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IOWA STATE UNIVERSITY

Iowa Agriculture and Home Economics Experiment Station

IOWA STATE UNIVERSITY University Extension In cooperation with Iowa
Agriculture and Home
Economics Experiment
Station and Cooperative
Extension Service, Iowa
State University; and
Division of Soil
Conservation, Iowa
Department of Agriculture
and Land Stewardship

Soil Survey of Crawford County, Iowa

Part II



How To Use This Soil Survey

This survey is divided into three parts. Part I includes general information about the survey area; descriptions of the general soil map units, detailed soil map units, and soil series in the area; and a description of how the soils formed. Part II describes the use and management of the soils and the major soil properties. This part may be updated as further information about soil management becomes available. Part III includes the maps.

On the **general soil map**, the survey area is divided into groups of soils called associations. 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 soil associations on the color-coded map legend, and then refer to the section **General Soil Map Units** in Part I for a general description of the soils in your area.

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** in Part III. 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. The **Contents** in Part I lists the map units and shows the page where each map unit is described.

The **Contents** in Part II shows which table has information on a specific land use or soil property for each detailed soil map unit. Also, see the **Contents** in Part I and Part II for other sections of this publication that may address your specific needs.

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

Major fieldwork for this soil survey was completed in 2002. Soil names and descriptions were approved in 2004. This survey was made cooperatively by the Natural Resources Conservation Service; the Iowa Agriculture and Home Economics Experiment Station and Cooperative Extension Service, Iowa State University; and the Division of Soil Conservation, Iowa Department of Agriculture and Land Stewardship. The survey is part of the technical assistance furnished to the Crawford County Soil and Water Conservation District.

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

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Cover: Contour farming and terraces in an area of Marshall soils. Corn and soybeans are planted in this area in alternate seasons.

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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Soil Survey of Crawford County, Iowa

Introduction to Part II

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.

This part of the soil survey includes interpretations for various uses of the soils and data on soil properties. This information can be used to plan the use and management of soils for crops and pasture or as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities. 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.

Soils are rated in their natural state. No unusual modification of the soil site or material is made other than that which is considered normal practice for the rated use. Even though soils may have limitations, it is important to remember that engineers and others can modify soil features or can design or adjust the plans for a structure to compensate for most of the limitations. Most of these practices, however, are costly. The final decision in selecting a site for a particular use generally involves weighing the costs of site preparation and maintenance.

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

Contractors can use this survey to locate sources of gravel, sand, reclamation material, 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.

The table "Classification of the Soils" is at the end of this section. Information about the system of soil taxonomy used by the Natural Resources Conservation Service is available in Part I of this publication. The extent of the map units in this survey area is shown in the table "Acreage and Proportionate Extent of the Soils."

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.

Classification of the Soils

(An asterisk in the first column indicates a taxadjunct to the series. See text in Part I for a description of those characteristics that are outside the range of the series)

Soil name	Family or higher taxonomic class
Ackmore	 Fine-silty, mixed, superactive, nonacid, mesic Mollic Fluvaquents
Burchard	Fine-loamy, mixed, superactive, mesic Typic Argiudolls
Chute	Mixed, mesic Typic Udipsamments
Colo	Fine-silty, mixed, superactive, mesic Cumulic Endoaquolls
Danbury	Fine-silty, mixed, superactive, nonacid, mesic Oxyaquic Udifluvents
Dow	Fine-silty, mixed, superactive, calcareous, mesic Typic Udorthents
*Exira	Fine-silty, mixed, superactive, mesic Dystric Eutrudepts
Hawick	Sandy, mixed, mesic Entic Hapludolls
Ida	Fine-silty, mixed, superactive, calcareous, mesic Typic Udorthents
Judson	Fine-silty, mixed, superactive, mesic Cumulic Hapludolls
Kennebec	Fine-silty, mixed, superactive, mesic Cumulic Hapludolls
Knox	Fine-silty, mixed, superactive, mesic Mollic Hapludalfs
Liston	Fine-loamy, mixed, superactive, mesic Typic Eutrudepts
Marshall	Fine-silty, mixed, superactive, mesic Typic Hapludolls
*Marshall	Fine-silty, mixed, superactive, mesic Dystric Eutrudepts
Monona	Fine-silty, mixed, superactive, mesic Typic Hapludolls
*Monona	Fine-silty, mixed, superactive, mesic Dystric Eutrudepts
Napier	Fine-silty, mixed, superactive, mesic Cumulic Hapludolls
Nodaway	Fine-silty, mixed, superactive, nonacid, mesic Mollic Udifluvents
Rawles	Fine-silty, mixed, superactive, calcareous, mesic Oxyaquic Udifluvents
Smithland	Fine-silty, mixed, superactive, mesic Aquic Cumulic Hapludolls
Zook	Fine, smectitic, mesic Cumulic Vertic Endoaquolls

Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
1C		664	0.1
1C3	Ida silt loam, 5 to 9 percent slopes, severely eroded	10,458	2.3
1D3	Ida silt loam, 9 to 14 percent slopes, severely eroded	7,800	1.7
1E3	Ida silt loam, 14 to 20 percent slopes, severely eroded	7,714	1.7
1F3	Ida silt loam, 20 to 30 percent slopes, severely eroded	1,051	0.2
8B	Judson silty clay loam, 2 to 5 percent slopes	20,632	4.5
8C	Judson silty clay loam, 5 to 9 percent slopes	7,399	1.6
9 9B	Marshall silty clay loam, 0 to 2 percent slopes	92	*
эв 9B2	Marshall silty clay loam, 2 to 5 percent slopes Marshall silty clay loam, 2 to 5 percent slopes, moderately eroded	10,969 4,618	1.0
9C	Marshall silty clay loam, 5 to 9 percent slopes, moderately eroded	4,449	1.0
9C2	Marshall silty clay loam, 5 to 9 percent slopes, moderately eroded	29,590	6.5
9D	Marshall silty clay loam, 9 to 14 percent slopes	331	*
9D2	Marshall silty clay loam, 9 to 14 percent slopes, moderately eroded	40,384	8.8
9E2	Marshall silty clay loam, 14 to 18 percent slopes, moderately eroded	6,917	1.5
9E3	Marshall silty clay loam, 14 to 18 percent slopes, severely eroded	5,687	1.2
10B	Monona silt loam, 2 to 5 percent slopes	1,049	0.2
10B2	Monona silt loam, 2 to 5 percent slopes, moderately eroded	781	0.2
10C2	Monona silt loam, 5 to 9 percent slopes, moderately eroded	10,153	2.2
10D2	Monona silt loam, 9 to 14 percent slopes, moderately eroded	11,408	2.5
10D3	Monona silt loam, 9 to 14 percent slopes, severely eroded	2,776	0.6
10E2	Monona silt loam, 14 to 20 percent slopes, moderately eroded	6,320	1.4
10E3	Monona silt loam, 14 to 20 percent slopes, severely eroded	4,813	1.1
10F2	Monona silt loam, 20 to 30 percent slopes, moderately eroded	1,502	0.3
10F3	Monona silt loam, 20 to 30 percent slopes, severely eroded	1,387	0.3
12B	Napier silt loam, 2 to 5 percent slopes	7,557	1.7
12C 17B	Napier silt loam, 5 to 9 percent slopes Napier-Kennebec-Nodaway complex, 2 to 5 percent slopes	7,297 7,743	1.6
22D2	Dow silt loam, 9 to 14 percent slopes, moderately eroded	265	1.7
22D2 22D3	Dow silt loam, 9 to 14 percent slopes, moderatery eroded	798	0.2
22E3	Dow silt loam, 14 to 20 percent slopes, severely eroded	974	0.2
26	Kennebec silty clay loam, 0 to 2 percent slopes, occasionally flooded	2,393	0.5
35D2	Liston-Burchard complex, 9 to 14 percent slopes, moderately eroded	407	*
35E2	Liston-Burchard complex, 14 to 18 percent slopes, moderately eroded	5,269	1.2
35F2	Liston-Burchard complex, 18 to 25 percent slopes, moderately eroded	2,695	0.6
35G	Liston-Burchard complex, 25 to 40 percent slopes	371	*
54	Zook silty clay loam, 0 to 2 percent slopes, occasionally flooded	859	0.2
54+	Zook silt loam, 0 to 2 percent slopes, occasionally flooded, overwash	622	0.1
59D2	Burchard clay loam, 9 to 14 percent slopes, moderately eroded	1,941	0.4
59E2	Burchard clay loam, 14 to 18 percent slopes, moderately eroded	1,283	0.3
99C2	Exira silty clay loam, 5 to 9 percent slopes, moderately eroded	2,818	0.6
99D2	Exira silty clay loam, 9 to 14 percent slopes, moderately eroded	12,019	2.6
99E2 100B	Exira silty clay loam, 14 to 18 percent slopes, moderately eroded	1,516 4,444	0.3
100B 100C2	Monona silty clay loam, 5 to 9 percent slopes, moderately eroded	24,311	5.3
100C2 100D2	Monona silty clay loam, 9 to 14 percent slopes, moderately eroded	34,477	7.5
100D3	Monona silty clay loam, 9 to 14 percent slopes, severely eroded	8,502	1.9
100E2	Monona silty clay loam, 14 to 20 percent slopes, moderately eroded	13,727	3.0
100E3	Monona silty clay loam, 14 to 20 percent slopes, severely eroded	8,306	1.8
100F2	Monona silty clay loam, 20 to 30 percent slopes, moderately eroded	1,802	0.4
100F3	Monona silty clay loam, 20 to 30 percent slopes, severely eroded	1,499	0.3
111D3	Dow-Monona complex, 9 to 14 percent slopes, severely eroded	1,024	0.2
111E3	Dow-Monona complex, 14 to 20 percent slopes, severely eroded	1,678	0.4
125D3	Ida-Chute complex, 9 to 14 percent slopes, severely eroded	324	*
125E3	Ida-Chute complex, 14 to 20 percent slopes, severely eroded	301	*
133	Colo silty clay loam, 0 to 2 percent slopes, occasionally flooded	993	0.2
133+	Colo silt loam, 0 to 2 percent slopes, occasionally flooded, overwash	2,361	0.5
212	Kennebec silt loam, 0 to 2 percent slopes, occasionally flooded	4,955	1.1
212+	Kennebec silt loam, 0 to 2 percent slopes, occasionally flooded, overwash	2,933	0.6
220	Nodaway silt loam, 0 to 2 percent slopes, occasionally flooded	7,487	1.6
266	Smithland silty clay loam, 0 to 2 percent slopes, occasionally flooded	1,129	0.2

Acreage and Proportionate Extent of the Soils--Continued

Map	Soil name	Acres	Percent
symbol			<u> </u>
266+	 Smithland silt loam, 0 to 2 percent slopes, occasionally flooded, overwash	799	0.2
268D	Knox silt loam, 9 to 14 percent slopes	257	*
268E	Knox silt loam, 14 to 20 percent slopes	726	0.2
268F	Knox silt loam, 20 to 30 percent slopes	1,031	0.2
430	Ackmore silt loam, 0 to 2 percent slopes, occasionally flooded	1,603	0.4
431B	Judson-Ackmore-Colo, overwash, complex, 2 to 5 percent slopes	52,271	11.4
509B	Marshall silty clay loam, terrace, 2 to 5 percent slopes	893	0.2
509C	Marshall silty clay loam, terrace, 5 to 9 percent slopes	137	*
509C2	Marshall silty clay loam, terrace, 5 to 9 percent slopes, moderately		į
	eroded	483	0.1
509D2	Marshall silty clay loam, terrace, 9 to 14 percent slopes, moderately		İ
	eroded	302	*
509E2	Marshall silty clay loam, terrace, 14 to 20 percent slopes, moderately		
	eroded	70	*
510	Monona silt loam, terrace, 0 to 2 percent slopes	1,487	0.3
510B	Monona silt loam, terrace, 2 to 5 percent slopes	1,264	0.3
510C2	Monona silt loam, terrace, 5 to 9 percent slopes, moderately eroded	688	0.2
510D2	Monona silt loam, terrace, 9 to 14 percent slopes, moderately eroded	333	*
510E2	Monona silt loam, terrace, 14 to 20 percent slopes, moderately eroded	216	*
630	Danbury silt loam, 0 to 2 percent slopes, occasionally flooded	6,914	1.5
670	Rawles silt loam, 0 to 2 percent slopes, occasionally flooded	633	0.1
700	Monona silty clay loam, terrace, 0 to 2 percent slopes	195	*
700B	Monona silty clay loam, terrace, 2 to 5 percent slopes	1,531	0.3
700C2 700D2	Monona silty clay loam, terrace, 5 to 9 percent slopes, moderately eroded Monona silty clay loam, terrace, 9 to 14 percent slopes, moderately	761	0.2
	eroded	382	*
717D	Napier-Gullied land complex, 5 to 14 percent slopes	944	0.2
740D	Hawick gravelly sandy loam, 9 to 14 percent slopes	250	*
740E	Hawick gravelly sandy loam, 14 to 18 percent slopes	202	*
740F	Hawick gravelly sandy loam, 18 to 25 percent slopes	225	*
980C	Judson-Gullied land complex, 5 to 9 percent slopes	1,371	0.3
1220	Nodaway silt loam, channeled, 0 to 2 percent slopes, frequently flooded	2,290	0.5
5010	Pits, sand and gravel	125	*
5040	Udorthents, loamy	739	0.2
5080	Udorthents, sanitary landfill	113	*
AW	Animal waste lagoon	14	*
SL	Sewage lagoon	156	*
W	Water	1,771	0.4
	 Total	457,200	100.0

^{*} Less than 0.1 percent.

Agronomy

This section provides some general information about managing the soils for crops and for hay and pasture. The lowa corn suitability rating system and the system of land capability classification used by the Natural Resources Conservation Service are explained, and the estimated yields of the main crops and hay and pasture plants are listed for each soil. Prime farmland and other important farmlands are described, and interpretations for agricultural waste management are provided.

Planners of management systems for individual fields or farms should consider obtaining specific information from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Cropland Management Considerations

The management concerns affecting the use of the detailed soil map units in the county for crops are shown in the table "Cropland Management Considerations" at the end of this section. The main concerns in managing nonirrigated cropland are conserving moisture, controlling wind erosion and water erosion, and maintaining soil fertility.

Conserving moisture consists primarily of reducing the evaporation and runoff rates and increasing the water infiltration rate. Applying conservation tillage and conservation cropping systems, farming on the contour, stripcropping, establishing field windbreaks, and leaving crop residue on the surface conserve moisture.

Generally, a combination of several practices is needed to control wind erosion and water erosion. Conservation tillage, stripcropping, field windbreaks, contour farming, conservation cropping systems, crop residue management, terraces, diversions, and grassed waterways help to prevent excessive soil loss.

Measures that are effective in maintaining soil fertility include applying fertilizer, both organic and inorganic, including manure; incorporating crop residue or green manure crops into the soil; and using proper crop rotations. Controlling erosion helps to prevent the loss of organic matter and plant nutrients and thus helps to maintain productivity, although the level of fertility can be reduced even in areas where erosion is controlled. All soils used for nonirrigated crops respond well to applications of fertilizer.

Some of the considerations shown in the table cannot be easily overcome. These are channels, flooding, gullies, and ponding.

Additional considerations are as follows:

Lime content, limited available water capacity, limited content of organic matter, potential poor tilth and compaction, and restricted permeability.—These limitations can be minimized by incorporating green manure crops, manure, or crop residue into the soil; applying a system of conservation tillage; and using conservation cropping systems. Also, crops may respond well to additions of phosphate fertilizer to soils that have a high content of lime.

Potential for ground-water contamination.—The proper use of nutrients and pesticides can reduce the risk of ground-water contamination.

Potential for surface-water contamination.—The risk of surface-water contamination can be reduced by the proper use of nutrients and pesticides and by conservation farming practices that reduce the runoff rate.

Surface crusting.—This limitation retards seedling development after periods of heavy rainfall.

Surface rock fragments.—This limitation causes rapid wear of tillage equipment. It cannot be easily overcome.

Surface stones.—Stones or boulders on or near the surface can hinder normal tillage unless they are removed.

Salt content.—In areas where this is a limitation, only salt-tolerant crops should be grown.

On irrigated soils the main management concerns are efficient water use, nutrient management, control of erosion, pest and weed control, and timely planting and harvesting for a successful crop. An irrigation system that provides optimum control and distribution of water at minimum cost is needed. Overirrigation wastes water, leaches plant nutrients, and causes erosion. Also, it can increase wetness and soil salinity.

Explanation of Criteria

Acid soil.—The pH is less than 6.1.

Channeled.—The word "channeled" is included in the map unit name.

Dense layer.—The bulk density is 1.80 g/cc or greater within the soil profile.

Depth to rock.—The depth to bedrock is less than 40 inches.

Eroded.—The word "eroded" is included in the map unit name.

Excessive permeability.—Saturated hydraulic conductivity is 42 micrometers per second or more within the soil profile.

Flooding.—Flooding is occasional, frequent, or very frequent.

Gullied.—The word "gullied" is included in the map unit name.

High content of organic matter.—The surface layer has more than 20 percent organic matter.

Lime content.—The pH is 7.4 or more in the surface layer, or the wind erodibility group is 4L.

Limited available water capacity.—The available water capacity calculated to a depth of 60 inches or to a root-limiting layer is 6 inches or less.

Limited content of organic matter.—The content of organic matter is 2 percent or less in the surface layer.

Ponding.—Ponding duration is assigned to the map unit component. Water is above the surface.

Potential poor tilth and compaction.—The content of clay is 27 percent or more in the surface layer.

Potential for ground-water contamination (by nutrients or pesticides).—The depth to a seasonal high water table is 4 feet or less, the saturated hydraulic conductivity of any layer is more than 42 micrometers per second, or the depth to bedrock is less than 60 inches.

Potential for surface-water contamination (by nutrients or pesticides).—The map unit component is occasionally, frequently, or very frequently flooded, is subject to ponding, is assigned to hydrologic group C or D and has a slope of more than 2 percent, is assigned to hydrologic group A and has a slope of more than 6 percent, or is assigned to hydrologic group B, has a slope of 3 percent or more, and has a K factor of more than 0.17.

Previously eroded.—The word "eroded" is included in the map unit name.

Restricted permeability.—Saturated hydraulic conductivity is less than 0.42 micrometer per second within the soil profile.

Salt content.—The electrical conductivity is 4 or more in the surface layer or 8 or more within a depth of 30 inches.

Slope (equipment limitation).—The slope is more than 15 percent.

Surface crusting.—The content of clay is 27 percent or more and the content of organic matter is 2 percent or less in the surface layer.

Surface rock fragments (equipment limitation).—The terms describing the texture of the surface layer include any rock fragment modifier, except for gravelly, channery, stony, very stony, extremely stony, bouldery, very bouldery, and extremely bouldery.

Surface stones (equipment limitation).—The word "stony" or "bouldery" is included in the description of the surface layer, or 0.01 to 0.1 percent of the surface is covered by stones or boulders.

Water erosion.—Either the slope is 6 percent or more, or the slope is more than 3 percent and less than 6 percent and the surface layer is not sandy.

Water table.—A water table is within 2.5 feet of the surface.

Wind erosion.—The wind erodibility group is 1, 2, 3, or 4L.

Hydrologic groups are described under the heading "Water Features." Erosion factors (e.g., K factor) and wind erodibility groups are described under the heading "Physical Properties."

Cropland Management Considerations

(See text for a description of the considerations listed in this table)

Map symbol	Pct. of	Cropland management
and	map unit	considerations
soil name		
1C: Ida	95	
Ida	95	Lime content Potential for surface-water contamination
ļ		Water erosion
i		Wind erosion
j		
1C3:		
Ida, severely eroded	80	Lime content
		Limited content of organic matter
l l		Potential for surface-water contamination Previously eroded
i		Water erosion
İ		Wind erosion
İ		
1D3:		
Ida, severely eroded	80	Lime content
l I		Limited content of organic matter Potential for surface-water contamination
i		Previously eroded
İ		Water erosion
İ		Wind erosion
1E3:	70	Clare
Ida, severely eroded	70	Slope Lime content
i		Limited content of organic matter
j		Potential for surface-water contamination
I		Previously eroded
		Water erosion
		Wind erosion
1F3:		
Ida, severely eroded	70	Slope
I		Lime content
		Limited content of organic matter
		Potential for surface-water contamination
ļ		Previously eroded Water erosion
i		Wind erosion
į		İ
8B:		
Judson	80	Potential poor tilth and compaction Potential for surface-water contamination
l l		Water erosion
i		
8C:		
Judson	95	Potential poor tilth and compaction
		Potential for surface-water contamination
		Water erosion
9:		[
Marshall	95	Potential poor tilth and compaction
İ		
9B:	100	
Marshall	100	Potential poor tilth and compaction Potential for surface-water contamination
		Water erosion
İ		

Cropland Management Considerations -- Continued

Map symbol and soil name	Pct. of map unit	Cropland management considerations
9B2: Marshall, moderately eroded	85	 - Potential poor tilth and compaction Potential for surface-water contamination Previously eroded
9C:		Water erosion
Marshall 	90	Potential poor tilth and compaction Potential for surface-water contamination Water erosion
9C2: Marshall, moderately eroded	80	Potential poor tilth and compaction Potential for surface-water contamination Previously eroded Water erosion
9D: Marshall	85	 Potential poor tilth and compaction Potential for surface-water contamination Water erosion
9D2: Marshall, moderately eroded	70	 Potential poor tilth and compaction Potential for surface-water contamination Previously eroded Water erosion
9E2: Marshall, moderately eroded	70	 Slope Potential poor tilth and compaction Potential for surface-water contamination Previously eroded Water erosion
9E3: Marshall, severely eroded	75	Slope
10B: Monona	100	 Potential for surface-water contamination Water erosion
10B2: Monona, moderately eroded	80	 Potential for surface-water contamination Previously eroded Water erosion
10C2: Monona, moderately eroded	75	 Potential for surface-water contamination Previously eroded Water erosion
10D2: Monona, moderately eroded	60	 Potential for surface-water contamination Previously eroded Water erosion

Cropland Management Considerations--Continued

Map symbol	Pct. of	Cropland management
and	map unit	considerations
soil name		
10D3:		
Monona, severely eroded	95	Limited content of organic matter
		Potential for surface-water contamination
		Previously eroded
		Water erosion
10E2:		
Monona, moderately eroded	50	Slope
i		Potential for surface-water contamination
		Previously eroded
		Water erosion
1072		
10E3:	60	Clana
Monona, severely eroded	60	Slope Limited content of organic matter
i		Potential for surface-water contamination
j		Previously eroded
I		Water erosion
10F2:	45	Clana
Monona, moderately eroded	43	Slope Potential for surface-water contamination
		Previously eroded
j		Water erosion
I		
10F3:		
Monona, severely eroded	70	Slope
		Limited content of organic matter Potential for surface-water contamination
i		Previously eroded
j		Water erosion
į		
12B:		
Napier	85	Potential for surface-water contamination
		Water erosion
12C:		
Napier	95	Potential for surface-water contamination
		Water erosion
17B:	50	 Potential for surface-water contamination
Napier	50	Water erosion
Kennebec, frequently flooded	20	Flooding
		Potential for ground-water contamination
		Potential for surface-water contamination
		Water erosion
Nodaway, frequently flooded	15	 Flooding
nodamay, rroquonor, rroquon		Potential for ground-water contamination
j		Potential for surface-water contamination
j		Water erosion
22D2:	0.0	Lime content
Dow, moderately eroded	90	Lime content Potential for surface-water contamination
i		Previously eroded
j		Water erosion
į		Wind erosion
I		

Cropland Management Considerations -- Continued

Map symbol	Pct. of	Cropland management
and	map unit	considerations
soil name		<u> </u>
22D3: Dow, severely eroded 	90	 Lime content Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion Wind erosion
22E3: Dow, severely eroded	80	Slope Lime content Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion Wind erosion
26:		
Kennebec, occasionally flooded	95	Flooding
35D2:		
Liston, moderately eroded	50	Lime content Potential for surface-water contaminatio Previously eroded Water erosion Wind erosion
Burchard, moderately eroded	35	 Potential for surface-water contaminatio Previously eroded Water erosion
 35E2:		
Liston, moderately eroded	50	Slope Lime content Potential for surface-water contamination Previously eroded Water erosion Wind erosion
Burchard, moderately eroded	35	 Slope Potential for surface-water contamination Previously eroded Water erosion
35F2:		
Liston, moderately eroded	40	Slope Lime content Potential for surface-water contaminatio Previously eroded Water erosion Wind erosion
Burchard, moderately eroded 	30	 Slope Potential for surface-water contaminatio Previously eroded Water erosion

Cropland Management Considerations--Continued

Map symbol	Pct. of	Cropland management
and	map unit	considerations
soil name		<u> </u>
35G: Liston	45	 Slope Lime content Potential for surface-water contamination Water erosion Wind erosion
Burchard	35	 Slope Potential for surface-water contamination Water erosion
54: Zook, occasionally flooded	90	Flooding Potential poor tilth and compaction Potential for ground-water contamination Potential for surface-water contamination Water table
54+: Zook, overwash, occasionally flooded	90	 Flooding Potential for ground-water contamination Potential for surface-water contamination Water table
59D2: Burchard, moderately eroded	55	 Potential for surface-water contamination Previously eroded Water erosion
59E2: Burchard, moderately eroded	55	 Slope Potential for surface-water contamination Previously eroded Water erosion
99C2: Exira, moderately eroded	80	 Potential poor tilth and compaction Potential for surface-water contamination Previously eroded Water erosion
99D2: Exira, moderately eroded	50	Potential poor tilth and compaction Potential for surface-water contamination Previously eroded Water erosion
99E2: Exira, moderately eroded	45	Slope Potential poor tilth and compaction Potential for surface-water contamination Previously eroded Water erosion
100B: Monona	75	 Potential poor tilth and compaction Potential for surface-water contamination Water erosion

Cropland Management Considerations -- Continued

Map symbol	Pct. of	Cropland management
and	map unit	considerations
soil name		
10000		
Monona, moderately eroded	50	Potential poor tilth and compaction Potential for surface-water contamination Previously eroded Water erosion
100D2:		
Monona, moderately eroded	45	Potential poor tilth and compaction Potential for surface-water contamination Previously eroded Water erosion
100D3:		
Monona, severely eroded	45	Potential poor tilth and compaction Potential for surface-water contamination Previously eroded Previously erosion
100E2:		
Monona, moderately eroded	45	Slope Potential poor tilth and compaction Potential for surface-water contamination Previously eroded Previously eroded
100E3:		
Monona, severely eroded 	45	Slope Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion
100F2:		
Monona, moderately eroded	55	Slope Potential poor tilth and compaction Potential for surface-water contamination Previously eroded Water erosion
100F3:		
Monona, severely eroded	70	Slope Potential poor tilth and compaction Potential for surface-water contamination Previously eroded Previously eroded
111D3:		
Dow, severely eroded	55	Lime content Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion Wind erosion
Monona, severely eroded 	40	 Limited content of organic matter Potential for surface-water contamination Previously eroded Water erosion

Cropland Management Considerations--Continued

Map symbol	Pct. of	Cropland management
and	map unit	considerations
soil name		<u> </u>
11177.		
111E3:	55	Glene
Dow, severely eroded	55	Slope
		Lime content
		Limited content of organic matter Potential for surface-water contamination
		Previously eroded
I		Water erosion
		Wind erosion
l I		Willia Globion
Monona, severely eroded	40	 Slope
		Limited content of organic matter
i		Potential for surface-water contamination
i		Previously eroded
i		Water erosion
i		Wind erosion
i		
125D3:		
Ida, severely eroded	50	Lime content
İ		Limited content of organic matter
		Potential for surface-water contamination
		Previously eroded
		Water erosion
		Wind erosion
Chute, severely eroded	30	Excessive permeability
		Lime content
		Limited available water capacity
		Limited content of organic matter
		Potential for ground-water contamination
		Potential for surface-water contamination
		Previously eroded
		Water erosion
		Wind erosion
125E3:		
Ida, severely eroded	50	 Slope
laa, peverery eroaca	30	Lime content
 		Limited content of organic matter
		Potential for surface-water contamination
i		Previously eroded
i		Water erosion
İ		Wind erosion
İ		
Chute, severely eroded	30	Slope
		Excessive permeability
		Lime content
		Limited available water capacity
		Limited content of organic matter
		Potential for ground-water contamination
		Potential for surface-water contamination
		Previously eroded
ĺ		Water erosion
j		Wind erosion
İ		
133:		
Colo, occasionally flooded	85	Flooding
		Potential poor tilth and compaction
		Potential for ground-water contamination
		Potential for surface-water contamination
		Water table

Cropland Management Considerations -- Continued

Map symbol	Pct. of	Cropland management
and	map unit	considerations
soil name		
133+:		
Colo, overwash, occasionally		
flooded	85	Flooding
		Limited content of organic matter
İ		Potential for ground-water contamination
İ		Potential for surface-water contamination
į		Water table
i		
212:		
Kennebec, occasionally		
flooded	70	Flooding
	, ,	Potential for ground-water contamination
· ·		Potential for surface-water contamination
ļ		Potential for surface-water contamination
010		
212+:		
Kennebec, overwash,		
occasionally flooded	90	Flooding
ļ		Potential for ground-water contamination
		Potential for surface-water contamination
220:		
Nodaway, occasionally flooded	75	Flooding
		Potential for ground-water contamination
		Potential for surface-water contamination
į		
266:		
Smithland, occasionally		
flooded	85	Flooding
		Potential poor tilth and compaction
į		Potential for ground-water contamination
į		Potential for surface-water contamination
į		Water table
į		
266+:		
Smithland, overwash,		
occasionally flooded	75	 Flooding
occasionally flooded	73	Potential for ground-water contamination
		Potential for surface-water contamination
		Water table
ļ		water table
2690.		
268D:	85	 Potential for surface-water contamination
Knox	85	! -
!		Water erosion
268E:		
Knox	80	Slope
		Potential for surface-water contamination
		Water erosion
268F:		
Knox	75	Slope
İ		Potential for surface-water contamination
i		Water erosion
i		
430:		
Ackmore, occasionally flooded	75	Flooding
		Potential for ground-water contamination
i		Potential for surface-water contamination
ļ		Water table
		macci cable
I		

Cropland Management Considerations--Continued

Map symbol	Pct. of	Cropland management
and	map unit	considerations
soil name		<u> </u>
431B:		
Judson	55	Potential poor tilth and compaction
		Potential for surface-water contamination
İ		Water erosion
İ		
Ackmore, frequently flooded	25	Flooding
		Potential for ground-water contamination
		Potential for surface-water contamination
		Water erosion
		Water table
Colo, overwash, frequently		[
flooded	15	 Flooding
		Limited content of organic matter
İ		Potential for ground-water contamination
		Potential for surface-water contamination
		Water erosion
		Water table
5000		
509B: Marshall, terrace	90	 Potential poor tilth and compaction
maishail, tellace	30	Potential for surface-water contamination
İ		Water erosion
İ		
509C:		
Marshall, terrace	85	Potential poor tilth and compaction
		Potential for surface-water contamination
		Water erosion
509C2:		
Marshall, terrace, moderately		
eroded	65	Potential poor tilth and compaction
İ		Potential for surface-water contamination
		Previously eroded
		Water erosion
F00D2 -		
509D2: Marshall, terrace, moderately		
eroded	65	Potential poor tilth and compaction
		Potential for surface-water contamination
İ		Previously eroded
ĺ		Water erosion
I		
509E2:		
Marshall, terrace, moderately	6.5	 Clara
eroded	65	Slope Potential poor tilth and compaction
I		Potential for surface-water contamination
		Previously eroded
İ		Water erosion
į		
510:		
Monona, terrace	100	No major considerations
510B:		
Monona, terrace	60	 Potential for surface-water contamination
Monona, Cerrace	00	Water erosion
510C2:		
Monona, terrace, moderately		
eroded	75	Potential for surface-water contamination
		Previously eroded
		Water erosion
		I

Cropland Management Considerations--Continued

Map symbol	Pct. of	Cropland management
and soil name	map unit	considerations
SUII Hame		<u> </u>
510D2:		
Monona, terrace, moderately eroded	75	Potential for surface-water contamination Previously eroded Water erosion
510E2:		
Monona, terrace, moderately eroded	75	 Slope Potential for surface-water contamination Previously eroded Water erosion
630:		
Danbury, occasionally flooded	80	Flooding Potential for ground-water contamination Potential for surface-water contamination Water table
670:		
Rawles, occasionally flooded	80	Flooding Lime content Potential for ground-water contamination Potential for surface-water contamination Wind erosion
700:		
Monona, terrace	100	Potential poor tilth and compaction
700B: Monona, terrace	75	 Potential poor tilth and compaction Potential for surface-water contamination Water erosion
700C2:		
Monona, terrace, moderately eroded	50	Potential poor tilth and compaction Potential for surface-water contamination Previously eroded Water erosion
700D2:		
Monona, terrace, moderately		
eroded 	60	Potential poor tilth and compaction Potential for surface-water contamination Previously eroded Pater erosion
717D:		
Napier	50	Gullied Potential for surface-water contamination Water erosion
Gullied land, frequently flooded	35	 Not applicable
740D: Hawick	90	Excessive permeability Limited available water capacity Limited content of organic matter Potential for ground-water contamination Potential for surface-water contamination Water erosion Wind erosion

Cropland Management Considerations--Continued

Map symbol	Pct. of	Cropland management
and	map unit	considerations
soil name	-	
740E:		
Hawick	90	Slope
		Excessive permeability
		Limited available water capacity
		Limited content of organic matter
		Potential for ground-water contamination Potential for surface-water contamination
i		Water erosion
i		Wind erosion
740F:		
Hawick	90	Slope
		Excessive permeability
		Limited available water capacity
		Limited content of organic matter
		Potential for ground-water contamination
		Potential for surface-water contamination
		Water erosion Wind erosion
i		Wind elosion
980C:		
Judson	55	Gullied
		Potential poor tilth and compaction
		Potential for surface-water contamination
		Water erosion
Gulliad land formunation		
Gullied land, frequently flooded	35	 Not applicable
1100404	33	Not applicable
1220:		
Nodaway, channeled,		İ
frequently flooded	80	Flooding
I		Channeled
		Potential for ground-water contamination
		Potential for surface-water contamination
5010:		
Pits, sand and gravel	100	Not applicable
j		
5040:		
Udorthents	100	Onsite investigation required
5080:	100	
Udorthents	100	Not applicable
AW:		
Animal waste lagoon	100	Not applicable
į		i
SL:		
Sewage lagoon	100	Not applicable
!		
Water-	100	Not applicable
Water	100	Not applicable
		<u> </u>

Crop Yield Estimates

The tables "Land Capability, Corn Suitability Rating, and Yields per Acre of Crops" and "Land Capability and Yields per Acre of Pasture" are described in this section. Crops other than those shown in the tables are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for 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, or wildlife habitat.

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.

[Reference: United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. USDA Handbook 210.]

Corn Suitability Rating

The corn suitability rating (CSR) system was developed in lowa to rate the productivity of each different kind of soil for row crops. CSRs provide a relative ranking of all soils mapped in the State of Iowa. They can be used to compare the potential yield production of one soil with that of other soils. Ratings range from 5 to 100. A rating of 5 indicates severe limitations for row crop production. Soil properties and weather conditions are the dominant factors that affect productivity.

Crop Yields

The average yields per acre that can be expected of the principal crops under a high level of management are shown in the table. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors.

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

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

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Pasture Yields

Some pasture yields are expressed in the table in terms of animal unit months. An animal unit month (AUM) is the amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

The local office of the Natural Resources Conservation Service or the Cooperative Extension Service can provide information about forage yields other than those shown in the table.

Land Capability, Corn Suitability Rating, and Yields per Acre of Crops

(The following crop yield estimates are based on a high level of management and are determined through recent research conducted by Iowa State University. They are for nonirrigated areas. See text for additional information. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Map symbol and soil name	Pct. of map unit	Land capability	Corn suitability rating	Corn	Soybeans	Oats
				Bu	Bu	Bu
1C	95	3e	60	143	55	90
1C3 Ida, severely eroded	80	3e	55 	140	34	56
1D3 Ida, severely eroded	80	3e	45 45	131	51	83
1E3 Ida, severely eroded	70	4e	35	113	47	76
1F3 Ida, severely eroded	70	6e	 15 			
8BJudson	80 	2e	 81 	185	66	108
8C Judson	95 	3e	 66 	170	64	104
9 Marshall	95 	1	 86 	189	68	111
9B Marshall	100	2e	 81 	180	67	109
9B2 Marshall, moderately eroded	85 	2e	 79 	174	65	106
9C Marshall	90	3e	 66 	168	65	105
9C2 Marshall, moderately eroded	80 	3e	 64 	164	62	102
9D Marshall	85 	3e	56 	156	60	99
9D2 Marshall, moderately eroded	70 	3e	 54 	153	58	96
9E2 Marshall, moderately eroded	70 	4 e	44 	133	52	85
9E3 Marshall, severely eroded	75 	4 e	 41 	128	49	81
10B Monona	100 	2e	 80 	169	63	103

Land Capability, Corn Suitability Rating, and Yields per Acre of Crops--Continued

Map symbol and soil name	Pct. of map unit	Land capability	Corn suitability rating	Corn	Soybeans	Oats
				Bu	Bu	Bu
10B2 Monona, moderately eroded	80	2e	78 78 	162	61 61 	100
10C2 Monona, moderately eroded	75	3e	63 63 	164	59 59 	96
10D2 Monona, moderately eroded	60	3e	53 	141	55 	89
10D3 Monona, severely eroded	95	3e	50	141	52 	86
10E2 Monona, moderately eroded	50	4e	43	127	50	82
10E3 Monona, severely eroded	60	4e	40 40	125	46	75
10F2 Monona, moderately eroded	45	6e	23			
10F3 Monona, severely eroded	70	6e	20 21			
12B Napier	85	2e	80 81	161	63	103
12C Napier	95	3e	65 	146	61 	99
 17B				148	 51	84
Napier Kennebec, frequently	50	2e				
flooded Nodaway, frequently flooded		2w 2w			 	
22D2 Dow, moderately eroded	90	3e	 46 	120	43	71
22D3 Dow, severely eroded	90	3e	 43 	113	41	67
22E3 Dow, severely eroded	80	4e	43 4	97	 34 	56
26 Kennebec, occasionally flooded	95	2w	85 81 	129	65 	105
35D2 Liston, moderately			 40 	123	42 	69
erodedBurchard, moderately	50	3e				
eroded	35	3e	ļ		İ	

Land Capability, Corn Suitability Rating, and Yields per Acre of Crops--Continued

Map symbol and soil name	Pct. of map unit	Land capability	Corn suitability rating	Corn	Soybeans	Oats
				Bu	Bu	Bu
35E2 Liston, moderately			 30 	71	36 	58
eroded Burchard, moderately	50	4e				
eroded	35	4e	į į			
35F2 Liston, moderately			 8 			
eroded Burchard, moderately	40	6e				
eroded	30	6e				
35G	45	7e	5			
Burchard	35	7e				
54 Zook, occasionally flooded	90	2w	73 73 	118	 	89
54+Zook, overwash, occasionally flooded	90	2w	78	125	58 	94
59D2Burchard, moderately eroded	55	3e	 58 	89	46 	75
59E2Burchard, moderately eroded	55	4 e	33 31 	75	39 	64
99C2Exira, moderately eroded	80	3e	61 61	167	57 	93
99D2Exira, moderately eroded	50	3e	51	149	53 	86
99E2Exira, moderately eroded	45	4e	41 41	135	46 	75
100B	75	2e	80	158	63	103
100C2 Monona, moderately eroded	50	3e	63	153	59 	96
100D2 Monona, moderately eroded	45	3e	53 	140	55 	89
100D3 Monona, severely eroded	45	3e	50 50	145	52 	86
100E2 Monona, moderately eroded	45	4 e	43 43 	126	48 	79
100E3 Monona, severely eroded	45	4 e	40 40	127	46 	75

Land Capability, Corn Suitability Rating, and Yields per Acre of Crops--Continued

Map symbol and soil name	Pct. of map unit	Land capability	Corn suitability rating	Corn	Soybeans	 Oats
				Bu	Bu	Bu
100F2 Monona, moderately eroded	55 	6e	 23 			
100F3 Monona, severely eroded	70	7e	20			
111D3 Dow, severely eroded Monona, severely eroded	55 40	3e 3e	 45 	 129 	46	 75
111E3 Dow, severely eroded Monona, severely eroded	55 40	4e 4e	 36 	103	39	 64
125D3 Ida, severely eroded Chute, severely eroded	50 30	3e 7s	 23 	 90 	29	 48
125E3 Ida, severely eroded Chute, severely eroded	50 30	4e 7s	 13 	 80 	26	 42
133Colo, occasionally	85 	2w	 80 	170	65	 105
133+ Colo, overwash, occasionally flooded	85 	2w	 85 	 174 	66	 108
212 Kennebec, occasionally flooded	70 7	2w	 85 	 192 	65	 105
212+ Kennebec, overwash, occasionally flooded	90	2w	 90 	 177 	65	 105
220 Nodaway, occasionally flooded	75 	2w	 86 	 177 	65	 105
266Smithland, occasionally flooded	85 	2w	 85 	 162 	65	 105
266+Smithland, overwash, occasionally flooded	75 	2w	90	 170 	65	 105
268D Knox	85 	3e	 50 	 129 	53	 86
268E Knox	80	4e	40	116	46	 75
268F Knox	75	6e	20			

Land Capability, Corn Suitability Rating, and Yields per Acre of Crops--Continued

Map symbol and soil name	Pct. of map unit	Land capability	Corn suitability rating	Corn	Soybeans	 Oats
			İ	Bu	Bu	Bu
430 Ackmore, occasionally flooded	75 	2w	 86 	168	68	 111
431B	 		66	180	55	 89
JudsonAckmore, frequently	 55 	2e				
floodedColo, overwash,	25 	2w				
frequently flooded	15	2w				
509B Marshall, terrace	 90 	2e	 76 	185	67	 109
509C Marshall, terrace	 85 	3e	 68 	180	65	 105
509C2 Marshall, terrace, moderately eroded	 65 	3e	 64 	176	62	 102
509D2 Marshall, terrace, moderately eroded	65 	3e	 54 	167	54	 96
509E2 Marshall, terrace, moderately eroded	65 	4e	44 45 	156	52	 85
510 Monona, terrace	100 100	1	 85 	179	65	 105
510B Monona, terrace	 60 	2e	80 81	171	63	 103
510C2 Monona, terrace, moderately eroded	 75 	3e	 63 	165	59	96
510D2 Monona, terrace, moderately eroded	75 75	3e	53 	149	55	 89
510E2 Monona, terrace, moderately eroded	75 	4 e	43 43 	133	48	 79
630 Danbury, occasionally flooded	 80 	2w	 85 	178	65	 105
670Rawles, occasionally flooded	 80 	2w	 80 	144	59	 96
700 Monona, terrace	100 100 	1	 85 	166	65	 105
700B Monona, terrace	 75 	2e	 80 	166	63	 103

Land Capability, Corn Suitability Rating, and Yields per Acre of Crops--Continued

Map symbol and soil name	Pct. of map unit	Land capability	Corn suitability rating	Corn	Soybeans	Oats
	i		İ	Bu	Bu	Bu
700C2 Monona, terrace, moderately eroded	50 	3e	63 63 	166 	59 	96
700D2 Monona, terrace, moderately eroded	60 	3e	53 51 	152 	55 	89
717D Napier Gullied land, frequently	50 	3e				
flooded	35	7e			ļ	
740D Hawick	90 	4 s		65 	30	49
740E Hawick	90 	6s				
740F Hawick	90	7s	5 5			
980C Judson Gullied land, frequently	55 	3e	5 5 			
flooded	35	7e				
1220 Nodaway, channeled, frequently flooded	80 	5w	25 			
5010. Pits, sand and gravel						
5040. Udorthents						
5080. Udorthents						
AW. Animal waste lagoon	 					
SL. Sewage lagoon	 					
W. Water	 		 			

Land Capability and Yields per Acre of Pasture

(Yields are those that can be expected under a high level of management. They are for nonirrigated areas. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Map symbol	Pct. of	Land	 Bromegrass-	Smooth	 Kentucky	 Bromegrass-
and soil name	map unit	capability	alfalfa hay	bromegrass	bluegrass	alfalfa
			Tons	AUM*	AUM*	AUM*
1C Ida	95 	3e	 5.2 	 5.1 	3.1	5.3
1C3 Ida, severely eroded	80 	3e	 4.7 	 4.6 	2.7	4.8
1D3 Ida, severely eroded	80	3e	4.8	 4.6 	2.8	4.9
1E3 Ida, severely eroded	70 	4e	4.4 	4.2 	2.6	4.5
1F3 Ida, severely eroded	70 	6e	3.1	3.2	1.2	3.1
8B Judson	80	2e	6.2	6.2	3.7	6.3
8C Judson	95	3e	6.0	5.6	3.5	6.1
9 Marshall	95 	1	6.4	 5.1 	3.8	6.5
9B	100	2e	6.3	 5.1 	3.7	6.4
9B2 Marshall, moderately eroded	85 	2e	6.1	 5.1 	3.6	6.2
9C Marshall	90	3e	6.1	 6.0 	3.5	6.2
9C2 Marshall, moderately eroded	80 	3e	 5.9 	 5.1 	 3.5 	6.0
9D Marshall	85 	3e	5.7	 5.1 	3.4	5.8
9D2 Marshall, moderately eroded	70 	3e	 5.5 	 5.1 	 3.3 	 5.6
9E2 Marshall, moderately eroded	70 	4 e	 4.9 	 5.1 	 2.9 	5.0
9E3 Marshall, severely eroded	75 	4 e	4.7 	 5.1 	 2.8 	4.7
10B Monona	100	2e	6.0	 5.8 	 3.5 	6.0

Land Capability and Yields per Acre of Pasture--Continued

Map symbol and soil name	Pct. of map unit	Land capability	Bromegrass-	Smooth bromegrass	Kentucky bluegrass	Bromegrass-
			Tons	AUM*	AUM*	AUM*
10B2 Monona, moderately eroded	80 	2e	 5.8 	 5.6 	 3.4 	 5.9
10C2 Monona, moderately eroded	75 	3e	 5.6 	 5.5 	 3.3 	 5.6
10D2 Monona, moderately eroded	60 	3e	 5.2 	 5.1 	 3.1 	5.2
10D3 Monona, severely eroded	95 	3e	5.0	 4.7 	 2.9 	5.0
10E2 Monona, moderately eroded	50 	4e	4.7 	 4.6 	2.8	4.8
10E3 Monona, severely eroded	60 	4e	 4.3 	 4.0 	 2.6 	4.4
10F2 Monona, moderately eroded	45 	6e	3.5	 3.4 	 1.6 	3.5
10F3 Monona, severely eroded	70 	6e	 3.2 	 3.0 	 1.4 	3.2
12B Napier	85 	2e	6.0	 5.3 	3.5	6.0
12C Napier	95 	3e	5.8	5.1	3.4	5.8
17B Napier Kennebec, frequently	50 	2e	4.9 	4.5 	 2.9 	4.9
flooded Nodaway, frequently flooded	20 15	2w 2w	 	 	 	
22D2 Dow, moderately eroded	90	3e	 4.1 	 4.0 	 2.4 	4.2
22D3 Dow, severely eroded	90 	4e	 3.9 	 3.4 	 2.3 	3.9
22E3 Dow, severely eroded	80 	3e	 3.2 	 3.0 	 1.9 	3.3
26 Kennebec, occasionally flooded	95 	2w	 6.1 	 5.1 	 3.6 	6.2
35D2 Liston, moderately			4.0	 4.2 	 2.4 	4.0
eroded Burchard, moderately eroded	50 35	3e 3e	 	 	 	

Land Capability and Yields per Acre of Pasture--Continued

			1	 I		
Map symbol and soil name	Pct. of map unit	Land capability	 Bromegrass- alfalfa hay	 Smooth bromegrass	 Kentucky bluegrass	 Bromegrass- alfalfa
			Tons	AUM*	AUM*	AUM*
				!	!	!
35E2			3.4	3.2	2.0	3.4
Liston, moderately eroded	 50	4e		 	 	
Burchard, moderately	30 	46		 	 	I I
eroded	35	4e			 	
35F2	 		 	 3.0	2.5	
Liston, moderately	i					
eroded	40	6e	į	İ	İ	İ
Burchard, moderately						
eroded	30	6e				
35G	 			3.0	2.5	
Liston	45	7e	İ	İ	İ	İ
Burchard	35	7e				ļ
54	 90	2w	5.2	 5.2	 3.1	5.2
Zook, occasionally	90 	2 W	5.2	5.2	3.1] 5.2
flooded					 	
7.0.h	90	2w	5.5	5.8	3.2	5.5
Zook, overwash, occasionally flooded			 	 	 	l I
occupionally liboaca				 	 	
59D2	55	3 e	4.3	4.2	2.6	4.4
Burchard, moderately						
eroded						
59E2	 55	4e	3.7	 3.3	2.2	3.7
Burchard, moderately	33					
eroded	İ		İ	İ	İ	į
99C2	 80	3e	5.4	 4.1		5.4
Exira, moderately eroded		3 e	5.4	4.1 	3.2	5.4
Exita, moderatery eroded				 	 	
99D2	50	3e	5.0	4.9	2.9	5.1
Exira, moderately eroded				!	!	!
99E2	 45	4e	4.4	 4.3	2.6	4.4
Exira, moderately eroded		16	1.1	1.5	2.0	1.1
	İ		İ	İ	İ	İ
100B	75	2 e	6.0	5.8	3.5	6.0
Monona						
100C2	 50	3e	5.6	 5.5	3.3	5.6
Monona, moderately						
eroded	İ		İ	İ	İ	į
100D2	45	3 e	5.2	5.1	3.1	5.2
Monona, moderately eroded			 	 	 	l I
croucu						
100D3	45	3 e	5.0	4.9	2.9	5.0
Monona, severely eroded						
100E2	 45	4e	4.5	 4.4	2.7	4.6
Monona, moderately	13	•	4.5	, <u></u>	2.,	
eroded			İ	İ	İ	i
İ	ĺ					

Land Capability and Yields per Acre of Pasture--Continued

Map symbol and soil name	Pct. of map unit	Land capability	Bromegrass-	Smooth bromegrass	Kentucky bluegrass	Bromegrass- alfalfa
	ļ		Tons	AUM*	AUM*	AUM*
100E3	45	4e	4.3	 4.1	2.6	4.4
Monona, severely eroded	į		i I	 	 	
100F2 Monona, moderately eroded	55 	6e	3.5 	3.4 	 1.6 	3.5
100F3 Monona, severely eroded	70 	7e	3.2	 3.0 	 1.4 	3.2
111D3	į		4.3	4.3	2.6	4.4
Dow, severely eroded	55	3e				
Monona, severely eroded	40	3e				
111E3	j		3.7	3.6	2.2	3.8
Dow, severely eroded	55	4e				
Monona, severely eroded	40	4e	 	 	 	1
125D3	i		2.8	2.3	1.6	2.8
Ida, severely eroded	50	3e				
Chute, severely eroded	30	7s	[[
125E3			2.5	1.8	1.5	2.5
Ida, severely eroded	50	4e	Ì	İ	İ	İ
Chute, severely eroded	30	7s		 	 	
133 Colo, occasionally flooded	85 	2w	 6.1 	6.3 	3.6 	6.2
133+ Colo, overwash, occasionally flooded	85 	2w	6.3	 6.5 	 3.7 	6.3
212 Kennebec, occasionally flooded	70 	2w	 6.1 	 6.6 	 3.6 	6.2
212+ Kennebec, overwash, occasionally flooded	90	2w	6.1 	 6.6 	3.6 	6.2
220 Nodaway, occasionally flooded	75 	2w	6.1 	 5.9 	3.6 	6.2
266Smithland, occasionally flooded	85 	2w	6.1 	 5.9 	3.6 	6.2
266+Smithland, overwash, occasionally flooded	75 	2w	6.1 	 5.9 	 3.6 	6.2
268D	85 	3e	 5.0 	 4.8 	 2.9 	 5.1
268E Knox	80 	4e	 4.4 	 4.2 	 2.6 	 4.4
268F Knox	75 	6e	3.2	3.0	1.4	3.2

Land Capability and Yields per Acre of Pasture--Continued

		 	I	 I	I	
Map symbol and soil name	Pct. of map unit	Land capability	 Bromegrass- alfalfa hay	Smooth bromegrass	 Kentucky bluegrass	 Bromegrass- alfalfa
			Tons	AUM*	AUM*	AUM*
430 Ackmore, occasionally flooded	 75 	2w	 6.4 	 6.2 	 3.8 	 6.5
431B Judson Ackmore, frequently	 	2e	 5.2 	 5.0 	 3.1 	 5.2
floodedColo, overwash,	25 	2w	 	 	 	
frequently flooded	15	2w		 	 	
509B Marshall, terrace	 90 	2e	6.3	 6.2 	3.7 	 6.4
509C Marshall, terrace	85 	3e	6.1	6.1 	3.6 	6.2
509C2 Marshall, terrace, moderately eroded	65	3e	5.9 	5.8 	3.5 	6.0
509D2 Marshall, terrace, moderately eroded	65 	3e	5.5 	5.3 	3.3 	 5.6
509E2 Marshall, terrace, moderately eroded	 65 	4 e	4.9	5.3 	 2.9 	5.0
510 Monona, terrace	 100 	1	 6.1 	 6.0 	 3.6 	 6.2
510B Monona, terrace	 60 	2e	6.0	 5.8 	3.5	6.0
510C2 Monona, terrace, moderately eroded	75 	3e	5.6 	5.5 	3.3 	5.6
510D2 Monona, terrace, moderately eroded	75 	3e	5.2	 5.0 	3.1 	5.2
510E2 Monona, terrace, moderately eroded	75 	4 e	4.5	4.2 	2.7 	4.6
630 Danbury, occasionally flooded	 80 	2w	 6.1 	 5.9 	 3.6 	6.2
670 Rawles, occasionally flooded	 80 	2w	 5.6 	 5.5 	 3.3 	 5.6
700 Monona, terrace	 100 	1	 6.1 	 6.0 	 3.6 	 6.2
700B Monona, terrace	75 75 	2e	 6.1 	 6.0 	 3.6 	 6.2

See footnote at end of table.

Land Capability and Yields per Acre of Pasture--Continued

Map symbol and soil name	Pct. of	Land	Bromegrass-	Smooth	Kentucky	Bromegrass-
and soil name	map unit	capability	Tons	bromegrass AUM*	bluegrass AUM*	AUM*
i			l	AOM"	AOM"	Aom
700C2	50	3e	5.6	5.5	3.3	5.6
Monona, terrace,						
moderately eroded						
 700D2	60	3e	5.2	5.2	 3.1	5.2
Monona, terrace,	i		İ	İ	İ	i
moderately eroded	į		į	İ	ĺ	į
 717D				 	 	
Napier	50	3e		 	 	
Gullied land, frequently				i I	! 	i
flooded		7e	İ	İ	İ	İ
 740D	90	4s	2.9	1.3	1.7	2.9
Hawick	90	45	2.9	1.3	1.7	2.9
į	į		į	į		į
740E Hawick	90	6s	1.8	0.5	1.1	1.9
hawick				 	 	
740F	90	7s		1.0	0.6	i
Hawick]
 980C				 	 	
Judson	55	3e		İ		i
Gullied land, frequently	į		İ	İ	İ	i
flooded	35	7e		İ		İ
1220	 80	5w	3.0	 2.7	1.3	3.0
Nodaway, channeled,		J.,				
frequently flooded	į		İ	İ	İ	İ
5010.					 	
Pits, sand and gravel				 	 	
	į		į	İ	ĺ	į
5040.	ļ					
Udorthents	 			 	 	
5080.					 	
Udorthents]
AW.				 	 	
Animal waste lagoon				İ		
	ļ			ļ		
SL.						
Sewage lagoon				 	 	
w.				İ		
Water	İ		1	I	I	1

^{*} Animal unit month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

Prime Farmland and Other Important Farmlands

The table "Prime Farmland and Other Important Farmlands" lists the map units in the survey area that are considered prime farmland, unique farmland, and farmland of statewide or local importance. This list does not constitute a recommendation for a particular land use.

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

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

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas. The soil quality, 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. The water supply is dependable and of adequate quality. Prime farmland 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 areas has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

For some soils identified in the table as prime farmland, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures.

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

In some areas, land that does not meet the criteria for prime or unique farmland is considered to be *farmland of statewide importance* for the production of food, feed, fiber, forage, and oilseed crops. The criteria for defining and delineating farmland of statewide importance are determined by the appropriate State agencies. Generally,

this land includes areas of soils that nearly meet the requirements for prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. Some areas may produce as high a yield as prime farmland if conditions are favorable. Farmland of statewide importance may include tracts of land that have been designated for agriculture by State law.

In some areas that are not identified as having national or statewide importance, land is considered to be *farmland of local importance* for the production of food, feed, fiber, forage, and oilseed crops. This farmland is identified by the appropriate local agencies. Farmland of local importance may include tracts of land that have been designated for agriculture by local ordinance.

Prime Farmland and Other Important Farmlands

(Only the soils considered prime or important farmland are listed. Urban or built-up areas of the soils listed are not considered prime or important farmland. If a soil is prime or important farmland only under certain conditions, such as "where drained," those conditions are specified)

Map symbol	Map unit name	 Farmland classification
	 Ida silt loam, 5 to 9 percent slopes	 Farmland of statewide importance
3	Ida silt loam, 5 to 9 percent slopes, severely eroded	Farmland of statewide importance
3	Ida silt loam, 9 to 14 percent slopes, severely eroded	Farmland of statewide importance
3	Ida silt loam, 14 to 20 percent slopes, severely eroded	Farmland of statewide importance
	Judson silty clay loam, 2 to 5 percent slopes	Prime farmland
	Judson silty clay loam, 5 to 9 percent slopes	Farmland of statewide importance
	Marshall silty clay loam, 0 to 2 percent slopes	Prime farmland
	Marshall silty clay loam, 2 to 5 percent slopes	Prime farmland
2	Marshall silty clay loam, 2 to 5 percent slopes, moderately eroded	Farmland of statewide importance
	Marshall silty clay loam, 5 to 9 percent slopes	 Farmland of statewide importance
2	Marshall silty clay loam, 5 to 9 percent slopes Marshall silty clay loam, 5 to 9 percent slopes, moderately	
4	eroded	raimiand of statewide importance
	Marshall silty clay loam, 9 to 14 percent slopes	 Farmland of statewide importance
:	Marshall silty clay loam, 9 to 14 percent slopes	Farmland of statewide importance
	moderately eroded	
2	•	 Farmland of statewide importance
	moderately eroded	<u>-</u>
3	Marshall silty clay loam, 14 to 18 percent slopes, severely	Farmland of statewide importance
	eroded	
3	Monona silt loam, 2 to 5 percent slopes	Prime farmland
32	Monona silt loam, 2 to 5 percent slopes, moderately eroded	•
22	Monona silt loam, 5 to 9 percent slopes, moderately eroded	-
02	Monona silt loam, 9 to 14 percent slopes, moderately eroded	-
03	Monona silt loam, 9 to 14 percent slopes, severely eroded	
2	Monona silt loam, 14 to 20 percent slopes, moderately erode	_
Ξ 3	Monona silt loam, 14 to 20 percent slopes, severely eroded	-
3	Napier silt loam, 2 to 5 percent slopes	Prime farmland
3	Napier silt loam, 5 to 9 percent slopes Napier-Kennebec-Nodaway complex, 2 to 5 percent slopes	Farmland of statewide importance Prime farmland
2	Dow silt loam, 9 to 14 percent slopes, moderately eroded	Farmland of statewide importance
03	Dow silt loam, 9 to 14 percent slopes, moderatery eroded	Farmland of statewide importance
3	Dow silt loam, 14 to 20 percent slopes, severely eroded	Farmland of statewide importance
	Kennebec silty clay loam, 0 to 2 percent slopes,	Prime farmland
	occasionally flooded	İ
02	Liston-Burchard complex, 9 to 14 percent slopes, moderately eroded	 Farmland of statewide importance
E2	Liston-Burchard complex, 14 to 18 percent slopes, moderately eroded	 Farmland of statewide importance
	•	Prime farmland where drained
٠	Zook silt loam, 0 to 2 percent slopes, occasionally flooded, overwash	Prime farmland where drained
02	Burchard clay loam, 9 to 14 percent slopes, moderately eroded	Farmland of statewide importance
2	Burchard clay loam, 14 to 18 percent slopes, moderately eroded	Farmland of statewide importance
C2	Exira silty clay loam, 5 to 9 percent slopes, moderately eroded	Farmland of statewide importance
02	Exira silty clay loam, 9 to 14 percent slopes, moderately eroded	Farmland of statewide importance
32	Exira silty clay loam, 14 to 18 percent slopes, moderately eroded	İ
)B	Monona silty clay loam, 2 to 5 percent slopes	Prime farmland
)C2	Monona silty clay loam, 5 to 9 percent slopes, moderately eroded	Farmland of statewide importance
0D2	Monona silty clay loam, 9 to 14 percent slopes, moderately eroded	Farmland of statewide importance
0D3	Monona silty clay loam, 9 to 14 percent slopes, severely eroded	Farmland of statewide importance

Prime Farmland and Other Important Farmlands--Continued

Map symbol	Map unit name	Farmland classification
.00E2	 Monona silty clay loam, 14 to 20 percent slopes, moderately eroded	 Farmland of statewide importance
.00E3	Monona silty clay loam, 14 to 20 percent slopes, severely eroded	Farmland of statewide importance
.11D3	Dow-Monona complex, 9 to 14 percent slopes, severely eroded	Farmland of statewide importance
.11E3	Dow-Monona complex, 14 to 20 percent slopes, severely eroded	Farmland of statewide importance
.25D3	Ida-Chute complex, 9 to 14 percent slopes, severely eroded	Farmland of statewide importance
.25E3	Ida-Chute complex, 14 to 20 percent slopes, severely eroded	-
.33	Colo silty clay loam, 0 to 2 percent slopes, occasionally flooded	Prime farmland where drained
.33+	Colo silt loam, 0 to 2 percent slopes, occasionally flooded, overwash	Prime farmland where drained
12	Kennebec silt loam, 0 to 2 percent slopes, occasionally flooded	Prime farmland
12+	Kennebec silt loam, 0 to 2 percent slopes, occasionally flooded, overwash	Prime farmland
220	Nodaway silt loam, 0 to 2 percent slopes, occasionally flooded	Prime farmland
266	Smithland silty clay loam, 0 to 2 percent slopes, occasionally flooded	Prime farmland
266+	Smithland silt loam, 0 to 2 percent slopes, occasionally flooded, overwash	Prime farmland
68D	Knox silt loam, 9 to 14 percent slopes	Farmland of statewide importance
68E	Knox silt loam, 14 to 20 percent slopes	Farmland of statewide importance
:30	Ackmore silt loam, 0 to 2 percent slopes, occasionally flooded	Prime farmland
31B	Judson-Ackmore-Colo, overwash, complex, 2 to 5 percent slopes	Prime farmland where drained
09B	Marshall silty clay loam, terrace, 2 to 5 percent slopes	Prime farmland
09C	Marshall silty clay loam, terrace, 5 to 9 percent slopes	Farmland of statewide importance
09C2	Marshall silty clay loam, terrace, 5 to 9 percent slopes, moderately eroded	Farmland of statewide importance
09D2	moderately eroded	Farmland of statewide importance
09E2	Marshall silty clay loam, terrace, 14 to 20 percent slopes, moderately eroded	
10	Monona silt loam, terrace, 0 to 2 percent slopes	Prime farmland
10B	Monona silt loam, terrace, 2 to 5 percent slopes	Prime farmland
10C2	Monona silt loam, terrace, 5 to 9 percent slopes, moderately eroded	Farmland of statewide importance
10D2	Monona silt loam, terrace, 9 to 14 percent slopes, moderately eroded	Farmland of statewide importance
10E2	Monona silt loam, terrace, 14 to 20 percent slopes, moderately eroded	Farmland of statewide importance
30	Danbury silt loam, 0 to 2 percent slopes, occasionally flooded	Prime farmland
70	Rawles silt loam, 0 to 2 percent slopes, occasionally flooded	Prime farmland
00	Monona silty clay loam, terrace, 0 to 2 percent slopes	Prime farmland
00B	Monona silty clay loam, terrace, 2 to 5 percent slopes	Prime farmland
00C2	Monona silty clay loam, terrace, 5 to 9 percent slopes, moderately eroded	Farmland of statewide importance
'00D2	Monona silty clay loam, terrace, 9 to 14 percent slopes, moderately eroded	Farmland of statewide importance
40D	Hawick gravelly sandy loam, 9 to 14 percent slopes	Farmland of statewide importance
80C	Judson-Gullied land complex, 5 to 9 percent slopes	Farmland of statewide importance

Agricultural Waste Management

The table "Agricultural Waste Management" is described in this section.

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

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

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

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

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

The ratings are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, the rate at which the waste is applied, and the method by which the waste is applied. The properties that affect absorption include permeability, depth to a water table, ponding, the sodium adsorption ratio, depth to bedrock or a

cemented pan, and available water capacity. The properties that affect plant growth and microbial activity include reaction, the sodium adsorption ratio, salinity, and bulk density. The wind erodibility group, the soil erosion factor K, and slope are considered in estimating the likelihood that wind erosion or water erosion will transport the waste material from the application site. Stones, cobbles, a water table, ponding, and flooding can hinder the application of waste. Permanently frozen soils are unsuitable for waste treatment.

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

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

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

Disposal of wastewater by irrigation not only disposes of municipal wastewater and wastewater from food-processing plants, lagoons, and storage ponds but also can improve crop production by increasing the amount of water available to crops. The ratings in the table are based on the soil properties that affect the design, construction, management, and performance of the irrigation system. The properties that affect design and management include the sodium adsorption ratio, depth to a water table, ponding, available water capacity, permeability, slope, and flooding. The properties that affect construction include stones, cobbles, depth to bedrock or a cemented pan, depth to a water table, and ponding. The properties that affect performance include depth to bedrock or a cemented pan, bulk density, the sodium adsorption ratio, salinity, reaction, and the cation-exchange capacity, which is used to estimate the capacity of a soil to adsorb heavy metals. Permanently frozen soils are not suitable for disposal of wastewater by irrigation.

A soil feature considered in the ratings for application of manure, sewage sludge, and wastewater is depth to the top of a water table (saturated zone). During August, September, and October, this depth is generally more than 60 cm in normal years. For soils that are limited by wetness, "Nov-Jul" indicates the most problematic months of the year for application of manure, sewage sludge, and wastewater. These soils may be slow to drain and can become waterlogged and boggy during periods of heavy precipitation.

Agricultural Waste Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map	of manure and food- map processing waste		Application of sewage sludg			ı
	unit 	Rating class and limiting features	Value	 Rating class and limiting features	Value	Rating class and limiting features	Value
1C: Ida	 95 	 Not limited 		 Not limited 	 	Somewhat limited Too steep for surface application Too steep for sprinkler	 0.92 0.02
1C3: Ida, severely eroded	 80 	 - Not limited - - -	 	 	 	application Somewhat limited Too steep for surface application Too steep for sprinkler application	 0.92 0.02
1D3: Ida, severely eroded	 80 	 Somewhat limited Slope 	 0.63 	 Somewhat limited Slope 	 0.63 	Very limited Too steep for surface application Too steep for sprinkler application	 1.00 0.78
1E3: Ida, severely eroded	 70 	 Very limited Slope 	 1.00 	 Very limited Slope 	 1.00 	Very limited Too steep for surface application Too steep for sprinkler application	 1.00 1.00
1F3: Ida, severely eroded	 70 	 Very limited Slope 	 1.00 	 Very limited Slope 	 1.00 	Very limited Too steep for sprinkler application Too steep for surface application	 1.00 1.00
8B: Judson	 80 	 Not limited 	 	 Not limited 	 	 Somewhat limited Too steep for surface application	 0.08

Map symbol and soil name	Pct. Application of of manure and food- map processing waste unit		Application of sewage sludg	re	Disposal of wastewater by irrigation		
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
8C: Judson	 95 	 Not limited 		 Not limited 		 Somewhat limited Too steep for surface application Too steep for sprinkler application	 0.92 0.02
9: Marshall	95	 Not limited	 	 Not limited 	 	 Not limited	
9B: Marshall	 100 	 Not limited 	 	 Not limited 		 Somewhat limited Too steep for surface application	0.08
9B2: Marshall, moderately eroded		 Not limited 	 	 Not limited 		 Somewhat limited Too steep for surface application	 0.08
9C: Marshall	 90 	 Not limited 	 	 Not limited 		Somewhat limited Too steep for surface application Too steep for sprinkler application	 0.92 0.02
9C2: Marshall, moderately eroded		 Not limited 		 Not limited 		Somewhat limited Too steep for surface application Too steep for sprinkler application	 0.92 0.02
9D: Marshall	 85 	 Somewhat limited Slope 	 0.63 	 Somewhat limited Slope 	 0.63 	Very limited Too steep for surface application Too steep for sprinkler application	 1.00 0.78

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	manure and food- processing waste		Application of sewage sludg	е	Disposal of wastewater by irrigation	
	 	Rating class and limiting features	Value 	Rating class and limiting features	Value	Rating class and limiting features	Value
9D2: Marshall, moderately eroded		 Somewhat limited Slope 	 0.63 	 Somewhat limited Slope 	 0.63 	 Very limited Too steep for surface application Too steep for sprinkler application	 1.00 0.78
9E2: Marshall, moderately eroded		 Very limited Slope 	 1.00 	 Very limited Slope 	 1.00 	Very limited Too steep for surface application Too steep for sprinkler application	 1.00 1.00
9E3: Marshall, severely eroded	 75 	 Very limited Slope 	 1.00 	 Very limited Slope 	 1.00 	 Very limited Too steep for surface application Too steep for sprinkler application	 1.00 1.00
10B: Monona	 100 	 Not limited 	 	 Not limited 	 	 Somewhat limited Too steep for surface application	 0.08
10B2: Monona, moderately eroded	 80 	 Not limited 	 	 Not limited 	 	 Somewhat limited Too steep for surface application	 0.08
Monona, moderately eroded	 75 	 Not limited 	 	 Not limited 	 	Somewhat limited Too steep for surface application Too steep for sprinkler application	 0.92 0.02

Map symbol and soil name	Pct. of map unit	manure and food- processing waste		Application of sewage sludg	e	Disposal of wastewater by irrigation	
	 	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
10D2: Monona, moderately eroded	 60 	 Somewhat limited Slope 	 0.63 	 Somewhat limited Slope 	 0.63 	 Very limited Too steep for surface application Too steep for sprinkler application	 1.00 0.78
10D3: Monona, severely eroded	 95 	 Somewhat limited Slope 	 0.63 	 Somewhat limited Slope 	 0.63 	Very limited Too steep for surface application Too steep for sprinkler application	 1.00 0.78
10E2: Monona, moderately eroded	 50 	 Very limited Slope 	 1.00 	 Very limited Slope 	 1.00 	 Very limited Too steep for surface application Too steep for sprinkler application	 1.00 1.00
10E3: Monona, severely eroded	 60 	 Very limited Slope 	 1.00 	 - Very limited Slope - -	 1.00 	Very limited Too steep for surface application Too steep for sprinkler application	 1.00 1.00
10F2: Monona, moderately eroded	 45 	 Very limited Slope 	 1.00 	 - Very limited Slope - -	 1.00 	Very limited Too steep for sprinkler application Too steep for surface application	 1.00 1.00
10F3: Monona, severely eroded	 70 	 Very limited Slope 	 1.00 	 Very limited Slope 	 1.00 	 Very limited Too steep for sprinkler application Too steep for surface application	 1.00 1.00

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	manure and food- processing waste		Application of sewage sludg	e	Disposal of wastewater by irrigation	1
	 	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
12B: Napier	 85 	 Very limited Low adsorption 	 1.00 	 Very limited Low adsorption 	 1.00 	 Very limited Low adsorption Too steep for surface application	 1.00 0.08
12C: Napier	 95 	 Very limited Low adsorption 	 1.00	 Very limited Low adsorption 	 1.00	 Very limited Low adsorption Too steep for surface	 1.00 0.92
170.	 		 		 	application Too steep for sprinkler application	0.02
17B: Napier	 50 	 Very limited Low adsorption 	 1.00 	 Very limited Low adsorption 	 1.00 		 1.00 0.08
Kennebec, frequently flooded	1	 Very limited Flooding 	 1.00 	 Very limited Flooding 	 1.00 	 Very limited Flooding Too steep for surface application	 1.00 0.08
Nodaway, frequently flooded	 15 	 Very limited Flooding 	 1.00 	 Very limited Flooding 	 1.00 	 Very limited Flooding Too steep for surface application	 1.00 0.08
22D2: Dow, moderately eroded	 90 	 Somewhat limited Slope 	 0.63 	 Somewhat limited Slope 	 0.63 	 Very limited Too steep for surface application Too steep for	 1.00 0.78
22D3: Dow, severely eroded	 90 	 - Somewhat limited Slope -	 0.63 	 Somewhat limited Slope 	 0.63 	sprinkler application	1.00

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map	manure and food processing wast	-	Application of sewage sludg	e	Disposal of wastewater by irrigation	ı
	unit 	 Rating class and limiting features	Value	 Rating class and limiting features	Value	 Rating class and limiting features	Value
22E3: Dow, severely eroded	80	 Very limited Slope 	 1.00 	 Very limited Slope 	 1.00 	 Very limited Too steep for surface application Too steep for sprinkler application	 1.00 1.00
26: Kennebec, occasionally		 	 	 		 	
flooded	95	Very limited Filtering capacity Flooding Too acid	 1.00 0.60 0.01	Very limited Filtering capacity Flooding Too acid	 1.00 1.00 0.01	Very limited Filtering capacity Flooding Too acid	 1.00 0.60 0.01
35D2: Liston, moderately eroded	 50	 Somewhat limited	 	 Somewhat limited		 Very limited	
		Slope Slow water movement 	0.63 0.30 	Slope Slow water movement 	0.63 0.22 	Too steep for surface application Too steep for sprinkler application Slow water movement	1.00 0.78 0.22
Burchard, moderately eroded		 Somewhat limited Slope	 0.63	 Somewhat limited Slope	0.63	 Very limited Too steep for	1.00
	 	Slow water movement 	0.41 	Slow water movement 	0.31	surface application Too steep for sprinkler application Slow water movement	0.78
35E2: Liston, moderately		 	 	 			
eroded	50 	Very limited Slope Slow water movement	 1.00 0.30 	Very limited Slope Slow water movement	 1.00 0.22 	Very limited Too steep for surface application Too steep for sprinkler	 1.00 1.00
	 	 	 	 		application Slow water movement	0.22

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	manure and food- processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
	 	Rating class and limiting features	Value 	Rating class and limiting features	Value 	Rating class and limiting features	Value
35E2: Burchard, moderately eroded	1	 Very limited Slope Slow water movement	 1.00 0.41 	 Very limited Slope Slow water movement 	 1.00 0.31 	Very limited Too steep for surface application Too steep for sprinkler application Slow water movement	
35F2: Liston, moderately eroded	 40 41 1	 Very limited Slope Slow water movement	 1.00 0.30 	 Very limited Slope Slow water movement	 1.00 0.22 	Very limited Too steep for sprinkler application Too steep for surface application Slow water movement	
Burchard, moderately eroded	1	 Very limited Slope Slow water movement	 1.00 0.41 	 Very limited Slope Slow water movement 	 1.00 0.31 	Very limited Too steep for sprinkler application Too steep for surface application Slow water movement	 1.00 1.00 0.31
35G: Liston	 45 	 Very limited Slope Slow water movement	 1.00 0.30 	 Very limited Slope Slow water movement 	 1.00 0.22 	Very limited Too steep for sprinkler application Too steep for surface application Slow water movement	 1.00 1.00 0.22
Burchard	 35 	 Very limited Slope Slow water movement 	 1.00 0.41 	 Very limited Slope Slow water movement 	 1.00 0.31 	Very limited Too steep for sprinkler application Too steep for surface application Slow water movement	 1.00 1.00 0.31

Map symbol and soil name	Pct. of map unit	f manure and food- p processing waste		Application of sewage sludg	e	Disposal of wastewater by irrigation	
		Rating class and	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
54: Zook, occasionally flooded	90	 Very limited Slow water movement Depth to saturated zone (Nov-Jul) Flooding	 1.00 1.00 0.60	 Very limited Depth to saturated zone (Nov-Jul) Flooding Slow water movement	 1.00 1.00 1.00	 Very limited Depth to saturated zone (Nov-Jul) Slow water movement Flooding	 1.00 1.00 0.60
54+: Zook, overwash, occasionally	 		 		 		
flooded	90 	Very limited Slow water movement Depth to saturated zone (Nov-Jul) Flooding	 1.00 1.00 0.60	Very limited Depth to saturated zone (Nov-Jul) Flooding Slow water movement	 1.00 1.00 1.00	Very limited Depth to saturated zone (Nov-Jul) Slow water movement Flooding	 1.00 1.00 0.60
59D2: Burchard, moderately eroded		 Somewhat limited Slope Slow water movement	 0.63 0.41 	 Somewhat limited Slope Slow water movement	 0.63 0.31 	 Very limited Too steep for surface application Too steep for sprinkler application Slow water	 1.00 0.78
59E2: Burchard, moderately eroded	!	 - Very limited Slope Slow water movement	 1.00 0.41 	 	 1.00 0.31 	movement	 1.00 1.00 0.31
99C2: Exira, moderately eroded	 80 	 Not limited 	 	 Not limited 	 	Somewhat limited Too steep for surface application Too steep for sprinkler application	 0.92 0.02

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	manure and food processing wast	-	Application of sewage sludg	e	Disposal of wastewater by irrigation	L.
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
99D2: Exira, moderately eroded	 50 	 Somewhat limited Slope 	 0.63 	 Somewhat limited Slope 	 0.63 	 Very limited Too steep for surface application Too steep for sprinkler application	 1.00 0.78
99E2: Exira, moderately eroded	 45 	 Very limited Slope 	 1.00 	 Very limited Slope 	 1.00 	 Very limited Too steep for surface application Too steep for sprinkler application	 1.00 1.00
100B: Monona	75	 Not limited	 	 Not limited	 	 Not limited	
100C2: Monona, moderately eroded	 50 	 Not limited 	 	 Not limited 			 0.92 0.02
100D2: Monona, moderately eroded	 45 	 Somewhat limited Slope 	 0.63 	 Somewhat limited Slope 	 0.63 		 1.00 0.78
100D3: Monona, severely eroded	 45 	 Somewhat limited Slope 	 0.63 	 Somewhat limited Slope 	 0.63 	 Very limited Too steep for surface application Too steep for sprinkler application	 1.00 0.78

Map symbol and soil name	Pct. of map unit	manure and food processing wast	-	Application of sewage sludg	e	Disposal of wastewater by irrigation	ı
	 	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
100E2: Monona, moderately eroded	 45 	 Very limited Slope 	 1.00 	 Very limited Slope 	 1.00 	Very limited Too steep for surface application Too steep for sprinkler application	 1.00 1.00
100E3: Monona, severely eroded	 45 	 - Very limited Slope - -	 1.00 	 Very limited Slope 	 1.00 	Very limited Too steep for surface application Too steep for sprinkler application	 1.00 1.00
100F2: Monona, moderately eroded	 55 	 Very limited Slope 	 1.00 	 Very limited Slope 	 1.00 	 Very limited Too steep for sprinkler application Too steep for surface application	 1.00 1.00
100F3: Monona, severely eroded	 70 	 Very limited Slope 	 1.00 	 Very limited Slope 	 1.00 	Very limited Too steep for sprinkler application Too steep for surface application	 1.00 1.00
111D3: Dow, severely eroded	 55 	 Somewhat limited Slope 	 0.63 	 Somewhat limited Slope 	 0.63 	Very limited Too steep for surface application Too steep for sprinkler application	 1.00 0.78
Monona, severely eroded	 40 	 Somewhat limited Slope 	 0.63 	 Somewhat limited Slope 	 0.63 	Very limited Too steep for surface application Too steep for sprinkler application	 1.00 0.78

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	manure and food processing wast	-	Application of sewage sludge		Disposal of wastewater by irrigation	
	 	Rating class and limiting features	Value 	Rating class and limiting features	Value	Rating class and limiting features	Value
111E3: Dow, severely eroded	 55 	 Very limited Slope 	 1.00 	 Very limited Slope 	 1.00 	 Very limited Too steep for surface application Too steep for sprinkler application	 1.00 1.00
Monona, severely eroded	 40 	 Very limited Slope 	 1.00 	 Very limited Slope 	 1.00 	Very limited Too steep for surface application Too steep for sprinkler application	 1.00 1.00
125D3: Ida, severely eroded	 50 	 Somewhat limited Slope 	 0.63 	 Somewhat limited Slope 	 0.63 	Very limited Too steep for surface application Too steep for sprinkler application	 1.00 0.78
Chute, severely eroded	 30 	 Very limited Filtering capacity Slope Leaching	 1.00 0.63 0.45 	 Very limited Filtering capacity Slope Droughty 	 1.00 0.63 0.21 		 1.00 1.00 1.00 0.78
125E3: Ida, severely eroded	 50 	 Very limited Slope 	 1.00 	 Very limited Slope 	 1.00 	Very limited Too steep for surface application Too steep for sprinkler application	 1.00 1.00
Chute, severely eroded	 30 	 Very limited Filtering capacity Slope Leaching	 1.00 1.00 0.45 	 Very limited Filtering capacity Slope Droughty	 1.00 1.00 0.21 		 1.00 1.00 1.00 1.00

Map symbol and soil name	Pct. of map unit	manure and food processing wast	-	Application of sewage sludg	e	Disposal of wastewater by irrigation	1
	<u> </u>	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
133: Colo, occasionally flooded	 85 	 Very limited Depth to saturated zone (Nov-Jul) Leaching Flooding	 1.00 0.70 0.60	Very limited Depth to saturated zone (Nov-Jul) Flooding	 1.00 1.00	Very limited Depth to saturated zone (Nov-Jul) Flooding	 1.00 0.60
133+: Colo, overwash, occasionally							
flooded	65	Depth to saturated zone (Nov-Jul) Leaching Flooding	1.00 0.70 0.60	Very limited Depth to saturated zone (Nov-Jul) Flooding	 1.00 1.00	Very limited Depth to saturated zone (Nov-Jul) Flooding	1.00
212: Kennebec, occasionally flooded	 70	 Somewhat limited Flooding	 0.60	 Very limited Flooding	 1.00	 Somewhat limited Flooding	 0.60
212+: Kennebec, overwash, occasionally flooded	 90	 Somewhat limited Flooding	 0.60	 Very limited Flooding	 1.00	 Somewhat limited Flooding	 0.60
220: Nodaway, occasionally flooded	 75	 Somewhat limited Flooding	 0.60	 Very limited Flooding	 1.00	 Somewhat limited Flooding	
266: Smithland, occasionally flooded	 85 	Very limited Depth to saturated zone (Nov-Jul) Leaching Flooding	 1.00 0.70	Very limited Depth to saturated zone (Nov-Jul) Flooding	 1.00 1.00	Very limited Depth to saturated zone (Nov-Jul) Flooding	 1.00 0.60
266+: Smithland, overwash, occasionally flooded	İ	 	 1.00 0.70 0.60	Very limited Depth to saturated zone Nov-Jul) Flooding	 1.00 1.00	Very limited Depth to saturated zone Nov-Jul) Flooding	 1.00 0.60

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map	Application of manure and food processing wast	-	Application of sewage sludg	е	Disposal of wastewater by irrigation	L
	unit 	Rating class and limiting features	Value	 Rating class and limiting features	Value	 Rating class and limiting features	Value
268D: Knox	 85 	 Somewhat limited Slope 	 0.63 	 Somewhat limited Slope 	 0.63 	Very limited Too steep for surface application Too steep for sprinkler application	 1.00 0.78
268E: Knox	 80 	 Very limited Slope 	 1.00 	 Very limited Slope 	 1.00 	Very limited Too steep for surface application Too steep for sprinkler application	 1.00 1.00
268F: Knox	 75 	 Very limited Slope 	 1.00 	 Very limited Slope 	 1.00 		 1.00 1.00
430: Ackmore, occasionally flooded	 75 	 	 1.00 0.60 0.41	 	 1.00 1.00 0.31	application	 1.00 0.60 0.31
431B: Judson	 55	 Not limited	 	 Not limited	 	 Not limited	
Ackmore, frequently flooded		 Very limited Depth to saturated zone (Nov-Jul) Flooding	 1.00 1.00	 Very limited Depth to saturated zone (Nov-Jul) Flooding	 1.00 1.00	 Very limited Depth to saturated zone (Nov-Jul) Flooding	 1.00 1.00
Colo, overwash, frequently flooded	 15 	 Very limited Depth to saturated zone (Nov-Jul) Flooding Leaching	 1.00 1.00 0.70	 Very limited Depth to saturated zone (Nov-Jul) Flooding	 1.00 1.00	 Very limited Depth to saturated zone (Nov-Jul) Flooding	 1.00 1.00
509B: Marshall, terrace	 90 	 Not limited 	 	 Not limited 	 	 Not limited 	

Map symbol and soil name	Pct. of map unit	Application of manure and food processing wast	-	Application of sewage sludg	e	Disposal of wastewater by irrigation	ı
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
509C: Marshall, terrace	 85 	 Not limited 	 	 Not limited 		Somewhat limited Too steep for surface application Too steep for sprinkler application	 0.92 0.02
509C2: Marshall, terrace, moderately eroded	 65 	 Not limited 	 	 Not limited 		Somewhat limited Too steep for surface application Too steep for sprinkler application	0.92
509D2: Marshall, terrace, moderately eroded	 65 	 Somewhat limited Slope 	 0.63 	 Somewhat limited Slope 	 0.63 	 Very limited Too steep for surface application Too steep for sprinkler application	 1.00 0.78
509E2: Marshall, terrace, moderately eroded	 65 		 1.00 	 Very limited Slope 	 1.00 	 Very limited Too steep for surface application Too steep for sprinkler application	 1.00 1.00
510: Monona, terrace	 100 	 Not limited 	 	 Not limited 		 Not limited 	
510B: Monona, terrace	 60	 Not limited	 	 Not limited	 	 Not limited	
510C2: Monona, terrace, moderately eroded	 75 	 Not limited 	 	 Not limited 	 	 Somewhat limited Too steep for surface application Too steep for	0.92
	 	 	 	 	 	sprinkler application 	

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food processing wast		Application of sewage sludg	е	Disposal of wastewater by irrigation	
	<u> </u> 	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
510D2: Monona, terrace, moderately eroded	 75 	 Somewhat limited Slope 	 0.63 	 Somewhat limited Slope 	 0.63 	 Very limited Too steep for surface application Too steep for sprinkler application	 1.00 0.78
510E2: Monona, terrace, moderately eroded	 75 	 Very limited Slope 	 1.00 	 Very limited Slope 	 1.00 	Very limited Too steep for surface application Too steep for sprinkler application	 1.00 1.00
Danbury, occasionally flooded	 80 	 Very limited Depth to saturated zone (Nov-Jul) Flooding Slow water movement	 1.00 0.60 0.41	 Very limited Flooding Depth to saturated zone (Nov-Jul) Slow water movement	 1.00 1.00 0.31		 1.00 0.60 0.31
670: Rawles, occasionally flooded	1	 Somewhat limited Flooding	 0.60	 Very limited Flooding	 1.00	 Somewhat limited Flooding	 0.60
700: Monona, terrace	100	 Not limited		 Not limited		 Not limited	į
700B: Monona, terrace	 75 	 Not limited 	 	 Not limited 		 Somewhat limited Too steep for surface application	 0.08
700C2: Monona, terrace, moderately eroded	 50 	 Not limited 	 	 Not limited 		Somewhat limited Too steep for surface application Too steep for sprinkler application	 0.92 0.02

Map symbol and soil name	Pct. of map unit	Application of manure and food processing wast	-	Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value 	Rating class and limiting features	Value	Rating class and limiting features	Value
700D2: Monona, terrace,	 	 - -	 	 - -	 	 - -	
moderately eroded	60 	Somewhat limited Slope 	 0.63 	Somewhat limited Slope	 0.63 	Very limited Too steep for surface application Too steep for sprinkler	 1.00 0.78
717D:	 	 	 	 	 	application	
Napier	50 	Very limited Low adsorption Slope	 1.00 0.04 	Very limited Low adsorption Slope	 1.00 0.04 	Very limited Low adsorption Too steep for surface application Too steep for sprinkler application	 1.00 1.00 0.22
Gullied land, frequently flooded	 35 	 Not rated 	 	 Not rated 	 	 Not rated 	
740D: Hawick	 90 	 Very limited Filtering capacity Droughty Slope	 1.00 0.91 0.63	 Very limited Filtering capacity Droughty Slope	 1.00 0.91 0.63	Very limited Filtering capacity Too steep for surface application Droughty	 1.00 1.00 0.91
740E: Hawick	90	 Very limited	 	 Very limited		 Very limited	
	 	Filtering capacity Slope Droughty	1.00 1.00 0.91 	Filtering capacity Slope Droughty 	1.00 1.00 0.91 	Filtering capacity Too steep for surface application Too steep for	1.00 1.00 1.00
	 	 	 	 	 	sprinkler application	
740F: Hawick	 90 	 Slope Filtering capacity Droughty	 1.00 1.00 0.91	 Very limited Filtering capacity Slope Droughty	 1.00 1.00 0.91	 Very limited Filtering capacity Too steep for sprinkler application	 1.00 1.00
	 	 	 	 	 	Too steep for surface application	1.00

Agricultural Waste Management--Continued

Map symbol and soil name	Pct. of map unit	manure and food processing wast	-	Application of sewage sludg	re	Disposal of wastewater by irrigation	
	 	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
980C: Judson	 55 	 Not limited 	 	 Not limited 		 Somewhat limited Too steep for surface	 0.92
	 	 	 	 		application Too steep for sprinkler application	 0.02
Gullied land,		 		 		 	
frequently flooded	35 	Not rated		Not rated 		Not rated 	
1220: Nodaway, channeled, frequently flooded	 80	 Very limited Flooding	 1.00	 Very limited Flooding		 Very limited Flooding	1.00
5010: Pits, sand and gravel	 100	 Not rated	 	 Not rated	 	 Not rated	
5040: Udorthents	 100	 Not rated		 Not rated		 Not rated	
5080: Udorthents	 100	 Not rated	 	 Not rated		 Not rated	
AW: Animal waste lagoon	 100	 Not rated		 Not rated		 Not rated	
SL: Sewage lagoon	 100	 Not rated		 Not rated		 Not rated	
W: Water	 100	 Not rated	 	 Not rated		 Not rated	

Recreational Development

The titles of the tables described in this section are:

- "Camp Areas, Picnic Areas, and Playgrounds"
- · "Paths, Trails, and Golf Fairways"

In the tables described in this section, the soils of the survey area are rated according to limitations that affect their suitability for recreational development. 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 these tables can be supplemented by other information in this survey, for example, interpretations for dwellings without basements, for local roads and streets, and for septic tank absorption fields.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The ratings are based on the soil properties that affect the ease of developing camp areas and the performance of the areas after development. Slope, stoniness, and depth to bedrock or a cemented pan are the main concerns affecting the development of camp areas. The soil properties that affect the performance of the areas after development are those that influence trafficability and promote the growth of vegetation, especially in heavily used areas. For good trafficability, the surface of camp areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the

surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

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

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

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

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

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

Camp Areas, Picnic Areas, and Playgrounds

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	 Pct. of map	 Camp areas 		 Picnic areas 		 Playgrounds 	
	unit 	 Rating class and	Value	 Rating class and	Value	 Rating class and	Value
		limiting features		limiting features		limiting features	
1C: Ida	 95 	 Not limited 	 	 Not limited 	 	 Very limited Slope 	 1.00
1C3: Ida, severely eroded	 80 	 Not limited 	 	 Not limited		 Very limited Slope	1.00
1D3: Ida, severely eroded	 80 	 Somewhat limited Slope 	 0.63	 Somewhat limited Slope 	 0.63	 Very limited Slope 	 1.00
1E3: Ida, severely eroded	 70 	 Very limited Slope 	 1.00	 Very limited Slope 	 1.00	 Very limited Slope 	 1.00
1F3: Ida, severely eroded	 70 	 Very limited Slope	 1.00	 Very limited Slope	1.00	 Very limited Slope	1.00
8B: Judson	 80 	 Not limited 		 Not limited 		 Somewhat limited Slope	0.50
8C: Judson	 95 	 Not limited 	 	 Not limited 	 	 Very limited Slope 	
9: Marshall	 95 	 Not limited 	 	 Not limited 	 	 Not limited 	
9B: Marshall	 100 	 Not limited 	 	 Not limited 		 Somewhat limited Slope	0.50
9B2: Marshall, moderately eroded		 Not limited 	 	 Not limited 	 	 Somewhat limited Slope	0.50
9C: Marshall	 90 	 Not limited		 Not limited		 Very limited Slope	1.00
9C2: Marshall, moderately eroded		 - Not limited -	 	 Not limited 	 	 Very limited Slope 	 1.00
9D: Marshall	 85 	 Somewhat limited Slope 	 0.63	 Somewhat limited Slope 	 0.63	 Very limited Slope 	 1.00

Camp Areas, Picnic Areas, and Playgrounds--Continued

	1						
Map symbol and soil name	Pct.	 Camp areas 		 Picnic areas 		 Playgrounds 	
	map unit	 		 		 	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
9D2: Marshall, moderately eroded		 Somewhat limited Slope	 0.63	 Somewhat limited Slope	 0.63	 Very limited Slope	
9E2: Marshall, moderately eroded	 70 	 Very limited Slope	 1.00	 Very limited Slope	 1.00	 Very limited Slope	1.00
9E3: Marshall, severely eroded	 75 	 Very limited Slope	 1.00	 Very limited Slope 	 1.00	 Very limited Slope 	1.00
10B: Monona	 100 	 Not limited	 	 Not limited 	 	 Somewhat limited Slope	0.50
10B2: Monona, moderately eroded	 80 	 Not limited 	 	 - Not limited 	 	 Somewhat limited Slope	 0.50
10C2: Monona, moderately eroded	 75 	 Not limited 	 	 Not limited 	 	 Very limited Slope	1.00
10D2: Monona, moderately eroded	 60 	 Somewhat limited Slope 	 0.63	 Somewhat limited Slope 	 0.63	 Very limited Slope 	 1.00
10D3: Monona, severely eroded	 95 	 Somewhat limited Slope 	 0.63	 Somewhat limited Slope 	 0.63	 Very limited Slope 	 1.00
10E2: Monona, moderately eroded	 50 	 Very limited Slope	 1.00	 Very limited Slope 	 1.00	 Very limited Slope 	 1.00
10E3: Monona, severely eroded	 60 	 Very limited Slope 	 1.00	 Very limited Slope 	 1.00	 Very limited Slope 	 1.00
10F2: Monona, moderately eroded	 45 	 Very limited Slope	 1.00	 Very limited Slope	 1.00	 Very limited Slope	1.00
10F3: Monona, severely eroded	 70 	 Very limited Slope	 1.00	 Very limited Slope	 1.00	 Very limited Slope	1.00

Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit			Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
12B: Napier	 85 	 Not limited 	 	 Not limited 	 	 Somewhat limited Slope	 0.50
12C: Napier	 95 	 Not limited	 	 Not limited 		 Very limited Slope	1.00
17B: Napier	 50	 Not limited 	 	 Not limited 	 	 Somewhat limited Slope	0.50
Kennebec, frequently flooded		 Very limited Flooding	 1.00	 Somewhat limited Flooding	 0.40 	 Very limited Flooding Slope	 1.00 0.50
Nodaway, frequently flooded	 15 	 Very limited Flooding 	 1.00 	 Somewhat limited Flooding 	 0.40 	 Very limited Flooding Slope	1.00
22D2: Dow, moderately eroded	 90 	 Somewhat limited Slope	 0.63	 Somewhat limited Slope	 0.63	 Very limited Slope	1.00
22D3: Dow, severely eroded	 90 	 Somewhat limited Slope	 0.63	 Somewhat limited Slope	 0.63	 Very limited Slope	1.00
22E3: Dow, severely eroded	 80 	 Very limited Slope	 1.00	 Very limited Slope	1.00	 Very limited Slope	1.00
26: Kennebec, occasionally flooded	 95 	 Very limited Flooding	 1.00	 Not limited 	 	 Somewhat limited Flooding	 0.60
35D2: Liston, moderately eroded	 50 	 Somewhat limited Slope Slow water movement	 0.63 0.15	 Somewhat limited Slope Slow water movement	 0.63 0.15	 Very limited Slope Slow water movement	 1.00 0.15
Burchard, moderately eroded		 Somewhat limited Slope Slow water movement	 0.63 0.21 	 Somewhat limited Slope Slow water movement	 0.63 0.21 	 Very limited Slope Slow water movement	 1.00 0.21

Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct.	Camp areas		Picnic areas		Playgrounds	
	map unit	 		 		 	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
35E2:		 		 		 	
Liston, moderately			İ		i i	 	i
eroded	50	 Very limited	İ	 Very limited	İ	 Very limited	i
	i	Slope	1.00	Slope	1.00	Slope	1.00
	İ	Slow water	0.15	Slow water	0.15	Slow water	0.15
		movement		movement		movement	
Purchard moderately		 		 		 -	
Burchard, moderately eroded		 Very limited	l I	 Very limited	l l	 Very limited	
croucu	33	Slope	1.00	Slope	1.00	Slope	1.00
	i	Slow water	0.21	Slow water	0.21	Slow water	0.21
	į	movement	İ	movement	İ	movement	İ
35F2: Liston, moderately		 	l I	 	l I	 	
eroded	40	 Very limited	1	 Very limited	 	 Very limited	
020404		Slope	1.00		1.00	Slope	1.00
	İ	Slow water	0.15	Slow water	0.15	Slow water	0.15
		movement		movement		movement	
Donahand madamakala							
Burchard, moderately eroded		 Very limited	l I	 Very limited	l I	 Very limited	
020404		Slope	1.00	-	1.00	Slope	1.00
	İ	Slow water	0.21	Slow water	0.21	Slow water	0.21
	ĺ	movement	ĺ	movement	ĺ	movement	İ
35G:						 	
Liston	 45	 Verv limited	1	 Very limited	 	 Very limited	
	İ	Slope	1.00		1.00	Slope	1.00
	į	Slow water	0.15	Slow water	0.15	Slow water	0.15
		movement	ļ	movement	ļ	movement	-
Burchard	 35	 Verv limited	1	 Very limited	l I	 Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
	İ	Slow water	0.21	: -	0.21	Slow water	0.21
		movement		movement		movement	
54:		 				 	
Zook, occasionally		 	1	 		 	
flooded	90	 Very limited		 Very limited		 Very limited	i
	İ	Depth to	1.00	-	1.00	Depth to	1.00
	ĺ	saturated zone	Ì	saturated zone		saturated zone	İ
		Flooding	1.00	Slow water	0.94	Slow water	0.94
		Slow water	0.94	movement		movement	
	 	movement	l I	 	l I	Flooding	0.60
54+:		 				 	i
Zook, overwash,	į	j	į	j	j	İ	į
occasionally		[[[
flooded	90			Very limited		Very limited	
		Depth to	1.00	Depth to	1.00	Depth to	1.00
	 	saturated zone	1.00	saturated zone Slow water	0.94	saturated zone Slow water	0.94
		Slow water	0.94	movement		movement	
	i	movement			İ	Flooding	0.60

Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of	- 		 Picnic areas 		 Playgrounds 	
	unit 	!	Value	 Rating class and limiting features	Value	 Rating class and limiting features	Value
59D2: Burchard, moderately eroded		 Somewhat limited Slope Slow water movement	 0.63 0.21	 Somewhat limited Slope Slow water movement	 0.63 0.21	 Very limited Slope Slow water movement	 1.00 0.21
59E2: Burchard, moderately eroded	:	 Very limited Slope Slow water movement	 1.00 0.21	 Very limited Slope Slow water movement	 1.00 0.21	 Very limited Slope Slow water movement	 1.00 0.21
99C2: Exira, moderately eroded	 80 	 Not limited	 	 Not limited	 	 Very limited Slope	 1.00
99D2: Exira, moderately eroded	 50 	 Somewhat limited Slope	 0.63	 Somewhat limited Slope	 0.63	 Very limited Slope	 1.00
99E2: Exira, moderately eroded	 45 	 Very limited Slope	 1.00	 Very limited Slope	 1.00	 Very limited Slope	 1.00
100B: Monona	 75 	 Not limited	 	 Not limited 	 	 Somewhat limited Slope	0.12
100C2: Monona, moderately eroded	 50 	 Not limited	 	 Not limited	 	 Very limited Slope	 1.00
100D2: Monona, moderately eroded	 45 	 Somewhat limited Slope	 0.63	 Somewhat limited Slope	 0.63	 Very limited Slope	 1.00
100D3: Monona, severely eroded	 45 	 Somewhat limited Slope	 0.63	 Somewhat limited Slope	 0.63	 Very limited Slope	 1.00
100E2: Monona, moderately eroded	 4 5 	 Very limited Slope	 1.00	 Very limited Slope	 1.00	 Very limited Slope	 1.00
100E3: Monona, severely eroded	 45 	 Very limited Slope	 1.00	 Very limited Slope	 1.00	 Very limited Slope	 1.00

Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit	 		Picnic areas 	Picnic areas		Playgrounds 		
		'	Value	Rating class and limiting features	Value	Rating class and limiting features	Value		
100F2: Monona, moderately eroded	 55	 Very limited Slope	 1.00	 Very limited Slope	1	 Very limited Slope			
100F3: Monona, severely eroded	 70 	 Very limited Slope	 1.00	 Very limited Slope	 1.00	 Very limited Slope			
111D3: Dow, severely eroded	 55 	 Somewhat limited Slope	0.63	 Somewhat limited Slope	0.63	 Very limited Slope	1.00		
Monona, severely eroded	 40 	 Somewhat limited Slope	0.63	 Somewhat limited Slope	0.63	 Very limited Slope	1.00		
111E3: Dow, severely eroded	 55 	 Very limited Slope	1.00	 Very limited Slope	1.00	 Very limited Slope	1.00		
Monona, severely eroded	 40 	 Very limited Slope	1.00	 Very limited Slope	1.00	 Very limited Slope	1.00		
125D3: Ida, severely eroded	 50 	 Somewhat limited Slope	0.63	 Somewhat limited Slope	0.63	 Very limited Slope	1.00		
Chute, severely eroded	 30 	 Somewhat limited Too sandy Slope	 0.76 0.63	:	 0.76 0.63	: -	 1.00 0.76		
125E3: Ida, severely eroded	 50 	 Very limited Slope	1.00	 Very limited Slope	1	 Very limited Slope	1.00		
Chute, severely eroded	 30 	 Very limited Slope Too sandy	 1.00 0.76	 Very limited Slope Too sandy	 1.00 0.76	 Very limited Slope Too sandy	 1.00 0.76		
133: Colo, occasionally flooded	 85 	 Very limited Depth to saturated zone Flooding	 1.00 1.00	 Very limited Depth to saturated zone	 1.00	Very limited Depth to saturated zone	1.00		
133+: Colo, overwash, occasionally flooded	 85 	 - Very limited Depth to saturated zone Flooding	 1.00 1.00	 - Very limited Depth to saturated zone 	 1.00	 - Very limited Depth to saturated zone Flooding	 1.00 0.60		

Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit			Picnic areas		Playgrounds 		
L		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	
212: Kennebec, occasionally flooded	 70 	 Very limited Flooding	 1.00	 Not limited 	 	 Somewhat limited Flooding	 0.60	
212+: Kennebec, overwash, occasionally flooded	 90 	 Very limited Flooding	 1.00	 Not limited	 	 Somewhat limited Flooding	 0.60	
220: Nodaway, occasionally flooded	 75	 Very limited Flooding	 1.00	 Not limited	 	 Somewhat limited Flooding	0.60	
266: Smithland, occasionally flooded	 85 	Very limited Depth to saturated zone Flooding	 1.00 1.00	 - Very limited Depth to saturated zone	 1.00	 - Very limited Depth to saturated zone Flooding	 1.00 0.60	
266+: Smithland, overwash, occasionally flooded	į	 Very limited Depth to saturated zone Flooding	 1.00 1.00	 Very limited Depth to saturated zone	 1.00	 Very limited Depth to saturated zone Flooding	 1.00 0.60	
268D: Knox	 85 	 Somewhat limited Slope	0.63	 Somewhat limited Slope	0.63	 Very limited Slope	1.00	
268E: Knox	 80 	 Very limited Slope	1.00	 Very limited Slope	1.00	 Very limited Slope	1.00	
268F: Knox	 75 	 Very limited Slope	 1.00	 Very limited Slope	1.00	 Very limited Slope	1.00	
430: Ackmore, occasionally flooded	 75 	Very limited Depth to saturated zone Flooding Slow water movement	 1.00 1.00 0.21	saturated zone	 1.00 0.21	saturated zone	 1.00 0.60 0.21	
431B: Judson	 55 	 Not limited 	 	 Not limited 	 	 Somewhat limited Slope 	 0.12	

Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	 Pct. of map unit	 Camp areas 		 Picnic areas 		 Playgrounds 		
	 	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	
431B: Ackmore, frequently flooded	 25 	 Very limited Depth to saturated zone Flooding	 1.00 1.00	 Very limited Depth to saturated zone Flooding	 1.00 0.40	 Very limited Depth to saturated zone Flooding Slope	 1.00 1.00 0.12	
Colo, overwash, frequently flooded	 15 	 Very limited Depth to saturated zone Flooding	 1.00 1.00	Very limited Depth to saturated zone Flooding	 1.00 0.40	 Very limited Depth to saturated zone Flooding Slope	 1.00 1.00 0.12	
509B: Marshall, terrace	 90 	 Not limited 	 	 Not limited 		 Somewhat limited Slope	0.12	
509C: Marshall, terrace	 85 	 Not limited 	 	 Not limited 		 Very limited Slope	1.00	
509C2: Marshall, terrace, moderately eroded	 65 	 Not limited 	 	 Not limited 	 	 Very limited Slope		
509D2: Marshall, terrace, moderately eroded	 65 	:	 0.63	 Somewhat limited Slope	 0.63	 Very limited Slope	1.00	
509E2: Marshall, terrace, moderately eroded	 65 	 Very limited Slope	 1.00	 Very limited Slope	 1.00	 Very limited Slope	1.00	
510: Monona, terrace	 100	 Not limited	 	 Not limited	<u> </u> 	 Not limited	į Į	
510B: Monona, terrace	 60 	 Not limited 	 	 Not limited 		 Somewhat limited Slope	0.12	
510C2: Monona, terrace, moderately eroded	 75 	 Not limited	 	 Not limited	 	 Very limited Slope	1.00	
510D2: Monona, terrace, moderately eroded	 75 	 Somewhat limited Slope	 0.63	 Somewhat limited Slope	 0.63	 Very limited Slope	 1.00	
510E2: Monona, terrace, moderately eroded	 75 	 Very limited Slope	 1.00	 Very limited Slope	 1.00	 Very limited Slope	 1.00	

Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	 Pct. of	 Camp areas		 Picnic areas		 Playgrounds 	
	map						
	unit 	 Rating class and limiting features	Value	 Rating class and limiting features	Value	 Rating class and limiting features	Value
630: Danbury, occasionally flooded	 80 	Very limited Flooding Depth to saturated zone Slow water movement	 1.00 0.39 0.21	 - Somewhat limited Slow water movement Depth to saturated zone	 0.21 0.19	 - Somewhat limited Flooding Depth to saturated zone Slow water movement	 0.60 0.39 0.21
670: Rawles, occasionally flooded	1	 Very limited Flooding	 1.00	 Not limited	 	 Somewhat limited Flooding	 0.60
700: Monona, terrace	 100 	 Not limited 	 	 Not limited 	 	 Not limited 	
700B: Monona, terrace	 75 	 Not limited 		 Not limited 		 Somewhat limited Slope	 0.50
700C2: Monona, terrace, moderately eroded	 50 	 Not limited 	 	 Not limited 	 	 Very limited Slope	 1.00
700D2: Monona, terrace, moderately eroded	 60 	 Somewhat limited Slope	 0.63	 Somewhat limited Slope	 0.63	 Very limited Slope	 1.00
717D: Napier	 50 	 Somewhat limited Slope	 0.04	 Somewhat limited Slope	 0.04	 Very limited Slope	
Gullied land, frequently flooded	 35	 Not rated 	 	 Not rated 	 	 Not rated 	
740D: Hawick	 90 		 1.00 0.63	 Very limited Too sandy Slope	 1.00 0.63	 Very limited Slope Too sandy Gravel content	 1.00 1.00 0.90
740E: Hawick	 90 	 Very limited Too sandy Slope 	 1.00 1.00	 Very limited Too sandy Slope 	 1.00 1.00	 Very limited Slope Too sandy Gravel content	 1.00 1.00 0.90
740F: Hawick	 90 	 Very limited Slope Too sandy 	 1.00 1.00 	 Very limited Too sandy Slope 	 1.00 1.00 	 Very limited Slope Too sandy Gravel content	 1.00 1.00 0.90

Camp Areas, Picnic Areas, and Playgrounds--Continued

Map symbol and soil name	Pct. of map unit		Camp areas 			Playgrounds 	
		Rating class and	Value	Rating class and	Value	Rating class and	Value
	<u> </u>	limiting features	<u> </u>	limiting features	1	limiting features	1
980C: Judson	 55 	 Not limited		 Not limited	 	 Very limited Slope	1.00
Gullied land, frequently flooded	 35 	 Not rated 	 	 Not rated 	 	 Not rated 	
1220: Nodaway, channeled, frequently flooded	 80 	 Very limited Flooding	 1.00	 Somewhat limited Flooding	0.40	 Very limited Flooding	
5010: Pits, sand and gravel	 100	 Not rated		 Not rated		 Not rated	
5040: Udorthents	 100	 Not rated		 Not rated	 	 Not rated	
5080: Udorthents	 100	 Not rated		 Not rated		 Not rated	
AW: Animal waste lagoon	 100	 Not rated		 Not rated		 Not rated	
SL: Sewage lagoon	 100	 Not rated		 Not rated		 Not rated	
W: Water	 100	 Not rated	 	 Not rated	 	 Not rated	

Paths, Trails, and Golf Fairways

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

	Pct. of map unit		Paths and trails		Off-road motorcycle trails		Golf fairways 	
	 	·	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	
1C: Ida	 95 	 Not limited 	 	 Not limited 	 	 Not limited 		
<pre>1C3: Ida, severely eroded</pre>	 80	 Not limited	 	 Not limited		 Not limited		
1D3: Ida, severely eroded	 80 		 1.00	 Very limited Water erosion	 1.00	 Somewhat limited Slope	0.63	
1E3: Ida, severely eroded	 70 	 Very limited Water erosion Slope	 1.00 0.08	 Very limited Water erosion 	 1.00	 Very limited Slope 	1.00	
1F3: Ida, severely eroded	 70 			 Very limited Water erosion 	 1.00	 Very limited Slope 	1.00	
8B: Judson	 80	 Not limited 	 	 Not limited 	 	 Not limited 		
8C: Judson	 95	 Not limited	 	 Not limited	 	 Not limited		
9: Marshall	 95	 Not limited	 	 Not limited		 Not limited		
9B: Marshall	 100	 Not limited	 	 Not limited	 	 Not limited		
9B2: Marshall, moderately eroded		 Not limited	 	 Not limited	 	 Not limited		
9C: Marshall	90	 Not limited		 Not limited		 Not limited		
9C2: Marshall, moderately eroded		 Not limited	 	 Not limited	 	 Not limited		
9D: Marshall	 85 	 Not limited	 	 Not limited 		 Somewhat limited Slope	0.63	
9D2: Marshall, moderately eroded		 Not limited 	 	 Not limited 	 	 Somewhat limited Slope	0.63	

Paths, Trails, and Golf Fairways--Continued

and soil name	Pct. of	Paths and trail	s	Off-road motorcycle trai	ls	 Golf fairways 	
	unit 	Rating class and limiting features	Value	 Rating class and limiting features	Value	 Rating class and limiting features	Value
9E2: Marshall, moderately eroded		 Somewhat limited Slope	 0.02	 Not limited 	 	 Very limited Slope	 1.00
9E3: Marshall, severely eroded	 75 	 Somewhat limited Slope	 0.02	 Not limited 	 	 Very limited Slope	1.00
10B: Monona	 100	 Not limited		 Not limited		 Not limited	
10B2: Monona, moderately eroded	 80	 Not limited	 	 Not limited	 	 Not limited 	
10C2: Monona, moderately eroded	 75 	 Not limited	 	 Not limited 	 	 Not limited 	
10D2: Monona, moderately eroded	 60 	 Not limited 	 	 Not limited 	 	 Somewhat limited Slope	0.63
10D3: Monona, severely eroded	 95 	 - Very limited Water erosion	 1.00	 - Very limited Water erosion	 1.00	 Somewhat limited Slope	0.63
10E2: Monona, moderately eroded	 50 	 Somewhat limited Slope	 0.08	 Not limited 	 	 Very limited Slope	1.00
10E3: Monona, severely eroded	 60 	 Very limited Water erosion Slope	 1.00 0.08	 Very limited Water erosion	 1.00	 Very limited Slope	1.00
10F2: Monona, moderately eroded	 45 	 Very limited Slope	 1.00	 Not limited 	 	 Very limited Slope	 1.00
10F3: Monona, severely eroded	 70 	 Very limited Water erosion Slope	 1.00 1.00	 	 1.00	 Very limited Slope	1.00
12B: Napier	 85 	 Not limited 	 	 Not limited 	 	 Not limited 	
12C: Napier	 95 	 Not limited 	 	 Not limited 	 	 Not limited 	

Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	 Pct. of map unit		s	Off-road motorcycle trai 	ls	 Golf fairways 	
	unit	Rating class and limiting features	Value	Rating class and limiting features	Value	 Rating class and limiting features	Value
17B: Napier	 50	 Not limited 	 	 Not limited 	 	 Not limited 	
Kennebec, frequently flooded		 Somewhat limited Flooding	 0.40	 Somewhat limited Flooding	 0.40	 Very limited Flooding	1.00
Nodaway, frequently flooded	 15 	 Somewhat limited Flooding	 0.40	 Somewhat limited Flooding 	 0.40	 Very limited Flooding	 1.00
22D2: Dow, moderately eroded	 90 	 Very limited Water erosion	 1.00	 Very limited Water erosion	 1.00	 Somewhat limited Slope	 0.63
22D3: Dow, severely eroded	90	 Very limited Water erosion	 1.00	 Very limited Water erosion	 1.00	 Somewhat limited Slope	0.63
22E3: Dow, severely eroded	 80 	 Very limited Water erosion Slope	 1.00 0.08	 Very limited Water erosion 	 1.00	 Very limited Slope 	 1.00
26: Kennebec, occasionally flooded	 95 	 Not limited	 	 Not limited 	 	 Somewhat limited Flooding	 0.60
35D2: Liston, moderately eroded	 50 	 Not limited	 	 Not limited	 	 Somewhat limited Slope	 0.63
Burchard, moderately eroded		 Not limited	 	 Not limited 	 	 Somewhat limited Slope	 0.63
35E2: Liston, moderately eroded	 50 	 Somewhat limited Slope	 0.02	 Not limited 	 	 Very limited Slope	 1.00
Burchard, moderately eroded		 Somewhat limited Slope	0.02	 Not limited	 	 Very limited Slope	1.00
35F2: Liston, moderately eroded	 4 0 	 Somewhat limited Slope	 0.68	 Not limited 	 	 Very limited Slope	 1.00
Burchard, moderately eroded		 Somewhat limited Slope 	 0.68	 Not limited 	 	 Very limited Slope 	 1.00

Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map	Paths and trail	s	Off-road motorcycle trai	ls	Golf fairways 	3
	unit 	!	Value	 Rating class and limiting features	Value	 Rating class and limiting features	Value
35G: Liston	 45 	 Very limited Slope	 1.00	 Somewhat limited Slope	 0.56	 Very limited Slope	
Burchard	 35 		1.00	 Somewhat limited Slope	0.56	 Very limited Slope	1.00
54: Zook, occasionally flooded	 90 		 1.00	 Very limited Depth to saturated zone	 1.00	Very limited Depth to saturated zone Flooding	 1.00 0.60
54+: Zook, overwash, occasionally flooded	 90 		 1.00	 - - Very limited Depth to saturated zone	 1.00	Very limited Depth to saturated zone	 1.00 0.60
59D2: Burchard, moderately eroded		 Not limited	 	 Not limited	 	 Somewhat limited Slope	
59E2: Burchard, moderately eroded		 Somewhat limited Slope	 0.02	 Not limited		 Very limited Slope	
99C2: Exira, moderately eroded	 80	 Not limited	 	 Not limited 	 	 Not limited 	
99D2: Exira, moderately eroded	 50 	 Not limited 	 	 Not limited 	 	 Somewhat limited Slope	0.63
99E2: Exira, moderately eroded	 45 	!	 0.02	 Not limited	 	 Very limited Slope	1.00
100B: Monona	 75	 Not limited		 Not limited		 Not limited	
100C2: Monona, moderately eroded	 50	 Not limited 	 	 Not limited 	 	 Not limited 	
100D2: Monona, moderately eroded	 4 5 	 Not limited 	 	 Not limited 	 	 Somewhat limited Slope	0.63

Paths, Trails, and Golf Fairways--Continued

and soil name	 Pct. of map unit		s	 Off-road motorcycle trai	ls	 Golf fairways 	
	unit 	 Rating class and limiting features	Value	 Rating class and limiting features	Value	 Rating class and limiting features	Value
100D3: Monona, severely eroded	 45 	 Very limited Water erosion	 1.00	 - Very limited Water erosion	 1.00	 Somewhat limited Slope	 0.63
100E2: Monona, moderately eroded	 45 	 Somewhat limited Slope	 0.08	 Not limited 	 	 Very limited Slope	
100E3: Monona, severely eroded	 4 5 	 Somewhat limited Slope	 0.08	 Not limited 	 	 Very limited Slope	
100F2: Monona, moderately eroded	 55 	 Very limited Slope	 1.00	 Not limited 	 	 Very limited Slope	
100F3: Monona, severely eroded	 70 	 Very limited Water erosion Slope	 1.00 1.00	 Very limited Water erosion	 1.00	 Very limited Slope	 1.00
111D3: Dow, severely eroded	 55 		 1.00	 Very limited Water erosion	 1.00	 Somewhat limited Slope	0.63
Monona, severely eroded	 40 	! -	 1.00	 Very limited Water erosion	 1.00	 Somewhat limited Slope	0.63
111E3: Dow, severely eroded	 55 	 Very limited Water erosion Slope	 1.00 0.08	 Very limited Water erosion 	 1.00	 Very limited Slope 	1.00
Monona, severely eroded	 4 0 	 Very limited Water erosion Slope	 1.00 0.08	 Very limited Water erosion 	 1.00	 Very limited Slope 	
125D3: Ida, severely eroded	 50 	 Very limited Water erosion	 1.00	 Very limited Water erosion	 1.00	 Somewhat limited Slope	0.63
Chute, severely eroded	 30 	 Somewhat limited Too sandy 	 0.76 	 Somewhat limited Too sandy 	 0.76	 Somewhat limited Slope Droughty	 0.63 0.22
125E3: Ida, severely eroded	 50 	 Very limited Water erosion Slope	 1.00 0.08	 Very limited Water erosion 	 1.00 	 Very limited Slope 	 1.00

Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	 Pct. of map		s	Off-road motorcycle trai	ls	Golf fairways		
	unit 	 Rating class and limiting features	Value	 Rating class and limiting features	Value	 Rating class and limiting features	Value	
125E3: Chute, severely eroded	 30 	 Somewhat limited Too sandy Slope	 0.76 0.08	 Somewhat limited Too sandy 	 0.76	 Very limited Slope Droughty	 1.00 0.22	
133: Colo, occasionally flooded	 85 	 	 1.00 	Very limited Depth to saturated zone	 1.00 	 	 1.00 0.60	
133+: Colo, overwash, occasionally flooded	 85 	 - Very limited Depth to saturated zone	 1.00	Very limited Depth to saturated zone	 1.00	Very limited Depth to saturated zone Flooding	 1.00 0.60	
212: Kennebec, occasionally flooded	 70 	 Not limited 	 	 Not limited 	 	 Somewhat limited Flooding	 0.60	
212+: Kennebec, overwash, occasionally flooded	 90 	 Not limited	 	 Not limited 		 Somewhat limited Flooding	0.60	
220: Nodaway, occasionally flooded	 75 	 Not limited	 	 Not limited	 	 Somewhat limited Flooding	0.60	
266: Smithland, occasionally flooded	 85 	 	 1.00 	 - Very limited Depth to saturated zone	 1.00 	 	 1.00 0.60	
266+: Smithland, overwash, occasionally flooded	 75 	 Very limited Depth to saturated zone	 1.00	 Very limited Depth to saturated zone	 1.00	 Very limited Depth to saturated zone Flooding	 1.00 0.60	
268D: Knox	 85 	 Not limited 	 	 Not limited 	 	 Somewhat limited Slope 	 0.63	

Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of		trails Off-road motorcycle trails		ls	 Golf fairways 	1
	unit 	Rating class and limiting features	Value	 Rating class and limiting features	Value	 Rating class and limiting features	Value
268E: Knox	 80 	 Somewhat limited Slope	 0.08	 Not limited 	 	 Very limited Slope	
268F: Knox	 75 	 Very limited Slope	 1.00	 Not limited 	 	 Very limited Slope	1.00
430: Ackmore, occasionally flooded	 75 	 Very limited Depth to saturated zone	 1.00	 Very limited Depth to saturated zone	 1.00	 Very limited Depth to saturated zone Flooding	 1.00 0.60
431B: Judson	 55 	 Not limited 	 	 Not limited 	 	 Not limited 	
Ackmore, frequently flooded	 25 	 Very limited Depth to saturated zone Flooding	 1.00 0.40	 Very limited Depth to saturated zone Flooding	 1.00 0.40	 Very limited Flooding Depth to saturated zone	 1.00 1.00
Colo, overwash, frequently flooded	 15 	 Very limited Depth to saturated zone Flooding	 1.00 0.40	 Very limited Depth to saturated zone Flooding	 1.00 0.40	 Very limited Flooding Depth to saturated zone	 1.00 1.00
509B: Marshall, terrace	90	 Not limited	 	 Not limited	 	 Not limited	
509C: Marshall, terrace	 85	 Not limited 	 	 Not limited 	 	 Not limited 	
509C2: Marshall, terrace, moderately eroded	 65 	 Not limited	 	 Not limited	 	 Not limited 	
509D2: Marshall, terrace, moderately eroded	 65 	 Not limited	 	 Not limited 	 	 Somewhat limited Slope	0.63
509E2: Marshall, terrace, moderately eroded	 65 	 Somewhat limited Slope	 0.08	 Not limited 	 	 Very limited Slope	 1.00
510: Monona, terrace	 100	 Not limited 	 	 Not limited 	 	 Not limited 	
510B: Monona, terrace	 60 	 Not limited 	 	 Not limited 	 	 Not limited 	

Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	of ap		Off-road motorcycle trai	Off-road motorcycle trails		3
	 	Rating class and limiting features	Value	 Rating class and limiting features	Value	Rating class and limiting features	Value
510C2: Monona, terrace, moderately eroded	 75	 Not limited 	 	 Not limited 	 	 Not limited 	
510D2: Monona, terrace, moderately eroded	 75 	 Not limited 	 	 Not limited 	 	 Somewhat limited Slope	0.63
510E2: Monona, terrace, moderately eroded	 75 	 Somewhat limited Slope	 0.08	 Not limited 		 - Very limited Slope	 1.00
630: Danbury, occasionally flooded	 80 	 Not limited 	 	 Not limited 		 Somewhat limited Flooding Depth to saturated zone	 0.60 0.19
670: Rawles, occasionally flooded		 Not limited 	 	 Not limited 		 Somewhat limited Flooding	 0.60
700: Monona, terrace	100	 Not limited		 Not limited		 Not limited	
700B: Monona, terrace	 75	 Not limited		 Not limited		 Not limited	
700C2: Monona, terrace, moderately eroded 700D2:	 50 	 Not limited 	 	 Not limited 		 Not limited	
Monona, terrace, moderately eroded	 60 	 Not limited 	 	 Not limited 	 	 Somewhat limited Slope	 0.63
717D: Napier	 50 	 Not limited 	 	 Not limited 		 Somewhat limited Slope	
Gullied land, frequently flooded	 35	 Not rated	 	 Not rated		 Not rated	
740D: Hawick	90	 Very limited Too sandy	 1.00	 Very limited Too sandy 	1.00	 Very limited Droughty Slope	 0.99 0.63
740E: Hawick	 90 	 Very limited Too sandy Slope	 1.00 0.02	 Very limited Too sandy 	 1.00	 Very limited Slope Droughty	 1.00 0.99

Paths, Trails, and Golf Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trai	ls	Golf fairways 	
	 	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
740F: Hawick	90	 Very limited Too sandy Slope	 1.00 0.82	 Very limited Too sandy 	 1.00	 Very limited Slope Droughty	 1.00 0.99
980C: Judson	55	 Not limited		 Not limited	ļ ļ	 Not limited	
Gullied land, frequently flooded	 35	 Not rated		 Not rated		 Not rated	
1220: Nodaway, channeled, frequently flooded	 80 	 Somewhat limited Flooding	 0.40	 Somewhat limited Flooding		 Very limited Flooding	
5010: Pits, sand and gravel	 100	 Not rated 		 Not rated 	 	 Not rated	
5040: Udorthents	100	 Not rated		 Not rated	ļ	 Not rated	
5080: Udorthents	 100	 Not rated		 Not rated		 Not rated	
AW: Animal waste lagoon	 100	 Not rated		 Not rated		 Not rated	
SL: Sewage lagoon	100	 Not rated		 Not rated		 Not rated	
W: Water	 100	 Not rated		 Not rated		 Not rated	

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, reclamation material, roadfill, and topsoil; plan structures for water management; 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

The titles of the tables described in this section are:

- "Dwellings and Small Commercial Buildings"
- "Roads and Streets, Shallow Excavations, and Lawns and Landscaping"

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. The tables described in this section show the degree and kind of soil limitations that affect dwellings with and without basements, small commercial buildings, local roads and streets, shallow excavations, and lawns and landscaping.

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

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

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

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

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or soil material stabilized by lime or cement; and a surface of flexible material (asphalt), rigid material (concrete), or gravel with a binder. The ratings are based on the soil properties that affect the ease of excavation and grading and the traffic-supporting capacity. The properties that affect the ease of excavation and grading are depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, depth to a water table, ponding, flooding, the amount of large stones, and slope. The properties that affect the traffic-supporting capacity are soil strength (as inferred from the AASHTO group index number), subsidence, linear extensibility (shrink-swell potential), the potential for frost action, depth to a water table, and ponding.

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

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

Dwellings and Small Commercial Buildings

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	Dwellings witho basements	ut	Dwellings with basements		Small commercial buildings 	
	unic 	Rating class and	Value	Rating class and	Value	Rating class and	Value
	<u> </u>	limiting features		limiting features	1	limiting features	1
1C: Ida	 95 	 Not limited 		 Not limited 	 	 Somewhat limited Slope	 0.88
1C3: Ida, severely eroded	 80 	 Not limited 		 Not limited 		 Somewhat limited Slope	0.88
1D3: Ida, severely eroded	 80 	 Somewhat limited Slope 	0.63	 Somewhat limited Slope 	0.63	 Very limited Slope 	1.00
1E3: Ida, severely eroded	 70 	 Very limited Slope	1.00	 Very limited Slope	1.00	 Very limited Slope	1.00
1F3: Ida, severely eroded	 70 	 Very limited Slope 	1.00	 Very limited Slope 	1.00	 Very limited Slope 	1.00
8B: Judson	 80 	 Somewhat limited Shrink-swell	0.50	 Somewhat limited Shrink-swell 	0.50	 Somewhat limited Shrink-swell 	0.50
8C: Judson	 95 	 Somewhat limited Shrink-swell	 0.50 	 Somewhat limited Shrink-swell	 0.50 	 Somewhat limited Slope Shrink-swell	0.88
9: Marshall	 95 	 Somewhat limited Shrink-swell 	 0.50	 Somewhat limited Shrink-swell 	 0.50	 Somewhat limited Shrink-swell 	0.50
9B: Marshall	 100 	 Somewhat limited Shrink-swell	 0.50	 Somewhat limited Shrink-swell	 0.50	 Somewhat limited Shrink-swell	0.50
9B2: Marshall, moderately eroded	 85 	 Somewhat limited Shrink-swell	 0.50	 Somewhat limited Shrink-swell	 0.50	 - Somewhat limited Shrink-swell	
9C: Marshall	 90 	 Somewhat limited Shrink-swell	 0.50	 Somewhat limited Shrink-swell	 0.50	 Somewhat limited Slope Shrink-swell	0.88
9C2: Marshall, moderately eroded	 80 	 Somewhat limited Shrink-swell	 0.50	 Somewhat limited Shrink-swell	 0.50	 Somewhat limited Slope Shrink-swell	0.88

Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	basements	ut	 Dwellings with basements 		Small commercial buildings 	
	diii c 	 Rating class and limiting features	Value	 Rating class and limiting features	Value	 Rating class and limiting features	Value
9D: Marshall	 85 	 Somewhat limited Slope Shrink-swell	 0.63 0.50	 Somewhat limited Slope Shrink-swell	 0.63 0.50	 Very limited Slope Shrink-swell	1.00
9D2: Marshall, moderately eroded		 Somewhat limited Slope Shrink-swell	 0.63 0.50	 Somewhat limited Slope Shrink-swell	 0.63 0.50	 - Very limited Slope Shrink-swell	1.00
9E2: Marshall, moderately eroded		 Very limited Slope Shrink-swell	 1.00 0.50	 - Very limited Slope Shrink-swell	 1.00 0.50	 	1.00
9E3: Marshall, severely eroded	 75 	 Very limited Slope Shrink-swell	 1.00 0.50	 	 1.00 0.50	 - Very limited Slope Shrink-swell	1.00
10B: Monona	 100 	 Somewhat limited Shrink-swell	0.50	 Not limited	 	 Somewhat limited Shrink-swell	0.50
10B2: Monona, moderately eroded	 80	 Not limited	 	 Not limited	 	 Not limited 	
10C2: Monona, moderately eroded	 75 	 Not limited	 	 Not limited	 	 Somewhat limited Slope	0.88
10D2: Monona, moderately eroded	 60 	 Somewhat limited Slope	 0.63	 Somewhat limited Slope	 0.63	 Very limited Slope	1.00
10D3: Monona, severely eroded	 95 	 Somewhat limited Slope	 0.63	 Somewhat limited Slope	 0.63	 Very limited Slope	1.00
10E2: Monona, moderately eroded	 50	 Very limited Slope	 1.00	 Very limited Slope	 1.00	 Very limited Slope	1.00
10E3: Monona, severely eroded	 60 	 Very limited Slope 	 1.00	 - Very limited Slope 	 1.00	 Very limited Slope 	 1.00

Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	basements	Dwellings without basements			Small commercial buildings 	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
10F2: Monona, moderately eroded	 45 	 Very limited Slope	 1.00	 Very limited Slope	 1.00	 Very limited Slope	
10F3: Monona, severely eroded	 70 	 Very limited Slope	 1.00	 Very limited Slope 	 1.00	 Very limited Slope	 1.00
12B: Napier	 85	 Not limited	 	 Not limited	 	 Not limited	
12C: Napier	 95 	 Not limited 	 	 Not limited 	 	 Somewhat limited Slope	 0.88
17B: Napier	 50	 Not limited	 	 Not limited	 	 Not limited	j
Kennebec, frequently flooded	1	 Very limited Flooding Shrink-swell 	 1.00 0.50 	 Very limited Flooding Depth to saturated zone Shrink-swell	 1.00 0.61 0.50	 Very limited Flooding Shrink-swell 	 1.00 0.50
Nodaway, frequently flooded	 15 	 Very limited Flooding Shrink-swell	 1.00 0.50 	 Very limited Flooding Depth to saturated zone Shrink-swell	 1.00 0.61 0.50	 Very limited Flooding Shrink-swell	 1.00 0.50
22D2: Dow, moderately eroded	 90 	 Somewhat limited Slope	 0.63	 Somewhat limited Slope	 0.63	 Very limited Slope	1.00
22D3: Dow, severely eroded	90	 Somewhat limited Slope	0.63	 Somewhat limited Slope	0.63	 Very limited Slope	1.00
22E3: Dow, severely eroded	 80 	 Very limited Slope	1.00	 Very limited Slope	1.00	 Very limited Slope	1.00
26: Kennebec, occasionally flooded	 95 	 Very limited Flooding 	 1.00	 - Very limited Flooding Depth to saturated zone	 1.00 0.61	 Very limited Flooding 	 1.00

Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of	basements	ut	Dwellings with basements		Small commercia buildings 	ıl
	unit 	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
35D2: Liston, moderately eroded	 50 	 Somewhat limited Slope Shrink-swell	 0.63	 Somewhat limited Slope Shrink-swell	 0.63	 - Very limited Slope Shrink-swell	 1.00 0.50
Burchard, moderately eroded		 Somewhat limited Slope Shrink-swell	 0.63 0.50	 Somewhat limited Slope Shrink-swell	 0.63 0.50	 Very limited Slope Shrink-swell	 1.00 0.50
35E2: Liston, moderately eroded	 50 	 Very limited Slope Shrink-swell	 1.00 0.50	 Very limited Slope Shrink-swell	 1.00 0.50	 Very limited Slope Shrink-swell	 1.00 0.50
Burchard, moderately eroded		 Very limited Slope Shrink-swell	 1.00 0.50	 Very limited Slope Shrink-swell	 1.00 0.50	 Very limited Slope Shrink-swell	 1.00 0.50
35F2: Liston, moderately eroded	 40 	 Very limited Slope Shrink-swell	 1.00 0.50	 Very limited Slope Shrink-swell	 1.00 0.50	 Very limited Slope Shrink-swell	 1.00 0.50
Burchard, moderately eroded		 Very limited Slope Shrink-swell	 1.00 0.50	 Very limited Slope Shrink-swell	 1.00 0.50	 Very limited Slope Shrink-swell	 1.00 0.50
35G: Liston	 4 5 	 Very limited Slope Shrink-swell	 1.00 0.50	 Very limited Slope Shrink-swell	 1.00 0.50	 Very limited Slope Shrink-swell	 1.00 0.50
Burchard	 35 	 Very limited Slope Shrink-swell	 1.00 0.50	 Very limited Slope Shrink-swell	 1.00 0.50	 Very limited Slope Shrink-swell	 1.00 0.50
54: Zook, occasionally flooded	 90 	 Very limited Flooding Depth to saturated zone Shrink-swell	 1.00 1.00 	 Very limited Flooding Depth to saturated zone Shrink-swell	 1.00 1.00 	 Very limited Flooding Depth to saturated zone Shrink-swell	 1.00 1.00
54+: Zook, overwash, occasionally flooded	 90 	 - Very limited Flooding Depth to saturated zone Shrink-swell	 1.00 1.00 	Very limited Flooding Depth to saturated zone Shrink-swell	 1.00 1.00	Very limited Flooding Depth to saturated zone Shrink-swell	 1.00 1.00

Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	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
59D2: Burchard, moderately eroded		 Somewhat limited Slope Shrink-swell	 0.63 0.50	 Somewhat limited Slope Shrink-swell	 0.63 0.50	 Very limited Slope Shrink-swell	 1.00 0.50
59E2: Burchard, moderately eroded	:	 - Very limited Slope Shrink-swell	 1.00 0.50	 - Very limited Slope Shrink-swell	 1.00 0.50	 - Very limited Slope Shrink-swell	 1.00 0.50
99C2: Exira, moderately eroded	 80 	 Somewhat limited Shrink-swell	 0.50	 Somewhat limited Shrink-swell	 0.50	 Somewhat limited Slope Shrink-swell	0.88
99D2: Exira, moderately eroded	 50 	 Somewhat limited Slope Shrink-swell	 0.63 0.50	 Somewhat limited Slope Shrink-swell	 0.63 0.50	 Very limited Slope Shrink-swell	 1.00 0.50
99E2: Exira, moderately eroded	 45 	 Very limited Slope Shrink-swell	 1.00 0.50	 - Very limited Slope Shrink-swell	 1.00 0.50	 Very limited Slope Shrink-swell	 1.00 0.50
100B: Monona	 75 	 Somewhat limited Shrink-swell	0.50	 Somewhat limited Shrink-swell	0.50	 Somewhat limited Shrink-swell	0.50
100C2: Monona, moderately eroded	 50	 Not limited 		 Not limited 	 	 Somewhat limited Slope	
100D2: Monona, moderately eroded	 45 	 Somewhat limited Slope		 Somewhat limited Slope	 0.63	 - Very limited Slope	
100D3: Monona, severely eroded	 45 	 Somewhat limited Slope Shrink-swell	 0.63 0.50	 Somewhat limited Slope	 0.63	 Very limited Slope Shrink-swell	 1.00 0.50
100E2: Monona, moderately eroded	 45 	 Very limited Slope	 1.00	 Very limited Slope	 1.00	 Very limited Slope	 1.00

Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map	basements	ut	Dwellings with basements		Small commercia buildings	ıl
	unit 	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
100E3: Monona, severely eroded	 45 	 Very limited Slope Shrink-swell	 1.00 0.50	 - Very limited Slope -	 1.00	 - Very limited Slope Shrink-swell	 1.00 0.50
100F2: Monona, moderately eroded	 55 	 Very limited Slope	 1.00	 Very limited Slope	 1.00	 Very limited Slope	 1.00
100F3: Monona, severely eroded	 70 	 Very limited Slope Shrink-swell	1.00	 	 1.00	 Very limited Slope Shrink-swell	 1.00 0.50
111D3: Dow, severely eroded	 55 	 Somewhat limited Slope	0.63	 Somewhat limited Slope	0.63	 Very limited Slope	1.00
Monona, severely eroded	 40 	 Somewhat limited Slope	0.63	 Somewhat limited Slope	0.63	 Very limited Slope	1.00
111E3: Dow, severely eroded	 55 	 Very limited Slope	1.00	 Very limited Slope	1.00	 Very limited Slope	1.00
Monona, severely eroded	 40 	 Very limited Slope	1.00	 Very limited Slope		 Very limited Slope	1.00
125D3: Ida, severely eroded	 50 	 Somewhat limited Slope	0.63	 Somewhat limited Slope	0.63	 Very limited Slope	1.00
Chute, severely eroded	 30 	 Somewhat limited Slope	0.63	 Somewhat limited Slope	0.63	 Very limited Slope	1.00
125E3: Ida, severely eroded	 50 	 Very limited Slope	1.00	 Very limited Slope	1.00	 Very limited Slope	1.00
Chute, severely eroded	 30 	 Very limited Slope	1.00	 Very limited Slope	 1.00	 Very limited Slope	1.00
133: Colo, occasionally flooded	 85 	 Very limited Flooding Depth to saturated zone Shrink-swell	 1.00 1.00 0.50	Very limited Flooding Depth to saturated zone Shrink-swell	 1.00 1.00 0.50	Very limited Flooding Depth to saturated zone Shrink-swell	 1.00 1.00 0.50

Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	basements	ut	Dwellings with basements		Small commercia	1
		Rating class and	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
133+: Colo, overwash, occasionally flooded	 85 	 Very limited Flooding Depth to saturated zone Shrink-swell	 1.00 1.00 0.50	 - Very limited Flooding Depth to saturated zone Shrink-swell	 1.00 1.00 0.50	Very limited Flooding Depth to saturated zone Shrink-swell	 1.00 1.00 0.50
212: Kennebec, occasionally flooded	 70 	 - Very limited Flooding Shrink-swell	 1.00 0.50	Very limited Flooding Depth to saturated zone Shrink-swell	 1.00 0.61 0.50	 - Very limited Flooding Shrink-swell	 1.00 0.50
212+: Kennebec, overwash, occasionally flooded	 90 	 Very limited Flooding Shrink-swell	 1.00 0.50	 	 1.00 0.61 0.50	 Very limited Flooding Shrink-swell	 1.00 0.50
220: Nodaway, occasionally flooded	 75 	 Very limited Flooding Shrink-swell	 1.00 0.50	Very limited Flooding Depth to saturated zone Shrink-swell	 1.00 0.61 0.50	 - Very limited Flooding Shrink-swell	 1.00 0.50
266: Smithland, occasionally flooded	 85 	 	 1.00 1.00 0.50	Very limited Flooding Depth to saturated zone Shrink-swell	 1.00 1.00 0.50	Very limited Flooding Depth to saturated zone Shrink-swell	 1.00 1.00 0.50
266+: Smithland, overwash, occasionally flooded	İ	 	 1.00 1.00 0.50	 - Very limited Flooding Depth to saturated zone Shrink-swell	 1.00 1.00 0.50	Very limited Flooding Depth to saturated zone Shrink-swell	 1.00 1.00 0.50
268D: Knox	 85 	 Somewhat limited Slope Shrink-swell	 0.63 0.50	 Somewhat limited Slope Shrink-swell	 0.63 0.50	 Very limited Slope Shrink-swell	 1.00 0.50

Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	basements	ut	Dwellings with basements		Small commercia buildings 	ıl
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
268E:	 	 		l I		 	
Knox	80	 Very limited Slope	1.00	 Very limited Slope	1.00	 Very limited Slope	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
268F:		 		 		 	
Knox	75	 Very limited Slope Shrink-swell	 1.00 0.50	Very limited Slope Shrink-swell	 1.00 0.50	Very limited Slope Shrink-swell	1.00
	 	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
430: Ackmore, occasionally	; 		 	 	 	 	
flooded	75	 Very limited	İ	 Very limited	İ	 Very limited	İ
		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
		Shrink-swell	0.50	Shrink-swell	1.00	Shrink-swell	0.50
431B:	į		į		į	į	į
Judson	55 	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50
Ackmore, frequently		 		 		 	
flooded	25	Very limited		Very limited		Very limited	
	l I	Flooding Depth to	1.00	Flooding Depth to	1.00	Flooding Depth to	1.00
		saturated zone	1	saturated zone	1	saturated zone	
	; 	Shrink-swell	0.50	Shrink-swell	1.00	Shrink-swell	0.50
Colo, overwash,			į		į		į
frequently flooded	15	Very limited Flooding	1.00	Very limited Flooding	1.00	Very limited Flooding	1.00
		Depth to	1.00	Depth to	1.00	Depth to	1.00
	İ	saturated zone	İ	saturated zone	İ	saturated zone	İ
	 	Shrink-swell 	0.50	Shrink-swell 	0.50	Shrink-swell	0.50
509B: Marshall, terrace	90	 Somewhat limited		 Somewhat limited		 Somewhat limited	
	į	Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
509C:		 		 		 	
Marshall, terrace	85	'	!	Somewhat limited		Somewhat limited	İ
	 	Shrink-swell 	0.50 	Shrink-swell 	0.50	Slope Shrink-swell	0.88
509C2:				 	 	 	
Marshall, terrace,	į	İ	į	İ	İ	İ	į
moderately eroded	65	!		Somewhat limited		Somewhat limited	
	 	Shrink-swell	0.50	Shrink-swell	0.50	Slope Shrink-swell	0.88
509D2:		 		 		 	
Marshall, terrace,	į		į		į	į	į
moderately eroded	65	:		Somewhat limited	1	Very limited	
	 	Slope Shrink-swell	0.63	Slope Shrink-swell	0.63	Slope Shrink-swell	1.00
		Surtur BACTT	1	Surtur BACTT	10.50	SHITHE BWGIT	10.50

Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	 Pct. of map unit	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
509E2: Marshall, terrace, moderately eroded	 65 	 Very limited Slope Shrink-swell	 1.00 0.50	 - Very limited Slope Shrink-swell	 1.00 0.50	 Very limited Slope Shrink-swell	 1.00 0.50
510: Monona, terrace	 100 	 Somewhat limited Shrink-swell	 0.50	 Not limited 	 	 Somewhat limited Shrink-swell	0.50
510B: Monona, terrace	 60 	 Somewhat limited Shrink-swell	 0.50	 Not limited 	 	 Somewhat limited Shrink-swell	0.50
510C2: Monona, terrace, moderately eroded	 75 	 Not limited 	 	 Not limited 	 	 Somewhat limited Slope	 0.88
510D2: Monona, terrace, moderately eroded	 75 	 Somewhat limited Slope	 0.63	 Somewhat limited Slope	 0.63	 Very limited Slope	 1.00
510E2: Monona, terrace, moderately eroded	 75 	 Very limited Slope	 1.00	 - Very limited Slope	 1.00	 Very limited Slope	1.00
630: Danbury, occasionally flooded	 80 	 	 1.00 0.50 0.39	 Very limited Flooding Depth to saturated zone Shrink-swell	 1.00 1.00 1.00	 	 1.00 0.50 0.39
670: Rawles, occasionally flooded		 Very limited Flooding Shrink-swell	 1.00 0.50	 Very limited Flooding Depth to saturated zone Shrink-swell	 1.00 0.61 0.50		 1.00 0.50
700: Monona, terrace	 100 	 Somewhat limited Shrink-swell	 0.50	 Somewhat limited Shrink-swell 	 0.50	 Somewhat limited Shrink-swell 	0.50
700B: Monona, terrace	 75 	 Somewhat limited Shrink-swell	 0.50	 Somewhat limited Shrink-swell 	 0.50	 Somewhat limited Shrink-swell	0.50

Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map	basements	ut	Dwellings with basements		 Small commercia buildings 	1
	unit 	Rating class and limiting features	Value	 Rating class and limiting features	Value	 Rating class and limiting features	Value
700C2: Monona, terrace, moderately eroded	 50 	 Somewhat limited Shrink-swell	 0.50	 Somewhat limited Shrink-swell	 0.50	 Somewhat limited Slope Shrink-swell	 0.88 0.50
700D2: Monona, terrace, moderately eroded	 60 	 Somewhat limited Slope Shrink-swell	 0.63 0.50	 - Somewhat limited Slope Shrink-swell	 0.63 0.50	 Very limited Slope Shrink-swell	 1.00 0.50
717D: Napier	 50 	 Somewhat limited Slope	 0.04	 Somewhat limited Slope 	 0.04	 Very limited Slope 	1.00
Gullied land, frequently flooded	 35	 Not rated		 Not rated 	 	 Not rated 	
740D: Hawick	 90 	 Somewhat limited Slope	 0.63	 Somewhat limited Slope	0.63	 Very limited Slope	1.00
740E: Hawick	 90 	 Very limited Slope	 1.00	 Very limited Slope	1.00	 Very limited Slope	1.00
740F: Hawick	 90 	 Very limited Slope	 1.00	 Very limited Slope	 1.00	 Very limited Slope	1.00
980C: Judson	 55 	 Somewhat limited Shrink-swell	 0.50	 Somewhat limited Shrink-swell	 0.50	 Somewhat limited Slope Shrink-swell	 0.88 0.50
Gullied land, frequently flooded	 35	 Not rated	 	 Not rated	 	 Not rated	
1220: Nodaway, channeled, frequently flooded	 80 	 Very limited Flooding Shrink-swell 	 1.00 0.50	Depth to saturated zone	 1.00 0.61 0.50		 1.00 0.50
5010: Pits, sand and gravel	 100	 Not rated	 	 Not rated	 	 Not rated	
5040: Udorthents	 100	 Not rated	 	 Not rated	 	 Not rated 	
5080: Udorthents	 100 	 Not rated 	 	 Not rated 	 	 Not rated 	

Dwellings and Small Commercial Buildings--Continued

Map symbol	Pct.	Dwellings witho	Dwellings without		Dwellings with		Small commercial	
and soil name	of	basements		basements		bu	ildings	
	map							
	unit	I						
		Rating class and	Value	Rating class and	Value	Rating cl	ass and	Value
		limiting features		limiting features		limiting	features	
: WA								
Animal waste lagoon	100	Not rated		Not rated		Not rated		
SL:								
Sewage lagoon	100	Not rated		Not rated		Not rated		
₹:								
Water	100	Not rated		Not rated		Not rated		

Roads and Streets, Shallow Excavations, and Lawns and Landscaping

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

	Pct. of map unit	streets	d	Shallow excavations -		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features		Rating class and limiting features	Value
1C: Ida	 95 	 Very limited Frost action Low strength	 1.00 1.00	 Somewhat limited Cutbanks cave	 0.10	 Not limited 	
1C3: Ida, severely eroded	 80 	 Very limited Frost action		 Somewhat limited Cutbanks cave 	 0.10	 Not limited 	
1D3: Ida, severely eroded	 80 	 Very limited Frost action Slope	1.00	 Somewhat limited Slope Cutbanks cave	0.63	 Somewhat limited Slope	0.63
1E3: Ida, severely eroded	 70 	 Very limited Frost action Slope	1.00	-	 1.00 0.10	 Very limited Slope 	1.00
1F3: Ida, severely eroded	 70 	 Very limited Slope Frost action	 1.00 1.00	-	 1.00 0.10	 Very limited Slope	 1.00
8B: Judson	 80 	 Very limited Frost action Shrink-swell	1	 Somewhat limited Cutbanks cave	 0.10	 Not limited 	
8C: Judson	 95 	 Very limited Frost action Shrink-swell		 Somewhat limited Cutbanks cave 	 0.10	 Not limited 	
9: Marshall	 95 	 Very limited Frost action Shrink-swell		 Somewhat limited Cutbanks cave 	 0.10	 Not limited 	
9B: Marshall	 100 	 Very limited Frost action Shrink-swell	 1.00 0.50	 Somewhat limited Cutbanks cave	0.10	 Not limited 	
9B2: Marshall, moderately eroded		 Very limited Frost action Shrink-swell		· ·	 0.10	 Not limited 	

Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

and soil name	Pct. of map unit	streets		Shallow excavations -		Lawns and landscaping	
		'	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
9C: Marshall	 90 	 Very limited Frost action Shrink-swell	 1.00 0.50	'	 0.10	 Not limited 	
9C2: Marshall, moderately eroded	:	Very limited Frost action Shrink-swell	 1.00 0.50	 Somewhat limited Cutbanks cave 	 0.10	 Not limited 	
9D: Marshall	 85 	 Very limited Frost action Slope Shrink-swell	 1.00 0.63 0.50	 Somewhat limited Slope Cutbanks cave	 0.63 0.10	 Somewhat limited Slope 	0.63
9D2: Marshall, moderately eroded		 - Very limited Frost action Low strength Slope	 1.00 1.00 0.63	-	 0.63 0.10	 Somewhat limited Slope 	 0.63
9E2: Marshall, moderately eroded		 	 1.00 1.00	 - Very limited Slope Cutbanks cave	 1.00 0.10	 Very limited Slope 	 1.00
9E3: Marshall, severely eroded	 75 	 Very limited Frost action Low strength Slope	 1.00 1.00	 Very limited Slope Cutbanks cave	 1.00 0.10	 Very limited Slope 	 1.00
10B: Monona	 100 	 Very limited Frost action Shrink-swell	 1.00 0.50	 Somewhat limited Cutbanks cave 	 0.10	 Not limited 	
10B2: Monona, moderately eroded	 80 	 Very limited Frost action		 Somewhat limited Cutbanks cave	 0.10	 Not limited	
10C2: Monona, moderately eroded	 75 	-	!	 Somewhat limited Cutbanks cave	 0.10	 Not limited	
10D2: Monona, moderately eroded	 60 	 Very limited Frost action Slope	 1.00 0.63	-	 0.63 0.10	 Somewhat limited Slope 	 0.63

Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

and soil name	Pct. of map unit	streets	d	Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
10D3: Monona, severely eroded	 95 	 Very limited Frost action Slope	 1.00 0.63	-	 0.63 0.10	 Somewhat limited Slope 	 0.63
10E2: Monona, moderately eroded	 50 	 - Very limited Frost action Slope	 1.00	 	 1.00 0.10	 Very limited Slope 	 1.00
10E3: Monona, severely eroded	 60 	 Very limited Frost action Slope	 1.00 1.00	-	 1.00 0.10	 - Very limited Slope	
10F2: Monona, moderately eroded	 45 	 Very limited Slope Frost action	 1.00 1.00	-	 1.00 0.10	 Very limited Slope	
10F3: Monona, severely eroded	 70 	 Very limited Slope Frost action	1.00	 	 1.00 0.10	 - Very limited Slope	
12B: Napier	 85 	 Very limited Frost action	!	 Somewhat limited Cutbanks cave	0.10	 Not limited 	
12C: Napier	 95 	 Very limited Frost action	!	 Somewhat limited Cutbanks cave	0.10	 Not limited 	
17B: Napier	 50 	 Very limited Frost action	1.00	 Somewhat limited Cutbanks cave	0.10	 Not limited 	
Kennebec, frequently flooded		 Very limited Frost action Flooding Shrink-swell	 1.00 1.00 0.50	 Somewhat limited Flooding Depth to saturated zone Cutbanks cave	 0.80 0.61 0.10	 Very limited Flooding 	 1.00
Nodaway, frequently flooded	 15 	 Very limited Frost action Flooding Low strength	 1.00 1.00 1.00	 Somewhat limited Flooding Depth to saturated zone Cutbanks cave	 0.80 0.61 0.10	 Very limited Flooding 	 1.00

Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	streets		Shallow excavations		Lawns and landscaping -	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
22D2: Dow, moderately eroded	 90 	 Very limited Frost action Slope	 1.00 0.63		 0.63	 Somewhat limited Slope 	
22D3: Dow, severely eroded	 90 	 Very limited Frost action Slope	 1.00 0.63	 Somewhat limited Slope Cutbanks cave	 0.63 0.10	 Somewhat limited Slope 	0.63
22E3: Dow, severely eroded	 80 	 Very limited Frost action Slope	 1.00 1.00	 Very limited Slope Cutbanks cave	 1.00 0.10	 Very limited Slope	1.00
26: Kennebec, occasionally flooded	 95 	 Very limited Frost action Flooding	 1.00 1.00	 Somewhat limited Depth to saturated zone Flooding Cutbanks cave	 0.61 0.60 0.10	 Somewhat limited Flooding 	 0.60
35D2: Liston, moderately eroded	 50 	 Somewhat limited Slope Shrink-swell Frost action	 0.63 0.50 0.50	 Somewhat limited Slope Cutbanks cave	 0.63 0.10	 Somewhat limited Slope 	0.63
Burchard, moderately eroded		 Somewhat limited Slope Shrink-swell Frost action	 0.63 0.50 0.50	 Somewhat limited Slope Cutbanks cave	 0.63 0.10	 Somewhat limited Slope 	 0.63
35E2: Liston, moderately eroded	 50 	 Very limited Slope Shrink-swell Frost action	 1.00 0.50 0.50	 - Very limited Slope Cutbanks cave 	 1.00 0.10	 - Very limited Slope -	1.00
Burchard, moderately eroded		 Very limited Slope Shrink-swell Frost action	 1.00 0.50 0.50	 Very limited Slope Cutbanks cave	 1.00 0.10	 Very limited Slope 	1.00
35F2: Liston, moderately eroded	 40 	 Very limited Slope Shrink-swell Frost action	 1.00 0.50 0.50	 Very limited Slope Cutbanks cave 	 1.00 0.10	 Very limited Slope 	 1.00

Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	of map			Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
35F2: Burchard, moderately eroded		 Very limited Slope Shrink-swell Frost action	 1.00 0.50 0.50	 - Very limited Slope Cutbanks cave 	 1.00 0.10	 Very limited Slope 	 1.00
35G:		 				 	
Liston	45 	Very limited Slope Shrink-swell Frost action	 1.00 0.50 0.50	 Very limited Slope Cutbanks cave	 1.00 0.10	 Very limited Slope 	1.00
Burchard	 35 	 Very limited Slope Shrink-swell Frost action	 1.00 0.50 0.50	 Very limited Slope Cutbanks cave 	 1.00 0.10 	 Very limited Slope 	1.00
54: Zook, occasionally flooded	 90 	 	 1.00 1.00	 	 1.00 0.60 0.10	 - Very limited Depth to saturated zone Flooding	 1.00 0.60
54+: Zook, overwash, occasionally flooded	 90 	 Very limited Depth to saturated zone Frost action Flooding	 1.00 1.00	Very limited Depth to saturated zone Flooding Cutbanks cave	 1.00 0.60 0.10	Very limited Depth to saturated zone Flooding	1.00
59D2: Burchard, moderately eroded	1	 Somewhat limited Slope Shrink-swell Frost action	0.63	 Somewhat limited Slope Cutbanks cave	 0.63 0.10	 Somewhat limited Slope 	0.63
59E2: Burchard, moderately eroded		 Very limited Slope Shrink-swell Frost action	 1.00 0.50 0.50	 Very limited Slope Cutbanks cave	 1.00 0.10	 Very limited Slope 	 1.00
99C2: Exira, moderately eroded	 80 	 Very limited Frost action Low strength Shrink-swell	 1.00 1.00 0.50	 Somewhat limited Cutbanks cave 	 0.10 	 Not limited 	

Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
99D2: Exira, moderately		 		 		 	
eroded	50	 Very limited		 Somewhat limited		 Somewhat limited	
		Frost action Low strength Slope	1.00 1.00 0.63	Slope Cutbanks cave 	0.63 0.10 	Slope 	0.63
99E2:		 		 		 	
Exira, moderately eroded	45	 Very limited Frost action	 1.00	 Very limited Slope	 1.00	 Very limited Slope	1.00
		Low strength	1.00	Cutbanks cave	0.10	510pe 	
100B:		<u> </u>		 		 	
Monona	75 	Very limited Frost action Low strength Shrink-swell	 1.00 1.00 0.50	Somewhat limited Cutbanks cave 	 0.10 	Not limited 	
100C2: Monona, moderately						 	
eroded	50	 Very limited Frost action Low strength	1.00	Somewhat limited Cutbanks cave	0.10	 Not limited 	
100D2:		 		 		 	
Monona, moderately eroded	 45 	 Very limited Frost action Low strength Slope	 1.00 1.00 0.63	 Somewhat limited Slope Cutbanks cave	 0.63 0.10	 Somewhat limited Slope 	0.63
100D3:		 				 	
Monona, severely eroded	 45 	 Very limited Frost action Low strength Slope	 1.00 1.00 0.63	 Somewhat limited Slope Cutbanks cave	 0.63 0.10	 Somewhat limited Slope 	0.63
100E2: Monona, moderately	 	 	 	 	 	 	
eroded	45 	Very limited Frost action Low strength Slope	 1.00 1.00 1.00	Very limited Slope Cutbanks cave	 1.00 0.10 	Very limited Slope 	1.00
100E3:							
Monona, severely eroded	 45 	 Very limited Frost action Low strength	 1.00 1.00	 Very limited Slope Cutbanks cave	 1.00 0.10	 Very limited Slope 	 1.00
	İ	Slope	1.00				į

Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map	streets		Shallow excavations		 Lawns and landscaping 	
	unit 	 Rating class and limiting features	Value	 Rating class and limiting features	Value	 Rating class and limiting features	Value
100F2: Monona, moderately	 	 		 	 	 	
eroded	55 	Very limited Slope Frost action Low strength	 1.00 1.00 1.00	Very limited Slope Cutbanks cave	 1.00 0.10 	Very limited Slope 	 1.00
100F3: Monona, severely	 				 	 	
eroded	70 	Very limited Slope Frost action Low strength	 1.00 1.00 1.00	Very limited Slope Cutbanks cave 	 1.00 0.10	Very limited Slope 	1.00
111D3:	 					 	
Dow, severely eroded	55 	 Frost action Slope	1.00	Somewhat limited Slope Cutbanks cave	0.63	Somewhat limited Slope 	0.63
Monona, severely eroded	 40 	 Very limited Frost action Slope	 1.00 0.63	 Somewhat limited Slope Cutbanks cave	 0.63 0.10	 Somewhat limited Slope 	 0.63
111E3: Dow, severely eroded	 55 	 Very limited Frost action Slope	 1.00 1.00	 Very limited Slope Cutbanks cave	 1.00 0.10	 Very limited Slope	 1.00
Monona, severely eroded	 40 	 Very limited Frost action Slope	 1.00 1.00	 Very limited Slope Cutbanks cave	 1.00 0.10	 Very limited Slope 	
125D3: Ida, severely eroded	 50 	 Very limited Frost action Slope	 1.00 0.63	 Somewhat limited Slope Cutbanks cave	 0.63 0.10	 Somewhat limited Slope 	0.63
Chute, severely eroded	 30 	 Somewhat limited Slope	 0.63	 Very limited Cutbanks cave Slope	 1.00 0.63	 Somewhat limited Slope Droughty	0.63
125E3: Ida, severely eroded	 50 	 Very limited Frost action Slope	 1.00 1.00	 Very limited Slope Cutbanks cave	 1.00 0.10	 Very limited Slope 	1.00
Chute, severely eroded	 30 	 Very limited Slope 	 1.00	 Very limited Cutbanks cave Slope	 1.00 1.00	 Very limited Slope Droughty	 1.00 0.22

Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	streets		Shallow excavations -		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
133: Colo, occasionally flooded	 85 	Very limited Depth to saturated zone Frost action Flooding	 1.00 1.00	 Very limited Depth to saturated zone Flooding Cutbanks cave	 1.00 0.60 0.10	Very limited Depth to saturated zone Flooding	 1.00 0.60
133+: Colo, overwash, occasionally	 			Cathanks cave		 	
flooded	85 	Very limited Depth to saturated zone Frost action Flooding	 1.00 1.00 1.00	Very limited Depth to saturated zone Flooding Cutbanks cave	 1.00 0.60 0.10	Very limited Depth to saturated zone Flooding	 1.00 0.60
212: Kennebec, occasionally flooded	 70 	 	 1.00 1.00	 - Somewhat limited Depth to saturated zone Flooding Cutbanks cave	 0.61 0.60 0.10	 Somewhat limited Flooding 	 0.60
212+: Kennebec, overwash, occasionally flooded	 90 	 Very limited Frost action Flooding Shrink-swell	 1.00 1.00 0.50	 Somewhat limited Depth to saturated zone Flooding Cutbanks cave	 0.61 0.60 0.10	 Somewhat limited Flooding 	0.60
220: Nodaway, occasionally flooded	 75 	Very limited Frost action Flooding Low strength	 1.00 1.00 1.00	 - Somewhat limited Depth to saturated zone Flooding Cutbanks cave	 0.61 0.60 0.10	 Somewhat limited Flooding 	 0.60
266: Smithland, occasionally flooded	 85	 - Very limited Depth to saturated zone		 - Very limited Depth to saturated zone		 - Very limited Depth to saturated zone	
	 	saturated zone Frost action Flooding	1.00	saturated zone Flooding Cutbanks cave	0.60	saturated zone Flooding 	0.60

Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
266+: Smithland, overwash, occasionally	 	 		 	 	 	
flooded	75 	Very limited Depth to saturated zone Frost action	 1.00 1.00	 Very limited Depth to saturated zone Flooding	 1.00 0.60	Very limited Depth to saturated zone Flooding	 1.00 0.60
		Flooding	1.00	Cutbanks cave	0.10	i I	į į
268D: Knox	 85 	 Very limited Frost action Slope Shrink-swell	 1.00 0.63 0.50		 0.63 0.10	 Somewhat limited Slope 	 0.63
268E: Knox	 80 	 Very limited Frost action Slope Shrink-swell	 1.00 1.00 0.50	 Very limited Slope Cutbanks cave 	 1.00 0.10	 Very limited Slope 	 1.00
268F: Knox	 75 	 Very limited Slope Frost action Shrink-swell	 1.00 1.00 0.50	 Very limited Slope Cutbanks cave	 1.00 0.10	 Very limited Slope 	 1.00
430: Ackmore, occasionally flooded	 75 	 	 1.00	 - Very limited Depth to saturated zone Flooding	 1.00 0.60	 - Very limited Depth to saturated zone Flooding	 1.00 0.60
431B: Judson	 55	Frost action	1.00	Cutbanks cave	0.10 0.10	 Not limited 	
Ackmore, frequently flooded	1	Shrink-swell Very limited Depth to saturated zone Frost action Flooding	0.50 1.00 1.00	 Very limited Depth to saturated zone Flooding Cutbanks cave	 1.00 0.80 0.10	 - Very limited Flooding Depth to saturated zone	 1.00 1.00
Colo, overwash, frequently flooded	 15 	Very limited Depth to saturated zone Frost action Flooding	 1.00 1.00	Very limited Depth to saturated zone Flooding Cutbanks cave	 1.00 0.80 0.10	Very limited Flooding Depth to saturated zone	 1.00 1.00
509B: Marshall, terrace	 90 	 Very limited Frost action Shrink-swell	 1.00 0.50	 Somewhat limited Cutbanks cave	 0.10	 Not limited 	

Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
509C: Marshall, terrace	 85 		 1.00 0.50	 Somewhat limited Cutbanks cave	 0.10	 Not limited	
509C2: Marshall, terrace, moderately eroded	 65 	 Very limited Frost action Low strength Shrink-swell	 1.00 1.00 0.50	 Somewhat limited Cutbanks cave 	 0.10	 Not limited 	
509D2: Marshall, terrace, moderately eroded	 65 	 Very limited Frost action Low strength Slope	 1.00 1.00 0.63		 0.63 0.10	 Somewhat limited Slope 	0.63
509E2: Marshall, terrace, moderately eroded	 65 	 Very limited Frost action Low strength Slope	 1.00 1.00 1.00	-	 1.00 0.10	 Very limited Slope 	1.00
510: Monona, terrace	 100 	 Very limited Frost action Shrink-swell	1.00	 Somewhat limited Cutbanks cave	0.10	 Not limited 	
510B: Monona, terrace	 60 	 Very limited Frost action Shrink-swell	1.00	 Somewhat limited Cutbanks cave	 0.10	 Not limited 	
510C2: Monona, terrace, moderately eroded	 75 	 Very limited Frost action	1.00	 Somewhat limited Cutbanks cave	 0.10	 Not limited	
510D2: Monona, terrace, moderately eroded	 75 	 Very limited Frost action Slope	1.00	 Somewhat limited Slope Cutbanks cave	0.63	 Somewhat limited Slope	0.63
510E2: Monona, terrace, moderately eroded	 75 	 Very limited Frost action Slope	 1.00 1.00		 1.00 0.10	 - Very limited Slope -	 1.00

Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	streets	d	Shallow excavati 	Lawns and landscaping		
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
630: Danbury, occasionally flooded	 80 	 Very limited Frost action Flooding Shrink-swell	 1.00 1.00 0.50	 Very limited Depth to saturated zone Flooding	1.00 0.60	 Somewhat limited Flooding Depth to saturated zone	 0.60 0.19
670: Rawles, occasionally flooded		 - Very limited Frost action Flooding	 1.00	Cutbanks cave	0.10 0.61	 Somewhat limited Flooding	0.60
		Shrink-swell	0.50	Flooding Cutbanks cave	0.60	 	
700: Monona, terrace	 100 	 Very limited Frost action Shrink-swell	 1.00 0.50	 Somewhat limited Cutbanks cave	 0.10	 Not limited 	
700B: Monona, terrace	 75 	 Very limited Frost action Shrink-swell	 1.00 0.50	 Somewhat limited Cutbanks cave 	 0.10	 Not limited 	
700C2: Monona, terrace, moderately eroded	 50 	 Very limited Frost action Shrink-swell	 1.00 0.50	 Somewhat limited Cutbanks cave	 0.10	 Not limited 	
700D2: Monona, terrace, moderately eroded	 60 	 Very limited Frost action Slope Shrink-swell	 1.00 0.63 0.50	 Somewhat limited Slope Cutbanks cave	 0.63 0.10	 Somewhat limited Slope 	
717D: Napier	 50 	 Very limited Frost action Slope	 1.00 0.04	 Somewhat limited Cutbanks cave Slope	 0.10 0.04	 Somewhat limited Slope 	 0.04
Gullied land, frequently flooded	 35	 Not rated 		 Not rated 		 Not rated 	
740D: Hawick	 90 	 Somewhat limited Slope 	 0.63 	 Very limited Cutbanks cave Slope	 1.00 0.63	 Very limited Droughty Slope	0.99
740E: Hawick	90	 Very limited Slope	 1.00	 Very limited Cutbanks cave Slope	 1.00 1.00	 Very limited Slope Droughty	1.00

Roads and Streets, Shallow Excavations, and Lawns and Landscaping--Continued

Map symbol and soil name	Pct. of map unit	streets	đ	Shallow excavations 		 Lawns and landscaping 		
		Rating class and	Value	Rating class and	Value	Rating class and	Value	
	<u> </u>	limiting features		limiting features		limiting features		
740F:		 	 	 		 		
Hawick	90	 Very limited	i	 Very limited	i	 Very limited	i	
	i	· -	1.00	Cutbanks cave	1.00	: -	1.00	
	į	į	İ	Slope	1.00	Droughty	0.99	
980C:		 	 	 		 		
Judson	55	 Verv limited	 	 Somewhat limited	l	 Not limited	i	
0 445011	33		1.00	1	0.10	1	i	
	İ	!	0.50				i	
Gullied land,		 		 			-	
frequently flooded	35	Not rated	 	Not rated	l	Not rated	l	
1220:	i		i		i		i	
Nodaway, channeled,	İ		İ		ĺ		İ	
frequently flooded	80	Very limited		Somewhat limited		Very limited		
		Frost action	1.00	Flooding	0.80	Flooding	1.00	
		Flooding	1.00	Depth to	0.61			
		Low strength	1.00	saturated zone				
				Cutbanks cave	0.10			
5010:		 	 	 		 		
Pits, sand and	i	İ	İ	İ	i	İ	i	
gravel	100	Not rated	į	Not rated	į	Not rated	į	
5040:		l	 	 	l i	l I		
Udorthents	100	 Not rated	 	 Not rated	i	 Not rated	1	
			i		i		i	
5080:	İ		ĺ		ĺ	İ	İ	
Udorthents	100	Not rated		Not rated	ļ	Not rated	ļ	
AW:		 	 	 	 	 		
Animal waste lagoon	100	Not rated	<u> </u>	Not rated	i	 Not rated	i	
-	İ	İ	į	İ	İ	İ	İ	
SL:		!		!	ļ	!	ļ	
Sewage lagoon	100	Not rated		Not rated		Not rated		
W:		 	 	 		 		
Water	100	Not rated	i	Not rated	i	 Not rated	i	
	i	i	i	i	i	i	i	

Sanitary Facilities

The titles of the tables described in this section are:

- "Sewage Disposal"
- · "Landfills"

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

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

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 60 inches is evaluated. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, and flooding affect absorption of the effluent. Stones and boulders, ice, and bedrock or a cemented pan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

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

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. Considered in the ratings are slope, permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, flooding, large stones, and content of organic matter.

Soil permeability is a critical property affecting the suitability for sewage lagoons. Most porous soils eventually become sealed when they are used as sites for sewage lagoons. Until sealing occurs, however, the hazard of pollution is severe. Soils that have a permeability rate of more than 2 inches per hour are too porous for the proper functioning of sewage lagoons. In these soils, seepage of the effluent can result in contamination of the ground water. Ground-water contamination is also a hazard if fractured bedrock is within a depth of 40 inches, if the water table is high enough to raise the level of sewage in the lagoon, or if floodwater overtops the lagoon.

A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor. If

the lagoon is to be uniformly deep throughout, the slope must be gentle enough and the soil material must be thick enough over bedrock or a cemented pan to make land smoothing practical.

A trench sanitary landfill is an area where solid waste is placed in successive layers in an excavated trench. The waste is spread, compacted, and covered daily with a thin layer of soil excavated at the site. When the trench is full, a final cover of soil material at least 2 feet thick is placed over the landfill. The ratings in the table are based on the soil properties that affect the risk of pollution, the ease of excavation, trafficability, and revegetation. These properties include permeability, depth to bedrock or a cemented pan, depth to a water table, ponding, slope, flooding, texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, onsite investigation may be needed.

Hard, nonrippable bedrock, creviced bedrock, or highly permeable strata in or directly below the proposed trench bottom can affect the ease of excavation and the hazard of ground-water pollution. Slope affects construction of the trenches and the movement of surface water around the landfill. It also affects the construction and performance of roads in areas of the landfill.

Soil texture and consistence affect the ease with which the trench is dug and the ease with which the soil can be used as daily or final cover. They determine the workability of the soil when dry and when wet. Soils that are plastic and sticky when wet are difficult to excavate, grade, or compact and are difficult to place as a uniformly thick cover over a layer of refuse.

The soil material used as the final cover for a trench landfill should be suitable for plants. It should not have excess sodium or salts and should not be too acid. The surface layer generally has the best workability, the highest content of organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

In an *area sanitary landfill*, solid waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site. A final cover of soil material at least 2 feet thick is placed over the completed landfill. The ratings in the table are based on the soil properties that affect trafficability and the risk of pollution. These properties include flooding, permeability, depth to a water table, ponding, slope, and depth to bedrock or a cemented pan.

Flooding is a serious problem because it can result in pollution in areas downstream from the landfill. If permeability is too rapid or if fractured bedrock, a fractured cemented pan, or the water table is close to the surface, the leachate can contaminate the water supply. Slope is a consideration because of the extra grading required to maintain roads in the steeper areas of the landfill. Also, leachate may flow along the surface of the soils in the steeper areas and cause difficult seepage problems.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste. The ratings in the table also apply to the final cover for a landfill. They are based on the soil properties that affect workability, the ease of digging, and the ease of moving and spreading the material over the refuse daily during wet and dry periods. These properties include soil texture, depth to a water table, ponding, rock fragments, slope, depth to bedrock or a cemented pan, reaction, and content of salts, sodium, or lime.

Loamy or silty soils that are free of large stones and excess gravel are the best cover for a landfill. Clayey soils may be sticky and difficult to spread; sandy soils are subject to wind erosion.

Slope affects the ease of excavation and of moving the cover material. Also, it can influence runoff, erosion, and reclamation of the borrow area.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as the final cover for a landfill should be suitable for plants. It should not have excess sodium, salts, or lime and should not be too acid.

Sewage Disposal

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

and soil name	Pct. of map unit	absorption fiel	ds	Sewage lagoons 	
	 	Rating class and limiting features	Value	Rating class and limiting features	Value
1C:	 	 		 	
Ida	95 	Somewhat limited Slow water movement	 0.46 	Very limited Slope Seepage	 1.00 0.53
1C3:	 	 		 	
Ida, severely eroded	 80 	Somewhat limited Slow water movement	0.46	 Very limited Slope Seepage	 1.00 0.53
1D3:	 				
Ida, severely eroded	80 	Somewhat limited Slope Slow water movement	 0.63 0.46	Very limited Slope Seepage	 1.00 0.53
1E3: Ida, severely eroded	 70 	 Very limited Slope Slow water movement	 1.00 0.46	 Very limited Slope Seepage	 1.00 0.53
1F3: Ida, severely eroded	 70 	 Very limited Slope Slow water movement	 1.00 0.46	 Very limited Slope Seepage	 1.00 0.53
8B: Judson	 80 	 Somewhat limited Slow water movement	 0.46	 Somewhat limited Seepage Slope	0.53
8C: Judson	 95 	 Somewhat limited Slow water movement	 0.46 	 Very limited Slope Seepage	 1.00 0.53
9: Marshall	 95 	 Somewhat limited Slow water movement	 0.46 	 Somewhat limited Seepage 	0.53
9B: Marshall	 100 	 Somewhat limited Slow water movement	 0.46	 Somewhat limited Seepage Slope	0.53

Sewage Disposal--Continued

Map symbol and soil name	Pct. of map	<u>-</u>	ds	Sewage lagoons	
	unit 	Rating class and limiting features	Value	 Rating class and limiting features	Value
9B2: Marshall, moderately eroded	:	 Somewhat limited Slow water movement	 0.46	 Somewhat limited Seepage Slope	 0.53 0.32
9C: Marshall	 90 	 Somewhat limited Slow water movement	 0.46	 Very limited Slope Seepage	1.00
9C2: Marshall, moderately eroded		 Somewhat limited Slow water movement	 0.46	 Very limited Slope Seepage	 1.00 0.53
9D: Marshall	 85 	 Somewhat limited Slope Slow water movement	 0.63 0.46	 Very limited Slope Seepage	 1.00 0.53
9D2: Marshall, moderately eroded		 Somewhat limited Slope Slow water movement	 0.63 0.46	 Very limited Slope Seepage	 1.00 0.53
9E2: Marshall, moderately eroded		 Very limited Slope Slow water movement	 1.00 0.46	 - Very limited Slope Seepage	 1.00 0.53
9E3: Marshall, severely eroded	 75 	 Very limited Slope Slow water movement	 1.00 0.46	 Very limited Slope Seepage	 1.00 0.53
10B: Monona	 100 	Somewhat limited Slow water movement	 0.46 	 Somewhat limited Seepage Slope	0.53
10B2: Monona, moderately eroded	 80 	 Somewhat limited Slow water movement	 0.46 	 Somewhat limited Seepage Slope	 0.53 0.32

Sewage Disposal--Continued

Map symbol and soil name	Pct. of	absorption fiel	đs	Sewage lagoons	
	unit 	 Rating class and limiting features	Value	 Rating class and limiting features	Value
10C2: Monona, moderately eroded	 75 	 Somewhat limited Slow water movement	 0.46	 Very limited Slope Seepage	 1.00 0.53
10D2: Monona, moderately eroded	 60 	 Somewhat limited Slope Slow water movement	 0.63 0.46	 Very limited Slope Seepage	 1.00 0.53
10D3: Monona, severely eroded	 95 	 Somewhat limited Slope Slow water movement	 0.63 0.46	 Very limited Slope Seepage	 1.00 0.53
10E2: Monona, moderately eroded	 50 	 	 1.00 0.46	 - Very limited Slope Seepage	 1.00 0.53
10E3: Monona, severely eroded	 60 	Very limited Slope Slow water movement	 1.00 0.46	 Very limited Slope Seepage	 1.00 0.53
10F2: Monona, moderately eroded	 45 	 Very limited Slope Slow water movement	 1.00 0.46	 Very limited Slope Seepage	 1.00 0.53
10F3: Monona, severely eroded	 70 	 	 1.00 0.46	 - Very limited Slope Seepage 	 1.00 0.53
12B: Napier	 85 	 Somewhat limited Slow water movement	 0.46 	 Somewhat limited Seepage Slope	0.53
12C: Napier	 95 	 Somewhat limited Slow water movement	 0.46 	 Very limited Slope Seepage	 1.00 0.53

Sewage Disposal--Continued

Map symbol and soil name	Pct. of map	<u>-</u>	ds	 Sewage lagoons 	3
	unit				
	 	Rating class and limiting features	Value	Rating class and limiting features	Value
150					
17B: Napier	 50 	 Somewhat limited Slow water movement	0.46	 Somewhat limited Seepage Slope	0.53
Kennebec, frequently flooded		 Very limited Flooding Depth to saturated zone Slow water movement	 1.00 0.99 0.46	Very limited Flooding Depth to saturated zone Seepage	 1.00 0.71 0.53
Nodaway, frequently	 	 		 	
flooded	15 	Very limited Flooding Depth to saturated zone Slow water movement	 1.00 0.99 0.50	Very limited Flooding Depth to saturated zone Seepage	 1.00 0.71 0.50
22D2:	 	 		 	
Dow, moderately eroded	 90 	Somewhat limited Slope Slow water movement	 0.63 0.46	 Very limited Slope Seepage	 1.00 0.53
22D3: Dow, severely eroded	 90 	 Somewhat limited Slope Slow water movement	 0.63 0.46	 Very limited Slope Seepage	 1.00 0.53
22E3: Dow, severely eroded	 80 	 Very limited Slope Slow water movement	 1.00 0.46	 Very limited Slope Seepage	 1.00 0.53
26: Kennebec, occasionally	 	 	 	 	
flooded	95 	Very limited Flooding Seepage, bottom layer Depth to saturated zone	 1.00 1.00 0.99	Very limited Flooding Seepage Depth to saturated zone	 1.00 1.00 0.71
35D2: Liston, moderately eroded	 50 	 Very limited Slow water movement Slope	 1.00 0.63	 Very limited Slope 	 1.00

Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	absorption fields		 Sewage lagoons 	•
	 	 Rating class and limiting features	:	Rating class and limiting features	Value
35D2: Burchard, moderately eroded		 - Very limited Slow water movement Slope	 1.00 0.63	 Very limited Slope 	 1.00
35E2: Liston, moderately eroded	 50 	 Very limited Slow water movement Slope	 1.00 1.00	 Very limited Slope 	 1.00
Burchard, moderately eroded		 Very limited Slow water movement Slope	1.00	 Very limited Slope 	1.00
35F2: Liston, moderately eroded	 40 	 	 1.00 1.00	 Very limited Slope 	 1.00
Burchard, moderately eroded		 Very limited Slope Slow water movement	 1.00 1.00	 Very limited Slope 	 1.00
35G: Liston	 45 	 Very limited Slope Slow water movement	1.00	 Very limited Slope 	1.00
Burchard	 35 	 Very limited Slope Slow water movement	 1.00 1.00	 Very limited Slope 	1.00
54: Zook, occasionally flooded	90	 	 1.00 1.00 1.00	 - Very limited Flooding Depth to saturated zone	 1.00 1.00

Sewage Disposal--Continued

Map symbol and soil name	Pct. of map	absorption fiel	ds	Sewage lagoons		
	unit 	 Rating class and limiting features	Value	 Rating class and limiting features	Value	
54+: Zook, overwash, occasionally flooded	 90 	Very limited Flooding Slow water movement Depth to saturated zone	 1.00 1.00 1.00	Very limited Flooding Depth to saturated zone	 1.00 1.00	
59D2: Burchard, moderately eroded		 Very limited Slow water movement Slope	1.00	 Very limited Slope 	 1.00	
59E2: Burchard, moderately eroded	:	 Very limited Slow water movement Slope	 1.00 1.00	 Very limited Slope 		
99C2: Exira, moderately eroded	 80 	 Somewhat limited Slow water movement	 0.46	 Very limited Slope Seepage	 1.00 0.53	
99D2: Exira, moderately eroded	 50 	 Somewhat limited Slope Slow water movement	 0.63 0.46	 	 1.00 0.53	
99E2: Exira, moderately eroded	 45 	 Very limited Slope Slow water movement	 1.00 0.46	 	 1.00 0.53	
100B: Monona	 75 	 Somewhat limited Slow water movement	 0.46 	 Somewhat limited Seepage Slope	0.53	
100C2: Monona, moderately eroded	 50 	 Somewhat limited Slow water movement	 0.46	 Very limited Slope Seepage	 1.00 0.53	

Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	absorption fiel	ds	Sewage lagoons		
	unit	 Rating class and limiting features	'	 Rating class and limiting features	Value	
100D2: Monona, moderately eroded	 45 	 Somewhat limited Slope Slow water movement	 0.63 0.46	 Very limited Slope Seepage	 1.00 0.53	
100D3: Monona, severely eroded	 45 	 Somewhat limited Slope Slow water movement	 0.63 0.46	 Very limited Slope Seepage	 1.00 0.53	
100E2: Monona, moderately eroded	 45 	 Very limited Slope Slow water movement	 1.00 0.46	 Very limited Slope Seepage	 1.00 0.53	
100E3: Monona, severely eroded	 45 	 	 1.00 0.50	 - Very limited Slope Seepage	 1.00 0.50	
100F2: Monona, moderately eroded	 55 	 Very limited Slope Slow water movement	 1.00 0.46	 Very limited Slope Seepage	 1.00 0.53	
100F3: Monona, severely eroded	 70 	 Very limited Slope Slow water movement	 1.00 0.46	 Very limited Slope Seepage	 1.00 0.53	
111D3: Dow, severely eroded	 55 	Somewhat limited Slope Slow water movement	 0.63 0.46	 Very limited Slope Seepage	 1.00 0.53	
Monona, severely eroded	 40 	 Somewhat limited Slope Slow water movement	 0.63 0.46	 Very limited Slope Seepage 	 1.00 0.53	
111E3: Dow, severely eroded	 55 	 Very limited Slope Slow water movement	 1.00 0.46 	 Very limited Slope Seepage 	 1.00 0.53 	

Sewage Disposal--Continued

Map symbol and soil name	Pct. of map	absorption fiel	ds	 Sewage lagoons 	•
	unit 	 Rating class and limiting features	Value	 Rating class and limiting features	Value
111E3: Monona, severely eroded	 40 	 Very limited Slope Slow water movement	 1.00 0.46	 Very limited Slope Seepage	 1.00 0.53
125D3:	 	 		 	
Ida, severely eroded	50 	Somewhat limited Slope Slow water movement	 0.63 0.46	Very limited Slope Seepage	 1.00 0.53
Chute, severely eroded	 30 	 Very limited Filtering capacity Seepage, bottom layer Slope	 1.00 1.00 0.63	 Very limited Slope Seepage 	 1.00 1.00
125E3: Ida, severely eroded	 50 	 Very limited Slope Slow water movement	 1.00 0.46	 Very limited Slope Seepage	 1.00 0.53
Chute, severely eroded	 30 	 Very limited Filtering capacity Seepage, bottom layer Slope	 1.00 1.00 	 Very limited Slope Seepage 	 1.00 1.00
133:	 	 		 	
Colo, occasionally flooded	 85 	 Very limited Flooding Depth to saturated zone Slow water movement	 1.00 1.00 0.46	 Very limited Flooding Depth to saturated zone Seepage	 1.00 1.00 0.53
133+: Colo, overwash, occasionally	 	 		 	
flooded	85 	Very limited Flooding Depth to saturated zone Slow water	 1.00 1.00 0.46	Very limited Flooding Depth to saturated zone Seepage	 1.00 1.00 0.53
	 	movement			

Sewage Disposal--Continued

Map symbol and soil name	Pct.	Septic tank absorption fiel	ds	Sewage lagoons	
	map unit	 		 	
		Rating class and limiting features	Value	Rating class and limiting features	Value
212: Kennebec, occasionally flooded	 70 	Very limited Flooding Depth to saturated zone Slow water movement	 1.00 0.99 0.46	Very limited Flooding Depth to saturated zone Seepage	 1.00 0.71 0.53
212+: Kennebec, overwash, occasionally flooded	 90 	 Very limited Flooding Depth to saturated zone Slow water movement	 1.00 0.99 0.46	 Very limited Flooding Depth to saturated zone Seepage	 1.00 0.71 0.53
220: Nodaway, occasionally flooded	 75 	 Very limited Flooding Depth to saturated zone Slow water movement	 1.00 0.99 0.50	 	 1.00 0.71 0.50
266: Smithland, occasionally flooded	 85 	 Very limited Flooding Depth to saturated zone Slow water movement	 1.00 1.00 0.46	 	 1.00 1.00 0.53
266+: Smithland, overwash, occasionally flooded	İ	 Very limited Flooding Depth to saturated zone Slow water movement	 1.00 1.00 0.46		 1.00 1.00 0.53
268D: Knox	 85 	 Somewhat limited Slope Slow water movement	 0.63 0.46	 Very limited Slope Seepage	 1.00 0.53

Sewage Disposal--Continued

Map symbol and soil name	Pct.	Septic tank absorption fiel	ds	Sewage lagoons		
	map			į		
	unit	!	177-1	 Dating along and	177-1	
		Rating class and limiting features	Value	Rating class and limiting features	Value	
	i		i		<u> </u>	
268E:	İ	İ	İ	İ	İ	
Knox	80	Very limited		Very limited		
		Slope Slow water	1.00 0.46	Slope Seepage	1.00	
	 	movement		Beepage 		
268F:				 		
Knox	75	Very limited	į	Very limited	İ	
		Slope	1.00	Slope	1.00	
		Slow water movement	0.46 	Seepage 	0.53 	
430:				l		
Ackmore,				 		
occasionally	İ	į	į	İ	ĺ	
flooded	75	Very limited		Very limited		
		Flooding	1.00	Flooding	1.00	
		Depth to	1.00	Depth to	1.00	
		saturated zone Slow water	1.00	saturated zone Seepage	0.53	
		movement		Beepage 		
431B:				 		
Judson	55	Somewhat limited		Somewhat limited		
		Slow water	0.46	Seepage	0.53	
		movement		Slope	0.08	
Ackmore, frequently				 		
flooded	25	Very limited	į	Very limited	į	
		Flooding	1.00	Flooding	1.00	
		Depth to	1.00	Depth to	1.00	
		saturated zone		saturated zone		
		Slow water movement	0.46	Seepage 	0.53	
Colo, overwash,				 		
frequently flooded	15	Very limited	İ	Very limited		
		Flooding	1.00	Flooding	1.00	
		Depth to	1.00	Depth to	1.00	
		saturated zone	0.46	saturated zone Seepage	0.53	
	 	movement		Beepage 		
509B:				 		
Marshall, terrace	90	Somewhat limited		Somewhat limited		
		Slow water	0.46	Seepage	0.53	
		movement		Slope 	0.08	
509C:		i I	į		į	
Marshall, terrace	85	Somewhat limited	1	Very limited	1 00	
		Slow water movement	0.46	Slope Seepage	1.00	
509C2:		 		 		
Marshall, terrace,						
moderately eroded	65	Somewhat limited		Very limited		
		Slow water	0.46	Slope	1.00	
		movement	1	Seepage	0.53	

Sewage Disposal--Continued

Map symbol and soil name	Pct. of map unit	absorption fiel	ds	 Sewage lagoons 	
		Rating class and limiting features	Value	Rating class and limiting features	Value
509D2: Marshall, terrace, moderately eroded	 65 	 Somewhat limited Slope Slow water movement	 0.63 0.46	 Very limited Slope Seepage 	 1.00 0.53
509E2: Marshall, terrace, moderately eroded	 65 	 Very limited Slope Slow water movement	 1.00 0.46	 Very limited Slope Seepage	 1.00 0.53
510: Monona, terrace	 100 	 Somewhat limited Slow water movement	 0.46	 Somewhat limited Seepage	0.53
510B: Monona, terrace	 60 	 Somewhat limited Slow water movement	 0.46	 Somewhat limited Seepage Slope	0.53
510C2: Monona, terrace, moderately eroded	 75 	 Somewhat limited Slow water movement	 0.46	 Very limited Slope Seepage	 1.00 0.53
510D2: Monona, terrace, moderately eroded	 75 	 Somewhat limited Slope Slow water movement	0.63	 - Very limited Slope Seepage	 1.00 0.53
510E2: Monona, terrace, moderately eroded	 75 	 	 1.00 0.46	 - Very limited Slope Seepage	 1.00 0.53
630: Danbury, occasionally flooded	 80 	 Very limited Flooding Depth to saturated zone Slow water movement	 1.00 1.00 1.00	Very limited Flooding Depth to saturated zone Seepage	 1.00 1.00 0.53

Sewage Disposal--Continued

Map symbol and soil name	Pct.	absorption fiel	ds	Sewage lagoons	
	map unit	:		l I	
	unit c 	Rating class and limiting features	Value	Rating class and limiting features	Value
670: Rawles, occasionally flooded	'	 Very limited Flooding Depth to saturated zone Slow water movement	 1.00 0.99 0.46	 Very limited Flooding Depth to saturated zone Seepage	 1.00 0.71 0.53
700: Monona, terrace	 100 	 Somewhat limited Slow water movement	 0.46 	 Somewhat limited Seepage	0.53
700B: Monona, terrace	 75 	 Somewhat limited Slow water movement	 0.46	 Somewhat limited Seepage Slope	0.53
700C2: Monona, terrace, moderately eroded	 50 	 Somewhat limited Slow water movement	 0.46	 Very limited Slope Seepage	 1.00 0.53
700D2: Monona, terrace, moderately eroded	 60 	 Somewhat limited Slope Slow water movement	 0.63 0.46	 Very limited Slope Seepage	 1.00 0.53
717D: Napier	 50 	Somewhat limited Slow water movement Slope	 0.46 0.04	 Very limited Slope Seepage	 1.00 0.53
Gullied land, frequently flooded	 35	 Not rated	 	 Not rated	
740D: Hawick	 90 	 Very limited Filtering capacity Seepage, bottom layer Slope	 1.00 1.00 0.63	 Very limited Slope Seepage 	 1.00 1.00
740E: Hawick	 90 	 Very limited Filtering capacity Seepage, bottom layer Slope	 1.00 1.00	 Very limited Slope Seepage 	 1.00 1.00

Sewage Disposal--Continued

	Pct.	-	_	 Sewage lagoons	
and soil name	of map unit	İ	ds	 	
	 	Rating class and limiting features	Value	Rating class and limiting features	Value
740F: Hawick	 90 	capacity Slope	1.00 1.00	 Very limited Slope Seepage	 1.00 1.00
980C: Judson	 55	Seepage, bottom layer Somewhat limited	1.00 	 Very limited	
Gullied land,	 	Slow water movement 	0.46 	Slope Seepage 	1.00 0.53
frequently flooded	 35 	 Not rated 	 	 Not rated 	
1220: Nodaway, channeled, frequently flooded	 80 	 Very limited Flooding Depth to saturated zone Slow water movement	 1.00 0.99 0.50	!	 1.00 0.71 0.50
5010: Pits, sand and gravel	 100	 Not rated	 	 Not rated	
5040: Udorthents	 100	 Not rated 	 	 Not rated 	
5080: Udorthents	 100	 Not rated	 	 Not rated	
AW: Animal waste lagoon	 100	 Not rated 	 	 Not rated 	
SL: Sewage lagoon	 100	 Not rated 	 	 Not rated 	
W: Water	 100 	 Not rated 	 	 Not rated 	

Landfills

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	landfill	У	Area sanitary		Daily cover fo	or
	unii c 	Rating class and	Value	Rating class and limiting features	Value		Value
	<u> </u>	limiting features	1	limiting reatures	<u> </u>	limiting features	1
1C: Ida	 95	 Not limited		 Not limited	<u> </u> 	 Not limited	
1C3:	 	 		 		 	
Ida, severely eroded	 80 	 Not limited 	<u> </u>	 Not limited 	İ	 Not limited 	
1D3: Ida, severely eroded	 80 	 Somewhat limited Slope	0.63	 Somewhat limited Slope	0.63	 Somewhat limited Slope	0.63
1E3: Ida, severely eroded	 70 	 Very limited Slope	1.00	 Very limited Slope	1.00	 Very limited Slope	1.00
1F3: Ida, severely eroded	 70 	 Very limited Slope	1.00	 Very limited Slope	1.00	 Very limited Slope	1.00
8B: Judson	 80 	 Somewhat limited Too clayey	0.50	 Not limited 		 Somewhat limited Too clayey	0.50
8C: Judson	 95 	 Somewhat limited Too clayey	 0.50	 Not limited 	 	 Somewhat limited Too clayey	 0.50
9: Marshall	 95 	 Somewhat limited Too clayey	0.50	 Not limited 		 Somewhat limited Too clayey 	0.50
9B: Marshall	 100 	 Somewhat limited Too clayey	0.50	 Not limited 		 Somewhat limited Too clayey	0.50
9B2: Marshall, moderately eroded		 Somewhat limited Too clayey	 0.50	 Not limited	 	 Somewhat limited Too clayey	0.50
9C: Marshall	 90 	 Somewhat limited Too clayey	0.50	 Not limited 		 Somewhat limited Too clayey	0.50
9C2: Marshall, moderately eroded		 Somewhat limited Too clayey	 0.50	 - Not limited - 	 	 Somewhat limited Too clayey	 0.50
9D: Marshall	 85 	 Somewhat limited Slope Too clayey	 0.63 0.50	 Somewhat limited Slope 	 0.63	 Somewhat limited Slope Too clayey	0.63

Landfills--Continued

Map symbol and soil name	Pct. of map	landfill	У	Area sanitary		Daily cover fo	or
	unit 	Rating class and limiting features	Value	Rating class and limiting features	Value	 Rating class and limiting features	Value
9D2: Marshall, moderately eroded		 Somewhat limited Slope Too clayey	 0.63 0.50	 Somewhat limited Slope 	 0.63	 - Somewhat limited Slope Too clayey	 0.63 0.50
9E2: Marshall, moderately eroded		 Very limited Slope Too clayey	 1.00 0.50	 Very limited Slope	 1.00	 - Very limited Slope Too clayey	1.00
9E3: Marshall, severely eroded	 75 	 Very limited Slope Too clayey	 1.00 0.50	 Very limited Slope	 1.00	 - Very limited Slope Too clayey	1.00
10B: Monona	 100	 Not limited	 	 Not limited		 Not limited	
10B2: Monona, moderately eroded	 80	 Not limited	 	 Not limited	 	 Not limited	
10C2: Monona, moderately eroded	 75	 Not limited	 	 Not limited		 Not limited	
10D2: Monona, moderately eroded	 60 	 Somewhat limited Slope	 0.63	 Somewhat limited Slope	 0.63	 Somewhat limited Slope	0.63
10D3: Monona, severely eroded	 95 	 Somewhat limited Slope	0.63	 Somewhat limited Slope	0.63	 Somewhat limited Slope	0.63
10E2: Monona, moderately eroded	 50	 Very limited Slope	 1.00	 Very limited Slope	 1.00	 Very limited Slope	1.00
10E3: Monona, severely eroded	 60	 Very limited Slope	 1.00	 Very limited Slope	 1.00	 Very limited Slope	1.00
10F2: Monona, moderately eroded	 45 	 Very limited Slope	 1.00	 Very limited Slope	 1.00	 Very limited Slope	1.00
10F3: Monona, severely eroded	 70 	 Very limited Slope 	 1.00	 Very limited Slope 	 1.00	 Very limited Slope 	 1.00

Landfills--Continued

Map symbol and soil name	Pct. of map unit	landfill		Area sanitary landfill		Daily cover for landfill	
	 	Rating class and	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
12B: Napier	 85	 Not limited	 	 Not limited	 	 Not limited	
12C: Napier	95	 Not limited		 Not limited		 Not limited	
17B: Napier	50	 Not limited		 Not limited		 Not limited	
Kennebec, frequently flooded	1	 Very limited Flooding Depth to saturated zone	 1.00 1.00	 Very limited Flooding Depth to saturated zone	 1.00 1.00	 Not limited 	
Nodaway, frequently flooded	 15 	Very limited Flooding Depth to saturated zone Too clayey	 1.00 1.00 0.50	 Very limited Flooding Depth to saturated zone	 1.00 1.00	 Somewhat limited Too clayey 	 0.50
22D2: Dow, moderately eroded	 90 	 Somewhat limited Slope	 0.63	 Somewhat limited Slope	 0.63	 Somewhat limited Slope	0.63
22D3: Dow, severely eroded	 90 	 Somewhat limited Slope	 0.63	 Somewhat limited Slope	0.63	 Somewhat limited Slope	0.63
22E3: Dow, severely eroded	 80 	 Very limited Slope	 1.00	 Very limited Slope	 1.00	 Very limited Slope	
26: Kennebec, occasionally flooded	 95 	Very limited Flooding Depth to saturated zone Seepage, bottom layer	 1.00 1.00 1.00	Very limited Flooding Depth to saturated zone	 1.00 1.00	 Somewhat limited Too clayey 	 0.50
35D2: Liston, moderately eroded	50	 Somewhat limited Slope Too clayey	 0.63 0.50	 Somewhat limited Slope	 0.63	 Somewhat limited Slope Too clayey	0.63
Burchard, moderately eroded	1	 Somewhat limited Slope Too clayey	 0.63 0.50	 Somewhat limited Slope 	 0.63	 Somewhat limited Slope Too clayey	0.63

Landfills--Continued

Map symbol and soil name	Pct. of map unit	landfill	У	Area sanitary	Area sanitary landfill 		Daily cover for landfill	
	unit 	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value	
35E2: Liston, moderately eroded	 50 	 Very limited Slope Too clayey	 1.00 0.50	 - Very limited Slope -	 1.00	 Very limited Slope Too clayey	 1.00 0.50	
Burchard, moderately eroded		 Very limited Slope Too clayey	 1.00 0.50	 Very limited Slope 	 1.00 	 Very limited Slope Too clayey	 1.00 0.50	
35F2: Liston, moderately eroded	 40 	 Very limited Slope Too clayey	 1.00 0.50	 - Very limited Slope	 1.00	 	 1.00 0.50	
Burchard, moderately eroded		 Very limited Slope Too clayey	 1.00 0.50	 Very limited Slope 	 1.00	 Very limited Slope Too clayey	 1.00 0.50	
35G: Liston	 45 	 Very limited Slope Too clayey	 1.00 0.50	 Very limited Slope 	 1.00	 Very limited Slope Too clayey	 1.00 0.50	
Burchard	 35 	 Very limited Slope Too clayey	 1.00 0.50	 Very limited Slope	 1.00	 Very limited Slope Too clayey	 1.00 0.50	
54: Zook, occasionally flooded	 90 	 Very limited Flooding Depth to saturated zone Too clayey	 1.00 1.00 	 Very limited Flooding Depth to saturated zone	 1.00 1.00	Very limited Depth to saturated zone Too clayey Hard to compact	 1.00 1.00	
54+: Zook, overwash, occasionally	 	 		 	 	 	 	
flooded	90 	Very limited Flooding Depth to saturated zone Too clayey	 1.00 1.00 1.00	Very limited Flooding Depth to saturated zone	 1.00 1.00 	Very limited Depth to saturated zone Too clayey Hard to compact	 1.00 1.00 1.00	
59D2: Burchard, moderately eroded		 Somewhat limited Slope Too clayey	 0.63 0.50	 Somewhat limited Slope 	 0.63	 Somewhat limited Slope Too clayey	 0.63 0.50	
59E2: Burchard, moderately eroded	:	 Very limited Slope Too clayey	 1.00 0.50	 Very limited Slope 	 1.00 	 Very limited Slope Too clayey	 1.00 0.50	

Landfills--Continued

Map symbol and soil name	Pct. of map	landfill		 Area sanitary landfill 		Daily cover for landfill	
	unit 	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
99C2: Exira, moderately eroded	 80	 Not limited	 	 Not limited	 	 Somewhat limited Too clayey	
99D2: Exira, moderately eroded	 50 	 Somewhat limited Slope 	 0.63	 Somewhat limited Slope 	 0.63	 Somewhat limited Slope Too clayey	0.63
99E2: Exira, moderately eroded	 45 	 Very limited Slope 	 1.00	 Very limited Slope 	 1.00	 Very limited Slope Too clayey	 1.00 0.50
100B: Monona	 75 	 Somewhat limited Too clayey	 0.50	 Not limited 	 	 Somewhat limited Too clayey	0.50
100C2: Monona, moderately eroded	 50	 Not limited	 	 Not limited 	 	 Not limited 	
100D2: Monona, moderately eroded	 45 	 Somewhat limited Slope	 0.63	 Somewhat limited Slope	 0.63	 Somewhat limited Slope	0.63
100D3: Monona, severely eroded	 45 	 Somewhat limited Slope	 0.63	 Somewhat limited Slope	 0.63	 Somewhat limited Slope	 0.63
100E2: Monona, moderately eroded	 45 	 Very limited Slope	 1.00	 Very limited Slope	 1.00	 Very limited Slope	 1.00
100E3: Monona, severely eroded	 45 	 Very limited Slope	 1.00	 Very limited Slope	 1.00	 Very limited Slope	 1.00
100F2: Monona, moderately eroded	 55 	 Very limited Slope	 1.00	 Very limited Slope	 1.00	 Very limited Slope	 1.00
100F3: Monona, severely eroded	 70 	 Very limited Slope	 1.00	 Very limited Slope	 1.00	 Very limited Slope	
111D3: Dow, severely eroded	 55 	 Somewhat limited Slope 	 0.63	 Somewhat limited Slope 	 0.63	 Somewhat limited Slope 	0.63

Landfills--Continued

Map symbol and soil name	Pct. of map	landfill	У	Area sanitary		Daily cover fo	or
	unit 	 Rating class and limiting features	Value	 Rating class and limiting features	Value	 Rating class and limiting features	Value
111D3: Monona, severely eroded	 40 	 Somewhat limited Slope	 0.63	 Somewhat limited Slope		 Somewhat limited Slope	
111E3: Dow, severely eroded	 55 	 Very limited Slope	1.00	 Very limited Slope	1.00	 Very limited Slope	1.00
Monona, severely eroded	 40 	 Very limited Slope	1.00	 Very limited Slope	1.00	 Very limited Slope	1.00
125D3: Ida, severely eroded	 50 	 Somewhat limited Slope	 0.63	 Somewhat limited Slope	 0.63	 Somewhat limited Slope	0.63
Chute, severely eroded	30		 1.00 1.00 0.63	 Very limited Seepage Slope 	 1.00 0.63 	 Very limited Too sandy Seepage Slope	 1.00 1.00 0.63
125E3: Ida, severely eroded	 50 	 Very limited Slope	1.00	 Very limited Slope	 1.00	 Very limited Slope	1.00
Chute, severely eroded	 30 	! -	 1.00 1.00	 Very limited Seepage Slope 	 1.00 1.00	 Very limited Too sandy Seepage Slope	 1.00 1.00 1.00
133: Colo, occasionally flooded	 85 	 Very limited Flooding Depth to saturated zone Too clayey	 1.00 1.00 0.50	 - Very limited Flooding Depth to saturated zone	 1.00 1.00	 - Very limited Depth to saturated zone Too clayey	 1.00 0.50
133+: Colo, overwash, occasionally flooded	 85 	 	 1.00 1.00 	 - Very limited Flooding Depth to saturated zone	 1.00 1.00	Very limited Depth to saturated zone Too clayey	 1.00 0.50
212: Kennebec, occasionally flooded	 70 	 Very limited Flooding Depth to saturated zone	 1.00 1.00	 Very limited Flooding Depth to saturated zone	 1.00 	 Not limited 	

Landfills--Continued

Map symbol and soil name	Pct. of map unit	landfill	У	Area sanitary landfill		Daily cover for landfill	or
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
212+: Kennebec, overwash, occasionally flooded	 90 	 Very limited Flooding Depth to saturated zone	 1.00 1.00	 Very limited Flooding Depth to saturated zone	 1.00 1.00	 Not limited 	
220: Nodaway, occasionally flooded	 75 	 Very limited Flooding Depth to saturated zone Too clayey	 1.00 1.00 0.50	 Very limited Flooding Depth to saturated zone	 1.00 1.00	 Somewhat limited Too clayey 	 0.50
266: Smithland, occasionally flooded	 85 	 Very limited Flooding Depth to saturated zone Too clayey	 1.00 1.00 0.50	 Very limited Flooding Depth to saturated zone	 1.00 1.00	 Very limited Depth to saturated zone Too clayey	 1.00 0.50
266+: Smithland, overwash, occasionally flooded	İ	 	 1.00 1.00 0.50	 Very limited Flooding Depth to saturated zone	 1.00 1.00	 	 1.00 0.50
268D: Knox	 85 	 Somewhat limited Slope Too clayey	 0.63 0.50	 Somewhat limited Slope 	 0.63	 Somewhat limited Slope Too clayey	0.63
268E: Knox	 80 	 Very limited Slope Too clayey	 1.00 0.50	 Very limited Slope 	 1.00 	 Very limited Slope Too clayey	 1.00 0.50
268F: Knox	 75 	 Very limited Slope Too clayey	 1.00 0.50	 Very limited Slope	 1.00 	 Very limited Slope Too clayey	1.00
430: Ackmore, occasionally flooded	 75 	 	 1.00 1.00	 	 1.00 1.00	Very limited Depth to saturated zone Too clayey	 1.00 0.50

Landfills--Continued

Map symbol and soil name	 Pct. of map unit	Trench sanitary landfill		 Area sanitary landfill 		 Daily cover fo landfill 	r
	 	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
431B: Judson	 55 	 Somewhat limited Too clayey	 0.50	 Not limited 	 	 Somewhat limited Too clayey	 0.50
Ackmore, frequently flooded	 25 	 Very limited Flooding Depth to saturated zone Too clayey	 1.00 1.00 0.50	 Very limited Flooding Depth to saturated zone	 1.00 1.00 	 Very limited Depth to saturated zone Too clayey	 1.00 0.50
Colo, overwash, frequently flooded	 15 	 Very limited Flooding Depth to saturated zone Too clayey	 1.00 1.00 0.50	 Very limited Flooding Depth to saturated zone	 1.00 1.00 	 Very limited Depth to saturated zone Too clayey	 1.00 0.50
509B: Marshall, terrace	 90 	 Somewhat limited Too clayey	 0.50	 Not limited 	 	 Somewhat limited Too clayey	0.50
509C: Marshall, terrace	 85 	 Somewhat limited Too clayey	 0.50	 Not limited 	 	 Somewhat limited Too clayey	 0.50
509C2: Marshall, terrace, moderately eroded	 65 	 Somewhat limited Too clayey	 0.50	 Not limited 	 	 Somewhat limited Too clayey	 0.50
509D2: Marshall, terrace, moderately eroded	 65 	 Somewhat limited Slope Too clayey	 0.63 0.50	 Somewhat limited Slope	 0.63	 Somewhat limited Slope Too clayey	 0.63 0.50
509E2: Marshall, terrace, moderately eroded	 65 	 Very limited Slope Too clayey	 1.00 0.50	 Very limited Slope	 1.00	 Very limited Slope Too clayey	 1.00 0.50
510: Monona, terrace	 100	 Not limited	 	 Not limited		 Not limited	
510B: Monona, terrace	 60 	 Not limited 	 	 Not limited 	 	 Not limited 	
510C2: Monona, terrace, moderately eroded	 75	 Not limited	 	 Not limited 	 	 Not limited 	
510D2: Monona, terrace, moderately eroded	 75 	 Somewhat limited Slope	 0.63	 Somewhat limited Slope	 0.63	 Somewhat limited Slope	 0.63

Landfills--Continued

Map symbol and soil name	Pct. of map unit	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
510E2: Monona, terrace, moderately eroded	 75 	 Very limited Slope	 1.00	 Very limited Slope	 1.00	 Very limited Slope	 1.00
630: Danbury, occasionally flooded	 80 	 Very limited Flooding Depth to saturated zone Too clayey	 1.00 1.00 0.50	 Very limited Flooding Depth to saturated zone	 1.00 1.00	 Somewhat limited Depth to saturated zone Too clayey	 0.86 0.50
670: Rawles, occasionally flooded	:	 Very limited Flooding Depth to saturated zone Too clayey	 1.00 1.00 0.50	 	 1.00 1.00	 Somewhat limited Too clayey 	 0.50
700: Monona, terrace	 100 	 Somewhat limited Too clayey	0.50	 Not limited		 Somewhat limited Too clayey	0.50
700B: Monona, terrace	 75 	 Somewhat limited Too clayey	0.50	 Not limited 	 	 Somewhat limited Too clayey	0.50
700C2: Monona, terrace, moderately eroded	 50	 Somewhat limited Too clayey		 Not limited 	 	 Somewhat limited Too clayey	
700D2: Monona, terrace, moderately eroded	 60 	 Somewhat limited Slope Too clayey	0.63	 Somewhat limited Slope 	 0.63	 Somewhat limited Slope Too clayey	 0.63 0.50
717D: Napier	 50 	 Somewhat limited Slope	0.04	 Somewhat limited Slope	 0.04	 Somewhat limited Slope	 0.04
Gullied land, frequently flooded	 35 	 Not rated 		 Very limited Flooding Slope	 1.00 0.04	 Not rated 	
740D: Hawick	 90 	 Very limited Seepage, bottom layer Too sandy Slope	 1.00 1.00 0.63	 Very limited Seepage Slope 	 	 Very limited Too sandy Seepage Slope	 1.00 1.00 0.63

Landfills--Continued

and soil name c	Pct. of map unit			Area sanitary		Daily cover for landfill	
	<u> </u>	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
740E:		 		 		l I	
Hawick	90	 Very limited		 Very limited	i	 Very limited	i
	i	Seepage, bottom	1	Seepage	1.00	: -	1.00
	İ	layer	İ	Slope	1.00	Seepage	1.00
		Too sandy	1.00			Slope	1.00
	ļ	Slope	1.00		1		ļ
740F:		 		 		 	
Hawick	90	 Very limited		 Very limited	i	 Very limited	i
	i	Slope	1.00	-	1.00	Slope	1.00
	İ	Seepage, bottom	1.00	Seepage	1.00	Too sandy	1.00
	İ	layer	İ		İ	Seepage	1.00
	ļ	Too sandy	1.00				ļ
980C:		 		 		 	
Judson	55	 Somewhat limited		 Not limited	İ	 Somewhat limited	1
0 442011		Too clayey	0.50		1	Too clayey	0.50
	į				i		
Gullied land,		[[
frequently flooded	35	Not rated		Very limited		Not rated	
		 -		Flooding	1.00		-
1220:		 		 		 	
Nodaway, channeled,	i	 			i	 	1
frequently flooded	80	 Very limited		 Very limited	i	Somewhat limited	i
	i	Flooding	1.00	-	1.00	Too clayey	0.50
	İ	Depth to	1.00	Depth to	1.00	İ	İ
	İ	saturated zone	İ	saturated zone	İ		İ
	ļ	Too clayey	0.50				ļ
5010:		İ		 		l I	
Pits, sand and] 	i	 	1
gravel	100	Not rated		Not rated	i	Not rated	i
3			İ		i		İ
5040:							
Udorthents	100	Not rated		Not rated	1	Not rated	
5080:		 		 		 	
Udorthents	1100	 Not rated		 Not rated		 Not rated	1
odor chemes					i		i
AW:	į	İ	į	j	į	İ	į
Animal waste lagoon	100	Not rated		Not rated		Not rated	ļ
SL:		 		 		 	
Sewage lagoon	100	Not rated		 Not rated		 Not rated	
go _ugoon					i		İ
W:	İ	İ	į	į	į	İ	İ
Water	100	Not rated	1	Not rated	1	Not rated	1

Construction Materials

The titles of the tables described in this section are:

- "Source of Sand and Gravel"
- "Source of Reclamation Material, Roadfill, and Topsoil"

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

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 the table "Source of Sand and Gravel," 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 as *improbable*, *possible*, *probable*, or *very likely* sources of gravel. 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 gravel. The number 0.00 indicates an improbable source; 0.01 to 0.39, a possible source; 0.40 to 0.99, a probable source; and 1.00, a very likely source.

The soils are rated *good, fair,* or *poor* as potential sources of sand. 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. The larger the number, the greater the likelihood that the layer is a source of sand.

In the table "Source of Reclamation Material, Roadfill, and Topsoil," the rating class terms are *good*, *fair*, and *poor*. The features that limit the soils as sources of these materials are specified in the tables. The numerical ratings given after the specified features indicate the degree to which the features limit the soils as sources of reclamation material, roadfill, and 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.

Source of Sand and Gravel

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The ratings given for the thickest layer are for the thickest layer above and excluding the bottom layer. The numbers in the value columns range from 0.00 to 0.99. The greater the value, the greater the likelihood that the bottom layer or thickest layer of the soil is a source of sand or gravel. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map	!		Potential as source of sand	
	unit		1	<u> </u>	1
	 	Rating class	Value	Rating class	Value
1C:	 			 	İ
Ida	95	Improbable	į	Poor	j
		Thickest layer	0.00	Bottom layer	0.00
	 	Bottom layer	0.00	Thickest layer	0.00
1C3:					
Ida, severely eroded	80	_		Poor	
		Thickest layer	0.00	Bottom layer	0.00
	 	Bottom layer 	0.00	Thickest layer 	0.00
1D3:			į		į
Ida, severely eroded	80	Improbable		Poor	
	 	Thickest layer Bottom layer	0.00	Bottom layer Thickest layer	0.00
1E3: Ida, severely eroded	70	 Tmprobable		 Poor	
ida, severely eloded	,0	Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
	į	·	j	į	j
1F3: Ida, severely eroded	 70	 Tmprobable		 Poor	
ida, severely eroded	,0	Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
8B:	 			 	l I
Judson	80	Improbable	i	Poor	i
		Thickest layer	0.00	Bottom layer	0.00
	 	Bottom layer	0.00	Thickest layer	0.00
8C:					
Judson	95	Improbable		Poor	
		Thickest layer	0.00	Bottom layer	0.00
	 	Bottom layer 	0.00	Thickest layer 	0.00
9:			į	-	į
Marshall	95	Improbable	0.00	Poor	
	 	Thickest layer Bottom layer	0.00	Bottom layer Thickest layer	0.00
9B:					
Marshall	100	Improbable Thickest layer	0.00	Poor Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
0.000		l			
9B2: Marshall, moderately	 	[
eroded		Improbable	į	Poor	i
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00

Source of Sand and Gravel--Continued

Map symbol and soil name	Pct. of map	Potential as source		Potential as source	
	unit	Í		<u> </u>	
		Rating class	Value	Rating class	Value
9C: Marshall	 90 	 Improbable Thickest layer Bottom layer	0.00	 Poor Bottom layer Thickest layer	0.00
9C2: Marshall, moderately eroded	:	 Improbable Thickest layer Bottom layer	0.00	:	0.00
9D: Marshall	 85 	 Improbable Thickest layer Bottom layer	0.00	 Poor Bottom layer Thickest layer	0.00
9D2: Marshall, moderately eroded	:	 Improbable Thickest layer Bottom layer	0.00	:	0.00
9E2: Marshall, moderately eroded		 Improbable Thickest layer Bottom layer	0.00	 Poor Bottom layer Thickest layer	0.00
9E3: Marshall, severely eroded	 75 	 Improbable Thickest layer Bottom layer	0.00	 Poor Bottom layer Thickest layer	0.00
10B: Monona	 100 	 Improbable Thickest layer Bottom layer	 0.00 0.00	:	0.00
10B2: Monona, moderately eroded	 80 	 Improbable Thickest layer Bottom layer	0.00	 Poor Bottom layer Thickest layer	0.00
10C2: Monona, moderately eroded	75 75	 Improbable Thickest layer Bottom layer	0.00	 Poor Bottom layer Thickest layer	0.00
10D2: Monona, moderately eroded	 60 	 Improbable Thickest layer Bottom layer	0.00	 Poor Bottom layer Thickest layer	0.00

Source of Sand and Gravel--Continued

Map symbol and soil name	Pct. of map	Potential as source		Potential as source of sand	
	unit	 		 	
		Rating class	Value	Rating class	Value
10D3: Monona, severely eroded	 95 	 Improbable Thickest layer Bottom layer	 0.00 0.00	 Poor Bottom layer Thickest layer	 0.00 0.00
10E2: Monona, moderately eroded	 50 	 Improbable Thickest layer Bottom layer	0.00	 Poor Bottom layer Thickest layer	 0.00 0.00
10E3: Monona, severely eroded	 60 	 Improbable Thickest layer Bottom layer	0.00	 - Poor Bottom layer Thickest layer	0.00
10F2: Monona, moderately eroded	 45 	 - Improbable Thickest layer Bottom layer	0.00	 - Poor Bottom layer Thickest layer	0.00
10F3: Monona, severely eroded	 70 	 Improbable Thickest layer Bottom layer	0.00	 - Poor Bottom layer Thickest layer	0.00
12B: Napier	 85 	 Improbable Thickest layer Bottom layer	0.00	 Poor Bottom layer Thickest layer	0.00
12C: Napier	 95 	 Improbable Thickest layer Bottom layer	0.00	 Poor Bottom layer Thickest layer	0.00
17B: Napier	 50 	 Improbable Thickest layer Bottom layer	0.00	 Poor Bottom layer Thickest layer	0.00
Kennebec, frequently flooded	:	 Improbable Thickest layer Bottom layer	0.00	 Poor Bottom layer Thickest layer	0.00
Nodaway, frequently flooded	 15 	 Improbable Thickest layer Bottom layer	0.00	 Poor Bottom layer Thickest layer	0.00
22D2: Dow, moderately eroded	 90 	 Improbable Thickest layer Bottom layer	0.00	 Poor Bottom layer Thickest layer	0.00

Source of Sand and Gravel--Continued

Map symbol and soil name	Pct. of	of gravel		Potential as source of sand	
	unit			<u> </u>	
	<u> </u>	Rating class	Value	Rating class	Value
22D3: Dow, severely eroded	 90 	 Improbable Thickest layer Bottom layer	 0.00 0.00	 Poor Bottom layer Thickest layer	 0.00 0.00
22E3: Dow, severely eroded	 80 	 Improbable Thickest layer Bottom layer	 0.00 0.00	 Poor Bottom layer Thickest layer	 0.00 0.00
26: Kennebec, occasionally flooded	 95 	 Improbable Thickest layer Bottom layer	 0.00 0.00	 Poor Bottom layer Thickest layer	 0.00 0.00
35D2: Liston, moderately eroded	 50 	 Improbable Thickest layer Bottom layer	 0.00 0.00	 Poor Bottom layer Thickest layer	0.00
Burchard, moderately eroded		 Improbable Thickest layer Bottom layer	 0.00 0.00	 Poor Bottom layer Thickest layer	0.00
35E2: Liston, moderately eroded	 50 	 Improbable Thickest layer Bottom layer	 0.00 0.00	 Poor Bottom layer Thickest layer	0.00
Burchard, moderately eroded		 Improbable Thickest layer Bottom layer	 0.00 0.00	:	 0.00 0.00
35F2: Liston, moderately eroded	 40 	 Improbable Thickest layer Bottom layer	 0.00 0.00	:	0.00
Burchard, moderately eroded	:	 Improbable Thickest layer Bottom layer	 0.00 0.00	 Poor Bottom layer Thickest layer	 0.00 0.00
35G: Liston	 45 	 Improbable Thickest layer Bottom layer	 0.00 0.00	 Poor Bottom layer Thickest layer	0.00
Burchard	 35 	 Improbable Thickest layer Bottom layer	 0.00 0.00	 Poor Bottom layer Thickest layer 	 0.00 0.00

Source of Sand and Gravel--Continued

Map symbol and soil name	Pct. of map	of gravel		Potential as source of sand	
	unit				
	<u> </u>	Rating class	Value	Rating class	Value
54: Zook, occasionally flooded	 90 	 Improbable Thickest layer Bottom layer	0.00	 - Poor Bottom layer Thickest layer	0.00
	į	į	j	j	i
54+: Zook, overwash, occasionally flooded	 90 	 Improbable Thickest layer Bottom layer	0.00	 Poor Bottom layer Thickest layer	0.00
59D2: Burchard, moderately eroded		 Improbable Thickest layer Bottom layer	0.00	 Poor Bottom layer Thickest layer	0.00
59E2: Burchard, moderately eroded	:	 Improbable Thickest layer Bottom layer	 0.00 0.00	 - Poor Bottom layer Thickest layer	 0.00 0.00
99C2: Exira, moderately eroded	 80 	 Improbable Thickest layer Bottom layer	0.00	 Poor Bottom layer Thickest layer	 0.00 0.00
99D2: Exira, moderately eroded	 50 	 Improbable Thickest layer Bottom layer	0.00	 - Poor Bottom layer Thickest layer	0.00
99E2: Exira, moderately eroded	 45 	 Improbable Thickest layer Bottom layer	0.00	 Poor Bottom layer Thickest layer	0.00
100B: Monona	 75 	 Improbable Thickest layer Bottom layer	0.00	 Poor Bottom layer Thickest layer	0.00
100C2: Monona, moderately eroded	 50 	 Improbable Thickest layer Bottom layer	0.00	 Poor Bottom layer Thickest layer	0.00
100D2: Monona, moderately eroded	 45 	 Improbable Thickest layer Bottom layer	0.00	 Poor Bottom layer Thickest layer	 0.00 0.00

Source of Sand and Gravel--Continued

Map symbol and soil name	Pct. of			Potential as source of sand	
	map			[
	unit 	Rating class	Value	Rating class	Value
					1
100D3:					ļ
Monona, severely eroded	15	 Improbable		 Poor	
eroded	43	Thickest layer	0.00	!	0.00
	İ	Bottom layer	0.00	· -	0.00
100-0					-
100E2: Monona, moderately	 	 		 	l I
eroded	45	 Improbable		Poor	i
	į	Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
100E3:	 	 		 	
Monona, severely		 		 	
eroded	45	Improbable	j	Poor	į
		Thickest layer	0.00	· -	0.00
		Bottom layer	0.00	Thickest layer	0.00
100F2:		 		 	i
Monona, moderately	į	İ	i	İ	j
eroded	55			Poor	
		Thickest layer	0.00	· -	0.00
	 	Bottom layer	0.00	Thickest layer	0.00
100F3:					i
Monona, severely	ĺ	İ	İ	İ	İ
eroded	70	: -		Poor	
	 	Thickest layer Bottom layer	0.00	· -	0.00
111D3:		!		!	ļ
Dow, severely eroded	55	: -		Poor	0.00
		Thickest layer Bottom layer	0.00	· -	0.00
Monona, severely		[[1
eroded	40	Improbable Thickest layer		Poor Bottom layer	
		Bottom layer	0.00	· -	0.00
	İ				
111E3:					ļ
Dow, severely eroded	55	Improbable	0.00	Poor Bottom layer	0.00
		Thickest layer Bottom layer	0.00	Thickest layer	0.00
	İ				1
Monona, severely					ļ
eroded	40	Improbable Thickest layer	0.00	Poor Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
	İ	į	j	<u> </u>	i
125D3:					ļ
Ida, severely eroded	50	Improbable		Poor	
		Thickest layer Bottom layer	0.00	Bottom layer Thickest layer	0.00
	i				
Chute, severely		!		!	Ţ
eroded	30	Improbable		Fair	
		Thickest layer Bottom layer	0.00	Thickest layer Bottom layer	0.06 0.26
	i				

Source of Sand and Gravel--Continued

Map symbol and soil name	Pct. of map	of gravel	rce	 Potential as sou of sand 	rce
	unit	!	177-1	 	177-1
		Rating class	Value	Rating class	Value
125E3: Ida, severely eroded	 50 	 Improbable Thickest layer Bottom layer	0.00	 Poor Bottom layer Thickest layer	0.00
Chute, severely eroded	 30 	 Improbable Thickest layer Bottom layer	0.00	 Fair Thickest layer Bottom layer	0.06
133: Colo, occasionally flooded	 85 	 Improbable Thickest layer Bottom layer	0.00	 - Poor Bottom layer Thickest layer	0.00
133+: Colo, overwash, occasionally flooded	 85 	 Improbable Thickest layer Bottom layer	0.00	 - Poor Bottom layer Thickest layer	0.00
212: Kennebec, occasionally flooded	 70 	 Improbable Thickest layer Bottom layer	0.00	 Poor Bottom layer Thickest layer	0.00
212+: Kennebec, overwash, occasionally flooded	 90 	 Improbable Thickest layer Bottom layer	 0.00 0.00	 Poor Bottom layer Thickest layer	0.00
220: Nodaway, occasionally flooded	 75 	 - Improbable Thickest layer Bottom layer	0.00	 - Poor Bottom layer Thickest layer	0.00
266: Smithland, occasionally flooded	 85 	 Improbable Thickest layer Bottom layer	0.00	 - Poor Bottom layer Thickest layer	0.00
266+: Smithland, overwash, occasionally flooded	į	 Improbable Thickest layer Bottom layer	 0.00 0.00	 - Poor Bottom layer Thickest layer	0.00

Source of Sand and Gravel--Continued

Map symbol and soil name	Pct. of		urce	Potential as sou of sand	irce
	map				
	unit 	Rating class	Value	Rating class	Value
268D: Knox	 85 	 Improbable Thickest layer Bottom layer	0.00	 Poor Bottom layer Thickest layer	 0.00 0.00
268E: Knox	 80 	 Improbable Thickest layer Bottom layer	0.00	 Poor Bottom layer Thickest layer	0.00
268F: Knox	 75 	 Improbable Thickest layer Bottom layer	0.00	· -	0.00
430: Ackmore, occasionally flooded	 75 	 Improbable Thickest layer Bottom layer	0.00		0.00
431B: Judson	 55 	 Improbable Thickest layer Bottom layer	0.00	 Poor Bottom layer Thickest layer	0.00
Ackmore, frequently flooded	 25 	 Improbable Thickest layer Bottom layer	0.00	· -	0.00
Colo, overwash, frequently flooded	 15 	 Improbable Thickest layer Bottom layer	0.00	 Poor Bottom layer Thickest layer	0.00
509B: Marshall, terrace	 90 	 Improbable Thickest layer Bottom layer	0.00	· -	0.00
509C: Marshall, terrace	 85 	 Improbable Thickest layer Bottom layer	0.00	 Poor Bottom layer Thickest layer	0.00
509C2: Marshall, terrace, moderately eroded	 65 	 Improbable Thickest layer Bottom layer	0.00	 - Poor Bottom layer Thickest layer	0.00
509D2: Marshall, terrace, moderately eroded	 65 	 - Improbable Thickest layer Bottom layer	0.00	 Poor Bottom layer Thickest layer	0.00

Source of Sand and Gravel--Continued

Map symbol and soil name	Pct.	of gravel	rce	 Potential as sour of sand	ce
	map unit			 	
	Ĺ	Rating class	Value	Rating class	Value
509E2: Marshall, terrace,	 	 	 	 	
moderately eroded	65	 Improbable		Poor	i
	ĺ	Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
510:		 		 	
Monona, terrace	100	Improbable	İ	Poor	i
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
510B:		 		 	i
Monona, terrace	60	Improbable	İ	Poor	į
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
510C2:		 		 	1
Monona, terrace,	ĺ	İ	ĺ	İ	İ
moderately eroded	75		!	Poor	
		Thickest layer Bottom layer	0.00	Bottom layer Thickest layer	0.00
		Boccom rayer		Inickest layer	
510D2:	į	į	į	į	į
Monona, terrace,	75	 		 Dane	
moderately eroded	/5 	Improbable Thickest layer	0.00	Poor Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
	İ		İ		İ
510E2: Monona, terrace,		 			
moderately eroded	 75	 Improbable		Poor	i
•	İ	Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
630:	 	 	 	 	
Danbury,		 		 	1
occasionally	į	İ	İ	İ	j
flooded	80	Improbable		Poor	
		Thickest layer Bottom layer	0.00	Bottom layer Thickest layer	0.00
		Boccom rayer		Inickest layer	
670:	İ		İ		İ
Rawles, occasionally	:	 		 Dane	
flooded	80 	Improbable Thickest layer	0.00	Poor Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
		!		!	
700: Monona, terrace	 100	 Improbable	 	Poor	
Monona, Cerrace		Thickest layer	0.00		0.00
	į	Bottom layer	0.00	Thickest layer	0.00
700D					
700B: Monona, terrace	 75	 Improbable	 	 Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00

Source of Sand and Gravel--Continued

Map symbol and soil name	Pct. of map	!	ırce	 Potential as source of sand		
	unit			<u> </u>		
		Rating class	Value	Rating class	Value	
700C2: Monona, terrace, moderately eroded	 50 	 Improbable Thickest layer Bottom layer	 0.00 0.00	 Poor Bottom layer Thickest layer	 0.00 0.00	
700D2: Monona, terrace, moderately eroded	 60 	 Improbable Thickest layer Bottom layer	 0.00 0.00	 - Poor Bottom layer Thickest layer	 0.00 0.00	
717D: Napier	 50 	 Improbable Thickest layer Bottom layer	0.00	 Poor Bottom layer Thickest layer	0.00	
Gullied land, frequently flooded	 35 	 Not rated 		 Not rated 		
740D: Hawick	 90 	 Possible Thickest layer Bottom layer	0.00	 Fair Thickest layer Bottom layer	0.12	
740E: Hawick	 90 	 Possible Thickest layer Bottom layer	0.00	 Fair Thickest layer Bottom layer	0.12	
740F: Hawick	 90 	 Possible Thickest layer Bottom layer	 0.00 0.04	 Fair Thickest layer Bottom layer	 0.12 0.88	
980C: Judson	 55 	 Improbable Thickest layer Bottom layer	0.00	 Poor Bottom layer Thickest layer	0.00	
Gullied land, frequently flooded	 35	 Not rated		 Not rated		
1220: Nodaway, channeled, frequently flooded	 80 	 Improbable Thickest layer Bottom layer		-	0.00	
5010: Pits, sand and gravel	 100	 Not rated		 Not rated		
5040: Udorthents	100	 Not rated		 Not rated		
5080: Udorthents	 100 	 Not rated 	 	 Not rated 		

Source of Sand and Gravel--Continued

Map symbol	Pct.	Potenti	ial as sou	rce	Potentia	al as sou	rce
and soil name	of	of	f gravel		of	sand	
	map						
	unit						
		Rating	class	Value	Rating	class	Value
AW:							
Animal waste lagoor	100	Not rated			Not rated		
SL:							
Sewage lagoon	- 100	Not rated			Not rated		
		!					ļ
W:							
Water	- 100	Not rated			Not rated		

Source of Reclamation Material, Roadfill, and Topsoil

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 0.99. The smaller the value, the greater the limitation. See text for further explanation of ratings in this table)

Map symbol and soil name	Pct. of map unit	reclamation mate		Potential as source of roadfill		Potential as source of topsoil	
	 	'	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
1C:			 	 			
Ida	95	Fair		Poor	İ	Fair	i
	 	Organic matter content	0.12	Low strength	0.00	Carbonate content	0.99
	 	Water erosion Carbonate content	0.90	 		 -	
1C3:	 	 	 	 		 	
Ida, severely eroded	80	Fair	ĺ	Good	İ	Good	ĺ
	 	content	0.12	 	 	 	
	 	Water erosion Carbonate content	0.90	 		 	
							i
1D3:		 		 Garant		 Tarker	
Ida, severely eroded	80 		 0.12 	Good 		Fair Slope	0.37
		!	0.90				i
		Carbonate content	0.97				
1E3:	 	 	 	 		 	
Ida, severely eroded	70	Fair		Fair	į	Poor	i
	 	Organic matter content	0.12 	Slope 	0.92	Slope 	0.00
	 	Water erosion Carbonate content	0.90	 		 	
1F3:		 		 Parasa		 	
Ida, severely eroded	70 		 0.12	Poor Slope	0.00	Poor Slope	0.00
	İ	content	İ	į	į		i
		!	0.90				
	 	Carbonate content	0.37	 		 	
8B:	į	į	į	į	į		į
Judson	80	!	 0.88	Fair Shrink-swell	0.87	Fair Too clayey	 0.88
			0.90				
8C:	 	 	 	 		 	
Judson	95	Fair		 Fair		 Fair	İ
			0.88	Shrink-swell	0.87	Too clayey	0.88
	 	Water erosion	0.90 	 		 	
9:	į		į	į	į		į
Marshall	95	•		Fair	0.07	Fair	 0.65
	 	Organic matter content	0.50 	Shrink-swell	0.97	Too clayey 	0.65
	į	!	0.90	İ	į	İ	i
		Too clayey	0.99				

Source of Reclamation Material, Roadfill, and Topsoil--Continued

and soil name	Pct. of map unit	reclamation material		Potential as source of roadfill		Potential as source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
9B: Marshall 	100	 Fair Organic matter content Water erosion Too clayey	 0.50 0.90 0.99	 Fair Shrink-swell 	 0.97 	 Fair Too clayey 	 0.65
9B2:		 				 	
Marshall, moderately eroded	85	 Fair Too clayey	0.99	 Fair Shrink-swell	0.87	 Fair Too clayey	0.77
9C: Marshall 	90	 Fair Organic matter content Water erosion Too clayey	 0.50 0.90 0.99	 Fair Shrink-swell 	 0.97 	 Fair Too clayey 	 0.65
9C2: Marshall, moderately eroded	80	 Fair Too clayey	0.99	 Fair Shrink-swell	 0.87	 Fair Too clayey	 0.77
9D: Marshall 	85	 Fair Organic matter content Water erosion Too clayey	 0.50 0.90 0.99	 Fair Shrink-swell 	 0.97 	 Fair Slope Too clayey 	 0.37 0.65
9D2: Marshall, moderately eroded	70	 Fair Too clayey 	 0.99	 Poor Low strength Shrink-swell	 0.00 0.87	 Fair Slope Too clayey	 0.37 0.77
9E2: Marshall, moderately eroded	70	 - Fair Too clayey 	 0.99	 - Poor Low strength Shrink-swell Slope	 0.00 0.87 0.98	 Poor Slope Too clayey	 0.00 0.77
9E3: Marshall, severely eroded	75	 - Fair Too clayey - 	 0.99	 - Poor Low strength Shrink-swell Slope	 0.00 0.87 0.98	:	 0.00 0.77
10B: Monona	100	 Fair Organic matter content Water erosion	0.50	 Good 		 Good 	

Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	reclamation mate		Potential as sou of roadfill	rce	Potential as source of topsoil	
	unit	Rating class and limiting features	Value	Rating class and limiting features	Value	 Rating class and limiting features	Value
10B2: Monona, moderately eroded	 80 	Fair Organic matter content Water erosion	 0.50 0.90	 Good 		 Good 	
10C2: Monona, moderately eroded	 75 	 Fair Organic matter content Water erosion	0.50	 Good 		 Good 	
10D2: Monona, moderately eroded	 60 	Fair Organic matter content Water erosion	0.50	 Good 		 Fair Slope 	 0.37
10D3: Monona, severely eroded	 95 	 - Fair Organic matter content Water erosion	 0.50 0.90	 Good 	 	 Fair Slope 	 0.37
10E2: Monona, moderately eroded	 50 	Fair Organic matter content Water erosion	 0.50 0.90	 Fair Slope 	 0.92	 Poor Slope 	 0.00
10E3: Monona, severely eroded	 60 	 Fair Organic matter content Water erosion	 0.50 0.90	 Fair Slope 	 0.92	 Poor Slope 	 0.00
10F2: Monona, moderately eroded	 45 	!	 0.50 0.90	 	 0.00	 	
10F3: Monona, severely eroded	 70 	 Fair Organic matter content Water erosion	 0.50 0.90	 	 0.00 	 Poor Slope	 0.00
12B: Napier	 85 	 Fair Water erosion 	0.90	 Good 		 Good 	

Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	reclamation mater				Potential as source of topsoil	
	i 	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
12C: Napier	 95 	!	 0.90	 Good 	 	 Good 	
17B: Napier	 50 	!	 0.90	 Good 	 	 Good	
Kennebec, frequently flooded		 Good	 	 - Fair Shrink-swell	 0.87	 Good	
Nodaway, frequently flooded	 15 	Organic matter content	 0.12 0.90	 Poor Low strength Shrink-swell	 0.00 0.87	 Good 	
22D2: Dow, moderately eroded	 90 	Organic matter content Carbonate content	0.50	 Good 	 	 Fair Slope 	 0.37
22D3: Dow, severely eroded	 90 	:	0.50	 Good 	 	 Fair Slope 	 0.37
22E3: Dow, severely eroded	 80 	Organic matter content Carbonate content	0.50	 Fair Slope 	 0.92 	 Poor Slope 	 0.00
26: Kennebec, occasionally flooded	 95 	 Fair Too acid 	 0.99	 Good 	 	 Good 	
35D2: Liston, moderately eroded	 50 	 Good 	 	 Fair Shrink-swell	 0.87	 Fair Slope	0.37
Burchard, moderately eroded		 Fair Organic matter content Water erosion	 0.12 0.99	 Fair Shrink-swell 	 0.87 	 Fair Slope 	 0.37

Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	reclamation material		Potential as source of roadfill		Potential as source of topsoil	
		Rating class and	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
35E2: Liston, moderately eroded	 50 	 Good 	 	 - Fair Shrink-swell Slope	 0.87 0.98	 Poor Slope 	
Burchard, moderately eroded	1	 Fair Organic matter content Water erosion	 0.12 0.99	 Fair Shrink-swell Slope 	 0.87 0.98	 Poor Slope 	0.00
35F2: Liston, moderately eroded	 40 	 Good 	 	 Fair Slope Shrink-swell	 0.32 0.87	 Poor Slope 	0.00
Burchard, moderately eroded	:	 Fair Organic matter content Water erosion	 0.12 0.99	 Fair Slope Shrink-swell	 0.32 0.87	 Poor Slope 	0.00
35G: Liston	 45 	 Good 	 	 Poor Slope Shrink-swell	 0.00 0.87	 Poor Slope 	0.00
Burchard	 35 	Fair Organic matter content Too clayey Water erosion	 0.12 0.98 0.99	 Poor Slope Shrink-swell 	 0.00 0.87 	 Poor Slope Too clayey 	 0.00 0.70
54: Zook, occasionally flooded	 90 	 - Poor Too clayey Water erosion	 0.00 0.99	 - Poor Wetness Shrink-swell	 0.00 0.12	 - Poor Wetness Too clayey	0.00
54+: Zook, overwash, occasionally flooded	90	Too clayey	 0.00 0.99	•	 0.00 0.12	•	 0.00 0.00
59D2: Burchard, moderately eroded		 - Fair Organic matter content Water erosion	 0.12 0.99	 Fair Shrink-swell 	 0.87	 Fair Slope 	0.37

Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential as sour		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
59E2: Burchard, moderately eroded		 Fair Organic matter content Water erosion	 0.12 0.99	 Fair Shrink-swell Slope 	 0.87 0.98	 - Poor Slope -	
99C2:				 	i	 	İ
Exira, moderately eroded	 80 	Fair Organic matter content Water erosion Too acid	 0.50 0.90 0.95	 Poor Low strength Shrink-swell 	 0.00 0.87 	 Good 	
99D2:		 		 	 	 	
Exira, moderately eroded	 50	 Fair	 	 Poor		 Fair	
	 	Organic matter content Water erosion Too acid	0.50 0.90 0.95	Low strength Shrink-swell	0.00	Slope 	0.37
99E2:				 		 	
Exira, moderately eroded	 45 	Fair Organic matter content Water erosion Too acid	 0.50 0.90 0.95	 Poor Low strength Shrink-swell Slope	 0.00 0.87 0.98	 Poor Slope 	0.00
100B:						 	
Monona	75 	Fair Water erosion	0.90	Poor Low strength Shrink-swell	0.00	Good 	
100C2: Monona, moderately eroded	 50	 - Fair Organic matter content	 0.50	 Poor Low strength	 0.00	 Good	
	į	_	0.90				
100D2: Monona, moderately eroded	 45	 Fair		 Poor	 	 Fair	
		Organic matter content Water erosion	0.50	!	0.00		0.37
100D3: Monona, severely eroded	 45	!	!	 Fair		 Fair	
		Organic matter content	0.50			Slope 	0.37
		Water erosion	0.90	I		 	

Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	reclamation material		·		Potential as source of topsoil	
		'	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
100E2: Monona, moderately eroded	 45 	Organic matter content	 0.50 0.90	 - Poor Low strength Slope	 0.00 0.92	 Poor Slope 	 0.00
100E3: Monona, severely eroded	 45 	content	 0.12 0.90	 - Poor Low strength Slope	 0.00 0.92	 Poor Slope 	 0.00
100F2: Monona, moderately eroded	 55 	Organic matter content	0.50	 Poor Low strength Slope	0.00	 Poor Slope 	 0.00
100F3: Monona, severely eroded	 70 	Organic matter content	 0.50 	 Poor Slope	 0.00	 Poor Slope	 0.00
111D3: Dow, severely eroded	 55 	 Fair Organic matter content Carbonate content	 0.50	 Good 	 	 Fair Slope 	 0.37
Monona, severely eroded	 40 	Organic matter content	 0.50 0.90	 Good 	 	 Fair Slope 	 0.37
111E3: Dow, severely eroded	 55 	Organic matter content Carbonate content	0.50	 Fair Slope 	 0.92 	 Poor Slope Carbonate content 	 0.00 0.86
Monona, severely eroded	 40 	Organic matter content	 0.50 0.90	 Fair Slope 	 0.92 	 Poor Slope 	 0.00

Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map	Potential as source reclamation mate:		 Potential as sou of roadfill 	rce	Potential as source of topsoil	
	unit 	 Rating class and limiting features	Value	 Rating class and limiting features	Value	 Rating class and limiting features	Value
	ĺ		İ		Ī		į
125D3: Ida, severely eroded	 50 	 Fair Organic matter	 0.50	 Good 	 	 Fair Slope	 0.37
	 	content Water erosion Carbonate content	 0.90 0.97	 		 	
					į		ļ
Chute, severely		 D = ===		la		 D = ===	
eroded	30 	Poor Too sandy	 0.00	Good		Poor Too sandy	0.00
	 	Wind erosion	0.00	 		Slope	0.37
	 	Organic matter content	0.12	 	<u> </u> 	Carbonate content	!
125E3:	 	 	 	 		 	
Ida, severely eroded	50	 Fair	 	 Fair		Poor	i
	 	Organic matter	0.50	Slope	0.92	Slope	0.00
		Water erosion Carbonate content	0.90	 			
Chute, severely	 			 			
eroded	30	Poor	ĺ	Fair	İ	Poor	ĺ
		Too sandy	0.00	Slope	0.92	Too sandy	0.00
	 	Wind erosion Organic matter content	0.00 0.12 	 	 	Slope Carbonate content 	0.00 0.95
133:	 	 	 	 		 	
Colo, occasionally			İ		i		i
flooded	85	Fair	İ	Poor	i	Poor	i
	 	Too clayey	0.95	Wetness Shrink-swell	0.00	Wetness Too clayey	0.00
133+:	 	 	 	 		 	
Colo, overwash, occasionally	 	 	 	 	 	 	
flooded	85	Fair	j	Poor	į	Poor	į
	 	Too clayey	0.95	Wetness Shrink-swell	0.00	Wetness Too clayey	0.00
212: Kennebec,	 	 	 	 	 	 	
occasionally					i		
flooded	70	Fair	İ	Poor	i	Good	i
	 	Water erosion	0.90	Low strength Shrink-swell	0.00	 	
212+:	 	 	 	[[[]	
Kennebec, overwash, occasionally	 		 	 		 	
flooded	90	Good	İ	Fair	į	Good	İ
				Shrink-swell	0.87		

Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	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
220: Nodaway, occasionally flooded	 75 	 Fair Organic matter content Water erosion	 0.12 0.90	 Poor Low strength Shrink-swell	 0.00 0.87	 Good 	
266: Smithland, occasionally flooded	 85 	 Fair Too clayey	 0.95	 Poor Wetness Shrink-swell	0.00	 Poor Wetness Too clayey	0.00
266+: Smithland, overwash, occasionally flooded	 75 	 Fair Too clayey 	 0.95	 Poor Wetness Shrink-swell	 0.00 0.87	 Poor Wetness Too clayey	0.00
268D: Knox	 85 	 Fair Organic matter content Water erosion	0.88	 Fair Shrink-swell 	 0.89 	 Fair Slope 	0.37
268E: Knox	 80 	 Fair Organic matter content Water erosion	 0.88 0.90	 Fair Shrink-swell Slope	 0.89 0.92	 Poor Slope 	 0.00
268F: Knox	 75 	 Fair Organic matter content Water erosion	0.88	 Poor Slope Shrink-swell	0.00	 Poor Slope 	0.00
430: Ackmore, occasionally flooded	 75 	 Good 		 - Poor Wetness Low strength Shrink-swell	0.00	 Poor Wetness 	 0.00
431B: Judson	 55 	 Fair Too clayey Water erosion	 0.88 0.90	 Fair Shrink-swell 	 0.87	 Fair Too clayey 	 0.88
Ackmore, frequently flooded	 25 	 Good 		 Poor Wetness Low strength Shrink-swell	 0.00 0.00 0.33	 Poor Wetness 	0.00

Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	reclamation mate		Potential as sou of roadfill	rce	Potential as sou of topsoil	irce
	 	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
431B: Colo, overwash, frequently flooded	 15 	 Fair Too clayey	 0.95	 Poor Wetness Shrink-swell	 0.00 0.87	 Poor Wetness Too clayey	 0.00 0.95
509B: Marshall, terrace	 90 	Fair Organic matter content Water erosion Too clayey	 0.50 0.90 0.99	 Fair Shrink-swell 	 0.97 	 Fair Too clayey 	 0.65
509C: Marshall, terrace	 85 	 Fair Organic matter content Water erosion Too clayey	0.50	 Fair Shrink-swell 	 0.97 	 Fair Too clayey 	 0.65
509C2: Marshall, terrace, moderately eroded	 65 	 Fair Too clayey	 0.99	 - Poor Low strength Shrink-swell	 0.00 0.87	 Fair Too clayey 	 0.77
509D2: Marshall, terrace, moderately eroded	 65 	 Fair Too clayey	 0.99	 Poor Low strength Shrink-swell	 0.00 0.87	 - Fair Slope Too clayey	0.37
509E2: Marshall, terrace, moderately eroded	 65 	 - Too clayey -	 0.99 	 Poor Low strength Shrink-swell Slope	 0.00 0.87 0.92	 - Poor Slope Too clayey	 0.00 0.77
510: Monona, terrace	 100 	 Fair Organic matter content Water erosion	0.50	 Good 		 Good 	
510B: Monona, terrace	 60 	 Fair Organic matter content Water erosion	 0.50 0.90	 Good 	 	 Good 	
510C2: Monona, terrace, moderately eroded	 75 	 - Fair Organic matter content Water erosion	 0.50 0.90	 Good 		 Good 	

Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	F reclamation material		Potential as sou of roadfill	rce	Potential as sou of topsoil	irce
	unit 	!	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
510D2: Monona, terrace, moderately eroded	 75 	Organic matter content	 0.50 0.90	 Good 	 	 Fair Slope 	 0.37
510E2: Monona, terrace, moderately eroded	 75 	Organic matter content	 0.50 0.90	 - Fair Slope	 0.92	 - Poor Slope	
630: Danbury, occasionally flooded	 80 	 Good 	 	 - Fair Shrink-swell Wetness	 0.45 0.53	 - Fair Wetness	
670: Rawles, occasionally flooded		 Good	 	 Fair Shrink-swell	 0.87	 Good	
700: Monona, terrace	 100 	!	 0.90	 - Fair Shrink-swell	 0.96	 - Good -	
700B: Monona, terrace	 75 	!	 0.90	 - Fair Shrink-swell	 0.96	 - Good	
700C2: Monona, terrace, moderately eroded	 50 	!	 0.90	 Fair Shrink-swell	 0.96	 Good 	
700D2: Monona, terrace, moderately eroded	 60 		 0.90	 Fair Shrink-swell	 0.96	 Fair Slope 	0.37
717D: Napier	 50 	!	 0.90	 Good	 	 Fair Slope	0.96
Gullied land, frequently flooded	 35 	 Not rated 	 	 Not rated 	 	 Not rated 	
740D: Hawick	90 90 	Too sandy Droughty	 0.00 0.09 0.12 	 Good - - - -	 	 Poor Too sandy Rock fragments Slope 	 0.00 0.03 0.37

Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Potential as sour reclamation mate		Potential as source of roadfill		Potential as source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
740E:	 	 		 	 	 	
Hawick	90	Poor	i	 Fair	i	Poor	i
		!	0.00	1	0.98		0.00
	i	Droughty	0.09			Slope	0.00
	<u> </u> 		0.12		İ	Rock fragments	0.03
740F:	 	 		 			
Hawick	90	Poor	i	Fair	i	Poor	i
	İ	Too sandy	0.00	1	0.18	1	0.00
	İ	Droughty	0.09	_	İ	Too sandy	0.00
		Organic matter content	0.12		 	Rock fragments	0.03
980C:							
Judson	55	Fair	İ	Fair	İ	Good	İ
		Water erosion	0.90	Shrink-swell	0.87		
Gullied land,	 	 		 		 	
frequently flooded	35	Not rated		Not rated	İ	Not rated	İ
1220:							
Nodaway, channeled,	 	 	1	 	l I	 	l I
frequently flooded	 80	 Fair	i i	Poor	 	 Good	
rrequencry rrooted	00	'	0.12	1	0.00	6000	i
	i	content		Shrink-swell	0.87		i
			0.90				
5010:	 	l	l I	l		 	
Pits, sand and		 	İ	 			
gravel	100	Not rated		 Not rated		Not rated	
5040:	 	 	1	 	l I	 	l I
Udorthents	100	 Not rated		 Not rated		 Not rated	
	İ						
5080:		 	ļ	 		 	ļ
Udorthents	100	Not rated 		Not rated 		Not rated 	
AW:			İ		İ		İ
Animal waste lagoon	100	Not rated		Not rated		Not rated	
SL:		[[
Sewage lagoon	100	Not rated	İ	Not rated	İ	Not rated	İ
W: Water	 100	 Not rated		 Not rated		 Not rated	
	= 0 0		1				1

Water Management

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

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

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. Embankments that have zoned construction (core and shell) are not considered. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

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

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of 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.

Ponds and Embankments

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table)

and soil name	Pct. Pond reservoir areas of		Embankments, dikes levees 	, and	Aquifer-fed excavated pond 	ls	
	unii c 	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
	İ		İ	İ	İ		İ
1C: Ida	 95 	 Somewhat limited Slope Seepage	 0.92 0.72	 Very limited Piping 	 1.00	 Very limited Depth to water 	 1.00
1C3:	 	l				 	
Ida, severely eroded	 80 	 Somewhat limited Slope Seepage	0.92	 Very limited Piping 	1.00	 Very limited Depth to water 	1.00
1D3:	 	 		 		 	
Ida, severely eroded	80 	 Very limited Slope Seepage	 1.00 0.72	 Very limited Piping 	1.00	 Very limited Depth to water 	1.00
1E3:	 	 				 	
Ida, severely eroded	 70 	 Very limited Slope Seepage	1.00	 Very limited Piping 	1.00	 Very limited Depth to water 	1.00
	į		į	į	į	į	į
1F3: Ida, severely eroded	 70 	 Very limited Slope Seepage	 1.00 0.72	 Very limited Piping	1.00	 Very limited Depth to water	1.00
		beepage					
8B: Judson	 80 	 Somewhat limited Seepage Slope	 0.72 0.08	 Somewhat limited Piping	 0.19	 Very limited Depth to water 	1.00
							ļ
8C: Judson	 95 	 Somewhat limited Slope Seepage	 0.92 0.72	 Somewhat limited Piping 	 0.19 	 Very limited Depth to water 	 1.00
9:	 	 		 		 	
Marshall	95 	Somewhat limited Seepage	0.72	Not limited		Very limited Depth to water	1.00
9B: Marshall	 100 	Seepage	0.72	 Not limited 	 	 Very limited Depth to water	1.00
	 	Slope 	0.08	 		 	
9B2: Marshall, moderately	 		 	i I	<u> </u>	 	
eroded	85 	Somewhat limited Seepage Slope	 0.72 0.08	Not limited 		Very limited Depth to water 	 1.00

Ponds and Embankments--Continued

Map symbol and soil name	Pct. of map unit	 Pond reservoir ar 	eas	 Embankments, dikes levees 	, and	Aquifer-fed excavated pond 	ls
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
9C: Marshall	 90 	 Somewhat limited Slope Seepage	 0.92 0.72	 Not limited 	 	 Very limited Depth to water	 1.00
9C2: Marshall, moderately eroded		 Somewhat limited Slope Seepage	 0.92 0.72	 Not limited 	 	 - Very limited Depth to water 	 1.00
9D: Marshall	 85 	 Very limited Slope Seepage	 1.00 0.72	 Not limited 	 	 Very limited Depth to water	1.00
9D2: Marshall, moderately eroded	:	 Very limited Slope Seepage	 1.00 0.72	 Not limited 	 	 Very limited Depth to water	 1.00
9E2: Marshall, moderately eroded		 Very limited Slope Seepage	 1.00 0.72	 - Not limited -	 	 - Very limited Depth to water	
9E3: Marshall, severely eroded	 75 	 Very limited Slope Seepage	 1.00 0.72	 Not limited 	 	 Very limited Depth to water	 1.00
10B: Monona	 100 	 Somewhat limited Seepage Slope	 0.72 0.08	 Somewhat limited Piping 	 0.28 	 Very limited Depth to water 	 1.00
10B2: Monona, moderately eroded	 80 	 Somewhat limited Seepage Slope	 0.72 0.08	 Somewhat limited Piping	 0.32	 Very limited Depth to water	1.00
10C2: Monona, moderately eroded	 75 	 Somewhat limited Slope Seepage	 0.92 0.72	 - Somewhat limited Piping -	 0.32	 - Very limited Depth to water 	
10D2: Monona, moderately eroded	 60 	 Very limited Slope Seepage	 1.00 0.72	 - Somewhat limited Piping -	 0.32	 - Very limited Depth to water 	

Ponds and Embankments--Continued

Map symbol and soil name	Pct. of map		eas	 Embankments, dikes levees 	, and	Aquifer-fed excavated pond	ls
	unit 	 Rating class and limiting features	Value	 Rating class and limiting features	Value	 Rating class and limiting features	Value
10D3: Monona, severely eroded	 95 	 Very limited Slope Seepage	 1.00 0.72	 Somewhat limited Piping 	 0.32	 Very limited Depth to water	
10E2: Monona, moderately eroded	 50 	 Very limited Slope Seepage	 1.00 0.72	 Somewhat limited Piping	 0.32	 Very limited Depth to water	1.00
10E3: Monona, severely eroded	 60 	 Very limited Slope Seepage	 1.00 0.72	 Somewhat limited Piping	 0.32	 Very limited Depth to water	1.00
10F2: Monona, moderately eroded	 45 	 Very limited Slope Seepage	 1.00 0.72	 Somewhat limited Piping	 0.32	 Very limited Depth to water	1.00
10F3: Monona, severely eroded	 70 	 Very limited Slope Seepage	 1.00 0.72	 Somewhat limited Piping	 0.32	 Very limited Depth to water	1.00
12B: Napier	 85 	 Somewhat limited Seepage Slope	 0.72 0.08	 Somewhat limited Piping 	 0.68	 Very limited Depth to water	 1.00
12C: Napier	 95 	 Somewhat limited Slope Seepage	 0.92 0.72	 Somewhat limited Piping 	 0.68	 Very limited Depth to water	 1.00
17B: Napier	 50 	 Somewhat limited Seepage Slope	 0.72 0.08	 Somewhat limited Piping 	 0.68	 Very limited Depth to water	1.00
Kennebec, frequently flooded		 Somewhat limited Seepage Slope 	 0.72 0.08 	 Somewhat limited Piping 	 0.87 	 Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	 0.81 0.28 0.10
Nodaway, frequently flooded	 15 	 Somewhat limited Seepage Slope	 0.70 0.08 	 Very limited Piping 	 1.00 	 Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	 0.81 0.30 0.10

Ponds and Embankments--Continued

Map symbol and soil name	Pct. of map unit		Embankments, dikes levees 	, and	Aquifer-fed excavated pond	ls	
		Rating class and	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
22D2: Dow, moderately eroded	 90 	 Very limited Slope Seepage	 1.00 0.72	 Very limited Piping	 1.00	 Very limited Depth to water	 1.00
22D3: Dow, severely eroded	 90 	 Very limited Slope Seepage	 1.00 0.72	 Very limited Piping 	 1.00	 Very limited Depth to water 	 1.00
22E3: Dow, severely eroded	 80 	 Very limited Slope Seepage	 1.00 0.72	 Very limited Piping 	1.00	 Very limited Depth to water	1.00
26: Kennebec, occasionally flooded	 95 	 Very limited Seepage 	 1.00	 Very limited Piping 	 1.00	 - Somewhat limited Depth to saturated zone Cutbanks cave	 0.81 0.10
Liston, moderately eroded	 50 	 Very limited Slope Seepage	 1.00 0.05	 Not limited 		 Very limited Depth to water	1.00
Burchard, moderately eroded		 Very limited Slope Seepage	 1.00 0.04	 Not limited 		 Very limited Depth to water 	1.00
35E2: Liston, moderately eroded	 50 	 Very limited Slope Seepage	 1.00 0.05	 - Not limited - 		 - Very limited Depth to water 	1.00
Burchard, moderately eroded		 Very limited Slope Seepage	 1.00 0.04	 Not limited 		 Very limited Depth to water 	1.00
35F2: Liston, moderately eroded	 40 	 Very limited Slope Seepage	 1.00 0.05	 		 	1.00
Burchard, moderately eroded	:	 Very limited Slope Seepage	 1.00 0.04	 Not limited 		 Very limited Depth to water 	1.00

Ponds and Embankments--Continued

Map symbol and soil name	Pct. of map	Pond reservoir ar 	eas	Embankments, dikes levees	, and	Aquifer-fed excavated pond	ls
	unit 	Rating class and	Value	Rating class and limiting features	Value	 Rating class and limiting features	Value
35G: Liston	 45 	 Very limited Slope Seepage	 1.00 0.05	 Not limited 	 	 Very limited Depth to water 	 1.00
Burchard	 35 	 Very limited Slope Seepage	 1.00 0.04	 Not limited 	 	 Very limited Depth to water	 1.00
54: Zook, occasionally flooded	 90 	 Somewhat limited Seepage 	 0.05	 - Very limited Depth to saturated zone Hard to pack	 1.00 0.96	 Somewhat limited Slow refill Cutbanks cave	 0.95 0.10
54+: Zook, overwash, occasionally flooded	 90 	 Somewhat limited Seepage 	 0.05	 - Very limited Depth to saturated zone Hard to pack	 1.00 0.96	 Somewhat limited Slow refill Cutbanks cave	 0.95 0.10
59D2: Burchard, moderately eroded	1	 Very limited Slope Seepage	 1.00 0.04	 Not limited 	 	 Very limited Depth to water	
59E2: Burchard, moderately eroded		 Very limited Slope Seepage	 1.00 0.04	 Not limited 	 	 Very limited Depth to water	 1.00
99C2: Exira, moderately eroded	 80 	 Somewhat limited Slope Seepage	 0.92 0.72	 		 - Very limited Depth to water	 1.00
99D2: Exira, moderately eroded	 50 	 Very limited Slope Seepage	 1.00 0.72	 Not limited 		 - Very limited Depth to water	 1.00
99E2: Exira, moderately eroded	 45 	 Very limited Slope Seepage	 1.00 0.72	 Not limited 		 Very limited Depth to water	
100B: Monona	 75 	 Somewhat limited Seepage	0.72	 Somewhat limited Piping 	0.24	 Very limited Depth to water 	1.00

Ponds and Embankments--Continued

Map symbol and soil name	Pct. of map unit		eas	Embankments, dikes levees 	, and	Aquifer-fed excavated pond	ls
	 	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
100C2: Monona, moderately eroded	 50 	 Somewhat limited Slope Seepage	 0.92 0.72	 Somewhat limited Piping 	 0.36	 Very limited Depth to water	 1.00
100D2: Monona, moderately eroded	 45 	 Very limited Slope Seepage	 1.00 0.72	 Somewhat limited Piping	 0.36	 Very limited Depth to water	 1.00
100D3: Monona, severely eroded	 45 	 Very limited Slope Seepage	 1.00 0.72	 Somewhat limited Piping		 Very limited Depth to water	 1.00
100E2: Monona, moderately eroded	 45 	 Very limited Slope Seepage	 1.00 0.72	 - Somewhat limited Piping -	 0.36	 - Very limited Depth to water 	 1.00
100E3: Monona, severely eroded	 45 	 Very limited Slope Seepage	 1.00 0.70	 Somewhat limited Piping	 0.28	 Very limited Depth to water	
100F2: Monona, moderately eroded	 55 	 Very limited Slope Seepage	 1.00 0.72	 Somewhat limited Piping	 0.36	 - Very limited Depth to water	
100F3: Monona, severely eroded	 70 	 Very limited Slope Seepage	 1.00 0.72	 Somewhat limited Piping		 - Very limited Depth to water	
111D3: Dow, severely eroded	 55 	 Very limited Slope Seepage	 1.00 0.72	 Very limited Piping 	 1.00	 Very limited Depth to water 	1.00
Monona, severely eroded	 40 	 Very limited Slope Seepage	 1.00 0.72	 Somewhat limited Piping 	0.32	 Very limited Depth to water 	1.00
111E3: Dow, severely eroded	 55 	 Very limited Slope Seepage	 1.00 0.72	 Very limited Piping 		 Very limited Depth to water 	1.00

Ponds and Embankments--Continued

Map symbol and soil name	Pct. of	of ap		Embankments, dikes levees	, and	Aquifer-fed excavated pond	ls
	unit 	Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
111E3: Monona, severely eroded	 40 	 Very limited Slope Seepage	 1.00 0.72	 Somewhat limited Piping 	 0.32	 Very limited Depth to water	 1.00
125D3: Ida, severely eroded	 50 	 Very limited Slope Seepage	 1.00 0.72	 Very limited Piping 	 1.00	 Very limited Depth to water 	1.00
Chute, severely eroded	 30 	 Very limited Seepage Slope	 1.00 1.00	 Somewhat limited Seepage 	 0.26	 Very limited Depth to water 	1.00
125E3: Ida, severely eroded	 50 	 Very limited Slope Seepage	 1.00 0.72	 Very limited Piping 	 1.00	 Very limited Depth to water 	1.00
Chute, severely eroded	 30 	 Very limited Seepage Slope	 1.00 1.00	 Somewhat limited Seepage 	 0.26	 Very limited Depth to water	1.00
133: Colo, occasionally flooded	 85 	 Somewhat limited Seepage	 0.72	 	 1.00	 - Somewhat limited Slow refill Cutbanks cave	 0.28 0.10
133+: Colo, overwash, occasionally flooded	 85 	 - Somewhat limited Seepage	 0.72	 	 1.00	 - Somewhat limited Slow refill Cutbanks cave	 0.28 0.10
212: Kennebec, occasionally flooded	 70 	 Somewhat limited Seepage 	 0.72	 Very limited Piping 	 0.99 	 Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	 0.81 0.28 0.10
212+: Kennebec, overwash, occasionally flooded	 90 	 Somewhat limited Seepage 	 0.72 	 Somewhat limited Piping 	 0.87 	 - Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	 0.81 0.28 0.10

Ponds and Embankments--Continued

Map symbol and soil name	Pct. of map unit		eas	Embankments, dikes levees 	, and	Aquifer-fed excavated pond 	ls
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
220: Nodaway, occasionally flooded	 75 	 Somewhat limited Seepage 	 0.70	 - Very limited Piping - 	 1.00	 - Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	 0.81 0.30 0.10
266: Smithland, occasionally flooded	 85 	 Somewhat limited Seepage 	 0.72	Very limited Depth to saturated zone	 1.00	 Somewhat limited Slow refill Cutbanks cave	 0.28 0.10
266+: Smithland, overwash, occasionally flooded	į	 - Somewhat limited Seepage 		 	 1.00	 Somewhat limited Slow refill Cutbanks cave	 0.28 0.10
268D: Knox	 85 	 Very limited Slope Seepage	1.00	 Not limited 		 Very limited Depth to water	1.00
268E: Knox	 80 	 Very limited Slope Seepage	 1.00 0.72	 Not limited 		 Very limited Depth to water	 1.00
268F: Knox	 75 	 Very limited Slope Seepage	 1.00 0.72	 Not limited 		 Very limited Depth to water 	
430: Ackmore, occasionally flooded	 75 	 Somewhat limited Seepage 	 0.72	 	 1.00 0.02	 Somewhat limited Slow refill Cutbanks cave	 0.28 0.10
431B: Judson	 55 	 Somewhat limited Seepage	0.72	 Somewhat limited Piping	0.19	 Very limited Depth to water	1.00
Ackmore, frequently flooded	 25 	 Somewhat limited Seepage 	 0.72 	 Very limited Depth to saturated zone Piping	 1.00 0.02	 Somewhat limited Slow refill Cutbanks cave 	 0.28 0.10

Ponds and Embankments--Continued

Map symbol and soil name	Pct. of map	Pond reservoir ar	eas	Embankments, dikes levees 	, and	Aquifer-fed excavated pond	ls
	unit 	Rating class and limiting features	Value	Rating class and limiting features	Value	 Rating class and limiting features	Value
431B: Colo, overwash, frequently flooded	 15 	 Somewhat limited Seepage 	 0.72	 - Very limited Depth to saturated zone	 1.00	 - Somewhat limited Slow refill Cutbanks cave	 0.28 0.10
509B: Marshall, terrace	 90 	 Somewhat limited Seepage	0.72	 Not limited 		 Very limited Depth to water	1.00
509C: Marshall, terrace	 85 	 Somewhat limited Slope Seepage	 0.92 0.72	 Not limited 		 Very limited Depth to water	1.00
509C2: Marshall, terrace, moderately eroded	 65 	 Somewhat limited Slope Seepage	 0.92 0.72	 Not limited 		 Very limited Depth to water	1.00
509D2: Marshall, terrace, moderately eroded	 65 	 Very limited Slope Seepage	 1.00 0.72	 Not limited 		 Very limited Depth to water	 1.00
509E2: Marshall, terrace, moderately eroded	 65 	 Very limited Slope Seepage	 1.00 0.72	 Not limited 		 Very limited Depth to water	 1.00
510: Monona, terrace	 100 	 Somewhat limited Seepage	0.72	 Somewhat limited Piping	0.28	 Very limited Depth to water	1.00
510B: Monona, terrace	 60 	 Somewhat limited Seepage	0.72	 Somewhat limited Piping	0.28	 Very limited Depth to water	1.00
510C2: Monona, terrace, moderately eroded	 75 	 Somewhat limited Slope Seepage	 0.92 0.72	 - Somewhat limited Piping	 0.32	 - Very limited Depth to water	
510D2: Monona, terrace, moderately eroded	 75 	 Very limited Slope Seepage	 1.00 0.72	 - Somewhat limited Piping -	 0.32	 - Very limited Depth to water 	 1.00
510E2: Monona, terrace, moderately eroded	 75 	 Very limited Slope Seepage	 1.00 0.72	 Somewhat limited Piping	 0.32	 - Very limited Depth to water	

Ponds and Embankments--Continued

Map symbol and soil name	Pct. of map unit	 Pond reservoir ar 	eas	 Embankments, dikes levees 	, and	Aquifer-fed excavated pond 	ls
	 	Rating class and limiting features	Value	 Rating class and limiting features	Value	 Rating class and limiting features	Value
630: Danbury, occasionally flooded	 80 	 Somewhat limited Seepage 	 0.72 	Very limited Depth to saturated zone Piping	 0.99 0.02	 Somewhat limited Slow refill Cutbanks cave Depth to saturated zone	 0.28 0.10 0.01
670: Rawles, occasionally flooded	:	 Somewhat limited Seepage 	 0.72 	 Somewhat limited Piping 	 0.84 	 Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	0.81
700: Monona, terrace	 100 	 Somewhat limited Seepage	 0.72	 Somewhat limited Piping 	0.24	 Very limited Depth to water 	1.00
700B: Monona, terrace	 75 	 Somewhat limited Seepage Slope	 0.72 0.08	 Somewhat limited Piping 	 0.24 	 Very limited Depth to water 	 1.00
700C2: Monona, terrace, moderately eroded	 50 	 Somewhat limited Slope Seepage	 0.92 0.72	 Somewhat limited Piping 	 0.24	 Very limited Depth to water	 1.00
700D2: Monona, terrace, moderately eroded	 60 	 Very limited Slope Seepage	 1.00 0.72	 Somewhat limited Piping	 0.24	 Very limited Depth to water	
717D: Napier	 50 	 Very limited Slope Seepage	 1.00 0.72	 Somewhat limited Piping 	 0.68 	 Very limited Depth to water 	1.00
Gullied land, frequently flooded	 35 	 Very limited Slope	 1.00	 Not rated 		 Not rated 	
740D: Hawick	 90 	 Very limited Seepage Slope	 1.00 1.00	 Somewhat limited Seepage	 0.88	 Very limited Depth to water	1.00
740E: Hawick	 90 	 Very limited Seepage Slope	 1.00 1.00	 Somewhat limited Seepage 	 0.88 	 Very limited Depth to water 	1.00

Ponds and Embankments--Continued

Map symbol and soil name	Pct. of map unit		eas	Embankments, dikes levees 	, and	Aquifer-fed excavated ponds			
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value		
740F: Hawick	 90 	 Very limited Seepage Slope	 1.00	 Somewhat limited Seepage 	 0.88	 Very limited Depth to water 	 1.00		
980C: Judson	 55 	 Somewhat limited Slope Seepage	 0.92 0.72	 Somewhat limited Piping 	 0.19 	 Very limited Depth to water 			
Gullied land, frequently flooded	 35 	 Somewhat limited Slope	0.92	 Not rated 		 Not rated 	 		
1220: Nodaway, channeled, frequently flooded	 80 	 Somewhat limited Seepage 	 0.70 	 - Very limited Piping - -	 1.00 	 Somewhat limited Depth to saturated zone Slow refill Cutbanks cave	 0.81 0.30 0.10		
5010: Pits, sand and gravel	 100	 Not rated	 	 Not rated	 	 Not rated	 		
5040: Udorthents	 100	 Not rated 	 	 Not rated 	 	 Not rated 	 		
5080: Udorthents	 100	 Not rated	 	 Not rated		 Not rated	 		
AW: Animal waste lagoon	100	 Not rated		 Not rated		 Not rated			
SL: Sewage lagoon	 100	 Not rated	 	 Not rated		 Not rated			
W: Water	 100 	 Not rated 	 	 Not rated 	 	 Not rated 	 		

Soil Properties

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

The table described in this section 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 and the system adopted by the American Association of State Highway and Transportation Officials.

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.

References:

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487–00.

Engineering Properties

(Absence of an entry indicates that data were not estimated)

and soil name	map unit	 				Fragments		Percentage passing sieve number				 Liquid	
			İ	 Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200	limit	ticity
		In	1		j	Pct	Pct		İ	İ		Pct	į
1C:					 		 						
Ida	95		Silt loam Silt loam	ML ML	A-4, A-6 A-4, A-6	0 0	0 0	100 100	100 100	95-100 95-100	95-100 95-100	1	5-15 5-15
1C3:													
Ida, severely									1				
eroded	80	0-3	Silt loam	ML	A-6, A-4	0	, 0 j	100	100	95-100	95-100	30-40	5-15
ļ		3-80	Silt loam	ML	A-6, A-4	0	0	100	100	95-100	95-100	30-40	5-15
1D3:							 					 	
Ida, severely													
eroded	80	0-3	Silt loam	ML	A-6, A-4	0	0	100	100		95-100	1	5-15
		3-80 	Silt loam	ML	A-6, A-4 	0	0 	100	100	95-100	95-100	30-40 	5-15
1E3:				İ	İ	İ	i i		į	j	İ	İ	i
Ida, severely													
eroded	70		Silt loam	ML	A-6, A-4	0	0	100	100	95-100		1	5-15
		3-80 	Silt loam	ML	A-6, A-4	0	0 	100	100	95-100	95-100	30-40 	5-15
1F3:				İ	i	İ	i i		İ	İ	İ		i
Ida, severely													
eroded	70	0-3	Silt loam	ML	A-6, A-4	0	0	100	100	1	95-100	1	5-15
		3-80 	Silt loam	ML	A-6, A-4 	0	0 	100	100	95-100	95-100	30-40	5-15
8B:				İ		İ	i i		i	İ	İ	İ	i
Judson	80	0 - 9	Silty clay loam	CL, ML	A-6, A-7	0	0	100	100	100	95-100	35-50	10-25
ļ			Silty clay loam	•	A-6, A-7	0	0	100	100	100	95-100	1	15-25
			Silty clay loam	1 -	A-6, A-7, A-4		0	100	100	100	95-100	1	5-25
		52-60 	Silty clay loam	CL, CL-ML	A-6, A-7, A-4	0	0 	100	100	100	95-100	25-50 	5-25
8C:			İ	İ	İ	į	i i		į	j	į	į	i
Judson	95	0 - 9	Silty clay loam	CL, ML	A-6, A-7	0	0	100	100	100	95-100	35-50	10-25
			Silty clay loam	•	A-6, A-7	0	0	100	100	100	95-100	1	15-25
		28-52	Silty clay loam	•	A-6, A-7, A-4		0	100	100	100	95-100	1	5-25
		52-60 	Silty clay loam	CL, CL-ML	A-6, A-7, A-4	0	0 	100	100	100	95-100	25-50 	5-25
9:					İ	İ	i i						İ
Marshall	95	0 - 7	Silty clay loam	•	A-6, A-7	0	0	100	100	100	95-100	1	15-25
ļ		7-22	Silty clay loam	•	A-6, A-7	0	0	100	100	100	95-100	,	15-25
ļ		22-65	Silty clay loam	•	A-7, A-6	0	0	100	100	100	95-100	1	15-25
		65-80	Silty clay	CL	A-7, A-6	0	0	100	100	100	95-100	35-50	15-25
			loam, silt			1	 				 	 	
			Toam				 		İ				

Map symbol	 Pct. of	Depth	USDA texture	Classi 	fication	Frag	ments	Pe 	_	Percentage passing sieve number			
and	map unit					>10	3-10					limit	ticity
soil name				Unified	AASHTO	inches	inches	4	10	40	200		index
		In	!		!	Pct	Pct		ļ			Pct	
9B:	 		 	 			 		l I				
Marshall	100	0 - 7	Silty clay loam	l CT.	A-6, A-7	0	0	100	100	100	95-100	35-50	15-25
	_00 		Silty clay loam	!	A-6, A-7	0	0	100	100	100		35-50	
		22-65	Silty clay loam	1	A-7, A-6	0	0 1	100	100	100		35-50	
			Silty clay	CL	A-7, A-6	0	0 1	100	100	100		35-50	
			loam, silt loam										
9B2: Marshall,				 			 						
moderately			1										
eroded	85	0-7	Silty clay loam		A-6, A-7	0	0	100	100	100		35-50	
			Silty clay loam	!	A-7, A-6	0	0	100	100	100		35-50	
		47-80	Silty clay loam, silt loam	CL	A-7, A-6 	0	0 	100 	100 	100	95-100 	35-50 	15-25
9C:				 									
Marshall	90	0 - 7	Silty clay loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-50	15-25
		7-22	Silty clay loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-50	15-25
		22-65	Silty clay loam	CL	A-7, A-6	0	0	100	100	100	95-100	35-50	15-25
	 	65-80	Silty clay loam, silt loam	 - CT	A-7, A-6 	0	0 	100 	100 	100 	95-100 	35-50	15-25
9C2:	 		 	 			 						
Marshall,	i i		İ	İ	j	i	į i		İ	İ	Ì	İ	İ
moderately	İ		İ	İ	İ	Ĺ	į i		İ	İ	İ	İ	ĺ
eroded	80	0 - 7	Silty clay loam	CL	A-6, A-7	j 0	0	100	100	100	95-100	35-50	15-25
	i i	7-47	Silty clay loam	CL	A-7, A-6	j 0	0	100	100	100	95-100	35-50	15-25
	 	47-80	Silty clay loam, silt loam	 	A-7, A-6 	0	0 	100 	100 	100 	95-100	35-50 	15-25
9D:			1	 									
Marshall	 85	0 - 7	 Silty clay loam	। Ст.	 A-6, A-7	0	 0	 100	100	100	95-100	35-50	15-25
Mar Suarr	05 		Silty clay loam	!	A-6, A-7	0	0	100	100	100		35-50	
			Silty clay loam	!	A-7, A-6	0	0	100	100	100		35-50	
			Silty Clay 10am	CL	A-7, A-6	0	0	100	100	100		35-50	
	 	03-00	loam, silt		A-1, A-0 			 					

Engineering Properties -- Continued

Engineering Properties -- Continued

Map symbol	Pct. of	Depth	USDA texture	Classi	fication	Fragi	ments	Pe		e passi	ng	 Liquid	 Plag-
and	map unit		ODDIT CORCUIC		I	>10	3-10		DICTO I	diliber		limit	
soil name	map and	 		 Unified	AASHTO		inches	4	10	40	200		index
		In				Pct	Pct		===			Pct	
9D2:	 	 		 								 	
Marshall, moderately	 	 		 	 		 	 			 	 	
eroded	70	0-7	Silty clay loam	CL	A-6, A-7	j 0	0	100	100	100	95-100	35-50	15-25
	İ	7-47	Silty clay loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-50	15-25
	 	47-80	Silty clay loam, silt loam	 - CL	A-6, A-7 	0	0 	100	100	100	95-100 	35-50 	15-25
9E2:	 					İ							
Marshall,													
moderately													
eroded	70	0-7	Silty clay loam	•	A-6, A-7	0	0	100	100	100		35-50	
		7-47	Silty clay loam	1	A-6, A-7	0	0	100	100	100	95-100	1	15-25
	 	47-80 	Silty clay loam, silt loam	 - CT	A-6, A-7 	0	0 	100 	100	100	95-100 	35-50 	15-25
9E3:	 	 		 							[
Marshall,		ĺ	İ	İ	İ	į	İ		İ	İ	ĺ	ĺ	ĺ
severely eroded	75	0-5	Silty clay loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-50	15-25
		5-46	Silty clay loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-50	15-25
		46-68	Silty clay	CL	A-6, A-7	0	0	100	100	100	95-100	35-50	15-25
	 	 	loam, silt	 							[[
10B:	 -	 		 -	İ	į	 		į	į	İ	 -	
Monona	100	 0-8		 ML	 A-7, A-6	0	 0	 100	100	105-100	 05_100	 35-50	 10-25
Monona	1 100		Silt loam	ML	A-7, A-6	0	0	100	100	95-100			10-25
	 		Silt loam	ML	A-7, A-6	0	0	100	100		95-100	1	10-25
			Silt loam	CL	A-6	0	0	100	100	1		30-40	
10B2: Monona,	 	 	 	 			 		 		 	 	
moderately													
eroded	80		Silt loam	ML, CL	A-6, A-7	0 0	0	100	100			35-50	
	 		Silt loam Silt loam	ML, CL CL	A-6, A-7 A-6	0	0 0	100 100	100 100		95-100 95-100	35-50	10-25 10-20
10C2: Monona,	 	 -	 	 			 	 			 	 	
moderately eroded	 75	 0-7	 Silt loam	 MT_CT	12627		 0	 100	100	05 100	 0E 100		10 25
eroded	/5 		Silt loam Silt loam	ML, CL	A-6, A-7	0	0 0	100	100		95-100	35-50	10-25
	I I		Silt loam	ML, CL CL	A-6, A-7	0	0 0	100	100			35-50	
	 	44-00	DITE TOAM					100				30-40	110-20

Engineering Properties -- Continued

Map symbol	Pct. of	Depth	USDA texture	Classi	fication	Frag	ments	Pe		ge passi number	ng	 Liquid	ticity
and	map unit	_			!	>10	3-10		1			_ limit	
soil name				Unified	AASHTO		inches	4	10	40	200		index
	 	In				Pct	Pct					Pct	l I
10D2:													
Monona,													
moderately	ĺ				ĺ	ĺ	ĺ		ĺ	ĺ	İ	İ	ĺ
eroded	60	0 - 7	Silt loam	ML, CL	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
		7-24	Silt loam	ML, CL	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
		24-60	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
10D3:	 						 				 	 	
Monona, severely	i		İ		i	i	İ		i	i	İ	İ	İ
eroded		0-7	Silt loam	ML	A-7, A-6	j o	0	100	100	95-100	95-100	35-50	10-25
	j i	7-24	Silt loam	ML	A-7, A-6	į o	0	100	100	95-100	95-100	35-50	10-25
		24-60	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
10E2:	 						 				 		
Monona,	i		İ	i	i	i	İ		i	i	i	İ	i
moderately	i				i	i	İ		i	i	i	İ	İ
eroded	50	0-7	Silt loam	ML, CL	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
	İ	7-24	Silt loam	ML, CL	A-6, A-7	j o	0	100	100	95-100	95-100	35-50	10-25
		24-60	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
10E3:	 						 						
Monona, severely	j i		İ	j	j	İ	İ		İ	İ	İ	İ	İ
eroded	60	0-7	Silt loam	ML	A-7, A-6	0	0	100	100	95-100	95-100	35-50	10-25
	ĺ	7-24	Silt loam	ML	A-7, A-6	0	0	100	100	95-100	95-100	35-50	10-25
		24-60	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
10F2:	 						 					 	
Monona, moderately													
eroded	 45	0-7		ML, CL	A-6, A-7	0	l l 0	 100	100	 0E 100	 0E 100	 35-50	 10 2E
eroded	43		Silt loam	ML, CL	A-6, A-7	0	0 0	100	100		95-100	1	10-25
			Silt loam	CL	A-6	0	0	100	100		95-100	1	10-25
10F3:							 						
Monona, severely	i				i	i	 		i	i	İ		i I
eroded	70	0-7	Silt loam	ML	A-7, A-6	0	0	100	100	95-100	95-100	35-50	10-25
02000	, , , , , , , , , , , , , , , , , , ,	7-24	Silt loam	ML	A-7, A-6	0	0	100	100		95-100	1	10-25
		24-60	Silt loam	CL	A-6	0	0	100	100		95-100	1	10-20
12B:	 						 				 		
Napier	85	0-8	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20
•			Silt loam	CL	A-4, A-6	0	0	100	100		95-100	1	8-20
	j		Silt loam	CL	A-4, A-6	0	0	100	100		95-100	1	8-20
	į		Silt loam	CL	A-4, A-6	0	0	100	100		95-100	,	8-20
	į		i	İ	i	i	İ		i	i	i	i	ĺ

Map symbol	Pct. of	Depth	USDA texture	Classi	fication	Frag	ments	Pe	ercentag	-	ng	 Liquid	Plas-
and	map unit					>10	3-10					limit	
soil name	į į		İ	Unified	AASHTO	inches	inches	4	10	40	200	İ	index
		In				Pct	Pct		Ţ	[[Pct	
12C:	 			 			 			 	 	 	
Napier	95	0-8	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20
		8-29	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20
		29-48	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20
		48-60	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20
17B:							 		l			 	
Napier	50	0-8	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20
	ĺ	8-29	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20
		29-48	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20
		48-60	Silt loam	CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	8-20
Kennebec, frequently	 		 	 			 			 	 	 	
flooded	20	0-8	Silt loam	CL	A-7, A-6	0	0	100	100	95-100	90-100	25-45	10-20
	j	8-41	Silt loam	CL	A-7, A-6	0	0	100	100	95-100	90-100	25-45	10-20
	 	41-54	Silt loam, silty clay loam	CL 	A-4, A-6	0	0 	100	100	95-100 	90-100	 25-40 	5-15
		54-80	Silt loam, silty clay loam	 - CT	A-4, A-6	0	0 	100	100	95-100 	90-100	25-40	5-15
Nodaway,				 			 		l I	 		 	
frequently	j		İ	İ	j	j	į i		i	İ	į	İ	į
flooded	15	0 - 7	Silt loam	CL	A-6, A-4	0	0	100	94-100	90-100	86-100	25-35	5-15
	 	7-31	Stratified silt loam to silty clay loam, silt loam, silty clay loam	CL 	A-6, A-4 	0 	0 	100	94-100 	88-100 	84-99 	25-40 	5-15
	 	31-42	Stratified silt loam to silty clay loam, silt loam, silty clay loam	 CL	A-6, A-4 	0	0 	100	94-100	88-100 	84-100 	25-40 	5-15
	 	42-80	Stratified silt loam to silty clay loam, silt loam, silty clay loam	CL 	A-6, A-4	0	0 	100	94-100	88-100 	84-99 	25-40 	5-15

Map symbol	Pct. of	Depth	USDA texture	Classi 	fication	Frag	ments		rcentage sieve n	_	ng	 Liquid	 Plas
and	map unit	ĺ	İ			>10	3-10	ĺ				limit	ticity
soil name	_	İ	İ	Unified	AASHTO	inches	inches	4	10	40	200	į	index
		In	İ		Ţ	Pct	Pct					Pct	
 22D2		 	 	 			 	 	 	 	 	 	
Dow, moderately		İ	İ	İ	j	j	į	İ	j	į	j	į	İ
eroded	90	0-6	Silt loam	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	95-100	25-40	5-15
		6-80	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	5-15
22D3:		 	 					 		 	 	 	
Dow, severely		ĺ	İ	İ	İ	į	İ	ĺ	ĺ	ĺ	ĺ	İ	ĺ
eroded	90	0-6	Silt loam	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	95-100	25-40	5-15
		6-80	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	5-15
22E3:		 		 				 	 	 	 		
Dow, severely													
eroded	80	0-6	Silt loam	CL, CL-ML	A-6, A-4	0	0	100	100	95-100	95-100	25-40	5-15
		6-80	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	95-100	25-40	5-15
26:		 		 				 	 	 	 		
Kennebec,													
occasionally													
flooded	95	0-8	Silty clay loam	CL	A-6	0	0	95-100	95-100	95-100	95-100	30-40	10-20
		8-41	Silty clay loam	ML	A-4	0	0	95-100	95-100	95-100	95-100	25-40	5-12
		41-54	Silty clay loam	ML	A-4	0	0	95-100	95-100	95-100	95-100		NP
		54-80	Silty clay loam	ML	A-4	0	0	95-100	95-100	95-100	95-100		NP
35D2:		 		 	1			 	 		 		
Liston,													
moderately													
eroded	50	0-5	Clay loam	CL	A-6, A-7	0	0-5	95-100	95-100	85-100	55-90	30-50	15-25
		5-38	Clay loam	CL	A-6, A-7	0	0-5	95-100	95-100	90-100	70-90	30-55	12-30
		38-80	Loam, clay loam	CL	A-6, A-7	0	0-5	95-100	95-100	90-100	60-75	25-55	10-30
Burchard,		 		 	İ								
moderately													
eroded	35	0-5	Clay loam	CL	A-6, A-7	0			95-100			1	,
		5-13	Clay loam	CL	A-6, A-7	0			85-100			35-50	
		13-37	Clay loam, loam		A-6, A-7	0			85-100				
I		37-80	Clay loam, loam		A-6, A-7	0	0-5	95-100	85-100	75-95	60-80	35-50	15-30

Map symbol	Pct. of	Depth	USDA texture	Classi	fication	Frag	ments		rcentago sieve no	-	ng	 Liquid	 Plas
and	map unit	· -	İ			>10	3-10	İ				limit	ticity
soil name	i		İ	Unified	AASHTO	inches	inches	4	10	40	200		index
		In	İ			Pct	Pct	<u> </u>		<u>. </u>		Pct	İ
35E2:	 								 	 			
Liston, moderately	 	 		 			 		 	 	[[
eroded	50	0-5	Clay loam	CL	A-6, A-7	0	0-5	95-100	95-100	85-100	55-90	30-50	15-25
		5-38	Clay loam	CL	A-6, A-7	0	0-5	95-100	95-100	90-100	70-90	30-55	12-30
		38-80	Loam, clay loam	CL	A-6, A-7	0	0-5	95-100	95-100	90-100	60-75	25-55	10-30
Burchard, moderately			 	 			 		 	 	 		
eroded	35	0-5	Clay loam	CL	A-6, A-7	0	0-5	95-100	95-100	85-95	60-80	35-50	14-24
		5-13	Clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	75-95	60-80	35-50	20-30
		13-37	Clay loam, loam	CL	A-6, A-7	0	0-5	95-100	85-100	75-95	60-80	35-50	20-30
		37-80	Clay loam, loam	CL	A-6, A-7	0	0-5	95-100	85-100	75-95	60-80	35-50	15-30
35F2:	 						 			 			
Liston,													
moderately													
eroded	40	0-5	Clay loam	CL	A-6, A-7	0	0-5	95-100	95-100	85-100	55-90	30-50	15-25
		5-38	Clay loam	CL	A-6, A-7	0	1					30-55	
		38-80 	Loam, clay loam	CL	A-6, A-7	0	0-5	95-100	95-100	90-100	60-75	25-55	10-30
Burchard,													
moderately								ļ	!				!
eroded	30	0-5	Clay loam	CL	A-6, A-7	0	!	1			1	35-50	
		5-13	Clay loam	CL	A-6, A-7	0	0-5	1	85-100		1	1	20-30
		13-37	Clay loam, loam	1	A-6, A-7	0	1	95-100				1	20-30
	 	37-80 	Clay loam, loam	CL	A-6, A-7	0 	0-5	95-100 	85-100 	75-95 	60-80 	35-50	15-30
35G:	j	İ	İ	İ	j	i	İ	İ	i	į	i	İ	i
Liston	45	0-5	Clay loam	CL	A-6, A-7	0	0-5	95-100	95-100	85-100	55-90	30-50	15-25
	į į	5-38	Clay loam	CL	A-6, A-7	0	0-5	95-100	95-100	90-100	70-90	30-55	12-30
		38-80	Loam, clay loam	CL	A-6, A-7	0	0-5	95-100	95-100	90-100	60-75	25-55	10-30
Burchard	 35	 0-11	 Clay loam	 CL	A-6, A-7	0	0-5	95-100	 95-100	 85-95	60-80	35-50	 14-24
		11-24	Clay loam	CL	A-6, A-7	0	0-5	95-100	85-100	75-95	60-80	35-50	20-30
		24-36	Clay loam, loam	CL	A-6, A-7	0	0-5	95-100	85-100	75-95	60-80	35-50	20-30
		36-60	Clay loam, loam	CL	A-7, A-6	0	0-5	95-100	85-100	75-95	60-80	35-50	15-30

Map symbol	Pct. of	Depth	USDA texture	Classi	fication	i	ments		rcentag	e passi: umber	ng		 Plas-
and soil name	map unit	 		Unified	AASHTO	>10	3-10	 4	10	40	200	limit	ticity
SOII Hame		In			AASHIO	Pct	Pct	-	10	40	200	Pct	
54:				 	- }			 					
Zook, occasionally		 		 			 	 	 		 		
flooded	 90	 0-6	 Silty clay loam	 CT.	 A-7	0	0	100	100	 95_100	95-100	 45-65	 20-35
11000eu]	6-20	Silty clay loam	!	A-7	0	0	100	100		95-100		
			Silty clay,	CH	A-7	0	0	100	100	1	95-100		1
		20-32 	silty clay					100 	100	 			
		52-60 	Silty clay loam, silty clay, silt loam	ML 	A-6, A-7 	0	0 	100 	100 	95-100 	95-100 	35-80 	10-50
54+:		 	į	 -	İ	į	į į	 	İ	į	į		į
Zook, overwash, occasionally		 	 	 			 	 	 	 	i I	 	
flooded	90	0-6	Silt loam	CL	A-7	j o	0	100	100	95-100	95-100	45-65	20-35
	i	6-20	Silty clay loam	CL	A-7	j o	0	100	100	95-100	95-100	45-65	20-35
		20-52	Silty clay, silty clay loam	CH 	A-7	0	0 	100 	100 	95-100 	95-100	60-85	35-55
		 52-60 	1	ML 	A-6, A-7 	0	0 	100 	100 	 95-100 	 95-100 	35-80 	10-50
59D2: Burchard, moderately		 	 	 			 	 	 	 	 	 	
eroded	l 55	 0-5	Clay loam	 CL	A-6, A-7	 0	0-5	 05_100	 05_100	 05_05	 60-80	 35-50	 14-24
eroded] 33	5-13	Clay loam	CL	A-6, A-7	0	0-5			75-95			20-30
		13-37	Clay loam, loam	1 -	A-6, A-7	0	0-5				60-80		
		37-80	Clay loam, loam	•	A-6, A-7	0	0-5				60-80		15-30
59E2: Burchard, moderately		 	 	 			 	 	 	 	 	 	
eroded	 55	 0-5	Clay loam	 CL	A-6, A-7	0	0-5	 95_100	 95_100	 85_95	 60-80	 35-50	 14-24
C10464	55	5-13		CL	A-6, A-7	0				1	60-80		1
		13-37	Clay loam, loam	1 -	A-6, A-7	0	0-5			75-95			20-30
			Clay loam, loam	•	A-6, A-7	0	0-5				60-80		1
		31-00 	cray roam, roam	 CII	A-0, A-/	0	0-5	 33-100	 32-T00	13-33	30-80	33-30	1 13-30

Map symbol	Pct. of	 Depth	USDA texture	Classi	fication	_i	ments		_	e passi: umber	ng	 Liquid	
and soil name	map unit	l I		Unified	AASHTO	>10 inches	3-10 inches	 4	10	40	200	limit 	ticity index
		In				Pct	Pct	<u> </u>				Pct	
99C2:	 	 		 			 	 				 	
Exira, moderately	j I	i I		 -	İ	İ	i i	 	İ	į	j I	i i	į į
eroded	80	0-6	Silty clay loam	CL	A-7, A-6	0	0	100	100	100	95-100	35-50	15-25
			Silty clay loam, silt loam	CT	A-7, A-6	0	0	100	100	100		35-50	
	 	40-80 	Silty clay loam, silt loam	 - CL	A-7, A-6	0	 0 	 100 	100	100	 95-100 	 35-50 	 15-25
99D2: Exira,	 	 	 	 			 	 			 	 	
moderately eroded	 50	 0-6		l ar	 A-7, A-6	0	 0	 100	100	100		 35-50	115 05
eroded	50 		Silty clay loam Silty clay loam, silt	CT	A-7, A-6	0	0	100 100 	100	100		35-50 35-50 	
	 	 40-80 	loam Silty clay loam, silt loam	 - CT	 A-7, A-6 	0	 0 	 100 	 100 	100	 95-100 	 35-50 	 15-25
99E2: Exira, moderately	 	 	 	 			 	 	 	 	 	 	
eroded	 45	0-6	Silty clay loam	l CT.	A-7, A-6	0	0	100	100	100	95-100	35-50	15-25
020404	 		Silty clay loam, silt loam	CT 	A-7, A-6	0	0 0 	100 100 	100	100		35-50 	
	 	40-80	Silty clay loam, silt loam	 CT	A-7, A-6	0	0 	100 	100	100	95-100	35-50 	15-25
100B:													
Monona	75	0-7	Silty clay loam	ML	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
		7-20	Silty clay loam	ML	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
	 	20-48 	Silt loam, silty clay loam	ML 	A-6, A-7	0	0 	100 	100	95-100 	95-100 	35-50 	10-25
	 	48-80	Silt loam	CL	A-6	0	, 0 	100	100	95-100	 95-100 	30-40	10-20

Map symbol and	Pct. of	 Depth	USDA texture	Classi	fication	Frag	ments		-	ge passi: number	ng	 Liquid limit	
soil name	map unit	 	l I	 Unified	AASHTO		inches	 4	10	40	200	11m1c	index
SOII Hame		In]		AASHIO	Pct	Pct	-	10	40	200	Pct	Index
100C2:		 	 	 			 	 			 	 	
Monona, moderately		 	 	l I			 	 				 	l I
eroded	50	 0-6	Silty clay loam	l Inver	A-6, A-7	0	l 0	100	100	95-100	05-100	35-50	110-25
e10ded 	30		Silt loam, silty clay loam	ML 	A-6, A-7	0	0 0 	100	100		95-100 95-100 		10-25
		24-80	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
100D2:		 	1	 									
Monona, moderately		 	 	 			 	 			 	 	
eroded	45	0-6	Silty clay loam	ML	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
		6-24	Silt loam, silty clay loam	ML	A-6, A-7	0	0	100	100		95-100		10-25
		24-80	Silt loam	CT	A-6	0	0	100	100	95-100	95-100	30-40	10-20
100D3:				 							 	 	
Monona, severely													
eroded	45	0-7	Silty clay loam	!	A-6, A-7	0	0	100	100		95-100		
		7-24 	Silt loam, silty clay loam	MTL 	A-6, A-7 	0 	0 	100 	100 	95-100 	95-100 	35-50 	10-25
İ		24-36	Silt loam	ML, CL	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
		36-80	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
100E2:		 	 	 			 	 	 		 	 	
moderately													
eroded	45	0-6	Silty clay loam	!	A-6, A-7	0	0	100	100	95-100			
		6-24 	Silt loam, silty clay loam	ML 	A-6, A-7 	0 	0 	100 	100 	95-100	95-100	35-50 	10-25
		24-80	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
100E3: Monona, severely		 	 	 			 				 	 	
eroded	45	 0-7	Silty clay loam	। мт.	A-6, A-7	0	l 0	100	100	95-100	95-100	 35-50	10-25
			Silt loam, silty clay	ML ML	A-6, A-7	0	0	100	100	1	95-100		10-25
		24-36	Silt loam	 ML, CL	A-6, A-7	0	l l 0	 100	100	95-100	95-100	 35-50	10-25
			Silt loam	CL 	A-6	0	0 0	100	100	95-100	1		

Map symbol	Pct. of	 Depth	USDA texture	Classi	fication	Frag	ments	Pe	_	ge passi: number	ng	 Liquid	 Plas
and soil name	map unit		İ	Unified	AASHTO	>10	3-10	 4	10	40	200	limit	ticity index
BOII Hame		In			AADIITO	Pct	Pct	-	10	10	200	Pct	Index
100F2:								 			 		
Monona, moderately			j 	j I	İ	İ	 	 	İ İ	į I	i I	 	
eroded	55	0-6	Silty clay loam	ML	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
		6-24 	Silt loam, silty clay loam	ML 	A-6, A-7 	0 	0 	100 	100	95-100	95-100 	35-50 	10-25
		24-80	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
100F3:													
Monona, severely													
eroded	70		Silty clay loam		A-6, A-7	0	0	100	100			35-50	
		7-24 	Silt loam, silty clay loam	ML 	A-6, A-7 	0 	0 	100 	100 	95-100 	95-100 	35-50 	10-25
	İ	24-36	Silt loam	ML, CL	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
		36-80	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
111D3:													
Dow, severely				!		ļ.					!		
eroded	55	0-6	Silt loam	CL, CL-ML	A-6, A-4	0	0	100	100	95-100			5-15
		6-80 	Silt loam	CL-ML, CL	A-4, A-6	0	0 	100 	100	95-100	95-100 	25-40 	5-15
Monona, severely	İ	İ	İ	İ	j	j	į	į	İ	İ	İ	į	
eroded	40	0-7	Silty clay loam	ML	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
		7-24 	Silt loam, silty clay loam	ML 	A-6, A-7 	0 	0 	100 	100 	95-100 	95-100 	35-50 	10-25
		24-36	Silt loam	ML, CL	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
		36-80	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
111E3:			ļ										
Dow, severely				!		ļ.					!		
eroded	55		Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	95-100			5-15
		6-60 	Silt loam	CL-ML, CL	A-4, A-6	0	0 	100 	100	95-100 	95-100 	25-40 	5-15
Monona, severely				İ	į	į	į		İ	İ	İ	į	
eroded	40	0-7	Silty clay loam	ML	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
		7-24 	Silt loam, silty clay loam	ML 	A-6, A-7	0	0 	100 	100	95-100	95-100 	35-50 	10-25
	İ	24-36	Silt loam	ML, CL	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
	i	36-80	Silt loam	CL	A-6	0	0	100	100		95-100		10-20
	İ			į	į	i	i	İ	i	İ	į	i	

Map symbol	Pct. of	Depth	USDA texture	Classi	fication	Fragi	nents	Pe	rcentage sieve n	_	ng	 Liquid	 Plas
and	map unit					>10	3-10					limit	
soil name				Unified	AASHTO		inches	4	10	40	200	<u> </u>	index
		In				Pct	Pct			 	 	Pct	
125D3:			 	 						 	 	 	
Ida, severely	i		i			i				! 	! 		i
eroded	50	0-3	Silt loam	ML	A-6, A-4	0	0	100	100	95-100	95-100	30-40	5-15
İ	ĺ	3-80	Silt loam	ML	A-6, A-4	0	0	100	100	95-100	95-100	30-40	5-15
											<u> </u>		!
Chute, severely	 30	0 4			 A-2			100	100			0-14	 NP
eroded	30	0 - 4	Loamy fine sand Fine sand,	SM	A-2 A-2, A-3	0	0 1 0	100 100	100 95-100	70-85	10-35 5-25	0-14	NP NP
		4-00	sand, loamy	511	A-2, A-3	0	0	100	33-100	70-33 	3-23	0-14	NF
	i		fine sand			i			i	İ	İ	İ	i
j	į		İ	j	j	į	j		j	j	j	į	į
125E3:			ļ										
Ida, severely													
eroded	50		Silt loam Silt loam	ML ML	A-6, A-4 A-6, A-4	0	0 0	100 100	100	95-100 95-100		1	5-15
		3-80	Silt loam	ML	A-6, A-4	0	0	100	100	95-100	 95-100	30-40	5-15
Chute, severely					i					! 	! 		i
eroded	30	0 - 4	Loamy fine sand	SM	A-2	0	0	100	100	70-85	10-35	0-14	NP
		4-60	Fine sand,	SM	A-2, A-3	0	0	100	95-100	70-95	5-25	0-14	NP
			sand, loamy	!									
			fine sand										
133:			 	 			 			 	 	 	
Colo,			i İ							! 	l I		i
occasionally	i		İ	İ	j	i			i	İ	İ	İ	i
flooded	85	0 - 8	Silty clay loam	CL, CH	A-7	0	0	100	100	90-100	90-100	40-60	15-30
			Silty clay loam		A-7	0	0	100				40-60	
			Silty clay loam		A-7	0	0	100	100			40-55	
		51-60	Silty clay	CH, CL	A-7	0	0	100	100	95-100	80-100	40-55	15-30
			loam, clay loam, silt	 		l I			1	l I	 	 	
			loam							 	! 	 	i
	İ				į	i			i	İ	İ	İ	i
133+:													
Colo, overwash,			ļ										
occasionally													
flooded	85	0 - 8	Silty clay loam, silt	CH, CL	A-7	0	0	100	100	95-100	 80-100	40-55	15-30
			loam	 						 	l I	 	
		8-34	Silty clay loam	CL, CH	A-7	0	0	100	100	90-100	90-100	40-60	15-30
	i		Silty clay loam		A-7	0	0	100	100			40-55	1
j	į	51-60	Silty clay	CH, CL	A-7	0	0	100	100	95-100	80-100	40-55	15-30
			loam, clay	ļ	ļ	ļ					!		!
			loam, silt			-							
			loam										

Map symbol	Pct. of	Depth	USDA texture	Classi	fication		ments	Pe	ercentag sieve n	-	ng		 Plas-
and soil name	map unit] 	Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200	limit	ticity
		In	İ			Pct	Pct		i i	İ	İ	Pct	İ
										[
212: Kennebec,												 	
occasionally flooded	 70	 0-8	 Silt loam	CL	A-7, A-6	0	 0	100	100	 95_100	90-100	25_45	10-20
1100ded	, , , o		Silt loam	CL	A-7, A-6	0	0 0	100	100		90-100		10-20
		41-54	Silt loam, silty clay	CL	A-4, A-6	0	0	100	100		90-100	1	5-15
	 	 54-80 	loam Silt loam, silty clay loam	 CT 	A-4, A-6	0	 0 	100	100	 95-100 	 90-100 	 25-40 	 5-15
212+: Kennebec, overwash,				 						 		 	
occasionally	l I	 		 		ļ	 		l I		l I	 	l I
flooded	 90	 0-8	Silt loam	CL	A-7, A-6	0		100	100	 95-100	90-100	25-45	10-20
	İ		Silt loam	CL	A-7, A-6	0	0	100	100		90-100		10-20
		41-54	Silt loam, silty clay loam	 CL	A-4, A-6	0	0 	100	100	 95-100 	90-100	25-40	5-15
		54-80	Silt loam, silty clay loam	CL	A-4, A-6	0	0 	100	100	95-100 	90-100 	25-40	5-15
220: Nodaway, occasionally	 		 	 			 		 	 	 	 	
flooded	75	0-7	Silt loam	CL	A-6, A-4	0	0	100	94-100	90-100	86-100	25-35	5-15
	 	7-31	Stratified silt loam to silty clay loam, silt loam, silty clay loam	CL 	A-6, A-4	0	0 	100	94-100	88-100 	84-99 	25-40	5-15
		31-42	Stratified silt loam to silty clay loam, silt loam, silty clay loam	CL 	A-6, A-4 	0	0 	100	94-100	88-100 	84-100 	25-40	5-15
		42-80	Stratified silt loam to silty clay loam, silt loam, silty clay loam	CL 	A-6, A-4	0	0 	100	94-100	88-100 	84-99 	25-40	5-15

Map symbol	 Pct. of	Depth	USDA texture	C1	assif	ication		Fragi	ments	Pe		ge passin number	ng	 Liquid	 Plas-
and	map unit			i		l		>10	3-10					limit	
soil name				Unifi	ed	AASH	то		inches	4	10	40	200		index
		In	1					Pct	Pct			1		Pct	
266:	 			 		 			 				 		
Smithland, occasionally				 		 							 		
flooded	 85	0 - 7	Silty clay loam	l CT.		 A-7	l I	0	0	100	100	90-100	 90-100	40-60	 15-30
2200000	, 55 , 		Silty clay loam			A-7	i	0	0	100	100		90-100	,	15-30
	i		Silty clay loam	•		A-7	i	0	0	100	100			40-55	1
	i		Silty clay	CL		A-7	i	0	0	100	100			40-55	
			loam, clay loam, silt loam	 		 	 						 	 	
266+:						 					ļ		 	ļ [ļ
Smithland, overwash,						 									
occasionally		0 0						•		100	100	100 100		140.60	115 20
flooded	75		Silt loam	CL		A-7 A-7		0	0 0	100 100	100			40-60 40-60	1
			Silty clay loam			A-7 A-7	l i	0	0	100	100			40-60	1
	 		Silty clay loam Silty clay	CL		A-7 A-7		0	0	100	100			40-55	
		30-00	loam, clay loam, silt loam			A -7 	 	Ü		100	100		 		
268D:	 					 									
Knox	85	0 - 7	Silt loam	ML, CL,	CL-ML	A-4, A-	6	0	0	100	100	95-100	90-100	20-35	2-15
		7-12	Silt loam	ML, CL,	CL-ML	A-4, A-	6	0	0	100	100	95-100	90-100	20-35	2-15
	 	12-61	Silty clay loam, silt loam	CL 		A-7 		0	0	100	100	95-100	95-100	40-50 	20-30
		61-70	Silt loam	CL		 A-6, A-	7	0	0	100	100	95-100	90-100	30-45	10-25
268E:	 					 									
Knox	80	0 - 7	Silt loam	ML, CL,	CL-ML	A-4, A-	6	0	0	100	100	95-100	90-100	20-35	2-15
		7-12	Silt loam	ML, CL,	CL-ML	A-4, A-	6	0	0	100	100	95-100	90-100	20-35	2-15
	 	12-61	Silty clay loam, silt loam	CL 		A-7 	 	0	0 	100	100 	95-100 	95-100 	40-50 	20-30
	 	61-70	Silt loam	CL		A-6, A-	7	0	0 	100	100	95-100	90-100 	30-45	10-25
268F:				<u> </u>		<u> </u>	ľ				i	i	i		i
Knox	75	0 - 7	Silt loam	ML, CL,	CL-ML	A-4, A-	6	0	0	100	100	95-100	90-100	20-35	2-15
	ı İ	7-12	Silt loam	ML, CL,	CL-ML	A-4, A-	6	0	0	100	100	95-100	90-100	20-35	2-15
	 	12-61	Silty clay loam, silt loam	CL		A-7 	 	0	0	100	100	95-100	95-100 	40-50	20-30
	 	61-70	Silt loam	CL		 A-6, A-	7	0	 0	100	100	95-100	 90_100	30-45	 10-2F
		01-10	DITC TOWN	(L)		A-0, A-	/	U	U	T00	1 100	22-T00	120-T00	30-45	IU-Z5

Map symbol	Pct. of	Depth	USDA texture		Classi	ficati	on		Fragi	ments		_	ge passi:	ng	 Liquid	 Plas-
and	map unit	i -	İ					i	>10	3-10					limit	ticity
soil name				U:	nified	A	ASHTO		inches	inches	4	10	40	200		index
		In							Pct	Pct					Pct	
430: Ackmore,				 						 				 	 	
occasionally				ļ												
flooded	75 	0-6 6-25	Silt loam Silt loam, silty clay	ML, CL,			A-7, A-4,		0	0 0 	100 100	100 100 		85-100 85-100 	1	8-20 8-20
		 25-60 	loam Silty clay loam, silt loam	 CH, 	CL	 A-6,	A-7		0	0 0 	100	 100 	95-100	 85-100 	 35-60 	 15-30
431B:										 				 	 	
Judson	55	0-9	Silty clay loam	CL,	ML	A-6,	A-7	i	0	0	100	100	100	95-100	35-50	10-25
		9-28	Silty clay loam	CL		A-6,	A-7	ĺ	0	0	100	100	100	95-100	1	15-25
			Silty clay loam Silty clay loam				A-7, A-7,		0	0	100 100	100	100	95-100 95-100	1	5-25
Ackmore, frequently	 		 	 						 		 		 	 	
flooded	25	0-6	Silt loam	ML,	CL	A-4,	A-7,	A-6	0	0	100	100	95-100	85-100	25-50	8-20
	 	6-25	Silt loam, silty clay loam	CL, 1 	ML	A-6,	A-4,	A-7	0	0 	100	100	95-100	85-100 	25-50 	8-20
		25-60 	Silty clay loam, silt loam	CH,	CL	A-6,	A-7		0	0 	100	100 	95-100	85-100 	35-60 	15-30
Colo, overwash, frequently	 		 	 						 				 	 	
flooded	15 	0-8	Silty clay loam, clay loam, silt loam	CH, 	CL	A-7			0	0 	100	100 	95-100	80-100 	40-55 	15-30
		8-34	Silty clay loam	CL,	CH	A-7		i	0	0	100	100	90-100	90-100	40-60	15-30
	İ	34-51	Silty clay loam	CH,	CL	A-7		ĺ	0	0	100	100	90-100	90-100	40-55	20-30
		51-60 	Silty clay loam, clay loam, silt loam	CH, 	CL	A-7 			0	0 	100	100 	95-100 	80-100 	40-55 	15-30
509B: Marshall,	 			 						 		 		 	 	
terrace	90	0-7	Silty clay loam	CL		A-6,	A-7	i	0	i o i	100	100	100	95-100	35-50	15-25
	ļ		Silty clay loam			A-6,		ĺ	0	0	100	100	100		35-50	
			Silty clay loam Silty clay loam, silt loam	 CT CT		A-7, A-7, 			0	0 0 	100 100	100 100 	100 100 		35-50 35-50 	

Map symbol	Pct. of	 Depth	USDA texture	Classi	fication	Frag	ments	Pe	rcentag			 Liquid	 Plas-
and	map unit			ĺ		>10	3-10	İ				limit	ticity
soil name				Unified	AASHTO	inches	inches	4	10	40	200		index
		In		ļ.	1	Pct	Pct		ļ		1	Pct	
509C:	 						 	 					
Marshall,	j i	İ	İ	İ	i	i	İ	İ	i	i	i	i	į
terrace	85	0-7	Silty clay loam	CL	A-6, A-7	j o	0	100	100	100	95-100	35-50	15-25
	ĺ	7-22	Silty clay loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-50	15-25
	ĺ	22-65	Silty clay loam	CL	A-7, A-6	0	0	100	100	100	95-100	35-50	15-25
		65-80	Silty clay	CL	A-7, A-6	0	0	100	100	100	95-100	35-50	15-25
			loam, silt loam										
509C2:	 							 					
Marshall,	j i	İ	İ	İ	i	i	İ	İ	i	i	i	i	į
terrace,	j	İ	İ	İ	Ì	i	İ	į	İ	İ	İ	İ	į
moderately	j	İ	İ	İ	Ì	i	İ	į	İ	İ	İ	İ	į
eroded	65	0-7	Silty clay loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-50	15-25
		7-47	Silty clay loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-50	15-25
	 	47-80 	Silty clay loam, silt loam	CL 	A-6, A-7 	0 	0 	100 	100 	100 	95-100 	35-50 	15-25
50000	İ				į	į	į		į	į	į	į	į
509D2: Marshall,				l I	l I			 					
terrace,	 	l I		l I	l I	l I	 	l I		l I	1	 	l I
moderately	 	l I	I I	 	ļ		 	l I		 		 	l I
eroded	l 65	 0-7	Silty clay loam	 СТ.	A-6, A-7	0	0	100	100	100	95-100	35-50	 15-25
CIOGCG	1 03		Silty clay loam	1	A-6, A-7	0	0	100	100	100		35-50	
	İ		Silty clay	CL	A-6, A-7	0	0	100	100	100		35-50	
	i	17 00	loam, silt					====	200	=00			
			loam	İ	j		İ	İ	İ	İ	i	İ	İ
509E2:	 	 						 		 			
Marshall,	İ				i			İ			i		
terrace,	i			i	i	i	İ	i i	i	i	i		i
moderately	i			i	i	i	İ	i i	i	i	i		i
eroded	65	0-7	Silty clay loam	CL	A-6, A-7	0	0	100	100	100	95-100	35-50	15-25
	į i	7-47	Silty clay loam		A-6, A-7	0	0	100	100	100		35-50	
	į i	47-80	Silty clay	CL	A-6, A-7	0	0	100	100	100		35-50	
	j		loam, silt	İ	į	į	İ	İ	İ	İ	İ	İ	İ
	į į		loam			j							
	 	47-80 	loam, silt	 CT	A-6, A-7 	0 	0 	100 	100 	100 	95-100 	35-50 	:

Map symbol	Pct. of	Depth	USDA texture	Classi	fication	Frag	ments	Pe	_	e passi: umber	ng	 Liquid	 Plas
and	map unit		İ			>10	3-10	İ				limit	ticity
soil name	i	İ	İ	Unified	AASHTO	inches	inches	4	10	40	200	İ	index
	l	In	İ	İ		Pct	Pct		İ	İ	İ	Pct	i i
510:	 						 	 			 		
Monona, terrace	100	0-8	Silt loam	ML	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
	İ	8-15	Silt loam	ML	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
	 	15-30 	Silt loam, silty clay loam	ML 	A-6, A-7 	0 	0 	100 	100 	95-100 	95-100 	35-50 	10-25
	İ	30-60	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
510B:								 					
Monona, terrace	60	0-8	Silt loam	ML	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
		8-15	Silt loam	ML	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
	 	15-30 	Silt loam, silty clay loam	ML 	A-6, A-7 	0 	0 	100 	100 	95-100 	95-100 	35-50 	10-25
	İ	30-60	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
510C2: Monona, terrace, moderately	 		 				 	 		 	 	 	
eroded	75	0-7	Silt loam	ML, CL	A-6, A-7	j o	0	100	100	95-100	95-100	35-50	10-25
	i	7-24	Silt loam	ML, CL	A-6, A-7	j o	0	100	100	95-100	95-100	35-50	10-25
	į	24-60	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
510D2:	 							 			 		
Monona, terrace, moderately	 							 					
eroded	75	0-7	Silt loam	ML, CL	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
	ĺ	7-24	Silt loam	ML, CL	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
		24-60	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
510E2:							 	 					
Monona, terrace, moderately	 	 					 	 			 		
eroded	75	0-7	Silt loam	ML, CL	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
	ĺ	7-24	Silt loam	ML, CL	A-6, A-7	0	0	100	100	95-100	95-100	35-50	10-25
	ĺ	24-60	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
						İ							1

Map symbol	 Pct. of	Depth	USDA texture	Classi	fication	Frag	ments	Pe	-	ge passi: number	ng	 Liquid	 Plas
and	map unit	-	İ			>10	3-10					limit	ticit
soil name	i i		į	Unified	AASHTO	inches	inches	4	10	40	200	İ	index
		In			İ	Pct	Pct		!	İ		Pct	
630:	 		 								[
Danbury,	i i		İ		i	i	i i		ì	i	i	İ	İ
occasionally	i i		İ		i	i	i i		ì	i	i	İ	İ
flooded	80 80 	0 - 7	Silt loam, silty clay loam	ML	A-6	0	0	100	100	95-100	 85-100 	25-50 	8-20
	 	7-32	Silty clay loam, silt loam	ML	A-6	0 	0 	100	100	95-100	85-100 	25-50	8-20
		32-64	Silty clay loam, silt loam	CL	A-7	0	0 	100	100	95-100	 85-100 	35-60 	 15-30
		64-80	Silty clay loam, silt loam	CL	A-7 	0	0 	100	100	95-100	85-100 	35-60 	 15-30
670: Rawles,	 		 				 		 	 	 	 	
occasionally													
flooded	80	0 - 8	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	100	90-100	25-40	5-15
		8-26	Silt loam	CL, CL-ML	A-4, A-6	0	0	100	100	100	90-100	25-40	5-15
		26-60	Silt loam, silty clay loam	CL	A-6, A-7 	0	0 	100	100 	100 	90-100 	30-45 	10-20
700:	 		 								[
Monona, terrace	100	0 - 6	Silty clay loam	ML	A-7	0	0	100	100	95-100	95-100	35-50	10-25
		6-16	Silty clay loam	ML	A-7	0	0	100	100	95-100	95-100	35-50	10-25
	 	16-49	Silty clay loam, silt loam	ML	A-7 	0 	0	100	100 	95-100	95-100 	35-50 	10-25
	į	49-80	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
700B:	 		 								 		
Monona, terrace	 75	0-6	 Silty clay loam	ML	A-7	0	0 1	100	100	95-100	 95-100	35-50	10-25
,			Silty clay loam		A-7	0	0 1	100	100			35-50	
				ML	A-7	0	0	100	100			35-50	
		49-80	IOam Silt loam	 CL	 A-6	0	 0	100	100	95-100	 95-100	30-40	 10-20
		-J-00	DIIC IOAM		A-0	0		100	1 -00	1222100	 	120-40	10-20

Map symbol	Pct. of	Depth	USDA texture	Classi	fication	Frag	ments		_	e passi	ng	 Liquid	 Plas-
and	map unit					>10	3-10	i					ticity
soil name				Unified	AASHTO	inches	inches	4	10	40	200	İ	index
		In	İ			Pct	Pct	İ		i i	Ī	Pct	
50050						ļ				ļ	[
700C2:													
Monona, terrace,													
moderately				1									
eroded	50		Silty clay loam Silty clay	ML	A-7 A-7	0 0	0	100 100	100		95-100 95-100	1	
		6-49	loam, silt	ML	A - /	0	0	1 100	100	95-100	95-100	35-50	10-25
	 		loam, silt	l I		1		 	1		l I	 	l I
	 	40-00	Silt loam	CL	 A-6	 0	0	100	100	05-100	 95-100	30-40	 10-20
	 	49-00	SIIC IOAM		A-0	0	0	100 	1 100	33-100	33-100	30-40	10-20
700D2:					i	İ		İ		İ	İ		!
Monona, terrace,	j		İ	İ	j	İ	İ	į	İ	į	İ	İ	į
moderately	j		İ	İ	j	İ	İ	į	İ	į	İ	İ	į
eroded	60	0 - 6	Silty clay loam	ML	A-7	0	0	100	100	95-100	95-100	35-50	10-25
		6-49	Silty clay	ML	A-7	0	0	100	100	95-100	95-100	35-50	10-25
			loam, silt										
			loam										
		49-80	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
7475													
717D:	 50	0-8	 Silt loam	 CL	 A-4, A-6	 0	 0	 100	100		 95-100		 8-20
Napier	50		Silt loam Silt loam	CL	A-4, A-6	0 0	0	100 100	100 100		95-100	1	8-20 8-20
	 		Silt loam	CL	A-4, A-6	0	0	100	100		95-100	1	8-20
	 		Silt loam	CL	A-4, A-6	0	0	100	100		95-100	1	8-20
	 	40-00	SIIC IOAM		A-4, A-6	0	0	100 	1 100	33-100	33-100	25-40	0-20
Gullied land,	 			 		 		 	İ		 	 	!
frequently	i			i	i	i	İ	i	İ	i	i	İ	İ
flooded	35					i		i	i	i	i		i
	j		İ	İ	j	İ	į	į	İ	į	į	j	j
740D:													
Hawick	90	0 - 7	Gravelly sandy	SM, SP-SM	A-1, A-3, A-2	0-2	0-5	75-95	60-95	35-70	5-35	0-14	NP-4
			loam										
		7-11	Gravelly loamy	'	A-1, A-2, A-3	0-2	0-5	75-95	60-95	35-70	5-25	0-14	NP
			sand, gravelly										
			coarse sand,			!				!	!		
			loamy sand			!				!	!		
		11-80	Gravelly coarse	SP-SM, SP	A-2, A-1, A-3	0-2	0-5	60-95	50-95	30-65	2-10	0-14	NP
			sand						!	1			
				1									

Map symbol	 Pct. of	Depth	USDA texture	Classi	fication	Frag	ments		rcentag sieve n	_	-	 Liquid	 Plas-
and	map unit					>10	3-10					limit	-
soil name				Unified	AASHTO	inches	inches	4	10	40	200		index
		In		 		Pct	Pct					Pct	
740E:									İ	i	İ		
Hawick	90	0 - 7	Gravelly sandy loam	SM, SP-SM	A-1, A-3, A-2	0-2	0-5	75-95 	60-95 	35-70	5-35	0-14	NP - 4
		7-11	Gravelly loamy sand, gravelly coarse sand, loamy sand	1	A-1, A-2, A-3	0-2	0-5 	75-95 	60-95	35-70 	5-25	0-14 	NP
		11-80	Gravelly coarse sand 	SP-SM, SP	A-2, A-1, A-3	0-2	0-5	60-95 	50-95	30-65	2-10	0-14	NP
740F:	i i		İ	İ	İ	İ	į	į	İ	į	İ	İ	į
Hawick	90	0 - 7	Gravelly sandy loam	SM, SP-SM	A-1, A-3, A-2	0-2	0-5	75-95 	60-95 	35-70	5-35	0-14	NP - 4
		7-11	Gravelly loamy sand, gravelly coarse sand, loamy sand		A-1, A-2, A-3 	0-2	0-5 	75-95 	60-95 	35-70 	5-25 	0-14 	NP
		11-80	Gravelly coarse sand	SP-SM, SP	A-2, A-1, A-3	0-2	0-5	60-95	50-95	30-65	2-10	0-14	NP
980C:				 	i				1		1		
Judson	55	0 - 9	Silty clay loam	CL, ML	A-6, A-7	0	0	100	100	100	95-100	35-50	10-25
		9-28	Silty clay loam	CL	A-6, A-7	0	0	100	100	100	95-100	30-50	15-25
		28-52	Silty clay loam	CL, CL-ML	A-6, A-7, A-4	0	0	100	100	100	95-100	25-50	5-25
		52-60	Silty clay loam	CL, CL-ML	A-6, A-7, A-4	0	0	100	100	100	95-100	25-50	5-25
Gullied land, frequently				 			 	 		 			
flooded	35			i		j					i		

Map symbol	Pct. of	Depth	USDA texture	Classi	fication	_ii	ments		rcentage sieve n		ng	 Liquid	
and soil name	map unit 			 Unified	AASHTO	>10 inches	3-10 inches	 4	10	40	200	limit	ticity index
		In	!			Pct	Pct					Pct	
1220: Nodaway, channeled, frequently	 		 	 		 	 	 	 	 	 	 	
flooded	80 		Silt loam Stratified silt loam to silty clay loam, silt loam, silty clay loam	CL CL 	A-6, A-4 A-6, A-4	0 0 	0 0 	100 100 	94-100 94-100 				5-15 5-15
		31-42	Stratified silt loam to silty clay loam, silt loam, silty clay loam	 	A-6, A-4	0	0 	 100 	94-100 	 88-100 	 84-100 	25-40 	 5-15
		42-80	Stratified silt loam to silty clay loam, silt loam, silty clay loam	CL 	A-6, A-4 	0 	0 	100 	94-100	88-100 	84-99 	25-40	5-15
5010. Pits, sand and gravel			 	 			 	 	 	 	 	 	
5040. Udorthents				 			 	 	 	 	 	 	
5080. Udorthents				 			 	 	 	 	 		
AW. Animal waste lagoon			 	 			 	 	 	 	 	 	
SL. Sewage lagoon	 		 	 			 	 	 	 	 		
W. Water	 		 	 	 		 	 	[

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Physical Properties

The table described in this section 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 linear extensibility, 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 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 micrometers per second, when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

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

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

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

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

Erosion factors are shown in the table as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and permeability. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

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

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

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

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," which is available in local offices of the Natural Resources Conservation Service or on the Internet.

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.

(Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Wind erodibility index" apply only to the surface layer. Absence of an entry indicates that data were not estimated)

25	Pct. of	D 1-1-	 Clav	Moist		 Available			Erosi	on fact	cors		Wind
Map symbol and soil name	map unit	Depth	Clay	Moist bulk	Permea- bility	water	extensi-	Organic matter		ı		erodi-	
and soll hame	map unic		 	density	DITICY	capacity	bility	Maccer	Kw	Kf	 т		index
<u></u>		In	Pct	g/cc	In/hr	In/in	Pct	Pct			-		
 1C:			 										
Ida	95	0-8	 18-27	1 1.20-1.30	0.6-2	0.20-0.22	0 0-2 9	2.0-3.0	.32	.32	l 5	 4L	86
	33	8-60		1.20-1.30	0.6-2	0.20-0.22		0.0-0.5	.43	.43			
1C3:			 	 			 	 		 	 	 	1
Ida, severely eroded	80	0-3	18-27	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	1.0-2.0	.43	.43	4	4L	86
		3-80	18-25	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43		į	į
1D3:			 					 		 	 		
Ida, severely eroded	80	0-3	18-27	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	1.0-2.0	.43	.43	4	4L	86
		3-80	18-25	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			Ì
1E3:								 			 		
Ida, severely eroded	70	0-3	18-27	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	1.0-2.0	.43	.43	4	4L	86
		3-80	18-25	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
1F3:													
Ida, severely eroded	70	0-3		1.20-1.30	0.6-2	0.20-0.22		1.0-2.0	.43	.43	4	4L	86
		3-80	18-25 	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43	 		
8B:			į	į į		į	į	į		į			į
Judson	80	0 - 9		1.30-1.35	0.6-2	0.21-0.23	1	3.0-4.0	.28	.28	5	7	38
		9-28		1.35-1.45	0.6-2	0.21-0.23		3.0-3.5	.28	.28			!
		28-52		1.35-1.45	0.6-2	0.21-0.23		1.0-2.0	.43	.43			
		52-60	25-32	1.35-1.45 	0.6-2	0.21-0.23	3.0-5.9	0.5-1.0	.43	.43 	 		
8C: Judson	95	0-9		 1.30-1.35	0.6-2	 0.21-0.23				 .28	 5	 7	38
Judson	95	9-28		1.35-1.45	0.6-2	0.21-0.23	1	3.0-4.0	.28	.28	>	/	38
		28-52		1.35-1.45	0.6-2	0.21-0.23	1	1.0-2.0	.43	.43			
		52-60		1.35-1.45	0.6-2	0.21-0.23		0.5-1.0	.43	.43	 		
9:			 				 						
Marshall	95	0-7	27-35	1.25-1.30	0.6-2	0.21-0.23	0.0-2.9	3.0-4.0	.28	.28	 5	6	48
I		7-22		1.25-1.30	0.6-2	0.21-0.23	0.0-2.9	3.0-4.0	.28	.28			
I		22-65		1.30-1.35	0.6-2	0.18-0.20	3.0-5.9	0.0-1.0	.43	.43			
		65-80	22-30	1.30-1.40	0.6-2	0.20-0.22	3.0-5.9	0.0-1.0	.43	.43			

Physical Properties of the Soils--Continued

Second Second	ic	Organic matter		ion facto	erod	Wind - erodi- y bility
9B: Marshall	Kw	maccer	Kw	Kf	T group	
Marshall		Pct				Ţ
9E2: Marshall, moderately eroded						İ
9E2: Marshall, moderately eroded	.0 .28	3.0-4.0	.2	.28	5 6	48
9B2: Marshall, moderately eroded	.0 .28	3.0-4.0	.2	.28		
9B2: Marshall, moderately eroded	.0 .43	0.0-1.0	.4:	.43		
Marshall, moderately eroded	.0 .43	0.0-1.0	.4:	.43		ļ
Proded						
9C: Marshall						
9C: Marshall	.0 .32	2.0-3.0	.3:	.32	5 6	48
9C: Marshall	.5 .32	1.0-1.5	.3:	.32		
Marshall	.0 .43	0.0-1.0	.4:	.43		
	.0 .28	3.0-4.0	.2	.28	5 7	38
9C2: Marshall, moderately eroded	.0 .28	3.0-4.0	.2	.28		
9C2: Marshall, moderately eroded				.43		
Marshall, moderately eroded	.0 .43	0.0-1.0	.4:	.43		
eroded	i		İ			İ
9D: Marshall						
9D: Marshall				1	5 6	48
9D: Marshall				.32		
Marshall	.0 .43	0.0-1.0	.4:	.43		l I
9D2: Marshall, moderately eroded	i		İ			İ
9D2: Marshall, moderately eroded				1	5 7	38
9D2: Marshall, moderately eroded			1	.28		
9D2: Marshall, moderately eroded				.43	ļ	ļ
Marshall, moderately eroded	.0 .43	0.0-1.0	.4:	.43		l I
eroded	j		į	į į		į
9E2: Marshall, moderately						
9E2: Marshall, moderately				1	5 7	38
9E2: Marshall, moderately				.32		
Marshall, moderately	.0 .43	0.0-1.0	.4:	.43		l I
		1	İ			
eroded 70 0-7 27-35 1.25-1.30 0.6-2 0.21-0.23 3.0-5.9 2.0-3.0	i	İ	i	i i	į	İ
	.0 .32	2.0-3.0	.3	.32	5 7	38
7-47 27-34 1.30-1.35 0.6-2 0.18-0.20 3.0-5.9 1.0-1.5	.5 .32	1.0-1.5	.3:	.32	į	
47-80 23-34 1.30-1.35 0.6-2 0.18-0.20 3.0-5.9 0.0-1.0	.0 .43	0.0-1.0	.43	.43		

and soil name m	Pct. of map unit	In 0-5 5-46	Clay Pct 	Moist bulk density g/cc 	Permea- bility In/hr	Available water capacity In/in	extensi- bility	Organic matter 	Kw	 Kf		bility	erodi-
9E3: Marshall, severely eroded	 	0-5	 					İ	Kw	Kf	i m	-	-
Marshall, severely eroded	 	0-5	 	g/cc 	In/hr	In/in				1 1/1	1 +	group	index
Marshall, severely eroded	 75 		 				Pct	Pct	İ	İ	İ	l	i i
Marshall, severely eroded	75 			1 1			 	 		 		 	
eroded	75 		!	1			 	! 		i	ľ	 	ì
10B:			27-35	1.25-1.30	0.6-2	0.21-0.23	3.0-5.9	1.0-2.0	.32	.32	4	7	38
				1.30-1.35	0.6-2	0.18-0.20		0.5-1.0	.32	.32	i -	'	
		46-68	1	1.30-1.35	0.6-2	0.18-0.20		0.0-1.0	.43	.43	İ	İ	İ
	100	0-8	20-27	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	3.0-4.0	.28	.28	5	6	48
		8-15	1	1.25-1.30	0.6-2	0.22-0.24		3.0-3.5	.28	.28			
ì	i	15-30		1.30-1.35	0.6-2	0.20-0.22		0.5-1.5	.43	.43	i	İ	i
j	İ	30-60		1.35-1.40	0.6-2	0.20-0.22		0.0-1.0	.43	.43	İ	İ	İ
10B2:			 	 		l I	 	 		 		 	
Monona, moderately	i		i	i i				İ	i	i	i	İ	i
eroded	80	0-7	20-27	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	2.0-3.0	.32	.32	5	6	48
		7-24		1.30-1.35	0.6-2	0.20-0.22		1.0-1.5	.43	.43	-		i
į		24-60		1.35-1.40	0.6-2	0.20-0.22		0.0-1.0	.43	.43	į	į	ļ
10C2:			 	 			 	 		 	 	 	1
Monona, moderately	į		i	i i		į	İ	İ	i	i	i	į	i
eroded	75	0 - 7	20-27	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	2.0-3.0	.32	.32	5	6	48
j	i	7-24	24-28	1.30-1.35	0.6-2	0.20-0.22	3.0-5.9	1.0-1.5	.43	.43	i	İ	i
į	į	24-60	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-1.0	.43	.43	į	į	į
10D2:			 	 			 	 		 		 	
Monona, moderately	İ		İ	į į				ĺ	İ	ĺ	ĺ	ĺ	İ
eroded	60	0 - 7	20-27	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	2.0-3.0	.32	.32	5	6	48
İ	İ	7-24	24-28	1.30-1.35	0.6-2	0.20-0.22	3.0-5.9	1.0-1.5	.43	.43	ĺ	ĺ	İ
į	ĺ	24-60	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-1.0	.43	.43	İ		
10D3:				 			 	 		 		 	
Monona, severely													
eroded	95	0 - 7	20-27	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	1.0-2.0	.43	.43	4	6	48
		7-24	24-28	1.30-1.35	0.6-2	0.20-0.22	3.0-5.9	0.5-1.0	.43	.43			
		24-60	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-1.0	.43	.43			
10E2:							 	 					
Monona, moderately	j			į į									
eroded	50	0 - 7	20-27	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	2.0-3.0	.32	.32	5	6	48
		7-24	24-28	1.30-1.35	0.6-2	0.20-0.22	3.0-5.9	1.0-1.5	.43	.43			
		24-60	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-1.0	.43	.43			

Physical Properties of the Soils--Continued

and soil name	Pct. of	Depth	Clay	Moist bulk	Permea- bility	Available water	Linear extensi-	Organic matter				erodi-	erodi-
and soll name	map unic			density	DITICY	capacity	bility	Maccel	Kw	Kf	T	group	
		In	Pct	g/cc	In/hr	In/in	Pct	Pct			ļ		
10E3:								 					
Monona, severely													
eroded	60	0 - 7	20-27	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	1.0-2.0	.43	.43	4	6	48
		7-24	24-28	1.30-1.35	0.6-2	0.20-0.22	3.0-5.9	0.5-1.0	.43	.43			
		24-60	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-1.0	.43	.43			
10F2:			 				 	 					
Monona, moderately	İ		İ	į į		j	İ	İ	İ	İ	İ	İ	İ
eroded	45	0 - 7	20-27	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	2.0-3.0	.32	.32	5	6	48
į	İ	7-24	24-28	1.30-1.35	0.6-2	0.20-0.22	3.0-5.9	1.0-1.5	.43	.43	ĺ	İ	İ
	į	24-60	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-1.0	.43	.43	į		İ
10F3:			 				 	 					
Monona, severely	İ		İ	į į		j	İ	İ	İ	İ	İ	İ	İ
eroded	70	0 - 7	20-27	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	1.0-2.0	.43	.43	4	6	48
į	İ	7-24	24-28	1.30-1.35	0.6-2	0.20-0.22	3.0-5.9	0.5-1.0	.43	.43	İ	İ	İ
İ	į	24-60	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-1.0	.43	.43	į	į	į
12B:	 						 	 					
Napier	85	0 - 8	20-27	1.20-1.25	0.6-2	0.22-0.24	0.0-2.9	3.0-4.0	.28	.28	5	6	48
		8-29	20-27	1.20-1.25	0.6-2	0.22-0.24	0.0-2.9	3.0-3.5	.28	.28			
		29-48	20-27	1.25-1.30	0.6-2	0.20-0.22	0.0-2.9	1.0-2.0	.43	.43			
		48-60	20-27	1.25-1.30	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
12C:								 					
Napier	95	0-8	20-27	1.20-1.25	0.6-2	0.22-0.24	0.0-2.9	3.0-4.0	.28	.28	5	6	48
		8-29	20-27	1.20-1.25	0.6-2	0.22-0.24	0.0-2.9	3.0-3.5	.28	.28			
		29-48	20-27	1.25-1.30	0.6-2	0.20-0.22	0.0-2.9	1.0-2.0	.43	.43			
		48-60	20-27	1.25-1.30	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
17B:													
Napier	50	0 - 8	20-27	1.20-1.25	0.6-2	0.22-0.24	0.0-2.9	3.0-4.0	.28	.28	5	6	48
		8-29	20-27	1.20-1.25	0.6-2	0.22-0.24	0.0-2.9	3.0-3.5	.28	.28			
		29-48	20-27	1.25-1.30	0.6-2	0.20-0.22	0.0-2.9	1.0-2.0	.43	.43			
		48-60	20-27	1.25-1.30	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
Kennebec, frequently			 					 					
flooded	20	0-8	22-26	1.25-1.35	0.6-2	0.22-0.24	3.0-5.9	2.0-4.0	.28	.28	5	6	48
I	I	8-41	24-32	1.25-1.35	0.6-2	0.22-0.24		5.0-6.0	.28	.28			
I	I	41-54	24-32	1.35-1.40	0.6-2	0.20-0.22	3.0-5.9	5.0-6.0	.43	.43			
1	I	54-80	24-30	1.35-1.40	0.6-2	0.20-0.22	3.0-5.9	1.0-2.0	.43	.43	1	1	

					_				Erosio	n fac	tors		Wind
Map symbol and soil name	Pct. of	Depth	Clay	Moist bulk	Permea- bility	Available water	Linear extensi-	Organic matter			1	erod1- bility	erodi-
and soil name	map unit			1	bility	1		matter	 Kw	Kf	 m		
		In	Pct	density	In/hr	capacity In/in	bility Pct	Pct	KW	KI	T	group	Index
i		111	PCC	9/66	111/111	111/111	PCL 	PCL 					
17B:				i i		i			i		i	İ	İ
Nodaway, frequently													
flooded	15	0 - 7	18-27	1.25-1.35	0.6-2	0.20-0.23	0.0-2.9	2.0-4.0	.32	.32	5	6	48
		7-31	18-28	1.25-1.35	0.6-2	0.20-0.23	3.0-5.9	0.5-1.0	.43	.43			
I		31-42		1.25-1.35	0.6-2	0.20-0.23	3.0-5.9	0.5-1.0	.43	.43			
		42-80	18-28	1.25-1.35	0.6-2	0.20-0.23	3.0-5.9	0.5-1.0	.43	.43			
22D2:							 	 			 		
Dow, moderately eroded	90	0-6	18-25	1.20-1.45	0.6-2	0.22-0.24	0.0-2.9	2.0-3.0	.43	.43	5	4L	86
		6-80	18-25	1.30-1.45	0.6-2	0.20-0.22	0.0-2.9	0.0-1.0	.43	.43		İ	İ
22D3: Dow, severely eroded	90	0-6	 18_25	 1.20-1.45	0.6-2	0.22-0.24	 0.0-2.9	1.0-2.0	.43	.43	 4	 4L	86
Dow, severely eloded	30	6-80		1.30-1.45	0.6-2	0.20-0.22	1	0.0-1.0	.43	.43	=	40	80
		0-80	10-25	1.30-1.43	0.0-2	0.20-0.22	0.0-2.9	0.0-1.0	.13	. 13	 		l
22E3:				i i		j			i		į	İ	į
Dow, severely eroded	80	0-6	18-25	1.20-1.45	0.6-2	0.22-0.24	0.0-2.9	1.0-2.0	.43	.43	4	4L	86
		6-80	18-25	1.30-1.45	0.6-2	0.20-0.22	0.0-2.9	0.0-1.0	.43	.43			
26:				 			 				 		
Kennebec, occasionally			i	i i			İ	İ	i		i	i	i
flooded	95	0-8	27-30	1.25-1.40	0.6-2	0.22-0.24	0.0-2.9	5.0-6.0	.28	.28	5	6	48
i		8-41	27-32	1.35-1.50	0.6-2	0.14-0.19	0.0-2.9	5.0-5.5	.32	.32	İ	i	i
i		41-54	27-33	1.55-1.65	0.6-2	0.02-0.04	0.0-2.9	2.0-3.0	.10	.10	İ	i	i
į		54-80	27-30	1.55-1.65	0.6-2	0.02-0.04	0.0-2.9	2.0-3.0	.10	.10	į	į	į
35D2:							 	 			 		
Liston, moderately							 	 				i	ì
eroded	50	0-5	24-35	1.30-1.60	0.2-0.6	0.17-0.19	3.0-5.9	2.0-3.0	.32	.32	5	4L	86
i		5-38		1.30-1.60	0.2-0.6	0.15-0.17	1	1.0-2.0	.32	.32	i	i	i
j		38-80	26-40	1.50-1.80	0.2-0.6	0.14-0.19	3.0-5.9	0.5-1.0	.32	.32	İ	İ	į
Burchard, moderately							 						
eroded	35	0-5	 18_30	1 1.40-1.60	0.2-0.6	0.17-0.19	 3 0-5 9	2.0-3.0	.28	.28	 5	1 6	48
	33	5-13		1.40-1.60	0.2-0.6	0.15-0.17	1	0.5-1.0	.37	.37	-		10
i		13-37		1.40-1.60	0.2-0.6	0.15-0.17		0.5-1.0	.37	.37	i	1	1
		37-80		1.40-1.60	0.2-0.6	0.14-0.16	1	0.0-0.5	.37	.37			i
j						İ		ĺ	İ		ĺ		
35E2:				ļ .								ļ	ļ
Liston, moderately													
eroded	50	0-5		1.30-1.60	0.2-0.6	0.17-0.19	1	2.0-3.0	.32	.32	5	4L	86
!		5-38		1.30-1.60	0.2-0.6	0.15-0.17	1	1.0-2.0	.32	.32			1
		38-80	26-40	1.50-1.80	0.2-0.6	0.14-0.19	3.0-5.9	0.5-1.0	.32	.32			1

Physical Properties of the Soils--Continued

35E2: Burchard, moderately eroded	map unit 	In 0-5 5-13	 Pct 18-30	bulk density g/cc	In/hr	water capacity In/in	extensi- bility Pct	matter	Kw	Kf	T	bility group	
eroded	35	0-5		g/cc 	In/hr	In/in	Pct	Pct	ī	ı	ī		
Burchard, moderately eroded	35 		 18-30	 			I	i	1	 	 		
eroded	35 		 18-30								 		
35F2:	35 		18-30										
	 	5-13		1.40-1.60	0.2-0.6	0.17-0.19	3.0-5.9	2.0-3.0	.28	.28	5	6	48
			27-35	1.40-1.60	0.2-0.6	0.15-0.17	3.0-5.9	0.5-1.0	.37	.37			
	1	13-37	18-30	1.40-1.60	0.2-0.6	0.15-0.17	3.0-5.9	0.5-1.0	.37	.37			
		37-80	18-30	1.40-1.60	0.2-0.6	0.14-0.16	3.0-5.9	0.0-0.5	.37	.37			
Liston, moderately							 	 		 	 		
eroded	40	0-5	24-35	1.30-1.60	0.2-0.6	0.17-0.19	3.0-5.9	2.0-3.0	.32	.32	5	4L	86
		5-38	27-33	1.30-1.60	0.2-0.6	0.15-0.17	3.0-5.9	1.0-2.0	.32	.32			
į	j	38-80	26-40	1.50-1.80	0.2-0.6	0.14-0.19	3.0-5.9	0.5-1.0	.32	.32			İ
Burchard, moderately			 				 	 		 	 		
eroded	30	0-5	18-30	1.40-1.60	0.2-0.6	0.17-0.19	3.0-5.9	2.0-3.0	.28	.28	5	6	48
į	į	5-13	27-35	1.40-1.60	0.2-0.6	0.15-0.17	3.0-5.9	0.5-1.0	.37	.37	İ	į	İ
į	i	13-37	18-30	1.40-1.60	0.2-0.6	0.15-0.17	3.0-5.9	0.5-1.0	.37	.37	İ	į	İ
į	į	37-80	18-30	1.40-1.60	0.2-0.6	0.14-0.16	3.0-5.9	0.0-0.5	.37	.37	į	į	į
35G:							 	 		 	 	 	
Liston	45	0-5	24-35	1.30-1.60	0.2-0.6	0.17-0.19	3.0-5.9	2.0-3.0	.32	.32	5	4L	86
	i	5-38	27-33	1.30-1.60	0.2-0.6	0.15-0.17	3.0-5.9	1.0-2.0	.32	.32	i	i	i
į	į	38-80	26-40	1.50-1.80	0.2-0.6	0.14-0.19	3.0-5.9	0.5-1.0	.32	.32	į	į	į
Burchard	35	0-11	 18-30	 1.40-1.60	0.2-0.6	0.17-0.19	3.0-5.9	2.0-4.0	.28	 .28	 5	 6	 48
į	i	11-24	27-35	1.40-1.60	0.2-0.6	0.15-0.17	3.0-5.9	0.5-1.0	.37	.37	i	i	i
į	i	24-36	18-30	1.40-1.60	0.2-0.6	0.15-0.17	3.0-5.9	0.5-1.0	.37	.37	i	i	i
į	į	36-60	18-30	1.40-1.60	0.2-0.6	0.14-0.16	3.0-5.9	0.0-0.5	.37	.37	į	į	į
54:							 	 		 	 	 	
Zook, occasionally	i		j	i		i	İ	İ	i	į	i	i	i
flooded	90	0-6	35-40	1.30-1.35	0.2-0.6	0.21-0.23	6.0-8.9	5.0-7.0	.37	.37	5	7	38
	i	6-20	35-40	1.30-1.35	0.2-0.6	0.21-0.23	6.0-8.9	5.0-6.5	.37	.37	i	i	i
	i	20-52	36-45	1.30-1.45	0.06-0.2	0.11-0.13	6.0-8.9	2.0-4.0	.28	.28	i	i	i
į	į	52-60	20-45	1.30-1.45	0.06-0.2	0.11-0.22	6.0-8.9	0.0-1.0	.28	.28	į		į
54+:	 		 				 	 		 	 	 	
Zook, overwash,	i		j	i		i	İ	İ	İ	į	i	i	İ
occasionally flooded	90	0-6	22-27	1.30-1.35	0.2-0.6	0.21-0.23	6.0-8.9	2.0-4.0	.37	.37	5	7	38
1	i	6-20		1.30-1.35	0.2-0.6	0.21-0.23	1	5.0-6.5	.37	.37	i	i	İ
i	i	20-52		1.30-1.45	0.06-0.2	0.11-0.13		2.0-4.0	.28	.28	i	i	İ
i	i	52-60		1.30-1.45		0.11-0.22		0.0-1.0	.28	.28	i	i	İ

Physical Properties of the Soils--Continued

Map symbol	Pct. of	Depth	 Clay	 Moist	Permea-	 Available		 Organic	Erosi	on fac	tors	erodi-	
and soil name	map unit			bulk	bility	water	extensi-	matter				bility	
				density		capacity	bility		Kw	Kf	T	group	index
	ļ	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
59D2:													
Burchard, moderately													
eroded	55	0-5	18-30	1.40-1.60	0.2-0.6	0.17-0.19	3.0-5.9	2.0-3.0	.28	.28	5	6	48
		5-13	27-35	1.40-1.60	0.2-0.6	0.15-0.17	3.0-5.9	0.5-1.0	.37	.37			
		13-37	18-30	1.40-1.60	0.2-0.6	0.15-0.17	3.0-5.9	0.5-1.0	.37	.37			
	ļ	37-80	18-30	1.40-1.60	0.2-0.6	0.14-0.16	3.0-5.9	0.0-0.5	.37	.37			
59E2:			l I							 		 	
Burchard, moderately													
eroded	55	0-5	18-30	1.40-1.60	0.2-0.6	0.17-0.19	3.0-5.9	2.0-3.0	.28	.28	5	6	48
İ	Ì	5-13	27-35	1.40-1.60	0.2-0.6	0.15-0.17	3.0-5.9	0.5-1.0	.37	.37			
		13-37	18-30	1.40-1.60	0.2-0.6	0.15-0.17	3.0-5.9	0.5-1.0	.37	.37			
		37-80	18-30	1.40-1.60	0.2-0.6	0.14-0.16	3.0-5.9	0.0-0.5	.37	.37			
99C2:			 	 						 		 	l I
Exira, moderately	j	İ	į	i i		j	İ	İ	İ	İ	İ	į	İ
eroded	80	0-6	28-34	1.25-1.35	0.6-2	0.21-0.23	3.0-5.9	2.0-3.0	.32	.32	5	7	38
į	j	6-40	25-35	1.30-1.35	0.6-2	0.18-0.20	3.0-5.9	0.5-1.0	.43	.43	İ	į	İ
ļ	į	40-80	20-30	1.35-1.40	0.6-2	0.20-0.22	3.0-5.9	0.0-1.0	.43	.43	İ		
99D2:			 								 	 	
Exira, moderately	j	İ	į	i i		j	İ	İ	İ	İ	İ	į	İ
eroded	50	0-6	28-34	1.25-1.35	0.6-2	0.21-0.23	3.0-5.9	2.0-3.0	.32	.32	5	7	38
İ	j	6-40	25-35	1.30-1.35	0.6-2	0.18-0.20	3.0-5.9	0.5-1.0	.43	.43	ĺ	ĺ	ĺ
ļ	į	40-80	20-30	1.35-1.40	0.6-2	0.20-0.22	3.0-5.9	0.0-1.0	.43	.43	İ		
99E2:			 							 		 	
Exira, moderately	j	İ	į	i i		j	İ	İ	İ	İ	İ	į	İ
eroded	45	0-6	28-34	1.25-1.35	0.6-2	0.21-0.23	3.0-5.9	2.0-3.0	.32	.32	5	7	38
İ	j	6-40	25-35	1.30-1.35	0.6-2	0.18-0.20	3.0-5.9	0.5-1.0	.43	.43	ĺ	ĺ	ĺ
ļ	į	40-80	20-30	1.35-1.40	0.6-2	0.20-0.22	3.0-5.9	0.0-1.0	.43	.43	İ		
100B:			 							 		 	
Monona	75	0-7	27-30	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	3.0-4.0	.32	.32	5	7	38
į	i	7-20	27-30	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	2.0-3.0	.32	.32	İ	į	İ
į	j	20-48	24-28	1.30-1.35	0.6-2	0.20-0.22	3.0-5.9	1.0-2.0	.43	.43	İ	į	İ
į	į	48-80	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-1.0	.43	.43	į	į	į
100C2:			 									 	
Monona, moderately	i		İ	į į		İ	İ	İ	İ	i	İ	İ	İ
eroded	50	0-6	27-30	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	2.0-3.0	.32	.32	5	7	38
i	i	6-24	24-28	1.30-1.35	0.6-2	0.20-0.22	3.0-5.9	0.5-1.5	.43	.43	İ	İ	İ
i	i	24-80	18-24	1.35-1.40	0.6-2	0.20-0.22	0 0-2 9	0.0-1.0	.43	.43	I	I	I

Physical Properties of the Soils--Continued

Map symbol and soil name	Pct. of map unit	Depth	 Clay	Moist bulk	Permea- bility	 Available water	 Linear extensi-	Organic matter		on fac		wind erodi- bility	
			i i	density	2	capacity	bility		Kw	Kf	т	group	
		In	Pct	g/cc	In/hr	In/in	Pct	Pct	Į.				
100D2:													
Monona, moderately													
eroded	45	0 - 6		1.25-1.30	0.6-2	0.22-0.24	1	2.0-3.0	.32	.32	5	7	38
		6-24		1.30-1.35	0.6-2	0.20-0.22	1	0.5-1.5	.43	.43			
		24-80	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-1.0	.43	.43	 		
100D3:				i							i		
Monona, severely													
eroded	45	0 - 7		1.25-1.30	0.6-2	0.22-0.24		1.0-2.0	.43	.43	4	7	38
		7-24		1.30-1.35	0.6-2	0.20-0.22		0.5-1.0	.43	.43			
		24-36		1.30-1.35	0.6-2	0.20-0.22		0.5-1.0	.43	.43			
		36-80	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-1.0	.43	.43			
100E2:			i i								i		
Monona, moderately													
eroded	45	0 - 6	27-30	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	2.0-3.0	.32	.32	5	7	38
		6-24		1.30-1.35	0.6-2	0.20-0.22		0.5-1.5	.43	.43			
		24-80	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-1.0	.43	.43			
100E3:													
Monona, severely													
eroded	45	0 - 7	27-30	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	1.0-2.0	.43	.43	4	6	38
		7-24		1.30-1.35	0.6-2	0.20-0.22		0.5-1.0	.43	.43			
		24-36		1.30-1.35	0.6-2	0.20-0.22		0.5-1.0	.43	.43			
		36-80	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-1.0	.43	.43			
100F2:													
Monona, moderately													
eroded	55	0 - 6		1.25-1.30	0.6-2	0.22-0.24		2.0-3.0	.32	.32	5	7	38
		6-24		1.30-1.35	0.6-2	0.20-0.22		0.5-1.5	.43	.43			
		24-80	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-1.0	.43	.43			
100F3:													
Monona, severely							[[
eroded	70	0 - 7	27-30	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	1.0-2.0	.43	.43	4	6	48
I		7-24		1.30-1.35	0.6-2	0.20-0.22		0.5-1.0	.43	.43			
		24-36		1.30-1.35	0.6-2	0.20-0.22		0.5-1.0	.43	.43			
		36-80	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-1.0	.43	.43			
111D3:													
Dow, severely eroded	55	0 - 6	18-25	1.20-1.45	0.6-2	0.22-0.24	0.0-2.9	1.0-2.0	.43	.43	4	4L	86
I		6-80	18-25	1.30-1.45	0.6-2	0.20-0.22	0.0-2.9	0.0-1.0	.43	.43	1		

Physical Properties of the Soils--Continued

Map symbol	Pct. of	Depth	Clay	Moist	Permea-	Available		Organic	Erosi	on fac	tors	erodi-	1
and soil name	map unit		 	bulk density	bility	water capacity	extensi- bility	matter	Kw	 Kf	 T	bility group	1
		In	Pct	g/cc	In/hr	In/in	Pct	Pct					
111D3:							 						
Monona, severely													
eroded	40	0-7	1	1.25-1.30	0.6-2	0.22-0.24	1	1.0-2.0	.43	.43	4	6	48
ļ		7-24		1.30-1.35	0.6-2	0.20-0.22	1	0.5-1.0	.43	.43			
		24-36		1.30-1.35	0.6-2	0.20-0.22	1	0.5-1.0	.43	.43	ļ	ļ	
		36-80	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-1.0	.43	.43	 	 	
111E3:							 						
Dow, severely eroded	55	0-6	18-25	1.20-1.45	0.6-2	0.22-0.24	0.0-2.9	1.0-2.0	.43	.43	4	4L	86
ļ		6-60	18-25	1.30-1.45	0.6-2	0.20-0.22	0.0-2.9	0.0-1.0	.43	.43	ļ		
Monona, severely			 				 	 		 	 	 	
eroded	40	0-7	27-30	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	1.0-2.0	.43	.43	4	4L	86
i	i	7-24	24-28	1.30-1.35	0.6-2	0.20-0.22	3.0-5.9	0.5-1.0	.43	.43	İ	İ	İ
į	i	24-36	24-28	1.30-1.35	0.6-2	0.20-0.22	3.0-5.9	0.5-1.0	.43	.43	İ	İ	i
į	į	36-80	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-1.0	.43	.43	į	į	į
 125D3:			 				 	 		 	 		
Ida, severely eroded	50	0-3	18-27	1.20-1.30	0.6-2	0.20-0.22	0.0-2.9	1.0-2.0	.43	.43	4	4L	86
		3-80	1	1.20-1.30	0.6-2	0.20-0.22	1	0.0-0.5	.43	.43	į	į	
Chute, severely eroded	30	0-4	 5-10	 1.45-1.66	6-20	0.11-0.13	0.0-2.9	1.0-2.0		 .17	 5	 2	134
		4-60		1.60-1.75	6-20	0.06-0.09	1	0.0-0.5	.15	.15		i -	
125E3:							 			 			
Ida, severely eroded	50	0-3	18-27	1 1.20-1.30	0.6-2	0.20-0.22	 0 0-2 9	1.0-2.0	.43	.43	4	4L	86
		3-80	1	1.20-1.30	0.6-2	0.20-0.22	1	0.0-0.5	.43	.43	-	12	
Chute, severely eroded	30	0-4		 1.45-1.66	6-20	0.11-0.13		1.0-2.0		 .17	 5	2	 134
chace, severely eloded	30	4-60		1.60-1.75	6-20	0.06-0.09		0.0-0.5	1.15	1.15		2	134
122													
133: Colo, occasionally							 						
flooded	85 I	0-8	27 26	 1.28-1.32	0.6-2	0.21-0.23		3.0-5.0	.28	 .28	 5	 7	38
1100ded	05	8-34		1.28-1.32	0.6-2	0.21-0.23		3.0-5.0	.28	.28	3	/	30
· ·		34-51		1.25-1.35	0.6-2	0.18-0.20		3.0-3.0	.28	.28	l I	l l	l
	i	51-60		1.35-1.45	0.6-2	0.18-0.20	1	1.0-2.0	.32	.32			
122													
133+: Colo, overwash,			I				l I	I		I I	 	I	I
occasionally flooded	85 I	0-8	25-25	 1.35-1.45	0.6-2	0.18-0.20	 3 0-5 0	2.0-5.0	.32	 .32	 5	 6	 38
occasionally flooded	05	8-34		1.28-1.32	0.6-2	0.18-0.20	1	3.0-5.0	.28	.32	5	0	36
ļ		34-51		1.25-1.35	0.6-2	0.18-0.20	1	3.0-5.0	.28	.28	 	I I	I I
ļ		51-60		1.35-1.45	0.6-2	0.18-0.20		1.0-2.0	.32	.32	i	1	
		31 00			J. U Z	1	1 2.0 3.5	1 2.0 2.0			1	1	1

Physical Properties of the Soils--Continued

Map symbol and soil name	Pct. of	Depth	 Clay 	Moist bulk	Permea- bility	Available water	 Linear extensi-	 Organic matter	LECOS1	on fac		1	Wind erodi-
and soll name	map dire		 	density	DILLEY	capacity	bility	maccer	Kw	Kf	 T	group	
		In	Pct	g/cc	In/hr	In/in	Pct	Pct			 -		
212:			 	 			 	 			 		
Kennebec, occasionally			İ	i i		i	İ	İ	ì	İ	i	İ	İ
flooded	70	0 - 8	22-26	1.25-1.35	0.6-2	0.22-0.24	3.0-5.9	2.0-4.0	.28	.28	5	6	48
i	i	8-41	24-32	1.25-1.35	0.6-2	0.22-0.24	3.0-5.9	5.0-6.0	.28	.28	i	İ	İ
İ		41-54	24-32	1.35-1.40	0.6-2	0.20-0.22	3.0-5.9	5.0-6.0	.43	.43	İ	İ	İ
		54-80	24-30	1.35-1.40	0.6-2	0.20-0.22	3.0-5.9	1.0-2.0	.43	.43			
212+:							 	! 					
Kennebec, overwash,													
occasionally flooded	90	0 - 8	22-26	1.25-1.35	0.6-2	0.22-0.24	3.0-5.9	2.0-4.0	.28	.28	5	6	48
		8-41	24-32	1.25-1.35	0.6-2	0.22-0.24	3.0-5.9	5.0-6.0	.28	.28			
		41-54	24-32	1.35-1.40	0.6-2	0.20-0.22	3.0-5.9	5.0-6.0	.43	.43			
		54-80	24-30	1.35-1.40	0.6-2	0.20-0.22	3.0-5.9	1.0-2.0	.43	.43	 		
220:			İ	i i				İ			İ		
Nodaway, occasionally													
flooded	75	0 - 7		1.25-1.35	0.6-2	0.20-0.23		2.0-4.0	.32	.32	5	6	48
		7-31	1	1.25-1.35	0.6-2	0.20-0.23		0.5-1.0	.43	.43	!		ļ
		31-42	1	1.25-1.35	0.6-2	0.20-0.23		0.5-1.0	.43	.43	!		ļ
		42-80	18-28 	1.25-1.35 	0.6-2	0.20-0.23	3.0-5.9	0.5-1.0	.43	.43	 	 	
266:			į	į		į	į	į	į	į	į		į
Smithland,											! _	_	
occasionally flooded	85	0-7		1.28-1.32	0.6-2 0.6-2	0.21-0.23		5.0-7.0	.28	.28	5	7	38
		7-34 34-50	1	1.28-1.32 1.25-1.35	0.6-2	0.21-0.23	1	5.0-6.5	.28	.28			
		50-60	1	1.35-1.35	0.6-2	0.18-0.20		1.0-2.0	.32	.32		 	l l
		30 00	23 33		0.0 2				.52	.52			
266+: Smithland, overwash,													
occasionally flooded	75	0-8	1 25 26	 1.28-1.32	0.6-2	0.21-0.23	3050	2.0-4.0	.28	.28	 5	 7	38
occasionally flooded	/3	8-34		1.28-1.32	0.6-2	0.21-0.23		5.0-6.5	.28	.28	3	<i>'</i>	36
		34-50	1	1.25-1.35	0.6-2	0.18-0.20	1	3.0-4.0	.28	.28	i	 	l I
		50-60		1.35-1.45	0.6-2	0.18-0.20	1	1.0-2.0	.32	.32	İ		
268D:			 	 			 	 			 		
Knox	85	0-7	18-27	1.20-1.30	0.6-2	0.22-0.24	0.0-2.9	1.0-3.0	.32	.32	5	6	48
i		7-12	18-27	1.20-1.30	0.6-2	0.22-0.24	0.0-2.9	1.0-3.0	.32	.32	i	İ	İ
İ		12-61	25-35	1.30-1.40	0.6-2	0.18-0.20	3.0-5.9	0.5-1.0	.43	.43	İ	İ	İ
		61-70	18-27	1.20-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-1.0	.43	.43	ĺ		
268E:			 				 	! 					
Knox	80	0-7	18-27	1.20-1.30	0.6-2	0.22-0.24	0.0-2.9	1.0-3.0	.32	.32	5	6	48
I		7-12		1.20-1.30	0.6-2	0.22-0.24	1	1.0-3.0	.32	.32			
I		12-61		1.30-1.40	0.6-2	0.18-0.20		0.5-1.0	.43	.43			
		61-70	18-27	1.20-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-1.0	.43	.43	1		

Physical Properties of the Soils--Continued

Map symbol	Pct. of	Depth	Clay	 Moist	Permea-	Available	 Linear	 Organic	Erosi	on fac	tors	Wind erodi-	Wind
and soil name	map unit	Depth	cray	bulk	bility	water	extensi-	matter		I .		bility	
and soft name	map dire		 	density	DITICY	capacity	bility	maccer	Kw	Kf	T	group	
		In	Pct	g/cc	In/hr	In/in	Pct	Pct	İ				
268F:											_		1
Knox	75	0-7		1.20-1.30	0.6-2 0.6-2	0.22-0.24		1.0-3.0	.32	.32	5	6	48
		7-12		1.20-1.30	0.6-2	0.22-0.24		1.0-3.0	.32	.32			ļ
		12-61 61-70		1.30-1.40 1.20-1.40	0.6-2	0.18-0.20		0.5-1.0	.43	.43	l I	 	l I
		01 70	10 1		0.0 2					5			
130:							ĺ	İ	İ		İ	İ	İ
Ackmore, occasionally													
flooded	75	0 - 6		1.25-1.30	0.6-2	0.21-0.23		2.0-4.0	.32	.32	5	6	48
		6-25		1.25-1.30	0.6-2	0.21-0.23		1.0-3.0	.32	.32		ļ	
		25-60	26-38	1.30-1.40	0.2-0.6	0.18-0.20	6.0-8.9	3.0-5.0	.32	.32			
431B:			 				 			 	 		
Judson	55	0-9	27-32	1.30-1.35	0.6-2	0.21-0.23	3.0-5.9	3.0-4.0	.28	.28	5	7	38
i		9-28	30-35	1.35-1.45	0.6-2	0.21-0.23	3.0-5.9	3.0-3.5	.28	.28	i	i	i
i		28-52	25-32	1.35-1.45	0.6-2	0.21-0.23	3.0-5.9	1.0-2.0	.43	.43	i	i	i
		52-60	25-32	1.35-1.45	0.6-2	0.21-0.23	3.0-5.9	0.5-1.0	.43	.43	į	į	į
Ackmore, frequently			 	 			 	 		 	 		
flooded	25	0-6	 18-27	1.25-1.30	0.6-2	0.21-0.23	 3 0-5 9	2.0-4.0	.32	.32	5	6	48
1100000	23	6-25		1.25-1.30	0.6-2	0.21-0.23		1.0-3.0	.32	.32]		1
		25-60		1.30-1.40	0.6-2	0.18-0.20		3.0-5.0	.32	.32	i		
į			İ	j j		j	İ	į	į	į	İ	İ	į
Colo, overwash,													
frequently flooded	15	0-8		1.35-1.45	0.6-2	0.18-0.20		3.0-5.0	.32	.32	5	6	38
		8-34		1.28-1.32	0.6-2	0.21-0.23		3.0-5.0	.28	.28			
		34-51		1.25-1.35	0.6-2	0.18-0.20	1	3.0-4.0	.28	.28			
		51-60	25-35	1.35-1.45	0.6-2	0.18-0.20	3.0-5.9	1.0-2.0	.32	.32			
509B:			 				 			 			
Marshall, terrace	90	0-7	27-35	1.25-1.30	0.6-2	0.21-0.23	0.0-2.9	3.0-4.0	.28	.28	5	6	48
		7-22	27-35	1.25-1.30	0.6-2	0.21-0.23	0.0-2.9	3.0-4.0	.28	.28	ĺ	ĺ	ĺ
i		22-65	27-34	1.30-1.35	0.6-2	0.18-0.20	3.0-5.9	0.0-1.0	.43	.43	İ	İ	İ
		65-80	22-30	1.30-1.40	0.6-2	0.20-0.22	3.0-5.9	0.0-1.0	.43	.43	İ	İ	İ
509C:			 	 			 	 		 	 	 	
Marshall, terrace	85	0-7	27-35	1.25-1.30	0.6-2	0.21-0.23	0.0-2.9	3.0-4.0	.28	.28	5	6	48
i		7-22	27-35	1.25-1.30	0.6-2	0.21-0.23	0.0-2.9	3.0-4.0	.28	.28			
i		22-65	27-34	1.30-1.35	0.6-2	0.18-0.20	3.0-5.9	0.0-1.0	.43	.43	İ	İ	İ
i		65-80	22-30	1.30-1.40	0.6-2	0.20-0.22	3.0-5.9	0.0-1.0	.43	.43	1	1	

Physical Properties of the Soils--Continued

Map symbol and soil name	Pct. of	 Depth 	 Clay 	 Moist bulk	Permea- bility	Available water	Linear extensi-	Organic matter	Erosi	on fac	cors	Wind erodi- bility	1
and soll name	map dire			density	DITICY	capacity	bility	maccer	Kw	Kf	T		index
		In	Pct	g/cc	In/hr	In/in	Pct	Pct			ļ		ļ
509C2:												 	
Marshall, terrace,													
moderately eroded	65	0-7	27-35	1.25-1.30	0.6-2	0.21-0.23	3.0-5.9	2.0-3.0	.32	.32	5	7	38
		7-47	27-34	1.30-1.35	0.6-2	0.18-0.20	3.0-5.9	0.5-1.0	.32	.32			
		47-80	23-34	1.30-1.35	0.6-2	0.18-0.20	3.0-5.9	0.0-1.0	.43	.43			
509D2:		 		 								 	
Marshall, terrace,			İ	į į		İ	İ		İ	İ	İ	ĺ	İ
moderately eroded	65	0-7	27-35	1.25-1.30	0.6-2	0.21-0.23	3.0-5.9	2.0-3.0	.32	.32	5	6	48
İ		7-47	27-34	1.30-1.35	0.6-2	0.18-0.20	3.0-5.9	0.5-1.0	.32	.32	İ	ĺ	ĺ
		47-80	23-34	1.30-1.35	0.6-2	0.18-0.20	3.0-5.9	0.0-1.0	.43	.43	ĺ		
509E2:		 	 	 								 	
Marshall, terrace,		İ	į	i i		j	İ	İ	İ	İ	İ	İ	İ
moderately eroded	65	0-7	27-35	1.25-1.30	0.6-2	0.21-0.23	3.0-5.9	2.0-3.0	.32	.32	5	7	38
Ī		7-47	27-34	1.30-1.35	0.6-2	0.18-0.20	3.0-5.9	0.5-1.0	.32	.32	İ	İ	İ
		47-80	23-34	1.30-1.35	0.6-2	0.18-0.20	3.0-5.9	0.0-1.0	.43	.43	į	į	į
510:		 	 									 	
Monona, terrace	100	0-8	20-27	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	3.0-4.0	.28	.28	5	6	48
i		8-15	20-27	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	3.0-3.5	.28	.28	İ	İ	İ
i		15-30	24-28	1.30-1.35	0.6-2	0.20-0.22	3.0-5.9	0.5-1.5	.43	.43	İ	İ	İ
		30-60	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-1.0	.43	.43	į	į	į
510B:												 	
Monona, terrace	60	0-8	20-27	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	3.0-4.0	.28	.28	5	6	48
i		8-15	20-27	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	3.0-3.5	.28	.28	i	İ	i
i		15-30	24-28	1.30-1.35	0.6-2	0.20-0.22	3.0-5.9	0.5-1.5	.43	.43	i	İ	i
		30-60	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-1.0	.43	.43	į	į	į
510C2:		 	 									 	
Monona, terrace,		İ	i	i i		i	İ	İ	i	İ	i	İ	i
moderately eroded	75	0-7	20-27	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	2.0-3.0	.32	.32	4	6	48
- i	i	7-24	24-28	1.30-1.35	0.6-2	0.20-0.22	3.0-5.9	1.0-1.5	.43	.43	i	İ	i
		24-60	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-1.0	.43	.43	į	į	į
510D2:			 	 								 	
Monona, terrace,		İ	i	į į		i	i	i	i	İ	i	į	i
moderately eroded	75	0-7	20-27	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	2.0-3.0	.32	.32	4	6	48
- i		7-24		1.30-1.35	0.6-2	0.20-0.22		1.0-1.5	.43	.43	i	į	i
i		24-60		1.35-1.40	0.6-2	0.20-0.22		0.0-1.0	.43	.43	İ	İ	i
İ	İ	l		i i									

									Erosi	on fac	tors	Wind	Wind
Map symbol and soil name	Pct. of map unit	Depth 	Clay 	Moist bulk density	Permea- bility	Available water capacity	Linear extensi- bility	Organic matter	 Kw	 Kf	 T	erodi- bility group	-
		In	Pct	g/cc	In/hr	In/in	Pct	Pct					
510E2:	 	 					 	 		 	 		[[
Monona, terrace,													
moderately eroded	75	0-7	20-27	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	2.0-3.0	.32	.32	5	6	48
		7-24	24-28	1.30-1.35	0.6-2	0.20-0.22	3.0-5.9	1.0-1.5	.43	.43			
		24-60	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-1.0	.43	.43			
630:	 	 		 							 	i	
Danbury, occasionally	ĺ	ĺ	ĺ	į į					İ	İ	ĺ	İ	İ
flooded	80	0-7	20-30	1.25-1.30	0.6-2	0.21-0.23	3.0-5.9	1.0-3.0	.32	.32	5	6	48
		7-32	18-35	1.25-1.30	0.6-2	0.21-0.23	3.0-5.9	1.0-2.5	.32	.32	ĺ	İ	İ
	ĺ	32-64	26-40	1.30-1.40	0.2-0.6	0.18-0.20	6.0-8.9	3.0-4.0	.32	.32	ĺ	İ	İ
		64-80	26-38	1.30-1.40	0.2-0.6	0.18-0.20	6.0-8.9	2.0-3.0	.32	.32	ĺ	İ	
670:	 	 									l I		
Rawles, occasionally	İ	İ	į	i i		İ	İ	İ	i	i	i	i	i
flooded	80	0-8	18-27	1.25-1.35	0.6-2	0.21-0.23	3.0-5.9	1.0-3.0	.32	.32	5	4L	86
	İ	8-26	18-27	1.25-1.35	0.6-2	0.21-0.23	3.0-5.9	1.0-2.5	.32	.32	i	i	i
		26-60	22-35	1.35-1.40	0.6-2	0.19-0.21	3.0-5.9	3.0-4.0	.32	.32	į	į	į
700:	 	 									 		
Monona, terrace	100	0-6	27-30	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	3.0-4.0	.32	.32	5	7	38
	İ	6-16	27-30	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	3.0-3.5	.32	.32	i	i	i
	İ	16-49	24-28	1.30-1.35	0.6-2	0.20-0.22	3.0-5.9	0.5-1.5	.43	.43	İ	İ	İ
		49-80	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-1.0	.43	.43	į	į	į
700B:	 	 									 		
Monona, terrace	75	0-6	27-30	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	3.0-4.0	.32	.32	5	7	38
	İ	6-16	27-30	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	3.0-3.5	.32	.32	İ	İ	İ
	İ	16-49	24-28	1.30-1.35	0.6-2	0.20-0.22	3.0-5.9	0.5-1.5	.43	.43	İ	İ	İ
		49-80	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-1.0	.43	.43	ĺ	İ	
700C2:		 									 		
Monona, terrace,	ĺ	ĺ	ĺ	į į					İ	İ	ĺ	İ	İ
moderately eroded	50	0-6	27-30	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	2.0-3.0	.32	.32	5	7	38
	İ	6-49	24-28	1.30-1.35	0.6-2	0.20-0.22	3.0-5.9	0.5-1.5	.43	.43	İ	İ	İ
		49-80	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-1.0	.43	.43	į	į	į
700D2:	 	 									 		
Monona, terrace,	İ	İ	İ	į į		i	İ	İ	i	i	i	i	i
moderately eroded	60	0-6	27-30	1.25-1.30	0.6-2	0.22-0.24	3.0-5.9	2.0-3.0	.32	.32	5	7	38
-	İ	6-49		1.30-1.35	0.6-2	0.20-0.22	1	0.5-1.5	.43	.43	İ	i	i
	İ	49-80	18-24	1.35-1.40	0.6-2	0.20-0.22	0.0-2.9	0.0-1.0	.43	.43	İ	i	i
	i	İ	i	i i		i	i	i	i	i	i	i	i

Physical Properties of the Soils--Continued

Map symbol and soil name	 Pct. of map unit	 Depth 	 Clay 	 Moist bulk	Permea- bility	 Available water	 Linear extensi-	Organic matter	Erosi	on fac	tors 	Wind erodi- bility	
		! 	i	density	2	capacity	bility		Kw	Kf	т	group	
		In	Pct	g/cc	In/hr	In/in	Pct	Pct	 	<u> </u>	i -		<u></u>
717D:	 	 	 	 			 						
Napier	50	0-8	20-27	1.20-1.25	0.6-2	0.22-0.24	0.0-2.9	3.0-4.0	.28	.28	5	6	48
		8-29	20-27	1.20-1.25	0.6-2	0.22-0.24	0.0-2.9	3.0-3.5	.28	.28			
		29-48	20-27	1.25-1.30	0.6-2	0.20-0.22	0.0-2.9	1.0-2.0	.43	.43			
	 	48-60	20-27	1.25-1.30	0.6-2	0.20-0.22	0.0-2.9	0.0-0.5	.43	.43			
Gullied land,	 	 											
frequently flooded	35										-		
740D:	 	 					 						
Hawick	90	0-7	2-10	1.50-1.65	2-20	0.03-0.13	0.0-2.9	1.0-3.0	.10	.15	3	3	86
		7-11	1-10	1.50-1.65	6-20	0.03-0.10	0.0-2.9	0.0-0.5	1.10	.15			
	 	11-80	1-5	1.55-1.65	20-101	0.02-0.06	0.0-2.9	0.0-0.5	.10	.15			
740E:	 	 				1							
Hawick	90	0-7	2-10	1.50-1.65	2-20	0.03-0.13	0.0-2.9	1.0-3.0	1.10	.15	3	3	86
		7-11	1-10	1.50-1.65	6-20	0.03-0.10	0.0-2.9	0.0-0.5	1.10	.15			
	 	11-80	1-5	1.55-1.65	20-101	0.02-0.06	0.0-2.9	0.0-0.5	.10	.15			
740F:	 	 					 						
Hawick	90	0-7	2-10	1.50-1.65	2-20	0.03-0.13	0.0-2.9	1.0-3.0	.10	.15	3	3	86
		7-11	1-10	1.50-1.65	6-20	0.03-0.10	0.0-2.9	0.0-0.5	1.10	.15			
	 	11-80	1-5	1.55-1.65	20-101	0.02-0.06	0.0-2.9	0.0-0.5	.10	.15			 -
980C:	 	 				1							
Judson	55	0-9	27-32	1.30-1.35	0.6-2	0.21-0.23	3.0-5.9	3.0-4.0	.28	.28	5	7	38
		9-28	27-32	1.35-1.45	0.6-2	0.21-0.23	3.0-5.9	3.0-3.5	.28	.28			
		28-52	1	1.35-1.45	0.6-2	0.21-0.23		1.0-2.0	.43	.43			
		52-60	25-32	1.35-1.45	0.6-2	0.21-0.23	3.0-5.9	0.5-1.0	.43	.43			
Gullied land,		 		i i		İ							
frequently flooded	35										-		
1220:		 				1							
Nodaway, channeled,													
frequently flooded	80	0-7	18-27	1.25-1.35	0.6-2	0.20-0.23	0.0-2.9	2.0-4.0	.32	.32	5	6	48
		7-31		1.25-1.35	0.6-2	0.20-0.23		0.5-1.0	.43	.43			
		31-42	1	1.25-1.35	0.6-2	0.20-0.23		0.5-1.0	.43	.43	!		
	 	42-80	18-28 	1.25-1.35	0.6-2	0.20-0.23	3.0-5.9	0.5-1.0	.43	.43			
5010.													
Pits, sand and gravel													
5040.	 	 	 	 			 						
Udorthents	İ	İ	i	į į		i	i	İ	i	i	i	į	İ
		İ	İ	i i		i	İ				i		

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									Erosi	on fac	tors	Wind	Wind
Map symbol	Pct. of	Depth	Clay	Moist	Permea-	Available	Linear	Organic				erodi-	erodi-
and soil name	map unit			bulk	bility	water	extensi-	matter				bility	bility
				density		capacity	bility		Kw	Kf	T	group	index
		In	Pct	g/cc	In/hr	In/in	Pct	Pct			ļ		ļ
5080.			 	 	 			 		 		 	
Udorthents	į į			İ	į	į		į	į	į	į	į	į
											!		
AW.	!!!		ļ	!			!		!	!	İ	!	!
Animal waste lagoon													
SL.													
Sewage lagoon													
W.													
Water	i i												

Chemical Properties

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

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

Cation-exchange capacity is the total amount of extractable bases that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. Soils having a low cation-exchange capacity hold fewer cations and may require more frequent applications of fertilizer than soils having a high cation-exchange capacity. The ability to retain cations reduces the hazard of ground-water pollution.

Soil reaction is a measure of acidity or alkalinity. The pH of each soil horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Calcium carbonate equivalent is the percent of carbonates, by weight, in the fraction of the soil less than 2 millimeters in size. The availability of plant nutrients is influenced by the amount of carbonates in the soil. Incorporating nitrogen fertilizer into calcareous soils helps to prevent nitrite accumulation and ammonium-N volatilization.

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Chemical Properties of the Soils

(Absence of an entry indicates that data were not estimated)

Map symbol and soil name	Pct. of map unit	Depth	Cation- exchange capacity	Soil reaction	Calcium carbon-
		In	meq/100 g	рн	Pct
1C: Ida	95	 0-8 8-60	 20-25 20-25	 6.6-8.4 7.4-8.4	 0-25 5-30
1C3: Ida, severely eroded	80	 0-3 3-80	20-25	 6.6-8.4 7.4-8.4	0-25
1D3: Ida, severely eroded	80	0-3	20-25	 6.6-8.4 7.4-8.4	0-25
1E3: Ida, severely eroded	70	 0-3 3-80	20-25	 6.6-8.4 7.4-8.4	0-25
1F3: Ida, severely eroded	70	 0-3 3-80	20-25	 6.6-8.4 7.4-8.4	0-25
8B: Judson	80	0-9 9-28 28-52 52-60	 25-30 25-30 25-30 25-30	 5.6-7.3 5.6-7.3 6.1-7.8 6.1-7.8	 0 0 0-15 0-15
8C: Judson	95	0-9 9-28 28-52 52-60	 25-30 25-30 25-30 25-30	 5.6-7.3 5.6-7.3 6.1-7.8 6.1-7.8	 0 0 0-15 0-15
9: Marshall 	95	 0-7 7-22 22-65 65-80	 25-30 25-30 25-30 20-25	 5.6-7.3 5.6-7.3 5.6-7.3 6.6-7.3	 0 0 0
9B: Marshall	100	0-7 7-22 22-65 65-80	25-30 25-30 25-30 25-30 20-25	 5.6-7.3 5.6-7.3 5.6-7.3	 0 0 0
9B2: Marshall, moderately eroded	85	0-7 7-47 47-80	 25-30 25-30 25-30	 5.6-7.3 5.6-7.3	 0 0
9C: Marshall 	90	 0-7 7-22 22-65 65-80	 25-30 25-30 25-30 20-25	 5.6-7.3 5.6-7.3 5.6-7.3 6.6-7.3	 0 0 0

Chemical Properties of the Soils--Continued

Map symbol and soil name	Pct. of map unit	Depth	Cation- exchange capacity	 Soil reaction	 Calcium carbon- ate
		In	meq/100 g	pН	Pct
9C2: Marshall, moderately eroded	80	 0-7 7-47 47-80	 25-30 25-30 25-30	 5.6-7.3 5.6-7.3	 0 0
9D: Marshall	85	0-7 7-22 22-65 65-80	25-30 25-30 25-30 25-30	 5.6-7.3 5.6-7.3 5.6-7.3	 0 0 0
9D2: Marshall, moderately eroded	70	 0-7 7-47 47-80	 25-30 25-30 25-30	 5.6-7.3 5.6-7.3	 0 0
9E2: Marshall, moderately eroded	70	 0-7 7-47 47-80	 25-30 25-30 25-30	 5.6-7.3 5.6-7.3	 0 0
9E3: Marshall, severely eroded	75	 0-5 5-46 46-68	 25-30 25-30 25-30	 5.6-7.3 5.6-7.3 5.6-7.3	 0 0
10B: Monona	100	0-8 8-15 15-30 30-60	25-30 25-30 25-30 25-30 20-25	5.6-7.3 5.6-7.3 6.1-7.3 6.6-8.4	0 0 0 0-25
10B2: Monona, moderately eroded	80	0-7 7-24 24-60	 25-30 25-30 20-25	 5.6-7.3 6.1-7.3 6.6-8.4	 0 0 0-25
10C2: Monona, moderately eroded	75	0-7 7-24 24-60	 25-30 25-30 20-25	 5.6-7.3 6.1-7.3 6.6-8.4	 0 0 0-25
10D2: Monona, moderately eroded	60	 0-7 7-24 24-60	 25-30 25-30 20-25	 5.6-7.3 6.1-7.3 6.6-8.4	 0 0 0-25
10D3: Monona, severely eroded	95	 0-7 7-24 24-60	 25-30 25-30 20-25	 5.6-7.3 6.1-7.3 6.6-8.4	 0 0 0-25

Chemical Properties of the Soils--Continued

Map symbol and soil name	Pct. of map unit	 Depth 	Cation- exchange capacity	 Soil reaction	 Calcium carbon- ate
	<u> </u>	 In	meq/100 g	pH	Pct
10E2: Monona, moderately eroded	 50	 0-7 7-24 24-60	25-30 25-30 25-30 20-25	 5.6-7.3 6.1-7.3 6.6-8.4	 0 0-25
10E3: Monona, severely eroded	 60 	 0-7 7-24 24-60	 25-30 25-30 20-25	 5.6-7.3 6.1-7.3 6.6-8.4	 0 0-25
10F2: Monona, moderately eroded	45	 0-7 7-24 24-60	 25-30 25-30 20-25	 5.6-7.3 6.1-7.3 6.6-8.4	 0 0 0-25
10F3: Monona, severely eroded	70	 0-7 7-24 24-60	 25-30 25-30 20-25	 5.6-7.3 6.1-7.3 6.6-8.4	 0 0-25
12B: Napier	85 	0-8 8-29 29-48 48-60	20-25 20-25 20-25 20-25	6.1-7.3 6.1-7.3 6.1-8.4 6.6-8.4	 0 0 0-10 0-10
12C: Napier	95	0-8 8-29 29-48 48-60	20-25 20-25 20-25 20-25	6.1-7.3 6.1-7.3 6.1-8.4 6.6-8.4	 0 0 0-10 0-10
17B: Napier	50	0-8 8-29 29-48 48-60	20-25 20-25 20-25 20-25	 6.1-7.3 6.1-7.3 6.1-8.4 6.6-8.4	 0 0 0-10 0-10
Kennebec, frequently flooded	20	0-8 8-41 41-54 54-80	30-36 30-36 30-36 30-36	5.6-7.3 5.6-7.3 6.1-7.3 6.1-7.3	 0 0 0
Nodaway, frequently flooded	 15 	0-7 7-31 31-42 42-80	 20-25 20-25 20-25 20-25	 6.1-7.3 6.1-7.3 6.1-7.3	 0 0 0 0
22D2: Dow, moderately eroded	90 	 0-6 6-80	 20-25 20-25	 6.6-8.4 7.9-8.4	 0-25 15-30

Chemical Properties of the Soils--Continued

Map symbol and soil name	Pct. of map unit	Depth	Cation- exchange capacity	Soil reaction	Calcium carbon- ate
		In	meq/100 g	рН	Pct
22D3:				 	
Dow, severely eroded	90	0 - 6	20-25	6.6-8.4	0-25
		6-80	20-25	7.9-8.4	15-30
22E3:				 	
Dow, severely eroded	80	0 - 6	20-25	6.6-8.4	0-25
ļ		6-80	20-25	7.9-8.4	15-30
26:				 	
Kennebec,					
occasionally flooded	95	0-8 8-41	30-36	5.6-7.3	0
		41-54	30-36	6.1-7.3	0
į	į	54-80	30-36	6.1-7.3	0
35D2:				 	
Liston, moderately				 	
eroded	50	0 - 5	25-30	7.4-8.4	0-15
		5-38 38-80	22-27	7.4-8.4	5-20
		38-80	20-31	7.4-0.4	5-20
Burchard, moderately	į		İ	İ	İ
eroded	35	0-5	15-25	5.6-7.3	0
	 	5-13 13-37	15-25 15-25	6.1-7.3	5-10
İ	İ	37-80	10-20	7.4-8.4	1-15
2582					
35E2: Liston, moderately				 	
eroded	50	0-5	25-30	7.4-8.4	0-15
		5-38	22-27	7.4-8.4	5-20
		38-80	20-31	7.4-8.4 	5-20
Burchard, moderately	į		İ	İ	İ
eroded	35	0-5	15-25	5.6-7.3	0
	 	5-13 13-37	15-25 15-25	6.1-7.3	0 5-10
İ		37-80	10-20	7.4-8.4	1-15
3.500.					
35F2: Liston, moderately	 			 	
eroded	40	0 - 5	25-30	7.4-8.4	0-15
ļ		5-38	22-27	7.4-8.4	5-20
		38-80	20-31	7.4-8.4	5-20
Burchard, moderately					İ
eroded	30	0-5	15-25	5.6-7.3	
ļ		5-13 13-37	15-25 15-25	6.1-7.3	
		37-80	10-20	7.4-8.4	
į	į			ļ	
35G: Liston	45	0-5	25-30	 7.4-8.4	0-15
TISCOII	40	5-38	22-27	7.4-8.4	
	İ	38-80	20-31	7.4-8.4	
Burchard	35	0.11	15.25	 5.6-7.3	0
Parchara) 	0-11 11-24	15-25 15-25	6.1-7.3	
		24-36	15-25	7.4-8.4	5-10

Chemical Properties of the Soils--Continued

Map symbol and soil name	Pct. of map unit	-	 Cation- exchange capacity	 Soil reaction	 Calcium carbon- ate
		In	meq/100 g	pН	Pct
54: Zook, occasionally flooded	90	0-6 6-20 20-52 52-60	 36-41 36-41 36-41 30-36	 5.6-7.8 5.6-7.3 6.1-7.3	 0 0 0
54+: Zook, overwash, occasionally flooded	90	0-6 6-20 20-52 52-60	 36-41 36-41 36-41 30-36	 5.6-7.8 5.6-7.3 6.1-7.3	 0 0 0
59D2: Burchard, moderately eroded	55	0-5 5-13 13-37 37-80	 15-25 15-25 15-25 10-20	 5.6-7.3 6.1-7.3 7.4-8.4 7.4-8.4	 0 0 5-10 1-15
59E2: Burchard, moderately eroded	55	0-5 5-13 13-37 37-80	 15-25 15-25 15-25 10-20	 5.6-7.3 6.1-7.3 7.4-8.4 7.4-8.4	 0 0 5-10 1-15
99C2: Exira, moderately eroded	80	0-6 6-40 40-80	 28-34 28-34 28-34	 5.6-6.5 5.6-6.5 6.1-7.3	 0 0
99D2: Exira, moderately eroded	50	0-6 6-40 40-80	28-34 28-34 28-34 28-34	 5.6-6.5 5.6-6.5 6.1-7.3	 0 0 0
99E2: Exira, moderately eroded	45	0-6 6-40 40-80		 5.6-6.5 5.6-6.5 6.1-7.3	:
100B: Monona	75	0-7 7-20 20-48 48-80	25-30 25-30 25-30 25-30	5.6-7.3 5.6-7.3 6.1-7.3 6.6-8.4	0 0
100C2: Monona, moderately eroded	50	0-6 6-24 24-80	 25-30 25-30 25-30	 5.6-7.3 6.1-7.3 6.6-8.4	 0 0 0-25

Chemical Properties of the Soils--Continued

45	In	capacity meq/100 g	рн	ate Pct
45	In	meq/100 g	pН	Dat
45			1	PCC
45		1		
45				
	0-6	25-30	5.6-7.3	0
	6-24	25-30	6.1-7.3	0
	24-80	25-30	6.6-8.4	0-25
45	0-7	25-30	5.6-7.3	0
	7-24	25-30	6.1-7.3	0
	24-36	25-30	6.1-7.3	0
	36-80	20-25	6.6-8.4	0-25
45	0-6	25-30	5.6-7.3	0
	6-24	25-30	6.1-7.3	0
	24-80	25-30	6.6-8.4	0-25
45	0-7	25-30	 5.6-7.3	0
13	7-24	25-30	6.1-7.3	0
	24-36	25-30	6.1-7.3	0
	36-80	20-25	6.6-8.4	0-25
		1		
55	0-6	25-30	5.6-7.3	0
	6-24	25-30	6.1-7.3	0
	24-80	25-30	6.6-8.4	0-25
70	0-7	25_30	 56-73	 0
70	7-24	1		0
	24-36	25-30	6.1-7.3	0
İ	36-80	20-25	6.6-8.4	0-25
	0.6	1 20 25		0-25
)		1		15-30
		20 23	,.,	13 30
		İ		į
40	0 - 7	25-30	5.6-7.3	0
	7-24	25-30		0
		1		0
	36-80	20-25	0.0-8.4 	0-25
			' 	
55	0 - 6	20-25	6.6-8.4	0-25
ļ	6-60	20-25	7.9-8.4	15-30
4.0	0.7	25.30		
40				0 0
	24-36	25-30	6.1-7.3	0
	36-80	20-25	6.6-8.4	0-25
	45 45 55 40	45	45	45

Chemical Properties of the Soils--Continued

Map symbol and soil name	Pct. of map unit	Depth	Cation- exchange capacity	Soil reaction	Calcium carbon- ate
		In	meq/100 g	рН	Pct
125D3: Ida, severely eroded	50	 0-3 3-80	 20-25 20-25	 6.6-8.4 7.4-8.4	 0-25 5-30
Chute, severely eroded	30	 0-4 4-60	 5.0-10 1.0-6.0	 7.6-8.4 7.4-8.4	 0-20 10-30
125E3: Ida, severely eroded	50	 0-3 3-80	20-25	 6.6-8.4 7.4-8.4	 0-25 5-30
Chute, severely eroded	30	 0-4 4-60	 5.0-10 1.0-6.0	7.6-8.4 7.4-8.4	0-20
133: Colo, occasionally flooded	85	0-8 8-34 34-51 51-60	36-41 36-41 36-41 36-41	 5.6-7.3 5.6-7.3 5.6-7.3 6.1-7.3	 0 0 0
133+: Colo, overwash, occasionally flooded	85	0-8 8-34 34-51 51-60	 30-36 36-41 36-41 30-36	 6.1-7.3 5.6-7.3 5.6-7.3 6.1-7.3	 0 0 0
212: Kennebec, occasionally flooded	70	0-8 8-41 41-54 54-80	 30-36 30-36 30-36	 5.6-7.3 5.6-7.3 6.1-7.3	 0 0 0
212+: Kennebec, overwash, occasionally flooded	90	0-8 8-41 41-54 54-80	 30-36 30-36 30-36 30-36	 5.6-7.3 5.6-7.3 6.1-7.3	 0 0 0
220: Nodaway, occasionally flooded	75	0-7 7-31 31-42 42-80	 20-25 20-25 20-25 20-25	 6.1-7.3 6.1-7.3 6.1-7.3	 0 0 0 0
266: Smithland, occasionally flooded	85	0-7 7-34 34-50 50-60	36-41 36-41 36-41 36-41 30-36	 5.6-7.3 5.6-7.3 5.6-7.3 6.1-7.3	 0 0 0

Chemical Properties of the Soils--Continued

Map symbol and soil name	Pct. of map unit	-	!	Soil reaction	Calcium carbon-
		In	capacity meq/100 g	рН	ate Pct
		111	meq/100 g	pn	FCC
266+:					[
Smithland, overwash,	 75	0 - 8	36-41	 5.6-7.3	0
occasionally flooded	/5	8-34	36-41	5.6-7.3	0
		34-50	36-41	5.6-7.3	0
		50-60	30-36	6.1-7.3	0
268D:				 	
Knox	85	0-7	10-18	5.6-7.3	0
		7-12	10-18	5.6-7.3	0
		12-61	12-22	5.6-7.3	0
		61-70	8.0-16	6.1-7.3 	0
268E:					İ
Knox	80	0 - 7	10-18	5.6-7.3	0
		7-12	10-18	5.6-7.3	0
		12-61 61-70	12-22	5.6-7.3	0
		01-70	0.0-10		
268F:			İ		İ
Knox	75	0-7	10-18	5.6-7.3	0
		7-12 12-61	10-18	5.6-7.3	0
		61-70	8.0-16	6.1-7.3	0
			į		İ
430:					
Ackmore, occasionally flooded	 75	0-6	25-30	5.6-7.3	0
1100000		6-25	25-30	5.6-7.3	0
		25-60	25-30	5.6-7.8	5-10
431B:				 	
Judson	55	0-9	25-30	5.6-7.3	0
		9-28	25-30	5.6-7.3	0
		28-52	25-30	6.1-7.8	0-15
		52-60	25-30	6.1-7.8	0-15
Ackmore, frequently				 	
flooded	25	0-6	25-30	5.6-7.3	0
		6-25	25-30	5.6-7.3	0
		25-60	25-30	5.6-7.8	5-10
Colo, overwash,					İ
frequently flooded	15	0 - 8	30-36	6.1-7.3	0
		8-34	36-41	5.6-7.3	0
		34-51 51-60	36-41 30-36	5.6-7.3	0
		31 00	30 30	0.1 7.3	
509B:			į		İ
Marshall, terrace	90	0-7	25-30	5.6-7.3	0
		7-22 22-65	25-30 25-30	5.6-7.3	0
		65-80	20-25	6.6-7.3	0
509C:	85	0.7	25.20		
Marshall, terrace	03 	0-7 7-22	25-30 25-30	5.6-7.3	0
		22-65	25-30	5.6-7.3	0

Chemical Properties of the Soils--Continued

Map symbol and soil name	Pct. of map unit	Depth	Cation- exchange capacity	Soil reaction	Calcium carbon-
		In	meq/100 g	pH	Pct
509C2: Marshall, terrace,				 -	
moderately eroded	65	0-7	25-30	5.6-7.3	0
		7-47 47-80	25-30	5.6-7.3	0
		1. 00			
509D2: Marshall, terrace,				 	
moderately eroded	65	0-7 7-47	25-30	5.6-7.3	0
		47-80	25-30	5.6-7.3	0
					į
509E2: Marshall, terrace,				 	
moderately eroded	65	0 - 7	25-30	5.6-7.3	0
		7-47 47-80	25-30	5.6-7.3	0 0
		47-00	23-30	3.0-7.3	0
510:			İ	İ	į
Monona, terrace	100	0 - 8	25-30	5.6-7.3	0
		8-15	25-30	5.6-7.3	0
		15-30 30-60	25-30	6.1-7.3	0 0-25
					0 20
510B:			İ	ĺ	İ
Monona, terrace	60	0-8	25-30	5.6-7.3	0
		8-15 15-30	25-30	6.1-7.3	0
		30-60	20-25	6.6-8.4	0-25
510C2: Monona, terrace,			 	 	
moderately eroded	75	0 - 7	25-30	5.6-7.3	0
		7-24 24-60	25-30	6.1-7.3	0 0-25
		24-00	20-25	0.0-0.4	0-23
510D2: Monona, terrace,				 	
moderately eroded	75	0-7	25-30	5.6-7.3	0
		7-24 24-60	25-30	6.1-7.3	0 0-25
		21 00	20 23		0 23
510E2:			İ	ĺ	İ
Monona, terrace, moderately eroded	 75	0-7	1 25 20		0
moderately eroded	/5 	7-24	25-30	5.6-7.3	0
		24-60	20-25	6.6-8.4	0-25
620					
630: Danbury, occasionally				 	
flooded	80	0-7	25-30	5.6-7.3	0
		7-32	25-30	5.6-7.3	0
		32-64	25-30	6.1-7.3	5-10
		64-80	25-30	3.0-7.3	5-10
670:			İ	İ	İ
Rawles, occasionally			15.00		
flooded	80	0-8 8-26	15-20 15-20	6.6-8.4	0-30
		26-60	15-20	6.1-7.8	0-30
			İ	İ	İ

Chemical Properties of the Soils--Continued

Map symbol and soil name	Pct. of map unit	Depth	Cation- exchange capacity	Soil reaction	Calcium carbon- ate
		In	meq/100 g	pН	Pct
			İ	ĺ	Ì
700:					
Monona, terrace	100	0 - 6	25-30	5.6-7.3	0
		6-16	25-30	5.6-7.3	0
		16-49	25-30	6.1-7.3	0
		49-80	25-30	6.6-8.4	0-25
700B:	7.5	0.6	05.30		
Monona, terrace	75	0-6	25-30	5.6-7.3	0
		6-16 16-49	25-30	6.1-7.3	0
		49-80	25-30	6.6-8.4	0-25
		19-00	23-30	0.0-0.4	0-23
700C2:				 	1
Monona, terrace,			1	 	1
moderately eroded	50	0-6	25-30	5.6-7.3	0
modoluooli olouou		6-49	25-30	6.1-7.3	0
i		49-80	25-30	6.6-8.4	0-25
700D2:			İ	İ	İ
Monona, terrace,			i	İ	İ
moderately eroded	60	0-6	25-30	5.6-7.3	0
- i	i	6-49	25-30	6.1-7.3	0
	i	49-80	25-30	6.6-8.4	0-25
			İ	İ	İ
717D:			İ	ĺ	Ì
Napier	50	0 - 8	20-25	6.1-7.3	0
		8-29	20-25	6.1-7.3	0
		29-48	20-25	6.1-8.4	0-10
		48-60	20-25	6.6-8.4	0-10
Gullied land,					
frequently flooded	35				
740D:					
Hawick	90	0-7	1.0-10	6.1-7.8	0-10
		7-11	1.0-5.0	6.1-7.8	0-10
		11-80	1.0-5.0	7.4-8.4	5-15
7408			1	 	1
740E: Hawick	90	0-7	1.0-10	6.1-7.8	0-10
Hawler	90	7-11	1.0-10	6.1-7.8	0-10
		11-80	1.0-5.0	7.4-8.4	5-15
		11-00	1.0-3.0	7.4-0.4	3-13
740F:				! 	İ
Hawick	90	0-7	1.0-10	6.1-7.8	0-10
		7-11	1.0-5.0	6.1-7.8	0-10
		11-80	1.0-5.0	7.4-8.4	5-15
980C:			i	İ	İ
Judson	55	0-9	25-30	5.6-7.3	0
i		9-28	25-30	5.6-7.3	0
i		28-52	25-30	6.1-7.8	0-15
i	İ	52-60	25-30	6.1-7.8	0-15
İ	ı i				
Gullied land,	l İ				
frequently flooded	35				

Chemical Properties of the Soils--Continued

			1	1	
Map symbol	Pct. of	Depth	Cation-	 Soil	 Calcium
and soil name	map unit	-	exchange	reaction	carbon-
			capacity	İ	ate
		In	meq/100 g	pН	Pct
1220:				 	
Nodaway, channeled,				! 	
frequently flooded	80	0-7	20-25	6.1-7.3	0
		7-31	20-25	6.1-7.3	0
	i	31-42	20-25	6.1-7.3	0
		42-80	20-25	6.1-7.3	0
5010.				 	
Pits, sand and gravel				 	
5040					
5040. Udorthents			 	 	
040101101			i		
5080.			İ	İ	i
Udorthents			į		İ
AW.			 	 	
Animal waste lagoon				 	
			i	! 	İ
SL.	İ		İ	j	į
Sewage lagoon					
W.				 	
Water				 	
				! 	

Water Features

The table described in this section gives estimates of various water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

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

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

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

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

Ponding is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. The table 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.

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)

				Water	table		Ponding	.	Floo	ding
and soil name	 Hydro- logic group	Surface runoff		 Upper limit 	Lower limit	Surface water depth	Duration		Duration	Frequenc
				Ft	Ft	Ft				
: :										
:: [da	 - B	Medium			 					
lua		Medium	January		 			None		None
			February		 			None		None
			March		 			None		None
			1	!	!	! !		None		None
			April					1		1
	!!!		May					None		None
	!!!		June					None		None
	!!!		July					None		None
	!!!		August					None		None
	!!!		September					None		None
	!!!		October					None		None
	!!!		November					None		None
			December					None		None
23:			I I	 	 					
Ida, severely eroded	- јв ј	Medium	į	i	İ	i i		i i		i
-	i i		January			i i		None		None
	i i		February			i i		None		None
	i i		March			i i		None		None
	i i		April			i i		None		None
	i i		May			i i		None		None
	i i		June			i i		None		None
	i i		July			i i		None		None
	i i		August			i i		None		None
	i i		September			i i		None		None
			October			i i		None		None
			November		 	i i		None		None
	1 1		V CMIDCI	1	1	1 1		110110		1,0116

			ļ	Water table		Ponding			Flooding	
Map symbol and soil name	 Hydro- logic group	Surface Mo	 Months 	 Upper limit 	Lower limit	Surface water depth	Duration	Frequency 	Duration	Frequency
				Ft	Ft	Ft				
D3:										
Ida, severely eroded	B	Medium								
ida, severely eroded		Medium	January		 			None		None
			February		 			None		None
			March					None		None
			April					None		None
			May					None		None
			June					None		None
			July		 			None		None
			August					None		None
			September					None		None
								None		None
			October November	!		!!!		None		None
			1					1		1
			December					None		None
E3:	i i		i	į	İ	i i		i i		İ
Ida, severely eroded	B	Medium								
			January					None		None
			February					None		None
	!!!		March					None		None
	!!!		April					None		None
	!!!		May					None		None
	!!!		June					None		None
	!!!		July					None		None
	!!!		August					None		None
	!!!		September					None		None
	!!!		October					None		None
			November					None		None
			December	 		 		None		None
F3: Ida, severely eroded	 B	High								
ida, severely eloded	4	High	January		 			None		None
			February			i i		None		None
			March					None		None
			April		 			None		None
	1 1		May					None		None
			June					None		None
			July		 			None		None
			August					None		None
			September		 			None		None
			October					None		None
			November					None		None
			December					None		None
	1		pecember					None		None

				Water	table		Ponding	r	Floo	ding
Map symbol and soil name	 Hydro- logic group	Surface runoff	Months	Upper	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
	!!!		ļ	Ft	Ft	Ft		!		ļ
25										
BB: Judson	B	T 0***	l	 	 					
Judson	B	Low		 	l I			None		None
			January	 	 			None		None
			February March		 			None		None
			April	 	 			None		None
			May	 	 			None		None
					 			None		None
			June	 	 			None		None
			July	 	 			None		None
			August	 	 			!		1
			September	!	 			None		None
			October		ı	1 1		None		None
			November					None		None
			December					None		None
C:				 	 					
C: Judson	B	Medium		 	 					
Judson		Medium	 Tamusanus	 	l I			None		None
			January February	 	 			None		None
			March		 			None		None
			1	!	!	1 1		!		None
			April	 	 			None None		None
			May June		 			None		None
				!	!					1
			July	 	 			None		None
			August	!	!	!!!		None		None
			September					None		None
			October					None		None
			November					None		None
			December					None		None
:				 	 					
Marshall	B	Low		l I	 					
Maishail	"	HO#	January	 	 			None		None
			February					None		None
			March		 			None		None
			April		 			None		None
			: -	 	 			None		None
	1 1		May June	 	 			None		None
			July		 			None		None
	1 1		August	 	 			None		None
			September	 	 			None		None
			October	!	 			None		None
			1		 			!		1
			November		I	1 1		None		None None
			December	j I	 	i i		None		N

ydro- ogic roup 	Surface runoff	Months	Upper limit	Lower limit	water	Duration	Frequency	Duration	Frequency
B 	Low		Ft 		depth		<u> </u>		<u> </u>
B 	Low			Ft	Ft				
B 	Low				!!!		! !		ļ
B 	Low								
		January					None		None
		February					None		None
		March April		 			None		None
			 	 			None None		None None
i		May	!	!	!				
- !		June	 	 			None		None
- !		July	!	!	!!!		None		None
- !		August		 			None		None
- !		September		!			None		None
- !		October		 			None		None
- !		November	 	 			None		None
- !		December					None		None
- !				 	! !				
в	Medium	I I	 	 			 		I
В	Medium	Tomicomic	 	 			None		None
		January		 					
- !		February	 	 			None None		None None
- !		March April		 			!		None
- !		May	 	 			None		None
		June		 			None		None
		1		!	1				None
			1	l	1				None
			!	!	!				None
			!	!	!				None
		!		!	1				1
		,		I	1		1 1		None None
		December		 			None		None
		I I	 	 			 		I
В	Modium		 	 					
P	Medium	Tanuaru		l I			None		None
				!	1				None
		-		!	!				None
-		,	!	!	!		!		None
-			!	!	!		1 1		None
			!	1	!				None
-			!	!	!		!		None
				1					None
-			!	l	!!!				None
				!	1		1 1		None
		1	!	!	!		!		None
		1		!					None
1	33	 None	July None August None September None October None November None December None December None January None March None April None June None July None August None September None None September None None						

				Water	table		Ponding		Floo	oding
Map symbol and soil name	 Hydro- logic group	Surface runoff	Months	 Upper limit 	Lower	 Surface water depth	Duration	Frequency	Duration	Frequenc
				Ft	Ft	Ft				1
C2: Marshall, moderately				 	 					
eroded	В	Medium				!!!				
			January					None		None
	!!!		February					None		None
			March					None		None
			April					None		None
			May					None		None
			June					None		None
			July					None		None
			August					None		None
			September					None		None
			October					None		None
			November					None		None
			December					None		None
D:				1	 					
Marshall	B	Medium								
			January					None		None
			February					None		None
			March					None		None
			April					None		None
			May					None		None
			June					None		None
			July			j j		None		None
	į į		August			j j		None		None
	į į		September			j j		None		None
	į į		October	i	i	j j		None		None
	į į		November			i i		None		None
	1 1		December	i		i i		None		None

				Water	table		Ponding	ļ	Floo	ding
Map symbol and soil name	Hydro- logic group	Surface runoff	 Months	 Upper limit 	Lower	Surface water depth	Duration	Frequency 	Duration	Frequenc
			<u> </u>	Ft	Ft	Ft		<u> </u>		<u> </u>
DD2: Marshall, moderately				 						
eroded	• В	Medium				!		! !		
			January					None		None
			February					None		None
			March					None		None
			April					None		None
			May					None		None
			June					None		None
			July					None		None
			August					None		None
			September					None		None
			October					None		None
			November					None		None
			December					None		None
E2:										
Marshall, moderately										
eroded	- В	Medium								
			January					None		None
			February					None		None
			March					None		None
			April					None		None
			May					None		None
	i i		June			j i		None		None
	i i		July			j i		None		None
	į į		August			j j		None		None
	į į		September			j j		None		None
	i i		October		i	j j		None		None
	i i		November			i i		None		None
	i i		December	i	i	i i		None		None

				Water	table		Ponding	·	Floo	ding
Map symbol and soil name	 Hydro- logic group	Surface runoff	 Months 	Upper	Lower limit	 Surface water depth	Duration	Frequency 	Duration	Frequency
				Ft	Ft	Ft				
			ļ							
9E3:		20.01								
Marshall, severely eroded	В	Medium	 							
			January					None		None
			February	 	 			None None		None None
			March April	 				None		None
			May	 				None		None
			June		 			None		None
			July		 			None		None
			August		 			None		None
			September					None		None
			October					None		None
			November					None		None
			December					None		None
			December					None		None
.0B:				l I		1 1				i i
Monona	. В	Low	i	 	 	1 1				İ
Honona	-	20#	January		 	i i		None		None
			February	 	 	i i		None		None
	1 1		March					None		None
	i i		April			i i		None		None
	i i		May			i i		None		None
	i i		June			i i		None		None
	ii		July			i i		None		None
	ii		August			i i		None		None
	ii		September			i i		None		None
	ii		October			i i		None		None
	ii		November			i i		None		None
	i i		December			i i		None		None
	i i			ì		i i				
.0B2:	i i		i	Ì	i	i i		i i		i
Monona, moderately eroded	В	Low	i	į	İ	į i		į i		i
•	i i		January			i i		None		None
	i i		February			i i		None		None
	i i		March			i i		None		None
	i i		April			i i		None		None
	i i		May			i i		None		None
	i i		June	i		i i		None		None
	į į		July	i		i i		None		None
	į į		August	i		i i		None		None
	i i		September	i		i i		None		None
	i i		October	i		i i		None		None
	i i		November	i		i i		None		None

				Water	table		Ponding	·	Floo	ding
Map symbol and soil name	 Hydro- logic group	Surface runoff	Months	 Upper limit 	Lower limit	 Surface water depth	Duration	Frequency 	Duration	Frequency
			!	Ft	Ft	Ft		! !		!
0.00					 					
Monona, moderately eroded	B	Medium		l I	 					l I
Monona, moderatery eroded	4	Medium	January	 	 			None		None
			February		 			None		None
			March		 			None		None
			April		 			None		None
			May		 			None		None
			June		 			None		None
			July		 			None		None
			August		 			None		None
					 			None		None
			September		 			None		None
			November	 	 			None		None
			1	!	 			! !		
			December					None		None
.0E3:				l I	 					I I
ивз: Monona, severely eroded	B	Medium	l I	l I	l I	1 1				I I
monona, severely eroded	•	Medium	Tomuomu	 	l I			None		None
			January February	 	 			None		None
			March		 			None		None
			1	!	!	1 1		None		None
			April	 	 					
			May	!	!			None None		None None
	! !		June							
			July		 			None		None
			August	!	!	!!!		None		None
			September					None		None
			October					None		None
			November					None		None
			December					None		None
0F2:					 					
	1	77 d la			 					
Monona, moderately eroded	B	High		 	 -			Name		1 27
			January					None		None
			February					None		None
			March					None		None
			April					None		None
			May					None		None
	!!		June					None		None
	! !		July					None		None
	! !		August					None		None
	! !		September					None		None
	!!		October					None		None
	!!		November					None		None
	1 1		December					None		None

ļ	 			Water 	table		Ponding	· 	Floc	ding
and soil name	 Hydro- logic group	Surface runoff	Months	Upper limit	Lower limit	Surface water depth	Duration	Frequency 	Duration	Frequency
I				Ft	Ft	Ft				
.0F3:										
Monona, severely eroded	 B	Medium	l	 						l I
Monona, severely eloded		Medium	January	 	 			None		None
l I	 		February		 			None		None
l I	 		March					None		None
l l	 		April	 				None		None
l l	 		May		 			None		None
l l	 		June					None		None
l I	 		July		 			None		None
l I	 		August					None		None
l I	 			 	 			None		None
			September October	 				None		None
			November	 	 			None		None
				!		!!!				
l l	 		December	 				None		None
2B:				 						
Napier	В	Low	i	İ		i i		į į		İ
Į.			January					None		None
Į.			February					None		None
Į.			March					None		None
Į.			April					None		None
Į.			May					None		None
Į.			June					None		None
Į.			July					None		None
Į.			August					None		None
Į.			September					None		None
Į.			October					None		None
Į.			November					None		None
ļ			December					None		None
2C:	 			 						
Napier	B	Medium	i					i i		
- i	i i		January			i i		None		None
į	i i		February			i i		None		None
į	i i		March			i i		None		None
į	i i		April			i i		None		None
į	i i		May			i i		None		None
İ	į į		June			i i		None		None
ļ	j i		July			i i		None		None
i	j i		August			i i		None		None
i	j i		September			i i		None		None
	į į		October			i i		None		None
ļ	i i		November			i i		None		None
			December			i i		None		None

				Water	table		Ponding		Floo	ding
Map symbol and soil name	 Hydro- logic group	Surface runoff	Months	Upper	Lower limit	Surface water depth	Duration	Frequency 	 Duration 	Frequency
	T I		1	Ft	Ft	Ft		1		
L7B:										
Napier	- B	Low				! !				
			January					None		None
			February					None		None
	!!!		March					None		None
	!!!		April					None		None
	!!!		May					None		None
			June					None		None
	!!!		July					None		None
	!!!		August					None		None
	!!!		September					None		None
	!!!		October					None		None
	!!!		November					None		None
	!!!		December					None		None
Kennebec, frequently									 	
flooded	 - B	Low	ļ					1	 	l I
1100ded	-	HOW	January	6.0-6.7	\ > 6 0			None	 	 None
			February	5.5-6.7				None	Very brief	Frequen
			March	4.5-6.5				None	Very brief	Frequen
			April	4.0-6.0				None	Very brief	Frequen
			May	4.5-6.5				None	Very brief	Frequen
			June	5.0-6.7				None	Very brief	Frequen
			July	6.0-6.7				None	Very brief	Frequen
			August	6.5-6.7				None	Very brief	Frequen
			September					None	Very brief	Frequen
	1 1		October	6.5-6.7				None	Very brief	Frequen
	1 1		November	5.5-6.7		i i		None	Very brief	Frequen
	1 1		December	6.0-6.7				None		None
	i i					i i			! 	
Nodaway, frequently	i i		i	i i		i i		İ		
flooded	- В	Low	i	į i		i i		İ	İ	İ
	i i		January	6.0-6.7	>6.0	i i		None		None
	i i		February	5.5-6.7		i i		None	Very brief	Frequen
	j i		March	4.5-6.5	>6.0	i i		None	Very brief	Frequen
	j i		April	4.0-6.0	>6.0	i i		None	Very brief	Frequen
	j i		May	4.5-6.5		i i		None	Very brief	Frequen
	j j		June	5.0-6.7	>6.0	j j		None	Very brief	Frequen
	j j		July	6.0-6.7	>6.0	j j		None	Very brief	Frequen
	i i		August	6.5-6.7	>6.0	i i		None	Very brief	Frequen
	i i		September	j j		i i		None	Very brief	Frequen
	j j		October	6.5-6.7	>6.0	j j		None	Very brief	Frequen
	. i		November	5.5-6.7	>6.0	i i		None	Very brief	Frequen
			Movemmer	3.3-0.7	70.0			None	Agra prier	Lreduen

				Water	table		Ponding	·	Floo	ding
Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Upper limit	Lower limit	Surface water depth	Duration	Frequency 	Duration	Frequency
				Ft	Ft	Ft				
2D2:				 	 					1
Dow, moderately eroded	в	Medium	i	i	İ	i i		i i		i
	i i		January			i i		None		None
	i i		February			i i		None		None
	i i		March			i i		None		None
	i i		April		 	i i		None		None
	1 1		May		 			None		None
	1 1		June					None		None
			July		 			None		None
								None		None
			August		!	: :		1 1		1
	! !		September					None		None
	!!!		October					None		None
	!!!		November					None		None
			December		 			None		None
2D3:	i i		j			i i		; ;		İ
Dow, severely eroded	B	Medium	ļ	!	!			!!!		
			January					None		None
			February					None		None
			March					None		None
			April					None		None
			May					None		None
			June					None		None
			July					None		None
			August					None		None
			September					None		None
	i i		October			i i		None		None
	i i		November		i	i i		None		None
	į į		December	ļ	ļ	i i		None		None
2E3:				 	 					
Dow, severely eroded	В	Medium	j	į	j	i i		i i		j
			January					None		None
			February					None		None
			March					None		None
			April					None		None
	i i		May			i i		None		None
	į į		June			i i		None		None
	i i		July			i i		None		None
	i i		August			i i		None		None
	i i		September		 	i i		None		None
	1 1		October		 			None		None
	1 1		November					None		None
			December					None		None
	1 1		1	1	:	1 1				1

Water Features -- Continued

				Water	table		Ponding	•	Floo	ding
Map symbol and soil name	 Hydro- logic group	Surface runoff	Months	Upper limit	Lower limit	Surface water depth	Duration	Frequency	 Duration 	Frequency
	i i		i	Ft	Ft	Ft		i		İ
	i i		į	į i		i i		İ		İ
26:										
Kennebec, occasionally										
flooded	B	Low								
			January	6.0-6.7	>6.0			None		None
			February	5.5-6.7	>6.0			None	Brief	Occasiona
			March	4.5-6.5	>6.0			None	Brief	Occasiona
			April	4.0-6.0	>6.0			None	Brief	Occasiona
			May	4.5-6.5	>6.0			None	Brief	Occasiona
			June	5.0-6.7	>6.0			None	Brief	Occasiona
			July	6.0-6.7	>6.0			None	Brief	Occasiona
	į į		August	6.5-6.7	>6.0	j j		None	Brief	Occasiona
	i i		September	j i		j j		None	Brief	Occasiona
	i i		October	6.5-6.7	>6.0	i i		None	Brief	Occasiona
	i i		November	5.5-6.7	>6.0	i i		None	Brief	Occasiona
	i i		December	6.0-6.7	>6.0	i i		None		None
	i i		i	i i		i i		i		i
35D2:	i i		i	i i		i i		İ		İ
Liston, moderately eroded	В	High	i	i i		i i		i		İ
•	i i	-	January	i i		i i		None		None
	i i		February	i i		i i		None		None
	i i		March	i		i i		None		None
	i i		April			i i		None		None
	i i		May	i		i i		None		None
			June	i		i i		None		None
			July					None		None
			August					None	 	None
			September					None	 	None
			October					None		None
			November					None	 	None
			December					None	 	None
			December					None		None
Burchard, moderately								1	 	1
eroded	B	High	-						 	
010ugu	"	gii	January					None	 	None
			February					None	 	None
			March					None	 	None
			April					None	 	None
				!		1 1		1	l	
			May					None	 	None
			June			!!!		None		None
			July					None		None
	!!!		August					None		None
	!!!		September					None		None
	ļ ļ		October					None		None
	<u> </u>		November					None		None
	1 1		December					None		None

				Water	table		Ponding	r	Floc	ding
Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Upper limit	Lower limit	Surface water depth	Duration	Frequency 	Duration	Frequency
				Ft	Ft	Ft				
35E2:				 	 					
Liston, moderately eroded	 B	High		! 	 	; ;				
Elbeon, moderately eloded			January		 	i i		None		None
			February		 	i i		None		None
			March		 	i i		None		None
			April		 	i i		None		None
			May		 	i i		None		None
			June		 	i i		None		None
			July		 	i i		None		None
			August			i i		None		None
			September		 	i i		None		None
			October		 	i i		None		None
			November					None		None
			December					None		None
			December		 			None		None
Burchard, moderately				 	 					
eroded	 B	High		 	l I	1 1				
eroded	B	nign	January		 			None		None
			February		 			None		None
			March					None		None
			1		 			!		None
			April		 			None None		None
			May June	!	 			!		
			1		 			None		None
			July		1	1		None		None
			August					None		None
			September					None		None
			October					None		None
			November					None		None
			December					None		None
						!!!				
35F2:										
Liston, moderately eroded	В	Very high				!!!				
			January					None		None
			February					None		None
			March					None		None
			April					None		None
	[May					None		None
			June					None		None
			July					None		None
			August					None		None
			September					None		None
			October					None		None
			November					None		None
	1		December			I I		None		None

				Water	table		Ponding	·	Floo	ding
Map symbol and soil name	 Hydro- logic group	Surface runoff	 Months 	 Upper limit 	Lower	Surface water depth	Duration	Frequency 	Duration	Frequency
			1	Ft	Ft	Ft				
			!	[ļ .		!
35F2:	!!!									
Burchard, moderately	!!!					!!!		! !		
eroded	B	Very high				!!!		! !		
	!!!		January					None		None
	!!!		February					None		None
	!!!		March					None		None
	!!!		April					None		None
	!!!		May					None		None
	!!!		June					None		None
			July					None		None
			August					None		None
			September					None		None
			October					None		None
			November					None		None
			December					None		None
5G:				 	l I					
Liston	 B	Very high		 	 					İ
1150011	-	very mrgm	January			i i		None		None
			February					None		None
			March					None		None
			April					None		None
			May					None		None
			June					None		None
			July					None		None
			August		 			None		None
			September		 			None		None
			October	 				None		None
			November		 			None		None
			December		 			None		None
			December					None		None
Burchard	B	Warre bigh	I I	l I	 	1 1				1
Burchard	4	Very high	 January	 	 			None		None
				 	 			None		None
			February	 	 			!		None
			March	!		! !		None		
			April					None		None
			May					None		None
			June					None		None
			July					None		None
			August					None		None
			September					None		None
			October					None		None
	ļ .		November					None		None
			December					None		None

		ic runoff	I I	Water table		Ponding			Flooding	
and soil name	Hydro- logic group		Months	Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
I				Ft	Ft	Ft				
			ļ							!
4:										
ook, occasionally flooded	С/Б	Medium	 			! !		N		
l I			January	2.0-3.5				None None	 Brief	None Occasion
l I			February March	1.5-3.0				None	Brief Brief	Occasion
ļ			April	0.5-2.0				None	Brief	Occasion
			May	0.5-2.0				None	Brief	Occasion
· ·			June	1.0-2.0				None	Brief	Occasion
· ·			July	2.0-3.5				None	Brief	Occasion
i			August	2.5-3.5		i i		None	Brief	Occasion
i				3.0-4.0		i i		None	Brief	Occasion
i			October	2.5-3.5		i i		None	Brief	Occasion
i	i		November	1.5-3.0		i i		None	Brief	Occasion
i	i		December	2.0-3.5		i i		None		None
i	i i					i i		i i		i
4+:	i		i	İ		i i		į i		i
Zook, overwash,	i		i	İ		i i		į i		i
occasionally flooded	C/D	Medium	i	i		i i		į i		İ
i	i i		January	2.0-3.5	>6.0	i i		None		None
į	i i		February	1.5-3.0	>6.0	i i		None	Brief	Occasion
İ	İ		March	0.5-2.0	>6.0	i i		None	Brief	Occasion
			April	0.0-1.0	>6.0			None	Brief	Occasion
I			May	0.5-2.0	>6.0			None	Brief	Occasion
I			June	1.0-2.0	>6.0			None	Brief	Occasion
I			July	2.0-3.5	>6.0			None	Brief	Occasion
			August	2.5-3.5	>6.0			None	Brief	Occasion
			September	3.0-4.0				None	Brief	Occasion
			October	2.5-3.5				None	Brief	Occasion
			November	1.5-3.0				None	Brief	Occasion
			December	2.0-3.5	>6.0			None		None
						!!!				ļ
9D2:						!!!				
Burchard, moderately	_					!!!				
eroded	В	High				!!!				
			January					None		None
l i			February					None		None
l I			March					None		None
ļ			April					None None		None None
ļ			May June					None		None
ļ			June July					None		None
ļ			August					None		None
			September					None		None
			October					None		None
			November					None		None
			December					None		None

				Water	table		Ponding	·	Flooding		
Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Upper limit	Lower limit 	Surface water depth	Duration	Frequency 	Duration	Frequency	
	!!!			Ft	Ft	Ft					
9E2:				 	 						
Burchard, moderately	 			 	 	1 1		1			
eroded	B	High		 	 	1 1		}			
eroded		nign	January	 				None		None	
			February					None		None	
			March					None		None	
	 		April					None		None	
	 		May					None		None	
	 		June					None		None	
	 		July					None		None	
	 		August					None		None	
				!		!!!		None		None	
			September		!			None		None	
			1							1	
			November			!!!		None		None	
			December					None		None	
9C2:				 							
	5	Ma 44		 							
Exira, moderately eroded	B	Medium	1			! !		1 27			
			January					None		None	
			February					None		None	
			March					None		None	
			April					None		None	
			May					None		None	
			June					None		None	
			July					None		None	
			August					None		None	
			September					None		None	
			October					None		None	
			November					None		None	
			December					None		None	
9D2:						!!!					
Exira, moderately eroded	B	Medium	1_								
			January					None		None	
			February					None		None	
			March					None		None	
			April					None		None	
			May					None		None	
			June					None		None	
	! !		July					None		None	
			August					None		None	
			September					None		None	
			October					None		None	
			November					None		None	
	1 1		December					None		None	

				Water	table	Ponding			Flooding		
Map symbol and soil name	 Hydro- logic group	Surface runoff	 Months	Upper limit	Lower	Surface water depth	Duration	Frequency	Duration	Frequenc	
	group		1	 EL	l ===			1		1	
				Ft	Ft	Ft					
9E2:				l l	 						
Exira, moderately eroded	B	Medium	i	 	 						
moderatery erodes	-	11001	January		 	i i		None		None	
	i i		February			i i		None		None	
	i i		March			i i		None		None	
	i i		April			i i		None		None	
	i i		May			i i		None		None	
	i i		June			i i		None		None	
	i i		July			i i		None		None	
	i i		August			i i		None		None	
	i i		September			i i		None		None	
	i i		October			i i		None		None	
	i i		November			i i		None		None	
	į į		December			i i		None		None	
	į į		İ	İ		i i		į i		İ	
00B:	į į		İ	İ		i i		į i		İ	
Monona	B	Low									
			January					None		None	
			February					None		None	
			March					None		None	
			April					None		None	
			May					None		None	
			June					None		None	
			July					None		None	
			August					None		None	
			September					None		None	
			October					None		None	
			November					None		None	
			December					None		None	
00C2:											
Monona, moderately eroded	B	Medium				! !					
	!!!		January					None		None	
	!!!		February					None		None	
	!!!		March					None		None	
	!!!		April					None		None	
	!!!		May					None		None	
	!!!		June					None		None	
			July					None		None	
			August					None		None	
			September					None		None	
			October					None		None	
			November					None		None	
			December					None		None	

			l I	Water	table		Ponding			Flooding	
	 Hydro- logic group	Surface runoff	 Months 	 Upper limit	Lower limit	Surface water depth	Duration	Frequency 	Duration	Frequency	
!				Ft	Ft	Ft					
!											
L00D2:						! !					
Monona, moderately eroded \mid	В	Medium				! !					
			January					None		None	
			February					None		None	
			March					None		None	
			April					None		None	
			May					None		None	
			June					None		None	
			July					None		None	
			August					None		None	
!			September					None		None	
!			October					None		None	
!			November					None		None	
!			December					None		None	
.00D3:			l I	 							
Monona, severely eroded	B	Medium		 	 						
•	i i		January			i i		None		None	
;	i i		February			i i		None		None	
;	i i		March			i i		None		None	
	i i		April			i i		None		None	
	i i		May			i i		None		None	
	i i		June			i i		None		None	
	i i		July			i i		None		None	
	i i		August			i i		None		None	
	i i		September			i i		None		None	
	i i		October			i i		None		None	
	i i		November			i i		None		None	
,	i i		December			i i		None		None	
!											
.00E2:		Medium		 							
Monona, moderately eroded	B	Medium	 Tomasomer	 	l I			None		Nor-	
l l			January		 			None		None	
l de la companya de la companya de la companya de la companya de la companya de la companya de la companya de			February	 	 			None		None	
l de la companya de la companya de la companya de la companya de la companya de la companya de la companya de			March	!		!!!		None		None	
l de la companya de la companya de la companya de la companya de la companya de la companya de la companya de			April					None		None	
l de la companya de la companya de la companya de la companya de la companya de la companya de la companya de			May					None		None	
ļ			June					None		None	
ļ			July					None		None	
ļ			August					None		None	
ļ			September					None		None	
			October					None		None	
	1										
			November	 	 			None None		None None	

				Water table			Ponding	·	Flooding		
and soil name	Hydro- logic group	Surface runoff	Months	Upper limit	Lower limit 	Surface water depth	Duration	Frequency 	Duration	Frequency 	
				Ft	Ft	Ft					
			ļ	[!	
L11D3:			ļ	!		! !		! !		!	
Dow, severely eroded	В	Medium									
			January					None		None	
			February					None		None	
			March					None		None	
			April					None		None	
			May					None		None	
	!!!		June					None		None	
	!!!		July					None		None	
	!!!		August					None		None	
	!!!		September					None		None	
			October					None		None	
			November					None		None	
	!!!		December					None		None	
	!!!		ļ			!!!		!!!			
Monona, severely eroded	B	Medium	ļ			!!!		!!!			
	!!!		January					None		None	
			February					None		None	
			March					None		None	
			April					None		None	
			May					None		None	
			June					None		None	
			July					None		None	
			August					None		None	
			September					None		None	
			October					None		None	
			November					None		None	
			December					None		None	
L11E3:											
Dow, severely eroded	В	Medium									
			January					None		None	
			February					None		None	
			March					None		None	
			April					None		None	
			May					None		None	
			June					None		None	
			July					None		None	
			August					None		None	
			September					None		None	
			October					None		None	
			November					None		None	

			 Months 	Water	table	Ponding			Flooding	
Map symbol and soil name	 Hydro- logic group	Surface runoff		Upper limit	Lower limit	Surface water depth	Duration	Frequency 	Duration	Frequency
	i i		İ	Ft	Ft	Ft		i		İ
	i i		j	į	j	į į		j i		İ
111E3:										
Monona, severely eroded	B	Medium								
			January					None		None
			February					None		None
			March					None		None
	!!!		April					None		None
	!!!		May					None		None
	!!!		June					None		None
	!!!		July					None		None
	!!!		August					None		None
	!!!		September					None		None
	!!!		October					None		None
	!!!		November					None		None
	!!!		December					None		None
10500	!!!									
125D3:						! !		! !		
Ida, severely eroded	B	Medium	 					N		
			January					None		None
			February					None		None
			March					None		None
			April		 			None		None
			May		!			None		None
			June		 			None		None None
			July		 			None None		None
			August		 			None		None
			September		 			None		None
			November		 					1
			December		 			None None		None None
			December					None		None
Chute, severely eroded	A	Very low		l I	l I					
chace, severely eroded	🙃	AGTA TOM	January		 			None		None
			February		 			None		None
			March		 			None		None
			April					None		None
			May					None		None
			June					None		None
			July					None		None
	1 1		August		 			None		None
			September		 			None		None
	1 1		October					None		None
	1 1		November					None		None
	1 1		December					None		None
	! !		December					140116		140116

				Water	table		Ponding		Flooding		
and soil name	 Hydro- logic group	Surface runoff	 Months 	Upper	Lower	Surface water depth	Duration	Frequency 	Duration	Frequency 	
				Ft	Ft	Ft					
125E3:						!!!		! !			
Ida, severely eroded	В	Medium	!_			!!!					
			January					None		None	
			February					None		None	
			March					None		None	
			April					None		None	
			May					None		None	
	!!!		June					None		None	
			July					None		None	
			August					None		None	
	!!!		September					None		None	
	!!!		October					None		None	
			November					None		None	
			December					None		None	
Chute, severely eroded	A	Very low	İ							 	
	i i		January			i i		None		None	
	i i		February			i i		None		None	
	i i		March			i i		None		None	
	i i		April			i i		None		None	
	i i		May			i i		None		None	
	i i		June			i i		None		None	
	i i		July			i i		None		None	
	i i		August			i i		None		None	
	i i		September			i i		None		None	
	1 1		October			i i		None		None	
			November					None		None	
			December					None		None	
	į į		j	i i		i i		i i		İ	
133:		_									
Colo, occasionally flooded	I B/D	Low	 								
			January	2.0-3.5				None		None	
			February	1.5-3.0				None	Brief	Occasion	
	!!!		March	0.5-2.0				None	Brief	Occasion	
	!!!		April	0.0-1.0				None	Brief	Occasion	
			May	0.5-2.0				None	Brief	Occasion	
			June	1.0-2.0				None	Brief	Occasion	
			July	2.0-3.5				None	Brief	Occasion	
			August	2.5-3.5				None	Brief	Occasion	
	į 1		September					None	Brief	Occasion	
			October	2.5-3.5				None	Brief	Occasion	
			November	1.5-3.0				None	Brief	Occasion	
			December	2.0-3.5	>6.0			None		None	

				Water	table		Ponding		Flooding		
Map symbol and soil name	 Hydro- logic group	Surface runoff	 Months 	Upper limit	Lower	Surface water depth	Duration	Frequency 	Duration	Frequency	
	i i		i	Ft	Ft	Ft		i i		İ	
	i i		j	İ	İ	i i		į į		İ	
133+:											
Colo, overwash,											
occasionally flooded	B/D	Low									
			January	2.0-3.5				None		None	
			February	1.5-3.0	>6.0			None	Brief	Occasiona	
			March	0.5-2.0	>6.0			None	Brief	Occasiona	
			April	0.0-1.0	>6.0			None	Brief	Occasiona	
			May	0.5-2.0	>6.0			None	Brief	Occasiona	
			June	1.0-2.0	>6.0			None	Brief	Occasiona	
			July	2.0-3.5	>6.0			None	Brief	Occasiona	
			August	2.5-3.5	>6.0			None	Brief	Occasiona	
			September	3.0-4.0	>6.0			None	Brief	Occasiona	
			October	2.5-3.5	>6.0			None	Brief	Occasiona	
			November	1.5-3.0	>6.0			None	Brief	Occasiona	
			December	2.0-3.5	>6.0			None		None	
212:					 						
Kennebec, occasionally											
flooded	B	Low									
			January	6.0-6.7	>6.0			None		None	
	į į		February	5.5-6.7	>6.0	i i		None	Brief	Occasiona	
	į į		March	4.5-6.5	>6.0	i i		None	Brief	Occasiona	
	į į		April	4.0-6.0	>6.0	i i		None	Brief	Occasiona	
	į į		May	4.5-6.5	>6.0	i i		None	Brief	Occasiona	
	į į		June	5.0-6.7	>6.0	i i		None	Brief	Occasiona	
	į į		July	6.0-6.7	>6.0	i i		None	Brief	Occasiona	
	į į		August	6.5-6.7	>6.0	i i		None	Brief	Occasiona	
	į į		September			i i		None	Brief	Occasiona	
	į į		October	6.5-6.7	>6.0	i i		None	Brief	Occasiona	
	į į		November	5.5-6.7	>6.0	i i		None	Brief	Occasiona	
	i i		December	6.0-6.7	>6.0	i i		None		None	

				Water	table		Ponding	·	Floo	ding
Map symbol and soil name	 Hydro- logic group	Surface runoff	Months	Upper limit	Lower limit	Surface water depth	Duration	Frequency 	Duration	Frequency
	T I		1	Ft	Ft	Ft				
			ļ					! !		ļ
212+:	!!!					! !		!!!		!
Kennebec, overwash,		_								
occasionally flooded	В	Low				!!!				
			January	6.0-6.7				None		None
			February	5.5-6.7				None	Brief	Occasion
			March	4.5-6.5				None	Brief	Occasion
	!!!		April	4.0-6.0				None	Brief	Occasion
	1 1		May	4.5-6.5				None	Brief	Occasion
	1		June	5.0-6.7				None	Brief	Occasion
			July	6.0-6.7				None	Brief	Occasion
			August	6.5-6.7	>6.0			None	Brief	Occasion
	1 1		September					None	Brief	Occasion
	1 1		October	6.5-6.7	>6.0			None	Brief	Occasion
	1 1		November	5.5-6.7				None	Brief	Occasion
			December	6.0-6.7	>6.0			None		None
220:										
Nodaway, occasionally	i i		İ	Ì		į į		į į		İ
flooded	В	Low	j	į		į į		į į		İ
	1 1		January	6.0-6.7	>6.0			None		None
	1 1		February	5.5-6.7	>6.0			None	Brief	Occasion
			March	4.5-6.5	>6.0			None	Brief	Occasion
	1 1		April	4.0-6.0	>6.0			None	Brief	Occasion
	į į		May	4.5-6.5	>6.0	j j		None	Brief	Occasion
	į į		June	5.0-6.7	>6.0	j j		None	Brief	Occasion
	į į		July	6.0-6.7	>6.0	j j		None	Brief	Occasion
	į į		August	6.5-6.7	>6.0	i i		None	Brief	Occasion
	į į		September			i i		None	Brief	Occasion
	į į		October	6.5-6.7	>6.0	i i		None	Brief	Occasion
	į į		November	5.5-6.7		i i		None	Brief	Occasion
	i i		December	6.0-6.7		i i		None		None

				Water	table		Ponding	•	Floo	ding
Map symbol and soil name	 Hydro- logic group	Surface runoff	Months	Upper limit	Lower	Surface water depth	Duration	Frequency	Duration	Frequency
	i i		i	Ft	Ft	Ft		İ		İ
	i i		i			i i		i		İ
266:	i i		j	į i		i i		İ		İ
Smithland, occasionally	i i		j	į i		į į		į i		İ
flooded	B/D	Low	j	į i		į į		į i		İ
	i i		January	3.0-5.5	>6.0	j j		None		None
			February	2.5-5.0	>6.0			None	Brief	Occasiona
	i i		March	1.5-4.0	>6.0	j j		None	Brief	Occasiona
	i i		April	1.0-3.5	>6.0	j j		None	Brief	Occasiona
			May	1.5-4.0	>6.0			None	Brief	Occasiona
	i i		June	2.0-4.5	>6.0	j j		None	Brief	Occasiona
	i i		July	3.0-5.5	>6.0	j j		None	Brief	Occasiona
	i i		August	3.5-6.0	>6.0	j j		None	Brief	Occasiona
	i i		September	4.0-6.5	>6.0	j j		None	Brief	Occasiona
	i i		October	3.5-6.0	>6.0	j j		None	Brief	Occasiona
	i i		November	2.5-5.0	>6.0	i i		None	Brief	Occasiona
	i i		December	3.0-5.5	>6.0	i i		None		None
66+: Smithland, overwash,		Low								
occasionally flooded	B/D	LOW		12 0 5 5				N		N
			January	3.0-5.5				None		None
	! !		February	2.5-5.0				None	Brief	Occasion
	!!!		March	1.5-4.0				None	Brief	Occasion
	!!!		April	1.0-3.5				None	Brief	Occasion
	!!!		May	1.5-4.0				None	Brief	Occasion
	!!!		June	2.0-4.5				None	Brief	Occasion
	!!!		July	3.0-5.5				None	Brief	Occasion
			August	3.5-6.0				None	Brief	Occasion
	!!!			4.0-6.5				None	Brief	Occasion
	!!!		October	3.5-6.0				None	Brief	Occasion
			November	2.5-5.0				None	Brief	Occasiona
			December	3.0-5.5	>6.0			None		None
COD										
68D: Knox	B	Medium								
KIIOX		Medium	January					None		None
			February					None		None
			March					None		None
				!				None		None
			April					1		
			May					None		None
			June					None		None
			July					None		None
			August					None		None
			September					None		None
			October					None		None
	!!!		November December					None None		None None
						l l				

				Water	table	1	Ponding	·	Floo	ding
Map symbol and soil name	 Hydro- logic group	Surface runoff	Months	Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
	Ī			Ft	Ft	Ft				Ī
			ļ					! !		
68E:										
Knox	- B	Medium				!!!				
			January					None		None
			February					None		None
			March					None		None
	!!!		April					None		None
	!!!		May					None		None
			June					None		None
			July					None		None
			August					None		None
			September					None		None
			October					None		None
			November					None		None
			December					None		None
58F:	!!!			!		!!!		! !		
Knox	- B	High		!		!!!		! !		
			January					None		None
			February					None		None
			March					None		None
			April					None		None
			May					None		None
			June					None		None
			July					None		None
			August					None		None
			September					None		None
			October					None		None
			November					None		None
			December					None		None
	!!!					!!!				ļ
30:								! !		
Ackmore, occasionally		_				!!!				
flooded	- B	Low	1_			[
	ļ ļ		January	3.0-5.5				None		None
			February	2.5-5.0				None	Brief	Occasion
			March	1.5-4.0				None	Brief	Occasion
			April	1.0-3.5				None	Brief	Occasion
			May	1.5-4.0				None	Brief	Occasion
			June	2.0-4.5				None	Brief	Occasion
			July	3.0-5.5				None	Brief	Occasion
			August	3.5-6.0				None	Brief	Occasion
			September	4.0-6.5				None	Brief	Occasion
			October	3.5-6.0				None	Brief	Occasion
			November	2.5-5.0				None	Brief	Occasion
	1 1		December	3.0-5.5	>6.0			None		None

				Water	table		Ponding		Floo	ding
Map symbol and soil name	 Hydro- logic group	Surface runoff	Months	 Upper limit 	Lower limit	Surface water depth	Duration	Frequency	 Duration 	Frequency
	i i		i	Ft	Ft	Ft		i		i
	i i		i			i i		i		i
09B:	i i		i	i		i i		į i		İ
Marshall, terrace	В	Low	i	i		i i		į i		i
	i i		January	i		i i		None		None
	į į		February	i		j j		None		None
	į į		March			i i		None		None
	į į		April			j j		None		None
	į į		May			j j		None		None
			June					None		None
	į į		July			j j		None		None
			August					None		None
			September					None		None
	į į		October			j j		None		None
	į į		November			j j		None		None
	į į		December			j j		None		None
09C:	į į			İ		į į		į į		İ
Marshall, terrace	B	Medium								
	į į		January			j j		None		None
	į į		February			j j		None		None
	į į		March			j j		None		None
	į į		April			j j		None		None
	į į		May			j j		None		None
	į į		June			j j		None		None
	į į		July			j j		None		None
	į į		August			j j		None		None
	į į		September			i i		None		None
	į į		October			i i		None		None
	į į		November			j j		None		None
	į į		December			j j		None		None
	į į		j	į		i i		į i	ĺ	İ
09C2:	į į		İ	į		i i		į i	ĺ	İ
Marshall, terrace,	į į		j	į		i i		į i	ĺ	İ
moderately eroded	В	Medium	j	į		i i		į i	ĺ	İ
-	i i		January			i i		None		None
	i i		February			i i		None		None
	i i		March			i i		None		None
	i i		April			i i		None		None
	i i		May			i i		None		None
	į į		June			i i		None		None
	į į		July			i i		None		None
	į į		August			i i		None		None
	į į		September			i i		None		None
	į į		October			i i		None		None
	į į		November			i i		None		None

				Water	table		Ponding	·	Floo	ding
Map symbol and soil name	Hydro- logic group	Surface runoff	 Months 	 Upper limit 	Lower	Surface water depth	Duration	Frequency 	Duration	Frequenc
			<u> </u>	 Ft	Ft	Ft		1		1
				FC	FC	FC				I I
09D2:				 	 					
Marshall, terrace,	i i					1		i		i
moderately eroded	. В	Medium				1		i		i
modelucely clouds	-	11001	January			i i		None		None
	i i		February			i		None		None
	i i		March			i		None		None
	i i		April			i		None		None
	i i		May			i		None		None
	i i		June			i		None		None
	i i		July			i i		None		None
	i i		August			i i		None		None
	i i		September			i		None		None
	i i		October			i i		None		None
	i i		November			i i		None		None
	i i		December			i i		None		None
	i i					1		1.0110		
09E2:	i i		i					i i		i
Marshall, terrace,	i i		i	i		i i		i i		i
moderately eroded	. В	Medium	i	i		i i		i i		i
	i - i		January			i i		None		None
	i i		February			i i		None		None
	i i		March			i i		None		None
	i i		April			i i		None		None
	i i		May			i i		None		None
	i i		June			i i		None		None
	i i		July			i i		None		None
	i i		August			i i		None		None
	i i		September			i i		None		None
	i i		October			i i		None		None
	i i		November			i i		None		None
	i i		December			i i		None		None

				Water	table		Ponding		Floo	ding
Map symbol and soil name	 Hydro- logic group	Surface runoff	Months	Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
	<u> </u>		i	Ft	Ft	Ft		i		i
	i i		į	İ	İ	i i		į i		İ
510:	į į		į	İ	ĺ	į į		į į		İ
Monona, terrace	B	Low								
			January					None		None
			February					None		None
			March					None		None
			April					None		None
			May					None		None
			June					None		None
			July					None		None
			August					None		None
			September					None		None
			October					None		None
			November					None		None
			December					None		None
10B:										ļ
Monona, terrace	B	Low				! !				!
	!!!		January					None		None
	!!!		February					None		None
	!!!		March					None		None
	!!!		April					None		None
	!!!		May					None		None
	!!!		June					None		None
	!!!		July					None		None
	!!!		August					None		None
	!!!		September					None		None
	!!!		October					None		None
	!!!		November					None		None
	!!!		December					None		None
	!!!					!!!				
110C2:										
Monona, terrace,						!!!				
moderately eroded	B	Medium	ļ_							
			January					None		None
			February					None		None
			March					None		None
			April					None		None
			May					None		None
			June					None		None
			July					None		None
			August					None		None
			September					None		None
			October					None		None
			November					None		None
	1 1		December					None		None

				Water	table		Ponding		Floo	ding
Map symbol and soil name	 Hydro- logic group	Surface runoff	 Months 	 Upper limit 	Lower limit 	Surface water depth	Duration		Duration	Frequency
	i i		i	Ft	Ft	Ft		i i		İ
	i i		İ	İ	İ	i i		i i		İ
10D2:	į į		j	j	į	į į		į į		İ
Monona, terrace,										
moderately eroded	В	Medium								
			January					None		None
			February					None		None
			March					None		None
			April					None		None
			May					None		None
	į į		June			i i		None		None
	į į		July			i i		None		None
	į į		August			i i		None		None
	į į		September			i i		None		None
	į į		October			i i		None		None
	į į		November			i i		None		None
			December					None		None
510E2:				 	 					
Monona, terrace,	į į			ĺ	İ	i i		i i		ĺ
moderately eroded	В	Medium		ĺ	İ	i i		į į		ĺ
			January					None		None
			February					None		None
			March					None		None
			April					None		None
			May					None		None
	į į		June			i i		None		None
	į į		July			i i		None		None
	I İ		August			i i		None		None
	į į		September			i i		None		None
	į į		October			i i		None		None
	į į		November			i i		None		None
	i i		December	i	i	i i		None		None

				Water	table		Ponding	·	Floo	ding
Map symbol and soil name	 Hydro- logic group	Surface runoff	Months	Upper limit	Lower limit	Surface water depth	Duration	Frequency 	Duration	Frequency
	I			Ft	Ft	Ft				1
30:										
Danbury, occasionally										
flooded	В	Low								
			January	4.0-6.0				None		None
			February	3.5-5.5				None	Brief	Occasion
			March	2.5-4.5				None	Brief	Occasion
			April	2.0-4.0				None	Brief	Occasion
			May	2.5-4.5				None	Brief	Occasion
			June	3.0-5.0	>6.0			None	Brief	Occasion
			July	4.0-6.0				None	Brief	Occasion
	1 1		August	4.5-6.5	>6.0			None	Brief	Occasion
			September	5.0-6.7	>6.0			None	Brief	Occasion
			October	4.5-6.5	>6.0			None	Brief	Occasion
			November	3.5-5.5	>6.0			None	Brief	Occasion
			December	4.0-6.0	>6.0			None		None
70:										
Rawles, occasionally										
flooded	B	Low	İ	İ		i i		į į		İ
	1 1		January	6.0-6.7	>6.0			None		None
	į į		February	5.5-6.7	>6.0	i i		None	Brief	Occasion
	i i		March	4.5-6.5	>6.0	i i		None	Brief	Occasion
	į į		April	4.0-6.0	>6.0	i i		None	Brief	Occasion
	į į		May	4.5-6.5	>6.0	i i		None	Brief	Occasion
	i i		June	5.0-6.7	>6.0	i i		None	Brief	Occasion
	i i		July	6.0-6.7	>6.0	i i		None	Brief	Occasion
	į į		August	6.5-6.7	>6.0	i i		None	Brief	Occasion
	į į		September			i i		None	Brief	Occasion
	į į		October	6.5-6.7	>6.0	i i		None	Brief	Occasion
	i i		November	5.5-6.7		i i		None	Brief	Occasion
	i i		December	6.0-6.7		i i		None		None

				water	table	 	Ponding		F100	ding
and soil name	Hydro- logic group	Surface runoff	Months	Upper limit	Lower	Surface water depth	Duration	Frequency	Duration	Frequence
				Ft	Ft 	Ft 		;		
00:	i		i	İ		i i		i i		i
Monona, terrace	В	Low	i	İ	į	į į		į į		İ
ĺ	į į		January			i i		None		None
ĺ	į į		February			i i		None		None
			March					None		None
			April					None		None
			May					None		None
			June					None		None
			July					None		None
			August					None		None
			September					None		None
			October					None		None
			November					None		None
			December					None		None
) 00B:					 	 		 		
Monona, terrace	В	Low	İ			i i		i i		İ
			January					None		None
			February					None		None
			March					None		None
			April					None		None
			May					None		None
			June					None		None
			July					None		None
			August					None		None
			September					None		None
			October					None		None
			November					None		None
			December					None		None
00C2:					 	 		 		
Monona, terrace,	i i		i	İ	i	i i		į į		i
moderately eroded	В	Medium	i	İ	i	i i		į į		i
i	i i		January			i i		None		None
İ	i i		February			i i		None		None
i	i		March			i i		None		None
i	i		April			i i		None		None
i	i		May			i i		None		None
İ	i		June			i i		None		None
İ	i		July			i i		None		None
İ	i		August			i i		None		None
İ	i		September			i i		None		None
İ	i		October			i i		None		None
	i		November			i i		None		None
				1	1			1 1 1		, , , , , , ,

				Water	table		Ponding	•	Floo	ding
Map symbol and soil name	 Hydro- logic group	Surface runoff	Months	 Upper limit 	Lower limit	Surface water depth	Duration	Frequency	 Duration 	Frequency
			i	Ft	Ft	Ft		i i	i I	i
			i		-0			i	 	
700D2:	i i		į	į	İ	i i		İ	İ	İ
Monona, terrace,	į į		İ	İ	ĺ	į į		İ	ĺ	
moderately eroded	В	Medium	i	į	İ	i i		İ	İ	İ
	i i		January			j j		None		None
	i i		February	i		j j		None		None
	i i		March	i		j j		None		None
	i i		April	i		j j		None		None
	i i		May	i		i i		None		None
	i i		June	i		i i		None		None
	i i		July	i		j j		None		None
	i i		August	i		i i		None		None
	i i		September			i i		None	i	None
	i i		October			i i		None	i	None
	i i		November	i		i i		None	i	None
	i i		December			i i		None	i	None
	i i		i	i	İ	i i		i	İ	İ
717D:	i i		i	i	İ	i i		İ	İ	İ
Napier	В	Low	i	i	İ	i i		İ	İ	İ
_	i i		January	i		i i		None	i	None
	i i		February			i i		None	i	None
	i i		March			i i		None	i	None
	i i		April			i i		None	i	None
	i i		May			i i		None	i	None
	i i		June			i i		None	i	None
	i i		July			i i		None	i	None
	i i		August			i i		None	i	None
	i i		September			i i		None	i	None
	i i		October	i		i i		None	i	None
	i i		November			i i		None	i	None
	i i		December			i i		None	i	None
				<u> </u>		i i			i	
Gullied land, frequently	i i		i	i	İ	i i		i	İ	İ
flooded	i i		i	i	İ	i i		i	İ	İ
	i i		January			i i		None	i	None
	i i		February			i i		None	Very brief	Frequent
	i i		March			i i		None	Very brief	Frequent
	i i		April	i		i i		None	Very brief	Frequent
	i i		May			i i		None	Very brief	Frequent
			June			i i		None	Very brief	Frequent
			July			i i		None	Very brief	Frequent
			August					None	Very brief	Frequent
	ı 		September					None	Very brief	Frequent
	ı 		October					None	Very brief	Frequent
	ı 		November					None	Very brief	Frequent
	ı 		December					None	very brier	None
			Pecemper					140116		Home

				Water	table		Ponding	·	Floo	ding
Map symbol and soil name	Hydro- logic group	Surface runoff	Months	Upper limit	Lower	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
740D:			l I		 					
Hawick	- A	Low		 	 					
nawick	- <u>A</u>	HOW	January		 			None		None
			February		 			None		None
			March		 			None		None
	i i		April			i i		None		None
	i i		May			i i		None		None
	i i		June			i i		None		None
	i i		July			i i		None		None
	i i		August			i i		None		None
	i i		September			i i		None		None
	i i		October			i i		None		None
	i i		November			i i		None		None
	i i		December			i i		None		None
	i i		İ	i	İ	i i		į i		i
740E:	i i		j	į	İ	i i		į i		İ
Hawick	- A	Low	j	į	İ	i i		j i		İ
	i i		January			i i		None		None
	i i		February		i	i i		None		None
	i i		March		i	i i		None		None
	i i		April			i i		None		None
	i i		May			i i		None		None
	i i		June			i i		None		None
	i i		July			i i		None		None
	i i		August			i i		None		None
	j j		September			j j		None		None
	i i		October			i i		None		None
	į į		November					None		None
740F:										
Hawick	- A	Medium								
			January					None		None
			February					None		None
			March					None		None
			April					None		None
			May					None		None
			June					None		None
			July					None		None
			August					None		None
			September					None		None
			October					None		None
			November					None		None

				Water	table		Ponding		Floo	ding
Map symbol and soil name	 Hydro- logic group	Surface runoff	Months	Upper limit	Lower limit	Surface water depth	Duration	Frequency	 Duration 	Frequency
	1 1		i	Ft	Ft	Ft		i i	<u>. </u>	i I
	i i		i			i i		i		İ
980C:	i i		į	į		i i		İ	İ	İ
Judson	В	Medium	ĺ	İ		į į		İ		ĺ
	i i		January			j j		None		None
			February					None		None
			March					None		None
			April					None		None
			May					None		None
			June					None		None
			July					None		None
			August					None		None
			September					None		None
			October					None		None
			November					None		None
			December					None		None
Gullied land, frequently									 	
flooded	·									
	i i		January			j j		None		None
	i i		February			j j		None	Very brief	Frequen
	į į		March					None	Very brief	Frequen
	į į		April					None	Very brief	Frequen
	i i		May			j j		None	Very brief	Frequen
	į į		June					None	Very brief	Frequen
	į į		July					None	Very brief	Frequen
	į į		August					None	Very brief	Frequen
	į į		September					None	Very brief	Frequen
			October					None	Very brief	Frequen
	i i		November			j j		None	Very brief	Frequen
			December					None		None
220:									 	
Nodaway, channeled,			i	İ				i	! 	İ
frequently flooded	 B	Low	i	İ				i	! 	İ
	-		January	6.0-6.7	>6.0			None	 	None
			February	5.5-6.7				None	Brief	Frequen
	i i		March	4.5-6.5		i i		None	Brief	Frequen
	i i		April	4.0-6.0		i i		None	Brief	Frequen
	i i		May	4.5-6.5		i i		None	Brief	Frequen
			June	5.0-6.7				None	Brief	Frequen
			July	6.0-6.7				None	Brief	Frequen
			August	6.5-6.7				None	Brief	Frequen
			September					None	Brief	Frequen
			October	6.5-6.7				None	Brief	Frequen
	1 1							1		
			November	5.5-6.7	>6.0			None	Brief	Frequent

				Water	table		Ponding		Floo	ding
Map symbol	 Hydro-	Surface	Months	Upper		Surface	Duration	Frequency	Duration	Frequency
and soil name	logic	runoff		limit	limit	water				
	group			<u> </u>		depth				
				Ft	Ft	Ft			 	
5010.										
Pits, sand and gravel										
5040.									 	
Udorthents	į į		į	į	į	į į		į		į
5080.					 				 	
Udorthents	ii				İ	i i				
AW.									 	
Animal waste lagoon										
•										
L. Sewage lagoon									 	
	i i		į	į	į	į į		į		į
N. Water									 	
Macer			1	1	 			I I	 	I I

Soil Features

The table described in this section gives estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

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.

Soil Survey of

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	Potential	Risk of corrosion		
and soil name	for	Uncoated		
	frost action	steel	Concrete	
1C: Ida	 High	Low	 Low	
1C3: Ida, severely eroded	 High 	Low	 Low	
<pre>1D3: Ida, severely eroded</pre>	 High 	Low	 Low 	
1E3: Ida, severely eroded	 High 	Low	 Low 	
1F3: Ida, severely eroded	 High 	Low	 Low 	
8B: Judson	 High 	Moderate	 Low 	
8C: Judson	 High 	Moderate	 Low 	
9: Marshall	 High	Moderate	 Moderate	
9B: Marshall	 High	Moderate	 Moderate	
9B2: Marshall, moderately eroded	 High	Moderate	 Moderate	
9C: Marshall	 High	Moderate	 Moderate	
9C2: Marshall, moderately eroded	 High	Moderate	 Moderate	
9D: Marshall	 High 	Moderate	 Moderate	
9D2: Marshall, moderately eroded	 High	Moderate	 Moderate	
9E2: Marshall, moderately eroded	 High	 Moderate	 Moderate 	
9E3: Marshall, severely eroded	 High 	Moderate	 Moderate	
10B: Monona	 High 	Low	 Low 	

Soil Features -- Continued

Man graphal	 Detential	Risk of corrosion		
Map symbol and soil name	Potential for	Uncoated		
	frost action	steel	Concrete	
10B2: Monona, moderately eroded	 High 	 Low	 Low	
10C2: Monona, moderately eroded	 High	Low	Low	
10D2: Monona, moderately eroded	 High	 Low	 Low	
10D3: Monona, severely eroded	 High 	Low	 Low 	
10E2: Monona, moderately eroded	 High 	 Low 	 Low 	
10E3: Monona, severely eroded	 High 	 Low 	 Low 	
10F2: Monona, moderately eroded	 High 	 Low 	 Low 	
10F3: Monona, severely eroded	 High 	 Low 	 Low 	
12B: Napier	 High 	 Low 	 Low 	
12C: Napier	 High 	 Low 	 Low 	
17B: Napier	 High 	 Low	 Low 	
Kennebec, frequently flooded	 High 	 Moderate	 Low 	
Nodaway, frequently flooded	 High 	 Moderate	 Low 	
22D2: Dow, moderately eroded	 High 	 Low	 Low 	
22D3: Dow, severely eroded	 High 	 Low	 Low 	
22E3: Dow, severely eroded	 High 	 Low 	 Low 	
26: Kennebec, occasionally flooded		 Low	 Moderate	
35D2: Liston, moderately eroded	 Moderate 	 High	 Low	
Burchard, moderately eroded	 Moderate 	 Moderate 	 Low	

Soil Survey of

Soil Features -- Continued

Map symbol	 Potential	Risk of corrosion	
and soil name	for	Uncoated	
	frost action	steel	Concrete
	İ	i I	İ
35E2:	<u> </u>	İ	
Liston, moderately	İ	İ	i I
eroded	Moderate	 High	Low
croded	Moderate	9	20#
Burchard, moderately	l I	l I	
eroded	Madamata	Moderate	Low
eloded	Moderace	Moderace	I TOW
35F2:	l I	l I	
	l I	l I	l I
Liston, moderately			
eroded	Moderate	High	Low
Burchard, moderately			
eroded	Moderate	Moderate	Low
35G:			
Liston	Moderate	High	Low
Burchard	Moderate	Moderate	Moderate
54:	ĺ	ĺ	İ
Zook, occasionally	İ	İ	İ
flooded	High	High	Moderate
	i	İ	İ
54+:	<u> </u>	İ	
Zook, overwash,	İ	İ	!
occasionally flooded	 High	 High	Moderate
occasionally liboued	111911	111911	Moderace
59D2:	l I	l I	
Burchard, moderately	l I	l I	
eroded	Moderate	Moderate	Low
59E2:			
Burchard, moderately		 	
eroded	Moderate	Moderate	Low
	!	!	
99C2:	!	!	
Exira, moderately			
eroded	High	Moderate	Moderate
99D2:			
Exira, moderately			
eroded	High	Moderate	Moderate
99E2:			
Exira, moderately	ĺ	ĺ	İ
eroded	High	Moderate	Moderate
	İ	İ	İ
100B:	İ	İ	İ
Monona	High	Low	Low
	i	İ	
100C2:	İ	İ	!
Monona, moderately	I I	l I	!
eroded	 Wich	I T OT/T	 Tow
010464	'	Low	Low
10002.	 	 	
100D2:	 	 -	
Monona, moderately		 -	 -
eroded	High	Low	Low
	!	!	!
100D3:	!	!	!
Monona, severely eroded	High	Low	Low

Soil Features -- Continued

Map symbol	Poter	ntial	Risk of	corrosion
and soil name	frost		Uncoated steel	Concrete
100E2: Monona, moderately eroded	 		 	Low
100E3: Monona, severely eroded	 High 		 Low 	 Low
100F2: Monona, moderately eroded	 High 		 Low 	 Low
100F3: Monona, severely eroded	 High 		 Low 	 Low
111D3: Dow, severely eroded	 High		 Low	 Low
Monona, severely eroded	 High 		Low	Low
111E3: Dow, severely eroded	 High		 Low	 Low
Monona, severely eroded	 High 		Low	Low
125D3: Ida, severely eroded	 High		 Low 	 Low
Chute, severely eroded	Low		Low	Low
125E3: Ida, severely eroded	 High		 Low	 Low
Chute, severely eroded	Low		Low	Low
133: Colo, occasionally flooded	 High 		 High	 Moderate
133+: Colo, overwash, occasionally flooded	 High 		 High 	 Moderate
212: Kennebec, occasionally flooded			 Moderate 	 Low
212+: Kennebec, overwash, occasionally flooded	 High		 Moderate	 Low
220: Nodaway, occasionally flooded	 High 		 Moderate 	 Low
266: Smithland, occasionally flooded			 High 	 Moderate
266+: Smithland, overwash, occasionally flooded	 High 		 High 	 Moderate

266 Soil Survey of

Soil Features -- Continued

Map symbol	 Potential	Risk of corrosion	
and soil name	for	Uncoated	
	frost action	steel	Concrete
268D: Knox	 High 	 Low 	 Low
268E: Knox	 High 	 Low 	 Low
268F: Knox	 High 	 Low 	 Low
430: Ackmore, occasionally flooded	 High 	 High	 Low
431B: Judson	 High 	 Moderate 	 Low
Ackmore, frequently flooded	 High 	 High 	 Low
Colo, overwash, frequently flooded	 High 	 High 	 Moderate
509B: Marshall, terrace	 High 	 Moderate 	 Moderate
509C: Marshall, terrace	 High 	 Moderate	 Moderate
509C2: Marshall, terrace, moderately eroded	 High	 Moderate	 Moderate
509D2: Marshall, terrace, moderately eroded	 High	 Moderate	 Moderate
509E2: Marshall, terrace, moderately eroded	 High 	 Moderate	 Moderate
510: Monona, terrace	 High 	 Low 	 Low
510B: Monona, terrace	 High 	 Low	 Low
510C2: Monona, terrace, moderately eroded	 High 	Low	Low
510D2: Monona, terrace, moderately eroded	 High	 Low	 Low
510E2: Monona, terrace, moderately eroded	 High 	 Low	 Low
630: Danbury, occasionally flooded	 High	 High	 Low

Soil Features -- Continued

Map symbol	 Potential	Risk of	corrosion
and soil name	for frost action	Uncoated steel	 Concrete
670: Rawles, occasionally flooded	 High	 Moderate	 Low
700: Monona, terrace	 High	 Low	 Low
700B: Monona, terrace	 High	 Low	 Low
700C2: Monona, terrace, moderately eroded	 High	 Low	 Low
700D2: Monona, terrace, moderately eroded	 High	 Low	Low
717D: Napier	 High	 Low	 Low
Gullied land, frequently flooded.	 	 	
740D: Hawick	 Low 	 Low 	 Low
740E: Hawick	 Low	 Low	 Low
740F: Hawick	 Low	 Low	 Low
980C: Judson	 High 	 Moderate	 Low
Gullied land, frequently flooded.	 	 	
1220: Nodaway, channeled, frequently flooded	 High	 Moderate	Low
5010. Pits, sand and gravel	 	 	
5040. Udorthents	 	 	
5080. Udorthents	 	 	
AW. Animal waste lagoon	 	 	
SL. Sewage lagoon	 	 	
W. Water	 	 	

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