

## Map Unit Description (MN)

Chisago 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]

### 40B--Nebish loam, 2 to 6 percent slopes

#### Nebish

*Extent:* 85 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 2 to 6 percent

*Parent material:* loamy till

*Restrictive feature(s):* greater than 60 inches

*Flooding:* none

*Ponding:* none

*Drainage class:* well drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 5

*Wind erodibility index (WEI):* 56

*Kw factor (surface layer)* .32

*Land capability, nonirrigated* 2e

*Hydric soil:* no

*Hydrologic group:* B

*Potential for 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	1.97 to 2.17 in	5.6 to 7.3
Bt1,Bt2 -- 10 to 40 in	clay loam	moderate	4.55 to 5.76 in	5.6 to 7.8
C -- 40 to 60 in	loam	moderate	2.17 to 3.74 in	7.4 to 8.4

### 40C--Nebish loam, 6 to 12 percent slopes

#### Nebish

*Extent:* 85 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 6 to 12 percent

*Parent material:* loamy till

*Restrictive feature(s):* greater than 60 inches

*Flooding:* none

*Ponding:* none

*Drainage class:* well drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 5

*Wind erodibility index (WEI):* 56

*Kw factor (surface layer)* .32

*Land capability, nonirrigated* 3e

*Hydric soil:* no

*Hydrologic group:* B

*Potential for 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	loam	moderate	1.57 to 1.73 in	5.6 to 7.3
Bt -- 8 to 33 in	clay loam	moderate	3.78 to 4.79 in	5.6 to 7.8
C -- 33 to 60 in	loam	moderate	2.94 to 5.09 in	7.4 to 8.4

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### 40D--Nebish loam, 12 to 25 percent slopes

#### Nebish

*Extent:* 85 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 12 to 25 percent

*Parent material:* loamy till

*Restrictive feature(s):* greater than 60 inches

*Flooding:* none

*Ponding:* none

*Drainage class:* well drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 5

*Wind erodibility index (WEI):* 56

*Kw factor (surface layer)* .32

*Land capability, nonirrigated* 4e

*Hydric soil:* no

*Hydrologic group:* B

*Potential for 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 7 in	loam	moderate	1.42 to 1.56 in	5.6 to 7.3
Bt1,Bt2 -- 7 to 42 in	clay loam	moderate	5.26 to 6.66 in	5.6 to 7.8
C -- 42 to 60 in	loam	moderate	1.95 to 3.37 in	7.4 to 8.4

### 40F--Nebish loam, 25 to 40 percent slopes

#### Nebish

*Extent:* 85 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 25 to 40 percent

*Parent material:* loamy till

*Restrictive feature(s):* greater than 60 inches

*Flooding:* none

*Ponding:* none

*Drainage class:* well drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 5

*Wind erodibility index (WEI):* 56

*Kw factor (surface layer)* .32

*Land capability, nonirrigated* 7e

*Hydric soil:* no

*Hydrologic group:* B

*Potential for 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	loam	moderate	0.79 to 0.87 in	5.6 to 7.3
E -- 4 to 6 in	fine sandy loam	moderately rapid	0.22 to 0.37 in	5.6 to 7.3
Bt1,Bt2 -- 6 to 22 in	clay loam	moderate	2.42 to 3.07 in	5.6 to 7.8
C -- 22 to 60 in	loam	moderate	4.16 to 7.18 in	7.4 to 8.4

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### 75--Bluffton loam

#### Bluffton

*Extent:* 90 percent of the unit

*Landform(s):* depressions on moraines

*Slope gradient:* 0 to 1 percent

*Parent material:* alluvium over loamy till

*Restrictive feature(s):* greater than 60 inches

*Flooding:* none

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 5

*Wind erodibility index (WEI):* 56

*Kw factor (surface layer)* .28

*Land capability, nonirrigated* 6w

*Hydric soil:* yes

*Hydrologic group:* B/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap,A -- 0 to 19 in	loam	moderate	3.78 to 4.54 in	5.6 to 7.3
Bg -- 19 to 40 in	loam	moderate	3.19 to 3.61 in	5.6 to 7.3
Cg -- 40 to 60 in	loam	moderately slow	2.95 to 3.74 in	7.4 to 8.4

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

#### Pomroy

*Extent:* 85 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 1 to 6 percent

*Parent material:* sandy outwash over loamy till

*Restrictive feature(s):* dense material at 39 to 60 inches

*Flooding:* none

*Ponding:* none

*Drainage class:* well drained

*Soil loss tolerance (T factor):* 4

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .15

*Land capability, nonirrigated* 3s

*Hydric soil:* no

*Hydrologic group:* C

*Potential for 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 9 in	loamy fine sand	rapid	0.91 to 1.09 in	5.1 to 6.5
E -- 9 to 20 in	loamy fine sand	rapid	0.66 to 0.99 in	5.1 to 6.5
2Bt -- 20 to 40 in	sandy loam	moderately slow	0.00 to 1.61 in	5.1 to 6.5
2Cd -- 40 to 60 in	sandy loam	slow	0.00 to 1.57 in	5.6 to 7.3

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

#### Pomroy

*Extent:* 85 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 6 to 12 percent

*Parent material:* sandy outwash over loamy till

*Restrictive feature(s):* dense material at 39 to 60 inches

*Flooding:* none

*Ponding:* none

*Drainage class:* well drained

*Soil loss tolerance (T factor):* 4

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .15

*Land capability, nonirrigated* 3e

*Hydric soil:* no

*Hydrologic group:* C

*Potential for 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 fine sand	rapid	0.51 to 0.61 in	5.1 to 6.5
E1,E2 -- 5 to 25 in	loamy fine sand	rapid	1.20 to 1.81 in	5.1 to 6.5
2Bt -- 25 to 45 in	sandy loam	moderately slow	0.00 to 1.57 in	5.1 to 6.5
2Cd -- 45 to 60 in	sandy loam	slow	0.00 to 1.20 in	5.6 to 7.3

### 155B--Chetek sandy loam, 1 to 6 percent slopes

#### Chetek

*Extent:* 85 percent of the unit

*Landform(s):* outwash plains

*Slope gradient:* 1 to 6 percent

*Parent material:* sandy and gravelly outwash

*Restrictive feature(s):* greater than 60 inches

*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 factor (surface layer)* .24

*Land capability, nonirrigated* 3s

*Hydric soil:* no

*Hydrologic group:* B

*Potential for 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	sandy loam	moderate	0.91 to 1.36 in	5.1 to 7.3
Bt1 -- 9 to 24 in	sandy loam	moderate	1.35 to 2.84 in	5.1 to 7.3
2Bt2,2C -- 24 to 60 in	gravelly sand	rapid	1.43 to 4.66 in	5.1 to 7.3

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### 155C--Chetek loam, 6 to 12 percent slopes

#### Chetek

*Extent:* 85 percent of the unit  
*Landform(s):* moraines  
*Slope gradient:* 6 to 12 percent  
*Parent material:* sandy and gravelly outwash  
*Restrictive feature(s):* greater than 60 inches  
*Flooding:* none  
*Ponding:* none  
*Drainage class:* somewhat excessively drained

*Soil loss tolerance (T factor):* 3  
*Wind erodibility group (WEG):* 5  
*Wind erodibility index (WEI):* 56  
*Kw factor (surface layer)* .32  
*Land capability, nonirrigated* 4e  
*Hydric soil:* no  
*Hydrologic group:* B  
*Potential for 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	loam	moderate	0.59 to 0.87 in	5.1 to 7.3
Bt1 -- 4 to 23 in	sandy loam	moderate	1.70 to 3.59 in	5.1 to 7.3
2Bt2,2C -- 23 to 60 in	gravelly sand	rapid	1.48 to 4.81 in	5.1 to 7.3

### 158B--Zimmerman loamy fine sand, 1 to 6 percent slopes

#### Zimmerman

*Extent:* 85 percent of the unit  
*Landform(s):* outwash plains  
*Slope gradient:* 1 to 6 percent  
*Parent material:* sandy outwash  
*Restrictive feature(s):* greater than 60 inches  
*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 factor (surface layer)* .17  
*Land capability, nonirrigated* 4s  
*Hydric soil:* no  
*Hydrologic group:* A  
*Potential for 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 8 in	loamy fine sand	rapid	0.79 to 0.94 in	5.1 to 6.5
Bw,E&Bt -- 8 to 60 in	fine sand	rapid	3.12 to 5.20 in	5.1 to 7.3

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### 158C--Zimmerman loamy fine sand, 6 to 12 percent slopes

#### Zimmerman

*Extent:* 85 percent of the unit

*Landform(s):* outwash plains

*Slope gradient:* 6 to 12 percent

*Parent material:* sandy outwash

*Restrictive feature(s):* greater than 60 inches

*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 factor (surface layer)* .17

*Land capability, nonirrigated* 6s

*Hydric soil:* no

*Hydrologic group:* A

*Potential for 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 8 in	loamy fine sand	rapid	0.79 to 0.94 in	5.1 to 6.5
Bw,E&Bt -- 8 to 60 in	fine sand	rapid	3.12 to 5.20 in	5.1 to 7.3

### 159B--Anoka loamy very fine sand, 1 to 6 percent slopes

#### Anoka

*Extent:* 85 percent of the unit

*Landform(s):* outwash plains

*Slope gradient:* 1 to 6 percent

*Parent material:* sandy outwash

*Restrictive feature(s):* greater than 60 inches

*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 factor (surface layer)* .17

*Land capability, nonirrigated* 3s

*Hydric soil:* no

*Hydrologic group:* B

*Potential for 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 9 in	loamy very fine sand	rapid	1.18 to 1.45 in	5.6 to 6.5
E,Bt,E&Bt -- 9 to 51 in	loamy very fine sand	moderate	4.21 to 6.74 in	5.1 to 6.5
C -- 51 to 60 in	fine sand	rapid	0.52 to 1.04 in	6.1 to 7.3

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### 159C--Anoka loamy fine sand, 6 to 12 percent slopes

#### Anoka

*Extent:* 85 percent of the unit

*Landform(s):* outwash plains

*Slope gradient:* 6 to 12 percent

*Parent material:* sandy outwash

*Restrictive feature(s):* greater than 60 inches

*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 factor (surface layer)* .17

*Land capability, nonirrigated* 3e

*Hydric soil:* no

*Hydrologic group:* A

*Potential for 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	loamy fine sand	rapid	0.77 to 0.94 in	5.6 to 6.5
E,Bt,E&Bt -- 6 to 56 in	loamy very fine sand	moderate	5.00 to 8.00 in	5.1 to 6.5
C -- 56 to 60 in	fine sand	rapid	0.24 to 0.47 in	6.1 to 7.3

### 161--Isanti loamy fine sand

#### Isanti

*Extent:* 90 percent of the unit

*Landform(s):* depressions on outwash plains

*Slope gradient:* 0 to 1 percent

*Parent material:* sandy outwash

*Restrictive feature(s):* greater than 60 inches

*Flooding:* none

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .17

*Land capability, nonirrigated* 6w

*Hydric soil:* yes

*Hydrologic group:* A/D

*Potential for 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 12 in	loamy fine sand	rapid	1.18 to 1.42 in	5.1 to 6.5
Bg -- 12 to 36 in	fine sand	rapid	1.44 to 1.92 in	5.1 to 6.5
Cg -- 36 to 60 in	fine sand	rapid	1.20 to 1.68 in	5.6 to 7.8

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### 162--Lino loamy fine sand

#### Lino

*Extent:* 85 percent of the unit

*Landform(s):* outwash plains

*Slope gradient:* 0 to 2 percent

*Parent material:* sandy outwash

*Restrictive feature(s):* greater than 60 inches

*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 factor (surface layer)* .17

*Land capability, nonirrigated* 3s

*Hydric soil:* no

*Hydrologic group:* A

*Potential for 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	0.79 to 0.94 in	5.1 to 6.0
Bw1,Bw2 -- 8 to 42 in	loamy fine sand	rapid	2.06 to 2.74 in	5.1 to 6.0
C -- 42 to 60 in	fine sand	rapid	0.89 to 1.24 in	5.1 to 6.5

### 169B--Braham loamy fine sand, 2 to 6 percent slopes

#### Braham

*Extent:* 85 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 2 to 6 percent

*Parent material:* sandy outwash over loamy till

*Restrictive feature(s):* greater than 60 inches

*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 factor (surface layer)* .17

*Land capability, nonirrigated* 3s

*Hydric soil:* no

*Hydrologic group:* B

*Potential for 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 8 in	loamy fine sand	rapid	0.79 to 0.94 in	5.6 to 7.3
E -- 8 to 20 in	loamy fine sand	rapid	0.98 to 1.22 in	5.6 to 7.3
2Bt -- 20 to 41 in	clay loam	moderate	3.13 to 3.76 in	5.1 to 7.3
2C -- 41 to 60 in	loam	moderate	2.83 to 3.40 in	7.4 to 8.4

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### 169C--Braham loamy fine sand, 6 to 12 percent slopes

#### Braham

*Extent:* 85 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 6 to 12 percent

*Parent material:* sandy outwash over loamy till

*Restrictive feature(s):* greater than 60 inches

*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 factor (surface layer)* .17

*Land capability, nonirrigated* 3e

*Hydric soil:* no

*Hydrologic group:* B

*Potential for 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 8 in	loamy fine sand	rapid	0.79 to 0.94 in	5.6 to 7.3
E -- 8 to 20 in	fine sand	rapid	0.98 to 1.22 in	5.6 to 7.3
2Bt -- 20 to 55 in	clay loam	moderate	5.26 to 6.31 in	5.1 to 7.3
2C -- 55 to 60 in	loam	moderate	0.71 to 0.85 in	7.4 to 8.4

## Map Unit Description (MN)

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### 182--Halder sandy loam

#### Halder

*Extent:* 85 percent of the unit

*Landform(s):* outwash plains

*Slope gradient:* 0 to 2 percent

*Parent material:* sandy outwash

*Restrictive feature(s):* greater than 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 factor (surface layer)* .24

*Land capability, nonirrigated* 2w

*Hydric soil:* no

*Hydrologic group:* B

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap,E -- 0 to 12 in	sandy loam	moderate	1.54 to 1.77 in	4.5 to 7.3
B/E,Bt -- 12 to 32 in	loam	moderate	2.61 to 4.42 in	4.5 to 6.5
2BC -- 32 to 40 in	loamy sand	moderate	0.41 to 1.07 in	4.5 to 6.5
2C -- 40 to 60 in	sand	rapid	0.39 to 0.79 in	5.6 to 6.5

## Map Unit Description (MN)

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### 204B--Cushing loam, 2 to 6 percent slopes

#### Cushing

*Extent:* 85 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 2 to 6 percent

*Parent material:* loamy till

*Restrictive feature(s):* greater than 60 inches

*Flooding:* none

*Ponding:* none

*Drainage class:* well drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 5

*Wind erodibility index (WEI):* 56

*Kw factor (surface layer)* .32

*Land capability, nonirrigated* 2e

*Hydric soil:* no

*Hydrologic group:* B

*Potential for 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	loam	moderate	0.82 to 1.23 in	5.1 to 7.8
E -- 5 to 12 in	loam	moderate	0.67 to 1.47 in	5.1 to 7.8
B/E,Bt -- 12 to 40 in	loam	moderate	2.83 to 5.39 in	5.1 to 7.8
C -- 40 to 60 in	loam	moderately slow	1.77 to 3.74 in	5.1 to 8.4

## Map Unit Description (MN)

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### 204C--Cushing loam, 6 to 12 percent slopes

#### Cushing

*Extent:* 85 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 6 to 12 percent

*Parent material:* loamy till

*Restrictive feature(s):* greater than 60 inches

*Flooding:* none

*Ponding:* none

*Drainage class:* well drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 5

*Wind erodibility index (WEI):* 56

*Kw factor (surface layer)* .32

*Land capability, nonirrigated* 3e

*Hydric soil:* no

*Hydrologic group:* B

*Potential for 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	loam	moderate	1.26 to 1.89 in	5.1 to 7.8
E/B -- 8 to 14 in	sandy loam	moderate	0.63 to 1.39 in	5.1 to 7.8
Bt -- 14 to 53 in	loam	moderate	3.90 to 7.41 in	5.1 to 7.8
C -- 53 to 60 in	loam	moderately slow	0.60 to 1.27 in	5.1 to 8.4

### 204D--Cushing loam, 12 to 20 percent slopes

#### Cushing

*Extent:* 85 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 12 to 20 percent

*Parent material:* loamy till

*Restrictive feature(s):* greater than 60 inches

*Flooding:* none

*Ponding:* none

*Drainage class:* well drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 5

*Wind erodibility index (WEI):* 56

*Kw factor (surface layer)* .32

*Land capability, nonirrigated* 4e

*Hydric soil:* no

*Hydrologic group:* B

*Potential for 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 7 in	loam	moderate	1.13 to 1.70 in	5.1 to 7.8
B/E,Bt -- 7 to 40 in	loam	moderate	3.31 to 6.28 in	5.1 to 7.8
C -- 40 to 60 in	loam	moderately slow	1.77 to 3.74 in	5.1 to 8.4

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### 204F--Cushing loam, 20 to 35 percent slopes

#### Cushing

*Extent:* 85 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 20 to 35 percent

*Parent material:* loamy till

*Restrictive feature(s):* greater than 60 inches

*Flooding:* none

*Ponding:* none

*Drainage class:* well drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 5

*Wind erodibility index (WEI):* 56

*Kw factor (surface layer)* .32

*Land capability, nonirrigated* 6e

*Hydric soil:* no

*Hydrologic group:* B

*Potential for 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 3 in	loam	moderate	0.50 to 0.76 in	5.1 to 7.8
E -- 3 to 6 in	loam	moderate	0.28 to 0.61 in	5.1 to 7.8
B/E,Bt -- 6 to 32 in	loam	moderate	2.60 to 4.94 in	5.1 to 7.8
C -- 32 to 60 in	loam	moderately slow	2.52 to 5.31 in	5.1 to 8.4

### 207B--Nymore loamy sand, 1 to 6 percent slopes

#### Nymore

*Extent:* 85 percent of the unit

*Landform(s):* outwash plains

*Slope gradient:* 1 to 6 percent

*Parent material:* sandy outwash

*Restrictive feature(s):* greater than 60 inches

*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 factor (surface layer)* .17

*Land capability, nonirrigated* 4s

*Hydric soil:* no

*Hydrologic group:* A

*Potential for 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 sand	rapid	0.71 to 0.85 in	5.1 to 6.5
Bw -- 7 to 27 in	loamy coarse sand	rapid	0.39 to 1.57 in	5.1 to 7.3
C -- 27 to 60 in	sand	rapid	0.66 to 2.65 in	5.1 to 7.8

## Map Unit Description (MN)

Chisago County, Minnesota

### 207C--Nymore loamy sand, 6 to 12 percent slopes

#### Nymore

*Extent:* 85 percent of the unit

*Landform(s):* outwash plains

*Slope gradient:* 6 to 12 percent

*Parent material:* sandy outwash

*Restrictive feature(s):* greater than 60 inches

*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 factor (surface layer)* .17

*Land capability, nonirrigated* 6s

*Hydric soil:* no

*Hydrologic group:* A

*Potential for 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	loamy sand	rapid	0.39 to 0.47 in	5.1 to 6.5
Bw -- 4 to 15 in	loamy coarse sand	rapid	0.22 to 0.88 in	5.1 to 7.3
C -- 15 to 60 in	sand	rapid	0.90 to 3.59 in	5.1 to 7.8

### 207D--Nymore loamy sand, 12 to 18 percent slopes

#### Nymore

*Extent:* 85 percent of the unit

*Landform(s):* outwash plains

*Slope gradient:* 12 to 18 percent

*Parent material:* sandy outwash

*Restrictive feature(s):* greater than 60 inches

*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 factor (surface layer)* .17

*Land capability, nonirrigated* 6s

*Hydric soil:* no

*Hydrologic group:* A

*Potential for 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	0.51 to 0.61 in	5.1 to 6.5
Bw -- 5 to 21 in	loamy coarse sand	rapid	0.31 to 1.26 in	5.1 to 7.3
C -- 21 to 60 in	sand	rapid	0.78 to 3.12 in	5.1 to 7.8

## Map Unit Description (MN)

Chisago County, Minnesota

### 207E--Nymore loamy sand, 18 to 25 percent slopes

#### Nymore

*Extent:* 85 percent of the unit

*Landform(s):* outwash plains

*Slope gradient:* 18 to 25 percent

*Parent material:* sandy outwash

*Restrictive feature(s):* greater than 60 inches

*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 factor (surface layer)* .17

*Land capability, nonirrigated* 7s

*Hydric soil:* no

*Hydrologic group:* A

*Potential for 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	loamy sand	rapid	0.39 to 0.47 in	5.1 to 6.5
Bw -- 4 to 18 in	loamy coarse sand	rapid	0.28 to 1.13 in	5.1 to 7.3
C -- 18 to 60 in	sand	rapid	0.83 to 3.34 in	5.1 to 7.8

### 265--Soderville loamy fine sand

#### Soderville

*Extent:* 85 percent of the unit

*Landform(s):* outwash plains

*Slope gradient:* 0 to 2 percent

*Parent material:* eolian deposits and/or sandy outwash

*Restrictive feature(s):* greater than 60 inches

*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 factor (surface layer)* .15

*Land capability, nonirrigated* 3s

*Hydric soil:* no

*Hydrologic group:* A

*Potential for 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 9 in	loamy fine sand	rapid	0.91 to 1.09 in	5.1 to 6.5
E -- 9 to 32 in	fine sand	rapid	1.37 to 1.83 in	5.1 to 6.5
Bt1,Bt2 -- 32 to 45 in	loamy fine sand	rapid	0.78 to 1.43 in	5.1 to 6.5
C1,C2 -- 45 to 60 in	loamy sand	rapid	0.75 to 1.50 in	5.1 to 6.5

## Map Unit Description (MN)

Chisago County, Minnesota

### 274--Newson mucky loamy sand

#### Newson

*Extent:* 90 percent of the unit

*Landform(s):* depressions on outwash plains

*Slope gradient:* 0 to 1 percent

*Parent material:* sandy outwash

*Restrictive feature(s):* greater than 60 inches

*Flooding:* none

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .17

*Land capability, nonirrigated* 6w

*Hydric soil:* yes

*Hydrologic group:* A/D

*Potential for 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	mucky loamy sand	rapid	0.39 to 0.79 in	3.5 to 7.3
Bg1,Bg2,BCg - 8 to 32 in	loamy sand	rapid	1.20 to 2.64 in	3.5 to 6.0
-				
Cg1,Cg2 -- 32 to 60 in	sand	rapid	1.12 to 2.80 in	4.5 to 6.5

## Map Unit Description (MN)

Chisago County, Minnesota

### 292--Alstad loam

#### Alstad

*Extent:* 85 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 1 to 3 percent

*Parent material:* loamy till

*Restrictive feature(s):* greater than 60 inches

*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 factor (surface layer)* .37

*Land capability, nonirrigated* 1

*Hydric soil:* no

*Hydrologic group:* B

*Potential for 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	1.81 to 2.17 in	5.1 to 7.3
E -- 9 to 13 in	loam	moderate	0.51 to 0.87 in	5.1 to 7.3
B/E -- 13 to 25 in	loam	moderate	1.71 to 2.69 in	5.1 to 7.3
Bt -- 25 to 39 in	clay loam	moderate	1.79 to 2.62 in	5.6 to 7.8
C -- 39 to 60 in	loam	moderately slow	1.88 to 3.96 in	6.1 to 8.4

## Map Unit Description (MN)

Chisago County, Minnesota

### 325--Prebish sandy loam

#### Prebish

*Extent:* 85 percent of the unit

*Landform(s):* depressions on moraines

*Slope gradient:* 0 to 1 percent

*Parent material:* alluvium over loamy till

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

*Flooding:* none

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 4

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 6w

*Hydric soil:* yes

*Hydrologic group:* C/D

*Potential for 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 18 in	sandy loam	moderately rapid	2.90 to 3.26 in	5.6 to 7.3
Bg1,Bg2 -- 18 to 42 in	sandy loam	moderate	3.36 to 3.84 in	5.6 to 7.3
2Cd1,2Cd2 -- 42 to 60 in	sandy loam	impermeable	0.00 to 0.71 in	5.6 to 8.4

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

#### Sartell

*Extent:* 85 percent of the unit

*Landform(s):* outwash plains

*Slope gradient:* 1 to 6 percent

*Parent material:* eolian deposits and/or sandy outwash

*Restrictive feature(s):* greater than 60 inches

*Flooding:* none

*Ponding:* none

*Drainage class:* excessively drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 1

*Wind erodibility index (WEI):* 220

*Kw factor (surface layer)* .15

*Land capability, nonirrigated* 4s

*Hydric soil:* no

*Hydrologic group:* A

*Potential for 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 8 in	fine sand	rapid	0.71 to 0.87 in	5.1 to 6.0
Bw -- 8 to 25 in	fine sand	rapid	1.04 to 1.73 in	5.1 to 6.0
C -- 25 to 60 in	fine sand	rapid	1.73 to 3.12 in	5.6 to 7.3

## Map Unit Description (MN)

Chisago County, Minnesota

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

#### Sartell

*Extent:* 85 percent of the unit

*Landform(s):* outwash plains

*Slope gradient:* 6 to 12 percent

*Parent material:* eolian deposits and/or sandy outwash

*Restrictive feature(s):* greater than 60 inches

*Flooding:* none

*Ponding:* none

*Drainage class:* excessively drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 1

*Wind erodibility index (WEI):* 220

*Kw factor (surface layer)* .15

*Land capability, nonirrigated* 6s

*Hydric soil:* no

*Hydrologic group:* A

*Potential for 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	fine sand	rapid	0.46 to 0.56 in	5.1 to 6.0
Bw -- 5 to 29 in	fine sand	rapid	1.44 to 2.40 in	5.1 to 6.0
C -- 29 to 60 in	fine sand	rapid	1.54 to 2.76 in	5.6 to 7.3

### 328D--Sartell fine sand, 12 to 25 percent slopes

#### Sartell

*Extent:* 85 percent of the unit

*Landform(s):* outwash plains

*Slope gradient:* 12 to 25 percent

*Parent material:* eolian deposits and/or sandy outwash

*Restrictive feature(s):* greater than 60 inches

*Flooding:* none

*Ponding:* none

*Drainage class:* excessively drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 1

*Wind erodibility index (WEI):* 220

*Kw factor (surface layer)* .15

*Land capability, nonirrigated* 7s

*Hydric soil:* no

*Hydrologic group:* A

*Potential for 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	fine sand	rapid	0.35 to 0.43 in	5.1 to 6.0
Bw -- 4 to 26 in	fine sand	rapid	1.32 to 2.20 in	5.1 to 6.0
C -- 26 to 60 in	fine sand	rapid	1.69 to 3.05 in	5.6 to 7.3

## Map Unit Description (MN)

Chisago County, Minnesota

### 337--Warman loam

#### Warman

*Extent:* 90 percent of the unit  
*Landform(s):* depressions on outwash plains  
*Slope gradient:* 0 to 1 percent  
*Parent material:* loamy drift over sandy outwash  
*Restrictive feature(s):* greater than 60 inches  
*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 factor (surface layer)* .24  
*Land capability, nonirrigated* 6w  
*Hydric soil:* yes  
*Hydrologic group:* B/D  
*Potential for 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 10 in	loam	moderately rapid	1.87 to 2.46 in	4.5 to 6.0
Bg1,Bg2 -- 10 to 34 in	loam	moderate	3.60 to 4.80 in	5.1 to 7.3
2Cg -- 34 to 60 in	sand	rapid	0.26 to 2.08 in	6.1 to 7.3

### 346--Talmoon loam

#### Talmoon

*Extent:* 90 percent of the unit  
*Landform(s):* swales on moraines  
*Slope gradient:* 0 to 2 percent  
*Parent material:* loamy till  
*Restrictive feature(s):* greater than 60 inches  
*Flooding:* none  
*Ponding:* none  
*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 5  
*Wind erodibility group (WEG):* 5  
*Wind erodibility index (WEI):* 56  
*Kw factor (surface layer)* .28  
*Land capability, nonirrigated* 2w  
*Hydric soil:* yes  
*Hydrologic group:* B/D  
*Potential for 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	1.81 to 1.99 in	5.1 to 7.3
Eg -- 9 to 12 in	loam	moderate	0.36 to 0.61 in	5.1 to 7.3
Btg -- 12 to 24 in	clay loam	moderately slow	1.95 to 2.32 in	5.6 to 7.3
BC,Cg -- 24 to 60 in	loam	moderately slow	5.37 to 6.81 in	7.4 to 8.4

## Map Unit Description (MN)

Chisago County, Minnesota

### 454B--Mahtomedi loamy sand, 1 to 6 percent slopes

#### Mahtomedi

*Extent:* 85 percent of the unit

*Landform(s):* outwash plains

*Slope gradient:* 1 to 6 percent

*Parent material:* sandy and gravelly outwash

*Restrictive feature(s):* greater than 60 inches

*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 factor (surface layer)* .15

*Land capability, nonirrigated* 4s

*Hydric soil:* no

*Hydrologic group:* A

*Potential for 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 8 in	loamy sand	rapid	0.79 to 0.94 in	5.1 to 6.5
E -- 8 to 22 in	loamy coarse sand	rapid	0.85 to 1.13 in	5.1 to 6.5
Bw1,Bw2 -- 22 to 40 in	coarse sand	rapid	0.91 to 1.27 in	5.1 to 6.5
C -- 40 to 60 in	coarse sand	rapid	0.79 to 1.77 in	5.1 to 7.8

## Map Unit Description (MN)

Chisago County, Minnesota

### 454C--Mahtomedi loamy sand, 6 to 12 percent slopes

#### Mahtomedi

*Extent:* 85 percent of the unit

*Landform(s):* outwash plains

*Slope gradient:* 6 to 12 percent

*Parent material:* sandy and gravelly outwash

*Restrictive feature(s):* greater than 60 inches

*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 factor (surface layer)* .15

*Land capability, nonirrigated* 6s

*Hydric soil:* no

*Hydrologic group:* A

*Potential for 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 8 in	loamy sand	rapid	0.79 to 0.94 in	5.1 to 6.5
E -- 8 to 29 in	sand	rapid	1.28 to 1.70 in	5.1 to 6.5
Bw1,Bw2 -- 29 to 51 in	coarse sand	rapid	1.10 to 1.54 in	5.1 to 6.5
C -- 51 to 60 in	coarse sand	rapid	0.35 to 0.78 in	5.1 to 7.8

## Map Unit Description (MN)

Chisago County, Minnesota

### 454D--Mahtomedi loamy sand, 12 to 20 percent slopes

#### Mahtomedi

*Extent:* 85 percent of the unit

*Landform(s):* outwash plains

*Slope gradient:* 12 to 20 percent

*Parent material:* sandy and gravelly outwash

*Restrictive feature(s):* greater than 60 inches

*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 factor (surface layer)* .15

*Land capability, nonirrigated* 6s

*Hydric soil:* no

*Hydrologic group:* A

*Potential for 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	loamy sand	rapid	0.39 to 0.47 in	5.1 to 6.5
E -- 4 to 12 in	loamy coarse sand	rapid	0.47 to 0.63 in	5.1 to 6.5
Bw1,Bw2 -- 12 to 34 in	coarse sand	rapid	1.10 to 1.54 in	5.1 to 6.5
C -- 34 to 60 in	coarse sand	rapid	1.04 to 2.34 in	5.1 to 7.8

### 454F--Mahtomedi loamy sand, 20 to 35 percent slopes

#### Mahtomedi

*Extent:* 85 percent of the unit

*Landform(s):* outwash plains

*Slope gradient:* 20 to 35 percent

*Parent material:* sandy and gravelly outwash

*Restrictive feature(s):* greater than 60 inches

*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 factor (surface layer)* .15

*Land capability, nonirrigated* 7s

*Hydric soil:* no

*Hydrologic group:* A

*Potential for 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 3 in	loamy sand	rapid	0.31 to 0.38 in	5.1 to 6.5
E -- 3 to 9 in	loamy coarse sand	rapid	0.35 to 0.47 in	5.1 to 6.5
Bw,C -- 9 to 60 in	gravelly sand	rapid	2.03 to 4.57 in	5.1 to 7.8

## Map Unit Description (MN)

Chisago County, Minnesota

### 540--Seelyeville muck

#### Seelyeville

*Extent:* 90 percent of the unit

*Landform(s):* swamps

*Slope gradient:* 0 to 1 percent

*Parent material:* organic material

*Restrictive feature(s):* greater than 60 inches

*Flooding:* none

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 3

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .02

*Land capability, nonirrigated* 7w

*Hydric soil:* yes

*Hydrologic group:* A/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oap -- 0 to 10 in	muck	moderately rapid	3.44 to 4.43 in	
Oa,Oe,O'a -- 10 to 60 in	muck	rapid	17.50 to 22.50 in	

### 543--Markey muck

#### Markey

*Extent:* 90 percent of the unit

*Landform(s):* swamps

*Slope gradient:* 0 to 1 percent

*Parent material:* organic material over sandy outwash

*Restrictive feature(s):* greater than 60 inches

*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 factor (surface layer)* .02

*Land capability, nonirrigated* 7w

*Hydric soil:* yes

*Hydrologic group:* A/D

*Potential for 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 30 in	muck	moderately rapid	10.47 to 13.46 in	
Cg -- 30 to 60 in	loamy sand	rapid	0.90 to 2.39 in	

## Map Unit Description (MN)

Chisago County, Minnesota

### 544--Cathro muck

#### Cathro

*Extent:* 90 percent of the unit

*Landform(s):* swamps

*Slope gradient:* 0 to 1 percent

*Parent material:* organic material over loamy till

*Restrictive feature(s):* greater than 60 inches

*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 factor (surface layer)* .02

*Land capability, nonirrigated* 7w

*Hydric soil:* yes

*Hydrologic group:* A/D

*Potential for 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 38 in	muck	moderately rapid	17.01 to 20.79 in	
Cg -- 38 to 60 in	loam	moderate	2.43 to 4.85 in	

### 545--Rondeau muck

#### Rondeau

*Extent:* 90 percent of the unit

*Landform(s):* swamps

*Slope gradient:* 0 to 1 percent

*Parent material:* organic material over marl

*Restrictive feature(s):* greater than 60 inches

*Flooding:* none

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 1

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .02

*Land capability, nonirrigated* 7w

*Hydric soil:* yes

*Hydrologic group:* A/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa,Oe -- 0 to 39 in	muck	moderately rapid	13.64 to 18.71 in	
Cg -- 39 to 60 in	marl	slow	4.17 to 4.59 in	

## Map Unit Description (MN)

Chisago County, Minnesota

### 565--Eckvoll loamy sand

#### Eckvoll

*Extent:* 85 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 0 to 3 percent

*Parent material:* sandy outwash over loamy till

*Restrictive feature(s):* greater than 60 inches

*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 factor (surface layer)* .17

*Land capability, nonirrigated* 3s

*Hydric soil:* no

*Hydrologic group:* B

*Potential for 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	loamy sand	rapid	0.79 to 0.94 in	6.1 to 7.3
E -- 8 to 24 in	loamy fine sand	rapid	0.97 to 1.29 in	6.1 to 7.3
2Bt1,2Bt2 -- 24 to 45 in	clay loam	moderate	3.34 to 3.76 in	6.6 to 7.8
2C -- 45 to 60 in	loam	moderate	2.54 to 2.84 in	7.4 to 8.4

### 676B--Kost loamy fine sand, 1 to 6 percent slopes

#### Kost

*Extent:* 85 percent of the unit

*Landform(s):* outwash plains

*Slope gradient:* 1 to 6 percent

*Parent material:* sandy outwash

*Restrictive feature(s):* greater than 60 inches

*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 factor (surface layer)* .17

*Land capability, nonirrigated* 4s

*Hydric soil:* no

*Hydrologic group:* A

*Potential for frost action:* low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap,A,AB -- 0 to 17 in	loamy fine sand	rapid	1.52 to 2.03 in	5.1 to 7.3
Bw -- 17 to 29 in	fine sand	rapid	0.73 to 0.98 in	5.1 to 7.3
C -- 29 to 60 in	fine sand	rapid	1.54 to 2.15 in	5.6 to 7.3

## Map Unit Description (MN)

Chisago County, Minnesota

### 677--Siren silt loam

#### Siren

*Extent:* 85 percent of the unit

*Landform(s):* lake plains, terraces

*Slope gradient:* 0 to 3 percent

*Parent material:* loamy drift over silty and clayey lacustrine deposits

*Restrictive feature(s):* greater than 60 inches

*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 factor (surface layer)* .32

*Land capability, nonirrigated* 2w

*Hydric soil:* no

*Hydrologic group:* C

*Potential for frost action:* high

*Representative soil profile:*

	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 2 in	silt loam	moderate	0.30 to 0.47 in	5.1 to 6.5
E,E/B -- 2 to 6 in	silt loam	moderate	0.35 to 0.87 in	5.1 to 6.5
2Bt1,2Bt2 -- 6 to 34 in	silty clay	moderately slow	2.52 to 3.63 in	5.1 to 7.8
2C1,2C2 -- 34 to 60 in	silty clay	moderately slow	2.08 to 3.12 in	6.1 to 8.4

## Map Unit Description (MN)

Chisago County, Minnesota

### 678--Beltrami loam, thick solum

#### Beltrami, thick solum

*Extent:* 85 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 0 to 3 percent

*Parent material:* loamy till

*Restrictive feature(s):* greater than 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 factor (surface layer)* .24

*Land capability, nonirrigated* 1

*Hydric soil:* no

*Hydrologic group:* B

*Potential for 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 8 in	loam	moderate	1.57 to 1.73 in	6.1 to 7.3
E -- 8 to 11 in	sandy loam	moderately rapid	0.35 to 0.60 in	5.1 to 7.3
Bt1,Bt2 -- 11 to 32 in	clay loam	moderate	3.13 to 3.96 in	5.1 to 7.3
BC -- 32 to 60 in	clay loam	moderate	4.19 to 5.31 in	6.1 to 7.8

## Map Unit Description (MN)

Chisago County, Minnesota

### 682B--Milaca sandy loam, 2 to 6 percent slopes, very stony

#### Milaca, very stony

*Extent:* 85 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 2 to 6 percent

*Parent material:* loamy till

*Restrictive feature(s):* dense material at 30 to 60 inches

*Flooding:* none

*Ponding:* none

*Drainage class:* well drained

*Soil loss tolerance (T factor):* 4

*Wind erodibility group (WEG):* 8

*Wind erodibility index (WEI):* 0

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 6s

*Hydric soil:* no

*Hydrologic group:* C

*Potential for 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	0.77 to 1.06 in	5.1 to 6.5
E -- 6 to 16 in	fine sandy loam	moderately rapid	1.23 to 1.64 in	5.1 to 6.5
Bt -- 16 to 24 in	sandy loam	moderate	0.94 to 1.26 in	5.1 to 6.5
BC -- 24 to 35 in	sandy loam	slow	0.00 to 0.88 in	5.6 to 7.3
Cd -- 35 to 60 in	sandy loam	impermeable	0.00 to 0.99 in	6.1 to 7.3

## Map Unit Description (MN)

Chisago County, Minnesota

### 682C--Milaca sandy loam, 6 to 12 percent slopes, very stony

#### Milaca, very stony

*Extent:* 85 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 6 to 12 percent

*Parent material:* loamy till

*Restrictive feature(s):* dense material at 30 to 60 inches

*Flooding:* none

*Ponding:* none

*Drainage class:* well drained

*Soil loss tolerance (T factor):* 4

*Wind erodibility group (WEG):* 8

*Wind erodibility index (WEI):* 0

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 6s

*Hydric soil:* no

*Hydrologic group:* C

*Potential for 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	0.77 to 1.06 in	5.1 to 6.5
E -- 6 to 15 in	fine sandy loam	moderately rapid	1.09 to 1.45 in	5.1 to 6.5
Bt -- 15 to 23 in	sandy loam	moderate	0.94 to 1.26 in	5.1 to 6.5
BC -- 23 to 35 in	sandy loam	slow	0.00 to 0.98 in	5.6 to 7.3
Cd -- 35 to 60 in	sandy loam	impermeable	0.00 to 0.99 in	6.1 to 7.3

## Map Unit Description (MN)

Chisago County, Minnesota

### 682D--Milaca sandy loam, 12 to 18 percent slopes, very stony

#### Milaca, very stony

*Extent:* 85 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 12 to 18 percent

*Parent material:* loamy till

*Restrictive feature(s):* dense material at 30 to 60 inches

*Flooding:* none

*Ponding:* none

*Drainage class:* well drained

*Soil loss tolerance (T factor):* 4

*Wind erodibility group (WEG):* 8

*Wind erodibility index (WEI):* 0

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 6s

*Hydric soil:* no

*Hydrologic group:* C

*Potential for 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	0.77 to 1.06 in	5.1 to 6.5
E -- 6 to 14 in	fine sandy loam	moderately rapid	0.99 to 1.32 in	5.1 to 6.5
Bt -- 14 to 25 in	sandy loam	moderate	1.32 to 1.76 in	5.1 to 6.5
BC -- 25 to 40 in	sandy loam	slow	0.00 to 1.20 in	5.6 to 7.3
Cd -- 40 to 60 in	sandy loam	impermeable	0.00 to 0.79 in	6.1 to 7.3

## Map Unit Description (MN)

Chisago County, Minnesota

### 682E--Milaca sandy loam, 18 to 25 percent slopes, very stony

#### Milaca, very stony

*Extent:* 85 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 18 to 25 percent

*Parent material:* loamy till

*Restrictive feature(s):* dense material at 30 to 60 inches

*Flooding:* none

*Ponding:* none

*Drainage class:* well drained

*Soil loss tolerance (T factor):* 4

*Wind erodibility group (WEG):* 8

*Wind erodibility index (WEI):* 0

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 7s

*Hydric soil:* no

*Hydrologic group:* C

*Potential for 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	0.51 to 0.71 in	5.1 to 6.5
E -- 4 to 16 in	fine sandy loam	moderately rapid	1.46 to 1.95 in	5.1 to 6.5
Bt -- 16 to 22 in	sandy loam	moderate	0.71 to 0.94 in	5.1 to 6.5
BC -- 22 to 40 in	sandy loam	slow	0.00 to 1.45 in	5.6 to 7.3
Cd -- 40 to 60 in	sandy loam	impermeable	0.00 to 0.79 in	6.1 to 7.3

## Map Unit Description (MN)

Chisago County, Minnesota

### 717B--Novak silt loam, 0 to 6 percent slopes

#### Novak

*Extent:* 85 percent of the unit

*Landform(s):* outwash plains

*Slope gradient:* 0 to 6 percent

*Parent material:* silty glaciolacustrine deposits over sandy outwash

*Restrictive feature(s):* greater than 60 inches

*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 factor (surface layer)* .37

*Land capability, nonirrigated* 2e

*Hydric soil:* no

*Hydrologic group:* B

*Potential for frost action:* high

*Representative soil profile:*

		<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap --	0 to 8 in	silt loam	moderate	1.73 to 1.89 in	5.1 to 6.5
E,E/B --	8 to 17 in	silt loam	moderate	1.81 to 1.99 in	5.1 to 6.5
Bt1 --	17 to 34 in	silt loam	moderate	2.71 to 3.72 in	5.1 to 6.5
2Bt2 --	34 to 38 in	sandy loam	moderately rapid	0.39 to 0.75 in	5.1 to 6.5
2C --	38 to 60 in	sand	rapid	0.44 to 0.88 in	5.1 to 6.5

## Map Unit Description (MN)

Chisago County, Minnesota

### 722--Blomford loamy sand, lacustrine substratum

#### Blomford, lacustrine substratum

*Extent:* 90 percent of the unit

*Landform(s):* swales on moraines

*Slope gradient:* 0 to 2 percent

*Parent material:* sandy outwash over silty and clayey lacustrine deposits

*Restrictive feature(s):* greater than 60 inches

*Flooding:* none

*Ponding:* none

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .17

*Land capability, nonirrigated* 3w

*Hydric soil:* yes

*Hydrologic group:* B/D

*Potential for frost action:* moderate

*Representative soil profile:*

		<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap --	0 to 8 in	loamy sand	rapid	0.63 to 0.94 in	5.1 to 7.3
Eg --	8 to 24 in	loamy sand	rapid	0.97 to 1.45 in	5.1 to 7.3
2Btg --	24 to 37 in	silty clay loam	moderate	2.08 to 2.86 in	5.1 to 7.3
2Cg --	37 to 60 in	silt loam	moderate	3.65 to 5.02 in	6.1 to 8.4

## Map Unit Description (MN)

Chisago County, Minnesota

### 726--Kratka loamy fine sand, thick solum

#### Kratka, thick solum

*Extent:* 90 percent of the unit

*Landform(s):* depressions on moraines

*Slope gradient:* 0 to 1 percent

*Parent material:* sandy outwash over loamy till

*Restrictive feature(s):* greater than 60 inches

*Flooding:* none

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .17

*Land capability, nonirrigated* 6w

*Hydric soil:* yes

*Hydrologic group:* B/D

*Potential for 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	loamy fine sand	rapid	0.98 to 1.18 in	6.1 to 7.3
Bg1 -- 10 to 30 in	sand	rapid	1.20 to 2.21 in	6.1 to 7.3
2Bg2,2Cg -- 30 to 60 in	clay loam	moderate	3.29 to 5.69 in	6.1 to 7.3

### 792--Fordum sandy loam, frequently flooded

#### Fordum, frequently flooded

*Extent:* 90 percent of the unit

*Landform(s):* flats on flood plains

*Slope gradient:* 0 to 2 percent

*Parent material:* alluvium

*Restrictive feature(s):* greater than 60 inches

*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 factor (surface layer)* .20

*Land capability, nonirrigated* 6w

*Hydric soil:* yes

*Hydrologic group:* D

*Potential for 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 26 in	sandy loam	moderately rapid	2.86 to 4.68 in	4.5 to 8.4
Cg1 -- 26 to 40 in	sandy loam	moderately rapid	1.42 to 3.12 in	4.5 to 8.4
2Cg2 -- 40 to 60 in	sand	rapid	0.79 to 1.97 in	5.6 to 8.4

## Map Unit Description (MN)

Chisago County, Minnesota

### 928B--Mahtomedi-Cushing complex, 2 to 6 percent slopes

#### Mahtomedi

*Extent:* 55 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 2 to 6 percent

*Parent material:* sandy and gravelly outwash

*Restrictive feature(s):* greater than 60 inches

*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 factor (surface layer)* .15

*Land capability, nonirrigated* 4s

*Hydric soil:* no

*Hydrologic group:* A

*Potential for 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 8 in	loamy sand	rapid	0.79 to 0.94 in	5.1 to 6.5
E,Bw1,Bw2 -- 8 to 40 in	coarse sand	rapid	1.61 to 2.26 in	5.1 to 6.5
C -- 40 to 60 in	coarse sand	rapid	0.79 to 1.77 in	5.1 to 7.8

#### Cushing

*Extent:* 30 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 2 to 6 percent

*Parent material:* loamy till

*Restrictive feature(s):* greater than 60 inches

*Flooding:* none

*Ponding:* none

*Drainage class:* well drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 5

*Wind erodibility index (WEI):* 56

*Kw factor (surface layer)* .32

*Land capability, nonirrigated* 2e

*Hydric soil:* no

*Hydrologic group:* B

*Potential for 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 5 in	loam	moderate	0.82 to 1.23 in	5.1 to 7.8
E -- 5 to 12 in	loam	moderate	0.67 to 1.47 in	5.1 to 7.8
B/E,Bt -- 12 to 40 in	loam	moderate	2.83 to 5.39 in	5.1 to 7.8
C -- 40 to 60 in	loam	moderately slow	1.77 to 3.74 in	5.1 to 8.4

## Map Unit Description (MN)

Chisago County, Minnesota

### 928C--Mahtomedi-Cushing complex, 6 to 12 percent slopes

#### Mahtomedi

*Extent:* 55 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 6 to 12 percent

*Parent material:* sandy and gravelly outwash

*Restrictive feature(s):* greater than 60 inches

*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 factor (surface layer)* .15

*Land capability, nonirrigated* 6s

*Hydric soil:* no

*Hydrologic group:* A

*Potential for 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 8 in	loamy sand	rapid	0.79 to 0.94 in	5.1 to 6.5
E,Bw1,Bw2 -- 8 to 29 in	coarse sand	rapid	1.06 to 1.49 in	5.1 to 6.5
C -- 29 to 60 in	coarse sand	rapid	1.23 to 2.76 in	5.1 to 7.8

#### Cushing

*Extent:* 30 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 6 to 12 percent

*Parent material:* loamy till

*Restrictive feature(s):* greater than 60 inches

*Flooding:* none

*Ponding:* none

*Drainage class:* well drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 5

*Wind erodibility index (WEI):* 56

*Kw factor (surface layer)* .32

*Land capability, nonirrigated* 3e

*Hydric soil:* no

*Hydrologic group:* B

*Potential for 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	loam	moderate	1.26 to 1.89 in	5.1 to 7.8
E/B -- 8 to 14 in	loam	moderate	0.63 to 1.39 in	5.1 to 7.8
Bt -- 14 to 53 in	loam	moderate	3.90 to 7.41 in	5.1 to 7.8
C -- 53 to 60 in	loam	moderately slow	0.60 to 1.27 in	5.1 to 8.4

## Map Unit Description (MN)

Chisago County, Minnesota

### 928D--Mahtomedi-Cushing complex, 12 to 20 percent slopes

#### Mahtomedi

*Extent:* 55 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 12 to 20 percent

*Parent material:* sandy and gravelly outwash

*Restrictive feature(s):* greater than 60 inches

*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 factor (surface layer)* .15

*Land capability, nonirrigated* 6s

*Hydric soil:* no

*Hydrologic group:* A

*Potential for 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	loamy sand	rapid	0.39 to 0.47 in	5.1 to 6.5
E -- 4 to 12 in	loamy coarse sand	rapid	0.47 to 0.63 in	5.1 to 6.5
Bw1,Bw2 -- 12 to 34 in	coarse sand	rapid	1.10 to 1.54 in	5.1 to 6.5
C -- 34 to 60 in	coarse sand	rapid	1.04 to 2.34 in	5.1 to 7.8

#### Cushing

*Extent:* 30 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 12 to 20 percent

*Parent material:* loamy till

*Restrictive feature(s):* greater than 60 inches

*Flooding:* none

*Ponding:* none

*Drainage class:* well drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 5

*Wind erodibility index (WEI):* 56

*Kw factor (surface layer)* .32

*Land capability, nonirrigated* 4e

*Hydric soil:* no

*Hydrologic group:* B

*Potential for 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 7 in	loam	moderate	1.13 to 1.70 in	5.1 to 7.8
B/E,Bt -- 7 to 40 in	loam	moderate	3.31 to 6.28 in	5.1 to 7.8
C -- 40 to 60 in	loam	moderately slow	1.77 to 3.74 in	5.1 to 8.4

## Map Unit Description (MN)

Chisago County, Minnesota

### 1030--Udorthents-Pits, gravel, complex

#### Udorthents

*Extent:* 60 percent of the unit

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

*Slope gradient:* 0 to 45 percent

*Parent material:* outwash

*Restrictive feature(s):* greater than 60 inches

*Flooding:* none

*Ponding:* none

*Drainage class:*

*Soil loss tolerance (T factor):*

*Wind erodibility group (WEG):*

*Wind erodibility index (WEI):*

*Kw factor (surface layer)*

*Land capability, nonirrigated*

*Hydric soil:* no

*Hydrologic group:*

*Potential for 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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#### Pits, gravel

*Extent:* 40 percent of the unit

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

*Slope gradient:* 0 to 45 percent

*Parent material:* outwash

*Restrictive feature(s):* greater than 60 inches

*Flooding:* none

*Ponding:* none

*Drainage class:*

*Soil loss tolerance (T factor):*

*Wind erodibility group (WEG):*

*Wind erodibility index (WEI):*

*Kw factor (surface layer)*

*Land capability, nonirrigated*

*Hydric soil:*

*Hydrologic group:*

*Potential for 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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## Map Unit Description (MN)

Chisago County, Minnesota

### 1068--Caryville sandy loam, occasionally flooded

#### Caryville, occasionally flooded

*Extent:* 90 percent of the unit

*Landform(s):* flood plains

*Slope gradient:* 0 to 3 percent

*Parent material:* alluvium

*Restrictive feature(s):* greater than 60 inches

*Flooding:* occasional

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 3s

*Hydric soil:* no

*Hydrologic group:* B

*Potential for 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 10 in	sandy loam	moderately rapid	1.18 to 1.77 in	5.6 to 7.3
2C -- 10 to 60 in	stratified sand to loam	rapid	2.00 to 5.00 in	5.1 to 7.3

## Map Unit Description (MN)

Chisago County, Minnesota

### 1069C--Fairport-Rock outcrop complex, 2 to 12 percent slopes

#### Fairport

*Extent:* 60 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 2 to 12 percent

*Parent material:* loamy till

*Restrictive feature(s):* lithic bedrock at 20 to 40 inches

*Flooding:* none

*Ponding:* none

*Drainage class:* well drained

*Soil loss tolerance (T factor):* 2

*Wind erodibility group (WEG):* 5

*Wind erodibility index (WEI):* 56

*Kw factor (surface layer)* .37

*Land capability, nonirrigated* 4e

*Hydric soil:* no

*Hydrologic group:* C

*Potential for 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	silt loam	moderate	1.02 to 1.23 in	5.6 to 7.8
E,Bt -- 5 to 24 in	loam	moderate	1.89 to 3.78 in	7.4 to 8.4
2R -- 24 to 34 in	unweathered bedrock	moderately slow		

#### Rock outcrop

*Extent:* 25 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 2 to 12 percent

*Parent material:* igneous, metamorphic and sedimentary rock

*Restrictive feature(s):* lithic bedrock at 0 to 0 inches

*Flooding:* none

*Ponding:* none

*Drainage class:*

*Soil loss tolerance (T factor):*

*Wind erodibility group (WEG):*

*Wind erodibility index (WEI):*

*Kw factor (surface layer)*

*Land capability, nonirrigated*

*Hydric soil:*

*Hydrologic group:*

*Potential for 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)

Chisago County, Minnesota

### 1070D--Plainbo-Rock outcrop complex, 12 to 40 percent slopes

#### Plainbo

*Extent:* 60 percent of the unit

*Landform(s):* terraces

*Slope gradient:* 12 to 40 percent

*Parent material:* sandy outwash

*Restrictive feature(s):* paralithic bedrock at 20 to 40 inches

*Flooding:* none

*Ponding:* none

*Drainage class:* excessively drained

*Soil loss tolerance (T factor):* 2

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .17

*Land capability, nonirrigated* 7s

*Hydric soil:* no

*Hydrologic group:* C

*Potential for 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	0.36 to 0.61 in	3.6 to 7.3
Bw -- 5 to 23 in	loamy sand	rapid	0.71 to 1.95 in	3.6 to 6.5
R -- 23 to 33 in	weathered bedrock	moderately slow		

#### Rock outcrop

*Extent:* 25 percent of the unit

*Landform(s):* terraces

*Slope gradient:* 12 to 40 percent

*Parent material:* igneous, metamorphic and sedimentary rock

*Restrictive feature(s):* lithic bedrock at 0 to 0 inches

*Flooding:* none

*Ponding:* none

*Drainage class:*

*Soil loss tolerance (T factor):*

*Wind erodibility group (WEG):*

*Wind erodibility index (WEI):*

*Kw factor (surface layer)*

*Land capability, nonirrigated*

*Hydric soil:*

*Hydrologic group:*

*Potential for 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)

Chisago County, Minnesota

### 1356--Water, miscellaneous

#### Water, miscellaneous

*Extent:* 100 percent of the unit

*Landform(s):*

*Slope gradient:*

*Parent material:*

*Restrictive feature(s):* greater than 60 inches

*Flooding:*

*Ponding:*

*Drainage class:*

*Soil loss tolerance (T factor):*

*Wind erodibility group (WEG):*

*Wind erodibility index (WEI):*

*Kw factor (surface layer)*

*Land capability, nonirrigated*

*Hydric soil:*

*Hydrologic group:*

*Potential for 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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### 1977--Mora loam, very stony

#### Mora, very stony

*Extent:* 85 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 1 to 3 percent

*Parent material:* loamy till

*Restrictive feature(s):* dense material at 30 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 factor (surface layer)* .28

*Land capability, nonirrigated* 6s

*Hydric soil:* no

*Hydrologic group:* C

*Potential for 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	0.67 to 0.79 in	5.1 to 6.5
E -- 4 to 12 in	loam	moderately rapid	1.10 to 1.57 in	5.1 to 6.5
Bt -- 12 to 30 in	sandy loam	moderate	2.72 to 3.44 in	5.6 to 6.5
BC -- 30 to 50 in	sandy loam	slow	0.00 to 1.61 in	5.6 to 6.5
Cd -- 50 to 60 in	sandy loam	impermeable	0.00 to 0.39 in	5.6 to 7.8

## Map Unit Description (MN)

Chisago County, Minnesota

### 1980--Ronneby loam, extremely stony

#### Ronneby, extremely stony

*Extent:* 85 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 0 to 2 percent

*Parent material:* loamy 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 factor (surface layer)* .28

*Land capability, nonirrigated* 7s

*Hydric soil:* no

*Hydrologic group:* C

*Potential for 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	0.71 to 0.91 in	5.1 to 6.5
E -- 4 to 11 in	sandy loam	moderately rapid	0.85 to 1.35 in	5.1 to 6.5
Bt -- 11 to 28 in	sandy loam	moderate	2.03 to 3.22 in	5.6 to 6.5
BC -- 28 to 38 in	sandy loam	slow	0.30 to 0.79 in	5.6 to 7.3
C -- 38 to 60 in	sandy loam	impermeable	0.00 to 0.88 in	5.6 to 7.3

### W--Water

#### Water

*Extent:* 100 percent of the unit

*Landform(s):*

*Slope gradient:*

*Parent material:*

*Restrictive feature(s):* greater than 60 inches

*Flooding:*

*Ponding:*

*Drainage class:*

*Soil loss tolerance (T factor):*

*Wind erodibility group (WEG):*

*Wind erodibility index (WEI):*

*Kw factor (surface layer)*

*Land capability, nonirrigated*

*Hydric soil:*

*Hydrologic group:*

*Potential for 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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## Map Unit Description (MN)

Chisago County, Minnesota

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This report provides a semitabular listing of some soil and site properties and interpretations that are valuable in communicating the concept of a map unit. The report also provides easy access to the commonly used conservation planning information in one place. The major soil components in each map unit are displayed. Minor components may be displayed if they are included in the database and are selected at the time the report is generated.