

## Map Unit Description (MN)

Clearwater 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]

### 20B--Chapett fine sandy loam, 2 to 6 percent slopes

#### Chapett

*Extent:* 90 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 2 to 6 percent

*Parent material:* 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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .17

*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,E -- 0 to 9 in	fine sandy loam	moderate	1.18 to 1.72 in	6.1 to 7.3
B/E,Bt -- 9 to 21 in	sandy clay loam	moderate	1.77 to 2.24 in	6.1 to 7.3
Bck -- 21 to 60 in	fine sandy loam	moderate	3.90 to 6.24 in	7.4 to 8.4

### 20C2--Chapett fine sandy loam, 6 to 12 percent slopes, eroded

#### Chapett, eroded

*Extent:* 90 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 6 to 12 percent

*Parent material:* 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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .17

*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,E -- 0 to 7 in	fine sandy loam	moderate	0.92 to 1.35 in	6.1 to 7.3
B/E,Bt -- 7 to 18 in	sandy clay loam	moderate	1.65 to 2.09 in	6.1 to 7.3
Bck -- 18 to 60 in	fine sandy loam	moderate	4.17 to 6.68 in	7.4 to 8.4

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### 38B--Waukon loam, 2 to 6 percent slopes

#### Waukon

*Extent:* 90 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 2 to 6 percent

*Parent material:* 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)* .20

*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,E -- 0 to 8 in	loam	moderate	1.57 to 1.89 in	6.1 to 7.3
Bt1,Bt2 -- 8 to 22 in	clay loam	moderate	2.13 to 2.69 in	6.1 to 8.4
Bck -- 22 to 60 in	loam	moderate	5.67 to 7.18 in	7.4 to 8.4

### 38C2--Waukon loam, 6 to 12 percent slopes, eroded

#### Waukon, eroded

*Extent:* 90 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 6 to 12 percent

*Parent material:* 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)* .20

*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,E -- 0 to 8 in	loam	moderate	1.57 to 1.89 in	6.1 to 7.3
Bt1,Bt2 -- 8 to 21 in	clay loam	moderate	1.95 to 2.47 in	6.1 to 8.4
Bck -- 21 to 60 in	loam	moderate	5.85 to 7.41 in	7.4 to 8.4

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### 38D2--Waukon loam, 12 to 20 percent slopes, eroded

#### Waukon, eroded

*Extent:* 90 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 12 to 20 percent

*Parent material:* 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)* .20

*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>
A1,E -- 0 to 7 in	loam	moderate	1.42 to 1.70 in	6.1 to 7.3
Bt1,Bt2 -- 7 to 22 in	clay loam	moderate	2.24 to 2.84 in	6.1 to 8.4
Bck -- 22 to 60 in	loam	moderate	5.67 to 7.18 in	7.4 to 8.4

### 40B--Nebish loam, 2 to 8 percent slopes

#### Nebish

*Extent:* 90 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 2 to 8 percent

*Parent material:* 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)* .37

*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 3 in	loam	moderate	0.63 to 0.69 in	5.6 to 7.3
E -- 3 to 9 in	fine sandy loam	moderately rapid	0.65 to 1.12 in	5.6 to 7.3
Bt1,Bt2 -- 9 to 26 in	clay loam	moderate	2.54 to 3.22 in	5.6 to 7.8
Bck -- 26 to 60 in	loam	moderate	3.72 to 6.43 in	7.4 to 8.4

## Map Unit Description (MN)

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### 40C--Nebish loam, 8 to 15 percent slopes

#### Nebish

*Extent:* 90 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 8 to 15 percent

*Parent material:* 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)* .37

*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>
A -- 0 to 3 in	loam	moderate	0.63 to 0.69 in	5.6 to 7.3
E -- 3 to 8 in	fine sandy loam	moderately rapid	0.52 to 0.90 in	5.6 to 7.3
Bt1,Bt2 -- 8 to 24 in	clay loam	moderate	2.42 to 3.07 in	5.6 to 7.8
BcK -- 24 to 60 in	loam	moderate	3.94 to 6.81 in	7.4 to 8.4

## Map Unit Description (MN)

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### 40E--Nebish loam, 15 to 30 percent slopes

#### Nebish

*Extent:* 90 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 15 to 30 percent

*Parent material:* 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)* .37

*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	0.63 to 0.69 in	5.6 to 7.3
E -- 3 to 8 in	fine sandy loam	moderately rapid	0.52 to 0.90 in	5.6 to 7.3
Bt1,Bt2 -- 8 to 23 in	clay loam	moderate	2.24 to 2.84 in	5.6 to 7.8
BcK -- 23 to 60 in	loam	moderate	4.07 to 7.03 in	7.4 to 8.4

### 45E--Maddock loamy fine sand, 12 to 30 percent slopes

#### Maddock

*Extent:* 90 percent of the unit

*Landform(s):* hillslopes on lake plains

*Slope gradient:* 12 to 30 percent

*Parent material:* glaciolacustrine

*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)* .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 10 in	loamy fine sand	rapid	0.79 to 1.18 in	6.6 to 7.8
Bw,C1,C2 -- 10 to 60 in	fine sand	rapid	2.50 to 6.50 in	6.6 to 8.4

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### 63--Rockwell loam

#### Rockwell

*Extent:* 90 percent of the unit

*Landform(s):* flats on moraines, swales on moraines

*Slope gradient:* 0 to 1 percent

*Parent material:* glaciolacustrine and 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):* 4L

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*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	1.63 to 1.99 in	7.4 to 8.4
Bkg1 -- 9 to 17 in	loam	moderately rapid	1.18 to 1.34 in	7.9 to 8.4
2Bkg2 -- 17 to 32 in	sand	rapid	0.75 to 1.05 in	7.4 to 7.8
3BCkg -- 32 to 60 in	loam	moderate	5.03 to 6.15 in	7.4 to 7.8

### 111--Hangaard sandy loam

#### Hangaard

*Extent:* 90 percent of the unit

*Landform(s):* flats on beach plains, swales on beach plains

*Slope gradient:* 0 to 2 percent

*Parent material:* beach 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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .10

*Land capability, nonirrigated* 4w

*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 10 in	sandy loam	moderately rapid	0.98 to 1.38 in	6.6 to 7.8
Cg1 -- 10 to 16 in	gravelly coarse sand	rapid	0.44 to 0.69 in	6.6 to 7.8
Cg2,Cg3 -- 16 to 60 in	coarse sand	very rapid	0.87 to 1.75 in	7.4 to 8.4

## Map Unit Description (MN)

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### 121--Wykeham fine sandy loam

#### Wykeham

*Extent:* 90 percent of the unit

*Landform(s):* flats on moraines, rises on moraines

*Slope gradient:* 1 to 3 percent

*Parent material:* 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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 1

*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 3 in	fine sandy loam	moderately rapid	0.41 to 0.57 in	5.1 to 6.5
E -- 3 to 12 in	fine sandy loam	moderate	0.87 to 1.47 in	5.1 to 6.5
B/E,Bt1,Bt2 -- 12 to 34 in	loam	moderate	2.65 to 3.97 in	5.6 to 7.3
Bck -- 34 to 60 in	fine sandy loam	moderate	2.86 to 4.16 in	7.4 to 8.4

## Map Unit Description (MN)

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### 125--Beltrami loam

#### Beltrami

*Extent:* 90 percent of the unit

*Landform(s):* flats on moraines, rises on moraines

*Slope gradient:* 1 to 3 percent

*Parent material:* 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)* .28

*Land capability, nonirrigated* 2e

*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 3 in	loam	moderate	0.63 to 0.69 in	6.1 to 7.3
E -- 3 to 9 in	fine sandy loam	moderately rapid	0.65 to 1.12 in	5.6 to 7.3
Bt1,Bt2 -- 9 to 25 in	clay loam	moderate	2.42 to 3.07 in	5.6 to 7.8
BcK -- 25 to 60 in	loam	moderate	5.20 to 6.58 in	7.4 to 8.4

### 133B--Dalbo silt loam, 2 to 8 percent slopes

#### Dalbo

*Extent:* 90 percent of the unit

*Landform(s):* hillslopes on lake plains, hillslopes on moraines

*Slope gradient:* 2 to 8 percent

*Parent material:* glaciolacustrine and 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):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .37

*Land capability, nonirrigated* 2e

*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,E -- 0 to 6 in	silt loam	moderate	1.30 to 1.42 in	5.6 to 7.3
Bt -- 6 to 35 in	silty clay	moderately slow	2.91 to 5.24 in	5.1 to 7.3
BcK1,BcK2 -- 35 to 60 in	silt loam	moderate	4.96 to 5.46 in	7.4 to 8.4

## Map Unit Description (MN)

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### 133C--Dalbo silt loam, 8 to 15 percent slopes

#### Dalbo

<i>Extent:</i> 90 percent of the unit	<i>Soil loss tolerance (T factor):</i> 5
<i>Landform(s):</i> hillslopes on lake plains, hillslopes on moraines	<i>Wind erodibility group (WEG):</i> 6
<i>Slope gradient:</i> 8 to 15 percent	<i>Wind erodibility index (WEI):</i> 48
<i>Parent material:</i> glaciolacustrine and till	<i>Kw factor (surface layer)</i> .37
<i>Restrictive feature(s):</i> greater than 60 inches	<i>Land capability, nonirrigated</i> 3e
<i>Flooding:</i> none	<i>Hydric soil:</i> no
<i>Ponding:</i> none	<i>Hydrologic group:</i> C
<i>Drainage class:</i> moderately well drained	<i>Potential for frost action:</i> high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A,E -- 0 to 7 in	silt loam	moderate	1.56 to 1.70 in	5.6 to 7.3
Bt -- 7 to 25 in	silty clay	moderately slow	1.81 to 3.26 in	5.1 to 7.3
Bck1,Bck2 -- 25 to 60 in	silt loam	moderate	6.93 to 7.62 in	7.4 to 8.4

### 133E--Dalbo silt loam, 15 to 30 percent slopes

#### Dalbo

<i>Extent:</i> 90 percent of the unit	<i>Soil loss tolerance (T factor):</i> 5
<i>Landform(s):</i> hillslopes on lake plains, hillslopes on moraines	<i>Wind erodibility group (WEG):</i> 6
<i>Slope gradient:</i> 15 to 30 percent	<i>Wind erodibility index (WEI):</i> 48
<i>Parent material:</i> glaciolacustrine and till	<i>Kw factor (surface layer)</i> .37
<i>Restrictive feature(s):</i> greater than 60 inches	<i>Land capability, nonirrigated</i> 6e
<i>Flooding:</i> none	<i>Hydric soil:</i> no
<i>Ponding:</i> none	<i>Hydrologic group:</i> C
<i>Drainage class:</i> moderately well drained	<i>Potential for frost action:</i> high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A,E -- 0 to 7 in	silt loam	moderate	1.56 to 1.70 in	5.6 to 7.3
Bt -- 7 to 29 in	silty clay	moderately slow	2.20 to 3.97 in	5.1 to 7.3
Bck1,Bck2 -- 29 to 60 in	silt loam	moderate	6.14 to 6.76 in	7.4 to 8.4

## Map Unit Description (MN)

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### 167A--Baudette silt loam

#### Baudette

*Extent:* 90 percent of the unit

*Landform(s):* flats on lake plains, rises on lake plains, flats on moraines, rises on moraines

*Slope gradient:* 1 to 3 percent

*Parent material:* glaciolacustrine deposits

*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)* .37

*Land capability, nonirrigated* 2e

*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 3 in	silt loam		moderate	0.63 to 0.69 in	5.6 to 7.3
E --	3 to 9 in	very fine sandy loam		moderate	0.83 to 1.18 in	5.6 to 7.3
Bt1,Bt2 --	9 to 30 in	silty clay loam		moderate	3.55 to 5.01 in	5.6 to 7.8
Bck --	30 to 60 in	silt loam		moderate	5.09 to 6.58 in	7.4 to 8.4

## Map Unit Description (MN)

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### 169B--Braham loamy fine sand, 2 to 8 percent slopes

#### Braham

*Extent:* 90 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 2 to 8 percent

*Parent material:* outwash and 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)* .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 10 in	loamy fine sand	rapid	0.98 to 1.18 in	5.6 to 7.3
E --	10 to 25 in	loamy fine sand	rapid	1.23 to 1.54 in	5.6 to 7.3
2Bt --	25 to 35 in	sandy clay loam	moderate	1.48 to 1.77 in	5.1 to 7.3
2BCK --	35 to 60 in	loam	moderate	3.72 to 4.46 in	7.4 to 8.4

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### 169C--Braham loamy fine sand, 8 to 15 percent slopes

#### Braham

*Extent:* 90 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 8 to 15 percent

*Parent material:* outwash and 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)* .24

*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>
Ap --	0 to 3 in	loamy fine sand	rapid	0.31 to 0.38 in	5.6 to 7.3
E --	3 to 30 in	loamy fine sand	rapid	2.14 to 2.68 in	5.6 to 7.3
2Bt --	30 to 38 in	sandy clay loam	moderate	1.24 to 1.49 in	5.1 to 7.3
2BCK --	38 to 60 in	loam	moderate	3.25 to 3.90 in	7.4 to 8.4

## Map Unit Description (MN)

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### 169E--Braham loamy fine sand, 15 to 30 percent slopes

#### Braham

*Extent:* 90 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 15 to 30 percent

*Parent material:* outwash and 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)* .24

*Land capability, nonirrigated* 6e

*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 3 in	loamy fine sand	rapid	0.31 to 0.38 in	5.6 to 7.3
E -- 3 to 32 in	loamy fine sand	rapid	2.30 to 2.87 in	5.6 to 7.3
2Bt -- 32 to 48 in	sandy clay loam	moderate	2.42 to 2.91 in	5.1 to 7.3
2BCK -- 48 to 60 in	loam	moderate	1.77 to 2.13 in	7.4 to 8.4

### 180--Gonvick loam

#### Gonvick

*Extent:* 90 percent of the unit

*Landform(s):* flats on moraines, rises on moraines

*Slope gradient:* 1 to 3 percent

*Parent material:* 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:* 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>
Ap -- 0 to 8 in	loam	moderate	1.57 to 1.73 in	6.1 to 7.3
Bt1,Bt2 -- 8 to 23 in	clay loam	moderate	2.24 to 2.84 in	6.6 to 7.3
BCK -- 23 to 60 in	loam	moderate	5.55 to 7.03 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 205--Karlstad sandy loam

#### Karlstad

*Extent:* 90 percent of the unit

*Landform(s):* flats on beach plains, rises on beach plains

*Slope gradient:* 1 to 3 percent

*Parent material:* beach deposits

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

*Flooding:* none

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 3

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .17

*Land capability, nonirrigated* 4s

*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,E -- 0 to 12 in	sandy loam	moderately rapid	1.54 to 2.13 in	4.5 to 7.3
Bt1 -- 12 to 18 in	sandy loam	moderately rapid	0.82 to 1.13 in	6.1 to 7.3
2Bt2 -- 18 to 24 in	gravelly coarse sandy loam	moderately rapid	0.71 to 0.94 in	6.1 to 7.8
2BcK -- 24 to 60 in	stratified gravelly coarse sand to loamy fine sand	very rapid	0.72 to 1.43 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 258B--Sandberg loamy sand, 1 to 6 percent slopes

#### Sandberg

*Extent:* 90 percent of the unit

*Landform(s):* hillslopes on beach ridges

*Slope gradient:* 1 to 6 percent

*Parent material:* beach deposits

*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)* .05

*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 10 in	loamy sand	rapid	0.98 to 1.18 in	5.6 to 7.8
Bw1 -- 10 to 15 in	loamy sand	rapid	0.15 to 0.51 in	6.1 to 7.8
BCK2 -- 15 to 30 in	gravelly sand	very rapid	0.30 to 0.90 in	7.4 to 8.4
C1,C2 -- 30 to 60 in	sand	very rapid	0.60 to 1.80 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 267B--Snellman sandy loam, 2 to 8 percent slopes

#### Snellman

*Extent:* 90 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 2 to 8 percent

*Parent material:* 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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*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 2 in	sandy loam	moderately rapid	0.26 to 0.35 in	5.1 to 6.5
E -- 2 to 12 in	loamy fine sand	moderate	0.89 to 1.38 in	5.1 to 6.5
B/E,Bt1,Bt2 -- 12 to 30 in	sandy clay loam	moderate	2.17 to 3.26 in	5.6 to 7.3
Bck -- 30 to 60 in	fine sandy loam	moderate	3.29 to 4.79 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 267C--Snellman sandy loam, 8 to 15 percent slopes

#### Snellman

*Extent:* 90 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 8 to 15 percent

*Parent material:* 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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*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>
A -- 0 to 3 in	sandy loam	moderately rapid	0.41 to 0.57 in	5.1 to 6.5
E -- 3 to 11 in	loamy fine sand	moderate	0.71 to 1.10 in	5.1 to 6.5
B/E,Bt1,Bt2 -- 11 to 33 in	sandy clay loam	moderate	2.65 to 3.97 in	5.6 to 7.3
Bck -- 33 to 60 in	fine sandy loam	moderate	2.94 to 4.28 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 267E--Snellman sandy loam, 15 to 30 percent slopes

#### Snellman

*Extent:* 90 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 15 to 30 percent

*Parent material:* 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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*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	sandy loam	moderately rapid	0.41 to 0.57 in	5.1 to 6.5
E -- 3 to 16 in	loamy fine sand	moderate	1.17 to 1.82 in	5.1 to 6.5
B/E,Bt1,Bt2 -- 16 to 38 in	sandy clay loam	moderate	2.65 to 3.97 in	5.6 to 7.3
Bck -- 38 to 60 in	fine sandy loam	moderate	2.38 to 3.46 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 272--Bemidji loamy sand

#### Bemidji

*Extent:* 90 percent of the unit

*Landform(s):* flats on moraines, rises on moraines

*Slope gradient:* 1 to 3 percent

*Parent material:* outwash and 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)* .05

*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 6 in	loamy sand	rapid	0.47 to 0.71 in	5.6 to 6.5
E1,E2 -- 6 to 24 in	sand	rapid	0.72 to 1.45 in	5.6 to 6.5
2B/E,2Bt -- 24 to 42 in	sandy clay loam	moderately slow	1.81 to 2.17 in	6.1 to 7.3
2Bck -- 42 to 60 in	fine sandy loam	moderate	2.48 to 2.83 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 346--Talmoon loam

#### Talmoon

*Extent:* 90 percent of the unit

*Landform(s):* flats on moraines, swales on moraines

*Slope gradient:* 0 to 2 percent

*Parent material:* 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)* .32

*Land capability, nonirrigated* 2w

*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 4 in	loam	moderate	0.79 to 0.87 in	5.1 to 7.3
Eg -- 4 to 9 in	fine sandy loam	moderate	0.67 to 1.13 in	5.1 to 7.3
Btg1,Btg2 -- 9 to 26 in	clay loam	moderately slow	2.71 to 3.22 in	5.6 to 7.3
BCkg -- 26 to 60 in	loam	moderately slow	5.08 to 6.43 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 426--Foldahl loamy fine sand

#### Foldahl

*Extent:* 90 percent of the unit

*Landform(s):* flats on lake plains, rises on lake plains, flats on moraines, rises on moraines

*Slope gradient:* 0 to 3 percent

*Parent material:* glaciolacustrine and 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)* .15

*Land capability, nonirrigated* 3s

*Hydric soil:* no

*Hydrologic group:* A

*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	loamy fine sand	rapid	0.98 to 1.38 in	6.1 to 7.8
Bw1,Bw2 -- 10 to 34 in	fine sand	rapid	1.68 to 2.88 in	6.6 to 7.8
2BCK -- 34 to 60 in	loam	moderate	3.64 to 4.94 in	7.4 to 8.4

### 432--Stranquist loam

#### Stranquist

*Extent:* 85 percent of the unit

*Landform(s):* flats on lake plains, swales on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* glaciolacustrine deposits over 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):* 4L

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .28

*Land capability, nonirrigated* 3w

*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	1.27 to 1.63 in	6.6 to 8.4
2Cg1 -- 9 to 32 in	very gravelly sand	rapid	0.69 to 1.14 in	7.4 to 8.4
3Cg2,3Cg3 -- 32 to 60 in	loam	moderate	3.35 to 5.31 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 435--Syrene sandy loam

#### Syrene

*Extent:* 90 percent of the unit

*Landform(s):* flats on beach plains, rises on beach plains

*Slope gradient:* 0 to 2 percent

*Parent material:* beach deposits

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

*Flooding:* none

*Ponding:* none

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 2

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .10

*Land capability, nonirrigated* 4w

*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>
A -- 0 to 9 in	sandy loam	moderately rapid	1.18 to 1.63 in	7.4 to 8.4
Bkg -- 9 to 17 in	sandy loam	moderately rapid	1.18 to 1.50 in	7.9 to 8.4
2Cg1,2Cg2 -- 17 to 60 in	stratified gravelly coarse sand to loamy fine sand	rapid	0.86 to 1.72 in	7.4 to 8.4

### 439--Strathcona fine sandy loam

#### Strathcona

*Extent:* 90 percent of the unit

*Landform(s):* flats on lake plains, rises on lake plains

*Slope gradient:* 0 to 2 percent

*Parent material:* glaciolacustrine and 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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .15

*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 10 in	fine sandy loam	moderately rapid	1.38 to 1.67 in	7.4 to 8.4
Bkg1 -- 10 to 18 in	fine sandy loam	moderately rapid	1.16 to 1.32 in	7.4 to 8.4
2Bkg2 -- 18 to 36 in	fine sand	rapid	0.89 to 1.59 in	7.4 to 8.4
3BCkg -- 36 to 60 in	loam	moderate	3.36 to 4.32 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 481--Kratka fine sandy loam

#### Kratka

*Extent:* 90 percent of the unit

*Landform(s):* flats on lake plains, swales on lake plains, flats on moraines, swales on moraines

*Slope gradient:* 0 to 2 percent

*Parent material:* glaciolacustrine and 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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 3w

*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	fine sandy loam		moderately rapid	1.28 to 1.77 in	5.6 to 7.8
Bg1,Bg2,Bg3 --	10 to 32 in	fine sand		rapid	1.32 to 2.43 in	5.6 to 7.8
2BCkg --	32 to 60 in	loam		moderate	3.07 to 5.31 in	6.1 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 496B--Andrusia loamy sand, 1 to 6 percent slopes

#### Andrusia

*Extent:* 90 percent of the unit

*Landform(s):* hillslopes on beach ridges, outwash plains

*Slope gradient:* 1 to 6 percent

*Parent material:* 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)* .10

*Land capability, nonirrigated* 3s

*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	5.6 to 7.3
E1,E2 --	3 to 32 in	sand	rapid	2.01 to 2.87 in	5.6 to 7.3
Bt --	32 to 40 in	coarse sandy loam	moderately rapid	0.91 to 1.32 in	5.6 to 7.3
BcK --	40 to 60 in	gravelly coarse sand	rapid	0.79 to 1.77 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 496C--Andrusia loamy sand, 6 to 12 percent slopes

#### Andrusia

*Extent:* 90 percent of the unit

*Landform(s):* hillslopes on beach ridges, outwash plains

*Slope gradient:* 6 to 12 percent

*Parent material:* 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)* .10

*Land capability, nonirrigated* 3e

*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	5.6 to 7.3
E1,E2 --	3 to 35 in	sand	rapid	2.23 to 3.19 in	5.6 to 7.3
Bt --	35 to 43 in	coarse sandy loam	moderately rapid	0.87 to 1.26 in	5.6 to 7.3
BcK --	43 to 60 in	gravelly coarse sand	rapid	0.68 to 1.52 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 505B--Debs silt loam, 2 to 8 percent slopes

#### Debs

*Extent:* 90 percent of the unit

*Landform(s):* hillslopes on lake plains, hillslopes on moraines

*Slope gradient:* 2 to 8 percent

*Parent material:* glaciolacustrine deposits

*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)* .37

*Land capability, nonirrigated* 2e

*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 2 in	silt loam	moderate	0.35 to 0.47 in	6.1 to 7.3
E -- 2 to 12 in	very fine sandy loam	moderately rapid	1.48 to 1.97 in	6.1 to 7.3
Bt1,Bt2 -- 12 to 32 in	silty clay loam	moderate	3.21 to 4.42 in	6.1 to 7.3
BcK -- 32 to 60 in	silt loam	moderate	3.91 to 6.15 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 505C--Debs silt loam, 8 to 15 percent slopes

#### Debs

*Extent:* 90 percent of the unit

*Landform(s):* hillslopes on lake plains, hillslopes on moraines

*Slope gradient:* 8 to 15 percent

*Parent material:* glaciolacustrine deposits

*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)* .37

*Land capability, nonirrigated* 3e

*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 3 in	silt loam	moderate	0.57 to 0.76 in	6.1 to 7.3
E -- 3 to 10 in	very fine sandy loam	moderately rapid	1.00 to 1.34 in	6.1 to 7.3
Bt1,Bt2 -- 10 to 26 in	silty clay loam	moderate	2.58 to 3.55 in	6.1 to 7.3
BcK -- 26 to 60 in	silt loam	moderate	4.74 to 7.45 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 505E--Debs silt loam, 15 to 30 percent slopes

#### Debs

*Extent:* 90 percent of the unit

*Landform(s):* hillslopes on lake plains, hillslopes on moraines

*Slope gradient:* 15 to 30 percent

*Parent material:* glaciolacustrine deposits

*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)* .37

*Land capability, nonirrigated* 6e

*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 2 in	silt loam	moderate	0.35 to 0.47 in	6.1 to 7.3
E -- 2 to 9 in	very fine sandy loam	moderately rapid	1.06 to 1.42 in	6.1 to 7.3
Bt1,Bt2 -- 9 to 25 in	silty clay loam	moderate	2.58 to 3.55 in	6.1 to 7.3
BcK -- 25 to 60 in	silt loam	moderate	4.85 to 7.62 in	7.4 to 8.4

### 540--Seelyeville muck

#### Seelyeville

*Extent:* 90 percent of the unit

*Landform(s):* bogs on lake plains, depressions on lake plains, bogs on moraines, depressions on moraines

*Slope gradient:* 0 to 1 percent

*Parent material:* organic materials

*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* 6w

*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>
Oa1 -- 0 to 16 in	muck	moderately rapid	5.65 to 7.26 in	
Oa2,Oa3 -- 16 to 60 in	muck	moderately rapid	15.30 to 19.67 in	

## Map Unit Description (MN)

Clearwater County, Minnesota

### 543--Markey muck

#### Markey

*Extent:* 90 percent of the unit

*Landform(s):* bogs on lake plains, depressions on lake plains, bogs on moraines, depressions on moraines, bogs on outwash plains, depressions on outwash plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic over glaciolacustrine

*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* 6w

*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>
Oa1,Oa2 -- 0 to 23 in	muck	moderately rapid	7.99 to 10.28 in	
A,Cg1,Cg2 -- 23 to 60 in	fine sand	rapid	1.11 to 2.96 in	

## Map Unit Description (MN)

Clearwater County, Minnesota

### 544--Cathro muck

#### Cathro

*Extent:* 90 percent of the unit

*Landform(s):* bogs on lake plains, depressions on lake plains,  
bogs on moraines, depressions on moraines

*Slope gradient:* 0 to 1 percent

*Parent material:* organic over till

*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* 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>
Oa1 -- 0 to 20 in	muck	moderately rapid	9.04 to 11.04 in	
Oa2 -- 20 to 34 in	muck	moderately rapid	4.82 to 6.20 in	
A,Cg -- 34 to 60 in	loam	moderate	2.86 to 5.72 in	

## Map Unit Description (MN)

Clearwater County, Minnesota

### 547--Deerwood muck

#### Deerwood

*Extent:* 90 percent of the unit

*Landform(s):* depressions on lake plains, depressions on lake plains, depressions on lake plains, depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic and glaciolacustrine

*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* 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>
Oa --	0 to 14 in	muck		moderately rapid	4.96 to 6.38 in	5.6 to 7.8
A --	14 to 20 in	loamy sand		rapid	0.53 to 1.00 in	6.1 to 8.4
Cg1,Cg2 --	20 to 60 in	sand		rapid	0.80 to 2.78 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 561--Bullwinkle muck

#### Bullwinkle

*Extent:* 90 percent of the unit

*Landform(s):* bogs on lake plains, depressions on lake plains,  
bogs on moraines, depressions on moraines

*Slope gradient:* 0 to 1 percent

*Parent material:* organic over glaciolacustrine

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

*Flooding:* none

*Ponding:* none

*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* 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>
Oa1	--	0 to 10 in	muck	moderately rapid	3.44 to 4.72 in	
Oa2	--	10 to 38 in	muck	moderately rapid	9.92 to 13.61 in	
A	--	38 to 43 in	loam	moderate	0.66 to 0.85 in	
Cg	--	43 to 60 in	loam	moderate	1.86 to 3.05 in	

## Map Unit Description (MN)

Clearwater County, Minnesota

### 563--Northwood muck

#### Northwood

*Extent:* 90 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic and glaciolacustrine

*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* 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>
Oa -- 0 to 12 in	muck	moderately rapid	4.13 to 5.31 in	5.1 to 7.8
A -- 12 to 16 in	fine sandy loam	rapid	0.39 to 0.74 in	5.6 to 7.8
Bg -- 16 to 24 in	fine sand	rapid	0.47 to 0.87 in	5.6 to 8.4
2BCkg1,2Cg2 - -	loam	moderate	5.02 to 6.81 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 564--Friendship loamy sand

#### Friendship

*Extent:* 90 percent of the unit

*Landform(s):* flats on outwash plains, rises on outwash plains

*Slope gradient:* 0 to 3 percent

*Parent material:* outwash

*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)* .10

*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>
A -- 0 to 4 in	loamy sand	rapid	0.31 to 0.47 in	4.5 to 7.3
Bw1 -- 4 to 22 in	sand	rapid	0.91 to 1.99 in	4.5 to 6.5
Bw2 -- 22 to 36 in	sand	rapid	0.69 to 1.10 in	4.5 to 7.3
C -- 36 to 60 in	sand	rapid	0.96 to 1.68 in	5.1 to 7.8

## Map Unit Description (MN)

Clearwater County, Minnesota

### 565--Eckvoll loamy fine sand

#### Eckvoll

*Extent:* 90 percent of the unit

*Landform(s):* flats on lake plains, rises on lake plains, flats on moraines, rises on moraines

*Slope gradient:* 0 to 3 percent

*Parent material:* glaciolacustrine over 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)* .10

*Land capability, nonirrigated* 3s

*Hydric soil:* no

*Hydrologic group:* A

*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	loamy fine sand	rapid	0.79 to 0.94 in	6.1 to 7.3
E1,E2	--	8 to 30 in	fine sand	rapid	1.32 to 1.76 in	6.1 to 7.3
2Bt	--	30 to 38 in	sandy clay loam	moderate	1.32 to 1.49 in	6.6 to 7.8
2Bck	--	38 to 60 in	loam	moderate	3.68 to 4.11 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 582--Roliss loam

#### Roliss

*Extent:* 90 percent of the unit

*Landform(s):* flats on lake plains, swales on lake plains, flats on moraines, swales on moraines

*Slope gradient:* 0 to 1 percent

*Parent material:* 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):* 4L

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .24

*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,A -- 0 to 12 in	loam	moderate	2.01 to 2.83 in	6.6 to 7.8
Bg -- 12 to 19 in	loam	moderate	1.06 to 1.35 in	7.4 to 8.4
BCkg1 -- 19 to 31 in	loam	moderate	1.83 to 2.32 in	7.4 to 8.4
BCkg2 -- 31 to 60 in	loam	moderate	4.31 to 5.46 in	7.4 to 8.4

### 607--Pengilly very fine sandy loam, frequently flooded

#### Pengilly, frequently flooded

*Extent:* 90 percent of the unit

*Landform(s):* flats on flood plains, swales on flood plains

*Slope gradient:* 0 to 1 percent

*Parent material:* alluvium

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

*Flooding:* frequent

*Ponding:* none

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .37

*Land capability, nonirrigated* 7w

*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>
A -- 0 to 3 in	very fine sandy loam	moderately rapid	0.41 to 0.69 in	5.6 to 7.8
Cg1..Cg5 -- 3 to 60 in	stratified loamy very fine sand to silt loam	moderate	6.80 to 11.34 in	6.1 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 621--Morph fine sandy loam

#### Morph

*Extent:* 85 percent of the unit

*Landform(s):* flats on lake plains, swales on lake plains, flats on moraines, swales on moraines

*Slope gradient:* 0 to 2 percent

*Parent material:* glaciolacustrine 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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 4w

*Hydric soil:* yes

*Hydrologic group:* B/D

*Potential for frost action:* high

#### Representative soil profile:

		Texture	Permeability	Available water capacity	pH
A --	0 to 4 in	fine sandy loam	moderately rapid	0.51 to 0.87 in	5.1 to 6.5
Eg --	4 to 13 in	very fine sandy loam	moderate	1.00 to 1.72 in	5.1 to 6.5
B/E..Btg2 --	13 to 35 in	loam	moderate	2.43 to 4.19 in	5.1 to 7.3
Cg --	35 to 60 in	stratified loamy sand to silty clay loam	moderate	2.73 to 4.71 in	6.6 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 627--Tawas muck

#### Tawas

*Extent:* 90 percent of the unit

*Landform(s):* bogs on lake plains, depressions on lake plains, bogs on outwash plains, depressions on outwash plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic over outwash

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

*Flooding:* none

*Ponding:* none

*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* 6w

*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>
Oa1 -- 0 to 10 in	muck	moderately rapid	3.44 to 4.43 in	
Oa2 -- 10 to 30 in	muck	moderately rapid	7.03 to 9.04 in	
A,Cg -- 30 to 60 in	sand	rapid	0.90 to 2.99 in	

### 650--Reiner fine sandy loam

#### Reiner

*Extent:* 90 percent of the unit

*Landform(s):* flats on lake plains, rises on lake plains

*Slope gradient:* 0 to 3 percent

*Parent material:* 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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 1

*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 7 in	fine sandy loam	moderately rapid	1.13 to 1.28 in	6.6 to 7.3
B/E,Bt -- 7 to 17 in	clay loam	moderate	1.48 to 1.87 in	6.6 to 7.3
BcK1,BcK2 -- 17 to 60 in	loam	moderate	6.01 to 8.15 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 672--Willosippi loam

#### Willosippi

*Extent:* 90 percent of the unit

*Landform(s):* flats on lake plains, swales on lake plains, flats on moraines, swales on moraines

*Slope gradient:* 0 to 2 percent

*Parent material:* glaciolacustrine 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):* 5

*Wind erodibility index (WEI):* 56

*Kw factor (surface layer)* .28

*Land capability, nonirrigated* 2w

*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 4 in	loam	moderate	0.79 to 0.94 in	5.1 to 7.3
Eg --	4 to 13 in	fine sandy loam	moderately rapid	1.36 to 1.99 in	5.1 to 7.3
Btg1,Btg2 --	13 to 28 in	stratified loamy sand to silty clay loam	moderately slow	2.24 to 2.84 in	5.6 to 7.8
BCkg1,BCkg2 --	28 to 60 in	stratified loamy sand to silty clay loam	moderately slow	3.83 to 6.06 in	6.6 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 676B--Kost loamy fine sand, 0 to 6 percent slopes

#### Kost

*Extent:* 80 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 0 to 6 percent

*Parent material:* eolian sands and 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)* .24

*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>
A --	0 to 14 in	loamy fine sand	rapid	1.56 to 2.13 in	5.1 to 7.3
Bw --	14 to 33 in	fine sand	rapid	0.94 to 1.70 in	5.1 to 7.3
C --	33 to 60 in	fine sand	rapid	1.34 to 1.87 in	5.6 to 7.3

## Map Unit Description (MN)

Clearwater County, Minnesota

### 702--Bullwinkle-Cathro complex

#### Bullwinkle

*Extent:* 50 percent of the unit

*Landform(s):* bogs on lake plains, bogs on lake plains, depressions on lake plains, bogs on lake plains, bogs on lake plains, depressions on lake plains, bogs on moraines, bogs on moraines, depressions on moraines, bogs on moraines, bogs on moraines, depressions on moraines

*Slope gradient:* 0 to 1 percent

*Parent material:* herbaceous organic material over till

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

*Flooding:* none

*Ponding:* none

*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* 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>
Oa1 -- 0 to 12 in	muck	moderately rapid	4.13 to 5.67 in	
Oa2,Oa3 -- 12 to 34 in	muck	moderately rapid	7.72 to 10.58 in	
A -- 34 to 40 in	loam	moderate	0.88 to 1.13 in	
Cg -- 40 to 60 in	loam	moderate	2.17 to 3.54 in	

#### Cathro

*Extent:* 40 percent of the unit

*Landform(s):* depressions, bogs on lake plains, bogs on moraines

*Slope gradient:* 0 to 1 percent

*Parent material:* herbaceous organic material over till

*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* 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>
Oa1,Oa2 -- 0 to 20 in	muck	moderately rapid	9.04 to 11.04 in	
A,Cg -- 20 to 60 in	loam	moderate	4.37 to 7.56 in	

## Map Unit Description (MN)

Clearwater County, Minnesota

### 702--Bullwinkle-Cathro complex

### 709B--Lengby fine sandy loam, 2 to 8 percent slopes

#### Lengby

*Extent:* 90 percent of the unit

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

*Slope gradient:* 2 to 8 percent

*Parent material:* glaciolacustrine deposits

*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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .28

*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 3 in	fine sandy loam	moderately rapid	0.38 to 0.57 in	6.1 to 7.3
E --	3 to 11 in	loamy fine sand	rapid	0.63 to 0.94 in	5.6 to 7.3
B/E,Bt1,Bt2 --	11 to 26 in	sandy clay loam	moderate	2.24 to 2.84 in	6.1 to 7.3
Bck1..Bck3 --	26 to 48 in	stratified coarse sand to silt loam	moderately rapid	1.76 to 3.53 in	7.4 to 8.4
C --	48 to 60 in	stratified sand to loamy very fine sand	rapid	0.71 to 1.42 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 709C--Lengby fine sandy loam, 8 to 15 percent slopes

#### Lengby

*Extent:* 90 percent of the unit

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

*Slope gradient:* 8 to 15 percent

*Parent material:* glaciolacustrine deposits

*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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .28

*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>
A --	0 to 3 in	fine sandy loam	moderately rapid	0.38 to 0.57 in	6.1 to 7.3
E --	3 to 15 in	loamy fine sand	rapid	0.94 to 1.42 in	5.6 to 7.3
B/E, Bt1, Bt2 --	15 to 29 in	sandy clay loam	moderate	2.13 to 2.69 in	6.1 to 7.3
Bck1..Bck3 --	29 to 42 in	stratified coarse sand to silt loam	moderately rapid	1.04 to 2.08 in	7.4 to 8.4
C --	42 to 60 in	stratified sand to loamy very fine sand	rapid	1.06 to 2.13 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 709E--Lengby fine sandy loam, 15 to 30 percent slopes

#### Lengby

*Extent:* 90 percent of the unit

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

*Slope gradient:* 15 to 30 percent

*Parent material:* glaciolacustrine deposits

*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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .28

*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	fine sandy loam	moderately rapid	0.38 to 0.57 in	6.1 to 7.3
E --	3 to 12 in	loamy fine sand	rapid	0.69 to 1.04 in	5.6 to 7.3
B/E, Bt1, Bt2 --	12 to 32 in	sandy clay loam	moderate	3.01 to 3.81 in	6.1 to 7.3
Bck1..Bck3 --	32 to 40 in	stratified coarse sand to silt loam	moderately rapid	0.66 to 1.32 in	7.4 to 8.4
C --	40 to 60 in	stratified sand to loamy very fine sand	rapid	1.18 to 2.36 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 712--Rosewood fine sandy loam

#### Rosewood

*Extent:* 90 percent of the unit

*Landform(s):* flats on lake plains, swales on lake plains

*Slope gradient:* 0 to 2 percent

*Parent material:* glaciolacustrine deposits

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

*Flooding:* none

*Ponding:* none

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 2

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .15

*Land capability, nonirrigated* 3w

*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	fine sandy loam	moderately rapid	1.02 to 1.42 in	7.4 to 8.4
Bkg -- 8 to 17 in	fine sandy loam	moderately rapid	1.00 to 1.36 in	7.4 to 8.4
Cg1,Cg2 -- 17 to 60 in	sand	rapid	2.15 to 3.43 in	7.4 to 8.4

### 713--Linveldt fine sandy loam

#### Linveldt

*Extent:* 90 percent of the unit

*Landform(s):* flats on lake plains, rises on lake plains

*Slope gradient:* 0 to 3 percent

*Parent material:* glaciolacustrine and 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):* 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:* 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	fine sandy loam	moderately rapid	1.18 to 1.63 in	6.6 to 7.8
Bt1 -- 9 to 16 in	sandy loam	moderately rapid	0.85 to 1.28 in	6.6 to 7.8
Bw2 -- 16 to 28 in	loamy sand	rapid	0.71 to 1.30 in	7.4 to 8.4
2BCK -- 28 to 60 in	loam	moderate	4.46 to 6.06 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 718B--Naytahwaush loam, 2 to 8 percent slopes

#### Naytahwaush

*Extent:* 90 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 2 to 8 percent

*Parent material:* 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):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .24

*Land capability, nonirrigated* 2e

*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 3 in	loam	moderate	0.63 to 0.76 in	5.6 to 7.3
E -- 3 to 9 in	fine sandy loam	moderate	0.94 to 1.42 in	5.6 to 7.3
Bt1,Bt2 -- 9 to 25 in	clay	slow	1.61 to 3.07 in	6.1 to 7.8
Bck1,Bck2 -- 25 to 60 in	clay loam	moderately slow	4.85 to 6.58 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 718C--Naytahwaush loam, 8 to 15 percent slopes

#### Naytahwaush

*Extent:* 90 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 8 to 15 percent

*Parent material:* 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):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .24

*Land capability, nonirrigated* 3e

*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 3 in	loam	moderate	0.63 to 0.76 in	5.6 to 7.3
E -- 3 to 9 in	fine sandy loam	moderate	0.94 to 1.42 in	5.6 to 7.3
Bt1,Bt2 -- 9 to 26 in	clay	slow	1.69 to 3.22 in	6.1 to 7.8
Bck1,Bck2 -- 26 to 60 in	clay loam	moderately slow	4.74 to 6.43 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 718E--Naytahwaush loam, 15 to 30 percent slopes

#### Naytahwaush

*Extent:* 90 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 15 to 30 percent

*Parent material:* 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):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .24

*Land capability, nonirrigated* 6e

*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 3 in	loam	moderate	0.63 to 0.76 in	5.6 to 7.3
E -- 3 to 8 in	fine sandy loam	moderate	0.76 to 1.13 in	5.6 to 7.3
Bt1,Bt2 -- 8 to 24 in	clay	slow	1.61 to 3.07 in	6.1 to 7.8
Bck1,Bck2 -- 24 to 60 in	clay loam	moderately slow	5.02 to 6.81 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 733--Berner muck

#### Berner

*Extent:* 90 percent of the unit

*Landform(s):* bogs on lake plains, depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic over glaciolacustrine

*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* 6w

*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>
Oa1,Oa2 -- 0 to 28 in	muck	moderately rapid	9.78 to 13.42 in	
A -- 28 to 31 in	sandy loam	moderately rapid	0.31 to 0.54 in	
Bg -- 31 to 44 in	sand	rapid	0.65 to 1.30 in	
2BCkg -- 44 to 60 in	loam	moderate	2.20 to 3.46 in	

## Map Unit Description (MN)

Clearwater County, Minnesota

### 737--Mahkonce loam

#### Mahkonce

*Extent:* 90 percent of the unit

*Landform(s):* flats on moraines, rises on moraines

*Slope gradient:* 1 to 3 percent

*Parent material:* 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):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .24

*Land capability, nonirrigated* 2s

*Hydric soil:* no

*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 4 in	loam	moderately slow	0.67 to 0.87 in	5.6 to 7.3
E -- 4 to 9 in	fine sandy loam	moderately slow	0.82 to 1.13 in	5.6 to 7.3
Bt1,Bt2 -- 9 to 26 in	clay	slow	2.20 to 3.22 in	6.1 to 7.3
Bck1,Bck2 -- 26 to 60 in	clay loam	moderately slow	4.40 to 6.43 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 746--Haslie muck

#### Haslie

*Extent:* 90 percent of the unit

*Landform(s):* depressions on flood plains, depressions on moraines

*Slope gradient:* 0 to 1 percent

*Parent material:* organic over coprogenous earth

*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* 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>
Oa1 --	0 to 15 in	muck	moderately rapid	5.24 to 7.18 in	
Oa2 --	15 to 34 in	muck	moderately rapid	6.61 to 9.07 in	
Cg --	34 to 60 in	coprogenous earth	slow	4.68 to 6.24 in	

## Map Unit Description (MN)

Clearwater County, Minnesota

### 765--Smiley loam

#### Smiley

*Extent:* 90 percent of the unit

*Landform(s):* flats on lake plains, swales on lake plains, flats on moraines, swales on moraines

*Slope gradient:* 0 to 2 percent

*Parent material:* 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):* 4L

*Wind erodibility index (WEI):* 86

*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 7 in	loam		moderate	1.42 to 1.70 in	6.6 to 7.8
Btg --	7 to 15 in	clay loam		moderate	1.18 to 1.50 in	6.6 to 8.4
BCkg1,BCkg2 --	15 to 60 in	loam		moderate	6.28 to 8.53 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 767--Auganaush loam

#### Auganaush

*Extent:* 90 percent of the unit

*Landform(s):* flats on moraines, swales on moraines

*Slope gradient:* 0 to 2 percent

*Parent material:* 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* 4w

*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 4 in	loam	moderate	0.79 to 0.94 in	5.6 to 7.3
E -- 4 to 9 in	fine sandy loam	moderate	0.82 to 1.23 in	5.6 to 7.3
Btg1,Btg2 -- 9 to 25 in	clay	slow	1.61 to 3.07 in	5.6 to 7.3
Bkg1,Bkg2 -- 25 to 60 in	clay loam	moderately slow	4.85 to 6.58 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 775B--Sugarbush-Two Inlets complex, 1 to 8 percent slopes

#### Sugarbush

*Extent:* 55 percent of the unit

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

*Slope gradient:* 1 to 8 percent

*Parent material:* 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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 3s

*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 2 in	sandy loam	moderately rapid	0.26 to 0.30 in	5.6 to 7.3
E --	2 to 14 in	loamy coarse sand	rapid	1.10 to 1.34 in	5.6 to 7.3
Bt --	14 to 26 in	coarse sandy loam	moderately rapid	1.42 to 1.77 in	5.6 to 7.3
2BCK --	26 to 60 in	gravelly coarse sand	very rapid	0.68 to 2.03 in	7.4 to 8.4

#### Two Inlets

*Extent:* 35 percent of the unit

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

*Slope gradient:* 1 to 8 percent

*Parent material:* outwash

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

*Flooding:* none

*Ponding:* none

*Drainage class:* somewhat excessively drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .10

*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>
A --	0 to 3 in	loamy sand	rapid	0.31 to 0.38 in	5.6 to 7.3
E --	3 to 15 in	loamy coarse sand	rapid	1.06 to 1.30 in	5.6 to 7.3
E&Bt,Bt --	15 to 30 in	gravelly loamy coarse sand	rapid	1.35 to 1.65 in	6.1 to 7.3
BCK --	30 to 60 in	gravelly coarse sand	very rapid	0.60 to 1.20 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 775C--Sugarbush-Two Inlets complex, 8 to 15 percent slopes

#### Sugarbush

*Extent:* 50 percent of the unit  
*Landform(s):* hillslopes on moraines, hillslopes on outwash plains  
*Slope gradient:* 8 to 15 percent  
*Parent material:* 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):* 3  
*Wind erodibility index (WEI):* 86  
*Kw factor (surface layer)* .20  
*Land capability, nonirrigated* 4e  
*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 2 in	sandy loam	moderately rapid	0.26 to 0.30 in	5.6 to 7.3
E -- 2 to 14 in	loamy coarse sand	rapid	1.10 to 1.34 in	5.6 to 7.3
Bt -- 14 to 27 in	coarse sandy loam	moderately rapid	1.56 to 1.95 in	5.6 to 7.3
2BCK -- 27 to 60 in	gravelly coarse sand	very rapid	0.65 to 1.96 in	7.4 to 8.4

#### Two Inlets

*Extent:* 40 percent of the unit  
*Landform(s):* hillslopes on moraines, hillslopes on outwash plains  
*Slope gradient:* 8 to 15 percent  
*Parent material:* outwash  
*Restrictive feature(s):* greater than 60 inches  
*Flooding:* none  
*Ponding:* none  
*Drainage class:* somewhat excessively drained

*Soil loss tolerance (T factor):* 5  
*Wind erodibility group (WEG):* 2  
*Wind erodibility index (WEI):* 134  
*Kw factor (surface layer)* .10  
*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>
A -- 0 to 3 in	loamy sand	rapid	0.31 to 0.38 in	5.6 to 7.3
E -- 3 to 12 in	loamy coarse sand	rapid	0.78 to 0.95 in	5.6 to 7.3
E&Bt,Bt -- 12 to 32 in	gravelly loamy coarse sand	rapid	1.81 to 2.21 in	6.1 to 7.3
BCK -- 32 to 60 in	gravelly coarse sand	very rapid	0.56 to 1.12 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 776B--Snellman-Sugarbush complex, 2 to 8 percent slopes

#### Snellman

*Extent:* 60 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 2 to 8 percent

*Parent material:* 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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*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 4 in	sandy loam	moderately rapid	0.51 to 0.71 in	5.1 to 6.5
E -- 4 to 17 in	loamy sand	moderate	1.17 to 1.82 in	5.1 to 6.5
B/E,Bt1,Bt2 -- 17 to 38 in	sandy clay loam	moderate	2.55 to 3.83 in	5.6 to 7.3
BCK -- 38 to 60 in	fine sandy loam	moderate	2.38 to 3.46 in	7.4 to 8.4

#### Sugarbush

*Extent:* 30 percent of the unit

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

*Slope gradient:* 2 to 8 percent

*Parent material:* 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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 3s

*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	sandy loam	moderately rapid	0.41 to 0.47 in	5.6 to 7.3
E -- 3 to 12 in	loamy coarse sand	rapid	0.78 to 0.95 in	5.6 to 7.3
Bt -- 12 to 25 in	coarse sandy loam	moderately rapid	1.61 to 2.01 in	5.6 to 7.3
2BCK -- 25 to 60 in	gravelly coarse sand	very rapid	0.69 to 2.08 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 776C--Snellman-Sugarbush complex, 8 to 15 percent slopes

#### Snellman

*Extent:* 60 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 8 to 15 percent

*Parent material:* 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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*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>
A -- 0 to 4 in	sandy loam	moderately rapid	0.51 to 0.71 in	5.1 to 6.5
E -- 4 to 12 in	loamy sand	moderate	0.71 to 1.10 in	5.1 to 6.5
B/E,Bt1,Bt2 -- 12 to 32 in	sandy clay loam	moderate	2.41 to 3.61 in	5.6 to 7.3
BCK -- 32 to 60 in	fine sandy loam	moderate	3.07 to 4.47 in	7.4 to 8.4

#### Sugarbush

*Extent:* 30 percent of the unit

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

*Slope gradient:* 8 to 15 percent

*Parent material:* 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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 4e

*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	sandy loam	moderately rapid	0.51 to 0.59 in	5.6 to 7.3
E -- 4 to 17 in	loamy coarse sand	rapid	1.17 to 1.43 in	5.6 to 7.3
Bt -- 17 to 30 in	coarse sandy loam	moderately rapid	1.56 to 1.95 in	5.6 to 7.3
2BCK -- 30 to 60 in	gravelly coarse sand	very rapid	0.60 to 1.80 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 776E--Snellman-Sugarbush complex, 15 to 30 percent slopes

#### Snellman

*Extent:* 55 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 15 to 30 percent

*Parent material:* 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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*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	sandy loam	moderately rapid	0.41 to 0.57 in	5.1 to 6.5
E -- 3 to 16 in	loamy sand	moderate	1.17 to 1.82 in	5.1 to 6.5
B/E,Bt1,Bt2 -- 16 to 34 in	sandy clay loam	moderate	2.13 to 3.19 in	5.6 to 7.3
BCK -- 34 to 60 in	fine sandy loam	moderate	2.86 to 4.16 in	7.4 to 8.4

#### Sugarbush

*Extent:* 35 percent of the unit

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

*Slope gradient:* 15 to 30 percent

*Parent material:* 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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 6e

*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 2 in	sandy loam	moderately rapid	0.26 to 0.30 in	5.6 to 7.3
E -- 2 to 16 in	loamy coarse sand	rapid	1.28 to 1.56 in	5.6 to 7.3
Bt -- 16 to 29 in	coarse sandy loam	moderately rapid	1.56 to 1.95 in	5.6 to 7.3
2BCK -- 29 to 60 in	gravelly coarse sand	very rapid	0.61 to 1.84 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 776F--Snellman-Sugarbush complex, 30 to 45 percent slopes

#### Snellman

*Extent:* 50 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 30 to 45 percent

*Parent material:* 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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*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 2 in	sandy loam	moderately rapid	0.26 to 0.35 in	5.1 to 6.5
E -- 2 to 12 in	loamy sand	moderate	0.89 to 1.38 in	5.1 to 6.5
B/E,Bt1,Bt2 -- 12 to 28 in	sandy clay loam	moderate	1.94 to 2.91 in	5.6 to 7.3
BCK -- 28 to 60 in	fine sandy loam	moderate	3.51 to 5.10 in	7.4 to 8.4

#### Sugarbush

*Extent:* 40 percent of the unit

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

*Slope gradient:* 30 to 45 percent

*Parent material:* 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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 6e

*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 2 in	sandy loam	moderately rapid	0.26 to 0.30 in	5.6 to 7.3
E -- 2 to 14 in	loamy coarse sand	rapid	1.10 to 1.34 in	5.6 to 7.3
Bt -- 14 to 26 in	coarse sandy loam	moderately rapid	1.42 to 1.77 in	5.6 to 7.3
2BCK -- 26 to 60 in	gravelly coarse sand	very rapid	0.68 to 2.03 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 797--Mooselake and Lupton soils

#### Mooselake

*Extent:* 45 percent of the unit

*Landform(s):* bogs on lake plains, depressions on lake plains,  
bogs on moraines, depressions on moraines

*Slope gradient:* 0 to 1 percent

*Parent material:* organic

*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* 6w

*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 15 in	muck	moderately rapid	5.24 to 8.23 in	
Oe1,Oe2 -- 15 to 60 in	mucky peat	moderately rapid	17.95 to 22.44 in	

#### Lupton

*Extent:* 45 percent of the unit

*Landform(s):* bogs on lake plains, depressions on lake plains,  
bogs on moraines, depressions on moraines

*Slope gradient:* 0 to 1 percent

*Parent material:* organic

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

*Flooding:* none

*Ponding:* none

*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>
Oa1 -- 0 to 14 in	muck	moderately rapid	4.96 to 6.38 in	
Oa2,Oa3 -- 14 to 60 in	muck	moderately rapid	15.98 to 20.55 in	

## Map Unit Description (MN)

Clearwater County, Minnesota

### 799--Seelyeville and Bowstring soils, frequently flooded

#### Seelyeville, frequently flooded

<p><i>Extent:</i> 45 percent of the unit</p> <p><i>Landform(s):</i> depressions on flood plains</p> <p><i>Slope gradient:</i> 0 to 1 percent</p> <p><i>Parent material:</i> organic</p> <p><i>Restrictive feature(s):</i> greater than 60 inches</p> <p><i>Flooding:</i> frequent</p> <p><i>Ponding:</i> frequent</p> <p><i>Drainage class:</i> very poorly drained</p>	<p><i>Soil loss tolerance (T factor):</i> 2</p> <p><i>Wind erodibility group (WEG):</i> 2</p> <p><i>Wind erodibility index (WEI):</i> 134</p> <p><i>Kw factor (surface layer)</i> .02</p> <p><i>Land capability, nonirrigated</i> 6w</p> <p><i>Hydric soil:</i> yes</p> <p><i>Hydrologic group:</i> A/D</p> <p><i>Potential for 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 10 in	muck	moderately rapid	3.44 to 4.43 in	
Oa2,Oa3 -- 10 to 60 in	muck	moderately rapid	17.50 to 22.50 in	

#### Bowstring, frequently flooded

<p><i>Extent:</i> 45 percent of the unit</p> <p><i>Landform(s):</i> depressions on flood plains</p> <p><i>Slope gradient:</i> 0 to 1 percent</p> <p><i>Parent material:</i> organic and alluvium</p> <p><i>Restrictive feature(s):</i> greater than 60 inches</p> <p><i>Flooding:</i> frequent</p> <p><i>Ponding:</i> frequent</p> <p><i>Drainage class:</i> very poorly drained</p>	<p><i>Soil loss tolerance (T factor):</i> 1</p> <p><i>Wind erodibility group (WEG):</i> 2</p> <p><i>Wind erodibility index (WEI):</i> 134</p> <p><i>Kw factor (surface layer)</i> .02</p> <p><i>Land capability, nonirrigated</i> 6w</p> <p><i>Hydric soil:</i> yes</p> <p><i>Hydrologic group:</i> A/D</p> <p><i>Potential for 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 32 in	muck	moderately rapid	11.16 to 14.35 in	
C -- 32 to 36 in	stratified sand to fine sandy loam	rapid	0.31 to 0.55 in	
O'a -- 36 to 60 in	muck	moderately rapid	8.41 to 10.81 in	

## Map Unit Description (MN)

Clearwater County, Minnesota

### 867B--Graycalm-Menahga complex, 1 to 8 percent slopes

#### Graycalm

*Extent:* 60 percent of the unit

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

*Slope gradient:* 1 to 8 percent

*Parent material:* outwash

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

*Flooding:* none

*Ponding:* none

*Drainage class:* somewhat 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>
A --	0 to 3 in	loamy sand	rapid	0.19 to 0.38 in	4.5 to 6.5
Bw --	3 to 32 in	sand	rapid	1.44 to 2.87 in	4.5 to 7.3
E,E&Bt --	32 to 42 in	sand	rapid	0.41 to 0.92 in	4.5 to 7.3
C --	42 to 60 in	sand	rapid	0.71 to 1.06 in	5.6 to 8.4

#### Menahga

*Extent:* 30 percent of the unit

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

*Slope gradient:* 1 to 8 percent

*Parent material:* 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)* .10

*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>
A --	0 to 3 in	loamy sand	rapid	0.31 to 0.38 in	4.5 to 6.5
Bw --	3 to 24 in	sand	rapid	1.04 to 1.46 in	4.5 to 6.5
C1,C2 --	24 to 60 in	sand	rapid	1.79 to 2.51 in	5.6 to 7.8

## Map Unit Description (MN)

Clearwater County, Minnesota

### 867C--Graycalm-Menahga complex, 8 to 15 percent slopes

#### Graycalm

*Extent:* 60 percent of the unit

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

*Slope gradient:* 8 to 15 percent

*Parent material:* outwash

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

*Flooding:* none

*Ponding:* none

*Drainage class:* somewhat 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 3 in	loamy sand	rapid	0.19 to 0.38 in	4.5 to 6.5
Bw --	3 to 28 in	sand	rapid	1.24 to 2.48 in	4.5 to 7.3
E,E&Bt --	28 to 55 in	sand	rapid	1.09 to 2.44 in	4.5 to 7.3
C --	55 to 60 in	sand	rapid	0.19 to 0.28 in	5.6 to 8.4

#### Menahga

*Extent:* 30 percent of the unit

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

*Slope gradient:* 8 to 15 percent

*Parent material:* 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)* .10

*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>
A --	0 to 3 in	loamy sand	rapid	0.31 to 0.38 in	4.5 to 6.5
Bw --	3 to 28 in	sand	rapid	1.24 to 1.74 in	4.5 to 6.5
C1,C2 --	28 to 60 in	sand	rapid	1.59 to 2.23 in	5.6 to 7.8

## Map Unit Description (MN)

Clearwater County, Minnesota

### 867E--Graycalm-Menahga complex, 15 to 30 percent slopes

#### Graycalm

*Extent:* 60 percent of the unit

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

*Slope gradient:* 15 to 30 percent

*Parent material:* outwash

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

*Flooding:* none

*Ponding:* none

*Drainage class:* somewhat 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	0.19 to 0.38 in	4.5 to 6.5
Bw --	3 to 26 in	sand	rapid	1.14 to 2.28 in	4.5 to 7.3
E,E&Bt --	26 to 42 in	sand	rapid	0.65 to 1.45 in	4.5 to 7.3
C --	42 to 60 in	sand	rapid	0.71 to 1.06 in	5.6 to 8.4

#### Menahga

*Extent:* 30 percent of the unit

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

*Slope gradient:* 15 to 30 percent

*Parent material:* 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)* .10

*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	4.5 to 6.5
Bw --	3 to 30 in	sand	rapid	1.34 to 1.87 in	4.5 to 6.5
C1,C2 --	30 to 60 in	sand	rapid	1.50 to 2.09 in	5.6 to 7.8

## Map Unit Description (MN)

Clearwater County, Minnesota

### 1033--Aquic Udipsamments-Aquents complex (lake beaches, sandy)

#### Aquic Udipsamments

*Extent:* 60 percent of the unit

*Landform(s):* beaches

*Slope gradient:* 1 to 3 percent

*Parent material:* sandy glaciolacustrine 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):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .24

*Land capability, nonirrigated* 3w

*Hydric soil:* no

*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>
A -- 0 to 3 in	loamy fine sand	rapid	0.25 to 0.38 in	5.1 to 6.5
E -- 3 to 8 in	fine sand	rapid	0.33 to 0.47 in	5.1 to 6.5
Bw,C -- 8 to 60 in	fine sand	rapid	3.12 to 4.16 in	6.1 to 7.8

#### Aquents

*Extent:* 30 percent of the unit

*Landform(s):* beaches

*Slope gradient:* 0 to 1 percent

*Parent material:* sandy glaciolacustrine 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)* .15

*Land capability, nonirrigated* 4w

*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	loamy fine sand	rapid	0.63 to 0.94 in	6.1 to 7.3
Cg -- 8 to 60 in	fine sand	rapid	3.12 to 5.20 in	6.1 to 7.8

## Map Unit Description (MN)

Clearwater County, Minnesota

### 1057--Fluvaquents, frequently flooded-Hapludalfs complex, 0 to 35 percent slopes

#### Fluvaquents, frequently flooded, loamy

<p><i>Extent:</i> 35 to 65 percent of the unit</p> <p><i>Landform(s):</i> flats on flood plains</p> <p><i>Slope gradient:</i> 0 to 1 percent</p> <p><i>Parent material:</i> alluvium</p> <p><i>Restrictive feature(s):</i> greater than 60 inches</p> <p><i>Flooding:</i> frequent</p> <p><i>Ponding:</i> none</p> <p><i>Drainage class:</i> very poorly drained</p>	<p><i>Soil loss tolerance (T factor):</i> 5</p> <p><i>Wind erodibility group (WEG):</i> 5</p> <p><i>Wind erodibility index (WEI):</i> 56</p> <p><i>Kw factor (surface layer):</i> .32</p> <p><i>Land capability, nonirrigated:</i> 7w</p> <p><i>Hydric soil:</i> yes</p> <p><i>Hydrologic group:</i> B/D</p> <p><i>Potential for 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>
A -- 0 to 6 in	mucky silt loam	moderate	1.18 to 1.42 in	5.6 to 7.3
Cg -- 6 to 80 in	stratified silt loam to loamy coarse sand	moderately rapid	4.44 to 16.28 in	5.6 to 7.3

#### Hapludalfs

<p><i>Extent:</i> 30 to 55 percent of the unit</p> <p><i>Landform(s):</i> flood plains</p> <p><i>Slope gradient:</i> 15 to 35 percent</p> <p><i>Parent material:</i> till</p> <p><i>Restrictive feature(s):</i> greater than 60 inches</p> <p><i>Flooding:</i> none</p> <p><i>Ponding:</i> none</p> <p><i>Drainage class:</i> moderately well drained</p>	<p><i>Soil loss tolerance (T factor):</i> 5</p> <p><i>Wind erodibility group (WEG):</i> 5</p> <p><i>Wind erodibility index (WEI):</i> 56</p> <p><i>Kw factor (surface layer):</i> .28</p> <p><i>Land capability, nonirrigated:</i> 6e</p> <p><i>Hydric soil:</i> no</p> <p><i>Hydrologic group:</i> C/D</p> <p><i>Potential for frost action:</i> moderate</p>
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<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	5.1 to 7.3
E -- 4 to 7 in	silt loam	moderate	0.47 to 0.69 in	5.1 to 7.3
B/E -- 7 to 11 in	silty clay loam	slow	0.55 to 0.75 in	5.1 to 7.3
Bt -- 11 to 39 in	silty clay	slow	2.80 to 5.03 in	5.1 to 7.3
BC -- 39 to 80 in	clay loam	moderately slow	5.73 to 7.37 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 1113--Haslie, Seelyeville, and Cathro soils, ponded

#### Haslie, ponded

*Extent:* 30 percent of the unit

*Landform(s):* depressions on depressions on flood plains, depressions on flood plains, depressions on lake plains, depressions on lake plains, depressions on moraines, depressions on moraines, depressions on depressions on moraines, depressions on moraines, depressions on moraines, depressions on outwash plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic over coprogenous earth

*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):* 8

*Wind erodibility index (WEI):* 0

*Kw factor (surface layer)* .02

*Land capability, nonirrigated* 8w

*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>
Oa1 -- 0 to 10 in	muck	moderately rapid	3.44 to 4.72 in	
Oa2 -- 10 to 28 in	muck	moderately rapid	6.34 to 8.69 in	
Cg -- 28 to 60 in	coprogenous earth	slow	5.74 to 7.65 in	

#### Seelyeville, ponded

*Extent:* 30 percent of the unit

*Landform(s):* depressions on lake plains, depressions on moraines, depressions on outwash plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic

*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):* 8

*Wind erodibility index (WEI):* 0

*Kw factor (surface layer)* .02

*Land capability, nonirrigated* 8w

*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>
Oa1 -- 0 to 15 in	muck	moderately rapid	5.24 to 6.73 in	
Oa2,Oa3 -- 15 to 60 in	muck	moderately rapid	15.71 to 20.20 in	

## Map Unit Description (MN)

Clearwater County, Minnesota

### 1113--Haslie, Seelyeville, and Cathro soils, ponded

#### Cathro, ponded

*Extent:* 30 percent of the unit

*Landform(s):* depressions on lake plains, depressions on moraines, depressions on outwash plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic and till

*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):* 8

*Wind erodibility index (WEI):* 0

*Kw factor (surface layer)* .02

*Land capability, nonirrigated* 8w

*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>
Oa1	--	0 to 12 in	muck	moderately rapid	5.31 to 6.50 in	
Oa2	--	12 to 30 in	muck	moderately rapid	6.34 to 8.15 in	
A,Cg	--	30 to 60 in	clay loam	moderate	3.29 to 6.58 in	

## Map Unit Description (MN)

Clearwater County, Minnesota

### 1147--Fordum, Fairdale, and Lamoure soils, frequently flooded

#### Fordum, frequently flooded

*Extent:* 30 percent of the unit

*Landform(s):* flats on flood plains, swales 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):* 3

*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>
A -- 0 to 6 in	silt loam	moderate	1.00 to 1.42 in	4.5 to 8.4
Cg1..Cg3 -- 6 to 30 in	very fine sandy loam	moderately rapid	2.40 to 5.28 in	4.5 to 8.4
Cg4..Cg6 -- 30 to 60 in	sand	rapid	1.20 to 2.99 in	5.6 to 8.4

#### Fairdale, frequently flooded

*Extent:* 30 percent of the unit

*Landform(s):* flats on flood plains, rises on flood plains

*Slope gradient:* 0 to 3 percent

*Parent material:* alluvium

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

*Flooding:* frequent

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .32

*Land capability, nonirrigated* 6w

*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 8 in	silt loam	moderate	1.57 to 1.89 in	7.4 to 7.8
C1..C6 -- 8 to 60 in	stratified very fine sandy loam to silty clay loam	moderate	8.83 to 11.95 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 1147--Fordum, Fairdale, and Lamoure soils, frequently flooded

#### Lamoure, frequently flooded

*Extent:* 30 percent of the unit

*Landform(s):* flats on flood plains, swales on flood plains

*Slope gradient:* 0 to 1 percent

*Parent material:* alluvium

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

*Flooding:* frequent

*Ponding:* none

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 4L

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .32

*Land capability, nonirrigated* 4w

*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 24 in	silt loam	moderate	4.56 to 5.28 in	7.4 to 8.4
Cg1 -- 24 to 38 in	silty clay loam	moderate	2.41 to 2.83 in	7.4 to 8.4
Cg2,Cg3 -- 38 to 50 in	loam	moderate	2.01 to 2.36 in	7.4 to 8.4
Cg4 -- 50 to 60 in	stratified sandy loam to silty clay loam	moderate	0.89 to 1.77 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 1152B--Sugarbush loamy sand, 1 to 8 percent slopes

#### Sugarbush

*Extent:* 90 percent of the unit

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

*Slope gradient:* 1 to 8 percent

*Parent material:* 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)* .10

*Land capability, nonirrigated* 3s

*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	5.6 to 7.3
E --	3 to 14 in	loamy sand	rapid	0.99 to 1.21 in	5.6 to 7.3
Bt --	14 to 22 in	coarse sandy loam	moderately rapid	0.94 to 1.18 in	5.6 to 7.3
2Bck --	22 to 60 in	gravelly sand	very rapid	0.76 to 2.27 in	5.6 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 1152C--Sugarbush loamy sand, 8 to 15 percent slopes

#### Sugarbush

*Extent:* 90 percent of the unit

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

*Slope gradient:* 8 to 15 percent

*Parent material:* 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)* .10

*Land capability, nonirrigated* 4e

*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	5.6 to 7.3
E --	3 to 12 in	loamy sand	rapid	0.78 to 0.95 in	5.6 to 7.3
Bt --	12 to 18 in	coarse sandy loam	moderately rapid	0.76 to 0.94 in	5.6 to 7.3
2Bck --	18 to 60 in	gravelly sand	very rapid	0.83 to 2.50 in	5.6 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 1152E--Sugarbush loamy sand, 15 to 30 percent slopes

#### Sugarbush

*Extent:* 90 percent of the unit

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

*Slope gradient:* 15 to 30 percent

*Parent material:* 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)* .10

*Land capability, nonirrigated* 6e

*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	5.6 to 7.3
E --	3 to 9 in	loamy sand	rapid	0.53 to 0.65 in	5.6 to 7.3
Bt --	9 to 20 in	coarse sandy loam	moderately rapid	1.32 to 1.65 in	5.6 to 7.3
2Bck --	20 to 60 in	gravelly sand	very rapid	0.80 to 2.39 in	5.6 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 1164--Zerkel loam

#### Zerkel

*Extent:* 90 percent of the unit

*Landform(s):* flats on moraines, rises on moraines

*Slope gradient:* 1 to 3 percent

*Parent material:* glaciolacustrine deposits

*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)* .28

*Land capability, nonirrigated* 1

*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	loam	moderate	0.79 to 0.94 in	5.6 to 7.3
E -- 4 to 10 in	very fine sandy loam	rapid	0.59 to 1.30 in	5.6 to 7.3
B/E,Bt1,Bt2 -- 10 to 29 in	loam	moderate	2.89 to 3.67 in	5.6 to 7.3
BcK,C -- 29 to 60 in	stratified fine sand to silt loam	moderately rapid	1.54 to 6.76 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 1166B--Moosecreek fine sandy loam, 2 to 8 percent slopes

#### Moosecreek

*Extent:* 90 percent of the unit

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

*Slope gradient:* 2 to 8 percent

*Parent material:* glaciolacustrine deposits

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

*Flooding:* none

*Ponding:* none

*Drainage class:* well drained

*Soil loss tolerance (T factor):* 3

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .28

*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 6 in	fine sandy loam	moderately rapid	0.77 to 1.30 in	6.1 to 7.3
E --	6 to 9 in	fine sandy loam	moderately rapid	0.31 to 0.38 in	5.6 to 7.3
Bt1,Bt2 --	9 to 21 in	loam	moderate	1.77 to 2.24 in	6.1 to 7.3
2Bk --	21 to 60 in	gravelly coarse sand	rapid	0.78 to 2.73 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 1191--Sahkahtay sandy loam

#### Sahkahtay

*Extent:* 90 percent of the unit

*Landform(s):* flats on beach plains, swales on beach plains

*Slope gradient:* 0 to 2 percent

*Parent material:* beach 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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 4w

*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>
A -- 0 to 4 in	sandy loam	moderately rapid	0.39 to 0.55 in	5.6 to 7.3
E -- 4 to 14 in	sand	rapid	0.51 to 0.82 in	5.6 to 7.3
Btg1,Btg2 -- 14 to 23 in	gravelly sandy clay loam	moderate	1.13 to 1.47 in	6.1 to 7.3
2BCkg -- 23 to 60 in	gravelly coarse sand	very rapid	1.11 to 2.22 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 1200--Egglake loam

#### Egglake

*Extent:* 90 percent of the unit

*Landform(s):* flats on moraines, swales on moraines

*Slope gradient:* 0 to 2 percent

*Parent material:* 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)* .32

*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>
A -- 0 to 4 in	loam	moderately rapid	0.39 to 0.83 in	5.6 to 7.3
E -- 4 to 14 in	fine sandy loam	moderately rapid	1.23 to 1.43 in	5.6 to 7.3
B/E..Btg2 -- 14 to 34 in	loam	moderate	3.15 to 3.54 in	5.6 to 7.3
BCkg -- 34 to 60 in	fine sandy loam	moderate	2.86 to 3.38 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 1238E--Two Inlets-Sugarbush complex, 15 to 30 percent slopes

#### Two Inlets

*Extent:* 55 percent of the unit

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

*Slope gradient:* 15 to 30 percent

*Parent material:* outwash

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

*Flooding:* none

*Ponding:* none

*Drainage class:* somewhat excessively drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .10

*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 3 in	loamy sand	rapid	0.31 to 0.38 in	5.6 to 7.3
E --	3 to 13 in	loamy coarse sand	rapid	0.89 to 1.08 in	5.6 to 7.3
E&Bt, Bt --	13 to 25 in	gravelly loamy coarse sand	rapid	1.10 to 1.34 in	6.1 to 7.3
BcK --	25 to 60 in	gravelly coarse sand	very rapid	0.69 to 1.39 in	7.4 to 8.4

#### Sugarbush

*Extent:* 35 percent of the unit

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

*Slope gradient:* 15 to 30 percent

*Parent material:* 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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 6e

*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	sandy loam	moderately rapid	0.41 to 0.47 in	5.6 to 7.3
E --	3 to 15 in	loamy coarse sand	rapid	1.06 to 1.30 in	5.6 to 7.3
Bt --	15 to 28 in	coarse sandy loam	moderately rapid	1.56 to 1.95 in	5.6 to 7.3
2BcK --	28 to 60 in	gravelly coarse sand	very rapid	0.64 to 1.91 in	5.6 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 1238F--Two Inlets-Sugarbush complex, 30 to 45 percent slopes

#### Two Inlets

*Extent:* 55 percent of the unit

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

*Slope gradient:* 30 to 45 percent

*Parent material:* outwash

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

*Flooding:* none

*Ponding:* none

*Drainage class:* somewhat excessively drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .10

*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	5.6 to 7.3
E -- 3 to 11 in	loamy coarse sand	rapid	0.71 to 0.87 in	5.6 to 7.3
E&Bt,Bt -- 11 to 25 in	gravelly loamy coarse sand	rapid	1.28 to 1.56 in	6.1 to 7.3
BCK -- 25 to 60 in	gravelly coarse sand	very rapid	0.69 to 1.39 in	7.4 to 8.4

#### Sugarbush

*Extent:* 35 percent of the unit

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

*Slope gradient:* 30 to 45 percent

*Parent material:* 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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 6e

*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 2 in	sandy loam	moderately rapid	0.26 to 0.30 in	5.6 to 7.3
E -- 2 to 14 in	loamy coarse sand	rapid	1.10 to 1.34 in	5.6 to 7.3
Bt -- 14 to 29 in	coarse sandy loam	moderately rapid	1.80 to 2.24 in	5.6 to 7.3
2BCK -- 29 to 60 in	gravelly coarse sand	very rapid	0.61 to 1.84 in	5.6 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 1244B--Sol-Sugarbush complex, 2 to 8 percent slopes, very stony

#### Sol, very stony

*Extent:* 65 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 2 to 8 percent

*Parent material:* 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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 6s

*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	sandy loam	moderate	0.47 to 0.79 in	5.1 to 6.0
E -- 4 to 17 in	loamy sand	moderately rapid	1.17 to 1.69 in	5.1 to 6.0
B/E,Bt -- 17 to 43 in	sandy clay loam	moderate	4.16 to 5.20 in	5.6 to 6.5
BcK -- 43 to 60 in	fine sandy loam	moderate	1.86 to 2.71 in	7.4 to 7.8

#### Sugarbush, very stony

*Extent:* 25 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 2 to 8 percent

*Parent material:* 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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*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 3 in	sandy loam	moderately rapid	0.41 to 0.47 in	5.6 to 7.3
E -- 3 to 12 in	loamy coarse sand	rapid	0.78 to 0.95 in	5.6 to 7.3
Bt -- 12 to 25 in	coarse sandy loam	moderately rapid	1.61 to 2.01 in	5.6 to 7.3
2BcK -- 25 to 60 in	gravelly sand	very rapid	0.69 to 2.08 in	5.6 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 1244C--Sol-Sugarbush complex, 8 to 15 percent slopes, very stony

#### Sol, very stony

*Extent:* 60 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 8 to 15 percent

*Parent material:* 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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 6s

*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 2 in	sandy loam	moderate	0.24 to 0.39 in	5.1 to 6.0
E -- 2 to 16 in	loamy sand	moderately rapid	1.28 to 1.84 in	5.1 to 6.0
B/E,Bt -- 16 to 38 in	sandy clay loam	moderate	3.53 to 4.41 in	5.6 to 6.5
BCK -- 38 to 60 in	fine sandy loam	moderate	2.38 to 3.46 in	7.4 to 7.8

#### Sugarbush, very stony

*Extent:* 30 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 8 to 15 percent

*Parent material:* 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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*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 2 in	sandy loam	moderately rapid	0.26 to 0.30 in	5.6 to 7.3
E -- 2 to 18 in	loamy coarse sand	rapid	1.45 to 1.78 in	5.6 to 7.3
Bt -- 18 to 26 in	coarse sandy loam	moderately rapid	0.94 to 1.18 in	5.6 to 7.3
2BCK -- 26 to 60 in	gravelly sand	very rapid	0.68 to 2.03 in	5.6 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 1244E--Sol-Sugarbush complex, 15 to 30 percent slopes, very stony

#### Sol, very stony

*Extent:* 55 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 15 to 30 percent

*Parent material:* 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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 7s

*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 2 in	sandy loam	moderate	0.24 to 0.39 in	5.1 to 6.0
E -- 2 to 19 in	loamy sand	moderately rapid	1.52 to 2.20 in	5.1 to 6.0
B/E,Bt -- 19 to 42 in	sandy clay loam	moderate	3.72 to 4.65 in	5.6 to 6.5
BcK -- 42 to 60 in	fine sandy loam	moderate	1.95 to 2.83 in	7.4 to 7.8

#### Sugarbush, very stony

*Extent:* 35 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 15 to 30 percent

*Parent material:* 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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*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 2 in	sandy loam	moderately rapid	0.26 to 0.30 in	5.6 to 7.3
E -- 2 to 17 in	loamy coarse sand	rapid	1.35 to 1.65 in	5.6 to 7.3
Bt -- 17 to 25 in	coarse sandy loam	moderately rapid	0.99 to 1.24 in	5.6 to 7.3
2BcK -- 25 to 60 in	gravelly sand	very rapid	0.69 to 2.08 in	5.6 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 1244F--Sol-Sugarbush complex, 30 to 45 percent slopes, very stony

#### Sol, very stony

*Extent:* 55 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 30 to 45 percent

*Parent material:* 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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 7s

*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 2 in	sandy loam	moderate	0.24 to 0.39 in	5.1 to 6.0
E -- 2 to 18 in	loamy sand	moderately rapid	1.45 to 2.10 in	5.1 to 6.0
B/E,Bt -- 18 to 46 in	sandy clay loam	moderate	4.47 to 5.59 in	5.6 to 6.5
Bck -- 46 to 60 in	fine sandy loam	moderate	1.52 to 2.20 in	7.4 to 7.8

#### Sugarbush, very stony

*Extent:* 35 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 30 to 45 percent

*Parent material:* 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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*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 2 in	sandy loam	moderately rapid	0.26 to 0.30 in	5.6 to 7.3
E -- 2 to 16 in	loamy coarse sand	rapid	1.28 to 1.56 in	5.6 to 7.3
Bt -- 16 to 24 in	coarse sandy loam	moderately rapid	0.94 to 1.18 in	5.6 to 7.3
2Bck -- 24 to 60 in	gravelly sand	very rapid	0.72 to 2.15 in	5.6 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 1272B--Sol fine sandy loam, 2 to 6 percent slopes

#### Sol

*Extent:* 90 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 2 to 6 percent

*Parent material:* 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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .28

*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 3 in	fine sandy loam	moderate	0.38 to 0.63 in	5.1 to 6.0
E -- 3 to 14 in	fine sandy loam	moderately rapid	0.99 to 1.43 in	5.1 to 6.0
B/E,Bt -- 14 to 38 in	sandy clay loam	moderate	3.84 to 4.80 in	5.6 to 6.5
Bck -- 38 to 60 in	fine sandy loam	moderate	2.38 to 3.46 in	7.4 to 7.8

## Map Unit Description (MN)

Clearwater County, Minnesota

### 1272C--Sol fine sandy loam, 6 to 12 percent slopes

#### Sol

*Extent:* 90 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 6 to 12 percent

*Parent material:* 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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .28

*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>
A -- 0 to 3 in	fine sandy loam	moderate	0.38 to 0.63 in	5.1 to 6.0
E -- 3 to 14 in	fine sandy loam	moderately rapid	0.99 to 1.43 in	5.1 to 6.0
B/E,Bt -- 14 to 40 in	sandy clay loam	moderate	4.16 to 5.20 in	5.6 to 6.5
Bck -- 40 to 60 in	fine sandy loam	moderate	2.17 to 3.15 in	7.4 to 7.8

## Map Unit Description (MN)

Clearwater County, Minnesota

### 1294--Nary fine sandy loam

#### Nary

*Extent:* 90 percent of the unit

*Landform(s):* flats on moraines, rises on moraines

*Slope gradient:* 1 to 3 percent

*Parent material:* 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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .28

*Land capability, nonirrigated* 2s

*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 3 in	fine sandy loam	moderate	0.38 to 0.63 in	5.1 to 6.0
E -- 3 to 15 in	loamy fine sand	moderately rapid	1.06 to 1.54 in	5.1 to 6.0
B/E,Bt -- 15 to 36 in	sandy clay loam	moderately slow	3.34 to 4.17 in	5.6 to 6.5
BcK -- 36 to 60 in	sandy loam	moderate	2.64 to 3.84 in	7.4 to 7.8

## Map Unit Description (MN)

Clearwater County, Minnesota

### 1325--Bowstring-Fluvaquents complex, frequently flooded

#### Bowstring, frequently flooded

*Extent:* 45 percent of the unit

*Landform(s):* bogs on flood plains, depressions on flood plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic and alluvium

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

*Flooding:* frequent

*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* 6w

*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 19 in	muck	moderately rapid	6.61 to 8.50 in	
C -- 19 to 31 in	stratified sand to fine sandy loam	rapid	0.98 to 1.71 in	
O'a -- 31 to 60 in	muck	moderately rapid	10.06 to 12.93 in	

#### Fluvaquents, frequently flooded

*Extent:* 45 percent of the unit

*Landform(s):* flats on flood plains, rises 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):* 5

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .17

*Land capability, nonirrigated* 6w

*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>
A -- 0 to 8 in	fine sandy loam	moderately rapid	0.87 to 1.42 in	4.5 to 8.4
C -- 8 to 60 in	stratified loamy sand to silt loam	rapid	2.08 to 5.20 in	5.6 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 1808--Markey muck, ponded

#### Markey, ponded

*Extent:* 90 percent of the unit

*Landform(s):* depressions on lake plains, depressions on outwash plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic over outwash

*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):* 8

*Wind erodibility index (WEI):* 0

*Kw factor (surface layer)* .02

*Land capability, nonirrigated* 8w

*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>
Oa1,Oa2 -- 0 to 28 in	muck	moderately rapid	9.78 to 12.58 in	
A,Cg1,Cg2 -- 28 to 60 in	fine sand	rapid	0.96 to 2.55 in	

### 1874--Radium loamy sand

#### Radium

*Extent:* 90 percent of the unit

*Landform(s):* flats on beach plains, rises on beach plains

*Slope gradient:* 0 to 3 percent

*Parent material:* beach deposits

*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)* .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 11 in	loamy sand	rapid	0.66 to 1.32 in	6.1 to 7.8
Bw -- 11 to 16 in	loamy sand	rapid	0.15 to 0.41 in	6.6 to 8.4
BcK1,BcK2 -- 16 to 60 in	sand	rapid	0.87 to 2.19 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 1878--Hamre muck

#### Hamre

*Extent:* 90 percent of the unit

*Landform(s):* depressions on lake plains, depressions on moraines

*Slope gradient:* 0 to 1 percent

*Parent material:* organic over till

*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* 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>
Oa -- 0 to 10 in	muck	moderate	3.44 to 4.72 in	5.1 to 7.8
A -- 10 to 14 in	loam	moderate	0.74 to 0.82 in	5.1 to 7.8
BCkg -- 14 to 60 in	loam	moderate	7.76 to 8.68 in	7.4 to 8.4

### 1943--Roscommon loamy sand

#### Roscommon

*Extent:* 90 percent of the unit

*Landform(s):* flats on outwash plains, swales on outwash plains

*Slope gradient:* 0 to 2 percent

*Parent material:* outwash

*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)* .05

*Land capability, nonirrigated* 4w

*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>
A -- 0 to 5 in	loamy sand	rapid	0.36 to 1.02 in	5.6 to 7.8
Cg1,Cg2 -- 5 to 60 in	sand	rapid	2.74 to 3.83 in	5.6 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 1993B--Snellman-Wykeham complex, 1 to 6 percent slopes

#### Snellman

<p><i>Extent:</i> 55 percent of the unit</p> <p><i>Landform(s):</i> hillslopes on moraines</p> <p><i>Slope gradient:</i> 1 to 6 percent</p> <p><i>Parent material:</i> till</p> <p><i>Restrictive feature(s):</i> greater than 60 inches</p> <p><i>Flooding:</i> none</p> <p><i>Ponding:</i> none</p> <p><i>Drainage class:</i> well drained</p>	<p><i>Soil loss tolerance (T factor):</i> 5</p> <p><i>Wind erodibility group (WEG):</i> 3</p> <p><i>Wind erodibility index (WEI):</i> 86</p> <p><i>Kw factor (surface layer)</i> .24</p> <p><i>Land capability, nonirrigated</i> 2e</p> <p><i>Hydric soil:</i> no</p> <p><i>Hydrologic group:</i> B</p> <p><i>Potential for frost action:</i> moderate</p>
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<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	0.67 to 0.92 in	5.1 to 6.5
E -- 5 to 18 in	fine sandy loam	moderate	1.17 to 1.82 in	5.1 to 6.5
B/E,Bt -- 18 to 28 in	sandy clay loam	moderate	1.18 to 1.77 in	5.6 to 7.3
C -- 28 to 60 in	fine sandy loam	moderate	3.51 to 5.10 in	7.4 to 8.4

#### Wykeham

<p><i>Extent:</i> 40 percent of the unit</p> <p><i>Landform(s):</i> flats on moraines, rises on moraines</p> <p><i>Slope gradient:</i> 1 to 3 percent</p> <p><i>Parent material:</i> till</p> <p><i>Restrictive feature(s):</i> greater than 60 inches</p> <p><i>Flooding:</i> none</p> <p><i>Ponding:</i> none</p> <p><i>Drainage class:</i> moderately well drained</p>	<p><i>Soil loss tolerance (T factor):</i> 5</p> <p><i>Wind erodibility group (WEG):</i> 3</p> <p><i>Wind erodibility index (WEI):</i> 86</p> <p><i>Kw factor (surface layer)</i> .17</p> <p><i>Land capability, nonirrigated</i> 1</p> <p><i>Hydric soil:</i> no</p> <p><i>Hydrologic group:</i> C</p> <p><i>Potential for frost action:</i> moderate</p>
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<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 sandy loam	moderately rapid	1.02 to 1.42 in	5.1 to 6.5
E -- 8 to 16 in	fine sandy loam	moderate	0.83 to 1.41 in	5.1 to 6.5
B/E,Bt -- 16 to 32 in	loam	moderate	1.89 to 2.83 in	5.6 to 7.3
C -- 32 to 60 in	fine sandy loam	moderate	3.07 to 4.47 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 2017B--Zimmerman-Andrusia complex, 1 to 8 percent slopes

#### Zimmerman

<p><i>Extent:</i> 45 percent of the unit</p> <p><i>Landform(s):</i> hillslopes on moraines</p> <p><i>Slope gradient:</i> 1 to 8 percent</p> <p><i>Parent material:</i> outwash</p> <p><i>Restrictive feature(s):</i> greater than 60 inches</p> <p><i>Flooding:</i> none</p> <p><i>Ponding:</i> none</p> <p><i>Drainage class:</i> excessively drained</p>	<p><i>Soil loss tolerance (T factor):</i> 5</p> <p><i>Wind erodibility group (WEG):</i> 2</p> <p><i>Wind erodibility index (WEI):</i> 134</p> <p><i>Kw factor (surface layer)</i> .17</p> <p><i>Land capability, nonirrigated</i> 4s</p> <p><i>Hydric soil:</i> no</p> <p><i>Hydrologic group:</i> A</p> <p><i>Potential for frost action:</i> low</p>
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<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 fine sand	rapid	0.31 to 0.38 in	5.1 to 6.5
E -- 3 to 16 in	fine sand	rapid	0.78 to 1.43 in	5.1 to 7.3
Bw -- 16 to 35 in	fine sand	rapid	1.13 to 2.08 in	5.1 to 7.3
E and Bt -- 35 to 60 in	fine sand	rapid	1.24 to 2.48 in	5.1 to 7.3

#### Andrusia

<p><i>Extent:</i> 35 percent of the unit</p> <p><i>Landform(s):</i> hillslopes on moraines</p> <p><i>Slope gradient:</i> 1 to 8 percent</p> <p><i>Parent material:</i> outwash</p> <p><i>Restrictive feature(s):</i> greater than 60 inches</p> <p><i>Flooding:</i> none</p> <p><i>Ponding:</i> none</p> <p><i>Drainage class:</i> well drained</p>	<p><i>Soil loss tolerance (T factor):</i> 5</p> <p><i>Wind erodibility group (WEG):</i> 2</p> <p><i>Wind erodibility index (WEI):</i> 134</p> <p><i>Kw factor (surface layer)</i> .15</p> <p><i>Land capability, nonirrigated</i> 3s</p> <p><i>Hydric soil:</i> no</p> <p><i>Hydrologic group:</i> A</p> <p><i>Potential for frost action:</i> low</p>
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<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	5.6 to 7.3
E -- 3 to 29 in	sand	rapid	1.82 to 2.60 in	5.6 to 7.3
Bt -- 29 to 39 in	gravelly sandy loam	moderately rapid	1.08 to 1.57 in	5.6 to 7.3
C -- 39 to 60 in	sand	rapid	0.83 to 1.88 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 2017C--Zimmerman-Andrusia complex, 8 to 15 percent slopes

#### Zimmerman, rolling

*Extent:* 45 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 8 to 15 percent

*Parent material:* 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 3 in	loamy fine sand	rapid	0.31 to 0.38 in	5.1 to 6.5
E -- 3 to 16 in	fine sand	rapid	0.78 to 1.43 in	5.1 to 7.3
Bw -- 16 to 35 in	fine sand	rapid	1.13 to 2.08 in	5.1 to 7.3
E and Bt -- 35 to 60 in	fine sand	rapid	1.24 to 2.48 in	5.1 to 7.3

#### Andrusia, rolling

*Extent:* 35 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 8 to 15 percent

*Parent material:* 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)* .15

*Land capability, nonirrigated* 3e

*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	5.6 to 7.3
E -- 3 to 29 in	sand	rapid	1.82 to 2.60 in	5.6 to 7.3
Bt -- 29 to 39 in	gravelly sandy loam	moderately rapid	1.08 to 1.57 in	5.6 to 7.3
C -- 39 to 60 in	sand	rapid	0.83 to 1.88 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 2017E--Zimmerman-Andrusia complex, 15 to 30 percent slopes

#### Zimmerman, hilly

*Extent:* 45 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 12 to 30 percent

*Parent material:* 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* 6e

*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 fine sand	rapid	0.31 to 0.38 in	5.1 to 6.5
E -- 3 to 16 in	fine sand	rapid	0.78 to 1.43 in	5.1 to 7.3
Bw -- 16 to 35 in	fine sand	rapid	1.13 to 2.08 in	5.1 to 7.3
E and Bt -- 35 to 60 in	fine sand	rapid	1.24 to 2.48 in	5.1 to 7.3

#### Andrusia, hilly

*Extent:* 35 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 15 to 30 percent

*Parent material:* 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)* .15

*Land capability, nonirrigated* 6e

*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	5.6 to 7.3
E -- 3 to 29 in	sand	rapid	1.82 to 2.60 in	5.6 to 7.3
Bt -- 29 to 39 in	gravelly sandy loam	moderately rapid	1.08 to 1.57 in	5.6 to 7.3
C -- 39 to 60 in	sand	rapid	0.83 to 1.88 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 2018B--Eagleview-Two Inlets complex, 1 to 8 percent slopes, pitted

#### Eagleview

*Extent:* 45 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 1 to 8 percent

*Parent material:* outwash

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

*Flooding:* none

*Ponding:* none

*Drainage class:* somewhat excessively drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .10

*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>
A -- 0 to 4 in	loamy sand	rapid	0.35 to 0.47 in	5.6 to 7.3
E -- 4 to 11 in	sand	rapid	0.28 to 0.78 in	5.6 to 7.3
Bw -- 11 to 28 in	sand	rapid	0.68 to 1.35 in	5.6 to 7.3
E and Bt -- 28 to 45 in	loamy sand	rapid	0.68 to 1.69 in	6.1 to 7.3
C -- 45 to 80 in	sand	very rapid	0.70 to 2.10 in	6.1 to 8.4

#### Two Inlets

*Extent:* 35 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 1 to 8 percent

*Parent material:* 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)* .10

*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>
A -- 0 to 2 in	loamy sand	rapid	0.18 to 0.24 in	5.6 to 7.3
E -- 2 to 10 in	loamy coarse sand	rapid	0.39 to 0.87 in	5.6 to 7.3
Bt -- 10 to 33 in	gravelly loamy coarse sand	rapid	1.16 to 2.56 in	6.1 to 7.3
C -- 33 to 60 in	gravelly coarse sand	very rapid	0.54 to 1.07 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 2018E--Eagleview-Two Inlets complex, 15 to 30 percent slopes

#### Eagleview, hilly

*Extent:* 45 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 15 to 30 percent

*Parent material:* outwash

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

*Flooding:* none

*Ponding:* none

*Drainage class:* somewhat excessively drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .10

*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	0.35 to 0.47 in	5.6 to 7.3
E -- 4 to 11 in	sand	rapid	0.28 to 0.78 in	5.6 to 7.3
Bw -- 11 to 28 in	sand	rapid	0.68 to 1.35 in	5.6 to 7.3
E and Bt -- 28 to 45 in	loamy sand	rapid	0.68 to 1.69 in	6.1 to 7.3
C -- 45 to 80 in	sand	very rapid	0.70 to 2.10 in	6.1 to 8.4

#### Two Inlets, hilly

*Extent:* 35 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 15 to 30 percent

*Parent material:* 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)* .10

*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 2 in	loamy sand	rapid	0.18 to 0.24 in	5.6 to 7.3
E -- 2 to 10 in	loamy coarse sand	rapid	0.39 to 0.87 in	5.6 to 7.3
Bt -- 10 to 33 in	gravelly loamy coarse sand	rapid	1.16 to 2.56 in	6.1 to 7.3
C -- 33 to 60 in	gravelly coarse sand	very rapid	0.54 to 1.07 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 2020B--Zimmerman-Snellman complex, 1 to 8 percent slopes

#### Zimmerman

<p><i>Extent:</i> 40 percent of the unit</p> <p><i>Landform(s):</i> hillslopes on moraines</p> <p><i>Slope gradient:</i> 1 to 8 percent</p> <p><i>Parent material:</i> outwash</p> <p><i>Restrictive feature(s):</i> greater than 60 inches</p> <p><i>Flooding:</i> none</p> <p><i>Ponding:</i> none</p> <p><i>Drainage class:</i> excessively drained</p>	<p><i>Soil loss tolerance (T factor):</i> 5</p> <p><i>Wind erodibility group (WEG):</i> 2</p> <p><i>Wind erodibility index (WEI):</i> 134</p> <p><i>Kw factor (surface layer)</i> .17</p> <p><i>Land capability, nonirrigated</i> 4s</p> <p><i>Hydric soil:</i> no</p> <p><i>Hydrologic group:</i> A</p> <p><i>Potential for frost action:</i> low</p>
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<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 fine sand	rapid	0.31 to 0.38 in	5.1 to 6.5
E -- 3 to 16 in	fine sand	rapid	0.78 to 1.43 in	5.1 to 7.3
Bw -- 16 to 35 in	fine sand	rapid	1.13 to 2.08 in	5.1 to 7.3
E and Bt -- 35 to 60 in	fine sand	rapid	1.24 to 2.48 in	5.1 to 7.3

#### Snellman

<p><i>Extent:</i> 30 percent of the unit</p> <p><i>Landform(s):</i> hillslopes on moraines</p> <p><i>Slope gradient:</i> 1 to 8 percent</p> <p><i>Parent material:</i> till</p> <p><i>Restrictive feature(s):</i> greater than 60 inches</p> <p><i>Flooding:</i> none</p> <p><i>Ponding:</i> none</p> <p><i>Drainage class:</i> well drained</p>	<p><i>Soil loss tolerance (T factor):</i> 5</p> <p><i>Wind erodibility group (WEG):</i> 3</p> <p><i>Wind erodibility index (WEI):</i> 86</p> <p><i>Kw factor (surface layer)</i> .15</p> <p><i>Land capability, nonirrigated</i> 2e</p> <p><i>Hydric soil:</i> no</p> <p><i>Hydrologic group:</i> B</p> <p><i>Potential for frost action:</i> moderate</p>
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<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 2 in	fine sandy loam	moderately rapid	0.31 to 0.35 in	5.1 to 7.3
E -- 2 to 16 in	loamy sand	moderate	1.28 to 1.98 in	5.1 to 7.3
Bt -- 16 to 31 in	sandy clay loam	moderate	1.80 to 2.69 in	5.6 to 6.5
C -- 31 to 80 in	fine sandy loam	moderate	5.37 to 8.79 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 2020C--Zimmerman-Snellman complex, 8 to 15 percent slopes

#### Zimmerman, rolling

*Extent:* 45 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 8 to 15 percent

*Parent material:* 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 3 in	loamy fine sand	rapid	0.31 to 0.38 in	5.1 to 6.5
E -- 3 to 16 in	fine sand	rapid	0.78 to 1.43 in	5.1 to 7.3
Bw -- 16 to 35 in	fine sand	rapid	1.13 to 2.08 in	5.1 to 7.3
E and Bt -- 35 to 60 in	fine sand	rapid	1.24 to 2.48 in	5.1 to 7.3

#### Snellman, rolling

*Extent:* 30 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 8 to 15 percent

*Parent material:* 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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .15

*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>
A -- 0 to 2 in	fine sandy loam	moderately rapid	0.31 to 0.35 in	5.1 to 7.3
E -- 2 to 16 in	loamy sand	moderate	1.28 to 1.98 in	5.1 to 7.3
Bt -- 16 to 31 in	sandy clay loam	moderate	1.80 to 2.69 in	5.6 to 6.5
C -- 31 to 80 in	fine sandy loam	moderate	5.37 to 8.79 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 2020E--Zimmerman-Snellman complex, 15 to 30 percent slopes

#### Zimmerman, hilly

*Extent:* 45 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 12 to 30 percent

*Parent material:* 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* 6e

*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 fine sand	rapid	0.31 to 0.38 in	5.1 to 6.5
E -- 3 to 16 in	fine sand	rapid	0.78 to 1.43 in	5.1 to 7.3
Bw -- 16 to 35 in	fine sand	rapid	1.13 to 2.08 in	5.1 to 7.3
E and Bt -- 35 to 60 in	fine sand	rapid	1.24 to 2.48 in	5.1 to 7.3

#### Snellman, hilly

*Extent:* 30 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 15 to 30 percent

*Parent material:* 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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .15

*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 2 in	fine sandy loam	moderately rapid	0.31 to 0.35 in	5.1 to 7.3
E -- 2 to 16 in	loamy sand	moderate	1.28 to 1.98 in	5.1 to 7.3
Bt -- 16 to 31 in	sandy clay loam	moderate	1.80 to 2.69 in	5.6 to 6.5
C -- 31 to 80 in	fine sandy loam	moderate	5.37 to 8.79 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 2021B--Debs, till substratum-Snellman complex, 1 to 8 percent slopes

#### Debs, till substratum

*Extent:* 40 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 1 to 8 percent

*Parent material:* silty glaciolacustrine deposits over 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)* .37

*Land capability, nonirrigated* 2e

*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 2 in	silt loam	moderate	0.39 to 0.47 in	6.1 to 7.3
E -- 2 to 12 in	very fine sandy loam	moderate	1.38 to 1.97 in	6.1 to 7.3
Bt -- 12 to 35 in	silty clay loam	moderately slow	4.18 to 5.11 in	6.1 to 7.3
C -- 35 to 50 in	silt loam	moderate	2.54 to 3.29 in	7.4 to 8.4
2C -- 50 to 60 in	fine sandy loam	moderate	1.08 to 1.77 in	7.4 to 8.4

#### Snellman

*Extent:* 30 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 1 to 8 percent

*Parent material:* 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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .15

*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 2 in	fine sandy loam	moderately rapid	0.31 to 0.35 in	5.1 to 7.3
E -- 2 to 16 in	loamy sand	moderate	1.28 to 1.98 in	5.1 to 7.3
Bt -- 16 to 31 in	sandy clay loam	moderate	1.80 to 2.69 in	5.6 to 6.5
C -- 31 to 80 in	fine sandy loam	moderate	5.37 to 8.79 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 2022B--Wykeham-Baudette, till substratum complex, 1 to 4 percent slopes

#### Wykeham

*Extent:* 40 percent of the unit  
*Landform(s):* rises on moraines  
*Slope gradient:* 1 to 3 percent  
*Parent material:* 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):* 3  
*Wind erodibility index (WEI):* 86  
*Kw factor (surface layer)* .15  
*Land capability, nonirrigated* 1  
*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 7 in	fine sandy loam	moderately rapid	1.13 to 1.28 in	5.1 to 7.3
E -- 7 to 11 in	fine sandy loam	moderate	0.35 to 0.55 in	5.1 to 6.5
BE -- 11 to 19 in	fine sandy loam	moderately rapid	1.10 to 1.50 in	5.1 to 7.3
Bt -- 19 to 28 in	sandy clay loam	moderate	1.09 to 1.63 in	5.6 to 7.3
C -- 28 to 71 in	fine sandy loam	moderate	4.72 to 7.72 in	7.4 to 8.4

#### Baudette, till substratum

*Extent:* 35 percent of the unit  
*Landform(s):* hillslopes on moraines  
*Slope gradient:* 1 to 3 percent  
*Parent material:* silty glaciolacustrine deposits over 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)* .37  
*Land capability, nonirrigated* 1  
*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	silt loam	moderate	0.79 to 0.94 in	5.6 to 7.3
E -- 4 to 8 in	very fine sandy loam	moderate	0.55 to 0.79 in	5.6 to 7.3
Bt -- 8 to 35 in	silty clay loam	moderately slow	4.89 to 5.98 in	6.1 to 7.3
C -- 35 to 50 in	silt loam	moderate	2.54 to 3.29 in	7.4 to 8.4
2C -- 50 to 60 in	fine sandy loam	moderate	1.08 to 1.77 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 2023A--Egglake-Spooner, till substratum complex, 0 to 2 percent slopes

#### Egglake

*Extent:* 40 percent of the unit

*Landform(s):* swales on moraines

*Slope gradient:* 0 to 2 percent

*Parent material:* till

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

*Flooding:* none

*Ponding:* occasional

*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>
A -- 0 to 4 in	loam	moderate	0.79 to 0.87 in	5.6 to 7.3
E -- 4 to 9 in	fine sandy loam	moderately rapid	0.56 to 0.87 in	5.6 to 7.3
Btg -- 9 to 25 in	sandy clay loam	moderate	1.94 to 2.91 in	5.6 to 6.5
Cg -- 25 to 80 in	fine sandy loam	moderate	6.02 to 9.85 in	7.4 to 8.4

#### Spooner, till substratum

*Extent:* 35 percent of the unit

*Landform(s):* swales on moraines

*Slope gradient:* 0 to 2 percent

*Parent material:* silty glaciolacustrine deposits over till

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

*Flooding:* none

*Ponding:* occasional

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 5

*Wind erodibility index (WEI):* 56

*Kw factor (surface layer)* .43

*Land capability, nonirrigated* 3w

*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 4 in	silt loam	moderate	0.87 to 0.94 in	5.6 to 7.3
E -- 4 to 7 in	very fine sandy loam	moderate	0.54 to 0.69 in	5.6 to 7.3
Btg -- 7 to 25 in	silty clay loam	moderately slow	3.26 to 3.98 in	6.1 to 7.3
Cg -- 25 to 50 in	silt loam	moderate	4.22 to 5.46 in	7.4 to 8.4
C -- 50 to 80 in	fine sandy loam	moderate	3.29 to 5.39 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 2024B--Snellman-Zimmerman complex, 1 to 8 percent slopes, pitted

#### Snellman

<p><i>Extent:</i> 55 percent of the unit</p> <p><i>Landform(s):</i> hillslopes on moraines</p> <p><i>Slope gradient:</i> 1 to 8 percent</p> <p><i>Parent material:</i> till</p> <p><i>Restrictive feature(s):</i> greater than 60 inches</p> <p><i>Flooding:</i> none</p> <p><i>Ponding:</i> none</p> <p><i>Drainage class:</i> well drained</p>	<p><i>Soil loss tolerance (T factor):</i> 5</p> <p><i>Wind erodibility group (WEG):</i> 3</p> <p><i>Wind erodibility index (WEI):</i> 86</p> <p><i>Kw factor (surface layer)</i> .15</p> <p><i>Land capability, nonirrigated</i> 2e</p> <p><i>Hydric soil:</i> no</p> <p><i>Hydrologic group:</i> B</p> <p><i>Potential for frost action:</i> moderate</p>
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<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 2 in	fine sandy loam	moderately rapid	0.31 to 0.35 in	5.1 to 7.3
E -- 2 to 16 in	loamy sand	moderate	1.28 to 1.98 in	5.1 to 7.3
Bt -- 16 to 31 in	sandy clay loam	moderate	1.80 to 2.69 in	5.6 to 6.5
C -- 31 to 80 in	fine sandy loam	moderate	5.37 to 8.79 in	7.4 to 8.4

#### Zimmerman

<p><i>Extent:</i> 25 percent of the unit</p> <p><i>Landform(s):</i> hillslopes on moraines</p> <p><i>Slope gradient:</i> 1 to 8 percent</p> <p><i>Parent material:</i> outwash</p> <p><i>Restrictive feature(s):</i> greater than 60 inches</p> <p><i>Flooding:</i> none</p> <p><i>Ponding:</i> none</p> <p><i>Drainage class:</i> excessively drained</p>	<p><i>Soil loss tolerance (T factor):</i> 5</p> <p><i>Wind erodibility group (WEG):</i> 2</p> <p><i>Wind erodibility index (WEI):</i> 134</p> <p><i>Kw factor (surface layer)</i> .17</p> <p><i>Land capability, nonirrigated</i> 4s</p> <p><i>Hydric soil:</i> no</p> <p><i>Hydrologic group:</i> A</p> <p><i>Potential for frost action:</i> low</p>
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<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 fine sand	rapid	0.31 to 0.38 in	5.1 to 6.5
E -- 3 to 16 in	fine sand	rapid	0.78 to 1.43 in	5.1 to 7.3
Bw -- 16 to 35 in	fine sand	rapid	1.13 to 2.08 in	5.1 to 7.3
E and Bt -- 35 to 60 in	fine sand	rapid	1.24 to 2.48 in	5.1 to 7.3

## Map Unit Description (MN)

Clearwater County, Minnesota

### 2026B--Lengby-Snellman complex, 1 to 8 percent slopes

#### Lengby

*Extent:* 45 percent of the unit  
*Landform(s):* hillslopes on moraines  
*Slope gradient:* 1 to 8 percent  
*Parent material:* stratified glaciofluvial deposits  
*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):* 3  
*Wind erodibility index (WEI):* 86  
*Kw factor (surface layer)* .20  
*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 3 in	fine sandy loam	moderately rapid	0.47 to 0.57 in	6.1 to 7.3
E -- 3 to 11 in	loamy fine sand	rapid	0.31 to 0.87 in	5.6 to 7.3
B/E -- 11 to 15 in	sandy clay loam	moderate	0.31 to 0.71 in	6.1 to 7.3
Bt -- 15 to 26 in	sandy clay loam	moderate	1.54 to 2.09 in	6.1 to 7.3
C -- 26 to 60 in	stratified sand to loamy very fine sand	rapid	1.69 to 5.76 in	7.4 to 8.4

#### Snellman

*Extent:* 30 percent of the unit  
*Landform(s):* hillslopes on moraines  
*Slope gradient:* 1 to 8 percent  
*Parent material:* 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):* 3  
*Wind erodibility index (WEI):* 86  
*Kw factor (surface layer)* .15  
*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 2 in	fine sandy loam	moderately rapid	0.31 to 0.35 in	5.1 to 7.3
E -- 2 to 16 in	loamy sand	moderate	1.28 to 1.98 in	5.1 to 7.3
Bt -- 16 to 31 in	sandy clay loam	moderate	1.80 to 2.69 in	5.6 to 6.5
C -- 31 to 80 in	fine sandy loam	moderate	5.37 to 8.79 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 2026C--Lengby-Snellman complex, 8 to 15 percent slopes

#### Lengby

*Extent:* 45 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 8 to 15 percent

*Parent material:* stratified glaciofluvial deposits

*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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*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>
A -- 0 to 3 in	fine sandy loam	moderately rapid	0.47 to 0.57 in	6.1 to 7.3
E -- 3 to 11 in	loamy fine sand	rapid	0.31 to 0.87 in	5.6 to 7.3
B/E -- 11 to 15 in	sandy clay loam	moderate	0.31 to 0.71 in	6.1 to 7.3
Bt -- 15 to 26 in	sandy clay loam	moderate	1.54 to 2.09 in	6.1 to 7.3
C -- 26 to 60 in	stratified sand to loamy very fine sand	rapid	1.69 to 5.76 in	7.4 to 8.4

#### Snellman, rolling

*Extent:* 30 percent of the unit

*Landform(s):* hillslopes on moraines

*Slope gradient:* 8 to 15 percent

*Parent material:* 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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .15

*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>
A -- 0 to 2 in	fine sandy loam	moderately rapid	0.31 to 0.35 in	5.1 to 7.3
E -- 2 to 16 in	loamy sand	moderate	1.28 to 1.98 in	5.1 to 7.3
Bt -- 16 to 31 in	sandy clay loam	moderate	1.80 to 2.69 in	5.6 to 6.5
C -- 31 to 80 in	fine sandy loam	moderate	5.37 to 8.79 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 2026E--Lengby-Snellman complex, 15 to 30 percent slopes

#### Lengby

<i>Extent:</i> 45 percent of the unit	<i>Soil loss tolerance (T factor):</i> 5
<i>Landform(s):</i> hillslopes on moraines	<i>Wind erodibility group (WEG):</i> 3
<i>Slope gradient:</i> 15 to 30 percent	<i>Wind erodibility index (WEI):</i> 86
<i>Parent material:</i> stratified glaciofluvial deposits	<i>Kw factor (surface layer)</i> .20
<i>Restrictive feature(s):</i> greater than 60 inches	<i>Land capability, nonirrigated</i> 6e
<i>Flooding:</i> none	<i>Hydric soil:</i> no
<i>Ponding:</i> none	<i>Hydrologic group:</i> B
<i>Drainage class:</i> well drained	<i>Potential for frost action:</i> 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	fine sandy loam	moderately rapid	0.47 to 0.57 in	6.1 to 7.3
E -- 3 to 11 in	loamy fine sand	rapid	0.31 to 0.87 in	5.6 to 7.3
B/E -- 11 to 15 in	sandy clay loam	moderate	0.31 to 0.71 in	6.1 to 7.3
Bt -- 15 to 26 in	sandy clay loam	moderate	1.54 to 2.09 in	6.1 to 7.3
C -- 26 to 60 in	stratified sand to loamy very fine sand	rapid	1.69 to 5.76 in	7.4 to 8.4

#### Snellman, hilly

<i>Extent:</i> 30 percent of the unit	<i>Soil loss tolerance (T factor):</i> 5
<i>Landform(s):</i> hillslopes on moraines	<i>Wind erodibility group (WEG):</i> 3
<i>Slope gradient:</i> 15 to 30 percent	<i>Wind erodibility index (WEI):</i> 86
<i>Parent material:</i> till	<i>Kw factor (surface layer)</i> .15
<i>Restrictive feature(s):</i> greater than 60 inches	<i>Land capability, nonirrigated</i> 6e
<i>Flooding:</i> none	<i>Hydric soil:</i> no
<i>Ponding:</i> none	<i>Hydrologic group:</i> B
<i>Drainage class:</i> well drained	<i>Potential for frost action:</i> moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 2 in	fine sandy loam	moderately rapid	0.31 to 0.35 in	5.1 to 7.3
E -- 2 to 16 in	loamy sand	moderate	1.28 to 1.98 in	5.1 to 7.3
Bt -- 16 to 31 in	sandy clay loam	moderate	1.80 to 2.69 in	5.6 to 6.5
C -- 31 to 80 in	fine sandy loam	moderate	5.37 to 8.79 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 2035A--Epoufette sandy loam, 0 to 2 percent slopes

#### Epoufette

*Extent:* 75 percent of the unit

*Landform(s):* swales on lake plains

*Slope gradient:* 0 to 2 percent

*Parent material:* sandy and gravelly glaciolacustrine deposits

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

*Flooding:* none

*Ponding:* occasional

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .15

*Land capability, nonirrigated* 4w

*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>
A -- 0 to 4 in	sandy loam	moderately rapid	0.51 to 0.59 in	6.1 to 7.3
Eg -- 4 to 13 in	loamy sand	rapid	0.45 to 0.63 in	6.1 to 7.3
Btg -- 13 to 18 in	sandy loam	moderately rapid	0.41 to 0.72 in	6.6 to 7.8
2Cg -- 18 to 60 in	gravelly coarse sand	very rapid	0.42 to 1.25 in	7.4 to 8.4

### 2036A--Meehan loamy sand, 0 to 3 percent slopes

#### Meehan

*Extent:* 75 percent of the unit

*Landform(s):* flats on lake plains

*Slope gradient:* 0 to 3 percent

*Parent material:* sandy glaciolacustrine 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):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .10

*Land capability, nonirrigated* 4w

*Hydric soil:* no

*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>
A -- 0 to 4 in	loamy sand	rapid	0.35 to 0.47 in	5.6 to 6.5
Bw -- 4 to 29 in	sand	rapid	0.76 to 2.77 in	5.6 to 6.5
C -- 29 to 60 in	sand	very rapid	0.61 to 2.15 in	5.5 to 7.3

## Map Unit Description (MN)

Clearwater County, Minnesota

### 2037A--Karlstad loamy sand, 0 to 3 percent slopes

#### Karlstad

*Extent:* 75 percent of the unit

*Landform(s):* beach ridges on lake plains

*Slope gradient:* 0 to 3 percent

*Parent material:* sandy and gravelly glaciolacustrine deposits

*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:* 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	loamy sand	rapid	0.25 to 0.30 in	5.6 to 7.3
E -- 3 to 9 in	loamy sand	rapid	0.31 to 0.82 in	5.6 to 7.3
Bt -- 9 to 16 in	sandy loam	moderately rapid	0.78 to 1.13 in	6.1 to 7.8
2Bt -- 16 to 19 in	gravelly sandy loam	moderately rapid	0.19 to 0.39 in	6.1 to 7.8
2C -- 19 to 60 in	stratified gravelly coarse sand to loamy fine sand	rapid	0.82 to 4.09 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 2038B--Marquette loamy sand, 1 to 6 percent slopes, MLRA 88

#### Marquette

*Extent:* 65 percent of the unit

*Landform(s):* beach ridges on lake plains

*Slope gradient:* 1 to 6 percent

*Parent material:* sandy and gravelly glaciolacustrine deposits

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

*Flooding:* none

*Ponding:* none

*Drainage class:* excessively drained

*Soil loss tolerance (T factor):* 3

*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>
A --	0 to 3 in	loamy sand	rapid	0.25 to 0.30 in	5.6 to 7.3
E --	3 to 13 in	sand	rapid	0.51 to 1.13 in	5.6 to 7.3
Bt --	13 to 19 in	very gravelly sandy loam	moderately rapid	0.24 to 0.53 in	6.6 to 8.4
C --	19 to 60 in	stratified very gravelly coarse sand to fine sand	very rapid	0.82 to 1.64 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### 2038C--Marquette loamy sand, 6 to 12 percent slopes, MLRA 88

#### Marquette

*Extent:* 75 percent of the unit

*Landform(s):* beach ridges on lake plains

*Slope gradient:* 6 to 12 percent

*Parent material:* sandy and gravelly glaciolacustrine deposits

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

*Flooding:* none

*Ponding:* none

*Drainage class:* excessively drained

*Soil loss tolerance (T factor):* 3

*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>
A --	0 to 3 in	loamy sand	rapid	0.25 to 0.30 in	5.6 to 7.3
E --	3 to 13 in	sand	rapid	0.51 to 1.13 in	5.6 to 7.3
Bt --	13 to 19 in	very gravelly sandy loam	moderately rapid	0.24 to 0.53 in	6.6 to 8.4
C --	19 to 60 in	stratified very gravelly coarse sand to fine sand	very rapid	0.82 to 1.64 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### B78B--Graycalm-Grettum complex, 1 to 8 percent slopes

#### Graycalm

*Extent:* 50 to 65 percent of the unit

*Landform(s):* beach ridges

*Slope gradient:* 4 to 8 percent

*Parent material:* sandy glaciofluvial deposits

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

*Flooding:* none

*Ponding:* none

*Drainage class:* somewhat excessively drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 1

*Wind erodibility index (WEI):* 220

*Kw factor (surface layer)* .02

*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>
A -- 0 to 3 in	sand	rapid	0.22 to 0.28 in	3.5 to 6.5
Bw -- 3 to 22 in	sand	rapid	1.13 to 2.08 in	3.5 to 7.3
E -- 22 to 35 in	sand	rapid	0.78 to 1.43 in	3.5 to 7.3
E and Bt -- 35 to 60 in	sand	rapid	1.24 to 3.97 in	3.5 to 7.3
C -- 60 to 80 in	sand	rapid	0.40 to 1.41 in	5.6 to 8.4

#### Grettum

*Extent:* 25 to 45 percent of the unit

*Landform(s):* beach ridges

*Slope gradient:* 1 to 6 percent

*Parent material:* sandy glaciofluvial deposits

*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)* .10

*Land capability, nonirrigated* 4s

*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 3 in	loamy sand	moderately rapid	0.31 to 0.38 in	4.5 to 5.0
Bw -- 3 to 31 in	sand	rapid	1.70 to 3.12 in	4.5 to 5.0
E and Bt -- 31 to 74 in	sand	rapid	2.55 to 7.23 in	6.1 to 6.5
C -- 74 to 80 in	sand	rapid	0.30 to 0.41 in	6.6 to 7.3

## Map Unit Description (MN)

Clearwater County, Minnesota

### B109A--Bowstring and Fluaquents soils, des moines, 0 to 2 percent slopes, frequently flooded

#### Bowstring, mlra 88, frequently flooded

*Extent:* 45 percent of the unit

*Landform(s):* swales on flood plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic material over alluvium

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

*Flooding:* frequent

*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* 6w

*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>
Oa1-2 -- 0 to 38 in	muck	moderately rapid	13.37 to 17.19 in	
Cg -- 38 to 47 in	stratified sand to fine sandy loam	rapid	0.69 to 1.21 in	
O'a1 -- 47 to 80 in	muck	moderately rapid	11.57 to 14.88 in	

#### Fluaquents, mlra 88, frequently flooded

*Extent:* 40 percent of the unit

*Landform(s):* flats on flood plains, swales on flood plains

*Slope gradient:* 0 to 2 percent

*Parent material:* alluvium

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

*Flooding:* frequent

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .15

*Land capability, nonirrigated* 6w

*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>
A -- 0 to 16 in	fine sandy loam	moderately rapid	2.58 to 3.87 in	6.6 to 7.8
Cg -- 16 to 80 in	stratified loamy sand to silt loam	rapid	2.55 to 12.76 in	6.6 to 7.8

## Map Unit Description (MN)

Clearwater County, Minnesota

### B200A--Garnes fine sandy loam, des moines, 0 to 3 percent slopes

#### Garnes

*Extent:* 70 percent of the unit

*Landform(s):* rises on lake plains

*Slope gradient:* 0 to 3 percent

*Parent material:* glaciolacustrine deposits and/or 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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .24

*Land capability, nonirrigated* 1

*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>
Ap -- 0 to 6 in	fine sandy loam	moderately rapid	0.94 to 1.06 in	6.1 to 7.3
E -- 6 to 9 in	loamy fine sand	rapid	0.16 to 0.38 in	6.1 to 7.3
Bt -- 9 to 14 in	clay loam	moderate	0.87 to 1.02 in	6.6 to 7.8
Bk1-2 -- 14 to 72 in	loam	moderate	8.68 to 11.00 in	7.4 to 8.4
C -- 72 to 80 in	loam	moderate	1.18 to 1.50 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### B201A--Chilgren fine sandy loam, des moines, 0 to 2 percent slopes

#### Chilgren

*Extent:* 75 percent of the unit

*Landform(s):* flats on lake plains, swales on lake plains

*Slope gradient:* 0 to 2 percent

*Parent material:* till

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

*Flooding:* none

*Ponding:* occasional

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .24

*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>
A -- 0 to 4 in	fine sandy loam	moderately rapid	0.63 to 0.71 in	6.1 to 7.3
E -- 4 to 10 in	fine sandy loam	rapid	0.30 to 0.71 in	6.1 to 7.3
Btg -- 10 to 18 in	clay loam	moderate	1.41 to 1.65 in	6.1 to 7.8
Bkg1-2 -- 18 to 72 in	loam	moderate	8.09 to 10.25 in	7.4 to 8.4
Cg -- 72 to 80 in	loam	moderate	1.18 to 1.50 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### B202A--Cathro muck, depressional, des moines, 0 to 1 percent slopes

#### Cathro, depressional, mlra 88

*Extent:* 80 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic material over till

*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* 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>
Oa1-Oa2 -- 0 to 11 in	muck	moderately rapid	3.86 to 5.29 in	
Oa3 -- 11 to 23 in	muck	moderately rapid	4.13 to 5.67 in	
Cg -- 23 to 60 in	loam	moderate	5.55 to 7.03 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### B203A--Northwood muck, depressional, des moines, 0 to 1 percent slopes

#### Northwood, depressional, mlra 88

*Extent:* 75 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic material over glaciolacustrine deposits and/or till

*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* 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>
Oa --	0 to 9 in	muck		moderately rapid	3.17 to 4.35 in	5.1 to 7.8
A --	9 to 14 in	loamy fine sand		rapid	0.51 to 0.92 in	5.6 to 7.8
Bg1-2 --	14 to 24 in	loamy fine sand		rapid	0.59 to 1.08 in	5.6 to 8.4
2BCkg-2Cg --	24 to 80 in	loam		moderate	8.39 to 10.62 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### B204A--Roliss loam, des moines, 0 to 2 percent slopes

#### Roliss, mlra 88

*Extent:* 75 percent of the unit

*Landform(s):* flats on lake plains, swales on lake plains

*Slope gradient:* 0 to 2 percent

*Parent material:* till

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

*Flooding:* none

*Ponding:* occasional

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 4L

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*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,A -- 0 to 14 in	loam	moderate	2.41 to 3.40 in	6.6 to 8.4
Bg -- 14 to 20 in	loam	moderate	0.89 to 1.12 in	7.4 to 8.4
Cg1-4 -- 20 to 80 in	loam	moderate	8.98 to 11.37 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### B205A--Berner muck, depressional, des moines, 0 to 1 percent slopes

#### Berner, depressional, mlra 88

*Extent:* 80 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic material over glaciolacustrine deposits and/or till

*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* 6w

*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>
Oa1-2 --	0 to 28 in	muck	moderately rapid	9.78 to 13.42 in	
A --	28 to 31 in	sandy loam	moderately rapid	0.31 to 0.57 in	
Bg --	31 to 44 in	sand	rapid	0.65 to 1.30 in	
2CBkg --	44 to 80 in	loam	moderate	5.37 to 6.81 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### B206A--Hamre muck, depressional, des moines, 0 to 1 percent slopes

#### Hamre, depressional, mlra 88

*Extent:* 80 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic material over till

*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* 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>
Oa -- 0 to 13 in	muck	moderately rapid	4.55 to 6.24 in	5.1 to 7.8
A -- 13 to 18 in	loam	moderate	0.87 to 1.13 in	5.1 to 7.8
Bg -- 18 to 35 in	loam	moderate	2.54 to 3.22 in	6.6 to 8.4
BCg-Cg -- 35 to 80 in	loam	moderate	6.73 to 8.53 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### B207A--Pelan sandy loam, des moines, 0 to 3 percent slopes

#### Pelan

*Extent:* 70 percent of the unit

*Landform(s):* rises on lake plains

*Slope gradient:* 0 to 3 percent

*Parent material:* glaciolacustrine deposits over 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):* 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:* 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	0.77 to 0.89 in	6.1 to 7.3
E -- 6 to 9 in	sand	rapid	0.16 to 0.38 in	6.1 to 7.3
Bt -- 9 to 14 in	very gravelly sandy loam	rapid	0.15 to 0.56 in	6.1 to 7.8
Bw -- 14 to 20 in	very gravelly coarse sand	rapid	0.12 to 0.41 in	7.4 to 8.4
2Bw -- 20 to 60 in	loam	moderate	5.96 to 7.56 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### B208A--Grygla loamy fine sand, des moines, 0 to 2 percent slopes

#### Grygla

*Extent:* 75 percent of the unit

*Landform(s):* flats on lake plains, swales on lake plains

*Slope gradient:* 0 to 2 percent

*Parent material:* glaciolacustrine deposits over till

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

*Flooding:* none

*Ponding:* occasional

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .24

*Land capability, nonirrigated* 4w

*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 6 in	loamy fine sand	rapid	0.77 to 0.89 in	6.1 to 7.3
Bg -- 6 to 26 in	fine sand	rapid	1.20 to 2.21 in	6.6 to 7.8
2Bkg-2Cg -- 26 to 80 in	loam	moderate	8.09 to 10.25 in	7.4 to 8.4

### B210A--Eckvoll loamy fine sand, des moines, 0 to 3 percent slopes

#### Eckvoll

*Extent:* 70 percent of the unit

*Landform(s):* rises on lake plains

*Slope gradient:* 0 to 3 percent

*Parent material:* glaciolacustrine deposits over 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)* .28

*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	6.1 to 7.3
E1-2 -- 9 to 25 in	fine sand	rapid	0.81 to 1.94 in	6.1 to 7.3
2Bt -- 25 to 32 in	sandy clay loam	moderate	1.07 to 1.20 in	6.6 to 7.8
2Bck-2C1-2 -- 32 to 80 in	loam	moderate	7.20 to 9.13 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### B211A--Berner and Cathro soils, ponded, des moines, 0 to 1 percent slopes

#### Berner, Ponded

*Extent:* 0 to 90 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic material over glaciolacustrine deposits and/or till

*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):* 8

*Wind erodibility index (WEI):* 0

*Kw factor (surface layer)* .02

*Land capability, nonirrigated* 8w

*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>
Oa1-2 -- 0 to 28 in	muck	moderately rapid	9.78 to 13.42 in	
A -- 28 to 31 in	sandy loam	moderately rapid	0.31 to 0.57 in	
Bg -- 31 to 44 in	sand	rapid	0.65 to 1.30 in	
2CBkg -- 44 to 80 in	loam	moderate	5.37 to 6.81 in	7.4 to 8.4

#### Cathro, Ponded

*Extent:* 0 to 90 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic material over till

*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):* 8

*Wind erodibility index (WEI):* 0

*Kw factor (surface layer)* .02

*Land capability, nonirrigated* 8w

*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>
Oa1-Oa2 -- 0 to 11 in	muck	moderately rapid	3.86 to 5.29 in	
Oa3 -- 11 to 23 in	muck	moderately rapid	4.13 to 5.67 in	
Cg -- 23 to 60 in	loam	moderate	5.55 to 7.03 in	7.4 to 8.4

## Map Unit Description (MN)

Clearwater County, Minnesota

### GP--Pits, gravel-Udipsamments complex

#### Pits, gravel

*Extent:* 70 to 90 percent of the unit

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

*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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#### Udipsamments

*Extent:* 10 to 30 percent of the unit

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

*Slope gradient:* 0 to 6 percent

*Parent material:* outwash

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

*Flooding:* none

*Ponding:* none

*Drainage class:* excessively drained

*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)

Clearwater County, Minnesota

### M-W--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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### W--Water

#### Water

*Extent:* 100 percent of the unit

*Landform(s):*

*Slope gradient:*

*Parent material:*

*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:* unranked

*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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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.