

## Map Unit Description (MN)

Koochiching 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]

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### 1007--Udorthents, shallow (sanitary landfill)

#### Udorthents, shallow (sanitary landfill)

*Extent:* 100 percent of the unit

*Landform(s):* sanitary landfills on moraines

*Slope gradient:*

*Parent material:* variable soil material

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

*Flooding:*

*Ponding:*

*Drainage class:* well drained

*Soil loss tolerance (T factor):*

*Wind erodibility group (WEG):*

*Wind erodibility index (WEI):*

*Kw factor (surface layer)*

*Land capability, nonirrigated*

*Hydric soil:* no

*Hydrologic group:*

*Potential for frost action:* low

<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)

Koochiching County, Minnesota

### 1020A--Bowstring and Fluvaquents, loamy, 0 to 2 percent slopes, frequently flooded

#### Bowstring, frequently flooded

*Extent:* 0 to 90 percent of the unit

*Landform(s):* flats on flood plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic materials mixed with alluvium

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

*Flooding:* frequent

*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)*

*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>
Oa -- 0 to 38 in	muck	moderately rapid	13.37 to 17.19 in	
Cg -- 38 to 47 in	stratified fine sand to loamy fine sand	rapid	0.43 to 0.87 in	5.6 to 7.3
O'a -- 47 to 80 in	muck	moderately rapid	11.57 to 14.88 in	

#### Fluvaquents, frequently flooded

*Extent:* 0 to 90 percent of the unit

*Landform(s):* flats on flood plains

*Slope gradient:* 0 to 2 percent

*Parent material:* alluvium

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

*Flooding:* frequent

*Ponding:* none

*Drainage class:* very 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* 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 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

## Map Unit Description (MN)

Koochiching County, Minnesota

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

#### Fluvaquents, frequently flooded, loamy

*Extent:* 35 to 65 percent of the unit

*Landform(s):* flats 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:* very 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* 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 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

*Extent:* 30 to 55 percent of the unit

*Landform(s):* flood plains

*Slope gradient:* 15 to 35 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* 6e

*Hydric soil:* no

*Hydrologic group:* C/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	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)

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### A15A--Effie-Ashlake complex, mlra 57, 0 to 3 percent slopes

#### Effie

*Extent:* 45 to 65 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):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .28

*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 2 in	loam	moderate	0.37 to 0.45 in	5.1 to 7.3
Eg -- 2 to 5 in	loam	moderate	0.35 to 0.69 in	5.1 to 7.3
B/E -- 5 to 8 in	clay loam	moderate	0.22 to 0.61 in	5.1 to 7.3
Btg -- 8 to 20 in	silty clay	slow	0.98 to 2.44 in	5.1 to 7.3
BCg -- 20 to 64 in	silty clay loam	moderately slow	5.73 to 8.38 in	7.4 to 8.4
Cg -- 64 to 80 in	loam	moderate	2.05 to 2.99 in	7.4 to 8.4

#### Ashlake

*Extent:* 25 to 45 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:* somewhat poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .28

*Land capability, nonirrigated* 3w

*Hydric soil:* no

*Hydrologic group:* C/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 1 in	loam	moderate	0.22 to 0.27 in	5.1 to 7.3
E -- 1 to 4 in	loam	moderate	0.30 to 0.61 in	5.1 to 7.3
E/B -- 4 to 9 in	silty clay loam	moderate	0.41 to 1.13 in	5.1 to 7.3
Bt -- 9 to 26 in	silty clay	slow	1.35 to 3.39 in	5.1 to 7.3
Bk -- 26 to 44 in	silty clay loam	moderately slow	2.35 to 3.44 in	7.4 to 8.4
C -- 44 to 80 in	loam	moderate	4.66 to 6.81 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

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### A15A--Effie-Ashlake complex, mlra 57, 0 to 3 percent slopes

## Map Unit Description (MN)

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### A16B--Ashlake-Suomi-Effie complex, mlra 57, 0 to 4 percent slopes

#### Ashlake

*Extent:* 25 to 75 percent of the unit  
*Landform(s):* flats on moraines, rises on moraines  
*Slope gradient:* 0 to 3 percent  
*Parent material:* till  
*Restrictive feature(s):* greater than 60 inches  
*Flooding:* none  
*Ponding:* none  
*Drainage class:* somewhat poorly drained

*Soil loss tolerance (T factor):* 5  
*Wind erodibility group (WEG):* 6  
*Wind erodibility index (WEI):* 48  
*Kw factor (surface layer)* .28  
*Land capability, nonirrigated* 3w  
*Hydric soil:* no  
*Hydrologic group:* C/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 1 in	loam	moderate	0.22 to 0.27 in	5.1 to 7.3
E -- 1 to 4 in	loam	moderate	0.30 to 0.61 in	5.1 to 7.3
E/B -- 4 to 9 in	silty clay loam	moderate	0.41 to 1.13 in	5.1 to 7.3
Bt -- 9 to 26 in	silty clay	slow	1.35 to 3.39 in	5.1 to 7.3
Bk -- 26 to 44 in	silty clay loam	moderately slow	2.35 to 3.44 in	7.4 to 8.4
C -- 44 to 80 in	loam	moderate	4.66 to 6.81 in	7.4 to 8.4

#### Suomi

*Extent:* 20 to 50 percent of the unit  
*Landform(s):* knolls on moraines  
*Slope gradient:* 1 to 4 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)* .28  
*Land capability, nonirrigated* 2e  
*Hydric soil:* no  
*Hydrologic group:* 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	loam	moderate	0.75 to 0.91 in	5.1 to 7.3
E -- 4 to 7 in	silt loam	moderate	0.35 to 0.69 in	5.1 to 7.3
B/E -- 7 to 11 in	silty clay loam	moderate	0.31 to 0.87 in	5.1 to 7.3
Bt -- 11 to 39 in	silty clay	slow	2.24 to 5.59 in	5.1 to 7.3
Bk -- 39 to 54 in	clay loam	moderately slow	1.94 to 2.84 in	7.4 to 8.4
C -- 54 to 80 in	loam	moderate	3.38 to 4.94 in	7.4 to 8.4

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### A16B--Ashlake-Suomi-Effie complex, mlra 57, 0 to 4 percent slopes

#### Effie

*Extent:* 10 to 30 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):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .28

*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 2 in	loam	moderate	0.37 to 0.45 in	5.1 to 7.3
Eg -- 2 to 5 in	loam	moderate	0.35 to 0.69 in	5.1 to 7.3
B/E -- 5 to 8 in	clay loam	moderate	0.22 to 0.61 in	5.1 to 7.3
Btg -- 8 to 20 in	silty clay	slow	0.98 to 2.44 in	5.1 to 7.3
BCg -- 20 to 64 in	silty clay loam	moderately slow	5.73 to 8.38 in	7.4 to 8.4
Cg -- 64 to 80 in	loam	moderate	2.05 to 2.99 in	7.4 to 8.4

## Map Unit Description (MN)

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### A17B--Suomi-Ashlake complex, mlra 57, 1 to 8 percent slopes

#### Suomi

*Extent:* 35 to 75 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 3 to 8 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)* .28

*Land capability, nonirrigated* 2e

*Hydric soil:* no

*Hydrologic group:* 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	loam	moderate	0.75 to 0.91 in	5.1 to 7.3
E -- 4 to 7 in	silt loam	moderate	0.35 to 0.69 in	5.1 to 7.3
B/E -- 7 to 11 in	silty clay loam	moderate	0.31 to 0.87 in	5.1 to 7.3
Bt -- 11 to 39 in	silty clay	slow	2.24 to 5.59 in	5.1 to 7.3
Bk -- 39 to 54 in	clay loam	moderately slow	1.94 to 2.84 in	7.4 to 8.4
C -- 54 to 80 in	loam	moderate	3.38 to 4.94 in	7.4 to 8.4

#### Ashlake

*Extent:* 15 to 40 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 1 to 6 percent

*Parent material:* till

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

*Flooding:* none

*Ponding:* none

*Drainage class:* somewhat poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .28

*Land capability, nonirrigated* 3w

*Hydric soil:* no

*Hydrologic group:* C/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 1 in	loam	moderate	0.22 to 0.27 in	5.1 to 7.3
E -- 1 to 4 in	loam	moderate	0.30 to 0.61 in	5.1 to 7.3
E/B -- 4 to 9 in	silty clay loam	moderate	0.41 to 1.13 in	5.1 to 7.3
Bt -- 9 to 26 in	silty clay	slow	1.35 to 3.39 in	5.1 to 7.3
Bk -- 26 to 44 in	silty clay loam	moderately slow	2.35 to 3.44 in	7.4 to 8.4
C -- 44 to 80 in	loam	moderate	4.66 to 6.81 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

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### A17B--Suomi-Ashlake complex, mlra 57, 1 to 8 percent slopes

## Map Unit Description (MN)

Koochiching County, Minnesota

### A17C--Suomi-Ashlake complex, mlra 57, 1 to 15 percent slopes

#### Suomi

*Extent:* 35 to 60 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 6 to 15 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)* .28

*Land capability, nonirrigated* 3e

*Hydric soil:* no

*Hydrologic group:* 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	loam	moderate	0.75 to 0.91 in	5.1 to 7.3
E -- 4 to 7 in	silt loam	moderate	0.35 to 0.69 in	5.1 to 7.3
B/E -- 7 to 11 in	silty clay loam	moderate	0.31 to 0.87 in	5.1 to 7.3
Bt -- 11 to 39 in	silty clay	slow	2.24 to 5.59 in	5.1 to 7.3
Bk -- 39 to 54 in	clay loam	moderately slow	1.94 to 2.84 in	7.4 to 8.4
C -- 54 to 80 in	loam	moderate	3.38 to 4.94 in	7.4 to 8.4

#### Ashlake

*Extent:* 25 to 50 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 1 to 6 percent

*Parent material:* till

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

*Flooding:* none

*Ponding:* none

*Drainage class:* somewhat poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .28

*Land capability, nonirrigated* 3w

*Hydric soil:* no

*Hydrologic group:* C/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 1 in	loam	moderate	0.22 to 0.27 in	5.1 to 7.3
E -- 1 to 4 in	loam	moderate	0.30 to 0.61 in	5.1 to 7.3
E/B -- 4 to 9 in	silty clay loam	moderate	0.41 to 1.13 in	5.1 to 7.3
Bt -- 9 to 26 in	silty clay	slow	1.35 to 3.39 in	5.1 to 7.3
Bk -- 26 to 44 in	silty clay loam	moderately slow	2.35 to 3.44 in	7.4 to 8.4
C -- 44 to 80 in	loam	moderate	4.66 to 6.81 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

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### A17C--Suomi-Ashlake complex, mlra 57, 1 to 15 percent slopes

## Map Unit Description (MN)

Koochiching County, Minnesota

### A17D--Suomi-Ashlake complex, mlra 57, 1 to 35 percent slopes

#### Suomi

*Extent:* 30 to 60 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 15 to 35 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)* .28

*Land capability, nonirrigated* 6e

*Hydric soil:* no

*Hydrologic group:* 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	loam	moderate	0.75 to 0.91 in	5.1 to 7.3
E -- 4 to 7 in	silt loam	moderate	0.35 to 0.69 in	5.1 to 7.3
B/E -- 7 to 11 in	silty clay loam	moderate	0.31 to 0.87 in	5.1 to 7.3
Bt -- 11 to 39 in	silty clay	slow	2.24 to 5.59 in	5.1 to 7.3
Bk -- 39 to 54 in	clay loam	moderately slow	1.94 to 2.84 in	7.4 to 8.4
C -- 54 to 80 in	loam	moderate	3.38 to 4.94 in	7.4 to 8.4

#### Ashlake

*Extent:* 25 to 50 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 1 to 6 percent

*Parent material:* till

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

*Flooding:* none

*Ponding:* none

*Drainage class:* somewhat poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .28

*Land capability, nonirrigated* 3w

*Hydric soil:* no

*Hydrologic group:* C/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 1 in	loam	moderate	0.22 to 0.27 in	5.1 to 7.3
E -- 1 to 4 in	loam	moderate	0.30 to 0.61 in	5.1 to 7.3
E/B -- 4 to 9 in	silty clay loam	moderate	0.41 to 1.13 in	5.1 to 7.3
Bt -- 9 to 26 in	silty clay	slow	1.35 to 3.39 in	5.1 to 7.3
Bk -- 26 to 44 in	silty clay loam	moderately slow	2.35 to 3.44 in	7.4 to 8.4
C -- 44 to 80 in	loam	moderate	4.66 to 6.81 in	7.4 to 8.4

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### A17D--Suomi-Ashlake complex, mlra 57, 1 to 35 percent slopes

## Map Unit Description (MN)

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### A18A--Effie, depressional-Hamre complex, mlra 57, 0 to 1 percent slopes

#### Effie, depressional

*Extent:* 35 to 60 percent of the unit

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

*Slope gradient:* 0 to 1 percent

*Parent material:* till

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

*Flooding:* none

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .28

*Land capability, nonirrigated* 6w

*Hydric soil:* yes

*Hydrologic group:* C/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 2 in	loam	moderate	0.37 to 0.45 in	5.1 to 7.3
Eg -- 2 to 5 in	loam	moderate	0.35 to 0.69 in	5.1 to 7.3
B/E -- 5 to 8 in	clay loam	moderate	0.22 to 0.61 in	5.1 to 7.3
Btg -- 8 to 20 in	silty clay	slow	0.98 to 2.44 in	5.1 to 7.3
BCg -- 20 to 64 in	silty clay loam	moderately slow	5.73 to 8.38 in	7.4 to 8.4
Cg -- 64 to 80 in	loam	moderate	2.05 to 2.99 in	7.4 to 8.4

#### Hamre

*Extent:* 15 to 40 percent of the unit

*Landform(s):* 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:* 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>
Oa -- 0 to 13 in	muck	moderately rapid	4.55 to 5.85 in	5.1 to 7.8
A -- 13 to 18 in	loam	moderate	0.82 to 1.23 in	5.6 to 7.8
Bg -- 18 to 35 in	clay loam	moderately slow	2.54 to 3.22 in	7.4 to 8.4
BCg -- 35 to 71 in	loam	moderately slow	5.02 to 6.81 in	7.4 to 8.4
Cg -- 71 to 80 in	loam	moderate	1.18 to 1.72 in	7.4 to 8.4

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### A18A--Effie, depressional-Hamre complex, mlra 57, 0 to 1 percent slopes

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### A19A--Talmoon, depressional-Hamre complex, 0 to 1 percent slopes

#### Talmoon, depressional

*Extent:* 30 to 55 percent of the unit

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

*Slope gradient:* 0 to 1 percent

*Parent material:* till

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

*Flooding:* none

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .24

*Land capability, nonirrigated* 6w

*Hydric soil:* yes

*Hydrologic group:* C/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 6 in	loam	moderate	1.18 to 1.30 in	5.1 to 7.3
Eg -- 6 to 16 in	loam	moderate	1.23 to 2.25 in	5.1 to 7.3
Btg -- 16 to 33 in	clay loam	moderately slow	2.54 to 3.22 in	5.6 to 8.4
2Btg -- 33 to 42 in	clay loam	moderately slow	1.27 to 1.72 in	5.6 to 7.3
2Cg -- 42 to 80 in	loam	moderate	4.91 to 6.43 in	7.4 to 8.4

#### Hamre

*Extent:* 20 to 45 percent of the unit

*Landform(s):* 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:* 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>
Oa -- 0 to 13 in	muck	moderately rapid	4.55 to 5.85 in	5.1 to 7.8
A -- 13 to 18 in	loam	moderate	0.82 to 1.23 in	5.6 to 7.8
Bg -- 18 to 35 in	clay loam	moderately slow	2.37 to 3.22 in	7.4 to 7.8
BCg -- 35 to 71 in	clay loam	moderately slow	5.02 to 6.81 in	7.4 to 7.8
Cg -- 71 to 80 in	loam	moderate	1.18 to 1.54 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### A20B--Kelliher-Beltrami complex, 1 to 6 percent slopes

#### Kelliher

*Extent:* 35 to 70 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 3 to 6 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)* .24

*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	moderate	0.44 to 0.57 in	6.1 to 7.3
E -- 3 to 9 in	fine sandy loam	moderate	0.47 to 1.00 in	5.1 to 7.3
Bt -- 9 to 30 in	clay loam	moderately slow	2.92 to 3.96 in	5.6 to 7.3
Bk -- 30 to 69 in	loam	moderately slow	5.46 to 7.41 in	7.4 to 8.4
C -- 69 to 80 in	loam	moderate	1.43 to 2.09 in	7.4 to 8.4

#### Beltrami

*Extent:* 15 to 40 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 1 to 3 percent

*Parent material:* till

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

*Flooding:* none

*Ponding:* none

*Drainage class:* somewhat poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .28

*Land capability, nonirrigated* 3w

*Hydric soil:* no

*Hydrologic group:* C/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 6 in	loam	moderate	1.06 to 1.30 in	6.1 to 7.3
E -- 6 to 11 in	fine sandy loam	moderately rapid	0.56 to 0.87 in	5.1 to 7.3
Bt -- 11 to 34 in	clay loam	moderately slow	3.20 to 4.34 in	5.6 to 7.3
Bk -- 34 to 60 in	loam	moderate	3.64 to 4.94 in	7.4 to 8.4
C -- 60 to 80 in	loam	moderate	2.61 to 3.81 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### A22A--Talmoon-Beltrami complex, 0 to 3 percent slopes

#### Talmoon

*Extent:* 40 to 75 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):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .24

*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 6 in	loam	moderate	1.18 to 1.30 in	5.1 to 7.3
Eg -- 6 to 16 in	loam	moderate	1.23 to 2.25 in	5.1 to 7.3
Btg -- 16 to 33 in	clay loam	moderately slow	2.54 to 3.22 in	5.6 to 8.4
2Btg -- 33 to 42 in	clay loam	moderately slow	1.27 to 1.72 in	5.6 to 7.3
2Cg -- 42 to 80 in	loam	moderate	4.91 to 6.43 in	7.4 to 8.4

#### Beltrami

*Extent:* 20 to 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:* somewhat poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .28

*Land capability, nonirrigated* 3w

*Hydric soil:* no

*Hydrologic group:* C/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 6 in	loam	moderate	1.06 to 1.30 in	6.1 to 7.3
E -- 6 to 11 in	fine sandy loam	moderately rapid	0.56 to 0.87 in	5.1 to 7.3
Bt -- 11 to 34 in	clay loam	moderately slow	3.20 to 4.34 in	5.6 to 7.3
Bk -- 34 to 60 in	loam	moderate	3.64 to 4.94 in	7.4 to 8.4
C -- 60 to 80 in	loam	moderate	2.61 to 3.81 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### A25A--Beltrami-Talmoon complex, 0 to 3 percent slopes

#### Beltrami

<i>Extent:</i> 40 to 80 percent of the unit	<i>Soil loss tolerance (T factor):</i> 5
<i>Landform(s):</i> flats, rises on moraines	<i>Wind erodibility group (WEG):</i> 6
<i>Slope gradient:</i> 1 to 3 percent	<i>Wind erodibility index (WEI):</i> 48
<i>Parent material:</i> till	<i>Kw factor (surface layer)</i> .28
<i>Restrictive feature(s):</i> greater than 60 inches	<i>Land capability, nonirrigated</i> 3w
<i>Flooding:</i> none	<i>Hydric soil:</i> no
<i>Ponding:</i> none	<i>Hydrologic group:</i> C/D
<i>Drainage class:</i> somewhat poorly 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>
Ap -- 0 to 6 in	loam	moderate	1.06 to 1.30 in	6.1 to 7.3
E -- 6 to 11 in	fine sandy loam	moderately rapid	0.56 to 0.87 in	5.1 to 7.3
Bt -- 11 to 34 in	clay loam	moderately slow	3.20 to 4.34 in	5.6 to 7.3
Bk -- 34 to 60 in	loam	moderate	3.64 to 4.94 in	7.4 to 8.4
C -- 60 to 80 in	loam	moderate	2.61 to 3.81 in	7.4 to 8.4

#### Talmoon

<i>Extent:</i> 15 to 30 percent of the unit	<i>Soil loss tolerance (T factor):</i> 5
<i>Landform(s):</i> flats on moraines, swales on moraines	<i>Wind erodibility group (WEG):</i> 6
<i>Slope gradient:</i> 0 to 2 percent	<i>Wind erodibility index (WEI):</i> 48
<i>Parent material:</i> till	<i>Kw factor (surface layer)</i> .24
<i>Restrictive feature(s):</i> greater than 60 inches	<i>Land capability, nonirrigated</i> 3w
<i>Flooding:</i> none	<i>Hydric soil:</i> yes
<i>Ponding:</i> none	<i>Hydrologic group:</i> C/D
<i>Drainage class:</i> poorly 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 -- 0 to 6 in	loam	moderate	1.18 to 1.30 in	5.1 to 7.3
Eg -- 6 to 16 in	loam	moderate	1.23 to 2.25 in	5.1 to 7.3
Btg -- 16 to 33 in	clay loam	moderately slow	2.54 to 3.22 in	5.6 to 8.4
2Btg -- 33 to 42 in	clay loam	moderately slow	1.27 to 1.72 in	5.6 to 7.3
2Cg -- 42 to 80 in	loam	moderate	4.91 to 6.43 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### A30C--Nebish-Kelliher complex, 3 to 15 percent slopes

#### Nebish

*Extent:* 30 to 50 percent of the unit

*Landform(s):* 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* 4e

*Hydric soil:* no

*Hydrologic group:* C

*Potential for frost action:* moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 6 in	fine sandy loam	moderate	0.83 to 1.06 in	5.6 to 7.3
Bt -- 6 to 16 in	clay loam	moderately slow	1.33 to 1.74 in	5.6 to 7.3
Bk -- 16 to 36 in	loam	moderately slow	2.76 to 3.74 in	7.4 to 8.4
C -- 36 to 80 in	loam	moderate	5.73 to 8.38 in	7.4 to 8.4

#### Kelliher

*Extent:* 25 to 45 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 3 to 5 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)* .24

*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	moderate	0.44 to 0.57 in	6.1 to 7.3
E -- 3 to 9 in	fine sandy loam	moderate	0.47 to 1.00 in	5.1 to 7.3
Bt -- 9 to 30 in	clay loam	moderately slow	2.92 to 3.96 in	5.6 to 7.3
Bk -- 30 to 69 in	loam	moderately slow	5.46 to 7.41 in	7.4 to 8.4
C -- 69 to 80 in	loam	moderate	1.43 to 2.09 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### A31A--Northwood-Berner complex, mlra 57, 0 to 1 percent slopes

#### Northwood

*Extent:* 40 to 60 percent of the unit  
*Landform(s):* depressions on moraines  
*Slope gradient:* 0 to 1 percent  
*Parent material:* herbaceous organic material over sandy glaciolacustrine deposits 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:* C/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 9 in	muck	moderately rapid	3.17 to 4.07 in	5.1 to 7.8
A -- 9 to 14 in	loamy sand	moderately rapid	0.51 to 0.61 in	5.1 to 6.5
Bg -- 14 to 24 in	loamy sand	moderately rapid	0.30 to 1.08 in	5.6 to 8.4
2BCkg -- 24 to 64 in	clay loam	moderately slow	5.62 to 7.63 in	7.4 to 7.8
2Cg -- 64 to 80 in	loam	moderate	2.05 to 2.68 in	7.4 to 8.4

#### Berner

*Extent:* 25 to 45 percent of the unit  
*Landform(s):* depressions on moraines  
*Slope gradient:* 0 to 1 percent  
*Parent material:* herbaceous organic material over sandy outwash 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* 7w  
*Hydric soil:* yes  
*Hydrologic group:* A/D  
*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa -- 0 to 29 in	muck	moderately rapid	10.06 to 12.93 in	
A -- 29 to 31 in	loamy sand	moderately rapid	0.24 to 0.28 in	5.1 to 6.5
Bg -- 31 to 44 in	loamy sand	moderately rapid	0.39 to 1.43 in	5.6 to 8.4
2BCkg -- 44 to 66 in	clay loam	moderately slow	3.09 to 4.19 in	7.4 to 7.8
2Cg -- 66 to 80 in	loam	moderate	1.79 to 2.34 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### A31A--Northwood-Berner complex, mlra 57, 0 to 1 percent slopes

### A32A--Greenwood-Lobo complex, nebish catena, 0 to 1 percent slopes

#### Greenwood

*Extent:* 50 to 80 percent of the unit

*Landform(s):* raised bogs on moraines

*Slope gradient:* 0 to 1 percent

*Parent material:* herbaceous organic material

*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):* 8

*Wind erodibility index (WEI):* 0

*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>
Oi -- 0 to 10 in	peat	very rapid	5.41 to 6.40 in	
Oe1 -- 10 to 24 in	mucky peat	rapid	6.38 to 7.80 in	
Oe2 -- 24 to 80 in	mucky peat	rapid	25.16 to 30.75 in	

#### Lobo

*Extent:* 20 to 50 percent of the unit

*Landform(s):* raised bogs on moraines

*Slope gradient:* 0 to 1 percent

*Parent material:* herbaceous organic material

*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):* 8

*Wind erodibility index (WEI):* 0

*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>
Oi -- 0 to 38 in	peat	very rapid	21.00 to 24.82 in	
Oe -- 38 to 80 in	mucky peat	rapid	18.78 to 22.95 in	

## Map Unit Description (MN)

Koochiching County, Minnesota

### A33A--Blomford-Northwood complex, 0 to 2 percent slopes

#### Blomford

*Extent:* 40 to 60 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* sandy outwash 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):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .02

*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 5 in	loamy sand	rapid	0.51 to 0.61 in	5.1 to 6.5
Eg -- 5 to 23 in	loamy sand	rapid	0.53 to 1.95 in	5.1 to 6.5
2Btg -- 23 to 55 in	clay loam	moderately slow	4.84 to 6.13 in	5.6 to 8.4
2BCg -- 55 to 65 in	clay loam	moderately slow	1.38 to 1.87 in	7.4 to 7.8
2Cg -- 65 to 80 in	loam	moderate	1.94 to 2.54 in	7.4 to 8.4

#### Northwood

*Extent:* 30 to 50 percent of the unit

*Landform(s):* depressions, moraines

*Slope gradient:* 0 to 1 percent

*Parent material:* herbaceous organic material over sandy glaciolacustrine deposits 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:* C/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 9 in	muck	moderately rapid	3.17 to 4.07 in	5.1 to 7.8
A -- 9 to 14 in	loamy sand	moderately rapid	0.51 to 0.61 in	5.1 to 6.5
Bg -- 14 to 24 in	loamy sand	moderately rapid	0.30 to 1.08 in	5.6 to 8.4
2BCkg -- 24 to 64 in	clay loam	moderately slow	5.62 to 7.63 in	7.4 to 7.8
2Cg -- 64 to 80 in	loam	moderate	2.05 to 2.68 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### A34A--Rifle soils, nebish catena, 0 to 1 percent slopes

#### Rifle

*Extent:* 0 to 95 percent of the unit

*Landform(s):* depressions on moraines

*Slope gradient:* 0 to 1 percent

*Parent material:* herbaceous organic material

*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):* 5

*Wind erodibility index (WEI):* 56

*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>
Oe1 -- 0 to 12 in	mucky peat	rapid	5.31 to 6.50 in	
Oe2 -- 12 to 42 in	mucky peat	rapid	13.64 to 16.67 in	
Oa -- 42 to 52 in	muck	moderately rapid	3.44 to 4.43 in	
Oe3 -- 52 to 80 in	mucky peat	rapid	12.58 to 15.37 in	

#### Rifle, depressional

*Extent:* 0 to 95 percent of the unit

*Landform(s):* depressions on moraines

*Slope gradient:* 0 to 1 percent

*Parent material:* herbaceous organic material

*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* 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>
Oe1 -- 0 to 12 in	mucky peat	rapid	5.31 to 6.50 in	
Oe2 -- 12 to 42 in	mucky peat	rapid	13.64 to 16.67 in	
Oa -- 42 to 52 in	muck	moderately rapid	3.44 to 4.43 in	
Oe3 -- 52 to 80 in	mucky peat	rapid	12.58 to 15.37 in	

## Map Unit Description (MN)

Koochiching County, Minnesota

### A35A--Ricelake-Blomford complex, mlra 57, 0 to 3 percent slopes

#### Ricelake

<p><i>Extent:</i> 40 to 70 percent of the unit</p> <p><i>Landform(s):</i> flats on moraines, rises on moraines</p> <p><i>Slope gradient:</i> 0 to 3 percent</p> <p><i>Parent material:</i> sandy outwash over 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> somewhat poorly 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> .05</p> <p><i>Land capability, nonirrigated</i> 3w</p> <p><i>Hydric soil:</i> no</p> <p><i>Hydrologic group:</i> B/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 2 in	loamy sand	moderately rapid	0.18 to 0.22 in	5.1 to 6.5
E -- 2 to 23 in	loamy sand	moderately rapid	0.63 to 2.30 in	5.1 to 6.5
Bt -- 23 to 30 in	sandy loam	moderate	0.85 to 1.35 in	5.6 to 7.3
Bw -- 30 to 35 in	sand	rapid	0.15 to 0.87 in	5.6 to 7.3
2C -- 35 to 80 in	loam	moderate	6.28 to 8.53 in	7.4 to 8.4

#### Blomford

<p><i>Extent:</i> 25 to 40 percent of the unit</p> <p><i>Landform(s):</i> flats on moraines, swales on moraines</p> <p><i>Slope gradient:</i> 0 to 2 percent</p> <p><i>Parent material:</i> sandy outwash over 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> poorly 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> .02</p> <p><i>Land capability, nonirrigated</i> 3w</p> <p><i>Hydric soil:</i> yes</p> <p><i>Hydrologic group:</i> C/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 5 in	loamy sand	rapid	0.51 to 0.61 in	5.1 to 6.5
Eg -- 5 to 23 in	loamy sand	rapid	0.53 to 1.95 in	5.1 to 6.5
2Btg -- 23 to 55 in	clay loam	moderately slow	4.84 to 6.13 in	5.6 to 8.4
2BCg -- 55 to 65 in	clay loam	moderately slow	1.38 to 1.87 in	7.4 to 7.8
2Cg -- 65 to 80 in	loam	moderate	1.94 to 2.54 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### A36A--Greenwood soils, nebish catena, 0 to 1 percent slopes

#### Greenwood

<i>Extent:</i> 0 to 95 percent of the unit	<i>Soil loss tolerance (T factor):</i> 2
<i>Landform(s):</i> raised bogs on moraines	<i>Wind erodibility group (WEG):</i> 8
<i>Slope gradient:</i> 0 to 1 percent	<i>Wind erodibility index (WEI):</i> 0
<i>Parent material:</i> herbaceous organic material	<i>Kw factor (surface layer)</i> .02
<i>Restrictive feature(s):</i> greater than 60 inches	<i>Land capability, nonirrigated</i> 7w
<i>Flooding:</i> none	<i>Hydric soil:</i> yes
<i>Ponding:</i> none	<i>Hydrologic group:</i> A/D
<i>Drainage class:</i> very poorly 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>
Oi -- 0 to 10 in	peat	very rapid	5.41 to 6.40 in	
Oe1 -- 10 to 24 in	mucky peat	rapid	6.38 to 7.80 in	
Oe2 -- 24 to 80 in	mucky peat	rapid	25.16 to 30.75 in	

#### Greenwood, depressional

<i>Extent:</i> 0 to 95 percent of the unit	<i>Soil loss tolerance (T factor):</i> 2
<i>Landform(s):</i> depressions on moraines	<i>Wind erodibility group (WEG):</i> 8
<i>Slope gradient:</i> 0 to 1 percent	<i>Wind erodibility index (WEI):</i> 0
<i>Parent material:</i> herbaceous organic material	<i>Kw factor (surface layer)</i> .02
<i>Restrictive feature(s):</i> greater than 60 inches	<i>Land capability, nonirrigated</i> 7w
<i>Flooding:</i> none	<i>Hydric soil:</i> yes
<i>Ponding:</i> frequent	<i>Hydrologic group:</i> A/D
<i>Drainage class:</i> very poorly 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>
Oi -- 0 to 10 in	peat	very rapid	5.41 to 6.40 in	
Oe1 -- 10 to 24 in	mucky peat	rapid	6.38 to 7.80 in	
Oe2 -- 24 to 80 in	mucky peat	rapid	25.16 to 30.75 in	

## Map Unit Description (MN)

Koochiching County, Minnesota

### A37B--Ricelake-Cutaway complex, mlra 57, 1 to 4 percent slopes

#### Ricelake

*Extent:* 35 to 55 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 1 to 3 percent

*Parent material:* sandy outwash over till

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

*Flooding:* none

*Ponding:* none

*Drainage class:* somewhat poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .05

*Land capability, nonirrigated* 3w

*Hydric soil:* no

*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 2 in	loamy sand	moderately rapid	0.18 to 0.22 in	5.1 to 6.5
E -- 2 to 23 in	loamy sand	moderately rapid	0.63 to 2.30 in	5.1 to 6.5
Bt -- 23 to 30 in	sandy loam	moderate	0.85 to 1.35 in	5.6 to 7.3
Bw -- 30 to 35 in	sand	rapid	0.15 to 0.87 in	5.6 to 7.3
2C -- 35 to 80 in	loam	moderate	6.28 to 8.53 in	7.4 to 8.4

#### Cutaway

*Extent:* 25 to 45 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 2 to 4 percent

*Parent material:* sandy outwash 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)* .05

*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	moderately rapid	0.28 to 0.35 in	5.1 to 6.5
E -- 3 to 14 in	loamy sand	moderately rapid	0.33 to 1.21 in	5.1 to 6.5
E/B -- 14 to 31 in	loamy sand	moderately rapid	0.51 to 1.86 in	5.6 to 6.5
2Bt -- 31 to 39 in	clay loam	moderately slow	1.10 to 1.50 in	5.6 to 7.3
2Bk -- 39 to 50 in	loam	moderately slow	1.54 to 2.09 in	7.4 to 8.4
2C -- 50 to 80 in	loam	moderate	3.89 to 5.69 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### A37B--Ricelake-Cutaway complex, mlra 57, 1 to 4 percent slopes

### A38A--Cathro and Tacoosh soils, nebish catena, 0 to 1 percent slopes

#### Cathro

<i>Extent:</i> 35 to 60 percent of the unit	<i>Soil loss tolerance (T factor):</i> 1
<i>Landform(s):</i> depressions on moraines	<i>Wind erodibility group (WEG):</i> 8
<i>Slope gradient:</i> 0 to 1 percent	<i>Wind erodibility index (WEI):</i> 0
<i>Parent material:</i> herbaceous organic material over till	<i>Kw factor (surface layer)</i> .02
<i>Restrictive feature(s):</i> greater than 60 inches	<i>Land capability, nonirrigated</i> 7w
<i>Flooding:</i> none	<i>Hydric soil:</i> yes
<i>Ponding:</i> frequent	<i>Hydrologic group:</i> B/D
<i>Drainage class:</i> very poorly 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>
Oa -- 0 to 36 in	muck	moderately rapid	12.54 to 16.12 in	
A -- 36 to 40 in	mucky silt loam	moderate	0.95 to 1.13 in	5.1 to 6.5
Cg -- 40 to 80 in	loam	moderate	5.57 to 7.56 in	7.4 to 8.4

#### Tacoosh

<i>Extent:</i> 35 to 60 percent of the unit	<i>Soil loss tolerance (T factor):</i> 1
<i>Landform(s):</i> depressions on moraines	<i>Wind erodibility group (WEG):</i> 5
<i>Slope gradient:</i> 0 to 1 percent	<i>Wind erodibility index (WEI):</i> 56
<i>Parent material:</i> herbaceous organic material over till	<i>Kw factor (surface layer)</i> .02
<i>Restrictive feature(s):</i> greater than 60 inches	<i>Land capability, nonirrigated</i> 7w
<i>Flooding:</i> none	<i>Hydric soil:</i> yes
<i>Ponding:</i> frequent	<i>Hydrologic group:</i> B/D
<i>Drainage class:</i> very poorly 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>
Oe1 -- 0 to 12 in	mucky peat	rapid	5.31 to 6.50 in	
Oe2 -- 12 to 32 in	mucky peat	rapid	9.04 to 11.04 in	
Oa -- 32 to 36 in	muck	moderately rapid	1.38 to 1.77 in	
Cg -- 36 to 80 in	loam	moderate	6.17 to 8.38 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### A39B--Cutaway-Ricelake complex, mlra 57, 2 to 8 percent slopes

#### Cutaway

*Extent:* 50 to 60 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 3 to 8 percent

*Parent material:* sandy outwash 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)* .05

*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	moderately rapid	0.28 to 0.35 in	5.1 to 6.5
E -- 3 to 14 in	loamy sand	moderately rapid	0.33 to 1.21 in	5.1 to 6.5
E/B -- 14 to 31 in	loamy sand	moderately rapid	0.51 to 1.86 in	5.6 to 6.5
2Bt -- 31 to 39 in	clay loam	moderately slow	1.10 to 1.50 in	5.6 to 7.3
2Bk -- 39 to 50 in	loam	moderately slow	1.54 to 2.09 in	7.4 to 8.4
2C -- 50 to 80 in	loam	moderate	3.89 to 5.69 in	7.4 to 8.4

#### Ricelake

*Extent:* 25 to 45 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 2 to 6 percent

*Parent material:* sandy outwash over till

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

*Flooding:* none

*Ponding:* none

*Drainage class:* somewhat poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .05

*Land capability, nonirrigated* 3w

*Hydric soil:* no

*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 2 in	loamy sand	moderately rapid	0.18 to 0.22 in	5.1 to 6.5
E -- 2 to 23 in	loamy sand	moderately rapid	0.63 to 2.30 in	5.1 to 6.5
Bt -- 23 to 30 in	sandy loam	moderate	0.85 to 1.35 in	5.6 to 7.3
Bw -- 30 to 35 in	sand	rapid	0.15 to 0.87 in	5.6 to 7.3
2C -- 35 to 80 in	loam	moderate	6.28 to 8.53 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### A39B--Cutaway-Ricelake complex, mlra 57, 2 to 8 percent slopes

### A40A--Beseman and Merwin soils, nebish catena, 0 to 1 percent slopes

#### Beseman

*Extent:* 35 to 60 percent of the unit

*Landform(s):* 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:* 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* 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>
Oa -- 0 to 36 in	muck	moderately rapid	12.54 to 16.12 in	
Cg -- 36 to 80 in	loam	moderate	6.17 to 8.38 in	7.4 to 8.4

#### Merwin

*Extent:* 35 to 60 percent of the unit

*Landform(s):* 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:* 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* 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>
Oi -- 0 to 6 in	peat	very rapid	3.25 to 3.84 in	
Oe -- 6 to 46 in	mucky peat	rapid	18.07 to 22.09 in	
Cg -- 46 to 80 in	loam	moderate	4.74 to 6.43 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### B1C--Taylor silty clay loam, 4 to 12 percent slopes

#### Taylor

*Extent:* 75 to 90 percent of the unit

*Landform(s):* lake plains

*Slope gradient:* 4 to 12 percent

*Parent material:* clayey 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):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .32

*Land capability, nonirrigated* 3s

*Hydric soil:* no

*Hydrologic group:* 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	silty clay loam	moderately slow	0.83 to 0.91 in	5.1 to 6.5
E -- 4 to 10 in	silty clay loam	moderately slow	0.77 to 1.18 in	5.1 to 7.3
B/E -- 10 to 14 in	silty clay	slow	0.56 to 0.87 in	5.6 to 7.3
Bt -- 14 to 30 in	clay	very slow	1.26 to 1.57 in	5.6 to 7.3
BC -- 30 to 38 in	clay	very slow	0.66 to 0.99 in	7.4 to 8.4
C -- 38 to 80 in	clay	very slow	3.34 to 5.01 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### B1D--Taylor silty clay loam, 12 to 25 percent slopes

#### Taylor

*Extent:* 75 to 90 percent of the unit

*Landform(s):* lake plains

*Slope gradient:* 12 to 25 percent

*Parent material:* clayey 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):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .32

*Land capability, nonirrigated* 4e

*Hydric soil:* no

*Hydrologic group:* 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	silty clay loam	moderately slow	0.83 to 0.91 in	5.1 to 6.5
E -- 4 to 10 in	silty clay loam	moderately slow	0.77 to 1.18 in	5.1 to 7.3
B/E -- 10 to 14 in	silty clay	slow	0.56 to 0.87 in	5.6 to 7.3
Bt -- 14 to 30 in	clay	very slow	1.26 to 1.57 in	5.6 to 7.3
BC -- 30 to 38 in	clay	very slow	0.66 to 0.99 in	7.4 to 8.4
C -- 38 to 80 in	clay	very slow	3.34 to 5.01 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### B2A--Indus-Woodslake, depressional, complex, 0 to 1 percent slopes

#### Indus

*Extent:* 55 to 75 percent of the unit

*Landform(s):* flats on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* clayey 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):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .28

*Land capability, nonirrigated* 4w

*Hydric soil:* yes

*Hydrologic group:* D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 4 in	silty clay loam	moderately slow	0.83 to 0.91 in	5.1 to 6.5
Eg -- 4 to 7 in	clay	slow	0.31 to 0.60 in	5.1 to 7.3
Btg -- 7 to 34 in	clay	very slow	2.14 to 2.68 in	5.6 to 7.3
Bkg -- 34 to 50 in	clay	very slow	1.29 to 1.94 in	7.4 to 8.4
Cg -- 50 to 80 in	clay	very slow	2.39 to 3.59 in	7.4 to 8.4

#### Woodslake, depressional

*Extent:* 20 to 40 percent of the unit

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

*Slope gradient:* 0 to 1 percent

*Parent material:* clayey glaciolacustrine deposits

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

*Flooding:* none

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .28

*Land capability, nonirrigated* 6w

*Hydric soil:* yes

*Hydrologic group:* D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 7 in	silty clay loam	moderately slow	1.49 to 1.63 in	5.6 to 6.5
Bg -- 7 to 18 in	clay	very slow	0.88 to 1.21 in	5.6 to 7.3
Cg1 -- 18 to 36 in	clay	very slow	1.42 to 1.77 in	6.6 to 7.8
Cg2 -- 36 to 80 in	clay	very slow	3.53 to 5.29 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### B3B--Alango-Indus complex, 1 to 4 percent slopes

#### Alango

<p><i>Extent:</i> 50 to 75 percent of the unit</p> <p><i>Landform(s):</i> rises on lake plains</p> <p><i>Slope gradient:</i> 1 to 4 percent</p> <p><i>Parent material:</i> clayey glaciolacustrine deposits</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> somewhat poorly drained</p>	<p><i>Soil loss tolerance (T factor):</i> 5</p> <p><i>Wind erodibility group (WEG):</i> 6</p> <p><i>Wind erodibility index (WEI):</i> 48</p> <p><i>Kw factor (surface layer)</i> .28</p> <p><i>Land capability, nonirrigated</i> 3w</p> <p><i>Hydric soil:</i> no</p> <p><i>Hydrologic group:</i> 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 2 in	silty clay loam	moderately slow	0.41 to 0.45 in	5.1 to 6.5
Eg -- 2 to 10 in	silty clay loam	moderately slow	1.02 to 1.57 in	5.1 to 7.3
Btg -- 10 to 28 in	clay	very slow	1.45 to 1.81 in	5.6 to 7.3
Bkg -- 28 to 60 in	clay	very slow	2.55 to 3.83 in	7.4 to 8.4
Cg -- 60 to 80 in	clay	very slow	1.61 to 2.41 in	7.4 to 8.4

#### Indus

<p><i>Extent:</i> 15 to 35 percent of the unit</p> <p><i>Landform(s):</i> flats on lake plains</p> <p><i>Slope gradient:</i> 1 to 2 percent</p> <p><i>Parent material:</i> clayey glaciolacustrine deposits</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> poorly drained</p>	<p><i>Soil loss tolerance (T factor):</i> 5</p> <p><i>Wind erodibility group (WEG):</i> 6</p> <p><i>Wind erodibility index (WEI):</i> 48</p> <p><i>Kw factor (surface layer)</i> .28</p> <p><i>Land capability, nonirrigated</i> 4w</p> <p><i>Hydric soil:</i> yes</p> <p><i>Hydrologic group:</i> 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 4 in	silty clay loam	moderately slow	0.83 to 0.91 in	5.1 to 6.5
Eg -- 4 to 7 in	clay	slow	0.31 to 0.60 in	5.1 to 7.3
Btg -- 7 to 34 in	clay	very slow	2.14 to 2.68 in	5.6 to 7.3
Bkg -- 34 to 50 in	clay	very slow	1.29 to 1.94 in	7.4 to 8.4
Cg -- 50 to 80 in	clay	very slow	2.39 to 3.59 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### B4A--Indus-Dora, depressional, complex, 0 to 2 percent slopes

#### Indus

<p><i>Extent:</i> 55 to 80 percent of the unit</p> <p><i>Landform(s):</i> rises on lake plains, flats on lake plains</p> <p><i>Slope gradient:</i> 0 to 2 percent</p> <p><i>Parent material:</i> clayey glaciolacustrine deposits</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> poorly drained</p>	<p><i>Soil loss tolerance (T factor):</i> 5</p> <p><i>Wind erodibility group (WEG):</i> 6</p> <p><i>Wind erodibility index (WEI):</i> 48</p> <p><i>Kw factor (surface layer)</i> .28</p> <p><i>Land capability, nonirrigated</i> 4w</p> <p><i>Hydric soil:</i> yes</p> <p><i>Hydrologic group:</i> 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 4 in	silty clay loam	moderately slow	0.83 to 0.91 in	5.1 to 6.5
Eg -- 4 to 7 in	clay	slow	0.31 to 0.60 in	5.1 to 7.3
Btg -- 7 to 34 in	clay	very slow	2.14 to 2.68 in	5.6 to 7.3
Bkg -- 34 to 50 in	clay	very slow	1.29 to 1.94 in	7.4 to 8.4
Cg -- 50 to 80 in	clay	very slow	2.39 to 3.59 in	7.4 to 8.4

#### Dora, depressional

<p><i>Extent:</i> 20 to 40 percent of the unit</p> <p><i>Landform(s):</i> depressions on lake plains, drainageways on lake plains</p> <p><i>Slope gradient:</i> 0 to 1 percent</p> <p><i>Parent material:</i> herbaceous organic material over clayey glaciolacustrine deposits</p> <p><i>Restrictive feature(s):</i> greater than 60 inches</p> <p><i>Flooding:</i> none</p> <p><i>Ponding:</i> frequent</p> <p><i>Drainage class:</i> very poorly drained</p>	<p><i>Soil loss tolerance (T factor):</i> 1</p> <p><i>Wind erodibility group (WEG):</i> 8</p> <p><i>Wind erodibility index (WEI):</i> 0</p> <p><i>Kw factor (surface layer)</i></p> <p><i>Land capability, nonirrigated</i> 7w</p> <p><i>Hydric soil:</i> yes</p> <p><i>Hydrologic group:</i> 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>
Oe -- 0 to 6 in	mucky peat	rapid	2.66 to 3.25 in	
Oa -- 6 to 22 in	muck	moderately rapid	6.46 to 7.26 in	
A -- 22 to 26 in	mucky silty clay loam	slow	0.59 to 1.18 in	6.1 to 7.3
Cg1 -- 26 to 36 in	clay	very slow	0.79 to 0.98 in	6.6 to 7.8
Cg2 -- 36 to 80 in	clay	very slow	3.53 to 5.29 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

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### **B4A--Indus-Dora, depressional, complex, 0 to 2 percent slopes**

## Map Unit Description (MN)

Koochiching County, Minnesota

### B5B--Alango-Taylor-Woodslake, depressional, complex, 0 to 6 percent slopes

#### Alango

*Extent:* 40 to 60 percent of the unit

*Landform(s):* lake plains

*Slope gradient:* 1 to 4 percent

*Parent material:* clayey 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):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .28

*Land capability, nonirrigated* 3w

*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 2 in	silty clay loam	moderately slow	0.41 to 0.45 in	5.1 to 6.5
Eg -- 2 to 10 in	silty clay loam	moderately slow	1.02 to 1.57 in	5.1 to 7.3
Btg -- 10 to 28 in	clay	very slow	1.45 to 1.81 in	5.6 to 7.3
Bkg -- 28 to 60 in	clay	very slow	2.55 to 3.83 in	7.4 to 8.4
Cg -- 60 to 80 in	clay	very slow	1.61 to 2.41 in	7.4 to 8.4

#### Woodslake, depressional

*Extent:* 10 to 25 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* clayey glaciolacustrine deposits

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

*Flooding:* none

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .28

*Land capability, nonirrigated* 6w

*Hydric soil:* yes

*Hydrologic group:* D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 7 in	silty clay loam	moderately slow	1.49 to 1.63 in	5.6 to 6.5
Bg -- 7 to 18 in	clay	very slow	0.88 to 1.21 in	5.6 to 7.3
Cg1 -- 18 to 36 in	clay	very slow	1.42 to 1.77 in	6.6 to 7.8
Cg2 -- 36 to 80 in	clay	very slow	3.53 to 5.29 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### B5B--Alango-Taylor-Woodslake, depressional, complex, 0 to 6 percent slopes

#### Taylor

*Extent:* 15 to 25 percent of the unit

*Landform(s):* lake plains

*Slope gradient:* 2 to 6 percent

*Parent material:* clayey 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):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .32

*Land capability, nonirrigated* 3s

*Hydric soil:* no

*Hydrologic group:* 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	silty clay loam	moderately slow	0.83 to 0.91 in	5.1 to 6.5
E -- 4 to 10 in	silty clay loam	moderately slow	0.77 to 1.18 in	5.1 to 7.3
B/E -- 10 to 14 in	silty clay	slow	0.56 to 0.87 in	5.6 to 7.3
Bt -- 14 to 30 in	clay	very slow	1.26 to 1.57 in	5.6 to 7.3
BC -- 30 to 38 in	clay	very slow	0.66 to 0.99 in	7.4 to 8.4
C -- 38 to 80 in	clay	very slow	3.34 to 5.01 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### B6B--Morcom-Thistledew complex, 0 to 6 percent slopes

#### Morcom

<p><i>Extent:</i> 40 to 60 percent of the unit</p> <p><i>Landform(s):</i> lake plains</p> <p><i>Slope gradient:</i> 0 to 4 percent</p> <p><i>Parent material:</i> sandy outwash over clayey glaciolacustrine deposits</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> somewhat poorly drained</p>	<p><i>Soil loss tolerance (T factor):</i> 4</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> .20</p> <p><i>Land capability, nonirrigated</i> 3w</p> <p><i>Hydric soil:</i> no</p> <p><i>Hydrologic group:</i> 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 3 in	fine sandy loam	moderately rapid	0.50 to 0.57 in	5.1 to 6.5
E -- 3 to 8 in	sandy loam	moderately rapid	0.47 to 0.76 in	5.1 to 6.5
Bw -- 8 to 19 in	loamy sand	rapid	0.88 to 1.21 in	5.1 to 6.5
2B/E -- 19 to 24 in	sandy clay loam	moderate	0.72 to 0.97 in	5.6 to 7.3
3Bt -- 24 to 28 in	clay	very slow	0.31 to 0.47 in	5.6 to 7.3
3Bk -- 28 to 44 in	clay	very slow	1.29 to 1.94 in	7.4 to 8.4
3C -- 44 to 80 in	clay	very slow	2.87 to 4.30 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### B6B--Morcom-Thistledew complex, 0 to 6 percent slopes

#### Thistledew

*Extent:* 20 to 40 percent of the unit

*Landform(s):* lake plains

*Slope gradient:* 1 to 6 percent

*Parent material:* sandy outwash over clayey glaciolacustrine deposits

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

*Flooding:* none

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 4

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .10

*Land capability, nonirrigated* 3s

*Hydric soil:* no

*Hydrologic group:* A

*Potential for frost action:* low

*Representative soil profile:*

		<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A --	0 to 3 in	loamy sand	rapid	0.31 to 0.38 in	5.1 to 6.5
Bw --	3 to 29 in	loamy sand	rapid	1.56 to 2.86 in	5.1 to 6.5
2Bt1 --	29 to 43 in	sandy clay loam	moderate	1.93 to 2.62 in	5.6 to 7.3
3Bt2 --	43 to 50 in	clay	very slow	0.57 to 0.85 in	5.6 to 7.3
3C --	50 to 80 in	clay	very slow	2.39 to 3.59 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### B12D--Taylor-Greaney, frequently flooded, complex, 0 to 25 percent slopes

#### Taylor

*Extent:* 40 to 60 percent of the unit

*Landform(s):* flood plains

*Slope gradient:* 8 to 25 percent

*Parent material:* clayey 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):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .32

*Land capability, nonirrigated* 4e

*Hydric soil:* no

*Hydrologic group:* 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	silty clay loam	moderately slow	0.83 to 0.91 in	5.1 to 6.5
E -- 4 to 10 in	silty clay loam	moderately slow	0.77 to 1.18 in	5.1 to 7.3
B/E -- 10 to 14 in	silty clay	slow	0.56 to 0.87 in	5.6 to 7.3
Bt -- 14 to 30 in	clay	very slow	1.26 to 1.57 in	5.6 to 7.3
BC -- 30 to 38 in	clay	very slow	0.66 to 0.99 in	7.4 to 8.4
C -- 38 to 80 in	clay	very slow	3.34 to 5.01 in	7.4 to 8.4

#### Greaney, frequently flooded

*Extent:* 30 to 50 percent of the unit

*Landform(s):* flats on flood plains

*Slope gradient:* 0 to 1 percent

*Parent material:* clayey alluvium

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

*Flooding:* frequent

*Ponding:* none

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .28

*Land capability, nonirrigated* 7w

*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	silty clay loam	moderately slow	0.83 to 0.91 in	5.1 to 6.5
Bg -- 4 to 30 in	silty clay	slow	2.86 to 5.20 in	5.6 to 7.3
Cg -- 30 to 80 in	stratified clay loam to silty clay loam to silty clay to clay	slow	5.00 to 6.50 in	6.6 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### B18A--Foglake-Hassman, depressional, complex, 0 to 2 percent slopes

#### Foglake

*Extent:* 40 to 60 percent of the unit

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

*Wind erodibility group (WEG):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .43

*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>
Ap -- 0 to 8 in	silt loam	moderate	1.73 to 1.89 in	5.1 to 6.5
Eg -- 8 to 16 in	silt loam	moderate	1.41 to 1.82 in	5.1 to 7.3
Btg,BCg -- 16 to 47 in	silty clay loam	slow	2.76 to 5.83 in	5.1 to 7.3
Cg -- 47 to 80 in	silty clay loam	moderately slow	5.95 to 7.28 in	7.4 to 8.4

#### Hassman, depressional

*Extent:* 20 to 40 percent of the unit

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

*Slope gradient:* 0 to 1 percent

*Parent material:* glaciolacustrine deposits

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

*Flooding:* none

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .28

*Land capability, nonirrigated* 6w

*Hydric soil:* yes

*Hydrologic group:* C/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 10 in	silty clay loam	moderately slow	2.07 to 2.26 in	5.1 to 6.5
Bg -- 10 to 32 in	silty clay	slow	1.98 to 4.19 in	5.1 to 7.3
BCg -- 32 to 45 in	silty clay	slow	1.17 to 2.47 in	5.6 to 7.8
Cg -- 45 to 80 in	silty clay	slow	3.15 to 6.66 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### B19B--Longsiding-Foglake-Grasston complex, 0 to 6 percent slopes

#### Longsiding

*Extent:* 35 to 60 percent of the unit

*Landform(s):* lake plains

*Slope gradient:* 1 to 4 percent

*Parent material:* 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):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .43

*Land capability, nonirrigated* 3w

*Hydric soil:* no

*Hydrologic group:* C/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 9 in	silt loam	moderate	1.99 to 2.17 in	5.1 to 6.5
B/E -- 9 to 12 in	silty clay loam	moderately slow	0.30 to 0.55 in	5.1 to 7.3
Bt1,Bt3 -- 12 to 35 in	silty clay	slow	2.09 to 4.41 in	5.1 to 7.3
Bk,C -- 35 to 80 in	silty clay loam	moderately slow	8.08 to 9.87 in	7.4 to 8.4

#### Foglake

*Extent:* 15 to 35 percent of the unit

*Landform(s):* 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):* 5

*Wind erodibility group (WEG):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .43

*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>
Ap -- 0 to 8 in	silt loam	moderate	1.73 to 1.89 in	5.1 to 6.5
Eg -- 8 to 16 in	silt loam	moderate	1.41 to 1.82 in	5.1 to 7.3
Btg,BCg -- 16 to 47 in	silty clay loam	slow	2.76 to 5.83 in	5.1 to 7.3
Cg -- 47 to 80 in	silty clay loam	moderately slow	5.95 to 7.28 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### B19B--Longsiding-Foglake-Grasston complex, 0 to 6 percent slopes

#### Grasston

*Extent:* 10 to 20 percent of the unit

*Landform(s):* lake plains

*Slope gradient:* 3 to 6 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):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .37

*Land capability, nonirrigated* 2e

*Hydric soil:* no

*Hydrologic group:* 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 9 in	silt loam	moderate	1.99 to 2.17 in	5.1 to 6.5
B/E -- 9 to 14 in	silty clay loam	moderately slow	0.56 to 1.02 in	5.1 to 7.3
Bt1,Bt2 -- 14 to 42 in	silty clay	slow	2.52 to 5.31 in	5.1 to 7.3
Bk,C -- 42 to 80 in	silty clay loam	moderately slow	6.80 to 8.31 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### B23A--Effie-Ashlake complex, mlra 88, 0 to 2 percent slopes

#### Effie

*Extent:* 50 to 65 percent of the unit

*Landform(s):* flats 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):* 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 2 in	loam	moderate	0.39 to 0.43 in	5.1 to 7.3
Eg -- 2 to 5 in	loam	moderate	0.47 to 0.69 in	5.1 to 7.3
B/E -- 5 to 8 in	silty clay loam	slow	0.39 to 0.52 in	5.1 to 7.3
Btg -- 8 to 20 in	silty clay	slow	1.22 to 2.20 in	5.1 to 7.8
BCg -- 20 to 64 in	silty clay loam	moderately slow	6.17 to 7.94 in	7.4 to 8.4
Cg -- 64 to 80 in	clay loam	moderately slow	2.20 to 2.83 in	7.4 to 8.4

#### Ashlake

*Extent:* 30 to 45 percent of the unit

*Landform(s):* rises on moraines

*Slope gradient:* 1 to 2 percent

*Parent material:* till

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

*Flooding:* none

*Ponding:* none

*Drainage class:* somewhat poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 5

*Wind erodibility index (WEI):* 56

*Kw factor (surface layer)* .28

*Land capability, nonirrigated* 3w

*Hydric soil:* no

*Hydrologic group:* C/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 1 in	loam	moderate	0.24 to 0.26 in	5.1 to 7.3
E -- 1 to 4 in	loam	moderate	0.36 to 0.52 in	5.1 to 7.3
E/B -- 4 to 9 in	loam	moderate	0.72 to 0.97 in	5.1 to 7.3
Bt -- 9 to 26 in	silty clay	slow	1.69 to 3.05 in	5.1 to 7.3
Bk -- 26 to 80 in	clay loam	moderately slow	7.55 to 9.71 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

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### B23A--Effie-Ashlake complex, mlra 88, 0 to 2 percent slopes

## Map Unit Description (MN)

Koochiching County, Minnesota

### B24B--Ashlake-Suomi-Effie complex, mlra 88, 1 to 4 percent slopes

#### Ashlake

*Extent:* 25 to 50 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 1 to 3 percent

*Parent material:* till

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

*Flooding:* none

*Ponding:* none

*Drainage class:* somewhat poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 5

*Wind erodibility index (WEI):* 56

*Kw factor (surface layer)* .28

*Land capability, nonirrigated* 3w

*Hydric soil:* no

*Hydrologic group:* C/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 1 in	loam	moderate	0.24 to 0.26 in	5.1 to 7.3
E -- 1 to 4 in	loam	moderate	0.36 to 0.52 in	5.1 to 7.3
E/B -- 4 to 9 in	loam	moderate	0.72 to 0.97 in	5.1 to 7.3
Bt -- 9 to 26 in	silty clay	slow	1.69 to 3.05 in	5.1 to 7.3
Bk -- 26 to 80 in	clay loam	moderately slow	7.55 to 9.71 in	7.4 to 8.4

#### Suomi

*Extent:* 30 to 40 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 1 to 4 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:* 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	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)

Koochiching County, Minnesota

### B24B--Ashlake-Suomi-Effie complex, mlra 88, 1 to 4 percent slopes

#### Effie

*Extent:* 15 to 30 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 1 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 2 in	loam	moderate	0.39 to 0.43 in	5.1 to 7.3
Eg -- 2 to 5 in	loam	moderate	0.47 to 0.69 in	5.1 to 7.3
B/E -- 5 to 8 in	silty clay loam	slow	0.39 to 0.52 in	5.1 to 7.3
Btg -- 8 to 20 in	silty clay	slow	1.22 to 2.20 in	5.1 to 7.8
BCg -- 20 to 64 in	silty clay loam	moderately slow	6.17 to 7.94 in	7.4 to 8.4
Cg -- 64 to 80 in	clay loam	moderately slow	2.20 to 2.83 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### B25B--Suomi-Ashlake complex, mlra 88, 1 to 8 percent slopes

#### Suomi

*Extent:* 60 to 80 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 3 to 8 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:* 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	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

#### Ashlake

*Extent:* 15 to 25 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 1 to 3 percent

*Parent material:* till

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

*Flooding:* none

*Ponding:* none

*Drainage class:* somewhat poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 5

*Wind erodibility index (WEI):* 56

*Kw factor (surface layer)* .28

*Land capability, nonirrigated* 3w

*Hydric soil:* no

*Hydrologic group:* C/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 1 in	loam	moderate	0.24 to 0.26 in	5.1 to 7.3
E -- 1 to 4 in	loam	moderate	0.36 to 0.52 in	5.1 to 7.3
E/B -- 4 to 9 in	loam	moderate	0.72 to 0.97 in	5.1 to 7.3
Bt -- 9 to 26 in	silty clay	slow	1.69 to 3.05 in	5.1 to 7.3
Bk -- 26 to 80 in	clay loam	moderately slow	7.55 to 9.71 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### B25C--Suomi-Ashlake complex, mlra 88, 6 to 15 percent slopes

#### Suomi

*Extent:* 70 to 90 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 6 to 15 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* 3e

*Hydric soil:* no

*Hydrologic group:* C/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	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

#### Ashlake

*Extent:* 5 to 25 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 6 to 6 percent

*Parent material:* till

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

*Flooding:* none

*Ponding:* none

*Drainage class:* somewhat poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 5

*Wind erodibility index (WEI):* 56

*Kw factor (surface layer)* .28

*Land capability, nonirrigated* 3w

*Hydric soil:* no

*Hydrologic group:* C/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 1 in	loam	moderate	0.24 to 0.26 in	5.1 to 7.3
E -- 1 to 4 in	loam	moderate	0.36 to 0.52 in	5.1 to 7.3
E/B -- 4 to 9 in	loam	moderately slow	0.72 to 0.97 in	5.1 to 7.3
Bt -- 9 to 26 in	silty clay	slow	1.69 to 3.05 in	5.1 to 7.3
Bk -- 26 to 80 in	clay loam	moderately slow	7.55 to 9.71 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### B25D--Suomi-Ashlake complex, mlra 88, 6 to 35 percent slopes

#### Suomi

*Extent:* 80 to 90 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 15 to 35 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* 6e

*Hydric soil:* no

*Hydrologic group:* C/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	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

#### Ashlake

*Extent:* 5 to 15 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 6 to 6 percent

*Parent material:* till

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

*Flooding:* none

*Ponding:* none

*Drainage class:* somewhat poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 5

*Wind erodibility index (WEI):* 56

*Kw factor (surface layer)* .28

*Land capability, nonirrigated* 3w

*Hydric soil:* no

*Hydrologic group:* C/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 1 in	loam	moderate	0.24 to 0.26 in	5.1 to 7.3
E -- 1 to 4 in	loam	moderate	0.36 to 0.52 in	5.1 to 7.3
E/B -- 4 to 9 in	loam	moderately slow	0.72 to 0.97 in	5.1 to 7.3
Bt -- 9 to 26 in	silty clay	slow	1.69 to 3.05 in	5.1 to 7.3
Bk -- 26 to 80 in	clay loam	moderately slow	7.55 to 9.71 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### B42B--Haystore-Kooch complex, 1 to 8 percent slopes

#### Haystore

<p><i>Extent:</i> 40 to 70 percent of the unit</p> <p><i>Landform(s):</i> till plains</p> <p><i>Slope gradient:</i> 3 to 8 percent</p> <p><i>Parent material:</i> clayey 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> 3</p> <p><i>Wind erodibility group (WEG):</i> 6</p> <p><i>Wind erodibility index (WEI):</i> 48</p> <p><i>Kw factor (surface layer)</i> .32</p> <p><i>Land capability, nonirrigated</i> 2e</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 3 in	silt loam	moderate	0.63 to 0.76 in	5.1 to 7.3
E -- 3 to 6 in	silt loam	moderate	0.47 to 0.61 in	5.1 to 7.3
E/B -- 6 to 11 in	silt loam	moderate	0.46 to 1.13 in	5.1 to 7.3
Bt -- 11 to 30 in	clay	slow	1.70 to 3.78 in	5.6 to 7.8
C -- 30 to 80 in	clay	slow	4.00 to 10.00 in	7.4 to 8.4

#### Kooch

<p><i>Extent:</i> 20 to 45 percent of the unit</p> <p><i>Landform(s):</i> till plains</p> <p><i>Slope gradient:</i> 1 to 4 percent</p> <p><i>Parent material:</i> clayey 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> somewhat poorly drained</p>	<p><i>Soil loss tolerance (T factor):</i> 3</p> <p><i>Wind erodibility group (WEG):</i> 6</p> <p><i>Wind erodibility index (WEI):</i> 48</p> <p><i>Kw factor (surface layer)</i> .32</p> <p><i>Land capability, nonirrigated</i> 3w</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 3 in	silt loam	moderate	0.63 to 0.76 in	5.1 to 7.3
E -- 3 to 5 in	silt loam	moderate	0.33 to 0.43 in	5.1 to 7.3
E/B -- 5 to 11 in	silt loam	moderate	0.53 to 1.30 in	5.1 to 7.3
Bt -- 11 to 22 in	clay	slow	0.99 to 2.20 in	5.6 to 7.8
Cg -- 22 to 80 in	clay	slow	4.63 to 11.57 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### B42C--Haystore-Kooch complex 1 to 15 percent slopes

#### Haystore

<p><i>Extent:</i> 45 to 75 percent of the unit</p> <p><i>Landform(s):</i> till plains</p> <p><i>Slope gradient:</i> 8 to 15 percent</p> <p><i>Parent material:</i> clayey 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> 3</p> <p><i>Wind erodibility group (WEG):</i> 6</p> <p><i>Wind erodibility index (WEI):</i> 48</p> <p><i>Kw factor (surface layer)</i> .32</p> <p><i>Land capability, nonirrigated</i> 3e</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 3 in	silt loam	moderate	0.63 to 0.76 in	5.1 to 7.3
E -- 3 to 6 in	silt loam	moderate	0.47 to 0.61 in	5.1 to 7.3
E/B -- 6 to 11 in	silt loam	moderate	0.46 to 1.13 in	5.1 to 7.3
Bt -- 11 to 30 in	clay	slow	1.70 to 3.78 in	5.6 to 7.8
C -- 30 to 80 in	clay	slow	4.00 to 10.00 in	7.4 to 8.4

#### Kooch

<p><i>Extent:</i> 20 to 45 percent of the unit</p> <p><i>Landform(s):</i> till plains</p> <p><i>Slope gradient:</i> 1 to 4 percent</p> <p><i>Parent material:</i> clayey 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> somewhat poorly drained</p>	<p><i>Soil loss tolerance (T factor):</i> 3</p> <p><i>Wind erodibility group (WEG):</i> 6</p> <p><i>Wind erodibility index (WEI):</i> 48</p> <p><i>Kw factor (surface layer)</i> .32</p> <p><i>Land capability, nonirrigated</i> 3w</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 3 in	silt loam	moderate	0.63 to 0.76 in	5.1 to 7.3
E -- 3 to 5 in	silt loam	moderate	0.33 to 0.43 in	5.1 to 7.3
E/B -- 5 to 11 in	silt loam	moderate	0.53 to 1.30 in	5.1 to 7.3
Bt -- 11 to 22 in	clay	slow	0.99 to 2.20 in	5.6 to 7.8
Cg -- 22 to 80 in	clay	slow	4.63 to 11.57 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### B43A--Northwood-Berner complex, mlra 88, 0 to 1 percent slopes

#### Northwood

<p><i>Extent:</i> 60 to 80 percent of the unit</p> <p><i>Landform(s):</i> depressions on moraines</p> <p><i>Slope gradient:</i> 0 to 1 percent</p> <p><i>Parent material:</i> herbaceous organic material over sandy glaciolacustrine deposits over till</p> <p><i>Restrictive feature(s):</i> greater than 60 inches</p> <p><i>Flooding:</i> none</p> <p><i>Ponding:</i> frequent</p> <p><i>Drainage class:</i> very poorly drained</p>	<p><i>Soil loss tolerance (T factor):</i> 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> 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>
Oa -- 0 to 9 in	muck	moderately rapid	3.17 to 4.07 in	5.1 to 7.8
A -- 9 to 14 in	loamy sand	moderately rapid	0.51 to 0.61 in	5.1 to 6.5
Bg -- 14 to 24 in	loamy sand	moderately rapid	0.30 to 1.08 in	5.6 to 8.4
2Bk -- 24 to 64 in	clay loam	moderately slow	5.62 to 7.23 in	7.4 to 8.4
2Cg -- 64 to 80 in	clay loam	moderately slow	2.20 to 2.83 in	7.4 to 8.4

#### Berner

<p><i>Extent:</i> 10 to 30 percent of the unit</p> <p><i>Landform(s):</i> depressions on moraines</p> <p><i>Slope gradient:</i> 0 to 1 percent</p> <p><i>Parent material:</i> herbaceous organic material over sandy outwash over till</p> <p><i>Restrictive feature(s):</i> greater than 60 inches</p> <p><i>Flooding:</i> none</p> <p><i>Ponding:</i> frequent</p> <p><i>Drainage class:</i> very poorly drained</p>	<p><i>Soil loss tolerance (T factor):</i> 1</p> <p><i>Wind erodibility group (WEG):</i> 8</p> <p><i>Wind erodibility index (WEI):</i> 0</p> <p><i>Kw factor (surface layer)</i> .02</p> <p><i>Land capability, nonirrigated</i> 7w</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 29 in	muck	moderately rapid	10.06 to 12.93 in	
A -- 29 to 31 in	loamy sand	moderately rapid	0.24 to 0.28 in	5.1 to 6.5
Bg -- 31 to 44 in	loamy sand	moderately rapid	0.39 to 1.43 in	5.6 to 8.4
2Bk -- 44 to 66 in	clay loam	moderately slow	3.09 to 3.97 in	7.4 to 8.4
2Cg -- 66 to 80 in	clay loam	moderately slow	1.93 to 2.48 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

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### B43A--Northwood-Berner complex, mlra 88, 0 to 1 percent slopes

## Map Unit Description (MN)

Koochiching County, Minnesota

### B44B--Cutaway-Ricelake complex, mlra 88, 2 to 6 percent slopes

#### Cutaway

*Extent:* 50 to 75 percent of the unit  
*Landform(s):* moraines  
*Slope gradient:* 2 to 6 percent  
*Parent material:* sandy outwash 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):* 8  
*Wind erodibility index (WEI):* 0  
*Kw factor (surface layer)* .20  
*Land capability, nonirrigated* 3s  
*Hydric soil:* no  
*Hydrologic group:* C/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 sand	rapid	0.31 to 0.38 in	5.1 to 6.5
E -- 3 to 14 in	loamy sand	rapid	0.33 to 1.21 in	5.1 to 6.5
E/B -- 14 to 31 in	loamy sand	rapid	1.02 to 3.05 in	5.6 to 6.5
2Bt -- 31 to 39 in	clay loam	moderate	1.18 to 1.50 in	5.6 to 7.3
2Bk -- 39 to 50 in	clay loam	moderately slow	1.54 to 2.20 in	7.4 to 8.4
2C -- 50 to 80 in	clay loam	moderately slow	4.19 to 5.39 in	7.4 to 8.4

#### Ricelake

*Extent:* 20 to 40 percent of the unit  
*Landform(s):* moraines  
*Slope gradient:* 2 to 3 percent  
*Parent material:* sandy outwash over till  
*Restrictive feature(s):* greater than 60 inches  
*Flooding:* none  
*Ponding:* none  
*Drainage class:* somewhat poorly drained

*Soil loss tolerance (T factor):* 5  
*Wind erodibility group (WEG):* 8  
*Wind erodibility index (WEI):* 0  
*Kw factor (surface layer)* .20  
*Land capability, nonirrigated* 3w  
*Hydric soil:* no  
*Hydrologic group:* C/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 2 in	loamy sand	rapid	0.20 to 0.24 in	5.1 to 6.5
E -- 2 to 23 in	loamy sand	rapid	1.25 to 2.30 in	5.1 to 6.5
Bt -- 23 to 30 in	sandy loam	moderately rapid	0.78 to 1.35 in	5.6 to 7.3
Bw -- 30 to 35 in	sand	rapid	0.10 to 0.51 in	5.6 to 7.3
2C -- 35 to 80 in	clay loam	moderately slow	6.28 to 8.08 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### B44B--Cutaway-Ricelake complex, mlra 88, 2 to 6 percent slopes

### B46A--Dora mucky peat, taylor catena, 0 to 1 percent slopes

#### Dora

<p><i>Extent:</i> 60 to 90 percent of the unit</p> <p><i>Landform(s):</i> depressions on lake plains</p> <p><i>Slope gradient:</i> 0 to 1 percent</p> <p><i>Parent material:</i> herbaceous organic material over clayey glaciolacustrine deposits</p> <p><i>Restrictive feature(s):</i> greater than 60 inches</p> <p><i>Flooding:</i> none</p> <p><i>Ponding:</i> frequent</p> <p><i>Drainage class:</i> very poorly drained</p>	<p><i>Soil loss tolerance (T factor):</i> 1</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></p> <p><i>Land capability, nonirrigated</i> 7w</p> <p><i>Hydric soil:</i> yes</p> <p><i>Hydrologic group:</i> 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>
Oe -- 0 to 6 in	mucky peat	rapid	2.66 to 3.25 in	
Oa -- 6 to 22 in	muck	moderately rapid	5.65 to 7.26 in	
A -- 22 to 26 in	mucky silty clay loam	slow	0.59 to 1.18 in	6.1 to 7.3
Cg1 -- 26 to 36 in	clay	very slow	0.79 to 0.98 in	6.6 to 7.8
Cg2 -- 36 to 80 in	clay	very slow	3.53 to 5.29 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### B49B--Kooch-Hapludalfs complex, 1 to 8 percent slopes

#### Kooch

*Extent:* 40 to 60 percent of the unit

*Landform(s):* till plains

*Slope gradient:* 1 to 6 percent

*Parent material:* clayey till

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

*Flooding:* none

*Ponding:* none

*Drainage class:* somewhat poorly drained

*Soil loss tolerance (T factor):* 3

*Wind erodibility group (WEG):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .32

*Land capability, nonirrigated* 3w

*Hydric soil:* no

*Hydrologic group:* C/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	silt loam	moderate	0.63 to 0.76 in	5.1 to 7.3
E -- 3 to 5 in	silt loam	moderate	0.33 to 0.43 in	5.1 to 7.3
E/B -- 5 to 11 in	silt loam	moderate	0.53 to 1.30 in	5.1 to 7.3
Bt -- 11 to 22 in	clay	slow	0.99 to 2.20 in	5.6 to 7.8
Cg -- 22 to 80 in	clay	slow	4.63 to 11.57 in	7.4 to 8.4

#### Hapludalfs

*Extent:* 15 to 35 percent of the unit

*Landform(s):* till plains

*Slope gradient:* 4 to 8 percent

*Parent material:* clayey till

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

*Flooding:* none

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 3

*Wind erodibility group (WEG):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .32

*Land capability, nonirrigated* 2e

*Hydric soil:* no

*Hydrologic group:* C/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	silt loam	moderate	0.69 to 0.76 in	5.1 to 7.3
E -- 3 to 9 in	silt loam	moderate	0.89 to 1.30 in	5.1 to 7.3
Bt -- 9 to 24 in	silty clay	slow	1.20 to 2.99 in	5.1 to 7.3
C -- 24 to 51 in	clay	slow	2.17 to 5.43 in	7.4 to 8.4
2R -- 51 to 80 in	bedrock	very slow		

## Map Unit Description (MN)

Koochiching County, Minnesota

### B50A--Ratroot-Dora complex, 0 to 1 percent slopes

#### Ratroot

*Extent:* 40 to 80 percent of the unit

*Landform(s):* depressions on till plains

*Slope gradient:* 0 to 1 percent

*Parent material:* clayey till

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

*Flooding:* none

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 5

*Wind erodibility index (WEI):* 56

*Kw factor (surface layer)* .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>
Oe -- 0 to 4 in	mucky peat	rapid	1.77 to 2.17 in	5.1 to 6.5
A -- 4 to 10 in	clay	slow	0.47 to 1.18 in	7.4 to 8.4
Btg -- 10 to 37 in	clay	slow	2.44 to 5.43 in	5.6 to 7.8
Cg -- 37 to 80 in	clay	slow	3.43 to 8.58 in	7.4 to 8.4

#### Dora

*Extent:* 15 to 30 percent of the unit

*Landform(s):* depressions on till plains

*Slope gradient:* 0 to 1 percent

*Parent material:* herbaceous organic material over clayey 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* 7w

*Hydric soil:* yes

*Hydrologic group:* D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa -- 0 to 28 in	muck	moderately rapid	9.78 to 12.58 in	
Cg1 -- 28 to 34 in	clay	very slow	0.47 to 0.59 in	6.6 to 7.8
Cg2 -- 34 to 80 in	clay	very slow	3.69 to 5.53 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### B51A--Blomford-Northwood complex, mlra 88, 0 to 2 percent slopes

#### Blomford

*Extent:* 40 to 75 percent of the unit

*Landform(s):* flats on moraines

*Slope gradient:* 0 to 2 percent

*Parent material:* sandy outwash 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):* 8

*Wind erodibility index (WEI):* 0

*Kw factor (surface layer)* .24

*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>
A -- 0 to 5 in	loamy fine sand	rapid	0.51 to 0.61 in	5.1 to 6.5
Eg -- 5 to 23 in	loamy fine sand	rapid	0.53 to 1.95 in	5.1 to 6.5
2Btg -- 23 to 55 in	clay loam	moderate	4.84 to 6.13 in	5.6 to 7.3
2BCg -- 55 to 65 in	silty clay loam	moderately slow	1.38 to 1.97 in	7.4 to 8.4
2Cg -- 65 to 80 in	clay loam	moderately slow	2.09 to 2.69 in	7.4 to 8.4

#### Northwood

*Extent:* 25 to 45 percent of the unit

*Landform(s):* depressions on moraines

*Slope gradient:* 0 to 1 percent

*Parent material:* herbaceous organic material over sandy 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* 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>
Oa -- 0 to 9 in	muck	moderately rapid	3.17 to 4.07 in	4.5 to 7.3
A -- 9 to 14 in	fine sandy loam	rapid	0.51 to 0.92 in	5.6 to 7.8
Bg -- 14 to 24 in	loamy fine sand	rapid	0.20 to 1.08 in	5.6 to 8.4
2BCkg -- 24 to 64 in	silty clay loam	moderately slow	5.62 to 8.03 in	7.4 to 8.4
2Cg -- 64 to 80 in	clay loam	moderately slow	2.20 to 2.83 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### B54A--Spoooner-Littleswan complex, 0 to 3 percent slopes

#### Spoooner

*Extent:* 55 to 75 percent of the unit

*Landform(s):* flats on lake plains

*Slope gradient:* 0 to 2 percent

*Parent material:* silty 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)* .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>
Ap -- 0 to 5 in	silt loam	moderate	1.13 to 1.23 in	5.6 to 7.3
Eg -- 5 to 9 in	very fine sandy loam	moderate	0.67 to 0.87 in	5.6 to 7.3
Btg -- 9 to 30 in	silty clay loam	moderately slow	3.76 to 4.59 in	6.1 to 7.3
Bkg -- 30 to 57 in	silt loam	moderate	4.62 to 5.98 in	7.4 to 8.4
Cg -- 57 to 80 in	silt loam	moderate	3.88 to 5.02 in	7.4 to 8.4

#### Littleswan

*Extent:* 15 to 35 percent of the unit

*Landform(s):* rises on lake plains

*Slope gradient:* 1 to 3 percent

*Parent material:* silty 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):* 5

*Wind erodibility index (WEI):* 56

*Kw factor (surface layer)* .43

*Land capability, nonirrigated* 3w

*Hydric soil:* no

*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 11 in	silt loam	moderate	1.20 to 1.56 in	5.6 to 7.3
Bt -- 11 to 32 in	silty clay loam	moderately slow	3.76 to 4.59 in	6.1 to 7.3
Cg1 -- 32 to 41 in	silt loam	moderate	1.54 to 1.99 in	7.4 to 8.4
Cg2 -- 41 to 80 in	silt loam	moderate	6.63 to 8.57 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### B55A--Kooch-Kab-Ratroot complex, 0 to 4 percent slopes

#### Kooch

*Extent:* 30 to 60 percent of the unit

*Landform(s):* till plains

*Slope gradient:* 1 to 4 percent

*Parent material:* clayey till

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

*Flooding:* none

*Ponding:* none

*Drainage class:* somewhat poorly drained

*Soil loss tolerance (T factor):* 3

*Wind erodibility group (WEG):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .32

*Land capability, nonirrigated* 3w

*Hydric soil:* no

*Hydrologic group:* C/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	silt loam	moderate	0.63 to 0.76 in	5.1 to 7.3
E -- 3 to 5 in	silt loam	moderate	0.33 to 0.43 in	5.1 to 7.3
E/B -- 5 to 11 in	silt loam	moderate	0.53 to 1.30 in	5.1 to 7.3
Bt -- 11 to 22 in	clay	slow	0.99 to 2.20 in	5.6 to 7.8
Cg -- 22 to 80 in	clay	slow	4.63 to 11.57 in	7.4 to 8.4

#### Kab

*Extent:* 20 to 50 percent of the unit

*Landform(s):* drainageways on till plains

*Slope gradient:* 0 to 2 percent

*Parent material:* clayey till

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

*Flooding:* none

*Ponding:* none

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 3

*Wind erodibility group (WEG):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .32

*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	silt loam	moderate	0.79 to 0.94 in	5.1 to 7.3
Eg -- 4 to 7 in	silt loam	moderate	0.54 to 0.69 in	5.1 to 7.3
B/E -- 7 to 13 in	silt loam	moderate	0.53 to 1.30 in	5.1 to 7.3
Btg -- 13 to 29 in	clay	slow	1.45 to 3.23 in	5.6 to 7.8
Cg -- 29 to 80 in	clay	slow	4.06 to 10.16 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### B55A--Kooch-Kab-Ratroot complex, 0 to 4 percent slopes

#### Ratroot

*Extent:* 10 to 20 percent of the unit

*Landform(s):* depressions on till plains

*Slope gradient:* 0 to 1 percent

*Parent material:* clayey till

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

*Flooding:* none

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 5

*Wind erodibility index (WEI):* 56

*Kw factor (surface layer)*

*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>
Oe -- 0 to 4 in	mucky peat	rapid	1.77 to 2.17 in	5.1 to 6.5
A -- 4 to 10 in	clay	slow	0.47 to 1.18 in	7.4 to 8.4
Btg -- 10 to 37 in	clay	slow	2.44 to 5.43 in	5.6 to 7.8
Cg -- 37 to 80 in	clay	slow	3.43 to 8.58 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### B56A--Spooner-Sax, depressional, complex, 0 to 2 percent slopes

#### Spooner

*Extent:* 40 to 65 percent of the unit

*Landform(s):* flats on lake plains

*Slope gradient:* 0 to 2 percent

*Parent material:* silty 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)* .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>
Ap -- 0 to 5 in	silt loam	moderate	1.13 to 1.23 in	5.6 to 7.3
Eg -- 5 to 9 in	very fine sandy loam	moderate	0.67 to 0.87 in	5.6 to 7.3
Btg -- 9 to 30 in	silty clay loam	moderately slow	3.76 to 4.59 in	6.1 to 7.3
Bkg -- 30 to 57 in	silt loam	moderate	4.62 to 5.98 in	7.4 to 8.4
Cg -- 57 to 80 in	silt loam	moderate	3.88 to 5.02 in	7.4 to 8.4

#### Sax, depressional

*Extent:* 30 to 55 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* herbaceous organic material over silty glaciolacustrine deposits

*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	
A -- 13 to 15 in	silt loam	moderate	0.43 to 0.51 in	5.6 to 7.3
Bg -- 15 to 36 in	silt loam	moderate	3.76 to 4.59 in	5.6 to 7.3
Cg -- 36 to 80 in	silt loam	moderate	7.50 to 9.70 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### B57B--Littleswan-Baudette complex, 1 to 6 percent slopes

#### Littleswan

*Extent:* 55 to 80 percent of the unit

*Landform(s):* lake plains

*Slope gradient:* 1 to 3 percent

*Parent material:* silty 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):* 5

*Wind erodibility index (WEI):* 56

*Kw factor (surface layer)* .43

*Land capability, nonirrigated* 3w

*Hydric soil:* no

*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 11 in	silt loam	moderate	1.20 to 1.56 in	5.6 to 7.3
Bt -- 11 to 32 in	silty clay loam	moderately slow	3.76 to 4.59 in	6.1 to 7.3
Cg1 -- 32 to 41 in	silt loam	moderate	1.54 to 1.99 in	7.4 to 8.4
Cg2 -- 41 to 80 in	silt loam	moderate	6.63 to 8.57 in	7.4 to 8.4

#### Baudette

*Extent:* 15 to 40 percent of the unit

*Landform(s):* lake plains

*Slope gradient:* 2 to 6 percent

*Parent material:* silty 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)* .43

*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 4 in	silt loam	moderate	0.87 to 0.94 in	5.6 to 7.3
E -- 4 to 8 in	silt loam	moderate	0.74 to 0.95 in	5.6 to 7.3
B/E -- 8 to 13 in	silty clay loam	moderately slow	0.80 to 1.04 in	6.1 to 7.3
Bt -- 13 to 39 in	silty clay loam	moderately slow	4.35 to 5.63 in	6.1 to 7.8
C -- 39 to 80 in	silt loam	moderate	7.03 to 9.09 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### B58B--Wurtsmith-Meehan complex, 0 to 4 percent slopes

#### Wurtsmith

<p><i>Extent:</i> 35 to 55 percent of the unit</p> <p><i>Landform(s):</i> rises on outwash plains</p> <p><i>Slope gradient:</i> 1 to 4 percent</p> <p><i>Parent material:</i> sandy 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> moderately 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> 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 sand	rapid	0.31 to 0.38 in	4.5 to 6.0
Bw -- 3 to 18 in	sand	rapid	0.45 to 1.65 in	4.5 to 6.0
BC -- 18 to 33 in	sand	rapid	0.30 to 1.05 in	4.5 to 6.0
C -- 33 to 80 in	sand	rapid	0.94 to 3.28 in	5.1 to 6.5

#### Meehan

<p><i>Extent:</i> 30 to 50 percent of the unit</p> <p><i>Landform(s):</i> rises on outwash plains</p> <p><i>Slope gradient:</i> 0 to 3 percent</p> <p><i>Parent material:</i> sandy 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> somewhat poorly 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> 4s</p> <p><i>Hydric soil:</i> no</p> <p><i>Hydrologic group:</i> A/D</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	4.5 to 6.0
Bw1 -- 3 to 12 in	loamy sand	rapid	0.52 to 0.95 in	4.5 to 6.0
Bw2 -- 12 to 47 in	sand	rapid	0.70 to 3.15 in	4.5 to 6.0
C -- 47 to 80 in	coarse sand	very rapid	0.66 to 2.31 in	5.1 to 6.5

## Map Unit Description (MN)

Koochiching County, Minnesota

### B60B--Ricelake-Cutaway complex, mlra 88, 1 to 4 percent slopes

#### Ricelake

*Extent:* 50 to 75 percent of the unit  
*Landform(s):* moraines on flats  
*Slope gradient:* 1 to 3 percent  
*Parent material:* sandy outwash over till  
*Restrictive feature(s):* greater than 60 inches  
*Flooding:* none  
*Ponding:* none  
*Drainage class:* somewhat poorly drained

*Soil loss tolerance (T factor):* 5  
*Wind erodibility group (WEG):* 8  
*Wind erodibility index (WEI):* 0  
*Kw factor (surface layer)* .20  
*Land capability, nonirrigated* 3w  
*Hydric soil:* no  
*Hydrologic group:* C/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 2 in	loamy sand	rapid	0.20 to 0.24 in	5.1 to 6.5
E -- 2 to 23 in	loamy sand	rapid	1.25 to 2.30 in	5.1 to 6.5
Bt -- 23 to 30 in	sandy loam	moderately rapid	0.78 to 1.35 in	5.6 to 7.3
Bw -- 30 to 35 in	sand	rapid	0.10 to 0.51 in	5.6 to 7.3
2C -- 35 to 80 in	clay loam	moderately slow	6.28 to 8.08 in	7.4 to 8.4

#### Cutaway

*Extent:* 20 to 40 percent of the unit  
*Landform(s):* rises on moraines  
*Slope gradient:* 2 to 4 percent  
*Parent material:* sandy outwash 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):* 8  
*Wind erodibility index (WEI):* 0  
*Kw factor (surface layer)* .20  
*Land capability, nonirrigated* 3s  
*Hydric soil:* no  
*Hydrologic group:* C/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 sand	rapid	0.31 to 0.38 in	5.1 to 6.5
E -- 3 to 14 in	loamy sand	rapid	0.33 to 1.21 in	5.1 to 6.5
E/B -- 14 to 31 in	loamy sand	rapid	1.02 to 3.05 in	5.6 to 6.5
2Bt -- 31 to 39 in	clay loam	moderate	1.18 to 1.50 in	5.6 to 7.3
2Bk -- 39 to 50 in	clay loam	moderately slow	1.54 to 2.20 in	7.4 to 8.4
2C -- 50 to 80 in	clay loam	moderately slow	4.19 to 5.39 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

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### B60B--Ricelake-Cutaway complex, mlra 88, 1 to 4 percent slopes

## Map Unit Description (MN)

Koochiching County, Minnesota

### B70A--Ricelake-Blomford complex, mlra 88, 0 to 3 percent slopes

#### Ricelake

*Extent:* 40 to 70 percent of the unit

*Landform(s):* flats on moraines

*Slope gradient:* 0 to 3 percent

*Parent material:* sandy outwash over till

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

*Flooding:* none

*Ponding:* none

*Drainage class:* somewhat poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 8

*Wind erodibility index (WEI):* 0

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 3w

*Hydric soil:* no

*Hydrologic group:* C/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 2 in	loamy sand	rapid	0.20 to 0.24 in	5.1 to 6.5
E -- 2 to 23 in	loamy sand	rapid	1.25 to 2.30 in	5.1 to 6.5
Bt -- 23 to 30 in	sandy loam	moderately rapid	0.78 to 1.35 in	5.6 to 7.3
Bw -- 30 to 35 in	sand	rapid	0.10 to 0.51 in	5.6 to 7.3
2C -- 35 to 80 in	clay loam	moderately slow	6.28 to 8.08 in	7.4 to 8.4

#### Blomford

*Extent:* 20 to 40 percent of the unit

*Landform(s):* drainageways on moraines

*Slope gradient:* 0 to 2 percent

*Parent material:* sandy outwash 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):* 8

*Wind erodibility index (WEI):* 0

*Kw factor (surface layer)* .24

*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>
A -- 0 to 5 in	loamy fine sand	rapid	0.51 to 0.61 in	5.1 to 6.5
Eg -- 5 to 23 in	loamy fine sand	rapid	0.53 to 1.95 in	5.1 to 6.5
2Btg -- 23 to 55 in	clay loam	moderate	4.84 to 6.13 in	5.6 to 7.3
2BCg -- 55 to 65 in	silty clay loam	moderately slow	1.38 to 1.97 in	7.4 to 8.4
2Cg -- 65 to 80 in	clay loam	moderately slow	2.09 to 2.69 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### B71A--Leafriver-Deford, depressional-Markey complex, 0 to 1 percent slopes

#### Leafriver

<i>Extent:</i> 40 to 60 percent of the unit	<i>Soil loss tolerance (T factor):</i> 1
<i>Landform(s):</i> depressions on beach ridges	<i>Wind erodibility group (WEG):</i> 2
<i>Slope gradient:</i> 0 to 1 percent	<i>Wind erodibility index (WEI):</i> 134
<i>Parent material:</i> herbaceous organic material over sandy glaciofluvial deposits	<i>Kw factor (surface layer)</i> .02
<i>Restrictive feature(s):</i> greater than 60 inches	<i>Land capability, nonirrigated</i> 6w
<i>Flooding:</i> none	<i>Hydric soil:</i> yes
<i>Ponding:</i> frequent	<i>Hydrologic group:</i> A/D
<i>Drainage class:</i> very poorly 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>
Oa -- 0 to 9 in	muck	moderately rapid	3.17 to 4.07 in	5.1 to 7.8
A -- 9 to 14 in	sandy loam	moderately rapid	0.36 to 1.13 in	3.5 to 7.3
Cg -- 14 to 80 in	loamy sand	rapid	3.29 to 6.57 in	3.5 to 7.3

#### Deford, depressional

<i>Extent:</i> 20 to 35 percent of the unit	<i>Soil loss tolerance (T factor):</i> 5
<i>Landform(s):</i> depressions on beach ridges	<i>Wind erodibility group (WEG):</i> 1
<i>Slope gradient:</i> 0 to 1 percent	<i>Wind erodibility index (WEI):</i> 250
<i>Parent material:</i> sandy glaciofluvial deposits	<i>Kw factor (surface layer)</i> .02
<i>Restrictive feature(s):</i> greater than 60 inches	<i>Land capability, nonirrigated</i> 6w
<i>Flooding:</i> none	<i>Hydric soil:</i> yes
<i>Ponding:</i> frequent	<i>Hydrologic group:</i> A/D
<i>Drainage class:</i> very poorly 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 4 in	fine sand	rapid	0.28 to 0.47 in	4.5 to 7.8
C -- 4 to 32 in	fine sand	rapid	1.40 to 2.80 in	5.1 to 8.4
Cg -- 32 to 80 in	fine sand	rapid	2.40 to 4.80 in	5.1 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### B71A--Leafriver-Deford, depressional-Markey complex, 0 to 1 percent slopes

#### Markey

*Extent:* 15 to 25 percent of the unit

*Landform(s):* depressions on beach ridges

*Slope gradient:* 0 to 1 percent

*Parent material:* herbaceous organic material over sandy glaciofluvial deposits

*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* 7w

*Hydric soil:* yes

*Hydrologic group:* A/D

*Potential for frost action:* high

*Representative soil profile:*

		<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	
Cg --	32 to 80 in	loamy sand	rapid	2.40 to 4.80 in	3.5 to 7.3

## Map Unit Description (MN)

Koochiching County, Minnesota

### B76A--Deford-Leafriver complex, 0 to 2 percent slopes

#### Deford

<p><i>Extent:</i> 50 to 65 percent of the unit</p> <p><i>Landform(s):</i> flats on beach ridges</p> <p><i>Slope gradient:</i> 0 to 2 percent</p> <p><i>Parent material:</i> sandy glaciofluvial deposits</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> poorly drained</p>	<p><i>Soil loss tolerance (T factor):</i> 5</p> <p><i>Wind erodibility group (WEG):</i> 1</p> <p><i>Wind erodibility index (WEI):</i> 250</p> <p><i>Kw factor (surface layer)</i> .02</p> <p><i>Land capability, nonirrigated</i> 4w</p> <p><i>Hydric soil:</i> yes</p> <p><i>Hydrologic group:</i> A/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	fine sand	rapid	0.28 to 0.47 in	4.5 to 7.8
C -- 4 to 32 in	fine sand	rapid	1.40 to 2.80 in	5.1 to 8.4
Cg -- 32 to 80 in	fine sand	rapid	2.40 to 4.80 in	5.1 to 8.4

#### Leafriver

<p><i>Extent:</i> 20 to 35 percent of the unit</p> <p><i>Landform(s):</i> depressions on beach ridges</p> <p><i>Slope gradient:</i> 0 to 1 percent</p> <p><i>Parent material:</i> herbaceous organic material over sandy glaciofluvial deposits</p> <p><i>Restrictive feature(s):</i> greater than 60 inches</p> <p><i>Flooding:</i> none</p> <p><i>Ponding:</i> frequent</p> <p><i>Drainage class:</i> very poorly drained</p>	<p><i>Soil loss tolerance (T factor):</i> 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> 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>
Oa -- 0 to 9 in	muck	moderately rapid	3.17 to 4.07 in	5.1 to 7.8
A -- 9 to 14 in	sandy loam	moderately rapid	0.36 to 1.13 in	3.5 to 7.3
Cg -- 14 to 80 in	loamy sand	rapid	3.29 to 6.57 in	3.5 to 7.3

## Map Unit Description (MN)

Koochiching County, Minnesota

### B77A--Meehan-Deford complex, 0 to 3 percent slopes

#### Meehan

<p><i>Extent:</i> 50 to 70 percent of the unit</p> <p><i>Landform(s):</i> beach ridges, outwash plains</p> <p><i>Slope gradient:</i> 1 to 3 percent</p> <p><i>Parent material:</i> sandy glaciofluvial deposits</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> somewhat poorly 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> 4s</p> <p><i>Hydric soil:</i> no</p> <p><i>Hydrologic group:</i> A/D</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	4.5 to 6.0
Bw1 -- 3 to 12 in	loamy sand	rapid	0.52 to 0.95 in	4.5 to 6.0
Bw2 -- 12 to 47 in	sand	rapid	0.70 to 3.15 in	4.5 to 6.0
C -- 47 to 80 in	coarse sand	very rapid	0.66 to 2.31 in	5.1 to 6.5

#### Deford

<p><i>Extent:</i> 25 to 35 percent of the unit</p> <p><i>Landform(s):</i> flats on beach ridges, swales on beach ridges</p> <p><i>Slope gradient:</i> 0 to 2 percent</p> <p><i>Parent material:</i> sandy glaciofluvial deposits</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> poorly drained</p>	<p><i>Soil loss tolerance (T factor):</i> 5</p> <p><i>Wind erodibility group (WEG):</i> 1</p> <p><i>Wind erodibility index (WEI):</i> 250</p> <p><i>Kw factor (surface layer)</i> .02</p> <p><i>Land capability, nonirrigated</i> 4w</p> <p><i>Hydric soil:</i> yes</p> <p><i>Hydrologic group:</i> A/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	fine sand	rapid	0.28 to 0.47 in	4.5 to 7.8
C -- 4 to 32 in	fine sand	rapid	1.40 to 2.80 in	5.1 to 8.4
Cg -- 32 to 80 in	fine sand	rapid	2.40 to 4.80 in	5.1 to 8.4

## Map Unit Description (MN)

Koochiching 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)

Koochiching County, Minnesota

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

#### Meehan

*Extent:* 1 to 5 percent of the unit

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

*Slope gradient:* 1 to 3 percent

*Parent material:* sandy glaciofluvial 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)* .15

*Land capability, nonirrigated* 4s

*Hydric soil:* no

*Hydrologic group:* A/D

*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 6.0
Bw1 -- 3 to 12 in	loamy sand	rapid	0.52 to 0.95 in	4.5 to 6.0
Bw2 -- 12 to 47 in	sand	rapid	0.70 to 3.15 in	4.5 to 6.0
C -- 47 to 80 in	coarse sand	very rapid	0.66 to 2.31 in	5.1 to 6.5

## Map Unit Description (MN)

Koochiching County, Minnesota

### B79B--Sugarbush-Graycalm complex, 2 to 8 percent slopes

#### Sugarbush

*Extent:* 50 to 60 percent of the unit

*Landform(s):* beach ridges, moraines, outwash plains

*Slope gradient:* 2 to 6 percent

*Parent material:* sandy and gravelly 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)* .15

*Land capability, nonirrigated* 4s

*Hydric soil:* no

*Hydrologic group:* A

*Potential for frost action:* moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 3 in	sandy loam	moderately rapid	0.41 to 0.47 in	5.6 to 7.3
E -- 3 to 13 in	loamy sand	rapid	0.59 to 1.08 in	5.6 to 7.3
Bt -- 13 to 25 in	sandy loam	moderately rapid	1.34 to 1.59 in	5.6 to 7.3
2C -- 25 to 80 in	gravelly coarse sand	very rapid	1.09 to 2.19 in	7.4 to 8.4

#### Graycalm

*Extent:* 20 to 30 percent of the unit

*Landform(s):* beach ridges, moraines, outwash plains

*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

## Map Unit Description (MN)

Koochiching County, Minnesota

### B79D--Sugarbush-Graycalm complex, 8 to 18 percent slopes

#### Sugarbush

<p><i>Extent:</i> 55 to 75 percent of the unit</p> <p><i>Landform(s):</i> moraines, outwash plains</p> <p><i>Slope gradient:</i> 8 to 18 percent</p> <p><i>Parent material:</i> sandy and gravelly 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> 3</p> <p><i>Wind erodibility index (WEI):</i> 86</p> <p><i>Kw factor (surface layer)</i> .20</p> <p><i>Land capability, nonirrigated</i> 4e</p> <p><i>Hydric soil:</i> no</p> <p><i>Hydrologic group:</i> A</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 3 in	sandy loam	moderately rapid	0.41 to 0.47 in	5.6 to 6.5
E -- 3 to 13 in	sand	rapid	0.30 to 1.08 in	5.6 to 6.5
Bt -- 13 to 25 in	coarse sandy loam	moderately rapid	1.34 to 1.95 in	6.1 to 7.3
2C -- 25 to 80 in	gravelly coarse sand	very rapid	1.09 to 3.28 in	7.4 to 8.4

#### Graycalm

<p><i>Extent:</i> 15 to 30 percent of the unit</p> <p><i>Landform(s):</i> moraines, outwash plains</p> <p><i>Slope gradient:</i> 8 to 18 percent</p> <p><i>Parent material:</i> sandy 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> somewhat 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> .10</p> <p><i>Land capability, nonirrigated</i> 4e</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 2 in	loamy sand	rapid	0.20 to 0.24 in	4.5 to 6.0
Bw -- 2 to 37 in	loamy sand	rapid	2.10 to 3.85 in	4.5 to 6.0
E and Bt -- 37 to 48 in	sand	rapid	0.55 to 0.99 in	5.1 to 6.0
C -- 48 to 80 in	coarse sand	very rapid	0.64 to 2.23 in	5.1 to 6.5

## Map Unit Description (MN)

Koochiching County, Minnesota

### B80A--Rifle soils, taylor catena, 0 to 1 percent slopes

#### Rifle

<p><i>Extent:</i> 0 to 95 percent of the unit</p> <p><i>Landform(s):</i> depressions on lake plains</p> <p><i>Slope gradient:</i> 0 to 1 percent</p> <p><i>Parent material:</i> herbaceous organic material</p> <p><i>Restrictive feature(s):</i> greater than 60 inches</p> <p><i>Flooding:</i> none</p> <p><i>Ponding:</i> frequent</p> <p><i>Drainage class:</i> very poorly drained</p>	<p><i>Soil loss tolerance (T factor):</i> 2</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></p> <p><i>Land capability, nonirrigated</i> 7w</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>
Oe1 -- 0 to 12 in	mucky peat	rapid	5.31 to 6.50 in	
Oe2 -- 12 to 42 in	mucky peat	rapid	13.64 to 16.67 in	
Oa -- 42 to 52 in	muck	moderately rapid	3.44 to 4.43 in	
Oe3 -- 52 to 80 in	mucky peat	rapid	12.58 to 15.37 in	

#### Rifle, depressional

<p><i>Extent:</i> 0 to 95 percent of the unit</p> <p><i>Landform(s):</i> depressions on lake plains</p> <p><i>Slope gradient:</i> 0 to 1 percent</p> <p><i>Parent material:</i> herbaceous organic material</p> <p><i>Restrictive feature(s):</i> greater than 60 inches</p> <p><i>Flooding:</i> none</p> <p><i>Ponding:</i> frequent</p> <p><i>Drainage class:</i> very poorly drained</p>	<p><i>Soil loss tolerance (T factor):</i> 2</p> <p><i>Wind erodibility group (WEG):</i> 8</p> <p><i>Wind erodibility index (WEI):</i> 0</p> <p><i>Kw factor (surface layer)</i></p> <p><i>Land capability, nonirrigated</i> 7w</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>
Oe1 -- 0 to 12 in	mucky peat	rapid	5.31 to 6.50 in	
Oe2 -- 12 to 42 in	mucky peat	rapid	13.64 to 16.67 in	
Oa -- 42 to 52 in	muck	moderately rapid	3.44 to 4.43 in	
Oe3 -- 52 to 80 in	mucky peat	rapid	12.58 to 15.37 in	

## Map Unit Description (MN)

Koochiching County, Minnesota

### B82A--Greenwood soils, taylor catena, 0 to 1 percent slopes

#### Greenwood

*Extent:* 0 to 95 percent of the unit

*Landform(s):* raised bogs on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* herbaceous organic material

*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):* 8

*Wind erodibility index (WEI):* 0

*Kw factor (surface layer)*

*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>
Oi -- 0 to 10 in	peat	very rapid	5.41 to 6.40 in	
Oe1 -- 10 to 24 in	mucky peat	rapid	6.38 to 7.80 in	
Oe2 -- 24 to 80 in	mucky peat	rapid	25.16 to 30.75 in	

#### Greenwood, depressional

*Extent:* 0 to 95 percent of the unit

*Landform(s):* bogs on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* herbaceous organic material

*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)*

*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>
Oi -- 0 to 10 in	peat	very rapid	5.41 to 6.40 in	
Oe1 -- 10 to 24 in	mucky peat	rapid	6.38 to 7.80 in	
Oe2 -- 24 to 80 in	mucky peat	rapid	25.16 to 30.75 in	

## Map Unit Description (MN)

Koochiching County, Minnesota

### B146A--Kab-Ratroot complex, 0 to 2 percent slopes

#### Kab

*Extent:* 40 to 80 percent of the unit

*Landform(s):* drainageways on till plains

*Slope gradient:* 0 to 2 percent

*Parent material:* clayey till

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

*Flooding:* none

*Ponding:* none

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 3

*Wind erodibility group (WEG):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .32

*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	silt loam	moderate	0.79 to 0.94 in	5.1 to 7.3
Eg -- 4 to 7 in	silt loam	moderate	0.54 to 0.69 in	5.1 to 7.3
B/E -- 7 to 13 in	silt loam	moderate	0.53 to 1.30 in	5.1 to 7.3
Btg -- 13 to 29 in	clay	slow	1.45 to 3.23 in	5.6 to 7.8
Cg -- 29 to 80 in	clay	slow	4.06 to 10.16 in	7.4 to 8.4

#### Ratroot

*Extent:* 15 to 40 percent of the unit

*Landform(s):* depressions on till plains

*Slope gradient:* 0 to 1 percent

*Parent material:* clayey till

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

*Flooding:* none

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 5

*Wind erodibility index (WEI):* 56

*Kw factor (surface layer)* .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>
Oe -- 0 to 4 in	mucky peat	rapid	1.77 to 2.17 in	5.1 to 6.5
A -- 4 to 10 in	clay	slow	0.47 to 1.18 in	7.4 to 8.4
Btg -- 10 to 37 in	clay	slow	2.44 to 5.43 in	5.6 to 7.8
Cg -- 37 to 80 in	clay	slow	3.43 to 8.58 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### B151A--Kab-Kooch complex, 0 to 4 percent slopes

#### Kab

<p><i>Extent:</i> 30 to 60 percent of the unit</p> <p><i>Landform(s):</i> drainageways on till plains</p> <p><i>Slope gradient:</i> 0 to 2 percent</p> <p><i>Parent material:</i> clayey 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> poorly drained</p>	<p><i>Soil loss tolerance (T factor):</i> 3</p> <p><i>Wind erodibility group (WEG):</i> 6</p> <p><i>Wind erodibility index (WEI):</i> 48</p> <p><i>Kw factor (surface layer)</i> .32</p> <p><i>Land capability, nonirrigated</i> 4w</p> <p><i>Hydric soil:</i> yes</p> <p><i>Hydrologic group:</i> C/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 4 in	silt loam	moderate	0.79 to 0.94 in	5.1 to 7.3
Eg -- 4 to 7 in	silt loam	moderate	0.54 to 0.69 in	5.1 to 7.3
B/E -- 7 to 13 in	silt loam	moderate	0.53 to 1.30 in	5.1 to 7.3
Btg -- 13 to 29 in	clay	slow	1.45 to 3.23 in	5.6 to 7.8
Cg -- 29 to 80 in	clay	slow	4.06 to 10.16 in	7.4 to 8.4

#### Kooch

<p><i>Extent:</i> 25 to 50 percent of the unit</p> <p><i>Landform(s):</i> till plains</p> <p><i>Slope gradient:</i> 1 to 4 percent</p> <p><i>Parent material:</i> clayey 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> somewhat poorly drained</p>	<p><i>Soil loss tolerance (T factor):</i> 3</p> <p><i>Wind erodibility group (WEG):</i> 6</p> <p><i>Wind erodibility index (WEI):</i> 48</p> <p><i>Kw factor (surface layer)</i> .32</p> <p><i>Land capability, nonirrigated</i> 3w</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 3 in	silt loam	moderate	0.63 to 0.76 in	5.1 to 7.3
E -- 3 to 5 in	silt loam	moderate	0.33 to 0.43 in	5.1 to 7.3
E/B -- 5 to 11 in	silt loam	moderate	0.53 to 1.30 in	5.1 to 7.3
Bt -- 11 to 22 in	clay	slow	0.99 to 2.20 in	5.6 to 7.8
Cg -- 22 to 80 in	clay	slow	4.63 to 11.57 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### B242C--Haystore-Hapludalfs complex, 8 to 15 percent slopes

#### Haystore

*Extent:* 40 to 60 percent of the unit

*Landform(s):* till plains

*Slope gradient:* 8 to 15 percent

*Parent material:* clayey till

*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):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .32

*Land capability, nonirrigated* 3e

*Hydric soil:* no

*Hydrologic group:* C/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	silt loam	moderate	0.63 to 0.76 in	5.1 to 7.3
E -- 3 to 6 in	silt loam	moderate	0.47 to 0.61 in	5.1 to 7.3
E/B -- 6 to 11 in	silt loam	moderate	0.46 to 1.13 in	5.1 to 7.3
Bt -- 11 to 30 in	clay	slow	1.70 to 3.78 in	5.6 to 7.8
C -- 30 to 80 in	clay	slow	4.00 to 10.00 in	7.4 to 8.4

#### Hapludalfs

*Extent:* 15 to 35 percent of the unit

*Landform(s):* till plains

*Slope gradient:* 8 to 15 percent

*Parent material:* clayey till

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

*Flooding:* none

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 3

*Wind erodibility group (WEG):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .32

*Land capability, nonirrigated* 3e

*Hydric soil:* no

*Hydrologic group:* C/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	silt loam	moderate	0.69 to 0.76 in	5.1 to 7.3
E -- 3 to 9 in	silt loam	moderate	0.89 to 1.30 in	5.1 to 7.3
Bt -- 9 to 24 in	silty clay	slow	1.20 to 2.99 in	5.1 to 7.3
C -- 24 to 51 in	clay	slow	2.17 to 5.43 in	7.4 to 8.4
2R -- 51 to 80 in	bedrock	very slow		

## Map Unit Description (MN)

Koochiching County, Minnesota

### B243A--Effie-Hamre complex, mlra 88, 0 to 1 percent slopes

#### Effie

*Extent:* 30 to 60 percent of the unit

*Landform(s):* 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):* 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 2 in	loam	moderate	0.39 to 0.43 in	5.1 to 7.3
Eg -- 2 to 5 in	loam	moderate	0.47 to 0.69 in	5.1 to 7.3
B/E -- 5 to 8 in	silty clay loam	slow	0.39 to 0.52 in	5.1 to 7.3
Btg -- 8 to 20 in	silty clay	slow	1.22 to 2.20 in	5.1 to 7.8
BCg -- 20 to 64 in	silty clay loam	moderately slow	6.17 to 7.94 in	7.4 to 8.4
Cg -- 64 to 80 in	clay loam	moderately slow	2.20 to 2.83 in	7.4 to 8.4

#### Hamre

*Extent:* 25 to 45 percent of the unit

*Landform(s):* 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:* 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>
Oa -- 0 to 13 in	muck	moderately rapid	4.55 to 5.85 in	5.1 to 7.8
A -- 13 to 18 in	loam	moderate	0.82 to 1.23 in	5.6 to 7.8
Bg -- 18 to 35 in	clay loam	moderately slow	2.37 to 3.22 in	7.4 to 7.8
BCg -- 35 to 71 in	silty clay loam	moderately slow	5.02 to 6.45 in	7.4 to 8.4
Cg -- 71 to 80 in	clay loam	moderately slow	1.27 to 1.63 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

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### B243A--Effie-Hamre complex, mlra 88, 0 to 1 percent slopes

## Map Unit Description (MN)

Koochiching County, Minnesota

### B247A--Leafriver-Cormant-Markey complex, 0 to 1 percent slopes

#### Leafriver

<i>Extent:</i> 40 to 60 percent of the unit	<i>Soil loss tolerance (T factor):</i> 1
<i>Landform(s):</i> depressions on lake plains, drainageways on lake plains	<i>Wind erodibility group (WEG):</i> 2
<i>Slope gradient:</i> 0 to 1 percent	<i>Wind erodibility index (WEI):</i> 134
<i>Parent material:</i> herbaceous organic material over sandy glaciofluvial deposits	<i>Kw factor (surface layer)</i> .02
<i>Restrictive feature(s):</i> greater than 60 inches	<i>Land capability, nonirrigated</i> 6w
<i>Flooding:</i> none	<i>Hydric soil:</i> yes
<i>Ponding:</i> frequent	<i>Hydrologic group:</i> A/D
<i>Drainage class:</i> very poorly 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>
Oa -- 0 to 9 in	muck	moderately rapid	3.17 to 4.07 in	5.1 to 7.8
A -- 9 to 14 in	sandy loam	moderately rapid	0.36 to 1.13 in	3.5 to 7.3
Cg -- 14 to 80 in	loamy sand	rapid	3.29 to 6.57 in	3.5 to 7.3

#### Cormant

<i>Extent:</i> 20 to 30 percent of the unit	<i>Soil loss tolerance (T factor):</i> 5
<i>Landform(s):</i> flats on lake plains	<i>Wind erodibility group (WEG):</i> 2
<i>Slope gradient:</i> 0 to 1 percent	<i>Wind erodibility index (WEI):</i> 134
<i>Parent material:</i> sandy glaciofluvial deposits	<i>Kw factor (surface layer)</i> .17
<i>Restrictive feature(s):</i> greater than 60 inches	<i>Land capability, nonirrigated</i> 4w
<i>Flooding:</i> none	<i>Hydric soil:</i> yes
<i>Ponding:</i> occasional	<i>Hydrologic group:</i> A/D
<i>Drainage class:</i> poorly 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>
Ap -- 0 to 6 in	loamy fine sand	rapid	0.53 to 0.71 in	6.1 to 7.3
Cg -- 6 to 60 in	fine sand	rapid	2.70 to 5.39 in	6.1 to 7.8

## Map Unit Description (MN)

Koochiching County, Minnesota

### B247A--Leafriver-Cormant-Markey complex, 0 to 1 percent slopes

#### Markey

*Extent:* 15 to 25 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* herbaceous organic material over sandy glaciofluvial deposits

*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* 7w

*Hydric soil:* yes

*Hydrologic group:* A/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa -- 0 to 32 in	muck	moderately rapid	11.16 to 14.35 in	
Cg -- 32 to 80 in	loamy sand	rapid	2.40 to 4.80 in	3.5 to 7.3

## Map Unit Description (MN)

Koochiching County, Minnesota

### B248A--Soderville-Redby complex, 0 to 3 percent slopes

#### Soderville

<p><i>Extent:</i> 40 to 65 percent of the unit</p> <p><i>Landform(s):</i> rises on lake plains</p> <p><i>Slope gradient:</i> 1 to 3 percent</p> <p><i>Parent material:</i> sandy glaciofluvial deposits</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> 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/D</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>
Ap -- 0 to 9 in	loamy fine sand	rapid	0.81 to 1.00 in	5.1 to 6.0
E -- 9 to 30 in	fine sand	rapid	1.25 to 2.09 in	5.1 to 6.0
Bt -- 30 to 45 in	loamy fine sand	rapid	0.90 to 1.50 in	5.1 to 7.3
E and Bt -- 45 to 60 in	fine sand	rapid	0.90 to 1.50 in	5.1 to 7.3

#### Redby

<p><i>Extent:</i> 20 to 30 percent of the unit</p> <p><i>Landform(s):</i> flats on lake plains</p> <p><i>Slope gradient:</i> 0 to 2 percent</p> <p><i>Parent material:</i> sandy glaciofluvial deposits</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> somewhat poorly 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> .20</p> <p><i>Land capability, nonirrigated</i> 3w</p> <p><i>Hydric soil:</i> no</p> <p><i>Hydrologic group:</i> A/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 5 in	loamy fine sand	rapid	0.46 to 0.61 in	5.6 to 6.5
E -- 5 to 10 in	loamy fine sand	rapid	0.24 to 0.47 in	5.6 to 6.5
Bw -- 10 to 35 in	fine sand	rapid	1.26 to 1.76 in	5.6 to 7.3
C -- 35 to 80 in	fine sand	rapid	2.24 to 3.14 in	6.1 to 7.8

## Map Unit Description (MN)

Koochiching County, Minnesota

### B249A--Cormant-Leafriver complex, 0 to 1 percent slopes

#### Cormant

<p><i>Extent:</i> 55 to 65 percent of the unit</p> <p><i>Landform(s):</i> flats on lake plains</p> <p><i>Slope gradient:</i> 0 to 1 percent</p> <p><i>Parent material:</i> sandy glaciofluvial deposits</p> <p><i>Restrictive feature(s):</i> greater than 60 inches</p> <p><i>Flooding:</i> none</p> <p><i>Ponding:</i> occasional</p> <p><i>Drainage class:</i> poorly 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> 4w</p> <p><i>Hydric soil:</i> yes</p> <p><i>Hydrologic group:</i> A/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>
Ap -- 0 to 6 in	loamy fine sand	rapid	0.53 to 0.71 in	6.1 to 7.3
Cg -- 6 to 60 in	fine sand	rapid	2.70 to 5.39 in	6.1 to 7.8

#### Leafriver

<p><i>Extent:</i> 25 to 35 percent of the unit</p> <p><i>Landform(s):</i> depressions on lake plains</p> <p><i>Slope gradient:</i> 0 to 1 percent</p> <p><i>Parent material:</i> herbaceous organic material over sandy glaciofluvial deposits</p> <p><i>Restrictive feature(s):</i> greater than 60 inches</p> <p><i>Flooding:</i> none</p> <p><i>Ponding:</i> frequent</p> <p><i>Drainage class:</i> very poorly drained</p>	<p><i>Soil loss tolerance (T factor):</i> 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> 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>
Oa -- 0 to 9 in	muck	moderately rapid	3.17 to 4.07 in	5.1 to 7.8
A -- 9 to 14 in	sandy loam	moderately rapid	0.36 to 1.13 in	3.5 to 7.3
Cg -- 14 to 80 in	loamy sand	rapid	3.29 to 6.57 in	3.5 to 7.3

## Map Unit Description (MN)

Koochiching County, Minnesota

### B250A--Redby-Cormant complex, 0 to 3 percent slopes

#### Redby

*Extent:* 40 to 60 percent of the unit

*Landform(s):* flats on lake plains

*Slope gradient:* 1 to 3 percent

*Parent material:* sandy glaciofluvial 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)* .20

*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 5 in	loamy fine sand	rapid	0.46 to 0.61 in	5.6 to 6.5
E -- 5 to 10 in	loamy fine sand	rapid	0.24 to 0.47 in	5.6 to 6.5
Bw -- 10 to 35 in	fine sand	rapid	1.26 to 1.76 in	5.6 to 7.3
C -- 35 to 80 in	fine sand	rapid	2.24 to 3.14 in	6.1 to 7.8

#### Cormant

*Extent:* 25 to 40 percent of the unit

*Landform(s):* drainageways on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* sandy glaciofluvial 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):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .17

*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 6 in	loamy fine sand	rapid	0.53 to 0.71 in	6.1 to 7.3
Cg -- 6 to 60 in	fine sand	rapid	2.70 to 5.39 in	6.1 to 7.8

## Map Unit Description (MN)

Koochiching County, Minnesota

### B251B--Zimmerman-Soderville complex, 2 to 8 percent slopes

#### Zimmerman

*Extent:* 45 to 65 percent of the unit

*Landform(s):* lake plains

*Slope gradient:* 4 to 8 percent

*Parent material:* sandy glaciofluvial 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):* 1

*Wind erodibility index (WEI):* 250

*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>
Ap -- 0 to 7 in	fine sand	rapid	0.50 to 0.64 in	5.1 to 6.0
Bw,E -- 7 to 27 in	fine sand	rapid	1.41 to 1.81 in	5.1 to 7.3
E and Bt -- 27 to 80 in	fine sand	rapid	3.17 to 5.28 in	5.1 to 7.3

#### Soderville

*Extent:* 25 to 60 percent of the unit

*Landform(s):* lake plains

*Slope gradient:* 2 to 5 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)* .15

*Land capability, nonirrigated* 3s

*Hydric soil:* no

*Hydrologic group:* A/D

*Potential for frost action:* low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 9 in	loamy fine sand	rapid	0.81 to 1.00 in	5.1 to 6.0
E -- 9 to 30 in	fine sand	rapid	1.25 to 2.09 in	5.1 to 6.0
Bt -- 30 to 45 in	loamy fine sand	rapid	0.90 to 1.50 in	5.1 to 7.3
E and Bt -- 45 to 60 in	fine sand	rapid	0.90 to 1.50 in	5.1 to 7.3

## Map Unit Description (MN)

Koochiching County, Minnesota

### B255A--Beseman and Merwin soils, suomi catena, 0 to 1 percent slopes

#### Beseman

*Extent:* 35 to 60 percent of the unit  
*Landform(s):* depressions on lake plains  
*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):* 8  
*Wind erodibility index (WEI):* 0  
*Kw factor (surface layer)*  
*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>
Oa -- 0 to 36 in	muck	moderately rapid	12.54 to 16.12 in	
Cg -- 36 to 80 in	loam	moderate	5.73 to 8.38 in	7.4 to 8.4

#### Merwin

*Extent:* 35 to 60 percent of the unit  
*Landform(s):* depressions on lake plains  
*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):* 8  
*Wind erodibility index (WEI):* 0  
*Kw factor (surface layer)*  
*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>
Oi -- 0 to 6 in	peat	very rapid	3.25 to 3.84 in	
Oe -- 6 to 46 in	mucky peat	rapid	18.07 to 22.09 in	
Cg -- 46 to 80 in	loam	moderate	4.40 to 6.43 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### B256A--Cathro and Tacoosh soils, suomi catena, 0 to 1 percent slopes

#### Cathro

*Extent:* 35 to 60 percent of the unit

*Landform(s):* depressions on lake plains

*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):* 8

*Wind erodibility index (WEI):* 0

*Kw factor (surface layer)*

*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>
Oa -- 0 to 36 in	muck	moderately rapid	12.54 to 16.12 in	
A -- 36 to 40 in	mucky silt loam	moderate	0.95 to 1.13 in	5.1 to 6.5
Cg -- 40 to 80 in	loam	moderate	5.17 to 7.56 in	7.4 to 8.4

#### Tacoosh

*Extent:* 35 to 60 percent of the unit

*Landform(s):* depressions on lake plains

*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):* 5

*Wind erodibility index (WEI):* 56

*Kw factor (surface layer)*

*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>
Oe1 -- 0 to 12 in	mucky peat	rapid	5.31 to 6.50 in	
Oe2 -- 12 to 32 in	mucky peat	rapid	9.04 to 11.04 in	
Oa -- 32 to 36 in	muck	moderately rapid	1.38 to 1.77 in	
Cg -- 36 to 80 in	loam	moderate	5.73 to 8.38 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### B257A--Greenwood-Lobo complex, kab catena, 0 to 1 percent slopes

#### Greenwood

<i>Extent:</i> 50 to 80 percent of the unit	<i>Soil loss tolerance (T factor):</i> 2
<i>Landform(s):</i> raised bogs on lake plains	<i>Wind erodibility group (WEG):</i> 8
<i>Slope gradient:</i> 0 to 1 percent	<i>Wind erodibility index (WEI):</i> 0
<i>Parent material:</i> herbaceous organic material	<i>Kw factor (surface layer)</i> .02
<i>Restrictive feature(s):</i> greater than 60 inches	<i>Land capability, nonirrigated</i> 7w
<i>Flooding:</i> none	<i>Hydric soil:</i> yes
<i>Ponding:</i> none	<i>Hydrologic group:</i> A/D
<i>Drainage class:</i> very poorly 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>
Oi -- 0 to 10 in	peat	very rapid	5.41 to 6.40 in	
Oe1 -- 10 to 24 in	mucky peat	rapid	6.38 to 7.80 in	
Oe2 -- 24 to 80 in	mucky peat	rapid	25.16 to 30.75 in	

#### Lobo

<i>Extent:</i> 20 to 50 percent of the unit	<i>Soil loss tolerance (T factor):</i> 2
<i>Landform(s):</i> raised bogs on lake plains	<i>Wind erodibility group (WEG):</i> 8
<i>Slope gradient:</i> 0 to 1 percent	<i>Wind erodibility index (WEI):</i> 0
<i>Parent material:</i> herbaceous organic material	<i>Kw factor (surface layer)</i> .02
<i>Restrictive feature(s):</i> greater than 60 inches	<i>Land capability, nonirrigated</i> 7w
<i>Flooding:</i> none	<i>Hydric soil:</i> yes
<i>Ponding:</i> none	<i>Hydrologic group:</i> A/D
<i>Drainage class:</i> very poorly 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>
Oi -- 0 to 38 in	peat	very rapid	21.00 to 24.82 in	
Oe -- 38 to 80 in	mucky peat	rapid	18.78 to 22.95 in	

## Map Unit Description (MN)

Koochiching County, Minnesota

### B258A--Waskish peat, kab catena, 0 to 2 percent slopes

#### Waskish

*Extent:* 60 to 90 percent of the unit

*Landform(s):* raised bogs on lake plains

*Slope gradient:* 0 to 2 percent

*Parent material:* herbaceous organic material

*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):* 8

*Wind erodibility index (WEI):* 0

*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>
Oi -- 0 to 14 in	peat	very rapid	7.80 to 9.21 in	
Oa -- 14 to 16 in	muck	moderately rapid	0.69 to 0.89 in	
Oi -- 16 to 80 in	mucky peat	very rapid	35.08 to 41.46 in	

## Map Unit Description (MN)

Koochiching County, Minnesota

### B259A--Greenwood soils, kab catena, 0 to 1 percent slopes

#### Greenwood

*Extent:* 0 to 95 percent of the unit

*Landform(s):* raised bogs on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* herbaceous organic material

*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):* 8

*Wind erodibility index (WEI):* 0

*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>
Oi -- 0 to 10 in	peat	very rapid	5.41 to 6.40 in	
Oe1 -- 10 to 24 in	mucky peat	rapid	6.38 to 7.80 in	
Oe2 -- 24 to 80 in	mucky peat	rapid	25.16 to 30.75 in	

#### Greenwood, depressional

*Extent:* 0 to 95 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* herbaceous organic material

*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* 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>
Oi -- 0 to 10 in	peat	very rapid	5.41 to 6.40 in	
Oe1 -- 10 to 24 in	mucky peat	rapid	6.38 to 7.80 in	
Oe2 -- 24 to 80 in	mucky peat	rapid	25.16 to 30.75 in	

## Map Unit Description (MN)

Koochiching County, Minnesota

### B260A--Rifle soils, kab catena, 0 to 1 percent slopes

#### Rifle

*Extent:* 0 to 95 percent of the unit

*Landform(s):* depressions on moraines

*Slope gradient:* 0 to 1 percent

*Parent material:* herbaceous organic material

*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):* 5

*Wind erodibility index (WEI):* 56

*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>
Oe1 -- 0 to 12 in	mucky peat	rapid	5.31 to 6.50 in	
Oe2 -- 12 to 42 in	mucky peat	rapid	13.64 to 16.67 in	
Oa -- 42 to 52 in	muck	moderately rapid	3.44 to 4.43 in	
Oe3 -- 52 to 80 in	mucky peat	rapid	12.58 to 15.37 in	

#### Rifle, depressional

*Extent:* 0 to 95 percent of the unit

*Landform(s):* depressions on moraines

*Slope gradient:* 0 to 1 percent

*Parent material:* herbaceous organic material

*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* 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>
Oe1 -- 0 to 12 in	mucky peat	rapid	5.31 to 6.50 in	
Oe2 -- 12 to 42 in	mucky peat	rapid	13.64 to 16.67 in	
Oa -- 42 to 52 in	muck	moderately rapid	3.44 to 4.43 in	
Oe3 -- 52 to 80 in	mucky peat	rapid	12.58 to 15.37 in	

## Map Unit Description (MN)

Koochiching County, Minnesota

### B261A--Daisybay and Terric Haplosaprist soils, kab catena, 0 to 1 percent slopes

#### Daisybay

<i>Extent:</i> 35 to 60 percent of the unit	<i>Soil loss tolerance (T factor):</i> 1
<i>Landform(s):</i> raised bogs on lake plains	<i>Wind erodibility group (WEG):</i> 8
<i>Slope gradient:</i> 0 to 1 percent	<i>Wind erodibility index (WEI):</i> 0
<i>Parent material:</i> organic material over clayey till and glaciolacustrine deposits	<i>Kw factor (surface layer)</i> .02
<i>Restrictive feature(s):</i> greater than 60 inches	<i>Land capability, nonirrigated</i> 7w
<i>Flooding:</i> none	<i>Hydric soil:</i> yes
<i>Ponding:</i> none	<i>Hydrologic group:</i> C/D
<i>Drainage class:</i> very poorly 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>
Oi -- 0 to 7 in	peat	very rapid	3.90 to 4.61 in	
Oe -- 7 to 30 in	mucky peat	rapid	10.28 to 12.56 in	
Oa -- 30 to 35 in	muck	moderately rapid	1.79 to 2.30 in	
Cg -- 35 to 80 in	clay	slow	3.59 to 8.98 in	7.4 to 8.4

#### Terric Haplosaprist

<i>Extent:</i> 35 to 60 percent of the unit	<i>Soil loss tolerance (T factor):</i> 1
<i>Landform(s):</i> depressions on lake plains	<i>Wind erodibility group (WEG):</i> 8
<i>Slope gradient:</i> 0 to 1 percent	<i>Wind erodibility index (WEI):</i> 0
<i>Parent material:</i> herbaceous organic material over clayey glaciolacustrine deposits over clayey till	<i>Kw factor (surface layer)</i> .02
<i>Restrictive feature(s):</i> greater than 60 inches	<i>Land capability, nonirrigated</i> 7w
<i>Flooding:</i> none	<i>Hydric soil:</i> yes
<i>Ponding:</i> frequent	<i>Hydrologic group:</i> C/D
<i>Drainage class:</i> very poorly 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>
Oa -- 0 to 36 in	muck	moderately rapid	12.54 to 16.12 in	
Cg -- 36 to 80 in	clay	slow	3.53 to 8.82 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### B262A--Dora and Terric Haplohemist soils, kab catena, 0 to 1 percent slopes

#### Dora

*Extent:* 35 to 60 percent of the unit  
*Landform(s):* depressions on lake plains  
*Slope gradient:* 0 to 1 percent  
*Parent material:* herbaceous organic material over clayey glaciolacustrine deposits over clayey 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* 7w  
*Hydric soil:* yes  
*Hydrologic group:* D  
*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa -- 0 to 28 in	muck	moderately rapid	9.78 to 12.58 in	
Cg1 -- 28 to 34 in	clay	very slow	0.47 to 0.59 in	6.6 to 7.8
Cg2 -- 34 to 80 in	clay	very slow	3.69 to 5.53 in	7.4 to 8.4

#### Terric Haplohemist

*Extent:* 35 to 60 percent of the unit  
*Landform(s):* depressions on lake plains  
*Slope gradient:* 0 to 1 percent  
*Parent material:* herbaceous organic material over clayey till over clayey glaciolacustrine deposits  
*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):* 5  
*Wind erodibility index (WEI):* 56  
*Kw factor (surface layer)* .02  
*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>
Oe1 -- 0 to 12 in	mucky peat	rapid	5.31 to 6.50 in	
Oe2 -- 12 to 32 in	mucky peat	rapid	9.04 to 11.04 in	
Oa -- 32 to 36 in	muck	moderately rapid	1.38 to 1.77 in	
Cg -- 36 to 80 in	loam	moderate	5.73 to 8.38 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### B263A--Lindford-Littlefork complex, 0 to 3 percent slopes, flooded

#### Lindford, occasionally flooded

*Extent:* 60 to 80 percent of the unit

*Landform(s):* stream terraces

*Slope gradient:* 0 to 2 percent

*Parent material:* alluvium

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

*Flooding:* occasional

*Ponding:* none

*Drainage class:* somewhat poorly 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* 3w

*Hydric soil:* no

*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>
Ap -- 0 to 5 in	silty clay loam	moderately slow	0.80 to 1.13 in	5.6 to 7.3
Bt -- 5 to 20 in	silty clay loam	slow	1.69 to 3.07 in	5.6 to 7.3
C1,C2,Cg1 -- 20 to 51 in	silty clay loam	moderately slow	4.35 to 6.22 in	7.4 to 8.4
Cg2,Cg3 -- 51 to 80 in	stratified very fine sandy loam to loam to silt loam to silty clay loam	moderate	4.89 to 6.32 in	7.4 to 8.4

#### Littlefork, rarely flooded

*Extent:* 15 to 35 percent of the unit

*Landform(s):* stream terraces

*Slope gradient:* 0 to 3 percent

*Parent material:* alluvium

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

*Flooding:* rare

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 4

*Wind erodibility group (WEG):* 5

*Wind erodibility index (WEI):* 56

*Kw factor (surface layer)* .43

*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>
Ap -- 0 to 8 in	silt loam	moderate	1.34 to 1.89 in	5.6 to 7.3
B/E -- 8 to 16 in	silt loam	moderate	1.18 to 1.73 in	5.6 to 7.3
Bt1,Bt2 -- 16 to 29 in	silty clay loam	moderately slow	2.41 to 2.94 in	5.6 to 7.3
C1,C2 -- 29 to 46 in	stratified very fine sandy loam to silt loam to loamy very fine sand to loam to silty clay loam	moderate	1.32 to 3.64 in	7.4 to 8.4
2C3,2C4 -- 46 to 80 in	fine sand	rapid	2.06 to 3.77 in	5.1 to 6.5

## Map Unit Description (MN)

Koochiching County, Minnesota

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### **B263A--Lindford-Littlefork complex, 0 to 3 percent slopes, flooded**

## Map Unit Description (MN)

Koochiching County, Minnesota

### B264B--Littlefork-Lindford complex, 0 to 8 percent slopes, flooded

#### Littlefork, rarely flooded

*Extent:* 40 to 60 percent of the unit

*Landform(s):* stream terraces

*Slope gradient:* 3 to 8 percent

*Parent material:* alluvium

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

*Flooding:* rare

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 4

*Wind erodibility group (WEG):* 5

*Wind erodibility index (WEI):* 56

*Kw factor (surface layer)* .43

*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>
Ap -- 0 to 8 in	silt loam	moderate	1.34 to 1.89 in	5.6 to 7.3
B/E -- 8 to 16 in	silt loam	moderate	1.18 to 1.73 in	5.6 to 7.3
Bt1,Bt2 -- 16 to 29 in	silty clay loam	moderately slow	2.41 to 2.94 in	5.6 to 7.3
C1,C2 -- 29 to 46 in	stratified very fine sandy loam to silt loam to loamy very fine sand to loam to silty clay loam	moderate	1.32 to 3.64 in	7.4 to 8.4
2C3,2C4 -- 46 to 80 in	fine sand	rapid	2.06 to 3.77 in	5.1 to 6.5

#### Lindford, occasionally flooded

*Extent:* 30 to 55 percent of the unit

*Landform(s):* stream terraces

*Slope gradient:* 0 to 3 percent

*Parent material:* alluvium

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

*Flooding:* occasional

*Ponding:* none

*Drainage class:* somewhat poorly 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* 3w

*Hydric soil:* no

*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>
Ap -- 0 to 5 in	silty clay loam	moderately slow	0.80 to 1.13 in	5.6 to 7.3
Bt -- 5 to 20 in	silty clay loam	slow	1.69 to 3.07 in	5.6 to 7.3
C1,C2,Cg1 -- 20 to 51 in	silty clay loam	moderately slow	4.35 to 6.22 in	7.4 to 8.4
Cg2,Cg3 -- 51 to 80 in	stratified very fine sandy loam to loam to silt loam to silty clay loam	moderate	4.89 to 6.32 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

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### **B264B--Littlefork-Lindford complex, 0 to 8 percent slopes, flooded**

## Map Unit Description (MN)

Koochiching County, Minnesota

### B265B--Urban land-Kooch-Kab complex, 0 to 4 percent slopes

#### Urban land

*Extent:* 30 to 70 percent of the unit

*Landform(s):* till plains

*Slope gradient:* 0 to 4 percent

*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:* no

*Hydrologic group:*

*Potential for frost action:*

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

*Extent:* 15 to 35 percent of the unit

*Landform(s):* till plains

*Slope gradient:* 2 to 4 percent

*Parent material:* clayey till

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

*Flooding:* none

*Ponding:* none

*Drainage class:* somewhat poorly drained

*Soil loss tolerance (T factor):* 3

*Wind erodibility group (WEG):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .32

*Land capability, nonirrigated* 3w

*Hydric soil:* no

*Hydrologic group:* C/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>
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A --	0 to 3 in	silt loam	moderate	0.63 to 0.76 in	5.1 to 7.3
E --	3 to 5 in	silt loam	moderate	0.33 to 0.43 in	5.1 to 7.3
E/B --	5 to 11 in	silt loam	moderate	0.53 to 1.30 in	5.1 to 7.3
Bt --	11 to 22 in	clay	slow	0.99 to 2.20 in	5.6 to 7.8
Cg --	22 to 80 in	clay	slow	4.63 to 11.57 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### B265B--Urban land-Kooch-Kab complex, 0 to 4 percent slopes

#### Kab

<p><i>Extent:</i> 15 to 35 percent of the unit</p> <p><i>Landform(s):</i> drainageways on till plains</p> <p><i>Slope gradient:</i> 0 to 2 percent</p> <p><i>Parent material:</i> clayey 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> poorly drained</p>	<p><i>Soil loss tolerance (T factor):</i> 3</p> <p><i>Wind erodibility group (WEG):</i> 6</p> <p><i>Wind erodibility index (WEI):</i> 48</p> <p><i>Kw factor (surface layer)</i> .32</p> <p><i>Land capability, nonirrigated</i> 4w</p> <p><i>Hydric soil:</i> yes</p> <p><i>Hydrologic group:</i> C/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 4 in	silt loam	moderate	0.79 to 0.94 in	5.1 to 7.3
Eg -- 4 to 7 in	silt loam	moderate	0.54 to 0.69 in	5.1 to 7.3
B/E -- 7 to 13 in	silty clay loam	moderate	1.06 to 1.30 in	5.1 to 7.3
Btg -- 13 to 29 in	clay	slow	1.45 to 3.23 in	5.6 to 7.8
Cg -- 29 to 80 in	clay	slow	4.06 to 10.16 in	7.4 to 8.4

#### Ratroot

<p><i>Extent:</i> 1 to 10 percent of the unit</p> <p><i>Landform(s):</i> depressions on till plains</p> <p><i>Slope gradient:</i> 0 to 1 percent</p> <p><i>Parent material:</i> clayey till</p> <p><i>Restrictive feature(s):</i> greater than 60 inches</p> <p><i>Flooding:</i> none</p> <p><i>Ponding:</i> frequent</p> <p><i>Drainage class:</i> very poorly drained</p>	<p><i>Soil loss tolerance (T factor):</i> 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> .02</p> <p><i>Land capability, nonirrigated</i> 6w</p> <p><i>Hydric soil:</i> yes</p> <p><i>Hydrologic group:</i> C/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>
Oe -- 0 to 4 in	mucky peat	rapid	1.77 to 2.17 in	5.1 to 6.5
A -- 4 to 10 in	clay	slow	0.47 to 1.18 in	7.4 to 8.4
Btg -- 10 to 37 in	clay	slow	2.44 to 5.43 in	5.6 to 7.8
Cg -- 37 to 80 in	clay	slow	3.43 to 8.58 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### B273A--Waskish peat, suomi catena, 0 to 2 percent slopes

#### Waskish

*Extent:* 60 to 90 percent of the unit

*Landform(s):* raised bogs on lake plains

*Slope gradient:* 0 to 2 percent

*Parent material:* herbaceous organic material

*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):* 8

*Wind erodibility index (WEI):* 0

*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>
Oi -- 0 to 14 in	peat	very rapid	7.80 to 9.21 in	
Oa -- 14 to 16 in	muck	moderately rapid	0.69 to 0.89 in	
Oi -- 16 to 80 in	mucky peat	very rapid	35.08 to 41.46 in	

## Map Unit Description (MN)

Koochiching County, Minnesota

### B274A--Rifle soils, spooner catena, 0 to 1 percent slopes

#### Rifle

<p><i>Extent:</i> 0 to 95 percent of the unit</p> <p><i>Landform(s):</i> depressions on moraines</p> <p><i>Slope gradient:</i> 0 to 1 percent</p> <p><i>Parent material:</i> herbaceous organic material</p> <p><i>Restrictive feature(s):</i> greater than 60 inches</p> <p><i>Flooding:</i> none</p> <p><i>Ponding:</i> frequent</p> <p><i>Drainage class:</i> very poorly drained</p>	<p><i>Soil loss tolerance (T factor):</i> 2</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></p> <p><i>Land capability, nonirrigated</i> 7w</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>
Oe1 -- 0 to 12 in	mucky peat	rapid	5.31 to 6.50 in	
Oe2 -- 12 to 42 in	mucky peat	rapid	13.64 to 16.67 in	
Oa -- 42 to 52 in	muck	moderately rapid	3.44 to 4.43 in	
Oe3 -- 52 to 80 in	mucky peat	rapid	12.58 to 15.37 in	

#### Rifle, depressional

<p><i>Extent:</i> 0 to 95 percent of the unit</p> <p><i>Landform(s):</i> depressions on moraines</p> <p><i>Slope gradient:</i> 0 to 1 percent</p> <p><i>Parent material:</i> herbaceous organic material</p> <p><i>Restrictive feature(s):</i> greater than 60 inches</p> <p><i>Flooding:</i> none</p> <p><i>Ponding:</i> frequent</p> <p><i>Drainage class:</i> very poorly drained</p>	<p><i>Soil loss tolerance (T factor):</i> 2</p> <p><i>Wind erodibility group (WEG):</i> 8</p> <p><i>Wind erodibility index (WEI):</i> 0</p> <p><i>Kw factor (surface layer)</i></p> <p><i>Land capability, nonirrigated</i> 7w</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>
Oe1 -- 0 to 12 in	mucky peat	rapid	5.31 to 6.50 in	
Oe2 -- 12 to 42 in	mucky peat	rapid	13.64 to 16.67 in	
Oa -- 42 to 52 in	muck	moderately rapid	3.44 to 4.43 in	
Oe3 -- 52 to 80 in	mucky peat	rapid	12.58 to 15.37 in	

## Map Unit Description (MN)

Koochiching County, Minnesota

### B275A--Rifle soils, suomi catena, 0 to 1 percent slopes

#### Rifle

<p><i>Extent:</i> 0 to 95 percent of the unit</p> <p><i>Landform(s):</i> depressions on lake plains</p> <p><i>Slope gradient:</i> 0 to 1 percent</p> <p><i>Parent material:</i> herbaceous organic material</p> <p><i>Restrictive feature(s):</i> greater than 60 inches</p> <p><i>Flooding:</i> none</p> <p><i>Ponding:</i> frequent</p> <p><i>Drainage class:</i> very poorly drained</p>	<p><i>Soil loss tolerance (T factor):</i> 2</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></p> <p><i>Land capability, nonirrigated</i> 7w</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>
Oe1 -- 0 to 12 in	mucky peat	rapid	5.31 to 6.50 in	
Oe2 -- 12 to 42 in	mucky peat	rapid	13.64 to 16.67 in	
Oa -- 42 to 52 in	muck	moderately rapid	3.44 to 4.43 in	
Oe3 -- 52 to 80 in	mucky peat	rapid	12.58 to 15.37 in	

#### Rifle, depressional

<p><i>Extent:</i> 0 to 95 percent of the unit</p> <p><i>Landform(s):</i> depressions on lake plains</p> <p><i>Slope gradient:</i> 0 to 1 percent</p> <p><i>Parent material:</i> herbaceous organic material</p> <p><i>Restrictive feature(s):</i> greater than 60 inches</p> <p><i>Flooding:</i> none</p> <p><i>Ponding:</i> frequent</p> <p><i>Drainage class:</i> very poorly drained</p>	<p><i>Soil loss tolerance (T factor):</i> 2</p> <p><i>Wind erodibility group (WEG):</i> 8</p> <p><i>Wind erodibility index (WEI):</i> 0</p> <p><i>Kw factor (surface layer)</i></p> <p><i>Land capability, nonirrigated</i> 7w</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>
Oe1 -- 0 to 12 in	mucky peat	rapid	5.31 to 6.50 in	
Oe2 -- 12 to 42 in	mucky peat	rapid	13.64 to 16.67 in	
Oa -- 42 to 52 in	muck	moderately rapid	3.44 to 4.43 in	
Oe3 -- 52 to 80 in	mucky peat	rapid	12.58 to 15.37 in	

## Map Unit Description (MN)

Koochiching County, Minnesota

### B276A--Cathro and Tacoosh soils, spooner catena, 0 to 1 percent slopes

#### Cathro

*Extent:* 35 to 60 percent of the unit  
*Landform(s):* depressions on lake plains  
*Slope gradient:* 0 to 1 percent  
*Parent material:* herbaceous organic material over silty glaciolacustrine deposits  
*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)*  
*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>
Oa -- 0 to 36 in	muck	moderately rapid	12.54 to 16.12 in	
A -- 36 to 40 in	mucky silt loam	moderate	0.95 to 1.13 in	5.1 to 6.5
Cg -- 40 to 80 in	silt loam	moderate	6.76 to 8.75 in	7.4 to 8.4

#### Tacoosh

*Extent:* 35 to 60 percent of the unit  
*Landform(s):* depressions on lake plains  
*Slope gradient:* 0 to 1 percent  
*Parent material:* herbaceous organic material over silty glaciolacustrine deposits  
*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):* 5  
*Wind erodibility index (WEI):* 56  
*Kw factor (surface layer)*  
*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>
Oe1 -- 0 to 12 in	mucky peat	rapid	5.31 to 6.50 in	
Oe2 -- 12 to 32 in	mucky peat	rapid	9.04 to 11.04 in	
Oa -- 32 to 36 in	muck	moderately rapid	1.38 to 1.77 in	
Cg -- 36 to 80 in	silt loam	moderate	7.50 to 9.70 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### B277A--Greenwood soils, suomi catena, 0 to 1 percent slopes

#### Greenwood

<p><i>Extent:</i> 0 to 95 percent of the unit</p> <p><i>Landform(s):</i> raised bogs on till plains</p> <p><i>Slope gradient:</i> 0 to 1 percent</p> <p><i>Parent material:</i> herbaceous organic material</p> <p><i>Restrictive feature(s):</i> greater than 60 inches</p> <p><i>Flooding:</i> none</p> <p><i>Ponding:</i> none</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> 8</p> <p><i>Wind erodibility index (WEI):</i> 0</p> <p><i>Kw factor (surface layer)</i></p> <p><i>Land capability, nonirrigated</i> 7w</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>
Oi -- 0 to 10 in	peat	very rapid	5.41 to 6.40 in	
Oe1 -- 10 to 24 in	mucky peat	rapid	6.38 to 7.80 in	
Oe2 -- 24 to 80 in	mucky peat	rapid	25.16 to 30.75 in	

#### Greenwood, depressional

<p><i>Extent:</i> 0 to 95 percent of the unit</p> <p><i>Landform(s):</i> depressions on till plains</p> <p><i>Slope gradient:</i> 0 to 1 percent</p> <p><i>Parent material:</i> herbaceous organic material</p> <p><i>Restrictive feature(s):</i> greater than 60 inches</p> <p><i>Flooding:</i> none</p> <p><i>Ponding:</i> frequent</p> <p><i>Drainage class:</i> very poorly drained</p>	<p><i>Soil loss tolerance (T factor):</i> 2</p> <p><i>Wind erodibility group (WEG):</i> 8</p> <p><i>Wind erodibility index (WEI):</i> 0</p> <p><i>Kw factor (surface layer)</i></p> <p><i>Land capability, nonirrigated</i> 7w</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>
Oi -- 0 to 10 in	peat	very rapid	5.41 to 6.40 in	
Oe1 -- 10 to 24 in	mucky peat	rapid	6.38 to 7.80 in	
Oe2 -- 24 to 80 in	mucky peat	rapid	25.16 to 30.75 in	

## Map Unit Description (MN)

Koochiching County, Minnesota

### B278A--Greenwood-Lobo complex, suomi catena, 0 to 2 percent slopes

#### Greenwood

<p><i>Extent:</i> 50 to 80 percent of the unit</p> <p><i>Landform(s):</i> raised bogs on lake plains</p> <p><i>Slope gradient:</i> 0 to 1 percent</p> <p><i>Parent material:</i> herbaceous organic material</p> <p><i>Restrictive feature(s):</i> greater than 60 inches</p> <p><i>Flooding:</i> none</p> <p><i>Ponding:</i> none</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> 8</p> <p><i>Wind erodibility index (WEI):</i> 0</p> <p><i>Kw factor (surface layer)</i> .02</p> <p><i>Land capability, nonirrigated</i> 7w</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>
Oi -- 0 to 10 in	peat	very rapid	5.41 to 6.40 in	
Oe1 -- 10 to 24 in	mucky peat	rapid	6.38 to 7.80 in	
Oe2 -- 24 to 80 in	mucky peat	rapid	25.16 to 30.75 in	

#### Lobo

<p><i>Extent:</i> 20 to 50 percent of the unit</p> <p><i>Landform(s):</i> raised bogs on lake plains</p> <p><i>Slope gradient:</i> 0 to 2 percent</p> <p><i>Parent material:</i> herbaceous organic material</p> <p><i>Restrictive feature(s):</i> greater than 60 inches</p> <p><i>Flooding:</i> none</p> <p><i>Ponding:</i> none</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> 8</p> <p><i>Wind erodibility index (WEI):</i> 0</p> <p><i>Kw factor (surface layer)</i> .02</p> <p><i>Land capability, nonirrigated</i> 7w</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>
Oi -- 0 to 38 in	peat	very rapid	21.00 to 24.82 in	
Oe -- 38 to 80 in	mucky peat	rapid	18.78 to 22.95 in	

## Map Unit Description (MN)

Koochiching County, Minnesota

### B279A--Markey and Lougee soils, 0 to 1 percent slopes

#### Markey

*Extent:* 35 to 60 percent of the unit

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

*Slope gradient:* 0 to 1 percent

*Parent material:* herbaceous organic material over sandy glaciofluvial deposits

*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)*

*Land capability, nonirrigated* 7w

*Hydric soil:* yes

*Hydrologic group:* A/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa -- 0 to 32 in	muck	moderately rapid	11.16 to 14.35 in	
Cg -- 32 to 80 in	loamy sand	rapid	2.40 to 4.80 in	3.5 to 7.3

## Map Unit Description (MN)

Koochiching County, Minnesota

### B279A--Markey and Lougee soils, 0 to 1 percent slopes

#### Lougee

*Extent:* 35 to 60 percent of the unit

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

*Slope gradient:* 0 to 1 percent

*Parent material:* herbaceous organic material over sandy glaciofluvial deposits

*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)*

*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>
Oi -- 0 to 3 in	peat	very rapid	1.73 to 2.05 in	
Oe -- 3 to 12 in	mucky peat	rapid	3.90 to 4.76 in	
Oa -- 12 to 28 in	muck	moderately rapid	5.51 to 7.09 in	
2A -- 28 to 31 in	mucky loamy fine sand	rapid	0.39 to 0.47 in	3.8 to 4.7
2Cg1 -- 31 to 43 in	fine sand	rapid	0.83 to 1.06 in	4.6 to 5.6
2Cg2 -- 43 to 55 in	fine sand	rapid	0.83 to 1.06 in	4.6 to 5.6
2Cg3 -- 55 to 80 in	fine sand	rapid	1.74 to 2.23 in	4.6 to 5.6

## Map Unit Description (MN)

Koochiching County, Minnesota

### B280A--Zippel silt loam, 0 to 2 percent slopes

#### Zippel

*Extent:* 85 to 95 percent of the unit

*Landform(s):* lake plains

*Slope gradient:* 0 to 2 percent

*Parent material:* silty 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):* 5

*Wind erodibility index (WEI):* 56

*Kw factor (surface layer)* .43

*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 7 in	silt loam	moderate	1.56 to 1.70 in	6.6 to 7.8
Bg -- 7 to 12 in	very fine sandy loam	moderately rapid	0.71 to 0.94 in	6.6 to 7.8
Cg1,Cg2,Cg3 - 12 to 60 in	stratified very fine sand to silt loam	moderately rapid	7.20 to 9.61 in	7.4 to 8.4
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## Map Unit Description (MN)

Koochiching County, Minnesota

### F2B--Eaglesnest-Wahlsten complex, 2 to 8 percent slopes, bouldery

#### Eaglesnest, bouldery

*Extent:* 30 to 60 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 2 to 8 percent

*Parent material:* loamy drift over dense gravelly lodgment till

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

*Flooding:* none

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 4

*Wind erodibility group (WEG):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .15

*Land capability, nonirrigated* 6s

*Hydric soil:* no

*Hydrologic group:* C

*Potential for frost action:* moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 3 in	stony loam	moderate	0.41 to 0.60 in	4.5 to 6.0
Bw1 -- 3 to 6 in	stony loam	moderate	0.22 to 0.44 in	4.5 to 6.0
Bw2 -- 6 to 20 in	stony sandy loam	moderate	0.99 to 2.13 in	5.1 to 6.5
Bw3 -- 20 to 28 in	very stony sandy loam	moderate	0.47 to 1.02 in	5.1 to 6.5
2BC -- 28 to 41 in	very cobbly sandy loam	moderately slow	0.52 to 1.17 in	5.1 to 6.5
2Cd -- 41 to 80 in	very cobbly sandy loam	slow	0.78 to 1.95 in	5.1 to 6.5

## Map Unit Description (MN)

Koochiching County, Minnesota

### F2B--Eaglesnest-Wahlsten complex, 2 to 8 percent slopes, bouldery

#### Wahlsten, bouldery

*Extent:* 20 to 50 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 2 to 8 percent

*Parent material:* loamy drift over dense gravelly lodgment till over bedrock

*Restrictive feature(s):* densic material at 15 to 35 inches  
lithic bedrock at 20 to 40 inches

*Flooding:* none

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 2

*Wind erodibility group (WEG):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 6s

*Hydric soil:* no

*Hydrologic group:* 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	stony loam	moderate	0.41 to 0.60 in	4.5 to 6.0
Bw1 -- 3 to 9 in	stony loam	moderate	0.59 to 1.06 in	4.5 to 6.0
Bw2 -- 9 to 17 in	gravelly loam	moderate	0.63 to 1.26 in	5.1 to 6.5
2Cd -- 17 to 37 in	very gravelly sandy loam	slow	0.60 to 1.41 in	5.1 to 6.5
R -- 37 to 80 in	bedrock	very slow		

## Map Unit Description (MN)

Koochiching County, Minnesota

### F3D--Eveleth-Eaglesnest-Conic complex, 6 to 18 percent slopes, bouldery

#### Eveleth, bouldery

*Extent:* 30 to 50 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 8 to 18 percent

*Parent material:* loamy drift over dense gravelly lodgment till

*Restrictive feature(s):* densic material at 35 to 55 inches

*Flooding:* none

*Ponding:* none

*Drainage class:* well drained

*Soil loss tolerance (T factor):* 4

*Wind erodibility group (WEG):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .15

*Land capability, nonirrigated* 6s

*Hydric soil:* no

*Hydrologic group:* C

*Potential for frost action:* moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 4 in	stony loam	moderate	0.51 to 0.75 in	4.5 to 6.0
Bw1 -- 4 to 13 in	stony loam	moderate	0.72 to 1.45 in	4.5 to 6.0
Bw2 -- 13 to 23 in	cobbly loam	moderate	0.69 to 1.57 in	5.1 to 6.5
2BC -- 23 to 43 in	very gravelly sandy loam	moderately slow	0.80 to 1.81 in	5.1 to 6.5
2Cd -- 43 to 80 in	very gravelly sandy loam	slow	0.74 to 1.85 in	5.1 to 6.5

#### Eaglesnest, bouldery

*Extent:* 15 to 35 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 6 to 10 percent

*Parent material:* loamy drift over dense gravelly lodgment till

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

*Flooding:* none

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 4

*Wind erodibility group (WEG):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .15

*Land capability, nonirrigated* 6s

*Hydric soil:* no

*Hydrologic group:* C

*Potential for frost action:* moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 3 in	stony loam	moderate	0.41 to 0.60 in	4.5 to 6.0
Bw1 -- 3 to 6 in	stony loam	moderate	0.22 to 0.44 in	4.5 to 6.0
Bw2 -- 6 to 20 in	stony sandy loam	moderate	0.99 to 2.13 in	5.1 to 6.5
Bw3 -- 20 to 28 in	very stony sandy loam	moderate	0.47 to 1.02 in	5.1 to 6.5
2BC -- 28 to 41 in	very cobbly sandy loam	moderately slow	0.52 to 1.17 in	5.1 to 6.5
2Cd -- 41 to 80 in	very cobbly sandy loam	slow	0.78 to 1.95 in	5.1 to 6.5

## Map Unit Description (MN)

Koochiching County, Minnesota

### F3D--Eveleth-Eaglesnest-Conic complex, 6 to 18 percent slopes, bouldery

#### Conic, bouldery

*Extent:* 15 to 30 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 8 to 18 percent

*Parent material:* loamy drift over dense gravelly lodgment till over bedrock

*Restrictive feature(s):* densic material at 12 to 30 inches  
lithic bedrock at 20 to 40 inches

*Flooding:* none

*Ponding:* none

*Drainage class:* well drained

*Soil loss tolerance (T factor):* 2

*Wind erodibility group (WEG):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .24

*Land capability, nonirrigated* 6e

*Hydric soil:* no

*Hydrologic group:* D

*Potential for frost action:* moderate

#### Representative soil profile:

		<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A --	0 to 3 in	stony loam	moderate	0.31 to 0.50 in	4.5 to 6.0
Bw --	3 to 9 in	stony loam	moderate	0.53 to 0.89 in	4.5 to 6.0
BC --	9 to 18 in	cobbly sandy loam	moderate	0.63 to 1.27 in	5.1 to 6.5
Cd --	18 to 29 in	very gravelly coarse sandy loam	slow	0.22 to 0.77 in	5.1 to 6.5
R --	29 to 80 in	bedrock	very slow		

## Map Unit Description (MN)

Koochiching County, Minnesota

### F7B--Biwabik-Graycalm complex, 1 to 8 percent slopes

#### Biwabik

*Extent:* 40 to 70 percent of the unit

*Landform(s):* outwash plains

*Slope gradient:* 1 to 8 percent

*Parent material:* gravelly outwash

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

*Flooding:* none

*Ponding:* none

*Drainage class:* excessively drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*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 2 in	sandy loam	moderately rapid	0.24 to 0.30 in	4.5 to 6.0
Bw -- 2 to 9 in	gravelly sandy loam	moderately rapid	0.64 to 0.92 in	4.5 to 6.0
E -- 9 to 32 in	gravelly loamy sand	rapid	0.69 to 1.60 in	4.5 to 6.0
E and Bt -- 32 to 64 in	gravelly loamy sand	rapid	0.97 to 1.94 in	5.1 to 6.0
C -- 64 to 80 in	gravelly coarse sand	very rapid	0.31 to 0.94 in	5.1 to 6.5

#### Graycalm

*Extent:* 25 to 55 percent of the unit

*Landform(s):* outwash plains

*Slope gradient:* 1 to 8 percent

*Parent material:* sandy 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 2 in	loamy sand	rapid	0.20 to 0.24 in	4.5 to 6.0
Bw -- 2 to 37 in	loamy sand	rapid	2.10 to 3.85 in	4.5 to 6.0
E and Bt -- 37 to 48 in	sand	rapid	0.55 to 0.99 in	5.1 to 6.0
C -- 48 to 80 in	coarse sand	very rapid	0.64 to 2.23 in	5.1 to 6.5

## Map Unit Description (MN)

Koochiching County, Minnesota

### F8D--Biwabik-Graycalm-Friendship complex, pitted, 0 to 18 percent slopes

#### Biwabik

*Extent:* 30 to 60 percent of the unit

*Landform(s):* pitted outwash plains

*Slope gradient:* 8 to 18 percent

*Parent material:* gravelly outwash

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

*Flooding:* none

*Ponding:* none

*Drainage class:* excessively drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .15

*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	0.24 to 0.30 in	4.5 to 6.0
Bw -- 2 to 9 in	gravelly sandy loam	moderately rapid	0.64 to 0.92 in	4.5 to 6.0
E -- 9 to 32 in	gravelly loamy sand	rapid	0.69 to 1.60 in	4.5 to 6.0
E and Bt -- 32 to 64 in	gravelly loamy sand	rapid	0.97 to 1.94 in	5.1 to 6.0
C -- 64 to 80 in	gravelly coarse sand	very rapid	0.31 to 0.94 in	5.1 to 6.5

#### Graycalm

*Extent:* 30 to 60 percent of the unit

*Landform(s):* pitted outwash plains

*Slope gradient:* 8 to 18 percent

*Parent material:* sandy 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* 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	loamy sand	rapid	0.20 to 0.24 in	4.5 to 6.0
Bw -- 2 to 37 in	loamy sand	rapid	2.10 to 3.85 in	4.5 to 6.0
E and Bt -- 37 to 48 in	sand	rapid	0.55 to 0.99 in	5.1 to 6.0
C -- 48 to 80 in	coarse sand	very rapid	0.64 to 2.23 in	5.1 to 6.5

## Map Unit Description (MN)

Koochiching County, Minnesota

### F8D--Biwabik-Graycalm-Friendship complex, pitted, 0 to 18 percent slopes

#### Friendship, depressional

*Extent:* 10 to 20 percent of the unit

*Landform(s):* depressions on pitted outwash plains

*Slope gradient:* 0 to 3 percent

*Parent material:* sandy 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)* .20

*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 6.0
Bw1 -- 3 to 24 in	sand	rapid	0.63 to 2.30 in	4.5 to 6.0
Bw2 -- 24 to 40 in	sand	rapid	0.32 to 1.13 in	4.5 to 6.0
C -- 40 to 80 in	sand	rapid	0.80 to 2.78 in	5.1 to 6.5

## Map Unit Description (MN)

Koochiching County, Minnesota

### F21C--Quetico, stony-Rock outcrop complex, 2 to 15 percent slopes

#### Quetico, stony

*Extent:* 30 to 60 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 2 to 15 percent

*Parent material:* loamy drift over bedrock

*Restrictive feature(s):* lithic bedrock at 4 to 10 inches

*Flooding:* none

*Ponding:* none

*Drainage class:* well drained

*Soil loss tolerance (T factor):* 1

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .28

*Land capability, nonirrigated* 7s

*Hydric soil:* no

*Hydrologic group:* D

*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 1 in	fine sandy loam	moderately rapid	0.11 to 0.17 in	4.5 to 6.0
Bw -- 1 to 7 in	gravelly fine sandy loam	moderately rapid	0.47 to 0.77 in	4.5 to 6.0
R -- 7 to 80 in	bedrock	very slow		

#### Rock outcrop

*Extent:* 20 to 40 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 2 to 15 percent

*Parent material:*

*Restrictive feature(s):* lithic bedrock at 0 to 0 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* 8s

*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>

## Map Unit Description (MN)

Koochiching County, Minnesota

### F21D--Quetico, stony-Rock outcrop complex, 15 to 35 percent slopes

#### Quetico, stony

*Extent:* 30 to 60 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 15 to 35 percent

*Parent material:* loamy drift over bedrock

*Restrictive feature(s):* lithic bedrock at 4 to 10 inches

*Flooding:* none

*Ponding:* none

*Drainage class:* well drained

*Soil loss tolerance (T factor):* 1

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .28

*Land capability, nonirrigated* 7s

*Hydric soil:* no

*Hydrologic group:* D

*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 1 in	fine sandy loam	moderately rapid	0.11 to 0.17 in	4.5 to 6.0
Bw -- 1 to 7 in	gravelly fine sandy loam	moderately rapid	0.47 to 0.77 in	4.5 to 6.0
R -- 7 to 80 in	bedrock	very slow		

#### Rock outcrop

*Extent:* 20 to 40 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 15 to 35 percent

*Parent material:*

*Restrictive feature(s):* lithic bedrock at 0 to 0 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* 8s

*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>

## Map Unit Description (MN)

Koochiching County, Minnesota

### F36D--Conic, bouldery-Insula, bouldery-Rock outcrop complex, 8 to 25 percent slopes

#### Conic, bouldery

*Extent:* 30 to 50 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 8 to 25 percent

*Parent material:* loamy drift over dense gravelly lodgment till over bedrock

*Restrictive feature(s):* densic material at 12 to 30 inches  
lithic bedrock at 20 to 40 inches

*Flooding:* none

*Ponding:* none

*Drainage class:* well drained

*Soil loss tolerance (T factor):* 2

*Wind erodibility group (WEG):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .24

*Land capability, nonirrigated* 6e

*Hydric soil:* no

*Hydrologic group:* 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	stony loam	moderate	0.31 to 0.50 in	4.5 to 6.0
Bw -- 3 to 9 in	stony loam	moderate	0.53 to 0.89 in	4.5 to 6.0
BC -- 9 to 18 in	cobbly sandy loam	moderate	0.63 to 1.27 in	5.1 to 6.5
Cd -- 18 to 29 in	very gravelly coarse sandy loam	slow	0.22 to 0.77 in	5.1 to 6.5
R -- 29 to 80 in	bedrock	very slow		

#### Insula, bouldery

*Extent:* 20 to 40 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 8 to 25 percent

*Parent material:* loamy drift over bedrock

*Restrictive feature(s):* lithic bedrock at 10 to 20 inches

*Flooding:* none

*Ponding:* none

*Drainage class:* well drained

*Soil loss tolerance (T factor):* 1

*Wind erodibility group (WEG):* 5

*Wind erodibility index (WEI):* 56

*Kw factor (surface layer)* .15

*Land capability, nonirrigated* 6s

*Hydric soil:* no

*Hydrologic group:* 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	gravelly sandy loam	moderately rapid	0.28 to 0.44 in	4.5 to 6.0
Bw1 -- 3 to 11 in	gravelly sandy loam	moderately rapid	0.63 to 1.26 in	4.5 to 6.0
Bw2 -- 11 to 17 in	gravelly fine sandy loam	moderately rapid	0.41 to 0.89 in	5.1 to 6.5
R -- 17 to 80 in	bedrock	very slow		

## Map Unit Description (MN)

Koochiching County, Minnesota

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### F36D--Conic, bouldery-Insula, bouldery-Rock outcrop complex, 8 to 25 percent slopes

#### Rock outcrop

*Extent:* 15 to 30 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 8 to 25 percent

*Parent material:*

*Restrictive feature(s):* lithic bedrock at 0 to 0 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* 8s

*Hydric soil:* unranked

*Hydrologic group:*

*Potential for frost action:*

*Representative soil profile:*

*Texture*

*Permeability*

*Available water  
capacity*

*pH*

## Map Unit Description (MN)

Koochiching County, Minnesota

### F41B--Wurtsmith-Friendship complex, mlra 93A, 1 to 4 percent slopes

#### Wurtsmith

*Extent:* 30 to 60 percent of the unit

*Landform(s):* outwash plains

*Slope gradient:* 1 to 4 percent

*Parent material:* sandy 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)* .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	0.31 to 0.38 in	4.5 to 6.0
Bw -- 3 to 18 in	sand	rapid	0.45 to 1.65 in	4.5 to 6.0
BC -- 18 to 33 in	sand	rapid	0.30 to 1.05 in	4.5 to 6.0
C -- 33 to 80 in	sand	rapid	0.94 to 3.28 in	5.1 to 6.5

#### Friendship

*Extent:* 30 to 55 percent of the unit

*Landform(s):* outwash plains

*Slope gradient:* 1 to 4 percent

*Parent material:* sandy 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 3 in	loamy sand	rapid	0.31 to 0.38 in	4.5 to 6.0
Bw1 -- 3 to 24 in	sand	rapid	0.63 to 2.30 in	4.5 to 6.0
Bw2 -- 24 to 40 in	sand	rapid	0.32 to 1.13 in	4.5 to 6.0
C -- 40 to 80 in	sand	rapid	0.80 to 2.78 in	5.1 to 6.5

## Map Unit Description (MN)

Koochiching County, Minnesota

### F167B--Wahlsten, bouldery-Insula, bouldery-Rock outcrop complex, 1 to 10 percent slopes

#### Wahlsten, bouldery

*Extent:* 25 to 45 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 1 to 8 percent

*Parent material:* loamy drift over dense gravelly lodgment till over bedrock

*Restrictive feature(s):* densic material at 15 to 35 inches  
lithic bedrock at 20 to 40 inches

*Flooding:* none

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 2

*Wind erodibility group (WEG):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 6s

*Hydric soil:* no

*Hydrologic group:* 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	stony loam	moderate	0.41 to 0.60 in	4.5 to 6.0
Bw1 -- 3 to 9 in	stony loam	moderate	0.59 to 1.06 in	4.5 to 6.0
Bw2 -- 9 to 17 in	gravelly loam	moderate	0.63 to 1.26 in	5.1 to 6.5
2Cd -- 17 to 37 in	very gravelly sandy loam	slow	0.60 to 1.41 in	5.1 to 6.5
R -- 37 to 80 in	bedrock	very slow		

#### Insula, bouldery

*Extent:* 15 to 30 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 2 to 10 percent

*Parent material:* loamy drift over bedrock

*Restrictive feature(s):* lithic bedrock at 10 to 20 inches

*Flooding:* none

*Ponding:* none

*Drainage class:* well drained

*Soil loss tolerance (T factor):* 1

*Wind erodibility group (WEG):* 5

*Wind erodibility index (WEI):* 56

*Kw factor (surface layer)* .15

*Land capability, nonirrigated* 6s

*Hydric soil:* no

*Hydrologic group:* 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	gravelly sandy loam	moderately rapid	0.28 to 0.44 in	4.5 to 6.0
Bw1 -- 3 to 11 in	gravelly sandy loam	moderately rapid	0.63 to 1.26 in	4.5 to 6.0
Bw2 -- 11 to 17 in	gravelly fine sandy loam	moderately rapid	0.41 to 0.89 in	5.1 to 6.5
R -- 17 to 80 in	bedrock	very slow		

## Map Unit Description (MN)

Koochiching County, Minnesota

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### F167B--Wahlsten, bouldery-Insula, bouldery-Rock outcrop complex, 1 to 10 percent slopes

#### Rock outcrop

*Extent:* 15 to 30 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 1 to 8 percent

*Parent material:*

*Restrictive feature(s):* lithic bedrock at 0 to 0 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* 8s

*Hydric soil:* unranked

*Hydrologic group:*

*Potential for frost action:*

*Representative soil profile:*

*Texture*

*Permeability*

*Available water  
capacity*

*pH*

## Map Unit Description (MN)

Koochiching County, Minnesota

### F168A--Foglake-Hassman, depressional, complex, mlra 93A, 0 to 2 percent slopes

#### Foglake

*Extent:* 35 to 60 percent of the unit

*Landform(s):* 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):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .43

*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>
Ap -- 0 to 8 in	silt loam	moderate	1.73 to 1.89 in	5.1 to 6.5
Eg -- 8 to 16 in	silt loam	moderate	1.41 to 1.82 in	5.1 to 7.3
Btg,BCg -- 16 to 47 in	silty clay loam	slow	2.76 to 5.83 in	5.1 to 7.3
Cg -- 47 to 80 in	silty clay loam	moderately slow	5.95 to 7.28 in	7.4 to 8.4

#### Hassman, depressional

*Extent:* 25 to 50 percent of the unit

*Landform(s):* depressions

*Slope gradient:* 0 to 1 percent

*Parent material:* glaciolacustrine deposits

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

*Flooding:* none

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .28

*Land capability, nonirrigated* 6w

*Hydric soil:* yes

*Hydrologic group:* C/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 10 in	silty clay loam	moderately slow	2.07 to 2.26 in	5.1 to 6.5
Bg -- 10 to 32 in	silty clay	slow	1.98 to 4.19 in	5.1 to 7.3
BCg -- 32 to 45 in	silty clay	slow	1.17 to 2.47 in	5.6 to 7.8
Cg -- 45 to 80 in	silty clay	slow	3.15 to 6.66 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### F169B--Longsiding-Grasston complex, 1 to 6 percent slopes

#### Longsiding

*Extent:* 35 to 55 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 1 to 4 percent

*Parent material:* 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):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .43

*Land capability, nonirrigated* 3w

*Hydric soil:* no

*Hydrologic group:* C/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 9 in	silt loam	moderate	1.99 to 2.17 in	5.1 to 6.5
B/E -- 9 to 12 in	silty clay loam	moderately slow	0.30 to 0.55 in	5.1 to 7.3
Bt1,Bt3 -- 12 to 35 in	silty clay	slow	2.09 to 4.41 in	5.1 to 7.3
Bk,C -- 35 to 80 in	silty clay loam	moderately slow	8.08 to 9.87 in	7.4 to 8.4

#### Grasston

*Extent:* 10 to 35 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 1 to 6 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):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .37

*Land capability, nonirrigated* 2e

*Hydric soil:* no

*Hydrologic group:* 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 9 in	silt loam	moderate	1.99 to 2.17 in	5.1 to 6.5
B/E -- 9 to 14 in	silty clay loam	moderately slow	0.56 to 1.02 in	5.1 to 7.3
Bt1,Bt2 -- 14 to 42 in	silty clay	slow	2.52 to 5.31 in	5.1 to 7.3
Bk,C -- 42 to 80 in	silty clay loam	moderately slow	6.80 to 8.31 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### F189B--Suomi-Ashlake complex, 1 to 8 percent slopes

#### Suomi

*Extent:* 30 to 50 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 3 to 8 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:* 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	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

#### Ashlake

*Extent:* 30 to 50 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 1 to 4 percent

*Parent material:* till

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

*Flooding:* none

*Ponding:* none

*Drainage class:* somewhat poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 5

*Wind erodibility index (WEI):* 56

*Kw factor (surface layer)* .28

*Land capability, nonirrigated* 3w

*Hydric soil:* no

*Hydrologic group:* C/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 1 in	loam	moderate	0.24 to 0.26 in	5.1 to 7.3
E -- 1 to 4 in	loam	moderate	0.36 to 0.52 in	5.1 to 7.3
E/B -- 4 to 9 in	loam	moderate	0.72 to 0.97 in	5.1 to 7.3
Bt -- 9 to 26 in	silty clay	slow	1.69 to 3.05 in	5.1 to 7.3
Bk -- 26 to 80 in	clay loam	moderately slow	7.55 to 9.71 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### F190B--Ashlake-Effie complex, 0 to 4 percent slopes

#### Ashlake

*Extent:* 45 to 75 percent of the unit

*Landform(s):* rises on moraines

*Slope gradient:* 1 to 4 percent

*Parent material:* till

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

*Flooding:* none

*Ponding:* none

*Drainage class:* somewhat poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 5

*Wind erodibility index (WEI):* 56

*Kw factor (surface layer)* .28

*Land capability, nonirrigated* 3w

*Hydric soil:* no

*Hydrologic group:* C/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 1 in	loam	moderate	0.24 to 0.26 in	5.1 to 7.3
E -- 1 to 4 in	loam	moderate	0.36 to 0.52 in	5.1 to 7.3
E/B -- 4 to 9 in	loam	moderate	0.72 to 0.97 in	5.1 to 7.3
Bt -- 9 to 26 in	silty clay	slow	1.69 to 3.05 in	5.1 to 7.3
Bk -- 26 to 80 in	clay loam	moderately slow	7.55 to 9.71 in	7.4 to 8.4

#### Effie

*Extent:* 15 to 35 percent of the unit

*Landform(s):* flats 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 2 in	loam	moderate	0.39 to 0.43 in	5.1 to 7.3
Eg -- 2 to 5 in	loam	moderate	0.47 to 0.69 in	5.1 to 7.3
B/E -- 5 to 8 in	silty clay loam	slow	0.39 to 0.52 in	5.1 to 7.3
Btg -- 8 to 20 in	silty clay	slow	1.22 to 2.20 in	5.1 to 7.8
BCg -- 20 to 64 in	silty clay loam	moderately slow	6.17 to 7.94 in	7.4 to 8.4
Cg -- 64 to 80 in	clay loam	moderately slow	2.20 to 2.83 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

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### F190B--Ashlake-Effie complex, 0 to 4 percent slopes

## Map Unit Description (MN)

Koochiching County, Minnesota

### F191A--Little Swan-Spooner complex, 0 to 3 percent slopes

#### Little Swan

*Extent:* 40 to 65 percent of the unit

*Landform(s):* rises on lake plains

*Slope gradient:* 1 to 3 percent

*Parent material:* silty 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):* 5

*Wind erodibility index (WEI):* 56

*Kw factor (surface layer)* .43

*Land capability, nonirrigated* 3w

*Hydric soil:* no

*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 11 in	silt loam	moderate	1.20 to 1.56 in	5.6 to 7.3
Bt -- 11 to 32 in	silty clay loam	moderately slow	3.76 to 4.59 in	6.1 to 7.3
Cg1 -- 32 to 41 in	silt loam	moderate	1.54 to 1.99 in	7.4 to 8.4
Cg2 -- 41 to 80 in	silt loam	moderate	6.63 to 8.57 in	7.4 to 8.4

#### Spooner

*Extent:* 20 to 40 percent of the unit

*Landform(s):* flats on lake plains

*Slope gradient:* 0 to 2 percent

*Parent material:* silty 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)* .43

*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>
Ap -- 0 to 5 in	silt loam	moderate	1.13 to 1.23 in	5.6 to 7.3
Eg -- 5 to 9 in	very fine sandy loam	moderate	0.67 to 0.87 in	5.6 to 7.3
Btg -- 9 to 30 in	silty clay loam	moderately slow	3.76 to 4.59 in	6.1 to 7.3
Bkg -- 30 to 57 in	silt loam	moderate	4.62 to 5.98 in	7.4 to 8.4
Cg -- 57 to 80 in	silt loam	moderate	3.88 to 5.02 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### F192B--Baudette-Littleswan complex, 1 to 8 percent slopes

#### Baudette

*Extent:* 40 to 65 percent of the unit

*Landform(s):* lake plains

*Slope gradient:* 3 to 8 percent

*Parent material:* silty 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)* .43

*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 4 in	silt loam	moderate	0.87 to 0.94 in	5.6 to 7.3
E -- 4 to 8 in	silt loam	moderate	0.74 to 0.95 in	5.6 to 7.3
B/E -- 8 to 13 in	silty clay loam	moderately slow	0.80 to 1.04 in	6.1 to 7.3
Bt -- 13 to 39 in	silty clay loam	moderately slow	4.35 to 5.63 in	6.1 to 7.8
C -- 39 to 80 in	silt loam	moderate	7.03 to 9.09 in	7.4 to 8.4

#### Littleswan

*Extent:* 15 to 40 percent of the unit

*Landform(s):* lake plains

*Slope gradient:* 1 to 4 percent

*Parent material:* silty 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):* 5

*Wind erodibility index (WEI):* 56

*Kw factor (surface layer)* .43

*Land capability, nonirrigated* 3w

*Hydric soil:* no

*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 11 in	silt loam	moderate	1.20 to 1.56 in	5.6 to 7.3
Bt -- 11 to 32 in	silty clay loam	moderately slow	3.76 to 4.59 in	6.1 to 7.3
Cg1 -- 32 to 41 in	silt loam	moderate	1.54 to 1.99 in	7.4 to 8.4
Cg2 -- 41 to 80 in	silt loam	moderate	6.63 to 8.57 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### F193A--Effie-Hamre complex, 0 to 2 percent slopes

#### Effie

*Extent:* 30 to 50 percent of the unit

*Landform(s):* flats 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 2 in	loam	moderate	0.39 to 0.43 in	5.1 to 7.3
Eg -- 2 to 5 in	loam	moderate	0.47 to 0.69 in	5.1 to 7.3
B/E -- 5 to 8 in	silty clay loam	slow	0.39 to 0.52 in	5.1 to 7.3
Btg -- 8 to 20 in	silty clay	slow	1.22 to 2.20 in	5.1 to 7.8
BCg -- 20 to 64 in	silty clay loam	moderately slow	6.17 to 7.94 in	7.4 to 8.4
Cg -- 64 to 80 in	clay loam	moderately slow	2.20 to 2.83 in	7.4 to 8.4

#### Hamre

*Extent:* 15 to 40 percent of the unit

*Landform(s):* 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:* 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)*

*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>
Oa -- 0 to 10 in	muck	moderately rapid	3.94 to 4.43 in	
A -- 10 to 15 in	loam	moderate	1.02 to 1.13 in	5.1 to 7.3
Bg -- 15 to 27 in	silty clay loam	moderately slow	1.71 to 2.20 in	6.1 to 7.8
BCg -- 27 to 35 in	silty clay loam	moderately slow	1.10 to 1.42 in	7.4 to 8.4
Cg -- 35 to 80 in	clay loam	moderately slow	6.28 to 8.08 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### F193A--Effie-Hamre complex, 0 to 2 percent slopes

### F194D--Suomi loam, 8 to 18 percent slopes

#### Suomi

*Extent:* 55 to 75 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 8 to 18 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* 4e

*Hydric soil:* no

*Hydrologic group:* 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	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)

Koochiching County, Minnesota

### F195B--Aquepts-Wahlsten-Rock outcrop complex, 1 to 8 percent slopes, very stony

#### Typic Epiaquepts, very stony, moderately deep

*Extent:* 15 to 40 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 1 to 5 percent

*Parent material:* loamy drift

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

*Flooding:* none

*Ponding:* none

*Drainage class:* somewhat poorly drained

*Soil loss tolerance (T factor):* 2

*Wind erodibility group (WEG):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .17

*Land capability, nonirrigated* 6s

*Hydric soil:* no

*Hydrologic group:* C/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	stony loam	moderate	0.67 to 0.97 in	4.5 to 6.0
Bw1 -- 5 to 14 in	stony loam	moderate	0.72 to 1.45 in	4.5 to 6.0
Bw2 -- 14 to 30 in	gravelly sandy loam	moderate	1.10 to 2.36 in	5.1 to 6.5
R -- 30 to 80 in	bedrock	very slow		

#### Wahlsten, very stony

*Extent:* 15 to 30 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 1 to 5 percent

*Parent material:* loamy drift over dense gravelly lodgment till over bedrock

*Restrictive feature(s):* densic material at 15 to 35 inches  
lithic bedrock at 20 to 40 inches

*Flooding:* none

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 2

*Wind erodibility group (WEG):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 6s

*Hydric soil:* no

*Hydrologic group:* 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	stony loam	moderate	0.41 to 0.60 in	4.5 to 6.0
Bw1 -- 3 to 9 in	stony loam	moderate	0.59 to 1.06 in	4.5 to 6.0
Bw2 -- 9 to 17 in	gravelly loam	moderate	0.63 to 1.26 in	5.1 to 6.5
2Cd -- 17 to 37 in	very gravelly sandy loam	slow	0.60 to 1.41 in	5.1 to 6.5
R -- 37 to 80 in	bedrock	very slow		

## Map Unit Description (MN)

Koochiching County, Minnesota

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### F195B--Aquepts-Wahlsten-Rock outcrop complex, 1 to 8 percent slopes, very stony

#### Rock outcrop

*Extent:* 10 to 20 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 1 to 8 percent

*Parent material:*

*Restrictive feature(s):* lithic bedrock at 0 to 0 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* 8s

*Hydric soil:* unranked

*Hydrologic group:*

*Potential for frost action:*

*Representative soil profile:*

*Texture*

*Permeability*

*Available water  
capacity*

*pH*

## Map Unit Description (MN)

Koochiching County, Minnesota

### F196A--Spoooner-Sax complex, 0 to 1 percent slopes

#### Spoooner

*Extent:* 40 to 50 percent of the unit

*Landform(s):* flats on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* silty 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)* .43

*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>
Ap -- 0 to 5 in	silt loam	moderate	1.13 to 1.23 in	5.6 to 7.3
Eg -- 5 to 9 in	very fine sandy loam	moderate	0.67 to 0.87 in	5.6 to 7.3
Btg -- 9 to 30 in	silty clay loam	moderately slow	3.76 to 4.59 in	6.1 to 7.3
Bkg -- 30 to 57 in	silt loam	moderate	4.62 to 5.98 in	7.4 to 8.4
Cg -- 57 to 80 in	silt loam	moderate	3.88 to 5.02 in	7.4 to 8.4

#### Sax

*Extent:* 20 to 50 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* herbaceous organic material over silty glaciolacustrine deposits

*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)*

*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	
A -- 13 to 15 in	silt loam	moderate	0.43 to 0.51 in	5.6 to 7.3
Bg -- 15 to 36 in	silt loam	moderate	3.76 to 4.59 in	5.6 to 7.3
Cg -- 36 to 80 in	silt loam	moderate	7.50 to 9.70 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### F197B--Cutaway-Biwabik complex, 1 to 8 percent slopes

#### Cutaway

*Extent:* 40 to 60 percent of the unit  
*Landform(s):* moraines  
*Slope gradient:* 1 to 8 percent  
*Parent material:* sandy outwash over till  
*Restrictive feature(s):* greater than 60 inches  
*Flooding:* none  
*Ponding:* none  
*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 4  
*Wind erodibility group (WEG):* 2  
*Wind erodibility index (WEI):* 134  
*Kw factor (surface layer)* .10  
*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>
A -- 0 to 3 in	loamy sand	rapid	0.31 to 0.38 in	4.5 to 6.0
E -- 3 to 14 in	sand	very rapid	0.33 to 0.99 in	5.1 to 6.5
E/B -- 14 to 31 in	sand	rapid	0.51 to 1.86 in	4.5 to 6.0
2Bt -- 31 to 39 in	silty clay	slow	0.79 to 1.42 in	5.1 to 7.3
2Bk -- 39 to 50 in	clay loam	moderately slow	1.54 to 1.98 in	7.4 to 8.4
2C -- 50 to 80 in	clay loam	moderately slow	4.19 to 5.39 in	7.4 to 8.4

#### Biwabik

*Extent:* 20 to 40 percent of the unit  
*Landform(s):* moraines  
*Slope gradient:* 1 to 8 percent  
*Parent material:* gravelly outwash  
*Restrictive feature(s):* greater than 60 inches  
*Flooding:* none  
*Ponding:* none  
*Drainage class:* excessively drained

*Soil loss tolerance (T factor):* 5  
*Wind erodibility group (WEG):* 3  
*Wind erodibility index (WEI):* 86  
*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 2 in	sandy loam	moderately rapid	0.24 to 0.30 in	4.5 to 6.0
Bw -- 2 to 9 in	gravelly sandy loam	moderately rapid	0.64 to 0.92 in	4.5 to 6.0
E -- 9 to 32 in	gravelly loamy sand	rapid	0.69 to 1.60 in	4.5 to 6.0
E and Bt -- 32 to 64 in	gravelly loamy sand	rapid	0.97 to 1.94 in	5.1 to 6.0
C -- 64 to 80 in	gravelly coarse sand	very rapid	0.31 to 0.94 in	5.1 to 6.5

## Map Unit Description (MN)

Koochiching County, Minnesota

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### F197B--Cutaway-Biwabik complex, 1 to 8 percent slopes

## Map Unit Description (MN)

Koochiching County, Minnesota

### F198D--Cutaway-Suomi-Conic complex, 6 to 25 percent slopes

#### Cutaway

*Extent:* 25 to 50 percent of the unit  
*Landform(s):* moraines  
*Slope gradient:* 6 to 12 percent  
*Parent material:* sandy outwash over till  
*Restrictive feature(s):* greater than 60 inches  
*Flooding:* none  
*Ponding:* none  
*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 4  
*Wind erodibility group (WEG):* 2  
*Wind erodibility index (WEI):* 134  
*Kw factor (surface layer)* .10  
*Land capability, nonirrigated* 4e  
*Hydric soil:* no  
*Hydrologic group:* A  
*Potential for frost action:* moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 3 in	loamy sand	rapid	0.31 to 0.38 in	4.5 to 6.0
E -- 3 to 14 in	sand	very rapid	0.33 to 0.99 in	5.1 to 6.5
E/B -- 14 to 31 in	sand	rapid	0.51 to 1.86 in	4.5 to 6.0
2Bt -- 31 to 39 in	silty clay	slow	0.79 to 1.42 in	5.1 to 7.3
2Bk -- 39 to 50 in	clay loam	moderately slow	1.54 to 1.98 in	7.4 to 8.4
2C -- 50 to 80 in	clay loam	moderately slow	4.19 to 5.39 in	7.4 to 8.4

#### Suomi

*Extent:* 20 to 50 percent of the unit  
*Landform(s):* moraines  
*Slope gradient:* 8 to 18 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* 3e  
*Hydric soil:* no  
*Hydrologic group:* 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	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)

Koochiching County, Minnesota

### F198D--Cutaway-Suomi-Conic complex, 6 to 25 percent slopes

#### Conic, bouldery

*Extent:* 10 to 20 percent of the unit

*Landform(s):* moraines

*Slope gradient:* 8 to 25 percent

*Parent material:* loamy drift over dense gravelly lodgment till over bedrock

*Restrictive feature(s):* densic material at 12 to 30 inches  
lithic bedrock at 20 to 40 inches

*Flooding:* none

*Ponding:* none

*Drainage class:* well drained

*Soil loss tolerance (T factor):* 2

*Wind erodibility group (WEG):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .24

*Land capability, nonirrigated* 6e

*Hydric soil:* no

*Hydrologic group:* 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	stony loam	moderate	0.31 to 0.50 in	4.5 to 6.0
Bw -- 3 to 9 in	stony loam	moderate	0.53 to 0.89 in	4.5 to 6.0
BC -- 9 to 18 in	cobbly sandy loam	moderate	0.63 to 1.27 in	5.1 to 6.5
Cd -- 18 to 29 in	very gravelly coarse sandy loam	slow	0.22 to 0.77 in	5.1 to 6.5
R -- 29 to 80 in	bedrock	very slow		

## Map Unit Description (MN)

Koochiching County, Minnesota

### F199B--Cutaway-Suomi complex, 1 to 8 percent slopes

#### Cutaway

*Extent:* 15 to 40 percent of the unit  
*Landform(s):* moraines  
*Slope gradient:* 1 to 8 percent  
*Parent material:* sandy outwash over till  
*Restrictive feature(s):* greater than 60 inches  
*Flooding:* none  
*Ponding:* none  
*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 4  
*Wind erodibility group (WEG):* 2  
*Wind erodibility index (WEI):* 134  
*Kw factor (surface layer)* .10  
*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>
A -- 0 to 3 in	loamy sand	rapid	0.31 to 0.38 in	4.5 to 6.0
E -- 3 to 14 in	sand	very rapid	0.33 to 0.99 in	5.1 to 6.5
E/B -- 14 to 31 in	sand	rapid	0.51 to 1.86 in	4.5 to 6.0
2Bt -- 31 to 39 in	silty clay	slow	0.79 to 1.42 in	5.1 to 7.3
2Bk -- 39 to 50 in	clay loam	moderately slow	1.54 to 1.98 in	7.4 to 8.4
2C -- 50 to 80 in	clay loam	moderately slow	4.19 to 5.39 in	7.4 to 8.4

#### Suomi

*Extent:* 10 to 30 percent of the unit  
*Landform(s):* moraines  
*Slope gradient:* 1 to 8 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:* 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	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)

Koochiching County, Minnesota

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### F199B--Cutaway-Suomi complex, 1 to 8 percent slopes

## Map Unit Description (MN)

Koochiching County, Minnesota

### F200A--Northwood-Hassman-Cathro soils, 0 to 1 percent slopes

#### Northwood

*Extent:* 0 to 90 percent of the unit  
*Landform(s):* depressions on moraines  
*Slope gradient:* 0 to 1 percent  
*Parent material:* herbaceous organic material over sandy glaciolacustrine deposits 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)*  
*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>
Oa -- 0 to 9 in	muck	moderately rapid	3.62 to 4.07 in	
A -- 9 to 14 in	sandy loam	moderately rapid	0.67 to 0.77 in	4.5 to 6.0
Bg -- 14 to 24 in	sand	very rapid	0.30 to 0.89 in	5.1 to 6.5
2BCkg -- 24 to 64 in	silty clay loam	moderately slow	5.62 to 7.23 in	7.4 to 8.4
2Cg -- 64 to 80 in	clay loam	moderately slow	2.20 to 2.83 in	7.4 to 8.4

#### Hassman, depressional

*Extent:* 0 to 90 percent of the unit  
*Landform(s):* depressions on moraines  
*Slope gradient:* 0 to 1 percent  
*Parent material:* clayey glaciolacustrine deposits  
*Restrictive feature(s):* greater than 60 inches  
*Flooding:* none  
*Ponding:* frequent  
*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 5  
*Wind erodibility group (WEG):* 6  
*Wind erodibility index (WEI):* 48  
*Kw factor (surface layer)* .28  
*Land capability, nonirrigated* 6w  
*Hydric soil:* yes  
*Hydrologic group:* C/D  
*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 10 in	silty clay loam	moderately slow	2.07 to 2.26 in	5.1 to 6.5
Bg -- 10 to 32 in	silty clay	slow	1.98 to 4.19 in	5.1 to 7.3
BCg -- 32 to 45 in	silty clay	slow	1.17 to 2.47 in	5.6 to 7.8
Cg -- 45 to 80 in	silty clay	slow	3.15 to 6.66 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### F200A--Northwood-Hassman-Cathro soils, 0 to 1 percent slopes

#### Cathro

*Extent:* 0 to 90 percent of the unit

*Landform(s):* 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:* 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)*

*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>
Oa -- 0 to 36 in	muck	moderately rapid	12.54 to 16.12 in	
A -- 36 to 40 in	mucky silt loam	moderate	0.95 to 1.13 in	5.1 to 6.5
Cg -- 40 to 80 in	loam	moderate	5.17 to 7.56 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### F201B--Rollins-Biwabik-Friendship complex, 0 to 8 percent slopes

#### Rollins

<p><i>Extent:</i> 30 to 50 percent of the unit</p> <p><i>Landform(s):</i> moraines, outwash plains</p> <p><i>Slope gradient:</i> 1 to 8 percent</p> <p><i>Parent material:</i> loamy drift over gravelly 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> somewhat excessively drained</p>	<p><i>Soil loss tolerance (T factor):</i> 2</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> .20</p> <p><i>Land capability, nonirrigated</i> 6s</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 5 in	sandy loam	moderately rapid	0.51 to 0.72 in	4.5 to 6.0
Bw -- 5 to 14 in	gravelly sandy loam	moderately rapid	0.81 to 1.45 in	4.5 to 6.0
2BC -- 14 to 25 in	very gravelly sand	rapid	0.22 to 0.55 in	4.5 to 6.0
2C -- 25 to 80 in	very gravelly coarse sand	very rapid	0.55 to 2.74 in	5.1 to 6.5

#### Biwabik

<p><i>Extent:</i> 30 to 50 percent of the unit</p> <p><i>Landform(s):</i> moraines, outwash plains</p> <p><i>Slope gradient:</i> 1 to 8 percent</p> <p><i>Parent material:</i> gravelly 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> 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> 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 2 in	sandy loam	moderately rapid	0.24 to 0.30 in	4.5 to 6.0
Bw -- 2 to 9 in	gravelly sandy loam	moderately rapid	0.64 to 0.92 in	4.5 to 6.0
E -- 9 to 32 in	gravelly loamy sand	rapid	0.69 to 1.60 in	4.5 to 6.0
E and Bt -- 32 to 64 in	gravelly loamy sand	rapid	0.97 to 1.94 in	5.1 to 6.0
C -- 64 to 80 in	gravelly coarse sand	very rapid	0.31 to 0.94 in	5.1 to 6.5

## Map Unit Description (MN)

Koochiching County, Minnesota

### F201B--Rollins-Biwabik-Friendship complex, 0 to 8 percent slopes

#### Friendship

*Extent:* 5 to 20 percent of the unit

*Landform(s):* moraines, outwash plains

*Slope gradient:* 0 to 4 percent

*Parent material:* sandy 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 3 in	loamy sand	rapid	0.31 to 0.38 in	4.5 to 6.0
Bw1 -- 3 to 24 in	sand	rapid	0.63 to 2.30 in	4.5 to 6.0
Bw2 -- 24 to 40 in	sand	rapid	0.32 to 1.13 in	4.5 to 6.0
C -- 40 to 80 in	sand	rapid	0.80 to 2.78 in	5.1 to 6.5

## Map Unit Description (MN)

Koochiching County, Minnesota

### F202B--Ricelake-Cutaway complex, 1 to 4 percent slopes

#### Ricelake

<p><i>Extent:</i> 30 to 50 percent of the unit</p> <p><i>Landform(s):</i> moraines</p> <p><i>Slope gradient:</i> 1 to 3 percent</p> <p><i>Parent material:</i> sandy outwash over 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> somewhat poorly 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> .10</p> <p><i>Land capability, nonirrigated</i> 3w</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 2 in	loamy sand	rapid	0.16 to 0.24 in	5.1 to 6.5
E -- 2 to 23 in	sand	very rapid	0.63 to 1.88 in	5.1 to 6.5
Bt -- 23 to 30 in	sandy loam	moderately rapid	0.78 to 1.13 in	5.6 to 7.3
Bw -- 30 to 35 in	sand	very rapid	0.15 to 0.46 in	5.6 to 7.3
2C -- 35 to 80 in	clay loam	moderately slow	6.28 to 8.08 in	7.4 to 8.4

#### Cutaway

<p><i>Extent:</i> 20 to 40 percent of the unit</p> <p><i>Landform(s):</i> moraines</p> <p><i>Slope gradient:</i> 2 to 4 percent</p> <p><i>Parent material:</i> sandy outwash over 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> 4</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> .10</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> 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 3 in	loamy sand	rapid	0.31 to 0.38 in	4.5 to 6.0
E -- 3 to 14 in	sand	very rapid	0.33 to 0.99 in	5.1 to 6.5
E/B -- 14 to 31 in	sand	rapid	0.51 to 1.86 in	4.5 to 6.0
2Bt -- 31 to 39 in	silty clay	slow	0.79 to 1.42 in	5.1 to 7.3
2Bk -- 39 to 50 in	clay loam	moderately slow	1.54 to 1.98 in	7.4 to 8.4
2C -- 50 to 80 in	clay loam	moderately slow	4.19 to 5.39 in	7.4 to 8.4

## Map Unit Description (MN)

Koochiching County, Minnesota

### F202B--Ricelake-Cutaway complex, 1 to 4 percent slopes

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

##### Pits, gravel

*Extent:* 60 to 95 percent of the unit

*Landform(s):* borrow pits on moraines, gravel pits on outwash plains, gravel pits on stream terraces

*Slope gradient:* 0 to 50 percent

*Parent material:* sandy and gravelly outwash

*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:* 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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##### Udipsamments

*Extent:* 5 to 40 percent of the unit

*Landform(s):* moraines, outwash plains, stream terraces, -- error in exists on --

*Slope gradient:* 0 to 25 percent

*Parent material:* sandy outwash

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

*Flooding:*

*Ponding:*

*Drainage class:* well drained

*Soil loss tolerance (T factor):*

*Wind erodibility group (WEG):*

*Wind erodibility index (WEI):*

*Kw factor (surface layer)*

*Land capability, nonirrigated*

*Hydric soil:* no

*Hydrologic group:*

*Potential for frost action:*

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
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## Map Unit Description (MN)

Koochiching County, Minnesota

### I-W--Water, intermittent

#### Water, intermittent

*Extent:* 100 percent of the unit

*Landform(s):* lakes

*Slope gradient:* 0 to 0 percent

*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:* 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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### 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:* 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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## Map Unit Description (MN)

Koochiching County, Minnesota

### NOTCOM--No Digital Data Available

#### NOTCOM

*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):* lakes

*Slope gradient:* 0 to 0 percent

*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:* 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.