

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

7A--Hubbard loamy sand, 0 to 2 percent slopes

Hubbard

Extent: 90 percent of the unit

Landform(s): outwash plains, stream terraces

Slope gradient: 0 to 2 percent

Parent material: sandy outwash deposits

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: excessively drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw (surface layer): .15

Land capability class, nonirrigated: 4s

Hydric soil: no

Hydrologic group: A

Potential frost action: low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap,A -- 0 to 14 in	loamy sand	rapid	1.1 to 1.7 in	5.1 to 7.3
Bw,BC -- 14 to 37 in	sand	rapid	0.7 to 1.6 in	5.1 to 7.3
C -- 37 to 60 in	sand	rapid	0.7 to 1.6 in	5.6 to 7.8

7B--Hubbard loamy sand, 2 to 6 percent slopes

Hubbard

Extent: 90 percent of the unit

Landform(s): hillslopes on outwash plains, hillslopes on stream terraces

Slope gradient: 2 to 6 percent

Parent material: sandy outwash deposits

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: excessively drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw (surface layer): .15

Land capability class, nonirrigated: 4s

Hydric soil: no

Hydrologic group: A

Potential frost action: low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap,A -- 0 to 14 in	loamy sand	rapid	1.1 to 1.7 in	5.1 to 7.3
Bw,BC -- 14 to 37 in	sand	rapid	0.7 to 1.6 in	5.1 to 7.3
C -- 37 to 60 in	sand	rapid	0.7 to 1.6 in	5.6 to 7.8

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[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

12C--Emmert gravelly loamy sand, 6 to 12 percent slopes

Emmert

Extent: 95 percent of the unit

Landform(s): hillslopes on eskers, hillslopes on terraces

Slope gradient: 6 to 12 percent

Parent material: sandy and gravelly outwash

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: excessively drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw (surface layer): .10

Land capability class, nonirrigated: 4s

Hydric soil: no

Hydrologic group: A

Potential frost action: low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A --	0 to 4 in gravelly loamy sand	very rapid	0.2 to 0.4 in	5.1 to 6.5
Bw,C1,C2 --	4 to 60 in very gravelly coarse sand	very rapid	1.1 to 2.2 in	5.1 to 7.3

12D--Emmert gravelly loamy sand, 12 to 40 percent slopes

Emmert

Extent: 95 percent of the unit

Landform(s): hillslopes on eskers, hillslopes on terraces

Slope gradient: 12 to 40 percent

Parent material: sandy and gravelly outwash

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: excessively drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw (surface layer): .10

Land capability class, nonirrigated: 6s

Hydric soil: no

Hydrologic group: A

Potential frost action: low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A --	0 to 4 in gravelly loamy sand	very rapid	0.2 to 0.4 in	5.1 to 6.5
Bw,C1,C2 --	4 to 60 in very gravelly coarse sand	very rapid	1.1 to 2.2 in	5.1 to 7.3

25--Becker fine sandy loam

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25--Becker fine sandy loam

Becker

Extent: 85 percent of the unit

Landform(s): flood plains

Slope gradient: 0 to 2 percent

Parent material: sandy loam over sandy alluvium

Restrictive feature(s):

Flooding: rare

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw (surface layer): .20

Land capability class, nonirrigated: 2s

Hydric soil: no

Hydrologic group: B

Potential frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A1 -- 0 to 15 in	fine sandy loam	moderately rapid	2.4 to 3.0 in	5.6 to 7.3
A2 -- 15 to 32 in	fine sandy loam	moderately rapid	2.5 to 3.4 in	5.6 to 7.3
2Bw -- 32 to 36 in	loamy fine sand	rapid	0.2 to 0.4 in	6.1 to 7.8
2C -- 36 to 60 in	fine sand	rapid	0.5 to 1.7 in	6.1 to 7.8

119B--Pomroy loamy fine sand, 1 to 6 percent slopes

Pomroy

Extent: 90 percent of the unit

Landform(s): hillslopes on drumlins

Slope gradient: 1 to 6 percent

Parent material: outwash deposits over dense glacial till

Restrictive feature(s): dense material at 42 to 60 inches

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw (surface layer): .15

Land capability class, nonirrigated: 3s

Hydric soil: no

Hydrologic group: C

Potential frost action: low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 9 in	loamy fine sand	rapid	0.9 to 1.1 in	5.1 to 6.5
E, BE -- 9 to 26 in	loamy fine sand	rapid	1.0 to 1.5 in	5.1 to 6.5
2Bt -- 26 to 42 in	sandy loam	moderately slow	0.0 to 1.3 in	5.1 to 6.5
2Cd -- 42 to 60 in	sandy loam	slow	0.0 to 1.4 in	5.6 to 7.3

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119B--Pomroy loamy fine sand, 1 to 6 percent slopes

119C--Pomroy loamy fine sand, 6 to 12 percent slopes

Pomroy

Extent: 90 percent of the unit

Landform(s): hillslopes on drumlins

Slope gradient: 6 to 12 percent

Parent material: outwash over dense glacial till

Restrictive feature(s): dense material at 42 to 60 inches

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw (surface layer): .15

Land capability class, nonirrigated: 4s

Hydric soil: no

Hydrologic group: C

Potential frost action: low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 9 in	loamy fine sand	rapid	0.9 to 1.1 in	5.1 to 6.5
E, BE -- 9 to 26 in	loamy fine sand	rapid	1.0 to 1.5 in	5.1 to 6.5
2Bt -- 26 to 42 in	sandy loam	moderately slow	0.0 to 1.3 in	5.1 to 6.5
2Cd -- 42 to 60 in	sandy loam	slow	0.0 to 1.4 in	5.6 to 7.3

142--Nokay loam

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142--Nokay loam

Nokay

Extent: 85 percent of the unit

Landform(s): drumlins

Slope gradient: 0 to 2 percent

Parent material: dense glacial till

Restrictive feature(s): dense material at 41 to 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw (surface layer): .32

Land capability class, nonirrigated: 2w

Hydric soil: no

Hydrologic group: C

Potential frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 6 in	loam	moderate	1.1 to 1.3 in	4.5 to 5.5
E -- 6 to 14 in	fine sandy loam	moderately rapid	1.0 to 1.6 in	4.5 to 5.5
Bt1,Bt2 -- 14 to 31 in	sandy loam	moderate	2.0 to 3.2 in	5.1 to 6.5
BC -- 31 to 41 in	sandy loam	slow	0.0 to 0.8 in	5.6 to 7.3
Cd -- 41 to 60 in	sandy loam	impermeable	0.0 to 0.8 in	5.6 to 7.3

144B--Flak sandy loam, 4 to 8 percent slopes

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144B--Flak sandy loam, 4 to 8 percent slopes

Flak

Extent: 85 percent of the unit

Landform(s): hillslopes on drumlins

Slope gradient: 4 to 8 percent

Parent material: dense glacial till

Restrictive feature(s): dense material at 43 to 60 inches

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw (surface layer): .28

Land capability class, nonirrigated: 2e

Hydric soil: no

Hydrologic group: C

Potential frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 7 in	sandy loam	moderately rapid	0.9 to 1.3 in	4.5 to 6.5
E -- 7 to 15 in	fine sandy loam	moderately rapid	0.9 to 1.3 in	5.1 to 6.5
Bt -- 15 to 23 in	sandy loam	moderate	0.9 to 1.3 in	5.1 to 6.5
BC -- 23 to 43 in	sandy loam	slow	0.0 to 1.2 in	5.1 to 7.3
Cd -- 43 to 60 in	sandy loam	impermeable	0.0 to 0.7 in	5.6 to 7.3

144C--Flak sandy loam, 8 to 15 percent slopes

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144C--Flak sandy loam, 8 to 15 percent slopes

Flak

Extent: 85 percent of the unit

Landform(s): hillslopes on drumlins

Slope gradient: 8 to 15 percent

Parent material: dense glacial till

Restrictive feature(s): dense material at 43 to 60 inches

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw (surface layer): .28

Land capability class, nonirrigated: 3e

Hydric soil: no

Hydrologic group: C

Potential frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 7 in	sandy loam	moderately rapid	0.9 to 1.3 in	4.5 to 6.5
E -- 7 to 15 in	fine sandy loam	moderately rapid	0.9 to 1.3 in	5.1 to 6.5
Bt -- 15 to 23 in	sandy loam	moderate	0.9 to 1.3 in	5.1 to 6.5
BC -- 23 to 43 in	sandy loam	slow	0.0 to 1.2 in	5.1 to 7.3
Cd -- 43 to 60 in	sandy loam	impermeable	0.0 to 0.7 in	5.6 to 7.3

144E--Flak sandy loam, 15 to 25 percent slopes

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144E--Flak sandy loam, 15 to 25 percent slopes

Flak

Extent: 85 percent of the unit

Landform(s): hillslopes on drumlins

Slope gradient: 15 to 25 percent

Parent material: dense glacial till

Restrictive feature(s): dense material at 43 to 60 inches

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw (surface layer): .28

Land capability class, nonirrigated: 6e

Hydric soil: no

Hydrologic group: C

Potential frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 7 in	sandy loam	moderately rapid	0.9 to 1.3 in	4.5 to 6.5
E -- 7 to 15 in	fine sandy loam	moderately rapid	0.9 to 1.3 in	5.1 to 6.5
Bt -- 15 to 23 in	sandy loam	moderate	0.9 to 1.3 in	5.1 to 6.5
BC -- 23 to 43 in	sandy loam	slow	0.0 to 1.2 in	5.1 to 7.3
Cd -- 43 to 60 in	sandy loam	impermeable	0.0 to 0.7 in	5.6 to 7.3

152B--Milaca fine sandy loam, 4 to 8 percent slopes

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[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

152B--Milaca fine sandy loam, 4 to 8 percent slopes

Milaca

Extent: 85 percent of the unit

Landform(s): hillslopes on drumlins

Slope gradient: 4 to 8 percent

Parent material: dense glacial till

Restrictive feature(s): dense material at 36 to 60 inches

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw (surface layer): .28

Land capability class, nonirrigated: 2e

Hydric soil: no

Hydrologic group: C

Potential frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 5 in	fine sandy loam	moderately rapid	0.7 to 0.9 in	5.1 to 6.5
E -- 5 to 17 in	fine sandy loam	moderately rapid	2.1 to 2.6 in	5.1 to 6.5
EB,Bt -- 17 to 27 in	gravelly fine sandy loam	moderate	1.2 to 1.6 in	5.1 to 6.5
BC -- 27 to 36 in	gravelly sandy loam	slow	0.0 to 0.7 in	5.6 to 7.3
Cd -- 36 to 60 in	gravelly sandy loam	impermeable	0.0 to 1.0 in	5.6 to 7.3

152C--Milaca fine sandy loam, 8 to 15 percent slopes

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152C--Milaca fine sandy loam, 8 to 15 percent slopes

Milaca

Extent: 85 percent of the unit

Landform(s): hillslopes on drumlins

Slope gradient: 8 to 15 percent

Parent material: dense glacial till

Restrictive feature(s): dense material at 36 to 60 inches

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw (surface layer): .28

Land capability class, nonirrigated: 3e

Hydric soil: no

Hydrologic group: C

Potential frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 5 in	fine sandy loam	moderately rapid	0.7 to 0.9 in	5.1 to 6.5
E -- 5 to 17 in	fine sandy loam	moderately rapid	2.1 to 2.6 in	5.1 to 6.5
EB,Bt -- 17 to 27 in	gravelly fine sandy loam	moderate	1.2 to 1.6 in	5.1 to 6.5
BC -- 27 to 36 in	gravelly sandy loam	slow	0.0 to 0.7 in	5.6 to 7.3
Cd -- 36 to 60 in	gravelly sandy loam	impermeable	0.0 to 1.0 in	5.6 to 7.3

155B--Chetek sandy loam, 2 to 8 percent slopes

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

155B--Chetek sandy loam, 2 to 8 percent slopes

Chetek

Extent: 90 percent of the unit

Landform(s): hillslopes on outwash plains, hillslopes on stream terraces

Slope gradient: 2 to 8 percent

Parent material: sandy loam mantled outwash

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: somewhat excessively drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw (surface layer): .24

Land capability class, nonirrigated: 3e

Hydric soil: no

Hydrologic group: B

Potential frost action: low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 6 in	sandy loam	moderate	0.6 to 0.9 in	5.1 to 7.3
E -- 6 to 10 in	sandy loam	moderate	0.4 to 0.7 in	5.1 to 7.3
BE,Bt -- 10 to 20 in	sandy loam	rapid	0.4 to 1.3 in	5.1 to 7.3
2C -- 20 to 60 in	gravelly sand	rapid	0.8 to 1.6 in	5.1 to 7.3

155C--Chetek sandy loam, 8 to 15 percent slopes

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155C--Chetek sandy loam, 8 to 15 percent slopes

Chetek

Extent: 90 percent of the unit

Landform(s): hillslopes on outwash plains, hillslopes on stream terraces

Slope gradient: 8 to 15 percent

Parent material: sandy loam mantled outwash

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: somewhat excessively drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw (surface layer): .24

Land capability class, nonirrigated: 4e

Hydric soil: no

Hydrologic group: B

Potential frost action: low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 6 in	sandy loam	moderate	0.6 to 0.9 in	5.1 to 7.3
E -- 6 to 10 in	sandy loam	moderate	0.4 to 0.7 in	5.1 to 7.3
BE,Bt -- 10 to 20 in	sandy loam	rapid	0.4 to 1.3 in	5.1 to 7.3
2C -- 20 to 60 in	gravelly sand	rapid	0.8 to 1.6 in	5.1 to 7.3

158B--Zimmerman loamy fine sand, 1 to 4 percent slopes

Zimmerman

Extent: 90 percent of the unit

Landform(s): hillslopes on outwash plains

Slope gradient: 1 to 4 percent

Parent material: sandy outwash

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: excessively drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw (surface layer): .17

Land capability class, nonirrigated: 4s

Hydric soil: no

Hydrologic group: A

Potential frost action: low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 6 in	loamy fine sand	rapid	0.6 to 0.7 in	5.1 to 6.5
E,Bw,E&Bt -- 6 to 60 in	fine sand	rapid	3.2 to 5.4 in	5.1 to 7.3

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161--Isanti fine sandy loam

Isanti

Extent: 85 percent of the unit

Landform(s): outwash plains

Slope gradient: 0 to 2 percent

Parent material: sandy glacial outwash

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw (surface layer): .20

Land capability class, nonirrigated: 4w

Hydric soil: yes

Hydrologic group: B/D

Potential frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A1,A2 -- 0 to 16 in	fine sandy loam	moderately rapid	2.1 to 2.9 in	5.1 to 6.5
Bg -- 16 to 34 in	fine sand	rapid	1.1 to 1.4 in	5.1 to 6.5
Cg -- 34 to 60 in	fine sand	rapid	1.3 to 1.8 in	5.6 to 7.8

163B--Brainerd sandy loam, 1 to 4 percent slopes

Brainerd

Extent: 85 percent of the unit

Landform(s): hillslopes on drumlins

Slope gradient: 1 to 4 percent

Parent material: dense glacial till

Restrictive feature(s): dense material at 41 to 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw (surface layer): .28

Land capability class, nonirrigated: 2e

Hydric soil: no

Hydrologic group: C

Potential frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 6 in	sandy loam	moderately rapid	0.8 to 1.1 in	4.5 to 6.0
E -- 6 to 11 in	sandy loam	moderately rapid	0.6 to 0.8 in	4.5 to 6.0
Bt1,Bt2 -- 11 to 23 in	sandy loam	moderate	1.4 to 1.9 in	5.1 to 6.5
BC -- 23 to 41 in	sandy loam	slow	0.5 to 1.4 in	5.1 to 7.3
Cd -- 41 to 60 in	sandy loam	impermeable	0.0 to 0.8 in	5.6 to 7.3

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163B--Brainerd sandy loam, 1 to 4 percent slopes

164B--Mora fine sandy loam, 1 to 4 percent slopes

Mora

Extent: 85 percent of the unit

Landform(s): hillslopes on drumlins

Slope gradient: 1 to 4 percent

Parent material: dense glacial till

Restrictive feature(s): dense material at 46 to 60 inches

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw (surface layer): .28

Land capability class, nonirrigated: 2e

Hydric soil: no

Hydrologic group: C

Potential frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 5 in	fine sandy loam	moderately rapid	0.8 to 0.9 in	5.1 to 6.5
E -- 5 to 11 in	fine sandy loam	moderately rapid	0.8 to 1.1 in	5.1 to 6.5
BE,Bt -- 11 to 25 in	fine sandy loam	moderate	2.1 to 2.7 in	5.6 to 6.5
BC -- 25 to 44 in	fine sandy loam	slow	0.0 to 1.5 in	5.6 to 7.3
Cd -- 44 to 60 in	fine sandy loam	impermeable	0.0 to 0.6 in	5.6 to 7.3

165--Parent loam

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165--Parent loam

Parent

Extent: 85 percent of the unit

Landform(s): interdrumlins

Slope gradient: 0 to 1 percent

Parent material: dense glacial till

Restrictive feature(s): dense material at 40 to 60 inches

Flooding: none

Ponding: none

Drainage class: poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 48

Kw (surface layer): .32

Land capability class, nonirrigated: 3w

Hydric soil: yes

Hydrologic group: C/D

Potential frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A,ABg -- 0 to 15 in	loam	moderate	3.0 to 3.3 in	5.6 to 7.3
Bg1,Bg2 -- 15 to 26 in	sandy loam	moderate	1.3 to 1.9 in	5.6 to 7.3
2BC -- 26 to 40 in	sandy loam	slow	0.0 to 1.1 in	6.1 to 7.3
2Cd -- 40 to 60 in	sandy loam	impermeable	0.0 to 0.8 in	6.1 to 8.4

166--Ronneby loam

Ronneby

Extent: 85 percent of the unit

Landform(s): drumlins

Slope gradient: 0 to 2 percent

Parent material: dense glacial till

Restrictive feature(s): dense material at 45 to 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw (surface layer): .28

Land capability class, nonirrigated: 2w

Hydric soil: no

Hydrologic group: C

Potential frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 5 in	loam	moderate	0.9 to 1.2 in	5.1 to 6.5
E -- 5 to 11 in	fine sandy loam	moderately rapid	0.7 to 1.1 in	5.1 to 6.5
BE,Bt1,Bt2 -- 11 to 32 in	sandy loam	moderate	2.5 to 4.0 in	5.6 to 6.5
BC -- 32 to 45 in	sandy loam	slow	0.4 to 1.0 in	5.6 to 7.3
Cd -- 45 to 60 in	gravelly sandy loam	impermeable	0.0 to 0.6 in	5.6 to 7.3

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

166--Ronneby loam

182A--Oesterle sandy loam, 0 to 1 percent slopes

Oesterle

Extent: 85 percent of the unit

Landform(s): outwash plains, stream terraces

Slope gradient: 0 to 1 percent

Parent material: loamy over sandy outwash

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw (surface layer): .24

Land capability class, nonirrigated: 2w

Hydric soil: no

Hydrologic group: B

Potential frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 6 in	sandy loam	moderately rapid	0.6 to 1.1 in	4.5 to 6.5
E/B -- 6 to 9 in	sandy loam	moderately rapid	0.3 to 0.6 in	4.5 to 6.5
Bt1,Bt2 -- 9 to 23 in	sandy loam	moderately rapid	0.7 to 2.5 in	4.5 to 6.5
2C1,2C2 -- 23 to 60 in	very gravelly sand	rapid	0.4 to 2.6 in	5.1 to 6.5

182B--Oesterle sandy loam, 1 to 3 percent slopes

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

182B--Oesterle sandy loam, 1 to 3 percent slopes

Oesterle

Extent: 85 percent of the unit

Landform(s): hillslopes on outwash plains, hillslopes on stream terraces

Slope gradient: 1 to 3 percent

Parent material: loamy over sandy outwash

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw (surface layer): .24

Land capability class, nonirrigated: 2e

Hydric soil: no

Hydrologic group: B

Potential frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 6 in	sandy loam	moderately rapid	0.6 to 1.1 in	4.5 to 6.5
E/B -- 6 to 9 in	sandy loam	moderately rapid	0.3 to 0.6 in	4.5 to 6.5
Bt1,Bt2 -- 9 to 23 in	sandy loam	moderately rapid	0.7 to 2.5 in	4.5 to 6.5
2C1,2C2 -- 23 to 60 in	very gravelly sand	rapid	0.4 to 2.6 in	5.1 to 6.5

200B--Holdingford sandy loam, 4 to 8 percent slopes

Holdingford

Extent: 85 percent of the unit

Landform(s): hillslopes on moraines

Slope gradient: 4 to 8 percent

Parent material: glacial till

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw (surface layer): .24

Land capability class, nonirrigated: 2e

Hydric soil: no

Hydrologic group: B

Potential frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 8 in	sandy loam	moderate	1.0 to 1.2 in	5.1 to 7.3
E1,E2 -- 8 to 17 in	sandy loam	moderate	1.0 to 1.3 in	5.1 to 7.3
Bt1,Bt2,Bt3 -- 17 to 49 in	sandy loam	moderate	3.8 to 6.1 in	5.1 to 7.3
C -- 49 to 60 in	sandy loam	moderate	1.3 to 1.5 in	7.4 to 8.4

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

200B--Holdingford sandy loam, 4 to 8 percent slopes

200C--Holdingford sandy loam, 8 to 15 percent slopes

Holdingford

Extent: 85 percent of the unit

Landform(s): hillslopes on moraines

Slope gradient: 8 to 15 percent

Parent material: glacial till

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw (surface layer): .24

Land capability class, nonirrigated: 3e

Hydric soil: no

Hydrologic group: B

Potential frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 8 in	sandy loam	moderate	1.0 to 1.2 in	5.1 to 7.3
E1,E2 -- 8 to 17 in	sandy loam	moderate	1.0 to 1.3 in	5.1 to 7.3
Bt1,Bt2,Bt3 -- 17 to 49 in	sandy loam	moderate	3.8 to 6.1 in	5.1 to 7.3
C -- 49 to 60 in	sandy loam	moderate	1.3 to 1.5 in	7.4 to 8.4

202--Meehan loamy sand

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

202--Meehan loamy sand

Meehan

Extent: 85 percent of the unit

Landform(s): outwash plains, stream terraces

Slope gradient: 0 to 2 percent

Parent material: sandy outwash

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw (surface layer): .17

Land capability class, nonirrigated: 4w

Hydric soil: no

Hydrologic group: A

Potential frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 7 in	loamy sand	moderately rapid	0.7 to 0.9 in	3.5 to 7.3
E,Bw -- 7 to 28 in	sand	rapid	1.3 to 2.3 in	3.5 to 6.5
C -- 28 to 60 in	coarse sand	rapid	0.6 to 2.2 in	3.5 to 7.3

204B--Cushing fine sandy loam, 4 to 8 percent slopes

Cushing

Extent: 85 percent of the unit

Landform(s): hillslopes on moraines

Slope gradient: 4 to 8 percent

Parent material: glacial till

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw (surface layer): .24

Land capability class, nonirrigated: 2e

Hydric soil: no

Hydrologic group: B

Potential frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 5 in	fine sandy loam	moderate	0.5 to 1.1 in	5.1 to 7.8
E1,E2 -- 5 to 19 in	sandy loam	moderate	1.4 to 3.0 in	5.1 to 7.8
B/E,Bt -- 19 to 42 in	sandy clay loam	moderate	2.3 to 4.4 in	5.1 to 7.8
C -- 42 to 60 in	sandy loam	moderately slow	1.6 to 3.4 in	5.1 to 8.4

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

204C--Cushing fine sandy loam, 8 to 15 percent slopes

Cushing

Extent: 85 percent of the unit

Landform(s): hillslopes on moraines

Slope gradient: 8 to 15 percent

Parent material: glacial till

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw (surface layer): .24

Land capability class, nonirrigated: 3e

Hydric soil: no

Hydrologic group: B

Potential frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 5 in	fine sandy loam	moderate	0.5 to 1.1 in	5.1 to 7.8
E1,E2 -- 5 to 19 in	sandy loam	moderate	1.4 to 3.0 in	5.1 to 7.8
B/E,Bt -- 19 to 42 in	sandy clay loam	moderate	2.3 to 4.4 in	5.1 to 7.8
C -- 42 to 60 in	sandy loam	moderately slow	1.6 to 3.4 in	5.1 to 8.4

204E--Cushing fine sandy loam, 15 to 25 percent slopes

Cushing

Extent: 85 percent of the unit

Landform(s): hillslopes on moraines

Slope gradient: 15 to 25 percent

Parent material: glacial till

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw (surface layer): .24

Land capability class, nonirrigated: 6e

Hydric soil: no

Hydrologic group: B

Potential frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 5 in	fine sandy loam	moderate	0.5 to 1.1 in	5.1 to 7.8
E1,E2 -- 5 to 19 in	sandy loam	moderate	1.4 to 3.0 in	5.1 to 7.8
B/E,Bt -- 19 to 42 in	sandy clay loam	moderate	2.3 to 4.4 in	5.1 to 7.8
C -- 42 to 60 in	sandy loam	moderately slow	1.6 to 3.4 in	5.1 to 8.4

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

204E--Cushing fine sandy loam, 15 to 25 percent slopes

217--Nokasippi mucky loamy fine sand

Nokasippi

Extent: 85 percent of the unit

Landform(s): depressions on interdrumlins

Slope gradient: 0 to 1 percent

Parent material: sandy outwash over dense till

Restrictive feature(s):

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw (surface layer): .17

Land capability class, nonirrigated: 6w

Hydric soil: yes

Hydrologic group: C/D

Potential frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A,AB -- 0 to 12 in	loamy fine sand	rapid	1.2 to 1.4 in	4.5 to 6.5
Bg1 -- 12 to 27 in	loamy fine sand	rapid	0.9 to 1.8 in	4.5 to 7.3
2Bg2 -- 27 to 33 in	sandy loam	moderately rapid	0.7 to 1.1 in	4.5 to 7.3
2BC -- 33 to 48 in	sandy loam	slow	0.0 to 1.2 in	4.5 to 7.3
2Cd -- 48 to 60 in	gravelly sandy loam	impermeable	0.0 to 0.5 in	5.1 to 7.3

218--Watab loamy fine sand

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

218--Watab loamy fine sand

Watab

Extent: 85 percent of the unit

Landform(s): interdrumlins

Slope gradient: 0 to 2 percent

Parent material: outwash over dense till

Restrictive feature(s): dense material at 51 to 60 inches

Flooding: none

Ponding: none

Drainage class: poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw (surface layer): .17

Land capability class, nonirrigated: 3w

Hydric soil: yes

Hydrologic group: C/D

Potential frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 8 in	loamy fine sand	rapid	0.8 to 0.9 in	5.1 to 6.0
E,E/B,Bw -- 8 to 30 in	loamy fine sand	rapid	1.3 to 2.0 in	5.1 to 6.5
2Bt -- 30 to 39 in	fine sandy loam	moderately rapid	0.7 to 1.1 in	5.1 to 6.5
2BC -- 39 to 51 in	sandy loam	slow	0.4 to 1.0 in	5.6 to 7.3
2Cd -- 51 to 60 in	sandy loam	impermeable	0.0 to 0.3 in	5.6 to 7.3

233A--Growton sandy loam, 0 to 2 percent slopes

Growton

Extent: 85 percent of the unit

Landform(s): moraines

Slope gradient: 0 to 2 percent

Parent material: glacial till

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw (surface layer): .24

Land capability class, nonirrigated: 2w

Hydric soil: no

Hydrologic group: B

Potential frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 9 in	sandy loam	moderately rapid	1.2 to 1.4 in	5.1 to 7.3
E -- 9 to 19 in	sandy loam	moderately rapid	1.1 to 1.5 in	5.1 to 6.5
Bt -- 19 to 44 in	sandy loam	moderate	3.0 to 4.8 in	5.1 to 6.5
C -- 44 to 60 in	sandy loam	moderate	1.9 to 2.7 in	7.4 to 8.4

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

233A--Growton sandy loam, 0 to 2 percent slopes

233B--Growton sandy loam, 2 to 4 percent slopes

Growton

Extent: 85 percent of the unit

Landform(s): hillslopes on moraines

Slope gradient: 2 to 4 percent

Parent material: glacial till

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw (surface layer): .24

Land capability class, nonirrigated: 2e

Hydric soil: no

Hydrologic group: B

Potential frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 9 in	sandy loam	moderately rapid	1.2 to 1.4 in	5.1 to 7.3
E -- 9 to 19 in	sandy loam	moderately rapid	1.1 to 1.5 in	5.1 to 6.5
Bt -- 19 to 44 in	sandy loam	moderate	3.0 to 4.8 in	5.1 to 6.5
C -- 44 to 60 in	sandy loam	moderate	1.9 to 2.7 in	7.4 to 8.4

260--Duelm loamy sand

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

260--Duelm loamy sand

Duelm

Extent: 85 percent of the unit

Landform(s): outwash plains, stream terraces

Slope gradient: 0 to 2 percent

Parent material: sandy outwash

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw (surface layer): .17

Land capability class, nonirrigated: 4s

Hydric soil: no

Hydrologic group: A

Potential frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap,A -- 0 to 11 in	loamy sand	rapid	0.9 to 1.3 in	5.6 to 7.3
Bw,Bg -- 11 to 33 in	sand	rapid	1.3 to 2.4 in	5.1 to 7.3
C -- 33 to 60 in	coarse sand	rapid	0.5 to 1.9 in	5.6 to 7.8

261--Isan sandy loam

Isan

Extent: 85 percent of the unit

Landform(s): outwash plains, stream terraces

Slope gradient: 0 to 1 percent

Parent material: sandy outwash

Restrictive feature(s):

Flooding: none

Ponding: frequent

Drainage class: poorly drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw (surface layer): .20

Land capability class, nonirrigated: 4w

Hydric soil: yes

Hydrologic group: B/D

Potential frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 8 in	sandy loam	moderately rapid	0.8 to 1.2 in	5.6 to 7.3
AB,Bg -- 8 to 25 in	sand	rapid	1.0 to 1.7 in	5.1 to 6.5
Cg -- 25 to 60 in	coarse sand	rapid	1.4 to 2.1 in	5.6 to 7.3

264B--Freeon silt loam, 1 to 4 percent slopes

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

264B--Freeon silt loam, 1 to 4 percent slopes

Freeon

Extent: 85 percent of the unit

Landform(s): hillslopes on drumlins

Slope gradient: 1 to 4 percent

Parent material: loess over dense glacial till

Restrictive feature(s): dense material at 36 to 60 inches

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw (surface layer): .37

Land capability class, nonirrigated: 2e

Hydric soil: no

Hydrologic group: C

Potential frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 7 in	silt loam	moderate	1.4 to 1.7 in	4.5 to 7.3
E,E/B -- 7 to 20 in	very fine sandy loam	moderate	2.3 to 2.9 in	4.5 to 7.3
Bt1 -- 20 to 27 in	silt loam	moderately slow	0.5 to 1.2 in	4.5 to 6.5
2Bt2 -- 27 to 35 in	loam	moderately slow	0.7 to 1.5 in	4.5 to 6.5
2Cd -- 35 to 60 in	sandy loam	impermeable	0.0 to 0.0 in	5.1 to 7.3

265--Soderville loamy fine sand

Soderville

Extent: 85 percent of the unit

Landform(s): outwash plains

Slope gradient: 0 to 2 percent

Parent material: sandy glacial outwash

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw (surface layer): .15

Land capability class, nonirrigated: 4s

Hydric soil: no

Hydrologic group: A

Potential frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 8 in	loamy fine sand	rapid	0.8 to 0.9 in	5.1 to 6.5
E -- 8 to 31 in	loamy fine sand	rapid	1.4 to 1.9 in	5.1 to 6.5
Bt1,Bt2 -- 31 to 49 in	loamy fine sand	rapid	1.1 to 1.9 in	5.1 to 6.5
C -- 49 to 60 in	fine sand	rapid	0.6 to 1.1 in	5.1 to 6.5

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

265--Soderville loamy fine sand

266--Freer silt loam

Freer

Extent: 85 percent of the unit

Landform(s): drumlins

Slope gradient: 0 to 2 percent

Parent material: loess over dense glacial till

Restrictive feature(s): dense material at 44 to 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw (surface layer): .37

Land capability class, nonirrigated: 2w

Hydric soil: no

Hydrologic group: C

Potential frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 4 in	silt loam	moderate	0.8 to 0.9 in	4.5 to 6.0
E -- 4 to 11 in	silt loam	moderate	1.3 to 1.6 in	4.5 to 6.0
E/B,Bt1 -- 11 to 22 in	silt loam	moderate	1.5 to 2.3 in	5.1 to 6.0
2Bt2 -- 22 to 33 in	loam	moderate	1.9 to 2.1 in	5.1 to 6.0
2BC -- 33 to 44 in	sandy loam	slow	0.3 to 0.9 in	5.6 to 7.3
2Cd -- 44 to 60 in	sandy loam	impermeable	0.0 to 0.6 in	5.6 to 7.3

292--Alstad loam

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

292--Alstad loam

Alstad

Extent: 85 percent of the unit

Landform(s): moraines

Slope gradient: 1 to 3 percent

Parent material: glacial till

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw (surface layer): .32

Land capability class, nonirrigated: 2e

Hydric soil: no

Hydrologic group: B

Potential frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 9 in	loam	moderate	1.4 to 2.2 in	4.5 to 7.8
E -- 9 to 13 in	loam	moderate	0.4 to 0.9 in	4.5 to 7.8
E/B -- 13 to 21 in	loam	moderate	0.7 to 1.4 in	4.5 to 7.8
Bt1,Bt2 -- 21 to 54 in	loam	moderate	3.0 to 6.0 in	4.5 to 7.8
C -- 54 to 60 in	sandy loam	moderate	0.5 to 1.1 in	7.4 to 8.4

302B--Rosholt silt loam, 1 to 4 percent slopes

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

302B--Rosholt silt loam, 1 to 4 percent slopes

Rosholt

Extent: 90 percent of the unit

Landform(s): hillslopes on outwash plains, hillslopes on stream terraces

Slope gradient: 1 to 4 percent

Parent material: loamy mantled outwash deposits

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw (surface layer): .32

Land capability class, nonirrigated: 2e

Hydric soil: no

Hydrologic group: B

Potential frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 10 in	silt loam	moderate	1.6 to 2.4 in	4.5 to 7.3
E/B -- 10 to 16 in	silt loam	moderately rapid	0.6 to 1.4 in	4.5 to 6.5
Bt1 -- 16 to 23 in	loam	moderately rapid	0.6 to 1.3 in	4.5 to 6.5
2Bt2 -- 23 to 26 in	sandy loam	moderately rapid	0.1 to 0.5 in	4.5 to 6.5
2C -- 26 to 60 in	very gravelly coarse sand	rapid	0.7 to 1.4 in	5.1 to 6.5

325--Prebish loam

Prebish

Extent: 85 percent of the unit

Landform(s): depressions on interdrumlins

Slope gradient: 0 to 1 percent

Parent material: glacial till

Restrictive feature(s):

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw (surface layer): .28

Land capability class, nonirrigated: 6w

Hydric soil: yes

Hydrologic group: C/D

Potential frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A1,A2 -- 0 to 13 in	loam	moderate	2.3 to 2.9 in	5.6 to 7.3
Bg1,Bg2 -- 13 to 42 in	fine sandy loam	moderate	4.1 to 4.7 in	5.6 to 7.3
2C -- 42 to 60 in	sandy loam	impermeable	0.0 to 0.7 in	5.6 to 8.4

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

325--Prebish loam

328B--Sartell loamy fine sand, 1 to 6 percent slopes

Sartell

Extent: 90 percent of the unit

Landform(s): hillslopes on outwash plains

Slope gradient: 1 to 6 percent

Parent material: sandy outwash

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: excessively drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw (surface layer): .15

Land capability class, nonirrigated: 4s

Hydric soil: no

Hydrologic group: A

Potential frost action: low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 7 in	loamy fine sand	rapid	0.7 to 0.9 in	5.1 to 6.0
BA,Bw1,Bw2 -- 7 to 39 in	fine sand	rapid	1.9 to 3.2 in	5.1 to 6.0
C -- 39 to 60 in	fine sand	rapid	1.0 to 1.9 in	5.6 to 7.3

328C--Sartell loamy fine sand, 6 to 12 percent slopes

Sartell

Extent: 95 percent of the unit

Landform(s): hillslopes on outwash plains

Slope gradient: 6 to 12 percent

Parent material: sandy outwash

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: excessively drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw (surface layer): .15

Land capability class, nonirrigated: 6s

Hydric soil: no

Hydrologic group: A

Potential frost action: low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 7 in	loamy fine sand	rapid	0.7 to 0.9 in	5.1 to 6.0
BA,Bw1,Bw2 -- 7 to 39 in	fine sand	rapid	1.9 to 3.2 in	5.1 to 6.0
C -- 39 to 60 in	fine sand	rapid	1.0 to 1.9 in	5.6 to 7.3

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

328C--Sartell loamy fine sand, 6 to 12 percent slopes

337--Warman loam

Warman

Extent: 85 percent of the unit

Landform(s): depressions on outwash plains

Slope gradient: 0 to 1 percent

Parent material: loamy mantled outwash deposits

Restrictive feature(s):

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw (surface layer): .24

Land capability class, nonirrigated: 6w

Hydric soil: yes

Hydrologic group: B/D

Potential frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap,AB -- 0 to 12 in	loam	moderately rapid	2.2 to 3.0 in	4.5 to 6.0
Bg1,Bg2,Bg3 -- 12 to 33 in	silt loam	moderate	3.2 to 4.3 in	5.1 to 7.3
2C -- 33 to 60 in	sand	rapid	0.3 to 2.1 in	6.1 to 7.3

341A--Arvilla sandy loam, 0 to 2 percent slopes

Arvilla

Extent: 90 percent of the unit

Landform(s): outwash plains, stream terraces

Slope gradient: 0 to 2 percent

Parent material: loamy mantled outwash deposits

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: somewhat excessively drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw (surface layer): .20

Land capability class, nonirrigated: 3s

Hydric soil: no

Hydrologic group: B

Potential frost action: low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 10 in	sandy loam	moderately rapid	1.3 to 1.5 in	6.1 to 8.4
Bw -- 10 to 18 in	sandy loam	moderately rapid	0.9 to 1.2 in	6.6 to 8.4
2C1,2C2 -- 18 to 60 in	gravelly coarse sand	very rapid	0.8 to 2.1 in	7.4 to 8.4

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

341A--Arvilla sandy loam, 0 to 2 percent slopes

341B--Arvilla sandy loam, 2 to 6 percent slopes

Arvilla

Extent: 90 percent of the unit

Landform(s): hillslopes on outwash plains, hillslopes on stream terraces

Slope gradient: 2 to 6 percent

Parent material: loamy mantled outwash deposits

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: somewhat excessively drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw (surface layer): .20

Land capability class, nonirrigated: 3e

Hydric soil: no

Hydrologic group: B

Potential frost action: low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 10 in	sandy loam	moderately rapid	1.3 to 1.5 in	6.1 to 8.4
Bw -- 10 to 18 in	sandy loam	moderately rapid	0.9 to 1.2 in	6.6 to 8.4
2C1,2C2 -- 18 to 60 in	gravelly coarse sand	very rapid	0.8 to 2.1 in	7.4 to 8.4

375--Forada loam

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

375--Forada loam

Forada

Extent: 85 percent of the unit

Landform(s): outwash plains

Slope gradient: 0 to 2 percent

Parent material: loamy mantled outwash deposits

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw (surface layer): .24

Land capability class, nonirrigated: 2w

Hydric soil: yes

Hydrologic group: B/D

Potential frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A1,A2 -- 0 to 16 in	loam	moderate	3.2 to 3.6 in	6.1 to 7.8
Bg -- 16 to 21 in	sandy loam	moderately rapid	0.6 to 0.9 in	6.1 to 7.8
BCg,2C1,2C2 - 21 to 60 in	coarse sand	rapid	0.8 to 3.9 in	6.6 to 8.4

413--Osakis loam

Osakis

Extent: 85 percent of the unit

Landform(s): outwash plains

Slope gradient: 0 to 2 percent

Parent material: loamy mantled outwash deposits

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw (surface layer): .28

Land capability class, nonirrigated: 3s

Hydric soil: no

Hydrologic group: B

Potential frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 10 in	loam	moderate	1.8 to 2.2 in	6.1 to 7.3
Bw -- 10 to 19 in	loam	moderately rapid	1.3 to 1.7 in	6.1 to 7.3
2BC,2C1,2C2 - 19 to 60 in	gravelly coarse sand	rapid	0.8 to 1.6 in	7.4 to 8.4

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

454B--Mahtomedi loamy sand, 2 to 8 percent slopes

Mahtomedi

Extent: 90 percent of the unit

Landform(s): hillslopes on moraines, hillslopes on outwash plains

Slope gradient: 2 to 8 percent

Parent material: sandy and gravelly outwash

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: excessively drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw (surface layer): .15

Land capability class, nonirrigated: 4s

Hydric soil: no

Hydrologic group: A

Potential frost action: low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 5 in	loamy sand	rapid	0.5 to 0.6 in	5.1 to 6.5
E -- 5 to 10 in	loamy sand	rapid	0.3 to 0.4 in	5.1 to 6.5
Bw1,Bw2 -- 10 to 35 in	coarse sand	rapid	1.3 to 1.8 in	5.1 to 6.5
C -- 35 to 60 in	gravelly sand	rapid	1.0 to 2.2 in	5.1 to 7.8

454C--Mahtomedi loamy sand, 8 to 15 percent slopes

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

454C--Mahtomedi loamy sand, 8 to 15 percent slopes

Mahtomedi

Extent: 90 percent of the unit

Landform(s): hillslopes on moraines, hillslopes on outwash plains

Slope gradient: 8 to 15 percent

Parent material: sandy and gravelly outwash

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: excessively drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw (surface layer): .15

Land capability class, nonirrigated: 6s

Hydric soil: no

Hydrologic group: A

Potential frost action: low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 5 in	loamy sand	rapid	0.5 to 0.6 in	5.1 to 6.5
E -- 5 to 10 in	sand	rapid	0.3 to 0.4 in	5.1 to 6.5
Bw1,Bw2 -- 10 to 35 in	coarse sand	rapid	1.3 to 1.8 in	5.1 to 6.5
C -- 35 to 60 in	gravelly sand	rapid	1.0 to 2.2 in	5.1 to 7.8

454E--Mahtomedi loamy sand, 15 to 25 percent slopes

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

454E--Mahtomedi loamy sand, 15 to 25 percent slopes

Mahtomedi

Extent: 90 percent of the unit

Landform(s): hillslopes on moraines, hillslopes on outwash plains

Slope gradient: 15 to 25 percent

Parent material: sandy and gravelly outwash

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: excessively drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw (surface layer): .15

Land capability class, nonirrigated: 6s

Hydric soil: no

Hydrologic group: A

Potential frost action: low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 5 in	loamy sand	rapid	0.5 to 0.6 in	5.1 to 6.5
E -- 5 to 10 in	sand	rapid	0.3 to 0.4 in	5.1 to 6.5
Bw1,Bw2 -- 10 to 35 in	coarse sand	rapid	1.3 to 1.8 in	5.1 to 6.5
C -- 35 to 60 in	gravelly sand	rapid	1.0 to 2.2 in	5.1 to 7.8

454F--Mahtomedi loamy sand, 25 to 45 percent slopes

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

454F--Mahtomedi loamy sand, 25 to 45 percent slopes

Mahtomedi

Extent: 90 percent of the unit

Landform(s): hillslopes on moraines, hillslopes on outwash plains

Slope gradient: 25 to 45 percent

Parent material: sandy and gravelly outwash

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: excessively drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw (surface layer): .15

Land capability class, nonirrigated: 7s

Hydric soil: no

Hydrologic group: A

Potential frost action: low

Representative soil profile:

		<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A --	0 to 5 in	loamy sand	rapid	0.5 to 0.6 in	5.1 to 6.5
E --	5 to 10 in	sand	rapid	0.3 to 0.4 in	5.1 to 6.5
Bw1,Bw2 --	10 to 35 in	coarse sand	rapid	1.3 to 1.8 in	5.1 to 6.5
C --	35 to 60 in	gravelly sand	rapid	1.0 to 2.2 in	5.1 to 7.8

458A--Menahga loamy sand, 0 to 2 percent slopes

Menahga

Extent: 90 percent of the unit

Landform(s): outwash plains, moraines

Slope gradient: 0 to 2 percent

Parent material: sandy outwash deposits

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: excessively drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw (surface layer): .15

Land capability class, nonirrigated: 4s

Hydric soil: no

Hydrologic group: A

Potential frost action: low

Representative soil profile:

		<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A,AB --	0 to 5 in	loamy sand	rapid	0.5 to 0.6 in	4.5 to 6.5
Bw,BC,C --	5 to 60 in	coarse sand	rapid	2.7 to 3.8 in	5.6 to 7.8

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

458B--Menahga loamy sand, 2 to 8 percent slopes

Menahga

Extent: 90 percent of the unit

Landform(s): hillslopes on moraines, hillslopes on outwash plains

Slope gradient: 2 to 8 percent

Parent material: sandy outwash deposits

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: excessively drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw (surface layer): .15

Land capability class, nonirrigated: 4s

Hydric soil: no

Hydrologic group: A

Potential frost action: low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A,AB -- 0 to 5 in	loamy sand	rapid	0.5 to 0.6 in	4.5 to 6.5
BW,BC,C -- 5 to 60 in	coarse sand	rapid	2.7 to 3.8 in	5.6 to 7.8

458C--Menahga loamy sand, 8 to 15 percent slopes

Menahga

Extent: 90 percent of the unit

Landform(s): hillslopes on moraines, hillslopes on outwash plains

Slope gradient: 8 to 15 percent

Parent material: sandy outwash deposits

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: excessively drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw (surface layer): .15

Land capability class, nonirrigated: 6s

Hydric soil: no

Hydrologic group: A

Potential frost action: low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A,AB -- 0 to 5 in	loamy sand	rapid	0.5 to 0.6 in	4.5 to 6.5
BW,BC,C -- 5 to 60 in	coarse sand	rapid	2.7 to 3.8 in	5.6 to 7.8

458E--Menahga loamy sand, 15 to 25 percent slopes

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

458E--Menahga loamy sand, 15 to 25 percent slopes

Menahga

Extent: 90 percent of the unit

Landform(s): hillslopes on moraines, hillslopes on outwash plains

Slope gradient: 15 to 25 percent

Parent material: sandy outwash deposits

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: excessively drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw (surface layer): .15

Land capability class, nonirrigated: 6s

Hydric soil: no

Hydrologic group: A

Potential frost action: low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A,AB -- 0 to 5 in	loamy sand	rapid	0.5 to 0.6 in	4.5 to 6.5
BW,BC,C -- 5 to 60 in	coarse sand	rapid	2.7 to 3.8 in	5.6 to 7.8

458F--Menahga loamy sand, 25 to 45 percent slopes

Menahga

Extent: 90 percent of the unit

Landform(s): hillslopes on moraines, hillslopes on outwash plains

Slope gradient: 25 to 45 percent

Parent material: sandy outwash deposits

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: excessively drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw (surface layer): .15

Land capability class, nonirrigated: 7s

Hydric soil: no

Hydrologic group: A

Potential frost action: low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A,AB -- 0 to 5 in	loamy sand	rapid	0.5 to 0.6 in	4.5 to 6.5
BW,BC,C -- 5 to 60 in	coarse sand	rapid	2.7 to 3.8 in	5.6 to 7.8

540--Seelyville muck

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

540--Seelyeville muck

Seelyeville

<p><i>Extent:</i> 85 percent of the unit</p> <p><i>Landform(s):</i> interdrumlins, outwash plains, moraines, stream terraces</p> <p><i>Slope gradient:</i> 0 to 1 percent</p> <p><i>Parent material:</i> herbaceous organic material</p> <p><i>Restrictive feature(s):</i></p> <p><i>Flooding:</i> none</p> <p><i>Ponding:</i> frequent</p> <p><i>Drainage class:</i> very poorly drained</p>	<p><i>Soil loss tolerance (T factor):</i> 3</p> <p><i>Wind erodibility group (WEG):</i> 2</p> <p><i>Wind erodibility index (WEI):</i> 134</p> <p><i>Kw (surface layer):</i> .02</p> <p><i>Land capability class, nonirrigated:</i> 6w</p> <p><i>Hydric soil:</i> yes</p> <p><i>Hydrologic group:</i> A/D</p> <p><i>Potential frost action:</i> high</p>
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<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa1 -- 0 to 12 in	muck	moderately rapid	4.1 to 5.3 in	
Oa2,Oa3 -- 12 to 60 in	muck	moderately rapid	16.8 to 21.6 in	

541--Rifle muck

Rifle

<p><i>Extent:</i> 85 percent of the unit</p> <p><i>Landform(s):</i> interdrumlins, outwash plains, moraines, stream terraces</p> <p><i>Slope gradient:</i> 0 to 2 percent</p> <p><i>Parent material:</i> herbaceous organic material</p> <p><i>Restrictive feature(s):</i></p> <p><i>Flooding:</i> none</p> <p><i>Ponding:</i> frequent</p> <p><i>Drainage class:</i> very poorly drained</p>	<p><i>Soil loss tolerance (T factor):</i> 3</p> <p><i>Wind erodibility group (WEG):</i> 5</p> <p><i>Wind erodibility index (WEI):</i> 56</p> <p><i>Kw (surface layer):</i> .02</p> <p><i>Land capability class, nonirrigated:</i> 6w</p> <p><i>Hydric soil:</i> yes</p> <p><i>Hydrologic group:</i> A/D</p> <p><i>Potential frost action:</i> high</p>
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<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa -- 0 to 7 in	muck	moderately rapid	3.4 to 4.1 in	
Oe1,Oe2,Oe3 -	mucky peat	moderately rapid	25.3 to 30.6 in	

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

543--Markey muck

Markey

Extent: 85 percent of the unit

Landform(s): outwash plains, stream terraces

Slope gradient: 0 to 2 percent

Parent material: herbaceous organic material over outwash deposits

Restrictive feature(s):

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 2

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw (surface layer): .02

Land capability class, nonirrigated: 6w

Hydric soil: yes

Hydrologic group: A/D

Potential frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa -- 0 to 33 in	muck	moderately rapid	11.6 to 14.9 in	
Cg -- 33 to 60 in	coarse sand	rapid	0.8 to 2.1 in	

544--Cathro muck

Cathro

Extent: 85 percent of the unit

Landform(s): interdrumlins, moraines

Slope gradient: 0 to 2 percent

Parent material: herbaceous organic material over glacial till

Restrictive feature(s):

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 2

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw (surface layer): .02

Land capability class, nonirrigated: 6w

Hydric soil: yes

Hydrologic group: A/D

Potential frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa1 -- 0 to 7 in	muck	moderately rapid	3.2 to 3.9 in	
Oa2,Oa3 -- 7 to 25 in	muck	moderately rapid	6.3 to 8.1 in	
AB,Cg -- 25 to 60 in	sandy loam	moderate	3.8 to 6.6 in	

549--Greenwood peat

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

549--Greenwood peat

Greenwood

Extent: 85 percent of the unit

Landform(s): interdrumlins

Slope gradient: 0 to 2 percent

Parent material: herbaceous organic deposits

Restrictive feature(s):

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 7

Wind erodibility index (WEI): 38

Kw (surface layer): .02

Land capability class, nonirrigated: 6w

Hydric soil: yes

Hydrologic group: A/D

Potential frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oi1,Oi2 -- 0 to 12 in	peat	rapid	6.5 to 7.7 in	
Oe1,Oe2 -- 12 to 60 in	mucky peat	moderately rapid	21.6 to 26.4 in	

623A--Pierz sandy loam, 0 to 2 percent slopes

Pierz

Extent: 90 percent of the unit

Landform(s): outwash plains, stream terraces

Slope gradient: 0 to 2 percent

Parent material: loamy mantled outwash deposits

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw (surface layer): .20

Land capability class, nonirrigated: 2s

Hydric soil: no

Hydrologic group: B

Potential frost action: low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap,AB -- 0 to 14 in	sandy loam	moderately rapid	1.8 to 2.4 in	5.1 to 6.5
Bt,BC -- 14 to 28 in	sandy loam	moderately rapid	2.2 to 2.8 in	5.1 to 6.5
2C -- 28 to 60 in	very gravelly coarse sand	very rapid	0.6 to 1.3 in	5.1 to 6.5

623B--Pierz sandy loam, 2 to 6 percent slopes

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

623B--Pierz sandy loam, 2 to 6 percent slopes

Pierz

Extent: 90 percent of the unit

Landform(s): hillslopes on outwash plains, hillslopes on stream terraces

Slope gradient: 2 to 6 percent

Parent material: loamy mantled outwash deposits

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw (surface layer): .20

Land capability class, nonirrigated: 2e

Hydric soil: no

Hydrologic group: B

Potential frost action: low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap,AB -- 0 to 14 in	sandy loam	moderately rapid	1.8 to 2.4 in	5.1 to 6.5
Bt,BC -- 14 to 28 in	sandy loam	moderately rapid	2.2 to 2.8 in	5.1 to 6.5
2C -- 28 to 60 in	very gravelly coarse sand	very rapid	0.6 to 1.3 in	5.1 to 6.5

835--Brainerd-Rock outcrop complex

Brainerd

Extent: 60 percent of the unit

Landform(s): hillslopes on drumlins

Slope gradient: 1 to 6 percent

Parent material: dense glacial till over bedrock

Restrictive feature(s): bedrock (lithic) at 40 to 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw (surface layer): .24

Land capability class, nonirrigated: 2e

Hydric soil: no

Hydrologic group: C

Potential frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 6 in	sandy loam	moderately rapid	0.8 to 1.1 in	4.5 to 6.0
E -- 6 to 18 in	sandy loam	moderately rapid	1.5 to 2.0 in	4.5 to 6.0
Bt -- 18 to 46 in	sandy loam	moderate	3.4 to 4.5 in	5.1 to 6.5
R -- 46 to 60 in	unweathered bedrock	rapid		

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

835--Brainerd-Rock outcrop complex

Rock outcrop

Extent: 30 percent of the unit

Landform(s): hillslopes on drumlins

Slope gradient: 0 to 3 percent

Parent material: exposed granite bedrock

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class:

Soil loss tolerance (T factor):

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Kw (surface layer):

Land capability class, nonirrigated:

Hydric soil: no

Hydrologic group:

Potential frost action:

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>

928B--Cushing-Mahtomedi-DeMontreville complex, 2 to 8 percent slopes

Cushing

Extent: 40 percent of the unit

Landform(s): hillslopes on moraines

Slope gradient: 2 to 8 percent

Parent material: glacial till

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw (surface layer): .24

Land capability class, nonirrigated: 2e

Hydric soil: no

Hydrologic group: B

Potential frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 5 in	fine sandy loam	moderate	0.5 to 1.1 in	5.1 to 7.8
E1,E2 -- 5 to 19 in	sandy loam	moderate	1.4 to 3.0 in	5.1 to 7.8
B/E,Bt -- 19 to 42 in	sandy clay loam	moderate	2.3 to 4.4 in	5.1 to 7.8
C -- 42 to 60 in	sandy loam	moderately slow	1.6 to 3.4 in	5.1 to 8.4

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

928B--Cushing-Mahtomedi-DeMontreville complex, 2 to 8 percent slopes

Mahtomedi

Extent: 25 percent of the unit

Landform(s): hillslopes on moraines

Slope gradient: 2 to 8 percent

Parent material: sandy and gravelly outwash deposits

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: excessively drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw (surface layer): .15

Land capability class, nonirrigated: 4s

Hydric soil: no

Hydrologic group: A

Potential frost action: low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 5 in	loamy sand	rapid	0.5 to 0.6 in	5.1 to 6.5
E -- 5 to 10 in	loamy coarse sand	rapid	0.3 to 0.4 in	5.1 to 6.5
Bw1,Bw2 -- 10 to 38 in	gravelly sand	rapid	1.4 to 2.0 in	5.1 to 6.5
C -- 38 to 60 in	gravelly sand	rapid	0.9 to 2.0 in	5.1 to 7.8

Demontreville

Extent: 20 percent of the unit

Landform(s): hillslopes on moraines

Slope gradient: 2 to 8 percent

Parent material: outwash deposits over glacial till

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw (surface layer): .17

Land capability class, nonirrigated: 3s

Hydric soil: no

Hydrologic group: B

Potential frost action: low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 6 in	loamy fine sand	rapid	0.6 to 0.7 in	5.1 to 7.3
E,BE -- 6 to 33 in	loamy sand	rapid	1.6 to 2.4 in	5.1 to 7.3
2Bt -- 33 to 46 in	sandy clay loam	moderately slow	1.0 to 1.8 in	5.6 to 6.5
2C -- 46 to 60 in	sandy loam	moderately slow	0.8 to 1.4 in	5.6 to 7.3

928C--Cushing-Mahtomedi-DeMontreville complex, 8 to 15 percent slopes

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

928C--Cushing-Mahtomedi-DeMontreville complex, 8 to 15 percent slopes

Cushing

Extent: 40 percent of the unit

Landform(s): hillslopes on moraines

Slope gradient: 8 to 15 percent

Parent material: glacial till

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw (surface layer): .24

Land capability class, nonirrigated: 3e

Hydric soil: no

Hydrologic group: B

Potential frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 5 in	fine sandy loam	moderate	0.5 to 1.1 in	5.1 to 7.8
E1,E2 -- 5 to 19 in	sandy loam	moderate	1.4 to 3.0 in	5.1 to 7.8
B/E,Bt -- 19 to 42 in	sandy clay loam	moderate	2.3 to 4.4 in	5.1 to 7.8
C -- 42 to 60 in	sandy loam	moderately slow	1.6 to 3.4 in	5.1 to 8.4

Mahtomedi

Extent: 25 percent of the unit

Landform(s): hillslopes on moraines

Slope gradient: 8 to 15 percent

Parent material: sandy and gravelly outwash deposits

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: excessively drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw (surface layer): .15

Land capability class, nonirrigated: 4s

Hydric soil: no

Hydrologic group: A

Potential frost action: low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 5 in	loamy sand	rapid	0.5 to 0.6 in	5.1 to 6.5
E -- 5 to 10 in	loamy coarse sand	rapid	0.3 to 0.4 in	5.1 to 6.5
Bw1,Bw2 -- 10 to 38 in	gravelly sand	rapid	1.4 to 2.0 in	5.1 to 6.5
C -- 38 to 60 in	gravelly sand	rapid	0.9 to 2.0 in	5.1 to 7.8

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

928C--Cushing-Mahtomedi-DeMontreville complex, 8 to 15 percent slopes

DeMontreville

Extent: 20 percent of the unit

Landform(s): hillslopes on moraines

Slope gradient: 8 to 15 percent

Parent material: outwash deposits over glacial till

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw (surface layer): .17

Land capability class, nonirrigated: 4e

Hydric soil: no

Hydrologic group: B

Potential frost action: low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 6 in	loamy fine sand	rapid	0.6 to 0.7 in	5.1 to 7.3
E, BE -- 6 to 33 in	loamy sand	rapid	1.6 to 2.4 in	5.1 to 7.3
2Bt -- 33 to 46 in	sandy clay loam	moderately slow	1.0 to 1.8 in	5.6 to 6.5
2C -- 46 to 60 in	sandy loam	moderately slow	0.8 to 1.4 in	5.6 to 7.3

928E--Cushing-Mahtomedi-DeMontreville complex, 15 to 25 percent slopes

Cushing

Extent: 40 percent of the unit

Landform(s): hillslopes on moraines

Slope gradient: 15 to 25 percent

Parent material: glacial till

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw (surface layer): .24

Land capability class, nonirrigated: 6e

Hydric soil: no

Hydrologic group: B

Potential frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 5 in	fine sandy loam	moderate	0.5 to 1.1 in	5.1 to 7.8
E1, E2 -- 5 to 19 in	sandy loam	moderate	1.4 to 3.0 in	5.1 to 7.8
B/E, Bt -- 19 to 42 in	sandy clay loam	moderate	2.3 to 4.4 in	5.1 to 7.8
C -- 42 to 60 in	sandy loam	moderately slow	1.6 to 3.4 in	5.1 to 8.4

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

928E--Cushing-Mahtomedi-DeMontreville complex, 15 to 25 percent slopes

Mahtomedi

Extent: 25 percent of the unit

Landform(s): hillslopes on moraines

Slope gradient: 15 to 25 percent

Parent material: sandy and gravelly outwash deposits

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: excessively drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw (surface layer): .15

Land capability class, nonirrigated: 6s

Hydric soil: no

Hydrologic group: A

Potential frost action: low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 5 in	loamy sand	rapid	0.5 to 0.6 in	5.1 to 6.5
E -- 5 to 10 in	loamy coarse sand	rapid	0.3 to 0.4 in	5.1 to 6.5
Bw1,Bw2 -- 10 to 38 in	gravelly sand	rapid	1.4 to 2.0 in	5.1 to 6.5
C -- 38 to 60 in	gravelly sand	rapid	0.9 to 2.0 in	5.1 to 7.8

DeMontreville

Extent: 20 percent of the unit

Landform(s): hillslopes on moraines

Slope gradient: 15 to 25 percent

Parent material: outwash deposits over glacial till

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw (surface layer): .17

Land capability class, nonirrigated: 6e

Hydric soil: no

Hydrologic group: B

Potential frost action: low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 6 in	loamy fine sand	rapid	0.6 to 0.7 in	5.1 to 7.3
E,BE -- 6 to 33 in	loamy sand	rapid	1.6 to 2.4 in	5.1 to 7.3
2Bt -- 33 to 46 in	sandy clay loam	moderately slow	1.0 to 1.8 in	5.6 to 6.5
2C -- 46 to 60 in	sandy loam	moderately slow	0.8 to 1.4 in	5.6 to 7.3

928F--Cushing-Mahtomedi-DeMontreville complex, 25 to 45 percent slopes

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

928F--Cushing-Mahtomedi-DeMontreville complex, 25 to 45 percent slopes

Cushing

Extent: 40 percent of the unit

Landform(s): hillslopes on moraines

Slope gradient: 25 to 45 percent

Parent material: glacial till

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw (surface layer): .24

Land capability class, nonirrigated: 6e

Hydric soil: no

Hydrologic group: B

Potential frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 5 in	fine sandy loam	moderate	0.5 to 1.1 in	5.1 to 7.8
E,E2 -- 5 to 19 in	sandy loam	moderate	1.4 to 3.0 in	5.1 to 7.8
B/E,Bt -- 19 to 42 in	sandy clay loam	moderate	2.3 to 4.4 in	5.1 to 7.8
C -- 42 to 60 in	sandy loam	moderately slow	1.6 to 3.4 in	5.1 to 8.4

Mahtomedi

Extent: 25 percent of the unit

Landform(s): hillslopes on moraines

Slope gradient: 25 to 45 percent

Parent material: sandy and gravelly outwash deposits

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: excessively drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw (surface layer): .15

Land capability class, nonirrigated: 7s

Hydric soil: no

Hydrologic group: A

Potential frost action: low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 5 in	loamy sand	rapid	0.5 to 0.6 in	5.1 to 6.5
E -- 5 to 10 in	loamy coarse sand	rapid	0.3 to 0.4 in	5.1 to 6.5
Bw1,Bw2 -- 10 to 38 in	gravelly sand	rapid	1.4 to 2.0 in	5.1 to 6.5
H4 -- 38 to 60 in	gravelly sand	rapid	0.9 to 2.0 in	5.1 to 7.8

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

928F--Cushing-Mahtomedi-DeMontreville complex, 25 to 45 percent slopes

DeMontreville

Extent: 20 percent of the unit

Landform(s): hillslopes on moraines

Slope gradient: 25 to 45 percent

Parent material: outwash deposits over glacial till

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw (surface layer): .17

Land capability class, nonirrigated: 7e

Hydric soil: no

Hydrologic group: B

Potential frost action: low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 6 in	loamy fine sand	rapid	0.6 to 0.7 in	5.1 to 7.3
E, BE -- 6 to 33 in	loamy sand	rapid	1.6 to 2.4 in	5.1 to 7.3
2Bt -- 33 to 46 in	sandy clay loam	moderately slow	1.0 to 1.8 in	5.6 to 6.5
2C -- 46 to 60 in	sandy loam	moderately slow	0.8 to 1.4 in	5.6 to 7.3

1015--Psamments, nearly level

Psamments, nearly level

Extent: 100 percent of the unit

Landform(s): outwash plains, stream terraces

Slope gradient: 0 to 25 percent

Parent material: variable sandy material

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: excessively drained

Soil loss tolerance (T factor):

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Kw (surface layer):

Land capability class, nonirrigated:

Hydric soil: no

Hydrologic group: A

Potential frost action: none

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
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1016--Udorthents, loamy

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

1016--Udorthents, loamy

Udorthents, loamy

Extent: 100 percent of the unit

Landform(s): drumlins, moraines

Slope gradient: 0 to 25 percent

Parent material: variable loamy material

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw (surface layer): .24

Land capability class, nonirrigated: 6s

Hydric soil: no

Hydrologic group: B

Potential frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
C --	0 to 60 in loam	moderately rapid	4.8 to 8.4 in	6.6 to 9.0

1030--Pits, gravel-Udorthents complex

Pits, gravel

Extent: 60 percent of the unit

Landform(s): outwash plains, moraines, stream terraces

Slope gradient: 0 to 50 percent

Parent material: gravelly outwash deposits

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class:

Soil loss tolerance (T factor):

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Kw (surface layer):

Land capability class, nonirrigated:

Hydric soil:

Hydrologic group:

Potential frost action:

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

1030--Pits, gravel-Udorthents complex

Udorthents

Extent: 40 percent of the unit

Landform(s): outwash plains, moraines, stream terraces

Slope gradient: 0 to 25 percent

Parent material: sandy and gravelly outwash deposits

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class:

Soil loss tolerance (T factor):

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Kw (surface layer):

Land capability class, nonirrigated:

Hydric soil:

Hydrologic group: B

Potential frost action:

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
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1934--Bowstring muck

Bowstring, frequently flooded

Extent: 85 percent of the unit

Landform(s): flood plains

Slope gradient: 0 to 1 percent

Parent material: herbaceous organic material stratified with mineral alluvium

Restrictive feature(s):

Flooding: frequent

Ponding: none

Drainage class: very poorly drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw (surface layer): .02

Land capability class, nonirrigated: 6w

Hydric soil: yes

Hydrologic group: A/D

Potential frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
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Oa,C,O'a -- 0 to 41 in	muck	moderately rapid	14.3 to 18.4 in	
C' -- 41 to 60 in	stratified sand to fine sandy loam	rapid	1.5 to 2.6 in	

1946--Fordum-Winterfield complex

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

1946--Fordum-Winterfield complex

Fordum, frequently flooded

Extent: 60 percent of the unit

Landform(s): flood plains

Slope gradient: 0 to 2 percent

Parent material: loamy mantled alluvium

Restrictive feature(s):

Flooding: frequent

Ponding: none

Drainage class: poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw (surface layer): .28

Land capability class, nonirrigated: 6w

Hydric soil: yes

Hydrologic group: D

Potential frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 8 in	silt loam	moderate	1.3 to 1.9 in	4.5 to 8.4
C1 -- 8 to 50 in	stratified sand to silt loam	moderately rapid	4.2 to 9.3 in	4.5 to 8.4
2C2 -- 50 to 60 in	sand	rapid	0.4 to 1.0 in	5.6 to 8.4

Winterfield, frequently flooded

Extent: 25 percent of the unit

Landform(s): flood plains

Slope gradient: 0 to 2 percent

Parent material: sandy alluvium

Restrictive feature(s):

Flooding: frequent

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw (surface layer): .17

Land capability class, nonirrigated: 7w

Hydric soil: no

Hydrologic group: A

Potential frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 4 in	loamy sand	rapid	0.4 to 0.5 in	5.6 to 7.8
C1 -- 4 to 29 in	loamy fine sand	rapid	1.5 to 2.8 in	5.6 to 7.8
C2 -- 29 to 60 in	sand	rapid	1.2 to 3.1 in	5.6 to 8.4

1973--Meehan-Isan complex

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

1973--Meehan-Isan complex

Meehan

Extent: 60 percent of the unit

Landform(s): outwash plains, stream terraces

Slope gradient: 0 to 2 percent

Parent material: sandy outwash

Restrictive feature(s):

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw (surface layer): .17

Land capability class, nonirrigated: 4w

Hydric soil: no

Hydrologic group: A

Potential frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 7 in	loamy sand	moderately rapid	0.7 to 0.9 in	3.5 to 7.3
E,Bw -- 7 to 28 in	sand	rapid	1.3 to 2.3 in	3.5 to 6.5
C -- 28 to 60 in	sand	rapid	0.6 to 2.2 in	3.5 to 7.3

Isan

Extent: 25 percent of the unit

Landform(s): outwash plains, stream terraces

Slope gradient: 0 to 1 percent

Parent material: sandy outwash

Restrictive feature(s):

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw (surface layer): .20

Land capability class, nonirrigated: 5w

Hydric soil: yes

Hydrologic group: B/D

Potential frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 13 in	sandy loam	moderately rapid	1.3 to 1.9 in	5.6 to 7.3
AB,Bg -- 13 to 25 in	sand	rapid	0.7 to 1.2 in	5.1 to 6.5
Cg -- 25 to 60 in	coarse sand	rapid	1.4 to 2.1 in	5.6 to 7.3

1976B--Brainerd sandy loam, 1 to 4 percent slopes, extremely stony

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

1976B--Brainerd sandy loam, 1 to 4 percent slopes, extremely stony

Brainerd, extremely stony

Extent: 85 percent of the unit

Landform(s): hillslopes on drumlins

Slope gradient: 1 to 4 percent

Parent material: dense glacial till

Restrictive feature(s): dense material at 33 to 60 inches

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw (surface layer): .28

Land capability class, nonirrigated: 6s

Hydric soil: no

Hydrologic group: C

Potential frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 4 in	sandy loam	moderately rapid	0.5 to 0.7 in	4.5 to 6.0
E -- 4 to 14 in	sandy loam	moderately rapid	1.2 to 1.6 in	4.5 to 6.0
Bt -- 14 to 26 in	sandy loam	moderate	1.4 to 1.9 in	5.1 to 6.5
BC -- 26 to 33 in	sandy loam	slow	0.2 to 0.6 in	5.1 to 7.3
Cd -- 33 to 60 in	sandy loam	impermeable	0.0 to 1.1 in	5.6 to 7.3

1977B--Mora fine sandy loam, 1 to 4 percent slopes, extremely stony

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

1977B--Mora fine sandy loam, 1 to 4 percent slopes, extremely stony

Mora, extremely stony

Extent: 85 percent of the unit

Landform(s): hillslopes on drumlins

Slope gradient: 1 to 4 percent

Parent material: dense glacial till

Restrictive feature(s): dense material at 49 to 60 inches

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw (surface layer): .28

Land capability class, nonirrigated: 6s

Hydric soil: no

Hydrologic group: C

Potential frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 4 in	fine sandy loam	moderately rapid	0.6 to 0.7 in	5.1 to 6.5
E -- 4 to 15 in	sandy loam	moderately rapid	1.5 to 2.2 in	5.1 to 6.5
BE,Bt -- 15 to 32 in	sandy loam	moderate	2.5 to 3.2 in	5.6 to 6.5
BC -- 32 to 49 in	sandy loam	slow	0.0 to 1.4 in	5.6 to 6.5
Cd -- 49 to 60 in	sandy loam	impermeable	0.0 to 0.4 in	5.6 to 7.8

1978--Nokay loam, extremely stony

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

1978--Nokay loam, extremely stony

Nokay, extremely stony

Extent: 85 percent of the unit

Landform(s): drumlins

Slope gradient: 0 to 2 percent

Parent material: dense glacial till

Restrictive feature(s): dense material at 40 to 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw (surface layer): .32

Land capability class, nonirrigated: 6s

Hydric soil: no

Hydrologic group: C

Potential frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 5 in	loam	moderate	0.9 to 1.1 in	4.5 to 5.5
E -- 5 to 17 in	sandy loam	moderately rapid	1.4 to 2.2 in	4.5 to 5.5
Bt1,Bt2 -- 17 to 30 in	sandy loam	moderate	1.6 to 2.5 in	5.1 to 6.5
BC -- 30 to 40 in	sandy loam	slow	0.0 to 0.8 in	5.6 to 7.3
Cd -- 40 to 60 in	sandy loam	impermeable	0.0 to 0.8 in	5.6 to 7.3

1979--Parent loam, extremely stony

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

1979--Parent loam, extremely stony

Parent, extremely stony

Extent: 85 percent of the unit

Landform(s): interdrumlins

Slope gradient: 0 to 1 percent

Parent material: dense glacial till

Restrictive feature(s): dense material at 42 to 60 inches

Flooding: none

Ponding: none

Drainage class: poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw (surface layer): .32

Land capability class, nonirrigated: 6s

Hydric soil: yes

Hydrologic group: C/D

Potential frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 6 in	loam	moderate	1.2 to 1.3 in	5.6 to 7.3
ABg,Bg1,Bg2 - 6 to 33 in	loam	moderate	3.3 to 4.6 in	5.6 to 7.3
-				
2BC -- 33 to 42 in	sandy loam	slow	0.0 to 0.7 in	6.1 to 7.3
2Cd -- 42 to 60 in	sandy loam	impermeable	0.0 to 0.7 in	6.1 to 8.4

1980--Ronneby loam, extremely stony

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

1980--Ronneby loam, extremely stony

Ronneby, extremely stony

Extent: 85 percent of the unit

Landform(s): drumlins

Slope gradient: 0 to 2 percent

Parent material: dense glacial till

Restrictive feature(s): dense material at 38 to 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw (surface layer): .28

Land capability class, nonirrigated: 6s

Hydric soil: no

Hydrologic group: C

Potential frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 4 in	loam	moderate	0.7 to 0.9 in	5.1 to 6.5
E -- 4 to 11 in	fine sandy loam	moderately rapid	0.9 to 1.3 in	5.1 to 6.5
BE,Bt1,Bt2 -- 11 to 28 in	sandy loam	moderate	2.0 to 3.2 in	5.6 to 6.5
BC -- 28 to 38 in	sandy loam	slow	0.3 to 0.8 in	5.6 to 7.3
Cd -- 38 to 60 in	sandy loam	impermeable	0.0 to 0.9 in	5.6 to 7.3

1998--Warman variant silty clay loam

Warman, variant

Extent: 85 percent of the unit

Landform(s): outwash plains

Slope gradient: 0 to 1 percent

Parent material: clayey lacustrine sediments

Restrictive feature(s):

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 4

Wind erodibility index (WEI): 86

Kw (surface layer): .24

Land capability class, nonirrigated: 6w

Hydric soil: yes

Hydrologic group: D

Potential frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 10 in	silty clay loam	moderately slow	1.8 to 2.2 in	6.6 to 7.3
AB -- 10 to 14 in	silty clay loam	moderately slow	0.6 to 1.0 in	6.6 to 7.3
Bg -- 14 to 31 in	silty clay loam	moderately slow	2.2 to 2.7 in	7.4 to 8.4
2C -- 31 to 60 in	silty clay loam	moderately slow	4.6 to 5.5 in	7.4 to 8.4

Map Unit Description (MN)

Morrison County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

1998--Warman variant silty clay loam

M-W--Water, miscellaneous

Water, miscellaneous

Extent: 95 percent of the unit

Landform(s):

Slope gradient:

Parent material:

Restrictive feature(s):

Flooding:

Ponding:

Drainage class:

Soil loss tolerance (T factor):

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Kw (surface layer):

Land capability class, nonirrigated:

Hydric soil:

Hydrologic group:

Potential frost action:

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
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W--Water

Water

Extent: 95 percent of the unit

Landform(s):

Slope gradient:

Parent material:

Restrictive feature(s):

Flooding:

Ponding:

Drainage class:

Soil loss tolerance (T factor):

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Kw (surface layer):

Land capability class, nonirrigated:

Hydric soil:

Hydrologic group:

Potential frost action:

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
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This report provides a semi tabular listing of some soil and site properties and interpretations valuable in communicating the concept of a map unit. It also includes commonly used conservation planning information in one place for easy access. Major soil components are always displayed and minor components are also displayed if they are included in the database and they are selected at the time the report is generated.