major components:

Dumps, stamp sand: 100 percent

General Definition

This map unit occurs as areas of crushed waste material from mining activities.

Use and Management

Land use: Major use—idle land; other use—source of material for roads and building

site development

Note: Onsite investigation is needed to determine the suitability for specific uses.

Interpretive Groups

Land capability classification: None assigned Michigan soil management group: None assigned Prime farmland category: Not prime farmland

Hydric soil status: Not hydric Forest habitat type: None assigned

312—Pits, borrow

Map Unit Composition

Major components:

Pits, borrow: 100 percent

Use and Management

Land use: Major use—source of borrow material; other use—idle land

Note: Onsite investigation is needed to determine the suitability for specific uses.

Interpretive Groups

Land capability classification: None assigned Michigan soil management group: None assigned Prime farmland category: Not prime farmland

Hydric soil status: Not applicable Forest habitat type: None assigned

313—Dumps, sawdust

Map Unit Composition

Major components:

Dumps, sawdust: 100 percent

General Definition

• This map unit occurs as areas of waste material from sawmills.

Use and Management

Land use: Major use—idle land

Note: Onsite investigation is needed to determine the suitability for specific uses.

Interpretive Groups

Land capability classification: None assigned Michigan soil management group: None assigned Prime farmland category: Not prime farmland

Hydric soil status: Not applicable Forest habitat type: None assigned

Use and Management of the Soils

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

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

Information in this section can be used to plan the use and management of soils for crops and pasture; as forestland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; 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. 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

In this section, general management needed for crops and pasture is suggested, the system of land capability classification used by the Natural Resources Conservation Service is explained, and prime farmland is described.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under the heading "Detailed Soil Map Units." Specific information can be obtained from the local office of the Natural Resources Conservation Service, the Conservation District, or Michigan State University Extension or from a certified planning professional.

The following paragraphs describe the concerns affecting management of the soils in the survey area for agriculture. These concerns include water erosion, soil blowing, seasonal wetness, seasonal droughtiness, soil fertility, and tilth in the surface layer.

Water erosion and soil blowing are major management concerns on most of the cropland in the survey area. The loss of the surface layer through erosion is especially damaging on soils that have a loamy subsoil, such as Munising, Skanee, and Gay soils, and on soils that tend to be droughty, such as Rubicon and Deer Park soils. Erosion on cropland results in the sedimentation of streams and ditches. Controlling erosion minimizes this pollution and improves the quality of water for municipal and recreational uses and for fish and wildlife.

Water erosion is a serious hazard on all loamy soils that have slopes of 4 percent or more. Preparing a good seedbed is difficult on some of the soils because the friable surface layer has been eroded away in places.

Erosion-control practices provide a protective cover, reduce the runoff rate, and increase the rate of water infiltration. A cropping system that keeps a plant cover on the surface for extended periods reduces the susceptibility to erosion and preserves the productive capacity of the soil. On livestock farms, where pasture and hay are needed, including forage crops of grasses and legumes in the cropping sequence helps to control erosion in the more sloping areas, provides nitrogen for subsequent crops, and improves tilth. Conservation tillage helps to control runoff and erosion by leaving a protective cover of crop residue on the surface. Cover crops, diversions, and grassed waterways also help to control erosion.

Soil blowing is a hazard on the coarse textured, sandy soils in the survey area. An adequate plant cover, surface mulch, buffer strips, and tillage methods that leave crop residue on the surface help to control soil blowing. No-till farming, which is increasingly common in the county, is effective in controlling water erosion and soil blowing because it leaves crop residue on the surface. This method is suited to most of the soils in the county. When no-till farming methods are applied, eroding areas that otherwise are only marginally productive can become more productive.

No-till helps to maintain the productive capacity of nearly all cropland. In areas where no-till crops are grown, different methods of planting and of controlling insects and weeds are needed. Planting at the proper time, selecting herbicides that are suited to the existing vegetation, providing an adequate supply of plant nutrients, and selecting tillage systems based on soil characteristics are important management requirements.

Much of the permanent pasture in the county is in areas where erosion is a hazard. Control of erosion is particularly important when the pasture is seeded. Forage production and the extent to which the plant cover protects the surface of the soil are influenced by the number of livestock that the pasture supports, the length of time that they graze, and the distribution of rainfall. Good pasture management includes

stocking rates that maintain the key forage species, weed control, lime and fertilizer, pasture rotation, deferred grazing, timely grazing, and the strategic placement of water supplies for livestock.

Information about the design and application of erosion-control practices for different soils is available in local offices of the Conservation Districts.

Seasonal wetness is a major management concern in many areas used for crops and pasture. Drainage of cropland improves the air-water relationship in the root zone. In areas where drainage is poor, spring planting, spraying, and harvesting are delayed and controlling weeds is difficult. Properly designed subsurface drainage systems or surface drainage systems, or both, can be used to remove excess water.

Unless they are drained, some soils are naturally so wet that they cannot be used for the crops commonly grown in the county. In undrained areas, very poorly drained, poorly drained, and somewhat poorly drained soils are so wet that crops are damaged in most years. Gay, Sabattis, Skanee, and Gratiot soils are examples of poorly drained and somewhat poorly drained soils. Natural drainage is good most of the year in the moderately well drained Munising, Yalmer, and Croswell soils, but water tends to perch in these soils, and they dry slowly after rains. Small areas of the wetter soils along drainageways and in swales are commonly mapped as inclusions in some areas of these soils, especially where slopes are 0 to 12 percent. Artificial drainage is needed to maximize crop production in these areas.

The design of surface and subsurface drainage systems varies with the kind of soil. A combination of surface drainage and subsurface drainage is needed in most areas of poorly drained soils that are intensively cropped. The drains should be more closely spaced in soils that are moderately slowly to very slowly permeable than in the more permeable soils. Finding adequate outlets for subsurface drainage systems is difficult in many areas of Gay and Sabattis soils. Diversions can be used to remove surface runoff from some wet areas. Good soil tilth and an ample supply of organic matter also improve drainage. In low-lying areas the growing season is shortened by frost in the late spring and early fall.

If drainage is planned, care must be taken so that designated wetlands are not affected. Drainage of these areas could violate existing laws and regulations and may jeopardize receipt of USDA benefits. Information about the design of drainage systems and wetland compliance is available in local offices of the Natural Resources Conservation Service.

Seasonal droughtiness during dry periods is a concern affecting the management of some soils, including Abbaye, Dishno, Arcadian, and Burt soils. Moisture can be conserved by no-till farming and other kinds of conservation tillage, which leave all or part of the crop residue on the surface. Increasing the content of organic matter improves the available water capacity. Irrigation improves productivity. The droughty soils and many other soils in the county are suited to irrigation if they are properly managed.

Soil tilth is an important factor affecting the germination of seeds and the infiltration of water into the soil. Some of the soils used for crops have a coarse textured surface layer. Generally, the structure of such soils is weak. Regular additions of crop residue, manure, and other organic materials can improve tilth. Maintaining good tilth is difficult in the coarse soils, such as Gay, Skanee, Assinins, and Munising soils, because these soils stay wet or have a perched water table until late spring. If the soils are plowed when wet, they can become compacted. As a result, preparing a good seedbed is difficult. Cover crops, green manure crops, proper management of crop residue, conservation tillage, and applications of livestock manure help to maintain or improve tilth and the content of organic matter. Fall plowing and chisel plowing while the soils are at the proper moisture content can help to prevent deterioration of tilth in areas of nearly level, poorly drained or somewhat poorly drained soils. These practices also allow the soils to be tilled earlier the following spring. Fall plowing is not suitable,

however, on sloping soils or on soils that are subject to soil blowing. Good management is needed in intensively cropped areas and in areas that are cultivated year after year.

Allowing grazing by livestock during periods when the soils are wet results in soil compaction and poor tilth. The compaction caused by grazing during wet periods retards the growth of pasture plants. Proper harvesting methods, such as those for hay or silage, increase plant growth and help to prevent compaction.

Soil fertility is naturally medium or high in the loamy and coarse soils and low in most of the sandy soils on uplands. Many sandy soils naturally range from strongly acid to slightly acid. If lime has never been applied on these soils, applications of ground limestone are needed to raise the pH level sufficiently for good growth of alfalfa and other crops that grow well only in areas where reaction in the soils is nearly neutral. Available phosphorus and potash levels are naturally low or medium in most of these soils. On all soils, additions of lime and fertilizer should be based on the results of soil tests, on the needs of the crop, and on the expected level of yields (Michigan State University, 1985). The commonly grown crops that are suited to the soils and climate in Keweenaw County include rye, barley, and oats. Alfalfa, alone or in mixtures of clover and grasses, is the most common hay crop.

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 (USDA, 1961). The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for forestland or for engineering purposes.

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

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

Class 1 soils have slight limitations that restrict their use.

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

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

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

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

Capability units are soil groups within a subclass. The soils in a capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example, 2e-4 and 3e-6. These units are not given in all soil surveys.

The capability classification of map units in this survey area is given in the section "Detailed Soil Map Units" and under the heading "Interpretive Groups."

Also under the heading "Interpretive Groups" and in each map unit description, the Michigan soil management group is listed. The soils in each map unit are assigned to a group according to the dominant texture, the drainage class, and the major management concerns (Mokma, 1982). More detailed information about these groups is available from the local office of the Michigan State University Cooperative Extension Service.

Prime Farmland

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

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

A recent trend in land use in some parts of the country 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.

None of the soils in Keweenaw County have been designated as prime farmland.

Hydric Soils

In this section, hydric soils are defined and described and the hydric soils in the survey area are listed.

The three essential characteristics of wetlands are hydrophytic vegetation (fig. 15), hydric soils, and wetland hydrology (Cowardin and others, 1979; U.S. Army Corps of Engineers, 1987; National Research Council, 1995; Tiner, 1985). Criteria for all of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

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

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

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

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

Map units that are dominantly made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units dominantly made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

The following map units meet the definition of hydric soils and, in addition, have at least one of the hydric soil indicators. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (National Research Council, 1995; Hurt and others, 2002).

- 2—Lupton and Tawas soils, 0 to 1 percent slopes
- 3—Dawson and Loxley soils, 0 to 1 percent slopes
- 6—Skandia-Burt complex, 0 to 2 percent slopes
- 10—Cathro-Sabattis complex, 0 to 2 percent slopes, stony
- 13—Tawas-Deford complex, 0 to 4 percent slopes
- 302—Histosols and Aquents, ponded
- 303—Aquents and Dumps, stamp sand



Figure 15.—Marsh vegetation in a typical area of Cathro-Sabattis complex, 0 to 2 percent slopes, stony.

Map units that are made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

The following map units, in general, do not meet the definition of hydric soils because they do not have one of the hydric soil indicators. A portion of these map units, however, may include hydric soils. Onsite investigation is recommended to determine whether hydric soils occur and the location of the included hydric soils.

- 15B—Dawson-Croswell complex, 0 to 8 percent slopes
- 125A—Croswell-Au Gres complex, 0 to 3 percent slopes
- 126B—Au Gres-Deford-Croswell complex, 0 to 6 percent slopes
- 127A—Au Gres-Kinross complex, 0 to 3 percent slopes
- 136B—Borgstrom-Ingalls complex, 0 to 6 percent slopes
- 166B—Gratiot-Sabattis complex, 0 to 4 percent slopes, rocky, very bouldery
- 173C—Montreal-Paavola-Dishno complex, dissected, 1 to 12 percent slopes, very rocky, very bouldery
- 173E—Montreal-Paavola-Dishno complex, dissected, 8 to 35 percent slopes, very rocky, very bouldery
- 174B—Montreal-Dishno-Gratiot complex, 0 to 8 percent slopes, rocky, very bouldery
- 177A—Assinins sand, 0 to 4 percent slopes
- 185B—Munising-Skanee complex, dissected, 1 to 8 percent slopes
- 185C—Munising-Skanee complex, dissected, 4 to 18 percent slopes
- 187A—Skanee-Gay complex, 0 to 3 percent slopes
- 195B—Copper Harbor-Bete Gris complex, 0 to 4 percent slopes, stony
- 196B—Bete Grise-Tawas complex, 0 to 4 percent slopes, stony

Woodland Productivity and Management

The tables described in this section can help forest 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 forest management. Questions relating to forestland management practices and solutions to the soil concerns affecting forestland should be referred to the local Soil Conservation District or private consulting forestry professionals.

In table 5, the *potential productivity* of merchantable or *common* trees on a soil is expressed as a *site index* and as a *volume* number. The site index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that forest managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability. More detailed information regarding site index is available in the "National Forestry Manual," which is available in local offices of the Natural Resources Conservation Service or on the Internet.

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

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

The paragraphs that follow indicate the soil properties considered in rating the soils for forest management practices in table 5. 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.

Ratings in the column *erosion hazard* are based on the soil erosion factor K, slope, and content of rock fragments. 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 is expected, that the roads or

trails require frequent maintenance, and that costly erosion-control measures are needed.

Ratings in the column *suitability for site preparation* are based on slope, depth to a restrictive layer, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, poorly suited, or unsuited to this management activity. *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. *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. The part of the soil from the surface to a depth of about 1 foot is considered in the ratings.

The column *windthrow hazard* rates the likelihood that trees will be uprooted by wind because the soil is not deep enough for adequate root anchorage. The main restrictions that affect rooting are a seasonal high water table and the depth to bedrock, a fragipan, or other limiting layers. A rating of *slight* indicates that under normal conditions no trees are blown down by the wind. Strong winds may damage trees, but they do not uproot them. A rating of *moderate* indicates that some trees can be blown down during periods when the soil is wet and winds are moderate or strong. A rating of *severe* indicates that many trees can be blown down during these periods.

Ratings in the column *potential for seedling mortality* are based on flooding, ponding, depth to a water table, content of lime, reaction, salinity, available water capacity, soil moisture regime, soil temperature regime, aspect, and slope. The soils are described as having a low, moderate, or high potential for seedling mortality.

Table 6 provides expanded information concerning the operability of harvesting equipment. The table gives information about operating harvesting or thinning equipment in logging areas and on skid roads, log landings, and haul roads. Limitations are given for the most limiting season and for the preferred operating season. The most limiting season in this survey area generally is spring or late fall. In some areas, however, it is during dry periods in summer, when loose sand can limit trafficability on deep, excessively drained, sandy soils.

The preferred operating season is the period when harvesting or thinning causes the least amount of soil damage. This period generally is when the soil is not too wet or when the ground is frozen or partly frozen or has an adequate snow cover.

For limitations affecting construction of *haul roads*, the ratings are based on slope, flooding, 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 soils are described as well suited, moderately suited, and poorly suited. A rating of *well suited* indicates that no significant limitations affect construction activities, *moderately suited* indicates that one or more limitations can cause some difficulty in construction, and *poorly suited* 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 *logging areas* and skid trails 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.

Forest Habitat Types

The information in this section is derived from a field guide developed for the Upper Peninsula of Michigan and for northeastern Wisconsin (Coffman and others, 1983). The system of habitat classification used in the guide is based on the concept that plants occur in predictable patterns or communities and that these communities reflect differences in site characteristics.

Besides identifying the various habitat types by means of vegetative keys, the guide also provides information about the different possible successional stages for most of the habitat types. The successional stages depend largely on how the forest has been disturbed. They include the succession after logging in the original climax stands, the succession after logging in second-growth stands, and the succession in stands that have been both logged and burned.

The guide gives the suggested forest management for each of the successional stages. This management includes methods of thinning and harvest, site preparation, and measures that improve regeneration of the stands. The potential productivity, in terms of a site index and the mean annual volume in cubic feet per acre per year, is given for most of the habitat types. The development of the descriptive or interpretive information for some of the habitat types, however, is based on limited data and thus should be used with caution.

Habitat types have been determined for each map unit in the survey area. The primary habitat type is the one that is most common for the map unit. The secondary habitat type is less common. Habitat types are given at the end of the descriptions in the section "Detailed Soil Map Units." They also are listed in the section "Interpretive Groups," which follows the tables at the back of this survey.

The following paragraphs describe the habitat types in the survey area. They provide information about the potential climax species, some of the common understory species, and, if known, the potential productivity of the habitat type.

AQVac—Acer-Quercus-Vaccinium habitat type. This habitat type has a potential climax overstory dominated by red maple and red oak. Other species include eastern hemlock, white pine, balsam fir, and white spruce. The dominant ground flora includes lowbush blueberry, Canada blueberry, brackenfern, wintergreen, bigleaf aster, and hazelnut. The potential productivity is moderately low for northern hardwoods, moderate for aspen, and moderately high for red pine and jack pine.

ATD—Acer-Tsuga-Dryopteris habitat type. This habitat type has a potential climax overstory dominated by sugar maple. Other species include eastern hemlock and American basswood. Yellow birch, red maple, and American elm are in some areas. The dominant ground flora includes spinulose woodfern, twistedstalk, hairy Solomon's seal, scarlet alder, and Canada mayflower. The potential productivity is moderately high for northern hardwoods and high for aspen. The potential productivity for red pine plantations is high if plant competition is controlled.

ATD-CI—Acer-Tsuga-Dryopteris habitat type, Circaea-Impatiens phase. This habitat type has a potential climax overstory dominated by sugar maple. Other species include eastern hemlock and American basswood. Yellow birch, red maple, and American elm are in some areas. The dominant ground flora includes spinulose woodfern, rosy twistedstalk, Solomon's seal, scarlet alder, Canada mayflower, jewelweed, and alpine circaea. The potential productivity is moderately high for northern hardwoods and high for aspen. The potential productivity for red pine plantations is high if plant competition is controlled.

ATD-D—Acer-Tsuga-Dryopteris habitat type, Dryopteris phase. This habitat type has a potential climax overstory dominated by sugar maple. Other species include eastern hemlock and American basswood. Yellow birch, red maple, and American elm are in some areas. The dominant ground flora includes spinulose woodfern, rosy twistedstalk, Solomon's seal, scarlet alder, and Canada mayflower. The

potential productivity is moderately high for northern hardwoods and high for aspen. The potential productivity for red pine plantations is high if plant competition is controlled.

- **AVO—Acer-Viola-Osmorhiza habitat type.** This habitat type has a potential climax overstory dominated by sugar maple. Other species include eastern hemlock, American basswood, white ash, yellow birch, eastern hophornbeam, eastern hemlock, and American elm. The dominant ground flora includes Canada white violet, sweet cicely, spinulose woodfern, common ladyfern, hairy Solomon's seal, and rosy twistedstalk. The potential productivity is high for northern hardwoods and aspen. It also is high for red pine plantations if plant competition is controlled.
- AVO-CI—Acer-Viola-Osmorhiza habitat type, Circaea-Impatiens phase. This habitat type has a potential climax overstory dominated by sugar maple. Other species include American basswood, white ash, yellow birch, eastern hophornbeam, eastern hemlock, and American elm. The dominant ground flora includes Canada white violet, sweet cicely, spinulose woodfern, ladyfern, Solomon's seal, rosy twistedstalk, jewelweed, and alpine circaea. The potential productivity is high for northern hardwoods and aspen. It is high for red pine plantations if plant competition is controlled.
- **FI—Fraxinus-Impatiens habitat type.** This habitat type has a potential climax overstory dominated by white ash and red maple. Other species include sugar maple, black ash, and balsam fir. The dominant ground flora consists of spotted touchmenot, sedge, alpine circaea, spinulose woodfern, common ladyfern, scarlet alder, and field mint. The potential productivity for northern hardwoods is moderate.
- **FMC**—**Fraxinus-Mentha-Carex habitat type.** This habitat type has a potential climax overstory dominated by black ash and American elm. Other species include red maple and balsam fir. The dominant ground flora consists of sedge, field mint, speckled alder, and spotted touchmenot.
- PCS—Picea-Chamadaphne-Sphagnum habitat type. This habitat type has a potential climax overstory dominated by black spruce. Other species include tamarack and northern whitecedar. The dominant ground flora consists of leatherleaf, bog rosemary, pale laurel, sphagnum, Labrador tea, sedge, and Canada blueberry.
- **PVC—Pinus-Vaccinium-Carex habitat type.** This habitat type has a potential climax overstory dominated by jack pine. Other species include red pine, black spruce, and white pine. The dominant ground flora consists of sedge, low sweet blueberry, sweet fern, juneberry, Canada mayflower, and spinulose woodfern.
- **QAE—Quercus-Acer-Epigea habitat type.** This habitat type has a potential climax overstory dominated by red oak and red maple. Other species include white spruce and white pine. The dominant ground flora consists of brackenfern, trailing arbutus, wintergreen, lowbush blueberry, mosses, and Canada blueberry. The potential productivity is moderately low for aspen and moderate for red pine and jack pine.
- **TM—Tsuga-Maianthemum habitat type.** This habitat type has a potential climax overstory dominated by eastern hemlock, sugar maple, and red maple. Other species include yellow birch, white spruce, balsam fir, white pine, red oak, northern whitecedar, and American basswood. The dominant ground flora includes Canada mayflower, brackenfern, sedge, American starflower, and wild sarsaparilla. The potential productivity is moderate for northern hardwoods, moderately high for aspen, and high for red pine and jack pine.
- TMC—Tsuga-Maianthemum-Coptis habitat type. This habitat type has a potential climax overstory dominated by eastern hemlock and red maple. Sugar maple and yellow birch are common. Balsam fir, white spruce, and northern whitecedar are in some stands. The dominant ground flora consists of Canada mayflower, goldthread, yellow beadlily, bunchberry dogwood, American starflower, and spinulose woodfern. The potential productivity for northern hardwoods is moderate.

TMC-D—Tsuga-Maianthemum-Coptis habitat type, Dryopteris phase. This habitat type has a potential climax overstory dominated by eastern hemlock and red maple. Sugar maple and yellow birch are common. Other species include balsam fir, white spruce, and northern whitecedar. The dominant ground flora consists of long beechfern, oakfern, and Solomon's seal. The potential productivity is moderate for northern hardwoods and aspen.

TMC-Vac—Tsuga-Maianthemum-Coptis habitat type, Vaccinium phase. This habitat type has a potential climax overstory dominated by eastern hemlock and red maple. Sugar maple and yellow birch are common. Other species include balsam fir, white spruce, and northern whitecedar. The dominant ground flora consists of Canada mayflower, goldthread, yellow beadlily, bunchberry dogwood, American starflower, Canada blueberry, lowbush blueberry, and spinulose woodfern. The potential productivity is moderate for northern hardwoods and aspen.

TMV—**Tsuga-Maianthemum-Vaccinium habitat type.** This habitat type has a potential climax overstory dominated by eastern hemlock and red maple. Other species include sugar maple, white pine, balsam fir, and white spruce. Red oak is in some stands. The dominant ground flora includes Canada blueberry, wild sarsaparilla, brackenfern, Canada mayflower, lowbush blueberry, yellow beadlily, and wood betony. The potential productivity is moderate for northern hardwoods, moderately high for aspen, and high for red pine and jack pine.

TTM—Tsuga-Thuja-Mitella habitat type. This habitat type has a potential climax overstory dominated by northern whitecedar and eastern hemlock. Other species include balsam fir and red maple. The dominant ground flora includes sphagnum, naked miterwort, twinflower, goldthread, bunchberry dogwood, sedge, Canada mayflower, American starflower, and fringed polygala.

TTS—Tsuga-Thuja-Sphagnum habitat type. This habitat type has a potential climax overstory dominated by eastern hemlock and northern whitecedar. Other species include balsam fir and black spruce. Red maple is in some stands. The dominant ground flora includes sphagnum, goldthread, bunchberry dogwood, sedge, Canada mayflower, American starflower, and wood sorrel.

Plant Communities on Selected Soils

Table 7 lists the common trees and characteristic vegetation typically associated with selected soils in the survey area. The common plant names and the plant symbols are those on a national list of plant names (USDA/NRCS, PLANTS database).

Windbreaks and Environmental Plantings

Windbreaks protect livestock, buildings, yards, fruit trees, gardens, and cropland from wind and snow; help to keep snow on fields; and provide food and cover for wildlife. 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 erodibility of the soil.

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.

Table 8 shows the height that locally grown trees and shrubs are expected to reach in 20 years on soils in the survey area. The estimates in the table are based on measurements and observation of established plantings that have been given adequate care. They can be used as a guide in planning windbreaks and screens. Additional information on planning windbreaks and screens and planting and caring for trees and shrubs can be obtained from the local office of the Natural Resources

Conservation Service or of the Cooperative Extension Service or from a commercial nursery.

Recreation

Recreation is a major land use in Keweenaw County. Much of the land in the county is used for nonintensive recreational purposes, such as fishing, hunting, canoeing, camping, hiking, and sightseeing (fig. 16). Winter activities include cross-country and downhill skiing and snowmobiling. Many areas are developed for intensive recreational uses, such as parks, campgrounds, and picnic areas. Because of an expanding population and increasing amounts of leisure time, more land is likely to be converted to various types of recreational areas.

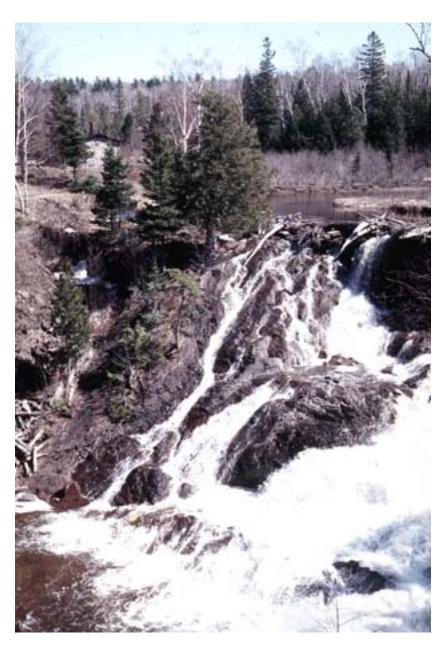


Figure 16.—The Eagle River Falls are among the many scenic areas in Keweenaw County.

The soils of the survey area are rated in tables 9a and 9b 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 9a and 9b 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.

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

Keweenaw County has a variety of wildlife. The principal species are white-tailed deer, black bear, moose, coyote, gray wolf, gray squirrel, fox squirrel, cottontail rabbit, snowshoe hare, bobcat, ruffed grouse, and various other birds. Many lakes and streams in the county provide good fishing for trout, northern pike, walleye, smallmouth bass, and a variety of other game fish. Habitat for wildlife in the county ranges from farmland to northern hardwood climax forests. Much of the habitat can be improved by establishing more water areas and by increasing the extent of vegetation that provides a variety of food and cover.

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 10, 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, orchardgrass, 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 bluestem, goldenrod, ferns, clubmoss, and cattails.

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, apple, beech, dogwood, and hazelnut. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are Russian-olive, blueberry, 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. and cedar.

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, wild rice, rushes, sedges, and reeds.

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

The habitat for various kinds of wildlife is described in the following paragraphs. Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. Wildlife attracted to these areas include sandhill cranes, sharptail grouse, meadowlark, marsh hawk, 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, shore birds, muskrat, mink, and beaver.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. 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. Construction activities on building sites may be regulated by local, State, and Federal laws. All necessary permits should be obtained before construction begins. Questions about management practices and solutions relating to the various soil concerns affecting building should be referred to the appropriate local permitting or regulatory officials.

Tables 11a and 11b show the degree and kind of soil limitations that affect dwellings with and without basements, small commercial buildings, local roads and streets, and shallow excavations.

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.

Sanitary Facilities

The construction of sanitary facilities may be regulated by local, State, and Federal laws. All necessary permits should be obtained before construction begins. Questions relating to management practices and solutions applicable to the soil concerns affecting sanitary facilities should be referred to the appropriate local permitting official, health department, building and zoning office, or regulatory officials.

Tables 12a and 12b 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 soil blowing.

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

Tables 13a and 13b give information about the soils as potential sources of reclamation material, roadfill, topsoil, gravel, and sand. Normal compaction, minor processing, and other standard construction practices are assumed.

In table 13a, the soils are rated *good, fair,* or *poor* as potential sources of reclamation material, roadfill, and topsoil. The features that limit the soils as sources of these materials are specified in the table. The numerical ratings given after the specified features indicate the degree to which the features limit the soils as sources of reclamation material, roadfill, or topsoil. The lower the number, the greater the limitation.

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

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

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

The ratings are based on the amount of suitable material and on soil properties that affect the ease of excavation and the performance of the material after it is in place.

The thickness of the suitable material is a major consideration. The ease of excavation is affected by large stones, depth to a water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the AASHTO classification of the soil) and linear extensibility (shrink-swell potential).

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area. The ratings are based on the soil properties that affect plant growth; the ease of excavating, loading, and spreading the material; and reclamation of the borrow area. Toxic substances, soil reaction, and the properties that are inferred from soil texture, such as available water capacity and fertility, affect plant growth. The ease of excavating, loading, and spreading is affected by rock fragments, slope, depth to a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, depth to a water table, rock fragments, depth to bedrock or a cemented pan, and toxic material.

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

Gravel and sand 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 13b, only the likelihood of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material. The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the Unified classification of the soil), the thickness of suitable material, and the content of rock fragments. If the bottom layer of the soil contains sand or gravel, the soil is considered a likely source regardless of thickness. The assumption is that the sand or gravel layer below the depth of observation exceeds the minimum thickness.

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

Water Management

Tables 14a and 14b give information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for grassed waterways; drainage; 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).

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

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock or to other layers that affect the rate of water movement; permeability; depth to a zone in which the soil moisture status is wet or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and the potential for frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts. Availability of drainage outlets is not considered in the ratings.

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 15 gives the engineering classifications and the range of engineering 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.

Physical Properties

Table 16 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.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In the table, 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 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 shrinkswell 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 (Ksat) refers to the ability of a soil to transmit water or air. The term "permeability," as used in soil surveys, indicates saturated hydraulic conductivity (Ksat). 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.

Erosion factors are shown in table 16 as the K factor (K 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 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.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are described in the "National Soil Survey Handbook" (USDA/NRCS, National Soil Survey Handbook).

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

Chemical Properties

Table 17 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.

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.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 17, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained 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.

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.

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

Soil moisture status is an estimate of the fluctuating water content in a soil. It greatly influences vegetation type and plant growth; physical properties of soils, such as permeability, workability, strength, linear extensibility, and frost action; and chemical interactions and transport. Many other properties, qualities, and interpretations also are affected. Soil moisture status is important in the classification of soils, wetland, and habitat.

Table 18 gives estimates of soil moisture for each component of a map unit at various depths for every month of the year. The depths displayed are representative values that are indicative of conditions that occur most commonly. These representative values of dry, moist, and wet can vary greatly from month to month and from year to year. *Dry* indicates a moisture condition under which most plants (especially crops) cannot extract water for growth. *Moist* indicates a moisture condition under which soil water is most readily available for plant growth. *Wet* indicates a condition under which water will stand in an unlined hole or at least a condition under which the soil is too wet for the growth of most agricultural species. A moisture status of 4.0-6.7 (wet) indicates that most of the time the component is saturated at some depth between 4.0 feet and 6.7 feet during the month designated. In some years the soil may be saturated at a depth of less than 4.0 feet or more than 6.7 feet; however, field observations indicate that the soil will be saturated between these depths in most years. In the summer, the soil may show the effects of drying plus intermittent rains that result in a moist or wet layer over a dry layer that gets moist or wet again.

Table 19 gives estimates of additional 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 (fig. 17).

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



Figure 17.—Spring runoff in an area of Montreal-Paavola-Dishno complex, dissected, 8 to 35 percent slopes, very rocky, very bouldery.

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 19 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.

The table also shows the *kind of water table*, that is, perched or apparent. An apparent water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. A *perched* water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

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 19 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 20 gives estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

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

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

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

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

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

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

Characterization Data for Selected Soils

Some of the major soils in Keweenaw County were sampled by the Soil Survey Laboratory at the National Soil Survey Center in Lincoln, Nebraska. The laboratory data obtained from the soil samples included analyses of particle-size distribution, rock fragments, bulk density, and moisture retention. Complete chemical analyses also were performed on each sample, and spodic horizon criteria were tested on the appropriate samples. Standard procedures of the National Cooperative Soil Survey were used for all analyses (USDA/NRCS, 2004).

These data were used in classifying and correlating the soils and in evaluating their behavior, especially under forestry uses. Several pedons were selected as representative of their series, and some were sampled for their unique characteristics. These pedons and their laboratory identification numbers are as follows: Bete Grise (S01MI-083-002), Betsy Bay (S00MI-083-003), Copper Harbor (S01MI-083-001), Lac La Belle (S01MI-083-001), Montreal (S00MI-083-002), and Trimountain (S00MI-083-001).

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (Soil Survey Staff, 1998 and 1999). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 21 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 Spodosol.

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 Aquods (*Aqu*, meaning water, plus *od*, from Spodosol).

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 Endoaquods (*Endo*, meaning within, plus *aquod*, the suborder of the Spodosols that has an aquic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other taxonomic class. Each subgroup is identified by one or more adjectives preceding the name of the great group. An example is Typic Endoaquods.

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

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.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows

standards in the "Soil Survey Manual" (Soil Survey Division Staff, 1993). Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" (Soil Survey Staff, 1999) and in "Keys to Soil Taxonomy" (Soil Survey Staff, 1998). Unless otherwise indicated, colors in the descriptions are for moist soil. More information about the soil series in Keweenaw County, including the range of important characteristics of the soils in the series, is available in the Official Soil Series Descriptions (OSDs) at http://soils.usda.gov.

Abbaye Series

The Abbaye series consists of moderately deep, moderately well drained soils on ground moraines underlain by sandstone. These soils formed in loamy till. Permeability is moderate. Slopes range from 1 to 35 percent.

Typical pedon of Abbaye sandy loam (fig. 18), 1,200 feet south and 2,550 feet west of the northeast corner of sec. 33, T. 52 N., R. 33 W., Baraga Township, Baraga County, Michigan:

- Oi—0 to 2 inches; recent hardwood litter.
- A—2 to 4 inches; dark reddish brown (5YR 2/2) sandy loam, gray (5YR 5/1) dry; weak fine granular structure; friable; many roots; about 5 percent pebbles; very strongly acid; abrupt smooth boundary.
- E—4 to 11 inches; brown (7.5YR 5/2) loamy sand; weak medium subangular blocky structure; friable; many roots; about 5 percent pebbles; strongly acid; clear irregular boundary.
- Bs1—11 to 16 inches; dark reddish brown (5YR 3/4) sandy loam; moderate medium subangular blocky structure; friable; few roots; few fragments of strongly cemented ortstein; about 5 percent pebbles; strongly acid; clear irregular boundary.
- Bs2—16 to 23 inches; reddish brown (5YR 4/4) sandy loam; moderate medium subangular blocky structure; friable; few roots; about 5 percent pebbles; moderately acid; clear wavy boundary.
- B/E´—23 to 30 inches; dark reddish brown (2.5YR 3/4) sandy loam (Bt) that has reddish brown (5YR 5/3) loamy sand (E´) coatings on peds; weak coarse subangular blocky structure; firm; about 5 percent pebbles; moderately acid; abrupt smooth boundary.
- 2R—30 inches; sandstone bedrock.

Alcona Series

The Alcona series consists of very deep, well drained soils on lake plains, till plains, and stream terraces. These soils formed in loamy and sandy deposits. Permeability is moderate. Slopes range from 1 to 35 percent.

Typical pedon of Alcona loamy fine sand, 2,100 feet west and 100 feet north of the southeast corner of sec. 11, T. 48 N., R. 36 W., Duncan Township, Houghton County, Michigan:

- A—0 to 3 inches; dark reddish brown (5YR 3/2) loamy fine sand, pinkish gray (5YR 6/2) dry; moderate fine granular structure; friable; many roots; very strongly acid; abrupt smooth boundary.
- E—3 to 6 inches; pinkish gray (5YR 6/2) loamy fine sand; weak thin platy structure; friable; common roots; strongly acid; abrupt wavy boundary.
- Bhs—6 to 7 inches; dark reddish brown (5YR 3/3) loamy fine sand; weak fine subangular blocky structure; friable; common roots; very strongly acid; clear wavy boundary.

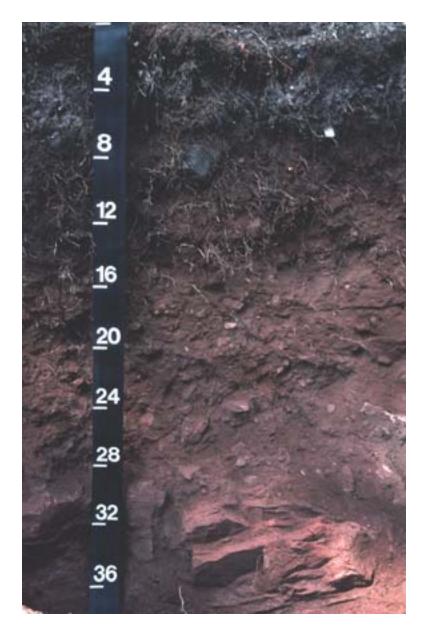


Figure 18.—Typical profile of an Abbaye soil. Bedrock is at a depth of 20 to 40 inches. Depth is marked in inches.

- Bs1—7 to 11 inches; dark reddish brown (5YR 3/4) loamy fine sand; weak fine subangular blocky structure; friable; common roots; strongly acid; clear wavy boundary.
- Bs2—11 to 19 inches; reddish brown (5YR 4/4) loamy fine sand; weak fine subangular blocky structure; friable; few roots; moderately acid; clear wavy boundary.
- E&Bt—19 to 48 inches; reddish brown (5YR 5/4) loamy fine sand (E); weak thin platy structure parting to weak fine subangular blocky; friable; lamellae of reddish brown (7.5YR 4/4) fine sandy loam (Bt); weak fine subangular blocky structure; friable; few distinct clay films on faces of peds; few roots; moderately acid; gradual wavy boundary.
- C—48 to 80 inches; stratified, reddish brown (5YR 5/3) fine sand, loamy fine sand, and fine sandy loam; massive; very friable; neutral.

Arcadian Series

The Arcadian series consists of shallow, well drained, moderately permeable soils on rocky knolls and ridges, on moraines, on till plains, and on postglacial lake shorelines. These soils formed in gravelly or cobbly loamy material overlying igneous or metamorphic bedrock. Slopes range from 0 to 90 percent.

Typical pedon of Arcadian very gravelly very fine sandy loam, 2,180 feet north and 250 feet east of the southwest corner of sec. 31, T. 59 N., R. 29 W., Eagle Harbor Township, Keweenaw County, Michigan; USGS Delaware 7.5-minute topographic quadrangle; lat. 47 degrees 27 minutes 58 seconds N. and long. 87 degrees 55 minutes 15 seconds W.

- Oa—0 to 3 inches; black (7.5YR 2.5/1), well decomposed forest litter.
- E—3 to 5 inches; dark brown (7.5YR 4/2) very gravelly very fine sandy loam, gray (7.5YR 5/1) dry; moderate medium granular structure; friable; many fine and medium and common coarse roots; 45 percent gravel, 5 percent cobbles, and 1 percent stones; strongly acid, abrupt wavy boundary.
- Bhs—5 to 12 inches; dark reddish brown (7.5YR 3/3) very gravelly very fine sandy loam; moderate medium subangular blocky structure; friable; many fine, common medium, and few coarse roots; 50 percent gravel, 5 percent cobbles, and 1 percent stones; strongly acid; abrupt wavy boundary.
- 2R—12 inches; conglomerate bedrock.

Arnheim Series

The Arnheim series consists of deep, poorly drained, moderately permeable soils on flood plains. These soils formed in stratified alluvium. Permeability is moderate. Slopes are 0 to 1 percent.

Typical pedon of Arnheim mucky silt loam, 2,000 feet west and 125 feet north of the southeast corner of sec. 2, T. 51 N., R. 34 W., Baraga Township, Baraga County, Michigan:

- A—0 to 5 inches; dark brown (7.5YR 3/2) mucky silt loam, dark grayish brown (10YR 4/2) dry; moderate medium granular structure; friable; many roots; moderately acid; clear smooth boundary.
- Cg—5 to 10 inches; dark grayish brown (10YR 4/2) silt loam; many coarse distinct strong brown (7.5YR 5/6) masses of iron accumulation; moderate medium subangular blocky structure; friable; many roots; moderately acid; clear smooth boundary.
- C1—10 to 15 inches; reddish brown (5YR 4/3) very fine sandy loam; many coarse distinct strong brown (7.5YR 5/6) masses of iron accumulation; massive; firm; common roots; moderately acid; abrupt smooth boundary.
- C2—15 to 24 inches; reddish brown (5YR 4/3) silt loam; common medium distinct strong brown (7.5YR 5/6) masses of iron accumulation; massive; firm; few roots; moderately acid; abrupt smooth boundary.
- C3—24 to 60 inches; reddish brown (5YR 4/3), stratified loamy fine sand, very fine sandy loam, and fine sandy loam; massive; friable; strongly acid.

Assinins Series

The Assinins series consists of deep, somewhat poorly drained soils on till plains and moraines. These soils formed in sandy and loamy glacial till. Permeability is rapid in the upper part of the profile, moderately slow or moderate in the next part, and moderate in the lower part. Slopes range from 0 to 4 percent.

- Typical pedon of Assinins sand, 660 feet north and 50 feet east of the center of sec. 17, R. 51 N., R. 33 W., Baraga Township, Baraga County, Michigan:
- Oe—0 to 2 inches; black (5YR 2/1), partially decomposed leaf litter; strong medium granular structure; very friable; many fine and medium roots; very strongly acid; abrupt smooth boundary.
- E—2 to 8 inches; brown (7.5YR 5/2) sand; many medium faint dark grayish brown (10YR 4/2) and light brownish gray (10YR 6/2) masses of iron accumulation; weak fine subangular blocky structure parting to weak medium granular; very friable; many fine and medium roots; about 5 percent pebbles; very strongly acid; abrupt wavy boundary.
- Bs1—8 to 13 inches; reddish brown (5YR 4/3) sand; weak fine subangular blocky structure parting to weak medium granular; very friable; common fine and medium roots; about 5 percent pebbles; strongly acid; abrupt wavy boundary.
- Bs2—13 to 22 inches; brown (7.5YR 4/4) sand; common fine distinct strong brown (7.5YR 5/6) and many medium distinct yellowish brown (10YR 5/4) masses of iron accumulation; weak fine subangular blocky structure; very friable; common fine roots; about 5 percent pebbles; strongly acid; abrupt wavy boundary.
- 2B/E—22 to 31 inches; reddish brown (2.5YR 4/4) sandy clay loam (Bt) that has pinkish gray (5YR 6/2) loamy sand (E) on the faces of peds; many medium distinct strong brown (7.5YR 5/6 and 5/8) masses of iron accumulation; weak medium subangular blocky structure; firm; few fine roots; common pores; reddish brown (5YR 5/3) clay films in pores; about 5 percent pebbles; moderately acid; clear wavy boundary.
- 2C—31 to 60 inches; reddish brown (2.5YR 4/4) sandy loam; few fine distinct pinkish gray (5YR 6/2) masses of iron accumulation; weak fine subangular blocky structure; friable; about 5 percent pebbles; moderately acid.

Au Gres Series

The Au Gres series consists of very deep, somewhat poorly drained, rapidly permeable soils on outwash plains, till-floored lake plains, and outwash terraces. These soils formed in sandy glaciofluvial and glaciolacustrine deposits. Slopes range from 0 to 6 percent.

Typical pedon of Au Gres sand, 2,550 feet north and 2,450 feet east of the southwest corner of sec. 30, T. 45 N., R. 24 W., Forsyth Township, Marquette County, Michigan; USGS Republic SW topographic quadrangle; lat. 46 degrees 16 minutes 51 seconds N. and long. 87 degrees 53 minutes 29 seconds W.

- Oa—0 to 2 inches; black (N 2.5/0), well decomposed forest litter; moderate very fine granular structure; very friable; many very fine to coarse roots; very strongly acid; abrupt smooth boundary.
- E—2 to 8 inches; dark reddish gray (5YR 4/2) sand, pinkish gray (5YR 6/2) dry; weak fine subangular blocky structure; very friable; many very fine to coarse roots; about 1 percent gravel; very strongly acid; abrupt wavy boundary.
- Bhs—8 to 11 inches; dark reddish brown (5YR 2.5/2) sand; strong fine subangular blocky structure; friable; many very fine to coarse roots; vertical tongues of dark reddish brown (5YR 3/2) and reddish brown (5YR 4/4) strongly cemented ortstein occupy 25 percent (10 of 40 inches) of the horizon; tongues are 2 to 4 inches wide and 5 to 16 inches apart and extend into the Bs1 horizon; common medium distinct yellowish red (5YR 5/6) masses of iron accumulation; about 1 percent gravel; strongly acid; clear irregular boundary.
- Bs1—11 to 13 inches; dark reddish brown (5YR 3/4) sand; moderate fine subangular blocky structure; friable; many very fine to coarse roots; vertical tongues of dark reddish brown (5YR 3/2) and reddish brown (5YR 4/4) strongly cemented ortstein

extend into the horizon from the Bhs horizon and occupy 30 percent (12 of 40 inches) of the horizon; tongues are 3 to 4 inches wide and 5 to 12 inches apart and extend into the Bs2 horizon to a depth of 24 inches; common fine distinct red (2.5YR 4/6) masses of iron accumulation; about 1 percent gravel; strongly acid; clear wavy boundary.

- Bs2—13 to 27 inches; yellowish red (5YR 5/6) sand; weak medium subangular blocky structure; very friable; common very fine to medium roots; vertical tongues of reddish brown (5YR 4/4) and yellowish red (5YR 4/6) strongly cemented ortstein extend into the horizon from the Bs1 horizon and occupy 40 percent (16 of 40 inches) of the horizon; tongues are 4 to 6 inches wide and 3 to 4 inches apart; common medium faint yellowish red (5YR 5/8) masses of iron accumulation; about 1 percent gravel; strongly acid; gradual wavy boundary.
- C—27 to 80 inches; brown (7.5YR 5/4) sand; single grain; loose; few very fine to medium roots; common fine faint strong brown (7.5YR 5/6) masses of iron accumulation; about 1 percent gravel; strongly acid.

Bete Grise Series

The Bete Grise series consists of very deep, somewhat poorly drained soils on glacial lake benches, stream terraces, and outwash plains underlain by gravelly sandy loam till. The upper part of the profile formed in cobbly, gravelly, and sandy deposits. The substratum formed in gravelly sandy loam till. Permeability is very rapid. Slopes range from 0 to 4 percent.

Typical pedon of Bete Grise very gravelly loamy sand, 1,196 feet west and 914 feet south of the northeast corner of sec. 5, T. 57 N., R. 32 W., Allouez Township, Keweenaw County, Michigan; USGS Ahmeek 7.5-minute topographic quadrangle; lat. 47 degrees 22 minutes 13.51 seconds N. and long. 88 degrees 23 minutes 18.73 seconds W.

- Oa—0 to 2 inches; dark reddish brown (5YR 2.5/1), well decomposed forest litter; abrupt smooth boundary.
- E—2 to 5 inches; dark reddish gray (5YR 4/2) very gravelly loamy sand, reddish gray (5YR 5/2) dry; moderate fine subangular blocky structure; friable; many very fine to coarse roots; few fine prominent strong brown (7.5YR 4/6) masses of iron accumulation; 35 percent gravel, 10 percent cobbles; moderately acid; clear wavy boundary.
- Bhs—5 to 17 inches; dark reddish brown (5YR 3/3) very gravelly loamy coarse sand; weak fine subangular blocky structure; friable; common very fine to medium and few coarse roots; few fine prominent yellowish red (5YR 4/6) masses of iron accumulation; dark reddish brown (5YR 3/3) moderately cemented ortstein; ortstein occupies 15 percent of the horizon; 30 percent gravel, 10 percent cobbles; moderately acid; gradual irregular boundary.
- Bs1—17 to 26 inches; dark reddish brown (5YR 3/4) very gravelly coarse sand; weak medium subangular blocky structure; friable; common very fine and fine and few medium roots; dark reddish brown (5YR 3/3) moderately cemented ortstein; ortstein occupies 10 percent of the horizon; common fine prominent yellowish red (7.5YR 4/6) masses of iron accumulation; 30 percent gravel, 10 percent cobbles; moderately acid; gradual irregular boundary.
- Bs2—26 to 32 inches; brown (7.5YR 4/4) extremely gravelly sand; weak medium subangular blocky structure; very friable; few very fine and fine roots; brown (7.5YR 4/4) ortstein occupies 5 of the horizon; common fine distinct strong brown (7.5YR 4/6) masses of iron accumulation; 60 percent gravel, 5 percent cobbles; moderately acid; gradual wavy boundary.

- BC—32 to 36 inches; brown (7.5YR 4/3) extremely gravelly coarse sand; weak medium subangular blocky structure; very friable; few very fine and fine roots; common fine prominent strong brown (7.5YR 4/6) masses of iron accumulation; 60 percent gravel, 5 percent cobbles; moderately acid; clear smooth boundary.
- C1—36 to 59 inches; reddish brown (5YR 4/3) very gravelly sand; single grain; loose; few fine prominent strong brown (7.5YR 4/6) masses of iron accumulation; 40 percent gravel, 10 percent cobbles; moderately acid; clear smooth boundary.
- 2C2—59 to 80 inches; reddish brown (5YR 4/3) very cobbly sand; single grain; friable; many medium prominent strong brown (7.5YR 4/6) and few fine prominent strong brown (7.5YR 5/8) masses of iron accumulation; 30 percent gravel, 20 percent cobbles; slightly acid.

Betsy Bay Series

The Betsy Bay series consists of moderately deep or deep, somewhat poorly drained soils in areas of outwash over bedrock lake benches. These soils formed in sandy beach deposits or sandy residuum derived from the sandstone. Permeability is rapid in the sandy material and moderately slow in the sandstone bedrock. Slopes range from 0 to 3 percent.

Typical pedon of Betsy Bay sand, 100 feet north and 500 feet west of the southeast corner of sec. 3, T. 57 N., R. 29 W., Grant Township, Keweenaw County, Michigan; USGS Point Isabelle 7.5-minute topographic quadrangle; lat. 47 degrees 21 minutes 30.40 seconds N. and long. 87 degrees 57 minutes 50.59 seconds W.

- Oe—0 to 1 inch; very dark brown (10YR 2/2), partially decomposed forest litter.
- E1—1 to 14 inches; light brownish gray (10YR 6/2) sand, light gray (10YR 7/2) dry; weak coarse subangular blocky structure; very friable; many very fine and fine roots; strongly acid; gradual wavy boundary.
- E2—14 to 18 inches; light brownish gray (10YR 5/3) sand, light gray (10YR 6/2) dry; single grain; loose; few very fine roots; strongly acid; clear wavy boundary.
- Bw—18 to 26 inches; dark brown (10YR 3/3) sand; single grain; loose; common medium distinct very pale brown (10YR 7/4) iron depletions; 2 percent sandstone flags; moderately acid; gradual wavy boundary.
- Cr—26 to 43 inches; brown (10YR 4/3) flaggy sand; single grain; loose; common medium distinct light yellowish brown (10YR 6/4) masses of iron accumulation; 20 percent sandstone flags; strongly acid; abrupt smooth boundary.
- R—43 inches; yellowish brown (10YR 5/4), weathered sandstone bedrock; strongly acid.

Borgstrom Series

The Borgstrom series consists of very deep, moderately well drained soils on outwash plains and lake plains. These soils formed in sandy outwash deposits and the underlying loamy lacustrine sediments. Permeability is rapid in the solum (except for the ortstein horizon, which is moderately permeable or moderately rapidly permeable) and moderately slow in the underlying loamy sediments. Slopes range from 0 to 6 percent.

Typical pedon of Borgstrom fine sand, 2,436 feet west and 1,015 feet north of the southeast corner of sec. 5, T. 57 N., R. 32 W., Allouez Township, Keweenaw County, Michigan; USGS Ahmeek 7.5-minute topographic quadrangle; lat. 47 degrees 21 minutes 38.70 seconds N. and long. 88 degrees 23 minutes 36.13 seconds W.

- Oa-0 to 1 inch; black (7.5YR 2.5/1), well decomposed forest litter.
- E—1 to 8 inches; brown (7.5YR 5/2) fine sand, pinkish gray (7.5YR 6/2) dry; weak medium subangular blocky structure; very friable; many very fine to medium and common coarse roots; very strongly acid; clear irregular boundary.
- Bhsm—8 to 11 inches; dark brown (7.5YR 3/3) fine sand; moderate medium subangular blocky structure parting to single grain; very friable; common very fine to medium and few coarse roots; 90 percent dark brown (7.5YR 3/2 and 3/4) moderately cemented ortstein; ortstein extends into the Bs horizon; strongly acid; gradual irregular boundary.
- Bsm—11 to 18 inches; dark brown (5YR 3/4) fine sand; single grain; very friable; few very fine and fine roots; 100 percent dark brown (7.5YR 3/3) and brown (7.5YR 54/4) moderately cemented ortstein; strongly acid; gradual irregular boundary.
- Bs—18 to 21 inches; brown (7.5YR 4/4) fine sand; moderate medium subangular blocky structure; friable; few very fine and fine roots; 60 percent dark brown (7.5YR 3/4) and brown (7.5YR 5/4) moderately cemented ortstein; ortstein extends into the 2C1 horizon; moderately acid; gradual irregular boundary.
- BC—21 to 24 inches; dark yellowish brown (10YR 4/4) fine sand; weak thin platy structure parting to moderate medium subangular blocky; friable; few very fine roots; 50 percent dark brown (7.5YR 3/4) and brown (7.5YR 5/4) moderately cemented ortstein; few fine distinct strong brown (7.5YR 4/6) masses of iron accumulation; moderately acid; gradual irregular boundary.
- 2C1—24 to 42 inches; reddish brown (5YR 4/4), stratified loamy fine sand, loamy very fine sand, and fine sand; moderate thin platy structure; friable; few very fine roots; common medium prominent brown (7.5YR 5/3) and many medium prominent strong brown (7.5YR 4/6 and 5/8) masses of iron accumulation; moderately acid; clear smooth boundary.
- 2C2—42 to 80 inches; reddish brown (5YR 4/3), stratified fine sand, loamy fine sand, loamy very fine sand, very fine sandy loam, and silt loam; massive; friable; common medium prominent strong brown (7.5YR 4/6) masses of iron accumulation; moderately acid.

Burt Series

The Burt series consists of shallow, poorly drained, rapidly permeable soils on sandstone benches. These soils formed in sandy residuum overlying sandstone bedrock. Slopes range from 0 to 3 percent.

Typical pedon of Burt mucky sand, 700 feet south and 2,640 feet east of the northwest corner of sec. 27, T. 52 N., R. 33 W., Baraga Township, Baraga County, Michigan:

- Oa—0 to 1 inch; black (10YR 2/1) muck; weak medium granular structure; friable; many roots; about 5 percent pebbles; strongly acid; abrupt smooth boundary.
- A—1 to 5 inches; black (10YR 2/1) mucky sand, gray (10YR 5/1) dry; weak medium granular structure; very friable; many roots; about 5 percent pebbles; moderately acid; abrupt smooth boundary.
- Cg—5 to 13 inches; gray (5Y 5/1) sand; single grain; loose; about 5 percent pebbles; moderately acid; clear smooth boundary.
- C—13 to 19 inches; brown (10YR 5/3) sand; single grain; loose; about 5 percent pebbles; slightly acid; abrupt smooth boundary.
- 2R—19 inches; sandstone bedrock.

Cathro Series

The Cathro series consists of very deep, very poorly drained soils in depressions and drainageways on moraines, outwash plains, lake plains, stream terraces, and flood plains. These soils formed in organic deposits over loamy till. Permeability is moderately slow to moderately rapid in the organic part of the profile and moderate in the loamy part. Slopes range from 0 to 2 percent.

Typical pedon of Cathro muck, 1,270 feet south and 1,320 feet west of the northeast corner of sec. 25, T. 42 N., R. 26 W., Wells Township, Marquette County, Michigan; USGS Arnold topographic quadrangle; lat. 46 degrees 00 minutes 07 seconds N. and long. 87 degrees 29 minutes 50 seconds W.

- Oa1—0 to 6 inches; muck, black (N 2.5/0) broken face, black (5YR 2.5/1) rubbed; weak thick platy structure; many very fine to medium roots; about 50 percent fiber, 15 percent rubbed; neutral; abrupt smooth boundary.
- Oa2—6 to 18 inches; muck, black (10YR 2/1) broken face and black (5YR 2.5/1) rubbed; moderate very thick platy structure; few fine roots; about 40 percent fiber, 10 percent rubbed; slightly acid; abrupt smooth boundary.
- Oa3—18 to 31 inches; muck, black (5YR 2.5/1) broken face and rubbed; massive; about 20 percent fiber, 5 percent rubbed; slightly acid; abrupt smooth boundary.
- Cg—31 to 80 inches; dark grayish brown (10YR 4/2) fine sandy loam; massive; about 9 percent gravel and 5 percent cobbles; slightly effervescent; slightly alkaline.

Chocolay Series

The Chocolay series consists of moderately well drained soils on sandstone benches. These soils are moderately deep to bedrock. They formed in loamy till overlying sandstone. Permeability is moderate in the loamy part and moderately slow in the sandstone. Slopes range from 1 to 8 percent.

Typical pedon of Chocolay very cobbly fine sandy loam, 100 feet south and 1,200 feet east of the northwest corner of sec. 34, T. 47 N., R. 23 W., Chocolay Township, Marquette County, Michigan; USGS Skandia topographic quadrangle; lat. 46 degrees 25 minutes 51 seconds N. and long. 87 degrees 10 minutes 10 seconds W.

- Oa—0 to 2 inches; black (N 2.5/0), well decomposed forest litter; moderate very fine granular structure; very friable; many very fine to coarse roots; about 15 percent stones; very strongly acid; abrupt smooth boundary.
- A—2 to 3 inches; black (10YR 2/1) very cobbly fine sandy loam, gray (5YR 5/1) dry; moderate fine granular structure; friable; many very fine to coarse roots; 18 percent gravel, 25 percent cobbles, and 15 percent stones; very strongly acid; abrupt smooth boundary.
- E—3 to 8 inches; reddish brown (5YR 4/3) very cobbly fine sandy loam, pinkish gray (5YR 6/2) dry; moderate fine subangular blocky structure; friable; many very fine to coarse roots; about 18 percent gravel, 25 percent cobbles, and 15 percent stones; very strongly acid; abrupt wavy boundary.
- Bhs—8 to 14 inches; dark reddish brown (5YR 3/3) very cobbly fine sandy loam; weak fine subangular blocky structure; friable; many very fine to coarse roots; about 25 percent cobbles, 18 percent gravel, and 15 percent stones; strongly acid; clear irregular boundary.
- Bs—14 to 27 inches; reddish brown (5YR 4/4) very gravelly sandy loam; weak fine subangular blocky structure; friable; common very fine to medium roots; few

medium distinct strong brown (7.5YR 4/6) masses of iron accumulation; about 30 percent gravel, 15 percent cobbles, and 10 percent stones; strongly acid; abrupt wavy boundary.

2R—27 inches; reddish brown (2.5YR 4/3) sandstone bedrock.

Copper Harbor Series

The Copper Harbor series consists of very deep, moderately well drained soils on glacial lake benches, stream terraces, and outwash plains. The upper part of the profile formed in cobbly, gravelly, and sandy deposits. The substratum formed in gravelly sandy loam till. Permeability is very rapid. Slopes range from 0 to 4 percent.

Typical pedon of Copper Harbor very gravelly loamy coarse sand, about 390 feet west and 398 feet south of the northeast corner of sec. 5, T. 57 N., R. 32 W., Allouez Township, Keweenaw County, Michigan; USGS Ahmeek 7.5-minute topographic quadrangle; lat. 47 degrees 22 minutes 17.60 seconds N. and long. 88 degrees 23 minutes 05.88 seconds W.

- Oa—0 to 1 inch; black (5YR 2.5/1), well decomposed forest litter; abrupt smooth boundary.
- E—1 to 5 inches; dark reddish brown (5YR 4/2) very gravelly loamy coarse sand, dark reddish gray (5YR 4/2) dry; moderate fine subangular blocky structure; friable; many very fine to medium and common coarse roots; 40 percent gravel, 10 percent cobbles; strongly acid; clear wavy boundary.
- Bhs—5 to 14 inches; dark reddish brown (5YR 3/3) extremely gravelly loamy coarse sand; weak fine subangular blocky structure; friable; many very fine to medium and common coarse roots; dark reddish brown (5YR 3/3) weakly cemented ortstein; ortstein occupies 30 percent of the horizon; 60 percent gravel, 10 percent cobbles; moderately acid; gradual irregular boundary.
- Bs1—14 to 20 inches; dark reddish brown (5YR 3/4) extremely gravelly coarse sand; weak fine subangular blocky structure; friable; common very fine to medium roots; dark reddish brown (5YR 4/4) weakly cemented ortstein; ortstein occupies 25 percent of the horizon; 60 percent gravel, 10 percent cobbles; moderately acid; gradual wavy boundary.
- Bs2—20 to 30 inches; brown (7.5YR 4/4) extremely gravelly coarse sand; weak medium subangular blocky structure; friable; common very fine and fine and few medium roots; dark reddish brown (5YR 4/4) weakly cemented ortstein; ortstein occupies 10 percent of the horizon; 55 percent gravel, 10 percent cobbles; moderately acid; clear wavy boundary.
- BC—30 to 40 inches; brown (7.5YR 4/3), stratified very gravelly coarse sand and very gravelly loamy coarse sand; weak medium subangular blocky structure; very friable; common fine distinct strong brown (7.5YR 4/6) masses of iron accumulation; common fine dark reddish brown (5YR 3/2) bands of fine sand and loamy fine sand ¹/¹6 to ¹/8 inch thick; 40 percent gravel, 10 percent cobbles; moderately acid; clear smooth boundary.
- C1—40 to 60 inches; reddish brown (5YR 4/3) very gravelly sand; single grain; loose; common fine prominent strong brown (7.5YR 4/6) masses of iron accumulation; 35 percent gravel; 10 percent cobbles; slightly acid; clear smooth boundary.
- 2C2—60 to 80 inches; reddish brown (5YR 4/3) very cobbly loamy coarse sand; massive; friable; 30 percent gravel, 20 percent cobbles; neutral.

Croswell Series

The Croswell series consists of very deep, moderately well drained, rapidly permeable soils on beach ridges, outwash plains, and outwash terraces. These soils

formed in sandy glaciolacustrine deposits and outwash. Slopes range from 0 to 12 percent.

Typical pedon of Croswell sand, 600 feet north and 1,650 feet west of the southeast corner of sec. 23, T. 45 N., R. 29 W., Humbolt Township, Marquette County, Michigan; USGS Republic SW topographic quadrangle; lat. 46 degrees 17 minutes 09 seconds N. and long. 87 degrees 53 minutes 37 seconds W.

- A—0 to 3 inches; very dark brown (10YR 2/2) sand, dark grayish brown (10YR 4/2) dry; weak very fine granular structure; very friable; many very fine to coarse roots; about 2 percent gravel; strongly acid; abrupt smooth boundary.
- E—3 to 7 inches; pinkish gray (5YR 6/2) sand, pinkish gray (7.5YR 6/2) dry; weak fine granular structure; very friable; many very fine to coarse roots; about 2 percent gravel; strongly acid; abrupt smooth boundary.
- Bs1—7 to 14 inches; reddish brown (5YR 4/4) sand; weak fine subangular blocky structure; very friable; many very fine to coarse roots; about 2 percent gravel; strongly acid; clear wavy boundary.
- Bs2—14 to 22 inches; yellowish red (5YR 4/6) sand; weak fine subangular blocky structure; very friable; few very fine to medium roots; tongues of dark reddish brown (5YR 3/4) moderately cemented ortstein occupy 13 percent (5 or 40 inches) of the horizon; tongues are 2 to 3 inches wide and 8 to 29 inches apart and extend into the Bs3 horizon; about 2 percent gravel; moderately acid; gradual wavy boundary.
- Bs3—22 to 34 inches; strong brown (7.5YR 5/6) sand; single grain; loose; few very fine to medium roots; tongues of reddish brown (5YR 4/4) moderately cemented ortstein extend into the horizon from the Bs2 horizon and occupy 15 percent (6 of 40 inches) of the horizon; tongues are 2 to 3 inches wide and 8 to 29 inches apart and extend into the C horizon to a depth of 38 inches; common fine distinct strong brown (7.5YR 5/8) masses of iron accumulation beginning at a depth of about 26 inches; about 2 percent gravel; moderately acid; gradual wavy boundary.
- C—34 to 80 inches; light brown (7.5YR 6/4) sand; single grain; loose; few very fine and fine roots; common fine distinct strong brown (7.5YR 5/8) masses of iron accumulation; about 2 percent gravel; moderately acid.

Dawson Series

The Dawson series consists of very deep, very poorly drained soils in depressions on outwash plains, till-floored lake plains, and moraines. These soils formed in organic deposits overlying sandy outwash. Permeability is moderately rapid to moderately slow in the organic part of the profile and rapid in the sandy part. Slopes are 0 to 1 percent. Typical pedon of Dawson peat, 1,100 feet south and 100 feet west of the northeast corner of sec. 20, T. 55 N., R. 31 W., Franklin Township, Houghton County, Michigan:

- Oi—0 to 6 inches; peat, dark brown (10YR 3/3) broken face, dark brown (10YR 4/3) rubbed; about 90 percent fiber, 80 percent rubbed; massive; nonsticky; primarily sphagnum moss fibers; extremely acid; abrupt smooth boundary.
- Oe—6 to 10 inches; mucky peat, black (10YR 2/1) broken face and rubbed; about 80 percent fiber, 30 percent rubbed; massive; nonsticky; primarily herbaceous fibers; extremely acid; abrupt smooth boundary.
- Oa1—10 to 18 inches; muck, very dark brown (10YR 2/2) broken face and rubbed; about 15 percent fibers, 5 percent rubbed; massive; nonsticky; primarily herbaceous fibers; extremely acid; clear wavy boundary.
- Oa2—18 to 30 inches; muck, black (10YR 2/1) broken face and rubbed; about 15 percent fibers, 5 percent rubbed; massive; nonsticky; primarily herbaceous fibers; extremely acid; abrupt smooth boundary.

A—30 to 34 inches; very dark grayish brown (10YR 3/2) sand; massive; nonsticky; very strongly acid; clear wavy boundary.

C—34 to 60 inches; brown (10YR 4/3) sand; single grain; nonsticky; very strongly acid.

Deer Park Series

The Deer Park series consists of very deep, excessively drained, rapidly permeable soils on beach ridges and dunes. These soils formed in sandy beach deposits. Slopes range from 0 to 70 percent.

Typical pedon of Deer Park sand; about 6 miles north of the city of Hancock; 660 feet north and 245 feet west of the southeast corner of sec. 21, T. 56 N., R. 34 W., Houghton County, Michigan:

- Oe—0 to 2 inches; black (10YR 2/1), partially decomposed leaf litter.
- A—2 to 6 inches; black (10YR 2/1) sand, dark gray (10YR 4/1) dry; weak medium granular structure; very friable; common roots; very strongly acid; abrupt smooth boundary.
- E—6 to 26 inches; pale brown (10YR 6/3) sand; single grain; loose; common roots; moderately acid; clear smooth boundary.
- Bs1—26 to 29 inches; yellowish brown (10YR 5/4) sand; single grain; loose; few roots; moderately acid; gradual wavy boundary.
- Bs2—29 to 38 inches; brown (10YR 5/3) fine sand; single grain; loose; moderately acid; gradual wavy boundary.
- C—38 to 62 inches; pale brown (10YR 6/3) sand; single grain; loose; slightly acid.

Deford Series

The Deford series consists of very deep, poorly drained, rapidly permeable soils in depressions and drainageways on outwash plains, lake plains, and moraines. These soils formed in sandy outwash. Slopes range from 0 to 2 percent.

Typical pedon of Deford muck, 1,300 feet north and 1,150 feet west of the southeast corner of sec. 20, T. 44 N., R. 26 W., Forsyth Township, Marquette County, Michigan; USGS Northland NE topographic quadrangle; lat. 46 degrees 12 minutes 38 seconds N. and long. 87 degrees 36 minutes 35 seconds W.

- Oa—0 to 6 inches; black (N 2.5/0) muck; moderate very fine granular structure; very friable; many very fine to coarse roots; moderately acid; abrupt wavy boundary.
- Cg1—6 to 18 inches; grayish brown (10YR 5/2) sand; single grain; loose; few very fine to medium roots; few fine distinct yellowish brown (10YR 5/6) and common medium distinct dark yellowish brown (10YR 4/4) masses of iron accumulation; about 1 percent gravel; moderately acid; gradual wavy boundary.
- Cg2—18 to 30 inches; brown (10YR 5/3) sand; single grain; loose; common medium prominent strong brown (7.5YR 4/6) masses of iron accumulation; few medium prominent dark gray (10YR 4/1) iron depletions; about 1 percent gravel; moderately acid; gradual wavy boundary.
- Cg3—30 to 80 inches; very dark gray (2.5Y 3/1) sand; single grain; loose; about 2 percent gravel; moderately acid.

Dishno Series

The Dishno series consists of moderately well drained soils on bedrock-controlled moraines. These soils are deep to bedrock. They formed in silty and loamy deposits over sandy and gravelly till underlain by igneous or metamorphic bedrock. Permeability

is moderate in the loamy material and moderately rapid in the sandy material. Slopes range from 0 to 35 percent.

Typical pedon of Dishno cobbly silt loam, 583 feet north and 1,832 feet east of the southwest corner of sec. 33, T. 49 N., R. 29 W., Michigamme Township, Marquette County, Michigan; USGS Champion topographic quadrangle; lat. 46 degrees 35 minutes 39.3 seconds N. and long. 87 degrees 56 minutes 16 seconds W.

- Oe—0 to 1 inch; dark reddish brown (5YR 2.5/2), partially decomposed forest litter; many very fine to coarse roots; very strongly acid; abrupt smooth boundary.
- A—1 to 3 inches; dark reddish brown (5YR 3/2) cobbly silt loam, reddish gray (5YR 5/2) dry; moderate very fine granular structure; friable; many very fine to coarse roots; few very fine vesicular pores; about 10 percent cobbles, 9 percent gravel, 5 percent stones, and 1 percent boulders; extremely acid; clear wavy boundary.
- E—3 to 9 inches; reddish gray (5YR 5/2) cobbly silt loam, light gray (5YR 7/1) dry; weak medium platy structure parting to weak very fine subangular blocky; friable; many very fine to coarse roots; few very fine vesicular pores; about 10 percent cobbles, 9 percent gravel, 5 percent stones, and 1 percent boulders; extremely acid; abrupt wavy boundary.
- Bhs—9 to 10 inches; dark brown (7.5YR 3/2) cobbly loam; weak fine subangular blocky structure; friable; many very fine to coarse roots; few very fine vesicular pores; about 10 percent cobbles, 7 percent gravel, 5 percent stones, and 1 percent boulders; very strongly acid; abrupt broken boundary.
- Bs1—10 to 18 inches; dark brown (7.5YR 3/4) cobbly fine sandy loam; weak fine subangular blocky structure; friable; many very fine to coarse roots; few very fine vesicular pores; about 10 percent cobbles, 7 percent gravel, 5 percent stones, and 1 percent boulders; very strongly acid; clear wavy boundary.
- Bs2—18 to 22 inches; brown (7.5YR 4/4) cobbly loamy sand; weak medium platy structure; firm; common very fine to coarse roots; common very fine vesicular pores; about 10 percent cobbles, 7 percent gravel, 5 percent stones, and 1 percent boulders; strongly acid; abrupt broken boundary.
- 2BC—22 to 29 inches; brown (10YR 4/3) very stony loamy sand; massive; weak thick platiness inherent from deposition; mostly friable, firm in places; few very fine to medium roots; few very fine vesicular pores; discontinuous silt coatings on rock fragments; common medium prominent strong brown (7.5YR 4/6) masses of iron accumulation; about 13 percent gravel, 10 percent cobbles, 10 percent stones, and 5 percent boulders; strongly acid; gradual wavy boundary.
- 2C—29 to 46 inches; light olive brown (2.5Y 5/3) very stony loamy sand; massive; weakly expressed thick platiness inherent from deposition; mostly friable, firm in places; few very fine to medium roots; few very fine vesicular pores; discontinuous silt coatings on rock fragments; few medium prominent strong brown (7.5YR 4/6) masses of iron accumulation; about 13 percent gravel, 10 percent cobbles, 10 percent stones, and 5 percent boulders; moderately acid; abrupt smooth boundary.
- 3R—46 inches; brown (10YR 4/3), unweathered bedrock; discontinuous layer of brown (10YR 4/3) loamy coarse sand saprolite ½ inch thick on surface of bedrock; many coarse prominent strong brown (7.5YR 5/8) masses of iron accumulation on surface of bedrock; strongly acid.

Garlic Series

The Garlic series consists of very deep, well drained, rapidly permeable soils on till-floored lake plains and dissected moraines. These soils formed in sandy glaciofluvial sediments. Slopes range from 0 to 60 percent.

Typical pedon of Garlic fine sand, 2,000 feet west and 1,350 feet north of the southeast corner of sec. 6, T. 46 N., R. 24 W., West Branch Township, Marquette

County, Michigan; USGS Harvey topographic quadrangle; lat. 46 degrees 24 minutes 32.50 seconds N. and long. 87 degrees 21 minutes 13.18 seconds W.

- Oa—0 to 1 inch; black (N 2.5/0), well decomposed leaf litter; moderate fine granular structure; very friable; many very fine to coarse roots; very strongly acid; abrupt smooth boundary.
- E—1 to 9 inches; reddish gray (5YR 5/2) fine sand, pinkish gray (5YR 6/2) dry; weak fine subangular blocky structure; very friable; many very fine to coarse roots; very strongly acid; clear wavy boundary.
- Bhs—9 to 15 inches; dark reddish brown (5YR 3/2) fine sand; weak medium subangular blocky structure; friable; many very fine to coarse roots; dark reddish brown (5YR 3/2) moderately cemented ortstein occupies 28 percent (11 of 40 inches) of the lower part of the horizon; ortstein extends into the Bs horizon; very strongly acid; clear wavy boundary.
- Bs—15 to 26 inches; dark reddish brown (5YR 3/4) fine sand; weak medium subangular blocky structure; friable; common very fine to coarse roots; dark reddish brown (5YR 3/3) and reddish brown (5YR 4/4) strongly cemented ortstein occupies 75 percent (30 of 40 inches) of the horizon; ortstein extends into this horizon from the Bhs horizon as tongues 10 to 30 inches apart to a depth of 47 inches; moderately acid; clear wavy boundary.
- BC—26 to 46 inches; brown (7.5YR 5/4) fine sand; weak fine subangular blocky structure; friable; few very fine to medium roots; few thin strata of reddish brown (5YR 4/4) loamy fine sand; moderate cementation in the upper part of the horizon; strongly acid; gradual wavy boundary.
- C—46 to 80 inches; brown (7.5YR 5/4) fine sand; single grain; loose; slightly acid.

Gay Series

The Gay series consists of deep, very poorly drained and poorly drained, moderately permeable soils on till plains. These soils formed in loamy glacial till. Slopes are 0 to 3 percent.

Typical pedon of Gay muck (fig. 19), 280 feet west and 1,200 feet north of the southeast corner of sec. 20, T. 51 N., R. 32 W., L'Anse Township, Baraga County, Michigan:

- Oa—0 to 4 inches; very dark gray (10YR 3/1) muck; moderate medium granular structure; friable; many roots; strongly acid; abrupt smooth boundary.
- A—4 to 7 inches; dark gray (10YR 4/1) fine sandy loam, gray (10YR 6/1) dry; weak fine subangular blocky structure; friable; many roots; strongly acid; clear smooth boundary.
- Eg—7 to 11 inches; light brownish gray (10YR 6/2) sandy loam; few fine distinct yellowish brown (10YR 5/6) masses of iron accumulation; weak medium subangular blocky structure; friable; common roots; about 2 percent pebbles; moderately acid; clear wavy boundary.
- Bw—11 to 16 inches; brown (7.5YR 5/4) sandy loam; many medium distinct grayish brown (10YR 5/2) and common fine faint yellowish brown (10YR 5/6) masses of iron accumulation; weak thick platy structure parting to weak fine subangular blocky; friable; common roots; about 4 percent pebbles; moderately acid; clear wavy boundary.
- BC—16 to 30 inches; reddish brown (2.5YR 4/4) sandy loam; many medium distinct strong brown (7.5YR 5/6) and common fine distinct reddish brown (5YR 5/3) masses of iron accumulation; massive; friable; few roots; about 4 percent pebbles; slightly acid; clear wavy boundary.
- C—30 to 60 inches; reddish brown (2.5YR 4/4) sandy loam; massive; friable; about 5 percent pebbles; slightly acid.

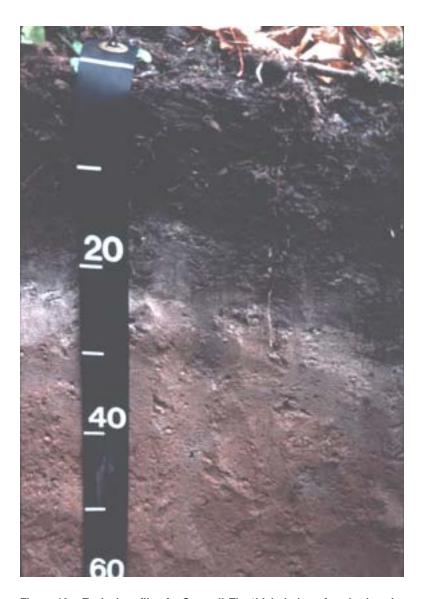


Figure 19.—Typical profile of a Gay soil. The thick dark surface horizon is typical of poorly drained soils. Depth is marked in inches.

Gratiot Series

The Gratiot series consists of very deep, somewhat poorly drained soils on moraines. These soils formed in loamy and sandy sediments. Permeability is moderate above the fragipan, very slow in the fragipan, and moderately rapid or moderate below the fragipan. Slopes range from 0 to 4 percent.

Typical pedon of Gratiot very cobbly fine sandy loam, 1,700 feet north and 2,200 feet east of the southwest corner of sec. 35, T. 58 N., R. 31 W., Houghton Township, Keweenaw County, Michigan; USGS Eagle Harbor 7.5-minute topographic quadrangle; lat. 47 degrees 22 minutes 36 seconds N. and long. 88 degrees 12 minutes 01.54 seconds W.

Oa—0 to 1 inch; dark reddish brown (5YR 3/3), well decomposed forest litter; abrupt smooth boundary.

A—1 to 4 inches; black (5YR 2.5/1) very cobbly fine sandy loam, dark reddish brown (5YR 3/2) dry; medium coarse granular structure; friable; many very fine to

- medium and common coarse and very coarse roots; 25 percent gravel, 15 percent cobbles, and 2 percent stones; strongly acid; abrupt wavy boundary.
- Bhs—4 to 7 inches; dark reddish brown (5YR 3/2) very cobbly loamy sand; moderate medium subangular blocky structure; friable; many very fine to medium and common coarse and very coarse roots; 34 percent gravel, 15 percent cobbles, and 2 percent stones; strongly acid; clear wavy boundary.
- Bs1—7 to 12 inches; dark reddish brown (5YR 3/4) very cobbly loamy sand; moderate medium subangular blocky structure; friable; many very fine and common fine and medium roots; few medium prominent yellowish red (5YR 4/6) masses of iron accumulation; 34 percent gravel, 15 percent cobbles, and 2 percent stones; strongly acid; clear wavy boundary.
- Bs2—12 to 20 inches; reddish brown (5YR 4/4) very cobbly fine sandy loam; weak medium platy structure parting to weak medium subangular blocky; friable; many very fine and common fine and medium roots; many medium prominent yellowish red (5YR 4/6 and 5/8) masses of iron accumulation; 24 percent gravel, 13 percent cobbles, and 2 percent stones; strongly acid; clear wavy boundary.
- (B/E)x—20 to 30 inches; about 75 percent reddish brown (5YR 4/4) cobbly fine sandy loam (Bt) surrounding reddish brown (5YR 5/3) cobbly loamy fine sand (E); reddish gray (5YR 5/2) dry; moderate thick platy structure; firm; few faint reddish brown (5YR 4/4) clay bridges between sand grains; few very fine and fine roots; many medium prominent yellowish red (5YR 4/6 and 5/8) masses of iron accumulation; 21 percent gravel, 10 percent cobbles, and 2 percent stones; slightly acid; clear wavy boundary.
- C1—30 to 36 inches; reddish brown (5YR 4/3) cobbly fine sandy loam; massive; friable; few very fine and fine roots; common medium prominent yellowish red (5YR 4/6 and 5/8) masses of iron accumulation; 10 percent gravel, 7 percent cobbles, and 2 percent stones; neutral; gradual wavy boundary.
- C2—36 to 80 inches; reddish brown (5YR 4/3) cobbly fine sandy loam; massive; friable; 10 percent gravel, 6 percent cobbles, and 1 percent stones; strongly effervescent; strongly alkaline.

Ingalls Series

The Ingalls series consists of very deep, somewhat poorly drained soils on outwash plains and lake plains. These soils formed in sandy outwash overlying stratified loamy lacustrine sediments. Permeability is rapid in the overlying sandy part and moderately slow in the loamy part. Slopes range from 0 to 4 percent.

Typical pedon of Ingalls sand, 2,200 feet south and 400 feet east of the northwest corner of sec. 16, T. 46 N., R. 19 W., Munising Township, Alger County, Michigan; USGS Munising, MI, topographic quadrangle; lat. 46 degrees 23 minutes 03 seconds N. and long. 86 degrees 41 minutes 54 seconds W., NAD27:

- Oa—0 to 4 inches; decomposed forest litter; moderate medium granular structure; very friable; many very fine to very coarse roots; ultra acid; clear wavy boundary.
- A—4 to 5 inches; very dark grayish brown (10YR 3/2) sand, gray (10YR 6/1) dry; weak fine subangular blocky structure; very friable; many very fine to very coarse roots; about 1 percent gravel; extremely acid; abrupt wavy boundary.
- E—5 to 14 inches; light brownish gray (10YR 6/2) sand, light gray (10YR 7/1) dry; weak fine subangular blocky structure; loose; very few prominent very dark brown (10YR 2/2) organic stains on surfaces along root channels; common very fine to medium roots; about 1 percent gravel; extremely acid; abrupt irregular boundary.
- Bhs—14 to 16 inches; dark reddish brown (5YR 2.5/2) sand; weak medium subangular blocky structure; very friable; about 35 percent strongly cemented dark reddish

- brown (5YR 3/4 and 3/2) ortstein, which occurs intermittently on a horizontal plane; common very fine to medium roots; about 1 percent gravel; extremely acid; abrupt broken boundary.
- Bs—16 to 22 inches; reddish brown (5YR 4/4) sand; weak medium subangular blocky structure; very friable; common medium distinct yellowish red (5YR 5/8) iron-manganese masses (spherical) on faces of peds; few very fine and fine roots; about 1 percent gravel; extremely acid; gradual irregular boundary.
- Bw—22 to 35 inches; strong brown (7.5YR 5/6) sand; weak fine subangular blocky structure; loose; few very fine and fine roots; about 1 percent gravel; very strongly acid; abrupt wavy boundary.
- 2C—35 to 80 inches; reddish brown (2.5YR 5/4) and brown (7.5YR 5/3), stratified silt loam and silt; massive parting to weak medium platy structure; friable; few very fine and fine roots; about 1 percent gravel; moderately acid.

Jacobsville Series

The Jacobsville series consists of moderately deep, poorly drained, moderately permeable soils on till plains and sandstone benches. These soils formed in loamy and sandy glacial till over sandstone bedrock. Slopes range from 0 to 2 percent.

Typical pedon of Jacobsville muck, 1,800 feet north and 1,900 feet west of the southeast corner of sec. 36, T. 55 N., R. 32 W., Torch Lake Township, Houghton County, Michigan:

- Oa—0 to 5 inches; black (N 2/0) muck; weak fine subangular blocky structure; very friable; many roots; strongly acid; abrupt smooth boundary.
- Eg—5 to 9 inches; dark reddish gray (5YR 4/2) sandy loam; common medium prominent strong brown (7.5YR 4/6) masses of iron accumulation; weak medium subangular blocky structure; friable; few roots; about 5 percent gravel; strongly acid; clear wavy boundary.
- Bw—9 to 23 inches; dark reddish brown (2.5YR 3/4) sandy loam; common medium prominent dark brown (7.5YR 4/2) and few fine prominent strong brown (7.5YR 4/6) masses of iron accumulation; weak fine and medium subangular blocky structure; friable; about 5 percent gravel; moderately acid; clear wavy boundary.
- C—23 to 36 inches; reddish brown (2.5YR 4/4) sandy loam; many medium prominent dark reddish gray (5YR 4/2), common medium prominent pinkish gray (7.5YR 6/2), and few medium prominent strong brown (7.5YR 5/8) masses of iron accumulation; weak medium subangular blocky structure; friable; about 5 percent gravel; moderately acid; clear smooth boundary.
- 2R—36 inches; reddish brown (2.5YR 4/4) sandstone bedrock.

Keweenaw Series

The Keweenaw series consists of very deep, well drained soils that formed in sandy deposits. These soils are typically on ground moraines and end moraines, but in some places they are on drumlins and islands of till surrounded by outwash. Permeability is moderate or moderately rapid. Slopes range from 1 to 60 percent.

Typical pedon of Keweenaw loamy sand, north of Thayer Lake; 2,064 feet west and 1,484 feet south of the northeast corner of sec. 29, T. 57 N., R. 31 W., Sherman Township, Keweenaw County, Michigan; USGS Mohawk, MI, topographic quadrangle; lat. 47 degrees 18 minutes 39.27 seconds N. and long. 88 degrees 15 minutes 59.57 seconds W., NAD83:

- Oa—0 to 1 inch; black (5YR 2.5/1), well decomposed forest litter.
- E—1 to 11 inches; reddish gray (5YR 5/2) loamy sand; weak fine and medium subangular blocky structure; very friable; many very fine to coarse roots; 3 percent gravel; extremely acid; clear irregular boundary.
- Bhs—11 to 17 inches; dark reddish brown (5YR 3/3) loamy sand; moderate medium subangular blocky structure; firm; 75 percent weakly cemented ortstein; many very fine to coarse roots; 3 percent gravel; extremely acid; gradual irregular boundary.
- Bs1—17 to 27 inches; dark brown (7.5YR 3/4) loamy sand; moderate thin platy structure; friable and firm; 35 percent weakly cemented ortstein; ortstein occurs as tongues that extend to a depth of 60 inches; common very fine to medium roots; 8 percent gravel; extremely acid; clear irregular boundary.
- Bs2—27 to 39 inches; brown (7.5YR 4/4) loamy sand; weak thin platy structure; very friable; few very fine and fine roots; 2 percent gravel; very strongly acid; clear smooth boundary.
- B/E—39 to 61 inches; about 70 percent reddish brown (5YR 4/4) fine sandy loam (Bt); common very fine and fine vesicular pores in peds; surrounded by weak brown (7.5YR 5/4) loamy sand (E); weak thin platy structure; friable; 2 percent gravel; very strongly acid; clear smooth boundary.
- E and Bt—61 to 80 inches; reddish brown (5YR 4/3) loamy sand (E) and lamellae of brown (7.5YR 4/4) fine sandy loam and sandy loam (Bt); single grain; loose; lamellae are ½ inch to 2 inches thick with a total accumulation of 8 inches; 2 percent gravel; moderately acid.

Kinross Series

The Kinross series consists of very deep, very poorly drained, rapidly permeable soils in depressions on outwash plains, moraines, and till-floored lake plains. These soils formed in sandy outwash and glaciolacustrine deposits. Slopes range from 0 to 3 percent.

Typical pedon of Kinross mucky peat, 60 feet west and 2,193 feet south of the northeast corner of sec. 36, T. 45 N., R. 25 W.; near Bass Lake; USGS Little Lake topographic quadrangle; lat. 46 degrees 15 minutes 12 seconds N. and long. 87 degrees 22 minutes 02 seconds W., Forsyth Township, Marquette County, Michigan:

- Oe—0 to 3 inches; black (7.5YR 2.5/1) mucky peat; weak medium granular structure; very friable; many very fine to medium roots; extremely acid; abrupt smooth boundary.
- Oa—3 to 5 inches; very dark gray (7.5YR 3/1) muck; weak medium granular structure; very friable; many very fine to medium roots; extremely acid; abrupt smooth boundary.
- E—5 to 10 inches; light brownish gray (10YR 6/2) sand, light gray (10YR 7/2) dry; weak medium subangular blocky structure; very friable; many very fine to medium roots; many medium and coarse distinct dark brown (10YR 3/3) and dark yellowish brown (10YR 4/4) masses of iron accumulation; extremely acid; abrupt wavy boundary.
- Bhs—10 to 15 inches; very dark brown (7.5YR 2.5/2) sand; weak fine and medium subangular blocky structure; friable; many very fine to medium roots; common medium prominent strong brown (7.5YR 4/6) and dark brown (7.5YR 3/4) masses of iron accumulation; discontinuous dark reddish brown (5YR 3/2) strongly cemented ortstein occupies about 30 percent of the horizon; about 3 percent gravel; extremely acid; clear wavy boundary.
- Bs—15 to 30 inches; dark brown (7.5YR 3/4) sand; weak fine subangular blocky structure; very friable; common very fine and fine roots; common medium distinct

- brown (7.5YR 4/3) masses of iron accumulation; about 3 percent gravel; very strongly acid; gradual wavy boundary.
- BC—30 to 42 inches; dark yellowish brown (10YR 4/4) sand; single grain; loose; common medium and coarse distinct strong brown (7.5YR 4/6) masses of iron accumulation; very strongly acid; gradual wavy boundary.
- C—42 to 80 inches; brown (10YR 5/3) sand; single grain; loose; very strongly acid.

Lac La Belle Series

The Lac La Belle series consists of well drained soils on ground moraines and end moraines. These soils formed in cobbly and gravelly loamy and sandy materials. Permeability is rapid in the upper part and very slow in the lower part. Slopes range from 15 to 60 percent.

Typical pedon of Lac La Belle very stony loamy sand, 1,380 feet east and 1,200 feet south of the northwest corner of sec. 13, T. 58 N., R. 28 W., Grant Township, Keweenaw County; USGS Fort Wilkins 7.5-minute topographic quadrangle; lat. 47 degrees 25 minutes 34.20 seconds N. and long. 87 degrees 48 minutes 30.26 seconds W.

- Oa—0 to 1 inch; reddish black (5YR 2.5/1), well decomposed forest litter.
- E—1 to 5 inches; reddish gray (5YR 5/2) very stony loamy sand, pinkish gray (5YR 6/2) dry; weak fine subangular blocky structure; very friable; many very fine to coarse roots; 25 percent gravel, 15 percent cobbles, 6 percent stones, and 2 percent boulders; extremely acid; abrupt smooth boundary.
- Bhs—5 to 12 inches; dark reddish brown (5YR 3/3) extremely stony loamy sand; weak fine subangular blocky structure; very friable; many very fine to coarse roots; 35 percent gravel, 20 percent cobbles, 8 percent stones, and 3 percent boulders; extremely acid; clear wavy boundary.
- Bs1—12 to 19 inches; dark reddish brown (5YR 3/4) extremely cobbly loamy sand; weak fine subangular blocky structure; very friable; many very fine to coarse roots; 35 percent gravel, 25 percent cobbles, 8 percent stones, and 3 percent boulders; very strongly acid; clear wavy boundary.
- Bs2—19 to 36 inches; brown (7.5YR 4/4) extremely cobbly loamy sand; weak fine subangular blocky structure; very friable; common very fine to medium roots; 35 percent gravel, 25 percent cobbles, 8 percent stones, and 3 percent boulders; very strongly acid; clear wavy boundary.
- 2(E/B)x—36 to 42 inches; about 60 percent brown (7.5YR 4/3) very cobbly loamy sand, brown (7.5YR 5/2) dry (E); reddish brown (5YR 4/4) very cobbly sandy loam (Bt); moderate thick platy structure; very firm; few very fine and fine roots; common very fine vesicular pores; few fine prominent and few faint reddish brown (5YR 4/3) clay films on faces of peds; 20 percent gravel, 20 percent cobbles, 5 percent stones, and 2 percent boulders; very strongly acid; gradual irregular boundary.
- 2Btx—42 to 50 inches; reddish brown (5YR 4/4) very cobbly loamy sand; moderate thick platy structure; very firm; few very fine vesicular pores; few fine prominent strong brown (7.5YR 4/6) masses of iron accumulation; few faint reddish brown (5YR 4/3) clay films on faces of peds; 15 percent gravel, 20 percent cobbles, 5 percent stones, and 2 percent boulders; very strongly acid; clear broken boundary.
- 2(B/E)x—50 to 62 inches; about 65 percent reddish brown (5YR 4/4) very cobbly sandy loam (Bt) and brown (7.5YR 4/3) very cobbly loamy sand (E), brown (7.5YR 5/2) dry (E); weak thick platy structure; firm; few very fine vesicular pores; few fine prominent strong brown (7.5YR 4/6) masses of iron accumulation; few faint reddish brown (5YR 4/3) clay films on faces of peds; 15 percent gravel, 20 percent cobbles, 3 percent stones, and 1 percent boulders; very strongly acid; gradual irregular boundary.

2C—62 to 80 inches; reddish brown (5YR 4/4) very cobbly loamy sand; massive; firm; 15 percent gravel, 22 percent cobbles, 3 percent stones, and 1 percent boulders; strongly acid.

Loxley Series

The Loxley series consists of very deep, very poorly drained soils in depressions on lake plains, outwash plains, and till plains. These soils formed in mainly herbaceous organic material. Permeability ranges from moderately slow to moderately rapid. Slopes are 0 to 1 percent.

Typical pedon of Loxley peat, 2,650 feet north and 600 feet west of the southeast corner of sec. 22, T. 55 N., R. 35 W., Stanton Township, Houghton County, Michigan:

- Oi—0 to 5 inches; dark yellowish brown (10YR 3/4) peat; 100 percent fiber, 100 percent rubbed; massive; primarily live roots and sphagnum moss; extremely acid; clear smooth boundary.
- Oa1—5 to 12 inches; muck, black (10YR 2/1) broken face and rubbed; about 30 percent fiber, 10 percent rubbed; nonsticky; primarily herbaceous fibers, a few woody fibers; extremely acid; gradual smooth boundary.
- Oa2—12 to 26 inches; muck, very dark brown (10YR 2/2) broken face and rubbed; about 10 percent fiber, 2 percent rubbed; nonsticky; primarily herbaceous fibers, a few woody fibers; extremely acid; gradual smooth boundary.
- Oa3—26 to 38 inches; muck, very dark brown (10YR 2/2) broken face and rubbed; about 15 percent fiber, 2 percent rubbed; massive; nonsticky; primarily herbaceous fibers; extremely acid; gradual smooth boundary.
- Oa4—38 to 45 inches; muck, dark brown (7.5YR 3/4) broken face and very dark brown (10YR 2/2) rubbed; about 60 percent fiber, 10 percent rubbed; massive; nonsticky; primarily herbaceous fibers; extremely acid; gradual smooth boundary.
- Oe—45 to 60 inches; mucky peat, brown (7.5YR 4/4) broken face and rubbed; about 90 percent fiber, 30 percent rubbed; massive; nonsticky; primarily herbaceous fibers; extremely acid.

Lupton Series

The Lupton series consists of very deep, poorly drained soils on moraines, outwash plains, and lake plains. These soils formed in herbaceous and woody deposits more than 51 inches thick. Permeability ranges from moderately slow to moderately rapid. Slopes are 0 to 1 percent.

Typical pedon of Lupton muck, 2,400 feet east and 2,000 feet north of the southwest corner of sec. 31, T. 59 N., R. 29 W., Eagle Harbor Township, Keweenaw County, Michigan; USGS Delaware 7.5-minute topographic quadrangle; lat. 47 degrees 27 minutes 55.68 seconds N. and long. 88 degrees 02 minutes 11.90 seconds W.

- Oa1—0 to 8 inches; muck, black (10YR 2/1) broken face, black (7.5YR 2.5/1) rubbed; about 15 percent fiber, 5 percent rubbed; weak thin to thick platy structure; very friable; many very fine and fine roots; 1 percent wood fragments; slightly acid; abrupt wavy boundary.
- Oa2—8 to 20 inches; muck, very dark brown (7.5YR 2.5/2) broken face and rubbed; about 10 percent fiber, 3 percent rubbed; weak medium to coarse subangular blocky structure; very friable; common very fine, fine, and medium roots; 4 percent wood fragments; slightly acid; clear wavy boundary.
- Oa3—20 to 34 inches; muck, black (7.5YR 2.5/1) broken face, black (5YR 2.5/1) rubbed; about 12 percent fiber, 6 percent rubbed; weak medium subangular blocky

- structure; very friable; common fine to medium roots; 11 percent wood fragments; neutral; clear wavy boundary.
- Oa4—34 to 80 inches; muck, black (7.5YR 2.5/1) broken face and rubbed (5YR 2.5/1); about 18 percent fiber, 8 percent rubbed; weak medium subangular blocky structure; very friable; common fine and few medium roots; 12 percent wood fragments; neutral.

Michigamme Series

The Michigamme series consists of moderately deep, well drained, moderately permeable soils on rocky knolls, till plains, and moraines. These soils formed in silty material and in loamy glacial till overlying igneous and metamorphic bedrock. Slopes range from 8 to 70 percent.

Typical pedon of Michigamme cobbly silt loam, 2,200 feet south and 300 feet east of the northwest corner of sec. 12, T. 47 N., T. 34 W., Covington Township, Baraga County, Michigan:

- A—0 to 2 inches; dark reddish brown (5YR 2/2) cobbly silt loam, pinkish gray (5YR 6/2) dry; moderate fine granular structure; very friable; many fine roots; about 2 percent pebbles and 30 percent cobbles; extremely acid; clear smooth boundary.
- E—2 to 4 inches; brown (7.5YR 5/2) cobbly silt loam; weak medium subangular blocky structure; friable; many fine roots; about 2 percent pebbles and 30 percent cobbles; extremely acid; clear wavy boundary.
- Bhs—4 to 7 inches; dark reddish brown (5YR 3/2) silt loam; weak medium subangular blocky structure parting to weak fine granular; friable; many fine and medium roots; about 3 percent pebbles and 10 percent cobbles; extremely acid; clear wavy boundary.
- Bs1—7 to 14 inches; dark reddish brown (5YR 3/4) silt loam; weak medium subangular blocky structure; friable; many fine and medium roots; about 2 percent pebbles; very strongly acid; gradual wavy boundary.
- Bs2—14 to 20 inches; reddish brown (5YR 4/4) silt loam; weak medium subangular blocky structure; friable; common fine roots; about 3 percent pebbles and 10 percent cobbles; strongly acid; gradual wavy boundary.
- Bs3—20 to 24 inches; brown (7.5YR 4/4) cobbly silt loam; weak fine subangular blocky structure; friable; few fine roots; about 10 percent pebbles and 30 percent cobbles; strongly acid; gradual irregular boundary.
- 2C—24 to 31 inches; about 50 percent brown (10YR 5/3) and 50 percent dark reddish brown (5YR 3/4) gravelly fine sandy loam; weak medium angular blocky structure; friable; few fine roots; about 20 percent pebbles and 15 percent cobbles; strongly acid; abrupt smooth boundary.
- 3R—31 inches; red (2.5YR 5/2) bedrock.

Montreal Series

The Montreal series consists of deep, moderately well drained soils on ground moraines and end moraines. These soils formed in cobbly and gravelly loamy and sandy materials. They have a fragipan. Permeability is moderate in the loamy material, very slow in the fragipan, and moderate or moderately rapid in the cobbly sediments. Slopes range from 0 to 35 percent.

Typical pedon of Montreal cobbly fine sandy loam, 1,375 feet north and 2,400 feet west of the southeast corner of sec. 9, T. 58 N., R. 29 W., Grant Township, Keweenaw County, Michigan; USGS Lake Medora 7.5-minute topographic quadrangle; lat. 47 degrees 26 minutes 04.48 seconds N. and long. 87 degrees 59 minutes 34.58 seconds W.

- Oa-0 to 2 inches; black (7.5YR 2.5/1), well decomposed forest litter.
- E—2 to 6 inches; brown (7.5YR 5/2) cobbly fine sandy loam, pinkish gray (7.5YR 7/2) dry; moderate medium granular structure; friable; many very fine to coarse roots; 10 percent gravel, 15 percent cobbles, 1 percent stones, and 1 percent boulders; very strongly acid; clear irregular boundary.
- Bhs—6 to 11 inches; dark brown (7.5YR 3/3) cobbly fine sandy loam; moderate medium subangular blocky structure; friable; many very fine to coarse roots; 10 percent gravel, 15 percent cobbles, 1 percent stones, and 1 percent boulders; strongly acid; clear irregular boundary.
- Bs—11 to 20 inches; dark brown (7.5YR 3/4) and brown (7.5YR 4/4) cobbly fine sandy loam; moderate fine and medium subangular blocky structure; friable; few fine and medium roots; few fine vesicular pores; few fine distinct strong brown (7.5YR 4/6) masses of iron accumulation; 10 percent gravel, 15 percent cobbles, 1 percent stones, and 1 percent boulders; strongly acid; clear wavy boundary.
- 2(E/B)x—20 to 33 inches; about 55 percent brown (7.5YR 5/3) very cobbly loamy fine sand (E), pinkish gray (7.5YR 7/2) dry (E), surrounding reddish brown (5YR 4/4) very cobbly fine sandy loam (Bt); moderate medium platy structure; very firm; few very fine and fine roots; common fine and medium vesicular pores; common medium distinct strong brown (7.5YR 4/6) masses of iron accumulation; 15 percent gravel, 20 percent cobbles, 2 percent stones, and 1 percent boulders; moderately acid; clear wavy boundary.
- 2(B/E)x—33 to 51 inches; about 65 percent reddish brown (5YR 4/4) very cobbly fine sandy loam (Bt) surrounded by reddish brown (5YR 5/3) very cobbly loamy fine sand (E), pinkish gray (5YR 7/2) dry (E); moderate thick platy structure; firm; common fine and medium vesicular pores; common fine prominent reddish brown (2.5YR 4/4) masses of iron accumulation; 15 percent gravel, 20 percent cobbles, 2 percent stones, and 1 percent boulders; moderately acid; gradual wavy boundary.
- 2E/B—51 to 80 inches; about 75 percent light brown (7.5YR 6/3) cobbly loamy fine sand, pinkish gray (5YR 7/2) dry (E); massive; friable; surrounding reddish brown (5YR 4/4) cobbly fine sandy loam (B); moderate medium platy structure parting to moderate medium subangular blocky; friable; common fine prominent reddish brown (2.5YR 4/4) masses of iron accumulation; 10 percent gravel, 10 percent cobbles, 1 percent stones, and 1 percent boulders; slightly acid.

Munising Series

The Munising series consists of deep, moderately well drained soils on till plains and moraines. These soils formed in loamy and sandy glacial till. They have a fragipan. Permeability is moderate in the upper part of the profile, very slow in the fragipan, and moderate in the substratum. Slopes range from 1 to 35 percent.

Typical pedon of Munising loamy sand (fig. 20), 1,000 feet north and 1,100 feet east of the center of sec. 4, T. 51 N., R. 31 W., Arvon Township, Baraga County, Michigan:

- A—0 to 1 inch; black (5YR 2/1) loamy sand, gray (5YR 5/1) dry; weak fine granular structure; friable; many roots; about 2 percent pebbles; very strongly acid; abrupt smooth boundary.
- E—1 to 9 inches; pinkish gray (5YR 6/2) loamy sand; weak fine subangular blocky structure; friable; common roots; about 2 percent pebbles; very strongly acid; abrupt wavy boundary.
- Bhs—9 to 13 inches; dark reddish brown (5YR 3/3) sandy loam; weak very coarse granular structure; friable; some strongly cemented tongues; many roots; about 2 percent pebbles; very strongly acid; clear wavy boundary.



Figure 20.—Typical profile of a Munising soil. The vertical white streak in the B horizon indicates the location of the fragipan. Depth is marked in inches.

- Bs—13 to 21 inches; reddish brown (5YR 4/3) sandy loam; weak coarse subangular blocky structure; friable; common roots; about 2 percent pebbles; very strongly acid; clear wavy boundary.
- Bx—21 to 29 inches; reddish brown (2.5YR 4/4) loamy sand; few fine faint yellowish red (5YR 4/6) masses of iron accumulation; weak thick platy structure; slightly hard, firm; brittle; few roots; about 2 percent pebbles; very strongly acid; clear wavy boundary.
- Ex—29 to 40 inches; pinkish gray (5YR 6/2) loamy sand; few reddish brown (2.5YR 4/4) pieces that appear to be remnants of a Bt horizon; massive; very hard, very firm; brittle; vesicular pores; about 2 percent pebbles; strongly acid; abrupt irregular boundary.

(B/E)x—40 to 48 inches; reddish brown (2.5YR 4/4) sandy loam (Bx); pinkish gray (5YR 6/2) tongues of loamy sand (Ex) as much as 2 inches thick; massive; very hard, very firm; brittle; vesicular pores; thin clay flows in root channels; about 2 percent pebbles; very strongly acid; clear wavy boundary.

- Bt—48 to 62 inches; reddish brown (2.5YR 4/4) sandy loam; massive; friable; clay flows along vertical faces of peds and in pores; about 2 percent pebbles; very strongly acid; gradual wavy boundary.
- C—62 to 80 inches; reddish brown (2.5YR 4/4) sandy loam; massive; friable; about 3 percent pebbles; moderately acid.

Nipissing Series

The Nipissing series consists of moderately deep, well drained soils on bedrock benches. These soils formed in gravelly and cobbly loamy and sandy material overlying igneous, metamorphic, or sedimentary bedrock. Permeability is moderately rapid in the upper part of the profile and very rapid in the lower part. Slopes range from 0 to 35 percent.

Typical pedon of Nipissing very cobbly silt loam, about 2,000 feet southwest and 100 feet southeast of Raspberry Island dock, Isle Royale National Park, NW¹/₄SW¹/₄ sec. 3, T. 66 N., R. 33 W., Houghton Township, Keweenaw County, Michigan:

- Oi—0 to 1 inch; black (5YR 2/1) forest litter; many roots; abrupt smooth boundary.
- Oe—1 to 3 inches; black (5YR 2/1), well decomposed leaf litter; many roots; abrupt smooth boundary.
- E—3 to 4 inches; dark reddish gray (5YR 4/2) very cobbly silt loam; weak fine granular structure; very friable; many roots; about 30 percent gravel and 30 percent cobbles; very strongly acid; abrupt smooth boundary.
- Bhs1—4 to 20 inches; dark reddish brown (5YR 2/2) extremely cobbly silt loam; weak fine granular structure; very friable; many roots; continuous black (5YR 2/1) coatings on rock fragment surfaces; about 30 percent gravel and 40 percent cobbles; moderately acid; gradual wavy boundary.
- Bhs2—20 to 29 inches; very dusky red (2.5YR 2/2) extremely cobbly loam; weak fine granular structure; very friable; many roots; continuous black (5YR 2/1) coatings on rock fragment surfaces; decreasing fine earth in interstices with depth; about 30 percent gravel and 40 percent cobbles; moderately acid; clear smooth boundary.
- Bs—29 to 35 inches; dark reddish brown (2.5YR 3/4) extremely cobbly loam; weak fine granular structure; very friable; many roots; black (5YR 2/1) coatings on rock fragment surfaces; a small amount of earth filling interstices 1 mm in diameter; about 30 percent gravel and 60 percent cobbles; moderately acid; gradual wavy boundary.
- 2C—35 to 39 inches; fragmental materials; single grain; loose; few roots; black (5YR 2/1) coatings on rock fragment surfaces; interstices between rock fragments unfilled; about 95 percent rock fragments (about 50 percent of which is cobbles and 45 percent is gravel); neutral; abrupt smooth boundary.
- 3R—39 inches; igneous bedrock.

Paavola Series

The Paavola series consists of very deep, moderately well drained soils on ground moraines and end moraines. These soils formed in gravelly or cobbly sandy deposits and in the underlying loamy or sandy glacial till. Permeability is very rapid in the upper part of the profile and very slow in the lower part. Slopes range from 1 to 35 percent.

Typical pedon of Paavola gravelly coarse sandy loam, 250 feet south and 300 feet west of the northeast corner of sec. 15, T. 55 N., R. 34 W., Quincy Township, Houghton County, Michigan:

- Oi—0 to 2 inches; undecomposed hardwood and coniferous leaf litter.
- A—2 to 6 inches; dark reddish brown (5YR 2/2) gravelly coarse sandy loam, pinkish gray (5YR 6/2) dry; moderate medium granular structure; friable; many roots; about 22 percent gravel and 10 percent cobbles; strongly acid; clear smooth boundary.
- Bhs—6 to 15 inches; dark reddish brown (5YR 3/3) extremely gravelly coarse sand; weak fine subangular blocky structure; very friable; many roots; about 55 percent gravel and 20 percent cobbles; strongly acid; clear wavy boundary.
- Bs1—15 to 21 inches; dark reddish brown (5YR 3/4) extremely gravelly coarse sand; weak fine subangular blocky structure; very friable; many roots; about 42 percent gravel and 20 percent cobbles; slightly acid; clear wavy boundary.
- Bs2—21 to 31 inches; brown and dark brown (7.5YR 4/4) extremely gravelly coarse sand; common fine distinct strong brown (7.5YR 4/6) masses of iron accumulation; weak fine subangular blocky structure; friable; few roots; about 61 percent gravel and 20 percent cobbles; moderately acid; abrupt smooth boundary.
- 2E/Bx—31 to 39 inches; about 60 percent dark reddish gray (5YR 4/2) gravelly loamy fine sand (E); common fine prominent strong brown (7.5YR 4/6) masses of iron accumulation; surrounding peds of reddish brown (5YR 4/4) gravelly fine sandy loam (B); weak thin platy structure; very firm; common fine vesicular pores; few discontinuous faint reddish brown (5YR 4/3) clay films on faces of peds; about 12 percent gravel and 5 percent cobbles; strongly acid; clear wavy boundary.
- 2Btx—39 to 60 inches; reddish brown (5YR 4/4) gravelly sandy loam; few fine prominent strong brown (7.5YR 4/6) masses of iron accumulation; weak medium platy structure; very firm; few very fine vesicular pores; few faint reddish brown (5YR 4/3) clay films on faces of peds; about 28 percent gravel and 5 percent cobbles; strongly acid; clear wavy boundary.
- 2Cd—60 to 70 inches; reddish brown (5YR 4/4) very gravelly sandy loam; weak thin platy structure parting to weak fine subangular blocky; very firm; about 21 percent gravel and 15 percent cobbles; moderately acid.

Pelkie Series

The Pelkie series consists of deep, moderately well drained, rapidly permeable soils on flood plains. These soils formed in sandy alluvium. Slopes range from 0 to 3 percent.

Typical pedon of Pelkie loamy very fine sand, 1,056 feet west of the southeast corner of sec. 28, T. 51 N., R. 34 W., Baraga Township, Baraga County, Michigan:

- Ap—0 to 8 inches; brown (7.5YR 5/4) loamy very fine sand, light brown (7.5YR 6/4) dry; weak fine subangular blocky structure parting to weak fine granular; very friable; many fine and medium roots; strongly acid; abrupt smooth boundary.
- C1—8 to 16 inches; light reddish brown (5YR 6/3) fine sand; weak fine subangular blocky structure parting to weak medium granular; very friable; common fine roots; strongly acid; abrupt smooth boundary.
- C2—16 to 32 inches; reddish brown (5YR 5/4) fine sand; weak fine subangular blocky structure parting to weak medium granular; very friable; common fine roots; strongly acid; abrupt smooth boundary.
- C3—32 to 60 inches; light reddish brown (5YR 6/4) sand; common fine faint yellowish red (5YR 5/6) masses of iron accumulation; single grain; loose; few fine roots; very strongly acid.

Rubicon Series

The Rubicon series consists of deep, excessively drained, rapidly permeable soils on outwash plains, lake plains, and moraines. These soils formed in sandy material. Slopes range from 1 to 50 percent.

Typical pedon of Rubicon sand, 2,500 feet south of the center of sec. 17, T. 50 N., R. 34 W., Baraga Township, Baraga County, Michigan:

- A—0 to 2 inches; very dark gray (5YR 3/1) sand, dark gray (10YR 4/1) dry; weak medium granular structure; very friable; many roots; very strongly acid; clear irregular boundary.
- E—2 to 7 inches; brown (7.5YR 5/2) sand; weak fine subangular blocky structure; very friable; many roots; very strongly acid; clear wavy boundary.
- Bs1—7 to 9 inches; reddish brown (5YR 4/4) sand; weak fine subangular blocky structure; very friable; many roots; strongly acid; abrupt irregular boundary.
- Bs2—9 to 13 inches; yellowish red (5YR 4/6) sand; weak fine subangular blocky structure parting to weak fine granular; very friable; common roots; moderately acid; clear irregular boundary.
- BC—13 to 26 inches; strong brown (7.5YR 5/6) sand; single grain; loose; few roots; moderately acid; clear wavy boundary.
- C—26 to 60 inches; brown (7.5YR 5/4) sand; single grain; loose; moderately acid.

Sabattis Series

The Sabattis series consists of very deep, very poorly drained soils on till plains. These soils formed in loamy deposits. Permeability is moderate in the surface layer and subsoil and moderately slow or moderate in the substratum. Slopes range from 0 to 4 percent.

Typical pedon of Sabattis very cobbly muck, in an area of Gratiot-Sabattis complex, 12 to 50 percent slopes, on a northwest-facing slope of 44 percent in a forested area at an elevation of 1,160 feet; 1,180 feet east and 200 feet north of the southwest corner of sec. 25, T. 58 N., R. 31 W., Houghton Township, Keweenaw County, Michigan; USGS Eagle Harbor 7.5-minute topographic quadrangle; lat. 47 degrees 23 minutes 14.75 seconds N. and long. 88 degrees 11 minutes 21.95 seconds W.

- Oa—0 to 8 inches; black (7.5YR 2.5/1) very cobbly muck, very dark brown (7.5YR 2.5/2) dry; 2 percent fiber rubbed; weak fine granular structure; very friable; many very fine to coarse roots; 15 percent gravel, 25 percent cobbles, and 5 percent stones; slightly acid; clear wavy boundary.
- A—8 to 12 inches; black (7.5YR 2.5/1) very cobbly very fine sandy loam, very dark brown (7.5YR 2.5/2) dry; weak medium subangular blocky structure parting to weak fine granular; very friable; many very fine to coarse roots; 15 percent gravel, 25 percent cobbles, and 5 percent stones; slightly acid; gradual wavy boundary.
- Bg—12 to 17 inches; dark grayish brown (2.5Y 4/2) cobbly very fine sandy loam; weak medium subangular blocky structure; friable; few very fine and fine roots; many medium faint dark gray (2.5Y 4/1) iron depletions and many medium distinct olive brown (2.5Y 4/4) masses of iron accumulation; 10 percent gravel, 5 percent cobbles, and 2 percent stones; slightly acid; gradual wavy boundary.
- C1—17 to 26 inches; brown (10YR 4/3) cobbly very fine sandy loam; massive; friable; many medium faint dark grayish brown (10YR 4/2) iron depletions and many medium distinct olive brown (2.5Y 4/4) masses of iron accumulation; 10 percent gravel, 5 percent cobbles, and 2 percent stones; neutral; clear wavy boundary.
- C2—26 to 32 inches; brown (10YR 5/3) cobbly very fine sandy loam; massive; friable; many medium distinct olive brown (2.5Y 4/4) masses of iron accumulation; 10

- percent gravel, 5 percent cobbles, and 2 percent stones; moderately alkaline; clear smooth boundary.
- 2C3—32 to 37 inches; brown (7.5YR 4/3) cobbly fine sandy loam; massive; friable; common fine faint brown (7.5Y 4/4) masses of iron accumulation; 20 percent gravel, 10 percent cobbles, and 3 percent stones; moderately alkaline; clear smooth boundary.
- 2C4—37 to 80 inches; dark grayish brown (10YR 4/2) very cobbly sandy loam; massive; friable; 20 percent gravel, 20 percent cobbles, and 5 percent stones; moderately alkaline.

Shelldrake Series

The Shelldrake series consists of very deep, excessively drained, very rapidly permeable soils on beach ridges and dunes. These soils formed in sandy beach deposits. Slopes range from 0 to 8 percent.

Typical pedon of Shelldrake sand, 4,200 feet south and 400 feet west of the northeast corner of sec. 34, T. 58 N., R. 29 W.; Grant Township, Keweenaw County, Michigan; USGS Big Bay topographic quadrangle; lat. 47 degrees 02 minutes 34.64 seconds N. and long. 87 degrees 57 minutes 56.15 seconds W.

- Oe—0 to 1 inch; black (7.5YR 2.5/1), partially decomposed forest litter.
- E—1 to 6 inches; brown (7.5YR 5/2) sand, pinkish gray (7.5YR 7/2) dry; weak medium subangular blocky structure; very friable; many very fine to coarse roots; strongly acid; clear smooth boundary.
- Bw—6 to 13 inches; light brown (7.5YR 6/4) sand; weak medium subangular blocky structure; very friable; many very fine to coarse roots; strongly acid; gradual smooth boundary.
- BC—13 to 23 inches; very pale brown (10YR 6/3) sand; single grain; loose; common very fine to medium roots; moderately acid; gradual smooth boundary.
- C—23 to 80 inches; pale brown (10YR 7/3) sand; single grain; loose; few very fine to medium roots; moderately acid.

Skandia Series

The Skandia series consists of very poorly drained soils in depressions and drainageways on sandstone benches. These soils formed in organic deposits overlying sandstone bedrock. Permeability is moderate or moderately rapid in the organic material. Slopes range from 0 to 2 percent.

Typical pedon of Skandia mucky peat, 330 feet south and 2,475 feet east of the northwest corner of sec. 20, T. 51 N., R. 26 W., Powell Township, Marquette County, Michigan:

- Oe—0 to 4 inches; mucky peat, dark grayish brown (10YR 4/2) broken face and pressed, very dark grayish brown (10YR 3/2) rubbed; about 80 percent fiber, 40 percent rubbed; weak medium platy structure; primarily sphagnum moss fibers; many very fine to coarse roots; extremely acid; clear smooth boundary.
- Oa—4 to 26 inches; muck, black (10YR 2/1) broken face, rubbed, and pressed; about 10 percent fiber, 2 percent rubbed; weak medium subangular blocky structure; primarily herbaceous fibers; many very fine to coarse roots; extremely acid; abrupt smooth boundary.
- 2Cr—26 to 31 inches; dark reddish brown (2.5YR 3/4), weathered sandstone bedrock; massive; firm; extremely acid; clear wavy boundary.
- 2R—31 inches; dusky red (2.5YR 3/2) sandstone bedrock.

Skanee Series

The Skanee series consists of very deep, somewhat poorly drained soils on till plains. These soils formed in loamy and sandy glacial till. They have a fragipan. Permeability is moderate in the upper part of the subsoil, very slow in the fragipan, and moderate in the underlying material. Slopes range from 0 to 6 percent.

Typical pedon of Skanee fine sandy loam (fig. 21), 2,700 feet west and 100 feet south of the northeast corner of sec. 34, T. 52 N., R. 36 W., Elm River Township, Houghton County, Michigan:

- Oa—0 to 2 inches; black (N 2/0), well decomposed leaf litter; many roots; abrupt smooth boundary.
- E—2 to 8 inches; pinkish gray (5YR 6/2) fine sandy loam; few fine faint reddish gray (5YR 5/2) masses of iron accumulation; moderate medium subangular blocky structure; friable; few roots; about 3 percent gravel; very strongly acid; abrupt smooth boundary.
- Bhs—8 to 14 inches; dark reddish brown (5YR 3/3) fine sandy loam; few medium faint dark reddish brown (5YR 3/4) masses of iron accumulation; moderate medium subangular blocky structure; friable; few roots; about 3 percent gravel; very strongly acid; abrupt smooth boundary.
- E/Bx—14 to 31 inches; about 60 percent reddish brown (5YR 5/3) fine sandy loam (E); few fine distinct yellowish red (5YR 5/6) masses of iron accumulation; surrounding peds of reddish brown (5YR 4/4) fine sandy loam (Bt); massive; very firm; common clay films on faces of peds; about 3 percent gravel; strongly acid; clear smooth boundary.
- Bt—31 to 42 inches; reddish brown (2.5YR 4/4) sandy clay loam; massive; friable; common clay films on faces of peds; about 3 percent gravel; moderately acid; clear smooth boundary.
- C—42 to 60 inches; reddish brown (2.5YR 4/4) sandy loam; massive; friable; about 3 percent gravel; moderately acid.

Sturgeon Series

The Sturgeon series consists of deep, somewhat poorly drained soils on flood plains. These soils formed in silty and sandy alluvium. Permeability is moderate in the upper part of the profile and rapid in the lower part. Slopes are 0 to 1 percent.

Typical pedon of Sturgeon silt loam, 460 feet east and 300 feet north of the southwest corner of sec. 2, T. 51 N., R. 34 W., Baraga Township, Baraga County, Michigan:

- Ap—0 to 8 inches; reddish brown (5YR 4/3) silt loam, pink (5YR 7/3) dry; moderate fine granular structure; friable; many roots; moderately acid; abrupt smooth boundary.
- C1—8 to 18 inches; reddish brown (5YR 4/3) silt loam; common fine faint strong brown (7.5YR 5/6) masses of iron accumulation; moderate fine and medium granular structure; friable; common roots; moderately acid; abrupt smooth boundary.
- C2—18 to 24 inches; reddish brown (5YR 4/4) silt loam; few fine faint yellowish red (5YR 4/6) masses of iron accumulation; moderate fine and medium granular structure; friable; common roots; moderately acid; abrupt smooth boundary.
- C3—24 to 30 inches; reddish brown (5YR 5/3) silt loam; many fine distinct yellowish red (5YR 5/8) masses of iron accumulation; weak fine subangular blocky structure; friable; moderately acid; abrupt smooth boundary.
- C4—30 to 60 inches; brown (7.5YR 5/4) fine sand; massive; friable; moderately acid.



Figure 21.—Typical profile of a Skanee soil. The B horizon has mottled colors, indicating a seasonal high water table. Depth is marked in inches.

Tawas Series

The Tawas series consists of very deep, very poorly drained soils in depressions and drainageways on outwash plains, till-floored lake plains, ground moraines, disintegration moraines, and bedrock-controlled moraines. These soils formed in organic deposits overlying sandy outwash. Permeability is moderately rapid to moderately slow in the organic part of the profile and rapid in the sandy part. Slopes range from 0 to 4 percent.

Typical pedon of Tawas muck, 1,650 feet south and 1,950 feet west of the northeast corner of sec. 7, T. 47 N., R. 25 W., Sands Township, Marquette County, Michigan; lat.

46 degrees 29 minutes 15.41 seconds N. and long. 87 degrees 28 minutes 38.46 seconds W.

- Oa1—0 to 6 inches; muck, black (N 2.5/0) broken face and rubbed; about 5 percent fiber, less than 1 percent rubbed; moderate fine granular structure; many very fine to coarse roots; moderately acid; gradual smooth boundary.
- Oa2—6 to 15 inches; muck, black (10YR 2/1) broken face and rubbed; about 25 percent fiber, 5 percent rubbed; weak thin platy structure; moderately acid; clear smooth boundary.
- Oa3—15 to 25 inches; muck, black (10YR 2/1) broken face and rubbed; about 90 percent fiber, 15 percent rubbed; weak medium platy structure; moderately acid; abrupt smooth boundary.
- Cg—25 to 80 inches; grayish brown (10YR 5/2) sand; single grain; loose; neutral.

Trimountain Series

The Trimountain series consists of very deep, well drained soils on ground moraines and end moraines. These soils formed in a loamy mantle over gravelly, loamy, and sandy glacial till. They have a fragipan. Permeability is moderate in the upper part of the profile, very slow in the fragipan, and moderate or moderately rapid in the lower part. Slopes range from 15 to 60 percent.

Typical pedon of Trimountain cobbly fine sandy loam, 1,850 feet west and 1,850 feet north of the southeast corner of sec. 24, T. 54 N., R. 35 W., Adams Township, Houghton County, Michigan:

- Oa—0 to 1 inch; black (N 2/0), decomposed forest litter; many fine and medium roots; clear wavy boundary.
- E—1 to 5 inches; dark reddish gray (5YR 4/2) cobbly fine sandy loam; weak fine subangular blocky structure; very friable; many roots; about percent gravel and 11 percent cobbles; extremely acid; clear wavy boundary.
- Bhs—5 to 11 inches; dark reddish brown (5YR 3/3) fine sandy loam; moderate medium subangular blocky structure; very friable; many roots; about 8 percent gravel and 2 percent cobbles; very strongly acid; clear wavy boundary.
- Bs—11 to 27 inches; reddish brown (5YR 4/4) gravelly fine sandy loam; moderate medium subangular blocky structure; friable; common fine and medium and few coarse roots; about 18 percent gravel and 2 percent cobbles; very strongly acid; clear wavy boundary.
- 2E/Bx—27 to 34 inches; about 60 percent reddish brown (5YR 5/3) gravelly loamy sand (E); surrounding peds of reddish brown (2.5YR 4/4) gravelly fine sandy loam (Bt); weak thin platy structure; very firm; few roots; common fine vesicular pores; few faint reddish brown (5YR 4/4) clay films in pores and root channels; about 17 percent gravel and 6 percent cobbles; very strongly acid; clear wavy boundary.
- 2Btx—34 to 46 inches; reddish brown (5YR 4/4) gravelly loamy sand; massive; very firm; few very fine vesicular pores; few faint reddish brown (5YR 4/3) clay films in pores; about 30 percent gravel and 3 percent cobbles; very strongly acid; gradual wavy boundary.
- 2C1—46 to 56 inches; reddish brown (5YR 4/4) gravelly fine sand; massive; firm; about 17 percent gravel and 3 percent cobbles; strongly acid; clear wavy boundary.
- 3C2—56 to 80 inches; reddish brown (5YR 4/4) extremely gravelly coarse sand; massive; friable; about 65 percent gravel and 3 percent cobbles; strongly acid.

Waiska Series

The Waiska series consists of excessively drained soils on glacial lake benches, stream terraces, and outwash plains. These soils formed in gravelly and sandy material. Permeability is very rapid. Slopes range from 0 to 60 percent.

Typical pedon of Waiska sand (fig. 22), on a convex slope of 5 percent in a forested area, 2,475 feet south and 165 feet east of the northwest corner of sec. 33, T. 51 N., R. 31 W., Arvon Township, Baraga County, Michigan:

- Oe—0 to 1 inch; dark reddish brown (5YR 2/2), partially decomposed leaf litter; weak fine granular structure; very friable; many roots; strongly acid; abrupt smooth boundary.
- E—1 to 4 inches; brown (7.5YR 4/2) sand; weak fine granular structure; very friable; many roots; about 5 percent gravel; strongly acid; abrupt smooth boundary.
- Bhs—4 to 8 inches; dark reddish brown (5YR 3/3) gravelly sand; weak fine subangular blocky structure parting to single grain; very friable to loose; many roots; about 15 percent gravel; strongly acid; abrupt smooth boundary.
- Bs1—8 to 11 inches; brown (7.5YR 4/4) gravelly sand; single grain; loose; common roots; about 20 percent gravel; strongly acid; clear smooth boundary.
- Bs2—11 to 18 inches; strong brown (7.5YR 4/6) very gravelly sand; single grain; loose; few roots; about 50 percent gravel; strongly acid; gradual smooth boundary.
- BC—18 to 35 inches; strong brown (7.5YR 5/6) very gravelly sand; single grain; loose; few roots; about 50 percent gravel; strongly acid; clear smooth boundary.
- C—35 to 60 inches; yellowish brown (10YR 5/4) and dark yellowish brown (10YR 4/4) very gravelly sand with strata of coarse sand; single grain; loose; about 50 percent gravel; strongly acid.

Wallace Series

The Wallace series consists of very deep, well drained soils on dunes and outwash plains. These soils formed in sandy sediments. Permeability is moderate or moderately rapid in the part of the profile that contains ortstein and rapid in other parts of the profile. Slopes range from 1 to 50 percent.

Typical pedon of Wallace sand (fig. 23), 300 feet west and 1,630 feet south of the northeast corner of sec. 30, T. 58 N., R. 27 W., Grant Township, Keweenaw County, Michigan:

- Oa—0 to 1.5 inches; reddish black (2.5YR 2.5/1), well decomposed forest litter.
- Oe—1.5 to 4 inches; very dusky red (2.5YR 2.5/2), well decomposed forest litter.
- A—4 to 5 inches; black (7.5YR 2.5/1) sand, very dark brown (7.5YR 2.5/2); weak fine granular structure; very friable; many very fine to coarse roots; very strongly acid; clear broken boundary.
- E1—5 to 19 inches; pinkish gray (7.5YR 6/2) sand, pinkish white (7.5YR 8/2) dry; weak fine granular structure; very friable; many very fine to coarse roots; very strongly acid; abrupt irregular boundary.
- E2—19 to 22 inches; light brown (7.5YR 6/3) sand, pinkish gray (7.5YR 7/2) dry; weak fine granular structure; very friable; many fine and few coarse roots; very strongly acid; abrupt broken boundary.
- Bhsm1—22 to 28 inches; dark reddish brown (2.5YR 2.5/2) sand; strong very coarse subangular blocky structure; rigid; few fine roots; dark reddish brown (2.5YR 2.5/2) very strongly cemented ortstein occupies 97 percent of the horizon; very strongly acid; abrupt irregular boundary.



Figure 22.—Typical profile of a Waiska soil. The B horizon has a large amount of gravel and stones. Depth is marked in inches.

Bhsm2—28 to 31 inches; dark reddish brown (2.5YR 3/2) sand; strong very coarse subangular blocky structure; slightly rigid; few very fine roots; dark reddish brown (2.5YR 2.5/2) very strongly cemented ortstein occupies 90 percent of the horizon; very strongly acid; abrupt broken boundary.

Bsm—31 to 37 inches; brown (7.5YR 4/4) sand; strong very coarse subangular blocky structure; rigid; few fine roots; brown (7.5YR 4/4) very strongly cemented ortstein occupies 99 percent of the horizon; very strongly acid; clear irregular boundary.

Bs1—37 to 52 inches; strong brown (7.5YR 4/6) sand; strong very coarse subangular blocky structure; firm; few fine and medium roots; dark reddish brown (5YR 3/3) strongly cemented ortstein occupies 74 percent of the horizon (12 percent of the horizon occurs as columns of ortstein extending from the Bhsm1 horizon into the Bs1 horizon); very strongly acid; clear irregular boundary.

- Bs2—52 to 62 inches; strong brown (7.5YR 4/6) sand; moderate coarse subangular blocky structure; firm; few very fine to medium roots; dark brown (7.5YR 3/4) strongly cemented ortstein occupies 49 percent of the horizon (8 percent of the horizon occurs as columns of ortstein extending from the Bhsm2 horizon into the Bs2 horizon); very strongly acid; clear wavy boundary.
- BC—62 to 74 inches; dark yellowish brown (10YR 4/6) sand; weak medium subangular blocky structure; very friable; strongly acid; clear wavy boundary.
- C—74 to 80 inches; yellowish brown (10YR 5/6) sand; single grain; loose; strongly acid.



Figure 23.—Typical profile of a Wallace soil. The dark layer below the white E horizon consists of ortstein cementation. Depth is marked in inches.

Yalmer Series

The Yalmer series consists of deep, moderately well drained soils on till plains and moraines. These soils formed in sandy and loamy glacial till. They have a fragipan. Permeability is rapid in the upper part of the subsoil, slow in the fragipan, and moderate in the substratum. Slopes range from 1 to 35 percent.

Typical pedon of Yalmer loamy sand, 1,300 feet north and 100 feet west of the center of sec. 32, T. 50 N., R. 33 W., L'Anse Township, Baraga County, Michigan:

- Oe—0 to 1 inch; dark reddish brown (5YR 3/2), partially decomposed forest litter.
- A—1 to 3 inches; black (5YR 2/1) loamy sand, dark gray (5YR 4/1) dry; weak fine granular structure; very friable; many roots; about 3 percent pebbles; extremely acid; abrupt smooth boundary.
- E—3 to 8 inches; reddish gray (5YR 5/2) loamy sand; weak medium and fine subangular blocky structure; very friable; common roots; about 3 percent pebbles; extremely acid; abrupt wavy boundary.
- Bhs—8 to 11 inches; dark reddish brown (5YR 3/3) sand; weak fine subangular blocky structure; very friable; many roots; about 40 percent ortstein; about 3 percent pebbles; extremely acid; abrupt irregular boundary.
- Bs1—11 to 15 inches; yellowish red (5YR 4/6) fine sand; weak fine subangular blocky structure; very friable; few roots; about 40 percent ortstein; about 3 percent pebbles; extremely acid; clear wavy boundary.
- Bs2—15 to 24 inches; yellowish red (5YR 5/6) fine sand; weak fine subangular blocky structure; very friable; few roots; about 6 percent pebbles; very strongly acid; abrupt wavy boundary.
- 2E/Bx—24 to 29 inches; about 70 percent reddish gray (5YR 5/2) loamy fine sand (E) surrounding peds of dark reddish brown (2.5YR 3/4) fine sandy loam (Bt); common medium distinct strong brown (7.5YR 5/6) masses of iron accumulation; weak medium subangular blocky structure; firm; few roots; many pores; about 10 percent pebbles; very strongly acid; clear broken boundary.
- 2B/Ex—29 to 40 inches; about 65 percent dark reddish brown (2.5YR 3/4) fine sandy loam (Bt); reddish gray (5YR 5/2) loamy fine sand (E); weak very coarse subangular blocky structure; very firm; about 10 percent pebbles; many pores; dusky red (2.5YR 3/2) clay flows in pores and on faces of peds; very strongly acid; gradual wavy boundary.
- 2Bt—40 to 66 inches; reddish brown (2.5YR 4/4) fine sandy loam; moderate medium platy structure parting to weak medium subangular blocky; firm; about 5 percent pebbles; many pores; dark red (2.5YR 3/6) clay flows on faces of peds; strongly acid; clear wavy boundary.
- 2C—66 to 70 inches; reddish brown (2.5YR 4/4) fine sandy loam; weak medium subangular blocky structure; friable; about 15 percent pebbles; moderately acid.

Zeba Series

The Zeba series consists of moderately deep, somewhat poorly drained, moderately permeable soils on till plains and sandstone benches. These soils formed in loamy and sandy glacial till over sandstone bedrock. Slopes range from 0 to 3 percent.

Typical pedon of Zeba sandy loam, 1,450 feet north and 150 feet east of the southwest corner of sec. 31, T. 52 N., R. 31 W., Arvon Township, Baraga County, Michigan:

A—0 to 2 inches; very dark gray (10YR 3/1) sandy loam, light gray (10YR 7/1) dry; moderate medium granular structure; friable; many roots; very strongly acid; abrupt smooth boundary.

- E—2 to 5 inches; grayish brown (10YR 5/2) sandy loam; few fine distinct dark yellowish brown 10YR 4/6) and common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation; moderate medium subangular blocky structure; friable; common roots; very strongly acid; clear smooth boundary.
- Bs—5 to 13 inches; dark brown (7.5YR 4/4) fine sandy loam; few fine distinct yellowish red (5YR 5/8) masses of iron accumulation; moderate medium subangular blocky structure; friable; common roots; about 5 percent pebbles; moderately acid; clear smooth boundary.
- E´—13 to 21 inches; reddish brown (5YR 5/3) sandy loam; many medium distinct yellowish red (5YR 5/8) masses of iron accumulation; moderate medium subangular blocky structure; friable; few roots; about 5 percent pebbles; moderately acid; clear smooth boundary.
- B/E—21 to 33 inches; reddish brown (2.5YR 4/4) sandy loam (Bt) and reddish gray (5YR 5/2) loamy sand (E); common medium distinct yellowish red (5YR 5/6) masses of iron accumulation; weak coarse subangular blocky structure; firm; common pores; few clay flows on faces of peds; about 5 percent pebbles; strongly acid; abrupt smooth boundary.
- 2R—33 inches; sandstone bedrock.

Formation of the Soils

This section describes the factors of soil formation and relates them to the soils in the survey area. It also describes the processes of soil formation.

Factors of Soil Formation

Soil forms through the interaction of five major factors. These are the physical, chemical, and mineral composition of the parent material; the climate under which the soil material has accumulated and has existed since accumulation; the plant and animal life on and in the soil; the relief, or topography; and the length of time that the processes of soil formation have acted on the parent material (Jenny, 1941).

Climate and plant and animal life are the active forces of soil formation. They slowly change the parent material into a natural body of soil that has genetically related layers, called horizons. The effects of climate and plant and animal life are conditioned by relief. The nature of the parent material affects the kind of soil profile that is formed and in extreme cases determines it almost entirely. Finally, time changes the parent material into a soil. Generally, a long time is required for the formation of distinct horizons

The factors of soil formation are so closely interrelated in their effects on the soil hat few generalizations can be made about the effect of any one factor unless conditions are specified for the other four. Many of the processes of soil formation are unknown.

Parent Material

Parent material is the unconsolidated mass in which a soil forms. The parent material of the soils in Keweenaw County was deposited by glaciers or by meltwater from the glaciers. Some of this material was subsequently reworked by water and wind. The glaciers covered the county about 12,000 years ago. Parent material determines the chemical and mineralogical composition of the soil. Although the soils in the county have parent material of common glacial origin, the properties of the parent material vary greatly, sometimes within a small area, depending on how the material was deposited. The dominant parent materials in Keweenaw County were deposited as bedrock-controlled till, outwash material, lake sediment, alluvium, or organic material.

Glacial till is material that was deposited directly by glaciers with a minimum of water action. It consists of a mixture of particles of different sizes. The small pebbles in till have sharp corners, indicating that they have not been worn by water. The till in Keweenaw County generally is calcareous loamy sand, sandy loam, and loam. Trimountain soils formed in till. Typically, they are coarse-loamy and have moderately strongly developed structure.

Outwash material was deposited by running water from melting glaciers. The size of the particles that make up outwash material depends on the speed of the water that carried them. When the water slows down, the coarser particles are deposited. The finer particles, such as very fine sand, silt, and clay, are carried by slowly moving water. Outwash deposits generally consist of layers of particles of similar size, such as

sand, coarse sand, and gravel. Waiska soils are examples of soils that formed in outwash material.

Lake sediment is material that settled from still or slowly moving, deep lake water and from shallow, high-energy water near shorelines. Lake sediments are well sorted, and the size of the particles depends on the speed of the water that suspends them. Deford soils are examples of sandy soils that formed in parent material deposited in sandbars on a shallow lake bottom. Deer Park soils are examples of sandy soils that formed in dune material deposited on a lake shoreline.

Alluvial material has been deposited by floodwater of present streams in recent time. The texture of this material depends on the speed of the water that deposited the material. Arnheim soils are alluvial soils.

Organic material is made up of plant remains. After the glaciers receded from the area, water was left standing in depressions on outwash plains, flood plains, and till plains. Grasses and sedges that grew around the edge of these depressions died. Because of the wetness, when the plants died their remains did not decompose but accumulated around the edge of the depressions. Later, water-tolerant trees grew in these areas. As these trees died, their residue became part of the organic accumulation. Consequently, the depressions were eventually filled with organic material and developed into areas of muck. Lupton soils are examples of soils that formed in organic material.

Plant and Animal life

Green plants have been the principal organism influencing the soils in Keweenaw County. Bacteria, fungi, earthworms, and humans also have been important. The chief contribution of plant and animal life is the addition of organic matter and nitrogen to the soil. The kind of organic matter on and in the soil depends on the kinds of plants that grew on the soil. The residue of these plants accumulates on the surface of the soil. It decays and eventually becomes organic matter. Plant roots provide channels for the downward movement of water through the soil and add organic matter to the soil as they decay. Bacteria in the soil help to break down the organic material into a form that can be used by plants.

The vegetation in Keweenaw County was a mixture of coniferous and deciduous forest. Differences in natural soil drainage and changes in parent material affect the composition of forests.

In general, the well drained upland soils, such as Rubicon and Croswell soils, were covered with red oak and white pine. Trimountain and Lac La Belle soils were covered with sugar maple and red maple. The very poorly drained soils were covered with cedar, black spruce, and tamarack. Dawson and Loxley soils, which formed under wet conditions, contain a considerable amount of organic matter.

Climate

Climate is important in the formation of soils. It determines the kind of plant and animal life on and in the soil and determines the amount of water available for the weathering of minerals and the transporting of soil materials. Through its influence on soil temperature, climate determines the rate of chemical reactions in the soil. These climatic influences generally affect areas larger than a county.

The climate in Keweenaw County is cool and humid. Presumably, it is similar to the climate under which the soils formed. The soils in Keweenaw County differ from soils that formed in a dry, warm climate or from those that formed in a moist, hot climate. Climate is uniform throughout the county, but its effect is modified locally by the proximity to Lake Superior. The minor differences in the soils in Keweenaw County are partially the result of climatic differences.

Relief

Relief, or topography, has had a marked influence on the formation of the soils in Keweenaw County through its influence on natural drainage, erosion, plant cover, and soil temperature. Slopes in the county range from 0 to 90 percent. Natural drainage classes range from excessively drained on hilltops to very poorly drained in depressions.

Relief influences the formation of soil by affecting runoff and drainage. Drainage in turn, through its effect on aeration of the soil, determines the color of the soil. Runoff is most rapid on the steeper slopes, but in low areas, water can be temporarily ponded.

Water and air move freely through well drained soils but slowly through very poorly drained soils. In soils that are well aerated, the iron and aluminum compounds that give most soils their color are brightly colored and are oxidized. Poorly aerated soils are dull gray and mottled. Waiska soils are examples of well drained, well aerated soils; Deford and Kinross soils are examples of very poorly drained, poorly aerated soils. All of these soils formed in similar parent material.

Time

Generally, a long time is required for the development of distinct horizons in a soil. The differences in the length of time that the parent material has been in place are commonly reflected in the degree of development of the soil profile. Some soils form rapidly; others form slowly.

The soils in Keweenaw County range from young to mature. The glacial deposits in which many of the soils formed have been exposed to soil-forming factors long enough for distinct horizons to develop. Some soils that formed in recent alluvial sediments have not been in place long enough for the development of distinct horizons. Pelkie soils, which formed in alluvial materials, are young soils. Gratiot soils show the effects of leaching of lime from the soil, which has taken place over a long period of time.

Processes of Soil Formation

The process responsible for the development of the soil horizons from unconsolidated parent material is referred to as soil genesis. Soil morphology describes the physical, chemical, and biological properties of these horizons.

Several processes were involved in the development of soil horizons in Keweenaw County. These processes include the accumulation of organic matter; the leaching of lime (calcium carbonate) and other bases; the reduction and transfer of iron; and the formation and translocation of clay minerals. In most soils, more than one of these processes have been active in the development of horizons.

Organic material accumulates at the surface to form an A horizon. If the soil is plowed, the surface horizon is mixed into a plow layer, or Ap horizon. In the soils of Keweenaw County, the content of organic matter in the surface layer ranges from very high to low. For example, Deford soils have a very high content of organic matter in the surface layer; Pelkie soils have a low content of organic matter.

Leaching of carbonates and other bases has occurred in most of the soils. Soil scientists generally agree that leaching of bases in soils precedes the translocation of clay minerals. Many of the soils in Keweenaw County are moderately or strongly leached. Gratiot soils are leached of carbonates to a depth of 30 to 40 inches. Munising soils are leached to a depth of more than 80 inches. The variation in the depth of leaching is a result of time, relief, and parent material.

The reduction and transfer of iron, a process called gleying, is evident in the somewhat poorly drained, poorly drained, and very poorly drained soils. The gray or dull color in the subsoil indicates the reduction and loss of iron.

Translocation of clay minerals has contributed to horizon development. An eluviated, or leached, E horizon above an illuviated B horizon has a lower content of clay than the B horizon and typically is lighter in color. The B horizon typically has an accumulation of clay and clay films in pores and on the faces of peds. The soils displaying this translocation of clay were probably leached of carbonates and soluble salts to a considerable extent before the translocation of clay took place. Leaching of bases and translocation of clays are among the more important processes in horizon differentiation. Skanee soils are characterized by translocated clay, in the form of clay films, that has accumulated in the B horizon.

In some soils, iron, aluminum, and humus have moved from the surface layer to the B horizon. The B horizon in such soils commonly is dark brown or dark reddish brown. Wallace, Borgstrom, and Garlic soils are examples of soils in which translocated iron, aluminum, and humus have affected the B horizon.

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Glossary

- **Aeration, soil.** The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.
- **Aggregate, soil.** Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.
- Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.
- **Alpha,alpha-dipyridyl.** A dye that when dissolved in 1N ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction indicates a type of redoximorphic feature.
- **Aquic conditions.** Current soil wetness characterized by saturation, reduction, and redoximorphic features.
- **Area reclaim** (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.
- **Argillic horizon.** A subsoil horizon characterized by an accumulation of illuvial clay. **Aspect.** The direction in which a slope faces.
- **Association**, **soil**. A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit
- **Available water capacity (available moisture capacity).** The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

- **Base saturation.** The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.
- **Bedrock.** The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.
- **Blowout.** A shallow depression from which all or most of the soil material has been removed by the wind. A blowout has a flat or irregular floor formed by a resistant layer or by an accumulation of pebbles or cobbles. In some blowouts the water table is exposed.
- **Bottom land.** The normal flood plain of a stream, subject to flooding.
- **Cable yarding.** A method of moving felled trees to a nearby central area for transport to a processing facility. Most cable yarding systems involve use of a drum, a pole, and wire cables in an arrangement similar to that of a rod and reel used for fishing.

To reduce friction and soil disturbance, felled trees generally are reeled in while one end is lifted or the entire log is suspended.

- **Calcareous soil.** A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.
- **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.
- Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.
- **Clay depletions.** Low-chroma zones having a low content of iron, manganese, and clay because of the chemical reduction of iron and manganese and the removal of iron, manganese, and clay. A type of redoximorphic depletion.
- **Clay film.** A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.
- **Clayey textures** (in map unit descriptions). Equipment use and other uses are limited because of the clayey texture in the surface layer and the subsoil.
- 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.
- **Colluvium.** Soil material or rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.
- **Complex slope.** Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.
- **Complex, soil.** A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.
- **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."
- **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.
- **Cropping system.** Growing crops according to a planned system of rotation and management practices.

- **Cutbanks caving** (in map unit descriptions). The walls of excavations tend to cave in or slough.
- **Deferred grazing.** Postponing grazing or resting grazing land for a prescribed period. **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 map unit descriptions). Equipment use and other uses are limited by the depth to bedrock.
- **Depth to soft bedrock** (in map unit descriptions). Soft bedrock is within a depth of 40 inches.
- **Dissected slopes** (in map unit descriptions). Equipment use and other uses are limited by the steep side slopes.
- **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.
- **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.
- **Droughtiness** (in map unit descriptions). The soil holds too little water for plants during dry periods.
- **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.
- **End moraine.** A ridgelike accumulation of till that is being produced or has been produced at the outer margin of an actively flowing glacier at any given time.
- **Endosaturation.** A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.
- **Episaturation.** A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.
- **Erodibility** (in map unit descriptions). The soil erodes easily as a result of surface water runoff.
- **Erosion.** The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.
 - *Erosion* (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.
 - *Erosion* (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.
- **Erosion** (in map unit descriptions). The soil has a potential for erosion during forestland management activities.
- **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.

Excess fines (in tables). Excess silt and clay in the soil. The soil does not provide a source of gravel or sand for construction purposes.

- **Excess humus** (in map unit descriptions). Equipment use and other uses are limited because of the large amount of organic material.
- **Fallow.** Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grain is grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.
- Fast intake (in tables). The rapid movement of water into the soil.
- **Fertility, soil.** The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.
- **Fibric soil material (peat).** The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.
- **Field moisture capacity.** The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity*, *normal moisture capacity*, or *capillary capacity*.
- **Fill slope.** A sloping surface consisting of excavated soil material from a road cut. It commonly is on the downhill side of the road.
- Fine textured soil. Sandy clay, silty clay, or clay.
- **Flat.** A general term for a level or nearly level surface, or a small area of land marked by little or no relief.
- **Flood plain.** A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.
- **Forest cover.** All trees and other woody plants (underbrush) covering the ground in a forest.
- **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.
- **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.
- **Graded stripcropping.** Growing crops in strips that grade toward a protected waterway.
- **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 moraine.** An extensive, fairly even layer of till having an uneven or undulating surface.
- **Ground water.** Water filling all the unblocked pores of the material below the water table.
- **Gully.** A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.
- **Hemic soil material (mucky peat).** Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.
- **Hill.** A natural elevation of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline; hillsides generally have slopes of more than 15 percent. The distinction between a hill and a mountain is arbitrary and is dependent on local usage.
- Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:
 - O horizon.—An organic layer of fresh and decaying plant residue.
 - A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.
 - *E horizon.*—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.
 - *B horizon.*—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.
 - *C horizon.*—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.
 - 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.
- **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.

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.

Intermittent stream. A stream, or reach of a stream, that flows for prolonged periods only when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Iron depletions. Low-chroma zones having a low content of iron and manganese oxide because of chemical reduction and removal, but having a clay content similar to that of the adjacent matrix. A type of redoximorphic depletion.

Kame. An irregular, short ridge or hill of stratified drift.

Knoll. A small, low, rounded hill rising above adjacent landforms.

Lacustrine deposit. Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Lake plain (geology). A nearly level surface marking the floor of an extinct lake filled by well sorted, coarse textured to fine textured, stratified sediments.

Lamellae. Thin layers in the soil in which illuviated clay particles have accumulated. The layers generally form in sandy soils and are commonly irregular or discontinuous.

Landform. An individual feature of the earth's surface. Large features include plateaus and mountains; small features include hills, dunes, kames, and hillslopes.

Landscape. A collection or population of landforms.

Large stones (in map unit descriptions). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil. The content of rock fragments in the surface layer and the subsoil is more than 25 percent.

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

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Low strength. The soil is not strong enough to support loads.

Marl. An earthy, unconsolidated deposit consisting chiefly of calcium carbonate mixed with clay in approximately equal amounts.

Masses. Concentrations of substances in the soil matrix that do not have a clearly defined boundary with the surrounding soil material and cannot be removed as a discrete unit. Common compounds making up masses are calcium carbonate, gypsum or other soluble salts, iron oxide, and manganese oxide. Masses consisting of iron oxide or manganese oxide generally are considered a type of redoximorphic concentration.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

- **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).
- **Muck.** Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)
- **Munsell notation.** A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.
- **Neutral soil.** A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)
- **Nutrient loss** (in map unit descriptions). The soil may lose nutrients, fertilizers and pesticides as a result of either surface water runoff or percolation through the soil.
- **Nutrient, plant.** Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.
- **Organic mat.** A zone of accumulation of organic material, such as leaves, twigs, and grasses, in various stages of decomposition. This zone lies above the mineral soil. It is often described in forest regions and is commonly called duff or forest litter.
- **Organic matter.** Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low	less than 0.5 percent
Low	0.5 to 1.0 percent
Moderately low	1.0 to 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent
Very high	more than 8.0 percent

Ortstein. A hardened mass or layer in the soil in which the cemented material consists of illuviated compounds of iron and aluminum and organic matter.

Outwash. Gravel, sand, and silt, commonly stratified, deposited by glacial meltwater.

Outwash plain. A landform of mainly sandy or coarse textured material of glaciofluvial origin. An outwash plain is commonly smooth; where pitted, it generally is low in relief.

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.

Percs slowly (in tables). The slow movement of water through the soil adversely affects the specified use.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as "saturated hydraulic conductivity," which is defined in the "Soil Survey Manual." In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as "permeability." Terms describing permeability, measured in inches per hour, are as follows:

Extremely slow	0.0 to 0.01 inch
Very slow	0.01 to 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate 0	.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poor filter (in tables). Because of rapid or very rapid permeability, the soil may not adequately filter effluent from a waste disposal system.

Poor filtering capacity (in map unit descriptions). Effluent moves through the soil too rapidly for adequate filtration or treatment.

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.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is

neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid	less than 3.5
Extremely acid	3.5 to 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

- **Red beds.** Sedimentary strata that are mainly red and are made up largely of sandstone and shale.
- **Redoximorphic concentrations.** Nodules, concretions, soft masses, pore linings, and other features resulting from the accumulation of iron or manganese oxide. An indication of chemical reduction and oxidation resulting from saturation.
- **Redoximorphic depletions.** Low-chroma zones from which iron and manganese oxide or a combination of iron and manganese oxide and clay has been removed. These zones are indications of the chemical reduction of iron resulting from saturation.
- **Redoximorphic features.** Redoximorphic concentrations, redoximorphic depletions, reduced matrices, a positive reaction to alpha, alpha-dipyridyl, and other features indicating the chemical reduction and oxidation of iron and manganese compounds resulting from saturation.
- **Reduced matrix.** A soil matrix that has low chroma in situ because of chemically reduced iron (Fe II). The chemical reduction results from nearly continuous wetness. The matrix undergoes a change in hue or chroma within 30 minutes after exposure to air as the iron is oxidized (Fe III). A type of redoximorphic feature.
- Relief. The elevations or inequalities of a land surface, considered collectively.
 Restrictive feature (in map unit descriptions). The soil has a layer that inhibits the movement of water and/or roots through the soil. Examples of restrictive features include bedrock, ortstein, and dense layers.
- **Rock fragments.** Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.
- **Rock fragments** (in map unit descriptions). Equipment use and other uses are limited because of excess gravel and cobbles within 12 inches of the surface.
- **Root zone.** The part of the soil that can be penetrated by plant roots.
- **Rooting depth** (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts 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 groundwater 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.
- **Sandy textures** (in map unit descriptions). Equipment use and other uses are limited because of the sandy surface layer.

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.

- **Seasonal wetness** (in map unit descriptions). Equipment use and other uses are limited because the soil has a water table between depths of 6 and 40 inches during some part of the year.
- **Seepage** (in tables). The movement of water through the soil. Seepage adversely affects the specified use.
- **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.
- **Severe wetness** (in map unit descriptions). Equipment use and other uses are limited because the soil has a water table at or near the surface during some part of the year.
- **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.
- **Silt.** As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.
- **Similar soils.** Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.
- **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 complex slopes are as follows:

Level	0 to 2 percent
Nearly level	0 to 3 percent
Gently undulating	0 to 6 percent
Undulating	2 to 6 percent
Gently rolling	6 to 12 percent
Rolling	6 to 18 percent
Hilly	12 to 25 percent
Steep	18 to 45 percent
Very steep	45 percent and higher

- **Slope** (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.
- **Slow refill** (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.
- **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 and by the passage of time.
- **Soil rutting** (in map unit descriptions). Ruts form easily during the spring and other wet periods.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

- **Solum.** The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.
- **Stones.** Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.
- **Stony.** Refers to a soil containing stones in numbers that interfere with or prevent tillage.
- **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 grain (each grain by itself, as in dune sand) or massive (the particles adhering without any regular cleavage, as in many hardpans).
- **Subsidence** (in map unit descriptions). The settlement of organic soils after they are drained is more than 24 inches.
- **Subsoil.** Technically, the B horizon; roughly, the part of the solum below plow depth. **Substratum.** The part of the soil below the solum.
- **Subsurface layer.** Any surface soil horizon (A, E, AB, or EB) below the surface layer. **Surface boulders** (in map unit descriptions). Equipment use and other uses are limited because of boulders on the 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.
- **Surface stones** (in map unit descriptions). Equipment use and other uses are limited because of stones on the surface.
- **Terminal moraine.** A belt of thick 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."
- **Thin layer** (in tables). Otherwise suitable soil material that is too thin for the specified use.
- **Till.** Unsorted, nonstratified drift consisting of clay, silt, sand, and boulders transported and deposited by glacial ice.
- **Till plain.** An extensive area of nearly level to undulating soils underlain by till.
- **Tilth, soil.** The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.
- **Topsoil.** The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.
- **Trace elements.** Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.
- **Upland.** Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.
- **Weathering.** All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.
- **Well graded.** Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.
- **Wilting point (or permanent wilting point).** The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.
- **Windthrow.** The uprooting and tipping over of trees by the wind.

Tables

Table 1.--Temperature and Precipitation
(Recorded in the period 1971-2000 at Houghton, Michigan)

	 			Temperature			Precipitation					
	 	 	 Average 	2 years		Average number of growing degree days*	 Average 	2 years in 10 will have				
Month	daily	Average daily minimum 		Maximum	 Minimum temperature lower than			Less		Average number of days with 0.10 inch or more	snowfall	
	°F	°F	°F	°F	o _F	Units	In	In	In		In	
January	 21.0 	 8.8 	 14. 9 	40	 -16 	 0 	 4.14 	 2.80 	 5.41 	 13 	 67.5 	
February	23.9	10.1	17.0	47	-14	1	2.29	1.20	3.29	7	33.6	
March	 32.7 	 18.4 	 25.5 	57	 -8 	 8 	2.45	 1.16 	 3.53	 6 	 24.0 	
April	46.3	30.1	38.2	77	10	87	1.71	.97	2.43	4	7.7	
May	 61.7	 41.4	 51.6	87	 26	 368 	2.49	1.42	 3.56	 5	 1.1	
June	70.3	50.0	60.2	91	35	605	2.84	1.51	4.12	6	.0	
July	 75.6	 55.9	 65.7	95	 43	 796	2.97	1.83	4.03	 5 	.0	
August	73.3	55.5	 64.4 	91	 42	 757	2.75	1.52	3.97	 5	.0	
September	63.0	47.0	 55.0	85	30	450	3.23	2.00	4.36	7	.1	
October	51.3	37.3	 44.3	75	 22	 176	2.56	1.59	3.37	 6	 3.9	
November	36.4	25.9	 31.1	61	 7	 22 	2.84	1.66	3.88	 8	 23.8	
December	25.4	14.6	20.0	44	 -8	 0	3.42	1.58	5.23	 11	56.7	
Yearly:	 	 	 		 	 	 	 	 	 	 	
Average	48.4	 32.9	 40.7 		 	 	 	 	 	 	 	
Extreme	102	-26	 	96	 -18			 	 		 	
Total	 	 	 		 	 3,270	33.68	 27.72	 39.25	 83	 218.5	

^{*} A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (40 degrees F).

Table 2.--Freeze Dates in Spring and Fall
(Recorded in the period 1971-2000 at Houghton, Michigan)

į	Temperature							
Probability	2.4	Op	20	o _F	32 °F			
	or lo	-	or 10	_	or lo	_		
			ļ.					
Last freezing temperature in spring:			 		 			
1 year in 10					 			
later than	May	1	May	12	May	23		
2 years in 10					 			
later than	Apr.	27	May	7	May	18		
5 years in 10								
later than	Apr.	17	Apr.	26	May	9		
First freezing temperature in fall:			 		 			
1 year in 10								
earlier than	Oct.	15	Sept.	. 30	Sept.	. 19		
2 years in 10								
earlier than	Oct.	20	Oct.	6	Sept.	. 24		
5 years in 10					 			
earlier than	Nov.	1	Oct.	18	Oct.	4		

Table 3.--Growing Season

(Recorded in the period 1971-2000 at Houghton,
Michigan)

	Daily minimum temperature during growing season					
Probability						
	Higher	Higher	Higher			
	than	than	than			
	24 ^O F	28 °F	32 °F			
I	Days	Days	Days			
9 years in 10	172	150	131			
8 years in 10	180	158	137			
5 years in 10	196	173	147			
2 years in 10	212	189	158			
 1 year in 10	221	 197	 163			

Table 4.--Acreage and Proportionate Extent of the Soils

3 I 6 8 10 10 11 11 11 11 11	Lupton and Tawas soils, 0 to 1 percent slopes	9,938 2,500 1,637 2,225 7,172 1,240 98 793 1,667 1,551	4.2 1.1 0.7 0.9 3.0 0.5 *
3 I 6 8 10 10 11 15 15 15 17 17 17 17	Dawson and Loxley soils, 0 to 1 percent slopes	2,500 1,637 2,225 7,172 1,240 98 793 1,667 1,551	1.1 0.7 0.9 3.0 0.5 *
3 I 6 8 10 10 13 17 15 15 17 17 17 17 17	Dawson and Loxley soils, 0 to 1 percent slopes	2,500 1,637 2,225 7,172 1,240 98 793 1,667 1,551	1.1 0.7 0.9 3.0 0.5 *
6 S 10 C C C C C C C C C	Skandia-Burt complex, 0 to 2 percent slopes	1,637 2,225 7,172 1,240 98 793 1,667 1,551	0.7 0.9 3.0 0.5 *
10 C C C C C C C C C	Cathro-Sabattis complex, 0 to 2 percent slopes, stony	2,225 7,172 1,240 98 793 1,667 1,551	3.0 0.5 * 0.3
13 13 15 15 15 15 15 15	Tawas-Deford complex, 0 to 4 percent slopes	1,240 98 793 1,667 1,551	0.5
15B I 20E I 21G I 39A I 47A 2 51C I 51E I	Dawson-Croswell complex, 0 to 8 percent slopes	98 793 1,667 1,551	*
21G F 39A F 47A Z 51C F 51E F 52C F	Rock outcrop-Arcadian complex, 40 to 90 percent slopes, extremely bouldery	793 1,667 1,551	0.3
39A F 47A Z 51C Z 51E Z 52C Z	Betsy Bay-Burt-Deford complex, 0 to 3 percent slopes	1,667 1,551	!
47A 2 51C 2 51E 2 52C 2	Zeba-Jacobsville complex, 0 to 3 percent slopes, stony	1,551	0.7
51C F 51E F 52C F	Arcadian-Nipissing-Rock outcrop complex, dissected, 1 to 12 percent slopes, very stony		
51E 2 52C 2			0.7
52C	Arcadian-Nipissing-Rock outcrop complex, dissected, 8 to 35 percent slopes, very stony	1,323	0.6
		4,934	2.1
	Arcadian-Dishno-Rock outcrop complex, dissected, 1 to 12 percent slopes, very bouldery	585	0.2
	Arcadian-Dishno-Rock outcrop complex, dissected, 8 to 35 percent slopes, very bouldery	13,744	5.8
	Arcadian-Michigamme-Rock outcrop complex, 8 to 35 percent slopes, extremely bouldery	1,667 9,075	0.7
	Chocolay very cobbly fine sandy loam, 1 to 8 percent slopes, very flaggy	835	0.4
	Waiska cobbly loamy sand, 0 to 8 percent slopes	322	0.1
	Waiska cobbly loamy sand, 8 to 15 percent slopes	163	*
	Waiska-Garlic complex, dissected, 1 to 12 percent slopes, very bouldery	619	0.3
	Waiska-Garlic complex, dissected, 8 to 35 percent slopes, very bouldery	1,506	0.6
	Waiska-Garlic complex, dissected, 15 to 60 percent slopes, very bouldery	569	0.2
110B S	Shelldrake-Croswell complex, 0 to 8 percent slopes	147	*
111B I	Deer Park sand, 0 to 8 percent slopes	357	0.2
111D I	Deer Park sand, 6 to 18 percent slopes	362	0.2
111E I	Deer Park sand, 8 to 35 percent slopes	922	0.4
111F I	Deer Park sand, 35 to 70 percent slopes	80	*
112C I	Deer Park-Croswell complex, 1 to 12 percent slopes	443	0.2
113C I	Rubicon-Croswell complex, 1 to 12 percent slopes	1,043	0.4
	Garlic fine sand, 0 to 8 percent slopes	1,244	0.5
120D	Garlic fine sand, 8 to 15 percent slopes	876	0.4
120E	Garlic fine sand, 15 to 35 percent slopes	430	0.2
125A 0	Croswell-Au Gres complex, 0 to 3 percent slopes	1,320 3,486	0.6
	Au Gres-Kinross complex, 0 to 3 percent slopes	1,008	0.4
130C 0	Garlic-Alcona complex, dissected, 1 to 12 percent slopes	2,965	1.2
130E 0	Garlic-Alcona complex, dissected, 8 to 35 percent slopes	2,792	1.2
133C F	Keweenaw-Garlic complex, 1 to 12 percent slopes	853	0.4
133E	Keweenaw-Garlic complex, 8 to 35 percent slopes	697	0.3
133F	Keweenaw-Garlic complex, 15 to 60 percent slopes	495	0.2
136B I	Borgstrom-Ingalls complex, 0 to 6 percent slopes	2,123	0.9
142C V	Wallace-Rubicon complex, 1 to 12 percent slopes	413	0.2
142F V	Wallace-Rubicon complex, 12 to 50 percent slopes	770	0.3
	Montreal-Paavola-Waiska complex, dissected, 1 to 12 percent slopes, rocky, very bouldery	8,832	3.7
	Montreal-Paavola-Waiska complex, dissected, 8 to 35 percent slopes, rocky, very bouldery	17,974	
	Arnheim-Sturgeon-Pelkie complex, 0 to 3 percent slopes	1,171	0.5
	Frimountain-Lac La Belle-Waiska complex, dissected, 15 to 60 percent slopes, rocky, very bouldery		
	•	1,947	0.8
	Trimountain-Lac La Belle-Michigamme complex, dissected, 15 to 60 percent slopes, very rocky, extremely bouldery	3,832	1.6
	Gratiot-Sabattis complex, 0 to 4 percent slopes, rocky, very bouldery	16,583	7.0
	Montreal-Paavola-Dishno complex, dissected, 1 to 12 percent slopes, very rocky, very	10,363	1 7.0
	bouldery	8,787	3.7
	Montreal-Paavola-Dishno complex, dissected, 8 to 35 percent slopes, very rocky, very	0,,0,	
	bouldery	19,313	8.1
	Montreal-Dishno-Gratiot complex, 0 to 8 percent slopes, rocky, very bouldery	5,086	2.1
	Assinins sand, 0 to 4 percent slopes	1,664	0.7
	Munising-Abbaye-Yalmer complex, dissected, 1 to 12 percent slopes, stony	2,535	1.1
	Munising-Abbaye-Yalmer complex, dissected, 8 to 35 percent slopes, stony	2,901	1.2
	Munising-Yalmer complex, dissected, 1 to 12 percent slopes	5,241	2.2
	Munising-Yalmer complex, dissected, 8 to 35 percent slopes	2,336	1.0
185B M	Munising-Skanee complex, dissected, 1 to 8 percent slopes	6,571	2.8

Table 4.--Acreage and Proportionate Extent of the Soils--Continued

Map	Soil name	Acres	Percent
symbol			<u> </u>
185C		10,567	4.5
187A	Skanee-Gay complex, 0 to 3 percent slopes	16,710	7.0
192B	Nipissing-Arcadian-Rock outcrop complex, 0 to 8 percent slopes, very stony	910	0.4
194B	Copper Harbor extremely gravelly sandy loam, 0 to 4 percent slopes, very stony	169	*
195B	Copper Harbor-Bete Grise complex, 0 to 4 percent slopes, stony	1,267	0.5
196B	Bete Grise-Tawas complex, 0 to 4 percent slopes, stony	701	0.3
301	Udorthents-Udipsamments, nearly level to very steep	103	*
302	Histosols and Aquents, ponded	3,834	1.6
303	Aquents and Dumps, stamp sand	495	0.2
310	Dumps, mine	223	*
311	Dumps, stamp sand	468	0.2
312	Pits, borrow	71	*
313	Dumps, sawdust	15	*
W	Water	10,158	4.3
		237,453	100.0

^{*} Less than 0.1 percent.

Table 5.--Woodland Management and Productivity

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. See text for further explanation of ratings in this table)

	l	Manageme	nt concerns		Potential prod	uctivi	ty	
Map symbol and	Erosion	Suitability		Potential				
soil name	hazard	for site	hazard	for	Common trees		Volume	Suggested
		preparation		seedling		index	of wood	trees to plant
	<u> </u>	1	<u> </u>	mortality	<u> </u>	<u> </u>	fiber*	<u> </u>
2 -								
2: Lupton	 Gliaht	Poorly	 Severe:	 High:	 Balsam fir	 46	 86	
парсоп	bilgiic	suited:	Wetness	Wetness	Black ash			
	 	Wetness	Wechess	Wechess	Black spruce		29	
	 	We chess	 		Northern whitecedar			
	! 		 		Paper birch			!
	 		 		Quaking aspen			!
	 	İ	 		Red maple			!
	 	İ	 		Tamarack			!
					White spruce			
	İ	j	İ	j	į	İ	j	j
Tawas	Slight	Poorly	Severe:	High:	Balsam fir		72	Eastern
		suited:	Wetness	Wetness	Balsam poplar			arborvitae,
		Wetness			Black ash			tamarack.
				!	Eastern arborvitae			
					Eastern hemlock			
			 	1	Red maple			
3:	 		 		 	İ		
Dawson	Slight	Unsuited:	Severe:	High:	Black spruce	15	29	
	İ	Wetness	Wetness	Wetness	Tamarack		i	İ
T 1		 Unsuited:		 	 Dellaran Glas			
Loxley	Slight	Wetness	Severe: Wetness	High: Wetness	Balsam fir Black spruce		 29	
	 	wethess	wethess	wechess	Tamarack		29	
	İ	i		İ		İ		
6:								
Skandia	Slight	Poorly	Severe:	High:	Balsam fir			Eastern
		suited:	Wetness	Wetness	Black ash	!		arborvitae,
		Wetness			Eastern arborvitae		43	tamarack,
					Eastern hemlock		 	white spruce.
	 		 		Tamarack			
Burt	Slight	Poorly	Severe:	High:	Balsam fir	45	<u> </u>	Eastern
	ĺ	suited:	Rooting	Wetness	Black spruce		İ	arborvitae,
	ĺ	Wetness	depth	İ	Eastern arborvitae		İ	white spruce.
	ĺ	İ	Wetness	İ	Eastern hemlock		İ	ĺ
					Quaking aspen			
		İ	!	ļ	Red maple			!
10:	 		 		 	[[
Cathro	 Slight	 Poorly	 Severe:	 High:	 Balsam fir	 40	 72	 Balsam fir,
		suited:	Wetness	Wetness	Black spruce		29	black ash,
	İ	Wetness			Eastern arborvitae		29	northern
	İ		İ	i	Paper birch			whitecedar,
	i	i	i i	i	Red maple		29	paper birch.
	İ	i	İ	i	Tamarack		29	
	İ	i	i	i	White spruce			İ
	İ	į	į	į	<u>.</u>	į	į	į

Table 5.--Woodland Management and Productivity--Continued

	<u> </u>		nt concerns	1	Potential prod	uctivi	ty	
Map symbol and soil name	Erosion hazard 	Suitability for site preparation	hazard	Potential for seedling	Common trees		 Volume of wood	 Suggested trees to plant
	<u> </u>	<u> </u>	<u> </u>	mortality	İ	<u> </u>	fiber*	<u> </u>
10: Sabattis	 Slight	 Poorly	 Severe:	 High:	 Balsam fir	 48	 86	 Northern
Dabaccib		suited:	Wetness	Wetness	Black ash			whitecedar.
	İ	Rock	İ	İ	Black spruce	48	72	
	ĺ	fragments	ĺ	İ	Northern whitecedar			ĺ
				[Quaking aspen			
					Red maple		1	
	 	 	 		Tamarack		1	
	 	 	 	1	Yellow birch		1	
	 		! 			İ	İ	
13:	İ	İ	ĺ	İ	İ	ĺ	ĺ	İ
Tawas	Slight	Poorly	Severe:	High:	Balsam fir		72	Eastern
		suited:	Wetness	Wetness	Balsam poplar		1	arborvitae,
	l I	Wetness	l I	l I	Black ash Eastern arborvitae			tamarack.
	 	 	 	1	Eastern hemlock			
					Red maple			İ
	İ	İ	İ	İ		İ	į	İ
Deford	Slight	Well suited	'	High:	Balsam fir			Eastern white
			Wetness	Wetness	Black ash			pine,
	 	 	l I	1	Eastern arborvitae Quaking aspen		1	tamarack, white spruce.
	 	 	 		Red maple		1	white spruce.
	 	 	 		White spruce			
	İ	İ	ĺ	İ	İ	ĺ	ĺ	İ
15B:		 		 				
Dawson	Slight 	Unsuited: Wetness	Severe:	High: Wetness	Black spruce		29	
	! 			Nechebb				!
Croswell	Slight	Well suited	Moderate:	Moderate:	Bigtooth aspen	69	86	Eastern white
			Wetness	Droughty	Black cherry		1	pine, red
					Eastern white pine		1	pine, white
	 	 	 		Jack pine Northern red oak			spruce.
	 	 	 		Paper birch			
	 	! 	! 		Quaking aspen		1	
	İ	<u> </u>	İ	İ	Red maple			
	İ	İ	ĺ	İ	Red pine	55	86	İ
0.07								
20E. Rock outcrop	l I	 	l I	l I		 	 	l I
ROCK Outcrop	 	 	 	1		l I	 	
21G:	 		 			i		
Rock outcrop.	İ	j	İ	İ	İ	İ	į	j
Arcadian		•	Severe:	Low	American basswood Eastern hemlock	 		Eastern white
	Slope	Slope Rock	Rooting depth	1	Eastern hemlock	1		pine, white spruce.
	! 	fragments	deben		Northern red oak			Spiace.
	İ		İ	İ	Quaking aspen			İ
	j	j	İ	İ	Red maple			į
					Sugar maple	63	43	
					White ash	:		
	1				Yellow birch			

Table 5.--Woodland Management and Productivity--Continued

			nt concerns		Potential prod	uctivi	ty	
Map symbol and soil name	Erosion hazard	Suitability	hazard	Potential for	Common trees		 Volume	Suggested
		preparation	 	seedling mortality	 	index 	or wood fiber*	trees to plant
39A:		j	İ	į	İ	İ	j	j
Betsy Bay	Slight	Well suited	Moderate:	High:	Balsam fir			Norway spruce,
		ļ	Wetness	Wetness	Bigtooth aspen			eastern white
					Eastern hemlock			pine, red
			l I	I	Eastern white pine		 72	pine, white spruce.
		l I	 	I I	Northern whitecedar		72	spidce.
		i		İ	Paper birch			
		j	İ	İ	Quaking aspen	70	86	j
					Red maple	65	43	
		ļ			Yellow birch			
Burt	 Cliabe	 Poorly	 Severe:	 High:	 Balsam fir	 45	 	 Eastern
Burc	SIIGHU	suited:	Rooting	Wetness	Black spruce			arborvitae,
		Wetness	depth	Wechess	Eastern arborvitae			white spruce.
			Wetness	i	Eastern hemlock			
		i		İ	Quaking aspen			
		İ	İ	İ	Red maple	i	i	İ
Defend	01:	 mall multiple		 TT = b	 Palmam film			Eastern white
Deford	Slight	Well suited	Wetness	High: Wetness	Balsam fir Black ash		 	pine,
			Wechess	Wechess	Eastern arborvitae		!	tamarack,
		i	 	İ	Quaking aspen		:	white spruce.
i		i	 	İ	Red maple		!	i
		j	İ	İ	White spruce	i	i	j
		ļ						
47A: Zeba	 Slight	 Well suited	Moderate	 High:	 Balsam fir	 	 	 Eastern white
ZeDa	BIIGHC	Well Suited	Wetness	Wetness	Bigtooth aspen		 	pine, white
		i	Rooting		Eastern hemlock		!	spruce.
		i	depth	İ	Paper birch			
		j	i -	İ	Quaking aspen	j	i	İ
					Red maple	55	29	
					Sugar maple			
					White spruce			
					Yellow birch			
Jacobsville	 Slight	 Well suited	 Severe:	 High:	 Balsam fir	 	 	
			Wetness	Wetness	Eastern hemlock			
		i	Rooting	İ	Quaking aspen	j		İ
		j	depth	İ	Red maple	55	29	ĺ
		ļ		!	Yellow birch			
51C:		l I	 		 	 	 	
Arcadian	 Slight	 Poorly	 Severe:	Low	American basswood	 	 	 Eastern white
		suited:	Rooting	İ	Eastern hemlock			pine, white
		Rock	depth	İ	Eastern hophornbeam-	j		spruce.
		fragments		İ	Northern red oak			ĺ
					Quaking aspen			
		ļ	!	İ	Red maple			!
		ļ			Sugar maple		43	
			 	I I	White ash Yellow birch		 	
			! 			, 	 	
Nipissing	Slight	Poorly	Slight	Low	Balsam fir	35	57	i
		suited:			Northern whitecedar			
		Rock		!	Paper birch		43	
		fragments	1	1	Quaking aspen			
		i	i	i	White spruce	40	72	I.

Table 5.--Woodland Management and Productivity--Continued

		Managemen	nt concerns		Potential productivity			
Map symbol and	Erosion	Suitability	'	Potential				Suggested
soil name	hazard	for site	hazard	for	Common trees		Volume	
		preparation		seedling		index		trees to plan
	<u> </u>			mortality			fiber*	
51C:								
Rock outcrop.								
51E:	136 - 3			 	13			
Arcadian	1	Poorly	Severe:	Low	American basswood		 	Eastern white
	Slope	suited:	Rooting		Eastern hemlock	1	 	pine, white
	1	Slope Rock	depth		Northern red oak		 	spruce.
	I I	fragments	l I		Quaking aspen			l I
	I I	IIagments	l I		Red maple			l I
	I I	l	l I		Sugar maple		43	l I
	1		l I		White ash			l I
	1		l I		Yellow birch			l I
Nipissing	Moderate	Poorly	 Slight	Low	Balsam fir	35	 57	
Kipibbing	Slope	suited:		10#	Northern whitecedar	1		
	51000	Rock	! [Paper birch	1	43	
	i	fragments	! 	i	Quaking aspen	1		İ
	i	Slope		i	White spruce		72	İ
	i			i			i	İ
Rock outcrop.	i	İ	! 	i	İ	i	i	
_	İ	į	İ	i	İ	i	į	İ
52C:	İ	į	İ	İ	İ	İ	Ì	İ
Arcadian	Slight	Poorly	Severe:	Low	American basswood			Eastern white
	İ	suited:	Rooting	İ	Eastern hemlock			pine, white
	İ	Rock	depth	İ	Eastern hophornbeam-			spruce.
		fragments			Northern red oak			
					Quaking aspen			
					Red maple			
					Sugar maple	63	43	
					White ash			
					Yellow birch			
						!		
Dishno	Slight	Poorly	Moderate:	High:	Balsam fir	1		Eastern white
		suited:	Wetness	Wetness	Eastern hemlock	1		pine, white
		Wetness			Eastern white pine			spruce.
					Quaking aspen			
	1		 		Red maple		 43	
			l I		Sugar maple Yellow birch		43 	
			l I		Tellow Birch			
Rock outcrop.			 				 	
Rock Outcrop.			 			i	l I	
52E:	i	i	İ	i		i	<u> </u>	İ
Arcadian	Moderate:	Poorly	 Severe:	Low	American basswood			Eastern white
	Slope	suited:	Rooting		Eastern hemlock			pine, white
	1	Slope	depth	i	Eastern hophornbeam-			spruce.
	i	Rock	į	i	Northern red oak			
	i	fragments	İ	i	Quaking aspen			İ
	İ	i	İ	i	Red maple			İ
	İ	i	İ	i	Sugar maple	1	43	İ
	İ	İ	İ	İ	White ash		i	İ
					Yellow birch	j	j	
	1			i .	i -	i contract	i	i

Table 5.--Woodland Management and Productivity--Continued

		Managemen	nt concerns		Potential prod	uctivi	ty	
Map symbol and	Erosion	Suitability	Windthrow	Potential			_	
soil name	hazard	for site	hazard	for	Common trees	Site	Volume	Suggested
		preparation		seedling		index	of wood	trees to plant
	<u> </u>	<u> </u>	ĺ	mortality	İ	İ	fiber*	
52E:				!				
Dishno	Slight	Poorly	Moderate:	High:	Balsam fir			Eastern white
		suited:	Wetness	Wetness	Eastern hemlock			pine, white
		Slope			Eastern white pine			spruce.
		Wetness			Quaking aspen			!
					Red maple			
					Sugar maple		43	
					Yellow birch			
Rock outcrop.			 					
53E:			 			 		
Arcadian	 Moderate:	Poorly	 Severe:	Low	American basswood			 Eastern white
	Slope	suited:	Rooting		Eastern hemlock			pine, white
		Slope	depth	i	Eastern hophornbeam-	:		spruce.
		Rock		i	Northern red oak			
		fragments	! 	i	Quaking aspen			İ
				i	Red maple			İ
				i	Sugar maple		43	İ
		i	! 	i	White ash			İ
				i	Yellow birch	1		
	į	j	İ	İ	İ	į	İ	İ
Michigamme	Slight	Poorly	Slight	Low	Balsam fir			Eastern white
 		suited:			Bigtooth aspen			pine, white
		Slope			Black cherry			spruce.
		Rock			Eastern hemlock			
		fragments			Red maple			
					Sugar maple	60	43	
					White spruce			
				İ	Yellow birch	60	43	
Rock outcrop.	 		 			 		
F28								
53F: Arcadian	Severe	 Unsuited:	 Severe:	Low	American basswood			 Eastern white
III Cuuluii	Slope	Slope	Rooting		Eastern hemlock			pine, white
	Diope	Rock	depth		Eastern hophornbeam-	:		spruce.
		fragments	402011	i	Northern red oak			
				i	Quaking aspen			İ
		i		i	Red maple			İ
		i	! 	i	Sugar maple	1	43	İ
				i	White ash			İ
	İ	j	İ	i	Yellow birch			İ
				1				
Michigamme	Slight	Unsuited:	Slight	Low	Balsam fir			Eastern white
		Slope		1	Bigtooth aspen			pine, white
		Rock			Black cherry			spruce.
		fragments	 		Eastern hemlock			
		1	 		Red maple			
		1	 		Sugar maple		43	
			 		White spruce Yellow birch			
	i	i	İ	i				
Rock outcrop.	İ	İ	İ	İ	İ	İ	İ	İ
-	İ	İ	İ	İ	İ	İ	İ	İ

Table 5.--Woodland Management and Productivity--Continued

		Managemen	nt concerns		Potential prod	uctivi	ty	
Map symbol and	Erosion	Suitability		Potential				
soil name	hazard	for site	hazard	for	Common trees		Volume	Suggested
		preparation	 	seedling mortality		index	of wood fiber*	trees to plant
			<u> </u>	MOICATICY	1	<u> </u>	IIDeI	l
55B:						i		İ
Chocolay	Slight	Poorly	Severe:	High:	Sugar maple	61	i	American
		suited:	Rooting	Wetness				basswood,
		Rock	depth	Droughty				balsam fir,
		fragments	Wetness					eastern
								hemlock, red
						!		maple, sugar
ļ		l I	 					maple, yellow birch.
 		l I	 			i	l I	Diren.
100B:		i				i	İ	İ
Waiska	Slight	Poorly	Slight	Moderate:	American basswood			Eastern white
		suited:		Droughty	Balsam fir			pine, red
		Rock			Eastern hemlock			pine.
		fragments			Paper birch			
					Quaking aspen		86	
ļ					Sugar maple		43	
					Yellow birch			
100D:						i		İ
Waiska	Slight	Poorly	Slight	Moderate:	American basswood	i	i	Eastern white
İ		suited:		Droughty	Balsam fir			pine, red
		Rock			Eastern hemlock			pine.
		fragments			Paper birch			
		ļ			Quaking aspen		86	
					Sugar maple		43	l I
					reliow birch			
102C:						i	İ	
Waiska	Slight	Poorly	Slight	Moderate:	American basswood		j	Eastern white
[suited:		Droughty	Balsam fir			pine, red
		Rock			Eastern hemlock			pine.
		fragments			Paper birch			
ļ					Quaking aspen		86 43	
					Sugar maple		43 	
i						i		İ
Garlic	Slight	Well suited	Slight	Moderate:	Eastern hemlock	j	j	Eastern white
				Droughty	Eastern white pine			pine, red
		ļ			Paper birch	1		pine.
					Quaking aspen			
ļ					Red maple	1	 	
					Red pine		 38	l I
					Yellow birch		30	
i						i		İ
102E:		į		į		į	į	į
Waiska	Slight	Poorly	Slight	Moderate:	American basswood	1	j	Eastern white
I		suited:		Droughty	Balsam fir			pine, red
		Rock			Eastern hemlock			pine.
ļ		fragments			Paper birch			
		Slope	 	 	Quaking aspen Sugar maple		86 43	I I
					Yellow birch		43 	I I
I		1	1	T.	1	1	I	I .

Table 5.--Woodland Management and Productivity--Continued

	ļ		nt concerns		Potential prod	uctivi	ty	
Map symbol and	Erosion	Suitability	!	Potential	ļ			_
soil name	hazard	for site	hazard	for seedling	Common trees			Suggested trees to plant
	<u> </u>			mortality	ļ	<u> </u>	fiber*	
					ļ	!		
102E:								
Garlic	Slight	Poorly	Slight	Moderate:	Eastern hemlock			Eastern white
		suited:		Droughty	Eastern white pine			pine, red
		Slope			Paper birch			pine.
	 		 		Quaking aspen		 	
	 	l I	 		Red maple			
	l I		 	I I	Sugar maple		38	
	 		 	1	Yellow birch			
	İ	i		İ		İ		
102F:	ĺ	į	ĺ	İ	İ	ĺ	ĺ	İ
Waiska	Slight	Unsuited:	Slight	Moderate:	American basswood			Eastern white
		Slope		Droughty	Balsam fir			pine, red
		Rock		1	Eastern hemlock			pine.
		fragments			Paper birch			
					Quaking aspen			
				!	Sugar maple			
					Yellow birch			
Garlic	 climbe	 Unsuited:	 Slight	 Moderate:	 Eastern hemlock		 	 Eastern white
Gallic	Siight	Slope	SIIGHU	Droughty	Eastern white pine			pine, red
	l I	Slope	l I	Dioughty	Paper birch		1	pine, red
	 		 		Quaking aspen			pine.
	 		 	l I	Red maple			
	! 		 	İ	Red maple			
	! 	i	! 	i	Sugar maple		38	!
		į	İ	İ	Yellow birch			
				1	ļ			
110B:								
Shelldrake	Slight	Well suited	Slight	Moderate:	Jack pine			Eastern white
	 -		 	Droughty 	Red pine	45 	 	pine, paper birch, red maple.
Croswell	 Slight	 Well suited	 Moderate:	 Moderate:	 Bigtooth aspen	 69	 86	 Eastern white
	. <u> </u>		Wetness	Droughty	Black cherry			pine, red
	İ	j	İ	İ	Eastern white pine	i		pine, white
	ĺ	İ		İ	Jack pine	53	72	spruce.
					Northern red oak			
					Paper birch	54	57	
					Quaking aspen	68	72	
					Red maple			
	İ				Red pine	55	86	
111B:	 		 	1	 	[[
Deer Park	 Slight	 Well suited	 Slight	Low	American beech	 		 Jack pine, red
				1	Black cherry			pine.
	į	i	İ	i	Eastern white pine		1	 İ
	İ	į	İ	İ	Jack pine		57	İ
	İ	į	İ	İ	Northern red oak		i	İ
					Paper birch	j	i	
					Quaking aspen		i	

Table 5.--Woodland Management and Productivity--Continued

			nt concerns		Potential produ	ictivi	cy	
Map symbol and	Erosion	Suitability		Potential				_
soil name	hazard	for site	hazard	for	Common trees		Volume	Suggested
		preparation		seedling		1 1		l trees to plant
			1	mortality			fiber*	
111D:	 		 		l I	 	 	
Deer Park	Slight	 Well suited	Slight	Low	American beech			Jack pine, red
					Black cherry			pine.
					Eastern white pine			
					Jack pine	46	57	
					Northern red oak			
					Paper birch			
			!	İ	Quaking aspen			
			 	l I	Red pine	45	64	
111E:		l I	 		 	 	 	
Deer Park	Slight	Poorly	Slight	Low	American beech		i	Jack pine, red
		suited:			Black cherry			pine.
		Slope			Eastern white pine			
					Jack pine	46	57	
					Northern red oak			
					Paper birch			
					Quaking aspen			
					Red pine	45	64	
111F:			 	l I	 	 	[[
Deer Park	Slight	Unsuited:	Slight	Low	American beech		i	Jack pine, red
		Slope			Black cherry			pine.
					Eastern white pine			
					Jack pine			
					Northern red oak			
					Paper birch		!	
			!		Quaking aspen			
	 		 		Red pine	45	64	
112C:	 		 				 	
Deer Park	Slight	Well suited	Slight	Low	American beech		j	Jack pine, red
					Black cherry			pine.
					Eastern white pine			
					Jack pine			
					Northern red oak			
					Paper birch			
			!		Quaking aspen			
	 		 		Red pine	45	64	
Croswell	Slight	 Well suited	 Moderate:	 Moderate:	 Bigtooth aspen	69	86	 Eastern white
	. <u>-</u>	j	Wetness	Droughty	Black cherry			pine, red
	İ	İ	İ	i	Eastern white pine			pine, white
					Jack pine		72	spruce.
					Northern red oak		j	
					Paper birch	54	57	
					Quaking aspen	68	72	
					Red maple			
	I	i i	I .	1	Red pine	55	86	I .

Table 5.--Woodland Management and Productivity--Continued

	I	Managemer	nt concerns		Potential productivity			
Map symbol and	Erosion	Suitability						
soil name	hazard	for site	hazard	for	Common trees	1	Volume	Suggested
		preparation		seedling		index		trees to plant
				mortality		<u> </u>	fiber*	1
113C:	 		 			 	 	
Rubicon	Slight	 Well suited	Slight	Moderate:	Bigtooth aspen	66	72	Eastern white
	İ	İ		Droughty	Eastern white pine	45	72	pine, jack
	İ	İ		İ	Jack pine	53	86	pine, red
	İ	İ		İ	Northern red oak			pine.
					Paper birch			
					Quaking aspen	60	57	
	İ	İ		İ	Red maple	57	29	ĺ
	į	İ			Red pine	53	72	į
Croswell	 Slight	 Well suited	 Moderate:	 Moderate:	 Bigtooth aspen	 69	 86	 Eastern white
	i	į	Wetness	Droughty	Black cherry			pine, red
	i	į	İ		Eastern white pine	i		pine, white
	i	į	İ	i	Jack pine		72	spruce.
	i	į	İ	i	Northern red oak			i
	i	į	İ	i	Paper birch		57	İ
	i	į	İ	i	Quaking aspen		72	İ
	i	į	İ	i	Red maple			İ
	į	į	ĺ	į	Red pine	55	86	į
120B:	 		 		 	 	 	
Garlic	Slight	Well suited	Slight	Moderate:	Eastern hemlock	i	i	Eastern white
	į	j	İ	Droughty	Eastern white pine	i		pine, red
	į	j	İ	i	Paper birch	i		pine.
	İ	j	İ	İ	Quaking aspen	i		İ
	İ	İ		İ	Red maple			ĺ
	İ	İ		İ	Red pine			ĺ
	İ	İ		İ	Sugar maple	62	38	ĺ
	ĺ	İ			Yellow birch			
120D:					 	 	 	
Garlic	Slight	Well suited	Slight	Moderate:	Eastern hemlock			Eastern white
				Droughty	Eastern white pine			pine, red
					Paper birch			pine.
					Quaking aspen			
					Red maple			
					Red pine			
					Sugar maple	62	38	
			 		Yellow birch			
120E:			 					
Garlic	Slight	Poorly	Slight	Moderate:	Eastern hemlock			Eastern white
		suited:		Droughty	Eastern white pine			pine, red
		Slope			Paper birch			pine.
					Quaking aspen			
					Red maple			
					Red pine			
					Sugar maple		38	
	1	1	1	1	Yellow birch	I .		I .

Table 5.--Woodland Management and Productivity--Continued

	l	Managemen	nt concerns		Potential produ	ıctivi	ty	
Map symbol and	Erosion	Suitability		Potential	!			
soil name	hazard	for site	hazard	for	Common trees	Site	Volume	Suggested
		preparation		seedling		1 1		trees to plant
				mortality			fiber*	
	ļ							
125A:								
Croswell	Slight	Well suited		Moderate:	Bigtooth aspen		86	Eastern white
	1		Wetness	Droughty	Black cherry		 	pine, red
	I I		l I	l I	Eastern white pine Jack pine		72	pine, white spruce.
			 		Northern red oak		72	sprace.
	1	l I	 	i i	Paper birch		57	
	İ		i I		Quaking aspen		72	!
	i			i	Red maple			
	i				Red pine		86	
	Ì	j	İ	j	į -	j	İ	İ
Au Gres	Slight	Well suited	Moderate:	High:	Balsam fir			Norway spruce,
			Wetness	Wetness	Bigtooth aspen			eastern white
					Eastern hemlock			pine, red
					Eastern white pine			pine, white
	!				Jack pine		72	spruce.
					Northern whitecedar			
					Paper birch			
	}				Quaking aspen		86	
	l I		 		Red maple		43	
	l I	l I	l I		Yellow birch			
126B:	İ		 			l I	 	
Au Gres	Slight	 Well suited	Moderate:	High:	Balsam fir			Norway spruce,
			Wetness	Wetness	Bigtooth aspen			eastern white
	i	į	İ	i	Eastern hemlock	i		pine, red
	İ	į	İ	İ	Eastern white pine	i	j	pine, white
	Ì	j	İ	İ	Jack pine	51	72	spruce.
					Northern whitecedar			
					Paper birch			
					Quaking aspen	70	86	
	ļ				Red maple		43	
	ļ				Yellow birch			
Doford	 Cliab+	 Woll and bed	Gorana	 High:	 Palgam fir	 	 	 Eastern white
Deford	 arranc	Well suited	Severe: Wetness	High: Wetness	Balsam fir Black ash			pine,
			Wechess	Wechess	Eastern arborvitae			tamarack,
	i		 		Quaking aspen		57	white spruce.
	İ		 		Red maple			#MICC DPIGCO.
	ì		 		White spruce			
	İ	İ	İ		<u>.</u>	İ	İ	
Croswell	Slight	Well suited	Moderate:	Moderate:	Bigtooth aspen	69	86	Eastern white
	[Wetness	Droughty	Black cherry			pine, red
	[Eastern white pine			pine, white
	ļ				Jack pine		72	spruce.
	ļ	ļ		!	Northern red oak			
	ļ	!		!	Paper birch		57	
	ļ			!	Quaking aspen		72	
					Red maple Red pine			
	1	1	1	1	Dod pine	55	86	I

Table 5.--Woodland Management and Productivity--Continued

			nt concerns	1	Potential prod	uctivi	ty	
Map symbol and soil name	Erosion hazard	Suitability for site	Windthrow hazard	Potential for	Common trees	 Site	 Volume	 Suggested
		preparation		seedling mortality	 			trees to plant
		i		<u> </u>	İ	İ	İ	
127A:		į		İ		ĺ	İ	
Au Gres	Slight	Well suited	Moderate:	High:	Balsam fir			Norway spruce,
			Wetness	Wetness	Bigtooth aspen			eastern white
		ļ		!	Eastern hemlock			pine, red
					Eastern white pine			pine, white
		ļ			Jack pine		72 	spruce.
		l I		I	Northern whitecedar Paper birch			
					Quaking aspen		86	
		İ			Red maple			
					Yellow birch			
Kinross	Slight	 Well suited	Severe:	 High:	 Balsam fir		 	
		ļ	Wetness	Wetness	Black spruce			
					Eastern white pine			
					Jack pine			
		l I		I	Northern whitecedar Paper birch			
					Quaking aspen		29	
į		i		i	Red maple			
		į		į	Tamarack		ļ	
130C:		ļ		!				
Garlic	Slight	Well suited	Slight	Moderate:	Eastern hemlock		1	Eastern white
		l I		Droughty	Eastern white pine Paper birch			pine, red
					Quaking aspen			pine.
		İ			Red maple			
		i		i	Red pine			
		j		İ	Sugar maple	62	38	İ
					Yellow birch	 		
Alcona	Slight	Well suited	Slight	Low	American basswood			Eastern white
		l I			Eastern white pine Northern red oak			pine, red
					Red maple			pine, white spruce.
		i		i	Red pine			
		į		İ	Sugar maple	61	43	İ
					Yellow birch	 	 	
130E: Garlic	Slight	 Poorly	Slight	 Moderate:	 	 	 	 Eastern white
Carre	PITAIL	suited:	Diraic	Droughty	Eastern white pine			pine, red
		Slope			Paper birch			pine, red
		į		į	Quaking aspen			İ
İ					Red maple		j	
		ļ		İ	Red pine			!
					Sugar maple		38	
					Yellow birch	 	 	
Alcona	Slight	Poorly	Slight	Low	American basswood		i	Eastern white
		suited:			Eastern white pine			pine, red
		Slope			Northern red oak			pine, white
		1		I I	Red maple		 	spruce.
					Sugar maple		43	1
		i		i	Yellow birch			İ
		i		i	1	i	i	İ

Table 5.--Woodland Management and Productivity--Continued

		Managemer	nt concerns		Potential prod	uctivi	ty	
Map symbol and	Erosion	Suitability		Potential			<u> </u>	
soil name	hazard	for site	hazard	for	Common trees	Site	Volume	Suggested
		preparation		seedling		index	of wood	trees to plant
	İ	İ		mortality	İ.	ĺ	fiber*	İ
	[
133C:								
Keweenaw	Slight	Well suited	Slight	Low	Balsam fir			
					Black cherry			
					Eastern hemlock			
					Eastern white pine			
					Northern red oak			
					Paper birch			
					Quaking aspen			
					Red maple			
					Sugar maple	61	43	
	[Yellow birch			
	ļ				!	!		
Garlic	Slight	Well suited	Slight	Moderate:	Eastern hemlock	!	!	Eastern white
				Droughty	Eastern white pine			pine, red
					Paper birch			pine.
					Quaking aspen			
					Red maple			
					Red pine			
					Sugar maple		38	
					Yellow birch			
133E:	l I	l I		I I		l I	l I	l I
Keweenaw	 Slight	Poorly	 Slight	Low	Balsam fir	 	 	
Keweenaw	bright	suited:	biight	100	Black cherry			
		Slope		I I	Eastern hemlock		1	
		Diobe		I I	Eastern white pine			
	i i			 	Northern red oak			
				I I	Paper birch			
	i i			 	Quaking aspen			
	i i			 	Red maple		1	
	i i			 	Sugar maple		43	
	i				Yellow birch			
	ì					İ		
Garlic	Slight	Poorly	Slight	Moderate:	Eastern hemlock	i	j	Eastern white
		suited:		Droughty	Eastern white pine			pine, red
		Slope			Paper birch			pine.
					Quaking aspen			
					Red maple			
					Red pine			
					Sugar maple	62	38	
	ļ				Yellow birch			
133F:					 Paless fin			
Keweenaw	slight	Poorly suited:	Slight	Low	Balsam fir			
	l I	1			Black cherry			
] [Slope		I I	Eastern hemlock		 	
	I I	 		 	Eastern white pine Northern red oak		 	
	I I	1			Paper birch		 	
] [l I		I I				
	I I	l I		I I	Quaking aspen Red maple		 	I I
	I.	 		I I	Sugar maple		43	
	}	I I		1	Yellow birch		43 	I
	1					, 	 	1
	1	1	1	I	T. Control of the Con	I	I	I

Table 5.--Woodland Management and Productivity--Continued

			nt concerns		Potential prod	uctivi	ty	
Map symbol and	Erosion	Suitability		Potential	!			_
soil name	hazard 	for site preparation	hazard 	for seedling mortality	Common trees	:	Volume of wood fiber*	Suggested trees to plant
		i		1	1	İ	İ	
133F:	! 	i	 	İ	İ	İ	i	
Garlic	Slight	Unsuited:	Slight	Moderate:	Eastern hemlock			Eastern white
	İ	Slope	İ	Droughty	Eastern white pine	:	i	pine, red
	İ	į -	İ	i	Paper birch			pine.
	İ	j	İ	İ	Quaking aspen	j		j
					Red maple			
					Red pine			
					Sugar maple	62	38	
					Yellow birch			
136B:								
Borgstrom	Slight	Well suited		Moderate:	American beech		:	Red pine,
			Rooting	Droughty	Eastern hemlock	:		white spruce.
			depth		Quaking aspen			
			Wetness	1	Red maple		43	
	 				Sugar maple			
	 				Yellow birch			
Tranlla	 C] : ~ b =	 Well ===================================	 Modomata:	 Wieth	 Balsam fir		 	 Postonebit:
Ingalls	Slight	Well suited	!	High:	· ·		 	Eastern white
	l i		Wetness	Wetness	Eastern hemlock			pine, northern
	 		 		Northern pin oak			whitecedar,
	 		 	1	Northern whitecedar			white ash,
	 		 		Paper birch			white ash, white spruce.
	 		 		Quaking aspen	:	57	white spidee.
	 		 	l I	Red maple			!
	 		 	l I	Sugar maple			!
	 		! 	i	White ash			
	! 	i	 	İ	İ	İ	i	
142C:	İ	j	İ	İ	İ	i	į	İ
Wallace	Slight	Well suited	Severe:	Low	Balsam fir			Red pine,
		j	Rooting		Eastern hemlock			white spruce.
			depth		Eastern white pine	52	100	
					Paper birch	63	72	
					Quaking aspen	75	86	
					Red maple			
					Red pine		100	
					Sugar maple			
Rubicon	Slight	Well suited	Slight	Moderate:	Bigtooth aspen	:		Eastern white
				Droughty	Eastern white pine	:	72	pine, jack
					Jack pine		86	pine, red
					Northern red oak		!	pine.
	 		 		Paper birch			
	 		 	I I	Quaking aspen		57 29	
	I 		I 	1	Red maple		29 72	1
	 		 			55	/2	
142F:	1 		! 		I 	1	 	1
Wallace	 Severe:	Poorly	 Severe:	Low	Balsam fir			Red pine,
	Slope	suited:	Rooting		Eastern hemlock			white spruce.
	2-020	Slope	depth	i	Eastern white pine	:	100	
				i	Paper birch		72	İ
	i I	i	i I	i	Quaking aspen		86	İ
	İ	i	İ	i	Red maple			İ
	İ	i	İ	i	Red pine		100	İ
	İ	i	i	i	Sugar maple			İ
		1		1		1	1	1

Table 5.--Woodland Management and Productivity--Continued

	ļ		nt concerns		Potential prod	uctivi	ty	
Map symbol and	Erosion	Suitability		Potential				1
soil name	hazard	for site	hazard	for	Common trees		Volume	
		preparation		seedling		index		trees to plant
				mortality			fiber*	
142F:								
Rubicon	Slight	Poorly	Slight	Moderate:	Bigtooth aspen	66	72	Eastern white
		suited:		Droughty	Eastern white pine	45	72	pine, jack
		Slope			Jack pine	53	86	pine, red
	ĺ	İ		İ	Northern red oak			pine.
	İ	į	İ	İ	Paper birch		i	İ
	İ	į	İ	İ	Quaking aspen	60	57	İ
	İ	i	İ	i	Red maple	57	29	İ
	İ	i	İ	i	Red pine		72	i
	İ			i	1	ĺ	ì	İ
155C:	i I		i I	i	İ	i	İ	İ
Montreal	 Slight	Poorly	 Severe:	High:	American basswood			Eastern white
		suited:	Rooting	Wetness	Eastern hemlock			pine, white
	 	Rock	depth	We chess	Eastern hophornbeam-	:		spruce.
	 	fragments	Wetness		Northern red oak			spidce.
	l I	Tragments	Wechess	I	1			I I
					Quaking aspen		!	
					Red maple			
					Sugar maple		43	
					Yellow birch			
Paavola	Slight	Poorly	Moderate:	High:	American basswood			Eastern white
		suited:	Wetness	Wetness	Eastern hemlock	:		pine, white
		Rock	Rooting	Droughty	Eastern hophornbeam-			spruce.
		fragments	depth		Northern red oak			
					Quaking aspen			
					Red maple			
					Sugar maple	63	43	
					Yellow birch			
Waiska	Slight	Poorly	Slight	Moderate:	American basswood			Eastern white
		suited:		Droughty	Balsam fir			pine, red
		Rock			Eastern hemlock			pine.
		fragments			Paper birch			
					Quaking aspen	71	86	
					Sugar maple	61	43	
					Yellow birch			
	ĺ	İ		İ	İ	İ	ĺ	ĺ
155E:	ĺ	İ		İ	İ	İ	ĺ	ĺ
Montreal	Slight	Poorly	Severe:	High:	American basswood		i	Eastern white
		suited:	Rooting	Wetness	Eastern hemlock		i	pine, white
	İ	Slope	depth	İ	Eastern hophornbeam-		i	spruce.
	İ	Rock	Wetness	i	Northern red oak			i
	İ	fragments		i	Quaking aspen	1		İ
	İ			i	Red maple	1		İ
	i I		i I	i	Sugar maple		43	İ
	! 		! 		Yellow birch			İ
	 		 			i	i i	
Paavola	 Slight	Poorly	 Moderate:	 High:	American basswood		 	Eastern white
1 aavo1a	DIIGHT	: -	Wetness	Wetness	Eastern hemlock		!	!
	 	suited:	!		1			pine, white
	 	Slope	Rooting	Droughty	Eastern hophornbeam-			spruce.
		Rock	depth		Northern red oak			
		fragments			Quaking aspen			
			ļ	İ	Red maple			
					Sugar maple		43	

Table 5.--Woodland Management and Productivity--Continued

	ļ	_	nt concerns		Potential prod	uctivi	ty	
Map symbol and soil name	Erosion hazard 	Suitability for site preparation	hazard	Potential for seedling mortality	Common trees		 Volume of wood fiber*	 Suggested trees to plant
155E:	 		 		 			
Waiska	 Slight 	Poorly suited: Rock fragments Slope	 Slight 	Moderate: Droughty 	American basswood Balsam fir Eastern hemlock Paper birch Quaking aspen	 	 	Eastern white pine, red pine.
	 	Diops 	 		Sugar maple Yellow birch	61	43	
158A:						i		
Arnheim	Slight	Well suited	Severe: Wetness	High: Wetness	American elm Balsam fir	i	 	
	1		 	I I	Black spruce Northern whitecedar			
	 	I I	 	i i	Paper birch			
	İ		 	ì	Quaking aspen			
	i			İ	Red maple			
	İ	j		į	Tamarack	j	i	j
		ļ		!	White spruce	38	72	
Sturgeon	 Cliabt	 Well suited	Modorato	 High:	American basswood			Norway spruce,
Sturgeon	Silgic	well suited	Wetness	Wetness	American elm			eastern white
	İ		Weenebb	Weenebb	Balsam fir			pine, white
	i	İ		i	Eastern hemlock			spruce.
	İ	j	İ	İ	Northern whitecedar	j	i	į -
	İ	j		İ	Quaking aspen			İ
					Red maple		43	
	!				Sugar maple			
			l I		White spruce Yellow birch			
	 		 		lellow pirch			
Pelkie	Slight	 Well suited	Moderate:	Moderate:	American basswood	i		Norway spruce,
			Wetness	Droughty	American elm			red pine,
					Red maple			white spruce.
					Sugar maple		43	
	l I		 		White spruce Yellow birch			
	 		 		reliow bitch			
161F:	İ	İ		İ		İ	İ	
Trimountain	Slight	Unsuited:	Severe:	Low	American basswood			Eastern white
	[Slope	Rooting		Eastern hemlock			pine, white
		Rock	depth		Eastern hophornbeam-			spruce.
		fragments	l I		Northern red oak			
	 		 	1	Quaking aspen Red maple			
	 	I I	 	i i	Sugar maple		43	
				İ	Yellow birch			
	[1			<u> </u>		[
Lac La Belle	Slight	Unsuited:	Slight	Moderate:	American basswood			Eastern white
		Slope		Droughty	Eastern hemlock			pine, red
		Rock	 	1	Eastern hophornbeam- Northern red oak			pine, white
	 	fragments	 	1	Quaking aspen			spruce.
			 		Red maple			
	i	i		i	Sugar maple		43	İ
	İ	İ		İ	i	İ	İ	İ

Table 5.--Woodland Management and Productivity--Continued

	ļ		nt concerns	1	Potential prod	Ly		
Map symbol and soil name	Erosion hazard	Suitability for site	Windthrow hazard	Potential for	Common trees	 Gi+^	 Volume	Suggested
soll name	nazaro			!	Common trees	1		
	l I	preparation	l I	seedling mortality		Index	fiber*	trees to plant
	l I	1	l I	MOTCATICY	1	1	LIDEL "	1
161F:	l I	l	l I				l I	I I
Waiska	 Cliabt	 Unsuited:	 Slight	 Moderate:	American basswood		 	Eastern white
waiska	BIIGHT	Slope	BIIGHT	Droughty	Balsam fir			pine, red
	 	Rock	l I	Dioughty	Eastern hemlock			pine, red
	 	fragments	 		Paper birch			pine.
	 	II agments	 		Quaking aspen		86	
	 	l	 		Sugar maple		43	
	 		 		Yellow birch			I I
162F:	! 	I I	 	l I		i	l I	I I
Trimountain	 Slight	Unsuited:	 Severe:	Low	American basswood			Eastern white
		Slope	Rooting		Eastern hemlock			pine, white
	i I	Rock	depth	i	Eastern hophornbeam-			spruce.
	i I	fragments		i	Northern red oak	1		
	i I		! 	i	Quaking aspen			İ
	i I	i	! 	i	Red maple			İ
	i I	i	! 	i	Sugar maple		43	İ
					Yellow birch			İ
						i	i	İ
Lac La Belle	Slight	Unsuited:	Slight	Moderate:	American basswood			Eastern white
		Slope		Droughty	Eastern hemlock			pine, red
		Rock			Eastern hophornbeam-	:		pine, white
	İ	fragments	İ	i	Northern red oak			spruce.
	İ	i	İ	i	Quaking aspen			i
	İ		İ	İ	Red maple			İ
	İ	į	İ	İ	Sugar maple	63	43	İ
	İ	į	İ	İ	į -	i	į	İ
Michigamme	Slight	Unsuited:	Slight	Low	Balsam fir		i	Eastern white
	İ	Slope		İ	Bigtooth aspen			pine, white
		Rock		İ	Black cherry			spruce.
		fragments		İ	Eastern hemlock			
					Red maple			
					Sugar maple	60	43	
					White spruce			
					Yellow birch	60	43	
166B:								
Gratiot	Slight	Poorly	Severe:	High:	Balsam fir		114	Eastern white
		suited:	Rooting	Wetness	Bigtooth aspen	1		pine, white
		Rock	depth		Eastern hemlock	1		spruce.
		fragments	Wetness		Paper birch		57	
					Quaking aspen			
				!	Red maple		43	
					White spruce		100	!
					Yellow birch			
Sabattis	Slight	Poorly	Severe:	High:	Balsam fir	1	86	Northern
		suited:	Wetness	Wetness	Black ash			whitecedar.
		Rock			Black spruce	:	72	
		fragments			Northern whitecedar			
					Quaking aspen			
					Red maple			
	 		 -		Tamarack	1	29	
	 		 -		White spruce Yellow birch		72 	

Table 5.--Woodland Management and Productivity--Continued

		Managemen	nt concerns		Potential prod	uctivi	ty	
Map symbol and	Erosion	Suitability	!	Potential				
soil name	hazard 	for site preparation	hazard 	for seedling	Common trees		Volume of wood fiber*	Suggested trees to plant
	l .	1	<u> </u>	mortality	<u> </u>	1	IIDel -	1
173C:	 	l I	 	I		1	 	
Montreal	 Slight	Poorly	 Severe:	 High:	American basswood	 	 	Eastern white
MOHOL CUL		suited:	Rooting	Wetness	Eastern hemlock			pine, white
		Rock	depth		Eastern hophornbeam-			spruce.
		fragments	Wetness	i	Northern red oak			
	İ	i	İ	İ	Quaking aspen	j		İ
		j		İ	Red maple			ĺ
					Sugar maple	63	43	
					Yellow birch			
Paavola	 Slight	Poorly	Moderate:	 High:	American basswood	 		Eastern white
		suited:	Wetness	Wetness	Eastern hemlock			pine, white
		Rock	Rooting	Droughty	Eastern hophornbeam-			spruce.
		fragments	depth		Northern red oak			
					Quaking aspen			
				!	Red maple			
					Sugar maple		43	
	 		 		Yellow birch	 	 	
Dishno	Slight	Poorly	Moderate:	High:	Balsam fir	j		Eastern white
		suited:	Wetness	Wetness	Eastern hemlock			pine, white
		Wetness			Eastern white pine			spruce.
					Quaking aspen			
					Red maple			
				ļ	Sugar maple		43	
			 		Yellow birch	 	 	
173E:		j	İ	j		İ	į	j
Montreal	Slight	Poorly	Severe:	High:	American basswood			Eastern white
		suited:	Rooting	Wetness	Eastern hemlock			pine, white
		Slope	depth	!	Eastern hophornbeam-			spruce.
		Rock	Wetness		Northern red oak			
		fragments			Quaking aspen		 	
	l I		 		Red maple			[[
	 		 		Yellow birch			
Paavola	 cliabe	 Boorles	Modorata	 High:	 Amorigan basswood		 	 Eastern white
raavota	 pridur	Poorly suited:	Moderate:	High: Wetness	American basswood Eastern hemlock			pine, red
	 	Slope	Rooting	Droughty	Eastern hophornbeam-			pine, red
	 	Rock	depth	Dioughey	Northern red oak			spruce.
		fragments		i	Quaking aspen			
	İ	i	İ	İ	Red maple	j		İ
	İ	j	İ	İ	Sugar maple	63	43	į
					Yellow birch			
Dishno	 Slight	 Poorly	 Moderate:	 High:	 Balsam fir	 		 Eastern white
		suited:	Wetness	Wetness	Eastern hemlock			pine, white
		Slope		Į.	Eastern white pine			spruce.
		Wetness	!	ļ.	Quaking aspen			ļ.
		ļ			Red maple			
	 	ļ.		1	Sugar maple		43	1
	I	1	I	1	Yellow birch			I

Table 5.--Woodland Management and Productivity--Continued

			nt concerns		Potential prod	ictivi	ty	
Map symbol and	Erosion	Suitability		Potential	ļ			
soil name	hazard	for site preparation	hazard	for seedling	Common trees		Volume of wood	Suggested trees to plant
	L			mortality			fiber*	
174B:						ļ		
Montreal	Slight	Poorly	Severe:	High:	American basswood	:		Eastern white
		suited:	Rooting	Wetness	Eastern hemlock			pine, white
		Rock	depth		Eastern hophornbeam-			spruce.
		fragments	Wetness		Northern red oak			
					Quaking aspen			
					Red maple			
					Sugar maple		43	
					Yellow birch			
Dishno	 Slight	 Poorly	 Moderate:	 High:	 Balsam fir	 		 Eastern white
DIBINO	bright	suited:	Wetness	Wetness	Eastern hemlock			pine, white
		Wetness	Wechess	Wechess	Eastern white pine			spruce.
		Wechess			Quaking aspen			spruce.
					Red maple			
	I I		l I	I I	Sugar maple		43	
	I I		l I	I I	Yellow birch			
Gratiot	Slight	Poorly	 Severe:	 High:	Balsam fir	 58	114	Eastern white
0140100		suited:	Rooting	Wetness	Bigtooth aspen			pine, white
	i i	Rock	depth	Weenebb	Eastern hemlock			spruce.
	İ	fragments	Wetness		Paper birch		57	522455.
	İ				Quaking aspen			
	İ		 		Red maple		43	
	i	i			White spruce		100	İ
		i			Yellow birch			
	İ	į			İ	İ	į	İ
177A:					I			
Assinins	Slight	Well suited	Moderate:	High:	American basswood			Norway spruce,
			Wetness	Wetness	Balsam fir			eastern white
					Bigtooth aspen			pine, white
					Eastern hemlock			spruce.
					Quaking aspen			
					Red maple	65	43	
					Sugar maple	63	43	
					White spruce			
		ļ			Yellow birch			
1020.								
183C:			 a	 TT 2 m b .	 Palmam film	 		
Munising	lerraur	Well suited		High:	Balsam fir			American
	1	l I	Rooting	Wetness	Eastern hemlock			beech,
	1	l I	depth		Paper birch			ironwood, quaking
	1	I I	Wetness		Quaking aspen		1	
	1	I I] 		Red maple			aspen, sugar
	1	I I] 		Sugar maple White spruce			maple, yellow birch.
	I I	l I	 		Yellow birch			birch.
						 		1
Abbaye	Slight	 Well suited	Moderate:	 Moderate:	Balsam fir	 		Red pine,
			Wetness	Wetness	Eastern hemlock			white spruce.
	i	i			Paper birch			
	i	i		i	Quaking aspen			İ
	i	i		i	Red maple		43	İ
	i	i		i	Sugar maple		43	İ
	i	i		i	Yellow birch			İ
	1	:		1		:	1	1

Table 5.--Woodland Management and Productivity--Continued

		Managemen	nt concerns		Potential prod	uctivi	ty	
Map symbol and	Erosion	Suitability	Windthrow	Potential				
soil name	hazard	for site	hazard	for	Common trees	Site	Volume	Suggested
		preparation		seedling		index	of wood	trees to plant
	<u> </u>			mortality			fiber*	
	[
183C:						!		
Yalmer	Slight	Well suited	1	High:	American beech			Balsam fir,
			Wetness	Wetness	Balsam fir			sugar maple,
			Rooting		Eastern hemlock			yellow birch.
	1		depth		Quaking aspen Red maple			
	I I		l I		Sugar maple			
	 		 		Yellow birch			
	 		l I	I I				
183E:	i	i	i	i	i I	i		!
Munising	Slight	Poorly	Severe:	High:	Balsam fir			American
-	i	suited:	Rooting	Wetness	Eastern hemlock	i		beech,
	İ	Slope	depth	İ	Paper birch	j		ironwood,
	İ	į	Wetness	İ	Quaking aspen	j		quaking
	İ	İ	ĺ	İ	Red maple			aspen, sugar
	İ	j	ĺ	İ	Sugar maple	61		maple, yellow
			[White spruce			birch.
					Yellow birch			
Abbaye	Slight	Poorly	Moderate:	Moderate:	Balsam fir			Red pine,
		suited:	Wetness	Wetness	Eastern hemlock			white spruce.
	!	Slope		!	Paper birch			
					Quaking aspen			
					Red maple		43	
					Sugar maple		43	
			 		Yellow birch			
Yalmer	 cliab+	 Poorly	 Moderate:	 High:	American beech			Balsam fir,
raimer	BIIGHT	suited:	Wetness	Wetness	Balsam fir			sugar maple,
		Slope	Rooting	Weenebb	Eastern hemlock			yellow birch.
	i	22000	depth	i	Quaking aspen			7011011
	i	i		i	Red maple			!
	i	i	<u> </u>	i	Sugar maple			
	İ	i	İ	İ	Yellow birch	j		İ
	İ	j	ĺ	İ		ĺ	İ	
184C:	1							
Munising	Slight	Well suited	Severe:	High:	Balsam fir			American
			Rooting	Wetness	Eastern hemlock			beech,
			depth		Paper birch			ironwood,
	!		Wetness	!	Quaking aspen			quaking
	!		!	!	Red maple			aspen, sugar
					Sugar maple			maple, yellow
					White spruce			birch.
					Yellow birch			
Yalmer	 Slight	 Well suited	Moderate	 High:	American beech	 _		 Balsam fir,
TGIMEL 3		Herr surred	Wetness	Wetness	Balsam fir			sugar maple,
			Rooting		Eastern hemlock		1	yellow birch.
		i	depth	i	Quaking aspen			
	i	i		i	Red maple			
	i	į	İ	i	Sugar maple			
	i	i	į	i	Yellow birch			İ
	i	i	i	i	İ	i	i	i

Table 5.--Woodland Management and Productivity--Continued

		Managemen	nt concerns		Potential prod	ıctivi	ty	
Map symbol and soil name	Erosion hazard 	Suitability for site preparation	hazard	Potential for seedling	Common trees		:	 Suggested trees to plant
		1		mortality		<u> </u>	fiber*	1
184E:	l I		 		 	l I	 	l I
Munising	Slight	Poorly	 Severe:	 High:	Balsam fir	 	 	American
		suited:	Rooting	Wetness	Eastern hemlock	1		beech,
	İ	Slope	depth		Paper birch			ironwood,
	İ	1	Wetness		Quaking aspen			quaking
	İ	i		İ	Red maple			aspen, sugar
	İ	j	İ	İ	Sugar maple	61		maple, yellow
	İ	İ	İ	İ	White spruce			birch.
		į		İ	Yellow birch			
Yalmer	 Slight	Poorly	 Moderate:	 High:	American beech	 	 	 Balsam fir,
Idimoi	l	suited:	Wetness	Wetness	Balsam fir		! 	sugar maple,
	! 	Slope	Rooting	Weenebb	Eastern hemlock		1	yellow birch.
	i I	520p0	depth		Quaking aspen			7022011 222011
	i I				Red maple			İ
	İ				Sugar maple			
	İ	j	İ	İ	Yellow birch		i	İ
185B:	 				 	 	 	l I
Munising	 Slight	 Well suited	 Severe:	 High:	Balsam fir	 	! 	American
			Rooting	Wetness	Eastern hemlock			beech,
	İ		depth		Paper birch			ironwood,
	İ	i	Wetness	İ	Quaking aspen	i		quaking
	İ	j	İ	İ	Red maple	i		aspen, sugar
	İ	İ	İ	İ	Sugar maple	61		maple, yellow
		İ			White spruce			birch.
					Yellow birch			
Skanee	 Slight	 Well suited	 Severe:	 High:	 Balsam fir	 	 	 Eastern white
	İ	j	Rooting	Wetness	Eastern hemlock	i		pine, white
		İ	depth		Northern whitecedar			spruce.
			Wetness		Paper birch			
					Quaking aspen			
					Red maple	60	43	
					Sugar maple		43	
	 				Yellow birch	 		
185C:	 						 	
Munising	Slight	Well suited		High:	Balsam fir			American
			Rooting	Wetness	Eastern hemlock			beech,
			depth		Paper birch			ironwood,
			Wetness		Quaking aspen			quaking
					Red maple			aspen, sugar
					Sugar maple			maple, yellow
	l I	l I	 		White spruce Yellow birch		 	birch.
	 	1					 	
Skanee	Slight	Well suited		High:	Balsam fir			Eastern white
			Rooting	Wetness	Eastern hemlock			pine, white
			depth		Northern whitecedar			spruce.
	 	1	Wetness	 	Paper birch			
	 	1] 	 	Quaking aspen Red maple			
	I I	 	 	 	Sugar maple		43	I I
	I I	I I		I I	Yellow birch		43 	I
	I	1	I	I	Terrow Dirent			I

Table 5.--Woodland Management and Productivity--Continued

	l	Managemer	nt concerns		Potential prod	uctivi	ty	
Map symbol and soil name	Erosion hazard 	Suitability for site preparation	hazard	Potential for seedling mortality	Common trees		 Volume of wood fiber*	Suggested
	!	!		!	!	ļ	[!
187A: Skanee	 cliabt	 Well suited	 Corroro	 High:	 Balsam fir	 	 	 Eastern white
branee			Rooting	Wetness	Eastern hemlock			pine, white
	i	i	depth		Northern whitecedar	i		spruce.
	İ	j	Wetness	į	Paper birch	j	j	į
					Quaking aspen			
	!	ļ		ļ	Red maple		43	!
					Sugar maple		43	
	l I	l I	 		Yellow birch			
Gay	 Slight	 Well suited	 Severe:	 High:	Balsam fir	62	114	
			Wetness	Wetness	Eastern hemlock			İ
	İ	i	İ	İ	Northern whitecedar	j		İ
					Paper birch			
					Quaking aspen		86	
	!			!	Red maple			
					White spruce			
	l I			1	Yellow birch			
192B:	 		 	i i	 	İ	 	
Nipissing	Slight	Poorly	Slight	Low	Balsam fir	35	57	
	j	suited:		İ	Northern whitecedar	i		
	İ	Rock		į	Paper birch	50	43	į
		fragments			Quaking aspen			
		ļ			White spruce	40	72	
Arcadian	 Cliabe	 Poorly	Severe:	Low	 American basswood	 	 	 Eastern white
Alcaulan	BIIGHT	suited:	Rooting	HOW	Eastern hemlock			pine, white
		Rock	depth	İ	Eastern hophornbeam-			spruce.
	i	fragments		i	Northern red oak			
	İ	į	İ	İ	Quaking aspen	j		İ
	İ	j		İ	Red maple			ĺ
					Sugar maple	63	43	
	!	ļ		ļ	White ash			!
			l I		Yellow birch			l I
Rock outcrop.			 		 	 	 	
194B:	 Cliabe	 Doomles	 Wadamata:	 	 American basswood	 	 	
Copper Harbor	 erraur	Poorly suited:	Moderate: Wetness	Low	Balsam fir			Eastern white pine, red
		Rock	Weenebb	İ	Eastern hemlock			pine,
	i	fragments		i	Paper birch			İ
	İ	į		İ	Quaking aspen	71	86	İ
					Sugar maple	61	43	
		ļ			Yellow birch			
1050.		l I	 	1	 	[[
195B: Copper Harbor	 Slight	 Poorly	 Moderate:	Low	American basswood	 	 	 Eastern white
copper narbor		suited:	Wetness		Balsam fir			pine, red
		Rock		i	Eastern hemlock			pine, red
	İ	fragments		i	Paper birch			_
	İ	į		İ	Quaking aspen		86	İ
					Sugar maple	61	43	

Table 5.--Woodland Management and Productivity--Continued

		Managemen	nt concerns		Potential produ			
Map symbol and	Erosion	Suitability	Windthrow	Potential	1	I		
soil name	hazard	for site	hazard	for	Common trees	Site	Volume	Suggested
	İ	preparation	ĺ	seedling	İ	index	of wood	trees to plant
	İ	İ	İ.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	mortality	<u>İ</u>	<u> </u>	fiber*	İ
		ļ.			ļ		!	
195B: Bete Grise	 Cliabe	Doomler	 Moderate:	 High:	American basswood	 	 	 Eastern white
bete Glise	BIIGHT	Poorly suited:	Wetness	Wetness	Balsam fir			pine, red
		Rock	Wechess	Wechess	Eastern hemlock			pine, red
		fragments	 	1	Paper birch		 	pinc.
		II agmenes			Quaking aspen		!	
	İ	i			Sugar maple		!	!
	İ				Yellow birch			
	ĺ	İ			İ	ĺ	ĺ	ĺ
196B:								
Bete Grise	Slight	Poorly	Moderate:	High:	American basswood			Eastern white
		suited:	Wetness	Wetness	Balsam fir			pine, red
		Rock			Eastern hemlock			pine.
		fragments			Paper birch			
					Quaking aspen			
					Sugar maple		!	
	 	l I	 		Yellow birch			
Tawas	Slight	Poorly	Severe:	 High:	Balsam fir	40	72	 Eastern
	ĺ	suited:	Wetness	Wetness	Balsam poplar			arborvitae,
	İ	Wetness	İ	İ	Black ash			tamarack.
	İ	j	ĺ	İ	Eastern arborvitae	i	i	İ
	ĺ				Eastern hemlock			
	ĺ	İ			Red maple			
201								
301.								
Udorthents-						ļ		
Udipsamments					l I	 	 	İ
302.								
Histosols and	i	İ		İ	i	i	İ	!
Aquents		İ		İ	į	İ	İ	
303.								
Aquents and						ļ		
Dumps, stamp								
sand	 		 		 	 	 	
310.	İ	i				İ	 	!
Dumps, mine	i					İ	İ	
_	İ	j	İ	İ	İ	İ	į	İ
311.	[
Dumps, stamp								
sand								
					!		ļ	
312.	ļ				!	ļ.	ļ	
Pits	 					 	 	
313.	 		 	 		 	[
Dumps, sawdust	i	i			İ	İ	İ	
	İ	į			İ		İ	
W.	ļ	!			ļ.		ļ	
Water	i contract of the contract of	1	1	1	T. Control of the Con	1	1	I .

 $[\]star$ Volume is the yield in cubic feet per acre per year at the age of culmination of the mean annual increment for fully stocked stands.

Table 6.--Equipment Limitations on Woodland

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. See text for further explanation of ratings in this table)

	Rating:	s for most lin season(s)	niting	Preferred operating season(s)	Ratings fo	or preferred (seasons(s)	operating
Map symbol and soil name	 Haul roads 	 Log landings 	Logging areas and skid roads	 	Haul roads	 Log landings 	 Logging areas and skid roads
2:	 	 	 			 	
Lupton	Poorly suited: Wetness Low strength	Poorly suited: Ponding Wetness Low strength	Poorly suited: Low strength Wetness	Winter 	Poorly suited: Low strength	Poorly suited: Low strength	Poorly suited: Low strength
Tawas	Poorly suited: Wetness Low strength	Poorly suited: Ponding Wetness Low strength	Poorly suited: Low strength Wetness	Winter 	Poorly suited: Low strength	Poorly suited: Low strength	 Poorly suited: Low strength
3: Dawson	 Poorly suited: Wetness Low strength	Poorly suited: Ponding Wetness Low strength	 Poorly suited: Low strength Wetness	 Winter 	Poorly suited: Low strength	 Poorly suited: Low strength	 Poorly suited: Low strength
Loxley	 Poorly suited: Wetness Low strength	Poorly suited: Ponding Wetness Low strength	Poorly suited: Low strength Wetness	 Winter 	Poorly suited: Low strength	 Poorly suited: Low strength	 Poorly suited: Low strength
6:	! 	 	 			 	
Skandia	Poorly suited: Wetness Low strength Restrictive layer	Poorly suited: Ponding Wetness Low strength	Poorly suited: Low strength Wetness	Winter 	Poorly suited: Low strength Restrictive layer	Poorly suited: Low strength	Poorly suited: Low strength
Burt	 Poorly suited: Restrictive layer Wetness	Poorly suited: Ponding Low strength Wetness	 Suited: Low strength Wetness	Summer, winter. 	Poorly suited: Restrictive layer	 Poorly suited: Low strength	 Poorly suited: Low strength
10:							
Cathro	Poorly suited: Wetness Low strength	Poorly suited: Ponding Wetness Low strength	Poorly suited: Low strength Wetness	Winter 	Poorly suited: Low strength	Poorly suited: Low strength	Poorly suited: Low strength

Table 6.--Equipment Limitations on Woodland--Continued

	Rating	s for most lin	miting	Preferred operating season(s)	Ratings f	or preferred seasons(s)	operating
Map symbol and soil name	 Haul roads 	 Log landings 	Logging areas and skid roads	 	Haul roads	 Log landings 	Logging areas and skid roads
10:	 		 				
Sabattis	Poorly suited: Wetness Low strength	Poorly suited: Ponding Wetness Low strength	Poorly suited: Low strength Wetness	Winter 	Poorly suited: Low strength	Poorly suited: Low strength	Poorly suited: Low strength
13:	ĺ	İ	ĺ	İ	İ	Ì	İ
Tawas	Poorly suited: Wetness Low strength	Poorly suited: Ponding Wetness Low strength	Poorly suited: Low strength Wetness	Winter 	Poorly suited: Low strength	Poorly suited: Low strength	Poorly suited: Low strength
Deford	Poorly suited: Wetness Low strength	Poorly suited: Ponding Wetness Low strength	Poorly suited: Low strength Wetness	Summer, winter. 	Poorly suited: Low strength	Poorly suited: Low strength	Poorly suited: Low strength
15B:	 		 				
Dawson	Poorly suited: Wetness Low strength	Poorly suited: Ponding Wetness Low strength	Poorly suited: Low strength Wetness	Winter 	Poorly suited: Low strength	Poorly suited: Low strength	Poorly suited: Low strength
Croswell	 Moderately suited: Sandiness	Moderately suited: Sandiness	 Moderately suited: Sandiness	Spring, fall, winter.	Well suited	 Well suited 	 Well suited
20E. Rock outcrop	 	 	 			 	
Noon outerop			İ				
21G: Rock outcrop.	 		 				
Arcadian	 Poorly suited: Slope 	Poorly suited: Low strength Slope	 Poorly suited: Low strength Slope	 Year round 	Poorly suited: Slope	Poorly suited: Slope Low strength	 Poorly suited: Low strength Slope
39A: Betsy Bay	 Poorly suited: Wetness	 Poorly suited: Wetness Sandiness	 Poorly suited: Wetness Sandiness	 Summer, winter. 	 Well suited 	 Well suited 	 Well suited

Table 6.--Equipment Limitations on Woodland--Continued

	 Rating: 	s for most lin season(s)	miting	Preferred operating season(s)	Ratings f	or preferred (operating
Map symbol and soil name	 Haul roads 	 Log landings 	 Logging areas and skid roads	 	 Haul roads 	 Log landings 	Logging areas and skid roads
39A: Burt	 Poorly suited: Restrictive layer Wetness	 Poorly suited: Ponding Low strength Wetness	 Poorly suited: Low strength Wetness	 Summer, winter. 	 Poorly suited: Restrictive layer	 Poorly suited: Low strength	 Poorly suited: Low strength
Deford	 Poorly suited: Wetness Low strength	Poorly suited: Ponding Wetness Low strength	 Poorly suited: Low strength Wetness	 Summer, winter. 	Poorly suited: Low strength	 Poorly suited: Low strength	 Poorly suited: Low strength
47A: Zeba	 Poorly suited: Wetness Restrictive layer	 Poorly suited: Wetness	 Poorly suited: Wetness	 Summer, winter. 	Moderately suited: Restrictive layer	 Well suited 	 Well suited
Jacobsville	Poorly suited: Wetness Restrictive layer	Poorly suited: Ponding Wetness Low strength	Poorly suited: Low strength Wetness	Summer, winter. 	Moderately suited: Restrictive layer	Poorly suited: Low strength	 Poorly suited: Low strength
51C: Arcadian	 Poorly suited: Restrictive layer	 Poorly suited: Low strength Slope	 Poorly suited: Low strength	 Year round 	Poorly suited: Restrictive layer	 Poorly suited: Low strength Slope	 Poorly suited: Low strength
Nipissing	 Moderately suited: Restrictive layer	 Moderately suited: Slope 	 Well suited 	 Year round 	Moderately suited: Restrictive layer	 Moderately suited: Slope 	 Well suited
Rock outcrop.	 	 	 			 	
51E: Arcadian	 Poorly suited: Restrictive layer Slope	 Poorly suited: Low strength Slope	 Poorly suited: Low strength Slope	 Year round 	Poorly suited: Restrictive layer Slope	 Poorly suited: Low strength Slope	 Poorly suited: Low strength Slope
Nipissing	 Moderately suited: Restrictive layer Slope	 Poorly suited: Slope 	 Moderately suited: Slope 	 Spring, fall, winter.	 Moderately suited: Restrictive layer Slope	 Poorly suited: Slope	 Moderately suited: Slope
Rock outcrop.	 	 	 			 	

Table 6.--Equipment Limitations on Woodland--Continued

	 Rating: 	s for most lin season(s)	niting	Preferred operating season(s)	Ratings for preferred operating seasons(s)		
Map symbol and soil name	 Haul roads 	 Log landings 	Logging areas and skid roads		Haul roads	 Log landings 	Logging areas and skid roads
52C: Arcadian	 Poorly suited: Restrictive layer	 Poorly suited: Low strength Slope	 Poorly suited: Low strength	 Year round 	 Poorly suited: Restrictive layer	 Poorly suited: Low strength Slope	 Poorly suited: Low strength
Dishno	Moderately suited: Wetness	Moderately suited: Wetness Slope	Moderately suited: Wetness	Summer, fall, winter.	Well suited	 Moderately suited: Slope 	 Well suited
Rock outcrop.	 	 	 			 	
52E: Arcadian	 Poorly suited: Restrictive layer Slope	 Poorly suited: Low strength Slope	 Poorly suited: Low strength Slope	 Year round 	 Poorly suited: Restrictive layer Slope	 Poorly suited: Low strength Slope	 Poorly suited: Low strength Slope
Dishno	Moderately suited: Wetness Slope Restrictive layer	 Poorly suited: Slope Wetness	 Moderately suited: Wetness Slope	 Spring, fall, winter. 	Moderately suited: Slope Restrictive layer	 Poorly suited: Slope 	 Moderately suited: Slope
Rock outcrop.	 	 	 			 	
53E: Arcadian	 Poorly suited: Restrictive layer Slope	Poorly suited: Low strength Slope	 Poorly suited: Low strength Slope	Year round	 Poorly suited: Restrictive layer Slope	 Poorly suited: Low strength Slope	 Poorly suited: Low strength Slope
Michigamme	Moderately suited: Restrictive layer Slope	Poorly suited: Slope Low strength	Moderately suited: Low strength Slope	 Summer, fall, winter. 	Moderately suited: Restrictive layer Slope	Poorly suited: Slope Low strength	 Moderately suited: Low strength Slope
Rock outcrop.	 		 		İ	 	
53F: Arcadian	 Poorly suited: Slope	Poorly suited: Low strength Slope	Poorly suited: Low strength Slope	Year round	 Poorly suited: Slope	Poorly suited: Slope Low strength	Poorly suited: Low strength Slope
Michigamme	Poorly suited: Slope Low strength	Poorly suited: Slope Low strength	Poorly suited: Slope Low strength	Summer, fall, winter.	Poorly suited: Slope Low strength	 Poorly suited: Slope Low strength	 Poorly suited: Slope Low strength
Rock outcrop.	 					 	

Table 6.--Equipment Limitations on Woodland--Continued

	Rating	s for most lin	miting	Preferred operating season(s)	Ratings for preferred operating seasons(s)			
Map symbol and soil name	 Haul roads 	 Log landings 	Logging areas and skid roads	 	Haul roads	 Log landings 	Logging areas and skid roads	
55B: Chocolay	 Moderately suited: Restrictive layer	 Well suited 	 Well suited 	 Year round 	 Moderately suited: Restrictive layer	 Well suited 	 Well suited 	
100B: Waiska	 Well suited	 Well suited	 Well suited	 Year round	 Well suited	 Well suited	 Well suited	
100D: Waiska	 Well suited 	 Moderately suited: Slope	 Well suited 	 Year round 	 Well suited 	 Moderately suited: Slope	 Well suited 	
102C: Waiska	 Well suited 	 Moderately suited: Slope	 Well suited 	 Year round 	 Well suited 	 Moderately suited: Slope	 Well suited 	
Garlic	 Well suited 	 Moderately suited: Slope	 Well suited 	 Year round 	 Well suited 	 Moderately suited: Slope	 Well suited 	
102E: Waiska	 Moderately suited: Slope	 Poorly suited: Slope	 Moderately suited: Slope	 Spring, fall, winter.	 Moderately suited: Slope	 Poorly suited: Slope	 Moderately suited: Slope	
Garlic	 Moderately suited: Slope	 Poorly suited: Slope	 Moderately suited: Slope	 Year round 	Moderately suited: Slope	 Poorly suited: Slope	 Moderately suited: Slope	
102F: Waiska	 Poorly suited: Slope	 Poorly suited: Slope	 Poorly suited: Slope	 Spring, fall, winter.	 Poorly suited: Slope	 Poorly suited: Slope	 Poorly suited: Slope	
Garlic	 Poorly suited: Slope	 Poorly suited: Slope	 Poorly suited: Slope	 Year round 	Poorly suited: Slope	 Poorly suited: Slope	 Poorly suited: Slope	
110B: Shelldrake	 Moderately suited: Sandiness	 Moderately suited: Sandiness	 Moderately suited: Sandiness	 Spring, fall, winter.	 Well suited 	 Well suited 	 Well suited 	
Croswell	 Moderately suited: Sandiness	 Moderately suited: Sandiness	 Moderately suited: Sandiness	 Spring, fall, winter.	 Well suited 	 Well suited 	 Well suited 	
111B: Deer Park	 Well suited 	 Well suited 	 Well suited 	 Spring, fall, winter.	 Well suited 	 Well suited 	 Well suited 	
111D: Deer Park	 Well suited 	 Moderately suited: Slope	 Well suited 	 Spring, fall, winter.	 Well suited 	 Moderately suited: Slope	 Well suited 	

Table 6.--Equipment Limitations on Woodland--Continued

	Rating	s for most lin season(s)	miting	Preferred operating season(s)	Ratings for preferred operating seasons(s)			
Map symbol and soil name	 Haul roads 	 Log landings 	Logging areas and skid roads		Haul roads	 Log landings 	Logging areas and skid roads	
111E:			 					
Deer Park	Moderately suited: Slope	Poorly suited: Slope	Moderately suited: Slope	Spring, fall, winter.	Moderately suited: Slope	Poorly suited: Slope	Moderately suited: Slope	
111F:	 		 	 			 	
Deer Park	Poorly suited: Slope	Poorly suited: Slope	Poorly suited: Slope	Spring, fall, winter.	Poorly suited: Slope	Poorly suited: Slope	Poorly suited: Slope	
112C:								
Deer Park	Well suited 	Moderately suited: Slope	Well suited 	Spring, fall, winter.	Well suited	Moderately suited: Slope	Well suited 	
Croswell	 Moderately suited: Sandiness	Moderately suited: Sandiness	 Moderately suited: Sandiness	Spring, fall, winter.	Well suited	 Well suited 	 Well suited 	
113C:	İ		 					
Rubicon	Moderately suited: Sandiness	Moderately suited: Sandiness Slope	Moderately suited: Sandiness	Spring, fall, winter.	Well suited	Moderately suited: Slope	Well suited 	
Croswell	 Moderately suited: Sandiness	 Moderately suited: Sandiness	 Moderately suited: Sandiness	 Spring, fall, winter.	 Well suited 	 Well suited 	 Well suited 	
120B:								
Garlic	Well suited	Well suited	Well suited	Year round	Well suited	Well suited	Well suited	
120D: Garlic	 Well suited 	 Moderately suited: Slope	 Well suited 	 Year round 	 Well suited	 Moderately suited: Slope	 Well suited 	
120E:	 		 				 	
Garlic	Moderately suited: Slope	Poorly suited: Slope	Moderately suited: Slope	Year round	Moderately suited: Slope	Poorly suited: Slope	Moderately suited: Slope	
125A:	İ		İ	İ			İ	
Croswell	Moderately suited: Sandiness	Moderately suited: Sandiness	Moderately suited: Sandiness	Spring, fall, winter.	Well suited	Well suited	Well suited 	
Au Gres	 Poorly suited: Wetness	Poorly suited: Wetness Low strength Sandiness	Poorly suited: Low strength Wetness Sandiness	Summer, winter.	Well suited	Poorly suited: Low strength	 Poorly suited: Low strength	

Table 6.--Equipment Limitations on Woodland--Continued

	 Rating 	s for most lin	miting	Preferred operating season(s)	Ratings for preferred operating seasons(s)		
Map symbol and soil name	 Haul roads 	 Log landings 	Logging areas and skid roads	 	 Haul roads 	 Log landings 	Logging areas and skid roads
126B.							
126B: Au Gres	 Poorly suited: Wetness 	Poorly suited: Wetness Low strength Sandiness	Poorly suited: Low strength Wetness Sandiness	Summer, winter. 	Well suited	 Poorly suited: Low strength	 Poorly suited: Low strength
Deford	 Poorly suited: Wetness Low strength	Poorly suited: Ponding Wetness Low strength	 Poorly suited: Low strength Wetness	Summer, winter. 	Poorly suited: Low strength	 Poorly suited: Low strength	 Poorly suited: Low strength
Croswell	 Moderately suited: Sandiness	 Moderately suited: Sandiness	 Moderately suited: Sandiness	Spring, fall, winter.	Well suited	 Well suited 	 Well suited
127A:	 	 	 			 	
Au Gres	Poorly suited: Wetness	Poorly suited: Wetness Low strength Sandiness	Poorly suited: Low strength Wetness Sandiness	Summer, winter. 	Well suited 	Poorly suited: Low strength	Poorly suited: Low strength
Kinross	 Poorly suited: Wetness 	Poorly suited: Ponding Wetness Low strength	 Poorly suited: Low strength Wetness	Summer, winter. 	Well suited 	Poorly suited: Low strength	 Poorly suited: Low strength
130C:	İ	İ	İ			İ	İ
Garlic	Well suited 	Moderately suited: Slope	Well suited 	Year round 	Well suited	Moderately suited: Slope	Well suited
Alcona	Well suited 	Moderately suited: Low strength Slope	Moderately suited: Low strength	Summer, fall, winter. 	Well suited 	Moderately suited: Low strength Slope	Moderately suited: Low strength
130E:	İ	į	İ	İ	İ	į	ĺ
Garlic	Moderately suited: Slope	Poorly suited: Slope 	Moderately suited: Slope	Year round 	Moderately suited: Slope	Poorly suited: Slope 	Moderately suited: Slope
Alcona	 Moderately suited: Slope 	 Poorly suited: Slope Low strength	 Moderately suited: Low strength Slope	Summer, fall, winter.	Moderately suited: Slope	Poorly suited: Slope Low strength	 Moderately suited: Low strength Slope

Table 6.--Equipment Limitations on Woodland--Continued

	 Rating 	s for most lin season(s)	miting	Preferred operating season(s)	Ratings f	or preferred (operating
Map symbol and soil name	 Haul roads 	 Log landings 	Logging areas and skid roads	 	Haul roads	 Log landings 	Logging areas and skid roads
1226							
133C: Keweenaw	 Well suited 	 Moderately suited: Slope	 Well suited 	 Year round 	 Well suited 	 Moderately suited: Slope	 Well suited
Garlic	 Well suited 	 Moderately suited: Slope	 Well suited 	 Year round 	 Well suited 	 Moderately suited: Slope	 Well suited
133E:	I I		 				
Keweenaw	Moderately suited: Slope	Poorly suited: Slope	Moderately suited: Slope	Year round	Moderately suited: Slope	Poorly suited: Slope	Moderately suited: Slope
Garlic	 Moderately suited: Slope	Poorly suited: Slope	 Moderately suited: Slope	Year round	Moderately suited: Slope	Poorly suited: Slope	 Moderately suited: Slope
133F:	l I	 	 				
Keweenaw	 Moderately suited: Slope	Poorly suited: Slope	 Moderately suited: Slope	Year round 	Moderately suited: Slope	Poorly suited: Slope	 Moderately suited: Slope
Garlic	 Poorly suited: Slope	 Poorly suited: Slope	 Poorly suited: Slope	 Year round 	 Poorly suited: Slope	 Poorly suited: Slope	 Poorly suited: Slope
136B:	 	İ	 			l I	
Borgstrom	 Well suited 	 Well suited 	 Well suited 	 Year round 	Well suited	 Well suited 	 Well suited
Ingalls	Poorly suited: Wetness Sandiness Sandiness	Poorly suited: Wetness Low strength Sandiness	Poorly suited: Low strength Wetness Sandiness	Summer, winter. 	Well suited	Poorly suited: Low strength	Poorly suited: Low strength
142C:		İ					
Wallace	Well suited 	Poorly suited: Low strength Slope	Poorly suited: Low strength	Spring, fall, winter. 	Well suited	Poorly suited: Low strength Slope	Poorly suited: Low strength
Rubicon	 Moderately suited: Sandiness 	Moderately suited: Sandiness Slope	 Moderately suited: Sandiness 	Spring, fall, winter.	Well suited	 Moderately suited: Slope 	 Well suited
142F:	į	İ	İ			İ	
Wallace	Moderately suited: Slope 	Poorly suited: Low strength Slope	Poorly suited: Low strength Slope	Spring, fall, winter. 	Moderately suited: Slope	Poorly suited: Low strength Slope	Poorly suited: Low strength Slope

Table 6.--Equipment Limitations on Woodland--Continued

	 Rating: 	s for most lin season(s)	niting	Preferred operating season(s)	Ratings for preferred operating seasons(s)		
Map symbol and soil name	 Haul roads 	 Log landings 	Logging areas and skid roads	 	Haul roads	 Log landings 	Logging areas and skid roads
142F:	 	 	 			 	l I
Rubicon	Moderately suited: Slope	Poorly suited: Slope Sandiness	Moderately suited: Slope Sandiness	Spring, fall, winter.	Moderately suited: Slope	Poorly suited: Slope	Moderately suited: Slope
155C:	1	 	 				
Montreal	 Well suited 	 Moderately suited: Slope	 Well suited 	Summer, winter. 	Well suited	 Moderately suited: Slope	 Well suited
Paavola	 Moderately suited: Restrictive layer	suited:	 Well suited 	Summer, winter. 	Moderately suited: Restrictive layer	 Moderately suited: Slope 	 Well suited
Waiska	 Well suited 	 Moderately suited: Slope	 Well suited 	 Year round 	Well suited	 Moderately suited: Slope	 Well suited
155E:	İ	 	 				
Montreal	Moderately suited: Slope	Poorly suited: Slope	Moderately suited:	Summer, winter.	Moderately suited:	Poorly suited: Slope	Moderately suited: Slope
Paavola	Moderately suited: Slope	 Poorly suited: Slope	 Moderately suited: Slope	Summer, winter.	Moderately suited: Slope	 Poorly suited: Slope	 Moderately suited: Slope
Waiska	 Moderately suited: Slope	 Poorly suited: Slope	 Moderately suited: Slope	 Spring, fall, winter.	Moderately suited: Slope	 Poorly suited: Slope	 Moderately suited: Slope
158A:	ì	 	! 			 	
Arnheim	Poorly suited: Wetness Flooding	Poorly suited: Ponding Flooding Wetness	Poorly suited: Wetness Low strength	Summer, winter. 	Well suited 	Moderately suited: Low strength	Moderately suited: Low strength
Sturgeon	Poorly suited: Wetness Flooding Low strength	Poorly suited: Wetness Flooding Low strength	Poorly suited: Wetness Low strength	 	Moderately suited: Low strength	 Moderately suited: Low strength	 Moderately suited: Low strength
Pelkie	 Moderately suited: Flooding	 Moderately suited: Flooding	 Well suited 	 	 Well suited 	 Well suited 	 Well suited
161F:	 	 	 			I 	
Trimountain	Poorly suited: Slope	 Poorly suited: Slope	 Poorly suited: Slope	Year round 	Poorly suited: Slope	 Poorly suited: Slope	Poorly suited: Slope

Table 6.--Equipment Limitations on Woodland--Continued

	 Rating 	s for most lin season(s)	miting	Preferred operating season(s)	Ratings f	or preferred o	operating
Map symbol and soil name	 Haul roads 	 Log landings 	Logging areas and skid roads	 	Haul roads	 Log landings 	Logging areas and skid roads
161F:			 				
Lac La Belle	Poorly	Poorly	 Poorly	 Spring,	Poorly	Poorly	 Poorly
240 24 20110	suited:	suited:	suited:	fall,	suited:	suited:	suited:
	Slope	Slope	Slope	winter.	Slope	Slope	Slope
Waiska	Poorly	Poorly	 Poorly	 Spring,	Poorly	Poorly	 Poorly
waiska	suited:	suited:	suited:	fall,	suited:	suited:	suited:
	Slope	Slope	Slope	winter.	Slope	Slope	Slope
	į	į	Ī	į		į	į
162F:				 Wasan			 December
Trimountain	suited:	Poorly suited:	Poorly suited:	Year round	Poorly suited:	Poorly suited:	Poorly
	Slope		!	 	Slope	Slope	suited:
	Slope	Slope	Slope 		Slope	Slope	Slope
Lac La Belle	Poorly	Poorly	Poorly	Spring,	Poorly	Poorly	Poorly
	suited:	suited:	suited:	fall,	suited:	suited:	suited:
	Slope	Slope	Slope	winter.	Slope	Slope	Slope
Michigamme	 Poorly	 Poorly	 Poorly	Summer,	Poorly	 Poorly	 Poorly
	suited:	suited:	suited:	fall,	suited:	suited:	suited:
	Slope	Slope	Slope	winter.	Slope	Slope	Slope
	Low	Low	Low	İ	Low	Low	Low
	strength	strength	strength		strength	strength	strength
166B:	 		 				
Gratiot	Poorly	Poorly	Poorly	Summer,	Well suited	Moderately	Moderately
	suited:	suited:	suited:	winter.		suited:	suited:
	Wetness	Wetness	Wetness			Low	Low
		Low	Low			strength	strength
	 	strength	strength			 	
Sabattis	Poorly	Poorly	 Poorly	Winter	Poorly	Poorly	 Poorly
	suited:	suited:	suited:		suited:	suited:	suited:
	Wetness	Ponding	Low		Low	Low	Low
	Low	Wetness	strength		strength	strength	strength
	strength	Low strength	Wetness				
	 	strength	 				
173C:	į	į	İ	į	į	į	į
Montreal	Well suited		Well suited		Well suited		Well suited
	 	suited:	 	winter.		suited:	
	İ		İ				
	Well suited	Moderately	Well suited	!	Well suited		Well suited
Paavola		: -		winter.		suited:	
Paavola		suited:		wincer.	1	63	
Paavola	 	suited: Slope	 		į	Slope	
Paavola Dishno	 	!	 Moderately	winter. Summer,	 Well suited	į -	 Well suited
	 	Slope	 Moderately suited:	i I	 Well suited	į -	 Well suited
	 Moderately	Slope Moderately suited: Wetness		 Summer,	 Well suited	 Moderately	 Well suited
	 Moderately suited:	Slope Moderately suited:	suited:	 Summer, fall,	 Well suited 	 Moderately suited:	 Well suited
	 Moderately suited:	Slope Moderately suited: Wetness	suited:	 Summer, fall,	 Well suited 	 Moderately suited:	 Well suited
Dishno	 Moderately suited: Wetness 	Slope Moderately suited: Wetness	suited:	 Summer, fall,	 Well suited 	 Moderately suited:	 Well suited Moderately
Dishno	 Moderately suited: Wetness 	Slope Moderately suited: Wetness Slope	suited: Wetness 	 Summer, fall, winter.		 Moderately suited: Slope 	

Table 6.--Equipment Limitations on Woodland--Continued

	 Rating: 	s for most lin season(s)	miting	Preferred operating season(s)	Ratings fo	or preferred (operating
Map symbol and soil name	 Haul roads 	 Log landings 	Logging areas and skid roads		Haul roads	 Log landings 	Logging areas and skid roads
173E:		 					
Paavola	Poorly suited: Restrictive layer Slope	Poorly suited: Slope 	Moderately suited: Slope 	Summer, winter. 	Poorly suited: Restrictive layer Slope	Poorly suited: Slope 	Moderately suited: Slope
Dishno	 Moderately suited: Wetness Slope Restrictive layer	 suited: Slope Wetness	Moderately suited: Wetness Slope	Spring, fall, winter. 	Moderately suited: Slope Restrictive layer	 Poorly suited: Slope 	 Moderately suited: Slope
174B:		İ			İ		
Montreal	Well suited 	Moderately suited: Slope	Well suited 	Summer, winter.	Well suited	Moderately suited: Slope	Well suited
Dishno	 Moderately suited: Wetness 	 Moderately suited: Wetness Slope	 Moderately suited: Wetness	Summer, fall, winter.	Well suited	 Moderately suited: Slope 	 Well suited
Gratiot	 Poorly suited: Wetness	Poorly suited: Wetness Low strength	Poorly suited: Wetness Low strength	Summer, winter. 	Well suited	 Moderately suited: Low strength	 Moderately suited: Low strength
177A:	 	 	 			 	
Assinins	Poorly suited: Wetness	Poorly suited: Wetness	Poorly suited: Wetness	Summer, winter. 	Well suited	Well suited 	 Well suited
183C: Munising	 Well suited 	 Moderately suited: Slope	 Well suited 	 Summer, winter.	 Well suited 	 Moderately suited: Slope	 Well suited
Abbaye	 Moderately suited: Restrictive layer	 Moderately suited: Slope 	 Well suited 	Year round 	Moderately suited: Restrictive layer	suited:	 Well suited
Yalmer	 Well suited 	 Moderately suited: Slope	 Well suited 	Summer, winter. 	Well suited	 Moderately suited: Slope	 Well suited
183E:		 	! 				
Munising	Moderately suited: Slope	Poorly suited: Slope	Moderately suited: Slope	Summer, winter. 	Moderately suited: Slope	Poorly suited: Slope	Moderately suited: Slope
Abbaye	Moderately suited: Restrictive layer Slope	 Poorly suited: Slope 	 Moderately suited: Slope 	 Year round 	Moderately suited: Restrictive layer Slope	 Poorly suited: Slope 	 Moderately suited: Slope

Table 6.--Equipment Limitations on Woodland--Continued

	Rating	s for most lin season(s)	niting	Preferred operating season(s)	Ratings for preferred operating seasons(s)			
Map symbol and soil name	 Haul roads 	 Log landings 	Logging areas and skid roads		 Haul roads 	 Log landings 	 Logging areas and skid roads	
183E: Yalmer	suited:	 Poorly suited:	 Moderately suited:	 Summer, winter.	 Moderately suited:	 Poorly suited:	 Moderately suited:	
184C:	Slope 	Slope 	Slope 	 	Slope 	Slope 	Slope 	
Munising	 Well suited 	Moderately suited: Slope	 Well suited 	Summer, winter.	Well suited	Moderately suited: Slope	 Well suited 	
Yalmer	 Well suited 	 Moderately suited: Slope	 Well suited 	Summer, winter.	 Well suited 	 Moderately suited: Slope	 Well suited 	
184E:						 		
Munising	Moderately suited: Slope	Poorly suited: Slope	Moderately suited: Slope	Summer, winter. 	Moderately suited: Slope	Poorly suited: Slope	Moderately suited: Slope	
Yalmer	 Moderately suited: Slope	Poorly suited: Slope	Moderately suited: Slope	Summer, winter.	Moderately suited: Slope	Poorly suited: Slope	Moderately suited: Slope	
185B: Munising	 Well suited 	 Well suited 	 Well suited 	 Summer, winter.	 Well suited	 Well suited 	 Well suited 	
Skanee	 Poorly suited: Wetness	 Poorly suited: Wetness	 Poorly suited: Wetness	 Summer, winter. 	 Well suited 	 Well suited 	 Well suited 	
185C:	 		 				 	
Munising	 Well suited 	Moderately suited: Slope	 Well suited 	Summer, winter.	Well suited	Moderately suited: Slope	 Well suited 	
Skanee	 Poorly suited: Wetness	Poorly suited: Wetness	 Poorly suited: Wetness	Summer, winter.	Well suited	 Well suited 	 Well suited 	
187A:	 					 	 	
Skanee	Poorly suited: Wetness	Poorly suited: Wetness	Poorly suited: Wetness	Summer, winter. 	Well suited	Well suited 	 Well suited 	
Gay	 Poorly suited: Wetness	Poorly suited: Ponding Wetness Low strength	Poorly suited: Low strength Wetness	Summer, winter. 	Well suited	 Poorly suited: Low strength	 Poorly suited: Low strength	
192B: Nipissing	 Moderately suited: Restrictive layer	 Well suited 	 Well suited 	 Year round 	Moderately suited: Restrictive layer	 Well suited 	 Well suited 	

Table 6.--Equipment Limitations on Woodland--Continued

	 Rating: 	s for most lin season(s)	miting	Preferred operating season(s)	Ratings for preferred operating seasons(s)		
Map symbol and soil name	 Haul roads 	 Log landings 	Logging areas and skid roads		Haul roads	 Log landings 	Logging areas and skid roads
192B: Arcadian	 Poorly suited: Restrictive layer	 Poorly suited: Low strength	 Poorly suited: Low strength	 Year round 	 Poorly suited: Restrictive layer	 Poorly suited: Low strength	 Poorly suited: Low strength
Rock outcrop.	 	 	 			 	
194B: Copper Harbor	 Well suited 	 Well suited 	 Well suited 	 Spring, fall, winter.	 Well suited 	 Well suited 	 Well suited
195B: Copper Harbor	 Well suited 	 Well suited 	 Well suited 	 Spring, fall, winter.	 Well suited 	 Well suited 	 Well suited
Bete Grise	 Poorly suited: Wetness	 Poorly suited: Wetness	 Poorly suited: Wetness	Summer, winter.	Well suited	 Well suited 	 Well suited
196B:	 	 	 	l I	1	 	l I
Bete Grise	 Poorly suited: Wetness	 Poorly suited: Wetness	 Poorly suited: Wetness	Summer, winter.	Well suited	 Well suited 	 Well suited
Tawas	Poorly suited: Wetness Low strength	Poorly suited: Ponding Wetness Low strength	 Poorly suited: Low strength Wetness	 Winter 	Poorly suited: Low strength	 Poorly suited: Low strength	 Poorly suited: Low strength
301. Udorthents- Udipsamments			 -	 		 -	
302. Histosols and Aquents	 	 	 	 		 	
303. Aquents and Dumps, stamp sand	 	 	 	 		 	
310. Dumps, mine	 	 	 	 		 	
311. Dumps, stamp sand	 	 	 	 		 	
312. Pits	 	 	 	 		 	

Table 6.--Equipment Limitations on Woodland--Continued

Ratings for most limiting season(s)			Preferred operating season(s)	Ratings for preferred operating seasons(s)			
Map symbol							
and soil name	Haul roads	Log landings	Logging		Haul roads	Log landings	Logging
			areas and				areas and
			skid roads	<u> </u>	1		skid roads
313.							
Dumps, sawdust							
W.		İ				į į	
Water		İ				į į	
		ı i		I		ı i	

Table 7.--Plant Communities on Selected Soils

(Absence of an entry indicates that information was not available)

Map symbol and soil name	Common trees	Symbol	Characteristic vegetation	Symbo
2:				
	 Balsam fir	ABBA	Chackled alder	ALINR
Lupton	Black ash	FRNI	Speckled alder	CAPE6
	Black asn	PIMA	Pennsylvania sedge Willow	SALIX
	Northern whitecedar	THOC2-1	Northern whitecedar	THOC2 -
	Paper birch	BEPA	American elm	ULAM
	Quaking aspen	POTR5	American eim	ODAM
	Red maple	ACRU		
	Tamarack	LALA		
	White spruce	PIGL		
		į		
Tawas	Balsam fir	ABBA	Purple pitcherplant	:
	Balsam poplar	POBA2	Northern maidenhair	ADPE
	Black ash	FRNI	Speckled alder	ALINR
	Eastern arborvitae	THOC2	Bluejoint	CACA4
	Eastern hemlock	TSCA	Sedge	CAREX
	Red maple	ACRU	Eastern teaberry	GAPR2
	!		Tamarack	LALA
	!		Balsam poplar	POBA2
	!		Quaking aspen	POTR5
	!		Brackenfern	PTERI
	!		American elm	ULAM
	 		Northern whitecedar	THOC2 -
3:		İ		
Dawson	Black spruce	PIMA	Chamaedaphne	CHAMA5
	Tamarack	LALA	Sedge	CAREX
	 		Bog Labradortea	LEGR
Loxley	 Balsam fir	ABBA	Chamaedaphne	CHAMA5
	Black spruce	PIMA	Eastern teaberry	GAPR2
	Tamarack	LALA	Vaccinium	VACCI
5:	 			
	Balsam fir	ABBA	American elm	ULAM
	Black ash	FRNI	Balsam fir	ABBA
	Eastern arborvitae	THOC2	Speckled alder	ALRU3
	Eastern hemlock	TSCA	Sedge	CAREX
	Tamarack	LALA	Bunchberry dogwood	COCA13
			Idaho goldthread	COOC
			Northern whitecedar	THOC2
			American starflower	TRBO2
Burt	 Balsam fir	ABBA	Sedge	CAREX
•	Black spruce	PIMA	Northern dewberry	RUFL
	Eastern arborvitae	THOC2	Woodsorrel	OXALI
	Eastern hemlock	TSCA	Bunchberry dogwood	COCA13
	Quaking aspen	POTRT	Goldthread	COPTI
	Red maple	ACRU	Speckled alder	ALINR
			Horsetail	EQUIS
			Sphagnum moss	SPHAG*
				MACA4
	 		Canada mayflower	MAC

Table 7.--Plant Communities on Selected Soils--Continued

Map symbol and soil name	 Common trees 	Symbol 	Characteristic vegetation	 Symbol
10:	 			
Cathro	Balsam fir Black spruce	ABBA	Rattlesnake fern Northern dewberry	BOVI
	Eastern arborvitae	THOC2	Common ladyfern	ATFI
	Paper birch	BEPA	Sedge	CAREX
	Red maple	ACRU	American starflower	TRBO2
	Tamarack	LALA	Naked miterwort	MINU3
	White spruce	PIGL	Sphagnum moss	SPHAG*
			Woodsorrel	OXALI
			Goldthread	COPTI
			Bedstraw	GALIU
	 		Spinulose woodfern	DRCA11
Sabattis	Balsam fir	ABBA	Idaho goldthread	cooc
	Black ash	FRNI	Northern whitecedar	THOC2-1
	Black spruce	PIMA	American starflower	TRBO2
	Northern whitecedar	THOC2-1	Speckled alder	ALINR
	Quaking aspen	POTR5	Sedge Eastern hemlock	CAREX TSCA
	Red maple	LALA	American elm	ULAM
	White spruce	PIGL	Balsam fir	ABBA
	Yellow birch	BEAL2	Bunchberry dogwood	COCA13
13:		İ		İ
Tawas	Balsam fir	ABBA	Speckled alder	ALINR
	Balsam poplar	POBA2	Eastern teaberry	GAPR2
	Black ash	FRNI	American elm	ULAM
	Eastern arborvitae	THOC2	Purple pitcherplant	SAPU4
	Eastern hemlock	TSCA	Brackenfern	PTERI
	Red maple	ACRU	Quaking aspen	POTR5
	1		Balsam poplar	POBA2
	 	1	Tamarack Sedge	CAREX
	 		Bluejoint	CACA4
	 		Northern maidenhair	ADPE
			Northern whitecedar	THOC2-1
Deford	 Balsam fir	 ABBA	 Bunchberry dogwood	COCA13
Deloid	Black ash	FRNI	Red maple	ACRU
	Eastern arborvitae	THOC2	Sedge	CAREX
	Quaking aspen	POTRT	Sphagnum moss	SPHAG*
	Red maple	ACRU	Northern whitecedar	THOC2-1
	White spruce	PIGL		į
15B:	 			
Dawson	Black spruce	PIMA	Chamaedaphne	CHAMA5
	Tamarack	LALA	Bog Labradortea	LEGR
			Sedge	CAREX
Croswell	 Bigtooth aspen	POGR4	Wintergreen	GAPR2
	Black cherry	PRSE2	Blueberry	VACCI
	Eastern white pine	PIST	Starflower	TRIEN
	i contract of the contract of	PIBA2	Thimbleberry	RUPA
	Jack pine	1		
	Jack pine Northern red oak	QURU	Brackenfern	PTERI
		1	Brackenfern Pin cherry	PTERI PRPE2
	Northern red oak Paper birch Quaking aspen	QURU	Pin cherry Northern twinflower	1
	Northern red oak Paper birch	QURU BEPA	Pin cherry	PRPE2

Table 7.--Plant Communities on Selected Soils--Continued

Map symbol and soil name	Common trees	Symbol	Characteristic vegetation	 Symbol
21G: Rock outcrop.	 	 	 	
Arcadian	American basswood Eastern hemlock Eastern hophornbeam Northern red oak Quaking aspen Red maple Sugar maple White ash Yellow birch	TIAM TSCA OSVI QURU POTR5 ACRU ACSA3 FRAM2 BEAL2	Spinulose woodfern Wild sarsaparilla Clayton's sweetroot American starflower Sambucus racemosa Var. racemosa Violet Canada beadruby Claspleaf twistedstalk Sugar maple	DRCA11 ARNU2 OSCL TRB02 SARAR3 VIOLA MACA4 STAM2 ACSA3
39A:		İ	į	į
Betsy Bay	Balsam fir Bigtooth aspen Eastern hemlock Eastern white pine Jack pine Northern whitecedar Paper birch Quaking aspen Red maple Yellow birch	ABBA POGR4 TSCA PIST PIBA2 THOC2-1 BEPA POTR5 ACRU BEAL2	Vaccinium Blackberry Eastern hemlock American hazelnut Common ninebark 	VACCI RUBUS TSCA COAM3 PHOP
Burt	Balsam fir Black spruce Eastern arborvitae Eastern hemlock Quaking aspen Red maple	ABBA PIMA THOC2 TSCA POTRT ACRU 	Woodsorrel Northern dewberry Sphagnum moss Horsetail Speckled alder Goldthread Bunchberry dogwood Sedge Canada mayflower	OXALI RUFL SPHAG* EQUIS ALINR COPTI COCA13 CAREX MACA4
Deford	 Balsam fir Black ash Eastern arborvitae Quaking aspen Red maple White spruce	ABBA FRNI THOC2 POTRT ACRU PIGL	 Red maple Sedge Bunchberry dogwood Sphagnum moss Northern whitecedar	ACRU CAREX COCA13 SPHAG* THOC2
47A:		İ		
Zeba	Balsam fir Bigtooth aspen Eastern hemlock Paper birch Quaking aspen Red maple Sugar maple White spruce Yellow birch	ABBA POGR4 TSCA BEPA POTR5 ACRU ACSA3 PIGL BEAL2 	Sedge Threeleaf goldthread Yellow bluebeadlily Spinulose woodfern Bunchberry dogwood Yellow birch Canada beadruby White baneberry Wild sarsaparilla Shining clubmoss Mountain woodsorrel American starflower Red maple Balsam fir	CAREX COTR2 CLBO3 DRCA11 COCA13 BEAL2 MACA4 ACAL* ARNU2 HULU2 OXMO TRBO2 ACRU ABBA

Table 7.--Plant Communities on Selected Soils--Continued

Map symbol and	Common trees	 Symbol	Characteristic	Symbol
soil name	 	 	vegetation	<u> </u>
47A:	 			
Jacobsville	Balsam fir	ABBA	Sphagnum moss	SPHAG*
	Eastern hemlock	TSCA	Wild sarsaparilla	ARNU2
	Quaking aspen	POTR5	Cinnamon fern	OSCI
	Red maple	ACRU	Sedge	CAREX
	Yellow birch	BEAL2	Streptopus	STLAR
			Lanceolatus var.	
	 		Roseus	 A CIDIT
	l I		Red maple	ACRU THOC2-1
	 	I I	Northern whitecedar Common ladyfern	ATFI
	 		Balsam fir	ABBA
	 	1	Baisam III	ADDA
51C:				
Arcadian	American basswood	TIAM	Sambucus racemosa	SARAR3
	Eastern hemlock	TSCA	Var. racemosa	
	Eastern hophornbeam	OSVI	Spinulose woodfern	DRCA11
	Northern red oak	QURU POTR5	Wild sarsaparilla	ARNU2
	Quaking aspen Red maple	ACRU	Clayton's sweetroot American starflower	TRBO2
	Sugar maple	ACSA3	Violet	VIOLA
	White ash	FRAM2	Canada beadruby	MACA4
	Yellow birch	BEAL2	Claspleaf	STAM2
		i	twistedstalk	
			Sugar maple	ACSA3
Nipissing	 Balsam fir	ABBA	 Mapleleaf viburnum	 VIAC
	Northern whitecedar	THOC2-1	Thimbleberry	RUPA
	Paper birch	BEPA	Wild sarsaparilla	ARNU2
	Quaking aspen	POTR5	Bigleaf aster	ASMA2
	White spruce	PIGL 	 	
Rock outcrop.	 		 	
51E:				 DDG111
Arcadian	American basswood Eastern hemlock	TIAM TSCA	Spinulose woodfern Wild sarsaparilla	DRCA11
	Eastern hemiock	OSVI	Clayton's sweetroot	!
	Northern red oak	QURU	American starflower	TRBO2
	Quaking aspen	POTR5	Sambucus racemosa	SARAR3
	Red maple	ACRU	Var. racemosa	İ
	Sugar maple	ACSA3	Violet	VIOLA
	White ash	FRAM2	Canada beadruby	MACA4
	Yellow birch	BEAL2	Claspleaf	STAM2
	[twistedstalk	
			Sugar maple	ACSA3
Nipissing	!	ABBA	Bigleaf aster	ASMA2
	Northern whitecedar		Wild sarsaparilla	ARNU2
	Paper birch	BEPA	Mapleleaf viburnum	VIAC
	Quaking aspen	POTR5	Thimbleberry	RUPA
	White spruce	PIGL		
Rock outcrop.	 			

Table 7.--Plant Communities on Selected Soils--Continued

Map symbol and soil name	Common trees	Symbol 	Characteristic vegetation 	Symbol
52C:				
Arcadian	American basswood	TIAM		ACSA3
Alcadian	Eastern hemlock	TSCA	Claspleaf	STAM2
	Eastern hophornbeam	OSVI	twistedstalk	DIAM2
	Northern red oak	QURU	Canada beadruby	MACA4
	Quaking aspen	POTR5	Violet	VIOLA
	Red maple	ACRU	American starflower	TRBO2
	Sugar maple	ACSA3	Clayton's sweetroot	OSCL
	White ash	FRAM2	Wild sarsaparilla	ARNU2
	Yellow birch	BEAL2	Spinulose woodfern	DRCA11
	Tellow bilen	DEAUZ	Sambucus racemosa	SARAR3
		1	Var. racemosa	BAKAKS
		I I	vai. lacemosa	1
Dishno	 Balsam fir	ABBA	Balsam fir	ABBA
Dismio	Eastern hemlock	TSCA	Red maple	ACRU
	Eastern white pine	PIST	Northern red oak	QURU
	Quaking aspen	POTRT	Wild sarsaparilla	ARNU2
	Red maple	ACRU	Violet	VIOLA
	Sugar maple	ACSA3	Brackenfern	PTAQ
	Yellow birch	BEAL2	Yellow beadlily	CLBO3
	Tellow Birch	DEALLZ	American fly	LOCA7
		I I	Honeysuckle	LUCA
		1	twistedstalk	STREP3
		1		
			Spinulose shield fern	DRSP4
			Sugar maple	ACSA3
			Bedstraw	GALIU
			Thimbleberry	RUPA
			Large leaved aster	ASMA2
			Yellow birch	BEAL2
			Northern whitecedar	THOC2 -
Rock outcrop.				
52E:		 	 	
Arcadian	American basswood	TIAM	Canada beadruby	MACA4
	Eastern hemlock	TSCA	Claspleaf	STAM2
	Eastern hophornbeam	OSVI	twistedstalk	
	Northern red oak	QURU	Sugar maple	ACSA3
	Quaking aspen	POTR5	Wild sarsaparilla	ARNU2
	Red maple	ACRU	Violet	VIOLA
	Sugar maple	ACSA3	Sambucus racemosa	SARAR3
	White ash	FRAM2	Var. racemosa	
	Yellow birch	BEAL2	American starflower	TRBO2
			Spinulose woodfern	DRCA11
		 	Clayton's sweetroot	OSCL
	1	1	craycon a sweet100t	OBCH

Table 7.--Plant Communities on Selected Soils--Continued

Map symbol and soil name	 Common trees 	Symbol 	Characteristic vegetation	 Symbol
52E: Dishno	Balsam fir Eastern hemlock Eastern white pine Quaking aspen	 ABBA TSCA PIST POTRT	 	 GALIU CLBO3 PTAQ DRSP4
	Red maple Sugar maple Yellow birch	ACRU ACSA3 BEAL2	fern Violet Northern red oak Large leaved aster Sugar maple Balsam fir Twistedstalk Northern whitecedar Yellow birch Red maple Wild sarsaparilla American fly Honeysuckle	VIOLA QURU ASMA2 ACSA3 ABBA STREP3 THOC2 BEAL2 ACRU ARNU2
Rock outcrop.	 		 	
	American basswood Eastern hemlock Eastern hophornbeam Northern red oak Quaking aspen Red maple Sugar maple White ash Yellow birch Balsam fir Bigtooth aspen Black cherry Eastern hemlock Red maple White spruce Yellow birch	TIAM TSCA OSVI QURU POTR5 ACRU ACSA3 FRAM2 BEAL2	Claspleaf twistedstalk Violet Sugar maple Wild sarsaparilla Sambucus racemosa Var. racemosa Var. racemosa American starflower Clayton's sweetroot Canada beadruby Spinulose woodfern Canada beadruby Sugar maple Sedge Yellow bluebeadlily Spinulose woodfern American fly honeysuckle Shining clubmoss Hairy Solomon's seal Yellow birch Sambucus racemosa Var. racemosa Var. racemosa Var. racemosa	STAM2 STAM2 VIOLA ACSA3 ARNU2 SARAR3 TRBO2 OSCL MACA4 DRCA11 MACA4 ACSA3 CAREX CLBO3 DRCA11 LOCA7 HULU2 POPU4 BEAL2 SARAR3
Rock outcrop.	 	 	Balsam fir 	ABBA
53F: Arcadian	American basswood Eastern hemlock Eastern hophornbeam Northern red oak Quaking aspen Red maple Sugar maple White ash Yellow birch	TIAM TSCA OSVI QURU POTR5 ACRU ACSA3 FRAM2 BEAL2	Sugar maple Claspleaf twistedstalk Violet Sambucus racemosa Var. racemosa Canada beadruby Spinulose woodfern Wild sarsaparilla Clayton's sweetroot American starflower	ACSA3 STAM2 VIOLA SARAR3 MACA4 DRCA11 ARNU2 OSCL TRBO2

Table 7.--Plant Communities on Selected Soils--Continued

Map symbol and soil name	Common trees	Symbol	Characteristic vegetation	 Symbol
53F:	 			
	Balsam fir Bigtooth aspen Black cherry Eastern hemlock Red maple Sugar maple White spruce Yellow birch	ABBA POGR4 PRSE2 TSCA ACRU ACSA3 PIGL BEAL2	Sedge Yellow bluebeadlily Spinulose woodfern American fly honeysuckle Shining clubmoss Hairy Solomon's seal Yellow birch Balsam fir Sambucus racemosa Var. racemosa Sugar maple Canada beadruby	DRCA11 LOCA7 HULU2
Rock outcrop.	 		i I	
55B: Chocolay	Sugar maple - - - -	ACSA3	Sedge Shining clubmoss Ground pine Oakfern Spinulose shield fern Sugar maple Yellow beadlily Canada mayflower Twistedstalk Hairy Solomon's seal Starflower	CAREX HULU2 LYOB GYDR DRSP4 ACSA3 CLB03 MACA4 STAM2 POPU4 TRB02
100B:		j	İ	İ
Waiska	American basswood Balsam fir Eastern hemlock Paper birch Quaking aspen Sugar maple Yellow birch	TIAM ABBA TSCA BEPA POTRT ACSA3 BEAL2	Starflower Large leaved aster Wild sarsaparilla Brackenfern Ground pine Thimbleberry Clubmoss Yellow beadlily Violet Twistedstalk Sugar maple	TRBO2 ASMA2 ARNU2 PTAQ LYOB RUPA LYCOP6 CLBO3 VIOLA STREP3 ACSA3
100D: Waiska	American basswood Balsam fir Eastern hemlock Paper birch Quaking aspen Sugar maple Yellow birch	TIAM ABBA TSCA BEPA POTRT ACSA3 BEAL2	Yellow beadlily Twistedstalk Violet Thimbleberry Clubmoss Starflower Sugar maple Ground pine Brackenfern Wild sarsaparilla Large leaved aster	CLBO3 STREP3 VIOLA RUPA LYCOP6 TRBO2 ACSA3 LYOB PTAQ ARNU2 ASMA2

Table 7.--Plant Communities on Selected Soils--Continued

Map symbol and soil name	Common trees	Symbol	Characteristic vegetation	 Symbol
102C:] 	İ
Waiska	 American basswood Balsam fir	TIAM ABBA	Sugar maple Violet	ACSA3
	Eastern hemlock	TSCA	Thimbleberry	RUPA
	Paper birch	BEPA	Ground pine	LYOB
	Quaking aspen Sugar maple	POTRT ACSA3	Twistedstalk Yellow beadlily	STREP3 CLBO3
	Yellow birch	BEAL2	Clubmoss	LYCOP6
			Starflower	TRBO2
	İ	j	Large leaved aster	ASMA2
			Wild sarsaparilla	ARNU2
	 		Brackenfern	PTAQ
Garlic	Eastern hemlock	TSCA	Spinulose woodfern	DRCA11
	Eastern white pine	PIST	Wild sarsaparilla	ARNU2
	Paper birch	BEPA	Sugar maple	ACSA3
	Quaking aspen	POTRT	Shining clubmoss	HULU2
	Red maple Red pine	ACRU PIRE	Wintergreen Twistedstalk	GAPR2
	Sugar maple	ACSA3	Bunchberry dogwood	COCA13
	Yellow birch	BEAL2	Yellow beadlily	CLBO3
	j	j	Ground pine	LYOB
			American starflower	TRBO2
			Canada mayflower	MACA4
	 		Partridgeberry	MIRE
102E:		į	<u> </u>	
Waiska	American basswood Balsam fir	TIAM ABBA	Twistedstalk Thimbleberry	STREP3
	Eastern hemlock	TSCA	Yellow beadlily	CLBO3
	Paper birch	BEPA	Clubmoss	LYCOP6
	Quaking aspen	POTRT	Starflower	TRBO2
	Sugar maple	ACSA3	Large leaved aster	ASMA2
	Yellow birch	BEAL2	Wild sarsaparilla	ARNU2
			Brackenfern	PTAQ
			Ground pine	LYOB
			Sugar maple Violet	ACSA3 VIOLA
Garlic	 Eastern hemlock	 TSCA	 Canada mayflower	 MACA4
341113	Eastern white pine	PIST	Yellow beadlily	CLBO3
	Paper birch	BEPA	Wild sarsaparilla	ARNU2
	Quaking aspen	POTRT	Spinulose woodfern	DRCA11
	Red maple	ACRU	Wintergreen	GAPR2
	Red pine	PIRE	Shining clubmoss	HULU2
	Sugar maple Yellow birch	ACSA3	Bunchberry dogwood Partridgeberry	COCA13
	Ieilow Dilch	DEALE	Twistedstalk	STAM2
		İ	American starflower	TRBO2
	İ	j	Ground pine	LYOB
			Sugar maple	ACSA3
102F:	 			
Waiska	American basswood	TIAM	Violet	VIOLA
	Balsam fir	ABBA	Thimbleberry	RUPA
	Eastern hemlock	TSCA	Twistedstalk	STREP3
	Paper birch Quaking aspen	BEPA POTRT	Clubmoss Large leaved aster	LYCOP6
	Sugar maple	ACSA3	Wild sarsaparilla	ARNU2
	Yellow birch	BEAL2	Brackenfern	PTAQ
	İ	į	Ground pine	LYOB
	I	1	Sugar maple	ACSA3
	I .	ı	Dagar mapre	ACDAS
			Yellow beadlily Starflower	CLBO3

Table 7.--Plant Communities on Selected Soils--Continued

Map symbol and soil name	Common trees	Symbol	Characteristic vegetation	Symbo
102F:			 	
Garlic	Eastern hemlock Eastern white pine Paper birch	TSCA PIST BEPA	Sugar maple Wild sarsaparilla Spinulose woodfern	ACSA3 ARNU2 DRCA11
	Quaking aspen Red maple Red pine	POTRT ACRU PIRE	Yellow beadlily Ground pine American starflower	CLBO3 LYOB TRBO2
	Sugar maple Yellow birch	ACSA3	Bunchberry dogwood Wintergreen Shining clubmoss	COCA13 GAPR2 HULU2
	 		Canada mayflower Partridgeberry Twistedstalk	MACA4 MIRE STAM2
110B: Shelldrake	 Jack pine	 PIBA2	 Shining club moss	HULU2
	Red pine	PIRE	Wintergreen Lowbush blueberry Wood sorrel	PYROL VAAN OXMO
	 		Brackenfern Sedge	PTERI CAREX
	<u> </u>		Wild lily-of-the- valley	MACA4
			Starflower Twinflower Hairgrass	TRIEN LINNA DESCH
	 		Spinulose shield fern	DESCH
			Goldthread Blueberry	COPTI VACCI
Croswell	Bigtooth aspen Black cherry	POGR4	Trailing arbutus Swordfern	EPRE2 DRSE*
	Eastern white pine Jack pine	PIST PIBA2	Wintergreen Northern twinflower	GAPR2
	Northern red oak Paper birch	QURU BEPA	Pin cherry Brackenfern	PRPE2
	Quaking aspen Red maple Red pine	POTRT ACRU PIRE	Thimbleberry Starflower Blueberry	RUPA TRIEN VACCI
111B:		İ	İ I	j I
Deer Park	American beech	FAGR PRSE2 PIST	Eastern teaberry Vaccinium	GAPR2
	Eastern white pine Jack pine Northern red oak	PIBA2 QURU	Brackenfern Sweet fern Kinnikinnick	PTERI COPE80 ARUV
	Paper birch Quaking aspen Red pine	BEPA POTR5 PIRE		
l11D: Deer Park	American beech	 	Pragkonform	DTEDI
Deer Fark	Black cherry Eastern white pine	FAGR PRSE2 PIST	Brackenfern Sweet fern Kinnikinnick	PTERI COPE80 ARUV
	Jack pine Northern red oak	PIBA2 QURU	Eastern teaberry Vaccinium	GAPR2
	Paper birch Quaking aspen	BEPA POTR5		
	Red pine	PIRE	 	

Table 7.--Plant Communities on Selected Soils--Continued

Map symbol and soil name	Common trees	 Symbol 	Characteristic vegetation	 Symbol
111E:				
Deer Park	American beech	FAGR	Vaccinium	VACCI
	Black cherry	PRSE2	Sweet fern	COPE80
	Eastern white pine	PIST	Kinnikinnick	ARUV
	Jack pine	PIBA2	Eastern teaberry Brackenfern	GAPR2
	Northern red oak Paper birch	QURU BEPA	Brackeniern	PIEKI
	Quaking aspen	POTR5		
	Red pine	PIRE		
111F:				
Deer Park	American beech	FAGR	Eastern teaberry	GAPR2
	Black cherry	PRSE2	Kinnikinnick	ARUV
	Eastern white pine	PIST	Sweet fern	COPE80
	Jack pine Northern red oak	PIBA2 QURU	Brackenfern Vaccinium	PTERI VACCI
	Paper birch	BEPA	Vaccinium	VACCI
	Quaking aspen	POTR5		
	Red pine	PIRE		
112C:				
Deer Park	American beech	FAGR	Kinnikinnick	ARUV
	Black cherry	PRSE2	Vaccinium	VACCI
	Eastern white pine	PIST	Brackenfern	PTERI
	Jack pine Northern red oak	PIBA2	Sweet fern	COPE80
	Paper birch	QURU BEPA	Eastern teaberry	GAPKZ
	Quaking aspen	POTR5		
	Red pine	PIRE		
Croswell	 Bigtooth aspen	POGR4	Blueberry	 VACCI
	Black cherry	PRSE2	Starflower	TRIEN
	Eastern white pine	PIST	Thimbleberry	RUPA
	Jack pine	PIBA2	Brackenfern	PTERI
	Northern red oak Paper birch	QURU BEPA	Pin cherry Trailing arbutus	PRPE2
	Quaking aspen	POTRT	Wintergreen	GAPR2
	Red maple	ACRU	Northern twinflower	LIBO3
	Red pine	PIRE	Swordfern	DRSE*
113C:				
Rubicon	Bigtooth aspen	POGR4	American witchhazel	HAVI4
	Eastern white pine	PIST	Canada beadruby	MACA4
	Jack pine	PIBA2	Western brackenfern	PTAQ
	Northern red oak Paper birch	QURU	American starflower	TRBO2
	Quaking aspen	POTR5	Beaked hazelnut	COCO6
	Red maple	ACRU	Sedge	CAREX
	Red pine	PIRE	American hornbeam	CACA18
			Bigleaf aster	ASMA2
			Wild sarsaparilla	ARNU2
			Sugar maple	ACSA3
Croswell	-	POGR4	Blueberry	VACCI
	Black cherry	PRSE2	Starflower Thimbleberry	TRIEN
	Eastern white pine	PIST PIBA2	Brackenfern	RUPA PTERI
	Northern red oak	QURU	Northern twinflower	LIBO3
	Paper birch	BEPA	Wintergreen	GAPR2
	Quaking aspen	POTRT	Swordfern	DRSE*
	Inad manda	A CIDIT	Trailing arbutus	EDDEO
	Red maple	ACRU	Italiing arbutus	EPRE2

Table 7.--Plant Communities on Selected Soils--Continued

Map symbol and soil name	Common trees	Symbol	Characteristic vegetation	Symbol
120B:	 			
Garlic	Eastern hemlock Eastern white pine Paper birch Quaking aspen Red maple Red pine Sugar maple Yellow birch	TSCA PIST BEPA POTRT ACRU PIRE ACSA3 BEAL2	Ground pine Sugar maple Wild sarsaparilla Spinulose woodfern Wintergreen Shining clubmoss Canada mayflower Partridgeberry Twistedstalk American starflower Yellow beadlily Bunchberry dogwood	LYOB ACSA3 ARNU2 DRCA11 GAPR2 HULU2 MACA4 MIRE STAM2 TRBO2 CLBO3 COCA13
120D: Garlic	Eastern hemlock Eastern white pine Paper birch Quaking aspen Red maple Red pine Sugar maple Yellow birch	TSCA PIST BEPA POTRT ACRU PIRE ACSA3 BEAL2	Sugar maple Wild sarsaparilla Spinulose woodfern Wintergreen Shining clubmoss Canada mayflower Partridgeberry Twistedstalk American starflower Ground pine Bunchberry dogwood Yellow beadlily	ACSA3 ARNU2 DRCA11 GAPR2 HULU2 MACA4 MIRE STAM2 TRB02 LY0B COCA13 CLB03
120E: Garlic	Eastern hemlock Eastern white pine Paper birch Quaking aspen Red maple Red pine Sugar maple Yellow birch	TSCA PIST BEPA POTRT ACRU PIRE ACSA3 BEAL2	Bunchberry dogwood Spinulose woodfern Wintergreen Canada mayflower Sugar maple Wild sarsaparilla Ground pine Yellow beadlily Shining clubmoss Partridgeberry Twistedstalk American starflower	COCA13 DRCA11 GAPR2 MACA4 ACSA3 ARNU2 LYOB CLBO3 HULU2 MIRE STAM2 TRBO2
125A: Croswell	Bigtooth aspen Black cherry Eastern white pine Jack pine Northern red oak Paper birch Quaking aspen Red maple Red pine	POGR4 PRSE2 PIST PIBA2 QURU BEPA POTRT ACRU PIRE	 Thimbleberry Wintergreen Northern twinflower Pin cherry Blueberry Starflower Trailing arbutus Brackenfern Swordfern	RUPA GAPR2 LIBO3 PRPE2 VACCI TRIEN EPRE2 PTERI DRSE*
Au Gres	Balsam fir Bigtooth aspen Eastern hemlock Eastern white pine Jack pine Northern whitecedar Paper birch Quaking aspen Red maple Yellow birch	ABBA POGR4 TSCA PIST PIBA2 THOC2-1 BEPA POTR5 ACRU BEAL2		PHOP RUBUS TSCA COAM3 VACCI

Table 7.--Plant Communities on Selected Soils--Continued

Map symbol and soil name	Common trees	Symbol	Characteristic vegetation	Symbol
126B:	 		 	
Au Gres	 Balsam fir Bigtooth aspen	ABBA POGR4	Blackberry Eastern hemlock	RUBUS
	Eastern hemlock	TSCA	American hazelnut	COAM3
	Eastern white pine	PIST	Common ninebark	PHOP
	Jack pine	PIBA2	Vaccinium	VACCI
	Northern whitecedar	THOC2-1		
	Paper birch	BEPA		
	Quaking aspen	POTR5		
	Red maple Yellow birch	BEAL2	 	
Deford	 Balsam fir	ABBA	 Red maple	ACRU
	Black ash	FRNI	Sedge	CAREX
	Eastern arborvitae	THOC2	Bunchberry dogwood	COCA13
	Quaking aspen	POTRT	Sphagnum moss	SPHAG*
	Red maple	ACRU	Northern whitecedar	THOC2
	White spruce	PIGL		
Croswell	Bigtooth aspen	POGR4	Trailing arbutus	EPRE2
	Black cherry	PRSE2	Swordfern	DRSE*
	Eastern white pine	PIST	Wintergreen	GAPR2
	Jack pine Northern red oak	PIBA2	Northern twinflower Pin cherry	:
	Paper birch	QURU BEPA	Brackenfern	PRPE2 PTERI
	Quaking aspen	POTRT	Thimbleberry	RUPA
	Red maple	ACRU	Starflower	TRIEN
	Red pine	PIRE	Blueberry	VACCI
127A: Au Gres	 Balsam fir	ABBA	Blackberry	RUBUS
114 0105	Bigtooth aspen	POGR4	Vaccinium	VACCI
	Eastern hemlock	TSCA	Common ninebark	PHOP
	Eastern white pine	PIST	American hazelnut	COAM3
	Jack pine	PIBA2	Eastern hemlock	TSCA
	Northern whitecedar	THOC2-1		
	Paper birch	BEPA		
	Quaking aspen Red maple	POTR5		1
	Yellow birch	BEAL2		
	İ	İ	İ	İ
Kinross	Balsam fir	ABBA	Balsam fir	ABBA
	Black spruce	PIMA	Jack pine	PIBA2
	Eastern white pine Jack pine	PIST PIBA2	Vaccinium Speckled alder	VACCI ALINR
	Northern whitecedar	THOC2-1	Northern whitecedar	THOC2-1
	Paper birch	BEPA	Eastern hemlock	TSCA
	Quaking aspen	POTR5		j
	Red maple	ACRU		İ
	Tamarack	LALA		
	 	 	1	
130C:		I MC CO	 Spinulose woodfern	DRCA11
130C: Garlic	Eastern hemlock	TSCA		
	 Eastern hemlock Eastern white pine	PIST	Bunchberry dogwood	COCA13
	Eastern white pine Paper birch		Yellow beadlily	CLB03
	Eastern white pine Paper birch Quaking aspen	PIST BEPA POTRT	Yellow beadlily Ground pine	CLBO3
	Eastern white pine Paper birch Quaking aspen Red maple	PIST BEPA POTRT ACRU	Yellow beadlily Ground pine Sugar maple	CLBO3 LYOB ACSA3
	Eastern white pine Paper birch Quaking aspen Red maple Red pine	PIST BEPA POTRT ACRU PIRE	Yellow beadlily Ground pine Sugar maple Wild sarsaparilla	CLBO3 LYOB ACSA3 ARNU2
	Eastern white pine Paper birch Quaking aspen Red maple Red pine Sugar maple	PIST BEPA POTRT ACRU PIRE ACSA3	Yellow beadlily Ground pine Sugar maple Wild sarsaparilla Wintergreen	CLBO3 LYOB ACSA3 ARNU2 GAPR2
	Eastern white pine Paper birch Quaking aspen Red maple Red pine	PIST BEPA POTRT ACRU PIRE	Yellow beadlily Ground pine Sugar maple Wild sarsaparilla Wintergreen Shining clubmoss	CLBO3 LYOB ACSA3 ARNU2 GAPR2 HULU2
	Eastern white pine Paper birch Quaking aspen Red maple Red pine Sugar maple	PIST BEPA POTRT ACRU PIRE ACSA3	Yellow beadlily Ground pine Sugar maple Wild sarsaparilla Wintergreen Shining clubmoss Canada mayflower	CLBO3 LYOB ACSA3 ARNU2 GAPR2 HULU2 MACA4
	Eastern white pine Paper birch Quaking aspen Red maple Red pine Sugar maple	PIST BEPA POTRT ACRU PIRE ACSA3	Yellow beadlily Ground pine Sugar maple Wild sarsaparilla Wintergreen Shining clubmoss	CLBO3 LYOB ACSA3 ARNU2 GAPR2 HULU2

Table 7.--Plant Communities on Selected Soils--Continued

Map symbol and soil name	Common trees	Symbol	Characteristic vegetation	Symbol
	1			
130C: Alcona	American basswood Eastern white pine Northern red oak Red maple Red pine Sugar maple Yellow birch	TIAM PIST QURU ACRU PIRE ACSA3 BEAL2	Canada mayflower Spinulose woodfern Downy yellow violet Elderberry Hairy Solomon's seal Twistedstalk Starflower Sedge	MACA4 DRCA11 VIPU3 SAMBU POPU4 STAM2 TRIEN CAREX
	Ì	i		
130E: Garlic	Eastern hemlock Eastern white pine Paper birch Quaking aspen Red maple Red pine Sugar maple Yellow birch	TSCA PIST BEPA POTRT ACRU PIRE ACSA3 BEAL2	Shining clubmoss Wintergreen Bunchberry dogwood Yellow beadlily Ground pine American starflower Twistedstalk Partridgeberry Canada mayflower Spinulose woodfern Wild sarsaparilla Sugar maple	HULU2 GAPR2 COCA13 CLB03 LY0B TRB02 STAM2 MIRE MACA4 DRCA11 ARNU2 ACSA3
Alcona	American basswood Eastern white pine Northern red oak Red maple Red pine Sugar maple Yellow birch	TIAM PIST QURU ACRU PIRE ACSA3 BEAL2	Sedge Hairy Solomon's seal Canada mayflower Spinulose woodfern Downy yellow violet Elderberry Twistedstalk Starflower	CAREX POPU4 MACA4 DRCA11 VIPU3 SAMBU STAM2 TRIEN
133C:				
Keweenaw	Balsam fir Black cherry Eastern hemlock Eastern white pine Northern red oak Paper birch Quaking aspen Red maple Sugar maple Yellow birch	ABBA PRSE2 TSCA PIST QURU BEPA POTR5 ACRU ACSA3 BEAL2	Yellow bluebeadlily Spinulose woodfern Wild sarsaparilla Shining clubmoss American starflower Sambucus racemosa Var. racemosa Canada beadruby Western brackenfern Streptopus Lanceolatus var. Roseus Feather Solomon's seal	CLB03 DRCA11 ARNU2 HULU2 TRB02 SARAR3 MACA4 PTAQ STLAR
Garlic	Eastern hemlock Eastern white pine Paper birch Quaking aspen Red maple Red pine Sugar maple Yellow birch	TSCA PIST BEPA POTRT ACRU PIRE ACSA3 BEAL2	Shining clubmoss Bunchberry dogwood Wintergreen Spinulose woodfern Wild sarsaparilla Sugar maple Canada mayflower Partridgeberry Twistedstalk American starflower Ground pine Yellow beadlily	HULU2 COCA13 GAPR2 DRCA11 ARNU2 ACSA3 MACA4 MIRE STAM2 TRB02 LYOB CLB03

Table 7.--Plant Communities on Selected Soils--Continued

Map symbol and soil name	Common trees	 Symbol 	Characteristic vegetation	 Symbol
133E:	 			
Keweenaw	Balsam fir Black cherry Eastern hemlock Eastern white pine Northern red oak Paper birch Quaking aspen Red maple Sugar maple Yellow birch	ABBA PRSE2 TSCA PIST QURU BEPA POTR5 ACRU ACSA3 BEAL2	Shining clubmoss Yellow bluebeadlily Spinulose woodfern Wild sarsaparilla American starflower Sambucus racemosa Var. racemosa Canada beadruby Western brackenfern Streptopus Lanceolatus var. Roseus Feather Solomon's seal	HULU2 CLB03 DRCA11 ARNU2 TRB02 SARAR3 MACA4 PTAQ STLAR
Garlic	Eastern hemlock Eastern white pine Paper birch Quaking aspen Red maple Red pine Sugar maple Yellow birch	TSCA PIST BEPA POTRT ACRU PIRE ACSA3 BEAL2	Sugar maple Wintergreen Ground pine Canada mayflower Partridgeberry Wild sarsaparilla Twistedstalk American starflower Yellow beadlily Bunchberry dogwood Spinulose woodfern Shining clubmoss	ACSA3 GAPR2 LYOB MACA4 MIRE ARNU2 STAM2 TRB02 CLB03 COCA13 DRCA11 HULU2
133F:				
Keweenaw	Balsam fir Black cherry Eastern hemlock Eastern white pine Northern red oak Paper birch Quaking aspen Red maple Sugar maple Yellow birch	ABBA PRSE2 TSCA PIST QURU BEPA POTR5 ACRU ACSA3 BEAL2	Yellow bluebeadlily Shining clubmoss Spinulose woodfern Wild sarsaparilla American starflower Sambucus racemosa Var. racemosa Canada beadruby Western brackenfern Streptopus Lanceolatus var. Roseus Feather Solomon's seal	CLB03 HULU2 DRCA11 ARNU2 TRB02 SARAR3 MACA4 PTAQ STLAR
Garlic	Eastern hemlock Eastern white pine Paper birch Quaking aspen Red maple Red pine Sugar maple Yellow birch	TSCA PIST BEPA POTRT ACRU PIRE ACSA3 BEAL2	Sugar maple Wild sarsaparilla Spinulose woodfern Wintergreen Shining clubmoss Canada mayflower Partridgeberry Ground pine Yellow beadlily Bunchberry dogwood Twistedstalk American starflower	ACSA3 ARNU2 DRCA11 GAPR2 HULU2 MACA4 MIRE LYOB CLBO3 COCA13 STAM2 TRBO2

Table 7.--Plant Communities on Selected Soils--Continued

Map symbol and soil name	Common trees	Symbol	Characteristic vegetation	Symbol
1260				
136B: Borgstrom	 American beech Eastern hemlock Quaking aspen Red maple	FAGR TSCA POTR5 ACRU	Bunchberry dogwood Starflower Spinulose woodfern Mountain woodsorrel	COCA13 TRIEN DRCA11
	Sugar maple Yellow birch	ACSA3	Red maple Sugar maple	ACRU ACSA3
Ingalls	Balsam fir Eastern hemlock Jack pine Northern pin oak Northern whitecedar Paper birch Quaking aspen Red maple Sugar maple White ash	ABBA ITSCA PIBA2 QUEL ITHOC2-1 BEPA POTR5 ACRU ACSA3 FRAM2	 Sweet fern American elm Blackberry Sedge 	COPE80 ULAM RUBUS CAREX
142C:	 			
Wallace	Balsam fir Eastern hemlock Eastern white pine Paper birch Quaking aspen Red maple Red pine Sugar maple	ABBA TSCA PIST BEPA POTR5 ACRU PIRE ACSA3	Bluebell bellflower Twinflower Western brackenfern Kinnikinnick 	LIBO3
Rubicon	 Bigtooth aspen Eastern white pine Jack pine Northern red oak Paper birch Quaking aspen Red maple Red pine	POGR4 PIST PIBA2 QURU BEPA POTR5 ACRU PIRE	Beaked hazelnut American beech American witchhazel Canada beadruby Western brackenfern American starflower Sugar maple Sedge American hornbeam Bigleaf aster Wild sarsaparilla	COCO6 FAGR HAVI4 MACA4 PTAQ TRBO2 ACSA3 CAREX CACA18 ASMA2 ARNU2
142F:		į	į	į
Wallace	Balsam fir Eastern hemlock Eastern white pine Paper birch Quaking aspen Red maple Red pine Sugar maple	ABBA TSCA PIST BEPA POTR5 ACRU PIRE ACSA3	Twinflower Kinnikinnick Bluebell bellflower Western brackenfern 	
Rubicon	Bigtooth aspen Eastern white pine Jack pine Northern red oak Paper birch Quaking aspen Red maple Red pine	POGR4 PIST PIBA2 QURU BEPA POTR5 ACRU PIRE	Wild sarsaparilla Bigleaf aster American starflower American hornbeam Sugar maple Western brackenfern Canada beadruby American witchhazel American beech Beaked hazelnut Sedge	ARNU2 ASMA2 TRB02 CACA18 ACSA3 PTAQ MACA4 HAVI4 FAGR COCO6

Table 7.--Plant Communities on Selected Soils--Continued

Map symbol and soil name	Common trees	Symbol	Characteristic vegetation	Symbol
155C:	 		 	
Montreal	American basswood Eastern hemlock Eastern hophornbeam Northern red oak Quaking aspen Red maple Sugar maple Yellow birch	TIAM TSCA OSVI QURU POTR5 ACRU ACSA3 BEAL2	Violet Canada beadruby Claspleaf twistedstalk Sugar maple Clayton's sweetroot Sambucus racemosa Var. racemosa Var. racemosa American starflower Spinulose woodfern Wild sarsaparilla	VIOLA MACA4 STAM2 ACSA3 OSCL SARAR3 TRB02 DRCA11 ARNU2
Paavola	American basswood Eastern hemlock Eastern hophornbeam Northern red oak Quaking aspen Red maple Sugar maple Yellow birch	TIAM TSCA OSVI QURU POTR5 ACRU ACSA3 BEAL2	Spinulose woodfern Clayton's sweetroot Sambucus racemosa Var. racemosa Wild sarsaparilla American starflower Sugar maple Claspleaf twistedstalk Canada beadruby Violet	DRCA11 OSCL SARAR3 ARNU2 TRB02 ACSA3 STAM2 MACA4 VIOLA
Waiska	American basswood Balsam fir Eastern hemlock Paper birch Quaking aspen Sugar maple Yellow birch	TIAM ABBA TSCA BEPA POTRT ACSA3 BEAL2	Thimbleberry Yellow beadlily Starflower Large leaved aster Wild sarsaparilla Violet Sugar maple Twistedstalk Ground pine Brackenfern Clubmoss	RUPA CLB03 TRB02 ASMA2 ARNU2 VIOLA ACSA3 STREP3 LYOB PTAQ LYCOP6
155E:				
Montreal	American basswood Eastern hemlock Eastern hophornbeam Northern red oak Quaking aspen Red maple Sugar maple Yellow birch	TIAM TSCA OSVI QURU POTR5 ACRU ACSA3 BEAL2 	Sugar maple Claspleaf twistedstalk Canada beadruby Violet Sambucus racemosa Var. racemosa American starflower Clayton's sweetroot Wild sarsaparilla Spinulose woodfern	ACSA3 STAM2 MACA4 VIOLA SARAR3 TRBO2 OSCL ARNU2 DRCA11
Paavola	American basswood Eastern hemlock Eastern hophornbeam Northern red oak Quaking aspen Red maple Sugar maple Yellow birch	TIAM TSCA OSVI QURU POTR5 ACRU ACSA3 BEAL2	Spinulose woodfern Wild sarsaparilla Clayton's sweetroot American starflower Sambucus racemosa Var. racemosa Violet Canada beadruby Claspleaf twistedstalk Sugar maple	DRCA11 ARNU2 OSCL TRBO2 SARAR3 VIOLA MACA4 STAM2 ACSA3

Table 7.--Plant Communities on Selected Soils--Continued

Map symbol and soil name	 Common trees 	 Symbol 	Characteristic vegetation	 Symbol
155E:	 	<u> </u>	 	
Waiska	American basswood Balsam fir Eastern hemlock Paper birch Quaking aspen Sugar maple Yellow birch	TIAM ABBA TSCA BEPA POTRT ACSA3 BEAL2 	Yellow beadlily Wild sarsaparilla Twistedstalk Violet Thimbleberry Clubmoss Starflower Large leaved aster Sugar maple Brackenfern Ground pine	CLBO3 ARNU2 STREP3 VIOLA RUPA LYCOP6 TRBO2 ASMA2 ACSA3 PTAQ LYOB
158A:	I 			
Arnheim	American elm Balsam fir Black spruce Northern whitecedar Paper birch Quaking aspen Red maple Tamarack White spruce	ULAM ABBA PIMA THOC2-1 BEPA POTR5 ACRU LALA PIGL	Speckled alder Sphagnum moss Sedge Cinnamon fern Jewelweed Mint Nettle Balsam fir Common ladyfern Willow Red maple	ALINR SPHAG* CAREX OSCI IMCA MENTH URTIC ABBA ATFI SALIX ACRU
Sturgeon	American basswood American elm Balsam fir Eastern hemlock Northern whitecedar Quaking aspen Red maple Sugar maple White spruce Yellow birch	TIAM ULAM ABBA TSCA THOC2-1 POTR5 ACRU ACSA3 PIGL BEAL2	Sedge Spinulose woodfern Yellow birch Sugar maple Canada beadruby Common ladyfern Willow Red maple Redosier dogwood Clayton's sweetroot White spruce	CAREX DRCA11 BEAL2 ACSA3 MACA4 ATFI SALIX ACRU COSES OSCL PIGL
Pelkie	American basswood American elm Red maple Sugar maple White spruce Yellow birch	TIAM ULAM ACRU ACSA3 PIGL BEAL2 	Streptopus Lanceolatus var. Roseus Canada beadruby Common ladyfern Violet American starflower Sugar maple Sedge Spinulose woodfern Clayton's sweetroot Hairy Solomon's seal	ACSA3 CAREX DRCA11 OSCL
161F: Trimountain	American basswood Eastern hemlock Eastern hophornbeam Northern red oak Quaking aspen Red maple Sugar maple Yellow birch	TIAM TSCA OSVI QURU POTR5 ACRU ACSA3 BEAL2	Spinulose woodfern Wild sarsaparilla Clayton's sweetroot Sambucus racemosa Var. racemosa Violet Canada beadruby Claspleaf twistedstalk Sugar maple	DRCA11 ARNU2 OSCL SARAR3 VIOLA MACA4 STAM2 ACSA3

Table 7.--Plant Communities on Selected Soils--Continued

Map symbol and soil name	 Common trees 	 Symbol 	Characteristic vegetation	 Symbol
161F:			 	
	 American basswood Eastern hemlock	TIAM TSCA	Spinulose woodfern Wild sarsaparilla	DRCA11
	Eastern hophornbeam Northern red oak	OSVI QURU	Clayton's sweetroot American starflower	OSCL
	Quaking aspen Red maple Sugar maple	POTR5 ACRU ACSA3	Sambucus racemosa Var. racemosa Violet	SARAR3 VIOLA
	Bugar mapre	 	Canada beadruby	MACA4 STAM2
			twistedstalk Sugar maple	ACSA3
Waiska	American basswood	TIAM	 Thimbleberry	RUPA
	Balsam fir Eastern hemlock	ABBA TSCA	Wild sarsaparilla Twistedstalk	ARNU2
	Paper birch	BEPA	Sugar maple	ACSA3
	Quaking aspen	POTRT	Ground pine	LYOB
	Sugar maple	ACSA3	Brackenfern	PTAQ
	Yellow birch	BEAL2	Large leaved aster	ASMA2
			Starflower	TRBO2
	 	1	Violet Clubmoss	VIOLA
			Yellow beadlily	CLB03
162F:	 		 	
Trimountain	American basswood	TIAM	Violet	VIOLA
	Eastern hemlock	TSCA	Claspleaf	STAM2
	Eastern hophornbeam Northern red oak	OSVI QURU	twistedstalk Sugar maple	ACSA3
	Quaking aspen	POTR5	Canada beadruby	MACA4
	Red maple	ACRU	Spinulose woodfern	DRCA11
	Sugar maple	ACSA3	Wild sarsaparilla	ARNU2
	Yellow birch	BEAL2	Clayton's sweetroot	OSCL
	 		Sambucus racemosa Var. racemosa	SARAR3
Lac La Belle	American basswood	 TIAM	 Wild sarsaparilla	ARNU2
	Eastern hemlock	TSCA	Clayton's sweetroot	OSCL
	Eastern hophornbeam	OSVI	American starflower	TRBO2
	Northern red oak	QURU	Sambucus racemosa	SARAR3
	Quaking aspen Red maple	POTR5	Var. racemosa Violet	 VIOLA
	Sugar maple	ACSA3	Sugar maple	ACSA3
		j	Claspleaf	STAM2
			twistedstalk	
	l		Canada beadruby Spinulose woodfern	MACA4 DRCA11
				į
Michigamme		ABBA	Canada beadruby	MACA4
	Bigtooth aspen Black cherry	POGR4	Sugar maple Sedge	ACSA3
	Eastern hemlock	TSCA	Yellow bluebeadlily	
	Red maple	ACRU	Spinulose woodfern	DRCA11
	Sugar maple	ACSA3	American fly	LOCA7
	White spruce	PIGL	honeysuckle	
	Yellow birch	BEAL2	Shining clubmoss	HULU2
	 	1	Hairy Solomon's seal Yellow birch	POPU4 BEAL2
	! 		Sambucus racemosa	SARAR3
			Var. racemosa	
			Balsam fir	ABBA
			I	

Table 7.--Plant Communities on Selected Soils--Continued

Map symbol and soil name	Common trees	Symbol	Characteristic vegetation 	Symbol
166B:				
Gratiot	Balsam fir	ABBA	Mountain woodsorrel	ОХМО
	Bigtooth aspen	POGR4	Shining clubmoss	HULU2
	Eastern hemlock	TSCA	Threeleaf goldthread	COTR2
	Paper birch	BEPA	Wild sarsaparilla	ARNU2
	Quaking aspen	POTR5	Spinulose woodfern	DRCA11
	Red maple	ACRU	Yellow bluebeadlily	CLBO3
	White spruce	PIGL	Sedge	CAREX
	Yellow birch	BEAL2	Canada beadruby	MACA4
			Bunchberry dogwood	COCA13
			Hairy Solomon's seal	POPU4
			American starflower	TRBO2
	!	!	Red maple	ACRU
			Sambucus racemosa	SARAR3
			Var. racemosa	
	1		Common ladyfern	ATFI
	l I	1	Balsam fir	ABBA
Sabattis	 Balsam fir	ABBA	Balsam fir	ABBA
	Black ash	FRNI	American elm	ULAM
	Black spruce	PIMA	Bunchberry dogwood	COCA13
	Northern whitecedar	THOC2-1	Northern whitecedar	THOC2-1
	Quaking aspen	POTR5	Idaho goldthread	COOC
	Red maple	ACRU	Eastern hemlock	TSCA
	Tamarack	LALA	Sedge	CAREX
	White spruce	PIGL	Speckled alder	ALINR
	Yellow birch	BEAL2	American starflower	TRBO2
173C:	 	 	 	
Montreal	American basswood	TIAM	Claspleaf	STAM2
	Eastern hemlock	TSCA	twistedstalk	İ
	Eastern hophornbeam	osvi	Sambucus racemosa	SARAR3
	Northern red oak	QURU	Var. racemosa	ĺ
	Quaking aspen	POTR5	Sugar maple	ACSA3
	Red maple	ACRU	Violet	VIOLA
	Sugar maple	ACSA3	Spinulose woodfern	DRCA11
	Yellow birch	BEAL2	Wild sarsaparilla	ARNU2
	!		Clayton's sweetroot	OSCL
			American starflower	TRBO2
	1		Canada beadruby	MACA4
Paavola	American basswood	TIAM	Clayton's sweetroot	OSCL
	Eastern hemlock	TSCA	American starflower	TRBO2
	Eastern hophornbeam	osvi	Sambucus racemosa	SARAR3
	Northern red oak	QURU	Var. racemosa	İ
	Quaking aspen	POTR5	Violet	VIOLA
	Red maple	ACRU	Canada beadruby	MACA4
	Sugar maple	ACSA3	Spinulose woodfern	DRCA11
	Yellow birch	BEAL2	Sugar maple	ACSA3
			Wild sarsaparilla	ARNU2
	į		Claspleaf twistedstalk	STAM2

Table 7.--Plant Communities on Selected Soils--Continued

Eastern hemlock Eastern white pine Quaking aspen Red maple Sugar maple Yellow birch 173E: Montreal	ABBA TSCA PIST POTRT ACRU ACSA3 BEAL2 TIAM TSCA OSVI	Bedstraw American fly honeysuckle Yellow beadlily Brackenfern Sugar maple Balsam fir Red maple Northern red oak Yellow birch Spinulose shield fern Violet Wild sarsaparilla Large leaved aster Northern whitecedar Twistedstalk Canada beadruby Claspleaf	GALIU LOCA7 CLB03 PTAQ ACSA3 ABBA ACRU QURU BEAL2 DRSP4 VIOLA ARNU2 ASMA2 THOC2 STREPS
Eastern hemlock Eastern white pine Quaking aspen Red maple Sugar maple Yellow birch 173E: Montreal	TSCA PIST POTRT ACRU ACSA3 BEAL2	American fly honeysuckle Yellow beadlily Brackenfern Sugar maple Balsam fir Red maple Northern red oak Yellow birch Spinulose shield fern Violet Wild sarsaparilla Large leaved aster Northern whitecedar Twistedstalk Canada beadruby	LOCA7 CLBO3 PTAQ ACSA3 ABBA ACRU BEAL2 DRSP4 VIOLA ARNU2 ASMA2 THOC2 STREP3
Quaking aspen Red maple Sugar maple Yellow birch	POTRT ACRU ACSA3 BEAL2	Yellow beadlily Brackenfern Sugar maple Balsam fir Red maple Northern red oak Yellow birch Spinulose shield fern Violet Wild sarsaparilla Large leaved aster Northern whitecedar Twistedstalk	PTAQ ACSA3 ABBA ACRU QURU BEAL2 DRSP4 VIOLA ARNU2 ASMA2 THOC2 STREPS
Red maple Sugar maple Yellow birch Sugar maple Yellow birch	ACRU ACSA3 BEAL2	Brackenfern Sugar maple Balsam fir Red maple Northern red oak Yellow birch Spinulose shield fern Violet Wild sarsaparilla Large leaved aster Northern whitecedar Twistedstalk	PTAQ ACSA3 ABBA ACRU QURU BEAL2 DRSP4 VIOLA ARNU2 ASMA2 THOC2 STREPS
Sugar maple Yellow birch	ACSA3 BEAL2	Sugar maple Balsam fir Red maple Northern red oak Yellow birch Spinulose shield fern Violet Wild sarsaparilla Large leaved aster Northern whitecedar Twistedstalk Canada beadruby	ACSA3 ABBA ACRU QURU BEAL2 DRSP4 VIOLA ARNU2 ASMA2 THOC2 STREPS
Yellow birch American basswood Eastern hemlock Eastern hophornbeam Northern red oak Quaking aspen Red maple Sugar maple Yellow birch Paavola	BEAL2	Balsam fir Red maple Northern red oak Yellow birch Spinulose shield fern Violet Wild sarsaparilla Large leaved aster Northern whitecedar Twistedstalk	ABBA ACRU QURU BEAL2 DRSP4 VIOLA ARNU2 ASMA2 THOC2 STREP3
Montreal	TIAM TSCA	Red maple Northern red oak Yellow birch Spinulose shield fern Violet Wild sarsaparilla Large leaved aster Northern whitecedar Twistedstalk Canada beadruby	ACRU QURU BEAL2 DRSP4 VIOLA ARNU2 ASMA2 THOC2 STREP3
Montreal	TSCA OSVI	Northern red oak Yellow birch Spinulose shield fern Violet Wild sarsaparilla Large leaved aster Northern whitecedar Twistedstalk Canada beadruby	QURU BEAL2 DRSP4 VIOLA ARNU2 ASMA2 THOC2 STREP3
Montreal	TSCA OSVI	Yellow birch Spinulose shield fern Violet Wild sarsaparilla Large leaved aster Northern whitecedar Twistedstalk	BEAL2 DRSP4 VIOLA ARNU2 ASMA2 THOC2 STREP3
Montreal	TSCA OSVI	Spinulose shield fern Violet Wild sarsaparilla Large leaved aster Northern whitecedar Twistedstalk	DRSP4 VIOLA ARNU2 ASMA2 THOC2 STREP3
Montreal	TSCA OSVI	fern Violet Wild sarsaparilla Large leaved aster Northern whitecedar Twistedstalk	VIOLA ARNU2 ASMA2 THOC2 STREP3
Montreal	TSCA OSVI	Wild sarsaparilla Large leaved aster Northern whitecedar Twistedstalk Canada beadruby	ARNU2 ASMA2 THOC2 STREP3
Montreal	TSCA OSVI	Large leaved aster Northern whitecedar Twistedstalk Canada beadruby	ASMA2 THOC2 STREP3
Montreal	TSCA OSVI	Northern whitecedar Twistedstalk Canada beadruby	THOC2 STREP3
Montreal	TSCA OSVI	Twistedstalk Canada beadruby	STREP3
Montreal	TSCA OSVI	 Canada beadruby	MACA4
Montreal	TSCA OSVI		!
Eastern hemlock Eastern hophornbeam Northern red oak Quaking aspen Red maple Sugar maple Yellow birch Paavola	TSCA OSVI		!
Eastern hophornbeam Northern red oak Quaking aspen Red maple Sugar maple Yellow birch	osvi	Claspleaf	
Northern red oak Quaking aspen Red maple Sugar maple Yellow birch	!		STAM2
Quaking aspen Red maple Sugar maple Yellow birch	OTTRIT	twistedstalk	
Red maple Sugar maple Yellow birch	QURU	Violet	VIOLA
Sugar maple Yellow birch	POTR5	Sugar maple	ACSA3
Yellow birch	ACRU ACSA3	Spinulose woodfern Sambucus racemosa	DRCA1
Paavola	BEAL2	Var. racemosa	SARAR
Eastern hemlock Eastern hophornbeam Northern red oak		American starflower	TRB02
Eastern hemlock Eastern hophornbeam Northern red oak	! 	Clayton's sweetroot	OSCL
Eastern hemlock Eastern hophornbeam Northern red oak		Wild sarsaparilla	ARNU2
Eastern hophornbeam Northern red oak	 TIAM	 Sugar maple	ACSA3
Northern red oak	TSCA	Claspleaf	STAM2
'	OSVI	twistedstalk	
Quaking aspen	QURU	Canada beadruby	MACA4
	POTR5	Violet	VIOLA
, -	ACRU	Sambucus racemosa Var. racemosa	SARAR
1 3 2	ACSA3	Clayton's sweetroot	OSCL
		Wild sarsaparilla	ARNU2
i	! 	American starflower	TRB02
į		Spinulose woodfern	DRCA1
	 ABBA	 Sugar maple	ACSA3
Eastern hemlock	TSCA	Balsam fir	ABBA
Eastern white pine	PIST	Red maple	ACRU
1	POTRT	Northern red oak	QURU
· -	ACRU	Bedstraw	GALIU
,	ACSA3	Yellow beadlily	CLB03
Yellow birch	BEAL2	Brackenfern	PTAQ
	 	Violet Wild sarsaparilla	VIOLA ARNU2
	! 	Large leaved aster	ASMA2
į į		American fly	LOCA7
į į	İ	honeysuckle	i
j		Twistedstalk	STREP
į		Northern whitecedar	THOC2
	 	Spinulose shield fern	DRSP4
	! 	Yellow birch	BEAL2

Table 7.--Plant Communities on Selected Soils--Continued

Map symbol and soil name	Common trees	Symbol	Characteristic vegetation	 Symbol
174B:	<u> </u>		İ I	
Montreal	American basswood Eastern hemlock Eastern hophornbeam Northern red oak Quaking aspen Red maple Sugar maple Yellow birch	TIAM TSCA OSVI QURU POTR5 ACRU ACSA3 BEAL2	Canada beadruby Violet Sambucus racemosa Var. racemosa American starflower Clayton's sweetroot Wild sarsaparilla Spinulose woodfern Sugar maple Claspleaf twistedstalk	MACA4 VIOLA SARAR3 TRBO2 OSCL ARNU2 DRCA11 ACSA3 STAM2
Dishno	Balsam fir Eastern hemlock Eastern white pine Quaking aspen Red maple Sugar maple Yellow birch	ABBA TSCA PIST POTRT ACRU ACSA3 BEAL2	Yellow beadlily Sugar maple Spinulose shield fern Violet Wild sarsaparilla Large leaved aster American fly honeysuckle Twistedstalk Bedstraw Brackenfern Balsam fir Red maple Northern red oak Yellow birch Northern whitecedar	CLBO3 ACSA3 DRSP4 VIOLA ARNU2 ASMA2 LOCA7 STREP3 GALIU PTAQ ABBA ACRU QURU BEAL2 THOC2
Gratiot	Balsam fir Bigtooth aspen Eastern hemlock Paper birch Quaking aspen Red maple White spruce Yellow birch	ABBA POGR4 TSCA BEPA POTR5 ACRU PIGL BEAL2	Shining clubmoss Bunchberry dogwood Wild sarsaparilla Spinulose woodfern Yellow bluebeadlily Hairy Solomon's seal Canada beadruby American starflower Sedge Red maple Sambucus racemosa Var. racemosa Common ladyfern Balsam fir Threeleaf goldthread Mountain woodsorrel	MACA4 TRB02 CAREX ACRU SARAR3 ATFI ABBA COTR2
177A: Assinins	American basswood Balsam fir Bigtooth aspen Eastern hemlock Quaking aspen Red maple Sugar maple White spruce Yellow birch	TIAM ABBA POGR4 TSCA POTR5 ACRU ACSA3 PIGL BEAL2	Drooping woodreed Sugar maple Canada beadruby Balsam fir Violet Red maple Woodfern Eastern hemlock American starflower Clubmoss Spinulose woodfern Sedge	CILA2 ACSA3 MACA4 ABBA VIOLA ACRU DRYOP TSCA TRBO2 LYCOP2 DRCA11 CAREX

Table 7.--Plant Communities on Selected Soils--Continued

Map symbol and soil name	Common trees	Symbol	Characteristic vegetation	 Symbol
183C:				
Munising	Balsam fir	ABBA	Interrupted fern	OSCL2
	Eastern hemlock	TSCA	Oakfern	GYDR
	Paper birch	BEPA	Canada yew	TACA7
	Quaking aspen	POTR5	Violet	VIOLA
	Red maple	ACRU	Starflower	TRIEN
	Sugar maple	ACSA3	Twistedstalk	STAM2
	White spruce	PIGL	Shining clubmoss	HULU2
	Yellow birch	BEAL2	Canada mayflower	MACA4
		ļ	Spinulose woodfern	DRCA11
		l	Red elderberry	SACA11
		l I	Sedge	CAREX ACSA3
			Sugar maple	ACSAS
Abbaye	Balsam fir	ABBA	Feather Solomon's	MARAR
	Eastern hemlock	TSCA	seal	
	Paper birch	BEPA	Streptopus	STLAR
	Quaking aspen	POTR5	Lanceolatus var.	
	Red maple	ACRU	Roseus	
	Sugar maple	ACSA3	Yellow birch	BEAL2
	Yellow birch	BEAL2	Sugar maple	ACSA3
		ļ	Canada beadruby	MACA4
		ļ	Balsam fir	ABBA
		ļ	Sambucus racemosa	SARAR3
		l I	Var. racemosa	 DODII4
	1	l I	Hairy Solomon's seal Shining clubmoss	HULU2
			Spinulose woodfern	DRCA11
			Yellow bluebeadlily	
			American starflower	
			Sedge	CAREX
1				
Yalmer	American beech	FAGR	Sedge	CAREX
	Balsam fir	ABBA	Spinulose woodfern	DRCA11
	Eastern hemlock Quaking aspen	TSCA	Northern maidenhair Canadian white	ADPE VICA4
	Red maple	POTR5 ACRU	violet	VICAT
	Sugar maple	ACSA3	Wild sarsaparilla	ARNU2
	Yellow birch	BEAL2	Sugar maple	ACSA3
			Trillium	TRILL
		i	Hairy Solomon's seal	!
		i	Red elderberry	SACA11
		i	Twistedstalk	STAM2
	İ	į	False Solomon's seal	SMILA
		į	Sweet cicely	OSCL
183E:				
Munising	 Balsam fir	ABBA		 HULU2
-	Eastern hemlock	TSCA	Canada mayflower	MACA4
	Paper birch	BEPA	Spinulose woodfern	DRCA11
	Quaking aspen	POTR5	Sedge	CAREX
	Red maple	ACRU	Sugar maple	ACSA3
	Sugar maple	ACSA3	Red elderberry	SACA11
	White spruce	PIGL	Twistedstalk	STAM2
	Yellow birch	BEAL2	Starflower	TRIEN
			Canada yew	TACA7
			Violet	VIOLA
			Interrupted fern	OSCL2
			Oakfern	GYDR

Table 7.--Plant Communities on Selected Soils--Continued

Map symbol and soil name	Common trees	Symbol	Characteristic vegetation	 Symbol
183E:	1			
	- Balsam fir Eastern hemlock	ABBA	Feather Solomon's	 MARAR
	Paper birch Quaking aspen Red maple	BEPA POTR5 ACRU	Streptopus Lanceolatus var. Roseus	STLAR
	Sugar maple Yellow birch	ACSA3	Sedge Yellow bluebeadlily	CAREX CLBO3
			Spinulose woodfern Shining clubmoss	DRCA11
			Hairy Solomon's seal Yellow birch	BEAL2
			Sugar maple Canada beadruby	ACSA3
			Balsam fir Sambucus racemosa	ABBA SARAR3
			Var. racemosa American starflower	TRBO2
Yalmer	 - American beech Balsam fir	 FAGR ABBA	 Red elderberry Hairy Solomon's seal	 SACA11
	Eastern hemlock	TSCA	Spinulose woodfern	DRCA11
	Quaking aspen Red maple	POTR5 ACRU	Sedge Sugar maple	CAREX ACSA3
	Sugar maple	ACSA3	Trillium	TRILL
	Yellow birch	BEAL2	Twistedstalk	STAM2
			False Solomon's seal	
			Sweet cicely Northern maidenhair Wild sarsaparilla Canadian white violet	OSCL ADPE ARNU2 VICA4
184C:	İ	İ		
Munising	- Balsam fir	ABBA	Twistedstalk	STAM2
	Eastern hemlock	TSCA	Spinulose woodfern	DRCA11
	Paper birch Quaking aspen	BEPA POTR5	Interrupted fern Oakfern	OSCL2
	Red maple	ACRU	Sugar maple	ACSA3
	Sugar maple	ACSA3	Sedge	CAREX
	White spruce	PIGL	Canada mayflower	MACA4
	Yellow birch	BEAL2	Canada yew Violet	TACA7 VIOLA
		i	Starflower	TRIEN
	į	į	Red elderberry	SACA11
			Shining clubmoss	HULU2
Yalmer		FAGR	Red elderberry	SACA11
	Balsam fir Eastern hemlock	ABBA TSCA	Hairy Solomon's seal Spinulose woodfern	DRCA11
	Quaking aspen	POTR5	Sedge	CAREX
	Red maple	ACRU	Sugar maple	ACSA3
	Sugar maple Yellow birch	ACSA3	Canadian white violet	VICA4
			Twistedstalk	STAM2
			Trillium False Solomon's seal	TRILL SMILA
		1	DOLOMON D BEAT	
			Sweet cicely	OSCL
	İ		Sweet cicely Wild sarsaparilla	OSCL ARNU2

Table 7.--Plant Communities on Selected Soils--Continued

Map symbol and soil name	Common trees	Symbol	Characteristic vegetation	Symbol
184E:] 	
Munising	Balsam fir	ABBA	Shining clubmoss	HULU2
	Eastern hemlock	TSCA	Interrupted fern	OSCL2
	Paper birch	BEPA	Oakfern	GYDR
	Quaking aspen	POTR5	Sedge	CAREX
	Red maple	ACRU	Spinulose woodfern	DRCA11
	Sugar maple	ACSA3	Canada mayflower	MACA4
	White spruce	PIGL	Canada yew	TACA7
	Yellow birch	BEAL2	Violet	VIOLA
			Starflower	TRIEN
			Twistedstalk Red elderberry	STAM2 SACA11
			Sugar maple	ACSA3
Yalmer	 American beech	 FAGR	 Trillium	 TRILL
-	Balsam fir	ABBA	Hairy Solomon's seal	!
	Eastern hemlock	TSCA	Spinulose woodfern	DRCA11
	Quaking aspen	POTR5	Sedge	CAREX
	Red maple	ACRU	Sugar maple	ACSA3
	Sugar maple	ACSA3	Canadian white	VICA4
	Yellow birch	BEAL2	violet	
			Twistedstalk	STAM2
			False Solomon's seal	SMILA
			Sweet cicely	OSCL
			Wild sarsaparilla	ARNU2
			!	ADPE
	1		Red elderberry	SACA11
185B:				İ
Munising	Balsam fir	ABBA	Sugar maple	ACSA3
	Eastern hemlock	TSCA	Sedge	CAREX
	Paper birch	BEPA	Spinulose woodfern	DRCA11
	Quaking aspen	POTR5	Canada mayflower	MACA4
	Red maple	ACRU	Shining clubmoss	HULU2
	Sugar maple	ACSA3	Red elderberry	SACA11
	White spruce	PIGL	Twistedstalk	STAM2
	Yellow birch	BEAL2	Starflower	TRIEN
			Violet Canada yew	VIOLA
			Oakfern	TACA7 GYDR
			Interrupted fern	OSCL2
Skanee	 Balsam fir	 ABBA	 Feather Solomon's	MARAR
	Eastern hemlock	TSCA	seal	
	Northern whitecedar	THOC2-1	American starflower	TRBO2
	Paper birch	BEPA	Blackberry	RUBUS
	Quaking aspen	POTR5	Wild sarsaparilla	ARNU2
		1	Clubmoss	LYCOP2
	Red maple	ACRU	CIUDIIIOSS	
		ACRU ACSA3	Bunchberry dogwood	COCA13
	Red maple	1	1	
	Red maple Sugar maple	ACSA3	Bunchberry dogwood	COCA13
	Red maple Sugar maple	ACSA3	Bunchberry dogwood Sugar maple	COCA13
	Red maple Sugar maple	ACSA3	Bunchberry dogwood Sugar maple Austrian woodfern	COCA13 ACSA3 DRAU4*

Table 7.--Plant Communities on Selected Soils--Continued

Map symbol and soil name	Common trees	Symbol 	Characteristic vegetation	Symbol
185C:				
Munising	Balsam fir Eastern hemlock Paper birch Quaking aspen Red maple Sugar maple White spruce Yellow birch	ABBA TSCA BEPA POTR5 ACRU ACSA3 PIGL BEAL2	Canada mayflower Shining clubmoss Red elderberry Twistedstalk Starflower Sedge Spinulose woodfern Oakfern Interrupted fern Canada yew Violet Sugar maple	MACA4 HULU2 SACA11 STAM2 TRIEN CAREX DRCA11 GYDR OSCL2 TACA7 VIOLA ACSA3
Skanee	Balsam fir Eastern hemlock Northern whitecedar Paper birch Quaking aspen Red maple Sugar maple Yellow birch	ABBA TSCA THOC2-1 BEPA POTR5 ACRU ACSA3 BEAL2	Canada beadruby Sugar maple Bunchberry dogwood Feather Solomon's seal Violet Canada yew Austrian woodfern American starflower Clubmoss Blackberry Wild sarsaparilla	MACA4 ACSA3 COCA13 MARAR VIOLA TACA7 DRAU4* TRB02 LYCOP2 RUBUS ARNU2
187A:	 		 	
Skanee	Balsam fir Eastern hemlock Northern whitecedar Paper birch Quaking aspen Red maple Sugar maple Yellow birch	ABBA TSCA THOC2-1 BEPA POTR5 ACRU ACSA3 BEAL2 	Wild sarsaparilla Clubmoss Canada beadruby Violet Canada yew Sugar maple Feather Solomon's seal Blackberry Bunchberry dogwood American starflower Austrian woodfern	ARNU2 LYCOP2 MACA4 VIOLA TACA7 ACSA3 MARAR RUBUS COCA13 TRBO2 DRAU4*
Gay	Balsam fir Eastern hemlock Northern whitecedar Paper birch Quaking aspen Red maple White spruce Yellow birch	 ABBA TSCA THOC2-1 BEPA POTR5 ACRU PIGL BEAL2 	Red maple Willow Northern whitecedar Common ladyfern American elm Balsam fir Eastern hemlock American starflower Bunchberry dogwood Canada beadruby Spinulose woodfern Sedge Speckled alder	ACRU SALIX THOC2-1 ATFI ULAM ABBA TSCA TRBO2 COCA13 MACA4 DRCA11 CAREX ALINR
192B: Nipissing	 Balsam fir Northern whitecedar Paper birch Quaking aspen White spruce	 ABBA THOC2-1 BEPA POTR5 PIGL	 Wild sarsaparilla Mapleleaf viburnum Thimbleberry Bigleaf aster 	 ARNU2 VIAC RUPA ASMA2

Table 7.--Plant Communities on Selected Soils--Continued

Map symbol and soil name	 Common trees 	Symbol 	Characteristic vegetation	Symbol
]	
192B: Arcadian	American basswood Eastern hemlock Eastern hophornbeam Northern red oak Quaking aspen Red maple	 TIAM TSCA OSVI QURU POTR5 ACRU	Wild sarsaparilla Spinulose woodfern American starflower Violet Canada beadruby Clayton's sweetroot	 ARNU2 DRCA11 TRBO2 VIOLA MACA4 OSCL
	Sugar maple White ash Yellow birch	ACSA3 FRAM2 BEAL2	Claspleaf twistedstalk Sambucus racemosa	STAM2 SARAR3
	 		Var. racemosa Sugar maple	ACSA3
Rock outcrop.				
194B:			 	
Copper Harbor	American basswood Balsam fir Eastern hemlock Paper birch Quaking aspen Sugar maple Yellow birch	TIAM ABBA TSCA BEPA POTRT ACSA3 BEAL2	 	
1050		į	ļ	į
195B: Copper Harbor Bete Grise	Balsam fir Eastern hemlock Paper birch Quaking aspen Sugar maple Yellow birch American basswood Balsam fir	TIAM ABBA TSCA BEPA POTRT ACSA3 BEAL2 TIAM ABBA	 Large leaved aster Violet	 ASMA2 VIOLA
	Eastern hemlock Paper birch Quaking aspen Sugar maple Yellow birch	TSCA BEPA POTRT ACSA3 BEAL2 	Lily-of-the-valley Bedstraw	COMA3 GALIU BEPA ACRU ABBA POTR5 PTAQ THOC2 COCA13 RUPA TRB02 PIGL
196B:			 	
Bete Grise	American basswood Balsam fir Eastern hemlock Paper birch Quaking aspen Sugar maple Yellow birch	TIAM ABBA TSCA BEPA POTRT ACSA3 BEAL2	Balsam fir Red maple Paper birch Quaking aspen Northern whitecedar White spruce Bunchberry dogwood Lily-of-the-valley Thimbleberry Brackenfern Starflower Bedstraw Large leaved aster Violet	ABBA ACRU BEPA POTR5 THOC2 PIGL COCA13 COMA3 RUPA PTAQ TRB02 GALIU ASMA2 VIOLA

Table 7.--Plant Communities on Selected Soils--Continued

Map symbol and soil name	 Common trees 	 Symbol	Characteristic vegetation	 Symbol
	<u> </u> 	<u> </u>	<u> </u>	<u> </u>
196B:	İ	İ	İ	į
Tawas	Balsam fir	ABBA	Northern whitecedar	THOC2-1
	Balsam poplar	POBA2	Brackenfern	PTERI
	Black ash	FRNI	Quaking aspen	POTR5
	Eastern arborvitae	THOC2	Balsam poplar	POBA2
	Eastern hemlock	TSCA	Tamarack	LALA
	Red maple	ACRU	Eastern teaberry	GAPR2
			Sedge	CAREX
			Bluejoint	CACA4
			Speckled alder	ALINR
			Northern maidenhair	ADPE
			Purple pitcherplant	SAPU4
	[American elm	ULAM

Table 8.--Windbreaks and Environmental Plantings

(Absence of an entry indicates that trees generally do not grow to the given height)

Map symbol	Trees having predicted 20-year average height, in feet, of						
and soil name	<8	8-15	16-25	26-35	>35		
2: Lupton.	 - -	 	 	 	 - -		
Tawas	Common ninebark, redosier dogwood, silky dogwood	 Nannyberry, southern arrowwood 	 Black spruce, eastern arborvitae, green ash	 	 		
3: Dawson.		 		 	 		
Loxley	Common ninebark, gray dogwood, silky dogwood 		Northern whitecedar	Siberian crabapple, Norway spruce, eastern white pine, green ash	Imperial Carolina poplar 		
6. Skandia-Burt		 		 			
10. Cathro-Sabattis	 	 	 	 	 		
13: Tawas	 Common ninebark, redosier dogwood, silky dogwood	 Nannyberry, southern arrowwood	 Black spruce, eastern arborvitae, green ash	 	 		
Deford	American cranberrybush, common ninebark, silky dogwood	Common lilac, Amur maple, eastern arborvitae, nannyberry	 White spruce, Norway spruce 	Eastern white pine,	 Imperial Carolina poplar 		
15B: Dawson.	 	 	 	 	 		
Croswell	Siberian peashrub, manyflower cotoneaster	 Amur maple, common lilac 	 Eastern redcedar, jack pine, red pine 	 Eastern white pine 	 		
20E. Rock outcrop	 	 	 	 	 		
21G. Rock outcrop-Arcadian	 	 	 	 	 		

cranberrybush, Amur crabapple, Norway pop maple, nannyberry spruce, jack pine, eastern white pine, green ash	>35 Perial Carolin Pplar Perial Carolin
39A: Betsy Bay	erial Carolin plar erial Carolin
Betsy Bay Common ninebark American cranberrybush, Amur maple, nannyberry spruce, jack pine, eastern white pine, green ash Burt. Deford	plar erial Carolin
Cranberrybush, Amur maple, nannyberry spruce, jack pine, eastern white pine, green ash Burt. Deford	plar erial Carolin
Burt. Deford	erial Carolin
Burt. Deford	
Burt. Deford	
Burt. Deford	
Deford	
cranberrybush, maple, eastern spruce green ash por common ninebark, arborvitae, silky dogwood nannyberry	
cranberrybush, maple, eastern spruce green ash por common ninebark, arborvitae, silky dogwood nannyberry	
common ninebark, arborvitae, silky dogwood nannyberry 47A. Zeba-Jacobsville 51C, 51E. Arcadian-Nipissing-Rock outcrop 52C, 52E. Arcadian-Dishno-Rock	piai
silky dogwood nannyberry 47A. Zeba-Jacobsville 51C, 51E. Arcadian-Nipissing-Rock outcrop 52C, 52E. Arcadian-Dishno-Rock	
47A. Zeba-Jacobsville 51C, 51E. Arcadian-Nipissing-Rock outcrop 52C, 52E. Arcadian-Dishno-Rock	
Zeba-Jacobsville 51C, 51E. Arcadian-Nipissing-Rock outcrop 52C, 52E. Arcadian-Dishno-Rock	
51C, 51E. Arcadian-Nipissing-Rock	
Arcadian-Nipissing-Rock	
outcrop	
52C, 52E. Arcadian-Dishno-Rock	
Arcadian-Dishno-Rock	
Arcadian-Dishno-Rock	
i i i	
53E, 53F.	
Arcadian-Michigamme-	
Rock outcrop	
55B.	
Chocolay	
WaiskaPeking cotoneaster, Eastern redcedar Austrian pine, jack	
Siberian peashrub, pine, eastern white	
common lilac, pine	
silver buffaloberry	

pine, eastern white

pine

Waiska-----| Austrian pine, jack

Siberian peashrub,

silver buffaloberry

common lilac,

Table 8.--Windbreaks and Environmental Plantings--Continued

Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol	Trees having predicted 20-year average height, in feet, of					
and soil name	<8	8-15	16-25	26-35	>35	
			1		1	
02C:						
Waiska	- Peking cotoneaster,	Eastern redcedar	Austrian pine, jack			
	Siberian peashrub,		pine, eastern white			
	common lilac,		pine			
	silver buffaloberry					
Garlic	- Siberian peashrub,	 Eastern_redcedar	 Jack pine, red pine,	 	 	
341113	barberry, common		eastern white pine	! 	İ	
	lilac, silver	 		! 	İ	
	buffaloberry,	 	! 	! 	İ	
	smooth sumac,	I I	l I	I I	i	
	staghorn sumac				i	
	İ	İ	İ	İ	İ	
02E:						
Waiska		Eastern redcedar				
	Siberian peashrub,		pine, eastern white			
	common lilac,		pine			
	silver buffaloberry	 	 	 	 	
Garlic	- Siberian peashrub,	 Eastern redcedar	Jack pine, red pine,			
	barberry, common	İ	eastern white pine	İ	į	
	lilac, silver	į	İ	į	Ì	
	buffaloberry,	į	İ	į	Ì	
	smooth sumac,					
	staghorn sumac	!		!	ļ	
02F:		l I	 -	 	 	
02r: Waiska	 - Peking cotonesster	 Eastern redcedar	 Augtrian nine iack			
Marbia.	Siberian peashrub,	Idabtelli ledeeddi	pine, eastern white	I 	1	
	common lilac,	 	pine	! 	İ	
	silver buffaloberry	 			ì	
					İ	
Garlic	- Siberian peashrub,	Eastern redcedar	Jack pine, red pine,			
	barberry, common		eastern white pine			
	lilac, silver					
	buffaloberry,					
	smooth sumac,					
	staghorn sumac					
10B:		 	 	 	 	
Shelldrake.	i				i	
					İ	
Croswell	- Siberian peashrub,	Amur maple, common	Eastern redcedar,	Eastern white pine	i	
	manyflower	lilac	jack pine, red pine			
	cotoneaster					

	Table 8Windbreaks and Environmental PlantingsContinued						
	Trees having predicted 20-year average height, in feet, of						
Map symbol and soil name	 <8	8-15	16-25	26-35	>35		
and soil name	<8	8-12	10-25	20-35	>35		
lB, 111D, 111E, 111F.		 	 	 	 		
eer Park							
2C:	 		 	 	 		
eer Park.				 	 		
coswell	 Siberian peashrub,	Amur maple, common	 Eastern redcedar,	 Eastern white pine			
	manyflower	lilac	jack pine, red pine	!			
	cotoneaster	l I	 	l I	 		
BC:	 		 	 	 		
ubicon		Eastern redcedar					
	Siberian peashrub,		eastern white pine				
	common lilac,	 	 	 	 		
	buffaloberry,				 		
	staghorn sumac	İ	İ		İ		
roswell	 Siberian peashrub,	Amur maple, common	 Eastern redcedar.	 Eastern white pine	 		
	manyflower	lilac	jack pine, red pine	•			
	cotoneaster	į					
DB:							
arlic	Siberian peashrub,	Eastern redcedar	Jack pine, red pine,				
	barberry, common		eastern white pine				
	lilac, silver						
	buffaloberry, smooth sumac,	 	 	 	 		
	staghorn sumac				 		
		į	į				
D: arlic	 Siberian peashrub,	 Eastern redcedar	Took nine med nine	 	 		
11110	barberry, common	Eastern reddedar	eastern white pine		 		
	lilac, silver		cassern white pine		 		
	buffaloberry,	İ	į		İ		
	smooth sumac,	İ	İ	İ	İ		
	staghorn sumac	1	I .	I .	I .		

Map symbol	Trees having predicted 20-year average height, in feet, of						
and soil name	<8	8-15	16-25	26-35	>35		
111B, 111D, 111E, 111F. Deer Park	 		 	 	 		
112C: Deer Park.	 	 	 	 	 		
Croswell	Siberian peashrub, manyflower cotoneaster	Amur maple, common lilac	 Eastern redcedar, jack pine, red pine 	 Eastern white pine 	 		
113C:	 		 	 	İ		
Rubicon	Peking cotoneaster, Siberian peashrub, common lilac, silver buffaloberry, staghorn sumac	Eastern redcedar	Jack pine, red pine, eastern white pine 	 	 		
Croswell	Siberian peashrub, manyflower cotoneaster	Amur maple, common lilac 	 Eastern redcedar, jack pine, red pine 	 Eastern white pine 	 		
120B:	 		 	 	 		
Garlic	Siberian peashrub, barberry, common lilac, silver buffaloberry, smooth sumac, staghorn sumac	Eastern redcedar 	Jack pine, red pine, eastern white pine 	 	 		
120D:	 		 		 		
Garlic	Siberian peashrub, barberry, common lilac, silver buffaloberry, smooth sumac, staghorn sumac	Eastern redcedar 	Jack pine, red pine, eastern white pine 	 	 		
120E:			 		 		
Garlic	Siberian peashrub, barberry, common lilac, silver buffaloberry,	Eastern redcedar 	Jack pine, red pine, eastern white pine 	 	 		

smooth sumac, staghorn sumac

Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol	Trees having predicted 20-year average height, in feet, of						
and soil name	<8	8-15	16-25	26-35	>35		
125A: Croswell	Siberian peashrub, manyflower cotoneaster	 Amur maple, common lilac	 Eastern redcedar, jack pine, red pine	 Eastern white pine 	 		
Au Gres	 Common ninebark 	 American cranberrybush, Amur maple, nannyberry 	 White spruce 	 Manchurian crabapple, Norway spruce, jack pine, eastern white pine, green ash	 Imperial Carolina poplar 		
126B: Au Gres	 Common ninebark 	American cranberrybush, Amur maple, nannyberry 	 White spruce 	Manchurian crabapple, Norway spruce, jack pine, eastern white pine, green ash	 Imperial Carolina poplar 		
Deford	American cranberrybush, common ninebark, silky dogwood	Common lilac, Amur maple, eastern arborvitae, nannyberry	White spruce, Norway spruce 	Eastern white pine,	Imperial Carolina poplar 		
Croswell	 Siberian peashrub, manyflower cotoneaster	 Amur maple, common lilac 	 Eastern redcedar, jack pine, red pine 	 Eastern white pine 	 		
127A: Au Gres	 Common ninebark	American cranberrybush, Amur maple, nannyberry	 White spruce 	Manchurian crabapple, Norway spruce, jack pine, eastern white pine, green ash	 Imperial Carolina poplar 		
Kinross.			 		 		
130C: Garlic	Siberian peashrub, barberry, common lilac, silver buffaloberry, smooth sumac, staghorn sumac	Eastern redcedar	 Jack pine, red pine, eastern white pine 	 	 		

Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol	Trees having predicted 20-year average height, in feet, of						
and soil name	<8	8-15	16-25	26-35	>35		
L30C: Alcona	American cranberrybush, Siberian peashrub, silky dogwood	 Common lilac, nannyberry, southern arrowwood	 Manchurian crabapple, white spruce, Norway spruce	 Eastern white pine, red pine 	 Imperial Carolina poplar 		
130E: Garlic	 Siberian peashrub, barberry, common lilac, silver buffaloberry, smooth sumac, staghorn sumac	 Eastern redcedar 	 Jack pine, red pine, eastern white pine 	 	 		
Alcona		 Common lilac, nannyberry, southern arrowwood	 Manchurian crabapple, white spruce, Norway spruce	 Eastern white pine, red pine 	 Imperial Carolina poplar 		
133C: Keweenaw	 Manyflower cotoneaster 	 Siberian peashrub, common lilac, Amur maple	 White spruce 	 Norway spruce, Siberian crabapple, eastern white pine, jack pine, red pine			
Garlic	Siberian peashrub, barberry, common lilac, silver buffaloberry, smooth sumac, staghorn sumac	 Eastern redcedar 	 Jack pine, red pine, eastern white pine 	 	 		
l33E: Keweenaw	 Manyflower cotoneaster 	 Siberian peashrub, common lilac, Amur maple 	 White spruce 	 Norway spruce, Siberian crabapple, eastern white pine, jack pine, red pine			
Garlic	Siberian peashrub, barberry, common lilac, silver buffaloberry, smooth sumac, staghorn sumac	 Eastern redcedar 	 Jack pine, red pine, eastern white pine 	 	 		

Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol	Trees having predicted 20-year average height, in feet, of					
and soil name	<8	8-15	16-25	26-35	>35	
33F: Keweenaw	 Manyflower cotoneaster	 Siberian peashrub, common lilac, Amur	 White spruce	 Norway spruce, Siberian crabapple,	 Carolina poplar	
		maple	 	eastern white pine, jack pine, red pine	 	
Jarlic	Siberian peashrub, barberry, common lilac, silver buffaloberry, smooth sumac, staghorn sumac	Eastern redcedar	Jack pine, red pine, eastern white pine	 	 	
86B: Borgstrom.	 	 			 	
Ingalls	American cranberrybush, Roselow sargent crabapple, Siberian peashrub, common ninebark	northern whitecedar	Manchurian crabapple, white spruce, Norway spruce	Eastern white pine,	 	
42C: Wallace	 Common lilac, common ninebark, silky dogwood	Amur privet, Siberian peashrub, nannyberry, northern whitecedar	 Siberian crabapple, white spruce, red pine	 Eastern white pine, green ash 	 	
Rubicon	Peking cotoneaster, Siberian peashrub, common lilac, silver buffaloberry, staghorn sumac	Eastern redcedar	 Jack pine, red pine, eastern white pine 	 	 	
42F: Wallace	 Common lilac, common ninebark, silky dogwood	Amur privet, Siberian peashrub, nannyberry, northern whitecedar	Siberian crabapple, white spruce, red pine	 Eastern white pine, green ash 	 	
Rubicon	Peking cotoneaster, Siberian peashrub, common lilac, silver buffaloberry, staghorn sumac	 Eastern redcedar 	 Jack pine, red pine, eastern white pine 	 	 	

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of					
	<8	8-15	16-25	26-35	>35	
.55C: Montreal.	 		 	 	 	
Paavola.	 		 	 	 	
Waiska	Peking cotoneaster, Siberian peashrub, common lilac, silver buffaloberry		 Austrian pine, jack pine, eastern white pine 		 	
55E:						
Montreal.			 	 	 	
Paavola.						
Waiska	Peking cotoneaster, Siberian peashrub, common lilac, silver buffaloberry		 Austrian pine, jack pine, eastern white pine 	 	 	
58A:						
Arnheim.						
Sturgeon	Silky dogwood	American cranberrybush, nannyberry, northern whitecedar, southern arrowwood	 White spruce 	 Manchurian crabapple, Norway spruce, eastern white pine, green ash, red maple	 Imperial Carolin poplar 	
Pelkie	Common ninebark, silky dogwood 	American cranberrybush, common lilac, northern whitecedar	White spruce 	Norway spruce, Siberian crabapple, red pine, eastern white pine, green ash	 Imperial Carolin poplar 	
61F:					 	
Frimountain.						
Lac La Belle.						
Waiska	Peking cotoneaster, Siberian peashrub, common lilac, silver buffaloberry		 Austrian pine, jack pine, eastern white pine 			

Table 8.--Windbreaks and Environmental Plantings--Continued

Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol	Trees having predicted 20-year average height, in feet, of						
and soil name	<8	8-15	16-25	26-35	>35		
2F. Trimountain-Lac La	 	 	 	 			
Belle-Michigamme	 	 	 				
6B. Tratiot-Sabattis	 		 				
3C, 173E. Contreal-Paavola-Dishno	 	 	 				
4B. Montreal-Dishno-Gratiot		 	 				
77A: Assinins	 Sargent crabapple, silky dogwood 	American cranberrybush, common lilac, nannyberry	 Northern whitecedar, white spruce 	Norway spruce, Siberian crabapple, eastern white pine, green ash, red maple			
33C: Munising	 Common ninebark, redosier dogwood, silky dogwood	American cranberrybush, common lilac, Amur maple, eastern arborvitae, nannyberry	 White spruce, eastern redcedar, Norway spruce, eastern white pine	 			
Abbaye	American cranberrybush, Siberian peashrub, common lilac, gray dogwood	Amur maple, Roselow sargent crabapple, northern whitecedar	White spruce, Norway spruce	Eastern white pine,			
Yalmer	 Common ninebark, redosier dogwood, silky dogwood	American cranberrybush, common lilac, Amur maple, eastern arborvitae, nannyberry	 White spruce, eastern redcedar, Norway spruce, eastern white pine	 			
83E: Munising	 Common ninebark, redosier dogwood, silky dogwood	American cranberrybush, common lilac, Amur maple, eastern arborvitae, nannyberry	 White spruce, eastern redcedar, Norway spruce, eastern white pine	 			

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Map symbol	 		ted 20-year average he		
and soil name	<8	8-15	16-25	26-35	>35
33E: bbbaye	American cranberrybush, Siberian peashrub, common lilac, gray dogwood	Amur maple, Roselow sargent crabapple, northern whitecedar	 White spruce, Norway spruce 	 Eastern white pine, green ash, red pine 	
almer	 Common ninebark, redosier dogwood, silky dogwood	American cranberrybush, common lilac, Amur maple, eastern arborvitae, nannyberry	 White spruce, eastern redcedar, Norway spruce, eastern white pine		
84C: Munising	 Common ninebark, redosier dogwood, silky dogwood 	American cranberrybush, common lilac, Amur maple, eastern arborvitae, nannyberry	 White spruce, eastern redcedar, Norway spruce, eastern white pine		
ralmer	 Common ninebark, redosier dogwood, silky dogwood 	American cranberrybush, common lilac, Amur maple, eastern arborvitae, nannyberry	White spruce, eastern redcedar, Norway spruce, eastern white pine	 	
84E: Munising	 Common ninebark, redosier dogwood, silky dogwood 	American cranberrybush, common lilac, Amur maple, eastern arborvitae, nannyberry	 White spruce, eastern redcedar, Norway spruce, eastern white pine		
Yalmer	 Common ninebark, redosier dogwood, silky dogwood 	American cranberrybush, common lilac, Amur maple, eastern arborvitae, nannyberry	 White spruce, eastern redcedar, Norway spruce, eastern white pine	 	

Table 8.--Windbreaks and Environmental Plantings--Continued

Table 8.--Windbreaks and Environmental Plantings--Continued

Map symbol	Trees having predicted 20-year average height, in feet, of							
and soil name	<8	8-15	16-25	26-35	>35			
185B: Munising	 Common ninebark, redosier dogwood, silky dogwood	American cranberrybush, common lilac, Amur maple, eastern arborvitae, nannyberry	 White spruce, eastern redcedar, Norway spruce, eastern white pine	 	 			
Skanee	 Roselow sargent crabapple, silky dogwood 	American cranberrybush, common lilac, nannyberry, northern whitecedar	 Siberian crabapple, white spruce, Norway spruce	Eastern white pine, green ash, red maple	 			
185C: Munising	 Common ninebark, redosier dogwood, silky dogwood	American cranberrybush, common lilac, Amur maple, eastern arborvitae, nannyberry	White spruce, eastern redcedar, Norway spruce, eastern white pine	 				
Skanee	 Roselow sargent crabapple, silky dogwood 	 American cranberrybush, common lilac, nannyberry, northern whitecedar	 Siberian crabapple, white spruce, Norway spruce	 Eastern white pine, green ash, red maple 	 			
187A: Skanee	 Roselow sargent crabapple, silky dogwood 	American cranberrybush, common lilac, nannyberry, northern whitecedar	 Siberian crabapple, white spruce, Norway spruce	 Eastern white pine, green ash, red maple 	 			
Gay	 Siberian peashrub, common ninebark, redosier dogwood, silky dogwood	 American cranberrybush, common lilac, northern whitecedar	 White spruce 	 Norway spruce, eastern white pine, green ash, red maple	 			
192B. Nipissing-Arcadian-Rock outcrop	 	 	 	 	 			

Man are 1 - 1		Trees having predict	ted 20-year average he	eight, in feet, of	
Map symbol and soil name	<8	8-15	16-25	26-35	>35
194B: Copper Harbor	 Peking cotoneaster, Siberian peashrub, common lilac, silver buffaloberry	 	Austrian pine, jack pine, eastern white pine		
195B: Copper Harbor	 Peking cotoneaster, Siberian peashrub, common lilac, silver buffaloberry	 	Austrian pine, jack pine, eastern white pine		
Bete Grise	Peking cotoneaster, Siberian peashrub, common lilac, silver buffaloberry	 	Austrian pine, jack pine, eastern white pine		
196B: Bete Grise	 Peking cotoneaster, Siberian peashrub, common lilac, silver buffaloberry	 	 Austrian pine, jack pine, eastern white pine		
Tawas	 Common ninebark, redosier dogwood, silky dogwood	 Nannyberry, southern arrowwood	 Black spruce, eastern arborvitae, green ash		
301. Udorthents-Udipsamments	 				
302. Histosols and Aquents	 	 			
303. Aquents and Dumps, stamp sand					
310. Dumps, mine	 	 			
311. Dumps, stamp sand	 	 	 		
312. Pits		 			

Table 8.--Windbreaks and Environmental Plantings--Continued

Table 8.--Windbreaks and Environmental Plantings--Continued

1	Trees having predicted 20-year average height, in feet, of								
Map symbol and soil name	<8	8-15	16-25	26-35	>35				
and soil name		0-15	10-25	20-35					
13.									
Dumps, sawdust			į į	į					
Water									

Table 9a.--Recreational Development

(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. "Not rated" indicates that data are not available or that no rating is applicable. See text for further explanation of ratings in this

Map symbol and soil name	Camp areas		 Picnic areas 		Playgrounds 	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
		1				
2:		1			 	-
Lupton		1	Very limited		Very limited	
	Depth to	1.00		1.00		1.00
	saturated zone		saturated zone		saturated zone	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
Tawas	 Very limited		 Very limited		 Very limited	
	Depth to	1.00	Depth to	1.00	Depth to	1.00
	saturated zone		saturated zone		saturated zone	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
						i
3:	İ	İ	İ	j	İ	İ
Dawson	Very limited		Very limited		Very limited	
	Depth to	1.00	Depth to	1.00	Depth to	1.00
	saturated zone		saturated zone		saturated zone	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
Loxley			Very limited		Very limited	
	Depth to	1.00		1.00		1.00
	saturated zone		saturated zone		saturated zone	
	Too acid	1.00		1.00	Too acid	1.00
	Ponding	1.00	Ponding	1.00	Ponding	1.00
6:			 	i i		ì
Skandia	 Very limited	i	 Very limited	İ	 Very limited	ì
	Depth to	1.00	: -	1.00	Depth to	1.00
	saturated zone	i	saturated zone	i	saturated zone	i
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	İ	İ	İ			İ
Burt	Very limited		Very limited		Very limited	
	Depth to	1.00	Depth to	1.00	Depth to	1.00
	saturated zone		saturated zone		saturated zone	
	Depth to bedrock		Depth to bedrock		Depth to bedrock	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
10:	l I		 	 	 	
Cathro	 Verv limited		 Very limited		 Very limited	i
0401120	Depth to	1.00	: -	1.00	Depth to	1.00
	saturated zone		saturated zone		saturated zone	
	Organic matter	1.00	Organic matter	1.00	Organic matter	1.00
	content		content		content	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
	į	į		İ	į	i
Sabattis	Very limited		Very limited		Very limited	
	Depth to	1.00	Depth to	1.00	Depth to	1.00
	saturated zone		saturated zone		saturated zone	
	Ponding	1.00	Ponding	1.00	Ponding	1.00

Table 9a.--Recreational Development--Continued

Map symbol and soil name	Camp areas		Picnic areas		Playgrounds 		
	Rating class and limiting features	Value	Rating class and limiting features	1	Rating class and limiting features	Value	
13: Tawas	 Very limited Depth to saturated zone Ponding		saturated zone	1.00	 Very limited Depth to saturated zone Ponding	 1.00 1.00	
Deford	 Very limited Depth to saturated zone Ponding	 1.00 1.00	Depth to	1	 Very limited Depth to saturated zone Ponding	 1.00 1.00	
15B: Dawson	 Very limited Depth to saturated zone Ponding		 Very limited Depth to saturated zone Ponding	1.00	 Very limited Depth to saturated zone Ponding	 1.00 1.00	
Croswell	Somewhat limited Depth to saturated zone	:	Somewhat limited Depth to saturated zone	!	Somewhat limited Depth to saturated zone Slope	 0.39 0.12	
20E: Rock outcrop	 Not rated 	 	 Not rated 	 	 Not rated 	 	
21G: Rock outcrop	 Not rated	 	 Not rated	 	 Not rated 	 	
Arcadian	Slope	1.00	 Slope Depth to bedrock	1.00	:	 1.00 1.00	
39A: Betsy Bay			 Very limited Depth to saturated zone	1	 Very limited Depth to saturated zone	1.00	
Burt	Depth to saturated zone Depth to bedrock	1.00	 Very limited Depth to saturated zone Depth to bedrock Ponding	1.00	 Very limited Depth to saturated zone Depth to bedrock Ponding	 1.00 1.00	
Deford		į	 Very limited Ponding Depth to saturated zone	į	 Very limited	1.00	
47A: Zeba	 Very limited Depth to saturated zone Slow water	 1.00 0.99	 Very limited Depth to saturated zone Slow water	 1.00 0.99	 Very limited Depth to saturated zone Slow water	 1.00 0.99	
Jacobsville	movement		movement	 1.00 1.00	movement Very limited	 1.00 1.00	

Table 9a.--Recreational Development--Continued

Map symbol and soil name	Camp areas		Picnic areas Picnic areas		 Playgrounds 		
	Rating class and	Value	Rating class and	Value	Rating class and	Value	
	limiting features	<u> </u>	limiting features		limiting features	<u>i</u>	
51C: Arcadian	 Very limited Depth to bedrock		 Very limited Depth to bedrock		 Very limited Depth to bedrock Slope	 1.00 1.00	
Nipissing	 Not limited 	 	 Not limited 	 	 Very limited Slope Depth to bedrock	1.00	
Rock outcrop	 Not rated		 Not rated	 	 Not rated		
51E:	 		 		 		
Arcadian	 Very limited Depth to bedrock Slope	1	: -		Very limited Slope Depth to bedrock	1.00	
Nipissing	 Very limited Slope 	 1.00 	 Very limited Slope 	 1.00 	 Very limited Slope Depth to bedrock	1.00	
Rock outcrop	 Not rated 	 	 Not rated 	 	 Not rated 		
52C:							
Arcadian	 Very limited Depth to bedrock 		 Very limited Depth to bedrock 	!	 Very limited Depth to bedrock Slope	 1.00 1.00	
Dishno	 Very limited Depth to saturated zone	1	 Very limited Depth to saturated zone	 1.00 	 Very limited Depth to saturated zone Slope	1.00	
Rock outcrop	 Not rated	 	 Not rated	 	 Not rated		
52E:	 	 	 	 	 	1	
Arcadian	 Very limited Depth to bedrock Slope		:		: -	1.00	
Dishno	Very limited Depth to saturated zone Slope	 1.00 1.00	 Very limited Depth to saturated zone Slope	 - 1.00 1.00	 Very limited Depth to saturated zone Slope	 1.00 1.00	
Rock outcrop	 Not rated		 Not rated	 	 Not rated		
53E: Arcadian	 Very limited Depth to bedrock Slope	1	-		:	1.00	
Michigamme	 Very limited Slope 	 1.00	 Very limited Slope 	 1.00	 Very limited Slope Depth to bedrock	1.00	
Rock outcrop	 Not rated 	 	 Not rated 	 	 Not rated 	 	

Table 9a.--Recreational Development--Continued

Map symbol and soil name	 Camp areas 		 		 Playgrounds 		
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	 Value	
53F: Arcadian		1.00	 - Very limited Slope Depth to bedrock	1.00	 Very limited	 1.00 1.00	
Michigamme	 Very limited Slope 	 1.00	 Very limited Slope 	 1.00 	 Very limited Slope Depth to bedrock	 1.00 0.46	
Rock outcrop	 Not rated 	 	 Not rated 	 	 Not rated 	 	
55B: Chocolay	 Very limited Depth to saturated zone 	 1.00 	Very limited Depth to saturated zone	 1.00 	 Very limited Depth to saturated zone Depth to bedrock Slope	 1.00 0.99 0.88	
100B: Waiska	 Not limited 	 	 Not limited 	 	 Somewhat limited Slope	 0.50	
100D: Waiska	 Somewhat limited Slope 	 0.63	 Somewhat limited Slope 	 0.63	 Very limited Slope 	 1.00	
102C: Waiska	 Not limited 		 Not limited 	 	 Very limited Slope	1.00	
Garlic	 Not limited 		 Not limited 	 	 Very limited Slope	1.00	
102E: Waiska	 Very limited Slope	 1.00	 Very limited Slope	 1.00	 Very limited Slope	 1.00	
Garlic	 Very limited Slope	1.00	 Very limited Slope	1.00	 Very limited Slope	1.00	
102F: Waiska	 Very limited Slope	1.00	 Very limited Slope	 1.00	 Very limited Slope	1	
Garlic	 Very limited Slope	1.00	 Very limited Slope	 1.00	 Very limited Slope	1.00	
110B: Shelldrake	 Not limited 		 Not limited	 	 Somewhat limited Slope	 0.88	
Croswell	 Somewhat limited Depth to saturated zone	 0.39 	Somewhat limited Depth to saturated zone	 0.19 		 0.50 0.39	
111B: Deer Park	 Not limited 	 	 Not limited 	 	 Somewhat limited Slope 	 0.50	

Table 9a.--Recreational Development--Continued

Map symbol and soil name			Picnic areas		 Playgrounds 		
	Rating class and	Value	Rating class and	Value	Rating class and	Value	
	limiting features	<u> </u>	limiting features	<u> </u>	limiting features	<u> </u>	
111D: Deer Park	 Somewhat limited Slope 	 0.63	 Somewhat limited Slope 	 0.63	 Very limited Slope	1.00	
111E: Deer Park	 Very limited Slope 	 1.00	 Very limited Slope 	 1.00	 Very limited Slope	1.00	
111F:		į		į		i	
Deer Park	Very limited Slope 	 1.00 	Very limited Slope 	 1.00 	Very limited Slope 	 1.00 	
112C:	į	į		į		į	
Deer Park	Somewhat limited Slope	0.01	Somewhat limited Slope	0.01	Very limited Slope	1.00	
Croswell	Somewhat limited Depth to saturated zone	 0.39 	 Somewhat limited Depth to saturated zone	 0.19 	Somewhat limited Slope Depth to saturated zone	0.50	
113C:	 		 		 	1	
Rubicon	Somewhat limited Slope	0.01	Somewhat limited Slope	0.01	 Very limited Slope	1.00	
Croswell	 Somewhat limited Depth to saturated zone	 0.39 	 Somewhat limited Depth to saturated zone	 0.19 	 Somewhat limited Slope Depth to saturated zone	0.50	
120B: Garlic	 Not limited 	 	 Not limited 	 	 Somewhat limited Slope	 0.50	
120D: Garlic	 Somewhat limited Slope 	 0.63	 Somewhat limited Slope 	 0.63	 Very limited Slope	1.00	
120E: Garlic	 Very limited Slope	 1.00	 Very limited Slope	 1.00	 Very limited Slope	1.00	
125A: Croswell	 Somewhat limited Depth to saturated zone	 0.39	 Somewhat limited Depth to saturated zone	 0.19 	 Somewhat limited Depth to saturated zone	0.39	
Au Gres	 Very limited Depth to saturated zone 	 1.00 	Very limited Depth to saturated zone	 1.00 	Very limited Depth to saturated zone Slope	 1.00 0.12	
126B: Au Gres	 Very limited Depth to saturated zone	 1.00 	 Very limited Depth to saturated zone	 1.00 	 Very limited Depth to saturated zone	 1.00	

Table 9a.--Recreational Development--Continued

Map symbol and soil name	Camp areas		Picnic areas		Playgrounds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
126B:		İ			 	İ
Deford	 Town limited		 Very limited	 	 Very limited	
Delord	Depth to		Ponding	1.00		1.00
	saturated zone	1	Depth to	1.00		1
	Ponding	1.00	· -		Ponding	1.00
		į		į	İ	i
Croswell	Somewhat limited		Somewhat limited		Somewhat limited	
	Depth to	0.39	Depth to	0.19	Slope	0.88
	saturated zone		saturated zone		Depth to	0.39
					saturated zone	
127A:		1			 	
Au Gres	 Very limited	İ	 Very limited		 Very limited	i
	Depth to	1.00	_	1.00	: -	1.00
	saturated zone		saturated zone		saturated zone	i
Kinross		1	Very limited	:	Very limited	
	Depth to	1.00	Depth to	1.00	Depth to	1.00
	saturated zone	!	saturated zone		saturated zone	
	Ponding	1.00	Ponding	1.00	Ponding	1.00
L30C:				 	 	
Garlic	Not limited	İ	Not limited	İ	 Very limited	i
		į		į	Slope	1.00
		!			!	1
Alcona	Not limited	ļ	Not limited		Very limited	
	 				Slope	1.00
L30E:		1		 	 	
Garlic	 Very limited	i	Very limited	İ	 Very limited	i
	Slope	1.00	· -	1.00	: -	1.00
		İ		į	į	į
Alcona	-	1	Very limited	:	Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
133C:	 				 -	
Keweenaw	 Not limited	1	 Not limited		 Very limited	
					Slope	1.00
		į		į	<u> </u>	i
Garlic	Not limited		Not limited		Very limited	
					Slope	1.00
L33E:	 				 -	
Keweenaw	 Very limited	1	 Very limited	 	 Very limited	
Reweenaw	Slope	1.00	_	1.00	Slope	1.00
			22020			
Garlic	 Very limited	İ	Very limited	İ	 Very limited	i
	Slope	1.00	Slope	1.00	Slope	1.00
						1
L33F: Keweenaw	 Very limited	1	Very limited	 	 Very limited	
Vewcellam	Slope	1.00	Very limited Slope	1.00	Very limited Slope	1.00
	 probe		 probe	1.00	 probe	
Garlic	 Very limited	İ	 Very limited		 Very limited	i
	Slope	1.00	Slope	1.00	Slope	1.00

Table 9a.--Recreational Development--Continued

Map symbol and soil name	 Camp areas 		Picnic areas		Playgrounds 		
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	
136B: Borgstrom	 Vory limited	 	 Very limited		 Very limited	 	
BOIGSTIOM	Depth to cemented pan	1.00	Depth to cemented pan	1.00	Depth to cemented pan	į	
	Depth to saturated zone 	0.39 	Depth to saturated zone 	0.19 	-	0.50	
Ingalls		 1.00	 Very limited Depth to saturated zone	 1.00	 Very limited Depth to saturated zone	 1.00	
	!	 0.04 	1	0.04	!	0.04	
142C:							
Wallace	Depth to cemented	!	Somewhat limited Depth to cemented			1.00	
	pan Slope 	 0.01 	pan Slope 	 0.01 	Depth to cemented pan	0.97 	
Rubicon	!	 0.01	Somewhat limited Slope	0.01	 Very limited Slope	1.00	
142F:	 	 	 				
Wallace	Slope	1.00	-	1.00		1.00	
	Depth to cemented pan	0.97 	Depth to cemented pan	0.97 	Depth to cemented pan	0.97	
Rubicon	: -	 1.00	 Very limited Slope 	 1.00	 Very limited Slope 	 1.00	
155C:		į				į	
Montreal	: -	 1.00	Very limited Depth to	 1.00	Very limited Depth to	1.00	
	saturated zone	1.00	saturated zone	İ	saturated zone	1.00	
	movement		movement		movement		
	Depth to cemented pan 	0.71 	Depth to cemented pan 	0.71 	Slope Depth to cemented pan	1.00 0.71 	
Paavola			 Very limited		 Very limited		
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	saturated zone	1.00	
	 	 	 		Slope Depth to bedrock	1.00	
Waiska	 Not limited 	 	 Not limited 		 Very limited Slope	1.00	

Table 9a.--Recreational Development--Continued

Map symbol and soil name	Camp areas		Picnic areas		Playgrounds	
		Value		Value	Rating class and	Value
	limiting features		limiting features		limiting features	<u> </u>
155E:	 	 	 	 	 	
Montreal	 Vorus limited	l I	 Very limited	 	 Very limited	
Moncreal	Depth to	1.00	_	1.00	<u>-</u>	1.00
	saturated zone	1	saturated zone	1	saturated zone	1
	Slow water	1.00		1.00	Slope	1.00
	movement	1	movement	1	-	1.00
	Slope	1.00	Slope	1.00	!	1
	Depth to cemented		-	!	Depth to cemented	0 71
	pan pan		pan pan		pan pan	
Paavola	 Very limited		 Very limited	 	 Very limited	
	Depth to	1.00	-	1.00	<u>-</u>	1.00
	saturated zone		saturated zone		saturated zone	i
	!	1.00	!	1.00	!	1.00
	Depth to cemented		Depth to cemented	!	Depth to cemented	!
	pan		pan		pan	
Waiska	 Verv limited	 	 Very limited	 	 Very limited	
	Slope	1.00	Slope	1.00	_	1.00
158A:	I		! 	! 	 	i
Arnheim	 Verv limited		 Very limited	! 	 Very limited	i
	Depth to	1.00	_	1.00	<u>-</u>	1.00
	saturated zone			1.00	-	
	Flooding	1.00	-		Flooding	1.00
	Ponding	1.00		0.40		1.00
	!					
Sturgeon	· -		Very limited		Very limited	!
	Depth to	1.00	-	1.00	-	1.00
	saturated zone		saturated zone		saturated zone	
	Flooding	1.00		 	Flooding	0.60
Pelkie	 Very limited		 Somewhat limited	 	 Somewhat limited	
	Flooding	1.00	Depth to	0.19	Flooding	0.60
	Depth to	0.39	saturated zone	İ	Depth to	0.39
	saturated zone	İ	İ	İ	saturated zone	İ
	İ	ĺ		İ	Slope	0.12
				ĺ		ĺ
161F:						
Trimountain	Very limited		Very limited		Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Depth to cemented	1.00	Depth to cemented	1.00	Depth to cemented	1.00
	pan		pan	 	pan	
Lac La Belle	 Very limited	 	 Very limited	 	 Very limited	
	Slope	1.00	_	1.00	_	1.00
	Depth to cemented		Depth to cemented		-	
	pan		pan	į	pan	į
Waiska	 Verv limited	 	 Very limited	 	 Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
					~== :	
162F:						i
Trimountain	Very limited		 Very limited	İ	 Very limited	i
	Slope	1.00	Slope	1.00	Slope	1.00
	Depth to cemented		-	'		
			_			1 11
	pan		pan		pan	

Table 9a.--Recreational Development--Continued

Map symbol and soil name	Camp areas		Picnic areas		Playgrounds 		
	Rating class and limiting features	Value	Rating class and	Value	Rating class and	Value	
162F:	l I	 	 	 	 		
Lac La Belle	 Very limited Slope Depth to cemented pan	1.00	 Very limited Slope Depth to cemented pan	1.00	 Very limited Slope Depth to cemented pan	 1.00 0.06	
Michigamme	 Very limited Slope 	 1.00 	 Very limited Slope 	 1.00 	 Very limited Slope Depth to bedrock	 1.00 0.46	
166B:							
Gratiot	: -	1.00	Very limited Depth to saturated zone Depth to cemented	 1.00 1.00	Very limited Depth to saturated zone Depth to cemented	 1.00 1.00	
	pan	 	pan		pan Slope	 0.12	
Sabattis	 Very limited Depth to saturated zone Ponding	 1.00 1.00	saturated zone	 1.00 1.00	 Very limited Depth to saturated zone	 1.00 1.00	
173C:	 -		 -		 		
Montreal	Depth to saturated zone	1.00	saturated zone	1.00	saturated zone	1.00	
	Slow water movement	1.00 	Slow water movement	1.00 	Slow water movement	1.00	
	Depth to cemented pan	0.71	Depth to cemented pan	0.71 	Slope Depth to cemented pan	1.00	
Paavola	: -	1.00	 Very limited Depth to saturated zone Depth to cemented pan	1.00	saturated zone Slope Depth to cemented	 1.00 1.00 0.84	
	 	 	 	 	pan 	 	
Dishno	Very limited Depth to saturated zone	 1.00 	Very limited Depth to saturated zone	 1.00 	Very limited Depth to saturated zone	 1.00 	
	 	 	 	 	Slope	1.00	
173E:				į			
Montreal	Very limited Depth to saturated zone	 1.00 	Very limited Depth to saturated zone	 1.00 	Very limited Depth to saturated zone	 1.00 	
	Slow water movement Slope Depth to cemented pan	1.00 1.00 0.71	movement	1.00 1.00 0.71	Slow water movement	1.00 1.00 0.71	
Paavola	 Very limited Depth to saturated zone Slope	 1.00 1.00	saturated zone	 1.00 1.00	Very limited Depth to saturated zone Slope Depth to bedrock	 1.00 1.00 0.84	

Table 9a.--Recreational Development--Continued

Map symbol and soil name	Camp areas		 Picnic areas 	Picnic areas		Playgrounds 		
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value		
173E: Dishno	 Very limited Depth to saturated zone	 1.00	 Very limited Depth to saturated zone	 1.00	 Very limited Depth to saturated zone	 1.00		
	Slope	1.00	!	1.00	Slope	1.00		
174B: Montreal	 Very limited Depth to	 1.00	 Very limited Depth to	 1.00	 Very limited Depth to	 1.00		
	saturated zone	1.00	saturated zone	1.00	saturated zone	1.00		
	movement Depth to cemented pan	 0.71 	movement Depth to cemented pan	 0.71 	movement Slope Depth to cemented pan	 1.00 0.71 		
Dishno	 Very limited Depth to saturated zone	 1.00 	 Very limited Depth to saturated zone	 1.00 	saturated zone	 - 1.00 - 1.00		
Gratiot	Depth to saturated zone Depth to cemented	1.00	saturated zone Depth to cemented	1.00	 Very limited Depth to saturated zone Depth to cemented	 1.00		
177A:	pan 	 	pan 	 	pan 	 		
Assinins	Very limited Depth to saturated zone	 1.00 	Very limited Depth to saturated zone	 1.00 	Very limited Depth to saturated zone	 1.00 		
183C:	 		 	 				
Munising	Depth to saturated zone Depth to cemented pan	1.00	saturated zone	1.00	saturated zone	 1.00 1.00		
		 		 	Slope	1.00		
Abbaye	Very limited Depth to saturated zone	 1.00 	Very limited Depth to saturated zone	 1.00 	saturated zone	 1.00 1.00		
Yalmer	:	 1.00	 Very limited Depth to	 1.00	Depth to bedrock Very limited Depth to	0.46 1.00		
	saturated zone Depth to cemented pan	 0.65 	saturated zone Depth to cemented pan	 0.65 	saturated zone Slope Depth to cemented pan	 1.00 0.64		

Table 9a.--Recreational Development--Continued

Map symbol and soil name	 Camp areas 		 Picnic areas 		Playgrounds	
	Rating class and	Value	Rating class and	Value	Rating class and limiting features	Value
183E:	 	 	 		 	
Munising	 Very limited		 Very limited		 Very limited	Ì
	Depth to	1.00	Depth to	1.00	Depth to	1.00
	saturated zone		saturated zone		saturated zone	
	Depth to cemented	1.00	Depth to cemented	1.00	Slope	1.00
	pan Slope		pan		Depth to cemented	1.00
	Slope	1.00 	Slope 	1.00 	pan 	
Abbaye	 Very limited	İ	 Very limited	i	 Very limited	i
	Depth to	1.00	Depth to	1.00	Depth to	1.00
	saturated zone		saturated zone		saturated zone	
	Slope	1.00	Slope	1.00	-	1.00
	 	 	 		Depth to bedrock	0.46
Yalmer	 Verv limited	l İ	 Very limited		 Very limited	ì
	Depth to	1.00	-	1.00	-	1.00
	saturated zone	j	saturated zone	İ	saturated zone	İ
	:	1.00	· -	1.00	Slope	1.00
	Depth to cemented	0.65	Depth to cemented	0.65	Depth to cemented	0.64
	pan	 	pan		pan	
184C:	 	i İ				i
Munising	 Very limited	j	 Very limited	i	Very limited	i
	Depth to	1.00	Depth to	1.00	Depth to	1.00
	saturated zone		saturated zone		saturated zone	1
	Depth to cemented	1.00	Depth to cemented	1.00	_	1.00
	pan	 	pan		pan Slope	1.00
	 	i İ			biope	
Yalmer	 Very limited	j	 Very limited	i	Very limited	i
	Depth to	1.00	Depth to	1.00	Depth to	1.00
	saturated zone		saturated zone		saturated zone	
	Depth to cemented	0.65	Depth to cemented	0.65	Slope	1.00
	pan 	 	pan 	 	Depth to cemented pan	0.64
		İ				į
184E:	 	 	 	l i	 Vom: limited	
Munising	: -	1.00	Very limited Depth to	1.00	Very limited Depth to	1.00
	saturated zone		saturated zone		saturated zone	
	Depth to cemented	1.00	Depth to cemented	1.00	Slope	1.00
	pan		pan		Depth to cemented	1.00
	Slope	1.00	Slope	1.00	pan	
Yalmer	 Very limited	l I	 Very limited	l I	 Very limited	l I
1411101	Depth to	1.00	_	1.00	Depth to	1.00
	saturated zone	j	saturated zone	i	saturated zone	i
	Slope	1.00	Slope	1.00	Slope	1.00
	Depth to cemented	0.65	Depth to cemented	0.65	Depth to cemented	0.64
	pan		pan		pan	
185B:	 	 	[
Munising	 Very limited		 Very limited	İ	 Very limited	İ
-	Depth to	1.00	_	1.00	_	1.00
	saturated zone		saturated zone		saturated zone	
	Depth to cemented	1.00	Depth to cemented	1.00	_	1.00
	pan	I	pan	I	pan	1
	Pan	l I	1		Slope	0.50

Table 9a.--Recreational Development--Continued

Map symbol and soil name	Camp areas		Picnic areas		Playgrounds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
185B: Skanee	 Very limited	 	 Very limited	 	 Very limited	
	Depth to saturated zone Depth to cemented	1.00	Depth to saturated zone Depth to cemented	1.00	Depth to saturated zone Depth to cemented	1.00
	pan Slow water	 1.00	pan Slow water	 1.00	pan Slow water	1.00
	movement	 	movement	 	movement Slope	0.12
185C: Munising	 Very limited	 	 Very limited	 	 Very limited	
-	Depth to saturated zone	1.00	saturated zone	1.00	Depth to saturated zone	1.00
	Depth to cemented pan	İ	Depth to cemented pan Slope		Depth to cemented pan	į
Skanee	Slope Very limited	0.16 	Slope Very limited	0.16 	Slope Very limited	1.00
	Depth to saturated zone	1.00	-	1.00	saturated zone	1.00
	Depth to cemented pan Slow water	1.00 1.00	Depth to cemented pan	1.00 1.00	pan	į
	movement 	1.00 	Slow water movement 	1.00 	movement Slope	1.00 0.88
187A:		!			- 	į Į
Skanee	Very limited Depth to saturated zone	 1.00 	Very limited Depth to saturated zone	 1.00 	Very limited Depth to saturated zone	1.00
	Depth to cemented pan	 1.00 	Depth to cemented pan	 1.00 	!	1.00
	Slow water movement 	1.00 	Slow water movement	1.00 	Slow water movement Slope	1.00 0.12
Gay	 Very limited Depth to saturated zone	 1.00	 Very limited Depth to saturated zone	 1.00	 Very limited Depth to saturated zone	 1.00
	Ponding	 1.00 	Ponding	 1.00 	Ponding	1.00
192B: Nipissing	 Not limited	 	 Not limited 	 	 Somewhat limited Slope	 0.50
	 	 		 	Depth to bedrock	
Arcadian	Very limited Depth to bedrock		Very limited Depth to bedrock		Very limited Depth to bedrock Slope	 1.00 0.50
Rock outcrop	 Not rated 	 	 Not rated 	 	 Not rated 	
194B: Copper Harbor	Depth to	 0.39	-	 0.19	:	 0.39
	saturated zone	 	saturated zone	 	saturated zone Slope	0.12

Table 9a.--Recreational Development--Continued

Map symbol and soil name	 Camp areas 		 Picnic areas 		 Playgrounds 		
	Rating class and	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	
195B: Copper Harbor	 Somewhat limited Depth to saturated zone	 0.39 	 Somewhat limited Depth to saturated zone	 0.19 	 Somewhat limited Depth to saturated zone Slope	0.39	
Bete Grise	 Very limited Depth to saturated zone	 1.00 	 Very limited Depth to saturated zone	 1.00 	 Very limited Depth to saturated zone	 1.00	
196B: Bete Grise	 Very limited Depth to saturated zone	 1.00	 Very limited Depth to saturated zone	 1.00	 Very limited Depth to saturated zone	1.00	
Tawas	 Very limited Depth to saturated zone Ponding	 1.00 1.00	 Very limited Depth to saturated zone Ponding	 1.00 1.00	 Very limited Depth to saturated zone Ponding	 1.00 1.00	
301:	 		 				
Udorthents	Not limited 	 	Not limited 	 	Very limited Slope Large stones	 1.00 0.01	
Udipsamments	 Very limited Too sandy 	 1.00 	 Very limited Too sandy 	 1.00 	 Very limited Too sandy Slope	1.00	
302: Histosols	 Very limited Depth to saturated zone Ponding Organic matter content	 1.00 1.00 1.00	 Very limited Ponding Depth to saturated zone Organic matter content	 1.00 1.00 1.00	 Very limited Depth to saturated zone Organic matter content Ponding	 1.00 1.00 	
Aquents	Very limited Depth to saturated zone Ponding Slow water movement	 1.00 1.00 0.60	Very limited Ponding Depth to saturated zone Slow water movement	 1.00 1.00 0.60	: -	 1.00 1.00 0.60 	
303: Aquents	 Very limited Depth to saturated zone Ponding Slow water movement	 1.00 1.00 0.60	Depth to saturated zone	 1.00 1.00 0.60	saturated zone Ponding	 1.00 1.00 0.60 	
Dumps, stamp sand	 Not rated 	 	 Not rated 	 	 Not rated 	 	
310: Dumps, mine	 Not rated 	 	 Not rated 	 	 Not rated 	 	

Table 9a.--Recreational Development--Continued

Map symbol and soil name	Camp areas		Picnic areas		Playgrounds 	
	Rating class and	Value	Rating class and	Value	Rating class and	Value
	limiting features		limiting features	<u> </u>	limiting features	<u> </u>
311:					 	
Dumps, stamp sand	Not rated		Not rated		Not rated	
312:			 		 	
Pits	Not rated		Not rated		Not rated	
313:			 		 	
Dumps, sawdust	Not rated		Not rated		Not rated	
Ň:	 		 		 	
Water	Not rated		Not rated		Not rated	

Table 9b.--Recreational Development

(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. "Not rated" indicates that data are not available or that no rating is applicable. See text for further explanation of ratings in this table)

Map symbol and soil name	Paths and trail	s	 Golf fairways 	
	Rating class and limiting features		Rating class and limiting features	Value
2:				
Lupton	Very limited	į	Very limited	İ
	Depth to	1.00		1.00
	saturated zone Ponding	1.00	saturated zone Ponding	1.00
Tawas	Very limited		Very limited	
	Depth to	1.00	Depth to	1.00
	saturated zone		saturated zone	
	Ponding	1.00	Ponding	1.00
3:				İ
Dawson	Very limited		Very limited	
	Depth to	1.00		1.00
	saturated zone Ponding	1.00	saturated zone Ponding	1.00
	Fonding		Foliating	1
Loxley	Very limited	i	 Very limited	i
	Depth to	1.00	Depth to	1.00
	saturated zone		saturated zone	
	Ponding	1.00	•	1.00
	 		Ponding 	1.00
6:		i		İ
Skandia	Very limited		Very limited	
	Depth to	1.00		1.00
	saturated zone Ponding	1.00	saturated zone Ponding	1.00
	Foliating		Depth to bedrock	
	j	i	<u> </u>	i
Burt	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to bedrock Depth to	1.00
	Ponding	1.00	saturated zone	1.00
			Ponding	1.00
	İ	j	Droughty	0.91
10.				
10: Cathro	 Very limited		 Very limited	
0401120	Depth to	1.00	: -	1.00
	saturated zone	i	content	i
	Organic matter	1.00	Depth to	1.00
	content		saturated zone	
	Ponding	1.00	Ponding	1.00
Sabattis	 Very limited		 Very limited	
	Depth to	1.00	Depth to	1.00
	saturated zone		saturated zone	
	Ponding	1.00	Ponding	1.00
	I	1	I	1

Table 9b.--Recreational Development--Continued

Map symbol and soil name	 Paths and 	trail	S	 Golf fairways 	
	Rating class	and	Value	Rating class and	Value
	limiting feat	tures	<u> </u>	limiting features	<u> </u>
13:	 		 	 	
Tawas	 Very limited		 	 Very limited	
	Depth to		1.00	_	1.00
	saturated :	zone	ļ	saturated zone	
	Ponding		1.00	Ponding	1.00
Deford	 Very limited		 	 Very limited	
	Depth to		1.00	_	1.00
	saturated :	zone	ļ	Depth to	1.00
	Ponding		1.00	saturated zone	
15B:	 		 		
Dawson	 Very limited		İ	 Very limited	İ
	Depth to		1.00	-	1.00
	saturated:	zone	 1.00	saturated zone	1 00
	Ponding		1.00 	Ponding	1.00
Croswell	Not limited		İ	Somewhat limited	
	ĺ		ĺ	Droughty	0.44
				Depth to	0.19
	 		 	saturated zone	
20E:			İ		
Rock outcrop	Not rated		ĺ	Not rated	İ
01.0					
21G: Rock outcrop	 Not rated		l I	 Not rated	
			İ		
Arcadian	Very limited			Very limited	
	Slope		1.00	_	
	 		 	Slope Droughty	1.00
			İ		
39A:	[
Betsy Bay	Very limited Depth to			Very limited	1 00
	saturated :	zone	1.00	Depth to saturated zone	1.00
			İ	Droughty	0.20
	!		ļ		
Burt	: -			Very limited	1 00
	Depth to saturated:	zone	1.00	Depth to bedrock Depth to	1.00
	Ponding		1.00	saturated zone	
				Ponding	1.00
				Droughty	0.91
Deford	 Verv limited		 	 Very limited	
	Depth to		1.00	-	1.00
	saturated :	zone		Depth to	1.00
	Ponding		1.00	saturated zone	
47A:	 		 	 	
	 Very limited			 Very limited	
	Depth to		1.00	Depth to	1.00
	saturated :	zone		saturated zone	
	 		 	nebru to pedrock	0.71
		- -	 	Depth to bedrock	0.7

Table 9b.--Recreational Development--Continued

Map symbol and soil name	Paths and trail	s	 Golf fairways 	
	Rating class and limiting features	Value	Rating class and limiting features	Value
47A: Jacobsville	 Very limited Depth to saturated zone	 1.00	 Very limited Depth to saturated zone	 1.00
	Ponding	1.00	Ponding Depth to bedrock	1.00
51C: Arcadian	 Not limited 	 	 Very limited Depth to bedrock Droughty	 - 1.00 1.00
Nipissing	 Not limited 	 	 Somewhat limited Droughty Depth to bedrock	 0.42 0.01
Rock outcrop	 Not rated 	 	 Not rated 	
51E: Arcadian	 Somewhat limited Slope 	 0.82 	 Very limited Depth to bedrock Slope Droughty	 1.00 1.00 1.00
Nipissing	 Somewhat limited Slope 	 0.82 	 Very limited Slope Droughty Depth to bedrock	 1.00 0.42 0.01
Rock outcrop	 Not rated 	 	 Not rated 	
52C: Arcadian	 Not limited 		 Very limited Depth to bedrock Droughty	 1.00 1.00
Dishno	 Very limited Depth to saturated zone	 1.00 	 Very limited Depth to saturated zone	 1.00
Rock outcrop	 Not rated 	 	 Not rated 	
52E: Arcadian	 Somewhat limited Slope 	 0.82 	 Very limited Depth to bedrock Slope Droughty	 1.00 1.00 1.00
Dishno	 Very limited Depth to saturated zone Slope	 1.00 0.82	 Very limited Depth to saturated zone Slope	 1.00 1.00
Rock outcrop	 Not rated 	 	 Not rated 	
53E: Arcadian	 Somewhat limited Slope 	 0.82 	 Very limited Depth to bedrock Slope Droughty	 1.00 1.00 1.00

Table 9b.--Recreational Development--Continued

Map symbol and soil name	Paths and trail	s	 Golf fairways 	
	Rating class and limiting features	Value	Rating class and limiting features	Value
53E: Michigamme	 Somewhat limited Slope	 0.82	 Very limited Slope Depth to bedrock	 1.00 0.46
Rock outcrop	 Not rated		 Not rated	
53F: Arcadian	 Very limited Slope 	 1.00 	 Very limited Depth to bedrock Slope Droughty	 1.00 1.00 1.00
Michigamme	 Very limited Slope 	 1.00 	 Very limited Slope Depth to bedrock	 1.00 0.46
Rock outcrop	 Not rated 	 	 Not rated 	
55B: Chocolay	 Very limited Depth to saturated zone	 1.00 	 Very limited Depth to saturated zone Depth to bedrock Droughty	 1.00 0.99 0.99
100B: Waiska	 Not limited 		 Very limited Droughty 	 1.00
100D: Waiska	 Not limited 	 	 Very limited Droughty Slope	 1.00 0.63
102C: Waiska	 Not limited		 Very limited Droughty	1.00
Garlic	 Not limited 		 Somewhat limited Droughty	
102E: Waiska	 Somewhat limited Slope	 0.82	 Very limited Slope Droughty	 1.00 1.00
Garlic	 Somewhat limited Slope 	 0.82 	 Very limited Slope Droughty	 1.00 0.40
102F: Waiska	 Very limited Slope 	 1.00	 Very limited Slope Droughty	 1.00 1.00
Garlic	 Very limited Slope 	 1.00 	 Very limited Slope Droughty 	 1.00 0.40

Table 9b.--Recreational Development--Continued

Map symbol and soil name	 Paths and trail 	s	 Golf fairways 	
	 Rating class and	Value	Rating class and	Value
	limiting features	<u> </u>	limiting features	<u> </u>
110B: Shelldrake	 Not limited 	 	 Very limited Droughty	 1.00
Croswell	 Not limited 	 		 0.44 0.19
111B: Deer Park	 Not limited 	 	 Somewhat limited Droughty 	 0.18
111D: Deer Park	 Not limited 	 	 Somewhat limited Slope Droughty	 0.63 0.18
111E: Deer Park	 Somewhat limited Slope 		 Very limited Slope Droughty	 1.00 0.18
111F: Deer Park	 Very limited Slope 	 1.00	 Very limited Slope Droughty	 1.00 0.18
112C: Deer Park	 Not limited 	 	 Somewhat limited Droughty Slope	 0.18 0.01
Croswell	 Not limited 	 		 0.44 0.19
113C: Rubicon	 Not limited 	 	 Somewhat limited Droughty Slope	 0.45 0.01
Croswell	 Not limited 	 	 Somewhat limited Droughty Depth to saturated zone	 0.44 0.19
120B: Garlic	 Not limited 	 	 Somewhat limited Droughty 	 0.40
120D: Garlic	 Not limited 	 	 Somewhat limited Slope Droughty	 0.63 0.40

Table 9b.--Recreational Development--Continued

Map symbol and soil name	 Paths and trails 		 Golf fairways 	
	Rating class and	Value	 Rating class and limiting features	Value
	limiting features	<u> </u>	limiting reatures	1
120E: Garlic	 Very limited Slope	 1.00 	 Very limited Slope Droughty	 1.00 0.40
125A: Croswell	 Not limited 		 Somewhat limited Droughty Depth to saturated zone	 0.44 0.19
Au Gres	 Very limited Depth to saturated zone	1.00	 Very limited Depth to saturated zone	1.00
126B:		į		i
Au Gres	Very limited Depth to saturated zone	 1.00 	Very limited Depth to saturated zone	 1.00
Deford	 Very limited Depth to saturated zone Ponding	 1.00 1.00	 Ponding Depth to saturated zone	 1.00 1.00
Croswell	 Not limited 	 	 Somewhat limited Droughty Depth to saturated zone	 0.44 0.19
127A: Au Gres	 Very limited Depth to saturated zone	 1.00	 Very limited Depth to saturated zone	 1.00
Kinross	 Very limited Depth to saturated zone Ponding	 1.00 1.00	 Very limited Depth to saturated zone Ponding	 1.00 1.00
130C: Garlic	 Not limited 	 	 Somewhat limited Droughty	0.40
Alcona	 Not limited		 Not limited	
130E: Garlic	 Somewhat limited Slope	 0.82	 Very limited Slope Droughty	 1.00 0.40
Alcona	 Somewhat limited Slope	0.82	 Very limited Slope	1.00
133C:			 	
Keweenaw	Not limited		Not limited	
Garlic	 Not limited 		 Somewhat limited Droughty 	0.40

Table 9b.--Recreational Development--Continued

Map symbol and soil name	 Paths and trails 		 Golf fairways 	
	 Rating class and limiting features	Value	 Rating class and limiting features	Value
133E: Keweenaw	 Somewhat limited Slope	 0.82	 Very limited Slope	 1.00
Garlic	 Somewhat limited Slope 	 0.82 		 - 1.00 0.40
133F:	 		 	
Keweenaw	Very limited Slope	1.00	Very limited Slope	1.00
Garlic	 Very limited Slope 	1.00		 1.00 0.40
136B: Borgstrom	 Not limited 			 1.00 1.00 0.19
Ingalls	 Very limited Depth to saturated zone	 1.00 	 Very limited Depth to saturated zone	 1.00
142C: Wallace	 Not limited 	 		 0.97 0.45 0.01
Rubicon	 Not limited 			 0.45 0.01
142F: Wallace	 Very limited Slope 	 1.00 	 Very limited Slope Depth to cemented pan Droughty	 1.00 0.97 0.45
Rubicon	 Very limited Slope 	 1.00 		 1.00 0.45
155C: Montreal	 Very limited Depth to saturated zone 	 1.00 	saturated zone Depth to cemented pan	 1.00 0.71 0.15

Table 9b.--Recreational Development--Continued

Map symbol and soil name	Paths and trail	s	 Golf fairways 	
	Rating class and limiting features	Value	Rating class and limiting features	Value
		İ		İ
155C: Paavola	 Very limited Depth to saturated zone 	 1.00 	saturated zone	 1.00 1.00
			Depth to bedrock	0.84
Waiska	 Not limited 		 Very limited Droughty 	 1.00
155E:				
Montreal	Very limited Depth to saturated zone	 1.00 	Very limited Depth to saturated zone	 1.00
	Slope	0.82	-	1.00
			Depth to cemented pan	0.71
			Droughty	0.15
Paavola	 Very limited Depth to saturated zone Slope 	 1.00 0.82 	saturated zone	 1.00 1.00 1.00 0.84
Waiska	 Somewhat limited Slope 	0.82	-	 1.00 1.00
1503		į		į
158A: Arnheim	 Very limited Depth to saturated zone Ponding Flooding	 1.00 1.00 0.40		 1.00 1.00 1.00
Sturgeon	 Very limited		 Very limited	
Sturgeon	Depth to saturated zone	1.00	Depth to saturated zone	 1.00 0.60
Pelkie	 Not limited 			 0.60 0.19
161F:				į
Trimountain	Very limited Slope 	 1.00 	Depth to cemented pan	 1.00 1.00 0.51
Lac La Belle	 Very limited Slope 	 1.00 		 1.00 1.00 0.06

Table 9b.--Recreational Development--Continued

Map symbol and soil name	 Paths and 	trail	s	 Golf fairways 	
	Rating class	and	Value	Rating class and	Value
	limiting fea	tures	<u> </u>	limiting features	<u> </u>
161F: Waiska	 Very limited Slope 		 1.00	-	 1.00
162F:	 		 	 	
Trimountain	 Very limited Slope 		 1.00 	Depth to cemented pan	 1.00 1.00 0.51
Lac La Belle	 Very limited Slope 		 1.00 	-	 1.00 1.00 0.06
Michigamme	 Very limited Slope 		 1.00 	 Very limited Slope Depth to bedrock	 - 1.00 0.46
166B: Gratiot	 Very limited Depth to saturated : 	zone	 1.00 	saturated zone	 1.00 1.00
Sabattis	 Very limited Depth to saturated : Ponding	zone	 - 1.00 1.00	saturated zone	 - 1.00 - 1.00
173C: Montreal	 Very limited Depth to saturated :	zone	 1.00 	saturated zone Depth to cemented pan	 1.00 0.71 0.15
Paavola	 Very limited Depth to saturated : 		 1.00 	 Very limited Depth to saturated zone	 1.00 1.00
Dishno	 Very limited Depth to saturated :		 1.00 	 Very limited Depth to saturated zone	 1.00

Table 9b.--Recreational Development--Continued

Map symbol and soil name	Paths and	d trail	s	Golf fairways			
	 Rating class limiting fea		Value	Rating class and limiting features	 Value		
173E: Montreal	Very limited Depth to saturated	zone	 1.00	Very limited Depth to saturated zone	 1.00		
	Slope 		 0.82 	Slope Depth to cemented pan	1.00 0.71 0.15		
Paavola	Very limited Depth to saturated Slope	zone	1.00	saturated zone	 1.00 1.00 1.00 0.84		
Dishno	Very limited Depth to saturated Slope	zone	 1.00 0.82	saturated zone	 1.00 1.00		
174B: Montreal	 Very limited Depth to saturated 	zone	 1.00 	saturated zone Depth to cemented pan	 1.00 0.71 0.15		
Dishno	 Very limited Depth to saturated	zone	 1.00 	 Very limited Depth to saturated zone	 1.00		
Gratiot	 Very limited Depth to saturated 	zone	 1.00 	saturated zone	 1.00 1.00 		
177A: Assinins	 Very limited Depth to saturated		 1.00 	 Very limited Depth to saturated zone	 1.00 		
183C: Munising	Very limited Depth to saturated		 1.00 	pan	 1.00 1.00		
Abbaye	 Very limited Depth to saturated 	zone		Very limited Depth to saturated zone Depth to bedrock	 1.00 0.46		

Table 9b.--Recreational Development--Continued

Map symbol and soil name	Paths and	l trail	s	 Golf fairways 	Golf fairways			
	Rating class		Value		Value			
	limiting fea	tures	<u> </u>	limiting features	<u> </u>			
183C: Yalmer	Very limited Depth to saturated	zone	 1.00 	 Very limited Depth to saturated zone Depth to cemented pan	 1.00 0.64			
	İ		į	Droughty	0.33			
183E: Munising	 Very limited Depth to		 1.00	 Very limited Depth to cemented	 1.00			
	saturated	zone		pan				
	Slope 		0.82 	saturated zone	1.00 1.00			
Abbaye	 Very limited Depth to saturated	zone	 1.00	 Very limited Depth to saturated zone	 1.00			
	Slope		0.82	Slope	1.00			
			ļ	Depth to bedrock	0.46			
Yalmer	 Very limited Depth to saturated	zone	 1.00	 Very limited Depth to saturated zone	 1.00			
	Slope		0.82	!	1.00			
				Depth to cemented pan	0.64			
				Droughty 	0.33 			
184C: Munising	 Very limited Depth to saturated	zone	 1.00	 Very limited Depth to cemented pan	 1.00			
		zone	 	: -	 1.00 			
Yalmer	Very limited Depth to saturated	zone	1.00	 Very limited Depth to saturated zone	 1.00 			
	i I		į Į	Depth to cemented pan	0.64			
				Droughty	0.33			
184E:				 	 			
Munising	Very limited Depth to saturated	zone	1.00	 Very limited Depth to cemented pan	 1.00			
	Slope		0.82	Depth to saturated zone	 1.00 1.00			
				Slope 	1. 00			
Yalmer	Very limited Depth to saturated	zone	1.00	 Very limited Depth to saturated zone	1.00			
	Slope	20116	0.82	Slope Depth to cemented	1.00			
	 		 	pan Droughty 	 0.33 			

Table 9b.--Recreational Development--Continued

Map symbol and soil name	 Paths and tra 	ails	 Golf fairways 	Golf fairways			
	Rating class and limiting feature		Rating class and limiting features	Value			
185B: Munising			 Very limited	 1.00			
	 	 		1.00 			
Skanee	Very limited Depth to saturated zone 	 1.00 	Very limited Depth to cemented pan Depth to saturated zone	 1.00 1.00			
185C:	 - -	 	Droughty 	1.00 			
Munising	Very limited Depth to saturated zone	1.00	Very limited Depth to cemented pan	 1.00 			
	 		saturated zone	1.00 0.16			
Skanee	 Very limited Depth to saturated zone	1.00	 Very limited Depth to cemented pan Depth to	 1.00 1.00			
1073	 	İ	saturated zone Droughty	 1.00 			
187A: Skanee	 Very limited Depth to saturated zone	1.00	 Very limited Depth to cemented pan Depth to saturated zone Droughty	 1.00 1.00 			
Gay	 Very limited Depth to saturated zone Ponding	1.00	saturated zone	 			
192B: Nipissing	 Not limited 		 Somewhat limited Droughty Depth to bedrock	 0.42 0.01			
Arcadian	 Not limited 		 Very limited Depth to bedrock Droughty	 - 1.00 1.00			
Rock outcrop	 Not rated 		 Not rated 	 			
194B: Copper Harbor	 Not limited 		saturated zone	 0.19 0.07			

Table 9b.--Recreational Development--Continued

Map symbol and soil name	 Paths and trail 	.s	 Golf fairways 	1
	Rating class and limiting features	Value	Rating class and limiting features	Value
195B: Copper Harbor	 Not limited 	 	 Somewhat limited Depth to saturated zone	 0.19
	 	 	Droughty	0.07
Bete Grise	Very limited Depth to saturated zone	 1.00 	Very limited Depth to saturated zone Droughty	 1.00 0.94
196B:]	
Bete Grise	 Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone Droughty	 1.00 0.94
Tawas	 Very limited	1	 Very limited	į Į
	Depth to saturated zone Ponding	1.00 1.00	Depth to saturated zone Ponding	1.00 1.00
301:	 		 	
Udorthents	Not limited	į Į	Somewhat limited Large stones	0.01
Udipsamments	 Very limited Too sandy 	 1.00	 Somewhat limited Droughty Too sandy	 0.69 0.50
302:	 		 	
Histosols	: -	1	Very limited	
	Depth to saturated zone Organic matter	1.00 1.00	Organic matter	1.00 1.00
	content Ponding	1.00	Depth to saturated zone	1.00
Aquents	 Very limited Depth to	 1.00	 Very limited Ponding	 1.00
	saturated zone Ponding	1.00	Depth to saturated zone	1.00
303:				
Aquents	Depth to	1.00	 Very limited Ponding	1.00
	saturated zone	1.00	Depth to saturated zone	1.00
Dumps, stamp sand	 Not rated 		 Not rated 	
310: Dumps, mine	 Not rated 		 Not rated 	
311: Dumps, stamp sand	 Not rated	<u> </u> 	 Not rated	
312: Pits	 Not rated 		 Not rated 	

Table 9b.--Recreational Development--Continued

Map symbol and soil name	 Paths and trail 	s	Golf fairways				
	Rating class and limiting features	Value	Rating class and limiting features	Value			
313: Dumps, sawdust	 Not rated		 Not rated	 			
W: Water	 Not rated 		 Not rated 	 			

Table 10.--Wildlife Habitat

(See text for definitions of terms used in this table. Absence of an entry indicates that no rating is applicable)

	ļ	P		for habit	at elemen	its	1	Potentia.	l as habi	tat for-
Map symbol and soil name	Grain and seed crops	Grasses and	Wild herba- ceous plants	 Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland	 Woodland wildlife 	
2:	 	 			 				 	
Lupton	Very poor.	Poor	Very poor.	Poor	Poor	Good	Good	Poor	 Very poor.	Good.
Tawas	 Very poor.	 Poor 	Very poor.	Poor	Poor	Good	Good	Poor	 Very poor.	Good.
3:	 	 							 	
Dawson	Very poor.	Very poor.	Very poor.	Poor	Poor	Good	Good	Poor	Very poor.	Good.
Loxley	 Very poor.	 Very poor. 	Very poor.	Poor	 Poor 	Good	Good 	Poor 	 Poor 	 Very poor.
6:	İ	İ	İ	İ	İ	İ	İ	İ		İ
Skandia	Very poor.	Very poor.	Poor	Poor	Poor 	Good 	Good 	Poor 	Very poor.	Good.
Burt	Very poor.	Very poor.	Poor	Poor	 Poor 	Good	Poor	Poor	 Very poor.	Good.
10:	 	 							 	
Cathro	Very poor.	Poor	Very poor.	Poor	Poor	Good	Good	Poor	Very poor.	Good.
Sabattis	 Very poor.	 Poor 	 Very poor.	 Poor 	 Poor 	Good	 Good 	 Poor 	 Very poor.	 Good.
13:		İ	İ	İ			İ	İ	 	
Tawas	Very poor.	Poor 	Very poor.	Poor	Poor 	Good 	Good 	Poor 	Very poor.	Good.
Deford	 Very poor.	 Poor 	Very poor.	Poor	 Poor 	Good	Good	Poor	 Very poor.	 Good.
15B:	 								 	
Dawson	Very poor.	Very poor.	Poor	Poor	Very poor.	Good	Good	Poor	Very poor.	Very poor.
Croswell	 Poor 	 Poor 	Good	 Fair 	 Good 	Poor	Very poor.	 Fair 	 Fair 	 Very poor.
20E. Rock outcrop	 	 	 		 		 	 	 	
21G: Rock outcrop.	 	 	 		 				 	
Arcadian	 Very poor.	 Very poor.	 Very poor.	 Poor	 Fair 	Very poor.	 Very poor.	 Very poor.	 Poor 	 Very poor.
39A:	 	 		1	 				 	
Betsy Bay	 Fair 	 Poor 	Good	Fair	 Good 	Poor	Fair	Poor	 Fair 	 Fair.
Burt	Very poor.	Very poor.	Fair	Fair	Fair	Fair	Fair	Poor	Poor	Fair.

Table 10.--Wildlife Habitat--Continued

		P	Potential as habitat for							
Map symbol and soil name	 Grain and seed crops	 Grasses and legumes	Wild herba- ceous plants	 Hardwood trees 	Conif- erous	 Wetland plants	 Shallow water areas	Openland wildlife		•
39A: Deford	 Very poor.	 Poor 	 Very poor.	 Poor 	 Poor 	 Fair 	 Good 	 Poor 	 Very poor.	 Fair.
47A:		İ			İ	İ	İ			!
Zeba	Poor	Fair	Good	Good	Good	Fair	Fair	Fair	Good	Fair.
Jacobsville	 Very poor.	 Poor 	 Fair 	 Fair 	 Fair 	 Fair 	 Fair 	Poor	 Fair 	 Fair.
51C:									 	
Arcadian	Very poor.	Very poor.	Very poor.	Fair	Fair	Very poor.	Very poor.	Very poor.	 Fair 	Very poor.
Nipissing	 Very poor.	 Very poor.	Very poor.	Good	 Good 	Very poor.	Very poor.	Very	 Good 	 Very poor.
Rock outcrop.	 	 			! 				 	
51E: Arcadian	 Very poor.	 Very poor.	 Very poor.	 Fair 	 Fair 	Very poor.	Very poor.	Very poor.	 Good 	 Very poor.
Nipissing	 Very poor.	 Very poor.	Very poor.	 Good 	 Good 	Very poor.	Very poor.	Very poor.	 Fair 	 Very poor.
Rock outcrop.					<u> </u>				 	
52C:					[
Arcadian	Very poor.	Very poor.	Very poor.	Fair	 Fair 	Very poor.	Very poor.	Very poor.	 Fair 	 Very poor.
Dishno	 Very poor.	 Very poor.	 Very poor.	 Good 	 Good 	Very poor.	 Very poor.	Very poor.	 Good 	 Very poor.
Rock outcrop.									 	
52E:		 			 				 	
Arcadian	Very poor.	Very poor.	Very poor.	Poor	 Fair 	Very poor.	Very poor.	Very poor.	Poor	Very poor.
Dishno	: -	 Very poor.	 Very poor.	Good	 Good 	Very poor.	Very poor.	Very poor.	 Good 	 Very poor.
Rock outcrop.		 	<u> </u>		 					
53E:					 				 	
Arcadian	Very poor.	Very poor.	Very poor.	Poor	 Fair 	Very poor.	Very poor.	Very poor.	 Poor 	 Very poor.
Michigamme	 Very poor.	 Very poor.	 Very poor.	 Fair 	 Good 	 Very poor.	 Very poor.	 Very poor.	 Fair 	 Very poor.
Rock outcrop.		 			 					
53F:	 	[[[[I	1		 	
Arcadian	Very poor.	Very poor.	Very	Poor	 Fair 	Very poor.	Very	Very	 Poor 	 Very poor.

Table 10.--Wildlife Habitat--Continued

	Ī	P	otential	for habit	at elemen	its		Potentia	l as habi	tat for
Map symbol and soil name	Grain and seed crops	Grasses and	Wild herba- ceous plants	 Hardwood trees	Conif-erous	 Wetland plants	 Shallow water areas	 Openland	I	 Wetland
53F: Michigamme		 Very poor.		 Good		 Very poor.	 Very poor.	 Very poor.	 Good	Very poor.
Rock outcrop.	 	 			 				 	
55B: Chocolay	 Poor	 Poor	 Fair	 Fair	 Fair	Poor	Poor	 Fair	 Fair	 Fair.
100B: Waiska	 Poor 	 Poor 	 Fair 	 Poor 	 Fair 	Very poor.	Very poor.	 Fair 	 Poor 	 Very poor.
100D: Waiska	 Poor 	 Poor 	 Fair 	 Poor 	 Fair 	Very poor.	Very poor.	 Fair 	 Poor 	 Very poor.
102C: Waiska	 Poor 	 Poor 	 Fair 	 Poor 	 Poor	Very poor.	Very poor.	 Fair 	 Poor 	 Very poor.
Garlic	 Poor 	 Poor 	 Fair 	 Poor 	 Fair 	Very poor.	Very poor.	 Fair 	 Poor 	 Very poor.
102E: Waiska	 Very poor.	 Poor 	 Fair 	 Poor	 Fair 	 Very poor.	 Very poor.	 Poor 	 Poor 	 Very poor.
Garlic	 Very poor.	 Poor 	 Fair 	 Poor 	 Fair 	Very poor.	Very poor.	 Poor 	 Poor 	 Very poor.
102F: Waiska	 Very poor.	 Poor 	 Fair 	 Poor	 Fair 	 Very poor.	 Very poor.	 Poor	 Poor 	 Very poor.
Garlic	 Very poor.	 Poor 	Fair	Poor	 Fair 	Very poor.	Very poor.	Poor	 Poor 	 Very poor.
110B: Shelldrake	 Poor	 Poor	 Poor	 Fair 	 Fair 	 Very poor.	 Very poor.	 Poor	 Fair 	 Very poor.
Croswell	 Poor 	 Poor 	 Good 	 Fair 	 Poor 	Very poor.	Very poor.	 Poor 	 Very poor.	 Very poor.
111B: Deer Park	 Very poor.	 Very poor.	 Poor 	 Poor 	 Poor 	Very poor.	Very poor.	 Very poor.	 Very poor.	 Very poor.
111D: Deer Park	 Very poor.	 Very poor.	 Poor 	 Poor 	 Poor 	Very poor.	Very poor.	 Very poor.	 Very poor.	 Very poor.
111E: Deer Park	 Very poor.	 Very poor.	 Poor	 Poor	 Poor 	Very poor.	Very poor.	 Poor	 Very poor.	 Very poor.
111F: Deer Park	 Very poor.	 Very poor.	 Poor 	 Poor 	 Poor 	 Very poor.	 Very poor.	 Very poor.	 Very poor. 	 Very poor.

Table 10.--Wildlife Habitat--Continued

		P	otential	for habit	at elemen	its		Potentia	l as habi	tat for
Map symbol			Wild				1			
and soil name	Grain and seed crops	Grasses and legumes	herba- ceous plants	Hardwood trees	Conif- erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	
112C:										
Deer Park	Very poor.	Very poor.	Poor	Poor	 Poor 	Very poor.	Very poor.	Poor	 Fair 	 Very poor.
Croswell	 Poor 	Poor	 Good 	 Fair 	 Good 	Very poor.	Very poor.	Fair	 Fair 	 Poor.
113C:		 			 				 	l I
Rubicon	Very poor.	Very poor.	Poor	Fair	Fair 	Very	Very poor.	Poor	 Fair 	Very poor.
Croswell	 Poor 	Poor	Good	Fair	 Good 	Very poor.	Very poor.	Fair	 Fair 	Very poor.
120B: Garlic	 Poor 	 Poor 	 Fair 	 Poor 	 Fair 	 Very poor.	 Very poor.	 Fair 	 Poor 	 Very poor.
120D: Garlic	 Poor	 Poor	 Fair 	 Poor	 Fair 	 Very poor.	 Very poor.	 Fair 	 Poor 	 Very poor.
120E: Garlic	 Very poor.	 Poor 	 Fair 	 Poor	 Fair 	 Very poor.	 Very poor.	 Poor	 Poor 	 Very poor.
125A: Croswell	 Poor 	 Poor 	 Good	 Fair	 Good 	 Poor	 Very poor.	 Fair 	 Fair 	 Very poor.
Au Gres	 Poor 	 Poor 	 Good	 Good 	 Fair 	 Poor	 Poor 	 Fair	 Fair 	 Poor.
126B:	İ	İ	į	İ	į	į	İ	İ	İ	İ
Au Gres	Poor	Poor	Good	Fair	Good	Poor	Poor	Fair	Fair	Poor.
Deford	Very poor.	Poor	Poor	Poor	 Poor 	 Fair 	Good	Poor	 Very poor.	 Fair.
Croswell	 Poor 	 Poor 	 Fair 	Fair	 Good 	Poor	Very poor.	 Fair 	 Fair 	 Very poor.
127A:	į	į	į	į	į	į	į	į	į	į
Au Gres	Poor	Poor	Good	Fair	Good	Poor	Poor	Fair	Fair	Poor.
Kinross	Very poor.	Poor 	Very poor.	Poor	Poor 	Good	Good 	Poor	 Very poor.	Good.
130C:	İ	İ	į	İ	İ	İ	İ	į	İ	İ
Garlic	Poor 	Poor 	Fair 	Poor	Fair 	Very poor.	Very poor.	Fair 	Poor 	Very poor.
Alcona	Fair	Good	Good	Good	 Good 	Very poor.	Very	Good	 Good 	Very poor.
130E:					! 			1	 	!
Garlic	Poor	Poor	Fair	Poor	Fair 	Very poor.	Very poor.	Poor	Poor 	Very poor.
Alcona	Very poor.	Poor	Good	Good	 Good 	Very poor.	Very poor.	Fair	 Good 	 Very poor.

Table 10.--Wildlife Habitat--Continued

		P		for habit	at elemen	its		Potentia	l as habi	tat for
Map symbol and soil name	Grain and seed crops	Grasses and	Wild herba-ceous plants	 Hardwood trees	Conif-erous	 Wetland plants	 Shallow water areas	 Openland wildlife 	 Woodland wildlife 	
	İ	ĺ		İ	İ	İ	İ	İ	İ	İ
133C: Keweenaw	 Fair 	 Fair 	 Good 	 Good 	 Good 	 Very poor.	 Very poor.	 Fair 	 Good 	 Very poor.
Garlic	 Poor 	 Poor 	 Fair 	 Poor 	 Fair 	Very poor.	Very poor.	 Fair 	 Poor 	 Very poor.
133E:	 	 	 		 		1		 	
Keweenaw	Very poor.	Fair 	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Garlic	 Very poor.	 Poor 	Fair	Poor	 Fair 	Very poor.	Very	Poor	 Poor 	 Very poor.
133F:	 	 			 				 	
Keweenaw	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Garlic	 Very poor.	 Poor 	 Fair 	Poor	 Fair 	Very poor.	Very poor.	Poor	 Poor 	 Very poor.
136B:	İ	ĺ		İ			İ	İ		
Borgstrom	Poor	Poor	Good 	Fair 	Good 	Poor	Very poor.	Fair 	Fair 	Very poor.
Ingalls	 Poor 	 Fair 	 Good 	 Fair 	 Good 	 Poor	 Poor	 Fair 	 Fair 	 Poor.
142C: Wallace	 Decem	 Decem		 Fair				 Fair	 Fair	
wallace		Poor 	Good 		Good 	Very poor.	Very poor.		Fair 	Very poor.
Rubicon	Very poor.	Very poor.	Fair 	Fair	Fair 	Very poor.	Very poor.	Poor	 Fair 	Very poor.
142F:	 				 					
Wallace	Very poor.	Poor	Good 	Fair 	Good 	Very poor.	Very poor.	Fair 	Fair 	Very poor.
Rubicon	 Very poor.	 Very poor.	 Fair 	Fair	 Fair 	Very poor.	Very poor.	Poor	 Fair 	 Very poor.
155C:	İ	İ		İ		İ	İ	İ	İ	
Montreal	Very poor.	Very poor.	Very poor.	Good 	Good 	Very poor.	Very poor.	Very poor.	Good 	Very poor.
Paavola	Very poor.	Very poor.	Very poor.	Fair	 Good 	Very poor.	Very poor.	Very	 Fair 	Very poor.
Waiska	 Very poor.	 Very poor.	Very poor.	Poor	 Fair 	Very poor.	Very poor.	Very poor.	 Poor 	 Very poor.
155E:	 	[[I I	
Montreal	Very poor.	Very poor.	Very poor.	Good	 Good 	Very poor.	Very poor.	Very	 Good 	Very poor.
Paavola	 Very poor.	 Very poor.	 Very poor.	 Fair 	 Good 	Very poor.	Very poor.	Very poor.	 Fair 	 Very poor.
Waiska	 Very poor.	 Very poor.	 Very poor.	 Poor 	 Fair 	 Very poor.	 Very poor.	 Very poor.	 Poor 	 Very poor.

Table 10.--Wildlife Habitat--Continued

	ļ	P		for habit	at elemen	ts		Potentia	l as habi	tat for
Map symbol and soil name	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	 Hardwood trees	Conif- erous plants	 Wetland plants 	Shallow water areas		 Woodland wildlife 	
158A: Arnheim	 Very poor.	 Fair 	 Fair 	 Fair 	 Fair 	 Good	 Good	 Fair 	 Fair 	 Good.
Sturgeon	 Fair 	 Fair 	 Good 	 Good	 Good 	 Fair	 Fair 	 Fair	 Good 	 Fair.
Pelkie	 Poor 	 Poor 	 Good 	Good	 Good 	Poor	Very poor.	Fair	 Good 	 Very poor.
161F: Trimountain	 Very poor.	 Very poor.	 Very poor.	 Good 	 Good 	 Very poor.	 Very poor.	 Very poor.	 Good 	 Very poor.
Lac La Belle	 Very poor.	 Very poor.	Very poor.	Very poor.	 Poor 	Very poor.	Very poor.	Very poor.	 Very poor.	 Very poor.
Waiska	 Very poor.	 Very poor.	 Very poor.	 Poor 	 Fair 	Very poor.	Very poor.	Very	 Poor 	 Very poor.
162F: Trimountain	 Very poor.	 Very poor.	 Very poor.	 Good 	 Good 	 Very poor.	 Very poor.	 Very poor.	 Good 	 Very poor.
Lac La Belle	 Very poor.	 Very poor.	 Very poor.	Very poor.	 Poor 	Very poor.	Very poor.	Very poor.	 Very poor.	 Very poor.
Michigamme	 Very poor.	 Very poor.	 Very poor.	 Poor 	 Fair 	Very poor.	Very poor.	Very poor.	 Poor 	 Very poor.
166B:	 				 					
Gratiot	Very poor.	Poor 	Very poor.	Fair 	Good 	Poor 	Poor 	Very poor.	Fair 	Poor.
Sabattis	Very poor.	Poor	Very poor.	Poor	Poor	Poor	Poor	Poor	Very poor.	Poor.
173C:	 				 					
Montreal	Very poor.	Very poor.	Very poor.	Good 	Good 	Very poor.	Very poor.	Very poor.	Good 	Very poor.
Paavola	 Very poor.	Very poor.	Very poor.	Fair	Good	Very poor.	Very poor.	Very	 Fair 	Very poor.
Dishno	 Very poor.	 Very poor.	 Very poor.	 Fair 	 Good 	Very poor.	Very poor.	Very poor.	 Fair 	 Very poor.
173E:	 	 			 	 	 		 	
Montreal	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Very poor.	Good	Very poor.
Paavola	 Very poor.	 Very poor.	 Very poor.	 Fair 	 Good 	Very poor.	Very poor.	Very poor.	 Fair 	 Very poor.
Dishno	 Very poor.	 Very poor.	 Very poor.	 Fair 	 Good 	 Very poor.	 Very poor.	Very poor.	 Fair 	 Very poor.
174B: Montreal	 Very poor.	 Very poor.	 Very poor. 	 Good 	 Good 	 Very poor.	 Very poor.	 Very poor.	 Good 	 Very poor.

Table 10.--Wildlife Habitat--Continued

		P	otential	for habita	at elemen	ts		Potentia	l as habi	tat for
Map symbol			Wild					1	 	l
and soil name	Grain	Grasses	herba-	Hardwood	Conif-	Wetland	Shallow	Openland	Woodland	Wetland
	and seed		ceous	trees	erous	plants	water		wildlife	
	crops	legumes	plants		plants		areas		ĺ	
	ĺ		ĺ	ĺ	ĺ			ĺ		
174B:	İ	į	į	į	j	İ	į	į	j	j
Dishno	Very	Poor	Good	Good	Good	Very	Very	Poor	Good	Very
	poor.					poor.	poor.			poor.
Gratiot	Very	Very	Very	Fair	Good	Very	Very	Very	Fair	Very
	poor.	poor.	poor.			poor.	poor.	poor.		poor.
	!	!	!			!	!	!	!	
177A:								!		
Assinins	Poor	Poor	Good	Good	Good	Poor	Poor	Fair	Good	Poor.
1020.					 				 	
183C: Munising	 Book	 Fair	 Very	Good	 Good	Very	 Very	 Poor	 Good	 Very
Munising	FOOT	Fair	poor.	J	l Good	poor.	poor.	FOOT	GOOG	: -
			1001.	I I	 	poor.	poor.		! !	poor.
Abbaye	Poor	Fair	Very	Good	Good	Very	Very	Poor	Good	Very
			poor.			poor.	poor.			poor.
Yalmer	Poor	Fair	Very	Fair	Good	Very	Very	Poor	Fair	Very
	İ	į	poor.	İ	İ	poor.	poor.	İ	İ	poor.
	İ	į	į	į	j	İ	į	į	j	
183E:										
Munising	Poor	Fair	Very	Good	Good	Very	Very	Poor	Good	Very
			poor.			poor.	poor.			poor.
Abbaye	Poor	Fair	Very	Good	Good	Very	Very	Poor	Good	Very
	!	!	poor.			poor.	poor.	!	!	poor.
_			!					!		
Yalmer	Poor	Fair	Very	Fair	Good	Very	Very	Poor	Fair	Very
			poor.			poor.	poor.			poor.
1040	 								 	
184C: Munising	 Book	 Fair	 Very	Good	 Good	Very	 Very	 Poor	 Good	 Very
Muniping	1001		poor.	GOOG	0000	poor.	poor.		0000	poor.
	l I		1001.	 	 	poor.	1001.	 	 	1001.
Yalmer	Poor	Fair	Very	Fair	Good	Very	Very	Poor	Fair	Very
	i		poor.	İ		poor.	poor.	i	İ	poor.
		i		İ	<u>'</u>	i	i -	İ	İ	
184E:	İ	į	į	į	j	İ	į	į	j	j
Munising	Poor	Fair	Very	Good	Good	Very	Very	Poor	Good	Very
			poor.			poor.	poor.			poor.
Yalmer	Poor	Fair	Very	Fair	Good	Very	Very	Poor	Fair	Very
			poor.			poor.	poor.			poor.
185B:						1				
Munising	Fair	Good	Good	Good	Good	Very	Very	Good	Good	Very
	l I	1		I I		poor.	poor.			poor.
Skanee	Poor	Poor	Good	 Fair	 Good	Poor	17077	 Fair	 Fair	Poor.
Skallee	FOOT		6000	Fair	G OOQ	FOOT	Very poor.	Fall	Fall	FOOI.
	! 				! 		1001.		 	
185C:										
Munising	Poor	Fair	Good	Good	Good	Very	Very	Fair	Good	 Very
· · · J	İ	i	İ			poor.	poor.	i		poor.
	İ	i	į	į	į		i	į	İ	i
Skanee	Poor	Fair	Good	Fair	Good	Poor	Poor	Fair	Fair	Poor.
		İ	İ	İ		İ	İ	İ		
187A:										
Skanee	Poor	Fair	Good	Fair	Good	Fair	Fair	Fair	Fair	Fair.

Table 10.--Wildlife Habitat--Continued

	Ī	P	otential	for habit	at elemen	ts		Potentia	l as habi	tat for
Map symbol and soil name	Grain and seed crops	Grasses and	Wild herba- ceous plants	 Hardwood trees	Conif-erous	 Wetland plants 	 Shallow water areas	 Openland wildlife 	 Woodland wildlife 	
187A: Gay	 	 Poor	 Fair	 Fair 	 Fair	 Good	 Fair 	 Poor	 Fair	 Fair.
192B:										
Nipissing	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Very poor.	Good	Very poor.
Arcadian	Very poor.	 Very poor.	Very poor.	 Fair 	 Fair 	Very poor.	Very poor.	Very poor.	 Fair 	Very poor.
Rock outcrop.	 	 	 	 	 	 	 	 	 	
194B: Copper Harbor	 Poor 	 Poor	 Poor 	 Fair 	 Good 	 Poor 	 Very poor.	 Poor 	 Fair 	 Very poor.
195B: Copper Harbor	 Poor 	 Poor 	 Poor 	 Fair 	 Good 	 Poor 	 Very poor.	 Poor 	 Fair 	 Very poor.
Bete Grise	 Poor 	 Poor 	 Poor 	 Fair 	 Good 	 Poor 	 Poor 	 Poor 	 Fair 	 Poor.
196B: Bete Grise	 Poor	 Poor	 Poor	 Fair	 Good	 Poor	 Poor	 Poor	 Fair	Poor.
Tawas	Very poor.	 Poor 	 Very poor.	 Poor 	 Poor 	 Good 	 Good 	 Poor 	 Very poor.	 Good.
301: Udorthents	 Poor 	 Poor 	 Poor 	 Poor 	 Poor 	 Very poor.	 Very poor.	 Very poor.	 Very poor.	 Very poor.
Udipsamments	 Poor 	 Poor 	 Poor 	 Poor 	 Poor 	 Very poor.	 Very poor.	 Very poor.	 Very poor.	 Very poor.
302: Histosols	 Very poor.	 Very poor.	 Very poor.	 Very poor.	 Very poor.	 Good 	 Good 	 Very poor.	 Very poor.	 Good.
Aquents	Very poor.	 Very poor.	 Very poor.	Very poor.	 Very poor.	 Good 	 Good 	 Very poor.	 Very poor.	 Good.
303:	 	 	 	 	 	 	 	 	 	
Aquents	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
Dumps, stamp sand	Very poor.	 Very poor.	 Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	 Very poor.	 Very poor.
310. Dumps, mine	 	 	 	 	 	 	 	 	 	
311: Dumps, stamp sand	 Very poor.	 Very poor. 	 Very poor. 	 Very poor.	 Very poor. 	 Very poor.	 Very poor.	 Very poor. 	 Very poor. 	 Very poor.
312. Pits	 	 	 	 	 	 	 	 	 	

Table 10.--Wildlife Habitat--Continued

		Po	otential	for habita	t elemen	its		Potentia	l as habitat for
Map symbol			Wild			1		I	
and soil name	Grain	Grasses	herba-	Hardwood	Conif-	Wetland	Shallow	Openland	Woodland Wetland
	and seed	and	ceous	trees	erous	plants	water	wildlife	wildlife wildlife
	crops	legumes	plants		plants		areas		
						1		1	
313.	İ	ĺ		j j		İ	Ì	İ	İ
Dumps, sawdust	İ	ĺ		j j		İ	Ì	İ	İ
	İ	ĺ		j j		İ	Ì	İ	İ
W.	į	ĺ		į į		İ	İ	İ	į į
Water				i i					į į
				i i		1		1	i i

Table 11a.--Building Site Development

(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. "Not rated" indicates that data are not available or that no rating is applicable. See text for further explanation of ratings in this table)

Map symbol and soil name	Dwellings without basements	out	Dwellings with basements	L	Small commercial buildings		
	Rating class and	Value	Rating class and	Value		Valu	
	limiting features		limiting features	1	limiting features	<u> </u>	
2:	 		 		 		
	 Very limited		 Very limited		 Very limited	i	
	Subsidence	1.00	Subsidence	1.00	Subsidence	1.00	
	Depth to	1.00	Depth to	1.00	Depth to	1.00	
	saturated zone	i	saturated zone	İ	saturated zone	i	
	Organic matter	1.00	Organic matter	1.00	Organic matter	1.00	
	content		content		content		
	Ponding	1.00	Ponding	1.00	Ponding	1.00	
_						ļ	
Tawas	Very limited		Very limited		Very limited		
	Subsidence Depth to	1.00	Subsidence Depth to	1.00	Subsidence Depth to	1.00	
	saturated zone	1	saturated zone	1.00	saturated zone	1	
	Organic matter	1.00	Ponding	1.00	Organic matter	1.00	
	content		I Onding		content	1	
	Ponding	1.00		i	Ponding	1.00	
		İ		i	İ	i	
3:	İ	j	j	į	İ	į	
Dawson	Very limited		Very limited		Very limited		
	Subsidence	1.00	Subsidence	1.00	Subsidence	1.00	
	Depth to	1.00	Depth to	1.00	Depth to	1.00	
	saturated zone		saturated zone		saturated zone	!	
	Organic matter	1.00	Ponding	1.00	Organic matter	1.00	
	content				content		
	Ponding	1.00	 		Ponding	1.00	
Loxley	 Very limited		 Very limited		 Very limited	1	
1	Subsidence	1.00	Subsidence	1.00	Subsidence	1.00	
	Depth to	1.00	Depth to	1.00	Depth to	1.00	
	saturated zone	İ	saturated zone	i	saturated zone	i	
	Organic matter	1.00	Organic matter	1.00	Organic matter	1.00	
	content		content		content		
	Ponding	1.00	Ponding	1.00	Ponding	1.00	
						!	
6:						1	
Skandia			Very limited		Very limited		
	Subsidence	1.00	Subsidence	1.00	Subsidence	1.00	
	Depth to saturated zone	11.00	Depth to saturated zone	1.00	Depth to saturated zone	11.00	
	Organic matter	1.00	Organic matter	1.00	Organic matter	1.00	
	content	1	content	1	content	1	
	Ponding	1.00	Depth to hard	1.00	Ponding	1.00	
	Depth to hard	0.01	bedrock	i	Depth to hard	0.01	
	bedrock	İ	Ponding	1.00	bedrock	İ	
Burt			Very limited		Very limited		
	Depth to	1.00		1.00	Depth to	1.00	
	saturated zone		saturated zone		saturated zone	ļ	
	Depth to hard	1.00	Depth to hard	1.00	Depth to hard	1.00	
	bedrock		bedrock		bedrock		
	Ponding	1.00	Ponding	1.00	Ponding	1.00	

Table 11a.--Building Site Development--Continued

Map symbol and soil name	Dwellings witho basements	ut	Dwellings with basements		Small commercial buildings 		
	Rating class and	Value	Rating class and	Value	Rating class and	Value	
	limiting features	<u> </u>	limiting features	1	limiting features	1	
10:	 						
Cathro	Very limited	İ	Very limited	İ	Very limited	į	
	Subsidence	1.00	Subsidence	1.00	Subsidence	1.00	
	Depth to	1.00	Depth to	1.00	Depth to	1.00	
	saturated zone		saturated zone		saturated zone		
	Organic matter	1.00	Ponding	1.00	Organic matter	1.00	
	Ponding	1.00	 		content Ponding	1.00	
	ronaing	1		i	ronaring	1	
Sabattis	 Very limited	i	 Very limited	i	 Very limited	i	
	Depth to	1.00	Depth to	1.00	Depth to	1.00	
	saturated zone		saturated zone		saturated zone		
	Ponding	1.00	Ponding	1.00	Ponding	1.00	
10							
13: Tawas	 Very limited		 Very limited		 Very limited		
lawas	Subsidence	1.00	Subsidence	1.00	Subsidence	1.00	
	Depth to	1.00	Depth to	1.00	Depth to	1.00	
	saturated zone		saturated zone		saturated zone		
	Organic matter	1.00	Ponding	1.00	Organic matter	1.00	
	content	į		į	content	j	
	Ponding	1.00			Ponding	1.00	
				ļ			
Deford			Very limited		Very limited		
	Ponding Depth to	1.00	Ponding Depth to	1.00	Ponding Depth to	1.00	
	saturated zone	1	saturated zone	1	saturated zone	1	
		i		i		i	
15B:		i		į		i	
Dawson	Very limited		Very limited		Very limited		
	Subsidence	1.00	Subsidence	1.00	Subsidence	1.00	
	Depth to	1.00	Depth to	1.00	Depth to	1.00	
	saturated zone		saturated zone		saturated zone		
	Organic matter	1.00	Ponding	1.00	Organic matter	1.00	
	Ponding	1.00	 		Ponding	1.00	
				i			
Croswell	Somewhat limited	i	 Very limited	i	Somewhat limited	i	
	Depth to	0.39	Depth to	1.00	Depth to	0.39	
	saturated zone	[saturated zone	ļ	saturated zone		
208.			 				
20E: Rock outcrop	 Not rated		 Not rated		 Not rated		
ROCK OUTCIOP				l		i	
21G:	i İ	i		i		i	
Rock outcrop	Not rated	İ	Not rated	ĺ	Not rated	İ	
		[
Arcadian	: -		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	
	Doubler		Doubler		Dourock		
39A:	İ	i		İ		i	
Betsy Bay	Very limited	İ	 Very limited	į	Very limited	İ	
	Depth to	1.00	Depth to	1.00	Depth to	1.00	
	saturated zone		saturated zone		saturated zone		
		1	Depth to hard bedrock	0.93			

Table 11a.--Building Site Development--Continued

Map symbol and soil name	Dwellings witho basements	ut	Dwellings with basements		Small commercial buildings		
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	
39A: Burt	 Very limited	 	 Very limited	 	 Very limited		
	Depth to saturated zone Depth to hard	1.00 1.00	Depth to saturated zone Depth to hard	1.00 1.00	Depth to saturated zone Depth to hard	1.00 1.00	
	bedrock Ponding 	 1.00 	bedrock Ponding 	 1.00 	bedrock Ponding 	1.00	
Deford	 Very limited Ponding Depth to	 1.00 1.00	 Very limited Ponding Depth to	 1.00 1.00	 Very limited Ponding Depth to	 1.00 1.00	
47A:	saturated zone		saturated zone		saturated zone		
Zeba	 Very limited Depth to saturated zone	1.00	 Very limited Depth to	1.00	 Very limited Depth to	1.00	
	saturated zone Depth to hard bedrock	0.71	saturated zone Depth to hard bedrock	1.00	saturated zone Depth to hard bedrock	0.71	
Jacobsville	 Very limited Depth to saturated zone	1.00	 Very limited Depth to saturated zone	1.00	 Very limited Depth to saturated zone	1.00	
	Ponding Depth to hard bedrock	 1.00 0.97 	Depth to hard bedrock Ponding	 1.00 1.00	Ponding Depth to hard bedrock	 1.00 0.97	
51C: Arcadian	 Verv limited		 Very limited		 Very limited		
	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock Slope	1.00	
Nipissing	 Somewhat limited Large stones Depth to hard bedrock	 0.77 0.01	 Very limited Depth to hard bedrock Large stones	 1.00 0.77	 Somewhat limited Slope Large stones Depth to hard	 0.88 0.77 0.01	
	 				bedrock		
Rock outcrop 51E:	Not rated 	 	Not rated 	 	Not rated 		
Arcadian	Very limited Depth to hard bedrock Slope	 1.00 1.00	Very limited Depth to hard bedrock Slope	 1.00 1.00	Very limited Slope Depth to hard bedrock	 1.00 1.00	
Nipissing	Slope	1.00	 Very limited Depth to hard	 1.00	 Very limited Slope	1.00	
	Large stones Depth to hard bedrock	0.77	bedrock Slope Large stones	1.00	Large stones Depth to hard bedrock	0.77	
Rock outcrop	 Not rated 	 	 Not rated 	 	 Not rated 		
52C: Arcadian	 Very limited Depth to hard bedrock	 1.00 	 Very limited Depth to hard bedrock	 1.00	 Very limited Depth to hard bedrock Slope	 1.00 0.88	

Table 11a.--Building Site Development--Continued

Map symbol and soil name	 Dwellings witho basements 	ut	 Dwellings with basements 		Small commercial buildings		
	Rating class and	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	
52C: Dishno	 Very limited Depth to saturated zone 	 1.00 	 Very limited Depth to saturated zone Depth to hard bedrock	 1.00 0.96	Very limited Depth to saturated zone Slope	 1.00 0.88	
Rock outcrop	Not rated	į Į	Not rated	į Į	 Not rated	Ì	
52E: Arcadian	 Very limited Depth to hard bedrock Slope	 1.00 1.00	 Very limited Depth to hard bedrock Slope	 1.00 1.00	 Very limited Slope Depth to hard bedrock	 1.00 1.00	
Dishno	 Very limited Depth to saturated zone Slope 	 1.00 1.00 	 Very limited Depth to saturated zone Slope Depth to hard bedrock	 1.00 1.00 0.96	Very limited Slope Depth to saturated zone	 1.00 1.00	
Rock outcrop	 Not rated 	 	 Not rated 	 	 Not rated 	 	
53E: Arcadian	 Very limited Depth to hard bedrock Slope	 1.00 1.00	Very limited Depth to hard bedrock Slope	 1.00 1.00	 Very limited Slope Depth to hard bedrock	 1.00 1.00	
Michigamme	Very limited Slope Depth to hard bedrock	 1.00 0.46	 Very limited Depth to hard bedrock Slope	 1.00 1.00	Depth to hard	 1.00 0.46	
Rock outcrop	 Not rated 	 	 Not rated 	 	 Not rated 		
53F: Arcadian	 Very limited Slope Depth to hard bedrock	 1.00 1.00	 Very limited Slope Depth to hard bedrock	 - 1.00 1.00	 Very limited Slope Depth to hard bedrock	 1.00 1.00	
Michigamme	 Very limited Slope Depth to hard bedrock	 1.00 0.46 	 Very limited Slope Depth to hard bedrock	 1.00 1.00 	 Very limited Slope Depth to hard bedrock	 1.00 0.46	
Rock outcrop	 Not rated 		 Not rated 	 	 Not rated 		
55B: Chocolay	 Very limited Depth to saturated zone Depth to hard bedrock	 1.00 0.99 	 Very limited Depth to saturated zone Depth to hard bedrock	 1.00 1.00 	saturated zone	 1.00 0.99 0.12	
100B: Waiska	 Not limited 	 	 Not limited 	 	 Not limited 	 	

Table 11a.--Building Site Development--Continued

Map symbol and soil name	 Dwellings witho basements	ut	 Dwellings with basements		Small commercial buildings		
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	
100D: Waiska		0.63	 Somewhat limited	0.63	Very limited Slope	1.00	
102C: Waiska	 Not limited 	 	 Not limited 	 	 Somewhat limited Slope	 0.88	
Garlic	 Not limited 	 	 Not limited 	 	 Somewhat limited Slope	0.88	
102E: Waiska	 Very limited Slope	 1.00	 Very limited Slope	 1.00	 Very limited Slope	1.00	
Garlic	 Very limited Slope 	 1.00	 Very limited Slope 	 1.00	 Very limited Slope 	1.00	
102F: Waiska	 Very limited Slope	 1.00	 Very limited Slope	 1.00	 Very limited Slope	1.00	
Garlic	 Very limited Slope	 1.00	 Very limited Slope	 1.00	 Very limited Slope	1.00	
110B: Shelldrake	 Not limited 	 	 Not limited 	 	 Somewhat limited Slope	0.12	
Croswell	 Somewhat limited Depth to saturated zone	 0.39 	 Very limited Depth to saturated zone	 1.00 	 Somewhat limited Depth to saturated zone	0.39	
111B: Deer Park	 Not limited 	 	 Not limited 	 	 Not limited 	 	
111D: Deer Park	 Somewhat limited Slope 	 0.63	 Somewhat limited Slope 	 0.63	 Very limited Slope 	 1.00	
111E: Deer Park	 Very limited Slope 	 1.00 	 Very limited Slope 	 1.00 	 Very limited Slope 	 1.00	
111F: Deer Park	 Very limited Slope	 1.00	 Very limited Slope	 1.00	 Very limited Slope	1.00	
112C: Deer Park	 Somewhat limited Slope	 0.01	 Somewhat limited Slope	 0.01	 Very limited Slope	1.00	
Croswell	Somewhat limited Depth to saturated zone	 0.39 	 Very limited Depth to saturated zone	 1.00 	 Somewhat limited Depth to saturated zone	0.39	
113C: Rubicon	 Somewhat limited Slope 	 0.01 	 Somewhat limited Slope 	 0.01 	 Very limited Slope 	 1.00	

Table 11a.--Building Site Development--Continued

Map symbol and soil name	 Dwellings witho basements	ut	 Dwellings with basements		Small commercial buildings		
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	
113C: Croswell	 Somewhat limited Depth to saturated zone	 0.39 	 Very limited Depth to saturated zone	 1.00	 Somewhat limited Depth to saturated zone		
120B: Garlic	 Not limited	 	 Not limited	 	 Not limited		
120D: Garlic	 Somewhat limited Slope 	 0.63	 Somewhat limited Slope 	 0.63	 Very limited Slope	1.00	
120E: Garlic	 Very limited Slope 	 1.00	 Very limited Slope 	 1.00	 Very limited Slope 	1.00	
125A: Croswell	 Somewhat limited Depth to saturated zone	 0.39 	 Very limited Depth to saturated zone	 1.00	 Somewhat limited Depth to saturated zone	0.39	
Au Gres	 Very limited Depth to saturated zone	 1.00 	 Very limited Depth to saturated zone	 1.00 	 Very limited Depth to saturated zone	1.00	
126B: Au Gres	 Very limited Depth to saturated zone	 1.00	 Very limited Depth to saturated zone	 1.00	 Very limited Depth to saturated zone	1.00	
Deford	 Very limited Ponding Depth to saturated zone	 1.00 1.00	 Very limited Ponding Depth to saturated zone	 1.00 1.00	 Very limited Ponding Depth to saturated zone	 1.00 1.00	
Croswell	 Somewhat limited Depth to saturated zone	 0.39 	 Very limited Depth to saturated zone	 1.00 	 Somewhat limited Depth to saturated zone Slope	0.39	
127A: Au Gres	1 7	 1.00	 Very limited Depth to saturated zone	 1.00	 Very limited Depth to saturated zone	1.00	
Kinross	 Very limited Depth to saturated zone Ponding	 1.00 1.00	 Very limited Depth to saturated zone Ponding	 1.00 1.00	 Very limited Depth to saturated zone Ponding	1.00	
130C: Garlic	 Not limited 	 	 Not limited 	 	 Somewhat limited Slope	0.88	
Alcona	 Not limited 	 	 Not limited 	 	 Somewhat limited Slope 	0.88	

Table 11a.--Building Site Development--Continued

Map symbol and soil name	 Dwellings withon basements	ut	 Dwellings with basements		Small commercial buildings		
	Rating class and	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	
130E: Garlic	 Very limited Slope	 1.00	 Very limited Slope	 1.00	 Very limited Slope	 1.00	
Alcona	 Very limited Slope	 1.00	 Very limited Slope	 1.00	 Very limited Slope	1.00	
133C: Keweenaw	 Not limited 	 	 Not limited 	 	 Somewhat limited Slope	0.88	
Garlic	 Not limited 	 	 Not limited 	 	 Somewhat limited Slope	0.88	
133E:	 	 	 		 		
Keweenaw	 Very limited Slope	 1.00	 Very limited Slope	 1.00	 Very limited Slope	1.00	
Garlic	 Very limited Slope	 1.00	 Very limited Slope	1.00	 Very limited Slope	1.00	
133F: Keweenaw	 Very limited	 	 Very limited	 	 Very limited	<u> </u> 	
	Slope	1.00	Slope	1.00	Slope	1.00	
Garlic	 Very limited Slope 	 1.00 	 Very limited Slope 	 1.00	 Very limited Slope 	 1.00	
136B:		i		i		i	
Borgstrom	Somewhat limited Depth to thin cemented pan	 0.50	Very limited Depth to saturated zone	 1.00	Somewhat limited Depth to thin cemented pan	1.00	
	Depth to saturated zone	0.39	!	1.00	Depth to saturated zone	0.39	
Ingalls	 Very limited Depth to saturated zone	 1.00 	 Very limited Depth to saturated zone	 1.00 	 Very limited Depth to saturated zone 	 1.00 	
142C: Wallace	Somewhat limited Depth to thick cemented pan Slope	 0.97 0.01	 Very limited Depth to thick cemented pan Slope	 1.00 0.01	 Very limited Slope Depth to thick cemented pan	 1.00 0.97	
Rubicon	 Somewhat limited Slope	 0.01	 Somewhat limited Slope	 0.01	 Very limited Slope	1.00	
142F:	[[
Wallace	Very limited Slope Depth to thick cemented pan	 1.00 0.97 	Very limited Depth to thick cemented pan Slope	 1.00 1.00	Very limited Slope Depth to thick cemented pan	 1.00 0.97	
Rubicon	 Very limited Slope 	 1.00 	 Very limited Slope 	 1.00 	 Very limited Slope 	 1.00	

Table 11a.--Building Site Development--Continued

Map symbol and soil name	Dwellings witho	ut	Dwellings with basements		Small commercial buildings		
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	
1550							
155C: Montreal	 Very limited Depth to saturated zone	1.00	 Very limited Depth to saturated zone	 1.00	 Very limited Depth to saturated zone	1.00	
	Depth to thick cemented pan Large stones	0.71	Depth to thick cemented pan Large stones	1.00	Slope Depth to thick cemented pan	0.88	
					Large stones	0.03	
Paavola	 Very limited Depth to saturated zone Depth to hard	 1.00 0.84	Very limited Depth to saturated zone Depth to hard	 1.00 1.00	 Very limited Depth to saturated zone Slope	 1.00 0.88	
	bedrock		bedrock 	 	Depth to hard bedrock	0.84	
Waiska	 Not limited 		 Not limited 	 	 Somewhat limited Slope	 0.88	
155E:							
Montreal	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Slope Depth to	 1.00 1.00	
	Slope Depth to thick	1.00	Depth to thick cemented pan	1.00	saturated zone Depth to thick	0.71	
	cemented pan Large stones	0.03	Slope Large stones	1.00	cemented pan Large stones	0.03	
Paavola	 Very limited		 Very limited		 Very limited		
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Slope Depth to	1.00	
	Slope	1.00	Slope Depth to thin cemented pan	1.00	saturated zone		
Waiska	 Very limited		 Very limited		 Very limited		
	Slope	1.00 	Slope 	1.00 	Slope 	1.00	
158A: Arnheim	 Verv 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	
Sturgeon	 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	
Pelkie	-		 Very limited		 Very limited		
	Flooding Depth to	1.00	Flooding Depth to	1.00 1.00	Flooding Depth to	1.00	
	saturated zone		bepth to saturated zone 		saturated zone		
161F:							
Trimountain	: -		Very limited	1 00	Very limited	1.00	
	Slope Depth to thick	1.00	Slope Depth to thick	1.00	Slope Depth to thick	1.00	
	cemented pan		cemented pan		cemented pan		
	Depth to thick cemented pan 	1.00 	Depth to thick cemented pan	1.00 	Depth to thick cemented pan 	1	

Table 11a.--Building Site Development--Continued

Map symbol and soil name	Dwellings witho	ut	Dwellings with basements		Small commercia buildings	1
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
161F: Lac La Belle	 Very limited Slope Depth to thick cemented pan	 1.00 0.06	 Very limited Slope Depth to thick cemented pan	 1.00 1.00	 Very limited Slope Depth to thick cemented pan	 1.00 0.06
Waiska	į	1.00	 Very limited	1.00	 - Very limited Slope	1.00
162F: Trimountain	 Very limited Slope Depth to thick cemented pan	 1.00 1.00	 Very limited Slope Depth to thick cemented pan	 1.00 1.00	 Very limited Slope Depth to thick cemented pan	 1.00 1.00
Lac La Belle	 Very limited Slope Depth to thick cemented pan	 1.00 0.06	 Very limited Slope Depth to thick cemented pan	 1.00 1.00	 Very limited Slope Depth to thick cemented pan	 1.00 0.06
Michigamme	 Very limited Slope Depth to hard bedrock	 1.00 0.46	 Very limited Slope Depth to hard bedrock	 1.00 1.00	 Very limited Slope Depth to hard bedrock	 1.00 0.46
166B: Gratiot	 Very limited Depth to saturated zone Depth to thin cemented pan Large stones	 1.00 0.50 0.01	saturated zone Depth to thin cemented pan	 1.00 1.00 0.01	saturated zone Depth to thin cemented pan	 1.00 1.00 0.01
Sabattis	 Very limited Depth to saturated zone Ponding	 1.00 1.00	 Very limited Depth to saturated zone Ponding	 1.00 1.00	 Very limited Depth to saturated zone Ponding	 1.00 1.00
173C: Montreal	 Very limited Depth to saturated zone Depth to thick cemented pan Large stones	 1.00 0.71 0.03	Very limited Depth to saturated zone Depth to thick cemented pan Large stones	 1.00 1.00 0.03	Very limited Depth to saturated zone Slope Depth to thick cemented pan Large stones	 1.00 0.88 0.71
Paavola	 Very limited Depth to saturated zone	 1.00 	Very limited Depth to saturated zone Depth to thin cemented pan	 1.00 0.84	 Very limited Depth to saturated zone Slope	 1.00 0.88
Dishno	 Very limited Depth to saturated zone	 1.00 	 Very limited Depth to saturated zone Depth to hard bedrock	 1.00 0.96	 Very limited Depth to saturated zone Slope	 1.00 0.88

Table 11a.--Building Site Development--Continued

Map symbol and soil name	Dwellings witho	ut	Dwellings with basements		Small commercial buildings	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
	!	ļ.		<u> </u>		ļ
173E: Montreal	 Very limited		 Very limited	l I	 Very limited	
Moncreal	Depth to	1.00	Depth to	1.00	Slope	1.00
	saturated zone		saturated zone		Depth to	1.00
	Slope	1.00	Depth to thick	1.00	saturated zone	i
	Depth to thick	0.71	cemented pan		Depth to thick	0.71
	cemented pan		Slope	1.00	cemented pan	
	Large stones	0.03	Large stones	0.03	Large stones	0.03
Paavola	 Very limited		 Very limited		 Very limited	
	Depth to	1.00	Depth to	1.00	Slope	1.00
	saturated zone	1	saturated zone		Depth to	1.00
	Slope	1.00	Depth to hard	1.00	saturated zone	
	Depth to hard bedrock	0.84	bedrock	11 00	Depth to hard bedrock	0.84
	Dedrock		Slope 	1.00	bedrock	
Dishno	 Very limited	į	 Very limited	į	 Very limited	i
	Depth to	1.00	Depth to	1.00	Slope	1.00
	saturated zone	1	saturated zone		Depth to	1.00
	Slope	1.00	Slope	1.00	saturated zone	
	 		Depth to hard bedrock	0.96	 	
174B:	 			İ	 	i
Montreal	Very limited	į	Very limited	į	Very limited	j
	Depth to	1.00	Depth to	1.00	Depth to	1.00
	saturated zone		saturated zone		saturated zone	
	Depth to thick	0.71	Depth to thick	1.00	Depth to thick	0.71
	cemented pan		cemented pan		cemented pan	
	Large stones	0.03	Large stones	0.03	Slope Large stones	0.50
	j	i		į	İ	i
Dishno	· -	1	Very limited		Very limited	
	Depth to	1.00	Depth to	1.00	Depth to	1.00
	saturated zone		saturated zone Depth to hard	0.96	saturated zone	0.50
			bedrock		Slope 	
Gratiot	Depth to	1.00	Very limited Depth to	1.00	Very limited Depth to	1.00
	saturated zone	1	saturated zone	1	saturated zone	1
	Depth to thin	0.50	Depth to thin	1.00	Depth to thin	1.00
	cemented pan	į	cemented pan	į	cemented pan	į
	Large stones	0.01	Large stones	0.01	Large stones	0.01
177A:	 		 		 	
Assinins	 Very limited	İ	 Very limited	i	 Very limited	i
	Depth to	1.00	Depth to	1.00	Depth to	1.00
	saturated zone		saturated zone		saturated zone	
183C:	 		 		 	
Munising	Very limited	i	 Very limited	İ	 Very limited	i
	Depth to	1.00	Depth to	1.00	Depth to	1.00
	saturated zone	[saturated zone		saturated zone	1
	Depth to thin	0.50	Depth to thin	1.00	Depth to thin	1.00
	cemented pan	1	cemented pan		cemented pan	
	1	1	I	1	Slope	0.88

Table 11a.--Building Site Development--Continued

Map symbol and soil name	Dwellings without basements	out	Dwellings with basements	ı	Small commercia buildings	al
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
183C:			 		 	
Abbaye	Very limited Depth to saturated zone Depth to hard	 1.00 0.46	Very limited Depth to saturated zone Depth to hard	 1.00 1.00	 Very limited Depth to saturated zone Slope	 1.00 0.88
	bedrock		bedrock		Depth to hard bedrock	0.46
Yalmer	Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
	Depth to thick cemented pan 	0.65 	Depth to thick cemented pan 	1.00 	Slope Depth to thick cemented pan 	0.88 0.65
183E:				į		į
Munising	Very limited Depth to	1.00	Very limited Depth to	1.00	Very limited Slope	1.00
	saturated zone		saturated zone	į	Depth to	1.00
	Slope Depth to thin	1.00 0.50	Depth to thin cemented pan	1.00	saturated zone Depth to thin	1.00
	cemented pan		Slope	1.00	cemented pan	
Abbaye	 Very limited		 Very limited		 Very limited	
	Depth to	1.00	Depth to	1.00	Slope	1.00
	saturated zone Slope	1.00	saturated zone Depth to hard	1.00	Depth to saturated zone	1.00
	Depth to hard	0.46	bedrock		Depth to hard	0.46
	bedrock		Slope	1.00	bedrock	İ
Yalmer	 Very limited		 Very limited		 Very limited	
	Depth to	1.00	Depth to	1.00	Slope	1.00
	saturated zone Slope	1.00	saturated zone Depth to thick	1.00	Depth to saturated zone	1.00
	Depth to thick	0.65	cemented pan		Depth to thick	0.65
	cemented pan		Slope	1.00	cemented pan	
184C:						
Munising	Very limited Depth to	1.00	Very limited Depth to	1.00	Very limited Depth to	1.00
	saturated zone		saturated zone		saturated zone	
	Depth to thin cemented pan	0.50	Depth to thin cemented pan 	1.00 	Depth to thin cemented pan	1.00 0.88
Yalmer	 -	į	 Very limited	į	 	į
raimer	Very limited Depth to	1.00	Depth to	1.00	Very limited Depth to	1.00
	saturated zone		saturated zone	į	saturated zone	İ
	Depth to thick cemented pan	0.65	Depth to thick cemented pan	1.00	Slope Depth to thick	0.88
					cemented pan	
184E:	 		 		 	
Munising			 Very limited		 Very limited	İ
	Depth to	1.00	Depth to	1.00	Slope	1.00
	saturated zone Slope	1.00	saturated zone Depth to thin	1.00	Depth to saturated zone	1.00
	Depth to thin	0.50	cemented pan		Depth to thin	1.00
	cemented pan		Slope	1.00	cemented pan	

Table 11a.--Building Site Development--Continued

Map symbol and soil name	 Dwellings witho basements	ut	 Dwellings with basements 		 Small commercia buildings 	1
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
184E: Yalmer	 Very limited		 Very limited	 	 Very limited	
raimer	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Slope Depth to	1.00
	Slope Depth to thick cemented pan	1.00	Depth to thick cemented pan Slope	1.00	saturated zone Depth to thick cemented pan	0.65
185B:	 					
Munising	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
	Depth to thin cemented pan	0.50	Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00
Skanee	 Very limited Depth to	 1.00	 Very limited Depth to	 1.00	 Very limited Depth to	1.00
	saturated zone Depth to thick cemented pan	 1.00 	saturated zone Depth to thick cemented pan	 1.00 	saturated zone Depth to thick cemented pan	 1.00
185C:						
Munising	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00
	Depth to thin cemented pan	0.50	Depth to thin cemented pan	1.00	Depth to thin cemented pan	1.00
	Slope	0.16	Slope	0.16	Slope	1.00
Skanee	Very limited Depth to	1.00	Very limited Depth to	1.00	Very limited Depth to	1.00
	saturated zone Depth to thick cemented pan	1.00	saturated zone Depth to thick cemented pan	 1.00 	saturated zone Depth to thick cemented pan	1.00
	i I	į į	- 	i i	Slope	0.12
187A: Skanee	 Very limited	<u> </u> 	 Very limited	<u> </u>	 Very limited	<u> </u>
	Depth to saturated zone Depth to thick	1.00 1.00	Depth to saturated zone Depth to thick	1.00 1.00	Depth to saturated zone Depth to thick	1.00 1.00
	cemented pan	i I	cemented pan	 	cemented pan	İ
Gay	Very limited Depth to saturated zone	1.00	 Very limited Depth to saturated zone	1.00	 Very limited Depth to saturated zone	1.00
	Ponding	1.00	Ponding 	1.00	Ponding	1.00
192B: Nipissing	 Somewhat limited		 Very limited		 Somewhat limited	
итріванід	Large stones Depth to hard	0.77	Depth to hard bedrock	1.00	Large stones Depth to hard	0.77
	bedrock		Large stones 	0.77 	bedrock	
Arcadian	Very limited Depth to hard bedrock	 1.00 	Very limited Depth to hard bedrock	 1.00 	Very limited Depth to hard bedrock	1.00
Rock outcrop	 Not rated 		 Not rated 		 Not rated 	

Table 11a.--Building Site Development--Continued

Map symbol and soil name	Dwellings witho	ut	 Dwellings with basements		Small commercial buildings	
	Rating class and	Value	Rating class and	Value	Rating class and	Value
	limiting features		limiting features	<u> </u>	limiting features	<u> </u>
194B: Copper Harbor	 Somewhat limited		 Very limited		 Somewhat limited	
002202 1102002	Depth to saturated zone	0.39	Depth to saturated zone	1.00	Depth to saturated zone	0.39
195B:		i		İ		İ
Copper Harbor	Somewhat limited Depth to saturated zone	0.39	Very limited Depth to saturated zone	 1.00 	Somewhat limited Depth to saturated zone	0.39
Bete Grise	 Very limited		 Very limited		 Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
196B:	 	į I	 	j I	 	İ
Bete Grise		:	 Very limited		 Very limited	į
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
Tawas	 Very limited		 Very limited		 Very limited	
	Subsidence Depth to	1.00	Subsidence Depth to	1.00	Subsidence Depth to	1.00
	saturated zone	į	saturated zone		saturated zone	į
	Organic matter content	1.00	Ponding	1.00	Organic matter content	1.00
	Ponding	1.00			Ponding	1.00
301: Udorthents	 Not limited		 Not limited		 Somewhat limited	
odor thenes					Slope	0.50
Udipsamments	 Not limited 		 Not limited 	 	 Somewhat limited Slope	0.50
302:						
Histosols	Very limited Ponding	1.00	Very limited Ponding	1.00	Very limited Ponding	1.00
	Subsidence	1.00	Subsidence	1.00	Subsidence	1.00
	Depth to	1.00	Depth to	1.00	Depth to	1.00
	saturated zone Organic matter	1.00	saturated zone Organic matter	1.00	saturated zone Organic matter	1.00
	content	į I	content	j I	content	İ
Aquents		:	Very limited	:	Very limited	į
	Ponding Depth to	1.00	Ponding Depth to	1.00		1.00
	saturated zone		saturated zone		saturated zone	
303:	 		 		 	
Aquents	Very limited Ponding	1.00	Very limited Ponding	1.00	Very limited Ponding	1.00
	Depth to	1.00	Depth to	1.00	Depth to	1.00
	saturated zone		saturated zone		saturated zone	
Dumps, stamp sand	Not rated 		Not rated 		Not rated 	
310: Dumps, mine	 Not rated		 Not rated		 Not rated	

Table 11a.--Building Site Development--Continued

Map symbol	Dwellings witho	ut	Dwellings with		Small commercia	1
and soil name	basements		basements		buildings	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
		1		1		1
311:	İ	j	İ	į	İ	j
Dumps, stamp sand	Not rated		Not rated		Not rated	
312:		İ		i		i
Pits	Not rated	į	Not rated	į	Not rated	Ì
313:	 		 	i	 	
Dumps, sawdust	Not rated	į	Not rated	į	Not rated	į
W:	 		 			
Water	Not rated	İ	Not rated	İ	Not rated	İ

Table 11b.--Building Site Development

(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. "Not rated" indicates that data are not available or that no rating is applicable. See text for further explanation of ratings in this table)

Map symbol and soil name	Local roads and st	reets	Shallow excavati	Shallow excavations 		
	Rating class and limiting features	Value	Rating class and limiting features	Valu		
2:		l				
Lupton	 Very limited	l I	 Very limited			
парсоп	Depth to	1.00	_	1.00		
	saturated zone		saturated zone	1		
	Subsidence	1.00		1.00		
	Frost action	1.00	-	i		
	Ponding	1.00	Ponding	1.00		
			Cutbanks cave	0.10		
Tawas	 Very limited		 Very limited			
	Depth to	1.00	-	1.00		
	saturated zone		saturated zone	!		
	Subsidence	1.00		1.00		
	Frost action	1.00		1.00		
	Ponding 	1.00	Organic matter content	1.00		
3:						
Dawson	_		Very limited			
	Depth to	1.00	_	1.00		
	saturated zone		saturated zone			
	Subsidence	1.00		1.00		
	!	1.00		1.00		
	Ponding	1.00	Organic matter content	1.00		
Loxley	 Very limited	 	 Very limited			
	Depth to	1.00	Depth to	1.00		
	saturated zone		saturated zone			
	Subsidence	1.00	-	1.00		
		1.00		!		
	Ponding	1.00	Ponding	1.00		
			Cutbanks cave	0.10		
6: Skandia	 Not rated	 	 Very limited			
211411414	Not rated;	 	Depth to hard	1.00		
	Minerology class		bedrock			
		1.00	Depth to	1.00		
	saturated zone		saturated zone	i		
	Subsidence	1.00	Organic matter	1.00		
	Frost action	1.00	content	İ		
	Ponding	1.00	Ponding	1.00		
		 	Cutbanks cave	0.10		
Burt			Very limited			
	Depth to hard	1.00	Depth to hard	1.00		
	bedrock		bedrock			
	Depth to	1.00	-	1.00		
	saturated zone		saturated zone			
	Ponding	1.00	Ponding	1.00		
	Frost action	0.50	Cutbanks cave	0.10		

Table 11b.--Building Site Development--Continued

Map symbol and soil name	 Local roads and st 	reets	Shallow excavations		
	 Rating class and	Value	Rating class and	Value	
	limiting features		limiting features	<u>i</u>	
		ļ			
10:					
Cathro	Very limited Depth to	1.00	Very limited Depth to	1.00	
	saturated zone	1	saturated zone	1	
	Subsidence	1.00	Ponding	1.00	
	Frost action	1.00	Organic matter	1.00	
	Ponding	1.00	content	i	
	 -	į	Cutbanks cave	0.10	
Sabattis	 Very limited		 Very limited		
	Depth to	1.00	Depth to	1.00	
	saturated zone		saturated zone		
	Frost action	1.00	Ponding	1.00	
	Ponding	1.00	Cutbanks cave	0.10	
13:	 	 			
	 Very limited	 	 Very limited		
Tunas	Depth to	1.00	Depth to	1.00	
	saturated zone		saturated zone		
	Subsidence	1.00	Cutbanks cave	1.00	
	Frost action	1.00	Ponding	1.00	
	Ponding	1.00	Organic matter	1.00	
			content		
Deford	 Very limited		 Very limited		
	Ponding	1.00	Ponding	1.00	
	Depth to	1.00	Depth to	1.00	
	saturated zone		saturated zone		
	Frost action	0.50	Cutbanks cave	1.00	
15B:					
Dawson	Very limited		Very limited		
	Depth to	1.00	Depth to	1.00	
	saturated zone		saturated zone		
	Subsidence	1.00	Cutbanks cave	1.00	
	Frost action Ponding	1.00	Ponding Organic matter	1.00	
	Fonding		content		
Croswell	 Somewhat limited		 Very limited		
CIODWCII	Depth to	0.19	Depth to	1.00	
	saturated zone		saturated zone		
		į	Cutbanks cave	1.00	
20E:	 	 	 		
Rock outcrop	Not rated	į	Not rated		
210.					
21G: Rock outcrop	 Not rated		 Not rated		
		į		į	
Arcadian	: -	1	Very limited		
	Depth to hard	1.00		1.00	
	bedrock Slope	1 00	bedrock	1 00	
	1 probe	1.00	-	1.00	
	Frost action	0.50	Cutbanks cave	0.10	

Table 11b.--Building Site Development--Continued

Map symbol and soil name	Local roads and st	reets	 Shallow excavati 	ons
	Rating class and	Value	Rating class and	Value
	limiting features		limiting features	
39A:	 Town limited		 Town limited	
Betsy Bay	Depth to	1.00	Very limited Depth to	1.00
	saturated zone	1	saturated zone	1
	Frost action	0.50	Cutbanks cave	1.00
			Depth to hard	0.93
	İ	İ	bedrock	İ
Burt	 Very limited		 Vorus limited	
Buit	Depth to hard	1.00	Very limited Depth to hard	1.00
	bedrock	1	bedrock	1
	Depth to	1.00	Depth to	1.00
	saturated zone		saturated zone	
	Ponding	1.00	Ponding	1.00
	Frost action	0.50	Cutbanks cave	0.10
	İ	į	İ	İ
Deford	Very limited	İ	Very limited	İ
	Ponding	1.00	Ponding	1.00
	Depth to	1.00	Depth to	1.00
	saturated zone		saturated zone	
	Frost action	0.50	Cutbanks cave	1.00
453				
47A: Zeba	 Town limited		 Town limited	
Zeba	Very limited Depth to	1.00	Very limited Depth to hard	1.00
	saturated zone	1	bedrock	1
	Frost action	1.00	Depth to	1.00
	Depth to hard	0.71	saturated zone	
	bedrock		Cutbanks cave	0.10
	İ	İ		
Jacobsville	Very limited		Very limited	
	Depth to	1.00	Depth to hard	1.00
	saturated zone		bedrock	
	Frost action	1.00	Depth to	1.00
	Ponding	1.00	saturated zone	
	Depth to hard	0.97	Cutbanks cave	1.00
	bedrock		Ponding	1.00
51C:	 			
Arcadian	Very limited	i	 Very limited	i
	Depth to hard	1.00	Depth to hard	1.00
	bedrock	İ	bedrock	İ
	Frost action	0.50	Cutbanks cave	0.10
Winingina				
Nipissing	Large stones	0.77	Very limited Depth to hard	1.00
	Frost action	0.77	bedrock	1
	Depth to hard	0.01	Large stones	0.77
	bedrock		Cutbanks cave	0.10
	İ	į		İ
Rock outcrop	Not rated	İ	Not rated	İ
51E:	 			
Arcadian	· -		Very limited	
	Depth to hard	1.00	Depth to hard	1.00
	bedrock Slope	1.00	bedrock Slope	1.00
	Frost action	0.50	Cutbanks cave	0.10
		10.50	Jucanina Cave	10.10

Table 11b.--Building Site Development--Continued

Map symbol and soil name	 Local roads and st 	reets	Shallow excavations 		
	Rating class and	Value	Rating class and	Value	
	limiting features	<u>i </u>	limiting features	<u>i</u>	
		ļ		ļ	
51E: Nipissing	 Very limited		 Very limited		
Mipibbing	Slope	1.00		1.00	
	Large stones	0.77	bedrock	i	
	Frost action	0.50	Slope	1.00	
	Depth to hard	0.01		0.77	
	bedrock		Cutbanks cave	0.10	
Rock outcrop	 Not rated	 	 Not rated		
52C:	 		 		
Arcadian	 Very limited	i	 Very limited	İ	
	Depth to hard	1.00	Depth to hard	1.00	
	bedrock		bedrock		
	Frost action	0.50	Cutbanks cave	0.10	
Dishno	 Very limited	İ	 Very limited	l l	
	Depth to	1.00		1.00	
	saturated zone	ĺ	saturated zone	Ì	
	Frost action	0.50	1	1.00	
			Depth to hard	0.96	
	 		bedrock	l I	
Rock outcrop	Not rated	į	Not rated		
52E:	 		 	l I	
	 Very limited	i	 Very limited		
	Depth to hard	1.00		1.00	
	bedrock		bedrock		
	Slope	1.00	Slope	1.00	
	Frost action	0.50	Cutbanks cave	0.10	
Dishno	 Very limited	i	 Very limited	1	
	Depth to	1.00		1.00	
	saturated zone		saturated zone		
	Slope	1.00		1.00	
	Frost action	0.50	Slope Depth to hard	1.00	
	 		bedrock	0.96	
		į		i	
Rock outcrop	Not rated	ļ	Not rated		
53E:					
Arcadian	 Verv limited		 Very limited		
	Depth to hard	1.00	: -	1.00	
	bedrock	į	bedrock	j	
	Slope	1.00	: -	1.00	
	Frost action	0.50	Cutbanks cave	0.10	
Michigamme	 Very limited		 Very limited		
. J	Slope	1.00	Depth to hard	1.00	
	Frost action	0.50	bedrock		
	Depth to hard	0.46	Cutbanks cave	1.00	
	bedrock		Slope	1.00	
Rock outcrop	 Not rated		 Not rated		

Table 11b.--Building Site Development--Continued

Rating class and limiting features	1**-7	I	Shallow excavations		
IIMITTING Teatures	value	Rating class and	Value		
<u> </u>	<u> </u>	limiting features	1		
			i		
Very limited	:	Very limited			
	1.00	-	1.00		
!	1.00	!	1.00		
Frost action	0.50	Cutbanks cave	0.10		
 Verv limited		 Verv limited			
Slope	:	-	1.00		
Frost action	0.50	bedrock	İ		
Depth to hard	0.46	Slope	1.00		
bedrock		Cutbanks cave	1.00		
 Not rated 		 Not rated			
Very limited		Very limited			
Depth to	1.00	Depth to hard	1.00		
!	 n aa		1.00		
	0.33	-	1		
Frost action	0.50	Cutbanks cave	0.10		
 Not limited		 Very limited			
	į	Cutbanks cave	1.00		
Somewhat limited	İ	 Very limited	İ		
Slope	0.63	Cutbanks cave	1.00		
l		Slope	0.63		
Not limited	į	Very limited	j		
		Cutbanks cave	1.00		
 Not limited		 Very limited			
		Cutbanks cave	1.00		
 Very limited		 Very limited			
Slope	1.00	Cutbanks cave	1.00		
	İ	Slope	1.00		
 Verv limited		 Verv limited			
Slope	1.00	Cutbanks cave	1.00		
_	į	Slope	1.00		
 Very limited	İ	 Very limited	i		
Slope	1.00	Slope	1.00		
 		Cutbanks cave	1.00		
 Very limited		 Very limited			
Slope	:	_	1.00		
		Cutbanks cave	1.00		
	Depth to hard bedrock Slope Frost action Very limited Slope Frost action Depth to hard bedrock Not rated Very limited Depth to saturated zone Depth to hard bedrock Frost action Not limited Somewhat limited Slope Very limited Slope Very limited Slope Very limited Slope Very limited Slope	Depth to hard 1.00 bedrock Slope 1.00 Frost action 0.50 Very limited Slope 1.00 Frost action 0.50 Depth to hard bedrock Not rated Depth to hard 0.99 bedrock Frost action 0.50 Not limited Slope 0.63 Not limited Very limited Slope 1.00 Very limited Slope	Depth to hard bedrock Slope 1.00 Slope Frost action 0.50 Cutbanks cave Very limited Very limited Slope 1.00 Depth to hard Slope 1.00 Depth to hard Slope 1.00 Depth to hard Frost action 0.50 Depth to hard Depth to hard 0.46 Slope Dedrock Cutbanks cave Not rated Very limited Depth to 1.00 Depth to hard Depth to Depth to hard Depth to Depth to hard Depth to Saturated zone Depth to hard Depth to hard Depth to Saturated zone Frost action 0.50 Cutbanks cave Not limited Very limited Cutbanks cave Somewhat limited Very limited Slope 0.63 Cutbanks cave Slope		

Table 11b.--Building Site Development--Continued

Map symbol and soil name	 Local roads and st 	reets	 Shallow excavations 		
	Rating class and limiting features	Value	 Rating class and limiting features	Value	
1100	IIMICING Teacures			<u> </u>	
110B: Shelldrake	 Not rated 	 	 Very limited Cutbanks cave	1.00	
Croswell	Somewhat limited Depth to saturated zone	 0.19 	 Very limited Depth to saturated zone Cutbanks cave	 1.00 1.00	
111B: Deer Park	 Not limited 	 	 Very limited Cutbanks cave	 1.00	
111D: Deer Park	 Somewhat limited Slope 	 0.63 	 Very limited Cutbanks cave Slope	 1.00 0.63	
111E: Deer Park	 Very limited Slope	 1.00 	 Very limited Cutbanks cave Slope	 1.00 1.00	
111F: Deer Park	 Very limited Slope 	 1.00 	 Very limited Slope Cutbanks cave	 1.00 1.00	
112C: Deer Park	 Somewhat limited Slope	 0.01	 Very limited Cutbanks cave Slope	 1.00 0.01	
Croswell	 Somewhat limited Depth to saturated zone	 0.19 	 Very limited Depth to saturated zone Cutbanks cave	 1.00 1.00	
113C:					
Rubicon	Somewhat limited Slope 	 0.01 	Very limited Cutbanks cave Slope	 1.00 0.01	
Croswell	 Somewhat limited Depth to saturated zone	 0.19 	 Very limited Depth to saturated zone Cutbanks cave	 1.00 1.00	
120B: Garlic	 Not limited 	 	 Very limited Cutbanks cave 	 1.00	
120D: Garlic	 Somewhat limited Slope 	 0.63 	 Very limited Cutbanks cave Slope	 1.00 0.63	

Table 11b.--Building Site Development--Continued

Map symbol and soil name	Local roads and st	reets	Shallow excavations	
	Rating class and limiting features		 Rating class and limiting features	Value
		Ī		
120E: Garlic	 Very limited Slope	1.00		1.00
			Cutbanks cave	1.00
125A:				
Croswell	· ·	:	Very limited	
	Depth to saturated zone	0.19	· -	1.00
	saturated zone		saturated zone Cutbanks cave	1.00
Au Cross	 Warre limited		 	
Au Gres	Depth to	1.00	Very limited Depth to	1.00
	saturated zone		saturated zone	
	Frost action	0.50	Cutbanks cave	1.00
126B:			 	
Au Gres	:	:	Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	0.50	Cutbanks cave	1.00
		İ		İ
Deford	· -	:	Very limited Ponding	1 00
	Ponding Depth to	1.00		1.00
	saturated zone		saturated zone	
	Frost action	0.50	Cutbanks cave	1.00
Croswell	 Somewhat limited		 Very limited	
	Depth to	0.19	Depth to	1.00
	saturated zone		saturated zone Cutbanks cave	1.00
127A:				
Au Gres	· Very limited Depth to	1.00	Very limited Depth to	1.00
	saturated zone		saturated zone	
	Frost action	0.50	Cutbanks cave	1.00
Kinross	 - Verv limited		 Very limited	
	Depth to	1.00	Depth to	1.00
	saturated zone		saturated zone	
	Ponding Frost action	1.00	Cutbanks cave	1.00
			I onding	
130C:				
Garlic	Not limited		Very limited Cutbanks cave	1.00
Alcona	1		Very limited	
	Frost action	0.50	Cutbanks cave	1.00
130E:				
Garlic			Very limited	
	Slope	1.00	Cutbanks cave	1.00
Alcona	:	:	Very limited	
	Slope	1.00	!	1.00
	Frost action	0.50	Slope	1.00

Table 11b.--Building Site Development--Continued

Map symbol and soil name	 Local roads and st 	reets	 Shallow excavati 	ons
	Rating class and limiting features	Value	Rating class and limiting features	Value
133C: Keweenaw	 Not limited 	 	 Very limited Cutbanks cave	1.00
Garlic	 Not limited 	 	 Very limited Cutbanks cave	1.00
133E: Keweenaw	 Very limited Slope 	 1.00	 Very limited Cutbanks cave Slope	 1.00 1.00
Garlic	 Very limited Slope 	 1.00 	 Very limited Cutbanks cave Slope	 1.00 1.00
133F: Keweenaw	 Very limited Slope 	 1.00	 Very limited Slope Cutbanks cave	1.00
Garlic	 Very limited Slope 	 1.00 	 Very limited Slope Cutbanks cave	1.00
136B: Borgstrom	Somewhat limited Depth to thin cemented pan Depth to saturated zone	 1.00 0.19 	cemented pan	 1.00 1.00 1.00 0.50
Ingalls	 Very limited Depth to saturated zone Frost action	 1.00 0.50	saturated zone	 1.00 1.00
142C: Wallace	 Somewhat limited Depth to thick cemented pan Slope	 0.97 0.01	cemented pan	 1.00 1.00 0.50 0.01
Rubicon	 Somewhat limited Slope 	 0.01 	 Very limited Cutbanks cave Slope	 1.00 0.01
142F: Wallace	 Very limited Slope Depth to thick cemented pan 	 1.00 0.97 	 Very limited Depth to thick cemented pan Cutbanks cave Slope Dense layer	 1.00 1.00 1.00

Table 11b.--Building Site Development--Continued

Map symbol and soil name	Local roads and st	reets	Shallow excavati 	Shallow excavations		
	Rating class and	Value	Rating class and	Value		
	limiting features	<u> </u>	limiting features			
142F:	 					
Rubicon	 Verv limited	l I	 Very limited			
	Slope	1.00	Cutbanks cave	1.00		
	İ	İ	Slope	1.00		
1550						
155C: Montreal	 Very limited	 	 Very limited			
	Depth to	1.00	Depth to thick	1.00		
	saturated zone	į	cemented pan	İ		
	Depth to thick	0.71	Depth to	1.00		
	cemented pan		saturated zone	[
	Frost action	0.50	Cutbanks cave	1.00		
	Large stones	0.03	Dense layer	0.50		
	 	l I	Large stones	0.03		
Paavola	 Very limited	İ	 Very limited			
	Depth to	1.00	Depth to hard	1.00		
	saturated zone		bedrock			
	Depth to hard	0.84	Depth to	1.00		
	bedrock	ļ	saturated zone			
	 		Cutbanks cave	1.00		
	 	 	Dense layer	0.50		
Waiska	 Not limited	İ	 Very limited			
			Cutbanks cave	1.00		
1550.			l			
155E: Montreal	 Verv limited	1	 Very limited			
	Depth to	1.00	Depth to thick	1.00		
	saturated zone	İ	cemented pan	i		
	Slope	1.00	Depth to	1.00		
	Depth to thick	0.71	saturated zone			
	cemented pan		Cutbanks cave	1.00		
	Frost action	0.50	Slope	1.00		
	Large stones	0.03	Dense layer	0.50		
Paavola	 Very limited	İ	 Very limited			
	Depth to	1.00	Depth to	1.00		
	saturated zone		saturated zone			
	Slope	1.00	Cutbanks cave	1.00		
			Slope	1.00		
	 	l I	Depth to thin cemented pan	0.84		
	! 		Dense layer	0.50		
	İ	į	· -	İ		
Waiska			Very limited			
	Slope	1.00	Cutbanks cave	1.00		
	 		Slope	1.00		
158A:						
Arnheim	Very limited	İ	Very limited	İ		
	Ponding	1.00	Ponding	1.00		
	Depth to	1.00	Depth to	1.00		
	1					
	saturated zone		saturated zone	11 00		
	saturated zone Frost action Flooding	 1.00 1.00	saturated zone Cutbanks cave Flooding	 1.00 0.80		

Table 11b.--Building Site Development--Continued

Map symbol and soil name	 Local roads and st 	reets	 Shallow excavati 	ons
	Rating class and	Value	Rating class and	Value
	limiting features		limiting features	
		!		ļ
158A:				
Sturgeon	Very limited Depth to	1.00	Very limited Depth to	1.00
	saturated zone	1	saturated zone	1
	Frost action	1.00	Cutbanks cave	1.00
	Flooding	1.00	Flooding	0.60
Pelkie	Very limited		Very limited	
	Flooding Depth to	1.00 0.19	Depth to saturated zone	1.00
	saturated zone	0.19	Cutbanks cave	1.00
			Flooding	0.60
	İ	į		i
161F:	!	[!
Trimountain	: -		Very limited	
	Slope	1.00	Depth to thick	1.00
	Depth to thick cemented pan	1.00	cemented pan Slope	1.00
	Frost action	0.50	Cutbanks cave	1.00
			Dense layer	0.50
	į	į	_	į
Lac La Belle	: -	!	Very limited	!
	Slope	1.00	Depth to thick	1.00
	Depth to thick	0.06	cemented pan	
	cemented pan		Slope Cutbanks cave	1.00
	 		Dense layer	0.50
	j	į	j	į
Waiska	: -		Very limited	!
	Slope	1.00	Slope	1.00
	 	1	Cutbanks cave	1.00
162F:			 	i
Trimountain	Very limited	İ	Very limited	į
	Slope	1.00	Depth to thick	1.00
	Depth to thick	1.00	cemented pan	
	cemented pan		Slope	1.00
	Frost action	0.50	Cutbanks cave Dense layer	1.00
			Dembe layer	
Lac La Belle	 Very limited	i	 Very limited	i
	Slope	1.00	Depth to thick	1.00
	Depth to thick	0.06	cemented pan	
	cemented pan		Slope	1.00
	 		Cutbanks cave	1.00
	 		Dense layer	
Michigamme	 Very limited	į	 Very limited	İ
	Slope	1.00	Depth to hard	1.00
	Frost action	0.50	bedrock	
	Depth to hard	0.46	Slope	1.00
	bedrock		Cutbanks cave	1.00

Table 11b.--Building Site Development--Continued

Map symbol and soil name	Local roads and st	reets	 Shallow excavati 	ons.
	Rating class and limiting features	Value	 Rating class and limiting features	Value
1660				
166B: Gratiot	 Very limited	1	 Very limited	
	Depth to thin	1.00		1.00
	cemented pan		cemented pan	
	Depth to	1.00		1.00
	saturated zone	1.00	saturated zone Dense layer	0.50
	Large stones	0.01	Cutbanks cave	0.10
			Large stones	0.01
Sabattis	 Very limited		 Very limited	
	Depth to	1.00	Depth to	1.00
	saturated zone		saturated zone	
	Frost action	1.00	Ponding	1.00
	Ponding	1.00	Cutbanks cave	0.10
173C:		į		
Montreal	Very limited		Very limited	
	Depth to saturated zone	1.00	Depth to thick cemented pan	1.00
	Depth to thick	0.71		1.00
	cemented pan		saturated zone	
	Frost action	0.50	Cutbanks cave	1.00
	Large stones	0.03	Dense layer	0.50
	 		Large stones	0.03
Paavola	 Very limited		 Very limited	
	Depth to	1.00	Depth to	1.00
	saturated zone		saturated zone	
		1	Cutbanks cave Depth to thin	1.00
			cemented pan	
	į	į	Dense layer	0.50
Dishno	 Very limited		 Very limited	
	Depth to	1.00	Depth to	1.00
	saturated zone		saturated zone	
	Frost action	0.50	Cutbanks cave Depth to hard	1.00
			bedrock	
173E:			 	
Montreal	 Very limited	İ	 Very limited	
	Depth to	1.00	Depth to thick	1.00
	saturated zone		cemented pan	
	Slope Depth to thick	1.00 0.71	Depth to saturated zone	1.00
		0.71	!	1.00
	· -		Cutbanks cave	1 - 0 0
	cemented pan Frost action	 0.50	Cutbanks cave	1.00
	cemented pan	 0.50 0.03	!	!
Paavola	cemented pan Frost action		Slope	1.00
Paavola	cemented pan Frost action Large stones		Slope Dense layer	1.00
Paavola	cemented pan Frost action Large stones Very limited Depth to saturated zone	0.03	Slope Dense layer Very limited Depth to hard bedrock	1.00 0.50 1.00
Paavola	cemented pan Frost action Large stones Very limited Depth to saturated zone Slope	0.03 1.00 	Slope Dense layer Very limited Depth to hard bedrock Depth to	1.00
Paavola	cemented pan Frost action Large stones Very limited Depth to saturated zone Slope Depth to hard	0.03	Slope Dense layer 	1.00 0.50 1.00 1.00
Paavola	cemented pan Frost action Large stones Very limited Depth to saturated zone Slope	0.03 1.00 	Slope Dense layer Very limited Depth to hard bedrock Depth to	1.00 0.50 1.00

Table 11b.--Building Site Development--Continued

Map symbol and soil name	Local roads and st	reets	 Shallow excavati 	ons
	Rating class and	Value	Rating class and	Value
	limiting features	<u>i</u>	limiting features	<u>i</u>
173E:		ļ		
Dishno	· -	:	Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slope	1.00	Cutbanks cave	1.00
	Frost action	0.50	Slope	1.00
			Depth to hard	0.96
	İ	į	bedrock	İ
4845		ļ		
174B: Montreal	 Very limited		 Very limited	
MONCIEAI	Depth to	1.00	:	1.00
	saturated zone		cemented pan	
	Depth to thick	0.71	Depth to	1.00
	cemented pan	į	saturated zone	İ
	Frost action	0.50	Cutbanks cave	1.00
	Large stones	0.03	Dense layer	0.50
		ļ	Large stones	0.03
Dishno	 Very limited		 Very limited	
DISIMO	Depth to	1.00		1.00
	saturated zone		saturated zone	
	Frost action	0.50	Cutbanks cave	1.00
		i	Depth to hard	0.96
	İ	İ	bedrock	1
Gratiot				
Graciot	Very limited Depth to thin	1.00	Very limited Depth to thin	1.00
	cemented pan		cemented pan	
	Depth to	1.00	Depth to	1.00
	saturated zone	į	saturated zone	İ
	Frost action	1.00	Dense layer	0.50
	Large stones	0.01	Cutbanks cave	0.10
			Large stones	0.01
177A:	 		 	
Assinins	 Very limited	i	 Very limited	i
	Depth to	1.00		1.00
	saturated zone		saturated zone	
	Frost action	1.00	Cutbanks cave	1.00
183C:	 		 	l I
Munising	 Very limited	i	 Very limited	
5	Depth to thin	1.00		1.00
	cemented pan	į	cemented pan	İ
	Depth to	1.00	Depth to	1.00
	saturated zone		saturated zone	
	Frost action	0.50	Cutbanks cave	1.00
			Dense layer	0.50
Abbaye	 Very limited		 Very limited	
	Depth to	1.00	:	1.00
	saturated zone		bedrock	
	Frost action	0.50	Depth to	1.00
	Depth to hard	0.46	saturated zone	
	bedrock	ļ	Cutbanks cave	1.00
	bedrock		Cutbanks cave	

Table 11b.--Building Site Development--Continued

Map symbol and soil name	Local roads and st	reets	Shallow excavati 	ons
	Rating class and limiting features	Value	Rating class and limiting features	Value
183C:	 		 	
Yalmer	Very limited Depth to	1.00	Very limited Depth to thick	1.00
	saturated zone Depth to thick cemented pan	0.65	cemented pan Depth to saturated zone	1.00
	cemented pan		Cutbanks cave Dense layer	1.00
183E:	 		 	
Munising	Very limited Depth to thin cemented pan	1.00	 Very limited Depth to thin cemented pan	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Slope Frost action 	1.00 0.50 	Cutbanks cave Slope Dense layer	1.00 1.00 0.50
Abbaye	 Very limited		 Very limited	
	Depth to saturated zone	1.00	Depth to hard bedrock	1.00
	Slope Frost action	1.00 0.50	Depth to saturated zone	1.00
	Depth to hard bedrock	0.46	Cutbanks cave	1.00
Yalmer	 Very limited Depth to	 1.00	 Very limited Depth to thick	 1.00
	saturated zone Slope	1.00	cemented pan Depth to	1.00
	Depth to thick cemented pan	0.65	saturated zone Cutbanks cave	1.00
	 		Slope Dense layer	1.00
184C:				
Munising	Very limited Depth to thin cemented pan	1.00	Very limited Depth to thin cemented pan	1.00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	0.50	Cutbanks cave	1.00
Yalmer	 Very limited Depth to	1.00	 Very limited Depth to thick	1.00
	saturated zone Depth to thick	0.65	cemented pan Depth to	1.00
	cemented pan	<u> </u> 	saturated zone Cutbanks cave	1.00
	 		Dense layer 	0.50

Table 11b.--Building Site Development--Continued

Map symbol and soil name	 Local roads and st 	reets	 Shallow excavati 	ons.
	Rating class and limiting features		Rating class and limiting features	Value
		i		i i
184E:				
Munising	_	1	Very limited	
	Depth to thin	1.00	:	1.00
	cemented pan Depth to	1.00	cemented pan Depth to	1.00
	saturated zone	1	saturated zone	1
	Slope	1.00	Cutbanks cave	1.00
	Frost action	0.50	Slope	1.00
			Dense layer	0.50
Yalmer	 Very limited		 Very limited	
1411101	Depth to	1.00	Depth to thick	1.00
	saturated zone	į	cemented pan	i
	Slope	1.00	Depth to	1.00
	Depth to thick	0.65	saturated zone	
	cemented pan		Cutbanks cave	1.00
	 		Slope	1.00 0.50
		İ	Dense layer 	0.50
185B:		į	İ	İ
Munising			Very limited	
	Depth to thin	1.00	Depth to thin	1.00
	cemented pan Depth to	1.00	cemented pan Depth to	1.00
	saturated zone	1	saturated zone	1
	Frost action	0.50	Cutbanks cave	1.00
		İ	Dense layer	0.50
Glass as				
Skanee	Very limited Depth to thick	1.00	Very limited Depth to thick	1.00
	cemented pan		cemented pan	
	Depth to	1.00	Depth to	1.00
	saturated zone	ĺ	saturated zone	Ì
	Frost action	1.00	Dense layer	0.50
	 		Cutbanks cave	0.10
185C:	 	i	 	
Munising	Very limited	İ	Very limited	İ
	Depth to thin	1.00	:	1.00
	cemented pan		cemented pan	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	0.50	!	1.00
	Slope	0.16		0.50
		İ	Slope	0.16
Glass as	 		 	
Skanee	Very limited Depth to thick	1.00	Very limited	1.00
	cemented pan	1.00	Depth to thick cemented pan	1
	Depth to	1.00	:	1.00
	saturated zone	į	saturated zone	İ
	Frost action	1.00	Dense layer	0.50
		ļ	Cutbanks cave	0.10
			I	

Table 11b.--Building Site Development--Continued

Map symbol and soil name	Local roads and st	reets	 Shallow excavati 	ons
	Rating class and	Value	Rating class and	Value
	limiting features	<u> </u>	limiting features	
1053				
187A: Skanee	 Very limited		 Town limited	
Skallee	Depth to thick	1.00	Very limited Depth to thick	1.00
	cemented pan		cemented pan	
	Depth to	1.00	_	1.00
	saturated zone	į	saturated zone	j
	Frost action	1.00	Dense layer	0.50
			Cutbanks cave	0.10
G	 		 	
Gay	Very limited	:	Very limited	1 00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	Frost action	1.00	Ponding	1.00
	Ponding	1.00	Cutbanks cave	0.10
	İ	İ		İ
192B:		İ	İ	İ
Nipissing	Somewhat limited		Very limited	
	Large stones	0.77	Depth to hard	1.00
	Frost action	0.50	bedrock	
	Depth to hard	0.01	Large stones Cutbanks cave	0.77
	bedrock		Cutbanks cave	0.10
Arcadian	 Very limited		 Very limited	
	Depth to hard	1.00	Depth to hard	1.00
	bedrock	į	bedrock	İ
	Frost action	0.50	Cutbanks cave	0.10
Rock outcrop	Not rated		 Not rated	
NOCK GUCCLOP				
194B:		į		İ
Copper Harbor	Somewhat limited	İ	Very limited	
	Depth to	0.19	Depth to	1.00
	saturated zone		saturated zone	
			Cutbanks cave	1.00
195B:	 		 	1
Copper Harbor	 Somewhat limited		 Very limited	1
ooppor margor	Depth to	0.19	Depth to	1.00
	saturated zone	İ	saturated zone	İ
			Cutbanks cave	1.00
Bete Grise	: -		Very limited	
	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	saturated zone		Cutbanks cave	1.00
	 		cacbannb cave	
196B:		į		İ
Bete Grise	Very limited		Very limited	
	Depth to	1.00	Depth to	1.00
	saturated zone		saturated zone	
	 		Cutbanks cave	1.00
Tawas	 Verv limited	 	 Very limited	
-uwap	Depth to	1.00		1.00
	saturated zone		saturated zone	
	Subsidence	1.00	!	1.00
		1.00	Ponding	1.00
	Frost action	11.00	Fonding	1 - 0 0
	Frost action Ponding	1.00	Organic matter	1.00

Table 11b.--Building Site Development--Continued

Map symbol and soil name			reets Shallow excavations	
	Rating class and limiting features	Value	Rating class and limiting features	Value
		İ		İ
301: Udorthents			 Somewhat limited	
udorthents	Not limited		Cutbanks cave	0.10
		į		İ
Udipsamments	Not limited	ļ	Very limited	
	 		Cutbanks cave	1.00
302:	 	İ		
Histosols	 Very limited	į	 Very limited	i
	Ponding	1.00	Ponding	1.00
	Depth to	1.00	Depth to	1.00
	saturated zone		saturated zone	
	Subsidence	1.00	Organic matter	1.00
	Frost action	1.00	content	
Aquents	 Verv limited		 Very limited	
114401105	Ponding	1.00	-	1.00
	Depth to	1.00		1.00
	saturated zone	i	saturated zone	i
	Frost action	1.00	İ	į
303:	 			
Aquents	 Vorus limited		 Very limited	-
Aquencs	Ponding	1.00		1.00
	Depth to	1.00		1.00
	saturated zone		saturated zone	
	Frost action	1.00		İ
Dumps, stamp sand	 Not rated		 Not rated	
• •		į		i
310:				
Dumps, mine	Not rated		Not rated	
311:	 		 	
Dumps, stamp sand	Not rated	l	Not rated	1
2		į		i
312:				
Pits	Not rated		Not rated	
313:	 	 	 	1
Dumps, sawdust	 Not rated	i	 Not rated	
		Ì		İ
W:		ļ		1
Water	Not rated		Not rated	

Table 12a.--Sanitary Facilities

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. "Not rated" indicates that data are not available or that no rating is applicable. See text for further explanation of ratings in this table)

Map symbol	Septic tank		Sewage lagoons	1
and soil name	absorption fiel	ds		
	Rating class and	Value	Rating class and	Value
	limiting features		limiting features	
2:			l	
	 Very limited		 Very limited	l I
пирсоп	Depth to	1.00	Organic matter	1.00
	saturated zone	1	content	1
	Subsidence	1.00	Depth to	1.00
	Seepage	1.00	saturated zone	1
	Ponding	1.00	Seepage	1.00
	l	1.00	Ponding	1.00
	İ		Ionarng	1
Tawas	 Very limited		 Very limited	i
201100	Depth to	1.00	Seepage	1.00
	saturated zone		Depth to	1.00
	Seepage	1.00	saturated zone	
	Ponding	1.00	Ponding	1.00
			Organic matter	1.00
	i	i	content	i
	i	i		i
:	i	i		i
Dawson	Very limited	i	Very limited	i
	Depth to	1.00	Seepage	1.00
	saturated zone	İ	Depth to	1.00
	Subsidence	1.00	saturated zone	İ
	Seepage	1.00	Ponding	1.00
	Ponding	1.00	Organic matter	1.00
			content	
Loxley	 Very limited		 Very limited	
LONICY	Depth to	1.00	Organic matter	1.00
	saturated zone		content	1
	Subsidence	1.00	Depth to	1.00
	Seepage	1.00	saturated zone	
	Ponding	1.00	Seepage	1.00
			Ponding	1.00
		İ		
:		İ		İ
Skandia		'	Very limited	
	Depth to bedrock		Depth to hard	1.00
	Depth to	1.00	bedrock	
	saturated zone	!	Organic matter	1.00
	Seepage	1.00	content	
	Ponding	1.00	Depth to	1.00
			saturated zone	
			Seepage	1.00
			Ponding	1.00

Table 12a.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fie	lds	 Sewage lagoons 	1
	Rating class and limiting features	Value	Rating class and limiting features	Value
6: Burt	 Very limited Depth to bedrock Depth to saturated zone Ponding	 1.00 1.00 1.00	 Very limited Depth to hard bedrock Seepage Depth to	 1.00 1.00 1.00
	 	 	saturated zone Ponding Organic matter content	 1.00 1.00
10: Cathro	Very limited Depth to saturated zone Ponding Slow water movement	 1.00 1.00 0.46	Very limited Depth to saturated zone Seepage Ponding Organic matter content	 1.00 1.00 1.00 1.00
Sabattis	 Very limited Depth to saturated zone Ponding Slow water movement	 1.00 1.00 0.72	Very limited Depth to saturated zone Ponding Organic matter content Seepage	 1.00 1.00 1.00 0.53
13: Tawas	 Very limited Depth to saturated zone Seepage Ponding	 1.00 1.00 1.00	Very limited Seepage Depth to saturated zone Ponding Organic matter content	 1.00 1.00 1.00 1.00
Deford	 Very limited Ponding Depth to saturated zone Filtering capacity Seepage	 1.00 1.00 1.00 		 1.00 1.00 1.00 1.00
15B: Dawson	 Very limited Depth to saturated zone Subsidence Seepage Ponding	 1.00 1.00 1.00	Depth to saturated zone Ponding	 1.00 1.00 1.00 1.00
Croswell	 Very limited Depth to saturated zone Filtering capacity Seepage	 1.00 1.00 1.00	Very limited Seepage Depth to saturated zone Slope	 1.00 1.00 0.08

Table 12a.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fiel	ds	Sewage lagoons 	ons	
	Rating class and limiting features	Value	Rating class and limiting features	Value	
20E:			 		
Rock outcrop	Not rated		 Not rated 	 	
21G: Rock outcrop	 Not rated	į Į	 Not rated	į Į	
Arcadian	 Verv limited		 Very limited		
	Depth to bedrock Slope	:	Depth to hard bedrock	1.00	
			Slope	1.00	
39A:					
Betsy Bay	Very limited	İ	 Very limited		
	Slow water	1.00	Seepage	1.00	
	movement	1 00	Depth to	1.00	
	Depth to saturated zone	1.00	saturated zone Depth to hard	0.93	
	Depth to bedrock	0.98	bedrock		
Burt	Very limited	i	 Very limited		
	Depth to bedrock	1.00	Depth to hard	1.00	
	Depth to	1.00	bedrock		
	saturated zone Ponding	1.00	Seepage Depth to	1.00	
	Policing	1	saturated zone	1	
			Ponding	1.00	
		į	Organic matter	1.00	
			content		
Deford	 Very limited		 Very limited		
	Ponding	1.00	Ponding	1.00	
	Depth to	1.00	Seepage	1.00	
	saturated zone		Depth to	1.00	
	Filtering capacity	1.00	saturated zone Organic matter	1.00	
	Seepage	1.00	content		
47A:			 		
Zeba	Very limited		Very limited		
	Slow water movement	1.00	Depth to hard bedrock	1.00	
	Depth to bedrock	1.00	Depth to	1.00	
	Depth to	1.00	saturated zone	j	
	saturated zone		Seepage 	0.53	
Jacobsville	Very limited	i	 Very limited		
	Depth to bedrock		Depth to hard	1.00	
	Depth to	1.00	bedrock		
	saturated zone Ponding	1.00	Depth to saturated zone	1.00	
	Foliating		Ponding	1.00	
	İ	į	Organic matter	1.00	
	ļ		content	0 53	
			Seepage 	0.53	
51C:					
Arcadian	-	:	Very limited	1 00	
	Depth to bedrock	1.00	Depth to hard bedrock	1.00	
		1	Slope	1.00	
	i	i	. = İ	i	

Table 12a.--Sanitary Facilities--Continued

Map symbol and soil name	 Septic tank absorption fiel 	ds	 Sewage lagoons 	
	Rating class and	Value	Rating class and	Value
	limiting features	<u></u>	limiting features	
51C:	 		 	
Nipissing	 Verv limited		 Very limited	
	Depth to bedrock	1	: -	1.00
	Filtering	1.00	bedrock	
	capacity		Seepage	1.00
	Large stones	0.77	Slope Large stones	1.00
	 	l	Large scones	1
Rock outcrop	 Not rated 	İ	 Not rated 	į
51E:		i		İ
Arcadian	Very limited	ĺ	Very limited	
	Depth to bedrock	1		1.00
	Slope	1.00	bedrock Slope	1.00
	 	l	Slope	1
Nipissing	Very limited	į	Very limited	İ
	Depth to bedrock		Depth to hard	1.00
	Filtering	1.00	bedrock	
	capacity Slope	1.00	Slope Seepage	1.00
	Large stones	0.77	Large stones	1.00
Rock outcrop	 Not rated	 	 Not rated	į Į
	!	ļ	!	
52C: Arcadian	 Vorus limited		 Very limited	
Alcadian	Depth to bedrock	1	: -	1.00
		i	bedrock	
	!	ļ	Slope	1.00
Dishno	 Very limited		 Very limited	
DIBINIO	Slow water	1.00	Seepage	1.00
	movement	į	Depth to	1.00
	Depth to	1.00	saturated zone	
	saturated zone		Slope	1.00
	Depth to bedrock	0.99 	Depth to hard bedrock	0.96
Rock outcrop	 Not rated	 	 Not rated	
		İ		į
52E:				
Arcadian	Very limited Depth to bedrock	1 00	Very limited Depth to hard	1.00
	Slope	1.00	bedrock	
	 	į	Slope	1.00
Dishno	 Very limited		 Very limited	
	Slow water	1.00	: -	1.00
	movement		Seepage	1.00
	Depth to	1.00		1.00
	saturated zone	1 00	saturated zone	0.06
	Slope Depth to bedrock	1.00	Depth to hard bedrock	0.96
		į	İ	i
Rock outcrop	Not rated 		Not rated 	

Table 12a.--Sanitary Facilities--Continued

Map symbol and soil name	 Septic tank absorption fiel	ds	 Sewage lagoons 	ı
	Rating class and	Value	Rating class and limiting features	Value
53E: Arcadian	Depth to bedrock	1.00	_	1.00
	Slope 	1.00 	bedrock Slope 	1.00
Michigamme	Depth to bedrock	 1.00 1.00 0.46	Very limited Depth to hard bedrock Slope	 1.00 1.00
	movement	 	Seepage Large stones	0.53
Rock outcrop	 Not rated 	 	 Not rated 	
53F: Arcadian	Depth to bedrock		Very limited Depth to hard bedrock Slope	 1.00 1.00
Michigamme	 Verv limited	 	Slope Very limited	
	Depth to bedrock		. –	1.00
	Slow water movement 	0.46 	Slope Seepage Large stones	1.00 0.53 0.36
Rock outcrop	 Not rated 	 	 Not rated 	
55B: Chocolay	Depth to bedrock		 Very limited Depth to hard bedrock	 1.00
	saturated zone	 	Seepage Depth to saturated zone	1.00
100B:	 	 	Slope 	0.68
Waiska	-	 1.00 1.00	Very limited Seepage Slope	 1.00 0.32
100D: Waiska	 Very limited	 	 Very limited	
	Filtering capacity Seepage Slope	1.00 1.00 0.63	Slope Seepage 	1.00 1.00
102C: Waiska	_		 Very limited	
	Filtering capacity Seepage	1.00 1.00 	Seepage Slope 	1.00 1.00

Table 12a.--Sanitary Facilities--Continued

Map symbol and soil name	 Septic tank absorption fiel 	ds	 Sewage lagoons 	
	Rating class and limiting features	Value	Rating class and limiting features	Value
	!	[<u> </u>
102C:	 		 	
Garlic	Very limited Filtering	1.00	Very limited Seepage	1.00
	capacity	1	Slope	1.00
	Seepage	1.00		
	İ	İ		ĺ
102E:				
Waiska	Very limited Filtering	1.00	Very limited	1.00
	capacity	1	Slope Seepage	1.00
	Seepage	1.00	beepage	
	Slope	1.00		į
	!	1		ļ
Garlic	Very limited		Very limited	
	Filtering capacity	1.00	Slope Seepage	1.00
	Seepage	1.00	beepage	1
	Slope	1.00		į
	İ	İ		ĺ
102F:				ļ
Waiska	Very limited Filtering	1 00	Very limited	11 00
	capacity	1.00	Slope Seepage	1.00
	Slope	1.00	beepage	1
	Seepage	1.00		İ
				ļ
Garlic	Very limited	1 00	Very limited	
	Filtering capacity	1.00	Slope Seepage	1.00
	Slope	1.00	beepage	
	Seepage	1.00		İ
	!	1		ļ
110B: Shelldrake				
Shelldrake	Very limited Filtering	1.00	Very limited Seepage	1.00
	capacity	1.00	Slope	0.68
	Seepage	1.00		
	!			!
Croswell	Very limited		Very limited	
	Depth to saturated zone	1.00	Seepage Depth to	1.00
	Filtering	1.00	saturated zone	
	capacity	i	Slope	0.32
	Seepage	1.00	İ	İ
444-				
111B: Deer Park	 Very limited	1	 Very limited	
DOGI FRIKATION	Filtering	1.00	Seepage	1.00
	capacity		Slope	0.32
	Seepage	1.00		İ
111D.	 		 	
111D: Deer Park	 Verv limited		 Very limited	
· == = ====	Filtering	1.00	Seepage	1.00
	capacity	į	Slope	1.00
	Seepage	1.00		
	Slope	0.63		ļ
	i -	İ	İ	İ

Table 12a.--Sanitary Facilities--Continued

Map symbol and soil name	 Septic tank absorption fiel 	ds	 Sewage lagoons 	
	Rating class and limiting features	Value	Rating class and	Value
111E:				
Deer Park	Filtering capacity Seepage	1.00	 Very limited Slope Seepage	 1.00 1.00
	Slope 	1.00	 	
111F: Deer Park	 Very limited Filtering capacity Slope Seepage	 1.00 1.00 1.00	 Very limited Slope Seepage 	 1.00 1.00
112C: Deer Park	 Very limited Filtering capacity Seepage Slope	 1.00 1.00 0.01	 Very limited Seepage Slope	 1.00 1.00
Croswell	 Very limited Depth to saturated zone Filtering capacity Seepage	 1.00 1.00 	 Yery limited Seepage Depth to saturated zone Slope	 1.00 1.00 0.32
113C: Rubicon	 Very limited Filtering capacity Seepage Slope	 1.00 1.00 0.01	 Very limited Seepage Slope 	 1.00 1.00
Croswell	 Very limited Depth to saturated zone Filtering capacity Seepage	 1.00 1.00 1.00	 Very limited Seepage Depth to saturated zone Slope	 1.00 1.00 0.32
120B: Garlic	 Very limited Filtering capacity Seepage	 1.00 1.00	 Very limited Seepage Slope	 1.00 0.32
120D: Garlic	 Very limited Filtering capacity Seepage Slope	 1.00 1.00 0.63	 Very limited Slope Seepage 	 1.00 1.00

Table 12a.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fie	lds	Sewage lagoons 	•
	Rating class and limiting features	Value	Rating class and limiting features	Value
120E:			 	
Garlic	Very limited	j	Very limited	İ
	Filtering	1.00	Slope	1.00
	capacity	1.00	Seepage	1.00
	Slope Seepage	1.00	 	
125A:			 	
Croswell	Very limited	İ	Very limited	İ
	Depth to	1.00	Seepage	1.00
	saturated zone		Depth to	1.00
	Filtering capacity	1.00	saturated zone	
	Seepage	1.00		
Au Gres	 Very limited		 Very limited	
	Depth to	1.00	Seepage	1.00
	saturated zone		Depth to	1.00
	Filtering capacity	1.00	saturated zone	0.08
	Seepage	1.00	Blope	
126B:			 	
Au Gres	Very limited	ĺ	Very limited	
	Depth to	1.00	Seepage	1.00
	saturated zone	1 00	Depth to saturated zone	1.00
	Filtering capacity	1.00	saturated zone	
	Seepage	1.00	 	
Deford	 Very limited		 Very limited	
	Ponding	1.00	Ponding	1.00
	Depth to	1.00	Seepage	1.00
	saturated zone Filtering	1.00	Depth to saturated zone	1.00
	capacity		Organic matter	1.00
	Seepage	1.00	content	
Croswell	 Very limited		 Very limited	
	Depth to	1.00	Seepage	1.00
	saturated zone	1.00	Depth to saturated zone	1.00
	capacity	1	Slope	0.68
	Seepage	1.00		
127A:			 	
Au Gres	Very limited	1	Very limited	
	Depth to	1.00	Seepage	1.00
	saturated zone Filtering	1.00	Depth to saturated zone	1.00
	capacity			i
	Seepage	1.00		
Kinross	 Very limited		 Very limited	
	Depth to	1.00	Seepage	1.00
	saturated zone		Depth to	1.00
	Filtering	1.00	saturated zone	1.00
	capacity Seepage	1.00	Organic matter	1.00

Table 12a.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fields		 Sewage lagoons 	
	Rating class and limiting features		 Rating class and limiting features	Value
130C:	 		 	
Garlic	 Verv limited		 Very limited	
	Filtering	1.00		1.00
	capacity	į	Slope	1.00
	Seepage	1.00		
Alcona	 Somewhat limited		 Very limited	
	Slow water	0.46	Slope	1.00
	movement		Seepage	0.53
130E:			 	
Garlic	Very limited	İ	Very limited	İ
	Filtering	1.00	Slope	1.00
	capacity		Seepage	1.00
	Seepage	1.00	 	
	Slope	1.00	 	
Alcona	 Very limited		 Very limited	
	Slope	1.00		1.00
	Slow water	0.46	Seepage	0.53
	movement			
133C:			 	
Keweenaw	Very limited	İ	Very limited	İ
	Seepage	1.00		1.00
			Slope	1.00
Garlic	 Very limited		 Very limited	
	Filtering	1.00	Seepage	1.00
	capacity		Slope	1.00
	Seepage	1.00	 	
133E:				
Keweenaw	-		Very limited	
	Slope	1.00		1.00
	Seepage 	1.00	Seepage 	1.00
Garlic	Very limited	į	Very limited	į
	Filtering	1.00	Slope	1.00
	capacity		Seepage	1.00
	Seepage	1.00		
	Slope 	1.00	 	
133F:				į
Keweenaw	_		Very limited	
	Slope	1.00	Slope	1.00
	Seepage 	1.00	Seepage 	1.00
Garlic		İ	 Very limited	İ
	Filtering	1.00	Slope	1.00
	capacity		Seepage	1.00
	Slope	1.00	 	
	Seepage	1.00	I	1

Table 12a.--Sanitary Facilities--Continued

	Map symbol and soil name	Septic tank absorption field	ds	Sewage lagoons	
Nery limited Depth to cemented 1.00 pan			Value		Value
Nery limited Depth to cemented 1.00 pan	126B.				
Depth to saturated zone Seepage 1.00 Seepage 1.00 Seepage 1.00 Seepage 1.00 Seepage 1.00 Saturated zone Slope 0.32		: -		: -	 1.00
Saturated zone Seepage 1.00 saturated zone Slope 0.32		: -		: -	
Seepage			1.00 		:
Ingalls			1.00		
Depth to 1.00 Seepage 1.00 Saturated zone Sat				Slope	0.32
Depth to 1.00 Seepage 1.00 Saturated zone Sat	Ingalls	 Very limited	 	 Very limited	
Slow water movement 1.00 saturated zone movement	-			: -	1.00
Mallace					1.00
Wallace		!	1.00	saturated zone	
Depth to cemented 1.00 Depth to cemented 1.00 pan pan Seepage 1.00 Seepage 1.00 Slope 1	142C:	 	 	 	
Pan Seepage 1.00 Seepage 1.00 Slope 1	Wallace	 Very limited	į	 Very limited	į
Seepage 1.00 Seepage 1.00		-	1.00	:	1.00
Slope		: -			1 00
Rubicon					!
Filtering					
Capacity Slope 1.00 Slope 1.00 Slope 1.00 Slope 0.01	Rubicon	: -		: -	
Seepage 1.00			1.00		1.00
Slope			 1 00	Slope	1.00
Wallace			!		
Wallace	1.40-				
Depth to cemented 1.00 Depth to cemented 1.00 pan pan pan		 Verv limited	 	 Verv limited	
Seepage 1.00 Slope 1.00 Rubicon		-		: -	1.00
Slope		pan	ĺ	pan	ĺ
Rubicon				: -	1.00
Filtering 1.00 Slope 1.00 Capacity Seepage 1.00 Slope epage 1.00 Seepage 1.00		Slope	1.00 	Seepage 	1.00
capacity Seepage 1.00	Rubicon	 Very limited		 Very limited	İ
Seepage 1.00			1.00	:	1.00
Slope				Seepage	1.00
Montreal			!	 	
Montreal		į	į		į
Depth to cemented 1.00 Depth to cemented 1.00 pan pan pan Depth to 1.00 Depth to 1.00 saturated zone saturated zone saturated zone Seepage 1.00 Seepage 1.00 Large stones 0.03 Slope 1.00 Large stones 0.23 Depth to bedrock 1.00 Depth to hard 1.00 Depth to hard 1.00 Depth to Seepage 1.00 Seepage		 Vom: limited		 	
pan	Montreal		1.00	: -	1.00
saturated zone saturated zone Seepage 1.00 Seepage 1.00 Large stones 0.03 Slope 1.00 Large stones 0.23 Paavola		-		:	
Seepage 1.00 Seepage 1.00 Large stones 0.03 Slope 1.00 Large stones 0.23 Paavola		. –	1.00		1.00
Large stones				:	1 00
Large stones 0.23			!		:
Depth to bedrock 1.00 Depth to hard 1.00 Depth to hard 1.00 Depth to hard 1.00 Depth to 1.00 Depth to 1.00 Seepage 1.00 Saturated zone Saturated				: -	0.23
Depth to bedrock 1.00 Depth to hard 1.00 Depth to hard 1.00 Depth to hard 1.00 Depth to 1.00 Depth to 1.00 Seepage 1.00 Saturated zone Saturated	Paavola	 Verv limited	 	 Verv limited	
Depth to 1.00 bedrock saturated zone Seepage 1.00 Depth to 1.00 saturated zone		-		: -	1.00
Seepage 1.00 Depth to 1.00		. –			į
saturated zone					1.00
		Seepage	1.00	:	1.00
2200		 	 	!	1.00
		İ	İ	į	i

Table 12a.--Sanitary Facilities--Continued

:	Rating class and limiting features	Value	·	
155C:		İ	Rating class and limiting features	Value
Waiska Ve				
	-		Very limited	
i	Filtering capacity	1.00	Seepage Slope	1.00 1.00
	Seepage	1.00	blope	
155E:				
Montreal V	ery limited	i	 Very limited	
į	Depth to cemented	1.00	Depth to cemented	1.00
	pan		pan	
	Depth to	1.00	Slope	1.00
	saturated zone		-	1.00
	Slope	1.00	saturated zone	
	Seepage Large stones	1.00	Seepage Large stones	1.00
	Large stones	0.03	harge stones	0.23
PaavolaV	ery limited	į	Very limited	į
	Depth to cemented	1.00	Depth to cemented	1.00
	pan		pan	
	Depth to	1.00	Slope	1.00
	saturated zone		Seepage	1.00
	Slope	1.00	Depth to saturated zone	1.00
			saturated zone	
Waiska V	ery limited	i	 Very limited	İ
	Filtering	1.00	Slope	1.00
	capacity		Seepage	1.00
	Seepage	1.00		
	Slope	1.00	 	
158A:				
Arnheim V	ery limited	İ	Very limited	ĺ
	Flooding	1.00	Ponding	1.00
	Ponding	1.00	Flooding	1.00
	Depth to	1.00	Seepage	1.00
	saturated zone	1 00	Depth to saturated zone	1.00
	Seepage Slow water	1.00	saturated zone	
	movement			
Sturgoon	ery limited		 Very limited	
Sturgeon Ve	Flooding	1.00	_	1.00
	Depth to	1.00	Seepage	1.00
	saturated zone		Depth to	1.00
	Seepage	1.00	saturated zone	i
İ	Slow water	0.46		ĺ
	movement		l I	
 Pelkie V	ery limited		 Very limited	
	Flooding	1.00	Flooding	1.00
į	Depth to	1.00	Seepage	1.00
İ	saturated zone		Depth to	1.00
	Filtering	1.00	saturated zone	
	capacity		Slope	0.08
	Seepage	1.00		

Table 12a.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption field	is	Sewage lagoons	
	Rating class and limiting features	Value	Rating class and limiting features	Value
161F:	İ	ĺ	İ	ĺ
Trimountain	Depth to cemented	:	Very limited Depth to cemented	1.00
	pan		pan	
	Slope Seepage	1.00		1.00
Lac La Belle	 	 	 Very limited	
nac na Belle	Depth to cemented pan	1.00	Depth to cemented pan	1.00
	: -	1.00	: -	1.00
	capacity	1		1.00
	Slope	1.00	1 2	0.01
	: -	1.00	large scones	
Waiska	 Very limited	 	 Very limited	
	Filtering	1.00	Slope	1.00
	capacity	İ	Seepage	1.00
	Slope	1.00	ĺ	ĺ
	Seepage	1.00		
162F:		 	 	
Trimountain	Very limited		Very limited	
	Depth to cemented	1.00	Depth to cemented	1.00
	pan		pan	
	Slope	1.00	Slope	1.00
	Seepage	1.00	Seepage	1.00
Lac La Belle	 Very limited		 Very limited	
	Depth to cemented	1.00	Depth to cemented	1.00
	pan		pan	
	Filtering	1.00		1.00
	capacity		1 2	1.00
	Slope Seepage	1.00 1.00	Large stones	0.01
				İ
Michigamme	Very limited		Very limited	
	Depth to bedrock	:		1.00
	Slope	1.00	bedrock	
	Slow water	0.46		1.00
	movement	l I		0.53 0.36
	 	 	narge scones	
166B:	İ	j	İ	İ
Gratiot	Very limited		Very limited	
	Depth to cemented pan	1.00	Depth to cemented pan	1.00
	: -	1.00		1.00
	Popul oo	= • • •	saturated zone	
	saturated zone	1		1
	saturated zone Seepage	1.00		1.00
	Seepage	 1.00 0.01	Seepage	1.00
	Seepage		Seepage Large stones	
Sabattis	Seepage Large stones 	0.01 	Seepage Large stones	0.30
Sabattis	Seepage Large stones Very limited	0.01 	Seepage Large stones Slope Very limited	0.30
Sabattis	Seepage Large stones Very limited	0.01 	Seepage Large stones Slope Very limited	0.30 0.08
Sabattis	Seepage Large stones Very limited Depth to	0.01 	Seepage Large stones Slope Very limited Depth to saturated zone	0.30 0.08
Sabattis	Seepage Large stones Very limited Depth to saturated zone	0.01	Seepage Large stones Slope Very limited Depth to saturated zone Ponding	0.30 0.08 1.00
Sabattis	Seepage Large stones Very limited Depth to saturated zone Ponding	0.01 1.00 	Seepage Large stones Slope Very limited Depth to saturated zone Ponding Organic matter content	0.30 0.08 1.00 1.00

Table 12a.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption field	ds	Sewage lagoons	ţ	
	Rating class and	Value	Rating class and	Value	
	limiting features	<u> </u>	limiting features	<u> </u>	
173C:					
Montreal	Very limited Depth to cemented		Very limited Depth to cemented	 1 00	
	pan pan	1.00 	pan pan	1	
	Depth to	1.00	-	1.00	
	saturated zone	İ	saturated zone	İ	
	Seepage	1.00	Seepage	1.00	
	Large stones	0.03	Slope	1.00	
			Large stones	0.23	
D1-	 		 		
Paavola	Very limited Depth to cemented	 1 00	Very limited Depth to cemented	1 00	
	pan pan	1	pan pan	1	
	Depth to	1.00	-	1.00	
	saturated zone			1.00	
		İ	saturated zone	İ	
		İ	Slope	1.00	
Dishno	Very limited		Very limited		
	Slow water	1.00		1.00	
	movement			1.00	
	Depth to saturated zone	1.00	saturated zone	 1.00	
		 0.99	-	0.96	
	Depth to Dedlock		bedrock		
		İ		İ	
173E:					
Montreal	Very limited		Very limited		
	Depth to cemented	1.00	Depth to cemented	1.00	
	pan		pan		
	Depth to	1.00	-	1.00	
	saturated zone	1.00	Depth to saturated zone	1.00	
	Seepage	1.00	!	1.00	
	Large stones	0.03		0.23	
	content		content		
		İ		İ	
Paavola	Very limited		Very limited		
	Depth to bedrock		-	1.00	
	Depth to	1.00	bedrock		
	saturated zone		-	1.00	
	Seepage	1.00		1.00	
	Slope	1.00	Depth to saturated zone	1.00	
		 	sacuraced zone	 	
Dishno	 Very limited	į	 Very limited	İ	
	Depth to	1.00	Slope	1.00	
	saturated zone			1.00	
	· -	1.00		1.00	
	Depth to bedrock	0.99	saturated zone		
	_				
	Slow water movement	0.46	Depth to hard bedrock	0.96	

Table 12a.--Sanitary Facilities--Continued

Map symbol and soil name	 Septic tank absorption fiel	ds	 Sewage lagoons 	
	Rating class and limiting features	Value	Rating class and limiting features	Value
	!		!	
174B: Montreal	 Very limited Depth to cemented		 Very limited Depth to cemented	 1 00
	pan pan		pan pan	
	Depth to	1.00	Depth to	1.00
	saturated zone		saturated zone	
	Seepage Large stones	1.00		1.00 0.92
	Harge scones		:	0.32
Dishno	 Very limited	 	 Very limited	
	!	1.00		1.00
	movement			1.00
	Depth to saturated zone	1.00	saturated zone Depth to hard	 0.96
	Depth to bedrock	0.99	bedrock	
		İ	Slope	0.92
Gratiot	 Very limited	 	 Very limited	
	Depth to cemented	1.00	Depth to cemented	1.00
	Depth to	1.00	· -	1.00
	saturated zone	İ	saturated zone	
	Seepage	1.00		1.00
	Large stones	0.01	Large stones	0.30
177A:	İ	İ	İ	i
Assinins	Very limited		Very limited	
	Depth to saturated zone	1.00		1.00
	Slow water movement	0.72	saturated zone	
183C:	 	 	 	
Munising	 Very limited	İ	 Very limited	İ
	Depth to cemented pan	1.00 	Depth to cemented pan	1.00
	Depth to	1.00	Depth to	1.00
	saturated zone		saturated zone	
	 	 		1.00
	 		Seepage 	0.55
Abbaye	Very limited	ĺ	Very limited	ĺ
	Depth to bedrock			1.00
	:	1.00	!	
	saturated zone Slow water	 0.72		1.00
	movement		!	1.00
		į	-	0.53
Yalmer	 Very limited	 	 Very limited	
	Depth to cemented	1.00	-	1.00
	pan Depth to	 1.00	pan	 1.00
	saturated zone	1. 00		1.00
	Filtering	1.00	saturated zone	
	capacity		Slope	1.00

Table 12a.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption field	ds	Sewage lagoons 		
	Rating class and	Value	Rating class and	Value	
1008					
183E: Munising	 Very limited Depth to cemented	:	 Very limited Depth to cemented	1.00	
	pan Depth to	1.00	pan Slope	1.00	
	saturated zone		Depth to	1.00	
	Slope	1.00	saturated zone	į	
	 	 	Seepage	0.53	
Abbaye	 Very limited	 	 Very limited		
•	Depth to bedrock	1.00	-	1.00	
	Depth to	1.00	bedrock		
	saturated zone			1.00	
	Slope	1.00	Depth to	1.00	
	Slow water movement	0.72	saturated zone Seepage	0.53	
	movement	 	beepage		
Yalmer	Very limited	İ	 Very limited	İ	
	Depth to cemented	1.00	Depth to cemented	1.00	
	pan		pan		
	Depth to saturated zone	1.00		1.00	
	Filtering	1.00		1.00	
	capacity		saturated zone		
	Slope	1.00	İ	į	
184C:	 Town limited	 	 Very limited		
Munising	Very limited Depth to cemented	 1.00	Depth to cemented	1.00	
	pan		pan		
	Depth to	1.00	Depth to	1.00	
	saturated zone		saturated zone		
	 	 		1.00	
		 	Seepage 	0.55	
Yalmer	 Very limited	İ	 Very limited		
	Depth to cemented	1.00	Depth to cemented	1.00	
	pan		pan		
	Depth to saturated zone	1.00		1.00	
	Filtering	1.00	saturated zone	1.00	
	capacity		!	1.00	
184E:					
Munising	Very limited Depth to cemented		Very limited Depth to cemented	1 00	
	pan pan	1. 00	pan co cemented	1.00	
	Depth to	1.00	· -	1.00	
	saturated zone	İ	Depth to	1.00	
	Slope	1.00	saturated zone		
		 	Seepage	0.53	
Yalmer	 Very limited	 	 Very limited	 	
	Depth to cemented		Depth to cemented	1.00	
	pan		pan	İ	
	Depth to	1.00		1.00	
	saturated zone		1 2	1.00	
	Filtering capacity	1.00	Depth to saturated zone	1.00	
			Sacurated Zone	1	
	Slope	1.00			

Table 12a.--Sanitary Facilities--Continued

Map symbol and soil name	 Septic tank absorption fiel(ds	 Sewage lagoons 	
	Rating class and limiting features	Value	Rating class and limiting features	Value
185B: Munising	Very limited Depth to cemented pan Depth to saturated zone	:	saturated zone	 1.00 1.00 0.53
Skanee	 Very limited Depth to cemented pan Depth to saturated zone	:	 Very limited Depth to cemented pan Depth to saturated zone Seepage	0.32 1.00 1.00 0.53 0.08
185C: Munising	saturated zone	:	pan Depth to saturated zone Slope	 1.00 1.00 1.00
Skanee	 Very limited Depth to cemented pan Depth to saturated zone	 1.00 1.00 	saturated zone	 1.00 1.00 0.68 0.53
187A: Skanee	 Very limited Depth to cemented pan Depth to saturated zone	:	saturated zone Seepage	 1.00 1.00 0.53
Gay	 Very limited Depth to saturated zone Ponding Slow water movement	 1.00 1.00 0.46 	Very limited Depth to saturated zone Ponding Organic matter content Seepage	 1.00 1.00 1.00 0.53
192B: Nipissing	 Very limited Depth to bedrock Filtering capacity Large stones	 1.00 1.00 0.77	 Very limited Depth to hard bedrock Seepage Large stones Slope	 1.00 1.00 1.00 0.32

Table 12a.--Sanitary Facilities--Continued

Map symbol and soil name	 Septic tank absorption fiel 	ds	 Sewage lagoons 		
	Rating class and	Value		Value	
	limiting features	<u> </u>	limiting features	<u> </u>	
192B: Arcadian	 Very limited Depth to bedrock 	 1.00 	 Very limited Depth to hard bedrock Slope	 1.00 0.32	
Rock outcrop	 Not rated		 Not rated		
194B:	 		 		
Copper Harbor	Very limited Depth to saturated zone Filtering capacity Seepage	 1.00 1.00 1.00	Very limited Seepage Depth to saturated zone Slope	 1.00 1.00 0.08	
195B:	 	l I	 		
Copper Harbor	Very limited Depth to saturated zone Filtering capacity Seepage	 1.00 1.00 	Very limited Seepage Depth to saturated zone Slope	 1.00 1.00 0.08	
Bete Grise	Very limited Depth to saturated zone Filtering capacity Seepage	 1.00 1.00 1.00	 Very limited Seepage Depth to saturated zone	 1.00 1.00 	
196B:	 	İ	 		
Bete Grise	Very limited Depth to saturated zone Filtering capacity Seepage	 1.00 1.00 1.00	Very limited Seepage Depth to saturated zone	 1.00 1.00 	
Tawas	 Very limited Depth to saturated zone Seepage Ponding	 1.00 1.00 1.00	Very limited Seepage Depth to saturated zone Ponding Organic matter content	 1.00 1.00 1.00 1.00	
301: Udorthents	 Somewhat limited Slow water movement	 1.00	 Somewhat limited Slope Seepage	 0.92 0.01	
Udipsamments	 Filtering capacity Seepage	 1.00 1.00	 Very limited Seepage Slope 	 1.00 0.92 	

Table 12a.--Sanitary Facilities--Continued

Map symbol and soil name	Septic tank absorption fiel	ds	Sewage lagoons		
	Rating class and limiting features	Value	Rating class and limiting features	Value	
302:	 	l I	 		
Histosols	 Verv limited		 Very limited	1	
	Ponding	1.00	-	1.00	
	Depth to	1.00	Organic matter	1.00	
	saturated zone		content	İ	
	Subsidence	1.00	Depth to	1.00	
			saturated zone		
			Seepage	1.00	
Aquents	 Very limited		 Very limited		
	Ponding	1.00	Ponding	1.00	
	Depth to	1.00	Depth to	1.00	
	saturated zone		saturated zone		
	Slow water	1.00			
	movement	 	 		
303:					
Aquents	Very limited		Very limited		
	Ponding	1.00	Ponding	1.00	
	Depth to	1.00	Depth to	1.00	
	saturated zone		saturated zone		
	Slow water	1.00		!	
	movement	l I	 		
Dumps, stamp sand	 Not rated		 Not rated	į	
310:	 		 		
Dumps, mine	Not rated	į	Not rated	į	
311:	 	 	 		
Dumps, stamp sand	 Not rated	İ	 Not rated	i	
		į		į	
312:				!	
Pits	Not rated 	 	Not rated 		
313:					
Dumps, sawdust	Not rated		Not rated		
W:	 	1	 		
Water	Not rated	i	Not rated	i	

Table 12b.--Sanitary Facilities

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. "Not rated" indicates that data are not available or that no rating is applicable. See text for further explanation of ratings in this table)

Map symbol and soil name	Trench sanitar	У	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
•						
2: Lupton	 Very limited	l I	 Very limited	l I	 Very limited	1
Hapton	Depth to	1.00	Depth to	1.00	Depth to	1.00
	saturated zone		saturated zone		saturated zone	
	Organic matter	1.00	Seepage	1.00		1.00
	content	i	Ponding	1.00	content	İ
	Seepage	1.00		i	Ponding	1.00
	Ponding	1.00	į	į	Seepage	0.16
Tawas	 Very limited		 Very limited		 Very limited	
	Depth to	1.00	Depth to	1.00	Depth to	1.00
	saturated zone	i	saturated zone	i	saturated zone	i
	Seepage	1.00	Seepage	1.00	Too sandy	1.00
	Too sandy	1.00	Ponding	1.00	Seepage	1.00
	Ponding	1.00			Ponding	1.00
3:	 		 		 	
Dawson	Very limited		Very limited		Very limited	
	Depth to	1.00	Depth to	1.00	Depth to	1.00
	saturated zone		saturated zone		saturated zone	
	Seepage	1.00	Seepage	1.00		1.00
	Too sandy	1.00	Ponding	1.00	Seepage	1.00
	Ponding	1.00	 		Ponding	1.00
Loxley	 Very limited	İ	 Very limited		 Very limited	İ
	Depth to	1.00		1.00		1.00
	saturated zone		saturated zone		saturated zone	
	Organic matter	1.00	Seepage	1.00		1.00
	content		Ponding	1.00	content	
	Too acid	1.00			Ponding	1.00
	Seepage Ponding	1.00			Seepage 	0.22
_		į		į	 -	į
6: Skandia	 Very limited		 Very limited		 Very limited	
	Depth to	1.00		1.00		1.00
	saturated zone	İ	saturated zone	İ	Depth to	1.00
	Depth to bedrock	1.00	Depth to bedrock	1.00	saturated zone	Ì
	Organic matter	1.00	Seepage	1.00	Organic matter	1.00
	content		Ponding	1.00	content	
	Seepage	1.00	l		 	
Burt	 Very limited		 Very limited		 Very limited	
	Depth to	1.00		1.00		
	saturated zone		saturated zone		Depth to	1.00
	Depth to bedrock		Depth to bedrock		saturated zone	
	Too sandy	1.00	Ponding	1.00		1.00
	Ponding	1.00		ļ	Seepage	1.00
	I	1	I	1	Ponding	1.00

Table 12b.--Sanitary Facilities--Continued

Map symbol and soil name	Trench sanitar	У	Area sanitary		Daily cover fo	Daily cover for landfill	
	Rating class and	Value		Value	Rating class and	Value	
	limiting features	<u> </u> 	limiting features	<u> </u>	limiting features	1	
10: Cathro	 Very limited Depth to	 1.00	 Very limited Depth to	 1.00	 Very limited Depth to	 1.00	
	saturated zone Ponding	 1.00 	saturated zone Seepage Ponding	 1.00 1.00	saturated zone Ponding	 1.00 	
Sabattis	 Very limited Depth to saturated zone Ponding	 1.00 1.00	 Very limited Depth to saturated zone Ponding	 1.00 1.00	 Very limited Depth to saturated zone Ponding	1.00	
13:	 		 		 	1	
Tawas	Very limited Depth to saturated zone Seepage	 1.00 1.00	Very limited Depth to saturated zone Seepage	 1.00 1.00	saturated zone	 1.00 1.00	
	Too sandy Ponding	1.00	Ponding 	1.00	Ponding	1.00	
Deford	Very limited	 1.00 1.00 1.00	Very limited Ponding Depth to saturated zone Seepage	 1.00 1.00 1.00	Very limited Ponding Depth to saturated zone Too sandy Seepage	 1.00 1.00 1.00 1.00	
15B: Dawson	 Very limited Depth to saturated zone Seepage Too sandy Ponding	 1.00 1.00 1.00	 Very limited Depth to saturated zone Seepage Ponding	 1.00 1.00 1.00	saturated zone Too sandy	 1.00 1.00 1.00	
Croswell	 Very limited Depth to saturated zone Seepage Too sandy	 1.00 1.00 1.00	 Very limited Depth to saturated zone Seepage	 1.00 1.00	 Too sandy Seepage Depth to saturated zone	 1.00 1.00 0.86	
20E: Rock outcrop	 Not rated 	 	 Not rated 	 	 Not rated 		
21G: Rock outcrop	 Not rated 	 	 Not rated 	 	 Not rated 	 	
Arcadian	Very limited Slope Depth to bedrock 	1.00	Very limited Slope Depth to bedrock	1.00		 1.00 1.00 0.65	
39A: Betsy Bay	 Very limited Depth to saturated zone Depth to bedrock Too sandy	1.00	 Very limited Depth to saturated zone Seepage Depth to bedrock	1.00 1.00	saturated zone Too sandy	 1.00 1.00 1.00 0.94	

Table 12b.--Sanitary Facilities--Continued

Map symbol and soil name	Trench sanitar	У	Area sanitary		Daily cover fo	r
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
39A: Burt	 Very limited Depth to saturated zone Depth to bedrock Too sandy Ponding	1.00	 Very limited Depth to saturated zone Depth to bedrock Ponding	1.00	 Very limited Depth to bedrock Depth to saturated zone Too sandy Seepage Ponding	 1.00 1.00 1.00 1.00
Deford	 Very limited Depth to saturated zone Ponding Seepage Too sandy	 1.00 1.00 1.00	 Very limited Ponding Depth to saturated zone Seepage	 1.00 1.00 1.00	 Very limited Ponding Depth to saturated zone Too sandy Seepage	 1.00 1.00 1.00 1.00
47A: Zeba	 Very limited Depth to saturated zone Depth to bedrock	1.00	 Very limited Depth to saturated zone Depth to bedrock	1.00	 Very limited Depth to bedrock Depth to saturated zone	 1.00 1.00
Jacobsville	 Very limited Depth to saturated zone Depth to bedrock Ponding	1.00	 Very limited Depth to saturated zone Depth to bedrock Ponding	1.00	 Very limited Depth to bedrock Depth to saturated zone Ponding	 1.00 1.00 1.00
51C: Arcadian	 Very limited Depth to bedrock	:	 Very limited Depth to bedrock	:	 Very limited Depth to bedrock Gravel content	1.00
Nipissing	 Very limited Depth to bedrock Large stones	:	 Very limited Seepage Depth to bedrock	1.00	 Very limited Depth to bedrock Seepage Large stones Gravel content	 1.00 1.00 0.77 0.22
Rock outcrop	 Not rated 	 	 Not rated 	 	 Not rated 	
51E: Arcadian	 Very limited Depth to bedrock Slope		 Very limited Depth to bedrock Slope	:	: -	 1.00 1.00 0.65
Nipissing	 Very limited Depth to bedrock Slope Large stones		 Seepage Depth to bedrock Slope	1.00	 Very limited Depth to bedrock Seepage Slope Large stones Gravel content	 1.00 1.00 1.00 0.77 0.22
Rock outcrop	 Not rated 	 	 Not rated 	 	 Not rated 	
52C: Arcadian	 Very limited Depth to bedrock 		 Very limited Depth to bedrock 	 1.00 	 Very limited Depth to bedrock Gravel content	 1.00 0.65

Table 12b.--Sanitary Facilities--Continued

Map symbol and soil name	Trench sanitary		 Area sanitary landfill 		Daily cover fo	r
	Rating class and	Value	Rating class and	Value	Rating class and	Value
	limiting features	<u> </u>	limiting features	<u> </u>	limiting features	<u> </u>
52C: Dishno	-	1.00	saturated zone	1.00 1.00	saturated zone Depth to bedrock	 1.00 0.96
Rock outcrop	 Not rated		 Not rated		 Not rated	
		İ		İ		İ
52E: Arcadian	Depth to bedrock		 Very limited Depth to bedrock Slope		: -	1.00
Dishno		1.00	saturated zone Seepage	1.00 1.00 1.00	saturated zone Slope Depth to bedrock	 1.00 1.00 0.96
Rock outcrop	 Not rated	 	 Not rated	 	 Not rated	
53E: Arcadian			 Very limited Depth to bedrock Slope		. –	1.00
Michigamme	Depth to bedrock	1.00	Depth to bedrock		: -	 1.00 1.00
Rock outcrop	 Not rated		 Not rated		 Not rated	ļ
53F: Arcadian	 Very limited Slope Depth to bedrock	1.00	:	1.00	Slope	 1.00 1.00 0.65
Michigamme	 Very limited Slope Depth to bedrock	 1.00 1.00	 Very limited Slope Depth to bedrock	1.00		 1.00 1.00
Rock outcrop	Not rated	į	Not rated	į	Not rated	
55B: Chocolay	Very limited Depth to saturated zone Depth to bedrock	 1.00 1.00	saturated zone	 1.00 1.00 1.00	Depth to saturated zone	 1.00 1.00 0.11
100B: Waiska	 Very limited Seepage Too sandy 	 1.00 1.00 	 Very limited Seepage 	 1.00 	 Very limited Too sandy Seepage Gravel content	 1.00 1.00 1.00

Table 12b.--Sanitary Facilities--Continued

Map symbol and soil name	 Trench sanitar landfill 	ту	Area sanitary		Daily cover for landfill	
	Rating class and	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
	IIMICING Teacures	1	IIMICING Teacures	1	IIMITTING TEACUTES	<u> </u>
100D:				İ		i
Waiska	Very limited	İ	Very limited	į	Very limited	į
	Seepage	1.00	Seepage	1.00	Too sandy	1.00
	Too sandy	1.00	Slope	0.63		1.00
	Slope	0.63	 	 	Gravel content Slope	1.00
102C:	İ		 -	į	- 	į
Waiska	 Verv limited		 Very limited		 Very limited	
Marsha	Seepage	1.00	: -	1.00		1.00
	Too sandy	1.00			Seepage	1.00
	_	į		į	Gravel content	1.00
Garlic	 Very limited		 Very limited		 Very limited	
	Seepage	1.00	Seepage	1.00	Too sandy	1.00
	Too sandy	1.00	l		Seepage	1.00
102E:					 	
Waiska	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Too sandy	1.00
	Too sandy	1.00	Slope	1.00		1.00
	Slope	1.00			Slope	1.00
			 		Gravel content	1.00
Garlic		1	Very limited	:	Very limited	į
	Seepage	1.00		1.00		1.00
	Too sandy Slope	1.00 1.00	Slope 	1.00	Seepage Slope	1.00
100-	į	į		į	_	į
102F: Waiska	 Very limited		 Very limited		 Very limited	
Walska	Slope	1.00	: -	1.00	: -	1.00
	Seepage	1.00	Seepage	1.00	:	1.00
	Too sandy	1.00		i	Seepage	1.00
					Gravel content	1.00
Garlic	 Very limited		 Very limited		 Very limited	
	Slope	1.00	Slope	1.00	Slope	1.00
	Seepage	1.00	Seepage	1.00	:	1.00
	Too sandy	1.00	 		Seepage 	1.00
110B:	į		İ	į		į
Shelldrake	_		Very limited	:	Very limited	
	Seepage	1.00	Seepage	1.00	Too sandy	1.00
	Too sandy	1.00	 		Seepage 	1.00
Croswell			Very limited	1	Very limited	
	Depth to	1.00	Depth to	1.00	Too sandy	1.00
	saturated zone	1 00	saturated zone	1 00	Seepage	1.00
	Seepage Too sandy	1.00 1.00	Seepage 	1.00	Depth to saturated zone	0.86
111D.						
111B: Deer Park	 Verv limited	I	 Very limited	 	 Very limited	
2001 10111	Seepage	1.00	Seepage	1.00	Too sandy	1.00
	Too sandy	1.00		i	Seepage	1.00
]				_	İ

Table 12b.--Sanitary Facilities--Continued

Map symbol and soil name	Trench sanitar	У	Area sanitary		Daily cover for landfill	
	Rating class and limiting features	Value	Rating class and		Rating class and limiting features	
111D:	 		 		 	
Deer Park	 Very limited	i	 Very limited	i	 Very limited	ì
	Seepage	1.00	Seepage	1.00	Too sandy	1.00
	Too sandy	1.00	Slope	0.63	Seepage	1.00
	Slope	0.63			Slope	0.63
111E:			 			
Deer Park	Very limited		Very limited		Very limited	
	Seepage	1.00	Seepage	1.00	Too sandy	1.00
	Too sandy	1.00	Slope	1.00	Seepage	1.00
	Slope	1.00	l I		Slope	1.00
111F:						
Deer Park	Very limited		Very limited		Very limited	
	Slope	1.00	:	1.00		1.00
	Seepage	1.00	Seepage	1.00	:	1.00
	Too sandy	1.00	 		Seepage	1.00
112C:		İ				İ
Deer Park	Very limited		Very limited		Very limited	
	Seepage	1.00		1.00	:	1.00
	Too sandy	1.00		0.01		1.00
	Slope	0.01	 		Slope 	0.01
Croswell	 Very limited		 Very limited		 Very limited	i
	Depth to	1.00	Depth to	1.00	Too sandy	1.00
	saturated zone		saturated zone		Seepage	1.00
	Seepage Too sandy	1.00	Seepage	1.00	Depth to saturated zone	0.86
	100 sandy		 		Saturated Zone	
113C:						
Rubicon	: -	1	Very limited		Very limited	
	Seepage	1.00		1.00	:	1.00
	Too sandy Slope	1.00	Slope	0.01	Seepage Slope	1.00
	Slope		 		Slope	
Croswell	: -	1	Very limited		Very limited	į
	Depth to	1.00	: -	1.00		1.00
	saturated zone		saturated zone	1.00	Seepage Depth to	1.00
	Seepage Too sandy	1.00	Seepage 	1.00	saturated zone	0.86
	į	į		į		į
120B: Garlic	 Town limited		 Very limited		 	
Gaille	Seepage	1.00	Seepage	1.00	Very limited Too sandy	1.00
	Too sandy	1.00	beepage		Seepage	1.00
1000						
120D: Garlic	 Verv limited		 Very limited	 	 Very limited	1
	Seepage	1.00	Seepage	1.00		1.00
	Too sandy	1.00	Slope	0.63	Seepage	1.00
	Slope	0.63	_		Slope	0.63
120E:	 		 		 	
Garlic	 Very limited		 Very limited		 Very limited	
	Slope	1.00	Slope	1.00		1.00
	Seepage	1.00	Seepage	1.00	Too sandy	1.00
	Too sandy	1.00				1.00

Table 12b.--Sanitary Facilities--Continued

Map symbol and soil name	Trench sanitar	У	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	
125A:							
	 Very limited		 Very limited		 Very limited		
	Depth to	1.00	Depth to	1.00	Too sandy	1.00	
	saturated zone	į	saturated zone	į	Seepage	1.00	
	Seepage	1.00	Seepage	1.00	Depth to	0.86	
	Too sandy	1.00	l		saturated zone		
Au Gres	 Very limited	1	 Very limited	1	 Very limited		
	Depth to	1.00	Depth to	1.00	Depth to	1.00	
	saturated zone	į	saturated zone	į	saturated zone	İ	
	Seepage	1.00	Seepage	1.00	Too sandy	1.00	
	Too sandy	1.00			Seepage	1.00	
126B:	 		 		 		
Au Gres	Very limited	į	Very limited	į	Very limited	j	
	Depth to	1.00	Depth to	1.00	Depth to	1.00	
	saturated zone		saturated zone		saturated zone		
	Seepage	1.00	Seepage	1.00	Too sandy	1.00	
	Too sandy	1.00	 		Seepage 	1.00	
Deford	 Very limited		 Very limited		 Very limited		
	Depth to	1.00	Ponding	1.00	Ponding	1.00	
	saturated zone		Depth to	1.00	Depth to	1.00	
	Ponding	1.00	saturated zone		saturated zone		
	Seepage	1.00	Seepage	1.00	Too sandy	1.00	
	Too sandy	1.00	 	 	Seepage 	1.00	
Croswell	 Very limited	į	 Very limited	į	 Very limited	i	
	Depth to	1.00	Depth to	1.00	Too sandy	1.00	
	saturated zone		saturated zone		Seepage	1.00	
	Seepage Too sandy	1.00	Seepage	1.00	Depth to saturated zone	0.86	
	100 sandy				sacuraced zone		
127A:							
Au Gres	Very limited	11 00	Very limited	11 00	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	Too sandy	1.00	
	Too sandy	1.00			Seepage	1.00	
W-1	 						
Kinross	Very limited Depth to	1.00	Very limited Depth to	1.00	Very limited Depth to	1.00	
	saturated zone	1	saturated zone	1	saturated zone	1	
	Seepage	1.00	Seepage	1.00	Too sandy	1.00	
	Too sandy	1.00	Ponding	1.00	Seepage	1.00	
	Ponding	1.00		į	Ponding	1.00	
130C:	 	 	 	 	 	1	
	 Very limited		 Very limited		 Very limited	ĺ	
	Seepage	1.00	Seepage	1.00	Too sandy	1.00	
	Too sandy	1.00			Seepage	1.00	
Alcona	 Somewhat limited		 Not limited		 Somewhat limited	1	
	Too sandy	0.50			Too sandy	0.50	
1205.							
130E: Garlic	 Very limited	 	 Very limited	 	 Very limited	1	
	Seepage	1.00	Seepage	1.00	Too sandy	1.00	
	Too sandy	1.00	Slope	1.00	Seepage	1.00	
	Slope	1.00			Slope	1.00	

Table 12b.--Sanitary Facilities--Continued

Map symbol and soil name	Trench sanitar	У	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
130E: Alcona	 Very limited Slope Too sandy	 1.00 0.50	 Very limited Slope	 1.00	 Very limited Slope Too sandy	 1.00 0.50
133C: Keweenaw	 Very limited Seepage Too sandy	 1.00 0.50	 Very limited Seepage 	 1.00	 Somewhat limited Too sandy Seepage	 0.50 0.22
Garlic	 Very limited Seepage Too sandy	 1.00 1.00	 Very limited Seepage	 1.00 	 Very limited Too sandy Seepage	 1.00 1.00
133E: Keweenaw	 Very limited Slope Seepage Too sandy	 1.00 1.00 0.50	 Very limited Slope Seepage	 1.00 1.00		 1.00 0.50 0.22
Garlic	 Very limited Seepage Too sandy Slope	 1.00 1.00 1.00		 1.00 1.00 	· -	 1.00 1.00 1.00
133F: Keweenaw	 Very limited Slope Seepage Too sandy	 1.00 1.00 0.50	:	 1.00 1.00	:	 1.00 0.50 0.22
Garlic	 Very limited Slope Seepage Too sandy	 1.00 1.00 1.00		 1.00 1.00		 1.00 1.00 1.00
136B: Borgstrom	Very limited Depth to saturated zone Too sandy Seepage Depth to thin cemented pan	 1.00 1.00 1.00 0.50	 Very limited Depth to cemented pan Depth to saturated zone Seepage		pan	 1.00 1.00 0.86 0.22
Ingalls	 Very limited Depth to saturated zone 	 1.00 	 Very limited Depth to saturated zone Seepage	 1.00 1.00	 Very limited Depth to saturated zone	 1.00
142C: Wallace	 Very limited Depth to thick cemented pan Seepage Too sandy Slope	 1.00 1.00 1.00 0.01	 Very limited Depth to cemented pan Seepage Slope	 1.00 1.00 0.01	 Very limited Depth to cemented pan Too sandy Seepage Slope	 1.00 1.00 1.00 0.01

Table 12b.--Sanitary Facilities--Continued

Map symbol and soil name	Trench sanitar	У	Area sanitary		Daily cover for landfill	r
	Rating class and	Value	Rating class and	Value	Rating class and	Value
	limiting features	<u>i</u>	limiting features	<u> </u>	limiting features	<u>i </u>
142C:			 	 	 	
Rubicon	 Very limited	İ	 Very limited		 Very limited	i
	Seepage	1.00	Seepage	1.00	Too sandy	1.00
	Too sandy	1.00	Slope	0.01		1.00
	Slope	0.01	l	 	Slope	0.01
142F:			 	 	 	
Wallace	Very limited	į	Very limited	į	Very limited	i
J	Depth to thick	1.00	Depth to cemented	1.00	Depth to cemented	1.00
	cemented pan		pan		pan	
	Seepage	1.00		1.00		1.00
	Too sandy Slope	1.00	Slope	1.00		1.00
	blope		 		blope	
Rubicon	Very limited	į	Very limited	į	Very limited	i
J	Seepage	1.00	Seepage	1.00	Too sandy	1.00
	Too sandy	1.00	Slope	1.00		1.00
	Slope	1.00	l I	 	Slope	1.00
155C:	 		 		 	i
Montreal	Very limited	į	Very limited	į	Very limited	į
	Depth to	1.00	Depth to cemented	1.00	Depth to cemented	1.00
	saturated zone		pan		pan	
	Depth to thick	1.00		1.00		1.00
	cemented pan Seepage	1.00	saturated zone	 	saturated zone Large stones	0.03
	Large stones	0.03	 		Large Beenes	
ļ		į	İ	İ	İ	İ
Paavola	-	'	Very limited		Very limited	
	Depth to	1.00		1.00		:
	saturated zone Depth to bedrock	1 00	saturated zone Seepage	 1.00		1.00
	Seepage	1.00	Depth to bedrock	!	!	1.00
	Too sandy	1.00		İ	:	1.00
		[[Gravel content	0.38
77 . 1 . 1			 		 	
Waiska	Very limited Seepage	1.00	Very limited Seepage	 1.00	Very limited Too sandy	1.00
	Too sandy	1.00	beepage	1.00		1.00
		İ		İ		1.00
		ļ	!		!	
155E:						
Montreal	Depth to	1.00	Very limited Depth to cemented		Very limited Depth to cemented	1 00
	saturated zone		pan		pan	
	Depth to thick	1.00	Depth to	1.00	Depth to	1.00
	cemented pan		saturated zone		saturated zone	
	Slope	1.00	Slope	1.00	Slope	1.00
	Seepage	1.00	 	 	Large stones	0.03
	Large stones	0.03	 	 	 	
_	 Very limited	İ	 Very limited		 Very limited	i
Paavola		1.00	Depth to cemented	1.00	Depth to cemented	1.00
Paavola	Depth to	12.00		1		1
Paavola	saturated zone	į	pan		pan	
Paavola	saturated zone Too sandy	1.00	Depth to	 1.00	Depth to	1.00
Paavola	saturated zone Too sandy Slope	 1.00 1.00	Depth to saturated zone	İ	Depth to saturated zone	į
Paavola	saturated zone Too sandy	1.00	Depth to	 1.00 1.00	Depth to	 1.00 1.00

Table 12b.--Sanitary Facilities--Continued

Map symbol and soil name	Trench sanitar	У	 Area sanitary landfill 		Daily cover for landfill	
	Rating class and	Value	Rating class and	Value	Rating class and	Value
	limiting features	<u> </u>	limiting features	İ	limiting features	<u>i</u>
1550						
155E: Waiska	 Very limited		 Very limited	l I	 Very limited	1
Walska	Seepage	1.00	Seepage	1.00	: -	1.00
	Too sandy	1.00		1.00		1.00
	Slope	1.00		İ	Slope	1.00
	į	i		İ	· -	1.00
1503					1	
158A: Arnheim	 Vorus limited		 Very limited	 	 Very limited	1
Armieim	Flooding	1.00	_	1.00	: -	1.00
	Depth to	1.00	Ponding	1.00	Depth to	1.00
	saturated zone	1	-	1.00	saturated zone	1
	Ponding	1.00	-			i
	Seepage	1.00				İ
Sturgeon	very limited Flooding	1	Very limited		Very limited	11 00
	Depth to	1.00	Flooding Depth to	1.00 1.00	:	1.00
	saturated zone	1	saturated zone	1. 00	Seepage	1.00
	Seepage	1.00	!	1.00	Too sandy	0.50
	Too sandy	0.50				
		1				
Pelkie	: -	1	Very limited		Very limited	
	Flooding	1.00		1.00	Seepage	1.00
	Depth to	1.00		1.00	Depth to	0.86
	saturated zone Seepage	1.00	saturated zone Seepage	 1.00	saturated zone Too sandy	0.50
	Too sandy	0.50	beepage		100 bandy	
161F: Trimountain	 Verv limited		 Very limited	 	 Very limited	1
	Slope	1.00	Depth to cemented		: -	1.00
	Depth to thick	1.00	pan	İ	pan	i
	cemented pan	i	-	1.00	: -	1.00
	Seepage	1.00		ĺ		į
Lac La Belle	 Vorus limited		 Very limited	 	 Very limited	l i
nac na Belle	Slope	1.00	Depth to cemented	 1 00		1 00
	Depth to thick	1.00	pan		pan	
	cemented pan		-	1.00	: -	1.00
	Seepage	1.00	Seepage	1.00	Seepage	1.00
	Too sandy	0.50		İ	Gravel content	1.00
	į	į		İ	Too sandy	0.50
Waiska	 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
	<u>.</u>	į		İ	Gravel content	1.00
162F:	 		 	 	 	
Trimountain	 Very limited		 Very limited	! 	 Very limited	
	Slope	1.00	Depth to cemented	1.00	Depth to cemented	1.00
	: -		-	i	: -	i
	Depth to thick	1.00	pan		pan	
	Depth to thick cemented pan	1.00	_	 1.00	pan Slope	1.00

Table 12b.--Sanitary Facilities--Continued

Map symbol and soil name	Trench sanitar landfill	У	Area sanitary		Daily cover for landfill	r
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
162F:			 	 	l I	
Lac La Belle	Very limited Slope Depth to thick	 1.00 1.00	 Very limited Depth to cemented pan	į	 Very limited Depth to cemented pan	1.00
	cemented pan Seepage Too sandy	 1.00 0.50 		1.00 1.00 	Seepage	1.00 1.00 1.00 0.50
Michigamme	Very limited Slope Depth to bedrock	1.00	 Very limited Slope Depth to bedrock	1.00	 Very limited Depth to bedrock Slope	 1.00 1.00
166B:						İ
Gratiot	Very limited Depth to saturated zone	 1.00	Very limited Depth to cemented pan	!	Very limited Depth to cemented pan	1.00
	Seepage Depth to thin	1.00	: -	 1.00 	Depth to saturated zone	1.00
	cemented pan Large stones	0.01	Seepage 	1.00 	Gravel content Large stones	0.18
Sabattis	Very limited Depth to saturated zone	1 1.00	 Very limited Depth to saturated zone	 1.00	 Very limited Depth to saturated zone	1.00
	Ponding	1.00	!	 1.00 	Ponding	1.00
173C:				İ	İ	İ
Montreal 	Very limited Depth to saturated zone	 1.00 	Very limited Depth to cemented pan	!	Very limited Depth to cemented pan	1.00
	Depth to thick cemented pan	1.00	_	1.00	Depth to saturated zone	1.00
	Seepage Large stones	1.00	 	 	Large stones 	0.03
Paavola	Very limited Depth to saturated zone	 1.00	 Very limited Depth to cemented pan	!	 Very limited Depth to cemented pan	1.00
	Too sandy Depth to thin	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
	cemented pan	 	Seepage 	1.00 	Too sandy Seepage Gravel content	1.00 1.00 0.38
Dishno		 	 Very limited		 Very limited	j I
	Depth to saturated zone Depth to bedrock	1.00 	saturated zone	1.00 1.00	Depth to saturated zone Depth to bedrock	1.00
			Depth to bedrock			
173E: Montreal	_		 Very limited		 Very limited	
	Depth to saturated zone Depth to thick	1.00 1.00	Depth to cemented pan Depth to	1.00 1.00	Depth to cemented pan Depth to	1.00 1.00
	cemented pan Slope	1.00	saturated zone	1.00	saturated zone Slope	1.00
i	Seepage	1.00			Large stones	0.03

Table 12b.--Sanitary Facilities--Continued

Map symbol and soil name	Trench sanitar	У	Area sanitary landfill		Daily cover for landfill	r
		Value		Value		Value
	limiting features	1	limiting features	l	limiting features	1
173E:	 			 		
Paavola	Very limited	İ	 Very limited	İ	 Very limited	İ
	Depth to	1.00	Depth to	1.00	Depth to bedrock	1.00
	saturated zone		saturated zone		Depth to	1.00
	Depth to bedrock	1.00		1.00		
	Seepage	1.00	-		•	1.00
	Too sandy	1.00	Slope	1.00		1.00
	Slope	1.00	 	 	Slope	1.00
Dishno	 Verv limited		 Very limited	l I	 Very limited	
222	Depth to	1.00	_	1.00		1.00
	saturated zone		saturated zone	İ	saturated zone	i
	Depth to bedrock	1.00	Seepage	1.00	Slope	1.00
	Slope	1.00	Slope	1.00	Depth to bedrock	0.96
			Depth to bedrock	0.96		
		!		ļ		
174B:	 				 	
Montreal	Depth to	1.00	Very limited Depth to cemented		Very limited Depth to cemented	1 00
	saturated zone	1	pan pan	1. 00	pan pan	1
	Depth to thick	1.00	-	1.00	Depth to	1.00
	cemented pan		saturated zone		saturated zone	
	Seepage	1.00		j	Large stones	0.03
	Large stones	0.03				
		!		ļ		
Dishno	:		Very limited		Very limited	
	Depth to	1.00	_	1.00		1.00
	saturated zone Depth to bedrock	1 00	saturated zone Seepage	 1.00	saturated zone Depth to bedrock	 n 06
	Depth to Dedlock	1	Depth to bedrock		Depth to bedrock	0.30
		i				İ
Gratiot	Very limited	į	Very limited	į	Very limited	į
	Depth to	1.00	Depth to cemented	1.00	Depth to cemented	1.00
	saturated zone		pan		pan	
	Seepage	1.00	-	1.00	Depth to	1.00
	Depth to thin	0.50	!		saturated zone	
	cemented pan		Seepage	1.00	!	0.18
	Large stones	0.01	 	l I	Large stones	0.01
177A:	İ	i		İ		i
Assinins	Very limited	į	Very limited	j	Very limited	į
	Depth to	1.00	Depth to	1.00	Depth to	1.00
	saturated zone		saturated zone		saturated zone	
			Seepage	1.00		
183C:	l I			 		
Munising	 Verv limited		 Very limited	 	 Very limited	
	Depth to	1.00	_	1.00		1.00
	saturated zone	i	pan	İ	pan	i
	Depth to thin	0.50	Depth to	1.00	Depth to	1.00
	cemented pan	1	saturated zone		saturated zone	
23.3		1				
Abbaye		1	Very limited		Very limited	1 00
	Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to bedrock Depth to	1.00
	Depth to bedrock	1 . 00	Depth to bedrock	1	saturated zone	1
ļ						

Table 12b.--Sanitary Facilities--Continued

Map symbol and soil name	Trench sanitar	У	Area sanitary landfill		Daily cover for landfill	r
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
183C: Yalmer	Very limited Depth to saturated zone Depth to thick cemented pan Too sandy	 1.00 1.00 0.50	pan Depth to saturated zone		pan Depth to saturated zone Seepage	 1.00 1.00 1.00
183E:	 	 	 	 	Too sandy 	
Munising	Very limited Depth to saturated zone Slope Depth to thin cemented pan	 1.00 1.00 0.50	pan Depth to saturated zone	'	pan Depth to saturated zone	 1.00 1.00 1.00
Abbaye	Very limited Depth to saturated zone Depth to bedrock Slope	1.00	saturated zone Depth to bedrock	1.00	Depth to saturated zone	 1.00 1.00 1.00
Yalmer	Very limited Depth to saturated zone Depth to thick cemented pan Slope Too sandy	 1.00 1.00 1.00 0.50	pan Depth to saturated zone Seepage		pan Depth to saturated zone Seepage Slope	 1.00 1.00 1.00 1.00 0.50
184C:	 			 	 	
Munising	Very limited Depth to saturated zone Depth to thin cemented pan	 1.00 0.50	pan		pan	 1.00 1.00
Yalmer	 Very limited Depth to saturated zone Depth to thick cemented pan Too sandy	 1.00 1.00 0.50	Very limited Depth to cemented pan Depth to saturated zone Seepage		 Very limited Depth to cemented pan Depth to saturated zone Seepage Too sandy	 1.00 1.00 1.00 0.50
184E: Munising	 Very limited Depth to saturated zone Slope Depth to thin cemented pan	 1.00 1.00 0.50	 Very limited Depth to cemented pan Depth to saturated zone Slope	 1.00 1.00 	 Very limited Depth to cemented pan Depth to saturated zone Slope	 1.00 1.00 1.00

Table 12b.--Sanitary Facilities--Continued

Map symbol and soil name	Trench sanitar	У	Area sanitary landfill		Daily cover for landfill	
, 	Rating class and	Value	Rating class and	Value	Rating class and	Value
	limiting features	<u> </u>	limiting features	<u> </u>	limiting features	<u> </u>
184E:				 	 	
	Very limited		 Very limited	l I	 Very limited	l I
	Depth to	1.00	-		· -	1.00
į	saturated zone	i	pan	İ	pan	i
į	Depth to thick	1.00	-	1.00	: -	1.00
İ	cemented pan	i	saturated zone	j	saturated zone	İ
ĺ	Slope	1.00	Seepage	1.00	Seepage	1.00
ĺ	Too sandy	0.50	Slope	1.00	Slope	1.00
I					Too sandy	0.50
I						
185B:						
Munising	-		-		Very limited	
ļ	Depth to	1.00	-	1.00	: -	1.00
l	saturated zone		pan		pan	
l	Depth to thin	0.50	_	1.00	:	1.00
	cemented pan		saturated zone	 	saturated zone	
Skanee	Wery limited		 Very limited	l I	 Very limited	l I
skallee	Depth to	1.00	_		· -	1 00
l I	saturated zone		pan pan	1.00	pan	
i		1.00	-	1.00	· -	1.00
i	cemented pan	i	saturated zone	İ	saturated zone	i
į	•	i		İ		i
185C:		ĺ		ĺ		
Munising	Very limited		Very limited		Very limited	
I	Depth to	1.00	Depth to cemented	1.00	Depth to cemented	1.00
I	saturated zone		pan		pan	
	Depth to thin	0.50	-	1.00	:	1.00
ļ	cemented pan		saturated zone		saturated zone	
l	Slope	0.16	Slope	0.16	Slope	0.16
 Skanee	Vor. limited		 Very limited	 	 Very limited	
Skallee	Depth to	1.00	-		· -	1 00
ļ	saturated zone	1	pan pan	1	pan pan	1
l I	Depth to thick	1.00	-	1.00	: -	1.00
i	cemented pan		saturated zone		saturated zone	
į	•	i		İ		i
187A:		į		j		į
Skanee	Very limited		Very limited		Very limited	
	Depth to	1.00	Depth to cemented	1.00	Depth to cemented	1.00
	saturated zone		pan		pan	
ļ	Depth to thick	1.00	-	1.00	: -	1.00
ļ	cemented pan		saturated zone		saturated zone	
G	1 i i i		 Very limited	 		
Gay	Depth to	1.00		 1.00	Very limited Depth to	1.00
l I	saturated zone	1	saturated zone	1. 00	saturated zone	1
l I	Ponding	1.00		1.00		1.00
192B:		i		İ		i
Nipissing	Very limited	İ	Very limited	İ	 Very limited	İ
į	Depth to bedrock		_	1.00		1.00
j	Large stones	0.77	Depth to bedrock	1.00	Seepage	1.00
		1			i = .	
					Large stones	0.77

Table 12b.--Sanitary Facilities--Continued

Map symbol and soil name	Trench sanitar	У	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
192B: Arcadian	 Very limited Depth to bedrock	 1.00	Very limited Depth to bedrock	:	 Very limited Depth to bedrock Gravel content	 1.00 0.65
Rock outcrop	 Not rated 	 	 Not rated 		 Not rated 	
194B: Copper Harbor	 Very limited Depth to saturated zone Seepage Too sandy	 1.00 1.00 1.00	 Very limited Depth to saturated zone Seepage 	 1.00 1.00 	Very limited Too sandy Seepage Gravel content Depth to saturated zone	 1.00 1.00 1.00 0.86
195B: Copper Harbor	 Very limited Depth to saturated zone Seepage Too sandy	 1.00 1.00 1.00	 Very limited Depth to saturated zone Seepage	 1.00 1.00 	 Very limited Too sandy Seepage Gravel content Depth to saturated zone	 1.00 1.00 1.00 0.86
Bete Grise	Very limited Depth to saturated zone Seepage Too sandy	 1.00 1.00 1.00	Very limited Depth to saturated zone Seepage	 1.00 1.00 	Very limited Depth to saturated zone Too sandy Seepage Gravel content	 1.00 1.00 1.00 1.00
196B: Bete Grise	 Very limited Depth to saturated zone Seepage Too sandy	 1.00 1.00 1.00	 Very limited Depth to saturated zone Seepage 	 1.00 1.00	 Very limited Depth to saturated zone Too sandy Seepage Gravel content	 1.00 1.00 1.00
Tawas	 Very limited Depth to saturated zone Seepage Too sandy Ponding	 1.00 1.00 1.00	 Very limited Depth to saturated zone Seepage Ponding	 1.00 1.00 1.00	 Very limited Depth to saturated zone Too sandy Seepage Ponding	 1.00 1.00 1.00
301: Udorthents	 Not limited	 	 Not limited	 	 Not limited	
Udipsamments	 Very limited Seepage Too sandy 	 1.00 1.00	 Very limited Seepage 	 1.00 	 Very limited Too sandy Seepage 	 1.00 1.00
302: Histosols	 Very limited Depth to saturated zone Ponding Organic matter content	 1.00 1.00 1.00	 Very limited Ponding Depth to saturated zone Seepage	 1.00 1.00 1.00	Very limited Ponding Depth to saturated zone Organic matter content Seepage	 1.00 1.00 1.00 0.16

Table 12b.--Sanitary Facilities--Continued

Map symbol and soil name	Trench sanitar 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
		İ		İ		İ
302:					 	
Aquents	_		Very limited	:	Very limited	
ļ	Depth to	1.00	Ponding	1.00		1.00
	saturated zone		Depth to	1.00	Depth to	1.00
!	Ponding	1.00	saturated zone		saturated zone	1
303:						-
Aquents	-	1 00	Very limited	1 00	Very limited	
	Depth to	1.00	Ponding	1.00	Ponding	1.00
!	saturated zone		Depth to	1.00	Depth to	1.00
ļ	Ponding	1.00	saturated zone		saturated zone	-
Dumps, stamp sand	Not rated	 	 Not rated		 Not rated	
210						1
310:		1				1
Dumps, mine	Not rated		Not rated		Not rated	
311:			 	l I	 	1
Dumps, stamp sand	Not rated	I I	 Not rated	 	 Not rated	1
Dumps, scamp sand	Not lated	i	NOC Taced		NOC Taced	
312:		i	 	l I	 	ł
Pits	Not rated	i	Not rated	i	Not rated	i
1105	not racea	i		i		ì
313:		i	! 	i	 	i
Dumps, sawdust	Not rated	i	Not rated	i	Not rated	i
		i	I	i	1	i
w:		i		i		i
Water	Not rated	i	Not rated	i	Not rated	i

Table 13a.--Construction Materials

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 0.99. The smaller the value, the greater the limitation. "Not rated" indicates that data are not available or that no rating is applicable. See text for further explanation of ratings in this table)

Map symbol and soil name	Potential as source of reclamation material		Potential as sou of roadfill	rce	Potential as source	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
2: Lupton	!	 0.00 	 Poor Depth to wetness 	 0.00 	 Poor Depth to wetness Organic matter content	 0.00 0.00
Tawas	Wind erosion Organic matter content	 0.00 0.00 0.68	 Poor Depth to wetness 	 0.00 	Poor Depth to wetness Organic matter content	 0.00 0.00
3: Dawson	Too acid	 0.50 0.50 	 Poor Depth to wetness 	 0.00 	Organic matter content	0.00
Loxley	 Poor Too acid 	 0.00 	 Poor Depth to wetness	 0.00 	content	0.00
6: Skandia	•	0.50	 Poor Depth to bedrock Depth to wetness 		content	0.00
Burt	Droughty Depth to bedrock Organic matter content	0.00	 Poor Depth to bedrock Depth to wetness 		 Poor Too sandy Depth to wetness Depth to bedrock	
10: Cathro	Wind erosion Organic matter content	0.00	 Poor Depth to wetness 	0.00	 Poor Depth to wetness Organic matter content	 0.00 0.00

Table 13a.--Construction Materials--Continued

Map symbol and soil name	Potential as source of reclamation material		Potential as source of roadfill		Potential as source of topsoil	
	Rating class and	Value	Rating class and	Value	Rating class and	Value
	limiting features		limiting features		limiting features	
10: Sabattis	 Fair	 	 Poor	 	 Poor	
	Organic matter content Too acid	0.12 0.54 	-	0.00 0.98 	: -	0.00
13:	 	 	 	 	 	
Tawas	Wind erosion	0.00	Poor Depth to wetness	!	Poor Depth to wetness Organic matter content	0.00
Deford	 Poor Too sandy Wind erosion Organic matter content Too acid	 0.00 0.00 0.12 	 Poor Depth to wetness 		 Too sandy Depth to wetness Too acid 	 0.00 0.00 0.88
15B:	 		 	 	 	
Dawson	 Fair	i	Poor	 	Poor	
	Organic matter content Too acid	0.12		!	Depth to wetness Organic matter content Too acid	0.00
Croswell	Poor Too sandy Wind erosion Organic matter content Too acid Droughty	 0.00 0.00 0.12 0.50 0.96	 Fair Depth to wetness 	!	 Poor Too sandy Depth to wetness Too acid 	 0.00 0.53 0.88
20E:	 	 	 	 	 	
Rock outcrop	 Not rated 	 	 Not rated 	 	 Not rated 	İ
21G: Rock outcrop	 Not rated 	 	 Not rated 	 	 Not rated 	
Arcadian	Poor Droughty Depth to bedrock Too acid Too sandy	0.00	Poor Depth to bedrock Slope 		Poor Slope Rock fragments Depth to bedrock Too sandy	 0.00 0.00 0.00 0.78
39A:	 December 1		 December		 D = ===	
Betsy Bay	Poor Too sandy Wind erosion Droughty Too acid Content of stones	0.00 0.00 0.09 0.50	Poor Depth to wetness Depth to bedrock Content of stones	0.07		 0.00 0.00

Table 13a.--Construction Materials--Continued

Rating class and	Potential as source of reclamation material			Potential as source of topsoil	
_	Value		Value	Rating class and	Value
limiting features	<u> </u>	limiting features	<u> </u>	limiting features	1
Poor	i	Poor	i	Poor	i
Too sandy	0.00	Depth to bedrock	0.00	Too sandy	0.00
Wind erosion	0.00	Depth to wetness	0.00	Depth to wetness	0.00
Droughty	0.00		ĺ	Depth to bedrock	0.00
Depth to bedrock	0.00				
Organic matter	0.12				
!					
Too acid	0.68	 		 	
Poor	 	Poor	 	 Poor	
	!	!	!		0.00
Wind erosion	0.00	· -	į	Depth to wetness	0.00
Organic matter	0.12		ĺ	Too acid	0.88
content					
Too acid	0.50				
		l		 	
 Fair	 	Poor	 	 Poor	1
!	!	!	!		0.00
content		-	:	_	
Depth to bedrock	0.29	· -	İ	Rock fragments	0.88
Too acid	0.50		ĺ		j
Droughty	0.59				!
 Tailer		 Danier		 Daare	
!	!		:	!	0.00
_	:	_	:		10.00
		Depen to wetness		· -	0.00
Organic matter	0.88		i	_	
content	İ		İ	Rock fragments	0.50
					1
Poor		Poor		Poor	
	:		:		0.00
	:			Depth to bedrock	
Too acid	0.50		i	Too sandy	0.78
Too sandy	0.78		İ	İ	į
	:	!	!		
	:	_	1	_	0.00
!	!	CODDIE CONCENT	0.00	Depth to Dedictal	0.99
			<u> </u>		i
	į		į		į
Not rated		Not rated		Not rated	!
 		l I		 	
Poor	 	Poor	 	Poor	1
!	!	!	!	1	0.00
	:	Slope	0.18	Depth to bedrock	
Too acid	0.50	_	į	Slope	0.00
Too sandy	0.78			Too sandy	0.78
 D		 December		 D = ===	
!	!		!	!	10.00
	:	-		_	0.00
!	:	!	:	_	
!	0.99				1
	Too sandy Wind erosion Droughty Depth to bedrock Organic matter content Too acid Poor Too sandy Wind erosion Organic matter content Too acid Fair Organic matter content Depth to bedrock Too acid Droughty Too acid Organic matter content Depth to bedrock Too acid Droughty Too acid Organic matter content Poor Droughty Depth to bedrock Too acid Too sandy Poor Droughty Cobble content Too acid Depth to bedrock Too acid Too randy Poor Droughty Cobble content Too acid Depth to bedrock Too acid Depth to bedrock Too acid Depth to bedrock	Too sandy	Too sandy Wind erosion Droughty October Depth to bedrock Wind erosion Droughty Too acid Droughty Too acid Droughty Depth to bedrock Droughty Depth to bedrock Droughty Depth to bedrock Droughty	Too sandy 0.00 Depth to bedrock 0.00 Droughty 0.00 Depth to wetness 0.00 Depth to bedrock 0.00 Depth to bedrock 0.00 Depth to bedrock 0.00 Depth to bedrock 0.00 Depth to wetness 0.00 Depth to sandy 0.00 Depth to wetness 0.00 Depth to wetness 0.00 Depth to wetness 0.00 Depth to wetness 0.00 Depth to wetness 0.00 Depth to bedrock 0.12 Depth to bedrock 0.00 Depth to wetness 0.00 Depth to bedrock 0.00 Depth t	Too sandy 0.00 Depth to bedrock 0.00 Too sandy Wind erosion 0.00 Depth to wetness 0.00 Depth to bedrock 0.00 Organic matter 0.12 Content Too acid 0.68 Depth to wetness 0.00 Too sandy Depth to bedrock 0.00 Depth to bedrock Depth to wetness 0.00 Too sandy Depth to wetness 0.00 Too sandy Depth to wetness Too acid Depth to wetness Too acid Depth to wetness Too acid Depth to wetness Too acid Depth to wetness Depth to wetness Too acid Depth to wetness Depth to bedrock Depth to wetness Depth to bedrock Depth to wetness Depth to bedrock Depth to bedrock Depth to wetness Depth to bedrock Depth to bedrock Depth to wetness Depth to bedrock Depth to wetness Depth to wetness Depth to wetness Depth to wetness Depth to wetness Depth to wetness Depth to wetness Depth to wetness Depth to wetness Depth to wetness Depth to wetness Depth to wetness Depth to wetness Depth to wetness Depth to wetness Depth to wetness Depth to bedrock Depth to wetness Depth to bedrock Depth to bedrock Depth to bedrock Depth to bedrock Depth to bedrock Depth to bedrock Depth to bedrock Too acid Depth to bedrock De

Table 13a.--Construction Materials--Continued

Map symbol and soil name	Potential as sour reclamation mate		 Potential as sou of roadfill 	rce	Potential as sou of topsoil	Potential as source of topsoil	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	
51E:			l I		l		
Rock outcrop	 Not rated 	 	 Not rated 	 	 Not rated 	 	
52C:		į		į		İ	
Arcadian	Poor Droughty Depth to bedrock Too acid Too sandy	 0.00 0.00 0.50 0.78	Poor Depth to bedrock 		Poor Rock fragments Depth to bedrock Too sandy	 0.00 0.00 0.78	
Dishno	Fair Too acid 	 0.50 	Poor Depth to wetness Depth to bedrock 	0.00	Hard to reclaim (rock fragments) Too acid	0.50	
Rock outcrop	 Not rated 		 Not rated 		 Not rated		
52E: Arcadian	 Poor Droughty Depth to bedrock Too acid Too sandy	0.00	 Poor Depth to bedrock Slope 	1	Depth to bedrock	 0.00 0.00 0.00	
Dishno	 Fair Too acid 	 0.50 	Poor Depth to wetness Depth to bedrock Slope	0.00	Slope Too acid Rock fragments	0.00 0.50 0.50 0.50	
Rock outcrop	 Not rated		 Not rated		 Not rated		
53E: Arcadian	 Poor Droughty Depth to bedrock Too acid Too sandy	0.00	 Poor Depth to bedrock Slope		Depth to bedrock	 0.00 0.00 0.00 0.78	
Michigamme	Poor Wind erosion Droughty Too acid Depth to bedrock Too sandy	0.00 0.40 0.50	Poor Depth to bedrock Slope Cobble content	1	· -	 0.00 0.00 0.01 0.54 0.78 0.88	
Rock outcrop	 Not rated		 Not rated 		 Not rated 		
53F: Arcadian	 Poor Droughty Depth to bedrock Too acid Too sandy	 0.00 0.00 0.50 0.78	 Poor Depth to bedrock Slope 		 Poor Slope Rock fragments Depth to bedrock Too sandy	 0.00 0.00 0.00 0.78	

Table 13a.--Construction Materials--Continued

Map symbol and soil name	Potential as source reclamation mate:		Potential as sour of roadfill	rce	Potential as source of topsoil		
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	
						Ţ	
53F: Michigamme	 Doom	 	 Poor	 	 Poor		
MICHIGANUME	Wind erosion	0.00	Depth to bedrock	!	Slope	0.00	
	Droughty	0.40	Slope	0.00	:	0.00	
	Too acid	0.50		0.70	•	1	
	!	0.54			Rock fragments	0.01	
	Too sandy	0.78	i I	İ	Depth to bedrock	1	
	<u> </u>	İ		İ	Too sandy	0.78	
	į	į		į	Too acid	0.88	
Rock outcrop	 Not rated 	 	 Not rated 	 	 Not rated		
55B:	 		 		 		
Chocolay	•	!	Poor	!	Poor		
	Wind erosion	0.00	Depth to bedrock	:	Depth to wetness	1	
	Droughty	0.00	Depth to wetness	0.00	Rock fragments	0.00	
	Depth to bedrock				Depth to bedrock		
	Too acid Too sandy	0.50 0.78	 	 	Too acid Too sandy	0.76	
	100 sandy		 		100 sandy		
100B:	!				!		
Waiska	Poor		Fair		Poor		
	Wind erosion	0.00	Content of stones	0.95	Hard to reclaim	0.00	
	Droughty	0.00			(rock fragments)		
	Too sandy	0.08	İ	 	Rock fragments	0.00	
	Organic matter content	0.12	 	 	Too sandy Too acid	0.08	
	Too acid	0.26	 	 	100 acia	1	
	Content of stones					İ	
100D:							
Waiska	Poor	 	 Fair	 	Poor		
	Wind erosion	0.00	!		Hard to reclaim	0.00	
	Droughty	0.00			(rock fragments)		
	Too sandy	0.08	İ	į	Rock fragments	0.00	
	Organic matter	0.12		ĺ	Too sandy	0.08	
	content				Slope	0.37	
	Too acid	0.26			Too acid	0.98	
	Content of stones	0.91 	 	 	 		
102C:		İ		İ		İ	
Waiska	Poor		Fair		Poor		
		0.00	Content of stones	0.95			
	Droughty	0.00			(rock fragments)		
	Too sandy	0.08			Rock fragments	0.00	
	Organic matter	0.12	İ	 	Too sandy Too acid	0.08	
	content Too acid	0.26	 	 	100 acid	10.30	
	Content of stones	'			 		
g 1 t	l Danasa		l a				
Garlic	!	0.00	Good	 	Poor	10.00	
	Too sandy Wind erosion	0.00	 	l I	Too sandy	0.00	
	Wind erosion Too acid	0.00 0.08	 	I I	 		
	Organic matter	0.12	! 	İ	! 		
	content						
	Droughty	0.98		i	İ	i	
			:	:	·		

Table 13a.--Construction Materials--Continued

Map symbol and soil name	Potential as source reclamation mate:		Potential as sour of roadfill	rce	Potential as sou of topsoil	rce
	Rating class and limiting features	Value	Rating class and	Value	Rating class and limiting features	Value
102E:	 	 		 		1
Waiska	Poor	i	Fair	İ	Poor	i
	Wind erosion	0.00	Slope	0.18	Hard to reclaim	0.00
	Droughty	0.00	Content of stones	0.95	(rock fragments)	
	Too sandy	0.08				0.00
		0.12	İ		-	0.00
	content Too acid	0.26	 	l I	-	0.08
	Content of stones	1	 			
Garlic	Poor	 	 Fair		Poor	
	Too sandy	0.00	Slope	0.18	Too sandy	0.00
	Wind erosion	0.00			Slope	0.00
	Too acid	0.08				
	Organic matter	0.12			ĺ	
	content Droughty	0.98	 		 	
102F:	 	 	 	 	 	1
Waiska	Poor	i	Poor	İ	Poor	i
	Wind erosion	0.00	Slope	0.00	Slope	0.00
	Droughty	0.00	Content of stones	0.95	Hard to reclaim	0.00
		0.08			(rock fragments)	
		0.12				0.00
	content Too acid	0.26	 	l I	-	0.08
	Content of stones	1		į		
Garlic	 Poor	 	 Poor	 	 Poor	
	Too sandy	0.00	Slope	0.00	Slope	0.00
	Wind erosion	0.00			Too sandy	0.00
	Too acid	0.08		!		!
	Organic matter content	0.12	İ		l	
	Droughty	0.98		 		
110B:		į	 	İ	 	į
Shelldrake	Poor	 	 Good		 Poor	
	Too sandy	0.00		ĺ	Too sandy	0.00
	!	0.00			Too acid	0.24
	Droughty	0.01				1
	Organic matter content	0.05	 	 		1
	!	0.50				
Croswell	 Poor	 	 Fair	 	 Poor	
	Too sandy	0.00	Depth to wetness		!	0.00
	Wind erosion	0.00			Depth to wetness	0.53
	Organic matter content	0.12	 	 	Too acid	0.88
	Too acid	0.50		İ		i
	Droughty	0.96	 			
111B:	 		 	 	 	
Deer Park	!	!	Good		Poor	
	Too sandy	0.00	 		Too sandy	0.00
	!	0.00 0.12	 	 	 	1
	Jiganic matter	0.12	1	1	1	1
	content					
	content Too acid Droughty	 0.50 0.99				

Table 13a.--Construction Materials--Continued

Map symbol and soil name	Potential as sour reclamation mate		Potential as sou of roadfill	rce	Potential as sou of topsoil	ırce
	Rating class and	Value	Rating class and	Value	Rating class and	Value
	limiting features		limiting features	<u> </u>	limiting features	
111D:			 		l	
Deer Park	Poor		 Good	1	 Poor	
	Too sandy	0.00		İ	Too sandy	0.00
	Wind erosion	0.00	İ	į	Slope	0.37
	Organic matter	0.12				
	content					
	Too acid	0.50				!
	Droughty	0.99	 -			
111E:			 	1	 	
Deer Park	Poor	İ	Fair	į	Poor	i
	Too sandy	0.00	Slope	0.18	Too sandy	0.00
	Wind erosion	0.00			Slope	0.00
	Organic matter	0.12				!
	content					!
	Too acid	0.50	 		İ	1
	Droughty	0.99	 	 	 	
111F:						İ
Deer Park	Poor		Poor	ĺ	Poor	İ
	Too sandy	0.00	Slope	0.00	Slope	0.00
	Wind erosion	0.00		ļ	Too sandy	0.00
	Organic matter	0.12				!
	content Too acid	0.50	 		l I	1
	Droughty	0.99	 	l I	 	1
	Dioughey					i
112C:	İ	İ	İ	į		į
Deer Park	!	!	Good		Poor	
	Too sandy	0.00		ļ	Too sandy	0.00
	Wind erosion	0.00	 		İ	1
	Organic matter content	0.12	 	l I	 	1
	Too acid	0.50	 	1	 	1
	Droughty	0.99		İ		i
	İ		İ	ĺ		ĺ
Croswell		!	Fair	!	Poor	
	Too sandy Wind erosion	0.00	Depth to wetness	0.53		0.00
	Organic matter	0.00	 	1	Depth to wetness Too acid	0.88
	content			İ	100 acia	1
	Too acid	0.50		İ		i
	Droughty	0.96	İ	į		į
1126						
113C: Rubicon	Poor	1	 Good		 Poor	
	Too sandy	0.00		İ	Too sandy	0.00
	Wind erosion	0.00		İ		
	Too acid	0.08		İ		İ
	Droughty	0.95				ļ
Croswell	Poor		 Fair		 Poor	
0100#011	Too sandy	0.00	Depth to wetness	!	Too sandy	0.00
	Wind erosion	0.00			Depth to wetness	
	Organic matter	0.12	İ	į	Too acid	0.88
		1	I	I.	I	1
	content					1
	content Too acid Droughty	 0.50 0.96	 			

Table 13a.--Construction Materials--Continued

Map symbol and soil name	Potential as sour reclamation mate		•	rce	Potential as source of topsoil		
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	
120B:	 		 		 		
Garlic	Poor	j	Good	İ	Poor	İ	
	Too sandy	0.00			Too sandy	0.00	
	Wind erosion	0.00					
	Too acid	0.08					
	Organic matter	0.12				!	
	content					1	
	Droughty	0.98	 		 		
120D:	 		 		 	1	
Garlic	Poor	i	 Good		Poor	ì	
541115	Too sandy	0.00		i	Too sandy	0.00	
	Wind erosion	0.00		i	Slope	0.37	
	Too acid	0.08	İ	į		į	
	Organic matter	0.12		İ		İ	
	content						
	Droughty	0.98				[
100-							
120E: Garlic	 Boor		 Poor		Poor	I	
Garric	Too sandy	0.00	!	0.00	Poor Slope	0.00	
	Wind erosion	0.00	biope		Too sandy	0.00	
	Too acid	0.08	! 	i			
	Organic matter	0.12		i		i	
	content	İ	İ	İ		i	
	Droughty	0.98	İ	İ		İ	
125A:		!		!		!	
Croswell	!		Fair	1	Poor		
	Too sandy	0.00	Depth to wetness	0.53	·	0.00	
	Wind erosion Organic matter	0.00 0.12	 		Depth to wetness Too acid	0.88	
	content	0.12	 		100 acid	0.00	
	Too acid	0.50		i		ì	
	Droughty	0.96		i		i	
Au Gres	· ·		Poor		Poor		
	Too sandy	0.00	Depth to wetness	0.00		0.00	
	Wind erosion	0.00			Depth to wetness	0.00	
	Organic matter content	0.12	 			1	
	Too acid	0.50	 		 	1	
			 	i		i	
126B:		i	İ	İ		i	
Au Gres	Poor	j	Poor	į	Poor	į	
	Too sandy	0.00	Depth to wetness	0.00	Too sandy	0.00	
	Wind erosion	0.00			Depth to wetness	0.00	
	Organic matter	0.12				!	
	content			1	 		
	Too acid	0.50	 	1	 	1	
Deford	Poor	1	 Poor	1	 Poor	1	
	Too sandy	0.00	:	1	!	0.00	
	Wind erosion	0.00		i	Depth to wetness		
		-	• Control of the cont		. –		
	Organic matter	0.12			Too acid	0.88	
	Organic matter content	0.12	 		Too acid	0.88	

Table 13a.--Construction Materials--Continued

Map symbol and soil name	Potential as sour reclamation mate		Potential as sou of roadfill	rce	Potential as source of topsoil		
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	
		<u> </u>	IIMICING TEACUTES	<u> </u>		1	
126B: Croswell	 Doom		Pain		Doom		
Croswell	Too sandy	0.00	Fair Depth to wetness	1	Poor Too sandy	0.00	
	Wind erosion	0.00	Depen to weenebb		Depth to wetness		
	Organic matter	0.12		İ	Too acid	0.88	
	content	İ		İ	İ	ĺ	
	Too acid	0.50					
	Droughty	0.96	l		 		
127A:	[
Au Gres	Poor	i	Poor	į	Poor	i	
	Too sandy	0.00	Depth to wetness	0.00	Too sandy	0.00	
	Wind erosion	0.00			Depth to wetness	0.00	
	Organic matter	0.12					
	content Too acid	0.50	l I		 		
	100 acid		 		 		
Kinross	Poor	į	Poor	į	Poor	İ	
	Too sandy	0.00	Depth to wetness	0.00	Too sandy	0.00	
	Organic matter	0.12			Depth to wetness	0.00	
	content Too acid		 		 -		
	100 acid	0.50	 		 		
130C:		i		İ			
Garlic	1		Good		Poor		
	Too sandy	0.00			Too sandy	0.00	
	Wind erosion	0.00	 		 -		
	Too acid Organic matter	0.08	 		 		
	content		 		! 	i	
	Droughty	0.98		į	İ	j	
22	 		l a		l a 1		
Alcona	Too acid	0.08	Good 		Good		
	Organic matter	0.12			 		
	content	į		į	İ	j	
1205							
130E: Garlic	Poor		 Fair		 Poor		
341113	Too sandy	0.00	'	0.18	!	0.00	
	Wind erosion	0.00	· -	į	Slope	0.00	
	Too acid	0.08					
	Organic matter	0.12				ļ	
	content Droughty	0.98	 -		 		
	Dioughty				 	i	
Alcona	Fair	İ	Fair	İ	Poor	İ	
	Too acid	0.08	Slope	0.18	Slope	0.00	
	Organic matter content	0.12	 		 		
					İ	İ	
133C:							
Keweenaw	Poor Wind erosion	0.00	Good		Fair Too sandy	10.22	
	Too acid	0.00	 		100 sandy	0.22	
	Too sandy	0.22	 		 		
	· ·	i	İ	i	i İ	i	

Table 13a.--Construction Materials--Continued

Map symbol and soil name	Potential as sour reclamation mate		Potential as sou of roadfill	rce	Potential as source		
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	
133C:	 	 	 	 	 	 	
Garlic	Poor		Good		Poor		
	Too sandy	0.00			Too sandy	0.00	
	Wind erosion	0.00					
	Too acid	0.08					
	Organic matter	0.12		!			
	content			!			
	Droughty	0.98 	 	 	 	l I	
133E:							
Keweenaw	Poor		Fair		Poor		
	Wind erosion	0.00	Slope	0.18	Slope	0.00	
	Too acid	0.08			Too sandy	0.22	
	Too sandy	0.22					
Garlic	Poor	 	 Fair	 	 Poor	 	
darrie	Too sandy	0.00		0.18	!	0.00	
	Wind erosion	0.00	52565		:	0.00	
	Too acid	0.08		i		İ	
	Organic matter	0.12	 	 	 	 	
	Droughty	0.98		İ		İ	
133F:	 						
Keweenaw	1		Poor	!	Poor		
	Wind erosion Too acid	0.00 0.08	Slope	0.00	:	0.00	
	Too sandy	0.22	 	l I	Too sandy	0.22	
				İ		İ	
Garlic	Poor	į	Poor	į	Poor	İ	
	Too sandy	0.00	Slope	0.00	Slope	0.00	
	Wind erosion	0.00			Too sandy	0.00	
	Too acid	0.08					
	Organic matter content	0.12 	 	 	 	 	
	Droughty	0.98					
136B:	 	 	 	 	 	l I	
Borgstrom	Poor		Poor		Poor	i	
3	Too sandy	0.00	Depth to cemented	0.00	!	0.00	
	Wind erosion	0.00	pan	İ	(dense layer)	i	
	Depth to cemented	0.00	Depth to wetness	0.53	-	0.00	
	pan	ĺ		ĺ	Depth to cemented	0.00	
	Droughty	0.00			pan		
	Too acid	0.50			Too acid	0.32	
					Depth to wetness	0.53	
Ingalls	Poor	 	 Poor	 	 Poor		
ya-16	Too sandy	0.00	Depth to wetness		'	0.00	
	Wind erosion	0.00	Septim to wethers		Depth to wetness		
	Organic matter	0.12	! 	İ	:	0.95	
	content			İ			
	Too acid	0.50		i		İ	
	· ·		:	:	1	1	

Table 13a.--Construction Materials--Continued

Map symbol and soil name	Potential as source of reclamation material		Potential as sour of roadfill	rce	Potential as sous	rce
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
142C:	 			 		
Wallace	Poor	İ	Poor	İ	Poor	i
	Too sandy	0.00	Depth to cemented	0.00	Hard to reclaim	0.00
	Wind erosion	0.00	pan	į	(dense layer)	i
	Droughty	0.00	į	İ	Too sandy	0.00
	Depth to cemented	0.03		ĺ	Depth to cemented	0.03
	pan				pan	
	Too acid	0.08		 	Too acid	0.50
Rubicon	Poor	 	 Good		 Poor	
	Too sandy	0.00			Too sandy	0.00
	Wind erosion	0.00				
	Too acid	0.08				
	Droughty	0.95 	 	 	 	
142F:						į
Wallace	!		Poor	!	Poor	
	Too sandy	0.00	Depth to cemented	0.00	!	0.00
	Wind erosion	0.00	pan		(dense layer)	
	Droughty Depth to cemented	0.00	Slope	0.00	Too sandy Slope	0.00
	pan	0.03 	I I	l I	Depth to cemented	
	Too acid	0.08	 	 	pan pan	0.05
					Too acid	0.50
Rubicon	Poor	 	Poor	 	 Poor	l I
Rubicon	Too sandy	0.00		0.00	Too sandy	0.00
	Wind erosion	0.00			Slope	0.00
	Too acid	0.08	İ	İ		i
	Droughty	0.95		į		į
155C:		 		 	 	
Montreal	Fair	ĺ	Poor	ĺ	Poor	ĺ
	Droughty	0.05	Depth to wetness	0.00	Hard to reclaim	0.00
	Too acid	0.08	Depth to cemented	0.00	(dense layer)	
	Depth to cemented	0.29	pan		Depth to wetness	1
	pan		!	0.50	Rock fragments	0.00
	 	 	Content of stones	0.99	Depth to cemented pan	0.29
					:	0.76
Paavola	Poor	 	 Poor	 	 Poor	
		0.00	Depth to bedrock	0.00		0.00
	Wind erosion	0.00	Depth to wetness		•	
	Droughty	0.00			Too sandy	0.00
		0.16	İ	j	Rock fragments	0.00
	Too acid	0.46			Depth to wetness	1
					Depth to bedrock	0.16
Waiska	Poor	 	 Fair	 	 Poor	
	Wind erosion	0.00	Content of stones	0.95	Hard to reclaim	0.00
	Droughty	0.00			(rock fragments)	
	Too sandy	0.08		ļ	Rock fragments	0.00
	Organic matter content	0.12 	 	 	Too sandy Too acid	0.08
	Too acid	0.26	į	į		i
	Content of stones		İ	į	İ	İ

Table 13a.--Construction Materials--Continued

Map symbol and soil name	 Potential as source reclamation mate:		 Potential as sou: of roadfill	rce	Potential as source of topsoil		
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	
155E: Montreal	 Fair		 Poor		 Poor		
Moncreal	!	0.05	Depth to wetness Depth to cemented pan	0.00	!	0.00	
	pan	 	Slope	0.18 0.50 0.99	Slope Rock fragments Depth to cemented pan	0.00	
Paavola	 Poor	 	Poor	 	Poor	i I	
	Too sandy Wind erosion Droughty Depth to cemented pan Too acid	0.00 0.00 0.00 0.16 0.46	Depth to cemented pan	:	(dense layer) Too sandy Slope	:	
Waiska	Poor Wind erosion Droughty Too sandy Organic matter content Too acid Content of stones	0.00 0.00 0.08 0.12 	Fair Slope Content of stones	0.18	(rock fragments) Rock fragments Slope Too sandy	 0.00 0.00 0.00 0.08 0.98	
158A: Arnheim	 Poor Wind erosion Organic matter content Water erosion Too acid	 0.00 0.12 0.90	 Poor Depth to wetness 		 Poor Depth to wetness 	 0.00 	
Sturgeon	 Poor Wind erosion Too sandy Too acid		 Poor Depth to wetness 	 0.00 	 Poor Depth to wetness Too sandy 	 0.00 0.22 	
Pelkie	Poor	 0.00 0.22 0.68 0.68	 Fair Depth to wetness 	1	 Fair Too sandy Depth to wetness 	 0.22 0.53 	
161F: Trimountain	Too acid Droughty	0.00	 Poor Depth to cemented pan	0.00	(dense layer)	 0.00	
	Depth to cemented pan	0.00 	-	0.00 0.96 	Depth to cemented pan	0.00 0.00 0.12 0.76	

Table 13a.--Construction Materials--Continued

Map symbol and soil name	Potential as source reclamation mater		Potential as sou: of roadfill	rce	Potential as sour of topsoil	rce
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and	Value
161F: Lac La Belle	Roor	 	 Poor	 	 Poor	
nac na belle	Droughty Too acid Too sandy Content of stones Depth to cemented pan		Depth to cemented pan Slope Content of stones	0.00	Slope Hard to reclaim (dense layer) Rock fragments Too sandy	0.00 0.00 0.00 0.22 0.50 0.94
Waiska	Poor Wind erosion Droughty Too sandy Organic matter content Too acid Content of stones	0.00 0.00 0.08 0.12 	 Poor Slope Content of stones 	0.00	Hard to reclaim (rock fragments)	 0.00 0.00 0.00 0.08 0.98
162F:				 	 	
Trimountain	Poor Too acid Droughty Depth to cemented pan	 0.00 0.00 0.00 	_	!	:	 0.00 0.00 0.00 0.12 0.76
Lac La Belle	Poor Droughty Too acid Too sandy Content of stones Depth to cemented pan	!	Poor Depth to cemented pan Slope Content of stones	0.00	Hard to reclaim (dense layer)	 0.00 0.00 0.00 0.22 0.50 0.94
Michigamme	Wind erosion Droughty Too acid	 0.00 0.40 0.50 0.54 0.78	Poor Depth to bedrock Slope Cobble content	 0.00 0.00 0.70 	Hard to reclaim	 0.00 0.00 0.01 0.54 0.78 0.88
166B: Gratiot	Poor Droughty Depth to cemented pan Too acid	 0.00 0.00 0.50 	Poor Depth to wetness Depth to cemented pan Cobble content	0.00	•	0.00

Table 13a.--Construction Materials--Continued

Map symbol and soil name	Potential as sour reclamation mate		Potential as sout	rce	Potential as source of topsoil		
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	
166B: Sabattis	 Fair Organic matter content Too acid 	 0.12 0.54 	 Poor Depth to wetness Cobble content 	 0.00 0.98 	(rock fragments) Rock fragments	0.00	
173C: Montreal	 Fair Droughty Too acid Depth to cemented pan 	0.05	Poor Depth to wetness Depth to cemented pan Cobble content Content of stones	0.00	(dense layer) Depth to wetness Rock fragments Depth to cemented pan	0.00	
Paavola	 Poor Too sandy Wind erosion Droughty Depth to cemented pan Too acid	0.00	Poor Depth to wetness Depth to cemented pan	0.00	(dense layer) Too sandy		
Dishno	 Fair Too acid 	 0.50 	 Poor Depth to wetness Depth to bedrock	0.00	Hard to reclaim (rock fragments) Too acid	0.50	
173E: Montreal	 Fair Droughty Too acid Depth to cemented pan 	0.05	Poor Depth to wetness Depth to cemented pan Slope Cobble content Content of stones	0.00 0.00 0.18 0.50	(dense layer) Depth to wetness Slope Rock fragments Depth to cemented pan	0.00	
Paavola	Too sandy Wind erosion Droughty Depth to bedrock Too acid	0.00	Poor Depth to bedrock Depth to wetness Slope	0.00	(dense layer) Too sandy Slope		
Dishno	Fair Too acid 	 0.50 	Poor Depth to wetness Depth to bedrock Slope	0.00	Slope Too acid Rock fragments	0.00 0.50 0.50 0.50	

Table 13a.--Construction Materials--Continued

Map symbol and soil name	Potential as source reclamation mate:		Potential as sous	rce	Potential as sour of topsoil	rce
	Rating class and	Value	Rating class and	Value	Rating class and	Value
	limiting features	<u> </u>	limiting features	<u> </u>	limiting features	<u> </u>
174B: Montreal	 Fair	 	 Poor	 	 Poor	
	Droughty Too acid Depth to cemented	0.05	Depth to wetness Depth to cemented pan	!	Hard to reclaim (dense layer) Depth to wetness	0.00
	pan	 		 0.50 0.99 	Rock fragments Depth to cemented pan	0.00
Dishno	 Fair	 	 Poor	 	 Poor	
	Too acid	0.50 	Depth to wetness Depth to bedrock	!	Depth to wetness Hard to reclaim (rock fragments) Too acid Rock fragments	0.50
Gratiot	 Poor Droughty	 0.00	 Poor Depth to wetness	!	Poor	 0.00
	Depth to cemented pan Too acid	0.00	Depth to cemented pan Cobble content	0.00	(dense layer) Depth to wetness Rock fragments Depth to cemented pan	0.00
		 		 	: - -	0.76
177A: Assinins	Wind erosion Organic matter	 0.00 0.12	 Poor Depth to wetness	!	(dense layer)	 0.00
	content Too acid	 0.50 	 	 	Depth to wetness 	0.00
183C:	İ	İ		İ	İ	İ
Munising	Poor	!	Poor	!	Poor	
	Depth to cemented pan	0.00	Depth to wetness Depth to cemented	:	Hard to reclaim (dense layer)	0.00
	Too acid Droughty	0.12 0.26	pan	0.00 	Depth to wetness Depth to cemented pan	
		 		 	Too acid	0.59
Abbaye	Fair Organic matter content	 0.12 	Poor Depth to bedrock Depth to wetness	0.00	Poor Depth to wetness Rock fragments	 0.00 0.00
	Droughty Too acid Depth to bedrock	0.26 0.50 0.54	 	 	Depth to bedrock	0.54
Yalmer	!	!	Poor		Poor	
	Wind erosion Droughty Too acid	0.00 0.01 0.01	Depth to wetness Depth to cemented pan		Hard to reclaim (dense layer) Depth to wetness	0.00 0.00
	Too sandy Depth to cemented pan	0.22		 	Too sandy Depth to cemented pan	0.22
	 	 	 	 	Too acid Rock fragments 	0.59 0.88

Table 13a.--Construction Materials--Continued

Map symbol and soil name	 Potential as source reclamation mate: 				al as sour roadfill	rce	Potential as sou of topsoil	rce
	Rating class and	Value	Rating	cla	ass and	Value	Rating class and	Value
	limiting features	<u> </u>	limiti	ng i	features	<u> </u>	limiting features	<u> </u>
183E:	l I	 	 -			 	l	
Munising	Poor	 	Poor			l İ	Poor	l I
•	Depth to cemented	:	:	to	wetness	0.00	Hard to reclaim	0.00
	pan		Depth	to	cemented	0.00		
	:	0.12	pan				Depth to wetness	
	Droughty	0.26	Slope			0.18	Slope	0.00
	 	l I	 			l I	Depth to cemented pan	10.00
	 	 	 			i İ	Too acid	0.59
		į	İ			j		į
Abbaye	Fair		Poor				Poor	
		0.12	_		bedrock	:		:
	content		: -	to	wetness	:	Rock fragments	0.00
	Droughty Too acid	0.26 0.50	Slope			0.18	Slope Depth to bedrock	0.00
	Depth to bedrock		 			i İ	Depth to Dedlock	
		ĺ	ĺ			İ		İ
Yalmer	Poor	ĺ	Poor			ĺ	Poor	Ì
	Wind erosion	0.00	_		wetness	:	:	0.00
	Droughty	0.01	-	to	cemented	0.00		
	Too acid Too sandy	0.01	pan Slope			 0.18	Depth to wetness Slope	0.00
	Depth to cemented	!	blobe			0.18 	Too sandy	0.22
	pan		! 			İ	Depth to cemented	
	i -	į	j			j	pan	į
							Too acid	0.59
						ļ	Rock fragments	0.88
184C:	 		 -			 	 	1
Munising	 Poor	 	 Poor			l I	Poor	
	Depth to cemented		:	to	wetness	:	Hard to reclaim	0.00
	Too acid	0.12	Depth	to	cemented	0.00	(dense layer)	į
	Droughty	0.26	pan				Depth to wetness	1
							Depth to cemented	0.00
	 	 	 			l I	pan Too acid	0.59
	! 		 			 		
Yalmer	Poor	į	Poor			j	Poor	į
	Wind erosion	0.00			wetness		Hard to reclaim	0.00
	Droughty	0.01		to	cemented	0.00	(dense layer)	
	Too acid	0.01	pan			 	Depth to wetness	
	Too sandy Depth to cemented	0.22	 			l I	Too sandy Depth to cemented	0.22
	pan		! 			! 	pan	
	j	į	j			į	Too acid	0.59
							Rock fragments	0.88
104-								
184E: Munising	Poor	 	 Poor			 	 Poor	1
munising	Depth to cemented		Poor Depth	to	wetness	0.00	!	0.00
	pan				cemented		(dense layer)	
	Too acid	0.12	pan				Depth to wetness	0.00
	Droughty	0.26	Slope			0.18	Slope	0.00
						!	Depth to cemented	0.00
	 	 	 			 	pan Too acid	0.59

Table 13a.--Construction Materials--Continued

Map symbol and soil name	Potential as source reclamation mater		Potential as sou of roadfill	ırce	Potential as sou	rce
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
184E: Yalmer	 Poor Wind erosion Droughty	 0.00 0.01	 Poor Depth to wetness Depth to cemented		 Poor Hard to reclaim (dense layer)	 0.00
	Too acid Too sandy Depth to cemented pan	0.01	pan Slope	 0.18 	Commercial Commercia	0.00
	 	 	 		Too acid Rock fragments	0.59
185B: Munising	Depth to cemented pan	:	 Poor Depth to wetness Depth to cemented pan	0.00	 Poor Hard to reclaim (dense layer) Depth to wetness	 0.00 0.00
	Droughty 	0.26 	 	 	Depth to cemented pan Too acid 	0.00 0.59
Skanee	Poor Droughty Depth to cemented pan Too acid	0.00	Poor Depth to wetness Depth to cemented pan 	0.00	Poor Hard to reclaim (dense layer) Depth to wetness Depth to cemented pan	0.00
185C: Munising	 - Poor Depth to cemented pan Too acid	:	 - Poor Depth to wetness Depth to cemented pan	0.00	Too acid Poor Hard to reclaim (dense layer) Depth to wetness	0.68 0.00 0.00
	Droughty 	0.26 	 		Depth to cemented pan Too acid Slope	0.00 0.59 0.84
Skanee	Poor Droughty Depth to cemented pan Too acid	0.00	Poor Depth to wetness Depth to cemented pan	0.00	Poor Hard to reclaim (dense layer) Depth to wetness Depth to cemented pan Too acid	1
187A: Skanee	!		 Poor		 Poor	
	Droughty Depth to cemented pan Too acid	0.00 0.00 0.12	Depth to wetness Depth to cemented pan		Hard to reclaim (dense layer) Depth to wetness Depth to cemented pan Too acid	
Gay	 Poor Wind erosion Organic matter	 0.00 0.12	 Poor Depth to wetness 	!	 Poor Hard to reclaim (dense layer) Depth to wetness	 0.00 0.00

Table 13a.--Construction Materials--Continued

Map symbol and soil name	Potential as sour reclamation mate		Potential as sou of roadfill	rce	Potential as sou of topsoil	rce
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
192B:			 	 	 	
Nipissing	Poor Droughty Cobble content Too acid Depth to bedrock	 0.00 0.29 0.50	Poor Depth to bedrock Cobble content 	 0.00 0.00 		 0.00 0.99
				İ		İ
Arcadian	Droughty Depth to bedrock Too acid	0.00	Poor Depth to bedrock 	1	Poor Rock fragments Depth to bedrock Too sandy	 0.00 0.00 0.78
Rock outcrop	 Not rated 	 	 Not rated 	 	 Not rated 	
194B:						
Copper Harbor	Poor Too sandy Organic matter content Too acid Droughty	 0.00 0.12 0.68 0.90	Fair Depth to wetness 	 0.53 	Hard to reclaim (rock fragments)	0.00
195B:		İ	İ	İ	İ	İ
Copper Harbor	Poor Too sandy Organic matter content Too acid Droughty	 0.00 0.12 0.68 0.90	Fair Depth to wetness	 0.53 	Hard to reclaim (rock fragments)	0.00
Bete Grise	Poor Too sandy Droughty Organic matter content Too acid	 0.00 0.08 0.12 0.32	Poor Depth to wetness	!		0.00
196B:				İ		İ
Bete Grise	Poor Too sandy Droughty Organic matter content Too acid	 0.00 0.08 0.12 0.32	Poor Depth to wetness	!	Poor Too sandy Depth to wetness Rock fragments Hard to reclaim (rock fragments)	0.00
Tawas	 Poor Wind erosion Organic matter content Too acid	0.00	 Poor Depth to wetness 	 0.00 	 Poor Depth to wetness Organic matter content 	 0.00 0.00
301: Udorthents	 Fair Organic matter content Too acid	 0.12 0.68	 Good 	 	 Good 	

Table 13a.--Construction Materials--Continued

Map symbol and soil name	Potential as source of reclamation material		Potential as source of roadfill		Potential as source	
	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
301:	 		 a 1		 	
Udipsamments	!		Good		Poor	10.00
	Too sandy	0.00	 		Too sandy	0.00
	Wind erosion	0.00	 		 	1
	Organic matter	0.12	 		 	1
	content Too acid	0.84	 		 	1
		0.84	 		 	1
	Droughty	10.96	 		 	
302:					 	i
Histosols	Poor	i	Poor	i	Poor	i
	Wind erosion	0.00	Depth to wetness	0.00	Depth to wetness	0.00
	Too acid	0.68		į Į	Organic matter content	0.00
Aquents	 Pada		 Poor		 Dane	
Aquencs	!	10 60		!	Poor	10.00
	Too acid	0.68	Depth to wetness	0.00	Depth to wetness Rock fragments	0.88
					ROOM Tragmenes	
303:		İ		İ		i
Aquents	Fair	i	Poor	i	Poor	i
_	Too acid	0.68	Depth to wetness	0.00	Depth to wetness	0.00
	j	į		į	Rock fragments	0.88
D	 Wat		 Not rated		 Not rated	
Dumps, stamp sand	Not rated		NOT Fated 		NOT rated 	
310:			 		! 	i
Dumps, mine	Not rated	i	Not rated	i	Not rated	i
•		İ		İ		i
311:		İ		İ		ĺ
Dumps, stamp sand	Not rated		Not rated		Not rated	
						ļ
312:		!		!	_	ļ
Pits	Not rated		Not rated		Not rated	
313:	 	I	 	I	 	1
Dumps, sawdust	 Not rated		 Not rated		 Not rated	1
Dumps, sawausc						l
W:		İ		İ		
Water	Not rated	1	Not rated	1	Not rated	1

Table 13b.--Construction Materials

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 0.99. The greater the value, the greater the likelihood that the bottom layer or thickest layer of the soil is a source of sand or gravel. "Not rated" indicates that data are not available or that no rating is applicable. See text for further explanation of ratings in this table)

Map symbol and soil name	Potential as so of gravel	ource	Potential as source		
	Rating class	Value	Rating class	Value	
2:	 		 		
	Poor		Poor		
	Bottom layer	0.00	Bottom layer	0.00	
	Thickest layer	0.00	Thickest layer	0.00	
Tawas	 Poor		 Fair		
	Bottom layer		Thickest layer	0.00	
	Thickest layer		Bottom layer	0.75	
3:	 	İ	 		
Dawson	Poor	į	Fair	į	
	Bottom layer	0.00		0.00	
	Thickest layer	0.00	Bottom layer	0.82	
Loxley	Poor	i	Poor	i	
	Bottom layer		Bottom layer	0.00	
	Thickest layer	0.00	Thickest layer	0.00	
6:		į		į	
Skandia	Poor		Poor		
	Bottom layer		Bottom layer	0.00	
	Thickest layer	0.00	Thickest layer		
Burt	Poor		Fair	į	
	Bottom layer		Thickest layer	0.00	
	Thickest layer	0.00	Bottom layer	0.75	
10:		ļ		ļ	
Cathro	Poor Bottom layer		Poor Bottom layer	0.00	
	Thickest layer	0.00	:	0.00	
Sabattis	Fair		Fair		
	Thickest layer Bottom layer	0.00 0.15	Thickest layer Bottom layer	0.00	
	Bottom layer		Bottom Tayer	0.03	
13:		į			
Tawas	Poor		Fair Thickest layer	0.00	
	Bottom layer Thickest layer		Bottom layer	0.75	
	<u> </u>	į	į	į	
Deford	Poor		Fair		
	Bottom layer Thickest layer	0.00	Thickest layer Bottom layer	0.00	
	Interest tayer		Doctom Tayer		
15B: Dawson	Poor		 Fair		
Dawsoll	Poor Bottom layer	0.00		0.00	
	Thickest layer		Bottom layer	0.82	
	į	į	Ī	į	

Table 13b.--Construction Materials--Continued

Map symbol and soil name	 Potential as sou of gravel 	rce	Potential as source of sand		
	Rating class	Value	Rating class	Value	
15B: Croswell	 Poor Bottom layer Thickest layer	 0.00 0.00	 Fair Bottom layer Thickest layer	 0.82 0.82	
20E: Rock outcrop	 Not rated	 	 Not rated	 	
21G: Rock outcrop	 Not rated 		 Not rated 		
Arcadian	 Fair Thickest layer Bottom layer 	 0.00 0.57	·	0.00	
39A:					
Betsy Bay	Poor Bottom layer Thickest layer 	 0.00 0.00	Fair Thickest layer Bottom layer 	0.20	
Burt	 Bottom layer Thickest layer	0.00	 Fair Thickest layer Bottom layer	0.00	
Deford	 Poor Bottom layer Thickest layer	0.00	 Thickest layer Bottom layer	0.00	
47A:					
Zeba	Poor Bottom layer Thickest layer	0.00	 Poor Bottom layer Thickest layer	0.00	
Jacobsville	 Poor Bottom layer Thickest layer	0.00	 Poor Bottom layer Thickest layer	0.00	
51C:		İ		İ	
Arcadian	Fair Thickest layer Bottom layer	 0.00 0.57	Fair Thickest layer Bottom layer 	 0.00 0.03	
Nipissing	Poor Bottom layer Thickest layer	0.00	 Bottom layer Thickest layer	0.00	
Rock outcrop	 Not rated 	 	 Not rated 	 	
51E:		!			
Arcadian	!	 0.00 0.57	·	0.00	
Nipissing	 Poor Bottom layer Thickest layer	0.00	:	0.00	
Rock outcrop	 Not rated 	 	 Not rated 	 	

Table 13b.--Construction Materials--Continued

Map symbol and soil name	 Potential as sou of gravel	rce	 Potential as source of sand		
	Rating class	Value	Rating class	Value	
52C: Arcadian	 Fair Thickest layer Bottom layer	 0.00 0.57	 Fair Thickest layer Bottom layer	 0.00 0.03	
Dishno	 Fair Thickest layer Bottom layer	 0.15 0.57	 Fair Thickest layer Bottom layer	 0.00 0.10	
Rock outcrop	 Not rated 	 	 Not rated 	İ	
52E: Arcadian	 Fair Thickest layer Bottom layer	 0.00 0.57	 Fair Thickest layer Bottom layer	0.00	
Dishno	 Fair Thickest layer Bottom layer 	 0.15 0.57	·	 0.00 0.10	
Rock outcrop	 Not rated 	į I	 Not rated 	į i	
53E: Arcadian	 Fair Thickest layer Bottom layer		 Fair Thickest layer Bottom layer	0.00	
Michigamme	 Poor Thickest layer Bottom layer		 Fair Thickest layer Bottom layer 	 0.00 0.10	
Rock outcrop	 Not rated 	į i	 Not rated 	į i	
53F: Arcadian	 Fair Thickest layer Bottom layer	 0.00 0.57	·	0.00	
Michigamme	 Poor Thickest layer Bottom layer 	 0.00 0.00	:	 0.00 0.10	
Rock outcrop	 Not rated	į i	 Not rated	į	
55B: Chocolay	 Poor Bottom layer Thickest layer	 0.00 0.00	 Poor Bottom layer Thickest layer	0.00	
100B: Waiska	 Fair Thickest layer Bottom layer	 0.47 0.71	 Fair Thickest layer Bottom layer	0.47	
100D: Waiska	 Fair Thickest layer Bottom layer	 0.47 0.71	 Fair Thickest layer Bottom layer	 0.47 0.71	

Table 13b.--Construction Materials--Continued

Map symbol and soil name	Potential as so of gravel	ource	Potential as source		
	Rating class	Value	Rating class	Value	
102C:			 		
Waiska	Fair	i	Fair	i	
	Thickest layer	0.47	Thickest layer	0.47	
	Bottom layer	0.71	Bottom layer	0.71	
Garlic	Poor		 Fair		
	Bottom layer Thickest layer	0.00	Bottom layer Thickest layer	0.75 0.75	
1008.		į	_	į	
102E: Waiska	 Fair	l I	 Fair		
Walska	Thickest layer	0.47	Thickest layer	0.47	
	Bottom layer	0.71	Bottom layer	0.71	
	Bottom layer	0.71	Bottom layer	0.71	
Garlic	Poor		Fair		
	Bottom layer	0.00	Bottom layer	0.75	
	Thickest layer	0.00	Thickest layer	0.75	
102F:		į	<u> </u>	į	
Waiska	Fair		Fair		
	Thickest layer	0.47		0.47	
	Bottom layer	0.71	Bottom layer	0.71	
Garlic	Poor	i	Fair	İ	
	Bottom layer	0.00	Bottom layer	0.75	
	Thickest layer	0.00	Thickest layer	0.75	
110B:			 		
Shelldrake	Poor		Fair		
	Bottom layer	0.00	Bottom layer	0.95	
	Thickest layer	0.00	Thickest layer	0.95	
Croswell	Poor	i	Fair	İ	
	Bottom layer	0.00	Bottom layer	0.82	
	Thickest layer	0.00	Thickest layer	0.82	
111B:		İ			
Deer Park	Poor		Fair		
	Bottom layer	0.00	Bottom layer	0.27	
	Thickest layer	0.00	Thickest layer	0.27	
111D:	į	į		į	
Deer Park	!		Fair		
	Bottom layer Thickest layer	0.00	-	0.27	
1110		į		į	
111E: Deer Park	Poor		 Fair	l	
Deel Falk	Bottom layer	0.00	!	0.27	
	Thickest layer	0.00	:	0.27	
111F: Deer Park	Poor		 Fair	l	
	Bottom layer	0.00	Bottom layer	0.27	
	Thickest layer	0.00	-	0.27	
112C:			l I		
	Poor		 Fair		
	Bottom layer	0.00	Bottom layer	0.27	
	Thickest layer	0.00	Thickest layer	0.27	

Table 13b.--Construction Materials--Continued

Map symbol and soil name	 Potential as so of gravel 	urce	Potential as source		
	Rating class	Value	Rating class	Value	
112C: Croswell	 Poor Bottom layer Thickest layer	0.00		 0.82 0.82	
113C: Rubicon	 Poor Bottom layer Thickest layer		 Fair Bottom layer Thickest layer	0.82	
Croswell	 Poor Bottom layer Thickest layer	0.00	 Fair Bottom layer Thickest layer	0.82	
120B: Garlic	 Poor Bottom layer Thickest layer	0.00	 Fair Bottom layer Thickest layer	 0.75 0.75	
120D: Garlic	 Poor Bottom layer Thickest layer	0.00	 Fair Bottom layer Thickest layer	0.75	
120E: Garlic	 Poor Bottom layer Thickest layer	0.00	:	0.75	
125A: Croswell	 Poor Bottom layer Thickest layer		 Fair Bottom layer Thickest layer	0.82	
Au Gres	 Poor Bottom layer Thickest layer 	 0.00 0.00	:	 0.75 0.75	
126B:	į	į		į	
Au Gres	Poor Bottom layer Thickest layer 	0.00	:	 0.75 0.75	
Deford	Poor Bottom layer Thickest layer	0.00	 Thickest layer Bottom layer	0.00	
Croswell	 Poor Bottom layer Thickest layer	0.00		0.82	
127A: Au Gres	 Poor Bottom layer Thickest layer	0.00		 0.75 0.75	
Kinross	 Poor Bottom layer Thickest layer 	0.00	 Fair Bottom layer Thickest layer 	 0.75 0.75	

Table 13b.--Construction Materials--Continued

Map symbol and soil name	 Potential as so of gravel 	urce	 Potential as source of sand 		
	Rating class	Value	Rating class	Value	
130C: Garlic	 Poor Bottom layer Thickest layer	 0.00 0.00	 Fair Bottom layer Thickest layer	 0.75 0.75	
Alcona	 Poor Bottom layer Thickest layer	0.00	 Fair Thickest layer Bottom layer	 0.11 0.27	
130E: Garlic	 Poor Bottom layer Thickest layer	 0.00 0.00	<u>-</u>	 0.75 0.75	
Alcona	 Poor Bottom layer Thickest layer	 0.00 0.00	-	 0.11 0.27	
133C:					
Keweenaw	Poor Bottom layer Thickest layer		Fair Bottom layer Thickest layer	 0.08 0.08	
Garlic	 Poor Bottom layer Thickest layer		 Fair Bottom layer Thickest layer	0.75	
	 Poor Bottom layer Thickest layer Poor Bottom layer	0.00	Thickest layer Fair	 0.08 0.08 	
	Thickest layer	0.00	Thickest layer	0.75	
133F:	 				
Keweenaw	Poor Bottom layer Thickest layer	0.00	Fair Bottom layer Thickest layer	0.08	
Garlic	Poor Bottom layer Thickest layer	0.00	 Fair Bottom layer Thickest layer	0.75	
136B: Borgstrom	 Poor Bottom layer Thickest layer	0.00	 Poor Bottom layer Thickest layer	0.00	
Ingalls	 Poor Bottom layer Thickest layer	0.00	 Fair Bottom layer Thickest layer	 0.00 0.72	
142C:	 		[
Wallace	 Poor Bottom layer Thickest layer 	0.00	Fair Thickest layer Bottom layer	 0.19 0.93	

Table 13b.--Construction Materials--Continued

Map symbol and soil name	Potential as so of gravel	ource	Potential as source		
	Rating class	Value	Rating class	Value	
142C: Rubicon	 Poor Bottom layer Thickest layer	 0.00 0.00	 Fair Bottom layer Thickest layer	0.82	
	Inickest layer		Inickest layer		
142F: Wallace	 Poor Bottom layer Thickest layer	0.00		0.19	
Rubicon	 Poor Bottom layer Thickest layer	 0.00 0.00		0.82	
155C:			 		
	 Fair Thickest layer Bottom layer	0.00	 Fair Thickest layer Bottom layer	0.00	
Paavola	 Fair Thickest layer Bottom layer	 0.06 0.57	 Fair Thickest layer Bottom layer	 0.06 0.10	
Waiska	 Fair Thickest layer Bottom layer	 0.47 0.71	 Fair Thickest layer Bottom layer	 0.47 0.71	
155E:					
Montreal	 Fair Thickest layer Bottom layer	 0.00 0.14	:	0.00	
Paavola	 Fair Thickest layer Bottom layer	 0.06 0.64	:	 0.06 0.07	
Waiska	 Fair Thickest layer Bottom layer	 0.47 0.71	:	 0.47 0.71	
158A: Arnheim	 Poor Bottom layer Thickest layer	 0.00 0.00	 Fair Thickest layer Bottom layer	 0.01 0.10	
Sturgeon	į	 0.00 0.00	 Fair	 0.10 0.10	
Pelkie	 Poor Bottom layer Thickest layer	 0.00 0.00	 Fair Thickest layer Bottom layer	 0.02 0.03	
161F: Trimountain	 Fair Thickest layer	 0.00	 Fair Thickest layer		
	Bottom layer	0.15	Bottom layer	0.04	

Table 13b.--Construction Materials--Continued

Map symbol and soil name	Potential as so of gravel	ource	Potential as source		
	Rating class	Value	Rating class	Value	
161F:			 		
Lac La Belle	Fair		 Fair	i	
	Thickest layer	0.44	Bottom layer	0.08	
	Bottom layer	0.51	Thickest layer	0.08	
Waiska	 Fair	l I	 Fair		
	Thickest layer	0.47	Thickest layer	0.47	
	Bottom layer	0.71	Bottom layer	0.71	
162F:					
Trimountain		!	Fair		
	Thickest layer	0.00	Thickest layer	0.00	
	Bottom layer	0.15	Bottom layer	0.04	
Lac La Belle	1		Fair	į	
	Thickest layer	0.44	Bottom layer	0.08	
	Bottom layer	0.51	Thickest layer	0.08	
Michigamme	Poor	j	Fair	j	
	Thickest layer	0.00	Thickest layer	0.00	
	Bottom layer	0.00	Bottom layer	0.10	
166B:		İ			
Gratiot	!		Fair		
	Thickest layer Bottom layer	0.00 0.68	Thickest layer Bottom layer	0.00	
	Bottom Tayer		Boccom Tayer		
Sabattis	!	!	Fair		
	Thickest layer	0.00	-	0.00	
	Bottom layer	0.15	Bottom layer 	0.03	
173C:	į	į		į	
Montreal	Fair		Fair		
	Thickest layer Bottom layer	0.00	Thickest layer Bottom layer	0.00	
Paavola	Fair		Fair		
	Thickest layer	0.06	Thickest layer	0.06	
	Bottom layer	0.64	Bottom layer 	0.07	
Dishno	Fair	1	Fair	j	
	Thickest layer	0.15	Thickest layer	0.00	
	Bottom layer	0.57	Bottom layer	0.10	
173E:	İ	į		į	
Montreal	!	!	Fair		
	Thickest layer Bottom layer	0.00	_	0.00	
	İ	į	·		
Paavola	!	1	Fair		
	Thickest layer Bottom layer	0.06 0.57	Thickest layer Bottom layer	0.06	
	İ	į	·		
Dishno	1		Fair		
	Thickest layer	0.15	Thickest layer	0.00	
	Bottom layer	0.5/	Bottom layer	0.10	

Table 13b.--Construction Materials--Continued

Map symbol and soil name	Potential as so of gravel	urce	Potential as source of sand		
	Rating class	Value	Rating class	Value	
174B:			 		
Montreal	Fair		 Fair		
	Thickest layer	0.00	Thickest layer	0.00	
	Bottom layer	0.14	Bottom layer	0.03	
Dishno	Fair	İ	 Fair	i	
	Thickest layer	0.15	Thickest layer	0.00	
	Bottom layer	0.57	Bottom layer 	0.10	
Gratiot	Fair	j	Fair	j	
	Thickest layer	0.00	Thickest layer	0.00	
	Bottom layer	0.68 	Bottom layer 	0.01	
177A:	į	į		į	
Assinins	Poor Bottom layer	0.00	Fair Bottom layer	0.02	
	Thickest layer	0.00	Thickest layer	0.02	
	į	j	·	i	
183C: Munising	Poor		 Fair		
Muniping	Bottom layer	0.00	!	0.00	
	Thickest layer	0.00	Bottom layer	0.01	
Abbaye	Poor		 Poor		
ADDaye	Bottom layer	0.00	1	0.00	
	Thickest layer	0.00	Thickest layer	0.00	
Yalmer	Poor		 Fair		
Idimoi	Bottom layer	0.00	!	0.04	
	Thickest layer	0.00	Thickest layer	0.10	
183E:			 		
Munising	Poor	İ	Fair	i	
	Bottom layer	0.00	-	0.00	
	Thickest layer	0.00	Bottom layer 	0.01	
Abbaye	Poor	i	Poor	i	
	Bottom layer	0.00	· -	0.00	
	Thickest layer	0.00	Thickest layer 	0.00	
Yalmer	Poor	į	Fair	į	
	Bottom layer Thickest layer	0.00	Bottom layer Thickest layer	0.04	
	Inickest layer		Inickest layer		
184C:				-	
Munising	Poor Bottom layer	0.00	Fair Thickest layer	0.00	
	Thickest layer	0.00	Bottom layer	0.01	
				ļ	
Yalmer	Bottom layer	0.00	Fair Bottom layer	0.04	
	Thickest layer	0.00	· -	0.10	
1048				-	
184E: Munising	 Poor		 Fair		
•	Bottom layer	0.00	Thickest layer	0.00	
	Thickest layer	0.00	Bottom layer	0.01	
Yalmer	Poor		 Fair		
	Bottom layer	0.00	!	0.04	
	Thickest layer	0.00	Thickest layer	0.10	
	I	I	I	I	

Table 13b.--Construction Materials--Continued

Map symbol and soil name	Potential as so of gravel	ource	Potential as so of sand	ource
	Rating class	Value	Rating class	Value
185B: Munising	 Poor Bottom layer Thickest layer	 0.00 0.00	 Fair Thickest layer Bottom layer	 0.00 0.01
Skanee	 Poor Bottom layer Thickest layer	0.00	 Fair Thickest layer Bottom layer	 0.00 0.01
185C: Munising	 Poor Bottom layer Thickest layer	 0.00 0.00	 Fair Thickest layer Bottom layer	0.00
Skanee	 Poor Bottom layer Thickest layer 	 0.00 0.00	 Fair Thickest layer Bottom layer	 0.00 0.01
187A: Skanee	 Poor Bottom layer Thickest layer	0.00	 Fair Thickest layer Bottom layer	 0.00 0.01
Gay	 Poor Bottom layer Thickest layer	0.00	 Bottom layer Thickest layer	0.03
192B: Nipissing	 Poor Bottom layer Thickest layer	 0.00 0.00	 Poor Bottom layer Thickest layer	 0.00 0.00
Arcadian	 Fair Thickest layer Bottom layer	 0.00 0.57	 Fair Thickest layer Bottom layer	0.00
Rock outcrop	 Not rated 		 Not rated 	
194B: Copper Harbor	 Fair Thickest layer Bottom layer	 0.30 0.57	 Fair Bottom layer Thickest layer	 0.16 0.30
195B: Copper Harbor	 Fair Thickest layer Bottom layer	 0.30 0.57	 Fair Bottom layer Thickest layer	 0.16 0.30
Bete Grise	 Fair Bottom layer Thickest layer	 0.29 0.41	 Fair Bottom layer Thickest layer	 0.29 0.38
196B: Bete Grise	 Fair Bottom layer Thickest layer	 0.29 0.41	 Fair Bottom layer Thickest layer	0.29
Tawas	 Poor Bottom layer Thickest layer 	0.00	 Fair Thickest layer Bottom layer	0.00

Table 13b.--Construction Materials--Continued

Map symbol and soil name	Potential as so of gravel	urce	Potential as source of sand	
	Rating class	Value	Rating class	Value
301:	 	l	 	
Udorthents	Not rated		Not rated	į
Udipsamments	 Poor		 Fair	
	Bottom layer	0.00	Bottom layer	0.89
	Thickest layer	0.00	Thickest layer	0.89
302:			 	
Histosols	Poor		Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Aquents	Poor		 Poor	
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
303:		l l	 	
Aquents	Poor	i	Poor	i
	Bottom layer	0.00	Bottom layer	0.00
	Thickest layer	0.00	Thickest layer	0.00
Dumps, stamp sand	 Not rated		 Not rated	
310:			 	
Dumps, mine	Not rated		Not rated	
311:			 	
Dumps, stamp sand	Not rated		Not rated	
312:			 	
Pits	Not rated		Not rated	-
313:			 	
Dumps, sawdust	Not rated		Not rated	
W:			 	
Water	Not rated	į	Not rated	į

Table 14a.--Water Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. "Not rated" indicates that data are not available or that no rating is applicable. See text for further explanation of ratings in this table)

Map symbol and soil name	Grassed waterways		Drainage	
	 Rating class and limiting features	Value	 Rating class and limiting features	Value
2: Lupton	 Very limited Depth to saturated zone 	 1.00 	 Very limited Depth to saturated zone Organic matter content Frost action Ponding	 1.00 1.00 1.00
Tawas	 Very limited Depth to saturated zone 	 1.00 	Cutbanks cave	1.00 1.00 1.00 1.00 1.00
3: Dawson	 Very limited Depth to saturated zone 	 1.00 	saturated zone Cutbanks cave Frost action Ponding	 1.00 1.00 1.00 1.00
Loxley	 Very limited Depth to saturated zone 	 1.00 	Very limited Depth to saturated zone Organic matter content Frost action Too acid Ponding	 1.00 1.00 1.00 1.00
6: Skandia	 Very limited Depth to saturated zone Depth to bedrock 	1.00	Very limited Depth to bedrock Depth to saturated zone Organic matter content Frost action Ponding	 1.00 1.00 1.00 1.00 1.00

Table 14a.--Water Management--Continued

Map symbol and soil name	Grassed waterways		 Drainage 	
	Rating class and limiting features	Value	Rating class and limiting features	Value
6: Burt	 Very limited Depth to bedrock Depth to saturated zone Droughty	1	Very limited Depth to bedrock Depth to saturated zone Deep to water Ponding Cutbanks cave	 1.00 1.00 1.00 1.00
10: Cathro	 Very limited Depth to saturated zone 	 1.00 	Very limited Depth to saturated zone Frost action Cutbanks cave Ponding Organic matter content	 1.00 1.00 1.00 1.00
Sabattis	 Very limited Depth to saturated zone Water erosion Cobble content	 1.00 0.56 0.02	 Very limited Depth to saturated zone Frost action Cutbanks cave Ponding	 1.00 1.00 1.00
13: Tawas	 Very limited Depth to saturated zone 	 1.00 	Very limited Depth to saturated zone Cutbanks cave Frost action Ponding Organic matter content	 1.00 1.00 1.00 1.00
Deford	 Very limited Depth to saturated zone Slope 	 1.00 0.04	 Very limited Ponding Depth to saturated zone Cutbanks cave	 1.00 1.00 1.00
15B: Dawson	 Very limited Depth to saturated zone 	 1.00 	Very limited Depth to saturated zone Cutbanks cave Frost action Ponding Organic matter content	 1.00 1.00 1.00 1.00
Croswell	 Somewhat limited Depth to saturated zone Droughty Slope	 0.86 0.44 0.16	saturated zone	 1.00 1.00
20E: Rock outcrop	 Not rated 		 Not rated 	

Table 14a.--Water Management--Continued

Map symbol and soil name	Grassed waterways		Drainage 	
	Rating class and limiting features	Value	Rating class and limiting features	Value
01.5				
21G: Rock outcrop	 Not rated 	 	 Not rated 	
Arcadian	Very limited Slope Depth to bedrock Droughty 	1.00	Very limited Depth to bedrock Slope Deep to water Cutbanks cave	 1.00 1.00 1.00 1.00
39A: Betsy Bay	Very limited Depth to saturated zone Depth to bedrock Droughty Slope	1.00	Very limited Depth to saturated zone Cutbanks cave Depth to bedrock	 1.00 1.00 0.93
Burt	Very limited Depth to bedrock Depth to saturated zone Droughty	1	Very limited Depth to bedrock Depth to saturated zone Deep to water Ponding Cutbanks cave	 1.00 1.00 1.00 1.00
Deford	 Very limited Depth to saturated zone	 1.00 	 Very limited Ponding Depth to saturated zone Cutbanks cave	 1.00 1.00 1.00
47A: Zeba	Very limited Depth to bedrock Depth to saturated zone Restricted permeability Water erosion Slope	:	Very limited Depth to bedrock Depth to saturated zone Frost action Cutbanks cave	 1.00 1.00 1.00 1.00
Jacobsville	Very limited Depth to bedrock Depth to saturated zone		. –	 1.00 1.00 1.00 1.00
51C: Arcadian	 Very limited Depth to bedrock Droughty Slope	 1.00 1.00 0.95		 1.00 1.00 1.00

Table 14a.--Water Management--Continued

Map symbol and soil name	 Grassed waterways		 Drainage 	
	Rating class and	Value	Rating class and	Value
	limiting features		limiting features	
E1.0.			l	
51C: Nipissing	 Verv limited		 Very limited	
J	Cobble content	1.00	: -	1.00
	Depth to bedrock	1.00	Deep to water	1.00
	Slope	0.95	!	1.00
	Droughty Water erosion	0.42	Large stones	0.77
	water erosion	0.17	 	
Rock outcrop	 Not rated	į	 Not rated	į
51E:		i		
Arcadian	Very limited	İ	Very limited	İ
	Depth to bedrock	1	: -	
	Slope Droughty	1.00	Deep to water Slope	1.00
	Droughty	1	Cutbanks cave	1.00
		İ		
Nipissing	Very limited		Very limited	
	Cobble content	1.00	: -	
	Slope Depth to bedrock	1.00	:	1.00
	Droughty	0.42	Cutbanks cave	1.00
	Water erosion	0.17	Large stones	0.77
Rock outcrop	 Not rated	İ	 Not rated	į I
		į		İ
52C:		1		
Arcadian	Very limited Depth to bedrock	1	Very limited Depth to bedrock	1 00
	Droughty	1.00	: -	1.00
	Slope	0.95	Cutbanks cave	1.00
-1.1		1		
Dishno	Very limited Depth to	1.00	Very limited Depth to	1.00
	saturated zone		saturated zone	
	Depth to bedrock	0.96	Cutbanks cave	1.00
	Slope	0.95	Depth to bedrock	0.96
	Water erosion	0.89	 	
Rock outcrop	 Not rated		 Not rated	
		İ		İ
52E:				
Arcadian	Very limited Depth to bedrock	1 00	Very limited Depth to bedrock	1 00
	Slope	1.00	: -	1.00
	Droughty	1.00	Slope	1.00
			Cutbanks cave	1.00
Dishno	 Verv limited		 Very limited	1
	Depth to	1.00	: -	1.00
	saturated zone	İ	saturated zone	İ
	Slope	1.00	!	1.00
	Depth to bedrock	1	:	1.00
	Water erosion	0.89	Depth to bedrock	U.96
Rock outcrop	Not rated		 Not rated	

Table 14a.--Water Management--Continued

Map symbol and soil name	 Grassed waterways		 Drainage 	
	Rating class and limiting features	Value	Rating class and limiting features	Value
53E:	 		 	
Arcadian	Very limited	į	 Very limited	İ
	Depth to bedrock		Depth to bedrock	1
	Slope	1.00	Deep to water Slope	1.00
	Droughty 		Cutbanks cave	1.00
Michigamme	 Very limited		 Very limited	
	Slope	1.00	Depth to bedrock	
	Depth to bedrock Water erosion	1	!	1.00
	Cobble content	0.56	Deep to water	1.00 1.00
Rock outcrop	 Not rated		 Not rated	
53F:				
Arcadian	: -		Very limited	
	Slope Depth to bedrock	1.00 1.00	Depth to bedrock	1.00
	Droughty	1.00	Deep to water	1.00
		į	Cutbanks cave	1.00
Michigamme	 Very limited		 Very limited	
	Slope	1.00	Depth to bedrock	1
	Depth to bedrock Water erosion	1.00	Slope Cutbanks cave	1.00
	Cobble content	0.30	Deep to water	1.00
Rock outcrop	 Not rated 	 	 Not rated 	
55B:				
Chocolay	-		Very limited	
	Depth to saturated zone	1.00	Depth to bedrock Depth to	1.00
	Depth to bedrock	1.00	saturated zone	1
	Droughty	0.99	Cutbanks cave	1.00
	Slope	0.62	 	
100B:				
Waiska	Somewhat limited Droughty	1.00	Very limited Cutbanks cave	1.00
	Slope	0.36	Deep to water	1.00
100D:	 			
Waiska	Very limited	İ	Very limited	ĺ
	Slope	1.00	Cutbanks cave	1.00
	Droughty 	1.00	Deep to water	1.00 0.63
102C:	 		[[
Waiska	Somewhat limited		 Very limited	
	Droughty	1.00	Cutbanks cave	1.00
	Slope 	0.95	Deep to water	1.00
Garlic	Somewhat limited		 Very limited	
	Slope	0.95	Cutbanks cave	1.00
	Droughty 	0.40	Deep to water	1.00
	I .	1	1	1

Table 14a.--Water Management--Continued

Map symbol and soil name	Grassed waterways		Drainage 	
	Rating class and limiting features	Value	Rating class and limiting features	Value
				İ
102E:		1		
Waiska	Very limited Slope	1.00	Very limited Cutbanks cave	1.00
	Droughty	1.00	Deep to water	1.00
			Slope	1.00
Garlic	 Very limited		 Very limited	
	Slope	1.00	Cutbanks cave	1.00
	Droughty	0.40	Deep to water	1.00
			Slope	1.00
102F:				
Waiska	Very limited	1	Very limited	
	Slope	1.00	Slope	1.00
	Droughty	1.00	Cutbanks cave Deep to water	1.00
		i	Deep to water	
Garlic	Very limited	i	 Very limited	i
	Slope	1.00	Slope	1.00
	Droughty	0.40	Cutbanks cave	1.00
			Deep to water	1.00
110B:	İ			İ
Shelldrake		1	Very limited	
	Droughty Slope	1.00 0.62	Cutbanks cave Deep to water	1.00
	Slope		Deep to water	
Croswell	Somewhat limited	1	Very limited	
	Depth to	0.86	Depth to	1.00
	saturated zone Droughty	0.44	saturated zone Cutbanks cave	1.00
	Slope	0.36	Cutbanks cave	
111B:			 	
	 Somewhat limited	1	 Very limited	
	Slope	0.36	Cutbanks cave	1.00
	Droughty	0.18	Deep to water	1.00
111D:				
Deer Park	Very limited		Very limited	
	Slope	1.00	Cutbanks cave	1.00
	Droughty	0.18	Deep to water Slope	1.00
	į	į	_	į
111E: Deer Park	 Verv limited		 Very limited	
	Slope	1.00	_	1.00
	Droughty	0.18	Deep to water	1.00
			Slope	1.00
111F:			[
Deer Park	Very limited		Very limited	
	Slope	1.00	-	1.00
	Droughty	0.18	Cutbanks cave	1.00
	I	I	Deep to water	1.00

Table 14a.--Water Management--Continued

Map symbol and soil name	 Grassed waterways 		 Drainage 	
	Rating class and limiting features	Value	Rating class and limiting features	Value
112C:	l		 	
Deer Park	 Very limited Slope Droughty	1.00	 Very limited Cutbanks cave Deep to water	1.00
Croswell	 Somewhat limited Depth to saturated zone Droughty Slope	 0.86 0.44 0.36	 Very limited Depth to saturated zone Cutbanks cave	 1.00 1.00
113C:	İ	į	İ	İ
Rubicon	Very limited Slope Droughty	 1.00 0.45	Very limited Cutbanks cave Deep to water	 1.00 1.00
Croswell	Somewhat limited Depth to saturated zone Droughty Slope	 0.86 0.44 0.36	Very limited Depth to saturated zone Cutbanks cave	 1.00 1.00
120B:	İ	İ	İ	İ
Garlic	Somewhat limited Droughty Slope	 0.40 0.36	Very limited Cutbanks cave Deep to water	 1.00 1.00
120D: Garlic	 Very limited Slope Droughty	 1.00 0.40	 Very limited Cutbanks cave Deep to water Slope	 1.00 1.00 0.63
120E: Garlic	 Very limited Slope Droughty	 1.00 0.40	 Very limited Slope Cutbanks cave	 1.00 1.00
	 		Deep to water	1.00
125A: Croswell	 Somewhat limited Depth to saturated zone Droughty	 0.86 0.44	 Very limited Depth to saturated zone Cutbanks cave	 1.00 1.00
	Slope	0.04		
Au Gres	 Very limited Depth to saturated zone Slope	 1.00 0.16	 Very limited Depth to saturated zone Cutbanks cave	 1.00 1.00
126B:	į	į	İ	į
Au Gres	Very limited Depth to saturated zone Slope	 1.00 0.04	Very limited Depth to saturated zone Cutbanks cave	 1.00 1.00
	į -	İ	İ	İ

Table 14a.--Water Management--Continued

Map symbol and soil name	Grassed waterways		 Drainage 	
	Rating class and limiting features	Value	Rating class and limiting features	Value
126B: Deford	 Very limited	 	 Very limited	
202024	Depth to saturated zone	1.00	Ponding Depth to	1.00
		 	saturated zone Cutbanks cave	1.00
Croswell	Somewhat limited Depth to saturated zone	0.86	 Very limited Depth to saturated zone	1.00
	Slope Droughty	0.62	Cutbanks cave	1.00
127A: Au Gres	 Very limited		 Very limited	
	Depth to saturated zone Slope	1.00 0.04	Depth to saturated zone Cutbanks cave	1.00 1.00
Kinross	 Very limited Depth to	j	 Very limited Depth to	1.00
	saturated zone		saturated zone Cutbanks cave	1.00
130C:	 	 	Ponding 	1.00
	Somewhat limited		Very limited	
	Slope Droughty	0.95	Cutbanks cave Deep to water	1.00
Alcona	 Somewhat limited Slope Water erosion	 0.95 0.01	 Very limited Cutbanks cave Deep to water	 1.00 1.00
130E:	 		 	
Garlic	Very limited Slope	1.00	Very limited Cutbanks cave	1.00
	Droughty	0.40	Deep to water Slope	1.00
Alcona	 Very limited Slope	 1.00	 Very limited Cutbanks cave	1.00
	Water erosion	0.01	Deep to water	1.00
133C:	 		 	
Keweenaw	Somewhat limited Slope 	0.95	Very limited Cutbanks cave Deep to water	 1.00 1.00
Garlic	Slope	0.95	 Very limited Cutbanks cave	1.00
	Droughty 	0.40	Deep to water	1.00
133E: Keweenaw	 Very limited Slope	 1.00	 Very limited Cutbanks cave	 1.00
	 	 	Deep to water Slope 	1.00 1.00

Table 14a.--Water Management--Continued

Map symbol and soil name	Grassed waterways			
	Rating class and limiting features	Value	Rating class and limiting features	Value
133E: Garlic	 Very limited Slope Droughty	 1.00 0.40	 Very limited Cutbanks cave Deep to water Slope	 1.00 1.00 1.00
133F:	 		l	
Keweenaw	 Very limited Slope 	1.00	 Very limited Slope Cutbanks cave Deep to water	 1.00 1.00 1.00
Garlic	 Very limited Slope Droughty 	 1.00 0.40 	 Very limited Slope Cutbanks cave Deep to water	 1.00 1.00 1.00
136B:				
Borgstrom	Very limited Droughty Depth to saturated zone	 1.00 0.86	Very limited Depth to thin cemented pan Depth to	 1.00 1.00
	Slope 	0.36	saturated zone Cutbanks cave Dense layer	 1.00 0.50
Ingalls	Very limited Depth to saturated zone Slope Restricted	 1.00 0.04 0.04	Very limited Depth to saturated zone Cutbanks cave	 1.00 1.00
142C:	permeability		 	
Wallace	Very limited Slope Droughty 	 1.00 0.45 	Very limited Depth to thick cemented pan Cutbanks cave Deep to water Dense layer	 1.00 1.00 1.00 0.50
Rubicon	 Very limited Slope Droughty	 1.00 0.45	 Very limited Cutbanks cave Deep to water	 1.00 1.00
142F: Wallace	 Very limited Slope Droughty 	 1.00 0.45 	 Very limited Depth to thick cemented pan Cutbanks cave Deep to water Slope	 1.00 1.00 1.00
Rubicon	 Very limited Slope Droughty 	 1.00 0.45 	Dense layer Very limited Cutbanks cave Deep to water Slope	0.50 1.00 1.00 1.00

Table 14a.--Water Management--Continued

Map symbol and soil name	Grassed waterways		 Drainage 	
	Rating class and limiting features	Value	Rating class and limiting features	Value
1550				
155C: Montreal	 Very limited		 Very limited	
	Depth to	1.00	Depth to thick	1.00
	saturated zone	İ	cemented pan	
	Restricted	1.00	Depth to	1.00
	permeability	1 00	saturated zone Cutbanks cave	1 00
	Depth to cemented pan	1	Dense layer	1.00 0.50
	Slope	0.95	Large stones	0.03
Paavola	 Very limited		 Very limited	
	Depth to bedrock	1.00	Depth to bedrock	1.00
	Depth to	1.00	Depth to	1.00
	saturated zone		saturated zone	
	Droughty Slope	1.00 0.95	Cutbanks cave Dense layer	1.00
	blobe	0.33	Dense layer	
Waiska	Somewhat limited	i	 Very limited	j
	Droughty	1.00	Cutbanks cave	1.00
	Slope	0.95	Deep to water	1.00
155E:			 	
Montreal	 Very limited	i	 Very limited	i
	Depth to	1.00	Depth to thick	1.00
	saturated zone		cemented pan	
	Restricted	1.00	Depth to	1.00
	permeability Slope	1.00	saturated zone Cutbanks cave	1.00
	Depth to cemented	!	Slope	1.00
	pan		Dense layer	0.50
P1-				
Paavola	Very limited Depth to cemented	:	Very limited Depth to	1.00
	pan		saturated zone	
	Depth to	1.00	Cutbanks cave	1.00
	saturated zone		Slope	1.00
	Slope	1.00	Depth to thin	0.84
	Droughty	1.00	cemented pan Dense layer	0.50
		i		
Waiska	Very limited		Very limited	
	Slope	1.00	Cutbanks cave	1.00
	Droughty 	1.00	Deep to water Slope	1.00
			blope	
158A:	İ	į		İ
Arnheim	Very limited	:	Very limited	
	Depth to saturated zone	1.00	Ponding Flooding	1.00
	Water erosion	1.00		1.00
			saturated zone	
		į	Cutbanks cave	1.00
			Frost action	1.00
Sturgeon	 Very limited		 Very limited	
Scargeon	Depth to	1.00	-	1.00
	saturated zone	i	saturated zone	į
	Water erosion	0.56	Cutbanks cave	1.00
			Frost action	1.00

Table 14a.--Water Management--Continued

Map symbol and soil name	Grassed waterways		Drainage 		
	Rating class and limiting features	Value	Rating class and limiting features	Value	
158A:	 	 	 		
Pelkie	Somewhat limited Depth to saturated zone	 0.86 	 Very limited Depth to saturated zone	1.00	
	Slope	0.16	Cutbanks cave	1.00	
161F:	 	 	 		
Trimountain	 Very limited Slope Depth to cemented	 1.00 1.00	 Very limited Depth to thick cemented pan	1.00	
	pan		Slope	1.00	
	Droughty Cobble content	0.51	Cutbanks cave	1.00	
	Comple content	0.04 	Deep to water Dense layer	1.00 0.50	
Lac La Belle	: -		Very limited		
	Slope Depth to cemented	1.00	Depth to thick cemented pan	1.00	
	pan		Slope	1.00	
	Droughty	1.00	Cutbanks cave	1.00	
	 	 	Deep to water Dense layer	1.00	
	İ	İ			
Waiska	Very limited		Very limited		
	Slope Droughty	1.00 1.00	Slope Cutbanks cave	1.00	
	Dioagney		Deep to water	1.00	
162F:	 	 	 		
Trimountain	 Very limited		 Very limited		
	Slope	1.00	Depth to thick	1.00	
	Depth to cemented	1.00	cemented pan		
	pan Droughty	 0.51	Slope Cutbanks cave	1.00	
	Cobble content	0.04	Deep to water	1.00	
			Dense layer	0.50	
Lac La Belle	 Very limited	 	 Very limited		
	Slope	1.00	Depth to thick	1.00	
	Depth to cemented	1.00	cemented pan		
	pan Droughty	 1.00	Slope Cutbanks cave	1.00	
	Dioughty		Deep to water	1.00	
		į	Dense layer	0.50	
Michigamme	 Very limited	 	 Very limited		
	Slope	1.00	Depth to bedrock	1.00	
		1.00	Slope	1.00	
	Water erosion Cobble content	0.56	Cutbanks cave Deep to water	1.00	
166B:	 Very limited		 Very limited		
Gratiot	Very limited Depth to	1.00	Depth to thin	1.00	
	saturated zone		cemented pan		
	Droughty	1.00	Depth to	1.00	
	Depth to cemented	1.00	saturated zone		
	pan Slope	 0.16	Frost action Cutbanks cave	1.00	
	Cobble content	0.03	Dense layer	0.50	
	CODDIE CONCERC		Sembe rayer		

Table 14a.--Water Management--Continued

Map symbol and soil name	 Grassed waterways		 Drainage 		
	Rating class and limiting features	Value	Rating class and limiting features	Value	
		İ		İ	
166B: Sabattis	 Very limited Depth to	 1.00	 Very limited Depth to	 1.00	
	saturated zone		saturated zone	11.00	
	Water erosion Cobble content 	0.56 0.02 	Frost action Cutbanks cave Ponding	1.00 1.00 1.00	
1720.					
173C: Montreal	 Very limited	 	 Very limited		
	Depth to saturated zone	1.00	Depth to thick cemented pan	1.00	
	Restricted permeability	1.00	Depth to saturated zone	1.00	
	Depth to cemented pan	1.00 	Cutbanks cave Dense layer	1.00 0.50	
	Slope	0.95	Large stones	0.03	
Paavola	Very limited	į	Very limited	į	
	Depth to cemented	1.00	Depth to	1.00	
	pan Depth to	1.00	saturated zone Cutbanks cave	1.00	
	saturated zone		Depth to thin	0.84	
	Droughty	1.00	cemented pan	ĺ	
	Slope	0.95	Dense layer	0.50	
Dishno	 Very limited		 Very limited		
	Depth to	1.00	Depth to	1.00	
	saturated zone		saturated zone	11 00	
	Depth to bedrock Slope	0.96 0.95	Cutbanks cave Depth to bedrock	1.00 0.96	
	Water erosion	0.89			
173E:	 		 		
Montreal	Very limited	ļ.	Very limited		
	Depth to saturated zone	1.00	Depth to thick cemented pan	1.00	
	Restricted	1.00	Depth to	1.00	
	permeability	İ	saturated zone	İ	
	Slope	1.00	Cutbanks cave	1.00	
	Depth to cemented pan	1.00 	Slope Dense layer	1.00 0.50	
		İ		İ	
Paavola			Very limited		
	Depth to bedrock Depth to	1.00 1.00	Depth to bedrock Depth to	1.00	
	saturated zone		saturated zone		
	Slope	1.00	Cutbanks cave	1.00	
	Droughty	1.00	Slope	1.00	
	 	 	Dense layer 	0.50	
Dishno	 Very limited		 Very limited	İ	
	Depth to	1.00	-	1.00	
	saturated zone	 1.00	saturated zone Cutbanks cave	1.00	
	Slope Depth to bedrock	0.96	Cutbanks cave Slope	1.00	
	Water erosion	0.89	-	0.96	

Table 14a.--Water Management--Continued

Map symbol and soil name	 Grassed waterways		 Drainage 	
	Rating class and	Value	Rating class and	Value
	limiting features		limiting features	
4.545				
174B: Montreal	 Very limited	 	 Very limited	
MOIICIeai	Depth to	1.00	Depth to thick	1.00
	saturated zone		cemented pan	
	Restricted	1.00	Depth to	1.00
	permeability	į	saturated zone	İ
	Depth to cemented	1.00	Cutbanks cave	1.00
	pan		Dense layer	0.50
	Slope	0.83	Large stones	0.03
Dishno	 Very limited	 	 Very limited	l I
DISIMO	Depth to	1.00	Depth to	1.00
	saturated zone		saturated zone	
	Depth to bedrock	0.96	Cutbanks cave	1.00
	Water erosion	0.89	Depth to bedrock	0.96
	Slope	0.83		
Gratiot	Very limited		Very limited	1 00
	Depth to saturated zone	1.00	Depth to thin cemented pan	1.00
	Droughty	1.00	Depth to	1.00
	Depth to cemented	'	saturated zone	
	pan	İ	Frost action	1.00
	Slope	0.04	Cutbanks cave	1.00
	Cobble content	0.03	Dense layer	0.50
1003				
177A: Assinins	 Very limited	 	 Very limited	1
11001111110	Depth to	1.00	Depth to	1.00
	saturated zone	ĺ	saturated zone	
	Slope	0.04	Cutbanks cave	1.00
			Frost action	1.00
183C:	 Town limited	 	 Town limited	
Munising	Very limited Depth to	1.00	Very limited Depth to thin	1.00
	saturated zone		cemented pan	
	Depth to cemented	1.00	Depth to	1.00
	pan	j	saturated zone	j
	Slope	0.95	Cutbanks cave	1.00
	Water erosion	0.17	Dense layer	0.50
3 h h				
Abbaye	Very limited Depth to	1.00	Very limited Depth to bedrock	1 00
	saturated zone	1.00	Depth to	1.00
	Depth to bedrock	1.00	saturated zone	
	Slope	0.95	Cutbanks cave	1.00
	Water erosion	0.17	İ	İ
Yalmer	· -		Very limited	
	Depth to cemented	1.00	Depth to thick cemented pan	1.00
	pan Depth to	1.00	Depth to	1.00
	saturated zone		saturated zone	
	Slope	0.95	Cutbanks cave	1.00
	Droughty	0.33	Dense layer	0.50

Table 14a.--Water Management--Continued

Map symbol and soil name	Grassed waterways		Drainage 	
	Rating class and limiting features	Value	Rating class and limiting features	Value
		İ	ĺ	İ
183E:				
Munising	Very limited Depth to	1.00	Very limited Depth to thin	1.00
	saturated zone	1.00	cemented pan	1
	Slope	1.00	Depth to	1.00
	Depth to cemented	1.00	saturated zone	
	pan		Cutbanks cave	1.00
	Water erosion	0.17	Slope Dense layer	1.00
Abbaye	 Very limited	 	 Very limited	
		1.00		1.00
	saturated zone	į	Depth to	1.00
	Slope	1.00	saturated zone	
	Depth to bedrock	!	Cutbanks cave	1.00
	Water erosion	0.17	Slope	1.00
Yalmer	 Very limited	 	 Very limited	
	Depth to cemented	1.00	Depth to thick	1.00
	pan	į	cemented pan	į
	Depth to	1.00	Depth to	1.00
	saturated zone		saturated zone	
	: -	1.00 0.33	Cutbanks cave	1.00
	Droughty 	0.33	Slope Dense layer	0.50
184C:				
Munising	Very limited	:	Very limited	
	Depth to saturated zone	1.00	Depth to thin cemented pan	1.00
	Depth to cemented	1.00	Depth to	1.00
	pan	ĺ	saturated zone	i
	Slope	0.95	Cutbanks cave	1.00
	Water erosion	0.17	Dense layer	0.50
Yalmer	 Very limited	 	 Very limited	
2 4 2 11 4 2	Depth to cemented	1.00	Depth to thick	1.00
	pan	į	cemented pan	į
	:	1.00	Depth to	1.00
	saturated zone		saturated zone	
	:	0.95	Cutbanks cave Dense layer	1.00
	Dioughty		Dense layer	
184E:	İ	İ	İ	İ
Munising			Very limited	
	Depth to saturated zone	1.00	Depth to thin cemented pan	1.00
	!	1.00	:	1.00
	Depth to cemented		:	
	pan	į	Cutbanks cave	1.00
	Water erosion	0.17	Slope	1.00
	l I	 	Dense layer	0.50
Yalmer	 Very limited		 Very limited	1
	Depth to cemented	1.00	Depth to thick	1.00
	pan		cemented pan	
		1.00	Depth to	1.00
	saturated zone		saturated zone	1 00
		1.00 0.33	Cutbanks cave	1.00
			Dense layer	0.50
			-	

Table 14a.--Water Management--Continued

Map symbol and soil name	Grassed waterways		Drainage 		
	Rating class and limiting features	Value	Rating class and limiting features	Value	
185B:	l	 	 		
	 Very limited	 	 Very limited		
-	-	1.00	Depth to thin	1.00	
	saturated zone	ļ	cemented pan		
	Depth to cemented	1.00	Depth to	1.00	
	pan Slope	 0.36	saturated zone Cutbanks cave	1.00	
	Water erosion	0.17	Dense layer	0.50	
Skanee	 Very limited	 	 Very limited		
Ditalico	Depth to cemented	1.00	Depth to thick	1.00	
	pan	İ	cemented pan		
	Depth to	1.00	Depth to	1.00	
	saturated zone		saturated zone		
	Restricted	1.00	Frost action Cutbanks cave	1.00	
	permeability Droughty	1.00	Dense layer	1.00 0.50	
1055					
185C: Munising	 Very limited	 	 Very limited		
	Depth to	1.00	Depth to thin	1.00	
	saturated zone	ĺ	cemented pan	İ	
	Depth to cemented	1.00	Depth to	1.00	
	pan		saturated zone		
	Slope Water erosion	1.00 0.17	Cutbanks cave Dense layer	1.00	
			Slope	0.16	
Skanee	 Very limited	 	 Very limited		
Diane	Depth to cemented	1.00	Depth to thick	1.00	
	pan	İ	cemented pan	İ	
	Depth to	1.00	Depth to	1.00	
	saturated zone		saturated zone		
	Restricted	1.00	Frost action Cutbanks cave	1.00	
	permeability Droughty	1.00	Dense layer	1.00 0.50	
1050		į	-	į	
187A: Skanee	 Very limited	 	 Very limited		
	Depth to cemented	1.00	Depth to thick	1.00	
	pan		cemented pan		
	Depth to	1.00	Depth to	1.00	
	saturated zone Restricted	1.00	saturated zone Frost action	1.00	
	permeability		Cutbanks cave	1.00	
	Droughty	1.00	Dense layer	0.50	
Gay	 Very limited	 	 Very limited		
	Depth to	1.00	Depth to	1.00	
	saturated zone	ĺ	saturated zone	İ	
	Water erosion	0.17	Frost action	1.00	
	 	 	Cutbanks cave	1.00	
192B:	 Vorus limited		 Vorus limited		
Nipissing	-	 1.00	Very limited Depth to bedrock	1 00	
	!	1.00	Deep to water	1.00	
	Droughty	0.42	Cutbanks cave	1.00	
	Slope	0.36	Large stones	0.77	
		0.17			

Table 14a.--Water Management--Continued

Map symbol and soil name	Grassed waterways		Drainage 		
	Rating class and limiting features	Value	Rating class and limiting features	Value	
192B: Arcadian	 Very limited Depth to bedrock Droughty Slope	1	 Very limited Depth to bedrock Deep to water Cutbanks cave	 1.00 1.00	
Rock outcrop	Not rated	į	 Not rated 		
194B: Copper Harbor	 Somewhat limited Depth to saturated zone Slope Droughty	 0.86 0.16 0.07	 Very limited Depth to saturated zone Cutbanks cave	 1.00 1.00	
195B: Copper Harbor		 0.86 0.16 0.07	 Very limited Depth to saturated zone Cutbanks cave	 1.00 1.00	
Bete Grise	Very limited Depth to saturated zone Droughty Slope	 1.00 0.94 0.04	 Very limited Depth to saturated zone Cutbanks cave	 1.00 1.00	
196B: Bete Grise	 Very limited Depth to saturated zone Droughty Slope	 1.00 0.94 0.04	 Very limited Depth to saturated zone Cutbanks cave	 1.00 1.00	
Tawas	 Very limited Depth to saturated zone 	 1.00 	Very limited Depth to saturated zone Cutbanks cave Frost action Ponding Organic matter content	 1.00 1.00 1.00 1.00	
301: Udorthents	 Slightly limited Water erosion	0.17	 Very limited Deep to water	1.00	
Udipsamments	 Somewhat limited Slope Droughty	 0.83 0.69	 Very limited Cutbanks cave Deep to water	 1.00 1.00	
302: Histosols	 Very limited Depth to saturated zone 	 1.00 	Very limited Ponding Depth to saturated zone Organic matter content Frost action Cutbanks cave	 1.00 1.00 1.00 1.00	

Table 14a.--Water Management--Continued

Map symbol and soil name	Grassed waterways		Drainage		
	Rating class and limiting features	Value	Rating class and limiting features	Value	
302:					
Aquents	 Very limited	i	 Very limited	i	
	Depth to	1.00	Ponding	1.00	
	saturated zone	İ	Depth to	1.00	
	Water erosion	0.89	saturated zone	İ	
			Frost action	1.00	
			Cutbanks cave	1.00	
303:	 				
Aquents	Very limited	i	Very limited	i	
	Depth to	1.00	Ponding	1.00	
	saturated zone	İ	Depth to	1.00	
	Water erosion	0.89	saturated zone		
			Frost action	1.00	
			Cutbanks cave	1.00	
Dumps, stamp sand	 Not rated 	 	 Not rated 	 	
310: Dumps, mine	 Not rated 		 Not rated 		
311: Dumps, stamp sand	 Not rated		 Not rated		
312: Pits	 Not rated	 	 Not rated	 	
313: Dumps, sawdust	 Not rated 		 Not rated 		
W: Water	 Not rated 		 Not rated 		

Table 14b. -- Water Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. "Not rated" indicates that data are not available or that no rating is applicable. See text for further explanation of ratings in this

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and	Value	Rating class and	Value	Rating class and	Value
	limiting features		limiting features		limiting features	
•						
2:						
Lupton	: -		Very limited	1 00	Somewhat limited Cutbanks cave	0.10
	Seepage	1.00	Organic matter content	1.00	Cutbanks cave	10.10
	 	i i	Depth to	1.00	 	
	 	i	saturated zone	1	 	ì
	 	i	Piping	1.00		ì
	! 	i	Ponding	1.00		i
		i				i
Tawas	Very limited	į	Very limited	İ	Very limited	į
	Seepage	1.00	Depth to	1.00	Cutbanks cave	1.00
			saturated zone			
			Ponding	1.00		
			Seepage	0.75		
		ļ				!
3:						
Dawson	: -		Very limited	1.00	Very limited Cutbanks cave	1.00
	Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	11.00
	 		Ponding	1.00	 	-
	 	i	Seepage	0.82	 	ì
	! 	i				i
Loxley	 Very limited	i	 Very limited	İ	Somewhat limited	i
-	Seepage	1.00	Organic matter	1.00	Cutbanks cave	0.10
		İ	content	ĺ		ĺ
			Depth to	1.00		
			saturated zone			
			Piping	1.00		
		ļ	Ponding	1.00		ļ
					1	1
6: Skandia	 Vorus limited		 Very limited	l I	 Very limited	
Skandia	Seepage	1.00	Organic matter	1.00	Depth to hard	1.00
	Depth to bedrock		content	1	bedrock	1
			Depth to	1.00		0.10
		i	saturated zone	i		1
		i	Piping	1.00		i
	İ	İ	Ponding	1.00		İ
	İ	Ì	Thin layer	0.56	İ	ĺ
	[1
Burt	Very limited		Very limited		Very limited	1
	Depth to bedrock	1.00	Depth to	1.00	Depth to hard	1.00
			saturated zone		bedrock	
			Thin layer	1.00	Cutbanks cave	0.10
	 		Ponding	1.00	 	1
	I	1	Seepage	0.75	I	

Table 14b.--Water Management--Continued

Map symbol and soil name	 Pond reservoir areas		Embankments, dikes, and levees		 Aquifer-fed excavated ponds	
	Rating class and	Value	!	Value	, -	Value
	limiting features	<u> </u>	limiting features	<u> </u>	limiting features	1
10: Cathro	 Very limited Seepage 	 1.00 	 Very limited Depth to saturated zone Piping Ponding	 1.00 1.00 1.00	 Somewhat limited Cutbanks cave 	0.10
Sabattis	 Somewhat limited Seepage 	 0.72 	 Very limited Depth to saturated zone Ponding Seepage	 1.00 1.00 0.03	 Somewhat limited Cutbanks cave 	 0.10
13: Tawas	 		 		 Very limited	
Tawas	Seepage	 1.00 	Very limited Depth to saturated zone Ponding Seepage	 1.00 1.00 0.75	Very limited Cutbanks cave 	1.00
Deford	 Very limited Seepage 	 1.00 	Very limited Ponding Depth to saturated zone Seepage	 1.00 1.00 0.75	 Very limited Cutbanks cave 	1.00
15B: Dawson	 Very limited Seepage 	 1.00 	 Very limited Depth to saturated zone Ponding Seepage	 1.00 1.00 0.82	 Very limited Cutbanks cave 	1.00
Croswell	 Very limited Seepage 	 1.00 	 Very limited Depth to saturated zone Seepage	 1.00 0.82	 Very limited Cutbanks cave Depth to saturated zone	 1.00 0.01
20E: Rock outcrop	 Not rated		 Not rated		 Not rated 	
21G: Rock outcrop	 Not rated 	 	 Not rated 	 	 Not rated 	
Arcadian	 Very limited Depth to bedrock Slope		 Very limited Thin layer Seepage	1.00	 Very limited Depth to water 	1.00
39A: Betsy Bay	 Very limited Seepage Depth to bedrock 	1.00	 Very limited Depth to saturated zone Seepage Thin layer	 1.00 0.38 0.34	 Very limited Cutbanks cave Depth to hard bedrock	 1.00 0.93

Table 14b.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
	Immitting reactures	<u> </u>		1		1
39A:		İ				İ
Burt	Very limited Depth to bedrock		Very limited Depth to	1.00	Very limited Depth to hard	1.00
	Depth to bedrock	1	saturated zone	1	bedrock	1.00
		į	Thin layer	1.00	!	0.10
		[Ponding	1.00		
			Seepage	0.75	l	
Deford	 Very limited		 Very limited	İ	 Very limited	
	Seepage	1.00	-	1.00	: -	1.00
		[Depth to	1.00		
			saturated zone		l	
	 		Seepage 	0.75	 	l
47A:	j	i		į		i
Zeba			Very limited		Very limited	
	Depth to bedrock	0.93	-	1.00	Depth to hard bedrock	1.00
	Seepage	0.72	saturated zone Thin layer	0.93		0.28
		i	Seepage	0.01		0.10
	İ	İ				İ
Jacobsville			Very limited	1	Very limited	
	Depth to bedrock Seepage	0.72	-	1.00	Depth to hard bedrock	1.00
	beepage		Ponding	1.00		1.00
	j	į	Thin layer	0.99		j
			Seepage	0.01		
51C:	 		 		 	
Arcadian	 Very limited	İ	 Very limited	i	 Very limited	i
	Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
			Seepage	0.03	l	
Nipissing	 Very limited	i i	 Somewhat limited		 Very limited	l
· J	Seepage	1.00		0.77	Depth to water	1.00
	Depth to bedrock	0.52	Thin layer	0.52		
	 		Seepage	0.50	l	
Rock outcrop	 Not rated		 Not rated		 Not rated	
	İ	İ				İ
51E: Arcadian	 Town limited		 		 Town limited	
Arcadian	Depth to bedrock		Very limited Thin layer	1.00	Very limited Depth to water	1.00
	Slope	0.18	Seepage	0.03		
		1		ļ		
Nipissing	-	1.00	Somewhat limited Large stones	 0.77	Very limited Depth to water	1.00
	Seepage Depth to bedrock		Thin layer	0.77	Depth to water	1
	Slope	0.18	Seepage	0.50		i
Dark automon			 		 	
Rock outcrop	NOC Tated		Not rated 		Not rated 	
52C:	į	İ				i
Arcadian			Very limited	:	Very limited	
	Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
	i -	i	Seepage	0.03	I.	1

Table 14b.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		 Aquifer-fed excavated ponds	
	Rating class and	Value	Rating class and	Value	Rating class and	Value
	limiting features		limiting features		limiting features	<u></u>
52C: Dishno	 Very limited Seepage Depth to bedrock 	 1.00 0.37	 Very limited Depth to saturated zone Thin layer Seepage	 1.00 0.37 0.10	 Very limited Cutbanks cave Depth to hard bedrock	 1.00 0.96
Rock outcrop	 Not rated	 	 Not rated	 	 Not rated	
52E: Arcadian	 Very limited Depth to bedrock Slope	 1.00 0.18	 Very limited Thin layer Seepage	 1.00 0.03	 Very limited Depth to water 	 1.00
Dishno	 Very limited Seepage Depth to bedrock Slope	 1.00 0.37 0.18	 Very limited Depth to saturated zone Thin layer Seepage	 1.00 0.37 0.10	 Very limited Cutbanks cave Depth to hard bedrock	 1.00 0.96
Rock outcrop	 Not rated 	 	 Not rated 	 	 Not rated 	
53E: Arcadian	 Very limited Depth to bedrock Slope	 	 Very limited Thin layer Seepage	 1.00 0.03	 Very limited Depth to water	 1.00
Michigamme	 Somewhat limited Depth to bedrock Seepage Slope	 0.86 0.72 0.18	 Somewhat limited Thin layer Seepage	 0.86 0.10 	 Very limited Depth to water 	 1.00
Rock outcrop	 Not rated 		 Not rated 	 	 Not rated 	
53F: Arcadian	 Very limited Depth to bedrock Slope	 1.00 0.88	 Very limited Thin layer Seepage	 1.00 0.03	 Very limited Depth to water	 1.00
Michigamme	 Somewhat limited Slope Depth to bedrock Seepage	 0.88 0.86 0.72	 Somewhat limited Thin layer Seepage	 0.86 0.10	 Very limited Depth to water 	
Rock outcrop	 Not rated 	 	 Not rated 	 	 Not rated 	
55B: Chocolay	 Very limited Seepage Depth to bedrock 	 1.00 1.00 	 Very limited Depth to saturated zone Thin layer Seepage	 1.00 1.00 0.03	 Very limited Depth to hard bedrock Cutbanks cave	 1.00 0.10
100B: Waiska	 Very limited Seepage	 1.00	 Somewhat limited Seepage	 0.86	 Very limited Depth to water	 1.00

Table 14b.--Water Management--Continued

Map symbol and soil name	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
100D: Waiska	 Very limited Seepage Slope	 1.00 0.01	 Somewhat limited Seepage	 0.86	 Very limited Depth to water	
102C: Waiska	 Very limited Seepage	1.00	 Somewhat limited Seepage	 0.86	 Very limited Depth to water	1.00
Garlic	 Very limited Seepage 	1.00	 Somewhat limited Seepage 	 0.75	 Very limited Depth to water 	1.00
102E: Waiska	 Very limited Seepage Slope	 1.00 0.18	 Somewhat limited Seepage	 0.86	 Very limited Depth to water	1.00
Garlic	 Very limited Seepage Slope	 1.00 0.18	 Somewhat limited Seepage 	 0.75 	 Very limited Depth to water 	 1.00
102F: Waiska	 Very limited Seepage Slope	 1.00 0.82	 Somewhat limited Seepage	 0.86	 Very limited Depth to water	1.00
Garlic	 Very limited Seepage Slope	 1.00 0.82	 Somewhat limited Seepage 	 0.75 	 Very limited Depth to water 	1.00
110B: Shelldrake	 Very limited Seepage 	1.00	 Somewhat limited Seepage	 0.95	 Very limited Depth to water	1.00
Croswell	 Very limited Seepage 	 1.00 	Very limited Depth to saturated zone Seepage	 1.00 0.82	Depth to	1.00
111B: Deer Park	 Very limited Seepage 	1.00	 Somewhat limited Seepage	 0.27	 Very limited Depth to water	1.00
111D: Deer Park	 Very limited Seepage Slope	 	 Somewhat limited Seepage	 0.27 	 Very limited Depth to water 	1.00
111E: Deer Park	 Very limited Seepage Slope	 1.00 0.18	 Somewhat limited Seepage	 0.27 	 Very limited Depth to water 	1.00
111F: Deer Park	 Very limited Seepage Slope	 1.00 1.00	 Somewhat limited Seepage	 0.27 	 Very limited Depth to water 	1.00

Table 14b.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and	Value	Rating class and	Value	Rating class and	Value
	limiting features		limiting features	<u> </u>	limiting features	<u> </u>
112C:	 		 		 	
Deer Park	 Very limited Seepage 	1.00	 Somewhat limited Seepage	0.27	 Very limited Depth to water	1.00
Croswell	 Very limited Seepage 	 1.00 	Very limited Depth to saturated zone Seepage	 1.00 0.82	 Very limited Cutbanks cave Depth to saturated zone	 1.00 0.01
113C:		į		İ	İ	i
Rubicon	Very limited Seepage	1.00	Somewhat limited Seepage	0.82	Very limited Depth to water	1.00
Croswell	 Very limited Seepage 	 1.00 	Very limited Depth to saturated zone Seepage	 1.00 0.82	Very limited Cutbanks cave Depth to saturated zone	 1.00 0.01
120B:	 			 	 	
Garlic	 Very limited Seepage	1.00	Somewhat limited Seepage	0.75	 Very limited Depth to water	1.00
120D: Garlic	 Very limited Seepage Slope	 1.00 0.01	 Somewhat limited Seepage	 0.75	 Very limited Depth to water	
120E: Garlic	 Very limited Seepage Slope	 1.00 0.28	 Somewhat limited Seepage 	 0.75 	 Very limited Depth to water 	1.00
125A:		İ				i
Croswell	 Very limited Seepage 	 1.00 	Very limited Depth to saturated zone Seepage	 1.00 0.82	Very limited Cutbanks cave Depth to saturated zone	 1.00 0.01
Au Gres	 Very limited Seepage 	 1.00 	 Very limited Depth to saturated zone Seepage	 1.00 0.75	 Very limited Cutbanks cave 	 1.00
10CD.			l			
126B: Au Gres	 Very limited Seepage 	 1.00 	 Very limited Depth to saturated zone Seepage	 1.00 0.75	 Very limited Cutbanks cave 	 1.00
Deford	 Very limited Seepage 	 1.00 	 Very limited Ponding Depth to saturated zone Seepage	 1.00 1.00 0.75	 Very limited Cutbanks cave 	 1.00
Croswell	 Very limited Seepage 	 1.00 	 Very limited Depth to saturated zone Seepage	 1.00 0.82	 Very limited Cutbanks cave Depth to saturated zone	 1.00 0.01

Table 14b.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and	Value	Rating class and	Value	Rating class and	Value
	limiting features		limiting features		limiting features	
127A: Au Gres	 Very limited	 	 Very limited	 	 Very limited	
	Seepage 	1.00 	saturated zone	1.00 0.75	Cutbanks cave	1.00
	Very limited Seepage	 1.00 	Very limited Depth to saturated zone Ponding Seepage	 1.00 1.00 0.75	Very limited Cutbanks cave	1.00
130C:						!
Garlic	Very limited Seepage 	 1.00 	Somewhat limited Seepage 	 0.75 	Very limited Depth to water 	1.00
Alcona	Somewhat limited Seepage	 0.72 	Somewhat limited Seepage	 0.27 	Very limited Depth to water	1.00
130E:		İ		i		i
Garlic	 Seepage Slope	 1.00 0.18	Somewhat limited Seepage	 0.75 	Very limited Depth to water	1.00
Alcona	Somewhat limited Seepage Slope	 0.72 0.18	Somewhat limited Seepage	 0.27 	 Very limited Depth to water	1.00
133C:		İ		i		i
Keweenaw	 Very limited Seepage	 1.00	Somewhat limited Seepage	0.08	 Very limited Depth to water	1.00
Garlic	 Very limited Seepage	 1.00	Somewhat limited Seepage	 0.75	 Very limited Depth to water	1.00
133E:		İ		i		i
Keweenaw	 Very limited Seepage Slope	 1.00 0.18	Somewhat limited Seepage	 0.08 	Very limited Depth to water	1.00
Garlic	 Very limited Seepage Slope	 1.00 0.18	 Somewhat limited Seepage 	 0.75 	 Very limited Depth to water 	1.00
133F:	İ	į		İ		į
Keweenaw	Very limited Seepage Slope	 1.00 0.28	Somewhat limited Seepage	 0.08 	Very limited Depth to water	 1.00
Garlic	 Very limited Seepage Slope 	 1.00 0.82	 Somewhat limited Seepage 	 0.75 	 Very limited Depth to water 	 1.00
136B: Borgstrom	Very limited Seepage Depth to cemented pan	1.00	 Very limited Thin layer Depth to saturated zone Seepage	 1.00 1.00 0.14	 Very limited Cutbanks cave Depth to saturated zone	 1.00 0.01

Table 14b.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	_	Value		Value	Rating class and	Value
	limiting features	 	limiting features	<u> </u>	limiting features	1
136B: Ingalls	 Very limited Seepage	 1.00 	 Very limited Depth to saturated zone Piping	 1.00 1.00	 Very limited Cutbanks cave 	 1.00
		ļ	Seepage	0.72	!	1
142C: Wallace	-	1.00	Very limited Thin layer Seepage	 0.99 0.93	 Very limited Depth to water 	 1.00
Rubicon	 Very limited Seepage	 1.00	 Somewhat limited Seepage	 0.82	 Very limited Depth to water	1.00
142F: Wallace	 Very limited Seepage Depth to cemented pan Slope	1.00	-	 0.99 0.93 	 Very limited Depth to water 	1.00
Rubicon	 Very limited Seepage Slope	 1.00 0.55	 Somewhat limited Seepage	 0.82	 Very limited Depth to water 	 1.00
155C:	 	 	 		 	
Montreal	Very limited Seepage Depth to cemented pan	1.00	Very limited Depth to saturated zone Thin layer Large stones Seepage	 1.00 0.93 0.03 0.03	Very limited Depth to water 	1.00
Paavola	 Seepage Depth to bedrock	1.00	-	 1.00 0.96 0.38	 Very limited Depth to water 	 1.00
Waiska	 Very limited Seepage	1.00	 Somewhat limited Seepage	0.86	 Very limited Depth to water	1.00
155E:					 	
Montreal	Very limited Seepage Depth to cemented pan Slope	1.00	Very limited Depth to saturated zone Thin layer Large stones Seepage	 1.00 0.93 0.03 0.03	Very limited Depth to water 	 1.00
Paavola	 Very limited Seepage Depth to cemented pan Slope	 1.00 0.96 0.18	 Very limited Depth to saturated zone Thin layer Seepage	 1.00 0.96 0.38	 Very limited Depth to water 	1.00

Table 14b.--Water Management--Continued

Map symbol and soil name	 Pond reservoir areas		 Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and limiting features	Value	Rating class and limiting features	Value	<u>-</u>	Value
155E: Waiska		 1.00 0.18	 Somewhat limited Seepage	 0.86	 Very limited Depth to water	1.00
158A: Arnheim		 1.00 	 Very limited Ponding Depth to saturated zone Piping Seepage	 1.00 1.00 1.00 0.10	 Very limited Cutbanks cave 	 1.00
Sturgeon		 1.00 	 Very limited Depth to saturated zone Seepage	 1.00 0.10	 Very limited Cutbanks cave 	 1.00
Pelkie	: -	 1.00 	 Very limited Depth to saturated zone Seepage	 1.00 0.03	 Very limited Cutbanks cave Depth to saturated zone	 1.00 0.01
161F: Trimountain	: -	1.00	 Very limited Thin layer Seepage 	 1.00 0.04 	 Very limited Depth to water 	 1.00
Lac La Belle	: -	1.00	 Somewhat limited Thin layer Seepage 	 0.66 0.12 	 Very limited Depth to water 	1.00
Waiska		 1.00 0.82	 Somewhat limited Seepage 	 0.86 	 Very limited Depth to water 	1.00
162F: Trimountain	Seepage Depth to cemented pan	1.00	 Very limited Thin layer Seepage 	 1.00 0.04 	 Very limited Depth to water 	1.00
Lac La Belle	: -	1.00	 Somewhat limited Thin layer Seepage 	 0.66 0.12 	 Very limited Depth to water 	 1.00
Michigamme	 Somewhat limited Depth to bedrock Slope Seepage	!	 Somewhat limited Thin layer Seepage 	 0.86 0.10 	 Very limited Depth to water 	 1.00

Table 14b.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
	Rating class and	Value	Rating class and	Value	<u> </u>	Value
	limiting features		limiting features		limiting features	<u> </u>
4.66						
166B:						
Gratiot	Depth to cemented		Very limited Depth to	1.00	Somewhat limited Depth to	0.96
	pan pan	1	saturated zone	1.00	saturated zone	10.96
	Seepage	1.00	Thin layer	1.00	Cutbanks cave	0.10
	beepage	1.00	Seepage	0.01	!	0.01
			Large stones	0.01		
~ · · · · ·						
Sabattis		!	Very limited	!	Somewhat limited	
	Seepage	0.72	Depth to	1.00	Cutbanks cave	0.10
	 		saturated zone Ponding	1.00	 	1
	 	 	Seepage	0.03	 	
	 	 	Beepage	0.03	 	i i
173C:	İ	İ		İ	İ	İ
Montreal	Very limited		Very limited		Very limited	
	Seepage	1.00	Depth to	1.00	Depth to water	1.00
	Depth to cemented	0.93	saturated zone			!
	pan		Thin layer	0.93		
			Large stones	0.03	 	
		 	Seepage	0.03	 	
Paavola	 Very limited		 Very limited		 Very limited	
	Seepage	1.00	Depth to	1.00	Depth to water	1.00
	Depth to cemented	0.96	saturated zone	İ		Ì
	pan		Thin layer	0.96		
			Seepage	0.38		ļ
Dishno	 Verv limited	 	 Very limited	 	 Very limited	1
2150	Seepage	1.00	Depth to	1.00	Cutbanks cave	1.00
	Depth to bedrock	:	saturated zone		Depth to hard	0.96
			Thin layer	0.37	bedrock	İ
	İ	į	Seepage	0.10	İ	j
173E:					 	
Montreal	 Verv limited	 	 Very limited	 	 Very limited	l l
	Seepage	1.00	Depth to	1.00	Depth to water	1.00
	Depth to cemented		saturated zone	İ	 	i
	pan	į	Thin layer	0.93	İ	İ
	Slope	0.18	Large stones	0.03		
			Seepage	0.03		
Paavola	 Very limited	 	 Very limited		 Very limited	l I
1447014	Seepage	1.00	Depth to	1.00	Depth to water	1.00
	Depth to bedrock		saturated zone		200011 00 114001	
	Slope	0.18	Thin layer	0.96		i
	į	į	Seepage	0.38	İ	j
Dishno	 		 		 	
סדווווס	Seepage	1.00	Very limited Depth to	1.00	Very limited Cutbanks cave	1.00
	Depth to bedrock		saturated zone	1.00	Depth to hard	0.96
	Slope	0.18	Thin layer	0.37	bedrock	
			Seepage	0.10		i
	į	i	 	İ	İ	İ

Table 14b.--Water Management--Continued

reservoir areas		dikes, and levees		excavated ponds	
	Value		Value		Value
limiting features	 	limiting features	<u> </u>	limiting features	1
-	 1.00 0.93	 Very limited Depth to saturated zone	 1.00 	 Very limited Depth to water	1.00
 	 	Large stones Seepage	0.03		
Seepage	1.00	Depth to saturated zone Thin layer Seepage	 1.00 0.37 0.10	Cutbanks cave Depth to hard bedrock	1.00 0.96
pan	1.00	Very limited Depth to saturated zone Thin layer Seepage Large stones	 1.00 1.00 0.01 0.01	Somewhat limited Depth to saturated zone Cutbanks cave Large stones	 0.96 0.10 0.01
 Very limited Seepage 	 1.00 	 Very limited Depth to saturated zone Seepage	 1.00 0.02	 Very limited Cutbanks cave 	1.00
Very limited Depth to cemented pan Seepage	:	 Very limited Depth to saturated zone Thin layer Seepage	 1.00 1.00 0.01	 Very limited Depth to water 	 1.00
 Somewhat limited Depth to bedrock Seepage 	:	 Very limited Depth to saturated zone Thin layer	1.00	Depth to hard bedrock	 1.00 1.00 0.28
 Seepage Depth to cemented pan 	1.00	Very limited Depth to saturated zone Thin layer Seepage	 1.00 0.91 0.10	 Very limited Depth to water 	1.00
 Very limited Depth to cemented pan Seepage Slope	 1.00 0.54 0.18	 Very limited Depth to saturated zone Thin layer Seepage	 1.00 1.00 0.01	 Very limited Depth to water 	1.00
 Somewhat limited Depth to bedrock Seepage Slope	 0.86 0.54 0.18	Very limited Depth to saturated zone Thin layer	 1.00 0.86	'	 1.00 1.00 0.28
	Rating class and limiting features Very limited Seepage Depth to cemented pan Very limited Seepage Depth to bedrock Very limited Depth to cemented pan Seepage Very limited Depth to cemented pan Seepage Very limited Depth to cemented pan Seepage Very limited Depth to bedrock Seepage Very limited Depth to bedrock Seepage Very limited Seepage Somewhat limited Depth to cemented pan Seepage Seepage Slope Somewhat limited Depth to cemented pan Seepage Slope Somewhat limited Depth to bedrock Seepage	Rating class and limiting features Very limited Seepage 1.00 Depth to cemented 0.93 pan	Rating class and limiting features Very limited Very limited Seepage 1.00 Depth to Depth to cemented 1.00 Depth to	Rating class and limiting features	Rating class and limiting features

Table 14b.--Water Management--Continued

Map symbol and soil name	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
183E: Yalmer	 Very limited Seepage	1.00	 Very limited Depth to		 Very limited Depth to water	
	Depth to cemented pan Slope 	0.91 0.18	saturated zone Thin layer Seepage	 0.91 0.10	 	
184C: Munising	Depth to cemented pan	 1.00 0.54	 Very limited Depth to saturated zone Thin layer	 1.00 1.00	 Very limited Depth to water	1.00
		 	Seepage	0.01		
Yalmer	Very limited Seepage Depth to cemented pan	1.00	Very limited Depth to saturated zone Thin layer Seepage	 1.00 0.91 0.10	Very limited Depth to water 	 1.00
184E: Munising	 Very limited	 	 Very limited	 	 Very limited	
	Depth to cemented pan Seepage Slope	1.00 0.54 0.18	Depth to saturated zone Thin layer Seepage	1.00 1.00 0.01	Depth to water 	1.00
Yalmer	 Very limited Seepage Depth to cemented pan Slope	1.00	Very limited Depth to saturated zone Thin layer Seepage	 1.00 0.91 0.10	 Very limited Depth to water 	 1.00
185B: Munising	 Very limited Depth to cemented pan Seepage	!	 Very limited Depth to saturated zone Thin layer	1.00 1.00	 Very limited Depth to water 	 1.00
Skanee	 Very limited Depth to cemented pan Seepage	 1.00 0.72	Seepage Very limited Depth to saturated zone Thin layer	0.01 1.00 1.00	 Somewhat limited Depth to saturated zone Slow refill	 0.96 0.28
185C:	 	 	Seepage 	0.01 	Cutbanks cave 	0.10
Munising	Very limited Depth to cemented pan Seepage		Very limited Depth to saturated zone Thin layer Seepage	 1.00 1.00 0.01	Very limited Depth to water 	 1.00
Skanee	 Very limited Depth to cemented pan Seepage		 Very limited Depth to saturated zone Thin layer Seepage	 1.00 1.00 0.01	Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	 0.96 0.28 0.10

Table 14b.--Water Management--Continued

Map symbol and soil name	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
187A: Skanee	Very limited Depth to cemented pan Seepage	 1.00 0.72	 Very limited Depth to saturated zone Thin layer Seepage	 1.00 1.00 0.01	saturated zone	 0.96 0.28 0.10
Gay	 Somewhat limited Seepage 	 0.72 	 Very limited Depth to saturated zone Ponding Seepage	į	 Somewhat limited Cutbanks cave 	 0.10
192B: Nipissing	 Very limited Seepage Depth to bedrock	 1.00 0.52 	Somewhat limited Large stones Thin layer Seepage	 0.77 0.52 0.50	 Very limited Depth to water 	1.00
Arcadian	 Very limited Depth to bedrock	:	 Wery limited Thin layer Seepage	1.00	 Very limited Depth to water 	1.00
Rock outcrop	 Not rated 	 	 Not rated 	 	 Not rated 	i I
194B: Copper Harbor	 Very limited Seepage 	 1.00 	 Very limited Depth to saturated zone Seepage	 1.00 0.38	Depth to	 1.00 0.01
195B: Copper Harbor	 Very limited Seepage 	 1.00 	 Very limited Depth to saturated zone Seepage	 1.00 0.38	 Very limited Cutbanks cave Depth to saturated zone	 1.00 0.01
Bete Grise	 Very limited Seepage 	 1.00 	 Very limited Depth to saturated zone Seepage	 1.00 0.75	 Very limited Cutbanks cave 	 1.00
196B: Bete Grise	 Very limited Seepage 	 1.00 	 Very limited Depth to saturated zone Seepage	 1.00 0.75	 Very limited Cutbanks cave 	1.00
Tawas	 Very limited Seepage 	 1.00 	 Very limited Depth to saturated zone Ponding Seepage	 1.00 1.00 0.75	 Very limited Cutbanks cave 	 1.00
301: Udorthents	 Somewhat limited Seepage 	 0.12	 Somewhat limited Seepage	0.03	 Very limited Depth to water	1.00
Udipsamments	 Very limited Seepage 	 1.00 	Somewhat limited Seepage	 0.89 	 Very limited Depth to water 	1.00

Table 14b.--Water Management--Continued

Map symbol and soil name	Pond reservoir areas	Embankments, dikes, and levees		Aquifer-fed excavated ponds		
	Rating class and	Value	Rating class and	Value	Rating class and	Value
302: Histosols			 Very limited Organic matter	 1.00	 Somewhat limited	 0.10
	Seepage	1.00 	content Ponding Depth to saturated zone Piping	 1.00 1.00 1.00	Cutbanks Cave	
Aquents	Somewhat limited Seepage	 0.01 	Very limited Ponding Depth to saturated zone Piping	 1.00 1.00 1.00		0.99
303: Aquents	 Somewhat limited Seepage 	 0.01 	 Very limited Ponding Depth to saturated zone Piping	 1.00 1.00 1.00		0.99
Dumps, stamp sand	 Not rated 	 	 Not rated 	 	 Not rated 	
310: Dumps, mine	 Not rated 	 	 Not rated 	 	 Not rated 	
311: Dumps, stamp sand	 Not rated 	 	 Not rated 	 	 Not rated 	į Į
312: Pits	 Not rated 		 Not rated 	 	 Not rated 	
313: Dumps, sawdust	 Not rated 		 Not rated 	 	 Not rated 	
W: Water	 Not rated 		 Not rated 	 	 Not rated 	

Table 15.--Engineering Index Properties

(Absence of an entry indicates that data were not estimated)

			Classif	ication	Fragi	ments		_	e passi	ng		
Map symbol	Depth	USDA texture	ļ		_			sieve n	umber		Liquid	
and soil name			Unified	AASHTO	>10	3-10	4	10	40	200	limit	ticit
		1	Unified	AASHTO		inches	4	10	40	200	<u> </u>	Index
	In		ļ I	 	Pct	Pct		 	 	 	Pct	
2:			 	 		 	 	 	 	 		
Lupton	0-8	Muck	PT	 A-8	i o	0	100	100	100	 90-100		NP
_upoon	8-80	Muck	PT	A-8	0	0	100	100		40-100	1	NP
					i -							
Tawas	0-6	Muck	PT	A-8	0	0	100	100	100	90-100		
	6-25	Muck	PT	A-8	0	0	100	100	90-100	40-100	j	
	25-80	Sand, fine	SM, SP-SM, SP	A-3, A-2-4	0	0	90-100	85-100	40-95	0-30	0-18	NP-2
		sand, loamy			ĺ	ĺ	ĺ	ĺ	ĺ	ĺ	İ	ĺ
		sand	ĺ	ĺ	j	ĺ		ĺ	ĺ	ĺ		
3:												
Dawson	0-6	Peat	PT	A-8	0	0	100	100		90-100	1	
	6-38	Muck	PT	A-8	0	0	100	100		40-100	1	
	38-80	Sand	SW-SM, SM	A-1, A-2-4	0	0	100	100	50-70	5-15	0-19	NP-2
Loxley	0-5	Peat	 PT	 A-8	0	l l 0	100	1 100	100	 90-100		NP
2		Muck	PT	A-8	0	0	100	100		40-100		NP
	26-45	Muck	PT	A-8	0	0	100	100	90-100			NP
	45-80	Mucky peat	PT	A-8	0	0	100	100	90-100	40-100	i	NP
6:			!		!							
Skandia	0-5	Mucky peat	PT	A-8	0	0	100	100	100	90-100	1	NP
	5-33	Muck	PT	A-8	0	0	100	100	1	40-100	1	NP
	33-41	Weathered										
		bedrock										
	41-80	Unweathered bedrock										
		bearock	 	 	l I	 	l I	l I	 	l I		l I
Burt	0-4	Muck	 PT	 A-8	0	 0	100	1 100	100	 90-100		
	4-6	Mucky sand	SM, SC-SM	A-3	0	0	100	90-100		5-15	1	NP-6
	6-12	Sand	SM, SC-SM	A-3, A-2-4	0	0	95-100	90-100		5-30	0-23	NP-6
	12-17	Sand	SM, SC-SM	A-3, A-2-4	0	0-15		90-100		5-30	0-23	NP-6
	>17	Unweathered			i			i				
		bedrock	j	İ	į	İ	j	j	į	j	į	j
10:			!									
Cathro		Muck	PT	A-8	0	0-1	100	100	100	90-100		
		Muck	PT	A-8	0	0	100	100		40-100		
	34-80	Very fine sandy	CL, CL-ML, ML	A-4	0	0-3	90-95	85-90	70-85	45-65	16-36	2-17
		loam, loam	I	I	1	1	1	1	1	I	1	1

Table 15.--Engineering Index Properties--Continued

Map symbol	Depth	USDA texture	Classif	ication	_ii	Fragments 		Percentage passing sieve number				 Plas-
and soil name			Unified	AASHTO	1	3-10 inches		10	40	200	limit	ticity index
	In			ARBITO	Pct	Pct	-			200	Pct	Index
10:				 		 	 	 	 	 	 	
Sabattis	0 - 8	Muck	PT	A-8	0	0	100	100	100	90-100		
	8-12	Very cobbly very fine sandy loam	ML, CL-ML 	A-4, A-6 	0-6 	15-35 	65-80 	55-75 	45-75 	25-65 	20-40 	2-12
	12-17	Cobbly very fine sandy loam	ML, CL-ML, CL 	A-4, A-6 	0-6 	10-30 	90-100 	85-100 	75-100 	60-90 	16-30 	2-12
	17-32	Cobbly very fine sandy loam	SM, SC, ML, CL 	A-2-4, A-4 	0-6 	10-30 	90-95 	85-90 	50-85 	25-60 	16-30 	2-12
	32-37	Cobbly fine sandy loam	SM, SC, ML,	A-1, A-2-4, A-4	0-6	10-30 	75-95 	50-90 	45-90 	15-70 	16-30 	2-12
	37-80	Very cobbly	SM, SC, SC-SM	A-1, A-2-4, A-4	3-6	15-30	75-95	65-90	40-65	20-40	16-30	2-12
13:				 								
Tawas	0 - 6	Muck	PT	A-8	0	0	100	100	100	90-100		
	6-25	Muck	PT	A-8	0	0	100	100	90-100	40-100		
	25-80	Sand, fine sand, loamy sand	SM, SP-SM, SP 	A-3, A-2-4 	0 	0 	90-100 	85-100 	40-95 	0-30 	0-18 	NP - 2
Deford	0-6	Muck	PT	A-8	0	0	100	100	100	90-100		
	6-8	Sand	SM, SC-SM	A-1, A-2-4	0	0	100	100	50-70	5-15	0-29	NP-2
	8-80	Sand	SM, SC-SM	A-3, A-2-4	0	0	100	100	50-70	5-15	0-19	NP-2
15B:				 								
Dawson		Peat	PT	A-8	0	0	100	100		90-100	1	
	6-38	Muck	PT	A-8	0	0	100	100	1	40-100	1	
	38-80	Sand	SW-SM, SM	A-1, A-2-4	0	0	100	100	50-70 	5-15	0-19	NP-2
Croswell	0-1	Highly decomposed plant material	 PT 	 A-8 	0	 0 	 100 	 100 	 100 	 90-100 	 	
	1-11	Sand	SW-SM, SM	A-3, A-2-4	0	0	100	100	50-70	5-15	0-22	NP-2
	11-21	Sand	SW-SM, SM	A-3, A-2-4	0	0	100	100	50-70	5-15	0-24	NP-2
	21-34	Sand	SW-SM, SM	A-3, A-2-4	0	0	100	100	50-70	5-15	0-19	NP-2
	34-80	Sand	SW-SM, SM	A-3, A-2-4	0	0	100	100	50-70	5-15	0-19	NP-2
20E. Rock outcrop.				 		 	 	 	 	 	 	
noon oddorop.					İ							

Map symbol	Depth	USDA texture	Classif	ication	Fragi	nents		rcentag	_	_	 Liquid	 Plas- ticity
and soil name	_				>10	3-10	İ				limit	
	l In	1	Unified	AASHTO	inches Pct	inches Pct	4	10	40	200	Pct	index
	l III		 	 	PCC 	PCt 	 	 	 		PCt 	
21G:					! 	! 	İ	İ	İ	İ		!
Rock outcrop.			į				ĺ	ĺ	ĺ		ĺ	
Arcadian	0-3	 Highly decomposed	İ	 A-8 	 0 	 0 	 100 	 100 	 100 	90-100	 	
	 3-5 	plant material Very gravelly fine sandy	 GC-GM, GM, SM 	 A-1, A-4, A- 2-4	 0-5 	 10-20 	 30-75 	 10-65 	 5-65 	5-45	 16-31 	 1-10
		loam, very gravelly loamy very fine sand		 	 	 	 	 	 	 	 	
	5-12 	Very gravelly fine sandy loam, very gravelly loamy	GC-GM, GM, SM 	A-1, A-4, A- 2-4 	0-5 	10-20 	30-75 	10-65 	5-65 	5-45 	20-40 	1-12
	12-22	very fine sand Unweathered bedrock	'	 	 	 	 	 	 	 	 	
39A:				 	! 	 	l I	l I	l I		 	
Betsy Bay	0-1	Highly decomposed plant material	PT 	A-8 	0	0 	100 	100 	100 	90-100	 	
	 1-18 	Sand, fine sand	SP-SM, SM	 A-2-4, A-3, A-1	 0 	 0 	100	100	 50-80 	5-35	0-25	 NP - 4
	18-26	Sand, fine sand, loamy sand	SP-SM, SM 	A-2-4, A-3, A-1	0-10	0 	100 	100 	50-80 	5-35	0-28	NP-10
	26-43	Flaggy sand, flaggy fine sand	SP-SM, SM	 A-1, A-2-4, A-3	7-30 	 2-7 	 100 	 100 	 50-80 	5-35	0-21 	 NP - 4
	>43	Unweathered bedrock	 	 	 	 	 	 	 		 	
Burt	 0-4	Muck	 PT	 A-8	 0	 0	100	100	100	90-100	 	
	4-6	Mucky sand	SM, SC-SM	A-3	0	0	100	90-100	45-70	5-15	0-33	NP-6
	6-12	Sand	SM, SC-SM	A-3, A-2-4	0	0	95-100	90-100	45-70	5-30	0-23	NP-6
	12-17	Sand	SM, SC-SM	A-3, A-2-4	0	0-15	90-100	90-100	45-70	5-30	0-23	NP-6
	>17 	Unweathered bedrock		 			 	 	 			
Deford	 0-6	Muck	 PT	 A-8	 0	 0	 100	100	 100	90-100	 	
	6-8	Sand	1	A-1, A-2-4	0	0	100	100	50-70	5-15	1	NP-2
		Sand		A-3, A-2-4	0	0	100	100	50-70	5-15		NP-2
		İ	İ	İ	j	İ	į	İ	İ	į	į	į

Table 15.--Engineering Index Properties--Continued

Table 15.--Engineering Index Properties--Continued

Map symbol	Depth	USDA texture	Classif	ication	Frag	ments		rcentag	_	-	 Liquid	 Plag-
and soil name	Depen	ODDIT CONCUITO		1	>10	3-10	i	oreve n	umber			ticity
		İ	Unified	AASHTO	inches	inches	4	10	40	200		index
	In	[[Pct	Pct			[[Pct	<u> </u>
47A:		 	 	 			 	 				
Zeba	0-2	Highly decomposed	PT	A-8 	0	0	100	100	100	90-100	 	
	2-3	plant material Fine sandy loam, loamy	 SM, SC, SC- SM, ML	 A-2-4, A-4 	0	 0 	 95-100 	 90-100 	 45-85 	15-55	 0-33 	 NP-12
	3-9	sand Fine sandy loam 	 SM, SC, SC- SM, ML	 A-2-4, A-4 	 0 	 0 	 90-100 	 85-100 	 60-85 	35-55	 16-35 	 1-12
	9-14	Loamy sand, fine sandy	SM, SC, SC-SM 	A-2-4, A-4 	0	0 	90-95	85-90	45-80	15-50	0-30	NP-12
	14-25		 SM, SC, SC-SM 	 A-2-4, A-4 	0	 0 	 90-95 	 85-90 	 60-80 	15-50	 0-30 	 NP-12
	25-27	Weathered bedrock	 	 		i	 	 	i I	j	i	i
	>27	Unweathered bedrock										
Jacobsville	0 - 5	Muck	 PT	 A-8	0	 0	 100	100	100	90-100	 	
	5-12	Fine sandy loam	SC, SC-SM,	A-4, A-2-4, A-1	0	0	75-90 	65-90	45-60	25-50	16-33	1-12
	12-20	Gravelly fine sandy loam	SM, SC, SC-SM 	A-4, A-2-4 	0	0-5 	80-90 	70-85 	50-70 	30-45	16-31 	1-12
	20-21	Channery fine sandy loam, sandy loam	GM, SM, ML, CL 	A-1, A-4, A- 2-4 	0 	5-25 	65-90 	65-90 	40-80 	20-50	15-30 	1-12
	21-22	Weathered bedrock	 	 	 	 	 	 	 		 	
	>22	Unweathered bedrock 	 	 		 	 	 	 		 	

Table 15.--Engineering Index Properties--Continued

			(Class	ifi	cati	on		Fragi	ments	Pe	rcentag	e passi	.ng		
Map symbol	Depth	USDA texture										sieve n	umber		Liquid	Plas-
and soil name									>10	3-10					limit	ticity
			Uni	fied		A	ASHTO		inches	inches	4	10	40	200		index
	In				Ţ				Pct	Pct					Pct	
51C:									 	 	 					
Arcadian	0-3	Highly decomposed	PT 			A-8			0 	0 	100 	100	100 	90-100	 	
		plant material	İ		Ì				ĺ	ĺ	ĺ	İ	ĺ	ĺ	İ	ĺ
	3-5	Very gravelly	GC-GM,	GM,	SM	A-1,	A-4,	A-	0-5	10-20	30-75	10-65	5-65	5-45	16-31	1-10
		fine sandy				2-4										
		loam, very														
		gravelly loamy														
		very fine sand														
	5-12	Very gravelly	GC-GM,	GM,	SM	A-1,	A-4,	A-	0-5	10-20	30-75	10-65	5-65	5-45	20-40	1-12
		fine sandy				2 - 4										
		loam, very														
		gravelly loamy														
		very fine sand														
	12-22	Unweathered														
		bedrock														

Table 15.--Engineering Index Properties--Continued

	Depth	USDA texture	i					sieve n		ng	Liquid	 Dl
Map symbol and soil name	рерсп	USDA texture	l		_ >10	3-10	l I	sieve n	umber		Liquia limit	
and soll hame		 	Unified	AASHTO		inches	 4	10	40	200	11111111	index
	In	1	1		Pct	Pct	<u> </u>	1	1	1	Pct	
I			 		100	100	 	1	1	1	100	i
51C:			 	i				i	i			i
Nipissing	0-1	Moderately	PT	A-8	0	0	100	100	100	90-100		
		decomposed										
		plant material	!									
	1-3	Highly	PT	A-8	0	0	100	100	100	90-100		
		decomposed										
		plant material										
	3 - 4	Very cobbly	GM, GC-GM	A-1, A-2-4	0-5	35-40	55-65	45-55	35-55	20-50	17-33	2-12
		fine sandy					!	!	!			!
		loam, very					!	!	!	!		!
		cobbly silt						!		!		!
		loam										
	4-20	Extremely	GM, GC-GM	A-1, A-2-4	0-5	35-45	50-55	35-40	25-40	15-35	20-40	2-12
		cobbly fine										
		sandy loam, extremely										
		cobbly silt	l I				 	-				
I		loam	 			 	l I				 	
l	20-29	Extremely	GM, GC-GM	A-1, A-2-4	0-5	 40-45	 50_55	35-40	30-35	15-35	120-40	1-12
	20-23	cobbly fine	GM, GC-GM	A-1, A-2-1	0-3	1 40-43	1 20-22	122-40	130-33	122-33	20-40	1-12
I		sandy loam,	 			 	 	1	1	1	 	
		extremely	! 			 	i i	1	1	1	! 	i
		cobbly loam	İ	i	i	! 	i	i	i	i	<u> </u>	i
	29-35	Extremely	GM, GC-GM	A-1, A-2-4	0-5	40-50	30-45	15-30	10-30	5-20	20-40	2-12
		cobbly fine		<u> </u>			İ					i
		sandy loam,	İ	İ	i	i	İ	i	i	i	i	i
İ		extremely	İ	j	j	į	į	i	i	i	į	i
j		cobbly silt	İ	j	į	į	į	İ	İ	İ	į	İ
İ		loam	İ	İ	j	İ	ĺ	İ	İ	İ	İ	İ
İ	35-39	Fragmental	GM, GC-GM	A-1	0-5	65-75	20-40	0-20	0-20	0-15	0-33	NP-6
		material,										
		extremely										
		cobbly loam										
	>39	Unweathered										
!		bedrock		ļ	ļ		ļ	ļ				
Rock outcrop.								-	!			

Table 15.--Engineering Index Properties--Continued

			Classif	ication	Fragi	ments	Pe	rcentag	e passi	ng		
Map symbol	Depth	USDA texture			.			sieve n	umber		Liquid	Plas
and soil name					>10	3-10					limit	ticit
			Unified	AASHTO	inches	inches	4	10	40	200		index
	In				Pct	Pct					Pct	
51E:	 	 				 			 		 	
Arcadian	0-3	Highly	PT	A-8	0	0	100	100	100	90-100		
		decomposed										
		plant material										
	3 - 5	Very gravelly	GC-GM, GM, SM	A-1, A-4, A-	0-5	10-20	30-75	10-65	5-65	5-45	16-31	1-10
		fine sandy		2-4								
		loam, very										
		gravelly loamy	1									
		very fine sand										
	5-12	Very gravelly	GC-GM, GM, SM	•	0-5	10-20	30-75	10-65	5-65	5-45	20-40	1-12
		fine sandy		2-4								
		loam, very							!			!
		gravelly loamy			!				!			!
		very fine sand							!			!
	12-22	Unweathered										
		bedrock										!

Table 15.--Engineering Index Properties--Continued

Map symbol and soil name	Map symbol	 Depth	USDA texture	Class	ification	Frag	ments	Pe	rcentag	_	-	 Liquid	 Dlag
In		Depth	USDA CEXCUIE				3-10		sieve i	imiper			
In	and soll hame	l I		 Unified	AASHTO	1		4	1 10	1 40	200	11111111	index
51E: Nipissing 0-1 Moderately PT		l Tn	1	0				- -	1	1	1	Dat	
Nipissing 0-1 Moderately decomposed plant material 1-3 Highly decomposed plant material 1-3 Highly decomposed plant material 1-4 Very cobbly GM, GC-GM 1-1 A-2-4 0-5 35-40 55-65 45-55 35-55 20-50 17-33 10-30				 		100	100	i			1	100	i
decomposed plant material	51E:			İ	i			i					i
plant material 1-3 Highly PT A-8 0 0 100 100 90-100 decomposed plant material 3-4 Very cobly GM, GC-GM A-1, A-2-4 0-5 35-40 55-65 45-55 35-55 20-50 17-33 16 16 16 16 16 16 16	Nipissing	0-1	Moderately	PT	A-8	0	0	100	100	100	90-100	j	
1-3 Highly PT			decomposed										
decomposed plant material			plant material										
plant material 3-4 Very cobbly GM, GC-GM A-1, A-2-4 0-5 35-40 55-65 45-55 35-55 20-50 17-33		1-3	Highly	PT	A-8	0	0	100	100	100	90-100		
3-4 Very cobbly GM, GC-GM A-1, A-2-4 0-5 35-40 55-65 45-55 35-55 20-50 17-33 fine sandy loam, very cobbly silt loam			decomposed										
fine sandy loam, very cobbly fine sandy loam, extremely loam sandy loam			plant material										
loam, very cobbly silt loam		3-4	Very cobbly	GM, GC-GM	A-1, A-2-4	0-5	35-40	55-65	45-55	35-55	20-50	17-33	2-12
cobbly silt loam			fine sandy										
Loam			loam, very										
4-20 Extremely GM, GC-GM A-1, A-2-4 0-5 35-45 50-55 35-40 25-40 15-35 20-40 cobbly fine sandy loam, extremely cobbly silt loam 20-29 Extremely GM, GC-GM A-1, A-2-4 0-5 40-45 50-55 35-40 30-35 15-35 20-40 cobbly fine sandy loam, extremely cobbly floam 29-35 Extremely GM, GC-GM A-1, A-2-4 0-5 40-50 30-45 15-30 10-30 5-20 20-40 cobbly fine sandy loam, extremely cobbly silt loam 35-39 Fragmental GM, GC-GM A-1 0-5 65-75 20-40 0-20 0-15 0-33 material, extremely cobbly loam cobbly loa			-										
cobbly fine sandy loam, extremely cobbly silt loam extremely cobbly fine sandy loam, extremely cobbly fine sandy loam, extremely cobbly fine sandy loam, extremely cobbly fine sandy loam sandy loam extremely cobbly fine sandy loam, extremely cobbly fine sandy loam, extremely cobbly fine sandy loam, extremely cobbly silt loam sandy loam, extremely cobbly silt loam sandy loam extremely cobbly silt loam sandy loam extremely cobbly silt loam sandy loam			1										
sandy loam, extremely cobbly silt		4-20	1	GM, GC-GM	A-1, A-2-4	0-5	35-45	50-55	35-40	25-40	15-35	20-40	2-12
extremely cobbly silt loam 20-29 Extremely GM, GC-GM A-1, A-2-4 0-5 40-45 50-55 35-40 30-35 15-35 20-40 cobbly fine sandy loam, extremely cobbly loam 29-35 Extremely GM, GC-GM A-1, A-2-4 0-5 40-50 30-45 15-30 10-30 5-20 20-40 cobbly fine sandy loam, extremely cobbly silt loam 35-39 Fragmental GM, GC-GM A-1 0-5 65-75 20-40 0-20 0-15 0-33 material, extremely cobbly loam -			-										
cobbly silt loam													
loam													
20-29 Extremely GM, GC-GM A-1, A-2-4 0-5 40-45 50-55 35-40 30-35 15-35 20-40				!		!		!	!		!		!
cobbly fine sandy loam, extremely cobbly loam			1	!		!		!	!		!		!
sandy loam, extremely cobbly loam		20-29		GM, GC-GM	A-1, A-2-4	0-5	40-45	50-55	35-40	30-35	15-35	20-40	1-12
extremely cobbly loam						ļ		!	!	!	!		
cobbly loam			-					!					
29-35 Extremely GM, GC-GM A-1, A-2-4 0-5 40-50 30-45 15-30 10-30 5-20 20-40						!		!			-		
cobbly fine		00 05	-						115 20	110 20	- 00		
sandy loam, extremely		29-35		GM, GC-GM	A-1, A-2-4	0-5	40-50	30-45	15-30	10-30	5-20	20-40	2-12
extremely			-						1				
cobbly silt		l I		l I					1		1		
loam		l I		 		l I	 		l I	l i	1	1	
35-39 Fragmental GM, GC-GM A-1 0-5 65-75 20-40 0-20 0-20 0-15 0-33		l I		 		l I	 		I I	1		1	1
material,		35_30	1	 GM GC-GM	 a _ 1	0-5	 65-75	20-40	0-20	1 0-20	1 0-15	 0-33	ND-6
extremely		33-33		GM, GC-GM		0-5	05-75	20-40	0-20	0-20	0-15	0-33	141 - 0
cobbly loam		l I		1		i	 	i	İ	İ	1	 	i
>39 Unweathered						i	<u> </u>	i	İ	i	i		i
		>39	-										
			bedrock	į	j	i	į	i	i	i	j	İ	İ
	Rock outcrop.						 	 					

Map symbol	Depth	USDA texture	Classif	ication	i	ments	Pe	rcentag sieve n	e passi umber	-	 Liquid	
and soil name				13.57770	>10	3-10		1 10	1 40		limit	
		1	Unified	AASHTO	<u> </u>	inches	4	10	40	200	<u> </u>	index
	In	l I	 	 	Pct	Pct					Pct	
52C:		 	 	 	 	 	 				 	l I
Arcadian	0-3	Highly	PT	 A-8	0	0	100	100	100	90-100		
		decomposed			i	İ	İ	i	i		İ	İ
İ		plant material			i	İ	İ	i	i	i	İ	İ
İ	3-5	Very gravelly	GC-GM, GM, SM	A-1, A-4, A-	0-5	10-20	30-75	10-65	5-65	5-45	16-31	1-10
ĺ		fine sandy		2-4	İ	ĺ	ĺ	İ	İ	İ	ĺ	ĺ
		loam, very										
		gravelly loamy										
		very fine sand										
	5-12		GC-GM, GM, SM	'	0-5	10-20	30-75	10-65	5-65	5-45	20-40	1-12
		fine sandy		2-4								
		loam, very					!	!	!	!		
		gravelly loamy										ļ
ļ		very fine sand		 								
	12-22	Unweathered bedrock										
l		Dedrock	 	l I	 	 	 				 	l I
Dishno	0-1	Moderately	 PT	 A-8	0	 0	100	100	100	90-100	 	
DIBINIO	0-1	decomposed		A -0 	0	0	1	1 100	1 100	50-100	 	
		plant material	 	 	i i	 	 	1			 	!
i	1-3		ML	A-4, A-2-4	0-7	5-15	80-95	80-90	55-80	35-55	20-40	1-12
i		fine sandy		,								
İ		loam			i	İ	İ	i	i	i	İ	İ
İ	3 - 4	Cobbly very	ML	A-4, A-2-4	4-7	5-20	80-95	80-90	55-80	30-55	16-33	1-12
ĺ		fine sandy			İ	ĺ	ĺ	İ	İ	İ	ĺ	ĺ
		loam										
	4-8	Cobbly very	ML, SM	A-4, A-2-4	4-7	5-20	80-90	80-90	55-80	30-55	20-40	1-12
		fine sandy										
		loam										
	8-26		ML, SM	A-4, A-2-4	4-7	5-20	80-95	75-90	50-75	30-50	16-35	1-12
		fine sandy					!	!	!	!		
		loam, cobbly										
		fine sandy	 	 		 					 	
l I	26 21	loam	 SM	 A-1, A-2-4	2 6	110 20	 70 00	 60 7E		 10-25	0 27	 NTD 10
I	20-31	Very cobbly	SM	A-1, A-2-4	3-6	10-20 	70-80 	60-75	30-55	10-25	0-27	NP-IO
		cobbly loamy	 	 	 	 	 	1	1	1	 	l I
		sand	 	 	i i	 	 	1			 	!
i	31-42	·	SM	A-1, A-2-4	3-7	10-20	70-80	60-75	30-55	10-25	0-27	NP-10
i		loamy sand,		,								
Ï		cobbly loamy		İ	i	į	į	i	i	i	İ	İ
į		sand		İ	i	İ	İ	İ	i	i	İ	İ
į	>42	Unweathered			i		j	j				
j		bedrock										
Rock outcrop.								1	1			

Table 15.--Engineering Index Properties--Continued

Table 15.--Engineering Index Properties--Continued

Map symbol	Depth	USDA texture	Classif	ication	Fragi	ments	Pe		e passi	_	 	 Plas-
and soil name	рерсп	USDA CEXCUIE			>10	3-10	 	sieve n	iumper			ticity
did boll name			Unified	AASHTO	1	inches	 4	10	40	200		index
	In	!	İ		Pct	Pct		İ	İ	İ	Pct	İ
52E:			 	 	 	 	 				 	
Arcadian	0-3	Highly decomposed plant material	 PT 	A-8 	0 	0 	100 	100	100 	90-100	 	
	3-5	Very gravelly fine sandy loam, very gravelly loamy very fine sand	 	A-1, A-4, A- 2-4 	0-5	10-20 	30-75 	10-65	5-65 	5-45 	16-31 	1-10
	5-12		GC-GM, GM, SM 	A-1, A-4, A- 2-4 	0-5 	10-20 	30-75 	10-65 	5-65 	5-45 	20-40 	1-12
	12-22	Unweathered bedrock	 	 	 	 	 				 	
Dishno	0-1	Moderately decomposed plant material	 PT 	A-8 	0	 0 	 100 	100	100	90-100	 	
	1-3		 ML 	A-4, A-2-4 	0-7	 5-15 	 80-95 	80-90	55-80	35-55	20-40	 1-12
	3-4		 ML 	A-4, A-2-4 	4-7 	 5-20 	 80-95 	80-90	 55-80 	30-55	 16-33 	 1-12
	4-8	· ·	ML, SM 	A-4, A-2-4 	4-7 	 5-20 	 80-90 	80-90	55-80	30-55	20-40	 1-12
	8-26	Cobbly very fine sandy loam, cobbly fine sandy loam	ML, SM 	A-4, A-2-4 	4-7 	5-20 	 80-95 	75-90 	50-75	30-50	 16-35 	1-12
	26-31		 SM 	 A-1, A-2-4 	3-6 	 10-20 	 70-80 	60-75 	30-55	 10-25 	 0-27 	 NP - 10
	31-42	· ·	SM 	A-1, A-2-4 	3-7 	 10-20 	70-80 	60-75	30-55	10-25 	0-27 	 NP-10
	>42	Unweathered bedrock	 	 	 	 	 		 		 	
Rock outcrop.	 	 	 	 	 	 	 		 		 	

Map symbol	Depth	USDA texture	Classif:	ication	Fragi	ments		rcentag sieve n	_	_	 Liquid	 Plas-
and soil name	_	į			>10	3-10	<u> </u>				limit	-
			Unified	AASHTO	inches	inches	4	10	40	200		index
	In				Pct	Pct					Pct	
53E:			 	 		 	 		 			
Arcadian	0-3	Highly	PT	A-8	0	0	100	100	100	90-100		i
		decomposed	İ		i	İ	i	i	İ	i	İ	į
		plant material	İ		i	İ	i	i	i	i	İ	i
	3-5		GC-GM, GM, SM	A-1, A-4, A-	0-5	10-20	30-75	10-65	5-65	5-45	16-31	1-10
		fine sandy	İ	2-4	i	İ	i	i	İ	i	İ	İ
		loam, very	! 		i	İ	i	i	İ	i	İ	İ
		gravelly loamy	! 		i	İ	i	i	İ	i	İ	İ
		very fine sand	!		i	İ	i	i	İ	i	İ	İ
	5-12	Very gravelly	GC-GM, GM, SM	A-1, A-4, A-	0-5	10-20	30-75	10-65	5-65	5-45	20-40	1-12
		fine sandy	İ	2-4	i	İ	i	i	İ	i	İ	i
		loam, very	İ		i	İ	i	i	İ	i	İ	i
		gravelly loamy	İ	İ	İ	İ	İ	İ	İ	İ	İ	į
		very fine sand	İ		i	İ	i	i	İ	i	İ	i
	12-22	Unweathered								i		
		bedrock	į		į	į	į	į	į	į	į	į
Michigamme	 0-1	 Highly	 PT	 A-8	0	 0	 100	 100	 100	90-100	 	
		decomposed										
		plant material				ĺ	İ	İ	ĺ	Ì	İ	ĺ
	1-4	Cobbly very	CL-ML, ML	A-4	0	20-50	95-100	75-100	45-85	20-50	0-26	NP-6
		fine sandy				ĺ	İ	İ	ĺ	Ì	İ	ĺ
		loam										
	4-10	Cobbly very	CL-ML, ML	A-4	0-1	0-50	95-100	75-100	45-95	20-90	0-37	NP-10
		fine sandy										
		loam										
	10-22	Very cobbly	CL-ML, ML,	A-4, A-2-4,	0-1	0-50	95-100	75-100	45-95	20-90	0-33	NP-10
		very fine	SM, SC-SM	A-1								
		sandy loam,										
		very cobbly										
		sandy loam										
	22-30	Cobbly loamy	SM, SC-SM	A-1, A-2-4	0-5	0-30	85-100	75-95	45-65	20-40	0-29	NP-6
		sand, bouldery										
		loamy sand,										
		cobbly sandy										
		loam										
	>30	Unweathered										
			I.	1	1	i	i .	1	i .	1	i .	1

bedrock

Rock outcrop.

Table 15.--Engineering Index Properties--Continued

Table 15.--Engineering Index Properties--Continued

Map symbol	 Depth	USDA texture	Classif	ication	Fragi	ments		rcentag sieve n	-	-	 Liquid	 Plas-
and soil name					>10	3-10					limit	ticity
		<u> </u>	Unified	AASHTO		inches	4	10	40	200	<u> </u>	index
	In				Pct	Pct				1	Pct	
53F:		 	 	 			 					
Arcadian	0-3 	Highly decomposed plant material	PT 	A-8 	0	0	100 	100 	100 	90-100		
	3-5	Very gravelly fine sandy loam, very gravelly loamy very fine sand	GC-GM, GM, SM 	A-1, A-4, A- 2-4 	0-5	 10-20 	 30-75 	 10-65 	5-65 	5-45	 16-31 	 1-10
	5-12 	Very gravelly fine sandy loam, very gravelly loamy very fine sand	GC-GM, GM, SM 	 A-1, A-4, A- 2-4 	0-5	 10-20 	 30-75 	 10-65 	5-65 	5-45	20-40	 1-12
	12-22	Unweathered bedrock	 	 		 	 	 	 		 	
Michigamme	0-1	 Highly decomposed plant material	 PT 	 A-8 	0	 0 	 100 	100 	 100 	90-100	 	
	1-4	Cobbly very fine sandy loam	CL-ML, ML 	 A-4 	0	20-50 	 95-100 	 75-100 	45-85 	20-50	0-26	NP - 6
	4-10	Cobbly very fine sandy loam	CL-ML, ML 	A-4 	0-1	0-50	95-100 	75-100 	45-95 	20-90	0-37	NP-10
	10-22	Very cobbly very fine sandy loam, very cobbly sandy loam	CL-ML, ML, SM, SC-SM	A-4, A-2-4, A-1 	0-1	0-50 	95-100 	75-100 	45-95 	20-90	0-33	NP-10
	22-30	Cobbly loamy sand, bouldery loamy sand, cobbly sandy loam	SM, SC-SM 	A-1, A-2-4 	0-5	0-30 	 85-100 	75-95 	45-65 	20-40	0-29 	 NP - 6
	>30	Unweathered bedrock	 	 	 	 	 	 	 		 	
Rock outcrop.		 	 	 		 	 	 	 		 	

Table 15.--Engineering Index Properties--Continued

Map symbol	 Depth	USDA texture	Classifi	ication	_i	ments 		rcentag sieve n	_	-	 Liquid	
and soil name	 		Unified	AASHTO	>10	3-10 inches	 4	10	40	200	limit	ticity index
	In	1		111111111	Pct	Pct	l -	1	1	1	Pct	
	İ	i			i	İ	İ	i	i	i	İ	i
55B:	İ	İ			i	İ	İ	i	i	i	İ	i
Chocolay	0-2	Highly	PT	A-8	0	0	100	100	100	90-100	i	i
_	İ	decomposed	ĺ		j	İ	İ	İ	İ	İ	İ	İ
	İ	plant material	ĺ		j	İ	İ	İ	İ	İ	İ	İ
	2-11	Very cobbly	GC-GM, GM, GC	A-1, A-4	0	0-10	55-80	45-75	40-70	25-50	16-33	1-12
	ĺ	fine sandy			į	İ	ĺ	İ	İ	İ	ĺ	İ
	ĺ	loam			j	İ	ĺ	İ	İ	İ	ĺ	İ
	11-13	Very gravelly	GC-GM, GM	A-1, A-2-4	0-1	5-10	50-75	40-70	25-60	15-35	20-40	1-12
		fine sandy										
		loam, cobbly										
		fine sandy										
		loam										
	13-18	Very gravelly	GC-GM, GM, GC	A-1, A-4	1-5	5-20	50-75	35-70	25-65	15-45	16-35	1-12
		very fine										
		sandy loam,										
		cobbly fine										
		sandy loam,										
		flaggy fine										
		sandy loam						!	!	!		!
	18-21			A-1, A-2-4	20-40	45-70	30-65	20-55	10-35	5-20	15-30	1-12
		fine sandy	GC, SM					!	!			!
		loam, flaggy						!	!			!
		fine sandy						!		!		!
		loam						!		!		!
	>21	Unweathered										
		bedrock			- 1							

Table 15.--Engineering Index Properties--Continued

Map symbol and soil name	 Depth 	 USDA texture 	Classif	ication	Frag	ments		ercentag sieve n	_	-	 Liquid limit	 Plas- ticity
	İ		Unified	AASHTO		inches	4	10	40	200		index
	In	Ī	Ī	l	Pct	Pct			Ī		Pct	
100B:	 		İ	 		 	 				 	
Waiska	0-1	Moderately	PT	 A-8	0	0	100	100	100	90-100		i
	,	decomposed		U			=00	200	=00		 	i
	 	plant material		 	i	 	 	i	i	1	 	i
	1-7	Cobbly loamy	SM, SC, SC-SM	A-1. A-2-4.	0-8	0-15	75-90	65-90	35-70	10-35	0-31	NP-10
	, <i></i>	sand, cobbly		A-3		0 20					0 02	
	! 	sandy loam				! 	i	i	i	i	<u>'</u>	i
	7-23	Very gravelly	SM, SW-SM,	A-1, A-2-4	0-13	5-10	50-60	35-45	15-35	5-15	0-35	NP-7
	İ	loamy sand,	SC-SM	, , 			İ	i	i			i
	İ	very gravelly	İ	İ	i	i	İ	i	i	i	i	i
	İ	loamy coarse	İ	İ	i	i	į	i	i	i	i	i
	İ	sand	İ	İ	i	į	į	i	i	i	į	i
	23-35	Extremely	SC-SM, SW-SM	A-1	7-12	5-10	40-60	25-45	15-30	0-10	0-27	NP-4
	ĺ	gravelly			j	İ	ĺ	İ	İ	İ	İ	ĺ
		coarse sand,			j	İ	ĺ	İ	İ	İ	İ	ĺ
		extremely										
		gravelly sand										
	35-60	Extremely	GP, SP, SP-	A-1	6-12	5-10	30-60	10-50	5-35	0-10	0-21	NP-4
		gravelly	SM, SC-SM,									
		coarse sand,	SW-SM									
		extremely										
		gravelly sand										
	60-80	Extremely	GP, SP, SC-	A-1	6	5-15	30-60	10-50	5-35	0-10	0-21	NP-4
		gravelly	SM, SP-SM,									
		coarse sand,	SW-SM									
		extremely										
		gravelly sand										

Map symbol and soil name	Depth	USDA texture	Classif: 	ication	Fragi	ments		rcentag sieve n	_	-	 Liquid limit	
and soll name			Unified	AASHTO		inches	 4	10	40	200		index
	In				Pct	Pct				1	Pct	
					ļ		ļ.			!		
100D:												
Waiska	0-1	1	PT	A-8	0	0	100	100	100	90-100		
		decomposed					!					
		plant material										
	1-7		SM, SC, SC-SM		0-8	0-15	75-90	65-90	35-70	10-35	0-31	NP-10
		sand, cobbly		A-3				!	ļ	!		
		sandy loam										
	7-23		!	A-1, A-2-4	0-13	5-10	50-60	35-45	15-35	5-15	0-35	NP-7
		loamy sand,	SC-SM									
		very gravelly										
		loamy coarse										
		sand										
	23-35	-	SC-SM, SW-SM	A-1	7-12	5-10	40-60	25-45	15-30	0-10	0-27	NP-4
		gravelly										
		coarse sand,										
		extremely										
		gravelly sand										
	35-60			A-1	6-12	5-10	30-60	10-50	5-35	0-10	0-21	NP-4
		gravelly	SM, SC-SM,			 						l
		coarse sand,	SW-SM	 		 						
		extremely		 		 						
		gravelly sand						10-50	5-35	0-10	 0-21	
	60-80	-		A-1	6	5-15	30-60	10-50	5-35	0-10	0-21	NP-4
		gravelly coarse sand,	SM, SP-SM,	 		 -	 				 	
		extremely	SW-SM	 -		 	I I			1	 	
		extremely gravelly sand	 	 -		 	I I			1	 	
		graveily sand			!			1		!	!	

Table 15.--Engineering Index Properties--Continued

Table 15.--Engineering Index Properties--Continued

			Classif	ication	Fragi	ments	Pe	rcentag	e passi	ng		
Map symbol	Depth	USDA texture			_			sieve n	umber		Liquid	
and soil name					>10	3-10					limit	ticity
			Unified	AASHTO	inches	inches	4	10	40	200		index
	In				Pct	Pct				[Pct	
102C:												
			 PT			 0	100	100	100			
Waiska	0-1	Moderately	PT	A-8	0	0	100	100	100	90-100		
		decomposed								1		
		plant material	1									
	1-7	Cobbly loamy	SM, SC, SC-SM	1	0-8	0-15	75-90	65-90	35-70	10-35	0-31	NP-10
		sand, cobbly		A-3					!			
		sandy loam										
	7-23	Very gravelly	SM, SW-SM,	A-1, A-2-4	0-13	5-10	50-60	35-45	15-35	5-15	0-35	NP-7
		loamy sand,	SC-SM	!			!	!	!	!		
		very gravelly	!	!			!	!	!	!		!
		loamy coarse	!	!			!	!	!	!		
		sand	!	!			!	!	!	!		
	23-35	Extremely	SC-SM, SW-SM	A-1	7-12	5-10	40-60	25-45	15-30	0-10	0-27	NP-4
		gravelly	!	!			!	!	!	!		
		coarse sand,	!	!			!	!	!	!		
		extremely										
		gravelly sand										
	35-60	Extremely	GP, SP, SP-	A-1	6-12	5-10	30-60	10-50	5-35	0-10	0-21	NP-4
		gravelly	SM, SC-SM,									
		coarse sand,	SW-SM									
		extremely										
		gravelly sand										
	60-80	Extremely	GP, SP, SC-	A-1	6	5-15	30-60	10-50	5-35	0-10	0-21	NP-4
		gravelly	SM, SP-SM,									
		coarse sand,	SW-SM									
		extremely										
		gravelly sand										
Garlic	0-1	Highly	PT	A-8	0	0	100	100	100	90-100		
		decomposed										
		plant material										
	1-7	Loamy fine	SM, SC-SM	A-2-4, A-4	0	0	95-100	90-100	60-85	15-45	0-26	NP-6
		sand, fine										
		sand										
		Fine sand, sand	1	A-3, A-2-4	0	0	1	90-100	1	5-35	0-33	
		Fine sand, sand		A-3, A-2-4	0	0	95-100	90-100	45-80	5-35	0-29	
	20-27	Sand, fine sand	SM, SC-SM	A-3, A-2-4	0	0	95-100	90-100	45-80	5-35	0-26	NP-6
	27-46	Sand, fine sand	SM, SC-SM	A-3, A-2-4	0	0	90-100	85-100	45-80	5-35	0-23	NP-6
	46-80	Sand, fine sand	SM, SC-SM	A-3, A-2-4	0	0	90-100	85-100	45-80	5-35	0-23	NP-6

Map symbol	Depth	USDA texture	Classif:	ication	Fragi	ments		rcentag sieve n	-	-	 Liquid	 Plas-
and soil name		ĺ			>10	3-10	İ				limit	ticity
			Unified	AASHTO	inches	inches	4	10	40	200	ĺ	index
	In		ĺ		Pct	Pct	l	l		Ī	Pct	
		İ	İ		j	İ	į	İ	İ	İ	İ	į
102E:		ĺ	İ		j		ĺ	İ	İ	İ	ĺ	ĺ
Waiska	0-1	Moderately	PT	A-8	0	0	100	100	100	90-100		
		decomposed	İ		j		ĺ	İ	İ	İ	ĺ	ĺ
		plant material										
	1-7	Cobbly loamy	SM, SC, SC-SM	A-1, A-2-4,	0-8	0-15	75-90	65-90	35-70	10-35	0-31	NP-10
		sand, cobbly	İ	A-3	j		ĺ	İ	İ	İ	ĺ	ĺ
		sandy loam	İ		j		ĺ	İ	İ	İ	ĺ	ĺ
	7-23	Very gravelly	SM, SW-SM,	A-1, A-2-4	0-13	5-10	50-60	35-45	15-35	5-15	0-35	NP-7
		loamy sand,	SC-SM		j		ĺ	İ	İ	İ	ĺ	ĺ
		very gravelly	İ		j		ĺ	İ	İ	İ	ĺ	ĺ
		loamy coarse	İ		j		ĺ	İ	İ	İ	ĺ	ĺ
		sand	İ		j		ĺ	İ	İ	İ	ĺ	ĺ
	23-35	Extremely	SC-SM, SW-SM	A-1	7-12	5-10	40-60	25-45	15-30	0-10	0-27	NP-4
		gravelly			j		ĺ	ĺ	İ	Ì	ĺ	ĺ
İ		coarse sand,										
		extremely	İ		j		ĺ	İ	İ	İ	ĺ	ĺ
		gravelly sand	İ		j		ĺ	İ	İ	İ	ĺ	ĺ
	35-60	Extremely	GP, SP, SP-	A-1	6-12	5-10	30-60	10-50	5-35	0-10	0-21	NP-4
		gravelly	SM, SC-SM,		j		ĺ	İ	İ	İ	ĺ	ĺ
		coarse sand,	SW-SM		j		ĺ	İ	İ	İ	ĺ	ĺ
		extremely										
		gravelly sand										
	60-80	Extremely	GP, SP, SC-	A-1	6	5-15	30-60	10-50	5-35	0-10	0-21	NP-4
		gravelly	SM, SP-SM,		j		ĺ	ĺ	İ	Ì	ĺ	ĺ
		coarse sand,	SW-SM									
		extremely			j		ĺ	ĺ	İ	Ì	ĺ	ĺ
		gravelly sand										
Garlic	0-1	Highly	PT	A-8	0	0	100	100	100	90-100		
		decomposed										
		plant material										
	1-7	Loamy fine	SM, SC-SM	A-2-4, A-4	0	0	95-100	90-100	60-85	15-45	0-26	NP-6
		sand, fine										
		sand										
		Fine sand, sand	1 -	A-1, A-2-4	0	0	95-100	90-100	45-80	5-35	0-33	NP-6
	13-20	Fine sand, sand	SM, SC-SM	A-1, A-2-4	0	0	95-100	90-100	45-80	5-35	0-29	NP-6
	20-27	Sand, fine sand	SM, SC-SM	A-3, A-2-4	0	0	95-100	90-100	45-80	5-35	0-26	NP-6
	27-46	Sand, fine sand	SM, SC-SM	A-1, A-2-4	0	0	90-100	85-100	45-80	5-35	0-23	NP-6
	46-80	Sand, fine sand	SM, SC-SM	A-1, A-2-4	0	0	90-100	85-100	45-80	5-35	0-23	NP-6

Table 15.--Engineering Index Properties--Continued

Table 15.--Engineering Index Properties--Continued

			Classif:	ication	Fragi	ments		rcentag	-	-		
Map symbol and soil name	Depth	USDA texture		I	_ >10	3-10		sieve n	umber		Liquid limit	
and soil name	 		 Unified	AASHTO		3-10 inches	 4	10	40	200	limic	index
	l In	1	Unitied	AADIIIO	Pct	Pct	<u>*</u> 	1 10	1 40	1 200	Pct	Index
	<u>111</u>		 	 	PCL	PCC	 	 		1	PCL	l I
102F:	 		 	 	i	 	 	l I	i	1		l I
Waiska	0-1	Moderately	PT	 A-8	0	0	100	100	100	90-100		
	İ	decomposed		İ	i	İ	İ	İ	i	i	İ	İ
	İ	plant material	İ	İ	i	İ	j	i	i	i	i	i
	1-7	Cobbly loamy	SM, SC, SC-SM	A-1, A-2-4,	0-8	0-15	75-90	65-90	35-70	10-35	0-31	NP-10
		sand, cobbly		A-3	İ	ĺ		ĺ	İ	İ	İ	
		sandy loam										
	7-23	Very gravelly	SM, SW-SM,	A-1, A-2-4	0-13	5-10	50-60	35-45	15-35	5-15	0-35	NP-7
 		loamy sand,	SC-SM									
		very gravelly										
		loamy coarse										
		sand										
	23-35	Extremely	SC-SM, SW-SM	A-1	7-12	5-10	40-60	25-45	15-30	0-10	0-27	NP-4
		gravelly			-							
	 	coarse sand,		 		 	 					
	 	gravelly sand	 	l I		 	 	l I		1		
	 35-60	Extremely	GP, SP, SP-	 A-1	6-12	 5-10	 30-60	 10-50	5-35	0-10	0-21	NTD_4
	33-00 	gravelly	SM, SC-SM,	 	0-12	J-10 	30 - 00 	10-30	3-33	0-10	0-21	
	! 	coarse sand,	SW-SM	! 	1	 	! 		i			i
	! 	extremely		 	i		! 	i	i	i		i
	İ	gravelly sand			i	İ	İ	i	i	i	i	i
	60-80	Extremely	GP, SP, SC-	A-1	6	5-15	30-60	10-50	5-35	0-10	0-21	NP-4
	İ	gravelly	SM, SP-SM,	İ	i	İ	j	i	i	i	i	i
	İ	coarse sand,	SW-SM	İ	İ	İ	İ	İ	İ	İ	İ	İ
		extremely			İ	ĺ		ĺ	İ	İ	İ	
		gravelly sand										
Garlic	0-1	Highly	PT	A-8	0	0	100	100	100	90-100		
		decomposed							!	!		ļ
		plant material	'									
	1-7	Loamy fine	SM, SC-SM	A-2-4, A-4	0	0	95-100	90-100	60-85	15-45	0-26	NP-6
	 	sand, fine			-							
	 7_10	sand Fine sand, sand	l lewr ec_ewr	 A-3, A-2-4	0	 0	 05_100	 90-100	 45-90	5-35	0-33	ND_6
		Fine sand, sand	1 -	A-3, A-2-4	0	0 0		90-100	1	5-35	0-33	1
		Sand, fine sand	•	A-3, A-2-4	0	0 0		90-100			0-25	
		Sand, fine sand	!	A-3, A-2-4	0	0 0		85-100			0-23	
	46-80	Sand, fine sand	'	A-3, A-2-4	0	0		85-100		5-35	0-23	
		!	1		1 1							1 1

Table 15.--Engineering Index Properties--Continued Classification Fragments Percentage passing ty

Map symbol	Depth	USDA texture	Classi	rication	Frag	ments	P6	-	ge passı number	-	 Liquid	 Plas-
and soil name					>10	3-10		1	1	1	limit	ticity
	<u> </u>	<u> </u>	Unified	AASHTO		inches	4	10	40	200	<u> </u>	index
	In		!		Pct	Pct		!			Pct	ļ
1100												
110B:		 1	 				100	1 100	1 100			1
Shelldrake	0-1	Moderately	PT	A-8	0	0	100	100	100	90-100		
		decomposed					 					1
		plant material					100	1 100				
	1-6	Sand	SP-SM, SP	A-3	0 0	0	100	100	50-70	0-10	1	NP-1 NP-1
	6-13	Sand	SP-SM, SP	A-3	1 -	0	100	100	50-70	0-10	1	1
	13-23	Sand	SP-SM, SP	A-3	0	0	100	100	50-70	0-10	1	NP-1
	23-80	Sand	SP-SM, SP	A-3	0	0	100	100	50-70	0-10	0-17	NP-1
			1									
Croswell	0-1	Highly	PT	A-8	0	0	100	100	100	90-100		
		decomposed								1		
		plant material	1									
	1	Sand	SW-SM, SM	A-3, A-2-4	0	0	100	100	50-70	5-15	0-22	1
	11-21	Sand	SW-SM, SM	A-3, A-2-4	0	0	100	100	50-70	5-15	1 .	NP-2
	21-34	Sand	SW-SM, SM	A-3, A-2-4	0	0	100	100	50-70	5-15		NP-2
	34-80	Sand	SW-SM, SM	A-3, A-2-4	0	0	100	100	50-70	5-15	0-19	NP-2
			!	ļ					!	!	ļ	
111B:												
Deer Park	0-1	Moderately	PT	A-8	0	0	100	100	100	90-100		
		decomposed						!	!	!		
		plant material										
	1-8	Sand, fine sand		A-3, A-2-4	0	0	100	100	50-80	5-30		NP-2
	8-17	Fine sand, sand		A-3, A-2-4	0	0	100	100	50-80	5-30	1 .	NP-2
		Fine sand, sand		A-3, A-2-4	0	0	100	100	50-80	5-30	1 .	NP-2
		Fine sand, sand		A-3, A-2-4	0	0	100	100	50-80	5-30		NP-2
	35-80	Fine sand, sand	SM, SP-SM	A-3, A-2-4	0	0	100	100	50-80	5-30	0-19	NP-2
								!				
111D:												
Deer Park	0-1	Moderately	PT	A-8	0	0	100	100	100	90-100		
		decomposed	!	ļ					!	!	ļ	
		plant material										
	1-8	Sand, fine sand		A-3, A-2-4	0	0	100	100	50-80	5-30		NP-2
	8-17	Fine sand, sand		A-3, A-2-4	0	0	100	100	50-80	5-30	1 .	NP-2
	17-24	Fine sand, sand		A-3, A-2-4	0	0	100	100	50-80	5-30	1 .	NP-2
	24-35	Fine sand, sand		A-3, A-2-4	0	0	100	100	50-80	5-30		NP-2
	35-80	Fine sand, sand	SM, SP-SM	A-3, A-2-4	0	0	100	100	50-80	5-30	0-19	NP-2
								!	!	!		
111E:												
Deer Park	0-1	Moderately	PT	A-8	0	0	100	100	100	90-100		
		decomposed						!	!	!		
		plant material										
	1-8	Sand, fine sand		A-3, A-2-4	0	0	100	100	50-80	5-30		NP-2
	8-17	Fine sand, sand		A-3, A-2-4	0	0	100	100	50-80	5-30	0-24	
	17-24	Fine sand, sand		A-3, A-2-4	0	0	100	100	50-80	5-30		NP-2
	24-35	Fine sand, sand		A-3, A-2-4	0	0	100	100	50-80	5-30	1	NP-2
	35-80	Fine sand, sand	SM, SP-SM	A-3, A-2-4	0	0	100	100	50-80	5-30	0-19	NP-2

Table 15.--Engineering Index Properties--Continued

Map symbol	Depth	USDA texture	Classif:	ication	Fragi	ments		rcentag sieve n	_	ng	 Liquid	 Plas-
and soil name					>10	3-10	İ				limit	
		1	Unified	AASHTO	inches	inches	4	10	40	200		index
	In				Pct	Pct					Pct	
111F:	 		 	 								
Deer Park	0-1	Moderately	PT	A-8	0	0	100	100	100	90-100		
		decomposed										
		plant material										
	1-8	Sand, fine sand		A-3, A-2-4	0	0	100	100	50-80	5-30	1	NP-2
	8-17 17-24	Fine sand, sand Fine sand, sand	•	A-3, A-2-4 A-3, A-2-4	0	0	100	100 100	50-80	5-30		NP-2 NP-2
	24-35	Fine sand, sand		A-3, A-2-4	0	0	100	100	50-80	5-30		NP-2
	35-80	Fine sand, sand		A-3, A-2-4	0	0	100	100	50-80	5-30		NP-2
	33 00											
112C:		Wadanahala	 pT			0	100	 100			 	
Deer Park	0-1	Moderately decomposed	PT	A-8	0	0	100	1 100	100	90-100		
	 	plant material	 	 	I	 	 	 	l I	1	 	
	1-8	Sand, fine sand	1	A-3, A-2-4	0	0	100	100	50-80	5-30	0-22	NP-2
	8-17	Fine sand, sand		A-3, A-2-4	0	0	100	100	50-80	5-30		NP-2
	17-24	Fine sand, sand		A-3, A-2-4	0	0	100	100	50-80	5-30	0-22	NP-2
	24-35	Fine sand, sand	SM, SP-SM	A-3, A-2-4	0	0	100	100	50-80	5-30	0-19	NP-2
	35-80	Fine sand, sand	SM, SP-SM	A-3, A-2-4	0	0	100	100	50-80	5-30	0-19	NP-2
Croswell	0-1	Highly	 PT	 A-8	0	0	100	100	100	90-100		
	 	decomposed plant material		 					 		 	
	 111	Sand	1	 A-3, A-2-4	0	0	100	100	 50-70	5-15	 0-22	 NP-2
	1	Sand	!	A-3, A-2-4	0	0	100	100	50-70	5-15	1	NP-2
	21-34	Sand		A-3, A-2-4	0	0	100	100	50-70	5-15	1	NP-2
	34-80	Sand	•	A-3, A-2-4	0	0	100	100	50-70	5-15	0-19	NP-2
113C:	 		 	 			 	 	 		 	
Rubicon	0-1	Highly	PT	A-8	0	0	100	100	100	90-100		
	j	decomposed	İ		İ	į	İ	į	į	į	j	į
		plant material										
	1-7	Sand	SP, SP-SM, SM		0	0		85-100		0-15	0-0	NP
	7-34	Sand	SP, SP-SM, SM		0	0		85-100		0-15	0-0	NP
	34-44	Sand, coarse sand	SP, SP-SM, SM	A-3, A-2-4, A-1	0	0	95-100	85-100	40-70 	0-15	0-0	NP
	44-80	Sand, coarse	SP, SP-SM, SM	!	0	0	95-100	85-100	40-70	0-15	0-0	NP
		sand		A-1								
Croswell	 0-1	 Highly	 PT	 A-8	0	0	100	 100	 100	90-100	 	
	İ	decomposed	İ		İ	İ	į	į	į	į	į	i
	ĺ	plant material			İ	İ	ĺ	ĺ	ĺ	Ì	ĺ	İ
	1-11	Sand	SW-SM, SM	A-3, A-2-4	0	0	100	100	50-70	5-15	0-22	NP-2
	11-21	Sand	SW-SM, SM	A-3, A-2-4	0	0	100	100	50-70	5-15		NP-2
	21-34	Sand	SW-SM, SM	A-3, A-2-4	0	0	100	100	50-70	5-15		NP-2
	34-80	Sand	SW-SM, SM	A-3, A-2-4	0	0	100	100	50-70	5-15	0-19	NP-2
			I		1			1	1	1	1	1

Classification Fragments Percentage passing Map symbol USDA texture sieve number --|Liquid| Plas-Depth and soil name >10 3-10 limit | ticity Unified AASHTO inches inches 4 index Pct In Pct 120B: Garlic-----0-1 Highly PT A-8 0 0 100 100 100 90-100 --decomposed plant material SM, SC-SM 1-7 | Loamy fine A-2-4, A-4 0 0 |95-100|90-100|60-85 |15-45 | 0-26 |NP-6 sand, fine sand 7-13 | Fine sand, sand | SM, SC-SM |95-100|90-100|45-80 0-33 NP-6 A-3, A-2-4 0 0 5-35 13-20 | Fine sand, sand | SM, SC-SM A-3, A-2-4 |95-100|90-100|45-80 0-29 NP-6 0 5-35 A-3, A-2-4 20-27 | Sand, fine sand | SM, SC-SM |95-100|90-100|45-80 5-35 0-26 NP-6 0 0 Sand, fine sand SM, SC-SM A-3, A-2-4 0 90-100|85-100|45-80 5-35 0-23 NP-6 46-80 Sand, fine sand SM, SC-SM A-3, A-2-4 0 90-100|85-100|45-80 5-35 0-23 NP-6 120D: Garlic-----Highly A-8 0-1 PT 0 0 100 100 100 90-100 --decomposed plant material |95-100|90-100|60-85 |15-45 | 0-26 |NP-6 1-7 | Loamy fine SM, SC-SM A-2-4, A-4 0 sand, fine sand 7-13 | Fine sand, sand | SM, SC-SM A-3, A-2-4 0 0 |95-100|90-100|45-80 5-35 0-33 NP-6 0-29 13-20 | Fine sand, sand | SM, SC-SM A-3, A-2-4 0 0 95-100 90-100 45-80 5-35 NP-6 |95-100|90-100|45-80 |Sand, fine sand |SM, SC-SM A-3, A-2-4 0 5-35 0-26 NP-6 27-46 | Sand, fine sand | SM, SC-SM A-3, A-2-4 0 0 |90-100|85-100|45-80 5-35 0-23 NP-6 46-80 | Sand, fine sand | SM, SC-SM A-3, A-2-4 0 |90-100|85-100|45-80 | 5-35 | 0-23 NP-6 0 120E: Garlic-----Highly A-8 0 0 100 90-100 --decomposed plant material Loamy fine SM, SC-SM A-2-4, A-4 0 0 |95-100|90-100|60-85 |15-45 0-26 NP-6 sand, fine sand 7-13 | Fine sand, sand | SM, SC-SM A-3, A-2-4 0 0 |95-100|90-100|45-80 | 5-35 0-33 NP-6 13-20 | Fine sand, sand | SM, SC-SM A-3, A-2-4 |95-100|90-100|45-80 0-29 NP-6 0 0 5-35 20-27 | Sand, fine sand | SM, SC-SM A-3, A-2-4 0 0 |95-100|90-100|45-80 | 5-35 0-26 NP-6 27-46 | Sand, fine sand | SM, SC-SM A-3, A-2-4 0 0 |90-100|85-100|45-80 | 5-35 | 0-23 NP-6

A-3, A-2-4

0

|90-100|85-100|45-80 | 5-35 |

0-23 NP-6

Sand, fine sand SM, SC-SM

Table 15.--Engineering Index Properties--Continued

Table 15.--Engineering Index Properties--Continued

			Classi	fication	Frag	ments	Pe	ercentag	_	_		
Map symbol and soil name	Depth	USDA texture	I	1	_ >10	3-10		sieve n	umber		Liquid	Plas- ticity
and soll halle	! 		 Unified	AASHTO		inches	4	10	40	200		ticity index
	In	<u> </u>	İ	İ	Pct	Pct		i	İ	i	Pct	İ
	į	İ	İ	i	j	į į		İ	į	į	į	į
125A:												
Croswell	0-1	Highly	PT	A-8	0	0	100	100	100	90-100		
		decomposed										
		plant material										
	1-11	Sand	SW-SM, SM	A-3, A-2-4	0	0	100	100	50-70	5-15	0-22	NP-2
	11-21	Sand	SW-SM, SM	A-3, A-2-4	0	0	100	100	50-70	5-15	0-24	NP-2
	21-34	Sand	SW-SM, SM	A-3, A-2-4	0	0	100	100	50-70	5-15	0-19	NP-2
	34-80	Sand	SW-SM, SM	A-3, A-2-4	0	0	100	100	50-70	5-15	0-19	NP-2
Au Gres	0-4	 Highly	 PT	 A-8	0	0	100	100	100	90-100		
		decomposed										
		plant material										
	4-13	Sand	SW-SM	A-2-4, A-3	0	0	100	95-100	50-70	5-15	0-25	NP-4
	13-19	Sand	SW-SM	A-2-4, A-3	0	0	100	95-100	50-70	5-15	0-31	NP-4
	19-28	Sand	SW-SM	A-2-4, A-3	0	0	100	95-100	50-70	5-15	0-27	NP-4
	28-34	Sand	SW-SM	A-2-4, A-3	0	0	100	95-100	50-70	5-15	0-21	NP-4
	34-80	Sand	SW-SM	A-2-4, A-3	0	0	100	95-100	50-70	5-15	0-21	NP-4
126B:	 								 		 	
Au Gres	0 - 4	Highly	PT	A-8	0	0	100	100	100	90-100		
		decomposed										
		plant material										
	4-13	Sand	SW-SM	A-2-4, A-3	0	0	100	95-100	50-70	5-15	0-25	NP-4
	13-19	Sand	SW-SM	A-2-4, A-3	0	0	100	95-100	50-70	5-15	0-31	NP-4
	19-28	Sand	SW-SM	A-2-4, A-3	0	0	100	95-100	50-70	5-15	0-27	NP-4
	28-34	Sand	SW-SM	A-2-4, A-3	0	0	100	95-100	50-70	5-15	0-21	NP-4
	34-80	Sand	SW-SM	A-2-4, A-3	0	0	100	95-100	50-70	5-15	0-21	NP-4
Deford	 0-6	Muck	 PT	A-8	0	0	100	100	100	90-100		
	6-8	Sand	SM, SC-SM	A-1, A-2-4	0	0	100	100	50-70	5-15	0-29	NP-2
	8-80	Sand	SM, SC-SM	A-3, A-2-4	0	0	100	100	50-70	5-15	0-19	NP-2
Croswell	 0-1	 Highly	 PT	 A-8	0	0	100	100	100	90-100		
		decomposed										
		plant material										
	1-11	Sand	SW-SM, SM	A-3, A-2-4	0	0	100	100	50-70	5-15	0-22	NP-2
	11-21	Sand	SW-SM, SM	A-3, A-2-4	0	0	100	100	50-70	5-15	0-24	NP-2
	21-34	Sand	SW-SM, SM	A-3, A-2-4	0	0	100	100	50-70	5-15	0-19	NP-2
	34-80	Sand	SW-SM, SM	A-3, A-2-4	0	0	100	100	50-70	5-15	0-19	NP-2

Map symbol	Depth	USDA texture	Classi	fication	Frag	ments		_	e passi: umber	ng	 Liquid	 Plas-
and soil name					>10	3-10					limit	ticity
		İ	Unified	AASHTO	inches	inches	4	10	40	200	į	index
	In			ļ	Pct	Pct					Pct	
127A:			 			 	 	 	 	 	 	
Au Gres	0-4	Highly decomposed plant material	PT 	A-8 	0	0 	100	100 	100 	90-100	 	
	4-13	Sand	SW-SM	A-2-4, A-3	0	0	100	95-100	50-70	5-15	0-25	NP-4
	13-19	1	SW-SM	A-2-4, A-3	0	0		95-100		5-15	0-31	NP-4
	19-28	1	SW-SM	A-2-4, A-3	0	0		95-100		5-15	0-27	NP-4
	28-34	Sand	SW-SM	A-2-4, A-3	0	0	100	95-100	50-70	5-15	0-21	NP-4
	34-80	Sand	SW-SM	A-2-4, A-3	0	0	100	95-100	50-70	5-15	0-21	NP-4
Kinross	0-2	Peat	 PT	 A-8	0	 0	100	100	100	 90-100	 	
	2-6	Muck	PT	A-8	0	0	100	100	90-100	40-100		
	6-16	Sand	SM, SC-SM,	A-3, A-2-4, A-1	0	0 	95-100 	90-100 	50-80 	5-30 	0-22 	NP - 2
	16-32	Sand	SM, SC-SM,	A-3, A-2-4, A-1	0	0 	95-100 	90-100 	50-80 	5-30 	0-29 	NP - 2
	32-80	Sand 	SM, SC-SM,	A-3, A-2-4, A-1	0	0	95-100	90-100	50-80	5-30	0-19	NP - 2
130C:			 	1		 		 	 	 	 	
Garlic	0-1	Highly decomposed plant material	PT 	A-8 	0 	0 	100 	100 	100 	90-100 	 	
	1-7	Loamy fine sand, fine sand	SM, SC-SM	A-2-4, A-4	0	0 	95-100 	 90-100 	60-85 	15-45 	0-26 	NP-6
	7-13	Fine sand, sand	SM, SC-SM	A-3, A-2-4	0	0	95-100	90-100	45-80	5-35	0-33	NP-6
	13-20	Fine sand, sand	SM, SC-SM	A-3, A-2-4	0	0	95-100	90-100	45-80	5-35	0-29	NP-6
	20-27	Sand, fine sand	SM, SC-SM	A-3, A-2-4	0	0	95-100	90-100	45-80	5-35	0-26	NP-6
j	27-46	Sand, fine sand	SM, SC-SM	A-3, A-2-4	0	0	90-100	85-100	45-80	5-35	0-23	NP-6
	46-80	Sand, fine sand	SM, SC-SM	A-3, A-2-4	0	0	90-100	85-100	45-80	5-35	0-23	NP-6

Table 15.--Engineering Index Properties--Continued

Table 15.--Engineering Index Properties--Continued

			Classif	ication	Fragi	ments		rcentag	-	_		
Map symbol	Depth	USDA texture	ļ		-	1		sieve n	umber		Liquid	1
and soil name	 		Unified	AASHTO	>10	3-10	 4	10	40	200	limit	ticity
	l In	1	Unitied	AASHIO	Pct	Pct	4	1 10	1 40	1 200	Pct	Index
	l III	1	 	 	PCt	PCt	 	l I		1	PCt	
130C:	 		 	 	-	 	 	 			 	
Alcona	0-1	Highly	PT	 A-8	0	0	100	100	100	90-100		
	İ	decomposed	<u> </u>		i	i	İ	İ	i	i	İ	i
	İ	plant material			i	i	İ	İ	i	i	İ	i
	1-4	Very fine sandy	CL-ML, ML, CL	A-4	0	0-2	100	100	85-95	50-65	0-33	NP-12
		loam			j	İ	ĺ	ĺ	İ	İ	İ	İ
	4-7	Very fine sandy	CL-ML, ML, CL	A-4	0	0-2	100	100	85-95	50-65	0-40	NP-12
		loam										
	7-29	Very fine sandy	CL-ML, ML, CL	A-4	0	0-2	100	100	85-95	50-65	0-35	NP-12
		loam										
	29-40	Very fine sandy		A-4	0	0-1	100	100	65-95	40-65	0-30	NP-12
		loam, loamy	ML, SC-SM						!			!
		very fine sand	1									
	40-46	1 . 2	CL-ML, SM, ML	A-4, A-2-4	0	0-2	100	100	65-95	20-65	0-30	NP-12
	 	loam, loamy	l I	 			 					
	 	sand, fine	 	 		 	l I	l I		1	 	
	 	sand, line	 	 		 	l I	 			 	
	 46-69	Stratified fine	SM. SC-SM	A-2-4, A-4	0	0-2	100	100	 65-85	20-45	0-27	 NP-10
	10 05	sand to loamy		,		" -	====	=00			0 = 1	
	! 	fine sand			i	<u> </u>	İ	i	i	i	İ	i
	69-80	Fine sand	SM, SC-SM	A-2-4	0	0-2	100	100	65-80	20-35	0-21	NP-4
	İ	İ	İ		j	į	į	į	i	i	İ	İ
130E:	j	İ	İ		į	į	į	İ	į	İ	į	į
Garlic	0-1	Highly	PT	A-8	0	0	100	100	100	90-100		
		decomposed										
		plant material										
	1-7	Loamy fine	SM, SC-SM	A-2-4, A-4	0	0	95-100	90-100	60-85	15-45	0-26	NP-6
		sand, fine						!	!			!
		sand										
		Fine sand, sand	1 -	A-3, A-2-4	0	0		90-100	1	5-35	0-33	
	13-20	Fine sand, sand	1 -	A-3, A-2-4	0	0		90-100				NP-6
	20-27	Sand, fine sand	1 -	A-3, A-2-4	0 0	0 0		90-100 85-100			0-26	
	27-46 46-80	Sand, fine sand	1 -	A-3, A-2-4 A-3, A-2-4	0	0 0		85-100 85-100	1	5-35	0-23	
	40-80 	Sand, line Sand	om, SC-SM	M-3, M-2-4 	0	0	 20-100	 02-T00	*2	5-35	0-∠3	MP-0

Classification Fragments Percentage passing Map symbol Depth USDA texture sieve number --|Liquid| Plasand soil name >10 3-10 limit | ticity Unified AASHTO inches inches 4 10 200 index In Pct Pct Pct 130E: Alcona-----0-1 Highly PT A-8 0 0 100 100 100 90-100 --decomposed plant material | Very fine sandy | CL-ML, ML, CL | A-4 0 0-2 100 100 |85-95 |50-65 | loam | Very fine sandy | CL-ML, ML, CL | A-4 4-7 0 0-2 100 100 85-95 | 50-65 loam 7-29 | Very fine sandy | CL-ML, ML, CL | A-4 85-95 | 50-65 0 0-2 100 100 loam 29-40 | Very fine sandy | CL-ML, SM, 0 0-1 100 100 65-95 40-65 loam, loamy ML, SC-SM very fine sand 40-46 | Very fine sandy | CL-ML, SM, ML | A-4, A-2-4 0 0-2 100 100 loam, loamy very fine sand, fine sand 46-69 | Stratified fine | SM, SC-SM A-2-4, A-4 0 0-2 100 100 sand to loamy fine sand 69-80 | Fine sand SM, SC-SM A-2-4 0 0-2 100 100 |65-80 |20-35 | 0-21 NP-4 Keweenaw-----0-1 Highly PT A-8 0 0 100 100 100 90-100 -----decomposed plant material 1-11 | Loamy sand SM, SC-SM A-2-4 0 |95-100|95-100|50-75 |15-30 11-17 | Loamy sand SM, SC-SM A-2-4 0 |95-100|95-100|50-75 |15-30 | 17-39 | Loamy sand, SM, SC-SM, SC A-2-4, A-4 0 fine sandy loam 39-61 | Fine sandy SM, SC-SM, SC A-4, A-2-4 0 |95-100|95-100|65-85 |15-55 |15-30 loam, loamy sand 61-80 Loamy sand, SM, SC-SM, SC A-2-4, A-4 0 |95-100|90-100|45-85 |15-55 | 0-30 |NP-12 fine sandy loam, sandy loam

Table 15. -- Engineering Index Properties -- Continued

0-33 NP-12 0-40 NP-12 0-35 NP-12 0-30 NP-12 |65-95 |20-65 | 0-30 |NP-12 |65-85 |20-45 | 0-27 |NP-10 133C: 0-31 NP-10 0-37 NP-10 95-100 85-100 45-85 15-55 16-35 1-12

Table 15.--Engineering Index Properties--Continued

	,			Classi	fic	ation	Fragi	ments		rcentag	-	ng		
Map symbol	Depth	USDA texture	ļ				_ >10	3-10		sieve n	umber			Plas-
and soil name	l I		l I	Unified		AASHTO		3-10 inches	 4	10	40	200	llmit	ticity
	l In	1	<u> </u>	oniii iea	+	AADIIIO	Pct	Pct	-	1	40	200	Pct	Index
			İ		i				İ	İ	i	İ		İ
133C:										[
Garlic	0-1	Highly	PT		1	1-8	0	0	100	100	100	90-100		
		decomposed												
		plant material												
	1-7	Loamy fine	SM,	SC-SM	Z	1-2-4, A-4	0	0	95-100	90-100	60-85	15-45	0-26	NP-6
		sand, fine	ļ		ļ						!	ļ		
		sand												
		Fine sand, sand				1-3, A-2-4	0	0		90-100		5-35	0-33	
	13-20	Fine sand, sand				1-3, A-2-4	0	0		90-100	1	5-35		NP-6
	20-27	Sand, fine sand				1-3, A-2-4	0	0		90-100		5-35	0-26	
	27-46	Sand, fine sand				1-3, A-2-4	0	0		85-100		5-35	0-23	
	46-80	Sand, fine sand	SM,	SC-SM	4	1-3, A-2-4	0	0	90-100	85-100	45-80	5-35	0-23	NP-6
133E:	 				i			 	i İ	l I				i i
Keweenaw	0-1	Highly	PT		Z	-8	0	0	100	100	100	90-100		
		decomposed	ĺ		Ĺ		ĺ	ĺ	ĺ	İ	İ	İ	İ	ĺ
		plant material	ĺ		İ		ĺ	ĺ	ĺ	ĺ	İ	Ì	İ	ĺ
	1-11	Loamy sand	SM,	SC-SM	Z	-2-4	0	0	95-100	95-100	50-75	15-30	0-31	NP-10
	11-17	Loamy sand	SM,	SC-SM	Z	1-2-4	0	0	95-100	95-100	50-75	15-30	0-37	NP-10
	17-39	Loamy sand,	SM,	SC-SM, S	C	-2-4, A-4	0	0	95-100	85-100	45-85	15-55	16-35	1-12
		fine sandy												
		loam												
	39-61	Fine sandy	SM,	SC-SM, S	C	1-4, A-2-4	0	0	95-100	95-100	65-85	15-55	15-30	1-12
		loam, loamy												
		sand	ļ							!	!			
	61-80	Loamy sand,	SM,	SC-SM, S	C Z	1-2-4, A-4	0	0	95-100	90-100	45-85	15-55	0-30	NP-12
		fine sandy	ļ		ļ						!	!		
		loam, sandy			-									
		loam					-							
Garlic	 0-1	 Highly	 PT			8	 0	 0	 100	100	 100	90-100	 	
041110		decomposed			1	. •			200	=00	200		 	
		plant material	İ		i		1	! 			i	i		
	1-7	Loamy fine		SC-SM	12	-2-4, A-4	0	0	95-100	90-100	60-85	15-45	0-26	NP-6
		sand, fine			1	,	i -							
	i	sand	i		i		i	İ	İ	i	i	i	i	İ
	7-13	Fine sand, sand	SM,	SC-SM	7	-3, A-2-4	0	0	95-100	90-100	45-80	5-35	0-33	NP-6
	13-20	Fine sand, sand	SM,	SC-SM	Z	-3, A-2-4	0	0	95-100	90-100	45-80	5-35	0-29	NP-6
	20-27	Sand, fine sand				-3, A-2-4	0	0		90-100		5-35	0-26	NP-6
	27-46	Sand, fine sand	SM,	SC-SM	1	-3, A-2-4	0	0	90-100	85-100	45-80	5-35	0-23	NP-6
	46-80	Sand, fine sand	SM,	SC-SM	12	-3, A-2-4	0	0	90-100	85-100	45-80	5-35	0-23	NP-6

Map symbol	Depth	USDA texture	Classif	ication	_ii	ments		rcentag sieve n	-	ng	 Liquid	
and soil name			Unified	AASHTO	>10	3-10 inches		10	40	200	limit	ticity index
	In		Unified	AASHTO	Pct	Pct	4	10	40	200	Pct	index
				į	į	İ	į	į	į	į	į	į
133F: Keweenaw	0-1	 Highly	 PT	 A-8	 0	 0	 100	 100	 100	 90-100	 	
Keweenaw	0-1	decomposed		A - 0	0	0	1 100	100	1		 	
		plant material		İ		 	i	i i	 	İ	 	i i
	1-11	Loamy sand	SM, SC-SM	A-2-4	0	l l 0	95-100	 95-100	 50-75	15-30	0-31	 NP-10
		Loamy sand		A-2-4	0	0		95-100	1	1		NP-10
		Loamy sand,	SM, SC-SM, SC	1	0	0				15-55	1	1-12
į		fine sandy			į į		į	į	į	į	į	į
	39-61	loam Fine sandy	 SM, SC-SM, SC	 	 0	 0	 95_100	 95_100	 65-85	 15-55	 15_30	 1-12
	33-01	loam, loamy	вм, вс-вм, вс 	A-1, A-2-1 	0	0	33-100	33-100	03-83	122-33	13-30	1-12
		sand	 	 		 		İ	 		 	
	61-80	Loamy sand,	SM, SC-SM, SC	 A-2-4. A-4	0	l 0	95-100	90-100	 45-85	15-55	0-30	 NP-12
	02 00	fine sandy		,								
		loam, sandy		i	i	İ	i	i	i	İ	İ	i
į		loam		į	į		į	į	į	į	į	į
Garlic	0-1	 Highly	 PT	 A-8	 0	 0	 100	 100	 100	 90-100	 	
		decomposed		i			i	i	İ	İ	İ	i
i		plant material	!	İ	i	İ	i	İ	İ	İ	İ	İ
İ	1-7	Loamy fine	SM, SC-SM	A-2-4, A-4	0	0	95-100	90-100	60-85	15-45	0-26	NP-6
j		sand, fine		Ì	j	İ	į	İ	į	İ	İ	į
j		sand		ĺ	j	ĺ	İ	ĺ	ĺ	İ	ĺ	ĺ
	7-13	Fine sand, sand	SM, SC-SM	A-3, A-2-4	0	0	95-100	90-100	45-80	5-35	0-33	NP-6
	13-20	Fine sand, sand	SM, SC-SM	A-3, A-2-4	0	0	95-100	90-100	45-80	5-35	0-29	NP-6
	20-27	Sand, fine sand	SM, SC-SM	A-3, A-2-4	0	0	95-100	90-100	45-80	5-35	0-26	NP-6
		Sand, fine sand		A-3, A-2-4	0	0		85-100		5-35		NP-6
	46-80	Sand, fine sand	SM, SC-SM	A-3, A-2-4	0	0	90-100	85-100	45-80	5-35	0-23	NP-6
136B:				 			 		 	 	 	
Borgstrom	0-1	Highly	PT	A-8	0	0	100	100	100	90-100	i	j
		decomposed		Ì	j	İ	į	İ	į	İ	İ	į
j		plant material		ĺ	j	ĺ	İ	ĺ	ĺ	İ	ĺ	ĺ
	1-8	Fine sand	SM, SC-SM	A-2-4	0	0-7	100	100	65-80	20-30	15-20	NP-4
	8-11	Fine sand	SM, SC-SM	A-2-4	0	0-7	100	100	65-80	20-30	0-26	NP-6
	11-18	Fine sand	SM, SC-SM	A-2-4	0	0-7	100	100		20-30	0-26	NP-6
		Fine sand		A-2-4	0	0-7	100	100		20-30		NP-6
		Fine sand		A-2-4	0	0-7	100	100	65-80	1		NP-4
	24-80	Stratified		A-2-4, A-4,	0	0	100	100	65-100	20-90	0-36	NP-17
		loamy fine	CL-ML, CL	A-6			!	ļ	ļ			ļ
		sand to loamy					!					
		very fine sand					!					
		to fine sand						[ļ			
		to very fine				 	1					
		sandy loam to	 	1		 		[1		
l		silt loam			1	l	I	I		1	1	

Table 15.--Engineering Index Properties--Continued

Table 15.--Engineering Index Properties--Continued

Map symbol De	Depth	USDA texture		Classif	ication	_ii	ments		rcentago sieve n	-	ng		 Plas-
and soil name		ļ	!			>10	3-10					limit	ticity
		<u> </u>	τ	Inified	AASHTO	inches	inches	4	10	40	200		index
	In	ļ				Pct	Pct	!	ļ	ļ		Pct	!
136B:		 			 								
Ingalls	 0-4	 Highly	PT		 A-8	0	0	100	100	100	90-100	 	
ingails	0-4	decomposed	FI		A-0 	0	0	1 100	1 100	1 100	1 30-100		
	l I	plant material			 		 	 	 	 	 	 	
	 4-5	Sand		SP-SM	 A-3	0	0	 00_100	 85-100	 45-70	0-10	0-31	 NP - 4
		Loamy sand,		SP-SM	A-2-4, A-3	0	0		85-100		0-10		NP-6
]]-11	sand, fine	51 ,	Dr - DM	A-2-1, A-3 		0	50-100	03-100	40-55	0-33	0-20	142 - 0
		sand, line			 		 	 	 	 	 	 	
	 14-16	Loamy sand,	SM.	SP SP-SM	A-2-4, A-3	0	0	90-100	85-100	 40-95	0-35	0-33	NP-6
		fine sand,		21, 21 211							0 00	0 00	
	 	sand				i		i	 	 	İ	 	i
	16-35	Fine sand,	SP.	SP-SM. SM	A-3, A-2-4	0	0	90-100	85-100	40-95	0-35	0-26	NP-6
		loamy sand,	/	,	,	-	-						
		sand	i					i	i	İ	i	<u> </u>	i
	35-80	Silt loam,	ML,	SM	A-4	0	0	100	100	60-100	35-95	0-27	NP-10
	İ	loamy fine	i			i	İ	i	İ	İ	i	i	i
		sand, loamy	i			i	İ	i	İ	İ	i	i	i
	İ	very fine	i			i	İ	İ	i	į	i	į	į
	İ	sand, silt	İ			i	İ	İ	İ	į	į	į	İ
	İ	Ì	İ			į	İ	į	İ	į	į	į	į
142C:		Ì	İ			İ	İ	İ	ĺ	ĺ	İ	İ	İ
Wallace	0-4	Highly	PT		A-8	0	0	100	100	100	90-100		
		decomposed											
		plant material											
	4-5	Sand	SM		A-2-4, A-3	0	0	100	100	50-70	5-15	0-29	NP-2
	5-22	Sand	SM		A-2-4, A-3	0	0	100	100	50-70	5-15	0-22	NP-2
	22-31	Sand	SM		A-2-4, A-3	0	0	100	100	50-70	5-15	0-29	NP-2
	31-37	Sand	SM		A-2-4, A-3	0	0	100	100	50-70	5-15	0-27	NP-2
	37-62	Sand	SM		A-2-4, A-3	0	0	100	100	50-70	5-15		NP-2
	62-74	1	SM		A-2-4, A-3	0	0	100	100	50-70	5-15		NP-2
	74-80	Sand	SM		A-2-4, A-3	0	0	100	100	50-70	5-15	0-19	NP-2
		ļ											
Rubicon	0-1	Highly	PT		A-8	0	0	100	100	100	90-100		
		decomposed	!					!	!		!		!
		plant material						!	!		!		!
	1-7	Sand			A-3, A-2-4	0	0		85-100		0-15	0-0	NP
	7-34			-	A-3, A-2-4	0	0		85-100		0-15	0-0	NP
	34-44	Sand, coarse	SP,	SP-SM, SM	A-3, A-2-4,	0	0	95-100	85-100	40-70	0-15	0-0	NP
		sand		an ar-	A-1								
	44-80	Sand, coarse	SP,	SP-SM, SM	A-3, A-2-4,	0	0	95-100	85-100	40-70	0-15	0-0	NP
		sand			A-1			1	1				

Table 15.--Engineering Index Properties--Continued

Map symbol	Depth	USDA texture	Classif:	ication	.ii	ments		rcentago sieve n	_	_	 Liquid	1
and soil name					>10	3-10		1 10	1.0		limit	
	l In	1	Unified	AASHTO	Inches	Inches	4	10	40	200	Pct	index
	111		 		FCC	FCC	 	 	 		FCC	i
142F:	İ	Ì	İ	İ	İ	İ	İ	į	i	į	İ	i
Wallace	0-4	Highly decomposed	PT 	A-8 	0	0 	100 	100	100 	90-100	 	
		plant material										
	4-5	Sand	•	A-2-4, A-3	0	0	100	100	50-70	5-15		NP-2
	5-22	Sand		A-2-4, A-3	0	0 0	100	100	50-70	5-15		NP-2
	22-31	Sand	SM	A-2-4, A-3	0		100	100	50-70	5-15	!	NP-2
		Sand		A-2-4, A-3	0	0 0	100 100	100 100	50-70	5-15		NP-2
	37-62	· ·	!	A-2-4, A-3	0	0 0			50-70	5-15	0-24	1
	62-74 74-80	Sand Sand	SM SM	A-2-4, A-3	0	0 0	100 100	100 100	50-70 50-70	5-15		NP-2
	/4-80 	Sand	SM 	A-2-4, A-3	0	U	100 	100	50-70	2-12	0-19	NP - 2
Rubicon	0-1	Highly decomposed	 PT 	A-8 	0	0	100	100	100	90-100	 	
		plant material										
	1-7	Sand	SP, SP-SM, SM		0		95-100			0-15	0-0	NP
	7-34	1	SP, SP-SM, SM		0	1	95-100			0-15	0-0	NP
	34-44	Sand, coarse	SP, SP-SM, SM		0	0	95-100	85-100	40-70	0-15	0-0	NP
		sand		A-1								
	44-80 	Sand, coarse sand	SP, SP-SM, SM	A-3, A-2-4, A-1	0	0 	95-100 	85-100 	40-70	0-15	0-0	NP
							! 	! 				i
155C:		İ	j		į	į	į	į	į	İ	į	į
Montreal	0-2 	Highly decomposed plant material	PT 	A-8 	0	0 	100 	100 	100 	90-100 	 	
	2-6	Cobbly fine sandy loam	SM, SC-SM,	A-4, A-2-4	2-5	15-25	85-95 	80-90	55-75	30-50	16-33 	1-12
	 6-11	Cobbly fine	SM, SC-SM,	A-4, A-2-4	2-5	 15-25	 85 - 95	 80-90	 55-75	30-50	20-40	1-12
		sandy loam	ML, CL-ML									i
	11-20			A-1, A-4, A-	2-14	15-35	65-90	55-90	40-75	20-50	16-35	1-12
		sandy loam	ML, CL-ML	2-4	1 10	 15-45			100 70	5-45	 0-25	 ND 7
	20-33	Very cobbly loamy fine sand, very cobbly fine	GP-GM, GM, SM, SC-SM 	A-1, A-2-4, A-4, A-3 	1-12	15-45 	40 - 90 	25-85 	20-70	5-45	U-25 	NP - 7
	 33_51	sandy loam Very cobbly	GP-GM, GM,	 A-1, A-4, A-	1-12	 15-45	 45_90	 25-85	20-70	5-45	 0-25	 ND - 7
	33-31	fine sandy loam, very cobbly loamy fine sand	GP-GM, GM, SM, SC-SM 	A-1, A-4, A- 2-4, A-3 	1-12	15-45 	45-90 	25-85 	20 - 70 	5-45	0-25 	NP - 7
	51-80	Cobbly loamy fine sand, cobbly fine sandy loam	GP-GM, GM, SM, SC-SM 	A-1, A-2-4, A-4, A-3	1-8	15-50 	40-90 	25-85 	20-70	10-45	0-25 	NP - 7

Table 15.--Engineering Index Properties--Continued

			Classif	ication	Fragi	nents	Pe	_	e passi	_		
Map symbol	Depth	USDA texture	ļ		_		!	sieve n	umber		Liquid	
and soil name					>10	3-10	ļ	1	1		limit	ticity
		<u> </u>	Unified	AASHTO		inches	4	10	40	200	<u> </u>	index
	In				Pct	Pct					Pct	
155C:			 	1		 	 					
Paavola	0-2	Highly	 PT	 A-8	0	 0	100	100	100	90-100		
1 44 7 0 1 4	" -	decomposed		0			200	200	=00			
		plant material		İ	i	İ	İ	i	i	i	İ	İ
	2-6	Cobbly loamy	SM, SC-SM, SC	A-1, A-2-4	2-4	10-15	60-80	50-70	25-55	5-20	0-37	NP-10
		sand		ĺ	ĺ	ĺ	ĺ	İ	j	Ì	İ	ĺ
	6-12	Cobbly loamy	SM, SC-SM, SC	A-1, A-2-4	2-4	15-20	60-80	45-70	25-55	5-20	0-37	NP-10
		sand										
	12-27		SP, SP-SM,	A-1	1-3	15-30	40-75	25-65	15-45	0-10	0-27	NP-4
		sand	SC-SM									
	27-35	Very gravelly loamy fine	SC, SM, SC-SM	A-1, A-2-4, A-4	1-3	5-15	75-90	65-85	45-70	20-45	0-30	NP-12
		sand, gravelly	 	A-4	l I	 	l I				 	
		fine sandy		l I	i	 	 	1	i	ŀ		
		loam		İ	i	! 	i	ì	i	ì	İ	İ
	35-46	Gravelly fine	SC, SM, SC-SM	A-2-4, A-4	1-3	5-15	70-85	70-80	50-65	25-45	15-30	1-12
		sandy loam	j	j	j	İ	į	į	j	į	į	į
	46-80	Gravelly sandy	SC, SM, SC-SM	A-1, A-2-4	1-4	5-15	70-85	60-75	35-55	20-30	15-30	1-12
		loam										
Waiska	0-1	1	PT	A-8	0	0	100	100	100	90-100		
		decomposed plant material	 	l I	l I	 	l I	1		1	 	
	1-7		SM, SC, SC-SM	 <u> </u>	0-8	 0-15	 75 - 90	65-90	 35-70	10-35	0-31	 NP-10
		sand, cobbly		A-3		0 _0					0 02	
		sandy loam			İ	İ	İ	i	i	İ	İ	İ
	7-23	Very gravelly	SM, SW-SM,	A-1, A-2-4	0-13	5-10	50-60	35-45	15-35	5-15	0-35	NP-7
		loamy sand,	SC-SM									
		very gravelly										
		loamy coarse						ļ	!	ļ		
	02.25	sand							115.20		0.07	
	23-35	Extremely gravelly	SC-SM, SW-SM	A-1	7-12	5-10	40-60	25-45	15-30	0-10	0-27	NP-4
		coarse sand,	 	 	1	 	l I		1	1	 	
		extremely		l I	i	 	 	1	i	ŀ		
		gravelly sand				! 		i	i	i		
	35-60	Extremely	GP, SP, SP-	A-1	6-12	5-10	30-60	10-50	5-35	0-10	0-21	NP-4
		gravelly	SM, SC-SM,	j	j	İ	į	į	j	į	į	į
		coarse sand,	SW-SM									
		extremely	!	!			ļ.			ļ		ļ
		gravelly sand										
	60-80	Extremely	GP, SP, SC-	A-1	6	5-15	30-60	10-50	5-35	0-10	0-21	NP - 4
		gravelly	SM, SP-SM,	 		 		1		1		
		coarse sand,	SW-SM	 	1	 	I I	I I		I	 	I I
		gravelly sand	 	 		 	 	1				l I
		Javerry Dana				! 	İ	i	i	i	İ	İ
				I	1							

Map symbol	 Depth	USDA texture	Classif	ication	i	ments	Pe	_	e passi umber	-	 Liquid	
and soil name	 		Unified	AASHTO	>10	3-10 inches	 4	10	40	200	limit	ticity index
	l In	1	01111100	111151110	Pct	Pct	<u>-</u>	1	1 10	1	Pct	l
			 	 	100	100	 	1			100	l I
155E:	! 	<u> </u>		İ	i		i	i	i	i	<u> </u>	!
Montreal	0-2	Highly	PT	A-8	0	0	100	100	100	90-100		
	İ	decomposed	İ	İ	į	İ	į	İ	İ	İ	į	į
	ĺ	plant material	İ	ĺ	İ	ĺ	ĺ	İ	İ		İ	ĺ
	2-6	Cobbly fine	SM, SC-SM,	A-4, A-2-4	2-5	15-25	85-95	80-90	55-75	30-50	16-33	1-12
		sandy loam	ML, CL-ML									
	6-11	Cobbly fine	SM, SC-SM,	A-4, A-2-4	2-5	15-25	85-95	80-90	55-75	30-50	20-40	1-12
		sandy loam	ML, CL-ML									
	11-20	Cobbly fine	SM, SC-SM,	A-1, A-4, A-	2-14	15-35	65-90	55-90	40-75	20-50	16-35	1-12
		sandy loam	ML, CL-ML	2-4								
	20-33	Very cobbly	GP-GM, GM,	A-1, A-2-4,	1-12	15-45	40-90	25-85	20-70	5-45	0-25	NP-7
		loamy fine	SM, SC-SM	A-4, A-3								
		sand, very										
		cobbly fine										
		sandy loam										
	33-51	Very cobbly	GP-GM, GM,	A-1, A-4, A-	1-12	15-45	45-90	25-85	20-70	5-45	0-25	NP-7
		fine sandy	SM, SC-SM	2-4, A-3			!	!				
		loam, very					!	!				
		cobbly loamy						!				
		fine sand										 -
	51-80	Cobbly loamy	1	A-1, A-2-4,	1-8	15-50	40-90	25-85	20-70	10-45	0-25	NP-7
	 	fine sand,	SM, SC-SM	A-4, A-3								
	 	cobbly fine		1								
	 	sandy loam	 	l I		 	 					
Paavola	 0-2	 Highly	 PT	 A-8	0	 0	 100	100	100	90-100	 	
raavola	U-Z	decomposed		A-0 	0	0	1 100	1 100	1 100	30-100		
	 	plant material	 	 	 	 	 	1			 	l I
	2-6	Cobbly loamy	SM, SC-SM, SC	 \[\] \[2-4	10-15	 60-80	50-70	125-55	5-20	0-37	 NP-10
	20	sand	DET, DC DET, DC			10 15		30 70	23 33	3 20	0 37	
	6-12	Cobbly loamy	SM, SC-SM, SC	A-1. A-2-4	2-4	15-20	60-80	45-70	25-55	5-20	0-37	NP-10
		sand										
	12-27	Very gravelly	SP, SP-SM,	A-1	1-3	15-30	40-75	25-65	15-45	0-10	0-27	NP-4
	İ	sand	SC-SM	İ	i	İ	İ	i	i	i	i	İ
	27-35	Very gravelly	SC, SM, SC-SM	A-1, A-2-4,	1-3	5-15	75-90	65-85	45-70	20-45	0-30	NP-12
	İ	loamy fine	İ	A-4	i	İ	į	i	i	i	į	j
		sand, gravelly										
	ĺ	fine sandy	İ	ĺ	İ	ĺ	ĺ	İ	Ì	İ	İ	ĺ
		loam										
	35-46	Gravelly fine	SC, SM, SC-SM	A-2-4, A-4	1-3	5-15	70-85	70-80	50-65	25-45	15-30	1-12
		sandy loam										
	46-80	Gravelly sandy	SC, SM, SC-SM	A-1, A-2-4	1-4	5-15	70-85	60-75	35-55	20-30	15-30	1-12
	I	1 1	1	1	1	I	1	1	1	1	1	I

Table 15.--Engineering Index Properties--Continued

Table 15.--Engineering Index Properties--Continued

Map symbol	Depth	USDA texture	Classif	ication	Fragi	ments		_	e passi: umber	ng	 Liquid	 Plag-
and soil name	Depen	ODDII CONCUIC		I	>10	3-10		DICTO II	uniber		limit	
and 5011 mano			Unified	AASHTO		inches	4	10	40	200		index
	In	Ī	Ī	l	Pct	Pct		İ	İ	İ	Pct	İ
155E:			 	 	-	 	 			 		
Waiska	0-1	Moderately decomposed	 PT 	 A -8 	0	 0 	100	100	100	 90-100 		
		plant material	İ	İ	i	j	i	İ	į	į	į	į
	1-7	Cobbly loamy sand, cobbly sandy loam	SM, SC, SC-SM 	A-1, A-2-4, A-3	0-8	0-15 	75-90 	65-90 	35-70 	10-35 	0-31 	NP-10
	7-23	· -	SM, SW-SM, SC-SM	A-1, A-2-4 	0-13	5-10 	50-60 	35-45 	15-35 	5-15 	0-35	NP - 7
	23-35	Extremely gravelly coarse sand, extremely gravelly sand	 SC-SM, SW-SM 	 A-1 	7-12	 5-10 	 40-60 	 25-45 	 15-30 	 0-10 	0-27 	 NP - 4
	35-60	Extremely gravelly coarse sand, extremely	 GP, SP, SP- SM, SC-SM, SW-SM	 A-1 	6-12	 5-10 	 30-60 	 10-50 	5-35 	 0-10 	0-21 	 NP - 4
	60-80	gravelly sand Extremely gravelly coarse sand, extremely gravelly sand	 GP, SP, SC- SM, SP-SM, SW-SM 	 A-1 	 6 	 5-15 	 30-60 	 10-50 	 5-35 	 0-10 	 0-21 	 NP - 4
158A:					ļ							
Arnheim	0-4	Mucky very fine sandy loam, mucky fine sandy loam	 CL-ML, ML, SC-SM, SM 	 A-4 	0	 0 	 100 	 100 	 70-95 	 40-65 	 20-37 	 1-12
	4-9	Very fine sandy	CL-ML, ML,	 A-4 	0	 0 	100	100	85-95	 50-65 	15-31	 1-12
	9-22	Silt loam	CL-ML, ML, CL	A-4, A-6	0	0	100	100	90-100	70-90	16-31	2-12
	22-35	Stratified very fine sandy loam to fine sandy loam to silt loam	CL-ML, ML, SM	A-4 	0	0 	100	100 	70-100 	40-90	15-31 	1-12
	35-50	Fine sandy loam	SM, SC-SM, SC	A-4	0	0	100	100	70-85	40-55	15-28	1-12
	50-60	Loamy sand	SM, SC-SM, SC	1 2 2 4	0	0	100	100	50-75		0-26	NP-9

Table 15.--Engineering Index Properties--Continued

Map symbol	Depth	USDA texture	Classif	ication	Fragi	ments		_	ge passi: number	ng	 Liquid	 Plas-
and soil name					>10	3-10					limit	ticity
			Unified	AASHTO	inches	inches	4	10	40	200		index
	In]			Pct	Pct			Ī		Pct	
158A:				 								
Sturgeon	0-2	Highly decomposed plant material	PT 	A-8 	0 	0	100	100	100	90-100	 	
	2-16	Silt loam	CL-ML, ML, CL	 <u>a - 4</u>	0		100	100	90-100	70-90	16-33	1-13
	16-42	1		A-2-4, A-4	0	0 1	100	100		15-60		NP-10
	10 12		ML, CL-ML,				100			 	20	
j	42-48	Fine sandy loam	CL-ML, ML, CL	A-4	0	0	100	100	70-85	40-55	16-31	1-12
	48-60	Loamy sand	SC-SM, SM, SC	A-2-4	0	0	100	100	50-75	15-30	0-28	NP-10
Pelkie	0 - 6	Loamy fine sand	SM, SC-SM	 A-2-4	0	0	100	100	 50-95	15-35	18-28	2-7
	6-22	Loamy fine sand	SM, SC-SM,	A-2-4, A-3	0	0	100	100	50-80	5-35	0-24	NP - 6
j	22-80	Loamy fine	SM, SP-SM	A-2-4, A-3	0	i o i	100	100	50-80	5-35	0-24	NP-6
j		sand, very	į	İ	i	i i		i	i	i	i	i
į		fine sandy	İ	İ	j	i i		İ	İ	į	į	İ
į		loam	İ	İ	İ	i i		İ	İ	İ	İ	İ
į		İ	İ	İ	İ	i i		İ	İ	İ	İ	İ

Table 15.--Engineering Index Properties--Continued

Map symbol	Depth	USDA texture	Classif:	ication	Fragi	ments		_	e passi umber	-	 Liquid	 Plas
and soil name	į				>10	3-10	İ				limit	
			Unified	AASHTO	inches	inches	4	10	40	200	İ	index
	In				Pct	Pct		[Pct	
161F:	 		 				 					
Trimountain	0-2 	Highly decomposed plant material	PT 	A-8	0 	0 	100 	100 	100 	90-100 	 	
	2-6 	Cobbly very fine sandy loam, cobbly loamy fine sand	GM, ML, CL- ML, SC-SM, SM	A-1, A-4, A- 2-4	0-3	10-20 	75-95 	65-90 	45-85 	20-60	16-33 	1-12
	6-11 	Cobbly very fine sandy loam, cobbly fine sandy loam	GM, ML, CL- ML, SC-SM, SM	A-1, A-4, A- 2-4	0-4	10-30 	70-95 	60-90 	45-85 	25-60 	0-40 	NP-12
	11-20 	Cobbly very fine sandy loam, cobbly fine sandy loam	GM, ML, CL- ML, SC-SM, SM	A-1, A-4, A- 2-4	0-4	15-30 	 65-90 	55-90 	40-85 	20-60	0-35 	NP-12
	20-33	Very cobbly loamy fine sand, very cobbly fine sandy loam	GM, SC-SM, SM 	A-1, A-2-4, A-4	1-4 	15-25 	60-90 	50-85 	35-70 	15-45 	0-30 	NP-12
	33-51 	Very cobbly fine sandy loam, very cobbly loamy fine sand	GM, SC-SM, SM 	A-1, A-2-4, A-4	1-4 	15-25 	60-90 	50-85 	35-70 	15-45 	0-30 	NP - 12
	51-80 	Cobbly loamy fine sand, cobbly fine sandy loam	SM, SC-SM, ML, GM 	A-2-4, A-4, A-1	0-4 	15-20 	70-95 	60-90 	45-75 	15-50 	0-30 	NP - 12

			C	lassif:	ication	Fragi	nents		rcentag	_	_		
Map symbol	Depth	USDA texture				_		!	sieve n	umber		Liquid	
and soil name						>10	3-10		1		1	limit	
		L	Unif	ied	AASHTO		inches	4	10	40	200		index
	In					Pct	Pct					Pct	
								!		!	!		!
161F:													
Lac La Belle	0-1	Highly	PT		A-8	0	0	100	100	100	90-100		
		decomposed											
	1-5	plant material	'	av. aa						0-25	0-15	 0-33	
	1-5	Very stony loamy sand,	GC-GM,	GM, GC	A-1, A-2-4	0-20	15-18	45-45	5-30	0-25	0-15	0-33	NP-12
		very stony	 		 	1	 	 				 	
		fine sandy	 		 		l I	l I	1			 	l I
		loam	 		 		 	l I				 	l I
	5-12	Extremely stony	l dc-cm	GM GC	 	0-19	 7_15	25-65	5-50	5-40	0-25	0-40	 NP-12
	3-12	loamy sand,	GC-GM, 	GII, GC	A-2-4, A-1 	0-15	/- 1 5	23-03	3-30	3-40	0-23	0-40	MF - 12
		extremely			 		 	 		1	1	 	l I
		stony fine					 	i i	i	1	1	! 	i i
		sandy loam	 				 	i i	i	1	1	! 	i I
	12-36	Extremely	GC-GM.	GM. SM	A-1, A-2-4	0-18	7-21	25-65	10-45	5-35	0-15	0-33	 NP-10
		cobbly loamy		,	, 								
		sand	i İ			i	İ	i	i	i	i	i	i
	36-42	Very cobbly	GC-GM,	SC-SM	A-1, A-2-4,	0-18	7-26	50-85	35-80	25-65	5-45	0-30	NP-12
		loamy sand,	GC-GM, SC		A-4			İ					i
i		very cobbly				i	İ	İ	i	i	i	i	İ
i		sandy loam,				i	İ	İ	i	i	i	i	İ
j		very cobbly	İ			i	İ	į	i	i	i	i	i
į		loamy fine	İ		ĺ	i	İ	į	i	İ	İ	į	İ
j		sand, very				İ	ĺ	ĺ	İ	İ	İ	İ	ĺ
j		cobbly fine				İ	ĺ	ĺ	İ	İ	İ	İ	ĺ
		sandy loam											
	42-50	Very cobbly	GC-GM,	SC-SM	A-1, A-2-4	0-18	7-26	50-85	35-80	20-65	5-35	0-27	NP-10
		loamy sand,											
		very cobbly											
		loamy fine											
		sand											
	50-62	Very cobbly	GC-GM,	SC-SM	A-2-4, A-4	0-17	7-26	50-85	35-80	20-65	5-45	0-30	NP-12
		sandy loam,											
		very cobbly											
		loamy sand,											
		very cobbly						!		!			!
		fine sandy						!		!			!
		loam, very											
		cobbly loamy	 				 			1			
	co oo	fine sand		a.									
	62-80	Very cobbly	GC-GM,	SM	A-1, A-2-4	0-17	7-26	50-85	35-80	20-65	5-35	0-27	NP-10
		loamy sand,	 		 		 			1			
		very cobbly	 		 		 	 		1	1	I	I I
		loamy fine sand	 		 		 	 		1			l I
		sand				ļ	 	1	1	1	1	!	1

Table 15.--Engineering Index Properties--Continued

Table 15.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classif	ication	Frag	ments 3-10		rcentag sieve n	_	-	 Liquid limit	
and boll name			Unified	AASHTO		inches	4	10	40	200		index
	In		[Pct	Pct		-	ļ	1	Pct	
161F:			[
Waiska	0-1	Moderately decomposed	 PT 	 A-8 	0	0	100	100	100	90-100	 	
	1-7	plant material Cobbly loamy sand, cobbly	 sm, sc, sc-sm 	 A-1, A-2-4, A-3	0-8	 0-15 	 75-90 	 65-90 	 35-70 	10-35	 0-31 	 NP-10
	7-23	sandy loam Very gravelly loamy sand, very gravelly	 SM, SW-SM, SC-SM	 A-1, A-2-4 	0-13	 5-10 	 50-60 	 35-45 	 15-35 	 5-15 	 0-35 	 NP-7
	23-35	loamy coarse sand Extremely gravelly	 SC-SM, SW-SM	 A-1 	 7-12	 5-10	 40-60	25-45	 15-30	0-10	 0-27	 NP-4
	35-60	coarse sand, extremely gravelly sand Extremely	 GP, SP, SP-	 A-1	 6-12			10-50	 5-35		 0-21	
	35-60	gravelly coarse sand, extremely gravelly sand	GP, SP, SP- SM, SC-SM, SW-SM	A-1 	6-12	5-10	30 - 60 	10-50	5-35	0-10	0-21 	NP - 4
	60-80	gravelly sand Extremely gravelly coarse sand, extremely gravelly sand	 GP, SP, SC- SM, SP-SM, SW-SM 	 A-1 	 6 	5-15 	 30-60 	 10-50 	5-35 	0-10 	 0-21 	NP-4

Table 15.--Engineering Index Properties--Continued

Map symbol	Depth	USDA texture	Classif	ication	Fragi	ments		rcentag sieve n	_	-	 Liquid	 Plas
and soil name	_				>10	3-10					limit	
		İ	Unified	AASHTO	inches	inches	4	10	40	200	į	index
	In				Pct	Pct		ļ			Pct	
162F:			 	 								
Trimountain	0-2	Highly decomposed plant material	PT 	A-8 	0 	0 	100	100 	100 	90-100	 	
	2-6	Cobbly very fine sandy loam, cobbly loamy fine sand	GM, ML, CL- ML, SC-SM, SM	A-1, A-4, A- 2-4 	0-3	10-20 	75-95	65-90 	45-85 	20-60	16-33 	1-12
	sand 6-11 Cobbly very	GM, ML, CL- ML, SC-SM, SM	A-1, A-4, A- 2-4 	0-4 10-30 		70-95	60-90 	45-85 	25-60 	0-40	 NP-12 	
	11-20		 GM, ML, CL- ML, SC-SM, SM	 A-1, A-4, A- 2-4 	0-4	 15-30 	65-90	55-90 	40-85 	20-60	0-35 	 NP-12
	20-33	Very cobbly loamy fine sand, very cobbly fine sandy loam	GM, SC-SM, SM 	A-1, A-2-4, A-4	1-4 	15-25 	60-90	50-85 	35-70 	15-45 	0-30 	NP-12
3	33-51	Very cobbly fine sandy loam, very cobbly loamy fine sand	GM, SC-SM, SM 	A-1, A-2-4, A-4 	1-4 	15-25 	60-90	50-85 	35-70 	15-45 	0-30 	NP - 12
	51-80	Cobbly loamy fine sand, cobbly fine sandy loam	SM, SC-SM, ML, GM 	A-2-4, A-4, A-1 	0-4	15-20 	70-95	60-90	45-75 	15-50 	0-30	NP - 12

Table 15.--Engineering Index Properties--Continued

Map symbol	Depth	USDA texture	Classif	ication	_ii	ments	Pe	ercentag sieve n	_	_	 Liquid	
and soil name	 	 	Unified	AASHTO	>10 inches	3-10 inches	 4	10	40	200	limit 	ticit; index
	In	1			Pct	Pct				1	Pct	
162F:		ĺ		 								
Lac La Belle	0-1	 Highly decomposed plant material	İ	 A-8 	0	 0 	 100 	100	 100 	90-100	 	
	1-5 	Very stony loamy sand, very stony fine sandy loam	 GC-GM, GM, GC 	 A-1, A-2-4 	0-20	 15-18 	 25-45 	5-30	0-25	0-15	0-33	 NP - 12
	5-12 	Extremely stony loamy sand, extremely stony fine sandy loam	 GC-GM, GM, GC 	 A-2-4, A-1 	0-19 	 7-15 	 25-65 	5-50	5-40	0-25	0-40	 NP - 12
	 12-36 	Extremely cobbly loamy sand	GC-GM, GM, SM	 A-1, A-2-4 	0-18	 7-21 	 25-65 	10-45	5-35	0-15	0-33	 NP-10
	36-42	Very cobbly loamy sand, very cobbly sandy loam, very cobbly loamy fine sand, very cobbly fine sandy loam	GC-GM, SC-SM 	A-1, A-2-4, A-4 	0-18	7-26 	50-85 	35-80	25-65 	5-45 	0-30 	NP-12
	42-50	Very cobbly loamy sand, very cobbly loamy fine sand	GC-GM, SC-SM	A-1, A-2-4 	0-18 	7-26 	50-85 	35-80	20-65	5-35	0-27 	NP-10
		Very cobbly sandy loam, very cobbly loamy sand, very cobbly fine sandy loam, very cobbly loamy fine sand	GC-GM, SC-SM 		0-17	 	 	35-80	 			NP-12
	62-80 	Very cobbly loamy sand, very cobbly loamy fine sand	GC-GM, SM 	A-1, A-2-4 	0-17	7-26 	50-85 	35-80	20-65 	5-35	0-27 	NP - 10

Table 15.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classi	fication	Fragi	ments		rcentage sieve n	_	-	 Liquid	 Plas
and soil name			ĺ		>10	3-10	İ				limit	ticity
j			Unified	AASHTO	inches	inches	4	10	40	200	ĺ	index
	In				Pct	Pct					Pct	
162F:							 	 	 		 	
Michigamme	0-1	Highly	PT	A-8	0	0	100	100	100	90-100		
ļ		decomposed										
ļ		plant material										
ļ	1-4	Cobbly very	CL-ML, ML	A-4	0	20-50	95-100	75-100	45-85	20-50	0-26	NP-6
		fine sandy										
		loam										
	4-10	1	CL-ML, ML	A-4	0-1	0-50	95-100	75-100	45-95	20-90	0-37	NP-10
ļ		fine sandy	!									
		loam										
	10-22	Very cobbly	CL-ML, ML,	A-4, A-2-4,	0-1	0-50	95-100	75-100	45-95	20-90	0-33	NP-10
		very fine	SM, SC-SM	A-1								
		sandy loam,										
I		very cobbly sandy loam	 				 	l I	l I	1	 	
I	22-30	Cobbly loamy	SM. SC-SM	A-1, A-2-4	0-5	0-30	 05_100	 75-95	 15-65	20-40	0-29	NP-6
I	22-30	sand, bouldery		A-1, A-2-4	0-3	0-30	63-100	73-33	1 42-02	20-40	0-29 	MF - 0
		loamy sand,	1		-		 	! 	! 	1	 	1
ļ		cobbly sandy	İ	i			! 	! 	! 		 	i
		loam	i	i	i		! 	i İ	i i	i	<u> </u>	i
	>30	Unweathered			i					i		i
į		bedrock	į	ĺ	i	i	İ	İ	İ	i	İ	i

Table 15.--Engineering Index Properties--Continued

Map symbol	 Depth	USDA texture	 	Classif	icati	on	_i	ments		rcentago sieve n	-	ng	 Liquid	
and soil name							>10	3-10		1	1 40		limit	
		1	Uni	fied	A.	ASHTO		inches	4	10	40	200	<u> </u>	index
	In		 		 		Pct	Pct	 	 	 		Pct	
166B:			 		 		İ	 	 	l I	 		l I	
Gratiot	0-1	decomposed	PT		A-8		0	0	100	100	100	90-100	 	
	 1-4 	plant material Very cobbly fine sandy	 ML, SC 	-SM	 A-1, 	A-2-4	0-2	 25-35 	 55-100 	 40-100 	 25-95 	 15-65 	 20-42 	 1-12
	 4-7	loam, cobbly very fine sandy loam Very cobbly loamy sand,	 sm, sc	, SC-SM	 A-1,	A-2-4		 10-35	 40-80	 25-75	 10-70	 5-45	 0-40	 NP-12
		cobbly loamy very fine sand, gravelly fine sandy loam			 			 	 	 	 	 	 	
	7-12 	loamy sand, cobbly loamy very fine sand, gravelly fine sandy	 	, SC-SM	A-1, 	A-2-4	0-2	10-35	40-80	25-75 	10-70 	5-45	0-35	NP-12
	 12-20 	loam Very cobbly fine sandy loam, gravelly very fine sandy loam, cobbly loamy	İ	, sc-sm	 A-1, 	A-2-4	 0-2 	 10-35 	 40-80 	 25-75 	 20-70 	 5-45 	 16-35 	 1-12
	 20-30 	sand Cobbly fine sandy loam, cobbly loamy fine sand, cobbly loamy sand, gravelly	 SM, SC SM, M 	-	 A-1, 	A-2-4	 0-2 	 0-20 	 60-95 	 45-95 	 25-90 	 5-60 	 0-30 	 NP-12
	 30-80 	very fine sandy loam Cobbly fine sandy loam, cobbly loamy fine sand, cobbly loamy sand	 sm, sc 	, sc-sm	 A-1, 	A-2-4	 0-10 	 0-25 	 55-80 	 35-75 	 20-65 	 5-40 	 0-30 	 NP-12

Map symbol	Depth	USDA texture	Classif:	ication	Fragi	ments		rcentage sieve n	-	-	 Liquid	 Plas
and soil name			Unified	AASHTO	>10	3-10 inches	4	10	40	200	limit	ticity index
	In				Pct	Pct	-	10			Pct	
166B:				 		 					 	
Sabattis	0 - 8	Muck	 PT	 A-8	0	l 0	100	1 100	100	90-100	 	
		1	1	A-4, A-6 	0-6		1			25-65 	1	2-12
	12-17	Cobbly very fine sandy loam	ML, CL-ML, CL 	A-4, A-6 	0-6	 10-30 	90-100 	85-100 	75-100 	60-90 	 16-30 	2-12
	17-32	Cobbly very fine sandy loam	SM, SC, ML, CL	A-2-4, A-4 	0-6	10-30 	90-95	85-90 	50-85 	25-60 	16-30 	2-12
	32-37	Cobbly fine sandy loam	SM, SC, ML,	A-1, A-2-4, A-4	0-6	10-30 	75-95 	50-90 	45-90 	15-70 	16-30 	2-12
	37-80	Very cobbly sandy loam	SM, SC, SC-SM	A-1, A-2-4, A-4	3-6	15-30 	75-95 	65-90	40-65	20-40	16-30	2-12
173C:			 	 				 	 	 	 	
Montreal	0-2	Highly decomposed plant material	İ	A-8 	0	0	100 	100 	100 	90-100	 	
	2-6	Cobbly fine		A-4, A-2-4	2-5	 15-25 	85-95	80-90	 55-75 	30-50	 16-33 	1-12
	6-11	Cobbly fine		A-4, A-2-4	2-5	 15-25 	85-95	80-90	 55-75 	30-50	20-40	1-12
	11-20	Cobbly fine		A-1, A-4, A-	2-14	 15-35 	65-90	55-90	40-75	20-50	 16-35 	 1-12
	20-33	Very cobbly loamy fine sand, very cobbly fine sandy loam	GP-GM, GM, SM, SC-SM	A-1, A-2-4, A-4, A-3	1-12 	15-45 	40-90 	25-85 	20-70 	5-45 	0-25 	NP - 7
	33-51	-	GP-GM, GM, SM, SC-SM 	A-1, A-4, A- 2-4, A-3 	1-12 	 15-45 	 45-90 	 25-85 	 20-70 	5-45 	0-25 	 NP - 7
	51-80	Cobbly loamy fine sand, cobbly fine sandy loam	GP-GM, GM, SM, SC-SM 	A-1, A-2-4, A-4, A-3	1-8 	15-50 	40-90 	25-85 	20-70 	10-45 	0-25 	NP - 7

Table 15.--Engineering Index Properties--Continued

			Classif	ication	Fragi	ments		_	e passi	_		
Map symbol	Depth	USDA texture		I	_	1 2 10		sieve n	umber		Liquid	
and soil name			Unified	AASHTO	>10	3-10 inches	 4	10	40	200	limit	ticity
	In	1	Unified	AASHTO	Pct	Pct	4	1 10	40	200	Pct	Index
			 		100	100	! 			ì	100	!
173C:			į	j	j	į	j	į	İ	İ	j	j
Paavola	0-2	Highly decomposed	PT 	A-8 	0	0 	100	100	100	90-100		
	2-6	plant material Cobbly loamy sand	 SM, SC-SM, SC 	 A-1, A-2-4 	2-4	 10-15 	 60-80 	50-70	25-55	5-20	0-37	 NP-10
	6-12	Cobbly loamy	SM, SC-SM, SC	A-1, A-2-4	2-4	15-20	60-80	45-70	25-55	5-20	0-37	NP-10
	12-27	Very gravelly sand	SP, SP-SM,	A-1 	1-3	15-30	40-75	25-65	15-45	0-10	0-27	NP-4
	27-35	Very gravelly loamy fine sand, gravelly fine sandy loam	SC, SM, SC-SM 	A-1, A-2-4, A-4	1-3	5-15 	75-90 	65-85	45-70	20-45	0-30	NP-12
	35-46	Gravelly fine sandy loam	SC, SM, SC-SM	 A-2-4, A-4 	1-3	 5-15 	 70-85 	70-80	50-65	25-45	15-30	 1-12
	46-80	Gravelly sandy loam	SC, SM, SC-SM	A-1, A-2-4 	1-4	5-15	70-85	60-75	35-55	20-30	15-30	1-12
Dishno	0-1	Moderately decomposed plant material	 PT 	 A-8 	0	 0 	100	100	100	90-100	 	
	1-3	Cobbly very fine sandy loam	 ML 	 A-4, A-2-4 	0-7	 5-15 	 80-95 	80-90	 55-80 	35-55	 20-40 	 1-12
	3-4	Cobbly very fine sandy loam	ML 	A-4, A-2-4 	4-7	5-20 	80-95 	80-90	55-80	30-55	16-33 	1-12
	4-8	Cobbly very fine sandy loam	ML, SM 	A-4, A-2-4	4-7	5-20 	80-90 	80-90	55-80	30-55	20-40	1-12
	8-26	Cobbly very fine sandy loam, cobbly fine sandy loam	ML, SM 	A-4, A-2-4	4-7	5-20 	80-95 	75-90	50-75	30-50	16-35 	1-12
	26-31		 SM 	 A-1, A-2-4 	3-6	 10-20 	 70-80 	60-75 	30-55	 10-25 	 0-27 	 NP-10
	31-42	Very cobbly loamy sand, cobbly loamy sand	SM 	A-1, A-2-4 	3-7	10-20 	70-80 	60-75	30-55	10-25	0-27	NP-10
	>42	Unweathered bedrock	 	 		 	 				 	

Map symbol	Depth	USDA texture	Classif	ication	Frag	ments		_	e passi umber	ng	 Liquid	 Plas-
and soil name				l	>10	3-10	i				limit	
	i		Unified	AASHTO		inches	4	10	40	200		index
	In	i i	<u> </u>	<u>.</u> I	Pct	Pct	i	i	i 	i	Pct	İ
	i			İ			i	İ	i	İ		i
173E:		İ	İ	İ	i	i	i	İ	i	İ	i	İ
Montreal	0-2	Highly	PT	A-8	0	0	100	100	100	90-100	i	j
	İ	decomposed	İ	İ	İ	į	İ	İ	İ	İ	į	į
		plant material		ĺ	İ	İ	İ	İ	ĺ	İ	İ	ĺ
	2-6	Cobbly fine	SM, SC-SM,	A-4, A-2-4	2-5	15-25	85-95	80-90	55-75	30-50	16-33	1-12
		sandy loam	ML, CL-ML									
	6-11	Cobbly fine	SM, SC-SM,	A-4, A-2-4	2-5	15-25	85-95	80-90	55-75	30-50	20-40	1-12
		sandy loam	ML, CL-ML									
	11-20	Cobbly fine	SM, SC-SM,	A-1, A-4, A-	2-14	15-35	65-90	55-90	40-75	20-50	16-35	1-12
		sandy loam	ML, CL-ML	2-4								
	20-33	Very cobbly	GP-GM, GM,	A-1, A-2-4,	1-12	15-45	40-90	25-85	20-70	5-45	0-25	NP-7
		loamy fine	SM, SC-SM	A-4, A-3								
		sand, very					!					
		cobbly fine					!		ļ			
		sandy loam										 -
	33-51	Very cobbly	GP-GM, GM,		1-12	15-45	45-90	25-85	20-70	5-45	0-25	NP - 7
		fine sandy	SM, SC-SM	2-4, A-3			!					
		loam, very										
		cobbly loamy										
		fine sand	an ar		1-8	 15-50	140.00	105 05	100 70	10 45	 0-25	
	1 21-80	Cobbly loamy fine sand,	GP-GM, GM,	A-1, A-2-4, A-4, A-3	1 1-8	12-20	40-90	25-85	20-70	10-45	0-25	NP-/
	l I	cobbly fine	SM, SC-SM	A-4, A-3		 		1		1	 	l I
	l I	sandy loam	I	 		 		1		1	 	l I
	l I	Sandy IOam	I	 		 		1	1	1	 	l I
Paavola	0-2	Highly	 PT	 A-8	0	0	100	100	100	90-100		
1 44 7 0 14	" -	decomposed					200	200	200			
		plant material		<u> </u>	ì	<u> </u>	i	i	i	i	<u> </u>	i
	2-6	Cobbly loamy	SM, SC-SM, SC	A-1, A-2-4	2-4	10-15	60-80	50-70	25-55	5-20	0-37	NP-10
		sand			i		i	İ				İ
	6-12	Cobbly loamy	SM, SC-SM, SC	A-1, A-2-4	2-4	15-20	60-80	45-70	25-55	5-20	0-37	NP-10
	İ	sand	İ	İ	İ	į	İ	İ	İ	İ	į	į
	12-27	Very gravelly	SP, SP-SM,	A-1	1-3	15-30	40-75	25-65	15-45	0-10	0-27	NP-4
		sand	SC-SM	ĺ	İ	İ	İ	İ	ĺ	İ	İ	ĺ
	27-35	Very gravelly	SC, SM, SC-SM	A-1, A-2-4,	1-3	5-15	75-90	65-85	45-70	20-45	0-30	NP-12
		loamy fine		A-4								
		sand, gravelly										
		fine sandy										
		loam										
	35-46	Gravelly fine	SC, SM, SC-SM	A-2-4, A-4	1-3	5-15	70-85	70-80	50-65	25-45	15-30	1-12
		sandy loam										
	46-80	Gravelly sandy	SC, SM, SC-SM	A-1, A-2-4	1-4	5-15	70-85	60-75	35-55	20-30	15-30	1-12
		loam		1	1			1	1	1		1

Table 15.--Engineering Index Properties--Continued

Map symbol	 Depth	USDA texture	Classi	fication	Frag	ments		rcentag sieve n	_	-	 Liquid	 Plas-
and soil name					>10	3-10					limit	ticity
			Unified	AASHTO	inches	inches	4	10	40	200		index
	In	1	I		Pct	Pct					Pct	I
173E:	 	 									 	
Dishno	0-1	Moderately decomposed plant material	PT	A-8	0	0	100	100	100	90-100	 	
	 1-3 	Cobbly very fine sandy loam	 ML 	 A-2-4, A-4 	0-7	 5-15 	 80-95 	80-90	 55-80 	35-55	 20-40 	 1-12
	 3-4 		 ML 	 A-2-4, A-4 	4-7	5-20	 80-95 	80-90	55-80	30-55	 16-33 	 1-12
	4-8 		 ML, SM 	A-2-4, A-4	4-7	5-20	 80-90 	80-90	 55-80 	30-55	20-40	 1-12
	8-26 		 ML, SM 	A-2-4, A-4	4-7 	5-20 	80-95 	 75-90 	50-75 	30-50	 16-35 	1-12
	26-31 	1	SM 	A-1, A-2-4	3-6	10-20 	70-80 	60-75	30-55	10-25	0-27 	NP-10
	31-42 	Very cobbly loamy sand, cobbly loamy sand	SM 	A-1, A-2-4	3-7	10-20 	70-80 	60-75 	30-55	10-25 	0-27 	NP-10
	>42 	Unweathered bedrock	 	 		 	 	 	 	 	 	

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é
호

	,		Classi	fication	Fragi	ments		rcentag	_	_		
Map symbol	Depth	USDA texture						sieve n	umber	•	Liquid	
and soil name					>10	3-10		1		1	limit	ticity
	l.,		Unified	AASHTO	inches	inches	4	10	40	200		index
	In				Pct	Pct					Pct	
174B:					1		 					
Montreal	0-2	Highly	PT	A-8	0	0	100	100	100	90-100		j
		decomposed	İ	j	Ì	İ	į	İ	İ	İ	İ	į
		plant material	İ	j	Ì	İ	į	İ	İ	İ	İ	į
	2-6	Cobbly fine	SM, SC-SM,	A-4, A-2-4	2-5	15-25	85-95	80-90	55-75	30-50	16-33	1-12
		sandy loam	ML, CL-ML	j	Ì	İ	į	İ	İ	İ	İ	į
	6-11	Cobbly fine	SM, SC-SM,	A-4, A-2-4	2-5	15-25	85-95	80-90	55-75	30-50	20-40	1-12
		sandy loam	ML, CL-ML	j	İ	İ	į	İ	İ	İ	İ	į
	11-20	Cobbly fine	SM, SC-SM,	A-1, A-4, A-	2-14	15-35	65-90	55-90	40-75	20-50	16-35	1-12
		sandy loam	ML, CL-ML	2-4	İ	İ	į	İ	İ	İ	İ	į
	20-33	Very cobbly	GP-GM, GM,	A-1, A-2-4,	1-12	15-45	40-90	25-85	20-70	5-45	0-25	NP-7
		loamy fine	SM, SC-SM	A-4, A-3	İ	İ	į	İ	İ	İ	İ	į
		sand, very		İ	İ	İ	ĺ	İ	İ	ĺ	İ	ĺ
		cobbly fine		İ	İ	İ	ĺ	İ	İ	ĺ	İ	ĺ
		sandy loam		İ	İ	İ	ĺ	İ	İ	ĺ	İ	ĺ
	33-51	Very cobbly	GP-GM, GM,	A-1, A-4, A-	1-12	15-45	45-90	25-85	20-70	5-45	0-25	NP-7
		fine sandy	SM, SC-SM	2-4, A-3	İ	İ	ĺ	İ	İ	ĺ	İ	ĺ
		loam, very										
		cobbly loamy										
		fine sand										
	51-80	Cobbly loamy	GP-GM, GM,	A-1, A-2-4,	1-8	15-50	40-90	25-85	20-70	10-45	0-25	NP-7
		fine sand,	SM, SC-SM	A-4, A-3								
j		cobbly fine										
		sandy loam										

Table 15.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture		fication	Flag	ments 		rcentag sieve n	_	-	 Liquid limit	
and soll name			 Unified	AASHTO		inches	4	10	40	200		index
	In	İ		İ	Pct	Pct		İ	Ì	i i	Pct	İ
1715					Ţ			1				ļ
174B:		1										
Dishno	0-1	Moderately	PT	A-8	0	0	100	100	100	90-100		
		decomposed					ļ					
		plant material	1									
	1-3	Cobbly very	ML	A-4, A-2-4	0-7	5-15	80-95	80-90	55-80	35-55	20-40	1-12
		fine sandy					ļ					
		loam			-							
	3-4	Cobbly very	ML	A-4, A-2-4	4-7	5-20	80-95	80-90	55-80	30-55	16-33	1-12
		fine sandy					 					
	 4-8	Cobbly very			4-7	 5-20				 30-55	00.40	1-12
	4-8	fine sandy	ML, SM	A-4, A-2-4	4-/	5-20	80-90	80-90	55-80	30-55	20-40	1-12
,		loam					 					
,	 8-26		 ML, SM	A-4, A-2-4	4-7			 75-90		30-50	116 25	1-12
,	8-26	fine sandy	ML, SM	A-4, A-2-4	4-7	3-20	80-95	75-90	50 - 75	30-50	10-33	1-12
,		loam, cobbly	 	l I		l I	l I	-		1	 	
,		fine sandy	 	l I		l I	l I	-		1	 	
		loam	 	1		 	l I				 	
	 26_31	Very cobbly	 SM	A-1, A-2-4	3-6	10-20	 70_00	60-75	30-55	10-25	1 0-27	NP-10
	20-31	loamy sand,	DM	A-1, A-2-4	3-0	10-20	70-00 	00-75	30-33	1	0-27	142 - 10
		cobbly loamy	 			 	l I	1		İ	 	i
		sand	 	İ		 	l I	1		ì	 	i
	31-42	Very cobbly	SM	A-1, A-2-4	3-7	10-20	 70-80	60-75	30-55	10-25	0-27	NP-10
		loamy sand,			-							
		cobbly loamy		i	i		i i	i	i	i		i
Ī		sand		i	i	İ	İ	i	i	ì	İ	i
	>42	Unweathered		i				i	i	i		i
		bedrock	İ	i	i	İ	İ	i	i	i	İ	i

ļ			Classif:	ication	Fragi	nents	Pe	rcentag	e passi	ng		
Map symbol	Depth	USDA texture	l		_			sieve n	umber		Liquid	Plas
and soil name					>10	3-10					limit	ticit
			Unified	AASHTO	inches	inches	4	10	40	200		index
1	In				Pct	Pct					Pct	
174B:												
Gratiot	0-1		PT	A-8	0	0	100	100	100	90-100		
		decomposed										
		plant material	•									
	1-4		ML, SC-SM	A-1, A-2-4	0-2	25-35	55-100	40-100	25-95	15-65	20-42	1-12
		fine sandy			ļ		!	!	!	!		!
		loam, cobbly			ļ		!	!	!	!		!
		very fine					!		!			!
		sandy loam										
	4-7		SM, SC, SC-SM	A-1, A-2-4	0-2	10-35	40-80	25-75	10-70	5-45	0-40	NP-12
		loamy sand,										ļ
		cobbly loamy			-							
		very fine			-							
		sand, gravelly				 						
		fine sandy	 	 		 -			 			
	7 10	loam	 SM, SC, SC-SM		0-2	10 25	140 00		 10 70		0 25	 NTD 12
	7-12	Very cobbly loamy sand,	SM, SC, SC-SM	A-1, A-2-4 	0-2	10-35	140-00	25-75	10-70	5-45	0-35	NP - 12
		cobbly loamy	 	 	i	 	 	 	 	1	Pct	l I
		very fine	 	 	1	 		i i	 	1	 	
		sand, gravelly	 	 	1	 		i i	 	1	 	
		fine sandy	! [1	 	i	 	 	1		İ
		loam	! [1	 	i	 	 	1		İ
	12-20	· ·	SM, SC, SC-SM	A-1, A-2-4	0-2	10-35	40-80	25-75	20-70	5-45	16-35	1-12
		fine sandy			ì		i	i	İ			i
		loam, gravelly	: 	İ	i	İ	i	İ	İ	i	İ	i
		very fine	<u> </u>	İ	i	İ	i	İ	İ	i	İ	İ
		sandy loam,	İ	İ	i	İ	İ	i	į	i	İ	į
		cobbly loamy	İ	İ	Ì	İ	į	İ	į	İ	İ	į
1		sand										
1	20-30	Cobbly fine	SM, SC, SC-	A-1, A-2-4	0-2	0-20	60-95	45-95	25-90	5-60	0-30	NP-12
ļ		sandy loam,	SM, ML									
		cobbly loamy										
		fine sand,										
		cobbly loamy										
		sand, gravelly										
		very fine			ļ		!	!	!			!
		sandy loam										
	30-80		SM, SC, SC-SM	A-1, A-2-4	0-10	0-25	55-80	35-75	20-65	5-40	0-30	NP-12
ļ		sandy loam,			I	 		[1		
ļ		cobbly loamy	 	 -	I	 		[
		fine sand,			I			[ļ	!		
i												
		cobbly loamy	 	 		 						

Table 15.--Engineering Index Properties--Continued

Table 15.--Engineering Index Properties--Continued

Map symbol	 Depth	USDA texture	Classi	fication	Frag	ments		rcentag sieve n	_	-	 Liquid	 Plas-
and soil name					>10	3-10					limit	ticity
			Unified	AASHTO	inches	inches	4	10	40	200		index
	In				Pct	Pct				-	Pct	
177A:			 				 	 	 			
Assinins	0-2 	Highly decomposed plant material	PT 	A - 8 	0 	0 	100 	100 	100 	90-100	 	
	2-11	Sand	SM	A-2-4, A-3	0	0-5	100	95-100	50-70	5-15	0-29	NP-6
	11-15	Sand	SM	A-2-4, A-3	0	0-5	100	95-100	50-70	5-15	0-29	NP-6
	15-24	Sand	SM	A-2-4, A-3	0	0-5	100	95-100	50-70	5-15	0-29	NP-6
	24-37	Sandy loam, loamy sand	SM, SC	A-2-4, A-4	0	0-5	95-100	85-100	50-75 	15-40	16-30	2-12
	37-80	Sandy loam	SM, SC-SM	A-2-4, A-4	0	0-5	95-100	85-100	60-70	30-40	16-30	2-12
183C:		 	 			 	 	 	 		 	
Munising	0-2 	Moderately decomposed plant material	PT 	A-8 	0 	0 	100 	100 	100 	90-100	 	
	2-4	Highly decomposed plant material	 PT 	A-8 	0	 0 	 100 	 100 	100	90-100	 	
	 4-11 	Fine sandy loam, loamy fine sand	 SM, SC-SM 	A-4, A-2-4	0-3	0-8	 90-100 	 85-95 	 40-85 	10-50	0-26	 NP - 6
	11-13	Fine sandy loam	SM, SC-SM	A-4, A-2-4	0-3	0-8	90-100	85-95	50-85	25-50	20-33	1-6
	13-18	Fine sandy loam		A-4, A-2-4	0-3	0-8	90-100		50-85	25-50	16-29	1-6
	18-31		SC-SM, SC	A-2-4, A-4	0-3	0-8	90-100	85-95	40-90	10-50	18-26	4-9
	31-51		SC-SM, SC	A-2-4, A-6,	0-3	0-8	90-100	85-95	 50-90 	25-50	20-44	6-25
	51-80	Sandy loam	SM, SC-SM	A-2-4, A-4	0-3	0-8	90-100	85-95	50-85	25-50	 17-25 	3-7

Table 15.--Engineering Index Properties--Continued

			Classif	ication	Fragi	ments	Pe	rcentag	e passi	ng		
Map symbol	Depth	USDA texture			_		:	sieve n	mber		Liquid	
and soil name					>10	3-10					limit	
		<u> </u>	Unified	AASHTO	inches	inches	4	10	40	200		index
	In				Pct	Pct					Pct	
				!								!
183C:												
Abbaye	0-1	, 5 1	PT	A-8	0	0	100	100	100	90-100		
		decomposed										
	1 5	plant material	1					 0F 100			0 21	 NTD 10
	1-5	Fine sandy	SM, SC, SC-SM	A-4, A-2-4	0	0-7	90-100	85-100	50-85	25-55	0-31	NP-10
		loam, sandy	l I	l I			 	 	 			
		loam, loamy	 	l I			 	l I	l I	1		
	5_11	Fine sandy	SM, SC-SM	 A-4, A-2-4	0-1	0-6	 05_100	 00_100	 15_05	20-50	16-20	1-6
	3-11	loam, sandy	SM, SC-SM	A-1, A-2-1 	0-1	0-0	63-100	80-100	1 42-02	20-30	10-23	1 1-0
		loam	 	 		 	 	l I	l I	1	 	i
	11-18		SM, SC-SM	A-4, A-2-4	0-1	0-6	 85-100	 80-100	 45-85	20-50	16-29	1-6
	11 10	sandy loam,	DE DE	,	0 1	0 0	03 100	00 100	13 03	1	1	1
		gravelly sandy	 	l I	i	 	 	l I	l I	i	 	i
		loam		i		<u> </u>	 	i I	i i	i	<u> </u>	i
	18-28		SC, SC-SM	A-4, A-2-4	0-4	0-3	65-80	55-75	35-65	15-40	18-27	4-10
		sandy loam,		į .					İ		i	i
		gravelly sandy		İ	i	i	İ	İ	İ	i	i	i
		loam, gravelly	•	İ	i	i	İ	İ	İ	i	i	i
		loamy fine	İ	İ	i	i	į	İ	İ	i	i	i
		sand	İ	İ	j	į	į	j	į	İ	į	İ
	28-30	Weathered								j		
		bedrock										
	30-80	Unweathered										
		bedrock										
Yalmer	0-1		PT	A-8	0	0	100	100	100	90-100		
		decomposed										
		plant material	1									
	1-6	Loamy sand	SM, SC, SC-SM		0	0-2		90-100				NP-10
	6-13	Loamy sand	SM, SC, SC-SM		0	0-2		90-100				NP-10
	13-28	Loamy sand		A-2-4, A-3	0	0-3	85-95	80-90	40-70	10-25	0-33	NP-10
	00 10	 	SP-SM, SW-SM	1								
	28-43		SM, SC, SC-SM	A-2-4	0	1-5	 AO-TOO	90-95	55-70	15-35	0-30	NP-12
	42 50	sandy loam								115 25	0 20	
	43-52		SM, SC, SC-SM	A-2-4	0	1-5	90-95	90-95	45-70	15-35	0-30	NP-12
	E2 00	loamy sand	 CO OM CO OM	1 2 4 3 2	0	 2-5	00 05		 EO 65	25-35	116 20	 2-12
	52-80	Sandy loam	SC, SM, SC-SM	A-2-4, A-3	0	2-5	30-35	05-90	50-05	25-35	1 70-30	2-12

Table 15.--Engineering Index Properties--Continued

 iquid Plas	 Liqui	ng	e passi: umber	rcentage sieve nu		ments	Fragi	ication	Classif	USDA texture	Depth	Map symbol
imit ticit	limit					3-10	>10			į	-	and soil name
index	į	200	40	10	4	inches	inches	AASHTO	Unified	j		j
?ct	Pct					Pct	Pct			!	In	
		1	 			 						183E:
i	i	90-100	100	100	100	0	0	A-8	PT	Moderately	0-2	Munising
i	i	İ	i			İ				decomposed		· 3
i	i	İ	i			i i	i			plant material		
j	i	90-100	100	100	100	0	0	A-8	PT		2-4	
i	i	İ	i			i i	i			decomposed		
į	i	i	i			i i	i i			plant material		
0-26 NP-6	0-26	10-50	40-85	85-95	90-100	0-8	0-3	A-4, A-2-4	SM, SC-SM	Fine sandy	4-11	
į	i	i	i			i i	i i			loam, loamy		
į	i	i	i			i i	i i			fine sand		
0-33 1-6	20-33	25-50	50-85	85-95	90-100	0-8	0-3	A-4, A-2-4	SM, SC-SM	Fine sandy loam	11-13	
6-29 1-6	16-29	25-50	50-85	85-95	90-100	0-8	0-3	A-4, A-2-4	SM, SC-SM	Fine sandy loam	13-18	
8-26 4-9	18-26	10-50	40-90	85-95	90-100	0-8	0-3	A-2-4, A-4	SC-SM, SC	Sandy loam,	18-31	
į	İ	İ	İ	İ		i i	į i			loamy sand		
0-44 6-25	20-44	25-50	50-90	85-95	90-100	0-8	0-3	A-2-4, A-6,	SC-SM, SC	Sandy loam	31-51	
į	İ	İ	į	İ		į į	į i	A-4				
7-25 3-7	17-25	25-50	50-85	85-95	90-100	0-8	0-3	A-2-4, A-4	SM, SC-SM	Sandy loam	51-80	
ĺ	İ	ĺ	İ			ĺ	İ					
		90-100	100	100	100	0	0	A-8	PT	Highly	0-1	Abbaye
										decomposed		
										plant material		
0-31 NP-10	0-31	25-55	50-85	85-100	90-100	0-7	0	A-4, A-2-4	SM, SC, SC-SM	Fine sandy	1-5	
										loam, sandy		
										loam, loamy		
										fine sand		
6-29 1-6	16-29	20-50	45-85	80-100	85-100	0-6	0-1	A-4, A-2-4	SM, SC-SM	Fine sandy	5-11	
										loam, sandy		
										loam		
6-29 1-6	16-29	20-50	45-85	80-100	85-100	0-6	0-1	A-4, A-2-4	SM, SC-SM	Gravelly fine	11-18	
										sandy loam,		
										gravelly sandy		
										loam		
8-27 4-10	18-27	15-40	35-65	55-75	65-80	0-3	0 - 4	A-4, A-2-4	SC, SC-SM	Gravelly fine	18-28	
										sandy loam,		
										gravelly sandy		
										loam, gravelly		
										loamy fine		
ļ.										sand		
										Weathered	28-30	
ļ.										bedrock		
										Unweathered	30-80	
ļ.			[bedrock		
-	 	 	 	 		 				loam Gravelly fine sandy loam, gravelly sandy loam, gravelly loamy fine sand Weathered bedrock Unweathered	28-30	

			Classif	ication	Fragi	ments	Pe	rcentag	e passi	ng		
Map symbol	Depth	USDA texture			_		:	sieve n	umber		Liquid	
and soil name					>10	3-10	ļ				limit	
		<u> </u>	Unified	AASHTO		inches	4	10	40	200		index
	In				Pct	Pct					Pct	
183E:	0.1	TT -1 1						100				
Yalmer	0-1	Highly	PT	A-8	0	0	100	100	100	90-100		
		decomposed plant material	 	l I		 	 	l I	 		 	
	1-6	Loamy sand	 SM, SC, SC-SM	 a _ 2 _ 4	0	0-2	 05_100	 90-100	 15-75	15-30	0-33	 NP-10
	6-13	Loamy sand	SM, SC, SC-SM		0	0-2		90-100		15-30		NP-10
	13-28	Loamy sand		A-2-4, A-3	0	0-2		80-90		10-25		NP-10
	13 20	Doubly Danie	SP-SM, SW-SM			0 3	03)3		10 ,0	10 13	0 33	
	28-43	Loamy sand,	SM, SC, SC-SM		0	1-5	90-100	90-95	55-70	15-35	0-30	NP-12
		sandy loam			i	İ		İ	İ	1		i
	43-52	Sandy loam,	SM, SC, SC-SM	A-2-4	0	1-5	90-95	90-95	45-70	15-35	0-30	NP-12
		loamy sand		İ	i	į	İ	į	į	İ	į	į
	52-80	Sandy loam	SC, SM, SC-SM	A-2-4, A-3	0	2-5	90-95	85-90	50-65	25-35	16-30	2-12
184C:												
Munising	0-2	Moderately	PT	A-8	0	0	100	100	100	90-100		
		decomposed										
		plant material						!	!			!
	2-4	Highly	PT	A-8	0	0	100	100	100	90-100		
		decomposed										
	4 11	plant material	'							110 50		
	4-11	Fine sandy	SM, SC-SM	A-4, A-2-4	0-3	0-8	90-100	85-95	40-85	10-50	0-26	NP-6
		loam, loamy	 	l I		 	 	l I	 		 	
	11_12	Fine sandy loam	lew ec_ewr	 A-4, A-2-4	0-3	 0-8	 00_100	 05_05	 EN_ 0E	25-50	20-33	 1-6
		Fine sandy loam		A-4, A-2-4	0-3	0-8				25-50		1-6
		Sandy loam,		A-2-4, A-4	0-3	0-8				10-50		4-9
	10 01	loamy sand		,								
	31-51	Sandy loam	SC-SM, SC	A-2-4, A-6,	0-3	0-8	90-100	85-95	50-90	25-50	20-44	6-25
				A-4	1		İ	i	İ	1	ĺ	ĺ
	51-80	Sandy loam	SM, SC-SM	A-2-4, A-4	0-3	0-8	90-100	85-95	50-85	25-50	17-25	3-7
				İ	į	j	j	į	į	İ	j	j
Yalmer	0-1	Highly	PT	A-8	0	0	100	100	100	90-100		
		decomposed										
		plant material										
	1-6	Loamy sand	SM, SC, SC-SM		0	0-2		90-100		!		NP-10
	6-13	Loamy sand	SM, SC, SC-SM		0	0-2		90-100		15-30		NP-10
	13-28	Loamy sand		A-2-4, A-3	0	0-3	85-95	80-90	40-70	10-25	0-33	NP-10
	00.45		SP-SM, SW-SM									
	28-43	Loamy sand,	SM, SC, SC-SM	A-2-4	0	1-5	90-100	90-95	55-70	15-35	0-30	NP-12
	12 50	sandy loam	lew ee ee ee		0				 45 30	115 25	0.30	 NTD 10
	43-52	Sandy loam,	SM, SC, SC-SM	A-2-4 	0	1-5	90-95	90-95	45-70	15-35	U-3U	NP-12
	52-00	loamy sand	 SC, SM, SC-SM	 <u> </u>	 0	 2-5	 90 - 95	 85_00	 50-65	25-35	 16-30	 2-12
	32-60	Dandy Ioam	DC, DM, DC-DM 	A-2-1, A-3 	0	<u>2</u> -3			50-05	23-33	±0-30	2-12
		1	I	I		I	I	1	I	1	I	1

Table 15.--Engineering Index Properties--Continued

Table 15.--Engineering Index Properties--Continued

Map symbol	Depth	USDA texture	Classif	ication	Fragi	ments		rcentago sieve no	-	_	 Liquid	 Plag-
and soil name	Depth	ODDA CEACGIE		I	>10	3-10		sieve ii	umber		limit	
and soll name			Unified	AASHTO	1	inches	4	10	40	200		index
	In				Pct	Pct				İ	Pct	
184E:			 	 	l	 		l I	 			
Munising	0-2	Moderately decomposed plant material	PT 	A-8	0	0 	100 	100 	100 	90-100	 	
	2-4	Highly decomposed plant material	PT 	A-8 	0	0 	100	100 	100 	90-100	 	
	4-11	Fine sandy loam, loamy fine sand	SM, SC-SM	A-4, A-2-4 	0-3	0-8	90-100 	85-95 	40-85 	10-50	0-26	NP - 6
	11-13	Fine sandy loam	SM, SC-SM	A-4, A-2-4	0-3	0-8	90-100	85-95	50-85	25-50	20-33	1-6
	13-18	Fine sandy loam	SM, SC-SM	A-4, A-2-4	0-3	0-8	90-100	85-95	50-85	25-50	16-29	1-6
	18-31	Sandy loam,	SC-SM, SC	A-2-4, A-4	0-3	0-8	90-100	85-95	40-90	10-50	18-26	4-9
	31-51	Sandy loam	SC-SM, SC	A-2-4, A-6, A-4	0-3	0-8	90-100	85-95	50-90	25-50	20-44	6-25
	51-80	Sandy loam	SM, SC-SM	A-2-4, A-4	0-3	0-8	90-100	85-95	50-85	25-50	17-25	3-7
Yalmer	0-1	 Highly decomposed plant material	 PT 	 A-8 	 0 	 0 	 100 	 100 	 100 	90-100	 	
	1-6	Loamy sand	SM, SC, SC-SM	A-2-4	0	0-2	95-100	90-100	45-75	15-30	0-33	NP-10
	6-13	Loamy sand	SM, SC, SC-SM	A-2-4	0	0-2	95-100	90-100	45-75	15-30	0-37	NP-10
	13-28	Loamy sand	SM, SC-SM,		0	0-3	85-95	80-90	40-70	10-25	0-33	NP-10
	28-43	Loamy sand, sandy loam	SM, SC, SC-SM	A-2-4	0	1-5 	90-100	90-95 	55-70	15-35	0-30	NP-12
	43-52	Sandy loam,	SM, SC, SC-SM	A-2-4 	0	1-5 	90-95	90-95 	45-70 	15-35	0-30	NP-12
	52-80	Sandy loam	SC, SM, SC-SM	A-2-4, A-3	0	2-5	90-95 	85-90 	50-65 	25-35	16-30 	2-12

Table 15.--Engineering Index Properties--Continued

Map symbol	 Depth	USDA texture	Classif	ication	_ii	ments		rcentag sieve n	-	_	 Liquid	
and soil name		[[Unified	AASHTO	>10	3-10	 4	10	40	200	limit	ticity
	In	1			Pct	Pct	<u> </u>			1	Pct	
185B:							 					
Munising	00	 Madamakalar	 PT	 A-8	0	 0	 100	100	 100	90-100	1	
Munising	0-2	Moderately decomposed	PT	A-8 	0	U	100 	100 	100 	90-100		
		plant material		i i			! 	i	i	i		i
	2-4		PT	A-8	0	0	100	100	100	90-100		
		decomposed	İ	İ	i	İ	İ	į	į	i	į	į
		plant material		ĺ	İ	ĺ	ĺ	ĺ	ĺ	İ	İ	ĺ
j	4-11	Fine sandy	SM, SC-SM	A-4, A-2-4	0-3	0-8	90-100	85-95	40-85	10-50	0-26	NP-6
		loam, loamy										
		fine sand										
		Fine sandy loam	•	A-4, A-2-4	0-3	1		85-95		25-50		1-6
		Fine sandy loam		A-4, A-2-4	0-3	0-8	90-100			25-50		1-6
	18-31	Sandy loam,	SC-SM, SC	A-2-4, A-4	0-3	0-8	90-100	85-95	40-90	10-50	18-26	4-9
		loamy sand										
	31-51	Sandy loam	SC-SM, SC	A-2-4, A-6,	0-3	0-8	90-100	85-95	50-90	25-50	20-44	6-25
				A-4								
	51-80	Sandy loam	SM, SC-SM	A-2-4, A-4	0-3	0-8	90-100	85-95	50-85	25-50	17-25	3-7
Skanee	 0-2	Moderately	 PT	 A-8	0	l l 0	100	100	100	90-100		
		decomposed	<u>'</u>	İ	i	İ	İ	İ	İ	i	i	i
		plant material	İ	İ	i	İ	j	i	į	i	į	į
	2-8	Fine sandy	SM, SC-SM	A-4, A-2-4	0-3	0-24	85-100	80-100	40-85	10-50	0-33	NP-6
		loam, sandy		ĺ	İ	ĺ	ĺ	ĺ	ĺ	İ	İ	ĺ
		loam, loamy										
		sand, cobbly										
		fine sandy										
		loam										
	8-14	Fine sandy	SM, SC-SM	A-4, A-2-4	0-3	0-24	85-100	80-100	50-85	25-50	0-33	NP-6
		loam, sandy						!	!			
		loam, cobbly							!			!
		fine sandy										
		loam								110 50	115 05	
	14-31	Fine sandy	SM, SC-SM	A-4, A-2-4	0-3	0-15	90-100	85-100	40-85	10-50	15-25	1-7
		loam, sandy loamy	 	 		 	 	l I	 			
		sand	 	 		 	 	l I	 			
	 31-42		SC, SC-SM, CL	 A - 2 - 6	0-3	 0-15	 90_100	 85-95	 50-90	25-50	20-44	6-25
	JI-IZ 	loam, fine		A-2-4, A-4	0-3	0-13	 		50-50	23-30	20-44	0-23
		sandy loam,		,	i	 	! 		İ	1		
		sandy loam		İ	i	İ	İ	i	İ	i		İ
	42-80		SM, SC-SM	A-2-4, A-4	0-3	0-15	90-100	85-95	50-85	25-50	17-25	3-7
		fine sandy	İ	İ	i	İ	İ	İ	İ	i	İ	İ
j		loam						[
								1				1

Table 15.--Engineering Index Properties--Continued

Map symbol	Depth	USDA texture	Classif	ication	Fragi	ments		rcentag sieve n	-	ng	 Liquid	 Plas-
and soil name	i -	İ			>10	3-10	į				limit	ticity
		Ì	Unified	AASHTO	inches	inches	4	10	40	200	İ	index
	In			ļ	Pct	Pct		[<u> </u>	Pct	
185C:			 	 		 	 		 			
Munising	0-2	Moderately	PT	A-8	0	0	100	100	100	90-100	j	j
		decomposed	İ	İ	j	İ	į	į	į	İ	İ	į
		plant material		İ	j	ĺ	ĺ	İ	ĺ	İ	İ	ĺ
	2-4	Highly	PT	A-8	0	0	100	100	100	90-100		
		decomposed										
		plant material										
	4-11	Fine sandy	SM, SC-SM	A-4, A-2-4	0-3	0-8	90-100	85-95	40-85	10-50	0-26	NP-6
		loam, loamy										
		fine sand										
	11-13	Fine sandy loam	!	A-4, A-2-4	0-3	0-8				25-50		1-6
	13-18			A-4, A-2-4	0-3	0-8	90-100			25-50		1-6
	18-31	Sandy loam,	SC-SM, SC	A-2-4, A-4	0-3	0-8	90-100	85-95	40-90	10-50	18-26	4-9
		loamy sand							!			!
	31-51	Sandy loam	SC-SM, SC	A-2-4, A-6,	0-3	0-8	90-100	85-95	50-90	25-50	20-44	6-25
				A-4								
	51-80	Sandy loam	SM, SC-SM	A-2-4, A-4	0-3	0-8	90-100	85-95	50-85	25-50	17-25	3-7
Skanee	0-2	1	PT	A-8	0	0	100	100	100	90-100		
		decomposed		1		 	 		 			
	 2-8	plant material Fine sandy	SM, SC-SM	 A-4, A-2-4	0-3	0 24	 0E 100	00 100	 40 0E	10-50	0-33	IND 6
	2-0	loam, sandy	SM, SC-SM	A-4, A-2-4	0-3	0-24	 03-T00	100-100	1 40-05	10-30	0-33	NP-6
		loam, loamy	 	1		l I	 	 	 	1	1	l I
		sand, cobbly	 			l I	l I	 	l I		1	I I
		fine sandy	 		i	 	 	 	 	1	 	i i
		loam	! 		1	 	 	i	i i	1		i
	8-14	Fine sandy	SM, SC-SM	A-4, A-2-4	0-3	0-24	85-100	80-100	50-85	25-50	0-33	NP-6
	0	loam, sandy				0 22						
		loam, cobbly		i	i	! 	İ	i	i	i		i
		fine sandy		i	i	İ	İ	i	i	i	İ	i
		loam	! 	İ	i	İ	İ	i	İ	i	i	İ
	14-31	Fine sandy	SM, SC-SM	A-4, A-2-4	0-3	0-15	90-100	85-100	40-85	10-50	15-25	1-7
		loam, sandy	İ	İ	i	İ	į	i	į	i	į	į
		loam, loamy	İ	İ	j	İ	į	į	į	İ	İ	į
		sand		İ	j	ĺ	ĺ	İ	ĺ	İ	İ	ĺ
	31-42	Sandy clay	SC, SC-SM, CL	A-2-6, A-6,	0-3	0-15	90-100	85-95	50-90	25-50	20-44	6-25
		loam, fine		A-2-4, A-4								
		sandy loam,										
		sandy loam										
	42-80	Sandy loam,	SM, SC-SM	A-2-4, A-4	0-3	0-15	90-100	85-95	50-85	25-50	17-25	3 - 7
		fine sandy										
		loam										

Map symbol	 Depth	USDA texture	Classif	ication	Fragi	ments		rcentag	_	-	 Liquid	 Plas-
and soil name					>10	3-10					limit	
		1	Unified	AASHTO	inches	inches	4	10	40	200		index
	In				Pct	Pct		[Pct	
187A: Skanee	 0-2	Wadamahala	 PT	 A-8	 0	 0	 100	 100	100	 90-100		
Skanee	U-Z 	Moderately decomposed	PT	A-8 	0	U	1 100	100	100	90-100	 	
	! 	plant material				 	i	 			 	
	2-8	Fine sandy	SM, SC-SM	A-4, A-2-4	0-3	0-24	85-100	80-100	40-85	10-50	0-33	NP-6
		loam, sandy		ĺ	İ	ĺ	ĺ	ĺ	ĺ	İ	ĺ	ĺ
		loam, loamy										
		sand, cobbly										
	 	fine sandy loam		1		 	 	 			 	
	∣ ∣ 8-14	Fine sandy	SM, SC-SM	 A-4, A-2-4	0-3	0-24	 85-100	 80-100	 50-85	25-50	0-33	 NP-6
	0 ==	loam, sandy				0 22						
	į	loam, cobbly	j	j	İ	į	į	į	į	į	j	į
		fine sandy						[
		loam		!				[
	14-31	Fine sandy	SM, SC-SM	A-4, A-2-4	0-3	0-15	90-100	85-100	40-85	10-50	15-25	1-7
	 	loam, sandy loamy		1		 	 	l I			 	
	 	sand				 	i	 			 	
	31-42	Sandy clay	SC, SC-SM, CL	A-2-6, A-6,	0-3	0-15	90-100	85-95	50-90	25-50	20-44	6-25
	į	loam, fine	j	A-2-4, A-4	İ	į	į	į	į	į	j	İ
		sandy loam,										
		sandy loam										
	42-80	Sandy loam, fine sandy	SM, SC-SM	A-2-4, A-4	0-3	0-15	90-100	85-95	50-85	25-50	17-25	3-7
	 	loam		 		l I	 	 	 	1	 	
	! 					 	i					
Gay	0-4	Muck	PT	A-8	0	0	100	100	100	90-100		i
	4-7	Fine sandy	SM	A-2-4, A-4	0-24	0-15	75-100	70-100	35-85	10-50		
		loam, loamy										
		sand, mucky										
	 -	sandy loam, cobbly sandy		 		 		 			 	
	 	loam		 		 		 	 		 	
	7-11	Sandy loam,	SM	A-2-4, A-4	0-24	0-15	75-100	70-100	35-75	10-40	0-26	NP-6
	İ	cobbly sandy		İ		ĺ		İ			ĺ	i
		loam, loamy										
		sand		1			[[
	11-16	Sandy loam,	SM, SC	A-2-4, A-4	0-8	0-8	85-100	80-100	50-90	25-50	18-45	3-25
		sandy clay			1							

A-2-4, A-4

A-2-4, A-4

loam, fine

sandy loam

SM

SM

16-30 | Sandy loam

30-60 | Sandy loam

Table 15.--Engineering Index Properties--Continued

			Classi	fication	Frag	ments	Pe	ercentag	_	-		
Map symbol	Depth	USDA texture			_		!	sieve n	umber		Liquid	
and soil name					>10	3-10		1	1	1	limit	
		<u> </u>	Unified	AASHTO		inches	4	10	40	200		index
	In	!	!		Pct	Pct	!				Pct	!
							!	!	!			!
192B:			1									
Nipissing	0-1	Moderately	PT	A-8	0	0	100	100	100	90-100		
	 -	decomposed plant material	1					1				
	 1-3	plant material Highly	 PT	 A-8	0	 0	 100	100	100	90-100		
	1-3	decomposed	PT	A-8	0	0	1 100	1 100	1 100	90-100		
	 	plant material	 			 		1	1		 	l I
	 3-4	Very cobbly	GM, GC-GM	A-1, A-2-4	0-5	35-40	 55-65	145-55	 35-55	20-50	 17-33	2-12
	3 -	fine sandy	GET GET GET		0 3		33 03	13 33	33 33	20 30	1, 33	2 12
	! 	loam, very	i	i	i	İ	i	i	i	i	İ	i
	İ	cobbly silt	i	i	i	İ	i	i	i	i	İ	İ
	İ	loam	İ		i	İ	i	i	i	i	İ	İ
	4-20	Extremely	GM, GC-GM	A-1, A-2-4	0-5	35-45	50-55	35-40	25-40	15-35	20-40	2-12
		cobbly fine	İ	į	j	İ	İ	İ	Ì	j	İ	ĺ
		sandy loam,										
		extremely										
		cobbly silt										
		loam										
	20-29	Extremely	GM, GC-GM	A-1, A-2-4	0-5	40-45	50-55	35-40	30-35	15-35	20-40	1-12
		cobbly fine					!	1				
	 	sandy loam,						1				
	 -	extremely cobbly loam	1					1				
	20_25	Extremely	GM, GC-GM	A-1, A-2-4	0-5	 40-50	 30 - 45	15-30	110-30	5-20	20-40	 2-12
	29-33	cobbly fine	GM, GC-GM	A-1, A-2-4	0-3	1 40-20	120-42	1	1	3-20	20-40	2-12
	 	sandy loam,	 			 	i			i	 	
	 	extremely			i	 	i	İ		1	 	i I
	! 	cobbly silt	İ				i	i		1		
	İ	loam	i	i	i	İ	i	i	i	i	İ	i
	35-39	Fragmental	GM, GC-GM	A-1	0-5	65-75	20-40	0-20	0-20	0-15	0-33	NP-6
	İ	material,	İ	i	i	İ	i	i	i	i	İ	į
	j	extremely	İ	j	j	į	į	İ	İ	İ	į	į
		cobbly loam										
	>39	Unweathered										
		bedrock										

Table 15.--Engineering Index Properties--Continued

Map symbol	Depth	USDA texture	Classi	ication	Fragi	ments		rcentag	_	-	 Liquid	 Plas-
and soil name	-		i		>10	3-10	İ				limit	ticity
į		İ	Unified	AASHTO	inches	inches	4	10	40	200	į	index
	In	ļ			Pct	Pct					Pct	
192B:							 			1		
Arcadian	0-3	Highly decomposed	PT 	A-8	0	0 	100 	100 	100 	90-100 		
		plant material		!								
	3-5	fine sandy loam, very	j 	A-1, A-4, A- 2-4 	0-5	10-20 	30-75 	10-65 	5-65 	5-45 	16-31 	1-10
		gravelly loamy very fine sand	İ		 	 	 	 	 		 	
	5-12	Very gravelly fine sandy loam, very gravelly loamy very fine sand	 	A-1, A-4, A- 2-4 	0-5	10-20 	30-75 	10-65 	5-65 	5-45 	20-40 	1-12
	12-22	Unweathered bedrock	 			 	 		 		 	
Rock outcrop.		 	 			 	 	 	 	 	 	

Table 15.--Engineering Index Properties--Continued

Map symbol	Depth	USDA texture	Classif	ication	Frag	ments		-	e passi umber	-	 Liquid	 Plas-
and soil name	j	İ			>10	3-10	İ				limit	ticity
			Unified	AASHTO	inches	inches	4	10	40	200		index
	In				Pct	Pct					Pct	
194B:	 		 									
Copper Harbor	0-1	Highly decomposed plant material	PT 	A-8 	0	0	100	100	100	90-100		
	 1-5 	Very gravelly loamy coarse sand	 GW, GP, GM 	 A-2-4, A-4, A-1	0	 5-15 	 30-60 	10-45	5-35	0-15	 8-20 	 NP-5
	 5-14 	sand Extremely gravelly loamy coarse sand, very gravelly coarse sand	 GW, GP, GM 	 A-4, A-1, A- 2-4 	0	 5-15 	 30-55 	 10-40 	5-30 	 5-15 	 8-20 	 NP-5
	 14-30 	coarse sand Extremely gravelly coarse sand, very gravelly coarse sand	 GW, GP, GM 	 A-4, A-1, A- 2-4 	0	 5-15 	 35-50 	 15-40 	 10-30 	 5-10 	 8-15 	 NP-5
	30-40	Very gravelly coarse sand, very gravelly loamy coarse sand, very gravelly sand	GW, GP, GC-GM 	A-4, A-1, A- 2-4 	0	5-15 	50-60 	35-45 	20-35	5-15 	8-15 	 NP - 5
	 40-60 		 	 A-4, A-1, A- 2-4 	0	 5-20 	 30-60 	 15-45 	5-35 	 5-15 	 7-15 	 NP-5
	 60-80 		 GW, GP, GM 	 A-4, A-1, A- 2-4 	0	 15-20 	30-65	 15-45 	5-35	5-15 	7-20 	NP - 5

Table 15.--Engineering Index Properties--Continued

Map symbol	Depth	USDA texture	 	Classif	icati	on	Frag	ments		rcentag sieve n	-	-	 Liquid	 Plas
and soil name							>10	3-10	İ				limit	ticit
			Uni	fied	A.	ASHTO	inches	inches	4	10	40	200		index
	In		 				Pct	Pct					Pct	
195B:									 					
Copper Harbor	0-1	Highly decomposed plant material	PT 		A-8		0	0	100 	100	100	90-100		
	1-5	Very gravelly loamy coarse sand	 GW, GE 	, GM	 A-4, A-1	A-2-4,	0	 5-15 	 30-60 	10-45	5-35	0-15	8-20	 NP - 5
	 5-14 	sand Extremely gravelly loamy coarse sand, very gravelly coarse sand	 GW, GI 	, GM	 A-4, 2-4 	A-1, A-	0	 5-15 	 30-55 	 10-40 	 5-30 	 5-15 	 8-20 	 NP - 5
	14-30 		 GW, GE 	, GM	 A-4, 2-4 	A-1, A-	0	 5-15 	 35-50 	 15-40 	 10-30 	5-10 	 8-15 	 NP - 5
	30-40	coarse sand, very gravelly loamy coarse sand, very	GW, GE 	, GC-GM	A-4, 2-4 		0	5-15 	50-60 	35-45 	20-35	5-15 	8-15 	NP - 5
	 40-60 	gravelly sand Very gravelly sand, very gravelly loamy sand, gravelly loamy coarse sand		, GM	 A-4, 2-4 	A-1, A-	0	 5-20 	 30-60 	 15-45 	 5-35 	 5-15 	 7-15 	 NP - 5
	 60-80 		 GW, GI 	, GM	 A-4, 2-4 	A-1, A-	0	 15-20 	 30-65 	15-45	5-35	5-15	 7-20 	 NP - 5

Table 15.--Engineering Index Properties--Continued

Map symbol	Depth	USDA texture	Classif	ication	Frag	ments		rcentag sieve n	-	_	 Liquid	 Plas
and soil name		İ I	Unified	AASHTO	>10	3-10	 	10	40	200	limit	ticit
	In				Pct	Pct	<u> </u>	1	1	1	Pct	
			i I	! [100	100	i I	ì	1	i	100	i
195B:			i	i	i	İ	i	i	i		İ	i
Bete Grise	0-2	Highly decomposed plant material	İ	 A-8 	0	 0 	 100 	100	100	90-100	 	
	2-5	Very gravelly loamy sand, very gravelly coarse sandy loam	GC-GM, SP-SM, SW-SM	A-1, A-2-4 	0	5-20 	40-75 	25-70	15-50 	5-20	0-31 	NP-10
	5-17	Very gravelly loamy coarse sand, very gravelly coarse sandy	 GC-GM, SP-SM, GM, SW-SM 	 A-1, A-2-4 	0 	5-20 	 40-70 	 25-60 	5-45 	5-20	0-40	 NP-12
	17-32	Very gravelly coarse sand, extremely gravelly sand, extremely gravelly coarse sand	 GC-GM, SP-SM, GW, SW-SM 	 A-1, A-2-4 	0 	0-20	 40-70 	 15-55 	5-40 	0-20	0-33	 NP - 6
	32-36	Extremely gravelly coarse sand, very gravelly loamy coarse sand	 GC-GM, SW-SM, GW 	 A-1, A-2-4 	0 	0-10 	 40-55 	20-55 	10-25 	0-10	0-33 	NP-12
	36-59	Very gravelly sand, extremely gravelly sand, very gravelly loamy sand	GC-GM, SP-SM, GW, SW-SM	A-1, A-2-4 	0-10	5-15 	30-60	5-50 	5-35 	0-20	0-27 	NP-10
	59-80	Very cobbly sand, extremely gravelly sand	GC-GM, SP-SM, GW, SW-SM	A-1, A-2-4 	0-10 	20-35	5-65 	5-35	5-30	0-10	0-23	NP - 6

Depth	USDA texture					I					
				_	3-10	 -	sieve n	umber		Liquid	
		Unified	AASHTO	>10	3-10 inches	 4	10	40	200	limit	ticit; index
	1	Unified	AASHTO			4	1 10	40	200	<u> </u>	Index
ın		 	 	PCt	PCt	 	1			PCt	
	 	 	 	l I	 	l I	l i		l I	l I	l I
0-2	 Highly	l Dri	 <u>a - 8</u>	0	0	 100	100	100	90-100	 	
0 2			11 0			100	100	100	30 100	 	i
			 	i	İ	! 	i	i	i		i
2-5			A-1, A-2-4	0	5-20	40-75	25-70	15-50	5-20	0-31	NP-10
	loamy sand,	SW-SM	İ	j	İ	į	İ	į	İ	İ	į
	very gravelly										
	coarse sandy										
	loam										
5-17		'	A-1, A-2-4	0	5-20	40-70	25-60	5-45	5-20	0-40	NP-12
		GM, SW-SM						!			!
		1									
		İ	 			 				 	
17-32		ן מכ∟מא פיס∟פאא	 a_1 a_2_4	0	0-20	 40-70	15-55	 5-40	0-20	 0-33	 ND_6
17-52		'	A-1, A-2-4 	i	0-20	40-70	15-55	3-40	0-20	0-33	142 - 0
			! 	i		! 	i	i		! 	İ
			 	i	İ	İ	İ	i	İ	İ	i
	extremely		İ	į	İ	İ	İ	İ	İ	į	į
	gravelly			Ì	İ	ĺ	İ	İ	İ	ĺ	ĺ
	coarse sand										
32-36	-	'	A-1, A-2-4	0	0-10	40-55	20-55	10-25	0-10	0-33	NP-12
		GW									
				ļ				!			!
		1									
		 	 			 	1			 	
36-50		 ac-am gp-am	 ⊼_1 ⊼_2_4	0-10	 5_15	 30_60	 E-E0	5-35	1 0-20	 0-27	 NTD _ 1.0
30-33			A-1, A-2-4 	0-10	3-13	30-00 	3-30	3-33	0-20	0-27	MF-10
		311, 511 522	 	1		 	İ	i	İ	 	l I
				i	İ	! 	İ	i	İ		i
	very gravelly			i	İ	İ	İ	i	İ	İ	İ
	loamy sand		İ	į	İ	İ	İ	İ	İ	į	į
59-80	Very cobbly	GC-GM, SP-SM,	A-1, A-2-4	0-10	20-35	5-65	5-35	5-30	0-10	0-23	NP-6
	sand,	GW, SW-SM									
	extremely										
	gravelly sand										
0.6	1251-						100				
		1	!	1	1 .				1	!	
		1			1 .						1
43-0U		om, or-om, or 	A-3, A-2-4 	0	0	 30 - 100	102-100	- U-33	0-30	 U-18	MP-2
		 	! 	İ	 	! 	i i	i	i i	 	İ
	2-5 5-17 17-32 32-36 36-59 59-80	0-2 Highly decomposed plant material 2-5 Very gravelly loamy sand, very gravelly coarse sandy loam 5-17 Very gravelly loamy coarse sand, very gravelly coarse sandy loam 17-32 Very gravelly coarse sand, extremely gravelly sand, extremely gravelly coarse sand 32-36 Extremely gravelly coarse sand 32-36 Extremely gravelly coarse sand 32-36 Very gravelly loamy coarse sand 36-59 Very gravelly loamy coarse sand 59-80 Very cobbly sand, extremely gravelly sand, very gravelly loamy sand 59-80 Very cobbly sand, extremely gravelly sand extremely gravelly sand	0-2 Highly PT decomposed plant material 2-5 Very gravelly GC-GM, SP-SM, loamy sand, very gravelly coarse sandy loam S-17 Very gravelly GC-GM, SP-SM, loamy coarse GM, SW-SM sand, very gravelly coarse sandy loam 17-32 Very gravelly GC-GM, SP-SM, coarse sand, GW, SW-SM extremely gravelly gravelly gravelly GC-GM, SP-SM, extremely gravelly GC-GM, SW-SM extremely gravelly GW coarse sand 32-36 Extremely GC-GM, SW-SM, gravelly loamy coarse sand 36-59 Very gravelly GC-GM, SP-SM, extremely gravelly sand, very gravelly loamy sand SP-SM extremely gravelly sand, very gravelly loamy sand SP-SM SM-SM extremely gravelly sand, GW, SW-SM extremely gravelly sand GC-GM, SP-SM, sand, GW, SW-SM extremely gravelly sand GC-GM, SP-SM, SAND,	O-2 Highly PT A-8 decomposed plant material	0-2 Highly decomposed plant material composed plant material composed plant material composed plant material composed plant material composed plant material composed plant material composed plant material composed compo	0-2 Highly PT A-8 0 0	0-2 Highly PT	0-2 Highly PT	0-2 Highly decomposed plant material 2-5 Very gravelly GC-GM, SP-SM, A-1, A-2-4 0 5-20 40-75 25-70 15-50 loamy sand, very gravelly GC-GM, SP-SM, A-1, A-2-4 0 5-20 40-75 25-70 15-50 loamy sand, very gravelly loam 5-17 Very gravelly GC-GM, SP-SM, A-1, A-2-4 0 5-20 40-70 25-60 5-45 loamy coarse sandy loam 6-25 sand, very gravelly loam 6-25 sand, extremely gravelly GC-GM, SP-SM, A-1, A-2-4 0 0 0-20 40-70 15-55 5-40 loamy coarse sand, GW, SW-SM extremely gravelly sand, extremely gravelly loamy coarse sand 8-2-36 Extremely GC-GM, SP-SM, A-1, A-2-4 0 0-10 40-55 20-55 10-25 gravelly loamy coarse sand 8-59 Very gravelly GC-GM, SP-SM, A-1, A-2-4 0 0 0-10 40-55 20-55 10-25 sand 8-25 sand	0-2 Highly PT A-8 0 0 100 100 100 90-100	0-2 Highly

Table 15.--Engineering Index Properties--Continued

Table 15.--Engineering Index Properties--Continued

		1	CIUDDI	fication	Fragi	ments		rcentag	_	-	!	!
Map symbol	Depth	USDA texture			-			sieve n	umber			Plas-
and soil name			 Unified	AASHTO	>10	3-10	 4	10	40	200	limit	ticity
<u>_</u>	In	1	Unitied	AADIIIO	Pct	Pct	<u>-</u>	1	10	1 200	Pct	Index
301:		İ		j	į	į	į	į	į	j	į	į
Udorthents	0-79	Sandy loam,	SC-SM	A-4, A-2-4	0-5	0-10	90-100	85-100	50-85	25-55	20-36	6-17
		fine sandy										ļ
		loam				 	 	 				
Udipsamments	0-79	Sand, loamy	SP, SP-SM	A-3, A-2-4	0	0	100	 90-100	45-70	0-15	0-23	NP-6
į		sand		į	j	į	į	į	j	i	į	į
						[[[1		
302:	0 51	363-						100	100			
Histosols		Muck Variable	PT 	A-8	0	0 	100	100	100	90-100		NP
 	31-80	variable					i	i				
Aquents	0-79	Variable	CL		0-1	0-1	85-100	75-95	65-85	50-70		i
!		!				[[
303:												
Aquents	0-79	Variable	CL		0-1	0-1	85-100	75-95	65-85	50-70		
Dumps, stamp					1		İ	l I				
sand	0-80	Sand	SW-SM	A-2-4, A-3	0	0	100	100	45-70	5-15	0-18	NP-2
310.												
Dumps, mine							 	 			 	
311:					İ	 	l I	l I	 			
Dumps, stamp				į	i	i	İ	İ	i	i	İ	İ
sand	0-80	Sand	SW-SM	A-2-4, A-3	0	0	100	100	45-70	5-15	0-18	NP-2
312. Pits							 	 			 	
rics					i i	 	 	l I	! 	i i	 	
313.				i	İ		İ	İ	i	i		İ
Dumps, sawdust		İ		j	Ì	ĺ	ĺ	ĺ	ĺ	İ	İ	
					1				!			ļ
W. Water					ļ			[
Macer		1	1		1	1			1	!	1	1

Table 16.--Physical Properties of the Soils

(Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Wind erodibility index" apply only to the surface layer)

Map symbol	Depth	 Clay	 Moist	Permea-	 Available	 Linear	Erosi	on fac	tors		Wind erodi-
and soil name			bulk	bility	water	extensi-			_	bility	
		<u> </u>	density	(Ksat)	capacity	bility	K	Kf	T	group	index
	In	Pct	g/cc	In/hr	In/in	Pct		 			
2:		 			 	 		 	l I		
Lupton	0-8		 0.10-0.35	0.20-6.00	0.35-0.45		i		5	2	134
	8-80		0.10-0.35		0.35-0.45	1	i		ĺ	İ	1
		İ	j i		İ	İ	į	į	į	į	į
Tawas	0 - 6		0.30-0.55		0.35-0.45				4	2	134
	6-25		0.30-0.55		0.24-0.45	1					
	25-80	0-5	1.40-1.65	6.00-20.00	0.03-0.10	0.0-2.9	.15	.15			
3:		 			 	1		 	 		
Dawson	0-6	l I	 0.05-0.15	6.00-20.00	 0.55-0.65			 	 2	 7	 38
<i>Da</i> # <i>D</i> 011	6-38		0.20-0.30			1	i			,	30
	38-80		1.50-1.65			1	.15	.15	İ	İ	i
		İ	j i		İ	İ	į	į	į	į	į
Loxley	0-5		0.05-0.15	6.00-20.00	0.55-0.65				5	5	56
	5-26		0.20-0.30			1					[
	26-45		0.20-0.30		0.35-0.45	1					
	45-80		0.10-0.20	0.60-6.00	0.45-0.55						
6:		 	 		 	 		 	 		
Skandia	0-5	 	 0.10-0.20	0.60-6.00	 0.45-0.55		i	 	 2	5	56
bkandia	5-33	ı	0.20-0.30	0.60-6.00	0.35-0.45				4	3	50
	33-41	 							i		i
	41-80		i i	0.00-0.20			i		İ	İ	i
j		j	į į		İ	İ	į	j	İ	į	į
Burt	0-4			0.20-6.00		1			2	2	134
	4-6			6.00-20.00		1	.15	.15			
	6-12			6.00-20.00		1	.15	.15	ļ		
	12-17 >17	0-10	1.50-1.70 	6.00-20.00	0.04-0.10	0.0-3.0	.15	.15			
	>17	 			 			 	l I	 	
10:		 	i		 		i	 	i		
Cathro	0-16		0.15-0.30	0.20-6.00	0.35-0.45		j	i	5	2	134
j	16-34	i	0.20-0.30	0.20-6.00	0.35-0.45	j	j	i	İ	į	į
	34-80	5-25	1.70-1.80	0.60-2.00	0.16-0.18	0.0-3.0	.20	.28			
						!	[!		
Sabattis	0-8				0.35-0.45				5	5	56
	8-12		1.25-1.60 1.25-1.60		0.08-0.10		.15	.37			
	12-17 17-32		1.25-1.60 1.55-1.75		0.13-0.15	1	.15	.43	l I	 	
	32-37		1.55-1.75 1.55-1.75		0.12-0.14	1	1.10	.20	l I	 	
	37-80		1.55-1.75		0.07-0.09	1	.05	.20			i
						ĺ	i		İ	İ	İ
13:		j	į į		İ	İ	į	j	İ	į	į
Tawas	0 - 6				•				4	2	134
	6-25	'		0.20-6.00					!		!
	25-80	0-5	1.40-1.65	6.00-20.00	0.03-0.10	0.0-2.9	.15	.15			
Deford	0-6	 	20-0-30	0.20-6.00	 0 35-0 45	 		 -	 5	 1	220
D01014-2	6-8			6.00-20.00	•		1			*	220
	8-80	'		6.00-20.00				'	i		i
						į	į	İ	İ	į	į
15B:			l İ								
Dawson	0-6	'		6.00-20.00					2	7	38
						1	1	1			1
	6-38 38-80			0.20-6.00 6.00-20.00			.15	 .15			

Table 16.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	 Clay 	 Moist bulk	Permea- bility	 Available water	Linear extensi-	Erosi	on fac	tors		Wind erodi- bility
and soll name		l I	density	(Ksat)	capacity		K	 Kf	 T	group	
	In	Pct	g/cc	In/hr	In/in	Pct	Ī	l	<u> </u>		l
		į	j j		į	İ	i	i	į	İ	į
L5B:											
Croswell	0-1		0.20-0.30		1				5	1	220
	1-11		1.30-1.55		1		.15	.15			
	11-21	1	1.40-1.60		1		.15	.15			
	21-34			6.00-20.00	1		.15	.15			
	34-80	0-5	1.50-1.65	6.00-20.00	0.05-0.07	0.0-2.9	.15	.15			
20E. Rock outcrop		 	 		 	 		 	 	 	
		j	j i		İ	j	i	İ	İ	į	İ
21G: Rock outcrop.		 	 		 	 		 	 		
Arcadian	0-3	 	 0.20-0.30	0.20-6.00	 0.35-0.45	 		 	 2	8	 0
	3-5	1	1.30-1.60		1		.17	.24	i	i *	į
	5-12	1	1.35-1.70		0.06-0.11		.17	.24	i	i	i
	12-22								<u> </u>	İ	İ
202											
39A: Betsy Bay	0-1	 	 0 20-0 30	0.20-6.00	 0 35-0 45	 		 	 4	1	 250
Decay Day	1-18	1		6.00-20.00			.10	.15	* 	-	230
	18-26	1	1.30-1.60		1		1.10	.15	 	i i	i i
	26-43	1	1.50-1.60				1.10	.15	 	İ	i
	>43			0.00-0.20						İ	İ
		<u> </u>					-				
Burt	0 - 4			0.20-6.00	t .				2	2	134
	4-6			6.00-20.00			1.15	.15			
	6-12			6.00-20.00			.15	.15			
	12-17 >17	0-10	1.50-1.70 	6.00-20.00	0.04-0.10	0.0-3.0	.15	.15	 	l i	l I
	/ /1/	 							 		
Deford	0-6	i	0.20-0.30	0.20-6.00	0.35-0.45		j	i	5	1	220
	6-8	0-5	1.35-1.60	6.00-20.00	0.05-0.07	0.0-2.9	.17	.17	İ	İ	į
	8-80	0-5	1.50-1.65	6.00-20.00	0.05-0.07	0.0-2.9	.15	.15	ĺ	İ	ĺ
47A:		 			1	l I			 		
Zeba	0-2	 	 0.20-0.30	0.20-6.00	 0.35-0.45	 		 	 4	3	 86
	2-3	1	1.30-1.65		1		.24	.24	İ	İ	i
	3 - 9	4-18	1.35-1.70	0.60-2.00	0.15-0.17	0.0-2.9	.24	.24	İ	i	į
	9-14	3-18	1.30-1.70	0.60-2.00	0.14-0.16	0.0-2.9	.20	.20	İ	İ	į
	14-25	3-18	1.30-1.70	0.60-2.00	0.16-0.18	0.0-2.9	.17	.24	İ	İ	į
j	25-27		i i	0.00-0.20					ĺ	İ	ĺ
	>27			0.00-0.20							ļ
Jacobsville	0-5	l I	 0.20-0.30	0.20-6.00	 0.35-0.45	 		 	 4	3	 86
	5-12	1		0.60-2.00			1	.24	i	i	
	12-20	1		0.60-2.00				.24	i	İ	İ
	20-21	1		0.60-2.00	1			.24	i	i	İ
	21-22								i	i	İ
	>22	i	i i	0.00-0.20			i	i	İ	į	İ
F1.0											
51C: Arcadian	0-3	 _	 0 20-0 30	0.20-6.00	 0 35-0 45	 		 	 ၁	8	 0
cauran	3-5			0.60-2.00			1		, 4	3	0
	5-12			0.60-2.00			1		I I		I I
	12-22					0.0-2.9		.24	I I		I I
		1			I I	I I	1	1	1	I.	1

Table 16.--Physical Properties of the Soils--Continued

Man numbal	D+h		16-3	D			Erosi	on fac	tors		Wind
Map symbol and soil name	Depth	Clay	Moist bulk	Permea- bility	Available water	Linear extensi-	ļ	1		erodi-	
and soll name		l I	density	(Ksat)	capacity	bility	 K	 Kf		bility group	. –
	In	Pct	g/cc	In/hr	In/in	Pct			<u> </u>		l
										[
51C: Nipissing	0-1	 	 0.05-0.15	6.00-20.00	 0.55-0.65	 		 	 4	 8	 0
-	1-3	i	0.20-0.30	0.20-6.00	0.35-0.45	i	j	j	İ	į	İ
	3 - 4	5-18	1.30-1.60	6.00-20.00	0.04-0.06	0.0-2.9	.24	.05	ĺ	ĺ	
	4-20			6.00-20.00			.24	.05			
	20-29			6.00-20.00						[
	29-35			6.00-20.00			.24				
	35-39 >39	0-10	1.35-1.70 	>20.00	0.01-0.01	0.0-2.9	.02	.02	 	 	
							į	į		İ	ĺ
Rock outcrop.		 	 		 	 		 	 	 	
51E:			 			! 	İ			İ	
Arcadian	0-3			0.20-6.00			1		2	8	0
	3-5			0.60-2.00				.24		!	
	5-12			0.60-2.00			.17				
	12-22	 	 		 	 		 	 	 	
Nipissing				6.00-20.00			1	i	4	8	0
	1-3			0.20-6.00	t .					[
	3-4			6.00-20.00	1		.24				
	4-20 20-29			6.00-20.00 6.00-20.00			.24	.05	 		
	29-35			6.00-20.00	1		.24		 	 	l I
	35-39		1.35-1.70		0.01-0.01		.02		 	İ	
	>39	i								İ	
Rock outcrop.		 	 		 	 		 	 	 	
52C:		 	 		 	 		 	 	 	
Arcadian	0-3		0.20-0.30	0.20-6.00	0.35-0.45				2	8	0
	3-5			0.60-2.00			.17		İ	ĺ	İ
	5-12	4-18	1.35-1.70	0.60-2.00	0.06-0.11	0.0-2.9	.17	.24	İ	į	İ
	12-22										
Dishno	0-1	l I	 0.10-0.20	0.60-6.00	 0.45-0.55	 		 	 4	 4	 86
2230	1-3			0.60-2.00			.28	.37	-	i -	
	3-4			0.60-2.00					İ	İ	İ
	4-8	4-18	1.35-1.70	0.60-2.00	0.16-0.18	0.0-2.9	.32	.32	İ	į	j
	8-26	4-18	1.35-1.70	0.60-2.00	0.16-0.18	0.0-2.9	.32	.32			
	26-31			2.00-6.00	1		.10	.20			
	31-42	3-15		2.00-6.00	0.08-0.10	0.0-2.9	1 .10	.20			
	>42	 	 	0.01-0.06		 		 	 	 	
Rock outcrop.		 	j j			 	į i	 	 	j I	
52E:		j	j i		j	İ	İ	İ	İ	į	į
Arcadian	0-3			0.20-6.00	1				2	8	0
	3-5			0.60-2.00	1					!	
	5-12		1.35-1.70 	0.60-2.00	0.06-0.11	0.0-2.9	1 .17		 		
	12-22	 	 		 	 		 	 	 	
Dishno	0-1	i	0.10-0.20	0.60-6.00	0.45-0.55	i			4	4	86
	1-3			0.60-2.00						ļ	
	3-4			0.60-2.00							
	4-8			0.60-2.00							
	8-26 26-31			0.60-2.00 2.00-6.00					 	[[l I
	31-42			2.00-6.00					l I	 	l I
	>42			0.01-0.06							
Rock outcrop.											
			1								

Table 16.--Physical Properties of the Soils--Continued

Map symbol	Depth	 Clay	 Moist	Permea-	 Available	Linear	Erosi	on fac	tors	Wind erodi-	Wind erodi-
and soil name	2 op om		bulk density	bility (Ksat)	water capacity	extensi-	 K	 Kf	 T	bility group	bility
	In	Pct	g/cc	In/hr	In/in	Pct			-	 	Index
535											
53E: Arcadian	0-3	 	 0.20-0.30	 0.20-6.00	 0.35-0.45	 			 2	 8	 0
	3-5		1.30-1.60		0.06-0.11		.17	.24	-		
į	5-12	4-18	1.35-1.70	0.60-2.00	0.06-0.11	0.0-2.9	.17	.24	į	į	į
	12-22										
 Michigamme	0-1	 	 0.20-0.30	 0.20-6.00	 0.35-0.45	 			 4	 1	 310
. 3.	1-4		1.25-1.60		0.08-0.15		.17	.24	İ	İ	
į	4-10	3-15	1.35-1.60	0.60-2.00	0.07-0.22	0.0-2.9	.28	.37	İ	į	İ
	10-22			0.60-2.00			.28	.37			
	22-30 >30	3-10	1.50-1.85 	0.60-2.00	0.05-0.16 	0.0-2.9	.20	.28 	 	[[
Rock outcrop.		<u> </u> 		 			į Į	į Į		į Į	į Į
53F:		 	 	 	 	 		 	 		
Arcadian	0-3		0.20-0.30	0.20-6.00	0.35-0.45				2	8	0
į	3-5	4-15	1.30-1.60	0.60-2.00	0.06-0.11	0.0-2.9	.17	.24	İ	į	İ
	5-12	1	1.35-1.70	1	0.06-0.11		.17	.24			
	12-22		 						 		
Michigamme	0-1	 	0.20-0.30	0.20-6.00	0.35-0.45	 			4	1	310
į	1-4	3-10	1.25-1.60	0.60-2.00	0.08-0.15	0.0-2.9	.17	.24	İ	į	į
	4-10	3-15	1.35-1.60	0.60-2.00	0.07-0.22	0.0-2.9	.28	.37			
	10-22			1	0.07-0.22		.28	.37			
	22-30	1		0.60-2.00	!	!	.20	.28			
	>30	 	 	 	 	 		 	 	 	
Rock outcrop.		İ		į	į		į	į		į	į
55B:		! 	 	 	 	 		 			
Chocolay	0-2		0.20-0.30	0.20-6.00	0.35-0.45				4	2	134
	2-11			0.60-2.00			.15	.28			
	11-13			0.60-2.00			.10	.24			
	13-18 18-21	1		0.60-2.00			.05	.28			
	>21	4-18	 	6.00-20.00 0.00-0.20		0.0-2.9		.24	 		
1000											
100B: Waiska	0-1	 	 0.05-0.15	6.00-20.00	 0.55-0.65	 			 5	 2	 134
	1-7	1	1.35-1.65	1	0.03-0.11		.15	.15	-	i -	
j	7-23	3-12	1.35-1.70	>20.00	0.03-0.07	0.0-2.9	.05	.10	İ	į	į
	23-35	0-8	1.40-1.65	>20.00	0.01-0.04	0.0-2.9	.05	.10			
	35-60		1.55-1.65		0.01-0.02	•		.10			
	60-80	0-8 	1.55-1.65 	>20.00	0.01-0.02	0.0-2.9 	.02	.10	 	 	
100D:		İ		İ	İ	İ	İ	İ		İ	İ
Waiska	0-1			6.00-20.00					5	2	134
	1-7	1		20.00-28.98			1.15	1.15			
	7-23 23-35			20.00-30.96 20.00-30.76			.05	.10	 		
	35-60			20.00-30.76			.02	.10	 	 	
	60-80	1		20.00-28.98			.02	1.10			
102C:		 	 	 	 	 		 	 	[[
Waiska	0-1		0.05-0.15	6.00-20.00	0.55-0.65				5	2	134
į	1-7		1.35-1.65		0.03-0.11		.15	.15			
	7-23		1.35-1.70		0.03-0.07	•	.05	.10			
	23-35		1.40-1.65		0.01-0.04		.05	.10			
	35-60		1.55-1.65		0.01-0.02		.02	.10			
	60-80	0-8	1.55-1.65	>20.00	0.01-0.02	0.0-2.9	.02	.10		1	I

Table 16.--Physical Properties of the Soils--Continued

Map symbol	Depth	Clay	 Moist	Permea-	 Available	!	Erosi	on fac		erodi-	Wind erodi-
and soil name			bulk	bility	water	extensi-				bility	-
			density	(Ksat)	capacity	bility	K	Kf	T	group	index
	In	Pct	g/cc	In/hr	In/in	Pct		!		!	
102C:											
Garlic	0-1	 	20-0-30 	0.20-6.00	 0.35_0.45			 	 5	 2	 134
Garric	1-7			6.00-20.00			.15	.15	3	4	1 134
	7-13			6.00-20.00			1.15	.15	 	 	
	13-20			6.00-20.00			1.15	.15	 	i	i I
i	20-27			6.00-20.00				.15			
	27-46			6.00-20.00				.15	<u> </u>	i	i
	46-80			6.00-20.00				.15	<u> </u>	i	İ
į		İ	j i		İ	İ	i	i	İ	į	į
102E:		İ	į į		İ	İ	İ	İ	İ	į	į
Waiska	0-1		0.05-0.15	6.00-20.00	0.55-0.65				5	2	134
	1-7	3-15	1.35-1.65	>20.00	0.03-0.11	0.0-2.9	.15	.15			
	7-23	3-12	1.35-1.70	>20.00	0.03-0.07	0.0-2.9	.05	.10			
	23-35	0-8	1.40-1.65	>20.00	0.01-0.04	0.0-2.9	.05	.10			
	35-60	0-8	1.55-1.65	>20.00	0.01-0.02	0.0-2.9		.10			
	60-80	0-8	1.55-1.65	>20.00	0.01-0.02	0.0-2.9	.02	.10			
Garlic	0-1			0.20-6.00					5	2	134
	1-7			6.00-20.00			.15	.15			
	7-13			6.00-20.00				.15			
	13-20			6.00-20.00				.15			
	20-27			6.00-20.00				.15			
	27-46			6.00-20.00		1		.15			
	46-80	0-10	1.55-1.75	6.00-20.00	0.05-0.08	0.0-2.9	.15	.15			
102F:		 			l I	l I			 	 	
Waiska	0-1	l l	 0.05_0.15	6.00-20.00	 0 55_0 65			 	 5	2	 134
waiska	1-7		0.05-0.15 1.35-1.65		0.03-0.65		1.15	.15	3	4	1 134
	7-23		1.35-1.70		0.03-0.11			1 .10	 	 	
i	23-35		1.40-1.65		0.01-0.04			.10			
	35-60		1.55-1.65		0.01-0.02			.10		i	i
i	60-80		1.55-1.65		0.01-0.02			.10		i	İ
i			i i		İ	i	i	İ	İ	i	İ
Garlic	0-1		0.20-0.30	0.20-6.00	0.35-0.45			i	5	2	134
	1-7	0-10	1.30-1.55	6.00-20.00	0.07-0.09	0.0-2.9	.15	.15			
	7-13	0-10	1.60-1.70	6.00-20.00	0.06-0.09	0.0-2.9	.15	.15			
	13-20	0-10	1.60-1.80	6.00-20.00	0.06-0.09	0.0-2.9	.15	.15			
	20-27	0-10	1.60-1.75	6.00-20.00	0.06-0.09	0.0-2.9	.15	.15			
	27-46			6.00-20.00				.15			
	46-80	0-10	1.55-1.75	6.00-20.00	0.05-0.08	0.0-2.9	.15	.15			
							!	!			
110B:											
Shelldrake	0-1			0.60-6.00					5	1	220
	1-6		1.30-1.55		0.04-0.06	•		.15			
	6-13		1.55-1.65		0.04-0.06		.15	.15			
	13-23		1.55-1.65		•	0.0-2.9		.15			
	23-80	U-4±	1.55-1.65	>20.00	0.02-0.04	0.0-2.9	.15	.15	 	 	l I
Croswell	0-1	 	 0 20-0 30	0.20-6.00	 0 35_0 45			 	 5	1	220
CIOSWEII	1-11			6.00-20.00	•		.15	.15]	+	220
	11-21			6.00-20.00	•		1.15	1.15	 	 	
i	21-34			6.00-20.00			.15	.15			
	34-80			6.00-20.00			.15	.15		i	i
									i	i	İ
111B:		İ	į i		İ	i	i	i	i	i	İ
Deer Park	0-1		0.10-0.20	0.60-6.00	0.45-0.55			i	5	1	250
i	1-8			6.00-20.00	•	•	.15	.15	İ	İ	İ
İ	8-17	0-5	1.40-1.60	6.00-20.00	0.06-0.11	0.0-2.9	.15	.15	İ	İ	İ
İ	17-24			6.00-20.00	•		.15	.15			
:	24-35	0-5	1.40-1.55	6.00-20.00	0.05-0.09	0.0-2.9	.15	.15	I		I
	24-33					1			1	1	

Table 16.--Physical Properties of the Soils--Continued

Y				D =		 	Erosi	on fac	tors		Wind
Map symbol	Depth	Clay	Moist	Permea-	Available	!		1			erodi-
and soil name		 	bulk	bility	!	extensi-	177	77.5		bility	: -
			density	(Ksat)	capacity	bility	K	Kf	T	group	Index
	In	Pct	g/cc	In/hr	In/in	Pct			 		
111D:		l I			 	 	l I	İ	 	l I	
Deer Park	0-1	i	0.10-0.20	0.60-6.00	0.45-0.55				5	1	250
į	1-8	0-5	1.40-1.60	6.00-20.00	0.06-0.11	0.0-2.9	.15	.15	i	İ	İ
j	8-17	0-5	1.40-1.60	6.00-20.00	0.06-0.11	0.0-2.9	.15	.15	ĺ	Ì	ĺ
	17-24	0-5	1.40-1.60	6.00-20.00	0.06-0.09	0.0-2.9	.15	.15			
	24-35			6.00-20.00			.15	.15			
	35-80	0-5	1.40-1.55	6.00-20.00	0.05-0.08	0.0-2.9	.15	.15		ļ	
111E:		 			l I				 		
Deer Park	0-1	l I	 0 10-0 20	0.60-6.00	 0 45_0 55	 		 	 5	1 1	250
Deel Falk	1-8			6.00-20.00			.15	.15]	-	230
	8-17			6.00-20.00			.15	.15		i	i
	17-24			6.00-20.00			.15	.15	<u> </u>	ì	i
i	24-35			6.00-20.00			.15	.15	i	İ	i
į	35-80	0-5	1.40-1.55	6.00-20.00	0.05-0.08	0.0-2.9	.15	.15	į	į	į
į			l i								
111F:		!	[!	!		[!
Deer Park	0-1			0.60-6.00	1	1			5	1	250
	1-8			6.00-20.00	1	1	.15	.15		ļ	!
	8-17			6.00-20.00			.15	.15		ļ	
	17-24			6.00-20.00			1.15	.15			
	24-35 35-80			6.00-20.00 6.00-20.00			1.15	.15			
	33-60	U-5	1.40-1.55	6.00-20.00	0.05-0.08	0.0-2.9	.15	.15	l I		
112C:		! 			İ	İ	i	İ	! 	i	i
Deer Park	0-1	i	0.10-0.20	0.60-6.00	0.45-0.55	i			5	1	250
į	1-8	0-5	1.40-1.60	6.00-20.00	0.06-0.11	0.0-2.9	.15	.15	İ	İ	İ
j	8-17	0-5	1.40-1.60	6.00-20.00	0.06-0.11	0.0-2.9	.15	.15	ĺ	Ì	ĺ
	17-24	0-5	1.40-1.60	6.00-20.00	0.06-0.09	0.0-2.9	.15	.15			
	24-35			6.00-20.00			.15	.15			
	35-80	0-5	1.40-1.55	6.00-20.00	0.05-0.08	0.0-2.9	.15	.15		!	
G	0.1			0 00 6 00							
Croswell	0-1 1-11			0.20-6.00 6.00-20.00				 .15	5	1	220
	11-21			6.00-20.00			1.15	.15	 	1	
	21-34			6.00-20.00			1.15	1.15	 	İ	
	34-80			6.00-20.00			.15	.15	<u> </u>	i	i
		İ	j i		İ	İ	i	İ	İ	İ	i
113C:		ĺ	į į		ĺ		ĺ	ĺ	ĺ	Ì	ĺ
Rubicon	0-1			0.20-6.00					5	1	220
	1-7			6.00-20.00			.15	.15			
	7-34			6.00-20.00			.15	.15		ļ	!
	34-44			6.00-20.00	!	!	.15	.15			
	44-80	0-5	1.50-1.60	6.00-20.00	0.05-0.08	0.0-2.9	.15	.15	 		
Croswell	0-1	l I	 0 20-0 30	0.20-6.00	 0 35-0 45	 		 	 5	1	220
0100#011	1-11			6.00-20.00			.15	.15]	-	220
	11-21			6.00-20.00				.15	<u> </u>	ì	i
i	21-34			6.00-20.00			.15	.15	i	İ	i
į	34-80			6.00-20.00			.15	.15		İ	İ
İ			ļ i					[
120B:		ļ					ļ	ļ			
Garlic	0-1			0.20-6.00					5	2	134
	1-7			6.00-20.00			.15	.15		1	
	7-13			6.00-20.00 6.00-20.00			.15	.15	 	1	
	13-20			6.00-20.00	1	1	1.15	15	l I	1	1
	20-27 27-46			6.00-20.00			1.15	.15 .15	 	1	
	46-80			6.00-20.00			1.15	.15	I I		1
	-0-00	1 2-10	1	3.00-20.00	10.02-0.00	0.0-2.9	1 . 10	1 . 10	1	1	1

Table 16.--Physical Properties of the Soils--Continued

Map symbol	Depth	 Clay	 Moist	Permea-	 Available	1	Erosi	on fac	Lors	erodi-	Wind erodi-
and soil name			bulk	bility	water	extensi-				bility	bility
			density	(Ksat)	capacity	bility	K	Kf	Т	group	index
	In	Pct	g/cc	In/hr	In/in	Pct					
120D:		 	 		 	 		 	 	l	
Garlic	0-1		0.20-0.30	0.20-6.00	0.35-0.45				5	2	134
j	1-7	0-10	1.30-1.55	6.00-20.00	0.07-0.09	0.0-2.9	.15	.15	ĺ	İ	ĺ
	7-13	0-10	1.60-1.70	6.00-20.00	0.06-0.09	0.0-2.9	.15	.15			
	13-20			6.00-20.00			.15	.15			
	20-27			6.00-20.00			.15	.15			!
	27-46			6.00-20.00			.15	.15			
	46-80	0-10	1.55-1./5 	6.00-20.00	0.05-0.08	0.0-2.9	1.15	.15	 	 	
120E:		i İ	i i				i			İ	İ
Garlic	0-1	i	0.20-0.30	0.20-6.00	0.35-0.45	i		i	5	2	134
	1-7			6.00-20.00			.15	.15			
	7-13			6.00-20.00			.15	.15			
	13-20			6.00-20.00			.15	.15			
	20-27			6.00-20.00			.15	.15			
	27-46 46-80			6.00-20.00	1	1	1.15	.15 .15	 		
	40-00	0-10	1.55-1.75	6.00-20.00	0.05-0.08	0.0-2.9	.15	.13	 	 	
125A:		İ	i i		İ		i			İ	İ
Croswell	0-1		0.20-0.30	0.20-6.00	0.35-0.45				5	1	220
	1-11	0-5	1.30-1.55	6.00-20.00	0.06-0.09	0.0-2.9	.15	.15			
	11-21			6.00-20.00			.15	.15			
	21-34			6.00-20.00	t .		.15	.15			
	34-80	0-5	1.50-1.65	6.00-20.00	0.05-0.07	0.0-2.9	.15	.15	 		
Au Gres	0 - 4	 	 0.20-0.30	0.20-6.00	0.35-0.45	 		 	 5	1	220
	4-13			6.00-20.00			.10	.15	-	i -	
	13-19			6.00-20.00			.10	.15	İ	İ	İ
j	19-28	0-8	1.30-1.55	6.00-20.00	0.07-0.10	0.0-2.9	.10	.15	ĺ	İ	ĺ
	28-34	0-8	1.50-1.70	6.00-20.00	0.05-0.07	0.0-2.9	.10	.15			
	34-80	0-8	1.50-1.70	6.00-20.00	0.05-0.07	0.0-2.9	.10	.15			
126B:		 	 		 	 		 	 		
Au Gres	0 - 4	 	 0.20-0.30	0.20-6.00	0.35-0.45	 		 	 5	1	220
	4-13			6.00-20.00			.10	.15	-	i -	
	13-19	0-8	1.30-1.55	6.00-20.00	0.07-0.10	0.0-2.9	.10	.15	İ	İ	į
	19-28	0-8	1.30-1.55	6.00-20.00	0.07-0.10	0.0-2.9	1.10	.15			
	28-34			6.00-20.00			.10	.15			
	34-80	0-8	1.50-1.70	6.00-20.00	0.05-0.07	0.0-2.9	.10	.15			
Deford	0-6	 	 0.20-0.30	0.20-6.00	 0.35-0.45	 		 	 5	1	 220
201014	6-8			6.00-20.00			.17	.17		-	===
	8-80			6.00-20.00			.15	.15	İ	İ	İ
		ĺ	į į				İ	ĺ	ĺ	İ	ĺ
Croswell	0-1			0.20-6.00					5	1	220
	1-11	1		6.00-20.00	1	1	.15	.15			!
	11-21			6.00-20.00			.15	1.15			
	21-34 34-80			6.00-20.00	1	1	1.15	.15 .15	 		
	31-00	0-3	1.50-1.65	0.00-20.00	0.03-0.07	0.0-2.9	.13	.13	 	İ	l I
127A:		İ	j i		į	į	į	į	İ	į	į
Au Gres	0 - 4			0.20-6.00	1	1			5	1	220
	4-13			6.00-20.00	1	1	.10	.15			ļ
	13-19	1		6.00-20.00	1	1	1.10	.15			
	19-28			6.00-20.00			1.10	.15			
	28-34 34-80			6.00-20.00			1.10	.15 .15	 	1	I I
	01 00			3.00 20.00							<u> </u>
Kinross	0-2		0.05-0.15	6.00-20.00	0.55-0.65	i	i	i	5	7	38
	2-6			0.20-6.00							
	6-16			6.00-20.00			.15	.15			ļ
	16-32			6.00-20.00			.15	.15		!	!
	32-80						.15	.15			

Table 16.--Physical Properties of the Soils--Continued

	<u> </u>		1		1	1	Erosi	on fac	tors	Wind	Wind
Map symbol	Depth	Clay	Moist	Permea-	 Available	Linear			0025		erodi-
and soil name			bulk	bility	water	extensi-		I	Ī	bility	
	<u> </u>	i	density	(Ksat)	capacity	bility	K	Kf	т	group	
	In	Pct	g/cc	In/hr	In/in	Pct	Ī	1	<u> </u>		l
	į	į	į i		į	į	İ	į	j	İ	į
130C:	ĺ	ĺ	į į		ĺ	ĺ	İ	ĺ	ĺ	İ	ĺ
Garlic	0-1		0.20-0.30	0.20-6.00	0.35-0.45				5	2	134
	1-7	0-10	1.30-1.55	6.00-20.00	0.07-0.09	0.0-2.9	.15	.15			
	7-13			6.00-20.00			.15	.15			
	13-20			6.00-20.00			.15	.15			
	20-27			6.00-20.00			.15	.15			
	27-46			6.00-20.00			.15	.15			
	46-80	0-10	1.55-1.75	6.00-20.00	0.05-0.08	0.0-2.9	.15	.15			
Alcona	 0-1	 	0 20-0 30	0.20-6.00	 0.35_0.45	 			 5	3	 86
AICONA	1-4			0.60-2.00			.20	.24]	3	00
	4-7			0.60-2.00			.20	.24	 		l I
	7-29			0.60-2.00			1	1.17	 		
	29-40			0.60-2.00			.24	.24	 		
	40-46			0.60-2.00				.24		1	
	46-69			0.60-2.00			.20	.24	 	1	
	69-80			0.60-2.00			.24	.24	İ	i	
									i	ì	İ
130E:	İ	į	<u> </u>		İ	i	i	i	İ	i	į
Garlic	0-1	j	0.20-0.30	0.20-6.00	0.35-0.45		j		5	2	134
	1-7	0-10	1.30-1.55	6.00-20.00	0.07-0.09	0.0-2.9	.15	.15	İ	Ì	į
	7-13	0-10	1.60-1.70	6.00-20.00	0.06-0.09	0.0-2.9	.15	.15	ĺ	İ	ĺ
	13-20	0-10	1.60-1.80	6.00-20.00	0.06-0.09	0.0-2.9	.15	.15	ĺ	İ	ĺ
	20-27	0-10	1.60-1.75	6.00-20.00	0.06-0.09	0.0-2.9	.15	.15			
	27-46	0-10	1.55-1.75	6.00-20.00	0.06-0.09	0.0-2.9	.15	.15			
	46-80	0-10	1.55-1.75	6.00-20.00	0.05-0.08	0.0-2.9	.15	.15			
		[[[!	ļ					
Alcona	0-1			0.20-6.00					5	3	86
	1-4			0.60-2.00			.20	.24	ļ	!	
	4-7			0.60-2.00			.20	.24			
	7-29			0.60-2.00			1.15	.17			
	29-40			0.60-2.00			.24	.24			
	40-46			0.60-2.00			1	.24			
	46-69 69-80		1.50-1.70	0.60-2.00 0.60-2.00	!		.20	.24	 		
	03-80	0-8	1.30-1.70	0.00-2.00	0.08-0.20	0.0-2.9	•24	.2.4	 	i	
133C:	İ	İ	i i		İ	i	i	i	i	ì	İ
Keweenaw	0-1	j	0.20-0.30	0.20-6.00	0.35-0.45	i	j	i	5	2	134
	1-11	3-15	1.45-1.65	0.60-6.00	0.09-0.13	0.0-2.9	.17	.17	İ	Ì	į
	11-17	3-15	1.45-1.80	0.60-6.00	0.09-0.13	0.0-2.9	.17	.17	ĺ	İ	ĺ
	17-39	4-18	1.45-1.75	0.60-6.00	0.08-0.12	0.0-2.9	.15	.17			
	39-61	4-18	1.50-1.70	0.60-6.00	0.04-0.07	0.0-2.9	.24	.24			
	61-80	3-18	1.50-1.70	0.60-6.00	0.08-0.10	0.0-2.9	.17	.17]	
									_		
Garlic	0-1			0.20-6.00					5	2	134
	1-7			6.00-20.00			1.15	.15			
	7-13			6.00-20.00 6.00-20.00				.15			
	13-20			6.00-20.00			1.15	.15	 		
	20-27 27-46			6.00-20.00			1.15	.15	 		l I
	46-80			6.00-20.00	t .		1.15	.15	l I		l I
	40-00	0-10		3.00-20.00		0.0-2.9	.13	.13		1	i I
133E:	İ	İ				İ	i	i	<u> </u>	i	İ
Keweenaw	0-1		0.20-0.30	0.20-6.00	0.35-0.45				5	2	134
	1-11			0.60-6.00	1		.17	.17	-	i -	,
	11-17			0.60-6.00	1		1.17	.17	i	i	i
	17-39			0.60-6.00			.15	.17	i	i	İ
					0.04-0.07		.24	.24	i	i	İ
	39-61	4-18	1.30-1.70	0.60-6.00	0.04-0.07				1		
	39-61 61-80			0.60-6.00	1		.17	.17	 		İ

Table 16.--Physical Properties of the Soils--Continued

Map symbol	Depth	 Clay	Moist	Permea-	 Available	1	Erosi	on fac	tors	erodi-	
and soil name		 	bulk density	bility (Ksat)	water capacity	extensi- bility	 K	 Kf	 •••	bility	
	In	Pct	g/cc	(Ksat) In/hr	capacity In/in	Pct	1	 KT	<u> </u>	 group	Turex
			9/00		111/111			! 	 		
133E:		į	j i		İ	İ	i	į	į	į	į
Garlic	0-1		0.20-0.30	0.20-6.00	0.35-0.45				5	2	134
	1-7			6.00-20.00			.15	.15		!	!
	7-13			6.00-20.00			1.15	.15			
	13-20 20-27			6.00-20.00 6.00-20.00			1.15	.15 .15	 		
	27-46			6.00-20.00			1.15	1 .15	 	1	
	46-80			6.00-20.00			.15	.15	<u> </u>	i	i
j		j	j i		j	İ	İ	į	İ	į	İ
133F:		<u> </u>				<u> </u>	-	ļ		!	!
Keweenaw	0-1			0.20-6.00					5	2	134
	1-11			0.60-6.00			17	.17			
	11-17 17-39		1.45-1.80	0.60-6.00 0.60-6.00			1.17	.17 .17	 	l I	l I
	39-61			0.60-6.00			.24	.24	 	l I	l I
	61-80		1.50-1.70				.17	.17	<u> </u>	i	i
		į	j i		İ	İ	İ	į	į	į	į
Garlic	0-1		0.20-0.30	0.20-6.00	0.35-0.45				5	2	134
	1-7			6.00-20.00			.15	.15			
	7-13			6.00-20.00			.15	.15		ļ	!
	13-20			6.00-20.00			1.15	.15			
	20-27 27-46			6.00-20.00			.15	.15			
	46-80			6.00-20.00 6.00-20.00			1.15	.15 .15	l I	1	
	10 00	0 10		0.00 20.00			.13	.13	! 		
136B:		į	j i		İ	İ	İ	į	į	į	į
Borgstrom	0-1		0.20-0.30	0.20-6.00	0.35-0.45				5	1	220
	1-8			6.00-20.00			.15	.15			
	8-11			0.60-6.00			.15	.15		ļ	
	11-18			0.60-6.00			.15	.15			
	18-21 21-24			6.00-20.00 6.00-20.00			1.15	.15 .15	 	1	
	24-80			0.60-6.00			.28	.28	 	l I	l I
								İ		İ	İ
Ingalls	0 - 4	j	0.20-0.30	0.20-6.00	0.35-0.45	i	j	j	5	2	134
	4 - 5	0-8	1.20-1.55	6.00-20.00	0.06-0.09	0.0-3.0	.15	.15			
	5-14			6.00-20.00		1	.15	.15			
	14-16			6.00-20.00			.15	.15		ļ	!
	16-35			6.00-20.00			1.15	.15			
	35-80	0-15	1.65-1.80	0.20-0.60	0.14-0.22	0.0-3.0	.43	.43	 	l I	
142C:		 	 		 	 	1	l I	 	l I	i İ
Wallace	0 - 4		0.20-0.30	0.20-6.00	0.35-0.45		j		4	1	220
j	4 - 5			6.00-20.00			.15	.15	İ	İ	İ
	5-22			6.00-20.00			.15	.15			
	22-31			0.60-6.00		1	.15	.15			[
	31-37			0.60-6.00		1	.15	.15			ļ
	37-62			6.00-20.00			.15	.15		1	ļ
	62-74 74-80			6.00-20.00 6.00-20.00			1.15	15	 		
	74-80	U-5	00.1-c#.	3.00-20.00	0.05-0.08 	0.0-2.9 	.15	.15 	 		
Rubicon	0-1	 	0.20-0.30	0.20-6.00	0.35-0.45			 	 5	1	220
	1-7			6.00-20.00			.15	.15	i	İ	İ
	7-34			6.00-20.00			.15	.15	İ	İ	
	34-44			6.00-20.00			.15	.15		Ì	

Table 16.--Physical Properties of the Soils--Continued

	_			_			Erosi	on fac	tors	Wind	
Map symbol	Depth	Clay	Moist		Available		ļ			erodi-	
and soil name			bulk	bility	water	extensi-			_	bility	
		<u> </u>	density	(Ksat)	capacity	·	K	Kf	T	group	Index
	In	Pct	g/cc	In/hr	In/in	Pct	l I	 	 		
L42F:		İ			 		i	İ			
Wallace	0 - 4		0.20-0.30	0.20-6.00	0.35-0.45				4	1	220
	4 - 5	0-5	1.35-1.45	6.00-20.00	0.07-0.10	0.0-2.9		.15			
	5-22	0-5	1.35-1.45	6.00-20.00	0.07-0.10	0.0-2.9	.15	.15			
	22-31			0.60-6.00				.15			
	31-37			0.60-6.00				.15			
	37-62			6.00-20.00				.15			
	62-74			6.00-20.00			1	.15			!
	74-80	0-5	1.45-1.60	6.00-20.00	0.05-0.08	0.0-2.9	.15	.15	 		
Rubicon	0-1	 	 0.20-0.30	0.20-6.00	0.35-0.45			 	 5	 1	220
	1-7	0-5	1.30-1.55	6.00-20.00	0.06-0.10	0.0-2.9	.15	.15	İ	i	i
	7-34	0-5	1.30-1.60	6.00-20.00	0.05-0.09	0.0-2.9	.15	.15	ĺ	İ	İ
	34-44	0-5	1.50-1.60	6.00-20.00	0.05-0.08	0.0-2.9	.15	.15			
	44-80	0-5	1.50-1.60	6.00-20.00	0.05-0.08	0.0-2.9	.15	.15			
L55C:			 		 			 	 		
Montreal	0-2		 0.20-0.30	0.20-6.00	0.35-0.45			 	4	4	86
	2-6			0.60-2.00			1	.24	į	į .	i
	6-11			0.60-2.00				.24	İ	i	i
	11-20	4-18	1.35-1.70	0.60-2.00	0.11-0.15	0.0-2.9	.15	.24	İ	į	İ
	20-33	2-12	1.80-2.10	0.01-0.06	0.03-0.06	0.0-2.9	.05	.17	ĺ	İ	İ
	33-51	2-12	1.80-2.10	0.01-0.06	0.02-0.05	0.0-2.9	.10	.24			
	51-80	0-12	1.55-1.75	0.60-6.00	0.03-0.06	0.0-2.9	.05	.17			
Paavola	0-2	 	 n 20-0 30	0.20-6.00	 n 35_n 45	 		 	 	 2	134
raavora	2-6		1.30-1.60		0.07-0.10		1	.17	* 	4	131
	6-12		1.40-1.65		0.07-0.10			.17	! 		i
	12-27		1.40-1.65		0.02-0.05			.15	İ	i	i
	27-35			0.01-0.06				.17	İ	i	i
	35-46	4-18	1.80-2.10	0.01-0.06	0.07-0.09	0.0-2.9	.10	.24	İ	į	İ
	46-80	4-18	1.60-1.80	0.01-0.06	0.07-0.09	0.0-2.9	.10	.24		İ	İ
Waiska	0-1			6.00-20.00	 0	 		 		 2	 134
Waiska	1-7		1.35-1.65		0.03-0.11		1	.15	3	4	1 134
	7-23		1.35-1.05		0.03-0.11				l I	 	
	23-35		1.40-1.65		0.01-0.04			1.10	 	i	i
	35-60		1.55-1.65		0.01-0.02		1	1.10	! 		i
	60-80		1.55-1.65		0.01-0.02		.02	.10		İ	
		!					ļ	[!
155E: Montreal	0-2		20-0-30	0.20-6.00	0 35-0 45	 		 	 4	 4	 86
MOIICI eai	2-6			0.60-2.00			1	.24	" 	*	80
	6-11			0.60-2.00					! 	i i	i
	11-20			0.60-2.00					İ	i	i
	20-33			0.01-0.06	•			.17	İ	i	i
	33-51			0.01-0.06	•			.24	İ	i	i
	51-80	0-12	1.55-1.75	0.60-6.00	0.03-0.06	0.0-2.9	.05	.17	ĺ	ĺ	ĺ
Dearrol -	0.0			0 20 6 22	0 25 0 45						134
Paavola	0-2		0.20-0.30 1.30-1.60	0.20-6.00	•				4	2	134
	2-6		1.30-1.60 1.40-1.65		0.07-0.10		.10	.17 .17	 	 	
	6-12 12-27		11.40-1.65		0.02-0.05			1.15	l I	 	
	27-35			0.01-0.06	•		1.10	1.17	 	 	i
	35-46			0.01-0.06	•			.24	 	i	i
	46-80			0.01-0.06			1.10	.24		İ	İ
İ		ļ	ļ i					[!	
Waiska	0-1			6.00-20.00	:				5	2	134
	1-7		1.35-1.65		0.03-0.11		.15	.15			
	7-23		1.35-1.70		0.03-0.07			.10			
	23-35		1.40-1.65		0.01-0.04			.10			
	35-60		1.55-1.65		0.01-0.02		.02	.10			1
	60-80	U-8	1.55-1.65	>20.00	0.01-0.02	0.0-2.9	.02	.10	I	1	1

Table 16.--Physical Properties of the Soils--Continued

Map symbol	Depth	Clay	 Moist	Permea-	 Available	!		on fac		erodi-	
and soil name			bulk	bility	water	extensi-			ļ	bility	
		<u> </u>	density	(Ksat)	capacity	bility	K	Kf	T	group	index
ļ	In	Pct	g/cc	In/hr	In/in	Pct					
 L58A:		 			l I	l I			 		
Arnheim	0-4	 4-18	 1 15-1 60	0.60-6.00	 0 12-0 35	0 0-2 9	.37	.37	 5	2	134
	4-9			0.60-2.00			.43	.43]	_	131
i	9-22			0.60-2.00	1	1	.43	.43	i	i	i
i	22-35			0.60-2.00			.24	.24	İ	i	i
į	35-50	4-18	1.50-1.80	0.60-2.00	0.14-0.16	0.0-2.9	.24	.24	İ	i	İ
į	50-60	3-15	1.50-1.80	2.00-6.00	0.08-0.10	0.0-2.9	.17	.17	į	į	İ
Sturgeon	0-2	 	20-0-30	0.20-6.00	0 35-0 45	 		 	 4	 2	 134
burgeon	2-16	1		0.60-2.00		1	.28	.28	=	2	134
 	16-42			6.00-20.00			.28	.28	 	 	i i
i I	42-48			0.60-2.00	1	1			 	i i	İ
i	48-60			6.00-20.00			.15	.15	İ	İ	İ
i		İ					i .	i	İ	i	i
Pelkie	0 - 6	5-12	1.30-1.55	6.00-20.00	0.11-0.14	0.0-2.9	.17	.17	5	2	134
j	6-22	0-10	1.25-1.65	6.00-20.00	0.08-0.11	0.0-2.9	.17	.17	İ	į	į
į	22-80	0-10	1.25-1.65	6.00-20.00	0.11-0.15	0.0-2.9	.17	.17	İ	İ	ĺ
1617											
161F: Trimountain	0-2	l I	 0 20-0 30	0.20-6.00	 0 35-0 45	 		 	 3	 4	 86
IIIMOdirealii	2-6			0.60-2.00			.15	.24]	*	00
ļ	6-11			0.60-2.00	1	1	1.15	.24	 		i
i	11-20			0.60-2.00			.15	.24	İ		İ
i	20-33	3-18	1.80-2.10	0.01-0.06	0.02-0.05	0.0-2.9	.10	.17	i	i	i
į	33-51	3-18	1.80-2.10	0.01-0.06	0.03-0.06	0.0-2.9	.10	.24	İ	i	i
į	51-80	3-18	1.70-1.90	0.60-6.00	0.02-0.05	0.0-2.9	.10	.17	į	į	İ
Lac La Belle	0-1	 	20-0-30	0.20-6.00	0 35-0 45	 		 	 4	 3	 86
Lac La Belle	1-5			6.00-28.57			.05	1.17	**	3	00
 	5-12			6.00-30.76			.05	1.17	 	 	i i
i	12-36			6.00-31.16			.05	.17	İ		İ
i	36-42			0.01-0.06			.05	.17	i	i	i
i	42-50			0.01-0.06			.05	.17	i	i	i
į	50-62	3-18	1.80-2.10	0.01-0.06	0.04-0.08	0.0-2.9	.05	.24	İ	i	İ
į	62-80	3-15	1.55-1.75	0.60-6.00	0.03-0.07	0.0-2.9	.05	.17	į	į	į
 	0-1	 	 0_05_0_15	6.00-20.00	0 55-0 65	 		 	 5	 2	 134
maiska	1-7		1.35-1.65		0.03-0.11	1	.15	.15]	4	131
ļ	7-23		1.35-1.70		0.03-0.07		.05	1.10	 		i
i	23-35		1.40-1.65		0.01-0.04	1	.05	.10	İ		İ
i	35-60		1.55-1.65		0.01-0.02	1	.02	.10	i	i	i
į	60-80	0-8	1.55-1.65	>20.00	0.01-0.02	0.0-2.9	.02	.10	İ	į	İ
 162F:		 	 		l I	l I					
Trimountain	0-2	! !	 0 20-0 30	0.20-6.00	 0 35_0 45	 		 	 3	4	 86
IIIModificatii	2-6			0.60-2.00			.15	.24	3	*	00
 	6-11			0.60-2.00	1	1	1.15	.24	 	 	i i
i	11-20			0.60-2.00			.15	.24	İ		İ
i	20-33			0.01-0.06			.10	.17	i	i	i
į	33-51			0.01-0.06			.10	.24	İ	i	i
į	51-80	3-18	1.70-1.90	0.60-6.00	0.02-0.05	0.0-2.9	.10	.17	į	į	İ
Tag to Polls	0 1			0.20-6.00	0 35 0 45				 4		
Lac La Belle	0-1 1-5			6.00-28.57	1	1	.05	 .17	4± 	3	86
l I	1-5 5-12			6.00-28.57	1	1	.05	.17	l I	1	I
l I	12-36			6.00-30.76			.05	.17			
l I	36-42			0.01-0.06	1	1	.05	1.17		İ	!
						0.0-2.9	.05	1.17		1	İ
i	42-50	3-15									
į	42-50 50-62			0.01-0.06			.05	.24			

Table 16.--Physical Properties of the Soils--Continued

Map symbol	Depth	 Clay	Moist	Permea-	 Available	1	Erosi	on fac	tors	erodi-	Wind erodi-
and soil name			bulk	bility	water	extensi-			-	bility	
		<u> </u>	density	(Ksat)	capacity	bility	K	Kf	T	group	index
	In	Pct	g/cc	In/hr	In/in	Pct					
162F:		l I				 		l	1	1	
Michigamme	0-1		0.20-0.30	0.20-6.00	0.35-0.45				4	1	310
. .	1-4		1.25-1.60		0.08-0.15	1	.17	.24	i	İ	İ
	4-10	3-15	1.35-1.60	0.60-2.00	0.07-0.22	0.0-2.9	.28	.37	į	İ	į
	10-22	3-15	1.35-1.60	0.60-2.00	0.07-0.22	0.0-2.9	.28	.37	į	İ	į
	22-30	3-10	1.50-1.85	0.60-2.00	0.05-0.16	0.0-2.9	.20	.28			
	>30										
			! !				ļ		ļ		
166B:	0.1			0 00 6 00					4		
Gratiot	0-1 1-4		0.20-0.30 1.30-1.70	0.20-6.00 0.60-2.00	1	1	1.5	.24	4	5	56
	4-7		1.30-1.70 1.40-1.65		0.04-0.08		1.15	.24			
	7-12				0.04-0.07	1	1.10	.24		1	l I
	12-20		11.40-1.65		0.05-0.08	1	1.10	.24		 	i i
	20-30		1.80-2.05		0.03-0.07	1	1.10	.28	i	İ	
	30-80		1.30-1.70		0.14-0.18	1	.15	.24	i	İ	İ
		İ	i		İ	İ	i	i	i	İ	İ
Sabattis	0 - 8	i	0.20-0.30	0.16-6.00	0.35-0.45	i	j	j	5	5	56
	8-12	5-18	1.25-1.60	0.60-2.00	0.08-0.10	0.0-2.9	.15	.37			
	12-17	5-18	1.25-1.60	0.60-2.00	0.13-0.15	0.0-2.9	.15	.43			
	17-32	5-18	1.55-1.75	0.60-2.00	0.12-0.14	0.0-2.9	.28	.43			
	32-37		1.55-1.75		0.09-0.11	1	.10	.20			
	37-80	5-18	1.55-1.75	0.20-2.00	0.07-0.09	0.0-2.9	.05	.20			
173C:		 									
Montreal	0-2	l I	 0.20-0.30	0.20-6.00	0.35-0.45	 			4	 4	 86
Moncreal	2-6		1.30-1.60		0.11-0.15	1	.15	.24	=	*	80
	6-11		1.35-1.70		0.11-0.15		1.15	.24	<u> </u>	İ	i i
	11-20				0.11-0.15	1	.15	.24	i	i	
	20-33		1.80-2.10		0.03-0.06	1	.05	.17	i	İ	i
	33-51	2-12	1.80-2.10	0.01-0.06	0.02-0.05	0.0-2.9	.10	.24	i	İ	į
j	51-80	0-12	1.55-1.75	0.60-6.00	0.03-0.06	0.0-2.9	.05	.17	ĺ		ĺ
Paavola	0-2		0.20-0.30		0.35-0.45	1			4	2	134
	2-6		1.30-1.60		0.07-0.10		.10	.17	ļ		!
	6-12		1.40-1.65		0.07-0.10		.05	.17			
	12-27		1.40-1.65		0.02-0.05	1	.05	.15			
	27-35 35-46		1.80-2.10		0.07-0.10		10	1.17			
	46-80		1.80-2.10 1.60-1.80		0.07-0.09		1.10	.24		l i	l I
	40-00	4-10	1.00-1.00	0.01-0.00		0.0-2.9	.10	•24			l I
Dishno	0-1		0.10-0.20	0.60-6.00	0.45-0.55	i			4	4	86
	1-3	4-18	1.30-1.60		0.20-0.24		.28	.37	i	İ	İ
	3-4	4-18	1.30-1.60	0.60-2.00	0.20-0.24	0.0-2.9	.28	.37	į	İ	į
j	4-8	4-18	1.35-1.70	0.60-2.00	0.16-0.18	0.0-2.9	.32	.32	ĺ	İ	ĺ
	8-26	4-18	1.35-1.70	0.60-2.00	0.16-0.18	0.0-2.9	.32	.32			
	26-31			2.00-6.00	1	1	1				
	31-42			2.00-6.00			.10	1			
	>42			0.01-0.06					ļ		
173E:		 	 			[1			1	
Montreal	0-2	l I .	0 20-0 30	0.20-6.00	0 35-0 45	 			4	4	 86
MOHICI CAT	2-6			0.60-2.00	1	1	1	.24	** 	**	00
	6-11			0.60-2.00				.24			I I
	11-20			0.60-2.00				.24	i	İ	İ
									1	1	1
	20-33	2-12	1.80-2.10	0.01-0.06	0.03-0.06	0.0-2.9	.05	.17			
	20-33 33-51			0.01-0.06 0.01-0.06				1.17			

Table 16.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	 Clay 	 Moist bulk density	Permea- bility (Ksat)	 Available water capacity	 Linear extensi- bility	Erosion factors				Wind erodi-
								Ī		- '	bility
							K	Kf	Т		
	In	Pct	g/cc	In/hr	In/in	Pct		!	ļ		
1725.											
173E: Paavola	0-2	 	0 20-0 30	0.20-6.00	 0.35_0.45	 		 	4	 2	134
Paavola 	2-6		1.30-1.60		0.33-0.43		1.10		** 	4	124
	6-12		1.40-1.65		0.07-0.10		1			i i	i
	12-27		1.40-1.65		0.02-0.05				i	i	i
	27-35			0.01-0.06					i	i	i
	35-46	4-18	1.80-2.10	0.01-0.06	0.07-0.09	0.0-2.9	.10	.24	į	į	į
	46-80	4-18	1.60-1.80	0.01-0.06	0.07-0.09	0.0-2.9	.10	.24			
			[[!	[
Dishno 	0-1			0.60-6.00			1		4	4	86
	1-3			0.60-2.00			1	.37			
	3-4			0.60-2.00							
	4-8 8-26			0.60-2.00 0.60-2.00						 	
	26-31			2.00-6.00						 	1
	31-42			2.00-6.00						 	i
	>42									İ	i
		! 	i		İ	i	i	i	i	i	i
174B:			<u> </u>		İ	İ	i	i	İ	i	i
Montreal 	0-2		0.20-0.30	0.20-6.00	0.35-0.45	i		j	4	4	86
	2-6	4-18	1.30-1.60	0.60-2.00	0.11-0.15	0.0-2.9	.15	.24	ĺ	İ	İ
	6-11	4-18	1.35-1.70	0.60-2.00	0.11-0.15	0.0-2.9	.15	.24			
	11-20	4-18	1.35-1.70	0.60-2.00	0.11-0.15	0.0-2.9	.15	.24			
	20-33			0.01-0.06							!
	33-51			0.01-0.06							
	51-80	0-12	1.55-1.75	0.60-6.00	0.03-0.06	0.0-2.9	.05	.17			
Dishno	0-1	 	 0 10-0 20	0.60-6.00	 0 45_0 55	 		 	 4	4	 86
DIBINO	1-3			0.60-2.00			.28		*	*	00
	3-4			0.60-2.00			1		i	i i	i
	4-8			0.60-2.00					i	i	i
	8-26			0.60-2.00					İ	i	i
	26-31	3-15	1.50-1.80	2.00-6.00	0.08-0.10	0.0-2.9	.10	.20	į	į	į
	31-42	3-15	1.50-1.80	2.00-6.00	0.08-0.10	0.0-2.9	.10	.20			
	>42			0.01-0.06							
								!		_	
Gratiot 	0-1			0.20-6.00					4	5	56
	1-4			0.60-2.00							
	4-7 7-12			0.60-2.00 0.60-2.00							
	12-20			0.60-2.00						 	
	20-30			0.01-0.06						 	i
	30-80			0.60-6.00					i	i	i
			j i		İ	İ	i	i	i	i	i
177A:		İ	į i		ĺ	į	j	į	į	į	į
Assinins	0-2		0.20-0.30	0.20-6.00	0.35-0.45				4	2	134
	2-11			6.00-20.00	1	1	.15				
	11-15			6.00-20.00							
	15-24			6.00-20.00					ļ	!	!
	24-37			0.20-2.00							
	37-80	2-18	1.50-1.90	0.60-2.00	0.10-0.16	0.0-2.9	.24	.24		 	
183C:		 			 	[[
Munising	0-2		0.10-0.20	0.60-6.00	0.45-0.55	 		 	4	3	86
·	2-4			0.20-6.00	1	1			i	i -	
	4-11			0.60-2.00			.24	.24	i	i	i
	11-13			0.60-2.00					İ	į	į
j	13-18	4-10	1.35-1.70	0.60-2.00	0.10-0.14	0.0-2.9	.24	.24			
	18-31			0.01-0.06			.24	.24			
i i	31-51	10-35	1.35-1.70	0.20-2.00	0.10-0.14	0.0-2.9	.24	.24			
	51-80			0.20-2.00		!	.24	.24		!	!

Table 16.--Physical Properties of the Soils--Continued

Map symbol	Depth	 Clay	 Moist	Permea-	 Available		Erosi	on fac	tors	erodi-	Wind erodi-
and soil name			bulk	bility	water	extensi-				bility	bility
			density	(Ksat)	capacity	bility	K	Kf	T	group	index
	In	Pct	g/cc	In/hr	In/in	Pct					
183C:		 	 		 	 		 	 		
Abbaye	0-1		0.20-0.30	0.20-6.00	0.35-0.45	i			4	3	86
•	1-5		1.35-1.65				.15	.17	i	İ	i
	5-11	4-10	1.35-1.70				.24	.24	i	İ	i
	11-18	4-10	1.35-1.70	0.60-2.00			.24	.24	İ	İ	i
	18-28	8-15	1.30-1.70	0.60-2.00	0.09-0.17	0.0-2.9	.20	.24	i	i	i
	28-30	j	i i		i	i		j	İ	İ	İ
İ	30-80	j	i i	0.00-0.20					İ	İ	İ
Yalmer	0-1	[0 20-0 30	0.20-6.00	0 35-0 45	 		 	 4	2	 134
raimer	1-6			6.00-20.00			.17	1 .17	=	4	134
	6-13			6.00-20.00			1 .17	1 .17	 	1	1
	13-28			6.00-20.00			1.15	1 .17	 	1	1
	28-43			0.01-0.06			1.15	1 .17	 	1	
	43-52			0.01-0.06			.20	.24	 	1	
	52-80		1.60-2.10				.20	.24	 	1	
	32-80	3-18	1.00-1.00	0.00-2.00		0.0-2.9	.20	•2 1 	 	İ	i
183E:		į	į į		İ	İ	İ	İ	İ	İ	İ
Munising	0-2		0.10-0.20	0.60-6.00	0.45-0.55				4	3	86
	2 - 4		0.20-0.30	0.20-6.00	0.35-0.45						
	4-11			0.60-2.00	1	1	.24	.24			
	11-13			0.60-2.00		1	.24	.24			
	13-18			0.60-2.00			.24	.24			
	18-31			0.01-0.06			.24	.24			
	31-51				0.10-0.14	1	.24	.24			!
	51-80	6-12	1.55-1.75	0.20-2.00	0.07-0.11	0.0-2.9	.24	.24	 		
Abbaye	0-1		0.20-0.30	0.20-6.00	0.35-0.45				4	3	86
	1-5	3-15	1.35-1.65	0.60-2.00	0.13-0.18	0.0-2.9	.15	.17			
	5-11	4-10	1.35-1.70	0.60-2.00	0.11-0.17	0.0-2.9	.24	.24			
	11-18	4-10	1.35-1.70	0.60-2.00	0.11-0.17	0.0-2.9	.24	.24			
	18-28	8-15	1.30-1.70	0.60-2.00	0.09-0.17	0.0-2.9	.20	.24			
	28-30										
	30-80			0.00-0.20							
Yalmer	0-1	 	 0.20-0.30	0.20-6.00	 0.35-0.45	 		 	 4	2	134
	1-6			6.00-20.00			.17	.17	İ	İ	i
	6-13	3-15	1.40-1.70	6.00-20.00	0.10-0.13	0.0-2.9	.17	.17	i	i	i
	13-28	3-15	1.40-1.70	6.00-20.00	0.09-0.12	0.0-2.9	.15	.17	i	i	i
	28-43	3-18	1.80-2.10	0.01-0.06	0.03-0.06	0.0-2.9	.15	.17	i	i	i
	43-52	3-18	1.80-2.10	0.01-0.06	0.04-0.07	0.0-2.9	.20	.24	İ	İ	İ
	52-80	5-18	1.60-1.80	0.60-2.00	0.10-0.13	0.0-2.9	.20	.24	ĺ	İ	į
1040.											
184C: Munising	0-2	l I	10 10 0 20	0.60-6.00	 0 45 0 55	 		 	 4	3	 86
Munising	2-4			0.20-6.00					**	3	00
	4-11			0.60-2.00			.24	.24	 	1	
	11-13			0.60-2.00				.24	 	1	
	13-18			0.60-2.00				.24	 	1	
	18-31			0.01-0.06	1	1	1	.24	 		
	31-51			0.20-2.00			.24	.24	 		
	51-80			0.20-2.00			.24	.24			
		ļ									
Yalmer	0-1			0.20-6.00					4	2	134
	1-6			6.00-20.00	1	1	.17	.17		!	!
	6-13			6.00-20.00				.17		1	
	13-28			6.00-20.00				.17		1	
	28-43			0.01-0.06			.15	.17		1	
	43-52		1.80-2.10 1.60-1.80	0.01-0.06			.20	.24		!	
	52-80										

Table 16.--Physical Properties of the Soils--Continued

Map symbol	 Depth	 Clay	 Moist	Permea-	 Available	 Linear	Erosi	on fac	tors	Wind erodi-	Wind erodi
and soil name	 	 	bulk density	bility (Ksat)	water capacity	extensi-	 K	 Kf	 T	bility group	
	In	Pct	g/cc	In/hr	In/in	Pct	<u> </u>				İ
184E:											
Munising	 0-2	 	 0.10-0.20	0.60-6.00	 0.45-0.55	 		 	 4	3	 86
	2-4	1		0.20-6.00		1			i -		
	4-11	0-10	1.30-1.65	0.60-2.00	0.16-0.20	0.0-2.9	.24	.24	j	į	į
	11-13			0.60-2.00			.24	.24			
	13-18			0.60-2.00			.24	.24		!	
	18-31	1		0.01-0.06		1		.24		1	
	31-51 51-80			0.20-2.00			.24	.24	 		
	31-00	0-12	1.55-1.75	0.20-2.00		0.0-2.5	•24	•23		ŀ	i
Yalmer	0-1		0.20-0.30	0.20-6.00	0.35-0.45			i	4	2	134
	1-6	3-15	1.30-1.65	6.00-20.00	0.10-0.13	0.0-2.9	.17	.17	İ	į	į
	6-13			6.00-20.00			.17	.17			
	13-28			6.00-20.00			.15	.17		!	
	28-43			0.01-0.06			.15	.17		1	
	43-52 52-80			0.01-0.06 0.60-2.00			.20	.24	 		
	32-80	3-10	1.00-1.60	0.00-2.00	0.10-0.13	0.0-2.3	.20	•23 	 	l I	i
185B:		! 	i				i	i	İ	i	i
Munising	0-2	j	0.10-0.20	0.60-6.00	0.45-0.55	i	j	j	4	3	86
	2-4		0.20-0.30	0.20-6.00	0.35-0.45						
	4-11	1		0.60-2.00		1	.24	.24		[
	11-13			0.60-2.00			.24	.24		ļ	
	13-18			0.60-2.00 0.01-0.06				.24			
	18-31 31-51	1		0.01-0.06		1	.24	.24	l I	1	
	51-80			0.20-2.00			.24	.24	 		
	İ	j	j i			İ	i	İ	į	į	i
Skanee	0-2			0.60-2.00					3	3	86
	2-8			0.60-2.00			.20	.24		!	
	8-14			0.60-2.00			.20	.24			
	14-31 31-42			0.01-0.06 0.60-2.00			.20	.24 .37	 		
	42-80			0.60-2.00			.20	.24	 	l I	i
		0							İ	i	i
185C:	İ	į	j i		İ	İ	į	j	į	į	į
Munising	0-2		0.10-0.20	0.60-6.00	0.45-0.55				4	3	86
	2-4			0.20-6.00						!	
	4-11			0.60-2.00			.24	.24			
	11-13 13-18			0.60-2.00 0.60-2.00			.24	.24			
	18-31			0.01-0.06				.24	 		
				0.20-2.00					İ		i
	51-80			0.20-2.00					İ	İ	i
		ĺ	į į				İ	ĺ	ĺ	İ	İ
Skanee	0-2			0.60-2.00					3	3	86
	2-8	1		0.60-2.00		1		.24			
	8-14 14-31			0.60-2.00 0.01-0.06							
	31-42	1		0.60-2.00					 		
	42-80			0.60-2.00				.24	<u> </u>	İ	i
	İ	İ				į	İ	į	İ	j	į
187A:			l i								
Skanee				0.60-2.00					3	3	86
	2-8			0.60-2.00				.24			
	8-14 14-31			0.60-2.00					:	1	
	31-42	1		0.01-0.06 0.60-2.00				.24 .37	 	1	
	42-80			0.60-2.00				.24			i
										1	1

Table 16.--Physical Properties of the Soils--Continued

							Erosi	on fac	tors		Wind
Map symbol and soil name	Depth 	Clay	Moist bulk	Permea-	Available water	Linear extensi- bility		 Kf	 T	erodi- bility group	-
	 In	Pct	density g/cc	(Ksat)	capacity In/in	Pct	K	KI	T 	group	Index
				,	,		Ì			İ	İ
187A:							-				
Gay	0-4 4-7		1.10-1.50	1	0.35-0.45	1	.24	.24	5	2	134
	1 -7 7-11		1.10-1.60	1	0.07-0.15	1	.24	.24	 	l I	
	11-16		1.50-1.85	1	0.10-0.18	1	.20	.24	İ	İ	İ
	16-30	6-12	1.70-1.80		0.09-0.13	0.0-2.9	.20	.24			
	30-60	6-12	1.70-1.80	0.60-2.00	0.09-0.13	0.0-2.9	.20	.24			
192B:		 	 	 	 	 			 		
Nipissing	0-1		0.05-0.15	6.00-20.00	0.55-0.65				4	8	0
-	1-3	i	0.20-0.30	0.20-6.00	0.35-0.45	i	j	j	į	į	j
	3-4			6.00-20.00			.24	.05		ļ	
	4-20			6.00-20.00			.24	.05			
	20-29 29-35			6.00-20.00 6.00-20.00			.24	05	 		
	35-39		1.35-1.70		0.01-0.01		.02	.02	 	l I	
	>39									İ	İ
			ļ	ļ	ļ	!	[ļ	ļ
Arcadian	0-3			0.20-6.00					2	8	0
	3-5 5-12		1.30-1.60 1.35-1.70		0.06-0.11		1.17	.24			
	12-22	4-18 	1.35-1.70	0.60-2.00		0.0-2.9	.1/	.24	 		
		!		İ			i	İ	İ	İ	!
Rock outcrop.	ĺ	ĺ	İ	İ	İ	İ	İ	İ	İ	İ	ĺ
							-				
194B:	01			1 0 20 6 00		 			 5	3	 86
Copper Harbor	0-1 1-5			0.20-6.00 20.00-28.98			.02	1.10	>	3	86
	5-14			20.00-30.96			.02	.10	İ	i	!
	14-30			20.00-30.76			.02	.10	İ	İ	İ
	30-40	0-15	1.30-1.75	20.00-28.98	0.05-0.09	0.0-3.0	.02	.10	ĺ	Ì	
	40-60			20.00-28.17			.02	.10		ļ	
	60-80	5-15	1.30-1.65	20.00-28.98	0.03-0.07	0.0-3.0	.02	.10			
195B:		 	 	 	 	 		l I	 		
Copper Harbor	0-1		0.20-0.30	0.20-6.00	0.35-0.45				5	3	86
	1-5	0-10	1.25-1.65	20.00-28.98	0.07-0.11	0.0-3.0	.02	.10	İ	į	j
	5-14			20.00-30.96			.02	.10		!	
	14-30			20.00-30.76			.02	.10			
	30-40 40-60		1	20.00-28.98 20.00-28.17	1	1	.02	.10	l I	l I	l I
	60-80			20.00-28.98			.02	.10	İ		!
	İ	İ	j	j	į	į	į	į	į	į	j
Bete Grise	0-2			0.20-6.00					5	3	86
	2-5			20.00-28.17			.05	.15			
	5-17 17-32			20.00-27.57 20.00-29.06			.05	.17	l I	l I	l I
	32-36			20.00-30.56			.05	1.17	 	İ	
	36-59		1	20.00-28.98		1	.02	.15	İ	İ	İ
	59-80	0-10	1.50-1.75	20.00-28.98	0.02-0.06	0.0-3.0	.02	.15			
10CD.											
196B: Bete Grise	0-2	l I	 0.20=0.30	 0.20-6.00	 0.35-0.45	 		 	 5	3	 86
2000 011863	2-5			20.00-28.17			.05	.15			55
	5-17		1	20.00-27.57		1	.05	.17	į	İ	İ
	17-32		1	20.00-29.06	t .		.05	.15			
	32-36		1	20.00-30.56		1	.05	.17			
	36-59			20.00-28.98			.02	.15			
	59-80 	 0-T0	1.30-1./5 	20.00-28.98	0.02-0.06 	0.0-3.0	.02	.15	 	1	
Tawas	 0-6	 	0.30-0.55	0.20-6.00	0.35-0.45	 			4	2	134
	6-25			0.20-6.00			i		İ	į	İ
	25-80	0 - 5	1.40-1.65	6.00-20.00	0.03-0.10	0.0-2.9	.15	.15			

Table 16.--Physical Properties of the Soils--Continued

Map symbol	Depth	Clay	 Moist	Permea-	 Available	Linear	Erosi	on fac	tors		Wind erodi-
and soil name	· -	į -	bulk	bility	water	extensi-	Ï	1		bility	bility
		i	density	-	capacity	bility	K	Kf	т	group	-
	In	Pct	g/cc	In/hr	In/in	Pct					
301:						 					
Udorthents	0-79 	10-25	1.50-1.70 	0.20-6.00	0.11-0.18	0.0-2.9	.24	 	5 	3 	86
Udipsamments	0-79	0-10	1.35-1.65	6.00-20.00	0.05-0.09	0.0-2.9	.15	.15	5	1	250
302:						 					
Histosols		0-0		0.20-6.00		!			5	2	134
	51-80 			0.01-0.02		 			 	 	
Aquents	0-79	0-30		0.06-0.60	0.10-0.25		.32	.32	-	8	0
303:						 			 		
Aquents	0-79 	0-30		0.06-0.60	0.10-0.25		.32	.32	-	8	0
Dumps, stamp								İ			
sand	0-80 	0-5 	1.35-1.65 	6.00-20.00	0.05-0.09	0.0-2.9	.15	.15 	5 	1 	220
310.		İ					İ	į		İ	İ
Dumps, mine		 	 		 	 		 	 	 	
311:								į	į	İ	į
Dumps, stamp sand	 0-80	 0-5	 1.35-1.65	 6.00-20.00	 0.05-0.09	 0.0-2.9	 .15	 .15	 5	 1	 220
312.	 	[[-	 -		[[[
Pits											
313.		 	 		 	 		 	 	 	
Dumps, sawdust		į				İ	į	į	į	į	į
W.			 	 	 	 			 		
Water					 			[

Table 17.--Chemical Properties of the Soils
(Absence of an entry indicates that data were not estimated)

Map symbol and soil name	Depth	Soil reaction 	Organic matter 	Cation- exchange capacity		Calcium carbonate
	In	pН	Pct	meq/100 g	meq/100 g	Pct
2:		 	 		 	
Lupton	0-8	5.6-7.8	75-90	140-180	 	l o
	8-80	5.6-7.8	80-95	140-180		0
Tawas	0-6	4.5-6.5	 75-90	80-120	 	 0
	6-25	4.5-7.3	80-95	80-120		0
	25-80	5.6-8.4	0.0-0.0	1.0-3.0		0
3:		 	 		 	
Dawson	0-6	3.0-4.4	85-95		100-180	0
j	6-38	3.0-4.4	80-95		140-180	
	38-80	3.5-6.5	0.0-0.5	1.0-2.0		0
Loxley	0-5	3.0-4.5	 85-95		 50-100	 0
-	5-26	3.2-4.5	80-95		50-120	0
	26-45	3.2-4.5	80-95		50-120	0
	45-80	3.6-4.5	65-85		120-190	0
6:					 	
Skandia	0-5	3.5-4.4	85-95	i	100-180	i
	5-33	3.5-4.4	80-95		100-180	
	33-41					
	41-80				 	
Burt	0 - 4	4.5-6.5	75-90			
	4-6	4.5-6.5	2.0-5.0	20-60		0
	6-12	4.5-6.5	0.0-0.5	0.0-6.0		0
	12-17 >17	4.5-6.5	0.0-0.5	0.0-6.0	 	0
		į	į	İ	İ	İ
10:	0.16			100 100	 	
Cathro	0-16 16-34	4.5-6.5	75-90 80-95	100-180	 	
	34-80	5.6-8.4	0.0-0.5	2.0-12		10-30
		į	į		ĺ	
Sabattis	0-8	4.5-6.0	75-90		100-140	
	8-12 12-17	4.5-6.0	2.0-5.0		30-40	0 0
	17-32	4.5-6.0	0.0-0.5		1.0-8.0	l 0
	32-37	5.1-6.5	0.0-0.5	1.0-3.0		0
	37-80	5.1-6.5	0.0-0.5	1.0-3.0		0
13:					 	
Tawas	0-6	4.5-6.5	75-90	80-120	 	 0
	6-25	4.5-7.3	!	80-120	!	0
	25-80	5.6-8.4	0.0-0.0	1.0-3.0		0
Deford	0-6	3.5-6.0	 75-90		 	
	6-8		2.0-5.0	1		0
	8-80		!	1.0-2.0		0
15B:		 	 		 	
Dawson	0-6	3.0-4.4	85-95		100-180	0
İ	6-38	:			140-180	i
	38-80	3.5-6.5	0.0-0.5	1.0-2.0		0

Table 17.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth 	Soil reaction 	Organic matter 	exchange capacity	Effective cation- exchange capacity	carbonate
	In	pН	Pct	meq/100 g	meq/100 g	Pct
15B:					 	
Croswell	0-1	3.5-5.5	50-90		 	
	1-11	3.5-5.5	0.5-2.0	j	1.0-5.0	0
	11-21	3.5-5.5	0.5-3.0		1.0-4.0	0
	21-34 34-80	3.5-6.5	0.0-0.5	1.0-2.0	 	0 0
20E. Rock outcrop		 	 	 	 	
21G: Rock outcrop.		 	 	 	 	
Arcadian	0-3	4.5-6.0	50-90		 	
	3-5	5.1-6.5	0.5-2.0	5.0-15		0
	5-12 12-22	5.1-6.5	2.0-5.0	5.0-15	 	0
39A:					 	
Betsy Bay	0-1	3.5-6.5	50-90			
	1-18	3.6-7.3	0.5-2.0	5.0-10	i	0
	18-26	3.6-7.3	0.5-1.0	5.0-10		0
	26-43	3.6-7.3	0.0-0.5	5.0-10		0
	>43 				 	
Burt	0-4	4.5-6.5	75-90		i	i
	4-6	4.5-6.5	2.0-5.0	20-60		0
	6-12	4.5-6.5	0.0-0.5	0.0-6.0		0
	12-17 >17	4.5-6.5	0.0-0.5	0.0-6.0	 	0
Deford	 0-6	3.5-6.0	 75-90		 	
Deloid	6-8	4.5-6.5	1	1.0-5.0		l 0
	8-80	3.5-6.5	1	1.0-2.0		0
47A:					 	
Zeba	0-2	4.5-6.0	50-90		ļ	
	2-3	4.5-6.0	0.5-2.0		1.0-10	0
	3-9 9-14	4.5-6.0	0.5-3.0	4.0-13	4.0-10	0 0
	14-25	4.5-6.5	0.0-0.5		4.0-10	0
	25-27			i		
	>27				 	
Jacobsville						
		1	1	1.0-5.0		
				1.0-5.0	4.0-13	
	20-21	5.1-6.5	0.0-0.5	2.0-13	 	
	>22	!				
51C:					 	
Arcadian	0-3	4.5-6.0	50-90		i	
	3 - 5		0.5-2.0			0
		5.1-6.5				0
	12-22					

Table 17.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter 	exchange	Effective cation- exchange capacity	 Calcium carbonate
	In	pH	Pct	meq/100 g	meq/100 g	Pct
51C:			! 		 	
Nipissing	0-1	3.5-5.5	50-90			
	1-3	4.5-6.0	50-90			
	3-4	5.1-6.5	0.5-2.0	5.0-15		0
	4-20	5.1-6.5	2.0-5.0	5.0-15		0
	20-29 29-35	5.1-6.5	2.0-5.0	5.0-15 5.0-15	 	0 0
	35-39	5.1-6.5	2.0-5.0	5.0-15	 	0
	>39	j	i	j	 	
Rock outcrop.		 	 	 	 	
51E:			İ			
Arcadian	0 - 3	4.5-6.0	50-90			
	3-5 5-12	5.1-6.5	0.5-2.0	5.0-15	 	0
	12-22	5.1-6.5	2.0-5.0	5.0-15	 	0
			İ			
Nipissing	0-1	3.5-5.5	50-90			
	1-3 3-4	4.5-6.0 5.1-6.5	50-90		 	 0
	4-20	5.1-6.5	2.0-5.0	5.0-15	 	0 0
	20-29	5.1-6.5	2.0-5.0	5.0-15		0
İ	29-35	5.1-6.5	2.0-5.0	5.0-15		0
	35-39 >39	5.1-6.5	2.0-5.0	5.0-15	 	0
Rock outcrop.		 	 	 	 	
52C:			İ		 	!
Arcadian	0 - 3	4.5-6.0	50-90			
	3-5	5.1-6.5	0.5-2.0	5.0-15	 	0
	5-12 12-22	5.1-6.5	2.0-5.0	5.0-15		0
Dishno	0-1	3.5-5.5	 50-90		 	
	1-3	3.5-5.5	2.0-5.0	i	2.0-10	0
	3 - 4	3.5-5.5	0.5-2.0		2.0-10	0
	4-8	3.5-5.5	2.0-5.0		2.0-10	0
	8-26 26-31	3.5-5.5	0.5-3.0		2.0-10 1.0-10	0 0
	31-42	4.5-6.0	0.0-0.5		1.0-10	0 0
	>42	1				
Rock outcrop.		 	 	 	 	
52E:		į	į	į		
Arcadian		4.5-6.0				
	3-5	5.1-6.5			 	0 0
	12-22					
Dishno	0-1	3.5-5.5	 50-90		 	
i	1-3	3.5-5.5			2.0-10	0
İ	3 - 4		0.5-2.0	,	2.0-10	0
		3.5-5.5		1	2.0-10	0
		3.5-5.5		'	2.0-10	0
		4.5-6.0		'	1.0-10 1.0-10	0 0
	>42	1				
Rock outcrop.		 	 	 	 	

Table 17.--Chemical Properties of the Soils--Continued

Map symbol and soil name 	Depth	Soil reaction 	Organic matter 	Cation- exchange capacity	Effective cation- exchange capacity	Calcium carbonate
	In	pН	Pct	meq/100 g	meq/100 g	Pct
53E:					 	
Arcadian	0 - 3	4.5-6.0	50-90			
ļ	3 - 5	5.1-6.5	0.5-2.0	5.0-15		0
	5-12 12-22	5.1-6.5	2.0-5.0	5.0-15	 	0
	12-22				 	
Michigamme	0-1	3.5-5.0	50-90			i
Ţ	1-4	3.5-6.5	0.5-2.0		3.0-20	0
	4-10	3.5-6.5	2.0-5.0		3.0-15	0
	10-22 22-30	3.5-6.5	0.5-3.0	1.0-5.0	3.0-15	0 0
	>30					
Rock outcrop.				 	 	
53F:		İ	İ			
Arcadian	0 - 3	4.5-6.0	50-90			
	3-5 5-12	5.1-6.5	0.5-2.0	5.0-15	 	0 0
	12-22		2.0-5.0		 	0
		į			į	į
Michigamme	0-1 1-4	3.5-5.0	50-90		 3.0-20	
	4-10	3.5-6.5	0.5-2.0		3.0-20	0 0
	10-22	3.5-6.5	0.5-3.0		3.0-15	0 0
i	22-30	4.5-6.5	0.5-3.0	1.0-5.0		0
į	>30					
Rock outcrop.					 	
55B:						
Chocolay	0-2 2-11	3.5-5.5	50-90		 2.0-10	 0
	11-13	3.5-5.5	2.0-5.0		6.0-10	0 0
i	13-18	4.5-5.5	0.5-3.0			0
į	18-21	3.6-7.3	0.0-0.5	5.0-10	i	0
į	>21					
100B:					 	
Waiska	0-1	3.5-5.5	50-90			
!	1-7	3.5-6.0	0.5-2.0		1.0-6.0	0
	7-23	3.5-6.0	2.0-5.0		4.0-12	0
			0.5-3.0	'	1.0-8.0	:
			0.0-0.5	'	0.0-3.0	0
100D:					 	
Waiska	0-1	3.5-5.5	50-90	j	i	i
1	1-7		0.5-2.0		1.0-6.0	0
!			2.0-5.0	'	4.0-12	0
			0.5-3.0		1.0-8.0	:
	35-60 60-80		0.0-0.5	'	0.0-3.0	0 0
	55-50					
102C:						
Waiska	0-1 1-7		50-90 0.5-2.0		 1.0-6.0	 0
			2.0-5.0		1.0-6.0	0 0
				'		
i	23-35	3.5-6.0	0.5-3.0		1.0-8.0	0
İ			0.5-3.0	'	0.0-3.0	

Table 17.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Soil reaction 	Organic matter 	Cation- exchange capacity	1	Calcium carbonate
	In	рН	Pct	meq/100 g	meq/100 g	Pct
102C:					 	
Garlic	0-1	3.5-5.6	50-90		 	
	1-7	3.5-5.5	0.5-2.0		0.1-4.0	i
į	7-13	3.5-5.5	2.0-5.0	j	0.1-4.0	j
	13-20	3.5-5.5	0.5-3.0		0.1-4.0	
	20-27	3.5-5.5	0.5-2.0		0.1-4.0	
	27-46	5.1-6.0	0.0-0.5	0.5-4.0		
	46-80	5.1-6.0	0.0-0.5	0.5-4.0		
102E:			1		 	
Waiska	0-1	3.5-5.5	50-90		 	
	1-7	3.5-6.0	0.5-2.0		1.0-6.0	i o
į	7-23	3.5-6.0	2.0-5.0	i	4.0-12	0
	23-35	3.5-6.0	0.5-3.0		1.0-8.0	0
	35-60	5.1-6.0	0.0-0.5		0.0-3.0	0
	60-80	5.1-6.0	0.0-0.5		0.0-3.0	0
 Garlic	0-1	3.5-5.6	50-90	 	 	
Gallic	1-7	3.5-5.5	0.5-2.0		0.1-4.0	
i	7-13	3.5-5.5	2.0-5.0		0.1-4.0	
İ	13-20	3.5-5.5	0.5-3.0		0.1-4.0	i
ĺ	20-27	3.5-5.5	0.5-2.0		0.1-4.0	
	27-46	5.1-6.0	0.0-0.5	0.5-4.0		
ļ	46-80	5.1-6.0	0.0-0.5	0.5-4.0		
102F:					 	
Waiska	0-1	3.5-5.5	50-90		 	
	1-7	3.5-6.0	0.5-2.0		1.0-6.0	i o
į	7-23	3.5-6.0	2.0-5.0	j	4.0-12	0
ĺ	23-35	3.5-6.0	0.5-3.0		1.0-8.0	0
	35-60	5.1-6.0	0.0-0.5		0.0-3.0	0
	60-80	5.1-6.0	0.0-0.5		0.0-3.0	0
 Garlic	0-1	3.5-5.6	50-90	 	 	
	1-7	3.5-5.5	0.5-2.0		0.1-4.0	
i	7-13	3.5-5.5	2.0-5.0		0.1-4.0	i
į	13-20	3.5-5.5	0.5-3.0	j	0.1-4.0	j
j	20-27	3.5-5.5	0.5-2.0		0.1-4.0	
	27-46	5.1-6.0	0.0-0.5	0.5-4.0		
	46-80	5.1-6.0	0.0-0.5	0.5-4.0		
110B:			1		 	
Shelldrake	0-1	3.5-5.5	50-90			
į	1-6		1.0-2.5	j	4.0-10	0
	6-13	3.5-6.0	0.2-0.5		0.0-1.0	0
		3.5-6.0		'	0.0-1.0	
	23-80	3.5-6.0	0.0-0.2		0.0-1.0	0
 Croswell	0-1	3.5-5.5	50-90		 	
CIOBWEII		3.5-5.5		1	1.0-5.0	0
i		3.5-5.5	1	1	1.0-4.0	
į		3.5-6.5		'	i	0
į	34-80	3.5-6.5	0.0-0.5	1.0-2.0		0
1115		[
111B: Deer Park	0 - 1	3.6-5.5	50-90		 	
DGGI FGIV	1-8			1.0-3.0	 	
 				1.0-3.0	ı	0
Ï				1.0-3.0		0
				0.0-2.0	i	
	24-35	5.1-6.5	0.0-0.5	0.0-2.0		0

Table 17.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Soil reaction 	Organic matter	Cation- exchange capacity	:	Calcium carbonate
	In	pH	Pct	meq/100 g	meq/100 g	Pct
111D:					 	
Deer Park	 0-1	3.6-5.5	50-90		l 	
	1-8	3.6-6.0	0.5-2.0	1.0-3.0		0
	8-17	5.1-6.5	0.5-3.0	1.0-3.0		0
j	17-24	5.1-6.5	0.5-2.0	1.0-3.0	i	0
	24-35	5.1-6.5	0.0-0.5	0.0-2.0		0
	35-80	5.1-6.5	0.0-0.5	0.0-2.0		0
1117					 	
111E: Deer Park	 0-1	3.6-5.5	50-90		 	
Deel Falk	1-8	3.6-6.0	0.5-2.0	1.0-3.0	 	0
	8-17	5.1-6.5	0.5-3.0	1.0-3.0	 	0
	17-24	5.1-6.5	0.5-2.0	1.0-3.0		0
	24-35	5.1-6.5	0.0-0.5	0.0-2.0		0
j	35-80	5.1-6.5	0.0-0.5	0.0-2.0		0
111F:		3.6-5.5			 	
Deer Park	0-1 1-8	3.6-5.5	50-90	1.0-3.0	 	!
	1-8 8-17	5.1-6.5	0.5-2.0	1.0-3.0	 	0 0
	17-24	5.1-6.5	0.5-2.0	1.0-3.0	 	0
	24-35	5.1-6.5	0.0-0.5	0.0-2.0	 	0
	35-80	5.1-6.5	0.0-0.5	0.0-2.0	i	0
j	İ	Ì	İ	İ	j	İ
112C:		Ţ				
Deer Park	0-1	3.6-5.5	50-90			
	1-8	3.6-6.0	0.5-2.0	1.0-3.0		0
	8-17 17-24	5.1-6.5	0.5-3.0	1.0-3.0	 	0
	24-35	5.1-6.5	0.0-0.5	0.0-2.0	 	0 0
	35-80	5.1-6.5	0.0-0.5	0.0-2.0		0 0
					<u> </u>	
Croswell	0-1	3.5-5.5	50-90	j	i	
	1-11	3.5-5.5	0.5-2.0		1.0-5.0	0
	11-21	3.5-5.5	0.5-3.0		1.0-4.0	0
	21-34	3.5-6.5	0.0-0.5	1.0-2.0		0
	34-80	3.5-6.5	0.0-0.5	1.0-2.0		0
113C:		}			 	
Rubicon	0-1	3.5-5.5	50-90			
	1-7	4.5-6.0	0.5-2.0	i	0.2-5.0	0
	7-34	4.5-6.0	0.5-3.0	1.0-9.0	i	0
	34-44	4.5-6.5	0.0-0.5	0.2-4.0		0
	44-80	4.5-6.5	0.0-0.5	0.2-4.0		0
G			50.00			
Croswell		3.5-5.5			 1.0-5.0	 0
		3.5-5.5		1	1.0-3.0	
		3.5-6.5				0
		3.5-6.5		1	1	0
120B:						
Garlic	0-1	3.5-5.6				
	1-7		0.5-2.0		0.1-4.0	
	7-13	1	2.0-5.0	1	0.1-4.0	
	13-20 20-27	1	0.5-3.0		0.1-4.0	
	20-27	1	0.0-0.5	1	0.1-4.0	
	46-80		0.0-0.5	'		
			1		!	!

Table 17.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Soil reaction 	Organic matter 	Cation- exchange capacity		Calcium carbonate
	In	pН	Pct	meq/100 g	meq/100 g	Pct
120D:					 	
Garlic	 0-1	3.5-5.6	50-90	 	 	
Garric	1-7	3.5-5.5	0.5-2.0		0.1-4.0	l
	7-13	3.5-5.5	2.0-5.0		0.1-4.0	
	13-20	3.5-5.5	0.5-3.0		0.1-4.0	
	20-27	3.5-5.5	0.5-2.0		0.1-4.0	i
	27-46	5.1-6.0	0.0-0.5	0.5-4.0	i	i
	46-80	5.1-6.0	0.0-0.5	0.5-4.0		
				1		
120E:				!		
Garlic	0-1	3.5-5.6	50-90			
	1-7	3.5-5.5			0.1-4.0	
	7-13 13-20	3.5-5.5	2.0-5.0		0.1-4.0	
	20-27	3.5-5.5	0.5-2.0		0.1-4.0	
	27-46	5.1-6.0	0.0-0.5	0.5-4.0		
	46-80	5.1-6.0	0.0-0.5	0.5-4.0		
125A:	İ	İ	İ	İ	İ	İ
Croswell	0-1	3.5-5.5	50-90			
	1-11	3.5-5.5	0.5-2.0		1.0-5.0	0
	11-21	3.5-5.5	0.5-3.0		1.0-4.0	0
	21-34	3.5-6.5	0.0-0.5	1.0-2.0		0
	34-80	3.5-6.5	0.0-0.5	1.0-2.0		0
Au Gres	 0-4	3.5-6.0	50-90		 	
	4-13	3.6-7.3	0.5-2.0	5.0-10		0
	13-19	3.6-7.3	2.0-5.0	5.0-10	i	0
	19-28	3.6-7.3	0.5-3.0	5.0-10		0
	28-34	5.1-7.3	0.0-0.5	1.0-2.0		0
	34-80	5.1-7.3	0.0-0.5	1.0-2.0		0
126B.					 	 -
126B: Au Gres	 0-4	3.5-6.0	50-90		l 	
Au Gleb	4-13	3.6-7.3	0.5-2.0	5.0-10	l	0
	13-19	3.6-7.3	2.0-5.0	5.0-10		0
	19-28	3.6-7.3	0.5-3.0	5.0-10		0
	28-34	5.1-7.3	0.0-0.5	1.0-2.0	i	0
	34-80	5.1-7.3	0.0-0.5	1.0-2.0		0
Deford	0-6 6-8	3.5-6.0	75-90 2.0-5.0	1.0-5.0	 	 0
	6-8 8-80	3.5-6.5	0.0-0.5	1.0-3.0	 	0 0
	0-00 	3.3-0.3	0.0-0.5	1.0-2.0	 	U
Croswell	0-1	3.5-5.5	50-90			i
	1-11	3.5-5.5	0.5-2.0		1.0-5.0	0
	11-21	3.5-5.5	0.5-3.0		1.0-4.0	0
	21-34	3.5-6.5	0.0-0.5	1.0-2.0		0
	34-80	3.5-6.5	0.0-0.5	1.0-2.0		0
127A:		 			 	
Au Gres	0-4	3.5-6.0	50-90		l	
114 0105	4-13	!	1	ı	 	 0
	13-19		1	1		0
	19-28		1	5.0-10		0
	28-34	5.1-7.3	0.0-0.5	1.0-2.0		0
	34-80	5.1-7.3	0.0-0.5	1.0-2.0		0
W-1					100 166	
Kinross	0-2 2-6	3.6-5.0	1		100-160 100-180	
	2-6 6-16	!	1	ı	1.0-180	 0
	16-32	!	1		1.0-10	0 0
	32-80	!	1		1.0-2.0	0
				!		

Table 17.--Chemical Properties of the Soils--Continued

Map symbol and soil name 	Depth	Soil reaction 	Organic matter		Effective cation- exchange capacity	Calcium carbonate
	In	pН	Pct	meq/100 g	meq/100 g	Pct
100-						
130C: Garlic	0-1	3.5-5.6	50-90	 	 	
Gallic	1-7	3.5-5.5	0.5-2.0		0.1-4.0	
	7-13	3.5-5.5	2.0-5.0		0.1-4.0	
	13-20	3.5-5.5	0.5-3.0		0.1-4.0	
İ	20-27	3.5-5.5	0.5-2.0	j	0.1-4.0	i
İ	27-46	5.1-6.0	0.0-0.5	0.5-4.0		
ļ	46-80	5.1-6.0	0.0-0.5	0.5-4.0		
Alcona	0-1	3.5-5.6	50-90		 	
Alcona	1-4	4.5-6.0	0.5-2.0	1.0-6.0	0.1-4.0	 0
	4-7	4.5-6.0	2.0-5.0	1.0-6.0	0.1-4.0	0 0
	7-29	5.1-6.5	0.5-3.0	1.0-8.0	0.1-4.0	0
	29-40	5.1-6.5	0.0-0.5	2.0-8.0		0
İ	40-46	5.1-7.3	0.0-0.5	1.0-8.0		0
į	46-69	4.5-6.5	0.0-0.5		4.0-10	0
	69-80	5.1-7.3	0.0-0.5	1.0-8.0		0
 130E:					 	
Garlic	0-1	3.5-5.6	50-90		 	
	1-7	3.5-5.5	0.5-2.0		0.1-4.0	
	7-13	3.5-5.5	2.0-5.0		0.1-4.0	
	13-20	3.5-5.5	0.5-3.0	i	0.1-4.0	
İ	20-27	3.5-5.5	0.5-2.0		0.1-4.0	
	27-46	5.1-6.0	0.0-0.5	0.5-4.0		
	46-80	5.1-6.0	0.0-0.5	0.5-4.0		
Alcona	0-1	3.5-5.6	50-90		 	
	1-4	4.5-6.0	0.5-2.0	1.0-6.0	0.1-4.0	0
j	4-7	4.5-6.0	2.0-5.0	1.0-6.0	0.1-4.0	0
	7-29	5.1-6.5	0.5-3.0	1.0-8.0	0.1-4.0	0
	29-40	5.1-6.5	0.0-0.5	2.0-8.0		0
	40-46	5.1-7.3	0.0-0.5	1.0-8.0		0
	46-69	4.5-6.5	0.0-0.5		4.0-10	0
	69-80	5.1-7.3	0.0-0.5	1.0-8.0	 	0
133C:		İ	İ			
Keweenaw	0-1	3.5-5.6	50-90			
	1-11	4.5-6.5	0.5-2.0	2.0-10		0
	11-17 17-39	4.5-6.5	2.0-5.0	2.0-10	 	0 0
I	39-61	4.5-6.5	0.0-0.5	2.0-10	 	0 0
	61-80		0.0-0.5			0
į		į	į			
Garlic	0-1		50-90	1		
	1-7		0.5-2.0	1	0.1-4.0	
l		1	0.5-3.0	1	0.1-4.0	
		1	0.5-2.0	1	0.1-4.0	
	27-46		0.0-0.5	1		
	46-80		0.0-0.5			
133E: Keweenaw	0 - 1	3 5-5 6	50-90		 	
VCMCGITGM		1	0.5-2.0	1	 	 0
					 	0 0
	11-17	4.5-6.5	2.0-5.0	2.0-10		
			0.5-3.0		 	0
 		4.5-6.5		2.0-10	!	!

Table 17.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Soil reaction 	Organic matter 	Cation- exchange capacity		Calcium carbonate
	In	pH	Pct	meq/100 g	meq/100 g	Pct
1225.					l I	l I
133E: Garlic	0-1	3.5-5.6	50-90	 	 	
garic	1-7	3.5-5.5	0.5-2.0		0.1-4.0	
i	7-13	3.5-5.5	2.0-5.0		0.1-4.0	
į	13-20	3.5-5.5	0.5-3.0		0.1-4.0	
į	20-27	3.5-5.5	0.5-2.0	j	0.1-4.0	i
	27-46	5.1-6.0	0.0-0.5	0.5-4.0		
!	46-80	5.1-6.0	0.0-0.5	0.5-4.0		
 133F:					 	 -
Keweenaw	0-1	3.5-5.6	50-90		l 	
	1-11	4.5-6.5	0.5-2.0	2.0-10	 	l 0
i	11-17	4.5-6.5	2.0-5.0	2.0-10		0
ľ	17-39	4.5-6.5	0.5-3.0	2.0-10		0
i	39-61	4.5-6.5	0.0-0.5	2.0-10		0
į	61-80	5.1-6.5	0.0-0.5	1.0-10		0
<u>.</u> .						
Garlic	0-1	3.5-5.6	50-90			
ļ	1-7	3.5-5.5	0.5-2.0		0.1-4.0	
ļ	7-13	3.5-5.5	2.0-5.0		0.1-4.0	
l I	13-20	3.5-5.5	0.5-3.0		0.1-4.0	
ļ	20-27 27-46	5.1-6.0	0.0-0.5	0.5-4.0	0.1-4.0	
 	46-80	5.1-6.0	0.0-0.5	0.5-4.0	 	
į		İ	İ	į	j	j
136B:						
Borgstrom	0-1	3.5-5.0	50-90			
ļ	1-8	3.5-5.0	0.5-2.0	3.0-14	0.4-3.0	
ļ	8-11	4.5-6.0	2.0-5.0	1.0-5.0	0.4-2.5	
ļ	11-18	4.5-6.0	0.5-3.0	1.0-5.0	0.4-2.5	
l I	18-21	5.1-6.5	0.5-3.0	1.0-5.0		
ļ	21-24 24-80	5.1-6.5	0.0-0.5	1.0-5.0	 	
 	24-00	5.6-7.6	0.0-0.5	0.0-22	 	
Ingalls	0 - 4	3.5-5.5	50-90		i	i
	4-5	4.5-6.5	2.0-5.0		4.0-20	
	5-14	4.5-6.5	0.5-2.0		1.0-4.0	
	14-16	4.5-6.5	2.0-5.0		4.0-16	
	16-35	4.5-6.5	0.5-2.0		1.0-8.0	
	35-80	5.6-6.5	0.0-0.5	1.0-9.0	 	
142C:					 	
Wallace	0 - 4	3.5-5.5	50-90		i	i
	4-5	3.5-5.5	2.0-5.0		2.0-4.0	
	5-22	3.5-5.5	0.5-2.0		2.0-4.0	
		4.5-5.5		•	1.0-4.0	
		4.5-5.5			1.0-4.0	
		4.0-5.5		1	1.0-4.0	
				1.0-4.0	!	
	74-80	4.5-6.5	0.0-0.5	1.0-4.0	 	
Rubicon	0-1	3.5-5.5	50-90		 	
Ï		4.5-6.0	!	!	0.2-5.0	
į				1.0-9.0	i	0
į				0.2-4.0		0
				0.2-4.0		i o

Table 17.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Soil reaction 	Organic matter	exchange	exchange	carbonate
		<u> </u>	1 2-1		capacity	<u> </u>
	In	pН	Pct	meq/100 g	meq/100 g	Pct
142F:			İ		! [
Wallace	0-4	3.5-5.5	50-90			
	4-5	3.5-5.5	2.0-5.0		2.0-4.0	
	5-22	3.5-5.5	0.5-2.0		2.0-4.0	
	22-31	4.5-5.5	2.0-5.0		1.0-4.0	
	31-37	4.5-5.5	1.0-4.0		1.0-4.0	
	37-62	4.0-5.5	0.5-3.0		1.0-4.0	
	62-74	4.5-6.0	0.0-0.5	1.0-4.0		
	74-80	4.5-6.5	0.0-0.5	1.0-4.0		
Rubicon	0-1	3.5-5.5	 50-90	 	 	
110011	1-7	4.5-6.0	0.5-2.0		0.2-5.0	0
	7-34	4.5-6.0	0.5-3.0	1.0-9.0		0
	34-44	4.5-6.5	0.0-0.5	0.2-4.0	i	0
	44-80	4.5-6.5	0.0-0.5	0.2-4.0		0
			ĺ	ĺ	ĺ	
155C:						
Montreal	0-2	3.5-6.0	50-90			
	2-6 6-11	3.5-6.0	0.5-2.0		4.0-20	0
	11-20	3.5-6.0	2.0-5.0		1.0-12 1.0-12	0 0
	20-33	3.5-6.0	0.0-0.5		1.0-12	0 0
	33-51	3.5-6.0	0.0-0.5		1.0-5.0	0 0
	51-80	4.5-6.5	0.0-0.5	0.0-3.0		0 0
Paavola	0-2	4.5-6.0	50-90		i	
	2-6	4.5-6.0	2.0-5.0		4.0-16	0
	6-12	4.5-6.0	2.0-5.0		4.0-12	0
	12-27	4.5-6.0	0.5-3.0	1.0-6.0		0
	27-35	4.5-6.0	0.0-0.5		4.0-12	0
	35-46	4.5-6.0	0.0-0.5		4.0-12	0
	46-80	5.1-6.5	0.0-0.5	3.0-8.0	 	0
Waiska	0-1	3.5-5.5	50-90			
	1-7	3.5-6.0	0.5-2.0		1.0-6.0	0
	7-23	3.5-6.0	2.0-5.0		4.0-12	0
	23-35	3.5-6.0	0.5-3.0		1.0-8.0	0
	35-60	5.1-6.0	0.0-0.5		0.0-3.0	0
	60-80	5.1-6.0	0.0-0.5		0.0-3.0	0
155E:			 	 	 	
Montreal	0-2	3.5-6.0	50-90			
	2-6	3.5-6.0	0.5-2.0		4.0-20	0
		3.5-6.0	:	:	1.0-12	0
	11-20	3.5-6.0	0.5-3.0		1.0-12	0
	20-33	3.5-6.0	0.0-0.5		1.0-5.0	0
	33-51	3.5-6.0	0.0-0.5		1.0-5.0	0
	51-80	4.5-6.5	0.0-0.5	0.0-3.0		0
Paavola	0-2	4 5-6 0	 50-90	 	 	 _
1 44 4014	2-6		2.0-5.0	1	4.0-16	 0
		4.5-6.0			4.0-10	0 0
		4.5-6.0	:	:		0
		4.5-6.0		1	4.0-12	0
		4.5-6.0			4.0-12	0
j	46-80	5.1-6.5	0.0-0.5	3.0-8.0	i	0
			[

Table 17.--Chemical Properties of the Soils--Continued

		 	matter 	!	cation- exchange capacity	carbonate
!	In	pН	Pct	meq/100 g	meq/100 g	Pct
155E: Waiska	0-1	3.5-5.5	50-90		 	
waiska	1-7	3.5-6.0	0.5-2.0		1.0-6.0	 0
l	7-23	3.5-6.0	2.0-5.0		4.0-12	0 0
 	23-35	3.5-6.0	0.5-3.0		1.0-8.0	0 0
	35-60	5.1-6.0	0.0-0.5		0.0-3.0	0
	60-80	5.1-6.0	0.0-0.5		0.0-3.0	0
158A:	0 - 4	5.1-7.3	2.0-4.0			
Arnheim	4-9	5.1-7.3	0.2-1.0	5.0-20	 	0 0
l	9-22	5.1-7.3	0.2-1.0	2.0-10	 	0 0
 	22-35	5.1-7.3	0.2-1.0	2.0-10		0 0
	35-50	5.1-7.3	0.0-0.5	2.0-10	 	0
	50-60	5.1-7.3	0.0-0.5	2.0-10		0
				İ		
Sturgeon	0-2	4.5-6.5	50-90			
	2-16	4.5-6.5	0.5-1.0	2.0-10		0
	16-42	4.5-6.5	0.5-1.0	2.0-10		0
	42-48	4.5-6.5	0.5-1.0	2.0-10		0
	48-60	4.5-6.5	0.2-1.0	1.0-5.0		0
Pelkie	0-6	4.5-6.5	2.0-5.0	4.0-10	 	 0
	6-22	4.5-6.5	0.2-1.0	1.0-2.0		0
	22-80	4.5-6.5	0.2-1.0	1.0-2.0		0
į		İ	İ	İ		j
161F:				!		
Trimountain	0-2	3.5-6.0				
	2-6	3.6-6.0	0.5-2.0		4.0-20	0
	6-11	3.6-6.0	2.0-5.0		1.0-12	0
ļ	11-20 20-33	3.6-6.0	0.5-3.0		1.0-12 1.0-5.0	0 0
	33-51	3.6-6.0	0.0-0.5		1.0-5.0	0 0
	51-80	3.6-6.0	0.0-0.5		1.0-5.0	0 0
Lac La Belle	0-1	3.5-5.0	50-90			
	1-5	3.5-5.0	0.5-2.0		4.0-16	0
	5-12	3.5-5.0	2.0-5.0		4.0-16	0
	12-36	3.5-5.0	0.5-3.0		4.0-16	0
	36-42	4.5-6.0	0.0-0.5		4.0-12	0
	42-50	4.5-6.0	0.0-0.5		4.0-12	0
	50-62	4.5-6.0	0.0-0.5		4.0-12	0
	62-80	5.1-6.5	0.0-0.5	3.0-8.0	 	0
Waiska	0-1	3.5-5.5	50-90			
į	1-7	3.5-6.0	0.5-2.0		1.0-6.0	0
	7-23	3.5-6.0	2.0-5.0		4.0-12	0
	23-35	3.5-6.0	0.5-3.0		1.0-8.0	0
	35-60	5.1-6.0	0.0-0.5		0.0-3.0	0
	60-80	5.1-6.0	0.0-0.5		0.0-3.0	0
 162F:			1		 	
Trimountain	0-2	3.5-6.0	50-90		 	
	2-6		0.5-2.0		4.0-20	0
			2.0-5.0		1.0-12	0
İ			0.5-3.0		1.0-12	0
į	20-33	3.6-6.0	0.0-0.5		1.0-5.0	0
	33-51		0.0-0.5		1.0-5.0	۱ ۵
j	JJ - JI	3.0-0.0	0.0-0.3		1.0-3.0	0

Table 17.--Chemical Properties of the Soils--Continued

Map symbol and soil name 	Depth	Soil reaction 	Organic matter 	exchange	Effective cation- exchange capacity	Calcium carbonate
	In	pН	Pct	meq/100 g	meq/100 g	Pct
1607						
162F: Lac La Belle	0-1	3.5-5.0	50-90	 	l I	
luc lu belle	1-5	3.5-5.0	0.5-2.0		4.0-16	 0
i	5-12	3.5-5.0	2.0-5.0	i	4.0-16	0
i	12-36	3.5-5.0	0.5-3.0		4.0-16	0
į	36-42	4.5-6.0	0.0-0.5	i	4.0-12	0
į	42-50	4.5-6.0	0.0-0.5	j	4.0-12	0
ĺ	50-62	4.5-6.0	0.0-0.5		4.0-12	0
ļ	62-80	5.1-6.5	0.0-0.5	3.0-8.0		0
Michigamme	0-1	3.5-5.0	50-90			
	1-4	3.5-6.5	0.5-2.0		3.0-20	0
	4-10	3.5-6.5	2.0-5.0		3.0-15	0
ļ	10-22	3.5-6.5	0.5-3.0		3.0-15	0
	22-30	4.5-6.5	0.5-3.0	1.0-5.0		0
	>30				 	
L66B:	0 1		 E0 00	j 	 	
Gratiot	0-1 1-4	3.6-6.0	50-90	5.0-7.0	 3.0-5.0	 0
	4-7	3.6-6.0	2.0-5.0	4.0-11	3.0-3.0	0 0
 	7-12	3.6-6.0	0.5-3.0	4.0-11	3.0-8.0	0 0
i	12-20	3.6-6.0	0.5-3.0	4.0-11	3.0-8.0	0
i	20-30	3.6-6.0	0.0-0.5	5.0-15	4.0-11	0
į	30-80	5.1-6.5	0.0-0.5	3.0-6.0	2.0-5.0	0
Sabattis	0 - 8	4.5-6.0	75-90		 100-140	
ĺ	8-12	4.5-6.0	2.0-5.0		30-40	0
	12-17	4.5-6.0	0.0-0.5		30-40	0
	17-32	4.5-6.0	0.0-0.5		1.0-8.0	0
	32-37	5.1-6.5	0.0-0.5	1.0-3.0		0
	37-80	5.1-6.5	0.0-0.5	1.0-3.0	 	0
173C:						
Montreal	0-2	3.5-6.0	50-90			
	2-6	3.5-6.0	0.5-2.0		4.0-20	0
ļ	6-11	3.5-6.0	2.0-5.0		1.0-12	0
ļ	11-20	3.5-6.0	0.5-3.0		1.0-12	0
ļ	20-33 33-51	3.5-6.0	0.0-0.5		1.0-5.0	0 0
ļ	51-80	4.5-6.5	0.0-0.5	0.0-3.0		0
 Paavola	0-2	4.5-6.0	50-90		 	
			2.0-5.0	,	4.0-16	0
i			2.0-5.0		4.0-12	0
į				1.0-6.0		0
į			0.0-0.5	•	4.0-12	0
j	35-46	4.5-6.0	0.0-0.5	j	4.0-12	0
į	46-80	5.1-6.5	0.0-0.5	3.0-8.0		0
Dishno	0-1	3.5-5.5	50-90		 	
į	1-3	3.5-5.5	2.0-5.0		2.0-10	0
	3 - 4	1	0.5-2.0	1	2.0-10	0
		1	2.0-5.0	1	2.0-10	0
			0.5-3.0		2.0-10	0
			0.0-0.5		1.0-10	0
		1	0.0-0.5	:	1.0-10	0
	>42					

Table 17.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth 	Soil reaction 	Organic matter 	Cation- exchange capacity		Calcium carbonate
	In	pН	Pct	meq/100 g	meq/100 g	Pct
		!	!		!	
173E:						
Montreal	0-2	3.5-6.0	50-90			
	2-6	3.5-6.0	0.5-2.0		4.0-20	0
	6-11 11-20	3.5-6.0	2.0-5.0		1.0-12 1.0-12	0
	20-33	3.5-6.0	0.0-0.5		1.0-12	0 0
	33-51	3.5-6.0	0.0-0.5		1.0-5.0	0 0
	51-80	4.5-6.5	0.0-0.5	0.0-3.0		0 0
	31 00	1.5 0.5	0.0 0.5		! 	
Paavola	0-2	4.5-6.0	50-90			
	2-6	4.5-6.0	2.0-5.0		4.0-16	0
	6-12	4.5-6.0	2.0-5.0		4.0-12	0
	12-27	4.5-6.0	0.5-3.0	1.0-6.0	i	0
	27-35	4.5-6.0	0.0-0.5		4.0-12	0
	35-46	4.5-6.0	0.0-0.5		4.0-12	0
	46-80	5.1-6.5	0.0-0.5	3.0-8.0		0
Dishno	0-1	3.5-5.5	50-90			
	1-3	3.5-5.5	2.0-5.0		2.0-10	0
	3-4	3.5-5.5	0.5-2.0		2.0-10	0
	4-8	3.5-5.5	2.0-5.0		2.0-10	0
	8-26	3.5-5.5	0.5-3.0		2.0-10	0
	26-31	4.5-6.0	0.0-0.5		1.0-10	0
	31-42	4.5-6.0	0.0-0.5		1.0-10	0
	>42					
174B:	l I			 	l I	
Montreal	0-2	3.5-6.0	50-90		l 	
Moncrear	2-6	3.5-6.0	0.5-2.0		4.0-20	0
	6-11	3.5-6.0	2.0-5.0		1.0-12	0
	11-20	3.5-6.0	0.5-3.0		1.0-12	0
	20-33	3.5-6.0	0.0-0.5		1.0-5.0	0
	33-51	3.5-6.0	0.0-0.5		1.0-5.0	0
	51-80	4.5-6.5	0.0-0.5	0.0-3.0	i	0
	İ	İ	İ	İ	İ	İ
Dishno	0-1	3.5-5.5	50-90			
	1-3	3.5-5.5	2.0-5.0		2.0-10	0
	3-4	3.5-5.5	0.5-2.0		2.0-10	0
	4-8	3.5-5.5	2.0-5.0		2.0-10	0
	8-26	3.5-5.5	0.5-3.0		2.0-10	0
	26-31	4.5-6.0	0.0-0.5		1.0-10	0
	31-42	4.5-6.0	0.0-0.5		1.0-10	0
	>42					
Gratiot	0-1		50-90	'		
	1-4			5.0-7.0		
			0.5-3.0	4.0-11		
			0.5-3.0	'	3.0-8.0	
	20-30		0.0-0.5	,	4.0-11	0
	30-80			3.0-6.0		
	30-00	3.1-0.3			2.0-5.0	
177A:	i				! 	!
Assinins	0-2	4.5-6.0	50-90		 	
			1.0-3.0	1.0-10	0.4-3.0	0
			1.0-3.0	,	0.4-3.0	
			1.0-3.0		0.4-3.0	
	24-37		0.0-0.5	'		0
	37-80	4.5-6.0	0.0-0.5	i	1.0-3.0	0
	I	I	1	1	I	I

Table 17.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Soil reaction 	Organic matter 	!	Effective cation- exchange capacity	Calcium carbonate
	In	pН	Pct	meq/100 g	meq/100 g	Pct
183C:					 	
Munising	0-2	4.5-5.5	50-90			
	2-4	4.5-5.5	50-90			
	4-11	4.5-6.0	0.5-2.0		1.0-8.0	
	11-13 13-18	4.5-6.0	2.0-5.0		6.0-16 3.0-12	
	18-31	4.5-6.0	0.0-0.5		2.0-8.0	
	31-51	4.5-6.0	0.0-0.5		6.0-21	
	51-80	5.6-6.5	0.0-0.5	3.0-9.0		
Abbaye	0-1	4.5-6.0	50-90		 	
i	1-5	4.5-6.0	0.5-2.0	j	1.0-10	0
į	5-11	4.5-6.0	0.5-3.0	3.0-12	i	0
	11-18	4.5-6.0	0.5-3.0	3.0-12		0
	18-28	4.5-6.0	0.0-0.5	4.0-10		0
	28-30 30-80				 	
Yalmer	0-1	3.5-6.0	50-90		 	
raimer	1-6	3.5-6.0	0.5-3.0		1.0-6.0	l 0
	6-13	3.5-6.0	2.0-5.0		4.0-12	0
į	13-28	3.5-6.0	0.5-3.0	j	1.0-8.0	0
	28-43	3.5-6.0	0.0-0.5		2.0-8.0	0
	43-52	3.5-6.0	0.0-0.5		2.0-8.0	0
	52-80	5.6-6.5	0.0-0.5	4.0-12		0
183E:					 	
Munising	0-2	4.5-5.5	50-90	j	i	
İ	2-4	4.5-5.5	50-90			
	4-11	4.5-6.0	0.5-2.0		1.0-8.0	
	11-13	4.5-6.0	2.0-5.0		6.0-16	
	13-18 18-31	4.5-6.0	0.5-3.0		3.0-12	
	31-51	4.5-6.0	0.0-0.5		6.0-21	
	51-80	5.6-6.5	0.0-0.5	3.0-9.0		
Abbaye	0-1	4.5-6.0	50-90		 	
	1-5	4.5-6.0	0.5-2.0		1.0-10	0
	5-11	4.5-6.0	0.5-3.0	3.0-12	ļ	0
	11-18 18-28	4.5-6.0	0.5-3.0	3.0-12	 	0
	28-30	4.5-6.0	0.0-0.5	4.0-10	 	0
	30-80					
Yalmer	0-1	3.5-6.0	50-90		 	
į	1-6	3.5-6.0	0.5-3.0	j	1.0-6.0	0
			2.0-5.0	1	4.0-12	0
		1	0.5-3.0	1	1.0-8.0	
			0.0-0.5	1	2.0-8.0	
		5.6-6.5		1	2.0-8.0	0
İ						
184C: Munising	0.3	4.5-5.5	F0 00		 	
maii181119	2-4				 	
			0.5-2.0	1	1.0-8.0	
i			2.0-5.0	1	6.0-16	
į	13-18	4.5-6.0	0.5-3.0		3.0-12	i
I			0.0-0.5		2.0-8.0	
			0.0-0.5	1	6.0-21	
	51-80	5.6-6.5	0.0-0.5	3.0-9.0		

Table 17.--Chemical Properties of the Soils--Continued

Map symbol and soil name 	Depth	Soil reaction 	Organic matter 	exchange	Effective cation- exchange capacity	Calcium carbonate
	In	рН	Pct	meq/100 g	meq/100 g	Pct
1046						
184C: Yalmer	0-1	3.5-6.0	50-90		 	
raimer	1-6	3.5-6.0	0.5-3.0		1.0-6.0	0
l I	6-13	3.5-6.0	2.0-5.0		4.0-12	0 0
	13-28	3.5-6.0	0.5-3.0		1.0-8.0	0 0
	28-43	3.5-6.0	0.0-0.5		2.0-8.0	0 0
	43-52	3.5-6.0	0.0-0.5		2.0-8.0	0 0
 	52-80	5.6-6.5	0.0-0.5	4.0-12		0 0
i						
184E:		İ	İ			
Munising	0-2	4.5-5.5	50-90			
	2-4	4.5-5.5	50-90			
İ	4-11	4.5-6.0	0.5-2.0		1.0-8.0	
İ	11-13	4.5-6.0	2.0-5.0	i	6.0-16	
İ	13-18	4.5-6.0	0.5-3.0	i	3.0-12	
į	18-31	4.5-6.0	0.0-0.5		2.0-8.0	
į	31-51	4.5-6.0	0.0-0.5		6.0-21	
į	51-80	5.6-6.5	0.0-0.5	3.0-9.0		
 Yalmer	0-1	3.5-6.0	50-90		 	
	1-6	3.5-6.0	0.5-3.0		1.0-6.0	0
	6-13	3.5-6.0	2.0-5.0		4.0-12	0
	13-28	3.5-6.0	0.5-3.0		1.0-8.0	0
i	28-43	3.5-6.0	0.0-0.5		2.0-8.0	0
i	43-52	3.5-6.0	0.0-0.5		2.0-8.0	0
į	52-80	5.6-6.5	0.0-0.5	4.0-12		0
185B:					 	
	0-2	4.5-5.5	50-90		 	l i
Munising	2-4	4.5-5.5	50-90		 	
l I	4-11	4.5-6.0	0.5-2.0		1.0-8.0	
	11-13	4.5-6.0	2.0-5.0		6.0-16	
	13-18	4.5-6.0	0.5-3.0		3.0-12	
	18-31	4.5-6.0	0.0-0.5		2.0-8.0	
	31-51	4.5-6.0	0.0-0.5		6.0-21	
Ï	51-80	5.6-6.5	0.0-0.5	3.0-9.0		
gl	0.0					
Skanee	0-2	3.5-5.5	50-90			
	2-8	3.5-5.5	2.0-5.0		4.0-16	0
l I	8-14 14-31	3.5-6.0	2.0-5.0		4.0-16 2.0-8.0	0 0
l I	31-42	3.5-6.0	0.0-0.5	6.0-21	2.0-8.0	0 0
	42-80	!		3.0-9.0	I	0
ľ	12 00					
185C:		į	į	į		
Munising		1	1	1		
			50-90	1		
		1	0.5-2.0	1	1.0-8.0	
		1	2.0-5.0	1	6.0-16	
		1	0.5-3.0	1	3.0-12	
		1	0.0-0.5	1	2.0-8.0	
			0.0-0.5	,	6.0-21	
	51-80	5.6-6.5 	0.0-0.5	3.0-9.0	 	
Skanee	0-2	3.5-5.5	50-90		 	
į	2-8	3.5-5.5	2.0-5.0	i	4.0-16	0
į	8-14	3.5-6.0	2.0-5.0	i	4.0-16	0
į	14-31	3.5-6.0	0.0-0.5	i	2.0-8.0	0
	21 /2	3 5-6 0	0.0-0.5	6.0-21	i	0
	31-42	7 3.3 0.0			l	

Table 17.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Soil reaction 	Organic matter 	Cation- exchange capacity		Calcium carbonate
ĺ	In	pН	Pct	meq/100 g	meq/100 g	Pct
1053						
187A: Skanee	0-2	3.5-5.5	50-90		 	
Jiunee	2-8	3.5-5.5	2.0-5.0		4.0-16	 0
	8-14	3.5-6.0	2.0-5.0	i	4.0-16	0
j	14-31	3.5-6.0	0.0-0.5	i	2.0-8.0	0
	31-42	3.5-6.0	0.0-0.5	6.0-21		0
	42-80	4.5-6.0	0.0-0.5	3.0-9.0		0
 Gay	0 - 4	4.5-6.0	75-90		 	
į	4-7	4.5-6.5	2.0-30	i	4.0-65	0
	7-11	4.5-6.5	0.5-2.0	2.0-10		0
	11-16	4.5-6.5	0.5-1.0	3.0-22	ļ	0
	16-30	5.6-7.3	0.0-0.5	3.0-8.0		0
	30-60	5.6-7.3	0.0-0.5	3.0-8.0	 	0
192B:		İ	İ			
Nipissing	0-1	3.5-5.5	50-90			
	1-3	4.5-6.0	50-90			
	3-4 4-20	5.1-6.5	0.5-2.0	5.0-15	 	0
	20-29	5.1-6.5	2.0-5.0	5.0-15	 	0 0
	29-35	5.1-6.5	2.0-5.0	5.0-15	 	0 0
	35-39	5.1-6.5	2.0-5.0	5.0-15		0
į	>39					
Arcadian	0-3	4.5-6.0	50-90		 	
	3-5	5.1-6.5	0.5-2.0	5.0-15		0
	5-12	5.1-6.5	2.0-5.0	5.0-15	i	0
	12-22					
Rock outcrop.					 	
194B:					 	
Copper Harbor	0-1	5.1-6.0	50-90	j	i	i
I	1-5	5.1-5.7	0.5-2.0	1.0-4.0	0.8-3.0	
	5-14	5.5-6.2	2.0-4.0	1.0-5.0	0.8-4.5	
	14-30	5.5-6.2	0.5-3.0	1.0-5.0	0.8-4.5	
	30-40 40-60	5.5-6.2	0.0-0.5	1.0-3.0	0.8-2.3	
	60-80	6.2-6.7	0.0-0.5	3.0-5.0	2.3-3.8	
		İ	İ			
195B: Copper Harbor	0-1	5.1-6.0	50-90		 	
copper narbor	1-5		0.5-2.0		0.8-3.0	
	5-14				0.8-4.5	
į	14-30	5.5-6.2	0.5-3.0		0.8-4.5	
	30-40		0.0-0.5		0.8-2.3	
	40-60		0.0-0.5	1	2.3-3.8	
	60-80	6.2-6.7	0.0-0.5	3.0-5.0	2.3-3.8	
Bete Grise	0-2	4.5-6.0	50-90		 	
į	2-5	5.6-6.0	0.5-2.0	1.0-4.0	0.0-3.0	0
I	5-17			•	0.0-7.0	0
	17-32				0.0-7.0	
	32-36					:
	36-59	5.6-6.5	0.0-0.5	1.0-4.0	0.0-3.0	0
i	59-80	5.6-6.5	0.0-0.5	1.0-4.0	0.0-3.0	0

Table 17.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Soil reaction	Organic matter	exchange	Effective cation- exchange	carbonate
					capacity	
	In	pH	Pct	meq/100 g	meq/100 g	<u> </u>
į		İ	İ		į	İ
196B:						
Bete Grise		4.5-6.0	1			
	2-5	5.6-6.0	1	1.0-4.0		0
		1	1.0-5.0	1	0.0-7.0	
	17-32	1	1.0-5.0	1.0-10	0.0-7.0	0
			0.0-2.0	'	0.0-3.0	
	36-59		0.0-0.5	1		
	59-80	5.6-6.5	0.0-0.5	1.0-4.0	0.0-3.0	0
Tawas	0-6	4.5-6.5	 75-90	80-120	 	 0
iawas	6-25		80-95	80-120	l	0 0
	25-80			1.0-3.0		0 0
	25-00	3.0-0.4	0.0-0.0	1.0-3.0	 	
301:		İ	İ		! 	
Udorthents	0-79	4.5-6.5	0.0-0.5			0
					İ	
Udipsamments	0-79	5.1-6.5	0.0-0.5			
302:		1	1	l I	 	
Histosols	0-51	4.5-6.5	75-90		l	
1115005015	51-80	1	1		l	
	31 00	1.5 0.5	İ		! 	
Aquents	0-79	4.5-6.5	0.1-5.0			
303:						
Aquents	0-79	4.5-6.5	0.1-5.0		 	
Dumps, stamp		l I	l I	 	 	
sand	0-80	4.5-6.5	0.0-0.1		l	
					! 	
310.		i	i			!
Dumps, mine		İ	İ	İ	İ	
i		İ	İ	İ	İ	
311:		į	į	İ	j	
Dumps, stamp						
sand	0-80	4.5-6.5	0.0-0.1			
312.						
Pits						
313.		!	!		<u> </u>	
Dumps, sawdust						
W. Water		I I	I I	 	 	
mater		1	1	1	I .	

Table 18.--Soil Moisture Status by Depth

(Depths of layers are in feet)

Map symbol and soil name	January	February 	March 	April 	May 	June	July	August 	September 	October 	November	Decembe
2:			 									
Lupton		0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-0.5:	0.0-1.0:	0.0-0.5:	0.0-6.7:	0.0-6.7:	0.0-6.7:
	Wet	Wet	Wet	Wet 	Wet 	Wet	Moist 0.5-6.7:	Moist 1.0-6.7:	Moist 0.5-6.7:	Wet	Wet	Wet
							Wet	Wet	Wet			
Tawas	 0.0-6.7:	0.0-6.7:	 0.0-6.7:	0.0-6.7:	 0.0-6.7:	0.0-6.7:	 0.0-0.5:	0.0-1.0:	0.0-0.5:	0.0-6.7:	0.0-6.7:	0.0-6.7:
	Wet	Wet	Wet	Wet	Wet	Wet	Moist	Moist	Moist	Wet	Wet	Wet
	 						0.5-6.7: Wet	1.0-6.7: Wet	0.5-6.7: Wet			
3:			 									
Dawson		0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-0.5:	0.0-0.5:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:
	Wet	Wet	Wet	Wet	Wet	Wet	Moist	Moist	Wet	Wet	Wet	Wet
							0.5-6.7: Wet	0.5-6.7: Wet				
Loxley		0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-0.5:	0.0-0.5:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:
	Wet	Wet	Wet	Wet	Wet	Wet	Moist	Moist	Wet	Wet	Wet	Wet
							0.5-6.7: Wet	0.5-6.7: Wet				
6:			ļ ļ									
Skandia	0.0-2.6: Wet	0.0-2.6: Wet	0.0-2.6: Wet	0.0-2.6: Wet	0.0-2.6: Wet	0.0-2.6: Wet	0.0-0.5: Moist	0.0-1.0: Moist	0.0-0.5: Moist	0.0-2.6: Wet	0.0-2.6: Wet	0.0-2.6:
	wet 	wet	wet 	wet	wet	wet	0.5-2.6:	1.0-2.6:	0.5-2.6:	wet	wet	wet
							Wet	Wet	Wet			
Burt		0.0-1.6:	0.0-1.6:	0.0-1.6:	0.0-1.6:	0.0-0.5:	0.0-1.0:	0.0-1.6:	0.0-1.5:	0.0-1.6:	0.0-1.6:	0.0-1.6:
	Wet	Wet	Wet	Wet	Wet	Moist 0.5-1.6:	Moist 1.0-1.6:	Moist	Moist 1.5-1.6:	Wet	Wet	Wet
						Wet	Wet		Wet			
10:			 									
Cathro	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-0.5:	0.0-1.0:	0.0-0.5:	0.0-6.7:	0.0-6.7:	0.0-6.7:
	Wet	Wet	Wet	Wet	Wet 	Wet	Moist 0.5-6.7:	Moist 1.0-6.7:	Moist 0.5-6.7:	Wet	Wet 	Wet
							Wet	Wet	Wet			
Sabattis		0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-0.5:	0.0-1.5:	0.0-2.0:	0.0-1.0:	0.0-6.7:	0.0-6.7:	0.0-6.7:
	Wet	Wet	Wet	Wet	Wet	Moist	Moist	Moist	Moist	Wet	Wet	Wet
						0.5-6.7: Wet	1.5-6.7: Wet	2.0-6.7: Wet	1.0-6.7: Wet			

Table 18.--Soil Moisture Status by Depth--Continued

Map symbol and soil name	January 	February	March	April	May	June	July	August	September	October	November	Decembe
13:	 											
Tawas	0.0-6.7: Wet	0.0-6.7: Wet	0.0-6.7: Wet	0.0-6.7: Wet	0.0-6.7: Wet	0.0-6.7: Wet	0.0-0.5: Moist	0.0-1.0: Moist	0.0-0.5: Moist	0.0-6.7: Wet	0.0-6.7: Wet	0.0-6.7: Wet
	 	 					0.5-6.7: Wet	1.0-6.7: Wet	0.5-6.7: Wet			
Deford	 0.0-6.7:	1	 0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-0.5:	0.0-1.5:	0.0-2.0:	0.0-1.0:	0.0-6.7:	 0.0-6.7:	0.0-6.7:
	Wet	Wet	Wet	Wet	Wet	Moist	Moist	Moist	Moist	Wet	Wet	Wet
	 	 				0.5-6.7: Wet	1.5-6.7: Wet	2.0-6.7: Wet	1.0-6.7: Wet			
15B:												
Dawson		0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-0.5:	0.0-0.5:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:
	Wet	Wet	Wet	Wet	Wet	Wet	Moist	Moist	Wet	Wet	Wet	Wet
							0.5-6.7: Wet	0.5-6.7: Wet				
Croswell		0.0-5.0:	0.0-2.5:	0.0-2.0:	0.0-2.0:	0.0-3.5:	 0.0-1.5:	0.0-2.5:	0.0-4.5:	0.0-3.0:	0.0-3.0:	0.0-4.0:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
	5.0-6.7:	5.0-6.7:	2.5-6.7:	2.0-6.7:	2.0-6.7:	3.5-6.7:	1.5-4.5:	2.5-5.5:	4.5-6.7:	3.0-6.7:	3.0-6.7:	4.0-6.7:
	Wet	Wet	Wet	Wet	Wet	Wet	Moist	Moist 5.5-6.7:	Wet	Wet	Wet	Wet
	 	 					4.5-6.7: Wet	5.5-6.7: Wet				
20E. Rock outcrop	 		 									
21G: Rock outcrop.	 		 							 		
Arcadian	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
39A:	 											
Betsy Bay	0.0-1.5:	0.0-1.5:	0.0-1.0:	0.0-0.5:	0.0-0.5:	0.0-1.0:	0.0-2.0:	0.0-0.5:	0.0-2.0:	0.0-1.0:	0.0-1.0:	0.0-1.5:
	Moist	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Moist	Moist	Moist	Moist
	1.5-6.7:	1.5-6.7:	1.0-6.7:	0.5-6.7:	0.5-6.7:	1.0-6.7:	2.0-6.7:	0.5-3.0:	2.0-6.7:	1.0-6.7:	1.0-6.7:	1.5-6.7:
	Wet 	Wet	Wet	Wet	Wet	Wet	Wet	Moist	Wet	Wet	Wet	Wet
								3.0-6.7: Wet				
Burt	 0.0-1.6:	0.0-1.6:	 0.0-1.6:	0.0-1.6:	0.0-1.6:	0.0-0.5:	0.0-1.0:	0.0-1.6:	0.0-1.5:	0.0-1.6:	0.0-1.6:	0.0-1.6:
	Wet	Wet	Wet	Wet	Wet	Moist	Moist	Moist	Moist	Wet	Wet	Wet
						0.5-1.6: Wet	1.0-1.6: Wet		1.5-1.6: Wet			

Table 18.--Soil Moisture Status by Depth--Continued

Map symbol and soil name	January 	February 	March 	April 	May 	June	July 	August	September 	October 	November 	Decembe
39A:												
Deford		0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-0.5:	0.0-1.5:	0.0-2.0:	0.0-1.0:	0.0-6.7:	0.0-6.7:	0.0-6.7:
	Wet	Wet	Wet	Wet	Wet	Moist	Moist	Moist	Moist	Wet	Wet	Wet
						0.5-6.7: Wet	1.5-6.7: Wet	2.0-6.7: Wet	1.0-6.7: Wet			
17A:										 		
Zeba	0.0-2.0:	0.0-2.0:	0.0-1.5:	0.0-1.0:	0.0-0.5:	0.0-2.0:	0.0-2.5:	0.0-2.8:	0.0-2.5:	0.0-1.0:	0.0-1.0:	0.0-1.5:
	Moist	Moist	Moist	Moist	Moist	Moist	Moist	Moist	Moist	Moist	Moist	Moist
	2.0-2.8:	2.0-2.8:	1.5-2.8:	1.0-2.8:	0.5-2.8:	2.0-2.8:	2.5-2.8:		2.5-2.8:	1.0-2.8:	1.0-2.8:	1.5-2.8:
	Wet 	Wet	Wet	Wet	Wet	Wet	Wet		Wet	Wet	Wet	Wet
Jacobsville		0.0-3.0:	0.0-3.0:	0.0-3.0:	0.0-3.0:	0.0-0.5:	0.0-1.0:	0.0-2.0:	1.5-3.0:	0.0-3.0:	0.0-3.0:	0.0-3.0:
	Wet	Wet	Wet	Wet	Wet	Moist	Moist	Moist	Wet	Wet	Wet	Wet
						0.5-3.0: Wet	1.0-3.0: Wet	2.0-3.0: Wet	0.0-1.5: Moist			
51C:												
Arcadian	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
Nipissing	0.0-3.2:	0.0-3.2:	0.0-3.2:	0.0-3.2:	0.0-3.2:	0.0-3.2:	0.0-1.0:	0.0-1.5:	0.0-3.2:	0.0-3.2:	0.0-3.2:	0.0-3.2:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
							1.0-3.2: Moist	1.5-3.2: Moist				
Rock outcrop.												
51E:							l I					
Arcadian	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
Nipissing	0.0-3.2:	0.0-3.2:	0.0-3.2:	0.0-3.2:	0.0-3.2:	0.0-3.2:	0.0-1.0:	0.0-1.5:	0.0-3.2:	0.0-3.2:	0.0-3.2:	0.0-3.2:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
							1.0-3.2: Moist	1.5-3.2: Moist				
Rock outcrop.												
52C:												
Arcadian	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist

Table 18.--Soil Moisture Status by Depth--Continued

Map symbol and soil name	January 	February 	March 	April 	May 	June 	July 	August 	September 	October 	November 	December
52C: Dishno	 0.0-3.8: Moist 	 0.0-3.8: Moist	 0.0-2.0: Moist 2.0-3.8:	 0.0-1.0: Moist 1.0-3.8:	 0.0-1.5: Moist 1.5-3.8:	 0.0-3.8: Moist	 0.0-1.0: Dry 1.0-3.8:	 0.0-1.5: Dry 1.5-3.8:	 0.0-3.0: Moist 3.0-3.8:	 0.0-1.0: Moist 1.0-3.8:	 0.0-2.0: Moist 2.0-3.8:	 0.0-3.8: Moist
			Wet 	Wet	Wet 		Moist	Moist	Wet 	Wet 	Wet 	
Rock outcrop.	 											
52E:								İ				
Arcadian	0.0-1.0: Moist	0.0-1.0: Moist	0.0-1.0: Moist	0.0-1.0: Moist	0.0-1.0: Moist	0.0-1.0: Moist	0.0-1.0: Dry	0.0-1.0: Dry	0.0-1.0: Moist	0.0-1.0: Moist	0.0-1.0: Moist	0.0-1.0: Moist
Dishno	0.0-3.8: Moist 	0.0-3.8: Moist 	0.0-2.0: Moist 2.0-3.8:	0.0-1.0: Moist 1.0-3.8:	0.0-1.5: Moist 1.5-3.8:	0.0-3.8: Moist 	0.0-1.0: Dry 1.0-3.8:	0.0-1.5: Dry 1.5-3.8:	0.0-3.0: Moist 3.0-3.8:	0.0-1.0: Moist 1.0-3.8:	0.0-2.0: Moist 2.0-3.8:	0.0-3.8: Moist
Rock outcrop.	 		Wet 	Wet 	Wet 	 	Moist 	Moist 	Wet 	Wet 	Wet 	
53E:	[[
Arcadian	 0.0-1.0: Moist	0.0-1.0: Moist	0.0-1.0: Moist	0.0-1.0: Moist	0.0-1.0: Moist	0.0-1.0: Moist	0.0-1.0: Dry	0.0-1.0: Dry	0.0-1.0: Moist	0.0-1.0: Moist	0.0-1.0: Moist	0.0-1.0: Moist
Michigamme	 0.0-2.6: Moist 	0.0-2.6: Moist 	 0.0-2.6: Moist 	0.0-2.6: Moist 	0.0-2.6: Moist 	0.0-2.6: Moist 	0.0-1.0: Dry 1.0-2.6: Moist	0.0-1.5: Dry 1.5-2.6: Moist	0.0-2.6: Moist 	0.0-2.6: Moist 	0.0-2.6: Moist 	0.0-2.6: Moist
Rock outcrop.	 		 									
53F:												
Arcadian	0.0-1.0: Moist	0.0-1.0: Moist	0.0-1.0: Moist	0.0-1.0: Moist	0.0-1.0: Moist	0.0-1.0: Moist	0.0-1.0: Dry	0.0-1.0: Dry	0.0-1.0: Moist	0.0-1.0: Moist	0.0-1.0: Moist	0.0-1.0: Moist
Michigamme	 0.0-2.6: Moist 	0.0-2.6: Moist 	0.0-2.6: Moist 	0.0-2.6: Moist 	0.0-2.6: Moist 	0.0-2.6: Moist 	0.0-1.0: Dry 1.0-2.6: Moist	0.0-1.5: Dry 1.5-2.6: Moist	0.0-2.6: Moist 	0.0-2.6: Moist 	0.0-2.6: Moist 	0.0-2.6: Moist
Rock outcrop.												
55B:	 		[]									
Chocolay	0.0-2.3: Moist 	0.0-2.3: Moist 	0.0-2.0: Moist 2.0-2.3:	0.0-1.0: Moist 1.0-2.3:	0.0-1.5: Moist 1.5-2.3:	0.0-2.3: Moist 	0.0-1.0: Dry 1.0-2.3:	0.0-1.5: Dry 1.5-2.3:	0.0-2.3: Moist 	0.0-1.0: Moist 1.0-2.3:	0.0-1.5: Moist 1.5-2.3:	0.0-2.3: Moist

Map symbol and soil name	 January 	 February 	March 	April	 May 	June 	July	 August 	 September 	October	November	Decembe
100B: Waiska	 0.0-6.7: Moist 	 0.0-6.7: Moist 	 0.0-6.7: Moist 		 0.0-6.7: Moist 	 0.0-6.7: Moist 	 0.0-2.0: Dry 2.0-6.7: Moist	 0.0-3.0: Dry 3.0-6.7: Moist	 0.0-6.7: Moist 	 0.0-6.7: Moist 	 0.0-6.7: Moist 	 0.0-6.7: Moist
100D: Waiska	 0.0-6.7: Moist 	 0.0-6.7: Moist 	 0.0-6.7: Moist 	 0.0-6.7: Moist 	 0.0-6.7: Moist 	 0.0-6.7: Moist 	 0.0-2.0: Dry 2.0-6.7: Moist	 0.0-3.0: Dry 3.0-6.7: Moist	 0.0-6.7: Moist 	 0.0-6.7: Moist 	 0.0-6.7: Moist 	 0.0-6.7: Moist
102C: Waiska	 0.0-6.7: Moist 	 0.0-6.7: Moist 	 0.0-6.7: Moist 	 0.0-6.7: Moist 	 0.0-6.7: Moist 	 0.0-6.7: Moist 	 0.0-2.0: Dry 2.0-6.7: Moist	 0.0-3.0: Dry 3.0-6.7: Moist	 0.0-6.7: Moist 	 0.0-6.7: Moist 	 0.0-6.7: Moist 	 0.0-6.7: Moist
Garlic	 0.0-6.7: Moist 	0.0-6.7: Moist 	 0.0-6.7: Moist 	 0.0-6.7: Moist 	 0.0-6.7: Moist 	 0.0-6.7: Moist 	 0.0-2.0: Dry 2.0-6.7: Moist		 0.0-6.7: Moist 	 0.0-6.7: Moist 	 0.0-6.7: Moist 	 0.0-6.7: Moist
102E: Waiska	 0.0-6.7: Moist 	0.0-6.7: Moist 	 0.0-6.7: Moist 	0.0-6.7: Moist 	 0.0-6.7: Moist 	 0.0-6.7: Moist 	 0.0-2.0: Dry 2.0-6.7: Moist	 0.0-3.0: Dry 3.0-6.7: Moist	 0.0-6.7: Moist 	 0.0-6.7: Moist 	 0.0-6.7: Moist 	0.0-6.7: Moist
Garlic	 0.0-6.7: Moist 	0.0-6.7: Moist 	 0.0-6.7: Moist 	0.0-6.7: Moist 		 0.0-6.7: Moist 		0.0-3.0: Dry 3.0-6.7: Moist	0.0-6.7: Moist 	 0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist
102F: Waiska	 0.0-6.7: Moist 	 0.0-6.7: Moist 	 0.0-6.7: Moist 	0.0-6.7: Moist 	 0.0-6.7: Moist 	 0.0-6.7: Moist 	0.0-2.0: Dry 2.0-6.7: Moist	 0.0-3.0: Dry 3.0-6.7: Moist	 0.0-6.7: Moist 	 0.0-6.7: Moist 	 0.0-6.7: Moist 	 0.0-6.7: Moist
Garlic	 0.0-6.7: Moist 	0.0-6.7: Moist 	 0.0-6.7: Moist 	 0.0-6.7: Moist 	 0.0-6.7: Moist 	 0.0-6.7: Moist 	 0.0-2.0: Dry 2.0-6.7: Moist	 0.0-3.0: Dry 3.0-6.7: Moist	 0.0-6.7: Moist 	 0.0-6.7: Moist 	 0.0-6.7: Moist 	 0.0-6.7: Moist

Table 18.--Soil Moisture Status by Depth--Continued

Table 18.--Soil Moisture Status by Depth--Continued

Map symbol and soil name	 January 	February 	March	April	May 	June	July	August	September	October	November	December
110B:	 											
Shelldrake	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-2.0: Dry 2.0-6.7: Moist	0.0-3.0: Dry 3.0-6.7: Moist	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist
Croswell	 0.0-5.0: Moist 5.0-6.7: Wet 	Moist	0.0-2.5: Moist 2.5-6.7: Wet 	0.0-2.0: Moist 2.0-6.7: Wet 	0.0-2.0: Moist 2.0-6.7: Wet 	0.0-3.5: Moist 3.5-6.7: Wet 	0.0-1.5: Dry 1.5-4.5: Moist 4.5-6.7: Wet	0.0-2.5: Dry 2.5-5.5: Moist 5.5-6.7: Wet	0.0-4.5: Moist 4.5-6.7: Wet 	0.0-3.0: Moist 3.0-6.7: Wet 	0.0-3.0: Moist 3.0-6.7: Wet 	0.0-4.0: Moist 4.0-6.7: Wet
111B:	 											
Deer Park	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-2.0: Dry 2.0-6.7: Moist	0.0-3.0: Dry 3.0-6.7: Moist	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist
111D:												
Deer Park	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-2.0: Dry 2.0-6.7: Moist	0.0-3.0: Dry 3.0-6.7: Moist	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist
111E:	 											
Deer Park	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-2.0: Dry 2.0-6.7: Moist	0.0-3.0: Dry 3.0-6.7: Moist	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist
111F:												
Deer Park	 0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-2.0: Dry 2.0-6.7: Moist	0.0-3.0: Dry 3.0-6.7: Moist	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist
112C:												
Deer Park	0.1-2.6: Moist 	0.1-2.6: Moist 	0.1-2.6: Moist 	0.1-2.6: Moist 	0.1-2.6: Moist 	0.1-2.6: Moist 	0.0-0.8: Dry 0.8-2.6: Moist	0.0-1.2: Dry 1.2-2.6: Moist	0.1-2.6: Moist 	0.1-2.6: Moist 	0.1-2.6: Moist 	0.1-2.6: Moist

Map symbol and soil name	January	February 	March 	April 	May	June	July 	August 	September 	October 	November 	Decembe
112C:												
Croswell	0.0-5.0: Moist 5.0-6.7: Wet	0.0-5.0: Moist 5.0-6.7: Wet	0.0-2.5: Moist 2.5-6.7: Wet	0.0-2.0: Moist 2.0-6.7: Wet	0.0-2.0: Moist 2.0-6.7: Wet	0.0-3.5: Moist 3.5-6.7: Wet	0.0-1.5: Dry 1.5-4.5: Moist	0.0-2.5: Dry 2.5-5.5: Moist	0.0-4.5: Moist 4.5-6.7: Wet	0.0-3.0: Moist 3.0-6.7: Wet	0.0-3.0: Moist 3.0-6.7: Wet	0.0-4.0: Moist 4.0-6.7: Wet
	 			 			4.5-6.7: Wet	5.5-6.7: Wet	 		 	
113C:										 		1
Rubicon	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-2.0: Dry 2.0-6.7: Moist	0.0-3.0: Dry 3.0-6.7: Moist	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist
Croswell	0.0-5.0: Moist 5.0-6.7:	0.0-5.0: Moist 5.0-6.7:	0.0-2.5: Moist 2.5-6.7:	0.0-2.0: Moist 2.0-6.7:	0.0-2.0: Moist 2.0-6.7:	0.0-3.5: Moist 3.5-6.7:	0.0-1.5: Dry 1.5-4.5:	0.0-2.5: Dry 2.5-5.5:	0.0-4.5: Moist 4.5-6.7:	0.0-3.0: Moist 3.0-6.7:	0.0-3.0: Moist 3.0-6.7:	0.0-4.0: Moist 4.0-6.7:
	Wet 	Wet 	Wet 	Wet 	Wet 	Wet 	Moist 4.5-6.7: Wet	Moist 5.5-6.7: Wet	Wet 	Wet 	Wet 	Wet
120B:												
Garlic	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-2.0: Dry 2.0-6.7: Moist	0.0-3.0: Dry 3.0-6.7: Moist	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist
120D:												
Garlic	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-2.0: Dry 2.0-6.7: Moist	0.0-3.0: Dry 3.0-6.7: Moist	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist
1007		į	į		į	į				į		į
120E: Garlic	 0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-2.0: Dry 2.0-6.7: Moist	0.0-3.0: Dry 3.0-6.7: Moist	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist
125A:												[[
Croswell	Moist 5.0-6.7:	0.0-5.0: Moist 5.0-6.7:	0.0-2.5: Moist 2.5-6.7:	0.0-2.0: Moist 2.0-6.7:	0.0-2.0: Moist 2.0-6.7:	0.0-3.5: Moist 3.5-6.7:	0.0-1.5: Dry 1.5-4.5:	0.0-2.5: Dry 2.5-5.5:	0.0-4.5: Moist 4.5-6.7:	0.0-3.0: Moist 3.0-6.7:	0.0-3.0: Moist 3.0-6.7:	0.0-4.0: Moist 4.0-6.7:
	Wet 	Wet 	Wet 	Wet 	Wet 	Wet 	Moist 4.5-6.7: Wet	Moist 5.5-6.7: Wet	Wet 	Wet 	Wet 	Wet

Table 18.--Soil Moisture Status by Depth--Continued

Table 18.--Soil Moisture Status by Depth--Continued

Map symbol and soil name	January 	February 	March 	April 	May 	June 	July 	August 	September 	October	November 	Decembe
125A:	 											
Au Gres	0.0-1.5:	0.0-1.5:	0.0-1.0:	0.0-0.5:	0.0-0.5:	0.0-1.0:	0.0-2.0:	0.0-0.5:	0.0-2.0:	0.0-1.0:	0.0-1.0:	0.0-1.5:
	Moist	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Moist	Moist	Moist	Moist
	1.5-6.7:	1.5-6.7:	1.0-6.7:	0.5-6.7:	0.5-6.7:	1.0-6.7:	2.0-6.7:	0.5-3.0:	2.0-6.7:	1.0-6.7:	1.0-6.7:	1.5-6.7:
	Wet	Wet	Wet	Wet	Wet	Wet	Wet	Moist	Wet	Wet	Wet	Wet
	 							3.0-6.7: Wet				
126B:	 											
Au Gres	0.0-1.5:	0.0-1.5:	0.0-1.0:	0.0-0.5:	0.0-0.5:	0.0-1.0:	0.0-2.0:	0.0-0.5:	0.0-2.0:	0.0-1.0:	0.0-1.0:	0.0-1.5:
	Moist	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Moist	Moist	Moist	Moist
	1.5-6.7:	1.5-6.7:	1.0-6.7:	0.5-6.7:	0.5-6.7:	1.0-6.7:	2.0-6.7:	0.5-3.0:	2.0-6.7:	1.0-6.7:	1.0-6.7:	1.5-6.7:
	Wet	Wet	Wet	Wet	Wet	Wet	Wet	Moist	Wet	Wet	Wet	Wet
	 		i			j		3.0-6.7: Wet				
Deford	 0.0-6.7:	 0.0-6.7:	 0.0-6.7:	0.0-6.7:	 0.0-6.7:	0.0-0.5:	 0.0-1.5:	0.0-2.0:	0.0-1.0:	0.0-6.7:	0.0-6.7:	0.0-6.7:
	Wet	Wet	Wet	Wet	Wet	Moist	Moist	Moist	Moist	Wet	Wet	Wet
	 			ļ		0.5-6.7: Wet	1.5-6.7: Wet	2.0-6.7: Wet	1.0-6.7: Wet			
Croswell	 0.0-5.0:	0.0-5.0:	 0.0-2.5:	0.0-2.0:	0.0-2.0:	0.0-3.5:	0.0-1.5:	0.0-2.5:	0.0-4.5:	0.0-3.0:	0.0-3.0:	0.0-4.0:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
	5.0-6.7:	5.0-6.7:	2.5-6.7:	2.0-6.7:	2.0-6.7:	3.5-6.7:	1.5-4.5:	2.5-5.5:	4.5-6.7:	3.0-6.7:	3.0-6.7:	4.0-6.7:
	Wet	Wet	Wet	Wet	Wet	Wet	Moist	Moist	Wet	Wet	Wet	Wet
	 						4.5-6.7: Wet	5.5-6.7: Wet				
127A:	 											
Au Gres	0.0-1.5:	0.0-1.5:	0.0-1.0:	0.0-0.5:	0.0-0.5:	0.0-1.0:	0.0-2.0:	0.0-0.5:	0.0-2.0:	0.0-1.0:	0.0-1.0:	0.0-1.5:
	Moist	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Moist	Moist	Moist	Moist
	1.5-6.7:	1.5-6.7:	1.0-6.7:	0.5-6.7:	0.5-6.7:	1.0-6.7:	2.0-6.7:	0.5-3.0:	2.0-6.7:	1.0-6.7:	1.0-6.7:	1.5-6.7:
	Wet	Wet	Wet	Wet	Wet	Wet	Wet	Moist	Wet	Wet	Wet	Wet
	 							3.0-6.7: Wet				
Kinross	 0.0-6.7:	0.0-6.7:	 0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-0.5:	0.0-1.5:	0.0-2.0:	0.0-1.0:	0.0-6.7:	 0.0-6.7:	0.0-6.7:
	Wet	Wet	Wet	Wet	Wet	Moist	Moist	Moist	Moist	Wet	Wet	Wet
						0.5-6.7: Wet	1.5-6.7: Wet	2.0-6.7: Wet	1.0-6.7: Wet			
130C:												
Garlic	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-2.0:	0.0-3.0:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:
•	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
							2.0-6.7: Moist	3.0-6.7: Moist				

Moist

Moist

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0-6.7: oist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-1.0: Dry 1.0-6.7: Moist	0.0-1.5: Dry 1.5-6.7: Moist	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist
	<u> </u>	j i		İ	İ	İ	İ		j I	İ	İ
0-6.7: oist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-2.0: Dry 2.0-6.7: Moist	0.0-3.0: Dry 3.0-6.7: Moist	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist
0-6.7: oist	 0.0-6.7: Moist 	 0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-1.0: Dry 1.0-6.7: Moist	0.0-1.5: Dry 1.5-6.7: Moist	0.0-6.7: Moist 	 0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist
0-6.7: oist	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-2.0: Dry 2.0-6.7: Moist	0.0-3.0: Dry 3.0-6.7: Moist	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist
0-6.7: oist 	 0.0-6.7: Moist 	 0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-2.0: Dry 2.0-6.7: Moist	0.0-3.0: Dry 3.0-6.7: Moist	0.0-6.7: Moist 	 0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist
0-6.7: oist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-2.0: Dry 2.0-6.7: Moist	0.0-3.0: Dry 3.0-6.7: Moist	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-6.7: Moist
000	0-6.7:						Moist				

Moist

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0.0-6.7:

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2.0-6.7: |3.0-6.7:

0.0-6.7: | 0.0-2.0: | 0.0-3.0: | 0.0-6.7:

|2.0-6.7: |3.0-6.7:

Moist

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0.0-6.7: 0.0-6.7: 0.0-6.7:

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133F:

Moist

Moist

Keweenaw-----|0.0-6.7: |0.0-6.7: |0.0-6.7: |0.0-6.7:

Moist

Moist

Table 18.--Soil Moisture Status by Depth--Continued

Table 18.--Soil Moisture Status by Depth--Continued

Map symbol and soil name	January 	February	March	April	May	June	July	August	September	October 	November	December
133F:	 											
Garlic		0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-2.0:	0.0-3.0:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
	 						2.0-6.7: Moist	3.0-6.7: Moist				
136B:	 											
Borgstrom	0.0-5.0:	0.0-5.0:	0.0-2.5:	0.0-2.0:	0.0-2.0:	0.0-3.5:	0.0-1.5:	0.0-2.5:	0.0-4.5:	0.0-3.0:	0.0-3.0:	0.0-4.0:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
	5.0-6.7:	5.0-6.7:	2.5-6.7:	2.0-6.7:	2.0-6.7:	3.5-6.7:	1.5-4.5:	2.5-5.5:	4.5-6.7:	3.0-6.7:	3.0-6.7:	4.0-6.7:
	Wet	Wet	Wet	Wet	Wet	Wet	Moist	Moist	Wet	Wet	Wet	Wet
	 					ļ	4.5-6.7: Wet	5.5-6.7: Wet				
Ingalls	 0.0-1.5:	0.0-1.5:	0.0-1.0:	0.0-0.5:	0.0-0.5:	0.0-1.0:	0.0-2.0:	0.0-0.5:	0.0-2.0:	0.0-1.0:	0.0-1.0:	0.0-1.5:
	Moist	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Moist	Moist	Moist	Moist
	1.5-6.7:	1.5-6.7:	1.0-6.7:	0.5-6.7:	0.5-6.7:	1.0-6.7:	2.0-6.7:	0.5-3.0:	2.0-6.7:	1.0-6.7:	1.0-6.7:	1.5-6.7:
	Wet	Wet	Wet	Wet	Wet	Wet	Wet	Moist	Wet	Wet	Wet	Wet
	 							3.0-6.7: Wet				
142C:	 											
Wallace	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-2.0:	0.0-3.0:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
	 						2.0-6.7: Moist	3.0-6.7: Moist				
Rubicon	 0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	 0.0-6.7:	0.0-2.0:	0.0-3.0:	0.0-6.7:	0.0-6.7:	 0.0-6.7:	0.0-6.7:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
	 						2.0-6.7: Moist	3.0-6.7: Moist				
142F:	 											
Wallace	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-2.0:	0.0-3.0:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
							2.0-6.7: Moist	3.0-6.7: Moist				
Rubicon	 0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-2.0:	0.0-3.0:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
	 						2.0-6.7: Moist	3.0-6.7: Moist				

Map symbol and soil name	January 	February 	March	April	May	June	July	August	September 	October	November	Decembe:
155C:	 											
Montreal	0.0-6.7:	0.0-6.7:	0.0-1.5:	0.0-1.0:	0.0-1.5:	0.0-6.7:	0.0-1.0:	0.0-1.5:	0.0-6.7:	0.0-6.7:	0.0-1.5:	0.0-6.7:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
			1.5-1.7:	1.0-1.7:	1.5-1.7:		1.0-6.7:	1.5-6.7:			1.5-1.7:	
			Wet	Wet	Wet		Moist	Moist			Wet	
			1.7-6.7:	1.7-6.7:	1.7-6.7:						1.7-6.7:	
			Moist	Moist	Moist						Moist	-
Paavola	0.0-6.7:	0.0-6.7:	0.0-1.5:	0.0-1.0:	0.0-1.5:	0.0-6.7:	0.0-2.0:	0.0-3.0:	0.0-6.7:	0.0-2.0:	0.0-1.5:	0.0-6.7:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
			1.5-2.6:	1.0-2.6:	1.5-2.6:		2.0-6.7:	3.0-6.7:		2.0-2.6:	1.5-2.6:	
			Wet	Wet	Wet		Moist	Moist		Wet	Wet	
			2.6-6.7:	2.6-6.7:	2.6-6.7:					2.6-6.7:	2.6-6.7:	
			Moist	Moist	Moist					Moist	Moist	
Waiska	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-2.0:	0.0-3.0:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
							2.0-6.7:	3.0-6.7:				
							Moist	Moist				
155E:	 										l I	
Montreal	0.0-6.7:	0.0-6.7:	0.0-1.5:	0.0-1.0:	0.0-1.5:	0.0-6.7:	0.0-1.0:	0.0-1.5:	0.0-6.7:	0.0-6.7:	0.0-1.5:	0.0-6.7:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
			1.5-1.7:	1.0-1.7:	1.5-1.7:		1.0-6.7:	1.5-6.7:			1.5-1.7:	
			Wet	Wet	Wet		Moist	Moist			Wet	
			1.7-6.7:	1.7-6.7:	1.7-6.7:						1.7-6.7:	
	 		Moist	Moist	Moist						Moist	
Paavola	0.0-6.7:	0.0-6.7:	0.0-1.5:	0.0-1.0:	0.0-1.5:	0.0-6.7:	0.0-2.0:	0.0-3.0:	0.0-6.7:	0.0-2.0:	0.0-1.5:	0.0-6.7:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
			1.5-2.6:	1.0-2.6:	1.5-2.6:		2.0-6.7:	3.0-6.7:		2.0-2.6:	1.5-2.6:	
			Wet	Wet	Wet		Moist	Moist		Wet	Wet	
			2.6-6.7:	2.6-6.7:	2.6-6.7:					2.6-6.7:	2.6-6.7:	
	 		Moist	Moist	Moist					Moist	Moist	
Waiska	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-2.0:	0.0-3.0:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
							2.0-6.7:	3.0-6.7:				
							Moist	Moist				
158A:												1
Arnheim	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-0.5:	0.0-1.0:	0.0-2.0:	0.0-1.5:	0.0-0.5:	0.0-6.7:	0.0-6.7:
	Wet	Wet	Wet	Wet	Wet	Moist	Moist	Moist	Moist	Moist	Wet	Wet
						0.5-6.7:	1.0-6.7:	2.0-6.7:	1.5-6.7:	0.5-6.7:		
	I					Wet	Wet	Wet	Wet	Wet		1

Table 18.--Soil Moisture Status by Depth--Continued

Table 18.--Soil Moisture Status by Depth--Continued

Map symbol and soil name	January 	February 	March 	April 	May 	June 	July 	August 	September 	October 	November	December
158A:	 											[[
Sturgeon	0.0-1.5:	0.0-1.5:	0.0-1.0:	0.0-0.5:	0.0-0.5:	0.0-1.0:	0.0-2.0:	0.0-0.5:	0.0-2.0:	0.0-1.0:	0.0-1.0:	0.0-1.5:
	Moist	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Moist	Moist	Moist	Moist
	1.5-6.7:	1.5-6.7:	1.0-6.7:	0.5-6.7:	0.5-6.7:	1.0-6.7:	2.0-6.7:	0.5-3.0:	2.0-6.7:	1.0-6.7:	1.0-6.7:	1.5-6.7:
	Wet	Wet	Wet	Wet	Wet	Wet	Wet	Moist	Wet	Wet	Wet	Wet
	 							3.0-6.7: Wet				
Pelkie	 0.0-5.0:	0.0-5.0:	0.0-2.5:	0.0-2.0:	0.0-2.0:	0.0-3.5:	0.0-1.5:	0.0-2.5:	0.0-4.5:	0.0-3.0:	0.0-3.0:	0.0-4.5:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
	5.0-6.7:	5.0-6.7:	2.5-6.7:	2.0-6.7:	2.0-6.7:	3.5-6.7:	1.5-4.5:	2.5-5.5:	4.5-6.7:	3.0-6.7:	3.0-6.7:	4.5-6.7:
	Wet	Wet	Wet	Wet	Wet	Wet	Moist	Moist	Wet	Wet	Wet	Wet
	i I	j	j	i	j		4.5-6.7: Wet	5.5-6.7: Wet	j		j	i
161F:	 											
Trimountain	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-1.0:	0.0-1.5:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
	 	j	i		j	j	1.0-6.7: Moist	1.5-6.7: Moist	j		j	
Lac La Belle	 0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-2.0:	0.0-3.0:	0.0-6.7:	 0.0-6.7:	0.0-6.7:	0.0-6.7:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
	 						2.0-6.7: Moist	3.0-6.7: Moist				
Waiska	 0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	 0.0-6.7:	0.0-6.7:	0.0-2.0:	0.0-3.0:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
	i !	j	i !		j	j	2.0-6.7: Moist	3.0-6.7: Moist	ļ		j	ļ
162F:	 											
Trimountain	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-1.0:	0.0-1.5:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
							1.0-6.7: Moist	1.5-6.7: Moist				
Lac La Belle	 0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-2.0:	0.0-3.0:	0.0-6.7:	 0.0-6.7:	0.0-6.7:	0.0-6.7:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
	 						2.0-6.7: Moist	3.0-6.7: Moist				
Michigamme	 0.0-2.6:	0.0-2.6:	 0.0-2.6:	0.0-2.6:	0.0-2.6:	0.0-2.6:	0.0-1.0:	 0.0-1.5:	0.0-2.6:	0.0-2.6:	0.0-2.6:	0.0-2.6:
-	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
	i						1.0-2.6: Moist	1.5-2.6: Moist				

Table 18.--Soil Moisture Status by Depth--Continued

Map symbol and soil name	January 	February 	March 	April 	May 	June 	July 	August 	September 	October 	November 	December
166B:	 											
Gratiot	0.0-5.5:	0.0-5.5:	0.0-1.5:	0.0-0.5:	0.0-0.5:	0.0-1.0:	0.0-5.5:	0.0-0.5:	0.0-6.7:	0.0-5.5:	0.0-1.5:	0.0-5.5:
	Moist	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Moist	Moist	Moist	Moist
	5.5-6.7:	5.5-6.7:	1.5-1.7:	0.5-1.7:	0.5-1.7:	1.0-1.7:	5.5-6.7:	0.5-6.7:		5.5-6.7:	1.5-1.7:	5.5-6.7:
	Wet	Wet	Wet	Wet	Wet	Wet	Wet	Moist		Wet	Wet	Wet
			1.7-5.0:	1.7-4.5:	1.7-4.5:	1.7-4.5:					1.7-5.5:	
			Moist	Moist	Moist	Moist					Moist	
			5.0-6.7:	4.5-6.7:	4.5-6.7:	4.5-6.7:					5.5-6.7:	
	 		Wet	Wet	Wet	Wet					Wet	
Sabattis	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-0.5:	0.0-1.5:	0.0-2.0:	0.0-1.0:	0.0-6.7:	0.0-6.7:	0.0-6.7:
	Wet	Wet	Wet	Wet	Wet	Moist	Moist	Moist	Moist	Wet	Wet	Wet
						0.5-6.7:	1.5-6.7:	2.0-6.7:	1.0-6.7:			
	 					Wet	Wet	Wet	Wet			
173C:	 						1	1				
Montreal	0.0-6.7:	0.0-6.7:	0.0-1.5:	0.0-1.0:	0.0-1.5:	0.0-6.7:	0.0-1.0:	0.0-1.5:	0.0-6.7:	0.0-6.7:	0.0-1.5:	0.0-6.7:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
			1.5-1.7:	1.0-1.7:	1.5-1.7:		1.0-6.7:	1.5-6.7:			1.5-1.7:	
			Wet	Wet	Wet		Moist	Moist			Wet	
			1.7-6.7:	1.7-6.7:	1.7-6.7:						1.7-6.7:	
			Moist	Moist	Moist			1			Moist	
Paavola	 0.0-6.7:	0.0-6.7:	0.0-1.5:	0.0-1.0:	0.0-1.5:	0.0-6.7:	0.0-2.0:	0.0-3.0:	0.0-6.7:	0.0-2.0:	0.0-1.5:	0.0-6.7:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
			1.5-2.6:	1.0-2.6:	1.5-2.6:		2.0-6.7:	3.0-6.7:		2.0-2.6:	1.5-2.6:	
			Wet	Wet	Wet		Moist	Moist		Wet	Wet	
			2.6-6.7:	2.6-6.7:	2.6-6.7:					2.6-6.7:	2.6-6.7:	
			Moist	Moist	Moist			1		Moist	Moist	
Dishno	 0.0-3.8:	0.0-3.8:	0.0-2.0:	0.0-1.0:	0.0-1.5:	0.0-3.8:	0.0-1.0:	0.0-1.5:	0.0-3.0:	0.0-1.0:	0.0-2.0:	0.0-3.8:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
			2.0-3.8:	1.0-3.8:	1.5-3.8:		1.0-3.8:	1.5-3.8:	3.0-3.8:	1.0-3.8:	2.0-3.8:	
			Wet	Wet	Wet		Moist	Moist	Wet	Wet	Wet	
173E:	 							l I				
Montreal	0.0-6.7:	0.0-6.7:	0.0-1.5:	0.0-1.0:	0.0-1.5:	0.0-6.7:	0.0-1.0:	0.0-1.5:	0.0-6.7:	0.0-6.7:	0.0-1.5:	0.0-6.7:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
			1.5-1.7:	1.0-1.7:	1.5-1.7:	i	1.0-6.7:	1.5-6.7:		j	1.5-1.7:	
			Wet	Wet	Wet	1	Moist	Moist			Wet	
		j	1.7-6.7:	1.7-6.7:	1.7-6.7:	j				j	1.7-6.7:	j
	l	1	Moist	Moist	Moist	1	1	1	1	I	Moist	1

Table 18.--Soil Moisture Status by Depth--Continued

Map symbol and soil name	January 	February	March 	April 	May	June 	July	August 	September	October	November	December
173E:	 											
Paavola	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-1.5: Moist 1.5-2.6:	0.0-1.0: Moist 1.0-2.6:	0.0-1.5: Moist 1.5-2.6:	0.0-6.7: Moist 	0.0-2.0: Dry 2.0-6.7:	0.0-3.0: Dry 3.0-6.7:	0.0-6.7: Moist 	0.0-2.0: Moist 2.0-2.6:	0.0-1.5: Moist 1.5-2.6:	0.0-6.7: Moist
	 	 	Wet 2.6-6.7: Moist	Wet 2.6-6.7: Moist	Wet 2.6-6.7: Moist	i 	Moist 	Moist 	i 	Wet 2.6-6.7: Moist	Wet 2.6-6.7: Moist	
Dishno	 0.0-3.8: Moist 	0.0-3.8: Moist 	 0.0-2.0: Moist 2.0-3.8: Wet		 0.0-1.5: Moist 1.5-3.8: Wet	0.0-3.8: Moist 			 0.0-3.0: Moist 3.0-3.8: Wet	0.0-1.0: Moist 1.0-3.8: Wet	 0.0-2.0: Moist 2.0-3.8: Wet	0.0-3.8: Moist
174B:	 					į						İ
Montreal	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-1.5: Moist 1.5-1.7:	1	0.0-1.5: Moist 1.5-1.7:	0.0-6.7: Moist 	0.0-1.0: Dry 1.0-6.7:	0.0-1.5: Dry 1.5-6.7:	0.0-6.7: Moist 	0.0-6.7: Moist 	0.0-1.5: Moist 1.5-1.7:	0.0-6.7: Moist
	 		Wet 1.7-6.7: Moist	Wet 1.7-6.7: Moist	Wet 1.7-6.7: Moist		Moist 	Moist 			Wet 1.7-6.7: Moist	
Dishno	0.0-3.8: Moist 	0.0-3.8: Moist 	0.0-2.0: Moist 2.0-3.8: Wet	0.0-1.0: Moist 1.0-3.8:	0.0-1.5: Moist 1.5-3.8:	0.0-3.8: Moist 	0.0-1.0: Dry 1.0-3.8: Moist	0.0-1.5: Dry 1.5-3.8: Moist	0.0-3.0: Moist 3.0-3.8: Wet	0.0-1.0: Moist 1.0-3.8:	0.0-2.0: Moist 2.0-3.8:	0.0-3.8: Moist
Gratiot		0.0-5.5:	 0.0-1.5:	0.0-0.5:	0.0-0.5:	0.0-1.0:	0.0-5.5:	0.0-0.5:	0.0-6.7:	0.0-5.5:	 0.0-1.5:	0.0-5.5:
Gratiot	0.0-5.5: Moist 5.5-6.7:	Moist 5.5-6.7:	Moist 1.5-1.7:	Moist 0.5-1.7:	Moist 0.5-1.7:	Moist 1.0-1.7:	Moist 5.5-6.7:	Dry 0.5-6.7:	Moist 	Moist 5.5-6.7:	Moist 1.5-1.7:	Moist 5.5-6.7:
	Wet 	Wet	Wet 1.7-5.0: Moist	Wet 1.7-4.5: Moist	Wet 1.7-4.5: Moist	Wet 1.7-4.5: Moist	Wet 	Moist	j 	Wet	Wet 1.7-5.5: Moist	Wet
	 		5.0-6.7: Wet	4.5-6.7: Wet	4.5-6.7: Wet	4.5-6.7: Wet					5.5-6.7: Wet	
177A: Assinins		 0.0-1.5:	 0.0-1.0:	 0.0-0.5:	 0.0-0.5:	 0.0-1.0:	 0.0-2.0:	0.0-0.5:	 0.0-2.0:	 0.0-1.0:	 0.0-1.0:	 0.0-1.5:
	0.0-1.5: Moist 1.5-6.7:	Moist 1.5-6.7:	Moist 1.0-6.7:	Moist 0.5-6.7:	Moist 0.5-6.7:	Moist 1.0-6.7:	Moist 2.0-6.7:	Dry 0.5-3.0:	Moist 2.0-6.7:	Moist 1.0-6.7:	Moist 1.0-6.7:	Moist 1.5-6.7:
	Wet 	Wet 	Wet 	Wet 	Wet 	Wet 	Wet 	Moist 3.0-6.7: Wet	Wet 	Wet 	Wet 	Wet

Table 18.--Soil Moisture Status by Depth--Continued

Map symbol and soil name	January	February 	March 	April 	May 	June 	July 	August 	September 	October 	November	December
183C:		1										1
Munising	0.0-6.7:	0.0-6.7:	0.0-1.5:	0.0-1.0:	0.0-1.5:	0.0-6.7:	0.0-1.0:	0.0-1.5:	0.0-6.7:	0.0-6.7:	0.0-1.5:	0.0-6.7:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
			1.5-1.7:	1.0-1.7:	1.5-1.7:		1.0-6.7:	1.5-6.7:			1.5-1.7:	
			Wet	Wet	Wet		Moist	Moist			Wet	
			1.7-6.7:	1.7-6.7:	1.7-6.7:						1.7-6.7:	
			Moist	Moist	Moist						Moist	
Abbaye	0.0-2.7:	0.0-2.7:	0.0-2.0:	0.0-1.0:	0.0-2.0:	0.0-2.7:	0.0-1.0:	0.0-1.5:	0.0-2.7:	0.0-1.0:	0.0-2.0:	0.0-2.7:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
			2.0-2.7:	1.0-2.7:	2.0-2.7:		1.0-2.7:	1.5-2.7:		1.0-2.7:	2.0-2.7:	
			Wet	Wet	Wet		Moist	Moist		Wet	Wet	
Yalmer	0.0-6.7:	0.0-6.7:	0.0-1.5:	0.0-1.0:	0.0-1.5:	0.0-6.7:	0.0-2.0:	0.0-2.0:	0.0-6.7:	0.0-6.7:	0.0-1.5:	0.0-6.7:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
			1.5-2.0:	1.0-2.0:	1.5-2.0:		2.0-6.7:	2.0-6.7:			1.5-2.0:	
			Wet	Wet	Wet		Moist	Moist			Wet	
			2.0-6.7:	2.0-6.7:	2.0-6.7:						2.0-6.7:	
			Moist	Moist	Moist						Moist	
183E:								1				
Munising	0.0-6.7:	0.0-6.7:	0.0-1.5:	0.0-1.0:	0.0-1.5:	0.0-6.7:	0.0-1.0:	0.0-1.5:	0.0-6.7:	0.0-6.7:	0.0-1.5:	0.0-6.7:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
			1.5-1.7:	1.0-1.7:	1.5-1.7:		1.0-6.7:	1.5-6.7:			1.5-1.7:	
			Wet	Wet	Wet		Moist	Moist			Wet	
			1.7-6.7:		1.7-6.7:						1.7-6.7:	
			Moist	Moist	Moist			1			Moist	
Abbaye	0.0-2.7:	0.0-2.7:	0.0-2.0:	0.0-1.0:	0.0-2.0:	0.0-2.7:	0.0-1.0:	0.0-1.5:	0.0-2.7:	0.0-1.0:	0.0-2.0:	0.0-2.7:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
			2.0-2.7:	1.0-2.7:	2.0-2.7:		1.0-2.7:	1.5-2.7:		1.0-2.7:	2.0-2.7:	
			Wet	Wet	Wet		Moist	Moist		Wet	Wet	
Yalmer	0.0-6.7:	0.0-6.7:	0.0-1.5:	0.0-1.0:	0.0-1.5:	0.0-6.7:	0.0-2.0:	0.0-2.0:	0.0-6.7:	0.0-6.7:	0.0-1.5:	0.0-6.7:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
			1.5-2.0:	1.0-2.0:	1.5-2.0:		2.0-6.7:	2.0-6.7:			1.5-2.0:	
			Wet	Wet	Wet		Moist	Moist			Wet	
			2.0-6.7:	2.0-6.7:	2.0-6.7:						2.0-6.7:	
			Moist	Moist	Moist						Moist	

Table 18.--Soil Moisture Status by Depth--Continued

Map symbol and soil name	 January 	February	March 	April	 May 	June	July	August	 September 	October	November	December
184C:	 											
Munising	0.0-6.7:	0.0-6.7:	0.0-1.5:	0.0-1.0:	0.0-1.5:	0.0-6.7:	0.0-1.0:	0.0-1.5:	0.0-6.7:	0.0-6.7:	0.0-1.5:	0.0-6.7:
•	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
		i	1.5-1.7:	1.0-1.7:	1.5-1.7:	j	1.0-6.7:	1.5-6.7:		j	1.5-1.7:	
			Wet	Wet	Wet		Moist	Moist			Wet	
			1.7-6.7:	1.7-6.7:	1.7-6.7:						1.7-6.7:	
			Moist	Moist	Moist						Moist	
Yalmer	0.0-6.7:	0.0-6.7:	0.0-1.5:	0.0-1.0:	0.0-1.5:	0.0-6.7:	0.0-2.0:	0.0-2.0:	0.0-6.7:	0.0-6.7:	0.0-1.5:	0.0-6.7:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
			1.5-2.0:	1.0-2.0:	1.5-2.0:		2.0-6.7:	2.0-6.7:			1.5-2.0:	
			Wet	Wet	Wet		Moist	Moist			Wet	
			2.0-6.7: Moist	2.0-6.7: Moist	2.0-6.7: Moist						2.0-6.7: Moist	
184E:												
Munising	0.0-6.7:	0.0-6.7:	0.0-1.5:	0.0-1.0:	0.0-1.5:	0.0-6.7:	0.0-1.0:	0.0-1.5:	0.0-6.7:	0.0-6.7:	0.0-1.5:	0.0-6.7:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
			1.5-1.7:	1.0-1.7:	1.5-1.7:		1.0-6.7:	1.5-6.7:			1.5-1.7:	
			Wet	Wet	Wet		Moist	Moist			Wet	
			1.7-6.7:	1.7-6.7:	1.7-6.7:						1.7-6.7:	
			Moist	Moist	Moist						Moist	
Yalmer	1	0.0-6.7:	0.0-1.5:	0.0-1.0:	0.0-1.5:	0.0-6.7:	0.0-2.0:	0.0-2.0:	0.0-6.7:	0.0-6.7:	0.0-1.5:	0.0-6.7:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
			1.5-2.0:	1.0-2.0:	1.5-2.0:		2.0-6.7:	2.0-6.7:			1.5-2.0:	
	!		Wet	Wet	Wet	ļ	Moist	Moist		ļ	Wet	
			2.0-6.7:	2.0-6.7:	2.0-6.7:						2.0-6.7:	
	 		Moist	Moist	Moist						Moist	
185B:	İ		İ		İ	İ	İ			İ		İ
Munising			0.0-1.5:	0.0-1.0:	0.0-1.5:	0.0-6.7:	0.0-1.0:	0.0-1.5:	0.0-6.7:	0.0-6.7:	0.0-1.5:	0.0-6.7:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
			1.5-1.7:	1.0-1.7:	1.5-1.7:	ļ	1.0-6.7:	1.5-6.7:			1.5-1.7:	
			Wet	Wet	Wet		Moist	Moist			Wet	
			1.7-6.7:	1.7-6.7:	1.7-6.7:						1.7-6.7:	
	 		Moist	Moist	Moist						Moist	
Skanee	0.0-5.5:	0.0-5.5:	0.0-5.0:	0.0-0.5:	0.0-0.5:	0.0-1.0:	0.0-5.5:	0.0-0.5:	0.0-6.7:	0.0-5.5:	0.0-5.5:	0.0-5.5:
	Moist	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Moist	Moist	Moist	Moist
	5.5-6.7:	5.5-6.7:	5.0-6.7:	0.5-1.2:	0.5-1.2:	1.0-1.2:	5.5-6.7:	0.5-6.7:		5.5-6.7:	5.5-6.7:	5.5-6.7:
	Wet	Wet	Wet	Wet	Wet	Wet	Wet	Moist	1	Wet	Wet	Wet
				1.2-4.5:	1.2-4.5:	1.2-4.5:						
	!	!	!	Moist	Moist	Moist	!			ļ.	1	!
				4.5-6.7:	4.5-6.7:	4.5-6.7:						
			1	Wet	Wet	Wet				1		

Map symbol and soil name	January	February	March	April	May	June	July	August	September 	October 	November	December
185C:												
Munising	0.0-6.7:	0.0-6.7:	0.0-1.5:	0.0-1.0:	0.0-1.5:	0.0-6.7:	0.0-1.0:	0.0-1.5:	0.0-6.7:	0.0-6.7:	0.0-1.5:	0.0-6.7:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
			1.5-1.7:	1.0-1.7:	1.5-1.7:		1.0-6.7:	1.5-6.7:			1.5-1.7:	
			Wet	Wet	Wet		Moist	Moist			Wet	
			1.7-6.7:	1.7-6.7:	1.7-6.7:						1.7-6.7:	
			Moist	Moist	Moist						Moist	
Skanee	0.0-5.5:	0.0-5.5:	0.0-5.0:	0.0-0.5:	0.0-0.5:	0.0-1.0:	0.0-5.5:	0.0-0.5:	0.0-6.7:	0.0-5.5:	0.0-5.5:	0.0-5.5:
j	Moist	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Moist	Moist	Moist	Moist
j	5.5-6.7:	5.5-6.7:	5.0-6.7:	0.5-1.2:	0.5-1.2:	1.0-1.2:	5.5-6.7:	0.5-6.7:		5.5-6.7:	5.5-6.7:	5.5-6.7:
	Wet	Wet	Wet	Wet	Wet	Wet	Wet	Moist		Wet	Wet	Wet
				1.2-4.5:	1.2-4.5:	1.2-4.5:						
				Moist	Moist	Moist						
				4.5-6.7:	4.5-6.7:	4.5-6.7:						
				Wet	Wet	Wet						
187A:												1
Skanee	0.0-5.5:	0.0-5.5:	0.0-5.0:	0.0-0.5:	0.0-0.5:	0.0-1.0:	0.0-5.5:	0.0-0.5:	0.0-6.7:	0.0-5.5:	0.0-5.5:	0.0-5.5:
	Moist	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Moist	Moist	Moist	Moist
	5.5-6.7:	5.5-6.7:	5.0-6.7:	0.5-1.2:	0.5-1.2:	1.0-1.2:	5.5-6.7:	0.5-6.7:		5.5-6.7:	5.5-6.7:	5.5-6.7:
	Wet	Wet	Wet	Wet	Wet	Wet	Wet	Moist		Wet	Wet	Wet
				1.2-4.5:	1.2-4.5:	1.2-4.5:						
		ļ	!	Moist	Moist	Moist	!		!	!		
				4.5-6.7: Wet	4.5-6.7: Wet	4.5-6.7: Wet						
								i		İ		İ
Gay		0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-0.5:	0.0-1.5:	0.0-2.0:	0.0-1.0:	0.0-6.7:	0.0-6.7:	0.0-6.7:
	Wet	Wet	Wet	Wet	Wet	Moist	Moist	Moist	Moist	Wet	Wet	Wet
						0.5-6.7:	1.5-6.7:	2.0-6.7:	1.0-6.7:			
						Wet	Wet	Wet	Wet			
192B:		i			i		1	1	1		1	
Nipissing	0.0-3.2:	0.0-3.2:	0.0-3.2:	0.0-3.2:	0.0-3.2:	0.0-3.2:	0.0-1.0:	0.0-1.5:	0.0-3.2:	0.0-3.2:	0.0-3.2:	0.0-3.2:
i	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
j							1.0-3.2:	1.5-3.2:				
ļ							Moist	Moist				1
Arcadian	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:	0.0-1.0:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
Rock outcrop.												
ROCK OUTGIOD.		1	1		!	!	!	1		!	1	!

Table 18.--Soil Moisture Status by Depth--Continued

Table 18.--Soil Moisture Status by Depth--Continued

Map symbol and soil name	January 	February 	March 	April 	May 	June 	July 	August 	September 	October 	November	December
194B:	 								1			
Copper Harbor	0.0-5.0:	0.0-5.0:	0.0-2.5:	0.0-2.0:	0.0-2.0:	0.0-3.5:	0.0-1.5:	0.0-2.5:	0.0-4.5:	0.0-3.0:	0.0-3.0:	0.0-4.0:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
	5.0-6.7:	5.0-6.7:	2.5-6.7:	2.0-6.7:	2.0-6.7:	3.5-6.7:	1.5-4.5:	2.5-5.5:	4.5-6.7:	3.0-6.7:	3.0-6.7:	4.0-6.7:
	Wet	Wet	Wet	Wet	Wet	Wet	Moist	Moist	Wet	Wet	Wet	Wet
	 						4.5-6.7: Wet	5.5-6.7: Wet				
195B:	 											
Copper Harbor	0.0-5.0:	0.0-5.0:	0.0-2.5:	0.0-2.0:	0.0-2.0:	0.0-3.5:	0.0-1.5:	0.0-2.5:	0.0-4.5:	0.0-3.0:	0.0-3.0:	0.0-4.0:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
	5.0-6.7:	5.0-6.7:	2.5-6.7:	2.0-6.7:	2.0-6.7:	3.5-6.7:	1.5-4.5:	2.5-5.5:	4.5-6.7:	3.0-6.7:	3.0-6.7:	4.0-6.7:
	Wet	Wet	Wet	Wet	Wet	Wet	Moist	Moist	Wet	Wet	Wet	Wet
	 						4.5-6.7: Wet	5.5-6.7: Wet				
Bete Grise	 0.0-1.5:	0.0-1.5:	0.0-1.0:	0.0-0.5:	0.0-0.5:	0.0-1.0:	0.0-2.0:	0.0-0.5:	0.0-2.0:	0.0-1.0:	0.0-1.0:	0.0-1.5:
	Moist	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Moist	Moist	Moist	Moist
	1.5-6.7:	1.5-6.7:	1.0-6.7:	0.5-6.7:	0.5-6.7:	1.0-6.7:	2.0-6.7:	0.5-3.0:	2.0-6.7:	1.0-6.7:	1.0-6.7:	1.5-6.7:
	Wet	Wet	Wet	Wet	Wet	Wet	Wet	Moist	Wet	Wet	Wet	Wet
	 							3.0-6.7: Wet	 			
196B:	 											
Bete Grise	0.0-1.5:	0.0-1.5:	0.0-1.0:	0.0-0.5:	0.0-0.5:	0.0-1.0:	0.0-2.0:	0.0-0.5:	0.0-2.0:	0.0-1.0:	0.0-1.0:	0.0-1.5:
	Moist	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Moist	Moist	Moist	Moist
	1.5-6.7:	1.5-6.7:	1.0-6.7:	0.5-6.7:	0.5-6.7:	1.0-6.7:	2.0-6.7:	0.5-3.0:	2.0-6.7:	1.0-6.7:	1.0-6.7:	1.5-6.7:
	Wet	Wet	Wet	Wet	Wet	Wet	Wet	Moist	Wet	Wet	Wet	Wet
	 							3.0-6.7: Wet				
Tawas	 0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-6.7:	0.0-0.5:	0.0-1.0:	0.0-0.5:	0.0-6.7:	0.0-6.7:	0.0-6.7:
	Wet	Wet	Wet	Wet	Wet	Wet	Moist	Moist	Moist	Wet	Wet	Wet
	 	 		j			0.5-6.7: Wet	1.0-6.7: Wet	0.5-6.7: Wet	 		i
301:	 							l I				
Udorthents	0.0-7.0:	0.0-7.0:	0.0-7.0:	0.0-7.0:	0.0-7.0:	0.0-7.0:	0.0-1.0:	0.0-1.5:	0.0-7.0:	0.0-7.0:	0.0-7.0:	0.0-7.0:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
	 	j		j			1.0-7.0: Moist	1.5-7.0: Moist	i			
Udipsamments	 0.0-7.0:	 0.0-7.0:	0.0-7.0:	0.0-7.0:	0.0-7.0:	0.0-7.0:	0.0-2.0:	0.0-3.0:	 0.0-7.0:	 0.0-7.0:	0.0-7.0:	 0.0-7.0:
	Moist	Moist	Moist	Moist	Moist	Moist	Dry	Dry	Moist	Moist	Moist	Moist
	 						2.0-7.0: Moist	3.0-7.0: Moist				

Map symbol and soil name	January 	February 	March 	April 	May 	June 	July 	August 	September 	October 	November 	December
302:	 											
Histosols	0.0-7.0: Wet	0.0-7.0: Wet	0.0-7.0: Wet	0.0-7.0: Wet	0.0-7.0: Wet	0.0-7.0: Wet	0.0-7.0: Wet	0.0-7.0: Wet	0.0-7.0: Wet	0.0-7.0: Wet	0.0-7.0:	0.0-7.0: Wet
Aquents	 0.0-7.0: Wet	0.0-7.0: Wet	0.0-7.0: Wet	 0.0-7.0: Wet	0.0-7.0: Wet	 0.0-7.0: Wet	0.0-7.0: Wet	 0.0-7.0: Wet	0.0-7.0: Wet	0.0-7.0: Wet	 0.0-7.0: Wet	 0.0-7.0: Wet
303:	 										1	I I
Aquents	0.0-7.0: Wet	0.0-7.0: Wet	0.0-7.0: Wet	0.0-7.0: Wet	0.0-7.0: Wet	0.0-7.0: Wet	0.0-7.0: Wet	0.0-7.0: Wet	0.0-7.0: Wet	0.0-7.0: Wet	0.0-7.0: Wet	0.0-7.0: Wet
Dumps, stamp	 											
sand	Moist	0.0-1.5: Moist	0.0-1.0: Moist	0.0-0.5: Moist	0.0-0.5: Moist	0.0-1.0: Moist	0.0-2.0: Moist	0.0-0.5: Dry	0.0-2.0: Moist	0.0-1.0: Moist	0.0-1.0: Moist	0.0-1.5: Moist
	1.5-6.7: Wet	1.5-6.7: Wet	1.0-6.7: Wet	0.5-6.7: Wet	0.5-6.7: Wet	1.0-6.7: Wet	2.0-6.7: Wet	0.5-3.0: Moist	2.0-6.7: Wet	1.0-6.7: Wet	1.0-6.7: Wet	1.5-6.7: Wet
	wet 	wet 	wet 	wet 	wet 	wet 	wet 	Moist 3.0-6.7: Wet	wet 	wet 	wet 	wet
310. Dumps, mine	 	 		 		 		 	 	 	 	
311:	 											
Dumps, stamp		i							i		i	i
sand	0.0-1.5:	0.0-1.5:	0.0-1.0:	0.0-0.5:	0.0-0.5:	0.0-1.0:	0.0-2.0:	0.0-0.5:	0.0-2.0:	0.0-1.0:	0.0-1.0:	0.0-1.5:
	Moist 1.5-6.7:	Moist 1.5-6.7:	Moist 1.0-6.7:	Moist 0.5-6.7:	Moist 0.5-6.7:	Moist 1.0-6.7:	Moist 2.0-6.7:	Dry 0.5-3.0:	Moist 2.0-6.7:	Moist 1.0-6.7:	Moist 1.0-6.7:	Moist 1.5-6.7:
	Wet	Wet	Wet	Wet	Wet	Wet	Wet	Moist	Wet	Wet	Wet	Wet
	 							3.0-6.7: Wet			j	
312.	 											}
Pits			į			į		į		į		j
313.	 											
Dumps, sawdust						į						
w.	 									1		
Water			1	1	1	1			1	1	1	1

Table 18.--Soil Moisture Status by Depth--Continued

Table 19.--Water Features

(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)

			W	ater tab	le	<u> </u>	Ponding	•	Floo	ding
Map symbol	Hydro-	Months	Upper	Lower	Kind	Surface	Duration	Frequency	Duration	Frequenc
and soil name	logic		limit	limit		water				
	group					depth				
			Ft	Ft		Ft				
:					ļ					
Lupton	A/D	Jan-Feb	0.0	>6.0	Apparent			None		None
		Mar	0.0	>6.0	Apparent	:	Brief	Frequent		None
		Apr-May	0.0	>6.0	Apparent		Long	Frequent		None
		Jun	0.0	>6.0	Apparent	:	Brief	Frequent		None
		Jul	0.5	>6.0	Apparent			None		None
		Aug	1.0	>6.0	Apparent	:		None		None
		Sep	0.5	>6.0	Apparent	:		None		None
		Oct-Nov	0.0	>6.0	Apparent	:	Brief	Frequent		None
	 	Dec	0.0	>6.0	Apparent			None		None
W	1 / 1	Tan Bab	0 0					Name		Name .
Tawas	A/D	Jan-Feb	0.0	>6.0	Apparent	: :	 D	None		None
	 	Mar	0.0	>6.0	Apparent		Brief	Frequent		None
	 	Apr-May	0.0	>6.0	Apparent		Long	Frequent		None
	 	Jun	0.0	>6.0	Apparent	:	Brief	Frequent		None
	 	Jul	0.5	>6.0	Apparent	:		None		None
	 	Aug	1.0	>6.0	Apparent	:		None		None
	 	Sep	0.5	>6.0	Apparent	:	 D	None		None
	 	Oct-Nov	0.0	>6.0	Apparent	:	Brief	Frequent		None
	 	Dec	0.0	>6.0	Apparent			None		None
:	 									
	 A/D	 Jan-Mar	0.0	>6.0	Apparent		Brief	Frequent		Mone
Dawson	A/D	: :		1						None
	 	Apr-May	0.0	>6.0 >6.0	Apparent		Long Brief	Frequent	 	None
	l I	Jun Jul-Aug	0.5	>6.0	Apparent	:	Prier	Frequent None	 	None None
	l I	Sep	0.0	>6.0	Apparent	:		None		None
	l I	Sep	0.0	>6.0	Apparent	:	Brief	Frequent		None
	l I	Nov	0.0	>6.0	Apparent	:	Long	Frequent		None
	l I	Dec	0.0	>6.0	Apparent	: :	Brief	Frequent		None
	l I	Dec	0.0	20.0	Apparenc	0.0-0.5 	prier	rrequenc		None
Loxley	A/D	Jan-Mar	0.0	>6.0	Apparent	0.0-0.5	Brief	Frequent		None
	, -	Apr-May	0.0	>6.0	Apparent	:	Long	Frequent		None
	! 	Jun	0.0	>6.0	Apparent	:	Brief	Frequent		None
	! 	Jul-Aug	0.5	>6.0	Apparent	:		None		None
	! 	Sep	0.0	>6.0	Apparent			None		None
	! 	Oct	0.0	>6.0	Apparent		Brief	Frequent		None
	! 	Nov	0.0	>6.0	Apparent	:	Long	Frequent		None
	! 	Dec	0.0	>6.0	Apparent	:	Brief	Frequent		None
	İ	i i						1		
:	İ	i i		i	i	i i		i		i
Skandia	D	Jan-Feb	0.0	2.6-2.6	Perched	i i		None		None
	İ	Mar	0.0	2.6-2.6	Perched	0.0-0.5	Brief	Frequent		None
	İ	Apr-May			Perched		Long	Frequent		None
	İ	Jun			Perched		Brief	Frequent		None
	İ	Jul			Perched	i i		None		None
	İ	Aug			Perched	i i		None		None
	İ	Sep			Perched	i i		None		None
	İ	Oct-Nov			Perched	0.0-0.5	Brief	Frequent		None
		Dec	0.0	'	Perched	i i		None		None
		į i		İ	İ	j		j		İ
Burt	D	Jan-Feb	>6.0	>6.0	j	i i		None		None
	İ	Mar	>6.0	>6.0	i	i i	Brief	Occasional		None
	İ	Apr-May		>6.0	j	i i	Long	Frequent		None
	İ	Jun-Sep		>6.0	j	i i		None		None
	İ	Oct-Nov	>6.0	>6.0	j	i i	Brief	Frequent		None
		Dec	>6.0	>6.0	i	i i		None		None

Table 19.--Water Features--Continued

				ater tab			Ponding		Floo	
Map symbol	Hydro-	Months	Upper	Lower	Kind	Surface	Duration	Frequency	Duration	Frequency
and soil name	logic		limit	limit		water				
	group					depth				<u> </u>
			Ft	Ft		Ft				
LO:										
Cathro	A/D	Jan-Feb	0.0	>6.0	Apparent			None		None
		Mar	0.0	>6.0	Apparent	0.0-0.5	Brief	Frequent		None
		Apr-May	0.0	>6.0	Apparent		-	Frequent		None
		Jun	0.0	>6.0	Apparent	0.0-0.5	Brief	Frequent		None
		Jul	0.5	>6.0	Apparent			None		None
		Aug	1.0	>6.0	Apparent			None		None
		Sep	0.5	>6.0	Apparent			None		None
		Oct-Nov	0.0	>6.0	Apparent	0.0-0.5	Brief	Frequent		None
		Dec	0.0	>6.0	Apparent			None		None
Sabattis	B/D	Jan-Feb	0.0	>6.0	Apparent			None		None
		Mar	0.0	>6.0	Apparent	0.5-0.5	Brief	Occasional		None
		Apr-May	0.0	>6.0	Apparent	0.5-0.5	Long	Frequent		None
		Jun	0.5	>6.0	Apparent	i i		None		None
	İ	Jul	1.5	>6.0	Apparent	i i		None		None
	İ	Aug	2.0	>6.0	Apparent	i i		None		None
	İ	Sep	1.0	>6.0	Apparent	: :		None		None
	! 	Oct	0.0	>6.0	Apparent	: :	Brief	Frequent		None
	! 	Nov	0.0	>6.0	Apparent	: :	Brief	Frequent		None
	 	Dec	0.0	>6.0	Apparent			None		None
	 	1	0.0	70.0		i i		1.0110		1.0110
.3:	 		 			 			 	
Tawas	A/D	Jan-Feb	0.0	 >6.0	Apparent	 		None		None
iawas	A/D	Mar	0.0	>6.0	Apparent		Brief	Frequent	 	None
	 	!				: :		-		!
	 	Apr-May	0.0	>6.0	Apparent		Long	Frequent		None
		Jun	0.0	>6.0	Apparent	: :	Brief	Frequent		None
		Jul	0.5	>6.0	Apparent	: :		None		None
		Aug	1.0	>6.0	Apparent	: :		None		None
		Sep	0.5	>6.0	Apparent			None		None
		Oct-Nov	0.0	>6.0	Apparent	: :		Frequent		None
		Dec	0.0	>6.0	Apparent			None		None
Deford	A/D	Jan-Feb	0.0	>6.0	Apparent					None
		Mar	0.0	>6.0	Apparent		Brief	Occasional		None
		Apr-May	0.0	>6.0	Apparent	0.0-0.5	Long	Frequent		None
		Jun	.5-49.7	>6.0	Apparent					None
		Jul	1.5	>6.0	Apparent					None
		Aug	2.0	>6.0	Apparent					None
		Sep	1.0	>6.0	Apparent					None
		Oct-Nov	0.0	>6.0	Apparent	0.0-0.5	Brief	Frequent		None
		Dec	0.0	>6.0	Apparent	i i				None
		İ			ĺ	į į		ĺ		İ
.5B:		ĺ			İ	i i		į i		İ
Dawson	A/D	Jan-Mar	0.0	>6.0	Apparent	0.0-0.5	Brief	Frequent		None
		Apr-May	0.0	>6.0	Apparent	0.0-1.0	Long	Frequent		None
	İ	Jun	0.0	>6.0	Apparent		_	Frequent		None
	! 	Jul-Aug		>6.0	Apparent			None		None
	! 	Sep	0.0	>6.0	Apparent			None		None
	 	Oct	0.0	>6.0	Apparent			Frequent		None
	 	Nov	0.0	>6.0	Apparent			Frequent		None
	 	Dec	0.0	>6.0	Apparent		_	Frequent		None
	! 	560	0.0	-0.0	-ipparent		21161	Licanenc		110116
Croswell	 A	Jan-Feb	5.0	 >6.0	Apparent	 		None		None
OT OBMETT		Mar	2.5	>6.0 >6.0		: :		None		None
	l I	1			Apparent	: :				!
	l I	Apr-May		>6.0	Apparent	: :		None		None
		Jun	3.5	>6.0	Apparent	: :		None		None
		Jul	4.5	>6.0	Apparent	: :		None		None
		Aug	5.5	>6.0	Apparent	: :		None		None
		Sep	4.5	>6.0	Apparent			None		None
		Oct-Nov	3.0 4.0	>6.0 >6.0	Apparent Apparent	: :		None None	 	None None

Table 19.--Water Features--Continued

			W	ater tab	le	<u> </u>	Ponding	· 	Floo	ding
Map symbol and soil name	Hydro- logic group	Months	Upper limit	Lower limit 	Kind 	Surface water depth	Duration 	Frequency 	Duration 	Frequency
		İ	Ft	Ft	İ	Ft		1		
	į	į	j	į	İ	į i	İ	İ	İ	İ
20E. Rock outcrop	 		 	 	 	 	 	 	 	
21G: Rock outcrop.	 		 	 			 		 	
Arcadian	 D	Jan-Dec	 >6.0	>6.0			 	None	 	None
39A:			 		 		 		 	
Betsy Bay	В	Jan-Feb	1.5	>6.0	Apparent			None	i	None
		Mar	1.0	>6.0	Apparent			None		None
		Apr-May	0.5	>6.0	Apparent			None		None
		Jun	1.0	>6.0	Apparent			None		None
		Jul	2.0	>6.0	Apparent			None		None
		Aug	3.0	>6.0	Apparent			None		None
	!	Sep	2.0	>6.0	Apparent			None		None
	!	Oct-Nov		>6.0	Apparent			None		None
		Dec	1.5	>6.0	Apparent			None		None
Burt	 D	 Jan-Feb	 >6.0	 >6.0	 		 	None	 	None
Burt	, D	Mar	>6.0 >6.0	>6.0			Brief	Occasional	 	None
		Apr-May	:	>6.0			Long	Frequent		None
	i	Jun-Sep	:	>6.0				None	 	None
	i	Oct-Nov	:	>6.0			Brief	Frequent		None
	İ	Dec	>6.0	>6.0				None		None
Deford	A/D	Jan-Feb	0.0	>6.0	Apparent					None
		Mar	0.0	>6.0	Apparent	0.0-0.5	Brief	Occasional		None
		Apr-May	0.0	>6.0	Apparent	0.0-0.5	Long	Frequent		None
		Jun	.5-49.7	>6.0	Apparent					None
	!	Jul	1.5	>6.0	Apparent					None
	!	Aug	2.0	>6.0	Apparent					None
	!	Sep	1.0	>6.0	Apparent					None
		Oct-Nov	:	>6.0	Apparent		Brief	Frequent		None
		Dec	0.0	>6.0	Apparent					None
47A:			 	 	 		 		 	
Zeba	 B	Jan-Feb	2.0	 2.8-2.8	Perched		 	None	 	None
1024	-	Mar		!	Perched			None		None
	i	Apr			Perched			None		None
	i	May			Perched			None	i	None
	i	Jun	2.0	2.8-2.8	Perched			None		None
	İ	Jul	2.5	2.8-2.8	Perched			None		None
		Aug	>6.0	>6.0				None		None
		Sep	2.5	2.8-2.8	Perched			None		None
		Oct-Nov	1.0	2.8-2.8	Perched			None		None
	!	Dec	1.5	2.8-2.8	Perched			None		None
Jacobsville	 D	Jan-Feb	 0.0	 3 0-3 0	 Perched		 	None	 	None
0400DB 41114	5	Mar	•		Perched		Brief	Occasional	 	None
	i	Apr-May			Perched		'	Frequent	 	None
	i	Jun		•	Perched		Long 	None		None
	i	Jul			Perched			None		None
	i	Aug			Perched			None		None
	i	Sep	•		Perched			None		None
	į	Oct-Nov	:		Perched		Brief	Frequent	i	None
	İ	Dec	0.0		Perched			None	i	None
		рес	0.0	3.0-3.0 	rerched			None		No

Table 19.--Water Features--Continued

			W	ater tab	le		Ponding		Floo	ding
Map symbol and soil name	logic	Months	Upper limit	Lower	Kind	water	Duration	Frequency	Duration	Frequency
	group				1	depth		1	<u> </u>	1
	l I	 	Ft	Ft	 	Ft		 	 	1
51C:	İ	i				i i		İ	İ	
Arcadian	D	Jan-Dec	>6.0	>6.0		ļ ļ		None		None
Nipissing	 B	 Jan-Dec	>6.0	>6.0				 None	 	None
Rock outcrop.	 								 	
51E:	 	 			 			l I	 	
Arcadian	 D 	 Jan-Dec 	>6.0	>6.0	 			None	 	None
Nipissing	 B 	 Jan-Dec 	>6.0	>6.0	 			None	 	None
Rock outcrop.									 -	
52C:	l I	 			[[
Arcadian	ם 	Jan-Dec	>6.0	>6.0				None		None
Dishno	 c	 Jan-Feb	>6.0	 >6.0	 			 None	 	None
DISIMO	C	Mar		3.8-3.8	1			None	 	None
	 	Apr		3.8-3.8		i i		None	 	None
	 	May		3.8-3.8		i i		None		None
	İ	Jun-Sep		>6.0		i i		None		None
	İ	Oct		3.8-3.8	Perched	i i		None	i	None
	į	Nov	2.0	3.8-3.8	Perched	i i		None	i	None
	İ	Dec	>6.0	>6.0		į į		None		None
Rock outcrop.	 				 				 -	
52E:	 	 			 			 	l I	1
Arcadian	ם ם	 Jan-Dec 	>6.0	>6.0				None		None
Dishno	l C	 Jan-Feb	>6.0	>6.0				None	 	None
	İ	Mar		3.8-3.8	Perched	i i		None	i	None
	İ	Apr		3.8-3.8		i i		None	i	None
	İ	May		3.8-3.8		i i		None	i	None
	İ	Jun-Sep		>6.0		i i		None	i	None
	į	Oct	1.0	3.8-3.8	Perched	i i		None	i	None
	į	Nov	2.0	3.8-3.8	Perched	i i		None	i	None
	İ	Dec	>6.0	>6.0	ļ	i i		None		None
Rock outcrop.	 				 			 	 -	
53E:	I I	 		 	[[I 	1
Arcadian	ן ס	 Jan-Dec 	>6.0	>6.0	 			None	 	None
Michigamme	 C 	 Jan-Dec 	>6.0	>6.0	 			None	 	None
Rock outcrop.	 				 				 	
53F:	İ	 						İ	 	
Arcadian	 D 	 Jan-Dec 	>6.0	>6.0	 			None	 	None
Michigamme	C	Jan-Nov	>6.0	>6.0				None		None
-	į	Dec	>6.0	>6.0		ļ į				None
Rock outcrop.	 	 			 	 		 	 	

Table 19.--Water Features--Continued

				ater tab			Ponding		Floo	
Map symbol	-	Months	Upper	Lower	Kind	:	Duration	Frequency	Duration	Frequenc
and soil name	logic group		limit	limit		water depth		l I	 	
	 		Ft	Ft	1	Ft		1	1	1
	İ							İ	İ	İ
5B:	İ	i i		İ	İ			İ	İ	İ
Chocolay	A	Jan-Feb	>6.0	>6.0				None		None
-	į	Mar	2.0	2.3-2.3	Perched			None		None
	į	Apr	1.0	2.3-2.3	Perched			None	i	None
	į	May	1.5	2.3-2.3	Perched			None		None
	į	Jun-Sep	>6.0	>6.0				None		None
	į	Oct	1.0	2.3-2.3	Perched			None		None
	į	Nov	1.5	2.3-2.3	Perched			None		None
	ĺ	Dec	>6.0	>6.0				None		None
00B:	 	 				 		 	 	
Waiska	A	Jan-Dec	>6.0	>6.0				None		None
00D:										
Waiska	A	Jan-Dec	>6.0	>6.0				None		None
02C:	 			 		 		I I	I I	l I
Waiska	 A	Jan-Dec	>6.0	>6.0				None		None
	İ				İ			İ	İ	
Garlic	A	Jan-Dec	>6.0	>6.0				None		None
007										
02E:		 Tam Dam						l Mana		Name .
Waiska	A	Jan-Dec	>6.0	>6.0				None		None
Garlic	 A	Jan-Dec	>6.0	>6.0				None		None
								!	!	
02F:								!	!	
Waiska	A	Jan-Dec	>6.0	>6.0				None		None
Garlic	 A	 Jan-Dec	>6.0	 >6.0				None	 	None
	i				İ				İ	
10B:	į	į i		į	İ	i i		į	į	i
Shelldrake	A	Jan-Dec	>6.0	>6.0				None	i	None
	į	į i		İ	İ	į i		İ	İ	İ
Croswell	A	Jan-Feb	5.0	>6.0	Apparent			None	i	None
	ĺ	Mar	2.5	>6.0	Apparent			None		None
	į	Apr-May	2.0	>6.0	Apparent			None		None
	į	Jun	3.5	>6.0	Apparent			None		None
	i	Jul	4.5	>6.0	Apparent			None	i	None
	İ	Aug	5.5	>6.0	Apparent			None		None
	i i	Sep	4.5	>6.0	Apparent			None		None
	 	: - :			:			!	!	1
	 	Oct-Nov	3.0	>6.0	Apparent	:		None		None
	 	Dec	4.0	>6.0	Apparent			None		None
11B:	 							 	 	
Deer Park	A	Jan-Dec	>6.0	>6.0	i			None	i	None
	İ	j i		İ	İ	i		İ	İ	İ
11D:		l i								
Deer Park	A	Jan-Dec	>6.0	>6.0				None		None
	ļ							!		
11E:										
Deer Park	A	Jan-Dec	>6.0	>6.0				None		None
11F:	 			 					 	
Deer Park	 A	Jan-Dec	>6.0	>6.0				None		None
	, 									
12C:	İ	j i			İ					

Table 19.--Water Features--Continued

			W	ater tab	le	<u> </u>	Ponding		Floo	ding
Map symbol		Months	Upper	Lower	Kind	Surface	Duration	Frequency	Duration	Frequenc
and soil name	logic		limit	limit		water				
	group					depth			<u> </u>	<u> </u>
	ļ		Ft	Ft	!	Ft		!	!	
105										
112C:			5 0					 		
Croswell	A	Jan-Feb	5.0	>6.0	Apparent			None		None
		Mar	2.5	>6.0	Apparent			None		None
		Apr-May	2.0	>6.0	Apparent		 	None		None
	l I	Jun Jul	3.5 4.5	>6.0 >6.0	Apparent		 	None None		None None
	l I	Aug	5.5	>6.0	Apparent Apparent		 	None		None
	 	Sep	4.5	>6.0	Apparent		 	None		None
	 	Oct-Nov		>6.0	Apparent	!	 	None		None
	 	Dec	4.0	>6.0	Apparent			None		None
	l I	Dec	1.0	20.0	Apparenc	 	 	None		110116
.13C:	i i			 	İ	 	 	l I		
Rubicon	 A	 Jan-Dec	>6.0	 >6.0		 	 	None		None
	i		20.0			İ	! 			
Croswell	 A	 Jan-Feb	5.0	 >6.0	Apparent	 	 	None		None
0102011	i	Mar	2.5	>6.0	Apparent		 	None		None
		Apr-May		>6.0	Apparent			None		None
		Jun	3.5	>6.0	Apparent			None		None
	İ	Jul	4.5	>6.0	Apparent			None		None
	İ	Aug	5.5	>6.0	Apparent			None		None
	İ	Sep	4.5	>6.0	Apparent			None		None
	İ	Oct-Nov		>6.0	Apparent		i	None	i	None
	İ	Dec	4.0	>6.0	Apparent			None	i	None
	İ	i i		İ	i	į	İ	İ	į	İ
20B:	İ	i i		İ	İ	į	İ	İ	į	İ
Garlic	A	Jan-Dec	>6.0	>6.0	i			None		None
	İ	į į		İ	İ	İ	İ	İ	į	İ
20D:	ĺ	į į		ĺ	ĺ	ĺ		ĺ	İ	ĺ
Garlic	A	Jan-Dec	>6.0	>6.0				None		None
20E:										
Garlic	A	Jan-Dec	>6.0	>6.0				None		None
.25A:										
Croswell	A	Jan-Feb	5.0	>6.0	Apparent			None		None
		Mar	2.5	>6.0	Apparent			None		None
		Apr-May	2.0	>6.0	Apparent			None		None
		Jun	3.5	>6.0	Apparent			None		None
		Jul	4.5	>6.0	Apparent			None		None
		Aug	5.5	>6.0	Apparent			None		None
		Sep	4.5	>6.0	Apparent			None		None
	ļ	Oct-Nov		>6.0	Apparent			None		None
		Dec	4.0	>6.0	Apparent			None		None
	_								ļ.	
Au Gres	В	Jan-Feb		>6.0	Apparent			None		None
		Mar	1.0	>6.0	Apparent			None		None
		Apr-May		>6.0	Apparent			None		None
		Jun	1.0	>6.0	Apparent			None		None
		Jul	2.0	>6.0	Apparent			None		None
		Aug	3.0	>6.0	Apparent			None		None
		Sep	2.0	>6.0	Apparent			None		None
		Oct-Nov		>6.0	Apparent			None		None
	I	Dec	1.5	>6.0	Apparent			None		None

Table 19.--Water Features--Continued

			Wa	ter tab	le		Ponding		Floo	ding
Map symbol	Hydro-	Months	Upper	Lower	Kind	Surface	Duration	Frequency	Duration	Frequency
and soil name	logic		limit	limit		water				
	group					depth				
			Ft	Ft		Ft				
126B:										
Au Gres	В	Jan-Feb	1.5	>6.0	Apparent			None		None
		Mar	1.0	>6.0	Apparent			None		None
		Apr-May	0.5	>6.0	Apparent			None		None
		Jun	1.0	>6.0	Apparent			None		None
		Jul	2.0	>6.0	Apparent			None		None
		Aug	3.0	>6.0	Apparent			None		None
		Sep	2.0	>6.0	Apparent			None		None
		Oct-Nov	1.0	>6.0	Apparent			None		None
		Dec	1.5	>6.0	Apparent			None		None
Deford	A/D	Jan-Feb	0.0	>6.0	Apparent					None
		Mar	0.0	>6.0	Apparent	0.0-0.5	Brief	Occasional		None
		Apr-May	0.0	>6.0	Apparent	0.0-0.5	Long	Frequent		None
		Jun	.5-49.7	>6.0	Apparent					None
		Jul	1.5	>6.0	Apparent					None
		Aug	2.0	>6.0	Apparent					None
	ĺ	Sep	1.0	>6.0	Apparent					None
	ĺ	Oct-Nov	0.0	>6.0	Apparent	0.0-0.5	Brief	Frequent		None
	ĺ	Dec	0.0	>6.0	Apparent					None
	ĺ	İ	İ		İ	ĺ		ĺ		İ
Croswell	A	Jan-Feb	5.0	>6.0	Apparent			None		None
	İ	Mar	2.5	>6.0	Apparent			None		None
	İ	Apr-May	2.0	>6.0	Apparent			None		None
	İ	Jun	3.5	>6.0	Apparent			None		None
	İ	Jul	4.5	>6.0	Apparent			None		None
	İ	Aug	5.5	>6.0	Apparent			None		None
	İ	Sep	4.5	>6.0	Apparent	:		None		None
	İ	Oct-Nov	3.0	>6.0	Apparent	:	i	None		None
	İ	Dec	4.0	>6.0	Apparent		i	None		None
	İ	İ	i i		i	İ	<u> </u>	i		İ
127A:	İ	İ	i i		İ	İ	<u> </u>	i		İ
Au Gres	В	Jan-Feb	1.5	>6.0	Apparent			None		None
	İ	Mar	1.0	>6.0	Apparent	:		None		None
	İ	Apr-May	0.5	>6.0	Apparent	:		None		None
	İ	Jun	1.0	>6.0	Apparent	:		None		None
	! 	Jul	2.0	>6.0	Apparent	:		None		None
	! 	Aug	3.0	>6.0	Apparent	:		None		None
	! 	Sep	2.0	>6.0	Apparent	:		None		None
	! 	Oct-Nov	1.0	>6.0	Apparent		 	None		None
	! 	Dec	1.5	>6.0	Apparent	!	 	None		None
	i I					İ	! 			
Kinross	A/D	Jan-Feb	0.0	>6.0	Apparent	 	 	None		None
	,, -	Mar	0.0	>6.0	Apparent		Brief	Occasional		None
	! 	Apr-May		>6.0	Apparent		Long	Frequent		None
	i İ	Jun	0.5	>6.0	Apparent		Long 	None		None
	! 	Jul	1.5	>6.0	Apparent		 	None		None
	! 	Aug	2.0	>6.0	Apparent		 	None		None
	ı İ	Sep	1.0	>6.0	Apparent		 	None		None
	ı İ	Oct	0.0	>6.0	Apparent		Brief	Frequent		None
	I I	Nov	0.0	>6.0	Apparent		Brief	Frequent		None
	l I	:	0.0	>6.0	:		Brier	None		None
	l I	Dec	0.0	/ 0.0	Apparent	,	 I	MOIIE		MOTTE
130C:	l I				1	I I	 			1
Garlic	l I A	 Jan-Dec	 >6.0	>6.0		 	 	None		None
Gallic	A	am-nec	/0.0	>0.0		i	 	None		MOTTE
Alcona	l I mo	Ton De-		.6.0	1	I I	 	No		N
6.COM4	В	Jan-Dec	20.U	>6.0				None		None

Table 19.--Water Features--Continued

			W	ater tab	le	I	Ponding		Floo	ding
Map symbol	Hydro-	Months	Upper	Lower	Kind	Surface	Duration	Frequency	Duration	Frequency
and soil name	logic		limit	limit		water		[1	[
	group			<u> </u>		depth			<u> </u>	<u> </u>
	ļ		Ft	Ft		Ft				
	ļ									
130E:		 								
Garlic	A	Jan-Dec	>6.0	>6.0				None		None
Alcona	 B	 Jan-Dec	 	 >6.0	 		l 	None		None
Alcona	5	Uan-Dec	20.0	70.0			 	None		None
133C:		İ	 		İ		! 	i i		
Keweenaw	A	Jan-Dec	>6.0	>6.0				None		None
	i				İ	i		İ	i	i
Garlic	A	Jan-Dec	>6.0	>6.0	i			None		None
133E:										
Keweenaw	A	Jan-Dec	>6.0	>6.0				None		None
								!	!	
Garlic	A	Jan-Dec	>6.0	>6.0				None		None
1225										
133F: Keweenaw	7	Ton Dog		0			l I	None	1	None
Keweenaw	A	Jan-Dec	>0.0	>6.0			 	None		None
Garlic	 A	Jan-Dec	 >6 0	>6.0	 		 	None		None
Gullio	**		20.0		 		 	110110	i i	110110
136B:	i	İ				i		İ	i	i
Borgstrom	В	Jan-Feb	5.0	>6.0	Apparent			None		None
_	į	Mar	2.5	>6.0	Apparent			None		None
	İ	Apr-May	2.0	>6.0	Apparent			None		None
		Jun	3.5	>6.0	Apparent			None		None
		Jul	4.5	>6.0	Apparent			None		None
		Aug	5.5	>6.0	Apparent			None		None
	ļ	Sep	4.5	>6.0	Apparent			None		None
	ļ	Oct-Nov		>6.0	Apparent	:		None		None
		Dec	4.0	>6.0	Apparent			None		None
Ingalls	 B	 Jan-Feb	1.5	 >6.0	 Apparent	 	 	None		None
ingails	5	Mar	1.0	>6.0	Apparent		 	None		None
	i	Apr-May		>6.0	Apparent	:		None		None
	i	Jun	1.0	>6.0	Apparent	:		None		None
	i	Jul	2.0	>6.0	Apparent			None		None
	į	Aug	3.0	>6.0	Apparent			None		None
		Sep	2.0	>6.0	Apparent			None		None
		Oct-Nov	1.0	>6.0	Apparent			None		None
	!	Dec	1.5	>6.0	Apparent			None		None
1400								Į.	1	
142C:		 Jan-Dec			 		 	No		None
Wallace	B	Jan-Dec	>6.0	>6.0				None		None
Rubicon	 20	 Jan-Dec	 >6 0	 >6.0	 	 	l 	None		None
Rubicon	^	Uaii-Dec	20.0	20.0	 		 	None		None
142F:	i				i	<u> </u>		i	i	i
Wallace	В	Jan-Dec	>6.0	>6.0	i			None	i	None
	į	į	İ	į	İ	į		İ	į	į
Rubicon	A	Jan-Dec	>6.0	>6.0	j	j		None	j	None
									1	
155C:		[[[1	[
Montreal	C	Jan-Feb		>6.0				None		None
		Mar		1	Perched			None		None
		Apr			Perched			None		None
		May		!	Perched			None		None
		Jun-Oct		1	Porghod			None		None
	I I	Nov Dec	1.5 >6.0	1.7-1.7 >6.0	Perched		 	None None		None None
		l pec	/0.0	20.0		,	 I	None		None
	I	I	I	I	I	I	I	I	I	I

Table 19.--Water Features--Continued

	l			ater tab		<u> </u>	Ponding			ding
Map symbol		Months	Upper	Lower	Kind		Duration	Frequency	Duration	Frequenc
and soil name	logic group	 	limit	limit	 	water depth				
		İ	Ft	Ft	İ	Ft		İ		İ
		į į		İ	ĺ	İ		İ		İ
55C:	-	Tan Bab						None		Non a
Paavola	B	Jan-Feb	>6.0	>6.0				None		None
		Mar	1.5	1	Perched			None		None
	ļ	Apr	1.0	'	Perched			None		None
		May	1.5	1	Perched			None		None
		Jun-Sep	>6.0	>6.0				None		None
		Oct	2.0	2.6-2.6	Perched			None		None
		Nov	1.5	2.6-2.6	Perched			None		None
		Dec	>6.0	>6.0				None		None
Waiska	 A	 Jan-Dec	>6.0	 >6.0	 	 		None	 	None
55E: Montreal	 C	 Jan-Feb	>6.0	 >6.0	 	 		None	 	None
Moncrear	-	Mar	1.5	1	Perched			None		None
	 			!	!			1		!
		Apr	1.0		Perched			None		None
	ļ	May	1.5	1	Perched			None		None
		Jun-Oct	>6.0	>6.0				None		None
		Nov	1.5	1.7-1.7	Perched			None		None
		Dec	>6.0	>6.0				None		None
Paavola	 в	 Jan-Feb	>6.0	 >6.0				None	 	None
1447014		Mar	1.5	1	Perched			None		None
	 			1				1		1
		Apr	1.0		Perched			None		None
		May	1.5	1	Perched			None		None
		Jun-Sep	>6.0	>6.0				None		None
		Oct	2.0	2.6-2.6	Perched			None		None
		Nov	1.5	2.6-2.6	Perched			None		None
		Dec	>6.0	>6.0				None		None
Waiska	 A	 Jan-Dec	>6.0	>6.0	 			None		None
158A:	 	 		 	 	 			 	
Arnheim	 D	Jan-Feb	0.0	>6.0	Apparent					
	ĺ	Mar-May	0.0	>6.0	Apparent			i i	Long	Frequen
	i	Jun	0.5	>6.0	Apparent	0.0-0.5	Brief	Occasional		i
	İ	Jul	1.0	>6.0	Apparent		Brief	Occasional		i
	! I	Aug	2.0	>6.0	Apparent		Brief	Occasional		
	l I		1.5	>6.0	Apparent		Long	Frequent		
	l I	Sep		!			-			-
		Oct	0.5	>6.0	Apparent		Long	Frequent		
	 	Nov Dec	0.0	>6.0 >6.0	Apparent Apparent		Long	Frequent		
	İ	i i				i		į į		İ
Sturgeon	В	Jan-Feb	1.5	>6.0	Apparent			None		
		Mar	1.0	>6.0	Apparent			None	Brief	Occasion
	İ	Apr-May	0.5	>6.0	Apparent			None	Brief	Occasion
	i	Jun	1.0	>6.0	Apparent			None		i
	i	Jul	2.0	>6.0	Apparent	:		None		i
	l I	Aug	3.0	>6.0	Apparent	:		None		
	l I		2.0	>6.0	:	:		None		1
	 	Sep		'	Apparent	:		1		
		Oct-Nov	1.0	>6.0	Apparent	:		None		
	 	Dec	1.5	>6.0	Apparent			None		
Pelkie	 A	 Jan-Feb	5.0	>6.0	 Apparent			None		
		Mar	2.5	>6.0	Apparent	:		None	Brief	Occasion
	İ	Apr-May		>6.0	Apparent	:		None	Brief	Occasion
	İ	Jun	3.5	>6.0	Apparent	:		None		
	I I	Jul	4.5	>6.0	:	:		None		
	l I	1			Apparent	:		1		1
	 	Aug	5.5	>6.0	Apparent	:		None		
	I	Sep	4.5	>6.0	Apparent	:		None		
	1									
		Oct-Nov	3.0 4.5	>6.0 >6.0	Apparent Apparent	:		None None		

Table 19.--Water Features--Continued

			W	ater tab	le		Ponding		Floo	ding
Map symbol	Hydro-	Months	Upper	Lower	Kind	Surface	Duration	Frequency	Duration	Frequency
and soil name	logic		limit	limit		water				
	group					depth]	
			Ft	Ft		Ft				
161F:		 								
Trimountain	B	Jan-Dec	>6.0	>6.0				None		None
Lac La Belle	l C	 Jan-Dec	 ~6 0	 >6.0	 	 	 	None	 	None
Lac La Belle	C	Jan-Dec	>0.0	>0.0	 	 		None		None
Waiska	 A	Jan-Dec	 >6.0	>6.0	 	 		None		None
	 		70.0			! 				
162F:	İ	i		İ		i i		İ		İ
Trimountain	В	Jan-Dec	>6.0	>6.0		i i		None		None
	į	į	İ	į	İ	j i		j	İ	İ
Lac La Belle	C	Jan-Dec	>6.0	>6.0		i i		None		None
Michigamme	C	Jan-Dec	>6.0	>6.0				None		None
166B:										
Gratiot	C	Jan-Feb	5.5	•	Apparent	: :		None		None
		Mar		1.7-1.7	!			None		None
		Mar	5.0	>6.0	Apparent	: :				
	 	Apr-May	4.5	'	Apparent			None		None
	 	Apr-May Jun	0.5 1.0	1.7-1.7 1.7-1.7		 		None	 	None
	 	Jun	4.5	>6.0	Apparent	! !		None		None
	l I	Jul	5.5	>6.0	Apparent	: :		None		None
	 	Aug-Sep		>6.0				None		None
	 	Oct	5.5	>6.0	Apparent			None		None
	İ	Nov	1.5	1.7-1.7				None		None
	İ	Nov	5.5	>6.0	Apparent	i i				
	İ	Dec	5.5	>6.0	Apparent	: :		None		None
	į	į	İ	İ	i	i i		İ	İ	İ
Sabattis	B/D	Jan-Feb	0.0	>6.0	Apparent	i i		None		None
		Mar	0.0	>6.0	Apparent	0.5-0.5	Brief	Occasional		None
		Apr-May	0.0	>6.0	Apparent	0.5-0.5	Long	Frequent		None
		Jun	0.5	>6.0	Apparent			None		None
		Jul	1.5	>6.0	Apparent	: :		None		None
		Aug	2.0	>6.0	Apparent	: :		None		None
		Sep	1.0	>6.0	Apparent	: :		None		None
		Oct	0.0	>6.0	Apparent	: :	Brief	Frequent		None
		Nov	0.0	>6.0	Apparent	: :	Brief	Frequent		None
	 	Dec	0.0	>6.0	Apparent			None		None
173C:	l I		l I	 		 				I I
Montreal	 в	Jan-Feb	 >6.0	>6.0	 	 	 	None	 	None
1101101011	-	Mar	1.5	1.7-1.7	Perched			None		None
	 	Apr			Perched			None		None
	İ	May		1.7-1.7				None		None
	İ	Jun-Oct		>6.0				None		None
	į	Nov	1.5	1.7-1.7	Perched	i i		None		None
		Dec		>6.0	j	i i		None		None
						l İ				
Paavola	В	Jan-Feb		>6.0				None		None
		Mar		1	Perched			None		None
		Apr		2.6-2.6				None		None
		May		2.6-2.6				None		None
	ļ	Jun-Sep		>6.0				None		None
		Oct		2.6-2.6				None		None
		Nov Dec	1.5 >6.0	2.6-2.6 >6.0	Perched 	 		None None		None None

Table 19.--Water Features--Continued

				ater tab			Ponding		<u> </u>	ding
Map symbol		Months	Upper	Lower	Kind	Surface	Duration	Frequency	Duration	Frequency
and soil name	logic group		limit	limit	 	water depth				
	group		Ft	Ft		Gepth Ft	<u> </u>	1	1	1
	İ							i	i	
.73C:	İ	i i		İ	İ	i		į	i	İ
Dishno	C	Jan-Feb	>6.0	>6.0				None		None
	į	Mar	2.0	3.8-3.8	Perched			None		None
	į	Apr	1.0	3.8-3.8	Perched			None		None
	ĺ	May	1.5	3.8-3.8	Perched			None		None
		Jun-Sep	>6.0	>6.0				None		None
		Oct	1.0	3.8-3.8	Perched			None		None
		Nov	2.0	3.8-3.8	Perched			None		None
		Dec	>6.0	>6.0				None		None
						!		!	!	
.73E:										
Montreal	C	Jan-Feb		>6.0				None		None
	 	Mar	1.5	'	Perched			None		None
	 	Apr	1.0	'	Perched		 	None		None
	 	May	1.5		Perched		 	None		None
	 	Jun-Oct		>6.0				None		None
	 	Nov	1.5	>6.0	Perched		 	None		None None
	 	Dec	>6.0	>0.0				None		None
Paavola	 B	Jan-Feb	>6.0	>6.0				None		None
	İ	Mar	1.5	2.6-2.6	Perched			None	i	None
	İ	Apr	1.0	2.6-2.6	Perched			None	i	None
	į	May	1.5	2.6-2.6	Perched			None		None
	į	Jun-Sep	>6.0	>6.0				None		None
	ĺ	Oct	2.0	2.6-2.6	Perched			None		None
	ĺ	Nov	1.5	2.6-2.6	Perched			None		None
		Dec	>6.0	>6.0				None		None
Dishno	C	Jan-Feb		>6.0				None		None
		Mar	2.0	'	Perched		 	None		None
	 	Apr	1.0	'	Perched		 	None		None
	 	May Jun-Sep	1.5 >6.0	>6.0	Perched		 	None None		None None
	l I	Oct	1.0	1	Perched			None		None
	 	Nov	2.0	'	Perched		 	None		None
	l I	Dec	>6.0	>6.0			 	None		None
	İ	j i		İ	j	į		İ	İ	İ
L74B:		ļ İ			[1	[
Montreal	C	Jan-Feb		>6.0				None		None
	ļ	Mar	1.5	1	Perched			None		None
		Apr	1.0	'	Perched			None		None
		May	1.5	'	Perched			None		None
		Jun-Oct		>6.0				None		None
		Nov	1.5		Perched			None		None
		Dec	>6.0	>6.0				None		None
Dishno	l l c	 Jan-Feb	>6.0	 >6.0	 	 	 	None		None
	İ	Mar			Perched			None		None
	i	Apr		1	Perched	1		None		None
	i	May			Perched			None		None
	İ	Jun-Sep		>6.0				None		None
	İ	Oct		'	Perched			None		None
	į	Nov			Perched			None		None
	į	Dec	>6.0	>6.0				None		None
	i	i		i	i	i	i	i	i	i

Table 19.--Water Features--Continued

	1	1		ater tab		<u> </u>	Ponding		Floo	
Map symbol	: -	Months	Upper	Lower	Kind	Surface	Duration	Frequency	Duration	Frequency
and soil name	logic	ļ	limit	limit		water				
	group				1	depth	1	1	1	1
		l I	Ft	Ft	 	Ft	 	l I	l I	
L74B:	 			 			 		I I	
Gratiot	C	Jan-Feb	5.5	>6.0	Apparent			None		None
	i -	Mar	5.0	>6.0	Apparent			None		None
	i	Mar	1.5	!	Perched		 	i	İ	i
	i	Apr-May	0.5	1.7-1.7	Perched			None	i	None
	i	Apr-May	4.5	>6.0	Apparent	į i	İ	İ	İ	İ
	İ	Jun	1.0	1.7-1.7	Perched			None		None
	İ	Apr-Jun	4.5	>6.0	Apparent	İ			İ	İ
	İ	Jul	5.5	>6.0	Apparent			None		None
		Aug-Sep	>6.0	>6.0				None		None
		Oct	5.5	>6.0	Apparent			None		None
		Nov	5.5	>6.0	Apparent			None		None
		Nov	1.5	1.7-1.7	Perched					
		Dec	5.5	>6.0	Apparent			None		None
.77A:								!	!	
Assinins	В	Jan-Feb	1.5	>6.0	Apparent			None		None
		Mar	1.0	>6.0	Apparent			None		None
	!	Apr-May	0.5	>6.0	Apparent			None		None
	!	Jun	1.0	>6.0	Apparent			None		None
	!	Jul	2.0	>6.0	Apparent			None		None
	!	Aug	3.0	>6.0	Apparent			None		None
		Sep	2.0	>6.0	Apparent			None		None
		Oct-Nov	1.0	>6.0	Apparent			None		None
		Dec	1.5	>6.0	Apparent			None		None
02.0							 			
.83C:	-	 Tan Bab			1		 -	Non-	1	Name.
Munising	B	Jan-Feb		>6.0	Perched			None		None
		Mar	1.5	!	!		 	None None		None None
		Apr	1.5		Perched		 	None		None
		May Jun-Oct		>6.0			 	None		None
		Nov	1.5	1	Perched		 	None		None
		Dec	>6.0	>6.0			 	None		None
		Dec	/ /0.0	20.0			 	None	 	None
Abbaye	 B	Jan-Feb	>6.0	>6.0			 	None		None
indu que	-	Mar	2.0	1	Perched		 	None		None
	i	Apr	1.0	!	Perched			None		None
	i	May	2.0		Perched			None		None
	i	Jun-Sep		>6.0				None		None
	i	Oct	1.0	1	Perched			None	i	None
	i	Nov	2.0	'	Perched			None	i	None
	i	Dec	>6.0	>6.0				None		None
	i	İ		İ	İ			İ	İ	İ
Yalmer	В	Jan-Feb	>6.0	>6.0	j			None	i	None
	İ	Mar	1.5	2.0-2.0	Perched			None		None
	į	Apr	1.0	2.0-2.0	Perched			None	i	None
	İ	May	1.5	2.0-2.0	Perched			None		None
	İ	Jun-Oct	>6.0	>6.0				None		None
		Nov	1.5	2.0-2.0	Perched			None		None
		Dec	>6.0	>6.0				None		None
83E:										
Munising	В	Jan-Feb	>6.0	>6.0				None		None
		Mar	1.5	1.7-1.7	Perched			None		None
-		Apr	1.0	1.7-1.7	Perched			None		None
-		E-						1	1	None
-	 	May	1.5	1.7-1.7	Perched			None		None
-	 			>6.0	j	 	 	None None		None
-	 	May		>6.0			!		1	!

Table 19.--Water Features--Continued

		! !		ater tab			Ponding		Floo	
Map symbol and soil name	Hydro- logic	Months	Upper limit	Lower	Kind	Surface water	Duration	Frequency	Duration 	Frequenc
	group	<u> </u>		<u> </u>		depth				<u> </u>
			Ft	Ft		Ft	l I			
83E:	 			 	 		 			
Abbaye	В	Jan-Feb	>6.0	>6.0				None		None
-	i	Mar	2.0	2.7-2.7	Perched			None		None
	i	Apr	1.0	2.7-2.7	Perched			None		None
	i	May	2.0	2.7-2.7	Perched			None		None
	i	Jun-Sep	>6.0	>6.0	i			None		None
	İ	Oct	1.0	2.7-2.7	Perched	j		None		None
	İ	Nov	2.0	2.7-2.7	Perched	j		None		None
	[Dec	>6.0	>6.0				None		None
_	!							!	!	
Yalmer	B	Jan-Feb	>6.0	>6.0				None		None
	!	Mar	1.5	'	Perched			None		None
		Apr	1.0		Perched			None		None
		May	1.5	!	Perched			None		None
		Jun-Oct	>6.0	>6.0				None		None
		Nov	1.5	!	Perched			None		None
		Dec	>6.0	>6.0				None		None
L84C:							 			
Munising	 B	Jan-Feb	>6.0	>6.0				None		None
numiping	2	Mar	1.5	1	Perched			None		None
		Apr	1.0	!	Perched			None		None
	i	May	1.5		Perched			None		None
	i	Jun-Oct		>6.0				None		None
	i	Nov	1.5	1	Perched			None		None
	i	Dec	>6.0	>6.0				None		None
	i	i i			i	i			i	
Yalmer	В	Jan-Feb	>6.0	>6.0				None	i	None
	i	Mar	1.5	2.0-2.0	Perched			None	i	None
	i	Apr	1.0		Perched			None	i	None
	i	May	1.5	2.0-2.0	Perched			None		None
	i	Jun-Oct	>6.0	>6.0	i			None		None
	İ	Nov	1.5	2.0-2.0	Perched			None		None
		Dec	>6.0	>6.0				None		None
184E:										
Munising	В	Jan-Feb	>6.0	>6.0				None		None
		Mar	1.5	1.7-1.7	Perched			None		None
		Apr	1.0		Perched			None		None
	!	May	1.5		Perched			None		None
	!	Jun-Oct	>6.0	>6.0				None		None
		Nov	1.5	1	Perched			None		None
		Dec	>6.0	>6.0				None		None
Valman		Ton 13-1-1	. 6 0				 	Nen		37
Yalmer	B	Jan-Feb		>6.0	Domahad			None		None
	1	Mar	1.5	'	Perched			None		None
	1	Apr	1.0	'	Perched			None		None
	1	May	1.5 >6.0	2.0-2.0 >6.0	Perched			None None		None None
	1	Jun-Oct	>6.0 1.5	1	Perched			None		None
		Dec	>6.0	>6.0				None		None
		566	/0.0	/0.0	-2-		=== 	HOME		Morre
.85B:	i							i	i	
Munising	В	Jan-Feb	>6.0	>6.0				None		None
- -	i	Mar	1.5	1	Perched			None		None
	i	Apr	1.0	'	Perched			None		None
	i	May	1.5	'	Perched			None		None
	i	Jun-Oct		>6.0				None		None
	i	Nov	1.5		Perched			None		None
	i	Dec	>6.0	>6.0				None		None
	1			1	i	i			i	1

Table 19.--Water Features--Continued

			W	ater tab	le		Ponding		Floo	ding
Map symbol		Months	Upper	Lower	Kind	Surface	Duration	Frequency	Duration	Frequency
and soil name	logic		limit	limit		water				
	group				l	depth	<u> </u>	<u> </u>	<u> </u>	1
	l I		Ft	Ft	l I	Ft	 	l I	l I	l I
185B:	 			 	 	 	 	l I	 	1
Skanee	l C	 Jan-Feb	5.5	>6.0	Apparent		 	None	 	None
2.14.133		Mar	5.0	>6.0	Apparent			None		None
	İ	Apr-May	0.5	1	Perched			None		None
	İ	Apr-May	4.5	>6.0	Apparent	į	İ	İ	İ	İ
	j	Jun	1.0	1.2-1.2	Perched			None		None
		Apr-Jun	4.5	>6.0	Apparent					
		Jul	5.5	>6.0	Apparent			None		None
		Aug-Sep		>6.0				None		None
		Oct-Dec	5.5	>6.0	Apparent			None		None
0.5.5										
185C:										
Munising	B	Jan-Feb Mar	>6.0 1.5	>6.0 1.7.1.7	Perched	 	 	None None	 	None None
	 	Apr	1.0	'	Perched	 	 	None	 	None
	! 	Apr May	1.5	'	Perched	 	 	None	 	None
	! 	Jun-Oct		>6.0			 	None	 	None
	İ	Nov	1.5	1	Perched		 	None		None
	İ	Dec	>6.0	>6.0				None		None
	İ	i i		İ	İ	į	İ	İ	İ	İ
Skanee	C	Jan-Feb	5.5	>6.0	Apparent			None		None
		Mar	5.0	>6.0	Apparent			None		None
		Apr-May	0.5	1.2-1.2	Perched			None		None
		Apr-May	4.5	>6.0	Apparent					
		Jun	1.0	'	Perched			None		None
		Apr-Jun		>6.0	Apparent			!		
		Jul	5.5	>6.0	Apparent	:		None		None
		Aug-Sep		>6.0				None		None
	 	Oct-Dec	5.5	>6.0	Apparent			None		None
87A:	 	 		 	 	 	 	l I	l I	
Skanee	l C	 Jan-Feb	5.5	>6.0	 Apparent		 	None	l 	None
J.141100		Mar	5.0	>6.0	Apparent			None		None
	İ	Apr-May	0.5	1	Perched			None		None
	İ	Apr-May	4.5	>6.0	Apparent	İ		İ	İ	İ
	j	Jun	1.0	1.2-1.2	Perched			None		None
		Apr-Jun	4.5	>6.0	Apparent					
		Jul	5.5	>6.0	Apparent			None		None
		Aug-Sep	>6.0	>6.0				None		None
		Oct-Dec	5.5	>6.0	Apparent			None		None
_										
Gay	B/D	Jan-Feb	0.0	>6.0	Apparent			None		None
	 	Mar	0.0	>6.0	Apparent Apparent		Brief	Occasional		None
	l I	Apr-May Jun	0.0	>6.0 >6.0	Apparent		Long	Frequent None	 	None None
	 	Jul	1.5	>6.0	Apparent		 	None	 	None
	 	Aug	2.0	>6.0	Apparent			None		None
	! 	Sep	1.0	>6.0	Apparent			None		None
	İ	Oct	0.0	>6.0	Apparent		Brief	Frequent		None
	İ	Nov	0.0	>6.0	Apparent		Brief	Frequent		None
		Dec	0.0	>6.0	Apparent			None	i	None
		ı i								
92B:		l i								
Nipissing	В	Jan-Dec	>6.0	>6.0				None		None
								!		
Arcadian	D	Jan-Dec	>6.0	>6.0						None
				!	[[
Rock outcrop.										

Table 19.--Water Features--Continued

			Wa	ater tab		l	Ponding			ding
	-	Months	Upper	Lower	Kind	Surface	Duration	Frequency	Duration	Frequence
and soil name	logic group	 	limit	limit 		water depth		 	 	
		İ	Ft	Ft	İ	Ft		ĺ	ĺ	İ
94B:								!	!	!
Copper Harbor	A	Jan-Feb	5.0	>6.0	Apparent			None		None
		Mar	2.5	>6.0	Apparent			None		None
		Apr-May	2.0	>6.0	Apparent			None		None
		Jun	3.5	>6.0	Apparent			None		None
		Jul	4.5	>6.0	Apparent			None		None
		Aug	5.5 4.5	>6.0 >6.0	Apparent	 		None	 	None
		Sep Oct-Nov	3.0	>6.0 >6.0	Apparent Apparent	 		None None	 	None
		Dec	4.0	>6.0	Apparent	 		None		None
			1.0			 			i I	
5B:		i i		İ	İ	i i		İ	İ	į
Copper Harbor	A	Jan-Feb	5.0	>6.0	Apparent	j j		None	i	None
		Mar	2.5	>6.0	Apparent			None		None
		Apr-May	2.0	>6.0	Apparent			None		None
		Jun	3.5	>6.0	Apparent			None		None
		Jul	4.5	>6.0	Apparent			None		None
		Aug	5.5	>6.0	Apparent			None		None
		Sep	4.5	>6.0	Apparent			None		None
		Oct-Nov	3.0	>6.0	Apparent			None		None
		Dec	4.0	>6.0	Apparent			None		None
Sete Grise	 A	 Jan-Feb	1.5	 >6.0	Apparent	 		 None	 	None
dece Gilbe	^	Mar	1.0	>6.0	Apparent			None	 	None
		Apr-May	0.5	>6.0	Apparent			None	l	None
		Jun	1.0	>6.0	Apparent	 		None	 	None
		Jul	2.0	>6.0	Apparent	 		None	 	None
		Aug	3.0	>6.0	Apparent	 		None	 	None
j		Sep	2.0	>6.0	Apparent			None		None
j		Oct-Nov	1.0	>6.0	Apparent			None		None
		Dec	1.5	>6.0	Apparent	i i		None	i	None
	İ	į į		İ	İ	j j		İ	į	İ
96B:								!	!	!
Bete Grise	A	Jan-Feb	1.5	>6.0	Apparent			None		None
		Mar	1.0	>6.0	Apparent			None		None
		Apr-May	0.5	>6.0	Apparent			None		None
		Jun	1.0	>6.0	Apparent			None		None
		Jul	2.0	>6.0	Apparent			None		None
		Aug	3.0	>6.0	Apparent			None		None
		Sep	2.0	>6.0	Apparent			None		None
		Oct-Nov	1.0	>6.0	Apparent			None		None
		Dec	1.5	>6.0 	Apparent	 		None	 	None
Tawas	A/D	 Jan-Feb	0.0	>6.0	Apparent	 		None		None
i	i '	Mar	0.0	>6.0	Apparent		Brief	Frequent	i	None
		Apr-May	0.0	>6.0	Apparent		Long	Frequent	i	None
i		Jun	0.0	>6.0	Apparent		Brief	Frequent		None
i		Jul	0.5	>6.0	Apparent			None	i	None
		Aug	1.0	>6.0	Apparent			None	i	None
i		Sep	0.5	>6.0	Apparent			None	i	None
		Oct-Nov	0.0	>6.0	Apparent		Brief	Frequent	i	None
		Dec	0.0	>6.0	Apparent	i i		None		None
\										1
01: Udorthents	 	 Jan. Do-	. 6 O			 		None	 	Non-
		Jan-Dec	>6.0	>6.0				None		None
Juoi chencs		į i		i	i	į i		i	i	i

Table 19.--Water Features--Continued

			W	ater tab	le		Ponding		Floc	ding
Map symbol	Hydro-	Months	Upper	Lower	Kind	Surface	Duration	Frequency	Duration	Frequency
and soil name	logic		limit	limit		water				
	group	į į		ĺ	ĺ	depth			ĺ	İ
	l	İ	Ft	Ft	İ	Ft			ĺ	İ
302:				 						
Histosols	 D	 Jan-Dec	0.0	 >6.0	Annaront	 0 0_1 0	 Very long	 Frequent	 	None
HISCOSOIS	5		0.0	>0.0	Apparent	0.0-1.0 	very rong	rrequent		None
Aquents	D	Jan-Dec	0.0	>6.0	Apparent	0.0-1.0	Very long	Frequent		None
303:										
Aquents	D	Jan-Dec	0.0	>6.0	Apparent	0.0-1.0	Very long	Frequent		None
Dumps, stamp sand	 A	 Jan-Feb	1.5	 >6.0	Apparent			None		None
		Mar	1.0	>6.0	Apparent			None		None
		Apr-May	0.5	>6.0	Apparent			None		None
		Jun	1.0	>6.0	Apparent			None		None
		Jul	2.0	>6.0	Apparent			None		None
		Aug	3.0	>6.0	Apparent			None		None
		Sep	2.0	>6.0	Apparent			None		None
		Oct-Nov	1.0	>6.0	Apparent			None		None
		Dec	1.5	>6.0	Apparent			None		None
310.	 	 		 					 	
Dumps, mine	į	į į		į	į			į	į	į
311:	 	 		 					 	
Dumps, stamp sand	A	Jan-Feb	1.5	>6.0	Apparent			None	i	None
	į	Mar	1.0	>6.0	Apparent			None	i	None
	į	Apr-May	0.5	>6.0	Apparent			None	i	None
	į	Jun	1.0	>6.0	Apparent			None	i	None
	į	Jul	2.0	>6.0	Apparent			None	i	None
	į	Aug	3.0	>6.0	Apparent			None	i	None
	į	Sep	2.0	>6.0	Apparent	i i		None		None
	į	Oct-Nov	1.0	>6.0	Apparent			None	i	None
	į	Dec	1.5	>6.0	Apparent			None		None
312.	 	 		 					 	
Pits	į	į i		İ	İ		İ	İ	i	İ
	i	į i		İ	i			İ	i	i
313.	i	į i		İ	İ		İ	İ	i	İ
Dumps, sawdust	į	į į		į	į			į	į	į
N.	 	[
Water	İ	i i		İ	i			i	i	i
	1	!!!		!	1			1	1	1

Table 20.--Soil Features

(See text for definitions of terms used in this table. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Map symbol	 	Restric	tive layer		Subsid	lence	Potential	Risk of	corrosion
and soil name		Depth					for	Uncoated	
	Kind	1	Thickness	Hardness			frost action	steel	Concrete
	 	In	In	l I	In	In		l I	
2:		İ			i			İ	
Lupton					6-18	50-55	High	High	Low
Tawas	 			 	4-12	20-30	 High	 High 	 Moderate
3:		İ			i i				
Dawson						30-36	High	High	High
Loxley	 			 	6-18	50-55	 High	 High 	 High
6: Skandia	 - Podrogk (lithig)	30-46		 Indurated	4-12	20-24	 	 High	Moderate
Skandia		30-40		Induraced	4-12	20-24		mign	Moderate
Burt	Bedrock (lithic)	12-20		Indurated			Moderate	High	Moderate
10:	 			 				 	
Cathro					4-12	19-22	High	Moderate	Moderate
Sabattis	 			 	0-2	2-3	 High	 High 	 Moderate
13:					i			 	
Tawas					4-12	20-30	High	High	Moderate
Deford				 	0-1	1-2	 Moderate	 Low 	 Moderate
15B:		İ			i i				
Dawson	 			 		30-36	High	High	High
Croswell							Low	Low	Moderate
20E.	 			 				 	
Rock outcrop	 			 				 	
21G:				 				 	
Rock outcrop.				 				 	
Arcadian	 Redrock (lithic)	10-20		 Indurated			Moderate	 Low	Moderate

	ļ	Restric	tive layer		Subsid	dence	!	Risk of	corrosion
Map symbol and soil name	1	Depth					Potential for	Uncoated	1
and soll name	Kind	to top	Thickness	Hardness	Initial	 Total	frost action	steel	Concrete
		In	In		In	In	İ	<u> </u>	İ
39A:	1			l I			 	 	
Betsy Bay	Bedrock (lithic)	30-50		Indurated			Moderate	Low	Moderate
Burt	 Bedrock (lithic)	12-20		 Indurated			 Moderate	 High	 Moderate
Deford				 	0-1	1-2	 Moderate	 Low	Moderate
47A:	 			 		 	 	 	
Zeba	Bedrock (lithic)	26-36		Indurated			High	Moderate	Moderate
Jacobsville	 Bedrock (lithic)	20-36		 Indurated	0-1	1-2	 High	 High	 High
51C:	 			 				 	
Arcadian	Bedrock (lithic)	10-20		Indurated			Moderate	Low	Moderate
Nipissing	 Bedrock (lithic)	20-40		 Indurated		 	 Moderate	 Low	Moderate
Rock outcrop.	 			 	 	 	 	 	
51E:							İ		
Arcadian	Bedrock (lithic)	10-20		Indurated			Moderate	Low	Moderate
Nipissing	 Bedrock (lithic)	20-40		 Indurated			 Moderate	 Low	Moderate
Rock outcrop.	 			 				 	
52C:							i	 	
Arcadian	Bedrock (lithic)	10-20		Indurated			Moderate	Low	Moderate
Dishno	 Bedrock (lithic)	40-60		 Indurated		 	 Moderate	 Moderate 	 High
Rock outcrop.	 			 		 	 	 	
52E:				 				 	
Arcadian	Bedrock (lithic)	10-20		Indurated			Moderate	Low	Moderate
Dishno	 Bedrock (lithic)	40-60		 Indurated			Moderate	 Moderate	 High

Table 20.--Soil Features--Continued

Map symbol	 	Restric	tive layer		Subsid	lence	 Potential	Risk of	corrosion
and soil name	Kind	Depth to top	 Thickness	Hardness	 Initial	Total	for frost action	Uncoated steel	Concrete
		In	In	[In	In	İ	<u> </u>	<u> </u>
39A: Betsy Bay	 Bedrock (lithic)	 30-50	 	 Indurated			 Moderate	 Low	 Moderate
Burt	 Bedrock (lithic)	12-20		 Indurated			 Moderate	 High	Moderate
Deford					0-1	1-2	 Moderate	Low	 Moderate
47A: Zeba	 Bedrock (lithic)	26-36	 	 Indurated			 High	 Moderate	 Moderate
Jacobsville	 Bedrock (lithic)	20-36		 Indurated	0-1	1-2	 High	 High	 High
51C: Arcadian	 Bedrock (lithic)	10-20		 Indurated			 Moderate	 Low	 Moderate
Nipissing	Bedrock (lithic)	20-40		 Indurated			 Moderate	Low	Moderate
Rock outcrop.	 			 			 		
51E: Arcadian	 Bedrock (lithic)	10-20		 Indurated			 Moderate	Low	 Moderate
Nipissing	 Bedrock (lithic)	20-40		 Indurated			 Moderate	Low	Moderate
Rock outcrop.									
52C: Arcadian	 Bedrock (lithic)	10-20		 Indurated			 Moderate	 - Low	 Moderate
Dishno	 Bedrock (lithic)	40-60		 Indurated			 Moderate	 Moderate	 High
Rock outcrop.	 			 			 		
52E: Arcadian	 Bedrock (lithic)	10-20		 Indurated			 Moderate	Low	 Moderate
Dishno	 Bedrock (lithic)	40-60		 Indurated			Moderate	 Moderate	 High
Rock outcrop.									
53E: Arcadian	 Bedrock (lithic)	10-20		 Indurated			 Moderate	Low	 Moderate
Michigamme	 Bedrock (lithic)	22-40		 Indurated			 Moderate	Low	 High
Rock outcrop.				 			[

Table 20.--Soil Features--Continued

Map symbol		Restric	tive layer		Subsid	lence	 Potential	Risk of	corrosion
and soil name	Kind	Depth to top	 Thickness	Hardness	 Initial	Total	for frost action	Uncoated steel	Concrete
		In	In		In	In		<u> </u>	
53F: Arcadian	 Bedrock (lithic)	10-20	 	 Indurated			 Moderate	 Low	 Moderate
Michigamme	 Bedrock (lithic)	20-40		 Indurated			Moderate	 Low	 High
Rock outcrop.		 		 				 	
55B: Chocolay	 Bedrock (lithic) 	 20-40	 	 Indurated 			 Moderate 	 Moderate 	 Moderate
100B: Waiska			 	 			Low	Low	 Moderate
100D: Waiska	 			 			 - Low	 Low	 Moderate
102C: Waiska	 			 			Low	 Low	 Moderate
Garlic							Low	 Low	 High
102E: Waiska	 			 			Low	 Low	 Moderate
Garlic							Low	Low	 High
102F: Waiska	 			 			Low	 Low	 Moderate
Garlic							Low	Low	 High
110B: Shelldrake	 			 			Low	 Low	 High
Croswell							Low	Low	Moderate
111B: Deer Park	 	 	 	 			 Low	 Low 	 Low
111D: Deer Park	 	 	 	 			 	 Low 	 Low
111E: Deer Park	 		 	 			 	 Low 	 Low

Table 20.--Soil Features--Continued

Map symbol		Restric	tive layer		Subsid	lence	 Potential	Risk of	corrosion
and soil name		Depth	<u> </u>		ii		for	Uncoated	[
	Kind		Thickness	Hardness	Initial		frost action	steel	Concrete
		In	In		In	In		 	
.11F:		į	į į		i i				
Deer Park							Low	Low	Low
12C:		İ							
Deer Park							Low	Low	Low
Croswell							Low	Low	Moderate
13C:		İ	i i		iii				
Rubicon							Low	Low	High
Croswell							Low	Low	Moderate
.20B:		į			į į				
Garlic							Low	Low	High
.20D:		į	į į		į į			<u>.</u>	į
Garlic							Low	Low	High
.20E:		į	į į		į į			<u>.</u>	į
Garlic							Low	Low	High
.25A:		į	į į		į į			-	į
Croswell							Low	Low	Moderate
Au Gres			i i		i i		Moderate	Low	Moderate
.26B:		İ	i i		iii				
Au Gres							Moderate	Low	Moderate
Deford					0-1	1-2	Moderate	Low	Moderate
Croswell							Low	Low	Moderate
.27A:			 						
Au Gres		ļ	ļ ļ		j j		Moderate	Low	Moderate
Kinross					0-2	1-4	Moderate	 High 	 Moderate
.30C:									
Garlic			ļ ļ		j j		Low	Low	High
Alcona							Moderate	Low	Low
i		i	į į		i i		i	i	İ

Table 20.--Soil Features--Continued

Map symbol	Restrictive layer				Subsidence		 Potential	Risk of corrosion	
and soil name	Kind	Depth to top	 Thickness	Hardness	 Initial	Total	for frost action	Uncoated steel	Concrete
İ		In	In		In	In	İ		
 130E:		 	 		 				
Garlic			ļ		j j		Low	Low	High
Alcona				 			 Moderate	Low	Low
133C:				 	 		 		
Keweenaw							Low	Low	Moderate
Garlic		 		 			Low	 Low 	 High
133E:		İ			i i		İ		
Keweenaw							Low	Low	Moderate
Garlic				 I	 		Low	 Low 	 High
133F:							İ		
Keweenaw							Low	Low	Moderate
Garlic				 I	 		Low	 Low 	High
136B:							İ		
Borgstrom	Ortstein	8-18	2-30	Very strongly cemented	 		Low	Low	Moderate
Ingalls		 	 	 			 Moderate	 Moderate	 Moderate
142C:				 			İ	 	
Wallace	Ortstein	18-25	14-32	Very strongly cemented	 		Low	Low	High
Rubicon		 		 	 		Low	 Low	 High
142F:				 				 	
Wallace	Ortstein	18-25	14-32	Very strongly cemented	 		Low	Low	High
Rubicon				 	 		Low	 Low	 High
L55C:			 	 	! ! 		[
Montreal	Fragipan	14-41	6-37	Strongly cemented			Moderate	Moderate	High
 Paavola	Bedrock (lithic)	20-30	3-26	 Strongly cemented			Low	 Moderate	 Moderate
		I		I				l	

Map symbol	 	Restric	tive layer		Subsid	lence	 Potential	Risk of	
and soil name	Kind	Depth	 Thickness	Hardness	Initial	Total	for frost action	Uncoated steel	Concrete
		In	In		In	In			
.55E:									
.55E: Montreal	 Fragipan	14-41	6-37	 Strongly cemented	 		Moderate	Moderate	 High
	j	İ			İ		İ		
Paavola	Fragipan	20-30	3-26	Strongly cemented			Low	Moderate	Moderate
Waiska							Low	Low	Moderate
.58A:	 	 	 	 			 		
Arnheim					0-0	0-1	High	High	Moderate
Sturgeon				 			 High	Moderate	Moderate
sturgeon				 			High	Moderate	Moderate
Pelkie			i				Low	Low	Moderate
.61F:			 	 			 		
Trimountain	 Fragipan	16-28	10-35	Strongly cemented			Moderate	Moderate	High
Lac La Belle	Fragipan 	25-40	3-45	Strongly cemented			Low	Moderate	Moderate
Waiska			i		i		Low	Low	Moderate
.62F:									
Trimountain	 Fragipan	16-28	10-35	 Strongly cemented			Moderate	Moderate	High
							İ	_	
Lac La Belle	Fragipan 	25-40	3-45	Strongly cemented			Low	Moderate	Moderate
Michigamme	Bedrock (lithic)	22-40		 Indurated			Moderate	Low	High
.66B:									
Gratiot	 Fragipan	15-20	5-15	 Strongly cemented			 High	Moderate	Moderate
	į	į	į		İ		į		į
Sabattis	 			 	0-2	2-3	High	High	Moderate
.73C:									
Montreal	Fragipan	14-41	6-37	Strongly cemented			Moderate	Moderate	High
Paavola	 Fragipan	20-30	 3-26	 Strongly cemented			Low	Moderate	Moderate
	j	İ	İ	İ	İ		İ		
Dishno	Bedrock (lithic)	40-60		Indurated			Moderate	Moderate	High
.73E:				 					
Montreal	Fragipan	14-41	6-37	Strongly cemented			Moderate	Moderate	High
Paavola	 Bedrock (lithic)	20-30	3-26	 Indurated	 		Low	Moderate	Moderate
Dishno	Bedrock (lithic)	40-60		Indurated			Moderate	Moderate	High

Table 20.--Soil Features--Continued

Table 20.--Soil Features--Continued

Map symbol	 	Restric	tive layer		Subsid	lence	 Potential	Risk of corrosion	
and soil name	Kind	Depth to top	 Thickness	Hardness	 Initial	Total	for frost action	Uncoated steel	Concrete
		In	In		In	In	İ	<u> </u>	
L74B:			 		 			 	
Montreal	Fragipan	14-41	6-37	Strongly cemented	i i		Moderate	Moderate	High
Dishno	 Bedrock (lithic)	40-60		Indurated			 Moderate	 Moderate	 High
Gratiot	 Fragipan	15-20	 5-15 	Strongly cemented			 High	 Moderate 	 Moderate
177A: Assinins	 	 	 		 		 High	 Moderate 	 Moderate
L83C: Munising	 Fragipan	15-22	 6-16	Strongly cemented	 		 Moderate	Low	 High
Abbaye	 Bedrock (lithic)	20-40		Indurated	 		 Moderate	 Low	 Moderate
Yalmer	 Fragipan	20-30	2-32	Strongly cemented	 		Low	 Low	 Moderate
L83E: Munising	 Fragipan	 15-22	 6-16	Strongly cemented			 Moderate	 Low	 High
Abbaye	 Bedrock (lithic)	20-40	 	Indurated			 Moderate	Low	Moderate
Yalmer	 Fragipan	20-30	2-32	Strongly cemented	 		Low	Low	 Moderate
L84C: Munising	 Fragipan	 15-22	 6-16	Strongly cemented	 		 Moderate	 Low	 High
Yalmer	 Fragipan	20-30	2-32	Strongly cemented			Low	 Low	 Moderate
L84E: Munising	 Fragipan	15-22	 6-16	Strongly cemented	 		 Moderate	 Low	 High
Yalmer	 Fragipan	20-30	2-32	Strongly cemented	 		Low	 Low	 Moderate
L85B: Munising	 Fragipan	 15-22	 6-16	Strongly cemented			 Moderate	 Low	 High
Skanee	Fragipan	12-18	17-26	Strongly cemented	 		 High	 Moderate	 High
185C: Munising	 Fragipan	 15-22	 6-16	Strongly cemented	 		 Moderate	 Low	 High
Skanee	 Fragipan	12-18	 17-26	Strongly cemented	 		High	Moderate	 High

Map symbol		Restric	tive layer		Subsid	lence	 Potential	Risk of	corrosion
and soil name	 Kind	Depth	 Thickness	Hardness	 Initial	Total	for frost action	Uncoated steel	Concret
		In	In	İ	In	In	!		<u> </u>
187A: Skanee	 Fragipan	 12-18	 17-26	 Strongly cemented	 		 High	 Moderate	 High
Gay					0-1	0-1	 High	 High	Moderate
192B: Nipissing	 Bedrock (lithic)	 20-40	 	 Indurated	 		 Moderate	 Low	 Moderate
Arcadian	 Bedrock (lithic)	10-20		 Indurated	 		 Moderate	Low	Moderate
Rock outcrop.	 			 			 	 	
194B: Copper Harbor	 		 	 	 		 Low 	 Low 	 Moderate
195B: Copper Harbor				 	 		Low	Low	 Moderate
Bete Grise				 			Low	 Low	Moderate
l96B: Bete Grise				 	 		Low	 Low	 Moderate
Tawas					4-12	20-30	 High	 High	Moderate
001: Udorthents	 		 	 	 		 - Low	 Moderate 	 Low
Udipsamments				 I			Low	 Low	Moderate
302: Histosols	 			 	 6-18	50-55	 High	 High	 Moderate
Aquents					 		High	 	
003: Aquents	 			 	 		 High	 	
Dumps, stamp sand				 	 		Low	 Low	Low
10. Dumps, mine	 			 			 	 	
11: Dumps, stamp sand	 				 		Low	 Low	Low

Table 20.--Soil Features--Continued

Table 20.--Soil Features--Continued

		Restric	tive layer		Subsid	dence		Risk of	corrosion
Map symbol					_[Potential		
and soil name		Depth					for	Uncoated	
	Kind	to top	Thickness	Hardness	Initial	Total	frost action	steel	Concrete
		In	In		In	In			
12.									
Pits									
		İ	į į		j i		į į		ĺ
13.		İ	į į		j i		į į		ĺ
Dumps, sawdust		İ	į į		j i		į į		ĺ
	İ	i	į į		j i		į į		İ
•	İ	i	į į		j i		į į		İ
Water	İ	i	i i		i i		i i		İ
	i İ	i	i i		i		i i		i

Table 21.--Classification of the Soils

Soil name	Family or higher taxonomic class
Abbave	Coarse-loamy, mixed, active, frigid Alfic Oxyaquic Haplorthods
-	Coarse-loamy, mixed, active, frigid Alfic Haplorthods
	Loamy-skeletal, mixed, active, frigid Lithic Haplorthods
	Coarse-loamy, mixed, superactive, nonacid, frigid Typic Fluvaquents
	Coarse-loamy, mixed, active, frigid Argic Endoaquods
	Sandy, mixed, frigid Typic Endoaquods
	Sandy-skeletal, mixed, frigid Typic Endoaquods
	Mixed, frigid Typic Psammaquents
	Sandy, mixed, frigid, shallow, ortstein Typic Durorthods
-	Siliceous, frigid Lithic Psammaquents
	Loamy, mixed, euic, frigid Terric Haplosaprists
	Loamy-skeletal, mixed, superactive, frigid Oxyaquic Haplorthods
	Sandy-skeletal, isotic, frigid Oxyaquic Haplorthods
	Sandy, mixed, frigid Oxyaquic Haplorthods
Dawson	Sandy or sandy-skeletal, mixed, dysic, frigid Terric Haplosaprists
Deer Park	Mixed, frigid Spodic Udipsamments
Deford	Mixed, frigid Typic Psammaquents
Dishno	Coarse-loamy over sandy or sandy-skeletal, mixed, superactive, frigid
	Oxyaquic Haplorthods
Garlic	Sandy, mixed, frigid, ortstein Typic Haplorthods
Gay	Coarse-loamy, mixed, active, nonacid, frigid Aeric Endoaquepts
Gratiot	Loamy-skeletal, mixed, superactive, frigid Typic Fragiaquods
Ingalls	Sandy over loamy, mixed, active, frigid Typic Endoaquods
Jacobsville	Coarse-loamy, mixed, active, nonacid, frigid Aeric Endoaquepts
Keweenaw	Sandy, mixed, frigid Alfic Haplorthods
Kinross	Sandy, mixed, frigid Typic Endoaquods
Lac La Belle	Sandy-skeletal, isotic, frigid Typic Fragiorthods
Loxley	Dysic, frigid Typic Haplosaprists
Lupton	Euic, frigid Typic Haplosaprists
Michigamme	Coarse-loamy, mixed, superactive, frigid Fragic Haplorthods
Montreal	Coarse-loamy, isotic, superactive, frigid Alfic Oxyaquic Fragiorthods
$ ext{funising}$	Coarse-loamy, mixed, active, frigid Alfic Oxyaquic Fragiorthods
Nipissing	Loamy-skeletal, mixed, active, frigid Typic Haplorthods
Paavola	Sandy-skeletal, mixed, frigid Alfic Oxyaquic Fragiorthods
Pelkie	Mixed, frigid Oxyaquic Udipsamments
Rubicon	Sandy, mixed, frigid Entic Haplorthods
	Coarse-loamy, mixed, active, nonacid, frigid Histic Humaquepts
	Frigid, uncoated Typic Quartzipsamments
Skandia	Dysic, frigid Lithic Haplosaprists
	Coarse-loamy, mixed, active, frigid Argic Fragiaquods
Sturgeon	Coarse-silty over sandy or sandy-skeletal, mixed, superactive, nonacid, frigid Aquic Udifluvents
	Sandy or sandy-skeletal, mixed, euic, frigid Terric Haplosaprists
	Coarse-loamy, mixed, superactive, frigid Ultic Fragiorthods
	Sandy-skeletal, mixed, frigid Typic Haplorthods
	Sandy, mixed, frigid, shallow, ortstein Typic Durorthods
Yalmer	Sandy, mixed, frigid Alfic Oxyaquic Fragiorthods
Zeba	Coarse-loamy, mixed, active, frigid Argic Endoaquods

Interpretive Groups

Interpretive Groups

(Unless otherwise indicated, a complex is treated as a single management unit in the land capability classification column. See text for definitions of the groups.

Absence of an entry indicates that the map unit is not suited to the intended use or that an interpretive group is not assigned)

Map symbol and soil name	 Land capability classification	Michigan soil	Hydric status	Habitat type
and soll name		management group	status 	(primary/ secondary)
	ļ			
2	6w		***********	mms /mm a
Lupton Tawas	 	Mc M/4c	Hydric Hydric	TTM/TTS
3	7w			
Dawson		Mc-a	Hydric	PCS/TTS
Loxley		M/4c-a	Hydric	PCS/TTS
6	7w			
Skandia	į į	M/Rc	Hydric	PCS/TTS
Burt	į į	Rbc	Hydric	PCS/TTS
10				
Cathro		M/3c	Hydric	TTM/FI
Sabattis	i i	3c	Hydric	TTM/FI
12				
13	6w	35/4-	***********	mmw./mm.c
Tawas Deford		M/4c 4c	Hydric Hydric	TTM/TTS
Deloid		40	Inyuric	115/1111
15B	7w		į	
Dawson		M/4c-a	Hydric	PCS/TMC-V
Croswell	 	5a	Not hydric	AQV/TMC-V
20E.	<u> </u>			
Rock outcrop				
21G				
Rock outcrop.	į į		İ	j
Arcadian		Ra	Not hydric	TMC-V/AQV
39A	3w			
Betsy Bay	i i	4/Rbc	Not hydric	TMC-V/TTS
Burt	į į	Rbc	Hydric	TTS/TTM
47A				
Zeba		3/Rbc	Not hydric	TMC-D/TMC
Jacobsville	į į	3/Rbc	Hydric	TTM/TMC-V
51C				
Arcadian	/5	Ra	Not hydric	TMV/ATD
Nipissing	i	G/Ra	Not hydric	ATD/TMV
Rock outcrop.	į į	·	į	
51E				
Arcadian	'8	Ra	Not hydric	TMV/TM
Nipissing		G/Ra	Not hydric	TMV/TM
Rock outcrop.	į i	• •		į
52C				
Arcadian	/s 	Ra	Not hydric	AVO/ATD
Dishno		3a	Not hydric	ATD/AVO
Rock outcrop.				
•	į į		İ	j

Interpretive Groups--Continued

	1 1		1	1
Map symbol and soil name	 Land capability classification 	Michigan soil management group	 Hydric status 	Habitat type (primary/ secondary)
52E Arcadian Dishno Rock outcrop.	7s 7s 	Ra 3a	Not hydric Not hydric	AVO/ATD
53E Arcadian Michigamme Rock outcrop.	7s 	Ra 3/Ra	 Not hydric Not hydric	ATD/TMV ATD/TMV
53F Arcadian Michigamme Rock outcrop.	i i	Ra 3/Ra	 Not hydric Not hydric	ATD/TMV
55BChocolay	 6s 	3/Ra	Not hydric	ATD
100B Waiska	 6s 	Ga	Not hydric	ATD
100D Waiska	 6s 	Ga	Not hydric	ATD
102CWaiskaGarlic	i i	Ga 5.3a	 Not hydric Not hydric	ATD/AVO
102E	i i	Ga 5.3a	 Not hydric Not hydric	ATD/AVO
102F Waiska Garlic	i i	Ga 5.3a	 Not hydric Not hydric	ATD/AVO
110B Shelldrake Croswell	j j	5.3a 5a	 Not hydric Not hydric	PVC QAE
111B Deer Park	6s 6	5.3a	Not hydric	AQV/QAE
111D Deer Park	 7s 	5.3a	Not hydric	AQV/QAE
111E Deer Park	 7s 	5.3a	Not hydric	 AQV/QAE
111F Deer Park	 7s 	5.3a	Not hydric	AQV/QAE
112C Deer Park Croswell	j j	5.3a 5a	 Not hydric Not hydric	 QAE QAE/TMC-V
113C Rubicon Croswell		5.3a 5a	 Not hydric Not hydric	AQV/TMV
120BGarlic		5.3a	 Not hydric	TM/ATD-D

Interpretive Groups--Continued

	1 1		1	1
Map symbol	 Land capability	Michigan	Hydric	 Habitat type
and soil name	classification	soil	status	(primary/
una 2011 mano		management	50000	secondary)
	 	group		Secondary)
	1		1	1
120D	6s	5.3a	Not hydric	TM/ATD-D
Garlic				
120E	7s	5.3a	Not hydric	TM/ATD-D
Garlic				
125A				
Croswell		5a	Not hydric	AQV
Au Gres		5b	Not hydric	TMC-V
	i i		i	j
126B	4w			
Au Gres		5b	Not hydric	TMC-V
Deford		4c	Hydric	TMC-V/AQV
Croswell	[[5a	Not hydric	TMC-V/AQV
1053				
127A	4w	5h	Not hadric	PMC 37
Au Gres		5b	Not hydric	TMC-V
Kinross	 	5c-a	Hydric	PCS/TTS
130C				
Garlic		5.3a	Not hydric	ATD-D
Alcona	i	3a-s	Not hydric	ATD
mrcomu		3 u 5	Not myarro	1115
130E	7s		İ	j
Garlic		5.3a	Not hydric	ATD-D
Alcona	[3a-s	Not hydric	ATD
	[-	!
133C	3e			
Keweenaw		4a-a	Not hydric	ATD-D/TM
Garlic	 	5.3a	Not hydric	TM/ATD-D
133E				
Keweenaw	i	4a-a	Not hydric	ATD-D/TM
Garlic	į į	5.3a	Not hydric	ATD-D/TM
	į į		İ	İ
133F	7e			
Keweenaw		4a-a	Not hydric	ATD-D/TM
Garlic		5.3a	Not hydric	ATD
136B	 6s			
Borgstrom	68	4/2a-hs	Not hydric	TM
Ingalls		4/2b	Not hydric	TMC
inguis		1,22	Not injurit	
142C	6s		İ	İ
Wallace	į į	5a-h	Not hydric	TMV
Rubicon	į į	5.3a	Not hydric	AQV/TMV
	[[1	
142F	7s			
Wallace	!	5a-h	Not hydric	TMV
Rubicon		5.3a	Not hydric	AQV/TMV
155C	 6s			
Montreal	55	3a-af	Not hydric	ATD/AVO
Paavola		Ga	Not hydric	AVO/ATD
Waiska	1	Ga	Not hydric	ATD/AVO
	į į			· ·
155E	7e			
Montreal		3a-af	Not hydric	ATD/AVO
Paavola		Ga	Not hydric	AVO/ATD
Waiska	į l	Ga	Not hydric	ATD/AVO

Interpretive Groups--Continued

Man much al		Wiehiese	77	Tabibat toma
Map symbol and soil name	Land capability classification	Michigan soil	Hydric	Habitat type
and soil name	Classification		status	(primary/
	 	management group		secondary)
	İ		İ	İ
158A	5w			
Arnheim		L-2c	Hydric	FMC/FI
Sturgeon		L-2b	Not hydric	AVO-CI
Pelkie	 	L-2a	Not hydric	AVO
161F	7e			
Trimountain	į į	3a-af	Not hydric	AVO/ATD
Lac La Belle		Ga	Not hydric	ATD/AVO
Waiska		Ga	Not hydric	AVO/ATD
162F	 7e			
Trimountain	!	3a-af	Not hydric	ATD/AVO
Lac La Belle		Ga	Not hydric	ATD/AVO
Michigamme		3/Ra	Not hydric	ATD/AVO
-	j i		į -	i
166B	7s			
Gratiot	İ	3b-af	Not hydric	AVO-CI/TMC-D
Sabattis		3c	Hydric	FI/TTM
173C	 6s			
Montreal	1	3a-af	Not hydric	AVO/ATD
Paavola	i i	Ga	Not hydric	AVO/ATD
Dishno	į į	3a	Not hydric	AVO/ATD
173E				
Montreal	1	3a-af	Not hydric	AVO/ATD
Paavola	1	Ga Ga	Not hydric	AVO/ATD
Dishno	1	3a	Not hydric	AVO/ATD
223	i	34		
174B	6s		İ	i
Montreal	i i	3a-af	Not hydric	ATD/AVO
Dishno		3a	Not hydric	ATD/AVO
Gratiot		3b-af	Not hydric	AVO-CI/ATD-CI
177A		4b	Not hydric	TMC
Assinins				
	į į		İ	İ
183C	!			
Munising		3a-af	Not hydric	TM/ATD
Abbaye	, ,	3/Ra	Not hydric	ATD
Yalmer		4a-a	Not hydric	TM/ATD
183E	7e			
Munising	1	3a-af	Not hydric	TM/ATD
Abbaye		3/Ra	Not hydric	ATD
Yalmer		4a-a	Not hydric	ATD/TM
184C				I
Munising		3a-af	Not hydric	TM/ATD
Yalmer		4a-a	Not hydric	ATD/TM
	į į		İ	İ
184E	1			
Munising		3a-af	Not hydric	ATD/TM
Yalmer		4a-a	Not hydric	ATD/TM
185B	68		İ	j
Munising	i i	3a-af	Not hydric	ATD/TM
Skanee	ļ	3b-a	Not hydric	TMC/TMC-D
1050	60			
185C Munising	, ,	3a-af	Not hydric	ATD/TM
Skanee		3b-a	Not hydric	TMC/TMC-D

Interpretive Groups--Continued

Map symbol	Land capability	Michigan	Hydric	Habitat type
and soil name	classification	soil	status	(primary/
		management		secondary)
		group		1
187A	 2e			
Skanee	i i	3b-a	Not hydric	TMC/TMC-D
Gay	į į	3c	Hydric	TTS
192B	 7s			
Nipissing	,5 	G/Ra	Not hydric	TMV/AQV
Arcadian		Ra	Not hydric	TMV/AQV
Rock outcrop.		Na.	Not hydric	IMV/AQV
		_		
194B	6s	Ga	Not hydric	ATD
Copper Harbor				
L95B	6s			İ
Copper Harbor		Ga	Not hydric	ATD
Bete Grise		Gbc	Not hydric	TMC-D
L96B	4w			
Bete Grise		M/4c	Not hydric	TMC-D
Tawas		Gbc	Hydric	TTM
301	 6e			
Udorthents	į į			
Udipsamments	į			
302	 7w			
Histosols	i i		i	
Aquents	i i		i	
303	 8s			
Aquents			Hydric	
Dumps, stamp sand			Not hydric	
310	 8s			
Dumps, mine				
311	 7s		Not hydric	
Dumps, stamp sand	61		MOC HYGETC	
Dumps, stamp sand				
312.	į		į	į
Pits	 		1	
313.				
Dumps, sawdust	į			
W.				
Water	:		i	i .

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