

Submittal Document II.I. USDA NRCS Soil Resources Report



United States
Department of
Agriculture

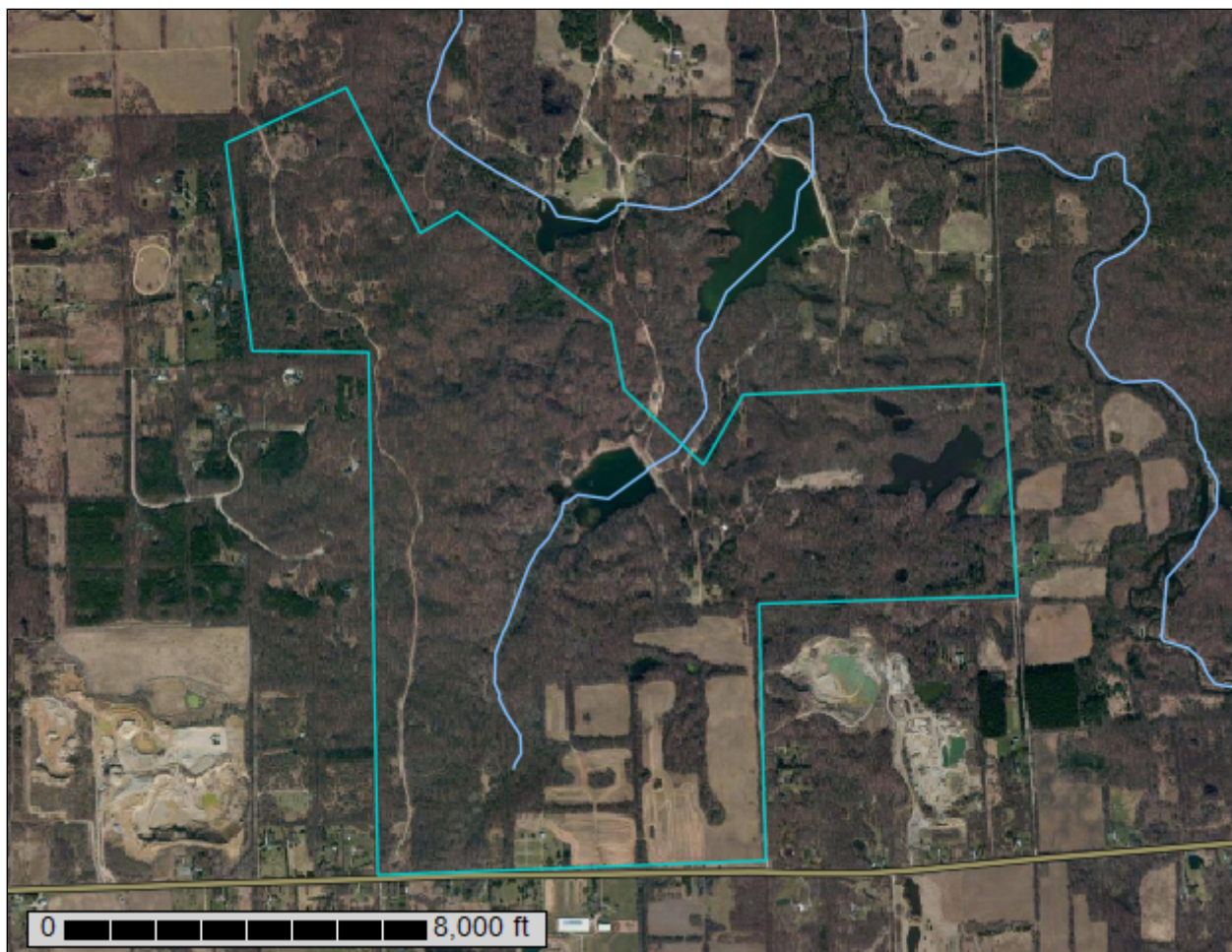
NRCS

Natural
Resources
Conservation
Service

A product 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
participants

Custom Soil Resource Report for **Lapeer County, Michigan**

Approximate Mining Boundary



October 5, 2015

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is 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.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<http://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

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.

The National Cooperative Soil Survey is 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 (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various 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 observed and described many soil profiles. A soil profile 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 or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur 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.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

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.

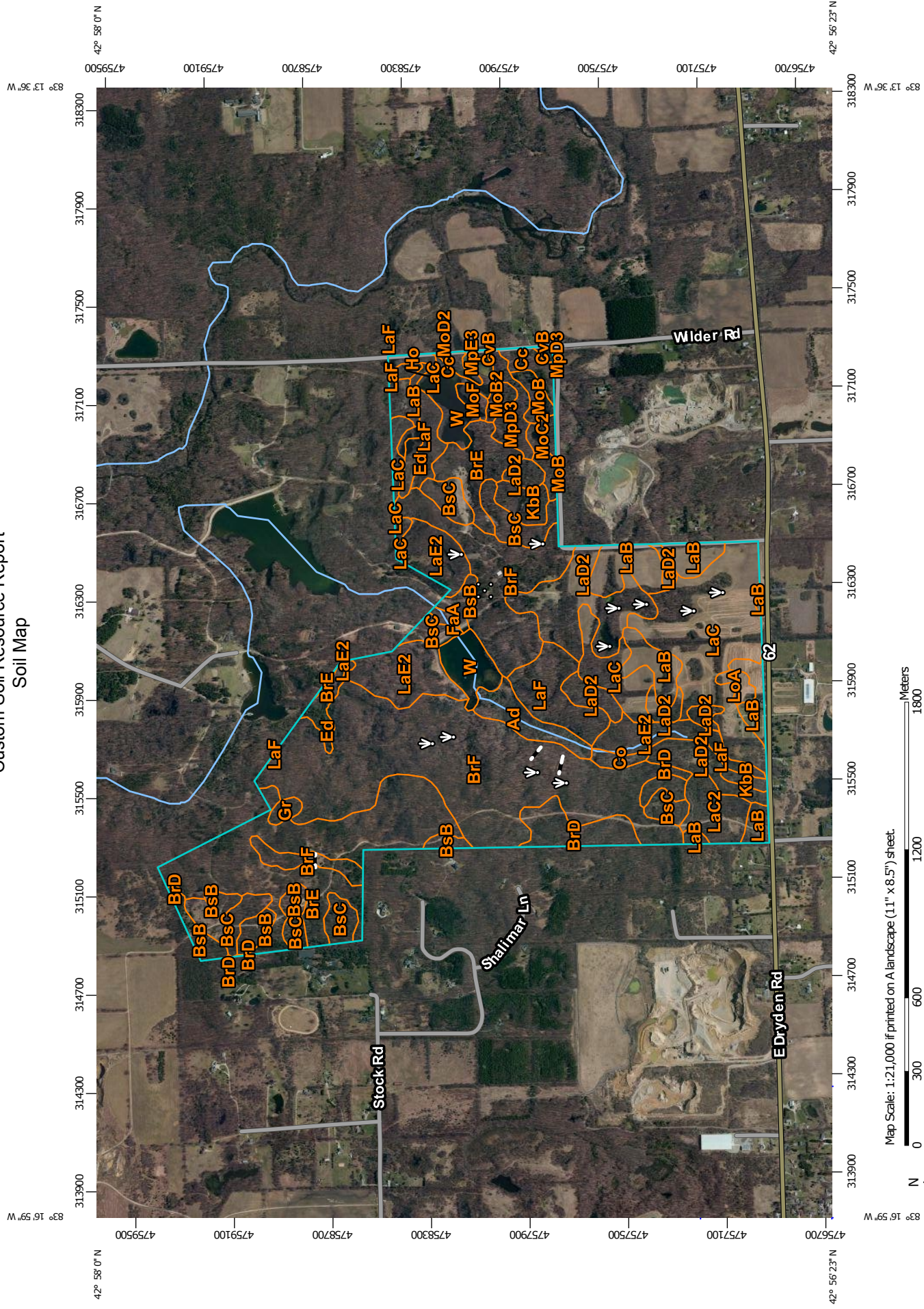
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree 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.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map




Map Scale: 1:21,000 if printed on A landscape (11" x 8.5") sheet.




Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84


MAP LEGEND


Area of Interest (AOI)

 Area of Interest (AOI)


Soils


 Soil Map Unit Polygons


 Soil Map Unit Lines


 Soil Map Unit Points


Special Point Features


 Blowout


 Borrow Pit


 Clay Spot


 Closed Depression


 Gravel Pit


 Gravelly Spot


 Landfill


 Lava Flow


 Marsh or swamp


 Mine or Quarry


 Miscellaneous Water


 Perennial Water


 Rock Outcrop


 Saline Spot

 Sandy Spot


 Severely Eroded Spot

 Sinkhole


 Slide or Slip


 Sodic Spot


Water Features

 Streams and Canals


Transportation

 Rails


 Interstate Highways


 US Routes

 Major Roads


 Local Roads


Background


 Aerial Photography


 Spoil Area

 Stony Spot

 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Lapeer County, Michigan
Survey Area Data: Version 11, Sep 17, 2014

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 18, 2011—Mar 21, 2012

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Lapeer County, Michigan (MI087)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ad	Adrian muck	13.5	1.8%
BrD	Boyer loamy sand, 12 to 18 percent slopes	18.5	2.5%
BrE	Boyer loamy sand, 18 to 25 percent slopes	96.0	12.9%
BrF	Boyer loamy sand, 25 to 50 percent slopes	193.1	25.9%
BsB	Boyer sandy loam, 1 to 6 percent slopes	20.7	2.8%
BsC	Boyer sandy loam, 6 to 12 percent slopes	40.4	5.4%
Cc	Carlisle muck	7.6	1.0%
Co	Colwood loam	3.1	0.4%
CvB	Conover loam, 2 to 6 percent slopes	0.3	0.0%
Ed	Edwards muck	8.7	1.2%
FaA	Fabius-Wasepi sandy loams, 0 to 2 percent slopes	1.4	0.2%
Gr	Gravel pits	2.4	0.3%
Ho	Houghton muck	2.1	0.3%
KbB	Kibbie loam, 2 to 6 percent slopes	9.2	1.2%
LaB	Lapeer sandy loam, 2 to 6 percent slopes	43.4	5.8%
LaC	Lapeer sandy loam, 6 to 12 percent slopes	80.8	10.8%
LaC2	Lapeer sandy loam, 6 to 12 percent slopes, moderately eroded	13.4	1.8%
LaD2	Lapeer sandy loam, 12 to 18 percent slopes, moderately eroded	59.3	8.0%
LaE2	Lapeer sandy loam, 18 to 25 percent slopes, moderately eroded	42.8	5.8%
LaF	Lapeer sandy loam, 25 to 60 percent slopes	32.8	4.4%
LoA	Locke sandy loam, 0 to 2 percent slopes	3.0	0.4%
MoB	Miami loam, 2 to 6 percent slopes	7.2	1.0%
MoB2	Miami loam, 2 to 6 percent slopes, moderately eroded	1.6	0.2%

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Lapeer County, Michigan (MI087)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
MoC2	Miami loam, 6 to 12 percent slopes, moderately eroded	3.7	0.5%
MoD2	Miami loam, 12 to 18 percent slopes, moderately eroded	0.5	0.1%
MoF	Miami loam, 25 to 60 percent slopes	2.5	0.3%
MpD3	Miami clay loam, 12 to 18 percent slopes, severely eroded	9.6	1.3%
MpE3	Miami clay loam, 18 to 25 percent slopes, severely eroded	1.8	0.2%
W	Water	25.1	3.4%
Totals for Area of Interest		744.5	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

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. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. 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 important soil properties and qualities.

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, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, 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. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, 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. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Lapeer County, Michigan

Ad—Adrian muck

Map Unit Setting

National map unit symbol: 6frg
Elevation: 780 to 1,040 feet
Mean annual precipitation: 31 to 32 inches
Mean annual air temperature: 47 to 48 degrees F
Frost-free period: 108 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Adrian and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Adrian

Setting

Landform: Depressions on lake plains, depressions on drainageways
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Herbaceous organic material over sandy glaciofluvial deposits

Typical profile

Oa1 - 0 to 12 inches: muck
Oa2 - 12 to 30 inches: muck
2Cg - 30 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.20 to 6.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water storage in profile: Very high (about 13.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: A/D

BrD—Boyer loamy sand, 12 to 18 percent slopes

Map Unit Setting

National map unit symbol: 2t6l5

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Elevation: 700 to 1,250 feet
Mean annual precipitation: 32 to 40 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 120 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Boyer and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Boyer

Setting

Landform: Moraines, stream terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, riser
Down-slope shape: Linear
Across-slope shape: Linear, convex
Parent material: Loamy outwash and/or sandy outwash over sandy and gravelly outwash

Typical profile

Ap - 0 to 8 inches: loamy sand
E - 8 to 16 inches: loamy sand
Bt - 16 to 30 inches: sandy loam
2C - 30 to 79 inches: stratified coarse sand to gravelly sand to very gravelly sand

Properties and qualities

Slope: 12 to 18 percent
Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 40 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A

Minor Components

Oshtemo

Percent of map unit: 9 percent
Landform: Stream terraces, moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, riser
Down-slope shape: Linear
Across-slope shape: Convex, linear

Spinks

Percent of map unit: 6 percent
Landform: Stream terraces, moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, riser
Down-slope shape: Linear
Across-slope shape: Convex, linear

BrE—Boyer loamy sand, 18 to 25 percent slopes

Map Unit Setting

National map unit symbol: 2t6l6
Elevation: 800 to 1,100 feet
Mean annual precipitation: 32 to 36 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 140 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Boyer and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Boyer

Setting

Landform: Stream terraces, moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, riser
Down-slope shape: Linear
Across-slope shape: Convex, linear
Parent material: Loamy outwash and/or sandy outwash over sandy and gravelly outwash

Typical profile

A - 0 to 7 inches: loamy sand
E - 7 to 15 inches: loamy sand
Bt - 15 to 28 inches: sandy loam
2C - 28 to 79 inches: stratified coarse sand to gravelly sand to very gravelly sand

Properties and qualities

Slope: 18 to 25 percent
Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None

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Frequency of ponding: None

Calcium carbonate, maximum in profile: 40 percent

Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water storage in profile: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: A

Minor Components

Spinks

Percent of map unit: 9 percent

Landform: Moraines, stream terraces

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope, riser

Down-slope shape: Linear

Across-slope shape: Linear, convex

Oshtemo

Percent of map unit: 6 percent

Landform: Moraines, stream terraces

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope, riser

Down-slope shape: Linear

Across-slope shape: Linear, convex

BrF—Boyer loamy sand, 25 to 50 percent slopes

Map Unit Setting

National map unit symbol: 2t6l7

Elevation: 800 to 1,100 feet

Mean annual precipitation: 32 to 36 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 140 to 180 days

Farmland classification: Not prime farmland

Map Unit Composition

Boyer and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Boyer

Setting

Landform: Stream terraces, moraines

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope, riser

Down-slope shape: Linear

Across-slope shape: Convex, linear

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Parent material: Loamy outwash and/or sandy outwash over sandy and gravelly outwash

Typical profile

A - 0 to 7 inches: loamy sand

E - 7 to 15 inches: loamy sand

Bt - 15 to 28 inches: sandy loam

2C - 28 to 79 inches: stratified coarse sand to gravelly sand to very gravelly sand

Properties and qualities

Slope: 25 to 50 percent

Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification

Natural drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum in profile: 40 percent

Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water storage in profile: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: A

Minor Components

Spinks

Percent of map unit: 9 percent

Landform: Moraines, stream terraces

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope, riser

Down-slope shape: Linear

Across-slope shape: Linear, convex

Oshtemo

Percent of map unit: 6 percent

Landform: Stream terraces, moraines

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope, riser

Down-slope shape: Linear

Across-slope shape: Convex, linear

BsB—Boyer sandy loam, 1 to 6 percent slopes

Map Unit Setting

National map unit symbol: 2t6l9

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Elevation: 700 to 1,250 feet
Mean annual precipitation: 32 to 40 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 120 to 180 days
Farmland classification: Farmland of local importance

Map Unit Composition

Boyer and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Boyer

Setting

Landform: Stream terraces, moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, tread
Down-slope shape: Linear
Across-slope shape: Convex, linear
Parent material: Loamy outwash and/or sandy outwash over sandy and gravelly outwash

Typical profile

Ap - 0 to 9 inches: sandy loam
E - 9 to 17 inches: sandy loam
Bt - 17 to 30 inches: sandy loam
2C - 30 to 79 inches: stratified coarse sand to gravelly sand to very gravelly sand

Properties and qualities

Slope: 1 to 6 percent
Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 40 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A

Minor Components

Oshtemo

Percent of map unit: 9 percent
Landform: Stream terraces, moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, tread
Down-slope shape: Linear
Across-slope shape: Convex, linear

Bronson

Percent of map unit: 6 percent
Landform: Moraines, stream terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Side slope, tread
Down-slope shape: Linear
Across-slope shape: Concave

BsC—Boyer sandy loam, 6 to 12 percent slopes

Map Unit Setting

National map unit symbol: 2t6l8
Elevation: 700 to 1,250 feet
Mean annual precipitation: 32 to 40 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 120 to 180 days
Farmland classification: Farmland of local importance

Map Unit Composition

Boyer and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Boyer

Setting

Landform: Moraines, stream terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, riser
Down-slope shape: Linear
Across-slope shape: Linear, convex
Parent material: Loamy outwash and/or sandy outwash over sandy and gravelly outwash

Typical profile

Ap - 0 to 9 inches: sandy loam
E - 9 to 17 inches: sandy loam
Bt - 17 to 30 inches: sandy loam
2C - 30 to 79 inches: stratified coarse sand to gravelly sand to very gravelly sand

Properties and qualities

Slope: 6 to 12 percent
Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None

Custom Soil Resource Report

Frequency of ponding: None

Calcium carbonate, maximum in profile: 40 percent

Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water storage in profile: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): 3e

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: A

Minor Components

Oshtemo

Percent of map unit: 9 percent

Landform: Moraines, stream terraces

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope, riser

Down-slope shape: Linear

Across-slope shape: Linear, convex

Spinks

Percent of map unit: 6 percent

Landform: Stream terraces, moraines

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope, riser

Down-slope shape: Linear

Across-slope shape: Convex, linear

Cc—Carlisle muck

Map Unit Setting

National map unit symbol: 6fsm

Elevation: 750 to 1,130 feet

Mean annual precipitation: 31 to 32 inches

Mean annual air temperature: 47 to 48 degrees F

Frost-free period: 108 to 178 days

Farmland classification: Not prime farmland

Map Unit Composition

Carlisle and similar soils: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Carlisle

Setting

Landform: Depressions on moraines, depressions on till plains, depressions on outwash plains

Landform position (three-dimensional): Dip

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Herbaceous organic material and/or woody organic material

Typical profile

Oa1 - 0 to 14 inches: muck
Oa2 - 14 to 28 inches: muck
Oa3 - 28 to 80 inches: muck

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.20 to 6.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water storage in profile: Very high (about 23.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: A/D

Co—Colwood loam

Map Unit Setting

National map unit symbol: 6fsx
Elevation: 760 to 1,130 feet
Mean annual precipitation: 31 to 32 inches
Mean annual air temperature: 47 to 48 degrees F
Frost-free period: 108 to 178 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Colwood and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Colwood

Setting

Landform: Outwash plains, lake plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy glaciolacustrine deposits and/or glaciofluvial deposits

Typical profile

Ap - 0 to 9 inches: loam
A - 9 to 11 inches: loam
Bg - 11 to 18 inches: loam
Btg - 18 to 32 inches: silty clay loam
2Cg1 - 32 to 39 inches: stratified silt to fine sand to silt loam
3Cg2 - 39 to 80 inches: stratified silt to fine sand to very fine sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 6.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum in profile: 35 percent
Available water storage in profile: Very high (about 12.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D

CvB—Conover loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 6fsz
Elevation: 760 to 1,170 feet
Mean annual precipitation: 31 to 32 inches
Mean annual air temperature: 47 to 48 degrees F
Frost-free period: 108 to 178 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Conover and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Conover

Setting

Landform: Knolls on till plains
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Loamy till

Typical profile

Ap - 0 to 8 inches: loam
E - 8 to 11 inches: loam
Bt1 - 11 to 14 inches: clay loam
Bt2 - 14 to 28 inches: clay loam
C - 28 to 80 inches: loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches

Custom Soil Resource Report

Natural drainage class: Somewhat poorly drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.20 to 2.00 in/hr)

Depth to water table: About 6 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum in profile: 30 percent

Available water storage in profile: High (about 10.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: C/D

Minor Components

Brookston

Percent of map unit: 5 percent

Landform: Drainageways on till plains

Landform position (three-dimensional): Talf

Down-slope shape: Linear

Across-slope shape: Linear

Ed—Edwards muck

Map Unit Setting

National map unit symbol: 6ft4

Elevation: 760 to 1,080 feet

Mean annual precipitation: 31 to 32 inches

Mean annual air temperature: 47 to 48 degrees F

Frost-free period: 108 to 178 days

Farmland classification: Not prime farmland

Map Unit Composition

Edwards and similar soils: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Edwards

Setting

Landform: Swamps on lake plains, depressions on moraines

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Dip

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Herbaceous organic material over marl

Typical profile

Oa1 - 0 to 18 inches: muck

Oa2 - 18 to 30 inches: muck

Custom Soil Resource Report

Lma - 30 to 80 inches: marly material

Properties and qualities

Slope: 0 to 1 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Very poorly drained

Runoff class: Negligible

*Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.20 to 2.00 in/hr)*

Depth to water table: About 0 inches

Frequency of flooding: None

Frequency of ponding: Frequent

Calcium carbonate, maximum in profile: 90 percent

Available water storage in profile: Very high (about 18.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 5w

Hydrologic Soil Group: B/D

FaA—Fabius-Wasepi sandy loams, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 6ft5

Elevation: 750 to 1,130 feet

Mean annual precipitation: 31 to 32 inches

Mean annual air temperature: 47 to 48 degrees F

Frost-free period: 108 to 178 days

Farmland classification: Farmland of local importance

Map Unit Composition

Fabius and similar soils: 50 percent

Wasepi and similar soils: 45 percent

Minor components: 5 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fabius

Setting

Landform: Lake plains, outwash plains

Landform position (three-dimensional): Rise

Down-slope shape: Linear

Across-slope shape: Convex

Parent material: Loamy over sandy and gravelly glaciofluvial deposits

Typical profile

Ap - 0 to 7 inches: sandy loam

Eg - 7 to 10 inches: sandy loam

Bt1 - 10 to 12 inches: sandy loam

Bt2 - 12 to 18 inches: sandy clay loam

2C - 18 to 80 inches: stratified coarse sand to gravelly sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.60 in/hr)
Depth to water table: About 6 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 25 percent
Available water storage in profile: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D

Description of Wasepi

Setting

Landform: Drainageways on outwash plains
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Loamy over sandy and gravelly glaciofluvial deposits

Typical profile

Ap - 0 to 7 inches: loamy sand
E - 7 to 11 inches: loamy sand
Bt - 11 to 14 inches: sandy loam
Btg - 14 to 24 inches: sandy loam
BCg - 24 to 32 inches: sandy loam
2Cg - 32 to 80 inches: gravelly sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 6.00 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 25 percent
Available water storage in profile: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: B/D

Minor Components

Gilford

Percent of map unit: 5 percent

Landform: Drainageways on outwash plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear

Gr—Gravel pits

Map Unit Setting

National map unit symbol: 6ftg
Elevation: 760 to 1,150 feet
Mean annual precipitation: 31 to 32 inches
Mean annual air temperature: 47 to 48 degrees F
Frost-free period: 108 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Gravel pits: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gravel Pits

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s

Ho—Houghton muck

Map Unit Setting

National map unit symbol: 6ftk
Elevation: 750 to 1,130 feet
Mean annual precipitation: 31 to 32 inches
Mean annual air temperature: 47 to 48 degrees F
Frost-free period: 108 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Houghton and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Houghton

Setting

Landform: Depressions on moraines, depressions on outwash plains, swamps on till plains

Custom Soil Resource Report

Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Herbaceous organic material

Typical profile

Oa1 - 0 to 10 inches: muck
Oa2 - 10 to 27 inches: mucky peat
Oa3 - 27 to 80 inches: peat

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.20 to 6.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water storage in profile: Very high (about 23.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: A/D

Minor Components

Timakwa

Percent of map unit: 3 percent
Landform: Lakebeds (relict) on till plains
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear

Edwards

Percent of map unit: 2 percent
Landform: Lakebeds (relict) on till plains
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear

KbB—Kibbie loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 6ftq
Elevation: 750 to 1,090 feet
Mean annual precipitation: 31 to 32 inches
Mean annual air temperature: 47 to 48 degrees F
Frost-free period: 108 to 178 days

Custom Soil Resource Report

Farmland classification: Prime farmland if drained

Map Unit Composition

Kibbie and similar soils: 95 percent

Minor components: 5 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kibbie

Setting

Landform: Knolls on lake plains, knolls on outwash plains

Landform position (three-dimensional): Rise

Down-slope shape: Linear

Across-slope shape: Convex

Parent material: Silty and loamy glaciofluvial deposits and/or glaciolacustrine deposits

Typical profile

Ap - 0 to 7 inches: loam

E - 7 to 11 inches: loam

Btg1 - 11 to 19 inches: silt loam

Btg2 - 19 to 34 inches: silty clay loam

C - 34 to 80 inches: stratified silt to very fine sand to fine sand

Properties and qualities

Slope: 2 to 6 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Somewhat poorly drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)

Depth to water table: About 6 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum in profile: 35 percent

Available water storage in profile: Very high (about 12.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: C/D

Minor Components

Colwood

Percent of map unit: 3 percent

Landform: Drainageways on lake plains

Landform position (three-dimensional): Talf

Down-slope shape: Linear

Across-slope shape: Linear

Tuscola

Percent of map unit: 2 percent

Landform: Knolls on lake plains

Landform position (three-dimensional): Rise

Down-slope shape: Linear

Across-slope shape: Convex

LaB—Lapeer sandy loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 6fts
Elevation: 800 to 1,150 feet
Mean annual precipitation: 31 to 32 inches
Mean annual air temperature: 47 to 48 degrees F
Frost-free period: 108 to 178 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Lapeer and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lapeer

Setting

Landform: Till plains, knolls on moraines
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Loamy till

Typical profile

Ap - 0 to 8 inches: sandy loam
E - 8 to 16 inches: sandy loam
BE - 16 to 22 inches: sandy loam
Bt1 - 22 to 28 inches: sandy clay loam
Bt2 - 28 to 36 inches: loam
C - 36 to 80 inches: sandy loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 35 percent
Available water storage in profile: Moderate (about 8.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B

Minor Components

Locke

Percent of map unit: 3 percent
Landform: Drainageways on moraines
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Convex

Barry

Percent of map unit: 2 percent
Landform: Drainageways on moraines
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear

LaC—Lapeer sandy loam, 6 to 12 percent slopes

Map Unit Setting

National map unit symbol: 6ftv
Elevation: 800 to 1,130 feet
Mean annual precipitation: 31 to 32 inches
Mean annual air temperature: 47 to 48 degrees F
Frost-free period: 108 to 178 days
Farmland classification: Farmland of local importance

Map Unit Composition

Lapeer and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lapeer

Setting

Landform: Moraines
Landform position (two-dimensional): Toeslope, footslope, backslope, shoulder, summit
Landform position (three-dimensional): Crest, base slope, side slope, nose slope, head slope, interfluvium
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Loamy till

Typical profile

Ap - 0 to 8 inches: sandy loam
E - 8 to 16 inches: sandy loam
BE - 16 to 22 inches: sandy loam
Bt1 - 22 to 28 inches: sandy clay loam
Bt2 - 28 to 36 inches: loam
C - 36 to 80 inches: sandy loam

Properties and qualities

Slope: 6 to 12 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.20 to 2.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum in profile: 35 percent

Available water storage in profile: Moderate (about 8.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: B

LaC2—Lapeer sandy loam, 6 to 12 percent slopes, moderately eroded

Map Unit Setting

National map unit symbol: 6ftw

Elevation: 790 to 1,150 feet

Mean annual precipitation: 31 to 32 inches

Mean annual air temperature: 47 to 48 degrees F

Frost-free period: 108 to 178 days

Farmland classification: Farmland of local importance

Map Unit Composition

Lapeer, moderately eroded, and similar soils: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lapeer, Moderately Eroded

Setting

Landform: Moraines

Landform position (two-dimensional): Toeslope, footslope, backslope, shoulder, summit

Landform position (three-dimensional): Crest, base slope, side slope, nose slope, head slope, interfluvium

Down-slope shape: Linear

Across-slope shape: Convex

Parent material: Loamy till

Typical profile

Ap - 0 to 4 inches: sandy loam

E - 4 to 16 inches: sandy loam

BE - 16 to 22 inches: sandy loam

Bt1 - 22 to 28 inches: sandy clay loam

Bt2 - 28 to 36 inches: loam

C - 36 to 80 inches: sandy loam

Properties and qualities

Slope: 6 to 12 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 35 percent
Available water storage in profile: Moderate (about 8.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B

LaD2—Lapeer sandy loam, 12 to 18 percent slopes, moderately eroded

Map Unit Setting

National map unit symbol: 6fty
Elevation: 810 to 1,130 feet
Mean annual precipitation: 31 to 32 inches
Mean annual air temperature: 47 to 48 degrees F
Frost-free period: 108 to 178 days
Farmland classification: Farmland of local importance

Map Unit Composition

Lapeer, moderately eroded, and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lapeer, Moderately Eroded

Setting

Landform: Moraines
Landform position (two-dimensional): Toeslope, footslope, backslope, shoulder, summit
Landform position (three-dimensional): Crest, base slope, side slope, nose slope, head slope, interfluvium
Down-slope shape: Linear, convex
Across-slope shape: Convex, concave
Parent material: Loamy till

Typical profile

Ap - 0 to 4 inches: sandy loam
E - 4 to 16 inches: sandy loam
BE - 16 to 22 inches: sandy loam
Bt1 - 22 to 28 inches: sandy clay loam
Bt2 - 28 to 36 inches: loam
C - 36 to 80 inches: sandy loam

Properties and qualities

Slope: 12 to 18 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 35 percent
Available water storage in profile: Moderate (about 8.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B

LaE2—Lapeer sandy loam, 18 to 25 percent slopes, moderately eroded

Map Unit Setting

National map unit symbol: 6fv0
Elevation: 810 to 1,150 feet
Mean annual precipitation: 31 to 32 inches
Mean annual air temperature: 47 to 48 degrees F
Frost-free period: 108 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Lapeer, moderately eroded, and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lapeer, Moderately Eroded

Setting

Landform: Moraines
Landform position (two-dimensional): Toeslope, footslope, backslope, shoulder, summit
Landform position (three-dimensional): Crest, base slope, side slope, nose slope, head slope, interfluvium
Down-slope shape: Linear, convex
Across-slope shape: Convex, concave
Parent material: Loamy till

Typical profile

Ap - 0 to 4 inches: sandy loam
E - 4 to 16 inches: sandy loam
BE - 16 to 22 inches: sandy loam
Bt1 - 22 to 28 inches: sandy clay loam
Bt2 - 28 to 36 inches: loam
C - 36 to 80 inches: sandy loam

Properties and qualities

Slope: 18 to 25 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 35 percent
Available water storage in profile: Moderate (about 8.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B

LaF—Lapeer sandy loam, 25 to 60 percent slopes

Map Unit Setting

National map unit symbol: 6fv2
Elevation: 800 to 1,120 feet
Mean annual precipitation: 31 to 32 inches
Mean annual air temperature: 47 to 48 degrees F
Frost-free period: 108 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Lapeer and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lapeer

Setting

Landform: Moraines
Landform position (two-dimensional): Toeslope, footslope, backslope, shoulder, summit
Landform position (three-dimensional): Crest, base slope, side slope, nose slope, head slope, interfluvium
Down-slope shape: Linear, convex
Across-slope shape: Convex, concave
Parent material: Loamy till

Typical profile

Ap - 0 to 8 inches: sandy loam
E - 8 to 16 inches: sandy loam
BE - 16 to 22 inches: sandy loam
Bt1 - 22 to 28 inches: sandy clay loam
Bt2 - 28 to 36 inches: loam
C - 36 to 80 inches: sandy loam

Properties and qualities

Slope: 25 to 60 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 35 percent
Available water storage in profile: Moderate (about 8.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B

LoA—Locke sandy loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 6fv5
Elevation: 780 to 1,100 feet
Mean annual precipitation: 31 to 32 inches
Mean annual air temperature: 47 to 48 degrees F
Frost-free period: 108 to 178 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Locke and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Locke

Setting

Landform: Knolls on till plains, moraines
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Loamy till

Typical profile

Ap - 0 to 8 inches: sandy loam
E - 8 to 12 inches: sandy loam
Bt1 - 12 to 18 inches: sandy loam
Bt2 - 18 to 29 inches: sandy clay loam
Cg - 29 to 80 inches: sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches

Custom Soil Resource Report

Natural drainage class: Somewhat poorly drained

Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.20 to 6.00 in/hr)

Depth to water table: About 6 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum in profile: 35 percent

Available water storage in profile: Moderate (about 7.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2w

Hydrologic Soil Group: B/D

Minor Components

Barry

Percent of map unit: 5 percent

Landform: Drainageways on till plains

Landform position (three-dimensional): Talf

Down-slope shape: Linear

Across-slope shape: Linear

MoB—Miami loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 6fwh

Elevation: 760 to 1,180 feet

Mean annual precipitation: 31 to 32 inches

Mean annual air temperature: 47 to 48 degrees F

Frost-free period: 108 to 178 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Miami and similar soils: 90 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Miami

Setting

Landform: Knolls on moraines, till plains

Landform position (three-dimensional): Rise

Down-slope shape: Linear

Across-slope shape: Convex

Parent material: Loamy till

Typical profile

Ap - 0 to 8 inches: loam

E - 8 to 12 inches: loam

Custom Soil Resource Report

Bt1 - 12 to 29 inches: clay loam
Bt2 - 29 to 36 inches: clay loam
C - 36 to 80 inches: loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 35 percent
Available water storage in profile: High (about 10.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C

Minor Components

Conover

Percent of map unit: 5 percent
Landform: Swales on moraines
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Convex

Celina

Percent of map unit: 5 percent
Landform: Swales on moraines
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Convex

MoB2—Miami loam, 2 to 6 percent slopes, moderately eroded

Map Unit Setting

National map unit symbol: 6fwj
Elevation: 770 to 1,140 feet
Mean annual precipitation: 31 to 32 inches
Mean annual air temperature: 47 to 48 degrees F
Frost-free period: 108 to 178 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Miami, moderately eroded, and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Miami, Moderately Eroded

Setting

Landform: Knolls on moraines, till plains
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Loamy till

Typical profile

Ap - 0 to 6 inches: loam
Bt1 - 6 to 29 inches: clay loam
Bt2 - 29 to 36 inches: clay loam
C - 36 to 80 inches: loam

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 35 percent
Available water storage in profile: High (about 10.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C

MoC2—Miami loam, 6 to 12 percent slopes, moderately eroded

Map Unit Setting

National map unit symbol: 6fwl
Elevation: 760 to 1,200 feet
Mean annual precipitation: 31 to 32 inches
Mean annual air temperature: 47 to 48 degrees F
Frost-free period: 108 to 178 days
Farmland classification: Farmland of local importance

Map Unit Composition

Miami, moderately eroded, and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Miami, Moderately Eroded

Setting

Landform: Moraines

Custom Soil Resource Report

Landform position (two-dimensional): Toeslope, footslope, backslope, shoulder, summit

Landform position (three-dimensional): Crest, base slope, side slope, nose slope, head slope, interfluvium

Down-slope shape: Linear

Across-slope shape: Convex

Parent material: Loamy till

Typical profile

Ap - 0 to 6 inches: loam

Bt1 - 6 to 29 inches: clay loam

Bt2 - 29 to 36 inches: clay loam

C - 36 to 80 inches: loam

Properties and qualities

Slope: 6 to 12 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum in profile: 35 percent

Available water storage in profile: High (about 10.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: C

MoD2—Miami loam, 12 to 18 percent slopes, moderately eroded

Map Unit Setting

National map unit symbol: 6fwn

Elevation: 760 to 1,180 feet

Mean annual precipitation: 31 to 32 inches

Mean annual air temperature: 47 to 48 degrees F

Frost-free period: 108 to 178 days

Farmland classification: Farmland of local importance

Map Unit Composition

Miami, moderately eroded, and similar soils: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Miami, Moderately Eroded

Setting

Landform: Moraines

Landform position (two-dimensional): Toeslope, footslope, backslope, shoulder, summit

Custom Soil Resource Report

Landform position (three-dimensional): Crest, base slope, side slope, nose slope, head slope, interfluve
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Loamy till

Typical profile

Ap - 0 to 5 inches: loam
Bt1 - 5 to 29 inches: clay loam
Bt2 - 29 to 36 inches: clay loam
C - 36 to 80 inches: loam

Properties and qualities

Slope: 12 to 18 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 35 percent
Available water storage in profile: High (about 10.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C

MoF—Miami loam, 25 to 60 percent slopes

Map Unit Setting

National map unit symbol: 6fwr
Elevation: 760 to 1,170 feet
Mean annual precipitation: 31 to 32 inches
Mean annual air temperature: 47 to 48 degrees F
Frost-free period: 108 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Miami and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Miami

Setting

Landform: Moraines
Landform position (two-dimensional): Toeslope, footslope, backslope, shoulder, summit
Landform position (three-dimensional): Crest, base slope, side slope, nose slope, head slope, interfluve

Custom Soil Resource Report

Down-slope shape: Linear, convex
Across-slope shape: Convex, concave
Parent material: Loamy till

Typical profile

Ap - 0 to 8 inches: loam
E - 8 to 12 inches: loam
Bt1 - 12 to 29 inches: clay loam
Bt2 - 29 to 36 inches: clay loam
C - 36 to 80 inches: loam

Properties and qualities

Slope: 25 to 50 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 35 percent
Available water storage in profile: High (about 10.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C

MpD3—Miami clay loam, 12 to 18 percent slopes, severely eroded

Map Unit Setting

National map unit symbol: 6fwv
Elevation: 770 to 1,190 feet
Mean annual precipitation: 31 to 32 inches
Mean annual air temperature: 47 to 48 degrees F
Frost-free period: 108 to 178 days
Farmland classification: Farmland of local importance

Map Unit Composition

Miami, severely eroded, and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Miami, Severely Eroded

Setting

Landform: Moraines
Landform position (two-dimensional): Toeslope, footslope, backslope, shoulder, summit
Landform position (three-dimensional): Crest, base slope, side slope, nose slope, head slope, interfluvium
Down-slope shape: Linear, convex

Custom Soil Resource Report

Across-slope shape: Convex, concave

Parent material: Loamy till

Typical profile

Bt1 - 0 to 17 inches: clay loam

Bt2 - 17 to 24 inches: clay loam

C - 24 to 80 inches: loam

Properties and qualities

Slope: 12 to 18 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum in profile: 35 percent

Available water storage in profile: High (about 9.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: C

MpE3—Miami clay loam, 18 to 25 percent slopes, severely eroded

Map Unit Setting

National map unit symbol: 6fww

Elevation: 780 to 1,170 feet

Mean annual precipitation: 31 to 32 inches

Mean annual air temperature: 47 to 48 degrees F

Frost-free period: 108 to 178 days

Farmland classification: Not prime farmland

Map Unit Composition

Miami, severely eroded, and similar soils: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Miami, Severely Eroded

Setting

Landform: Moraines

Landform position (two-dimensional): Toeslope, footslope, backslope, shoulder, summit

Landform position (three-dimensional): Crest, base slope, side slope, nose slope, head slope, interfluvium

Down-slope shape: Linear, convex

Across-slope shape: Convex, concave

Parent material: Loamy till

Custom Soil Resource Report

Typical profile

Bt1 - 0 to 17 inches: clay loam
Bt2 - 17 to 24 inches: clay loam
C - 24 to 80 inches: loam

Properties and qualities

Slope: 18 to 25 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 35 percent
Available water storage in profile: High (about 9.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C

W—Water

Map Unit Setting

National map unit symbol: sh4q
Elevation: 750 to 1,160 feet
Mean annual precipitation: 31 to 32 inches
Mean annual air temperature: 47 to 48 degrees F
Frost-free period: 108 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

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