

## Map Unit Description (MN)

Roseau 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]

### 47--Colvin silty clay loam, 0 to 2 percent slopes

#### Colvin

*Extent:* 85 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* glaciolacustrine deposits

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

*Flooding:* none

*Ponding:* occasional

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 4L

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .32

*Land capability, nonirrigated* 2w

*Hydric soil:* yes

*Hydrologic group:* C/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 11 in	silty clay loam	moderately slow	2.20 to 2.43 in	6.6 to 8.4
Bkg1-3 -- 11 to 41 in	silty clay loam	moderately slow	4.79 to 5.98 in	7.4 to 9.0
Cg1..Cg3 -- 41 to 80 in	silt loam	moderate	5.85 to 7.80 in	7.4 to 8.4

### 48B--Hiwood fine sand, 1 to 6 percent slopes

#### Hiwood

*Extent:* 85 percent of the unit

*Landform(s):* rises on lake plains

*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):* 1

*Wind erodibility index (WEI):* 250

*Kw factor (surface layer)* .02

*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,E -- 0 to 3 in	fine sand	rapid	0.25 to 0.38 in	4.5 to 6.0
Bw1,Bw2 -- 3 to 22 in	fine sand	rapid	1.32 to 1.89 in	5.1 to 6.0
C1..C4 -- 22 to 80 in	fine sand	rapid	2.89 to 4.63 in	5.6 to 7.8

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### 52--Augsburg loam, 0 to 2 percent slopes

#### Augsburg

*Extent:* 85 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* glaciolacustrine deposits

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

*Flooding:* none

*Ponding:* occasional

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 4

*Wind erodibility group (WEG):* 4L

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .37

*Land capability, nonirrigated* 2w

*Hydric soil:* yes

*Hydrologic group:* C/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 9 in	loam	moderate	1.81 to 2.08 in	7.4 to 8.4
Bkg..Bg2 -- 9 to 33 in	silt loam	moderately rapid	4.80 to 5.52 in	7.4 to 8.4
2Cg -- 33 to 80 in	clay	slow	4.69 to 6.56 in	7.4 to 8.4

### 59--Grimstad fine sandy loam, 0 to 3 percent slopes

#### Grimstad

*Extent:* 85 percent of the unit

*Landform(s):* rises on lake plains

*Slope gradient:* 0 to 3 percent

*Parent material:* glaciolacustrine deposits over till

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

*Flooding:* none

*Ponding:* none

*Drainage class:* somewhat poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .24

*Land capability, nonirrigated* 2s

*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>
Ap -- 0 to 10 in	fine sandy loam	moderately rapid	1.28 to 1.77 in	7.4 to 8.4
Bk..C3 -- 10 to 30 in	fine sand	rapid	1.57 to 2.76 in	7.4 to 9.0
2C4..2C5 -- 30 to 80 in	fine sandy loam	moderate	5.54 to 9.57 in	7.4 to 9.0

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### 64--Ulen fine sandy loam, 0 to 3 percent slopes

#### Ulen

*Extent:* 85 percent of the unit

*Landform(s):* rises on lake plains

*Slope gradient:* 0 to 3 percent

*Parent material:* glaciolacustrine deposits

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

*Flooding:* none

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 3s

*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>
Ap -- 0 to 10 in	fine sandy loam	moderately rapid	1.28 to 1.77 in	7.4 to 8.4
Bk -- 10 to 16 in	loamy fine sand	rapid	0.38 to 0.63 in	7.9 to 8.4
C1..C4 -- 16 to 67 in	fine sand	rapid	3.05 to 4.06 in	7.4 to 8.4
2Cg5 -- 67 to 80 in	very fine sandy loam	moderate	1.95 to 2.47 in	7.4 to 8.4

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### 65--Foxhome sandy loam, 0 to 3 percent slopes

#### Foxhome

*Extent:* 85 percent of the unit

*Landform(s):* rises on lake plains

*Slope gradient:* 0 to 3 percent

*Parent material:* glaciolacustrine deposits over till

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

*Flooding:* none

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .10

*Land capability, nonirrigated* 3s

*Hydric soil:* no

*Hydrologic group:* B

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 10 in	sandy loam	moderately rapid	1.28 to 1.77 in	6.6 to 7.8
Bw1 -- 10 to 15 in	loamy fine sand	rapid	0.36 to 0.61 in	6.6 to 7.8
2Bw2 -- 15 to 23 in	very gravelly coarse sand	rapid	0.16 to 0.55 in	7.4 to 8.4
3C1..3C3 -- 23 to 80 in	loam	moderate	8.56 to 12.56 in	7.4 to 8.4

### 67--Bearden silt loam, 0 to 2 percent slopes

#### Bearden

*Extent:* 85 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:* moderately well drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 4L

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .43

*Land capability, nonirrigated* 2s

*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 7 in	silt loam	moderate	1.42 to 1.70 in	7.4 to 8.4
ABk..Bk2 -- 7 to 32 in	silt loam	moderately slow	3.97 to 5.46 in	7.4 to 8.4
C1..C4 -- 32 to 80 in	silty clay loam	slow	7.69 to 10.57 in	7.4 to 8.4

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### 77--Garnes fine sandy loam, 0 to 3 percent slopes

#### Garnes

*Extent:* 85 percent of the unit

*Landform(s):* rises on lake plains

*Slope gradient:* 0 to 3 percent

*Parent material:* glaciolacustrine deposits and till

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

*Flooding:* none

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .24

*Land capability, nonirrigated* 1

*Hydric soil:* no

*Hydrologic group:* C

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap,E -- 0 to 9 in	fine sandy loam	moderately rapid	1.27 to 1.63 in	6.1 to 7.8
Bt -- 9 to 14 in	clay loam	moderate	0.87 to 1.02 in	6.6 to 7.8
Bk1..C -- 14 to 80 in	fine sandy loam	moderate	9.20 to 12.49 in	7.4 to 8.4

### 111--Hangaard sandy loam, 0 to 2 percent slopes

#### Hangaard

*Extent:* 90 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* beach deposits

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

*Flooding:* none

*Ponding:* occasional

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .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 12 in	sandy loam	moderately rapid	1.18 to 1.65 in	6.6 to 7.8
Cg1..Cg5 -- 12 to 80 in	stratified gravelly coarse sand	very rapid	1.36 to 2.72 in	7.4 to 8.4

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### 116--Redby loamy fine sand, 0 to 3 percent slopes

#### Redby

*Extent:* 85 percent of the unit

*Landform(s):* rises on lake plains

*Slope gradient:* 0 to 3 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):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .15

*Land capability, nonirrigated* 3w

*Hydric soil:* no

*Hydrologic group:* A/D

*Potential for frost action:* moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 3 in	loamy fine sand	rapid	0.25 to 0.38 in	5.1 to 6.5
E..Bw2 -- 3 to 28 in	fine sand	rapid	1.74 to 2.48 in	5.1 to 6.5
Cg1..Cg3 -- 28 to 80 in	fine sand	rapid	3.12 to 4.16 in	6.1 to 7.8

### 117--Cormant loamy fine sand, 0 to 2 percent slopes

#### Cormant

*Extent:* 85 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* glaciolacustrine deposits

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

*Flooding:* none

*Ponding:* 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	0.47 to 0.71 in	6.1 to 7.3
Cg1..Cg7 -- 6 to 80 in	fine sand	rapid	4.44 to 7.40 in	6.1 to 7.8

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### 133--Dalbo loam, 0 to 3 percent slopes

#### Dalbo

*Extent:* 85 percent of the unit

*Landform(s):* rises on lake plains

*Slope gradient:* 0 to 3 percent

*Parent material:* glaciolacustrine deposits

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

*Flooding:* none

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .32

*Land capability, nonirrigated* 1

*Hydric soil:* no

*Hydrologic group:* C

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap..E -- 0 to 15 in	loam	moderate	3.29 to 3.59 in	5.6 to 7.3
Bt -- 15 to 23 in	clay	moderately slow	0.79 to 1.42 in	5.1 to 7.3
Bk..C2 -- 23 to 80 in	silty clay	moderate	5.71 to 10.28 in	7.4 to 8.4

### 145--Enstrom loamy fine sand, 0 to 3 percent slopes

#### Enstrom

*Extent:* 85 percent of the unit

*Landform(s):* rises on lake plains

*Slope gradient:* 0 to 3 percent

*Parent material:* glaciolacustrine deposits over till

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

*Flooding:* none

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .10

*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>
Ap -- 0 to 6 in	loamy fine sand	rapid	0.59 to 0.71 in	6.6 to 7.8
Bw1,Bw2 -- 6 to 29 in	fine sand	rapid	1.39 to 1.86 in	6.6 to 8.4
2C -- 29 to 80 in	loam	moderate	8.63 to 10.16 in	7.4 to 8.4

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### 147--Spooner very fine sandy loam, 0 to 2 percent slopes

#### Spooner

*Extent:* 85 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* glaciolacustrine deposits

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

*Flooding:* none

*Ponding:* occasional

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .43

*Land capability, nonirrigated* 2w

*Hydric soil:* yes

*Hydrologic group:* B/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 6 in	very fine sandy loam	moderately rapid	1.18 to 1.30 in	5.6 to 7.8
E -- 6 to 15 in	loamy very fine sand	moderately rapid	1.54 to 1.72 in	5.6 to 7.8
Btg -- 15 to 22 in	loam	moderate	1.20 to 1.56 in	6.1 to 7.8
Cg1,Cg2 -- 22 to 60 in	silt loam	moderate	6.43 to 8.31 in	7.4 to 8.4

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

#### Zimmerman

*Extent:* 85 percent of the unit

*Landform(s):* beach ridges

*Slope gradient:* 1 to 6 percent

*Parent material:* beach deposits

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

*Flooding:* none

*Ponding:* none

*Drainage class:* excessively drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 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>
A,E -- 0 to 6 in	fine sand	rapid	0.41 to 0.53 in	5.1 to 6.5
Bw1..C -- 6 to 80 in	fine sand	rapid	4.44 to 7.40 in	5.1 to 7.3

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### 167B--Baudette fine sandy loam, 1 to 6 percent slopes

#### Baudette

*Extent:* 85 percent of the unit

*Landform(s):* rises on lake plains

*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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .32

*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	fine sandy loam	moderately rapid	1.18 to 1.50 in	5.6 to 7.3
E -- 8 to 10 in	very fine sandy loam	moderate	0.28 to 0.39 in	5.6 to 7.3
Bt1..Bt3 -- 10 to 30 in	silty clay loam	moderate	3.41 to 4.82 in	5.6 to 7.8
Bck1..C -- 30 to 80 in	silt loam	moderate	8.50 to 11.00 in	7.4 to 8.4

### 187--Haug muck, 0 to 1 percent slopes

#### Haug

*Extent:* 90 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic materials over till

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

*Flooding:* none

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 1

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .02

*Land capability, nonirrigated* 6w

*Hydric soil:* yes

*Hydrologic group:* B/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa -- 0 to 10 in	muck	moderately rapid	3.44 to 4.72 in	6.6 to 7.8
A -- 10 to 16 in	loam	moderately rapid	0.76 to 1.51 in	6.6 to 8.4
Bg,Cg -- 16 to 80 in	loam	moderate	7.02 to 12.12 in	7.4 to 8.4

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### 191--Epoufette loamy fine sand, map 22-30, 0 to 2 percent slopes

#### Epoufette, map 22-30

*Extent:* 85 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* beach deposits

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

*Flooding:* none

*Ponding:* 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)* .20

*Land capability, nonirrigated* 4w

*Hydric soil:* yes

*Hydrologic group:* A/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap,Eg -- 0 to 10 in	loamy fine sand	rapid	0.59 to 1.08 in	6.1 to 7.3
Btg -- 10 to 20 in	sandy loam	moderately rapid	0.82 to 1.43 in	6.6 to 7.8
2Cg1-3 -- 20 to 60 in	stratified gravelly sand	very rapid	0.40 to 1.19 in	7.4 to 8.4

### 202--Meehan loamy sand, map 22-30, 0 to 2 percent slopes

#### Meehan, map 22-30

*Extent:* 85 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:* somewhat poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .17

*Land capability, nonirrigated* 4w

*Hydric soil:* no

*Hydrologic group:* A/D

*Potential for frost action:* moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A,E -- 0 to 8 in	loamy sand	moderately rapid	0.79 to 0.94 in	3.5 to 7.3
Bw1,Bw2 -- 8 to 31 in	sand	rapid	1.39 to 2.56 in	3.5 to 6.5
C1..Cg4 -- 31 to 80 in	sand	rapid	0.98 to 3.42 in	3.5 to 7.3

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### 205--Karlstad loamy sand, 0 to 3 percent slopes

#### Karlstad

*Extent:* 85 percent of the unit

*Landform(s):* beach ridges

*Slope gradient:* 0 to 3 percent

*Parent material:* sandy glaciolacustrine deposits

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

*Flooding:* none

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .17

*Land capability, nonirrigated* 3s

*Hydric soil:* no

*Hydrologic group:* B

*Potential for frost action:* moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap,E -- 0 to 7 in	loamy sand	rapid	0.71 to 0.85 in	4.5 to 7.3
Bt1 -- 7 to 10 in	sandy loam	moderately rapid	0.36 to 0.50 in	6.1 to 7.3
2Bt2 -- 10 to 14 in	gravelly sandy loam	moderately rapid	0.52 to 0.69 in	6.1 to 7.8
2C1,2C2 -- 14 to 80 in	stratified gravelly coarse sand to loamy fine sand	rapid	1.31 to 2.63 in	7.4 to 8.4

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### 242B--Marquette loamy sand, 1 to 8 percent slopes

#### Marquette

*Extent:* 85 percent of the unit

*Landform(s):* beach ridges

*Slope gradient:* 1 to 8 percent

*Parent material:* beach deposits

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

*Flooding:* none

*Ponding:* none

*Drainage class:* excessively drained

*Soil loss tolerance (T factor):* 2

*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 7 in	loamy sand	rapid	0.71 to 0.99 in	5.6 to 7.3
Bt1..Bt2 -- 7 to 16 in	very gravelly fine sandy loam	moderately rapid	0.91 to 1.45 in	6.6 to 8.4
C1..C3 -- 16 to 80 in	stratified extremely gravelly coarse sand to fine sand	very rapid	1.28 to 2.55 in	7.4 to 8.4

### 280--Pelan sandy loam, 0 to 3 percent slopes

#### Pelan

*Extent:* 85 percent of the unit

*Landform(s):* rises on lake plains

*Slope gradient:* 0 to 3 percent

*Parent material:* glaciolacustrine deposits over till

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

*Flooding:* none

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 3s

*Hydric soil:* no

*Hydrologic group:* B

*Potential for frost action:* moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 6 in	sandy loam	moderately rapid	0.59 to 0.77 in	6.1 to 7.3
Bt1..Bt2 -- 6 to 12 in	very gravelly sandy loam	rapid	0.30 to 0.65 in	6.1 to 7.8
Bw1..Bw2 -- 12 to 24 in	very gravelly coarse sand	rapid	0.24 to 1.10 in	7.4 to 8.4
2Bk -- 24 to 60 in	loam	moderate	5.02 to 6.45 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### 379--Percy loam, 0 to 2 percent slopes, very cobbly

#### Percy, very cobbly

*Extent:* 90 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* till

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

*Flooding:* none

*Ponding:* occasional

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 4L

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .28

*Land capability, nonirrigated* 3s

*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 8 in	loam	moderate	1.42 to 1.73 in	6.6 to 8.4
Bkg1-2 -- 8 to 23 in	loam	moderate	2.24 to 2.84 in	7.4 to 8.4
Cg1-2 -- 23 to 80 in	loam	moderate	6.85 to 10.85 in	7.4 to 8.4

### 383--Percy loam, 0 to 2 percent slopes

#### Percy

*Extent:* 90 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* till

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

*Flooding:* none

*Ponding:* occasional

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 4L

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .28

*Land capability, nonirrigated* 2w

*Hydric soil:* yes

*Hydrologic group:* B/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 10 in	loam	moderate	1.77 to 2.17 in	6.6 to 8.4
Bkg1-2 -- 10 to 25 in	loam	moderate	2.30 to 2.92 in	7.4 to 8.4
Cg1-3 -- 25 to 80 in	loam	moderate	6.57 to 10.40 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### 384--Percy mucky loam, depressional, 0 to 1 percent slopes

#### Percy, depressional

*Extent:* 85 percent of the unit

*Landform(s):* depressions on lake plains

*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):* 4L

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .32

*Land capability, nonirrigated* 6w

*Hydric soil:* yes

*Hydrologic group:* B/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 8 in	mucky loam	moderate	1.57 to 1.73 in	6.6 to 8.4
Bkg1-2 -- 8 to 27 in	loam	moderate	2.89 to 3.67 in	7.4 to 8.4
Cg1-2 -- 27 to 80 in	loam	moderate	6.33 to 10.02 in	7.4 to 8.4

### 387--Roliss loam, depressional, 0 to 1 percent slopes

#### Roliss, depressional

*Extent:* 85 percent of the unit

*Landform(s):* depressions on lake plains

*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):* 4L

*Wind erodibility index (WEI):* 86

*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 8 in	loam	moderate	1.34 to 1.89 in	6.6 to 8.4
Bg -- 8 to 13 in	clay loam	moderately slow	0.77 to 0.97 in	7.4 to 8.4
Cg1-3 -- 13 to 80 in	loam	moderate	10.04 to 12.72 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### 404--Chilgren fine sandy loam, 0 to 2 percent slopes

#### Chilgren

*Extent:* 85 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* till

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

*Flooding:* none

*Ponding:* occasional

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .32

*Land capability, nonirrigated* 2w

*Hydric soil:* yes

*Hydrologic group:* B/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 5 in	fine sandy loam	moderately rapid	0.82 to 0.92 in	6.1 to 7.3
E -- 5 to 9 in	fine sandy loam	moderate	0.51 to 0.87 in	6.1 to 7.3
Btg -- 9 to 16 in	loam	moderate	1.28 to 1.56 in	6.1 to 7.8
Bkg,Cg -- 16 to 80 in	loam	moderate	8.93 to 12.12 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### 412--Mavie fine sandy loam, 0 to 2 percent slopes

#### Mavie

*Extent:* 85 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* glaciolacustrine deposits over till

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

*Flooding:* none

*Ponding:* occasional

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*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>
Ap -- 0 to 12 in	fine sandy loam	moderately rapid	1.54 to 1.77 in	7.4 to 8.4
Bkg -- 12 to 18 in	fine sandy loam	moderate	0.76 to 1.20 in	7.9 to 8.4
2Cg1-2 -- 18 to 39 in	very gravelly sand	rapid	0.63 to 1.04 in	7.4 to 8.4
3Cg3 -- 39 to 80 in	loam	moderate	6.14 to 8.60 in	7.4 to 8.4

### 432--Strandquist loam, 0 to 2 percent slopes

#### Strandquist

*Extent:* 85 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* glaciolacustrine deposits over till

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

*Flooding:* none

*Ponding:* occasional

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 4L

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .28

*Land capability, nonirrigated* 3w

*Hydric soil:* yes

*Hydrologic group:* B/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 8 in	loam	moderate	1.10 to 1.42 in	6.6 to 8.4
2Bg1-2 -- 8 to 35 in	very gravelly sand	rapid	0.81 to 1.36 in	7.4 to 8.4
3Cg -- 35 to 80 in	loam	moderate	5.39 to 8.53 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### 435--Syrene sandy loam, 0 to 2 percent slopes

#### Syrene

*Extent:* 85 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* beach deposits

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

*Flooding:* none

*Ponding:* occasional

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 2

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*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 11 in	sandy loam	moderately rapid	1.43 to 1.98 in	7.4 to 8.4
Bkg1 -- 11 to 19 in	sandy loam	moderately rapid	1.18 to 1.50 in	7.9 to 8.4
2Bkg,2Cg -- 19 to 80 in	stratified gravelly coarse sand to loamy fine sand	rapid	1.22 to 2.44 in	7.4 to 8.4

### 439--Strathcona fine sandy loam, 0 to 2 percent slopes

#### Strathcona

*Extent:* 85 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* glaciolacustrine deposits over till

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

*Flooding:* none

*Ponding:* occasional

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 2w

*Hydric soil:* yes

*Hydrologic group:* B/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 10 in	fine sandy loam	moderately rapid	1.38 to 1.67 in	7.4 to 8.4
Bkg -- 10 to 17 in	fine sandy loam	moderately rapid	0.99 to 1.13 in	7.4 to 8.4
Cg1 -- 17 to 28 in	fine sand	rapid	0.55 to 0.99 in	7.4 to 8.4
2Cg2-3 -- 28 to 80 in	loam	moderate	7.28 to 9.35 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### 481--Kratka fine sandy loam, 0 to 2 percent slopes

#### Kratka

*Extent:* 85 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* glaciolacustrine deposits over till

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

*Flooding:* none

*Ponding:* occasional

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 3w

*Hydric soil:* yes

*Hydrologic group:* B/D

*Potential for frost action:* moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 8 in	fine sandy loam	moderately rapid	1.02 to 1.42 in	5.6 to 7.8
ABg,Bg -- 8 to 22 in	loamy fine sand	rapid	0.85 to 1.56 in	5.6 to 7.8
2Bkg-2Cg -- 22 to 80 in	loam	moderate	6.37 to 11.00 in	6.1 to 8.4

### 482--Grygla loamy fine sand, 0 to 2 percent slopes

#### Grygla

*Extent:* 85 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* glaciolacustrine deposits and till

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

*Flooding:* none

*Ponding:* occasional

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .17

*Land capability, nonirrigated* 4w

*Hydric soil:* yes

*Hydrologic group:* B/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 6 in	loamy fine sand	rapid	0.77 to 0.89 in	6.1 to 7.3
Bg -- 6 to 26 in	fine sand	rapid	1.20 to 2.21 in	6.6 to 7.8
2BCkg,2Cg -- 26 to 80 in	loam	moderate	9.17 to 10.25 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### 532--Sago muck, 0 to 1 percent slopes

#### Sago

*Extent:* 90 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic materials over 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

*Representative soil profile:*

		<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa --	0 to 14 in	muck	moderately rapid	4.96 to 6.38 in	4.5 to 6.5
A..Cg3 --	14 to 80 in	stratified fine sand to silt loam	moderate	9.20 to 13.15 in	5.6 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### 534--Mooselake mucky peat, 0 to 1 percent slopes

#### Mooselake

*Extent:* 90 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic materials

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

*Flooding:* none

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 2

*Wind erodibility group (WEG):* 5

*Wind erodibility index (WEI):* 56

*Kw factor (surface layer)* .02

*Land capability, nonirrigated* 6w

*Hydric soil:* yes

*Hydrologic group:* A/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oe1 -- 0 to 16 in	mucky peat	moderately rapid	5.65 to 8.88 in	
Oe2..Oe4 -- 16 to 80 in	mucky peat	moderately rapid	25.51 to 31.89 in	

#### Dora

*Extent:* 3 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic materials over 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:* D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa1 -- 0 to 8 in	muck	moderately rapid	2.76 to 4.33 in	
Oa2 -- 8 to 26 in	muck	moderately rapid	6.34 to 9.96 in	
A..Cg3 -- 26 to 80 in	silty clay	very slow	5.39 to 10.79 in	

## Map Unit Description (MN)

Roseau County, Minnesota

### 540--Seelyeville muck, 0 to 1 percent slopes

#### Seelyeville

*Extent:* 90 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic materials

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

*Flooding:* none

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 2

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .02

*Land capability, nonirrigated* 6w

*Hydric soil:* yes

*Hydrologic group:* A/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa1 -- 0 to 12 in	muck	moderately rapid	4.13 to 5.31 in	
Oa2-Oa4 -- 12 to 80 in	muck	moderately rapid	23.84 to 30.65 in	

### 541--Rifle mucky peat, map 18-22, 0 to 1 percent slopes

#### Rifle, map 18-22

*Extent:* 90 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic materials

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

*Flooding:* none

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 2

*Wind erodibility group (WEG):* 5

*Wind erodibility index (WEI):* 56

*Kw factor (surface layer)* .02

*Land capability, nonirrigated* 6w

*Hydric soil:* yes

*Hydrologic group:* A/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oep -- 0 to 8 in	mucky peat	moderately rapid	3.78 to 4.57 in	
Oe1..Oe4 -- 8 to 80 in	mucky peat	moderately rapid	34.58 to 41.79 in	

## Map Unit Description (MN)

Roseau County, Minnesota

### 543--Markey muck, map 18-22, 0 to 1 percent slopes

#### Markey, map 18-22

*Extent:* 90 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic materials over 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:* A/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa1..Oa5 -- 0 to 42 in	muck	moderately rapid	14.74 to 18.96 in	
Cg -- 42 to 80 in	fine sand	rapid	1.13 to 3.02 in	

### 544--Cathro muck, map 18-22, 0 to 1 percent slopes

#### Cathro, map 18-22

*Extent:* 90 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic materials over glaciolacustrine deposits or till

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

*Flooding:* none

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 1

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .02

*Land capability, nonirrigated* 6w

*Hydric soil:* yes

*Hydrologic group:* A/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa1 -- 0 to 8 in	muck	moderately rapid	3.54 to 4.33 in	
Oa2,Oa3 -- 8 to 40 in	muck	moderately rapid	11.30 to 14.53 in	
A,Cg -- 40 to 80 in	loam	moderate	4.37 to 7.56 in	

## Map Unit Description (MN)

Roseau County, Minnesota

### 546--Lupton muck, map 22-30, 0 to 1 percent slopes

#### Lupton, map 22-30

*Extent:* 90 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic materials

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

*Flooding:* none

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 2

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .02

*Land capability, nonirrigated* 7w

*Hydric soil:* yes

*Hydrologic group:* A/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa1 -- 0 to 16 in	muck	moderately rapid	5.65 to 7.26 in	
Oa2..Oa4 -- 16 to 80 in	muck	moderately rapid	22.32 to 28.70 in	

### 547--Deerwood muck, 0 to 1 percent slopes

#### Deerwood

*Extent:* 90 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic materials over 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:* 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>
Oap -- 0 to 14 in	muck	moderately rapid	4.96 to 6.38 in	5.6 to 7.8
A -- 14 to 16 in	fine sandy loam	rapid	0.18 to 0.33 in	6.1 to 8.4
Cg1..Cg3 -- 16 to 80 in	fine sand	rapid	1.28 to 4.46 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### 550--Dora muck, 0 to 1 percent slopes

#### Dora

*Extent:* 90 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic materials over 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:* D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa1 -- 0 to 5 in	muck	moderately rapid	1.79 to 2.81 in	
Oa -- 5 to 31 in	muck	moderately rapid	9.09 to 14.29 in	
A..Cg3 -- 31 to 80 in	silty clay	very slow	4.88 to 9.76 in	

### 561--Bullwinkle muck, 0 to 1 percent slopes

#### Bullwinkle

*Extent:* 90 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic materials over glaciolacustrine deposits or till

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

*Flooding:* none

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 1

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .02

*Land capability, nonirrigated* 6w

*Hydric soil:* yes

*Hydrologic group:* A/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa1 -- 0 to 16 in	muck	moderately rapid	5.65 to 7.75 in	
Oa -- 16 to 48 in	muck	moderately rapid	11.16 to 15.31 in	
A-Cg -- 48 to 80 in	silt loam	moderate	6.38 to 7.02 in	

## Map Unit Description (MN)

Roseau County, Minnesota

### 563--Northwood muck, 0 to 1 percent slopes

#### Northwood

*Extent:* 90 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic materials over glaciolacustrine deposits or till

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

*Flooding:* none

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 1

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .02

*Land capability, nonirrigated* 6w

*Hydric soil:* yes

*Hydrologic group:* B/D

*Potential for frost action:* high

*Representative soil profile:*

		<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa --	0 to 11 in	muck	moderately rapid	3.86 to 4.96 in	5.1 to 7.8
A --	11 to 16 in	fine sandy loam	rapid	0.46 to 0.87 in	5.6 to 7.8
Bg --	16 to 25 in	fine sand	rapid	0.54 to 1.00 in	5.6 to 8.4
2Cg1-3 --	25 to 80 in	loam	moderate	7.66 to 10.40 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### 565--Eckvoll loamy fine sand, 0 to 3 percent slopes

#### Eckvoll

*Extent:* 85 percent of the unit

*Landform(s):* rises on lake plains

*Slope gradient:* 0 to 3 percent

*Parent material:* glaciolacustrine deposits over till

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

*Flooding:* none

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .10

*Land capability, nonirrigated* 3s

*Hydric soil:* no

*Hydrologic group:* A

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 6 in	loamy fine sand	rapid	0.59 to 0.71 in	6.1 to 7.3
E1,E2 -- 6 to 21 in	fine sand	rapid	0.90 to 1.20 in	6.1 to 7.3
2Bt -- 21 to 26 in	sandy clay loam	moderate	0.82 to 0.92 in	6.6 to 7.8
2Bk,2C -- 26 to 80 in	loam	moderate	9.17 to 10.25 in	7.4 to 8.4

### 568--Zippel very fine sandy loam, 0 to 2 percent slopes

#### Zippel

*Extent:* 85 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* glaciolacustrine deposits

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

*Flooding:* none

*Ponding:* occasional

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .32

*Land capability, nonirrigated* 2w

*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>
Ap -- 0 to 10 in	very fine sandy loam	moderately rapid	1.57 to 2.17 in	6.6 to 7.8
Bg -- 10 to 16 in	very fine sandy loam	moderately rapid	0.94 to 1.26 in	6.6 to 7.8
Cg1..Cg3 -- 16 to 80 in	stratified very fine sand to silt loam	moderately rapid	9.57 to 12.76 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### 569--Wabanica silt loam, 0 to 2 percent slopes

#### Wabanica

*Extent:* 85 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* glaciolacustrine deposits

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

*Flooding:* none

*Ponding:* occasional

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 4L

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .43

*Land capability, nonirrigated* 2w

*Hydric soil:* yes

*Hydrologic group:* B/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 8 in	silt loam	moderate	1.34 to 1.73 in	6.6 to 7.8
Bg -- 8 to 19 in	silt loam	moderate	1.87 to 2.43 in	6.6 to 7.8
Cg1..Cg3 -- 19 to 80 in	silt loam	moderate	10.37 to 13.43 in	7.4 to 8.4

### 570--Faunce loamy fine sand, 0 to 3 percent slopes

#### Faunce

*Extent:* 85 percent of the unit

*Landform(s):* beach ridges

*Slope gradient:* 0 to 3 percent

*Parent material:* beach 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):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .24

*Land capability, nonirrigated* 4s

*Hydric soil:* no

*Hydrologic group:* A

*Potential for frost action:* low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 2 in	loamy fine sand	rapid	0.20 to 0.26 in	5.1 to 6.5
E1,E2 -- 2 to 14 in	loamy sand	rapid	0.73 to 0.98 in	5.1 to 6.5
E&Bt -- 14 to 24 in	gravelly loamy coarse sand	rapid	0.59 to 0.79 in	5.1 to 7.3
C1..C3 -- 24 to 80 in	stratified coarse sand to gravelly sand	rapid	1.68 to 3.35 in	6.6 to 7.8

## Map Unit Description (MN)

Roseau County, Minnesota

### 581--Percy fine sandy loam, 0 to 1 percent slopes

#### Percy

*Extent:* 90 percent of the unit

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

*Slope gradient:* 0 to 1 percent

*Parent material:* till

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

*Flooding:* none

*Ponding:* occasional

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .24

*Land capability, nonirrigated* 2w

*Hydric soil:* yes

*Hydrologic group:* B/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 11 in	fine sandy loam	moderately rapid	1.43 to 1.98 in	6.6 to 8.4
2Bkg1 -- 11 to 15 in	loam	moderate	0.59 to 0.75 in	7.4 to 8.4
2Bkg2,2C -- 15 to 60 in	loam	moderate	5.39 to 8.53 in	7.4 to 8.4

### 582--Roliss loam, 0 to 2 percent slopes

#### Roliss

*Extent:* 85 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* till

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

*Flooding:* none

*Ponding:* occasional

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 4L

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 2w

*Hydric soil:* yes

*Hydrologic group:* B/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap, A -- 0 to 14 in	loam	moderate	2.41 to 3.40 in	6.6 to 8.4
Bg -- 14 to 20 in	clay loam	moderate	0.89 to 1.12 in	7.4 to 8.4
Cg1-Cg3 -- 20 to 80 in	loam	moderate	8.98 to 11.37 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### 583--Nereson fine sandy loam, 0 to 3 percent slopes

#### Nereson

*Extent:* 85 percent of the unit

*Landform(s):* rises on lake plains

*Slope gradient:* 0 to 3 percent

*Parent material:* till

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

*Flooding:* none

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .28

*Land capability, nonirrigated* 1

*Hydric soil:* no

*Hydrologic group:* C

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 7 in	fine sandy loam	moderately rapid	0.99 to 1.20 in	6.1 to 7.3
Bt -- 7 to 11 in	sandy loam	moderate	0.71 to 0.87 in	6.6 to 7.8
2Bk1-2 -- 11 to 29 in	loam	moderately rapid	2.90 to 3.26 in	7.4 to 8.4
2C1,2C2 -- 29 to 80 in	loam	moderately rapid	8.13 to 9.14 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### 627--Tawas muck, map 22-30, 0 to 1 percent slopes

#### Tawas, map 22-30

*Extent:* 90 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic materials over 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:* A/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa1 -- 0 to 10 in	muck	moderately rapid	3.44 to 4.43 in	
Oa2 -- 10 to 27 in	muck	moderately rapid	6.06 to 7.80 in	
Cg1..Cg4 -- 27 to 80 in	sand	rapid	1.58 to 5.28 in	

### 630--Wildwood muck, 0 to 1 percent slopes

#### Wildwood

*Extent:* 90 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic materials over 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:* C/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa1,Oa2 -- 0 to 12 in	muck	moderately rapid	4.13 to 5.31 in	5.1 to 6.5
A,Bg -- 12 to 33 in	clay	slow	0.00 to 0.85 in	5.6 to 7.3
Cg1,Cg2 -- 33 to 80 in	clay	slow	0.00 to 1.87 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### 643--Huot fine sandy loam, 0 to 3 percent slopes

#### Huot

*Extent:* 85 percent of the unit

*Landform(s):* rises on lake plains

*Slope gradient:* 0 to 3 percent

*Parent material:* glaciolacustrine deposits

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

*Flooding:* none

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 4

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 2s

*Hydric soil:* no

*Hydrologic group:* B

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap,Ak -- 0 to 14 in	fine sandy loam	moderately rapid	1.84 to 2.55 in	7.4 to 8.4
Bk -- 14 to 26 in	loamy fine sand	moderately rapid	1.06 to 2.01 in	7.4 to 8.4
C1 -- 26 to 34 in	fine sand	rapid	0.47 to 0.87 in	7.4 to 8.4
2C2,2C3 -- 34 to 80 in	clay	slow	4.15 to 7.37 in	7.4 to 8.4

### 644--Boash clay loam, 0 to 2 percent slopes

#### Boash

*Extent:* 85 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* glaciolacustrine deposits over till

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

*Flooding:* none

*Ponding:* occasional

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 4L

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .24

*Land capability, nonirrigated* 2w

*Hydric soil:* yes

*Hydrologic group:* C/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 9 in	clay loam	slow	1.18 to 1.54 in	6.6 to 7.8
Bg1,Bg2 -- 9 to 29 in	clay	slow	3.01 to 4.02 in	6.6 to 7.8
2BCKg,2C -- 29 to 80 in	loam	moderate	6.09 to 9.14 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### 645--Espelie fine sandy loam, 0 to 2 percent slopes

#### Espelie

*Extent:* 85 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* glaciolacustrine deposits

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

*Flooding:* none

*Ponding:* occasional

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 4

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .24

*Land capability, nonirrigated* 2w

*Hydric soil:* 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 10 in	fine sandy loam	moderately rapid	1.28 to 1.77 in	6.6 to 7.3
Bg1,Bg2 -- 10 to 27 in	fine sand	rapid	1.04 to 1.91 in	6.6 to 7.8
2Cg -- 27 to 80 in	clay	slow	4.75 to 10.02 in	7.4 to 8.4

### 651--Thiefriever fine sandy loam, 0 to 2 percent slopes

#### Thiefriever

*Extent:* 85 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* glaciolacustrine deposits

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

*Flooding:* none

*Ponding:* occasional

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 4

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .24

*Land capability, nonirrigated* 2w

*Hydric soil:* 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 10 in	fine sandy loam	moderately rapid	1.28 to 1.77 in	7.4 to 8.4
Bkg -- 10 to 16 in	loamy fine sand	rapid	0.57 to 1.07 in	7.4 to 8.4
Cg1,Cg2 -- 16 to 35 in	fine sand	rapid	1.13 to 2.08 in	7.4 to 8.4
2Cg3 -- 35 to 80 in	clay	slow	4.04 to 8.53 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### 708--Rushlake loamy sand, 0 to 3 percent slopes

#### Rushlake

*Extent:* 85 percent of the unit

*Landform(s):* rises on beach plains

*Slope gradient:* 0 to 3 percent

*Parent material:* beach deposits

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

*Flooding:* none

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .05

*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>
Ap -- 0 to 8 in	loamy sand	rapid	0.79 to 0.94 in	6.1 to 7.8
C1..C6 -- 8 to 80 in	gravelly sand	rapid	1.44 to 7.20 in	7.4 to 8.4

### 712--Rosewood fine sandy loam, 0 to 2 percent slopes

#### Rosewood

*Extent:* 85 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* glaciolacustrine deposits

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

*Flooding:* none

*Ponding:* occasional

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 2

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 3w

*Hydric soil:* yes

*Hydrologic group:* A/D

*Potential for frost action:* moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 11 in	fine sandy loam	moderately rapid	1.43 to 1.98 in	7.4 to 8.4
Bkg -- 11 to 19 in	fine sandy loam	moderately rapid	0.87 to 1.18 in	7.4 to 8.4
Cg1..Cg3 -- 19 to 65 in	fine sand	rapid	2.30 to 3.69 in	7.4 to 8.4
Cg4,Cg5 -- 65 to 80 in	fine sand	rapid	0.30 to 1.05 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### 721B--Corliss loamy sand, 1 to 6 percent slopes

#### Corliss

*Extent:* 85 percent of the unit

*Landform(s):* beach ridges

*Slope gradient:* 1 to 6 percent

*Parent material:* beach deposits

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

*Flooding:* none

*Ponding:* none

*Drainage class:* excessively drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .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 8 in	loamy sand	rapid	0.79 to 0.94 in	6.1 to 7.8
Bw..C4 -- 8 to 80 in	stratified very gravelly sand to sand	rapid	2.16 to 3.60 in	6.1 to 7.8

#### Hangaard

*Extent:* 4 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* beach deposits

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

*Flooding:* none

*Ponding:* occasional

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .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 12 in	sandy loam	moderately rapid	1.18 to 1.65 in	6.6 to 7.8
Cg1..Cg5 -- 12 to 80 in	stratified gravelly coarse sand	very rapid	1.36 to 2.72 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### 733--Berner muck, 0 to 1 percent slopes

#### Berner

*Extent:* 90 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic materials over glaciolacustrine deposits or till

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

*Flooding:* none

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 1

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .02

*Land capability, nonirrigated* 6w

*Hydric soil:* yes

*Hydrologic group:* A/D

*Potential for frost action:* high

#### *Representative soil profile:*

	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa1,Oa2 -- 0 to 23 in	muck	moderately rapid	7.99 to 10.96 in	
A,Cg1 -- 23 to 41 in	fine sand	rapid	0.91 to 1.81 in	
2Cg2 -- 41 to 80 in	loam	moderate	5.46 to 8.57 in	

## Map Unit Description (MN)

Roseau County, Minnesota

### 737--Mahkonce fine sandy loam, 0 to 3 percent slopes

#### Mahkonce

*Extent:* 85 percent of the unit

*Landform(s):* rises on lake plains

*Slope gradient:* 0 to 3 percent

*Parent material:* till

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

*Flooding:* none

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .28

*Land capability, nonirrigated* 2s

*Hydric soil:* no

*Hydrologic group:* D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 3 in	fine sandy loam	moderate	0.50 to 0.57 in	5.6 to 7.3
E -- 3 to 5 in	fine sandy loam	moderately slow	0.31 to 0.43 in	5.6 to 7.3
Bt -- 5 to 16 in	clay	slow	1.43 to 2.09 in	6.1 to 7.3
Btk -- 16 to 23 in	silty clay loam	moderately slow	0.87 to 1.27 in	6.1 to 7.8
Bk,C -- 23 to 80 in	silty clay loam	moderately slow	7.42 to 10.85 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### 755--Woodslake clay, 0 to 1 percent slopes

#### Woodslake

*Extent:* 85 percent of the unit

*Landform(s):* 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):* 4

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .15

*Land capability, nonirrigated* 3w

*Hydric soil:* yes

*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 8 in	clay	moderately slow	0.79 to 1.10 in	6.6 to 7.8
Bg1 -- 8 to 15 in	clay	very slow	0.64 to 0.92 in	6.6 to 8.4
Bg2,Cg1 -- 15 to 36 in	clay	very slow	1.88 to 2.71 in	7.4 to 8.4
Cg2,Cg3 -- 36 to 80 in	clay	very slow	3.97 to 9.70 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### 767--Auganaush loam, 0 to 2 percent slopes

#### Auganaush

*Extent:* 90 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* glaciolacustrine deposits over till

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

*Flooding:* none

*Ponding:* occasional

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 5

*Wind erodibility index (WEI):* 56

*Kw factor (surface layer)* .32

*Land capability, nonirrigated* 2w

*Hydric soil:* yes

*Hydrologic group:* C/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 5 in	loam	moderate	1.02 to 1.23 in	5.6 to 7.3
E -- 5 to 7 in	fine sandy loam	moderate	0.31 to 0.47 in	5.6 to 7.3
Btg -- 7 to 18 in	clay	moderately slow	1.10 to 2.09 in	5.6 to 7.3
Bkg1-2 -- 18 to 58 in	silty clay loam	moderately slow	5.57 to 7.56 in	7.4 to 8.4
C -- 58 to 80 in	loam	moderate	3.53 to 4.19 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### 794--Clearriver loamy fine sand, 0 to 3 percent slopes

#### Clearriver

*Extent:* 85 percent of the unit

*Landform(s):* beach ridges

*Slope gradient:* 0 to 3 percent

*Parent material:* beach deposits

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

*Flooding:* none

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .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>
Ap -- 0 to 2 in	loamy fine sand	rapid	0.20 to 0.24 in	5.1 to 6.5
E1,E2 -- 2 to 21 in	loamy sand	rapid	1.13 to 2.08 in	5.1 to 7.3
E&Bt..C3 -- 21 to 80 in	stratified gravelly coarse sand to fine sand	rapid	1.18 to 3.54 in	6.6 to 7.8

#### Cormant

*Extent:* 2 percent of the unit

*Landform(s):* flats

*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:* yes

*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)

Roseau County, Minnesota

### 1002--Fluvaquents, 0 to 2 percent slopes, frequently flooded

#### Fluvaquents, frequently flooded

*Extent:* 90 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* alluvium

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

*Flooding:* very frequent

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .17

*Land capability, nonirrigated* 6w

*Hydric soil:* yes

*Hydrologic group:* A/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 12 in	fine sandy loam	rapid	0.83 to 1.54 in	5.6 to 7.8
Cg -- 12 to 80 in	stratified loamy sand to silt loam	rapid	2.72 to 13.62 in	5.6 to 7.8

## Map Unit Description (MN)

Roseau County, Minnesota

### 1030--Pits, gravel-Udipsamments complex, 1 to 50 percent slopes

#### Pits, gravel

*Extent:* 75 percent of the unit

*Landform(s):* beach ridges

*Slope gradient:* 1 to 50 percent

*Parent material:* beach deposits

*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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#### Udipsamments

*Extent:* 20 percent of the unit

*Landform(s):* beach ridges

*Slope gradient:* 1 to 50 percent

*Parent material:* beach deposits

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

*Flooding:* none

*Ponding:* none

*Drainage class:* excessively drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 1

*Wind erodibility index (WEI):* 220

*Kw factor (surface layer)* .02

*Land capability, nonirrigated* 8s

*Hydric soil:* no

*Hydrologic group:* A

*Potential for frost action:* low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 14 in	sand	rapid	0.71 to 1.42 in	6.6 to 7.3
C1 -- 14 to 60 in	sand	rapid	2.28 to 3.65 in	6.6 to 7.3
C2 -- 60 to 80 in	gravelly coarse sand	very rapid	0.60 to 1.00 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### 1031--Seelyeville muck, ponded, 0 to 1 percent slopes

#### Seelyeville, ponded

*Extent:* 90 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic materials

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

*Flooding:* none

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 2

*Wind erodibility group (WEG):* 8

*Wind erodibility index (WEI):* 0

*Kw factor (surface layer)* .02

*Land capability, nonirrigated* 8w

*Hydric soil:* yes

*Hydrologic group:* A/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa1 -- 0 to 18 in	muck	moderately rapid	6.34 to 8.15 in	
Oa2-Oa5 -- 18 to 80 in	muck	moderately rapid	21.63 to 27.81 in	

## Map Unit Description (MN)

Roseau County, Minnesota

### 1067--Fluvaquents, frequently flooded-Hapludalfs complex, 0 to 60 percent slopes

#### Fluvaquents, frequently flooded

*Extent:* 60 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* alluvium

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

*Flooding:* very frequent

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .17

*Land capability, nonirrigated* 6w

*Hydric soil:* yes

*Hydrologic group:* A/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 11 in	fine sandy loam	rapid	0.77 to 1.43 in	5.6 to 7.8
Cg -- 11 to 80 in	stratified loamy sand to silt loam	rapid	2.76 to 13.78 in	5.6 to 7.8

#### Hapludalfs

*Extent:* 30 percent of the unit

*Landform(s):* escarpments

*Slope gradient:* 3 to 60 percent

*Parent material:* glaciolacustrine deposits and till

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

*Flooding:* none

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 6e

*Hydric soil:* no

*Hydrologic group:* C

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 6 in	fine sandy loam	moderately rapid	0.94 to 1.06 in	6.1 to 7.8
E -- 6 to 8 in	fine sandy loam	rapid	0.20 to 0.35 in	6.1 to 7.8
Bt1,Bt2 -- 8 to 25 in	clay loam	moderate	2.60 to 3.29 in	6.6 to 7.8
C1,C2 -- 25 to 80 in	silt loam	moderately rapid	7.66 to 10.40 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### 1133B--Skime loamy fine sand, 0 to 4 percent slopes

#### Skime

*Extent:* 85 percent of the unit

*Landform(s):* rises on lake plains

*Slope gradient:* 0 to 4 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):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .24

*Land capability, nonirrigated* 4s

*Hydric soil:* no

*Hydrologic group:* B

*Potential for frost action:* moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 6 in	loamy fine sand	rapid	0.47 to 0.71 in	6.1 to 7.3
E -- 6 to 17 in	fine sand	rapid	0.88 to 1.21 in	6.1 to 7.3
Bt -- 17 to 22 in	fine sandy loam	moderately rapid	0.61 to 0.87 in	6.1 to 7.3
C1..C3 -- 22 to 72 in	fine sand	rapid	2.50 to 4.00 in	6.6 to 8.4
C4 -- 72 to 80 in	stratified fine sand to very fine sandy loam to silt loam	rapid	0.39 to 1.73 in	6.6 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### 1134--Borup-Glyndon complex, 0 to 2 percent slopes

#### Borup

*Extent:* 55 percent of the unit

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

*Slope gradient:* 0 to 1 percent

*Parent material:* 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):* 4L

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .37

*Land capability, nonirrigated* 2w

*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>
Ap -- 0 to 9 in	loam	moderately rapid	1.81 to 2.08 in	7.4 to 8.4
Bkg1-2 -- 9 to 34 in	very fine sandy loam	moderately rapid	4.22 to 4.96 in	7.4 to 8.4
Cg1-5 -- 34 to 80 in	very fine sandy loam	rapid	6.91 to 8.75 in	7.4 to 8.4

#### Glyndon

*Extent:* 35 percent of the unit

*Landform(s):* 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:* moderately well drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .32

*Land capability, nonirrigated* 2s

*Hydric soil:* no

*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	very fine sandy loam	moderate	1.42 to 1.63 in	7.4 to 9.0
Bk1-C2 -- 7 to 80 in	very fine sandy loam	moderately rapid	12.38 to 14.57 in	7.4 to 9.0

## Map Unit Description (MN)

Roseau County, Minnesota

### 1144--Strathcona and Kratka soils, depressional, 0 to 1 percent slopes

#### Strathcona, depressional

*Extent:* 45 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* glaciolacustrine deposits over till

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

*Flooding:* none

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .24

*Land capability, nonirrigated* 6w

*Hydric soil:* yes

*Hydrologic group:* B/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 12 in	mucky fine sandy loam	moderate	2.36 to 3.54 in	7.4 to 8.4
Bkg -- 12 to 18 in	fine sandy loam	moderately rapid	0.88 to 1.01 in	7.4 to 8.4
Cg1,Cg2 -- 18 to 39 in	fine sand	rapid	1.04 to 1.88 in	7.4 to 8.4
2Cg3-4 -- 39 to 80 in	loam	moderate	5.73 to 7.37 in	7.4 to 8.4

#### Kratka, depressional

*Extent:* 45 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* glaciolacustrine deposits over till

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

*Flooding:* none

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .17

*Land capability, nonirrigated* 6w

*Hydric soil:* yes

*Hydrologic group:* B/D

*Potential for frost action:* moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 9 in	mucky fine sandy loam	moderately rapid	1.27 to 1.63 in	6.6 to 7.8
Bg-Cg1 -- 9 to 26 in	loamy fine sand	rapid	1.02 to 1.86 in	6.6 to 7.8
2Cg3-4 -- 26 to 80 in	loam	moderate	5.93 to 10.25 in	6.1 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### 1154--Sax muck, 0 to 1 percent slopes

#### Sax

*Extent:* 90 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic materials over 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

#### *Representative soil profile:*

		<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa --	0 to 15 in	muck	moderately rapid	5.24 to 6.73 in	5.1 to 6.5
A --	15 to 24 in	mucky silt loam	moderate	1.54 to 1.99 in	6.1 to 7.3
Bg --	24 to 39 in	silt loam	moderate	2.54 to 3.29 in	6.1 to 7.3
Cg1..Cg3 --	39 to 71 in	silt loam	moderate	4.46 to 7.02 in	7.4 to 8.4
Cg4 --	71 to 80 in	silty clay	moderately slow	0.81 to 1.72 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### 1158--Skagen loam, 0 to 3 percent slopes

#### Skagen

*Extent:* 85 percent of the unit

*Landform(s):* rises on lake plains

*Slope gradient:* 0 to 3 percent

*Parent material:* till

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

*Flooding:* none

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 4L

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .32

*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 9 in	loam	moderate	1.45 to 1.63 in	7.4 to 7.8
Bk1,Bk2 -- 9 to 19 in	loam	moderately rapid	1.08 to 1.77 in	7.4 to 8.4
C1,C2 -- 19 to 80 in	loam	moderately rapid	6.71 to 10.98 in	7.4 to 8.4

### 1170--Skagen loam, 0 to 3 percent slopes, very cobbly

#### Skagen, very cobbly

*Extent:* 85 percent of the unit

*Landform(s):* rises on lake plains

*Slope gradient:* 0 to 3 percent

*Parent material:* till

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

*Flooding:* none

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 4L

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .32

*Land capability, nonirrigated* 3s

*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 10 in	loam	moderate	1.57 to 1.77 in	7.4 to 7.8
Bk1,Bk2 -- 10 to 28 in	loam	moderately rapid	1.99 to 3.26 in	7.4 to 8.4
C1-3 -- 28 to 80 in	loam	moderately rapid	5.72 to 9.35 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### 1179B--Moranville loamy fine sand, 0 to 4 percent slopes

#### Moranville

*Extent:* 85 percent of the unit

*Landform(s):* rises on lake plains

*Slope gradient:* 0 to 4 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):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .24

*Land capability, nonirrigated* 3s

*Hydric soil:* no

*Hydrologic group:* A

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 8 in	loamy fine sand	rapid	0.63 to 0.87 in	6.6 to 7.8
E -- 8 to 24 in	fine sand	rapid	0.81 to 1.78 in	6.6 to 7.8
2Bt1-2 -- 24 to 42 in	silty clay loam	moderately slow	2.54 to 3.62 in	6.6 to 7.8
2C1..2C3 -- 42 to 80 in	very fine sandy loam	moderate	4.91 to 7.56 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### 1181--Rosewood-Ulen complex, 0 to 2 percent slopes

#### Rosewood

*Extent:* 50 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* glaciolacustrine deposits

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

*Flooding:* none

*Ponding:* occasional

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 2

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 3w

*Hydric soil:* yes

*Hydrologic group:* A/D

*Potential for frost action:* moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 8 in	fine sandy loam	moderately rapid	1.02 to 1.42 in	7.4 to 8.4
Bkg-Cg2 -- 8 to 15 in	fine sandy loam	moderately rapid	0.78 to 1.06 in	7.4 to 8.4
Cg3 -- 15 to 80 in	fine sand	rapid	3.25 to 5.20 in	7.4 to 8.4

#### Ulen

*Extent:* 40 percent of the unit

*Landform(s):* 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:* moderately well drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 3s

*Hydric soil:* no

*Hydrologic group:* A/D

*Potential for frost action:* moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 10 in	fine sandy loam	moderately rapid	1.28 to 1.77 in	7.4 to 8.4
Bk1-2 -- 10 to 18 in	loamy fine sand	rapid	0.50 to 0.83 in	7.9 to 8.4
C1-3 -- 18 to 80 in	fine sand	rapid	3.71 to 4.94 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### 1182--Warroad fine sandy loam, 0 to 2 percent slopes

#### Warroad

*Extent:* 85 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* glaciolacustrine deposits

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

*Flooding:* none

*Ponding:* occasional

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .28

*Land capability, nonirrigated* 3w

*Hydric soil:* yes

*Hydrologic group:* B/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap,A -- 0 to 11 in	fine sandy loam	moderately rapid	1.43 to 1.98 in	6.6 to 7.8
Bg..Cg2 -- 11 to 26 in	fine sand	rapid	0.75 to 1.65 in	7.4 to 7.8
2Cg3 -- 26 to 80 in	silt loam	moderate	10.25 to 11.33 in	7.4 to 8.4

### 1187--Dora muck, ponded, 0 to 1 percent slopes

#### Dora, ponded

*Extent:* 90 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic materials over 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)* .02

*Land capability, nonirrigated* 8w

*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 24 in	muck	moderately rapid	8.41 to 13.21 in	
A -- 24 to 30 in	mucky silt loam	moderate	1.30 to 1.48 in	
Cg -- 30 to 80 in	silty clay	very slow	0.00 to 2.00 in	

## Map Unit Description (MN)

Roseau County, Minnesota

### 1191--Sahkahtay sandy loam, 0 to 2 percent slopes

#### Sahkahtay

*Extent:* 85 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* beach deposits

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

*Flooding:* none

*Ponding:* occasional

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 3w

*Hydric soil:* yes

*Hydrologic group:* B/D

*Potential for frost action:* moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 4 in	sandy loam	moderately rapid	0.39 to 0.55 in	5.6 to 7.3
Eg -- 4 to 8 in	loamy sand	rapid	0.20 to 0.31 in	5.6 to 7.3
Btg -- 8 to 14 in	sandy clay loam	moderate	0.82 to 1.07 in	6.1 to 7.3
2Cg1-4 -- 14 to 80 in	stratified gravelly coarse sand	very rapid	1.97 to 3.94 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### 1206--Cormant-Redby complex, 0 to 2 percent slopes

#### Cormant

*Extent:* 55 percent of the unit

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

*Slope gradient:* 0 to 1 percent

*Parent material:* 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):* 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>
A -- 0 to 7 in	loamy fine sand	rapid	0.57 to 0.85 in	6.1 to 7.3
Cg1..Cg3 -- 7 to 80 in	fine sand	rapid	4.37 to 7.28 in	6.1 to 7.8

#### Redby

*Extent:* 35 percent of the unit

*Landform(s):* 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:* 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* 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 4 in	loamy fine sand	rapid	0.31 to 0.47 in	5.1 to 6.5
E..Bw2 -- 4 to 30 in	fine sand	rapid	1.82 to 2.60 in	5.1 to 6.5
Cg -- 30 to 80 in	fine sand	rapid	3.00 to 4.00 in	6.1 to 7.8

## Map Unit Description (MN)

Roseau County, Minnesota

### 1214--Mustinka clay loam, 0 to 1 percent slopes

#### Mustinka

*Extent:* 90 percent of the unit

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

*Slope gradient:* 0 to 1 percent

*Parent material:* glaciolacustrine deposits over till

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

*Flooding:* none

*Ponding:* occasional

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 6

*Wind erodibility index (WEI):* 48

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 2w

*Hydric soil:* yes

*Hydrologic group:* C/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 9 in	clay loam	moderately slow	1.54 to 2.17 in	6.6 to 7.8
Btg1,Btk -- 9 to 35 in	silty clay	slow	3.38 to 4.94 in	6.6 to 7.8
Cg1,Cg2 -- 35 to 62 in	silty clay loam	moderately slow	3.75 to 5.09 in	7.4 to 8.4
2Cg3 -- 62 to 80 in	silty clay loam	moderately slow	2.54 to 3.44 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### 1274B--Redby-Hiwood-Leafriver complex, 0 to 6 percent slopes

#### Redby

*Extent:* 40 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:* 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* 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,E -- 0 to 10 in	loamy fine sand	rapid	0.79 to 1.18 in	5.1 to 6.5
Bw1-2 -- 10 to 35 in	fine sand	rapid	1.76 to 2.52 in	5.1 to 6.5
Cg1..Cg3 -- 35 to 80 in	fine sand	rapid	2.69 to 3.59 in	6.1 to 7.8

#### Hiwood

*Extent:* 30 percent of the unit

*Landform(s):* rises on lake plains

*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):* 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:* moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A,E -- 0 to 7 in	loamy fine sand	rapid	0.57 to 0.85 in	4.5 to 6.0
Bw1-3 -- 7 to 32 in	fine sand	rapid	1.74 to 2.48 in	5.1 to 6.0
C1-3 -- 32 to 80 in	fine sand	rapid	2.40 to 3.84 in	5.6 to 7.8

## Map Unit Description (MN)

Roseau County, Minnesota

### 1274B--Redby-Hiwood-Leafriver complex, 0 to 6 percent slopes

#### Leafriver, wooded

<p><i>Extent:</i> 15 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> organic materials over 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> 2</p> <p><i>Wind erodibility index (WEI):</i> 134</p> <p><i>Kw factor (surface layer)</i> .02</p> <p><i>Land capability, nonirrigated</i> 6w</p> <p><i>Hydric soil:</i> yes</p> <p><i>Hydrologic group:</i> A/D</p> <p><i>Potential for frost action:</i> high</p>
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<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa -- 0 to 10 in	muck	moderately rapid	3.44 to 4.92 in	4.5 to 7.3
A -- 10 to 13 in	loamy sand	rapid	0.25 to 0.44 in	4.5 to 7.3
Cg1-3 -- 13 to 80 in	fine sand	rapid	2.01 to 5.35 in	4.5 to 7.3

### 1298--Borup silt loam, 0 to 2 percent slopes

#### Borup

<p><i>Extent:</i> 90 percent of the unit</p> <p><i>Landform(s):</i> flats on lake plains, swales on lake plains</p> <p><i>Slope gradient:</i> 0 to 2 percent</p> <p><i>Parent material:</i> glaciolacustrine 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> 4L</p> <p><i>Wind erodibility index (WEI):</i> 86</p> <p><i>Kw factor (surface layer)</i> .37</p> <p><i>Land capability, nonirrigated</i> 2w</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>
Ap -- 0 to 8 in	silt loam	moderately rapid	1.57 to 1.81 in	7.4 to 8.4
Bkg..Cg3 -- 8 to 80 in	silt loam	moderately rapid	12.25 to 14.41 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### 1302--Foldahl fine sandy loam, 0 to 3 percent slopes

#### Foldahl

*Extent:* 85 percent of the unit

*Landform(s):* rises on lake plains

*Slope gradient:* 0 to 3 percent

*Parent material:* glaciolacustrine deposits over till

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

*Flooding:* none

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 2s

*Hydric soil:* no

*Hydrologic group:* B

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap,A -- 0 to 12 in	fine sandy loam	moderately rapid	1.65 to 2.13 in	6.1 to 7.8
Bw1,Bw2 -- 12 to 30 in	loamy fine sand	rapid	1.27 to 2.17 in	6.6 to 7.8
2C1-4 -- 30 to 80 in	loam	moderate	7.00 to 9.50 in	7.4 to 8.4

### 1304--Glyndon very fine sandy loam, 0 to 2 percent slopes

#### Glyndon

*Extent:* 85 percent of the unit

*Landform(s):* 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:* moderately well drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .32

*Land capability, nonirrigated* 2s

*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,A1 -- 0 to 11 in	very fine sandy loam	moderate	2.20 to 2.54 in	7.4 to 9.0
Bk1..Bk4 -- 11 to 56 in	silt loam	moderately rapid	7.63 to 8.98 in	7.4 to 9.0
C -- 56 to 80 in	silt loam	moderately rapid	3.60 to 4.56 in	7.4 to 9.0

## Map Unit Description (MN)

Roseau County, Minnesota

### 1305--Hilaire fine sandy loam, 0 to 3 percent slopes

#### Hilaire

*Extent:* 85 percent of the unit

*Landform(s):* rises on lake plains

*Slope gradient:* 0 to 3 percent

*Parent material:* glaciolacustrine deposits

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

*Flooding:* none

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 4

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .24

*Land capability, nonirrigated* 2s

*Hydric soil:* no

*Hydrologic group:* B

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap,A -- 0 to 13 in	fine sandy loam	moderately rapid	1.69 to 2.34 in	6.6 to 7.3
Bw1,Bw2 -- 13 to 33 in	loamy fine sand	rapid	1.41 to 2.81 in	6.6 to 7.8
2Bk1-2 -- 33 to 80 in	clay	slow	4.22 to 8.90 in	7.4 to 8.4

### 1314--Tacoosh mucky peat, map 22-30, 0 to 1 percent slopes

#### Tacoosh, map 22-30

*Extent:* 90 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic materials over 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* 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>
Oe1 -- 0 to 17 in	mucky peat	moderately rapid	7.62 to 9.31 in	
Oe2,Oa -- 17 to 33 in	mucky peat	moderately rapid	7.26 to 8.88 in	
A..Cg3 -- 33 to 80 in	silt loam	moderate	7.50 to 10.31 in	

## Map Unit Description (MN)

Roseau County, Minnesota

### 1316--Wheatville loam, 0 to 2 percent slopes

#### Wheatville

*Extent:* 85 percent of the unit

*Landform(s):* 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:* moderately well drained

*Soil loss tolerance (T factor):* 4

*Wind erodibility group (WEG):* 4L

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .37

*Land capability, nonirrigated* 2s

*Hydric soil:* no

*Hydrologic group:* B

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap,A -- 0 to 12 in	loam	moderately rapid	2.13 to 2.60 in	7.4 to 8.4
Bk1..C1 -- 12 to 35 in	very fine sandy loam	moderately rapid	3.48 to 4.88 in	7.4 to 8.4
2Cg2-3 -- 35 to 80 in	stratified very fine sandy loam to silt loam to silty clay loam to clay	slow	4.49 to 6.28 in	7.4 to 7.8

## Map Unit Description (MN)

Roseau County, Minnesota

### 1326--Augsburg and Wabanica soils, depressional, 0 to 1 percent slopes

#### Augsburg, depressional

*Extent:* 45 percent of the unit

*Landform(s):* 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):* 4

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .32

*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>
Ap -- 0 to 9 in	mucky very fine sandy loam	moderate	1.81 to 2.08 in	7.4 to 8.4
Bkg -- 9 to 16 in	very fine sandy loam	moderately rapid	1.42 to 1.63 in	7.4 to 8.4
Bg -- 16 to 32 in	loamy very fine sand	moderately rapid	2.68 to 3.46 in	7.4 to 8.4
2Cg1-3 -- 32 to 80 in	clay	slow	4.80 to 6.72 in	7.4 to 8.4

#### Wabanica, depressional

*Extent:* 45 percent of the unit

*Landform(s):* 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):* 4L

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .37

*Land capability, nonirrigated* 6w

*Hydric soil:* yes

*Hydrologic group:* B/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 8 in	mucky silt loam	moderate	1.73 to 1.89 in	6.6 to 7.8
Bg -- 8 to 26 in	silty clay loam	moderate	2.90 to 3.98 in	7.4 to 8.4
Cg1,Cg2 -- 26 to 68 in	silty clay loam	moderate	6.74 to 9.27 in	7.4 to 8.4
2Cg3 -- 68 to 80 in	clay	slow	1.06 to 1.54 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### 1327B--Karlstad-Marquette complex, 0 to 8 percent slopes

#### Karlstad

*Extent:* 65 percent of the unit

*Landform(s):* beach ridges

*Slope gradient:* 0 to 2 percent

*Parent material:* beach deposits

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

*Flooding:* none

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 3

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .17

*Land capability, nonirrigated* 3s

*Hydric soil:* no

*Hydrologic group:* B

*Potential for frost action:* moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap,E -- 0 to 11 in	loamy sand	rapid	1.10 to 1.32 in	4.5 to 7.3
Bt1 -- 11 to 14 in	sandy loam	moderately rapid	0.41 to 0.57 in	6.1 to 7.3
2Bt2 -- 14 to 16 in	gravelly sandy loam	moderately rapid	0.24 to 0.31 in	6.1 to 7.8
2C1-2C3 -- 16 to 80 in	stratified very gravelly coarse sand to sand	rapid	1.28 to 2.55 in	7.4 to 8.4

#### Marquette

*Extent:* 25 percent of the unit

*Landform(s):* beach ridges

*Slope gradient:* 1 to 8 percent

*Parent material:* beach deposits

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

*Flooding:* none

*Ponding:* none

*Drainage class:* excessively drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .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,E -- 0 to 10 in	loamy sand	rapid	0.98 to 1.38 in	5.6 to 7.3
Bt1-2 -- 10 to 18 in	very gravelly sandy loam	moderately rapid	0.83 to 1.32 in	6.6 to 8.4
C1-C4 -- 18 to 80 in	stratified very gravelly coarse sand to very gravelly sand	very rapid	1.24 to 2.47 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### 1328--Northwood muck, wooded, 0 to 1 percent slopes

#### Northwood, wooded

*Extent:* 90 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic materials over glaciolacustrine deposits or till

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

*Flooding:* none

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 1

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .02

*Land capability, nonirrigated* 6w

*Hydric soil:* yes

*Hydrologic group:* B/D

*Potential for frost action:* high

*Representative soil profile:*

		<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa --	0 to 15 in	muck	moderately rapid	5.24 to 6.73 in	5.1 to 7.8
A --	15 to 21 in	fine sandy loam	rapid	0.53 to 1.00 in	5.6 to 7.8
Bg-Cg2 --	21 to 39 in	fine sand	rapid	1.09 to 1.99 in	5.6 to 8.4
2Cg3 --	39 to 80 in	loam	moderate	5.73 to 7.78 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### 1333--Dora muck, wooded, 0 to 1 percent slopes

#### Dora, wooded

*Extent:* 90 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic materials over 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:* D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa1 -- 0 to 8 in	muck	moderately rapid	2.76 to 4.33 in	
Oa2 -- 8 to 26 in	muck	moderately rapid	6.34 to 9.96 in	
A..Cg3 -- 26 to 80 in	silty clay	very slow	5.39 to 10.79 in	

### 1356--Water, miscellaneous

#### Water, miscellaneous

*Extent:* 100 percent of the unit

*Landform(s):*

*Slope gradient:*

*Parent material:*

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

*Flooding:*

*Ponding:*

*Drainage class:*

*Soil loss tolerance (T factor):*

*Wind erodibility group (WEG):*

*Wind erodibility index (WEI):*

*Kw factor (surface layer)*

*Land capability, nonirrigated*

*Hydric soil:*

*Hydrologic group:*

*Potential for frost action:*

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

## Map Unit Description (MN)

Roseau County, Minnesota

### 1399B--Two Inlets loamy sand, noncalcareous substratum, 0 to 6 percent slopes

#### Two Inlets, noncalcareous substratum

*Extent:* 85 percent of the unit

*Landform(s):* beach ridges

*Slope gradient:* 0 to 6 percent

*Parent material:* beach deposits

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

*Flooding:* none

*Ponding:* none

*Drainage class:* excessively drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .17

*Land capability, nonirrigated* 4s

*Hydric soil:* no

*Hydrologic group:* A

*Potential for frost action:* low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 2 in	loamy sand	rapid	0.20 to 0.24 in	6.6 to 7.3
E -- 2 to 4 in	loamy coarse sand	rapid	0.18 to 0.22 in	6.1 to 6.5
Bt -- 4 to 17 in	loamy coarse sand	rapid	1.17 to 1.43 in	6.1 to 6.5
C1..C4 -- 17 to 80 in	coarse sand	very rapid	1.26 to 2.52 in	6.6 to 7.3

### 1401--Grygla mucky loamy fine sand, depressional, 0 to 1 percent slopes

#### Grygla, depressional

*Extent:* 90 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* glaciolacustrine deposits and till

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

*Flooding:* none

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .15

*Land capability, nonirrigated* 6w

*Hydric soil:* yes

*Hydrologic group:* B/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 5 in	mucky loamy fine sand	rapid	0.51 to 0.77 in	6.1 to 7.3
Bg,Cg1 -- 5 to 36 in	fine sand	rapid	1.84 to 3.38 in	6.6 to 7.8
2Cg2-3 -- 36 to 80 in	fine sandy loam	moderate	7.50 to 8.38 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### 1402--Leafriver muck, wooded, 0 to 1 percent slopes

#### Leafriver, wooded

*Extent:* 90 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic materials over 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:* 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 10 in	muck	moderately rapid	3.44 to 4.92 in	4.5 to 7.3
A -- 10 to 13 in	loamy sand	rapid	0.25 to 0.44 in	4.5 to 7.3
Cg1-3 -- 13 to 80 in	sand	rapid	2.01 to 5.35 in	4.5 to 7.3

### 1404--Berner muck, wooded, 0 to 1 percent slopes

#### Berner, wooded

*Extent:* 90 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic materials over glaciolacustrine deposits or till

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

*Flooding:* none

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 1

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .02

*Land capability, nonirrigated* 6w

*Hydric soil:* yes

*Hydrologic group:* A/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa -- 0 to 20 in	muck	moderately rapid	7.03 to 9.64 in	
A,Cg1 -- 20 to 44 in	fine sand	rapid	1.20 to 2.40 in	
2Cg2-3 -- 44 to 80 in	silt loam	moderate	5.02 to 7.88 in	

## Map Unit Description (MN)

Roseau County, Minnesota

### 1405--Lallie mucky silt loam, map 18-22, 0 to 1 percent slopes

#### Lallie, map 18-22

*Extent:* 90 percent of the unit

*Landform(s):* 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):* 4L

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .37

*Land capability, nonirrigated* 8w

*Hydric soil:* yes

*Hydrologic group:* C/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 8 in	mucky silt loam	slow	0.94 to 1.18 in	7.4 to 8.4
Cg1..Cg6 -- 8 to 80 in	silty clay loam	slow	7.20 to 10.81 in	7.4 to 9.0

### 1428--Karlsruhe sandy loam, map 18-22, 0 to 3 percent slopes

#### Karlsruhe, map 18-22

*Extent:* 85 percent of the unit

*Landform(s):* rises on beach plains

*Slope gradient:* 0 to 3 percent

*Parent material:* beach deposits

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

*Flooding:* none

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 2

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 4e

*Hydric soil:* no

*Hydrologic group:* A/D

*Potential for frost action:* moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 8 in	sandy loam	moderately rapid	0.79 to 1.18 in	6.6 to 8.4
Bk -- 8 to 16 in	sandy loam	rapid	0.74 to 1.16 in	6.6 to 8.4
C1..C6 -- 16 to 80 in	coarse sand	very rapid	1.28 to 4.46 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### 1444--Wurtsmith loamy sand, map 22-30, 0 to 3 percent slopes

#### Wurtsmith, map 22-30

*Extent:* 85 percent of the unit

*Landform(s):* rises on lake plains

*Slope gradient:* 0 to 3 percent

*Parent material:* glaciolacustrine deposits

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

*Flooding:* none

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 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,E -- 0 to 5 in	loamy sand	rapid	0.41 to 0.61 in	4.5 to 7.3
Bw1..BC -- 5 to 45 in	sand	rapid	1.99 to 4.37 in	4.5 to 6.5
C1..C3 -- 45 to 80 in	sand	rapid	1.40 to 2.45 in	5.1 to 7.8

### 1448--Grano clay, map 18-22, 0 to 2 percent slopes

#### Grano, map 18-22

*Extent:* 90 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* glaciolacustrine deposits

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

*Flooding:* none

*Ponding:* occasional

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 4

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 2w

*Hydric soil:* yes

*Hydrologic group:* C/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap,A -- 0 to 13 in	clay	slow	1.69 to 2.21 in	6.6 to 7.8
Bg,Cg1-2 -- 13 to 54 in	clay	slow	6.14 to 7.37 in	7.4 to 8.4
Cg2-Cg3 -- 54 to 80 in	stratified silt loam to clay	slow	3.90 to 4.68 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### 1449--Grano loam, map 18-22, 0 to 2 percent slopes

#### Grano, map 18-22

*Extent:* 90 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* glaciolacustrine deposits

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

*Flooding:* none

*Ponding:* occasional

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 3

*Wind erodibility group (WEG):* 5

*Wind erodibility index (WEI):* 56

*Kw factor (surface layer)* .37

*Land capability, nonirrigated* 2w

*Hydric soil:* yes

*Hydrologic group:* C/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap,A -- 0 to 11 in	loam	moderately rapid	1.10 to 1.76 in	6.6 to 7.8
Bg-Cg1 -- 11 to 41 in	silty clay	slow	4.49 to 5.39 in	7.4 to 8.4
Cg2-Cg3 -- 41 to 80 in	stratified silt loam to clay	slow	5.85 to 7.02 in	7.4 to 8.4

### 1807--Cathro muck, ponded, map 22-30, 0 to 1 percent slopes

#### Cathro, ponded

*Extent:* 90 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic materials over glaciolacustrine deposits or till

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

*Flooding:* none

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 1

*Wind erodibility group (WEG):* 8

*Wind erodibility index (WEI):* 0

*Kw factor (surface layer)* .02

*Land capability, nonirrigated* 8w

*Hydric soil:* yes

*Hydrologic group:* B/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa1,Oa2 -- 0 to 19 in	muck	moderately rapid	8.50 to 10.39 in	
A-Cg3 -- 19 to 80 in	silt loam	moderate	6.71 to 13.43 in	

## Map Unit Description (MN)

Roseau County, Minnesota

### 1808--Markey muck, ponded, map 22-30, 0 to 1 percent slopes

#### Markey, ponded

<i>Extent:</i> 90 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> organic materials over glaciolacustrine deposits	<i>Kw factor (surface layer)</i> .02
<i>Restrictive feature(s):</i> greater than 60 inches	<i>Land capability, nonirrigated</i> 8w
<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>
Oa1,Oa2 -- 0 to 17 in	muck	moderately rapid	5.93 to 7.62 in	
A,Cg -- 17 to 80 in	fine sand	rapid	1.89 to 5.04 in	

### 1918--Croke very fine sandy loam, 0 to 2 percent slopes

#### Croke

<i>Extent:</i> 85 percent of the unit	<i>Soil loss tolerance (T factor):</i> 4
<i>Landform(s):</i> rises on lake plains	<i>Wind erodibility group (WEG):</i> 3
<i>Slope gradient:</i> 0 to 2 percent	<i>Wind erodibility index (WEI):</i> 86
<i>Parent material:</i> glaciolacustrine deposits	<i>Kw factor (surface layer)</i> .32
<i>Restrictive feature(s):</i> greater than 60 inches	<i>Land capability, nonirrigated</i> 1
<i>Flooding:</i> none	<i>Hydric soil:</i> no
<i>Ponding:</i> none	<i>Hydrologic group:</i> B
<i>Drainage class:</i> moderately well drained	<i>Potential for frost action:</i> high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 12 in	very fine sandy loam	moderately rapid	2.36 to 2.83 in	6.6 to 7.8
Bw,C1 -- 12 to 21 in	loamy very fine sand	moderately rapid	1.54 to 1.99 in	6.6 to 8.4
2C2,2C3 -- 21 to 80 in	clay	slow	5.91 to 8.86 in	7.9 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### 1923B--Garnes loam, 1 to 4 percent slopes, very stony

#### Garnes, very stony

*Extent:* 85 percent of the unit

*Landform(s):* rises on lake plains

*Slope gradient:* 1 to 4 percent

*Parent material:* glaciolacustrine deposits and till

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

*Flooding:* none

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 5

*Wind erodibility index (WEI):* 56

*Kw factor (surface layer)* .32

*Land capability, nonirrigated* 6s

*Hydric soil:* no

*Hydrologic group:* C

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap, E -- 0 to 6 in	loam	moderate	1.06 to 1.18 in	6.1 to 7.8
Bt -- 6 to 13 in	sandy clay loam	moderate	1.20 to 1.42 in	6.6 to 7.8
Bk1-C2 -- 13 to 80 in	sandy loam	moderate	9.37 to 12.72 in	7.4 to 8.4

### 1984--Leafriver muck, 0 to 1 percent slopes

#### Leafriver

*Extent:* 90 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic materials over 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:* A/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa1,Oa2 -- 0 to 13 in	muck	moderately rapid	4.55 to 6.50 in	4.5 to 7.3
Cg1,Cg2 -- 13 to 80 in	fine sand	rapid	2.01 to 5.35 in	4.5 to 7.3

## Map Unit Description (MN)

Roseau County, Minnesota

### I16F--Fluvaquents, flooded-Hapludolls complex, 0 to 30 percent slopes

#### Fluvaquents, frequently flooded

*Extent:* 55 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* alluvium

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

*Flooding:* frequent

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 2

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .15

*Land capability, nonirrigated* 6w

*Hydric soil:* yes

*Hydrologic group:* A/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 16 in	fine sandy loam	moderately rapid	2.58 to 3.87 in	6.6 to 7.8
Cg -- 16 to 80 in	stratified loamy sand to silt loam	rapid	2.55 to 12.76 in	6.6 to 7.8

#### Hapludolls, rarely flooded

*Extent:* 25 percent of the unit

*Landform(s):* escarpments on flood plains

*Slope gradient:* 2 to 30 percent

*Parent material:* glaciolacustrine deposits and/or till

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

*Flooding:* rare

*Ponding:* none

*Drainage class:* well drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 4L

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .28

*Land capability, nonirrigated* 2e

*Hydric soil:* no

*Hydrologic group:* B

*Potential for frost action:* moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 9 in	loam	moderate	1.54 to 1.99 in	6.6 to 7.8
C -- 9 to 60 in	loam	moderate	7.11 to 11.17 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### I41A--Markey muck, 0 to 1 percent slopes

#### Markey

*Extent:* 80 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic material over glaciolacustrine deposits

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

*Flooding:* none

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 1

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .02

*Land capability, nonirrigated* 6w

*Hydric soil:* yes

*Hydrologic group:* A/D

*Potential for frost action:* high

*Representative soil profile:*

*Texture*

*Permeability*

*Available water capacity*

*pH*

Oa --	0 to 32 in	muck	moderately rapid	11.16 to 14.35 in	
Cg --	32 to 60 in	fine sand	rapid	0.84 to 2.80 in	5.6 to 8.4

### I42A--Markey muck, ponded, 0 to 1 percent slopes

#### Markey, ponded

*Extent:* 85 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic material over 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)* .02

*Land capability, nonirrigated* 8w

*Hydric soil:* yes

*Hydrologic group:* A/D

*Potential for frost action:* high

*Representative soil profile:*

*Texture*

*Permeability*

*Available water capacity*

*pH*

Oa --	0 to 32 in	muck	moderately rapid	11.16 to 14.35 in	6.1 to 7.8
Cg --	32 to 60 in	fine sand	rapid	0.84 to 2.24 in	

## Map Unit Description (MN)

Roseau County, Minnesota

### I47A--Poppleton fine sand, 0 to 3 percent slopes

#### Poppleton

*Extent:* 75 percent of the unit

*Landform(s):* rises on lake plains

*Slope gradient:* 0 to 3 percent

*Parent material:* glaciolacustrine deposits

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

*Flooding:* none

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 1

*Wind erodibility index (WEI):* 250

*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>
Ap -- 0 to 6 in	fine sand	rapid	0.35 to 0.53 in	5.6 to 7.3
E -- 6 to 9 in	fine sand	rapid	0.16 to 0.22 in	6.1 to 7.8
Bw -- 9 to 40 in	fine sand	rapid	1.56 to 2.18 in	6.1 to 7.8
C -- 40 to 60 in	fine sand	rapid	0.98 to 1.38 in	6.1 to 7.8

## Map Unit Description (MN)

Roseau County, Minnesota

### I75A--Radium-Sandberg-Garborg complex, 0 to 3 percent slopes

#### Radium

<p><i>Extent:</i> 40 percent of the unit</p> <p><i>Landform(s):</i> beach ridges on lake plains</p> <p><i>Slope gradient:</i> 0 to 3 percent</p> <p><i>Parent material:</i> beach 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> .20</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>
Ap -- 0 to 14 in	loamy sand	rapid	0.85 to 1.70 in	6.1 to 7.8
Bw1-2 -- 14 to 33 in	sand	rapid	0.57 to 1.51 in	6.6 to 8.4
C1 -- 33 to 43 in	very gravelly coarse sand	very rapid	0.20 to 0.49 in	7.4 to 8.4
C2-4 -- 43 to 80 in	sand	rapid	1.11 to 3.33 in	7.4 to 8.4

#### Sandberg

<p><i>Extent:</i> 20 percent of the unit</p> <p><i>Landform(s):</i> beach ridges on lake plains</p> <p><i>Slope gradient:</i> 1 to 6 percent</p> <p><i>Parent material:</i> beach 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> 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> .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>
Ap,A -- 0 to 12 in	loamy sand	rapid	1.18 to 1.42 in	5.6 to 7.8
Bw -- 12 to 19 in	gravelly loamy coarse sand	rapid	0.21 to 0.71 in	6.1 to 7.8
Bk -- 19 to 29 in	gravelly coarse sand	very rapid	0.20 to 0.61 in	7.4 to 8.4
C -- 29 to 80 in	gravelly coarse sand	very rapid	1.02 to 2.03 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### I75A--Radium-Sandberg-Garborg complex, 0 to 3 percent slopes

#### Garborg

<p><i>Extent:</i> 15 percent of the unit</p> <p><i>Landform(s):</i> flats on lake plains, rises on lake plains</p> <p><i>Slope gradient:</i> 0 to 3 percent</p> <p><i>Parent material:</i> 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> 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>
Ap,A -- 0 to 12 in	loamy fine sand	rapid	1.18 to 1.54 in	6.1 to 7.8
Bw1-3 -- 12 to 41 in	loamy fine sand	rapid	1.75 to 3.50 in	6.6 to 8.4
BcK -- 41 to 59 in	fine sand	rapid	1.09 to 1.81 in	7.4 to 8.4
C1-2 -- 59 to 80 in	fine sand	rapid	1.25 to 2.09 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### I76A--Karlstad loamy sand, 0 to 3 percent slopes

#### Karlstad

*Extent:* 70 percent of the unit

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

*Slope gradient:* 0 to 3 percent

*Parent material:* beach deposits

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

*Flooding:* none

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .17

*Land capability, nonirrigated* 3s

*Hydric soil:* no

*Hydrologic group:* B

*Potential for frost action:* moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 6 in	loamy sand	rapid	0.53 to 0.65 in	5.6 to 7.3
E -- 6 to 7 in	loamy sand	rapid	0.06 to 0.15 in	5.6 to 7.3
Bt1 -- 7 to 10 in	sandy loam	moderately rapid	0.30 to 0.44 in	6.1 to 7.8
2Bt2 -- 10 to 14 in	gravelly sandy loam	moderately rapid	0.30 to 0.61 in	6.1 to 7.8
2C -- 14 to 80 in	stratified gravelly coarse sand to loamy fine sand	rapid	1.31 to 6.57 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### I77A--Deerwood muck, dense till, 0 to 1 percent slopes

#### Deerwood

*Extent:* 75 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic material over glaciolacustrine deposits

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

*Flooding:* none

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 1

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .02

*Land capability, nonirrigated* 6w

*Hydric soil:* yes

*Hydrologic group:* A/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa -- 0 to 10 in	muck	moderately rapid	3.44 to 4.43 in	5.6 to 7.8
A -- 10 to 12 in	loamy sand	rapid	0.18 to 0.35 in	6.1 to 8.4
Cg -- 12 to 60 in	sand	rapid	0.96 to 3.36 in	7.4 to 8.4

### I78B--Marquette loamy sand, 1 to 8 percent slopes

#### Marquette

*Extent:* 65 percent of the unit

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

*Slope gradient:* 1 to 8 percent

*Parent material:* beach deposits

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

*Flooding:* none

*Ponding:* none

*Drainage class:* excessively drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .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 7 in	loamy sand	rapid	0.64 to 0.78 in	5.6 to 7.3
Bt -- 7 to 16 in	very gravelly sandy loam	moderately rapid	0.36 to 0.81 in	6.6 to 8.4
C -- 16 to 80 in	stratified very gravelly coarse sand to fine sand	very rapid	1.28 to 2.55 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### 179A--Berner, Cathro, and Haug soils, ponded, dense till, 0 to 1 percent slopes

#### Cathro, ponded, dense till

*Extent:* 30 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

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

*Restrictive feature(s):* densic material at 30 to 50 inches

*Flooding:* none

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 1

*Wind erodibility group (WEG):* 8

*Wind erodibility index (WEI):* 0

*Kw factor (surface layer)* .02

*Land capability, nonirrigated* 8w

*Hydric soil:* yes

*Hydrologic group:* A/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa -- 0 to 40 in	muck	moderately rapid	14.06 to 18.07 in	5.6 to 7.8
A -- 40 to 42 in	loam	moderate	0.24 to 0.43 in	6.6 to 7.8
Cdg -- 42 to 80 in	loam	moderately slow	2.27 to 3.78 in	7.4 to 8.4

#### Berner, ponded, dense till

*Extent:* 30 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

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

*Restrictive feature(s):* densic material at 20 to 50 inches

*Flooding:* none

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 1

*Wind erodibility group (WEG):* 8

*Wind erodibility index (WEI):* 0

*Kw factor (surface layer)* .02

*Land capability, nonirrigated* 8w

*Hydric soil:* yes

*Hydrologic group:* A/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa -- 0 to 28 in	muck	moderately rapid	9.78 to 12.58 in	5.6 to 7.3
A -- 28 to 31 in	sandy loam	moderately rapid	0.31 to 0.57 in	6.1 to 7.3
Bg -- 31 to 44 in	sand	rapid	0.65 to 0.91 in	6.1 to 7.8
2Cdg -- 44 to 80 in	loam	moderately slow	1.79 to 3.58 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### I79A--Berner, Cathro, and Haug soils, ponded, dense till, 0 to 1 percent slopes

#### Haug, ponded

*Extent:* 30 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic material over glaciolacustrine deposits

*Restrictive feature(s):* densic material at 25 to 50 inches

*Flooding:* none

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 1

*Wind erodibility group (WEG):* 8

*Wind erodibility index (WEI):* 0

*Kw factor (surface layer)* .02

*Land capability, nonirrigated* 8w

*Hydric soil:* yes

*Hydrologic group:* C/D

*Potential for frost action:* high

#### *Representative soil profile:*

<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	6.1 to 7.8
A --	9 to 15 in	loam		moderate	0.71 to 1.30 in	6.6 to 8.4
Bkg --	15 to 30 in	loam		moderate	1.80 to 2.84 in	7.4 to 8.4
Cdg --	30 to 80 in	loam		moderately slow	2.50 to 5.00 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### I80B--Karlstad-Marquette complex, 0 to 8 percent slopes

#### Karlstad

*Extent:* 45 percent of the unit

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

*Slope gradient:* 0 to 3 percent

*Parent material:* beach deposits

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

*Flooding:* none

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .17

*Land capability, nonirrigated* 3s

*Hydric soil:* no

*Hydrologic group:* B

*Potential for frost action:* moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 6 in	loamy sand	rapid	0.53 to 0.65 in	5.6 to 7.3
E -- 6 to 7 in	loamy sand	rapid	0.06 to 0.15 in	5.6 to 7.3
Bt1 -- 7 to 10 in	sandy loam	moderately rapid	0.30 to 0.44 in	6.1 to 7.8
2Bt2 -- 10 to 14 in	gravelly sandy loam	moderately rapid	0.30 to 0.61 in	6.1 to 7.8
2C -- 14 to 80 in	stratified gravelly coarse sand to loamy fine sand	rapid	1.31 to 6.57 in	7.4 to 8.4

#### Marquette

*Extent:* 25 percent of the unit

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

*Slope gradient:* 1 to 8 percent

*Parent material:* beach deposits

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

*Flooding:* none

*Ponding:* none

*Drainage class:* excessively drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .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 7 in	loamy sand	rapid	0.64 to 0.78 in	5.6 to 7.3
Bt -- 7 to 16 in	very gravelly sandy loam	moderately rapid	0.36 to 0.81 in	6.6 to 8.4
C -- 16 to 80 in	stratified very gravelly coarse sand to fine sand	very rapid	1.28 to 2.55 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### I81A--Northwood muck, dense till, 0 to 1 percent slopes

#### Northwood, dense till

*Extent:* 70 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

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

*Restrictive feature(s):* densic material at 20 to 50 inches

*Flooding:* none

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 1

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .02

*Land capability, nonirrigated* 6w

*Hydric soil:* yes

*Hydrologic group:* B/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa -- 0 to 9 in	muck	moderately rapid	3.17 to 4.07 in	5.6 to 7.8
A -- 9 to 14 in	loamy fine sand	rapid	0.51 to 0.92 in	6.1 to 7.8
Bg -- 14 to 24 in	fine sand	rapid	0.20 to 0.98 in	6.1 to 8.4
2BCkg -- 24 to 35 in	loam	moderate	1.21 to 2.09 in	7.4 to 8.4
2Cdg -- 35 to 80 in	loam	moderately slow	2.24 to 4.49 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### I82A--Cathro muck, dense till, 0 to 1 percent slopes

#### Cathro, dense till

*Extent:* 75 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic material over till

*Restrictive feature(s):* densic material at 30 to 50 inches

*Flooding:* none

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 1

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .02

*Land capability, nonirrigated* 6w

*Hydric soil:* yes

*Hydrologic group:* A/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa -- 0 to 40 in	muck	moderately rapid	14.06 to 18.07 in	5.6 to 7.8
A -- 40 to 42 in	loam	moderate	0.24 to 0.43 in	6.6 to 7.8
Cdg -- 42 to 80 in	loam	moderately slow	2.27 to 3.78 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### I83A--Wildwood muck, dense till, 0 to 1 percent slopes

#### Wildwood

*Extent:* 75 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic material over glaciolacustrine deposits

*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

*Representative soil profile:*

			<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa --	0 to 12 in	muck		moderately rapid	4.13 to 5.31 in	5.6 to 6.5
A --	12 to 17 in	silty clay		slow	0.56 to 1.18 in	5.6 to 7.3
Bg --	17 to 24 in	clay		slow	0.57 to 0.85 in	7.4 to 8.4
Cg --	24 to 60 in	clay		slow	2.87 to 4.30 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### I84A--Percy loam, 0 to 2 percent slopes, very cobbly

#### Percy, very cobbly

*Extent:* 70 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* till

*Restrictive feature(s):* densic material at 25 to 40 inches

*Flooding:* none

*Ponding:* occasional

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 2

*Wind erodibility group (WEG):* 4L

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .32

*Land capability, nonirrigated* 3s

*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	loam	moderate	1.50 to 1.73 in	6.6 to 8.4
Bkg -- 8 to 30 in	loam	moderate	2.43 to 4.19 in	7.4 to 8.4
Cdg -- 30 to 80 in	loam	moderately slow	2.50 to 5.00 in	7.4 to 8.4

### I85A--Percy loam, 0 to 2 percent slopes, bouldery

#### Percy, bouldery

*Extent:* 65 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* till

*Restrictive feature(s):* densic material at 25 to 40 inches

*Flooding:* none

*Ponding:* occasional

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 2

*Wind erodibility group (WEG):* 4L

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .32

*Land capability, nonirrigated* 6s

*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 8 in	loam	moderate	1.50 to 1.73 in	6.6 to 8.4
Bkg -- 8 to 30 in	loam	moderate	2.43 to 4.19 in	7.4 to 8.4
Cdg -- 30 to 80 in	loam	moderately slow	2.50 to 5.00 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### I86A--Percy mucky loam, depressional, 0 to 1 percent slopes

#### Percy

*Extent:* 70 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* till

*Restrictive feature(s):* densic material at 25 to 40 inches

*Flooding:* none

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 2

*Wind erodibility group (WEG):* 4L

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .32

*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 8 in	mucky loam	moderate	1.57 to 1.73 in	6.6 to 8.4
Bkg -- 8 to 30 in	loam	moderate	2.43 to 4.19 in	7.4 to 8.4
Cdg -- 30 to 80 in	loam	moderately slow	2.50 to 5.00 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### I87A--Pelan sandy loam, dense till, 0 to 3 percent slopes

#### Pelan, dense till

*Extent:* 65 percent of the unit

*Landform(s):* rises on lake plains

*Slope gradient:* 0 to 3 percent

*Parent material:* glaciolacustrine deposits over till

*Restrictive feature(s):* densic material at 20 to 40 inches

*Flooding:* none

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 3

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .28

*Land capability, nonirrigated* 3s

*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	sandy loam	moderately rapid	0.59 to 0.83 in	6.1 to 7.3
E -- 6 to 9 in	sand	rapid	0.16 to 0.35 in	6.1 to 7.3
Bt -- 9 to 14 in	very gravelly sandy loam	moderate	0.31 to 0.61 in	6.1 to 7.8
Bw -- 14 to 32 in	very gravelly coarse sand	very rapid	0.18 to 0.71 in	7.4 to 8.4
2Cd -- 32 to 60 in	loam	moderately slow	1.40 to 2.80 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### I88A--Haug muck, 0 to 1 percent slopes

#### Haug

*Extent:* 75 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* organic material over till

*Restrictive feature(s):* densic material at 25 to 50 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 9 in	muck	moderately rapid	3.17 to 4.07 in	6.1 to 7.8
A -- 9 to 15 in	loam	moderate	0.71 to 1.30 in	6.6 to 8.4
Bkg -- 15 to 30 in	loam	moderate	1.80 to 2.84 in	7.4 to 8.4
Cdg -- 30 to 80 in	loam	moderately slow	3.00 to 5.00 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### I89A--Nereson fine sandy loam, 0 to 3 percent slopes, very cobbly

#### Nereson, very cobbly

*Extent:* 65 percent of the unit

*Landform(s):* rises on lake plains

*Slope gradient:* 0 to 3 percent

*Parent material:* till

*Restrictive feature(s):* densic material at 25 to 40 inches

*Flooding:* none

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 3

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .28

*Land capability, nonirrigated* 3s

*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 7 in	fine sandy loam	moderately rapid	0.92 to 1.20 in	6.1 to 7.3
Bt -- 7 to 11 in	sandy loam	moderate	0.35 to 0.71 in	6.6 to 7.8
2Bk -- 11 to 29 in	loam	moderate	1.99 to 3.44 in	7.4 to 8.4
2Cd -- 29 to 80 in	loam	moderately slow	2.54 to 5.08 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### 190A--Redby loamy fine sand, dense till, 0 to 3 percent slopes

#### Redby

*Extent:* 65 percent of the unit

*Landform(s):* rises on lake plains

*Slope gradient:* 0 to 3 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):* 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

### 191A--Rosewood fine sandy loam, dense till, 0 to 2 percent slopes

#### Rosewood

*Extent:* 70 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 2 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):* 2

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .15

*Land capability, nonirrigated* 3w

*Hydric soil:* yes

*Hydrologic group:* A/D

*Potential for frost action:* 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	fine sandy loam	moderately rapid	1.10 to 1.42 in	7.4 to 8.4
Bkg -- 8 to 18 in	fine sandy loam	moderately rapid	0.92 to 1.74 in	7.4 to 8.4
Cg -- 18 to 80 in	fine sand	rapid	3.09 to 6.18 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### I92A--Grano clay, dense till, 0 to 2 percent slopes

#### Grano

*Extent:* 75 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* clayey glaciolacustrine deposits

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

*Flooding:* none

*Ponding:* frequent

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 4

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .15

*Land capability, nonirrigated* 2w

*Hydric soil:* yes

*Hydrologic group:* C/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 16 in	clay	slow	2.26 to 2.91 in	7.4 to 8.4
Cg1 -- 16 to 44 in	silty clay	slow	3.91 to 4.75 in	7.4 to 8.4
Cg2 -- 44 to 60 in	silty clay	slow	2.05 to 2.52 in	7.4 to 8.4

### I94A--Strathcona fine sandy loam, dense till, 0 to 2 percent slopes

#### Strathcona, dense till

*Extent:* 65 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* glaciolacustrine deposits over till

*Restrictive feature(s):* densic material at 20 to 40 inches

*Flooding:* none

*Ponding:* occasional

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 3

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .24

*Land capability, nonirrigated* 2w

*Hydric soil:* yes

*Hydrologic group:* B/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 10 in	fine sandy loam	moderately rapid	1.57 to 1.77 in	7.4 to 8.4
Bkg -- 10 to 17 in	fine sandy loam	moderately rapid	0.64 to 1.20 in	7.4 to 8.4
Cg -- 17 to 28 in	fine sand	rapid	0.55 to 1.10 in	7.4 to 8.4
2Cdg -- 28 to 80 in	loam	moderately slow	2.60 to 5.20 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### 195A--Kratka and Strathcona soils, depressional, dense till, 0 to 1 percent slopes

#### Kratka, dense till

*Extent:* 35 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* glaciolacustrine deposits over till

*Restrictive feature(s):* densic material at 20 to 40 inches

*Flooding:* none

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 3

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 6w

*Hydric soil:* yes

*Hydrologic group:* B/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 11 in	mucky fine sandy loam	moderately rapid	1.76 to 1.98 in	6.1 to 7.8
Bg -- 11 to 18 in	loamy fine sand	rapid	0.43 to 0.78 in	6.1 to 7.8
Cg -- 18 to 25 in	fine sand	rapid	0.35 to 0.71 in	6.6 to 7.8
2Cdg -- 25 to 80 in	loam	moderately slow	2.74 to 5.47 in	7.4 to 8.4

#### Strathcona, dense till

*Extent:* 35 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* glaciolacustrine deposits over till

*Restrictive feature(s):* densic material at 20 to 40 inches

*Flooding:* none

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 3

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .24

*Land capability, nonirrigated* 6w

*Hydric soil:* yes

*Hydrologic group:* B/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 10 in	mucky fine sandy loam	rapid	1.97 to 2.95 in	7.4 to 8.4
Bkg -- 10 to 17 in	fine sandy loam	moderately rapid	0.64 to 1.20 in	7.4 to 8.4
Cg -- 17 to 28 in	fine sand	rapid	0.55 to 1.10 in	7.4 to 8.4
2Cdg -- 28 to 80 in	loam	moderately slow	2.60 to 5.20 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### 197A--Cormant loamy fine sand, dense till, 0 to 2 percent slopes

#### Cormant

*Extent:* 65 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* glaciolacustrine deposits

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

*Flooding:* none

*Ponding:* 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

### 198A--Ulen fine sandy loam, dense till, 0 to 3 percent slopes

#### Ulen

*Extent:* 65 percent of the unit

*Landform(s):* flats on lake plains

*Slope gradient:* 0 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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .10

*Land capability, nonirrigated* 3e

*Hydric soil:* no

*Hydrologic group:* A

*Potential for frost action:* moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 9 in	fine sandy loam	rapid	1.27 to 1.63 in	7.4 to 8.4
Ak -- 9 to 13 in	loamy fine sand	rapid	0.31 to 0.67 in	7.4 to 8.4
Bk -- 13 to 42 in	loamy fine sand	rapid	1.46 to 3.79 in	7.9 to 8.4
C -- 42 to 60 in	fine sand	rapid	0.89 to 1.77 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### I99A--Berner muck, dense till, 0 to 1 percent slopes

#### Berner, dense till

*Extent:* 75 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

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

*Restrictive feature(s):* densic material at 20 to 50 inches

*Flooding:* none

*Ponding:* frequent

*Drainage class:* very poorly drained

*Soil loss tolerance (T factor):* 1

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .02

*Land capability, nonirrigated* 6w

*Hydric soil:* yes

*Hydrologic group:* A/D

*Potential for frost action:* high

*Representative soil profile:*

		<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	5.6 to 7.3
A --	28 to 31 in	sandy loam	moderately rapid	0.31 to 0.57 in	6.1 to 7.3
Bg --	31 to 44 in	sand	rapid	0.65 to 0.91 in	6.1 to 7.8
2Cd <sub>g</sub> --	44 to 80 in	loam	moderately slow	1.79 to 3.58 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### I101A--Foxhome sandy loam, dense till, 0 to 3 percent slopes

#### Foxhome, dense till

*Extent:* 65 percent of the unit

*Landform(s):* rises on lake plains

*Slope gradient:* 0 to 3 percent

*Parent material:* glaciolacustrine deposits over till

*Restrictive feature(s):* densic material at 20 to 40 inches

*Flooding:* none

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 3

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .24

*Land capability, nonirrigated* 3s

*Hydric soil:* no

*Hydrologic group:* B

*Potential for frost action:* moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 10 in	sandy loam	moderately rapid	1.28 to 1.48 in	6.6 to 7.8
Bw -- 10 to 15 in	sand	rapid	0.20 to 0.46 in	6.6 to 7.8
2Bw -- 15 to 23 in	very gravelly coarse sand	very rapid	0.16 to 0.55 in	7.4 to 8.4
3Cd -- 23 to 80 in	loam	moderately slow	2.85 to 6.28 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### I102A--Mavie fine sandy loam, dense till, 0 to 2 percent slopes

#### Mavie, dense till

*Extent:* 65 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* glaciolacustrine deposits over till

*Restrictive feature(s):* densic material at 20 to 40 inches

*Flooding:* none

*Ponding:* occasional

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 3

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*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 12 in	fine sandy loam	moderately rapid	1.89 to 2.13 in	7.4 to 8.4
Bk -- 12 to 18 in	sandy loam	moderate	0.76 to 1.20 in	7.9 to 8.4
2C -- 18 to 39 in	very gravelly coarse sand	very rapid	0.42 to 1.46 in	7.4 to 8.4
3Cd -- 39 to 80 in	loam	moderately slow	2.05 to 4.09 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### I103A--Kratka fine sandy loam, dense till, 0 to 2 percent slopes

#### Kratka, dense till

*Extent:* 65 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* glaciolacustrine deposits over till

*Restrictive feature(s):* densic material at 20 to 40 inches

*Flooding:* none

*Ponding:* occasional

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 3

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 2w

*Hydric soil:* yes

*Hydrologic group:* B/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 11 in	fine sandy loam	moderately rapid	1.76 to 1.98 in	6.1 to 7.8
Bg -- 11 to 18 in	loamy fine sand	rapid	0.43 to 0.78 in	6.1 to 7.8
Cg -- 18 to 25 in	fine sand	rapid	0.35 to 0.71 in	6.6 to 7.8
2Cdg -- 25 to 80 in	loam	moderately slow	2.74 to 5.47 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### I104A--Strandquist loam, dense till, 0 to 2 percent slopes

#### Strandquist, dense till

*Extent:* 65 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* glaciolacustrine deposits over till

*Restrictive feature(s):* densic material at 20 to 40 inches

*Flooding:* none

*Ponding:* occasional

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 3

*Wind erodibility group (WEG):* 4L

*Wind erodibility index (WEI):* 86

*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>
Ap -- 0 to 10 in	loam	moderate	1.97 to 2.17 in	6.6 to 8.4
2Bg -- 10 to 24 in	very gravelly sand	very rapid	0.28 to 0.99 in	7.4 to 8.4
3BCg -- 24 to 36 in	loam	moderate	1.30 to 2.24 in	7.4 to 8.4
3Cdg -- 36 to 80 in	loam	moderately slow	2.20 to 4.41 in	7.4 to 8.4

### I105A--Hangaard sandy loam, dense till, 0 to 2 percent slopes

#### Hangaard

*Extent:* 70 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* beach 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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .15

*Land capability, nonirrigated* 4w

*Hydric soil:* yes

*Hydrologic group:* A/D

*Potential for frost action:* moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 10 in	sandy loam	moderately rapid	1.28 to 1.48 in	6.6 to 7.8
A -- 10 to 15 in	loamy sand	rapid	0.36 to 0.72 in	6.6 to 7.8
Cg -- 15 to 80 in	coarse sand	very rapid	1.30 to 3.90 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### I106A--Enstrom loamy fine sand, dense till, 0 to 3 percent slopes

#### Enstrom, dense till

*Extent:* 70 percent of the unit

*Landform(s):* rises on lake plains

*Slope gradient:* 0 to 3 percent

*Parent material:* glaciolacustrine deposits over till

*Restrictive feature(s):* densic material at 20 to 40 inches

*Flooding:* none

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 3

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .28

*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>
Ap -- 0 to 8 in	loamy fine sand	rapid	0.71 to 0.94 in	6.6 to 7.8
Bw -- 8 to 23 in	fine sand	rapid	0.75 to 1.50 in	6.6 to 8.4
C -- 23 to 33 in	fine sand	rapid	0.51 to 1.02 in	6.6 to 8.4
2Cd -- 33 to 60 in	loam	moderately slow	1.34 to 2.68 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### I107A--Syrene mucky sandy loam, depressional, dense till, 0 to 1 percent slopes

#### Syrene

*Extent:* 70 percent of the unit

*Landform(s):* depressions on lake plains

*Slope gradient:* 0 to 1 percent

*Parent material:* beach deposits

*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):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .10

*Land capability, nonirrigated* 6w

*Hydric soil:* yes

*Hydrologic group:* A/D

*Potential for frost action:* moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 11 in	mucky sandy loam	moderately rapid	1.43 to 1.98 in	7.4 to 8.4
Bkg1 -- 11 to 18 in	sandy loam	moderately rapid	0.78 to 1.35 in	7.9 to 8.4
2Bkg2 -- 18 to 28 in	stratified gravelly coarse sand to loamy fine sand	very rapid	0.20 to 0.79 in	7.4 to 8.4
2Cg -- 28 to 80 in	stratified gravelly coarse sand to loamy fine sand	very rapid	1.04 to 4.16 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### I108A--Syrene sandy loam, dense till, 0 to 2 percent slopes

#### Syrene

*Extent:* 65 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* beach glaciofluvial deposits

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

*Flooding:* none

*Ponding:* occasional

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 2

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .10

*Land capability, nonirrigated* 4w

*Hydric soil:* yes

*Hydrologic group:* A/D

*Potential for frost action:* moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 11 in	sandy loam	moderately rapid	1.43 to 1.65 in	7.4 to 8.4
Bkg1 -- 11 to 18 in	sandy loam	moderately rapid	0.78 to 1.35 in	7.9 to 8.4
2Bkg2 -- 18 to 28 in	stratified gravelly coarse sand to loamy fine sand	very rapid	0.20 to 0.79 in	7.4 to 8.4
2Cg -- 28 to 80 in	stratified gravelly coarse sand to loamy fine sand	very rapid	1.04 to 4.16 in	7.4 to 8.4

### I109A--Fluvaquents, 0 to 2 percent slopes, flooded

#### Fluvaquents, frequently flooded

*Extent:* 70 percent of the unit

*Landform(s):* flood plains

*Slope gradient:* 0 to 2 percent

*Parent material:* alluvium

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

*Flooding:* frequent

*Ponding:* frequent

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 2

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .15

*Land capability, nonirrigated* 6w

*Hydric soil:* yes

*Hydrologic group:* A/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 16 in	fine sandy loam	moderately rapid	2.58 to 3.87 in	6.6 to 7.8
Cg -- 16 to 80 in	stratified loamy sand to silt loam	rapid	2.55 to 12.76 in	6.6 to 7.8

## Map Unit Description (MN)

Roseau County, Minnesota

### I113A--Grimstad fine sandy loam, dense till, 0 to 2 percent slopes

#### Grimstad, dense till

*Extent:* 65 percent of the unit

*Landform(s):* rises on lake plains

*Slope gradient:* 0 to 2 percent

*Parent material:* glaciolacustrine deposits over till

*Restrictive feature(s):* densic material at 20 to 40 inches

*Flooding:* none

*Ponding:* none

*Drainage class:* somewhat poorly drained

*Soil loss tolerance (T factor):* 3

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .24

*Land capability, nonirrigated* 2s

*Hydric soil:* no

*Hydrologic group:* B/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 9 in	fine sandy loam	moderately rapid	1.36 to 1.63 in	7.4 to 8.4
Bk -- 9 to 22 in	loamy fine sand	rapid	1.17 to 2.21 in	7.4 to 8.4
C -- 22 to 28 in	fine sand	rapid	0.30 to 0.59 in	7.4 to 8.4
2Cd -- 28 to 60 in	loam	moderately slow	1.59 to 3.19 in	7.4 to 8.4

### I114A--Foldahl fine sandy loam, dense till, 0 to 3 percent slopes

#### Foldahl, dense till

*Extent:* 65 percent of the unit

*Landform(s):* rises on lake plains

*Slope gradient:* 0 to 3 percent

*Parent material:* glaciolacustrine deposits over till

*Restrictive feature(s):* densic material at 20 to 40 inches

*Flooding:* none

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 3

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 2s

*Hydric soil:* no

*Hydrologic group:* B

*Potential for frost action:* moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 9 in	fine sandy loam	moderately rapid	1.36 to 1.63 in	6.1 to 7.8
Bw -- 9 to 30 in	fine sand	rapid	1.46 to 2.50 in	6.6 to 7.8
2Cd -- 30 to 80 in	loam	moderately slow	2.50 to 5.50 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### I115A--Garnes fine sandy loam, dense till, 0 to 3 percent slopes, very stony

#### Garnes, dense till

*Extent:* 65 percent of the unit

*Landform(s):* rises on lake plains

*Slope gradient:* 0 to 3 percent

*Parent material:* glaciolacustrine deposits and till

*Restrictive feature(s):* densic material at 25 to 40 inches

*Flooding:* none

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 3

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .20

*Land capability, nonirrigated* 6s

*Hydric soil:* no

*Hydrologic group:* C

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 6 in	fine sandy loam	moderately rapid	0.89 to 1.06 in	6.1 to 7.3
E -- 6 to 9 in	loamy fine sand	rapid	0.19 to 0.35 in	6.1 to 7.3
Bt -- 9 to 14 in	clay loam	moderately slow	0.67 to 0.97 in	6.6 to 7.8
Bk -- 14 to 34 in	loam	moderate	2.17 to 3.74 in	7.4 to 8.4
Cd -- 34 to 80 in	loam	moderately slow	2.30 to 4.61 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### I116A--Grygla loamy fine sand, dense till, 0 to 2 percent slopes

#### Grygla, dense till

*Extent:* 65 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* glaciolacustrine deposits over till

*Restrictive feature(s):* densic material at 20 to 42 inches

*Flooding:* none

*Ponding:* occasional

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 4

*Wind erodibility group (WEG):* 2

*Wind erodibility index (WEI):* 134

*Kw factor (surface layer)* .24

*Land capability, nonirrigated* 4w

*Hydric soil:* yes

*Hydrologic group:* B/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 6 in	loamy fine sand	rapid	0.77 to 0.89 in	6.1 to 7.3
Bg -- 6 to 26 in	fine sand	rapid	1.00 to 2.21 in	6.6 to 7.8
2Bkg -- 26 to 42 in	loam	moderate	1.78 to 3.07 in	7.4 to 8.4
2Cdg -- 42 to 80 in	loam	moderately slow	1.89 to 3.78 in	7.4 to 8.4

### I117A--Skagen loam, 0 to 3 percent slopes, very cobbly

#### Skagen, very cobbly

*Extent:* 65 percent of the unit

*Landform(s):* rises on lake plains

*Slope gradient:* 0 to 3 percent

*Parent material:* till

*Restrictive feature(s):* densic material at 25 to 42 inches

*Flooding:* none

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 2

*Wind erodibility group (WEG):* 4L

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .32

*Land capability, nonirrigated* 3s

*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 9 in	loam	moderate	1.54 to 1.99 in	7.4 to 8.4
Bk -- 9 to 42 in	loam	moderate	3.64 to 6.28 in	7.4 to 8.4
Cd -- 42 to 80 in	loam	moderately slow	1.89 to 3.78 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### I118A--Poppleton fine sand, dense till, 0 to 2 percent slopes

#### Poppleton

*Extent:* 70 percent of the unit

*Landform(s):* 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:* moderately well drained

*Soil loss tolerance (T factor):* 5

*Wind erodibility group (WEG):* 1

*Wind erodibility index (WEI):* 250

*Kw factor (surface layer)* .02

*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>
Ap -- 0 to 6 in	fine sand	rapid	0.35 to 0.53 in	5.6 to 7.3
E -- 6 to 9 in	fine sand	rapid	0.16 to 0.22 in	6.1 to 7.8
Bw -- 9 to 40 in	fine sand	rapid	1.56 to 2.18 in	6.1 to 7.8
C -- 40 to 60 in	fine sand	rapid	0.98 to 1.38 in	6.1 to 7.8

### I125A--Skagen loam, 0 to 3 percent slopes

#### Skagen

*Extent:* 65 percent of the unit

*Landform(s):* rises on lake plains

*Slope gradient:* 0 to 3 percent

*Parent material:* till

*Restrictive feature(s):* densic material at 25 to 42 inches

*Flooding:* none

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 2

*Wind erodibility group (WEG):* 4L

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .32

*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 9 in	loam	moderate	1.54 to 1.99 in	7.4 to 8.4
Bk -- 9 to 42 in	loam	moderate	3.64 to 6.28 in	7.4 to 8.4
Cd -- 42 to 80 in	loam	moderately slow	1.89 to 3.78 in	7.4 to 8.4

## Map Unit Description (MN)

Roseau County, Minnesota

### I126A--Nereson fine sandy loam, 0 to 3 percent slopes

#### Nereson

*Extent:* 65 percent of the unit

*Landform(s):* rises on lake plains

*Slope gradient:* 0 to 3 percent

*Parent material:* till

*Restrictive feature(s):* densic material at 25 to 40 inches

*Flooding:* none

*Ponding:* none

*Drainage class:* moderately well drained

*Soil loss tolerance (T factor):* 3

*Wind erodibility group (WEG):* 3

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .28

*Land capability, nonirrigated* 1

*Hydric soil:* no

*Hydrologic group:* C

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 7 in	fine sandy loam	moderately rapid	0.99 to 1.20 in	6.1 to 7.3
Bt -- 7 to 11 in	sandy loam	moderate	0.35 to 0.71 in	6.6 to 7.8
2Bk -- 11 to 29 in	loam	moderate	1.99 to 3.44 in	7.4 to 8.4
2Cd -- 29 to 80 in	loam	moderately slow	2.54 to 5.08 in	7.4 to 8.4

### I127A--Percy loam, 0 to 2 percent slopes

#### Percy

*Extent:* 70 percent of the unit

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

*Slope gradient:* 0 to 2 percent

*Parent material:* till

*Restrictive feature(s):* densic material at 25 to 40 inches

*Flooding:* none

*Ponding:* occasional

*Drainage class:* poorly drained

*Soil loss tolerance (T factor):* 2

*Wind erodibility group (WEG):* 4L

*Wind erodibility index (WEI):* 86

*Kw factor (surface layer)* .32

*Land capability, nonirrigated* 2w

*Hydric soil:* yes

*Hydrologic group:* C/D

*Potential for frost action:* high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 8 in	loam	moderate	1.50 to 1.73 in	6.6 to 8.4
Bkg -- 8 to 30 in	loam	moderate	2.43 to 4.19 in	7.4 to 8.4
Cdg -- 30 to 80 in	loam	moderately slow	2.50 to 5.00 in	7.4 to 8.4

# Map Unit Description (MN)

Roseau County, Minnesota

## W--Water

### Water

*Extent:* 100 percent of the unit

*Landform(s):*

*Slope gradient:*

*Parent material:*

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

*Flooding:*

*Ponding:*

*Drainage class:*

*Soil loss tolerance (T factor):*

*Wind erodibility group (WEG):*

*Wind erodibility index (WEI):*

*Kw factor (surface layer)*

*Land capability, nonirrigated*

*Hydric soil:*

*Hydrologic group:*

*Potential for frost action:*

*Representative soil profile:*

*Texture*

*Permeability*

*Available water  
capacity*

*pH*

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.