

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

[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]

1003B--Udorthents, loamy (cut and fill land)

Udorthents, loamy, (cut and fill land)

Extent: 100 percent of the unit

Landform(s):

Slope gradient: 0 to 6 percent

Parent material: variable soil material

Restrictive feature(s): greater than 60 inches

Flooding:

Ponding:

Drainage class: well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer)

Land capability, nonirrigated

Hydric soil: unranked

Hydrologic group: B

Potential for frost action:

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

1007--Udorthents, shallow (sanitary landfill)

Udorthents, shallow, (sanitary landfill)

Extent: 100 percent of the unit

Landform(s):

Slope gradient:

Parent material: variable soil material

Restrictive feature(s): greater than 60 inches

Flooding:

Ponding:

Drainage class: well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer)

Land capability, nonirrigated

Hydric soil:

Hydrologic group: B

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)

St. Louis County, Minnesota, Embarrass Part

1012A--Lobo-Waskish complex, 0 to 2 percent slopes

Lobo

Extent: 50 to 80 percent of the unit

Landform(s): raised bogs on end moraines, raised bogs on outwash plains, raised bogs on till plains

Slope gradient: 0 to 2 percent

Parent material: organic material

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: very poorly drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 7

Wind erodibility index (WEI): 38

Kw factor (surface layer) .02

Land capability, nonirrigated 7w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|-----------|
| Oi -- 0 to 38 in | peat | very rapid | 21.00 to 24.82 in | |
| Oe -- 38 to 80 in | mucky peat | rapid | 18.78 to 22.95 in | |

Waskish

Extent: 20 to 50 percent of the unit

Landform(s): raised bogs on end moraines, raised bogs on outwash plains, raised bogs on till plains

Slope gradient: 0 to 2 percent

Parent material: organic material

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: very poorly drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 7

Wind erodibility index (WEI): 38

Kw factor (surface layer) .02

Land capability, nonirrigated 7w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|-----------|
| Oi -- 0 to 14 in | peat | very rapid | 7.80 to 9.21 in | |
| Oa -- 14 to 16 in | muck | moderately rapid | 0.69 to 0.89 in | |
| Oi -- 16 to 80 in | mucky peat | very rapid | 35.08 to 41.46 in | |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

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

Bowstring, frequently flooded

Extent: 0 to 90 percent of the unit

Landform(s): flats on flood plains

Slope gradient: 0 to 1 percent

Parent material: organic materials mixed with alluvium

Restrictive feature(s): greater than 60 inches

Flooding: frequent

Ponding: none

Drainage class: very poorly drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw factor (surface layer) .02

Land capability, nonirrigated 7w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|---|---------------------|---------------------------------|------------|
| Oa -- 0 to 38 in | muck | moderately rapid | 13.37 to 17.19 in | |
| Cg -- 38 to 47 in | stratified fine sand to loamy fine sand | rapid | 0.43 to 0.87 in | 5.6 to 7.3 |
| O'a -- 47 to 80 in | muck | moderately rapid | 11.57 to 14.88 in | |

Fluvaquents, frequently flooded, very poorly drained

Extent: 0 to 90 percent of the unit

Landform(s): flats on flood plains

Slope gradient: 0 to 1 percent

Parent material: alluvium

Restrictive feature(s): greater than 60 inches

Flooding: frequent

Ponding: none

Drainage class: very poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .24

Land capability, nonirrigated 7w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|---|---------------------|---------------------------------|------------|
| A -- 0 to 6 in | mucky silt loam | moderate | 1.18 to 1.42 in | 5.6 to 7.3 |
| Cg -- 6 to 80 in | stratified silt loam to loamy coarse sand | moderately rapid | 4.44 to 16.28 in | 5.6 to 7.3 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

1021A--Rifle soils, 0 to 1 percent slopes

Rifle

| | |
|---|--|
| <i>Extent:</i> 0 to 95 percent of the unit | <i>Soil loss tolerance (T factor):</i> 3 |
| <i>Landform(s):</i> swamps on end moraines, swamps on outwash plains, swamps on till plains | <i>Wind erodibility group (WEG):</i> 5 |
| <i>Slope gradient:</i> 0 to 1 percent | <i>Wind erodibility index (WEI):</i> 56 |
| <i>Parent material:</i> organic material | <i>Kw factor (surface layer)</i> .02 |
| <i>Restrictive feature(s):</i> greater than 60 inches | <i>Land capability, nonirrigated</i> 7w |
| <i>Flooding:</i> none | <i>Hydric soil:</i> yes |
| <i>Ponding:</i> frequent | <i>Hydrologic group:</i> D |
| <i>Drainage class:</i> very poorly drained | <i>Potential for frost action:</i> high |

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|-----------|
| Oe1 -- 0 to 12 in | mucky peat | rapid | 5.31 to 6.50 in | |
| Oe2 -- 12 to 42 in | mucky peat | rapid | 13.64 to 16.67 in | |
| Oa -- 42 to 52 in | muck | moderately rapid | 3.44 to 4.43 in | |
| Oe3 -- 52 to 80 in | mucky peat | rapid | 12.58 to 15.37 in | |

Rifle, depressional

| | |
|---|--|
| <i>Extent:</i> 0 to 95 percent of the unit | <i>Soil loss tolerance (T factor):</i> 3 |
| <i>Landform(s):</i> swamps on end moraines, swamps on outwash plains, swamps on till plains | <i>Wind erodibility group (WEG):</i> 5 |
| <i>Slope gradient:</i> 0 to 1 percent | <i>Wind erodibility index (WEI):</i> 56 |
| <i>Parent material:</i> organic material | <i>Kw factor (surface layer)</i> .02 |
| <i>Restrictive feature(s):</i> greater than 60 inches | <i>Land capability, nonirrigated</i> 7w |
| <i>Flooding:</i> none | <i>Hydric soil:</i> yes |
| <i>Ponding:</i> frequent | <i>Hydrologic group:</i> D |
| <i>Drainage class:</i> very poorly drained | <i>Potential for frost action:</i> high |

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|-----------|
| Oe1 -- 0 to 12 in | mucky peat | rapid | 5.31 to 6.50 in | |
| Oe2 -- 12 to 42 in | mucky peat | rapid | 13.64 to 16.67 in | |
| Oa -- 42 to 52 in | muck | moderately rapid | 3.44 to 4.43 in | |
| Oe3 -- 52 to 80 in | mucky peat | rapid | 12.58 to 15.37 in | |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

1022A--Greenwood soils, 0 to 1 percent slopes

Greenwood

| | |
|--|--|
| <i>Extent:</i> 0 to 95 percent of the unit | <i>Soil loss tolerance (T factor):</i> 3 |
| <i>Landform(s):</i> bogs on end moraines, bogs on outwash plains, bogs on till plains | <i>Wind erodibility group (WEG):</i> 7 |
| <i>Slope gradient:</i> 0 to 1 percent | <i>Wind erodibility index (WEI):</i> 38 |
| <i>Parent material:</i> organic material | <i>Kw factor (surface layer)</i> .02 |
| <i>Restrictive feature(s):</i> greater than 60 inches | <i>Land capability, nonirrigated</i> 7w |
| <i>Flooding:</i> none | <i>Hydric soil:</i> yes |
| <i>Ponding:</i> none | <i>Hydrologic group:</i> D |
| <i>Drainage class:</i> very poorly drained | <i>Potential for frost action:</i> high |

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|-----------|
| Oi -- 0 to 10 in | peat | very rapid | 5.41 to 6.40 in | |
| Oe1 -- 10 to 24 in | mucky peat | rapid | 6.38 to 7.80 in | |
| Oe2 -- 24 to 80 in | mucky peat | rapid | 25.16 to 30.75 in | |

Greenwood, depressional

| | |
|--|--|
| <i>Extent:</i> 0 to 95 percent of the unit | <i>Soil loss tolerance (T factor):</i> 3 |
| <i>Landform(s):</i> bogs on end moraines, bogs on outwash plains, bogs on till plains | <i>Wind erodibility group (WEG):</i> 7 |
| <i>Slope gradient:</i> 0 to 1 percent | <i>Wind erodibility index (WEI):</i> 38 |
| <i>Parent material:</i> organic material | <i>Kw factor (surface layer)</i> .02 |
| <i>Restrictive feature(s):</i> greater than 60 inches | <i>Land capability, nonirrigated</i> 7w |
| <i>Flooding:</i> none | <i>Hydric soil:</i> yes |
| <i>Ponding:</i> frequent | <i>Hydrologic group:</i> D |
| <i>Drainage class:</i> very poorly drained | <i>Potential for frost action:</i> high |

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|-----------|
| Oi -- 0 to 10 in | peat | very rapid | 5.41 to 6.40 in | |
| Oe1 -- 10 to 24 in | mucky peat | rapid | 6.38 to 7.80 in | |
| Oe2 -- 24 to 80 in | mucky peat | rapid | 25.16 to 30.75 in | |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

1048--Dumps, iron mine

Dumps, iron mine

Extent: 100 percent of the unit

Landform(s):

Slope gradient:

Parent material: variable soil material

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class:

Soil loss tolerance (T factor): 5

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> |
|-------------------------------------|----------------|---------------------|---------------------------------|-----------|
| | | | | |

1049--Pits, iron mine

Pits, iron mine

Extent: 100 percent of the unit

Landform(s): moraines

Slope gradient:

Parent material: variable soil material

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class:

Soil loss tolerance (T factor): 5

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)

St. Louis County, Minnesota, Embarrass Part

1050--Tailings basin

Tailings basin

Extent: 100 percent of the unit

Landform(s):

Slope gradient:

Parent material:

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class:

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Kw factor (surface layer)

Land capability, nonirrigated

Hydric soil: unranked

Hydrologic group:

Potential for frost action:

Representative soil profile:

Texture

Permeability

*Available water
capacity*

pH

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

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

Indus

Extent: 55 to 80 percent of the unit

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

Slope gradient: 0 to 2 percent

Parent material: clayey glaciolacustrine sediments

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 4

Wind erodibility index (WEI): 86

Kw factor (surface layer) .32

Land capability, nonirrigated 4w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

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

Dora, depressional

Extent: 20 to 40 percent of the unit

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

Slope gradient: 0 to 1 percent

Parent material: organic material over clayey glaciolacustrine sediments

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 2

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .02

Land capability, nonirrigated 7w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|-----------------------|---------------------|---------------------------------|------------|
| Oe -- 0 to 6 in | mucky peat | rapid | 2.66 to 3.25 in | |
| Oa -- 6 to 22 in | muck | moderately rapid | 6.46 to 7.26 in | |
| A -- 22 to 26 in | mucky silty clay loam | slow | 0.59 to 1.18 in | 6.1 to 7.3 |
| Cg1 -- 26 to 36 in | clay | very slow | 0.79 to 0.98 in | 6.6 to 7.8 |
| Cg2 -- 36 to 80 in | clay | very slow | 3.53 to 5.29 in | 7.4 to 8.4 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

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

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B6B--Morcom-Thistledeew complex, 0 to 6 percent slopes

Morcom

Extent: 40 to 60 percent of the unit

Landform(s): lake plains

Slope gradient: 0 to 4 percent

Parent material: sandy outwash and/or beach deposits over glaciolacustrine sediments

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 3w

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|-----------------|---------------------|---------------------------------|------------|
| A -- 0 to 3 in | fine sandy loam | moderately rapid | 0.50 to 0.57 in | 5.1 to 6.5 |
| E -- 3 to 8 in | sandy loam | moderately rapid | 0.47 to 0.76 in | 5.1 to 6.5 |
| Bw -- 8 to 19 in | loamy sand | rapid | 0.88 to 1.21 in | 5.1 to 6.5 |
| 2B/E -- 19 to 24 in | sandy clay loam | moderate | 0.72 to 0.97 in | 5.6 to 7.3 |
| 3Bt -- 24 to 28 in | clay | very slow | 0.31 to 0.47 in | 5.6 to 7.3 |
| 3Bk -- 28 to 44 in | clay | very slow | 1.29 to 1.94 in | 7.4 to 8.4 |
| 3C -- 44 to 80 in | clay | very slow | 2.87 to 4.30 in | 7.4 to 8.4 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

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

Thistledew

Extent: 20 to 40 percent of the unit

Landform(s): lake plains

Slope gradient: 1 to 6 percent

Parent material: sandy outwash and/or beach deposits over glaciolacustrine sediments

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw factor (surface layer) .15

Land capability, nonirrigated 3s

Hydric soil: no

Hydrologic group: B

Potential for frost action: low

Representative soil profile:

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

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B7D--Udorthents, slumped-Thistledeew-Taylor complex, 10 to 25 percent slopes

Udorthents, slumped

| | |
|--|--|
| <p><i>Extent:</i> 40 to 60 percent of the unit</p> <p><i>Landform(s):</i> lake plains</p> <p><i>Slope gradient:</i> 10 to 25 percent</p> <p><i>Parent material:</i> glaciolacustrine sediments and outwash</p> <p><i>Restrictive feature(s):</i> greater than 60 inches</p> <p><i>Flooding:</i> none</p> <p><i>Ponding:</i> none</p> <p><i>Drainage class:</i> moderately well drained</p> | <p><i>Soil loss tolerance (T factor):</i> 5</p> <p><i>Wind erodibility group (WEG):</i> 6</p> <p><i>Wind erodibility index (WEI):</i> 48</p> <p><i>Kw factor (surface layer)</i> .28</p> <p><i>Land capability, nonirrigated</i> 4e</p> <p><i>Hydric soil:</i> no</p> <p><i>Hydrologic group:</i> C</p> <p><i>Potential for frost action:</i> moderate</p> |
|--|--|

| <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 1.13 in | 5.1 to 6.5 |
| C1 -- 5 to 18 in | fine sandy loam | moderate | 1.95 to 2.47 in | 5.1 to 7.3 |
| C2 -- 18 to 28 in | loamy fine sand | rapid | 0.49 to 0.98 in | 5.6 to 7.3 |
| 2C3 -- 28 to 50 in | stratified fine sandy loam to clay loam | moderately slow | 3.09 to 4.19 in | 5.6 to 7.8 |
| 3C4 -- 50 to 80 in | silty clay | very slow | 2.39 to 3.59 in | 7.4 to 8.4 |

Thistledeew

| | |
|---|--|
| <p><i>Extent:</i> 20 to 40 percent of the unit</p> <p><i>Landform(s):</i> lake plains</p> <p><i>Slope gradient:</i> 10 to 25 percent</p> <p><i>Parent material:</i> sandy outwash and/or beach deposits over glaciolacustrine sediments</p> <p><i>Restrictive feature(s):</i> greater than 60 inches</p> <p><i>Flooding:</i> none</p> <p><i>Ponding:</i> none</p> <p><i>Drainage class:</i> moderately well drained</p> | <p><i>Soil loss tolerance (T factor):</i> 5</p> <p><i>Wind erodibility group (WEG):</i> 2</p> <p><i>Wind erodibility index (WEI):</i> 134</p> <p><i>Kw factor (surface layer)</i> .15</p> <p><i>Land capability, nonirrigated</i> 4e</p> <p><i>Hydric soil:</i> no</p> <p><i>Hydrologic group:</i> B</p> <p><i>Potential for frost action:</i> low</p> |
|---|--|

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

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B7D--Udorthents, slumped-Thistledew-Taylor complex, 10 to 25 percent slopes

Taylor

Extent: 10 to 20 percent of the unit

Landform(s): lake plains

Slope gradient: 10 to 25 percent

Parent material: clayey glaciolacustrine sediments

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): 4

Wind erodibility index (WEI): 86

Kw factor (surface layer) .32

Land capability, nonirrigated 4e

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|-----------------|---------------------|---------------------------------|------------|
| A -- 0 to 4 in | silty clay loam | moderately slow | 0.83 to 0.91 in | 5.1 to 6.5 |
| E -- 4 to 10 in | silty clay loam | moderately slow | 0.77 to 1.18 in | 5.1 to 7.3 |
| B/E -- 10 to 14 in | silty clay | slow | 0.56 to 0.87 in | 5.6 to 7.3 |
| Bt -- 14 to 30 in | clay | very slow | 1.26 to 1.57 in | 5.6 to 7.3 |
| BC -- 30 to 38 in | clay | very slow | 0.66 to 0.99 in | 7.4 to 8.4 |
| C -- 38 to 80 in | clay | very slow | 3.34 to 5.01 in | 7.4 to 8.4 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B8A--Bearville loamy sand, 0 to 2 percent slopes

Bearville

Extent: 65 to 85 percent of the unit

Landform(s): flats on lake plains

Slope gradient: 0 to 2 percent

Parent material: sandy outwash and/or beach deposits over glaciolacustrine sediments

Restrictive feature(s): abrupt textural change at 10 to 20 i

Flooding: none

Ponding: none

Drainage class: poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw factor (surface layer) .15

Land capability, nonirrigated 4w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

Representative soil profile:

| | | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|----------|-------------|-----------------|---------------------|---------------------------------|------------|
| A -- | 0 to 2 in | loamy sand | rapid | 0.20 to 0.24 in | 5.1 to 6.5 |
| Eg -- | 2 to 16 in | loamy sand | rapid | 1.13 to 1.56 in | 5.1 to 6.5 |
| 2Btg1 -- | 16 to 25 in | sandy clay loam | moderate | 1.27 to 1.72 in | 5.6 to 7.3 |
| 3Btg2 -- | 25 to 35 in | clay | very slow | 0.79 to 1.18 in | 5.6 to 7.3 |
| 3BCg -- | 35 to 80 in | clay | very slow | 3.59 to 5.39 in | 7.4 to 8.4 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B10D--Rollins sandy loam, 8 to 18 percent slopes

Rollins

Extent: 80 to 90 percent of the unit

Landform(s): kames

Slope gradient: 8 to 18 percent

Parent material: loamy material over gravelly outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat excessively drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .20

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: A

Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|---------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 5 in | sandy loam | moderately rapid | 0.51 to 0.72 in | 4.5 to 6.0 |
| Bw -- 5 to 14 in | gravelly sandy loam | moderately rapid | 0.81 to 1.45 in | 4.5 to 6.0 |
| 2BC -- 14 to 25 in | very gravelly sand | rapid | 0.22 to 0.55 in | 4.5 to 6.0 |
| 2C -- 25 to 80 in | very gravelly coarse sand | very rapid | 0.55 to 2.74 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B11B--Taylor-Taylor, sandy substratum, complex, 2 to 6 percent slopes

Taylor

Extent: 40 to 60 percent of the unit

Landform(s): kames

Slope gradient: 2 to 6 percent

Parent material: clayey glaciolacustrine sediments

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): 4

Wind erodibility index (WEI): 86

Kw factor (surface layer) .32

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> |
|-------------------------------------|-----------------|---------------------|---------------------------------|------------|
| A -- 0 to 4 in | silty clay loam | moderately slow | 0.83 to 0.91 in | 5.1 to 6.5 |
| E -- 4 to 10 in | silty clay loam | moderately slow | 0.77 to 1.18 in | 5.1 to 7.3 |
| B/E -- 10 to 14 in | silty clay | slow | 0.56 to 0.87 in | 5.6 to 7.3 |
| Bt -- 14 to 30 in | clay | very slow | 1.26 to 1.57 in | 5.6 to 7.3 |
| BC -- 30 to 38 in | clay | very slow | 0.66 to 0.99 in | 7.4 to 8.4 |
| C -- 38 to 80 in | clay | very slow | 3.34 to 5.01 in | 7.4 to 8.4 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B11B--Taylor-Taylor, sandy substratum, complex, 2 to 6 percent slopes

Taylor, sandy substratum

Extent: 30 to 50 percent of the unit

Landform(s): kames

Slope gradient: 2 to 6 percent

Parent material: clayey glaciolacustrine sediments over sandy outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 4

Wind erodibility index (WEI): 86

Kw factor (surface layer) .32

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> |
|-------------------------------------|----------------------|---------------------|---------------------------------|------------|
| A -- 0 to 4 in | silty clay loam | moderately slow | 0.83 to 0.91 in | 5.1 to 6.5 |
| E -- 4 to 10 in | silty clay loam | moderately slow | 0.77 to 1.18 in | 5.1 to 7.3 |
| B/E -- 10 to 14 in | silty clay | slow | 0.56 to 0.87 in | 5.6 to 7.3 |
| Bt -- 14 to 30 in | clay | very slow | 1.26 to 1.57 in | 5.6 to 7.3 |
| BC -- 30 to 63 in | clay | very slow | 2.65 to 3.97 in | 7.4 to 8.4 |
| 2C -- 63 to 80 in | gravelly coarse sand | very rapid | 0.34 to 1.02 in | 6.6 to 7.8 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B13B--Graycalm-Grayling complex, 1 to 8 percent slopes

Graycalm

Extent: 30 to 60 percent of the unit
Landform(s): outwash plains
Slope gradient: 1 to 8 percent
Parent material: sandy outwash
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: somewhat excessively drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 2
Wind erodibility index (WEI): 134
Kw factor (surface layer) .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 | 4.5 to 6.0 |
| Bw -- 2 to 37 in | loamy sand | rapid | 2.10 to 3.85 in | 4.5 to 6.0 |
| E and Bt -- 37 to 48 in | sand | rapid | 0.55 to 0.99 in | 5.1 to 6.0 |
| C -- 48 to 80 in | coarse sand | very rapid | 0.64 to 2.23 in | 5.1 to 6.5 |

Grayling

Extent: 30 to 50 percent of the unit
Landform(s): outwash plains
Slope gradient: 1 to 8 percent
Parent material: sandy outwash
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: 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 3 in | loamy sand | rapid | 0.25 to 0.38 in | 4.5 to 6.0 |
| Bw -- 3 to 22 in | coarse sand | very rapid | 0.57 to 1.70 in | 4.5 to 6.0 |
| C -- 22 to 80 in | coarse sand | very rapid | 1.16 to 4.05 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B14A--Greenwood soils, upham basin, 0 to 1 percent slopes

Greenwood

Extent: 0 to 95 percent of the unit

Landform(s): bogs on lake plains

Slope gradient: 0 to 1 percent

Parent material: organic material

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: very poorly drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 7

Wind erodibility index (WEI): 38

Kw factor (surface layer) .02

Land capability, nonirrigated 7w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|-----------|
| Oi -- 0 to 10 in | peat | very rapid | 5.41 to 6.40 in | |
| Oe1 -- 10 to 24 in | mucky peat | rapid | 6.38 to 7.80 in | |
| Oe2 -- 24 to 80 in | mucky peat | rapid | 25.16 to 30.75 in | |

Greenwood, depressional

Extent: 0 to 95 percent of the unit

Landform(s): bogs on lake plains

Slope gradient: 0 to 1 percent

Parent material: organic material

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 7

Wind erodibility index (WEI): 38

Kw factor (surface layer) .02

Land capability, nonirrigated 7w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|-----------|
| Oi -- 0 to 10 in | peat | very rapid | 5.41 to 6.40 in | |
| Oe1 -- 10 to 24 in | mucky peat | rapid | 6.38 to 7.80 in | |
| Oe2 -- 24 to 80 in | mucky peat | rapid | 25.16 to 30.75 in | |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B16B--Westoo-Barber-Vasso complex, 0 to 6 percent slopes

Westoo

Extent: 20 to 40 percent of the unit

Landform(s): lake plains, outwash plains

Slope gradient: 1 to 6 percent

Parent material: eolian deposits and/or 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: low

Representative soil profile:

| | | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|--------|-------------|-----------------|---------------------|---------------------------------|------------|
| A -- | 0 to 5 in | loamy fine sand | rapid | 0.51 to 0.67 in | 4.5 to 6.0 |
| Bw1 -- | 5 to 17 in | loamy fine sand | rapid | 1.06 to 1.89 in | 4.5 to 6.5 |
| Bw2 -- | 17 to 44 in | loamy fine sand | rapid | 1.63 to 2.72 in | 5.1 to 6.5 |
| C -- | 44 to 74 in | fine sand | rapid | 1.80 to 2.99 in | 5.1 to 6.5 |
| Cg -- | 74 to 80 in | fine sand | rapid | 0.35 to 0.59 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B16B--Westoo-Barber-Vasso complex, 0 to 6 percent slopes

Barber

Extent: 20 to 40 percent of the unit

Landform(s): lake plains, outwash plains

Slope gradient: 0 to 4 percent

Parent material: eolian deposits and/or 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): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .20

Land capability, nonirrigated 3s

Hydric soil: no

Hydrologic group: C

Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|-----------------|---------------------|---------------------------------|------------|
| A -- 0 to 5 in | fine sandy loam | moderately rapid | 0.82 to 0.92 in | 4.5 to 6.0 |
| E -- 5 to 8 in | fine sandy loam | moderately rapid | 0.28 to 0.47 in | 4.5 to 6.0 |
| Bw1 -- 8 to 19 in | loamy fine sand | rapid | 1.10 to 1.76 in | 4.5 to 6.5 |
| Bw2 -- 19 to 27 in | loamy fine sand | rapid | 0.50 to 0.83 in | 5.1 to 6.5 |
| Bg -- 27 to 53 in | fine sand | rapid | 1.56 to 2.60 in | 5.1 to 6.5 |
| C -- 53 to 80 in | fine sand | rapid | 1.61 to 2.68 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B16B--Westoo-Barber-Vasso complex, 0 to 6 percent slopes

Vasso

Extent: 15 to 25 percent of the unit

Landform(s): lake plains, outwash plains

Slope gradient: 0 to 4 percent

Parent material: sandy eolian, glaciolacustrine or outwash material and underlying loamy glaciolacustrine sediments

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) .20

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> |
|-------------------------------------|-------------|-----------------|---------------------|---------------------------------|------------|
| A -- | 0 to 4 in | fine sandy loam | moderately rapid | 0.63 to 0.75 in | 4.5 to 6.0 |
| E -- | 4 to 6 in | fine sandy loam | moderately rapid | 0.18 to 0.33 in | 4.5 to 6.0 |
| Bw1 -- | 6 to 18 in | loamy fine sand | rapid | 0.37 to 1.22 in | 4.5 to 6.5 |
| Bw2 -- | 18 to 38 in | fine sand | rapid | 0.60 to 2.01 in | 5.1 to 6.5 |
| 2Bg -- | 38 to 50 in | silt loam | moderate | 2.01 to 2.60 in | 5.6 to 6.5 |
| 2Cg -- | 50 to 80 in | silt loam | moderate | 5.09 to 6.58 in | 5.6 to 7.8 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B17B--Graycalm-Biwabik complex, 1 to 6 percent slopes

Graycalm

Extent: 45 to 65 percent of the unit
Landform(s): outwash plains
Slope gradient: 1 to 6 percent
Parent material: sandy outwash
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: somewhat 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 | 4.5 to 6.0 |
| Bw -- 2 to 37 in | loamy sand | rapid | 2.10 to 3.85 in | 4.5 to 6.0 |
| E and Bt -- 37 to 48 in | sand | rapid | 0.55 to 0.99 in | 5.1 to 6.0 |
| C -- 48 to 80 in | coarse sand | very rapid | 0.64 to 2.23 in | 5.1 to 6.5 |

Biwabik

Extent: 30 to 50 percent of the unit
Landform(s): outwash plains
Slope gradient: 1 to 6 percent
Parent material: gravelly outwash
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: excessively drained

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

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B17D--Graycalm-Biwabik complex, pitted, 6 to 25 percent slopes

Graycalm

Extent: 40 to 65 percent of the unit
Landform(s): pitted outwash plains
Slope gradient: 6 to 25 percent
Parent material: sandy outwash
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: somewhat excessively drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 2
Wind erodibility index (WEI): 134
Kw factor (surface layer) .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 | 4.5 to 6.0 |
| Bw -- 2 to 37 in | loamy sand | rapid | 2.10 to 3.85 in | 4.5 to 6.0 |
| E and Bt -- 37 to 48 in | sand | rapid | 0.55 to 0.99 in | 5.1 to 6.0 |
| C -- 48 to 80 in | coarse sand | very rapid | 0.64 to 2.23 in | 5.1 to 6.5 |

Biwabik

Extent: 20 to 50 percent of the unit
Landform(s): pitted outwash plains
Slope gradient: 6 to 25 percent
Parent material: gravelly outwash
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: excessively drained

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

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

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

Foglake

Extent: 40 to 60 percent of the unit

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

Slope gradient: 0 to 2 percent

Parent material: glaciolacustrine deposits

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .24

Land capability, nonirrigated 3w

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

Hassman, depressional

Extent: 20 to 40 percent of the unit

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

Slope gradient: 0 to 1 percent

Parent material: glaciolacustrine deposits

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 7

Wind erodibility index (WEI): 38

Kw factor (surface layer) .28

Land capability, nonirrigated 6w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

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

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

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

Longsiding

Extent: 35 to 60 percent of the unit

Landform(s): lake plains

Slope gradient: 1 to 4 percent

Parent material: glaciolacustrine deposits

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 2w

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

Foglake

Extent: 15 to 35 percent of the unit

Landform(s): lake plains

Slope gradient: 0 to 2 percent

Parent material: glaciolacustrine deposits

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .24

Land capability, nonirrigated 3w

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

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

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

Grasston

Extent: 10 to 20 percent of the unit

Landform(s): lake plains

Slope gradient: 3 to 6 percent

Parent material: glaciolacustrine deposits

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 2e

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

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

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

Effie

Extent: 50 to 65 percent of the unit

Landform(s): flats on moraines

Slope gradient: 0 to 1 percent

Parent material: fine-loamy till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .20

Land capability, nonirrigated 4w

Hydric soil: yes

Hydrologic group: C

Potential for frost action: high

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|-----------------|---------------------|---------------------------------|------------|
| A -- 0 to 2 in | loam | moderate | 0.39 to 0.43 in | 5.1 to 7.3 |
| Eg -- 2 to 5 in | loam | moderate | 0.47 to 0.69 in | 5.1 to 7.3 |
| BE -- 5 to 8 in | silty clay loam | slow | 0.39 to 0.52 in | 5.1 to 7.3 |
| Btg -- 8 to 20 in | silty clay | slow | 1.22 to 2.20 in | 5.1 to 7.8 |
| BCg -- 20 to 64 in | silty clay loam | moderately slow | 6.17 to 7.94 in | 7.4 to 8.4 |
| Cg -- 64 to 80 in | clay loam | moderately slow | 2.20 to 2.83 in | 7.4 to 8.4 |

Ashlake

Extent: 30 to 45 percent of the unit

Landform(s): rises on moraines

Slope gradient: 1 to 2 percent

Parent material: fine-loamy till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .20

Land capability, nonirrigated 3w

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|------------|
| A -- 0 to 1 in | loam | moderate | 0.24 to 0.26 in | 5.1 to 7.3 |
| E -- 1 to 4 in | loam | moderate | 0.36 to 0.52 in | 5.1 to 7.3 |
| E/B -- 4 to 9 in | loam | moderate | 0.72 to 0.97 in | 5.1 to 7.3 |
| Bt -- 9 to 26 in | silty clay | slow | 1.69 to 3.05 in | 5.1 to 7.3 |
| Bk -- 26 to 80 in | clay loam | moderately slow | 7.55 to 9.71 in | 7.4 to 8.4 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

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

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

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

Ashlake

Extent: 25 to 50 percent of the unit

Landform(s): moraines

Slope gradient: 0 to 3 percent

Parent material: fine-loamy till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .20

Land capability, nonirrigated 3w

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|------------|
| A -- 0 to 1 in | loam | moderate | 0.24 to 0.26 in | 5.1 to 7.3 |
| E -- 1 to 4 in | loam | moderate | 0.36 to 0.52 in | 5.1 to 7.3 |
| E/B -- 4 to 9 in | loam | moderate | 0.72 to 0.97 in | 5.1 to 7.3 |
| Bt -- 9 to 26 in | silty clay | slow | 1.69 to 3.05 in | 5.1 to 7.3 |
| Bk -- 26 to 80 in | clay loam | moderately slow | 7.55 to 9.71 in | 7.4 to 8.4 |

Suomi

Extent: 30 to 40 percent of the unit

Landform(s): moraines

Slope gradient: 1 to 4 percent

Parent material: fine-loamy till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .20

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> |
|-------------------------------------|-----------------|---------------------|---------------------------------|------------|
| A -- 0 to 4 in | loam | moderate | 0.79 to 0.87 in | 5.1 to 7.3 |
| E -- 4 to 7 in | silt loam | moderate | 0.47 to 0.69 in | 5.1 to 7.3 |
| B/E -- 7 to 11 in | silty clay loam | slow | 0.55 to 0.75 in | 5.1 to 7.3 |
| Bt -- 11 to 39 in | silty clay | slow | 2.80 to 5.03 in | 5.1 to 7.3 |
| BC -- 39 to 80 in | clay loam | moderately slow | 5.73 to 7.37 in | 7.4 to 8.4 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

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

Effie

Extent: 15 to 30 percent of the unit

Landform(s): moraines

Slope gradient: 0 to 1 percent

Parent material: fine-loamy till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .20

Land capability, nonirrigated 4w

Hydric soil: yes

Hydrologic group: C

Potential for frost action: high

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|-----------------|---------------------|---------------------------------|------------|
| A -- 0 to 2 in | loam | moderate | 0.39 to 0.43 in | 5.1 to 7.3 |
| Eg -- 2 to 5 in | loam | moderate | 0.47 to 0.69 in | 5.1 to 7.3 |
| BE -- 5 to 8 in | silty clay loam | slow | 0.39 to 0.52 in | 5.1 to 7.3 |
| Btg -- 8 to 20 in | silty clay | slow | 1.22 to 2.20 in | 5.1 to 7.8 |
| BCg -- 20 to 64 in | silty clay loam | moderately slow | 6.17 to 7.94 in | 7.4 to 8.4 |
| Cg -- 64 to 80 in | clay loam | moderately slow | 2.20 to 2.83 in | 7.4 to 8.4 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B27A--McQuade-Buhl complex, 0 to 3 percent slopes

Mcquade

Extent: 40 to 60 percent of the unit

Landform(s): flats on till plains

Slope gradient: 0 to 2 percent

Parent material: loamy material over dense fine till

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

Flooding: none

Ponding: none

Drainage class: poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 4w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|------------|
| A -- 0 to 4 in | loam | moderate | 0.79 to 0.87 in | 4.5 to 5.5 |
| Eg -- 4 to 8 in | loam | moderate | 0.59 to 0.83 in | 4.5 to 5.5 |
| 2B/E -- 8 to 17 in | clay loam | slow | 0.72 to 1.36 in | 5.1 to 6.0 |
| 2Bt -- 17 to 36 in | clay | slow | 1.51 to 2.83 in | 5.1 to 6.5 |
| 2BCt -- 36 to 52 in | clay | slow | 1.29 to 2.42 in | 5.6 to 7.3 |
| 2BCd -- 52 to 80 in | clay | slow | 1.12 to 2.24 in | 6.1 to 8.4 |

Buhl

Extent: 25 to 45 percent of the unit

Landform(s): rises on till plains

Slope gradient: 1 to 3 percent

Parent material: loamy material over dense fine till

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

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 3w

Hydric soil: no

Hydrologic group: D

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|------------|
| A -- 0 to 3 in | loam | moderate | 0.63 to 0.69 in | 4.5 to 5.5 |
| E -- 3 to 13 in | loam | moderate | 1.48 to 2.07 in | 4.5 to 5.5 |
| 2B/E -- 13 to 18 in | clay loam | slow | 0.41 to 0.77 in | 5.1 to 6.0 |
| 2Bt1 -- 18 to 32 in | clay | slow | 1.10 to 2.07 in | 5.1 to 6.0 |
| 2Bt2 -- 32 to 58 in | clay | slow | 2.08 to 3.90 in | 5.1 to 6.5 |
| 2BCd -- 58 to 80 in | clay | slow | 0.88 to 1.76 in | 6.1 to 8.4 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B27A--McQuade-Buhl complex, 0 to 3 percent slopes

B28B--Buhl loam, 1 to 5 percent slopes

Buhl

Extent: 70 to 88 percent of the unit

Landform(s): drumlins, till plains

Slope gradient: 1 to 5 percent

Parent material: loamy material over dense fine till

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

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 2w

Hydric soil: no

Hydrologic group: D

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|------------|
| A -- 0 to 3 in | loam | moderate | 0.63 to 0.69 in | 4.5 to 5.5 |
| E -- 3 to 13 in | loam | moderate | 1.48 to 2.07 in | 4.5 to 5.5 |
| 2B/E -- 13 to 18 in | clay loam | slow | 0.41 to 0.77 in | 5.1 to 6.0 |
| 2Bt1 -- 18 to 32 in | clay | slow | 1.10 to 2.07 in | 5.1 to 6.0 |
| 2Bt2 -- 32 to 58 in | clay | slow | 2.08 to 3.90 in | 5.1 to 6.5 |
| 2BCd -- 58 to 80 in | clay | slow | 0.88 to 1.76 in | 6.1 to 8.4 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B29B--Hibbing-Buhl complex, 1 to 8 percent slopes

Hibbing

Extent: 35 to 60 percent of the unit

Landform(s): till plains

Slope gradient: 3 to 8 percent

Parent material: loamy material over dense fine till

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

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 2e

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|------------|
| A -- 0 to 4 in | loam | moderate | 0.79 to 0.87 in | 4.5 to 5.5 |
| Bw -- 4 to 8 in | loam | moderate | 0.59 to 0.83 in | 4.5 to 5.5 |
| 2E/B -- 8 to 12 in | loam | moderate | 0.55 to 0.75 in | 5.1 to 6.0 |
| 2Bt1 -- 12 to 27 in | clay | slow | 1.23 to 2.30 in | 5.1 to 6.0 |
| 2Bt2 -- 27 to 36 in | clay | slow | 0.69 to 1.30 in | 5.1 to 6.5 |
| 2Bt3 -- 36 to 48 in | clay | slow | 0.98 to 1.83 in | 5.1 to 6.5 |
| 2BCd -- 48 to 80 in | clay | slow | 1.28 to 2.55 in | 6.1 to 8.4 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B29B--Hibbing-Buhl complex, 1 to 8 percent slopes

Buhl

Extent: 25 to 45 percent of the unit

Landform(s): till plains

Slope gradient: 1 to 4 percent

Parent material: loamy material over dense fine till

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

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 3w

Hydric soil: no

Hydrologic group: D

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|------------|
| A -- 0 to 3 in | loam | moderate | 0.63 to 0.69 in | 4.5 to 5.5 |
| E -- 3 to 13 in | loam | moderate | 1.48 to 2.07 in | 4.5 to 5.5 |
| 2B/E -- 13 to 18 in | clay loam | slow | 0.41 to 0.77 in | 5.1 to 6.0 |
| 2Bt1 -- 18 to 32 in | clay | slow | 1.10 to 2.07 in | 5.1 to 6.0 |
| 2Bt2 -- 32 to 58 in | clay | slow | 2.08 to 3.90 in | 5.1 to 6.5 |
| 2BCd -- 58 to 80 in | clay | slow | 0.88 to 1.76 in | 6.1 to 8.4 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B29D--Hibbing-Buhl complex, 1 to 18 percent slopes

Hibbing

Extent: 45 to 65 percent of the unit

Landform(s): moraines

Slope gradient: 5 to 18 percent

Parent material: loamy material over dense fine till

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

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 4e

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|------------|
| A -- 0 to 4 in | loam | moderate | 0.79 to 0.87 in | 4.5 to 5.5 |
| Bw -- 4 to 8 in | loam | moderate | 0.59 to 0.83 in | 4.5 to 5.5 |
| 2E/B -- 8 to 12 in | loam | moderate | 0.55 to 0.75 in | 5.1 to 6.0 |
| 2Bt1 -- 12 to 27 in | clay | slow | 1.23 to 2.30 in | 5.1 to 6.0 |
| 2Bt2 -- 27 to 36 in | clay | slow | 0.69 to 1.30 in | 5.1 to 6.5 |
| 2Bt3 -- 36 to 48 in | clay | slow | 0.98 to 1.83 in | 5.1 to 6.5 |
| 2BCd -- 48 to 80 in | clay | slow | 1.28 to 2.55 in | 6.1 to 8.4 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B29D--Hibbing-Buhl complex, 1 to 18 percent slopes

Buhl

Extent: 20 to 30 percent of the unit

Landform(s): moraines

Slope gradient: 1 to 5 percent

Parent material: loamy material over dense fine till

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

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 3w

Hydric soil: no

Hydrologic group: D

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|------------|
| A -- 0 to 3 in | loam | moderate | 0.63 to 0.69 in | 4.5 to 5.5 |
| E -- 3 to 13 in | loam | moderate | 1.48 to 2.07 in | 4.5 to 5.5 |
| 2B/E -- 13 to 18 in | clay loam | slow | 0.41 to 0.77 in | 5.1 to 6.0 |
| 2Bt1 -- 18 to 32 in | clay | slow | 1.10 to 2.07 in | 5.1 to 6.0 |
| 2Bt2 -- 32 to 58 in | clay | slow | 2.08 to 3.90 in | 5.1 to 6.5 |
| 2BCd -- 58 to 80 in | clay | slow | 0.88 to 1.76 in | 6.1 to 8.4 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B30A--Sago mucky peat, depressional, 0 to 1 percent slopes

Sago, depressional

Extent: 65 to 90 percent of the unit

Landform(s): -- error in exists on --

Slope gradient: 0 to 1 percent

Parent material: organic material over glaciolacustrine or glaciofluvial sediments

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .02

Land capability, nonirrigated 6w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

Representative soil profile:

| | | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------|-------------|---|---------------------|---------------------------------|------------|
| Oe -- | 0 to 5 in | mucky peat | rapid | 2.30 to 2.81 in | |
| Oa -- | 5 to 13 in | muck | moderately rapid | 2.76 to 3.54 in | |
| A -- | 13 to 15 in | fine sandy loam | moderately rapid | 0.22 to 0.41 in | 4.5 to 6.0 |
| Bg -- | 15 to 41 in | stratified loamy fine sand to silt loam | moderately rapid | 3.38 to 4.94 in | 5.1 to 6.5 |
| Cg -- | 41 to 80 in | stratified loamy fine sand to silt loam | moderately rapid | 5.07 to 7.41 in | 5.6 to 7.8 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B31D--Hibbing loam, 8 to 18 percent slopes

Hibbing

Extent: 75 to 95 percent of the unit

Landform(s): moraines

Slope gradient: 8 to 18 percent

Parent material: loamy material over dense fine till

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

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 4e

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|------------|
| A -- 0 to 4 in | loam | moderate | 0.79 to 0.87 in | 4.5 to 5.5 |
| Bw -- 4 to 8 in | loam | moderate | 0.59 to 0.83 in | 4.5 to 5.5 |
| 2E/B -- 8 to 12 in | loam | moderate | 0.55 to 0.75 in | 5.1 to 6.0 |
| 2Bt1 -- 12 to 27 in | clay | slow | 1.23 to 2.30 in | 5.1 to 6.0 |
| 2Bt2 -- 27 to 36 in | clay | slow | 0.69 to 1.30 in | 5.1 to 6.5 |
| 2Bt3 -- 36 to 48 in | clay | slow | 0.98 to 1.83 in | 5.1 to 6.5 |
| 2BCd -- 48 to 80 in | clay | slow | 1.28 to 2.55 in | 6.1 to 8.4 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B31E--Hibbing loam, 18 to 30 percent slopes

Hibbing

Extent: 85 to 95 percent of the unit

Landform(s): moraines

Slope gradient: 18 to 30 percent

Parent material: loamy material over dense fine till

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

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 6e

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|------------|
| A -- 0 to 4 in | loam | moderate | 0.79 to 0.87 in | 4.5 to 5.5 |
| Bw -- 4 to 8 in | loam | moderate | 0.59 to 0.83 in | 4.5 to 5.5 |
| 2E/B -- 8 to 12 in | loam | moderate | 0.55 to 0.75 in | 5.1 to 6.0 |
| 2Bt1 -- 12 to 27 in | clay | slow | 1.23 to 2.30 in | 5.1 to 6.0 |
| 2Bt2 -- 27 to 36 in | clay | slow | 0.69 to 1.30 in | 5.1 to 6.5 |
| 2Bt3 -- 36 to 48 in | clay | slow | 0.98 to 1.83 in | 5.1 to 6.5 |
| 2BCd -- 48 to 80 in | clay | slow | 1.28 to 2.55 in | 6.1 to 8.4 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B32A--McQuade-Dora, depressional-Fayal, depressional, complex, 0 to 2 percent slopes

Mcquade

Extent: 35 to 50 percent of the unit

Landform(s): flats on till plains

Slope gradient: 0 to 2 percent

Parent material: loamy material over dense fine till

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

Flooding: none

Ponding: none

Drainage class: poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 4w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|------------|
| A -- 0 to 4 in | loam | moderate | 0.79 to 0.87 in | 4.5 to 5.5 |
| Eg -- 4 to 8 in | loam | moderate | 0.59 to 0.83 in | 4.5 to 5.5 |
| 2B/E -- 8 to 17 in | clay loam | slow | 0.72 to 1.36 in | 5.1 to 6.0 |
| 2Bt -- 17 to 36 in | clay | slow | 1.51 to 2.83 in | 5.1 to 6.5 |
| 2BCt -- 36 to 52 in | clay | slow | 1.29 to 2.42 in | 5.6 to 7.3 |
| 2BCd -- 52 to 80 in | clay | slow | 1.12 to 2.24 in | 6.1 to 8.4 |

Dora, depressional

Extent: 20 to 40 percent of the unit

Landform(s): swales on till plains, depressions on till plains

Slope gradient: 0 to 1 percent

Parent material: organic deposits over dense fine till

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

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 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: 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> |
|-------------------------------------|----------------|---------------------|---------------------------------|------------|
| Oe -- 0 to 8 in | mucky peat | rapid | 3.54 to 4.33 in | |
| Oa -- 8 to 33 in | muck | moderately rapid | 8.82 to 11.34 in | |
| 2Cg -- 33 to 65 in | clay | slow | 2.55 to 4.78 in | 5.1 to 6.5 |
| 2Cd -- 65 to 80 in | clay | slow | 0.60 to 1.20 in | 6.1 to 7.8 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B32A--McQuade-Dora, depressional-Fayal, depressional, complex, 0 to 2 percent slopes

Fayal, depressional

Extent: 15 to 35 percent of the unit

Landform(s): swales on till plains

Slope gradient: 0 to 1 percent

Parent material: loamy material over dense fine till

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

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .02

Land capability, nonirrigated 6w

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> |
|-------------------------------------|-------------|-----------------|---------------------|---------------------------------|------------|
| Oe -- | 0 to 5 in | mucky peat | rapid | 2.30 to 2.81 in | |
| A -- | 5 to 9 in | mucky silt loam | moderate | 0.79 to 1.02 in | 4.5 to 5.5 |
| Eg -- | 9 to 17 in | clay loam | moderately slow | 0.63 to 1.18 in | 4.5 to 5.5 |
| 2Btg -- | 17 to 29 in | clay | slow | 0.98 to 1.83 in | 5.1 to 6.5 |
| 2BC -- | 29 to 46 in | clay | slow | 1.35 to 2.54 in | 5.6 to 7.3 |
| 2BCd -- | 46 to 80 in | clay | slow | 1.35 to 2.71 in | 6.1 to 8.4 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B33A--McQuade-Fayal, depressional, complex, 0 to 2 percent slopes

Mcquade

Extent: 40 to 60 percent of the unit

Landform(s): flats on till plains

Slope gradient: 0 to 2 percent

Parent material: loamy material over dense fine till

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

Flooding: none

Ponding: none

Drainage class: poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 4w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|------------|
| A -- 0 to 4 in | loam | moderate | 0.79 to 0.87 in | 4.5 to 5.5 |
| Eg -- 4 to 8 in | loam | moderate | 0.59 to 0.83 in | 4.5 to 5.5 |
| 2B/E -- 8 to 17 in | clay loam | slow | 0.72 to 1.36 in | 5.1 to 6.0 |
| 2Bt -- 17 to 36 in | clay | slow | 1.51 to 2.83 in | 5.1 to 6.5 |
| 2BCt -- 36 to 52 in | clay | slow | 1.29 to 2.42 in | 5.6 to 7.3 |
| 2BCd -- 52 to 80 in | clay | slow | 1.12 to 2.24 in | 6.1 to 7.8 |

Fayal, depressional

Extent: 35 to 55 percent of the unit

Landform(s): swales on till plains

Slope gradient: 0 to 1 percent

Parent material: loamy material over dense fine till

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

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .02

Land capability, nonirrigated 6w

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> |
|-------------------------------------|-----------------|---------------------|---------------------------------|------------|
| Oe -- 0 to 5 in | mucky peat | rapid | 2.30 to 2.81 in | |
| A -- 5 to 9 in | mucky silt loam | moderate | 0.79 to 1.02 in | 4.5 to 5.5 |
| Eg -- 9 to 17 in | clay loam | moderately slow | 0.63 to 1.18 in | 4.5 to 5.5 |
| 2Btg -- 17 to 29 in | clay | slow | 0.98 to 1.83 in | 5.1 to 6.5 |
| 2BC -- 29 to 46 in | clay | slow | 1.35 to 2.54 in | 5.6 to 7.3 |
| 2BCd -- 46 to 80 in | clay | slow | 1.35 to 2.71 in | 6.1 to 8.4 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B33A--McQuade-Fayal, depressional, complex, 0 to 2 percent slopes

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B34B--Majestic-Hibbing complex, 2 to 8 percent slopes

Majestic

Extent: 45 to 65 percent of the unit

Landform(s): till plains

Slope gradient: 2 to 8 percent

Parent material: sandy sediments over dense fine till

Restrictive feature(s): dense material at 45 to 70 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 2e

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|------------|
| A -- 0 to 4 in | sandy loam | moderately rapid | 0.51 to 0.59 in | 4.5 to 6.0 |
| Bw1 -- 4 to 13 in | sandy loam | moderately rapid | 1.09 to 1.54 in | 4.5 to 6.0 |
| Bw2 -- 13 to 34 in | loamy sand | rapid | 1.04 to 2.30 in | 4.5 to 6.0 |
| 2B/E -- 34 to 38 in | clay loam | slow | 0.35 to 0.65 in | 5.1 to 6.5 |
| 2Bt -- 38 to 59 in | clay | slow | 1.67 to 3.13 in | 5.1 to 6.5 |
| 2BCd -- 59 to 80 in | clay | slow | 0.83 to 1.67 in | 6.1 to 8.4 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B34B--Majestic-Hibbing complex, 2 to 8 percent slopes

Hibbing

Extent: 15 to 30 percent of the unit

Landform(s): till plains

Slope gradient: 2 to 8 percent

Parent material: loamy material over dense fine till

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

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 2e

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|------------|
| A -- 0 to 4 in | loam | moderate | 0.79 to 0.87 in | 4.5 to 5.5 |
| Bw -- 4 to 8 in | loam | moderate | 0.59 to 0.83 in | 4.5 to 5.5 |
| 2E/B -- 8 to 12 in | loam | moderate | 0.55 to 0.75 in | 5.1 to 6.0 |
| 2Bt1 -- 12 to 27 in | clay | slow | 1.23 to 2.30 in | 5.1 to 6.0 |
| 2Bt2 -- 27 to 36 in | clay | slow | 0.69 to 1.30 in | 5.1 to 6.5 |
| 2Bt3 -- 36 to 48 in | clay | slow | 0.98 to 1.83 in | 5.1 to 6.5 |
| 2BCd -- 48 to 80 in | clay | slow | 1.28 to 2.55 in | 6.1 to 8.4 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B35E--Hibbing-Udorthents complex, 18 to 45 percent slopes

Hibbing

Extent: 40 to 60 percent of the unit

Landform(s): moraines

Slope gradient: 18 to 45 percent

Parent material: loamy material over dense fine till

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

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 7e

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|------------|
| A -- 0 to 4 in | loam | moderate | 0.79 to 0.87 in | 4.5 to 5.5 |
| Bw -- 4 to 8 in | loam | moderate | 0.59 to 0.83 in | 4.5 to 5.5 |
| 2E/B -- 8 to 12 in | loam | moderate | 0.55 to 0.75 in | 5.1 to 6.0 |
| 2Bt1 -- 12 to 27 in | clay | slow | 1.23 to 2.30 in | 5.1 to 6.0 |
| 2Bt2 -- 27 to 36 in | clay | slow | 0.69 to 1.30 in | 5.1 to 6.5 |
| 2Bt3 -- 36 to 48 in | clay | slow | 0.98 to 1.83 in | 5.1 to 6.5 |
| 2BCd -- 48 to 80 in | clay | slow | 1.28 to 2.55 in | 6.1 to 8.4 |

Udorthents

Extent: 20 to 40 percent of the unit

Landform(s): moraines

Slope gradient: 18 to 45 percent

Parent material: loamy material over gravelly outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat excessively drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .20

Land capability, nonirrigated 7e

Hydric soil: no

Hydrologic group: A

Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------------|---------------------|---------------------------------|------------|
| A -- 0 to 5 in | sandy loam | moderately rapid | 0.56 to 0.72 in | 4.5 to 6.0 |
| Bw -- 5 to 9 in | gravelly sandy loam | moderately rapid | 0.28 to 0.71 in | 4.5 to 6.5 |
| 2C -- 9 to 80 in | gravelly coarse sand | very rapid | 0.71 to 4.25 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B36B--Lavell-Shawano complex, 1 to 6 percent slopes

Shawano

Extent: 25 to 55 percent of the unit

Landform(s): lake plains, outwash plains

Slope gradient: 1 to 6 percent

Parent material: eolian and/or glaciolacustrine sand

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat excessively drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw factor (surface layer) .17

Land capability, nonirrigated 3s

Hydric soil: no

Hydrologic group: A

Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|-----------------|---------------------|---------------------------------|------------|
| A -- 0 to 5 in | loamy fine sand | rapid | 0.51 to 0.67 in | 4.5 to 6.0 |
| Bw -- 5 to 21 in | loamy fine sand | rapid | 1.10 to 1.73 in | 5.1 to 6.5 |
| C -- 21 to 80 in | fine sand | rapid | 3.54 to 5.91 in | 5.1 to 6.5 |

Lavell

Extent: 30 to 55 percent of the unit

Landform(s): lake plains, outwash plains

Slope gradient: 1 to 6 percent

Parent material: eolian and/or glaciolacustrine sand

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: A

Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|-----------------|---------------------|---------------------------------|------------|
| A -- 0 to 5 in | loamy fine sand | rapid | 0.51 to 0.67 in | 4.5 to 6.0 |
| Bw1 -- 5 to 18 in | loamy fine sand | rapid | 0.78 to 1.30 in | 4.5 to 6.5 |
| Bw2 -- 18 to 42 in | fine sand | rapid | 1.44 to 2.40 in | 5.1 to 6.5 |
| C -- 42 to 80 in | fine sand | rapid | 2.27 to 3.78 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B37B--Westoo-Lavell complex, 0 to 6 percent slopes

Westoo

Extent: 30 to 50 percent of the unit

Landform(s): lake plains, outwash plains

Slope gradient: 0 to 4 percent

Parent material: eolian deposits and/or 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: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|-----------------|---------------------|---------------------------------|------------|
| A -- 0 to 5 in | loamy fine sand | rapid | 0.51 to 0.67 in | 4.5 to 6.0 |
| Bw1 -- 5 to 17 in | loamy fine sand | rapid | 1.06 to 1.89 in | 4.5 to 6.5 |
| Bw2 -- 17 to 44 in | loamy fine sand | rapid | 1.63 to 2.72 in | 5.1 to 6.5 |
| C -- 44 to 74 in | fine sand | rapid | 1.80 to 2.99 in | 5.1 to 6.5 |
| Cg -- 74 to 80 in | fine sand | rapid | 0.35 to 0.59 in | 5.1 to 6.5 |

Lavell

Extent: 25 to 40 percent of the unit

Landform(s): lake plains, outwash plains

Slope gradient: 1 to 6 percent

Parent material: eolian and/or glaciolacustrine sand

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: A

Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|-----------------|---------------------|---------------------------------|------------|
| A -- 0 to 5 in | loamy fine sand | rapid | 0.51 to 0.67 in | 4.5 to 6.0 |
| Bw1 -- 5 to 18 in | loamy fine sand | rapid | 0.78 to 1.30 in | 4.5 to 6.5 |
| Bw2 -- 18 to 42 in | fine sand | rapid | 1.44 to 2.40 in | 5.1 to 6.5 |
| C -- 42 to 80 in | fine sand | rapid | 2.27 to 3.78 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B39A--Meehan loamy sand, 0 to 3 percent slopes

Meehan

Extent: 75 to 90 percent of the unit

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

Slope gradient: 0 to 3 percent

Parent material: sandy outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: 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 4s

Hydric soil: no

Hydrologic group: A

Potential for frost action: low

Representative soil profile:

| | | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|--------|-------------|----------------|---------------------|---------------------------------|------------|
| A -- | 0 to 3 in | loamy sand | rapid | 0.31 to 0.38 in | 4.5 to 6.0 |
| Bw1 -- | 3 to 12 in | loamy sand | rapid | 0.52 to 0.95 in | 4.5 to 6.0 |
| Bw2 -- | 12 to 47 in | sand | rapid | 0.70 to 3.15 in | 4.5 to 6.0 |
| C -- | 47 to 80 in | coarse sand | very rapid | 0.66 to 2.31 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B40D--Shawano loamy fine sand, 6 to 18 percent slopes

Shawano

Extent: 75 to 90 percent of the unit

Landform(s): lake plains, outwash plains

Slope gradient: 6 to 18 percent

Parent material: eolian and/or glaciolacustrine sand

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat excessively drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw factor (surface layer) .17

Land capability, nonirrigated 4e

Hydric soil: no

Hydrologic group: A

Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|-----------------|---------------------|---------------------------------|------------|
| A -- 0 to 5 in | loamy fine sand | rapid | 0.51 to 0.67 in | 4.5 to 6.0 |
| Bw -- 5 to 21 in | loamy fine sand | rapid | 1.10 to 1.73 in | 5.1 to 6.5 |
| C -- 21 to 80 in | fine sand | rapid | 3.54 to 5.91 in | 5.1 to 6.5 |

B41B--Friendship loamy sand, 0 to 4 percent slopes

Friendship

Extent: 65 to 85 percent of the unit

Landform(s): rises on lake plains, rises on outwash plains

Slope gradient: 0 to 4 percent

Parent material: sandy outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw factor (surface layer) .17

Land capability, nonirrigated 4s

Hydric soil: no

Hydrologic group: A

Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|------------|
| A -- 0 to 3 in | loamy sand | rapid | 0.31 to 0.38 in | 4.5 to 6.0 |
| Bw1 -- 3 to 24 in | sand | rapid | 0.63 to 2.30 in | 4.5 to 6.0 |
| Bw2 -- 24 to 40 in | sand | rapid | 0.32 to 1.13 in | 4.5 to 6.0 |
| C -- 40 to 80 in | sand | rapid | 0.80 to 2.78 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B47A--Daisybay peat, 0 to 1 percent slopes

Daisybay

Extent: 60 to 90 percent of the unit

Landform(s): bogs on moraines, bogs on till plains

Slope gradient: 0 to 1 percent

Parent material: organic material over dense fine till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: very poorly drained

Soil loss tolerance (T factor): 2

Wind erodibility group (WEG): 7

Wind erodibility index (WEI): 38

Kw factor (surface layer) .02

Land capability, nonirrigated 7w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|------------|
| Oi -- 0 to 7 in | peat | very rapid | 3.90 to 4.61 in | |
| Oe -- 7 to 30 in | mucky peat | rapid | 10.28 to 12.56 in | |
| Oa -- 30 to 35 in | muck | moderately rapid | 1.79 to 2.30 in | |
| 2Cg -- 35 to 80 in | clay | slow | 3.59 to 6.73 in | 5.6 to 7.3 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B48A--Mooseline-Turpela complex, 0 to 3 percent slopes

Mooseline

Extent: 35 to 55 percent of the unit

Landform(s): rises on till plains

Slope gradient: 0 to 3 percent

Parent material: sandy sediments over dense fine till

Restrictive feature(s): dense material at 45 to 70 inches

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .20

Land capability, nonirrigated 2w

Hydric soil: no

Hydrologic group: D

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|------------|
| A -- 0 to 3 in | sandy loam | moderately rapid | 0.41 to 0.47 in | 4.5 to 6.0 |
| E -- 3 to 8 in | sandy loam | moderately rapid | 0.47 to 0.80 in | 4.5 to 6.0 |
| Bw1 -- 8 to 23 in | loamy sand | rapid | 1.05 to 2.24 in | 5.1 to 6.5 |
| Bw2 -- 23 to 34 in | sand | rapid | 0.55 to 1.10 in | 5.1 to 6.5 |
| 2B/E -- 34 to 39 in | clay loam | moderately slow | 0.51 to 0.87 in | 5.1 to 6.5 |
| 2Bt -- 39 to 56 in | clay | slow | 1.35 to 2.54 in | 5.1 to 6.5 |
| 2BCd -- 56 to 80 in | clay | slow | 0.96 to 1.92 in | 6.1 to 8.4 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B48A--Mooseline-Turpela complex, 0 to 3 percent slopes

Turpela

Extent: 25 to 45 percent of the unit

Landform(s): flats on till plains

Slope gradient: 0 to 2 percent

Parent material: sandy sediments over dense fine till

Restrictive feature(s): dense material at 45 to 70 inches

Flooding: none

Ponding: none

Drainage class: poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .20

Land capability, nonirrigated 4w

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> |
|-------------------------------------|-----------------|---------------------|---------------------------------|------------|
| A -- 0 to 5 in | fine sandy loam | moderately rapid | 0.82 to 0.92 in | 4.5 to 6.0 |
| Bg1 -- 5 to 21 in | loamy fine sand | rapid | 1.57 to 2.68 in | 4.5 to 6.0 |
| Bg2 -- 21 to 28 in | loamy fine sand | rapid | 0.35 to 0.78 in | 5.1 to 6.5 |
| 2Bt1 -- 28 to 34 in | clay | slow | 0.47 to 0.89 in | 5.1 to 6.0 |
| 2Bt2 -- 34 to 55 in | clay | slow | 1.70 to 3.19 in | 5.1 to 6.5 |
| 2BCd -- 55 to 80 in | clay | slow | 0.99 to 1.98 in | 6.1 to 8.4 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B52A--Dora muck, depressional, hibbing catena, 0 to 1 percent slopes

Dora, depressional

Extent: 60 to 90 percent of the unit

Landform(s): swamps on moraines, swamps on till plains

Slope gradient: 0 to 1 percent

Parent material: organic material over dense fine till

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

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 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: D

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|------------|
| Oa -- 0 to 22 in | muck | moderately rapid | 7.72 to 9.92 in | |
| 2Cg -- 22 to 65 in | clay | slow | 3.43 to 6.44 in | 5.1 to 6.5 |
| 2Cd -- 65 to 80 in | clay | slow | 0.60 to 1.20 in | 6.1 to 7.8 |

B53A--Dora mucky peat, hibbing catena, 0 to 1 percent slopes

Dora

Extent: 60 to 90 percent of the unit

Landform(s): swamps on moraines, swamps on till plains

Slope gradient: 0 to 1 percent

Parent material: organic material over dense fine till

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

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 2

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .02

Land capability, nonirrigated 7w

Hydric soil: yes

Hydrologic group: 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> |
|-------------------------------------|----------------|---------------------|---------------------------------|------------|
| Oe -- 0 to 8 in | mucky peat | rapid | 3.54 to 4.33 in | |
| Oa -- 8 to 33 in | muck | moderately rapid | 8.82 to 11.34 in | |
| 2Cg -- 33 to 65 in | clay | slow | 2.55 to 4.78 in | 5.1 to 6.5 |
| 2Cd -- 65 to 80 in | clay | slow | 0.60 to 1.20 in | 6.1 to 7.8 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

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

Spoooner

Extent: 55 to 75 percent of the unit

Landform(s): flats on lake plains

Slope gradient: 0 to 2 percent

Parent material: silty glaciolacustrine deposits

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .32

Land capability, nonirrigated 3w

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

Littleswan

Extent: 15 to 35 percent of the unit

Landform(s): rises on lake plains

Slope gradient: 1 to 3 percent

Parent material: silty glaciolacustrine deposits

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .32

Land capability, nonirrigated 2w

Hydric soil: no

Hydrologic group: C

Potential for frost action: high

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|-----------------|---------------------|---------------------------------|------------|
| A -- 0 to 4 in | silt loam | moderate | 0.87 to 0.94 in | 5.6 to 7.3 |
| E -- 4 to 11 in | silt loam | moderate | 1.20 to 1.56 in | 5.6 to 7.3 |
| Bt -- 11 to 32 in | silty clay loam | moderately slow | 3.76 to 4.59 in | 6.1 to 7.3 |
| Cg1 -- 32 to 41 in | silt loam | moderate | 1.54 to 1.99 in | 7.4 to 8.4 |
| Cg2 -- 41 to 80 in | silt loam | moderate | 6.63 to 8.57 in | 7.4 to 8.4 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B56A--Spoooner-Sax, depressional, complex, 0 to 2 percent slopes

Spoooner

Extent: 40 to 65 percent of the unit

Landform(s): flats on lake plains

Slope gradient: 0 to 2 percent

Parent material: silty glaciolacustrine deposits

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .32

Land capability, nonirrigated 3w

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

Sax, depressional

Extent: 30 to 55 percent of the unit

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

Slope gradient: 0 to 1 percent

Parent material: organic material over silty glaciolacustrine deposits

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw factor (surface layer) .43

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> |
|-------------------------------------|----------------|---------------------|---------------------------------|------------|
| Oa -- 0 to 13 in | muck | moderately rapid | 4.55 to 6.24 in | |
| A -- 13 to 15 in | silt loam | moderate | 0.43 to 0.51 in | 5.6 to 7.3 |
| Bg -- 15 to 36 in | silt loam | moderate | 3.76 to 4.59 in | 5.6 to 7.3 |
| Cg -- 36 to 80 in | silt loam | moderate | 7.50 to 9.70 in | 7.4 to 8.4 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

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

Wurtsmith

Extent: 35 to 55 percent of the unit
Landform(s): rises on outwash plains
Slope gradient: 1 to 4 percent
Parent material: sandy outwash
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: moderately well drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 2
Wind erodibility index (WEI): 134
Kw factor (surface layer) .17
Land capability, nonirrigated 4s
Hydric soil: no
Hydrologic group: A
Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|------------|
| A -- 0 to 3 in | loamy sand | rapid | 0.31 to 0.38 in | 4.5 to 6.0 |
| Bw -- 3 to 18 in | sand | rapid | 0.45 to 1.65 in | 4.5 to 6.0 |
| BC -- 18 to 33 in | sand | rapid | 0.30 to 1.05 in | 4.5 to 6.0 |
| C -- 33 to 80 in | sand | rapid | 0.94 to 3.28 in | 5.1 to 6.5 |

Meehan

Extent: 30 to 50 percent of the unit
Landform(s): rises on outwash plains, flats on outwash plains
Slope gradient: 0 to 3 percent
Parent material: sandy outwash
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: 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 4s
Hydric soil: no
Hydrologic group: A
Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|------------|
| A -- 0 to 3 in | loamy sand | rapid | 0.31 to 0.38 in | 4.5 to 6.0 |
| Bw1 -- 3 to 12 in | loamy sand | rapid | 0.52 to 0.95 in | 4.5 to 6.0 |
| Bw2 -- 12 to 47 in | sand | rapid | 0.70 to 3.15 in | 4.5 to 6.0 |
| C -- 47 to 80 in | coarse sand | very rapid | 0.66 to 2.31 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B62A--Wabuse-Vasso complex, 0 to 3 percent slopes

Wabuse

Extent: 30 to 50 percent of the unit

Landform(s): flats on lake plains

Slope gradient: 0 to 2 percent

Parent material: sandy eolian, glaciolacustrine or outwash material and underlying loamy glaciolacustrine sediments

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .20

Land capability, nonirrigated 3w

Hydric soil: yes

Hydrologic group: 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 | sandy loam | moderately rapid | 1.18 to 1.36 in | 4.5 to 6.0 |
| Bg1 -- | 9 to 16 in | loamy fine sand | rapid | 0.28 to 0.78 in | 4.5 to 6.0 |
| Bg2 -- | 16 to 27 in | loamy sand | rapid | 0.44 to 1.21 in | 5.1 to 6.5 |
| Bg3 -- | 27 to 32 in | loamy coarse sand | rapid | 0.19 to 0.52 in | 5.1 to 6.5 |
| 2Bg4 -- | 32 to 54 in | silt loam | moderate | 3.75 to 4.85 in | 5.6 to 6.5 |
| 2Cg -- | 54 to 80 in | silt loam | moderate | 4.42 to 5.72 in | 5.6 to 7.8 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B62A--Wabuse-Vasso complex, 0 to 3 percent slopes

Vasso

Extent: 15 to 35 percent of the unit

Landform(s): rises on lake plains

Slope gradient: 1 to 3 percent

Parent material: sandy eolian, glaciolacustrine or outwash material and underlying loamy glaciolacustrine sediments

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) .20

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> |
|-------------------------------------|-----------------|---------------------|---------------------------------|------------|
| A -- 0 to 4 in | fine sandy loam | moderately rapid | 0.63 to 0.75 in | 4.5 to 6.0 |
| E -- 4 to 6 in | fine sandy loam | moderately rapid | 0.18 to 0.33 in | 4.5 to 6.0 |
| Bw1 -- 6 to 18 in | loamy fine sand | rapid | 0.37 to 1.22 in | 4.5 to 6.5 |
| Bw2 -- 18 to 38 in | fine sand | rapid | 0.60 to 2.01 in | 5.1 to 6.5 |
| 2Bg -- 38 to 50 in | silt loam | moderate | 2.01 to 2.60 in | 5.6 to 6.5 |
| 2Cg -- 50 to 80 in | silt loam | moderate | 5.09 to 6.58 in | 5.6 to 7.8 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B63B--Urbanland-McQuade-Buhl complex, 0 to 12 percent slopes

Urban land

Extent: 40 to 65 percent of the unit

Landform(s): knolls on till plains, flats on till plains

Slope gradient: 0 to 12 percent

Parent material: human transported material

Restrictive feature(s): greater than 60 inches

Flooding:

Ponding:

Drainage class:

Soil loss tolerance (T factor):

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Kw factor (surface layer)

Land capability, nonirrigated

Hydric soil: unranked

Hydrologic group:

Potential for frost action:

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

Mcquade

Extent: 15 to 25 percent of the unit

Landform(s): till plains

Slope gradient: 0 to 2 percent

Parent material: loamy material over dense fine till

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

Flooding: none

Ponding: none

Drainage class: poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 4w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|------------|
| A -- 0 to 4 in | loam | moderate | 0.79 to 0.87 in | 4.5 to 5.5 |
| Eg -- 4 to 8 in | loam | moderate | 0.59 to 0.83 in | 4.5 to 5.5 |
| 2B/E -- 8 to 17 in | clay loam | slow | 0.72 to 1.36 in | 5.1 to 6.0 |
| 2Bt -- 17 to 36 in | clay | slow | 1.51 to 2.83 in | 5.1 to 6.5 |
| 2BCt -- 36 to 52 in | clay | slow | 1.29 to 2.42 in | 5.6 to 7.3 |
| 2BCd -- 52 to 80 in | clay | slow | 1.12 to 2.24 in | 6.1 to 8.4 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B63B--Urbanland-McQuade-Buhl complex, 0 to 12 percent slopes

Buhl

Extent: 15 to 25 percent of the unit

Landform(s): till plains

Slope gradient: 1 to 5 percent

Parent material: loamy material over dense fine till

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

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 3w

Hydric soil: no

Hydrologic group: D

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|------------|
| A -- 0 to 3 in | loam | moderate | 0.63 to 0.69 in | 4.5 to 5.5 |
| E -- 3 to 13 in | loam | moderate | 1.48 to 2.07 in | 4.5 to 5.5 |
| 2B/E -- 13 to 18 in | clay loam | slow | 0.41 to 0.77 in | 5.1 to 6.0 |
| 2Bt1 -- 18 to 32 in | clay | slow | 1.10 to 2.07 in | 5.1 to 6.0 |
| 2Bt2 -- 32 to 58 in | clay | slow | 2.08 to 3.90 in | 5.1 to 6.5 |
| 2BCd -- 58 to 80 in | clay | slow | 0.88 to 1.76 in | 6.1 to 8.4 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B64B--Vasso-Keenan complex, 1 to 6 percent slopes

Vasso

Extent: 30 to 50 percent of the unit

Landform(s): lake plains

Slope gradient: 1 to 3 percent

Parent material: sandy eolian, glaciolacustrine or outwash material and underlying loamy glaciolacustrine sediments

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) .20

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> |
|-------------------------------------|-------------|-----------------|---------------------|---------------------------------|------------|
| A -- | 0 to 4 in | fine sandy loam | moderately rapid | 0.63 to 0.75 in | 4.5 to 6.0 |
| E -- | 4 to 6 in | fine sandy loam | moderately rapid | 0.18 to 0.33 in | 4.5 to 6.0 |
| Bw1 -- | 6 to 18 in | loamy fine sand | rapid | 0.37 to 1.22 in | 4.5 to 6.5 |
| Bw2 -- | 18 to 38 in | fine sand | rapid | 0.60 to 2.01 in | 5.1 to 6.5 |
| 2Bg -- | 38 to 50 in | silt loam | moderate | 2.01 to 2.60 in | 5.6 to 6.5 |
| 2Cg -- | 50 to 80 in | silt loam | moderate | 5.09 to 6.58 in | 5.6 to 7.8 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B64B--Vasso-Keenan complex, 1 to 6 percent slopes

Keenan

Extent: 25 to 45 percent of the unit

Landform(s): lake plains

Slope gradient: 1 to 6 percent

Parent material: sandy eolian, glaciolacustrine or outwash material and underlying loamy glaciolacustrine sediments

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: moderate

| <i>Representative soil profile:</i> | | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|-------------|-----------------|---------------------|---------------------------------|------------|
| A -- | 0 to 4 in | fine sandy loam | moderately rapid | 0.63 to 0.71 in | 4.5 to 6.0 |
| Bw1 -- | 4 to 12 in | loamy fine sand | rapid | 0.31 to 0.87 in | 4.5 to 6.5 |
| Bw2 -- | 12 to 32 in | fine sand | rapid | 0.60 to 2.01 in | 5.1 to 6.5 |
| 2Bw3 -- | 32 to 54 in | silt loam | moderate | 3.75 to 4.85 in | 5.6 to 6.5 |
| 2C -- | 54 to 80 in | silt loam | moderate | 4.42 to 5.72 in | 5.6 to 7.8 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B65A--Merwin peat, upham basin, 0 to 1 percent slopes

Merwin

| | |
|---|---|
| <p><i>Extent:</i> 60 to 90 percent of the unit</p> <p><i>Landform(s):</i> bogs on lake plains</p> <p><i>Slope gradient:</i> 0 to 1 percent</p> <p><i>Parent material:</i> organic material over glaciolacustrine or glaciofluvial sediments</p> <p><i>Restrictive feature(s):</i> greater than 60 inches</p> <p><i>Flooding:</i> none</p> <p><i>Ponding:</i> none</p> <p><i>Drainage class:</i> very poorly drained</p> | <p><i>Soil loss tolerance (T factor):</i> 2</p> <p><i>Wind erodibility group (WEG):</i> 7</p> <p><i>Wind erodibility index (WEI):</i> 38</p> <p><i>Kw factor (surface layer)</i> .02</p> <p><i>Land capability, nonirrigated</i> 7w</p> <p><i>Hydric soil:</i> yes</p> <p><i>Hydrologic group:</i> D</p> <p><i>Potential for frost action:</i> high</p> |
|---|---|

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|--|---------------------|---------------------------------|------------|
| Oi -- 0 to 6 in | peat | very rapid | 3.25 to 3.84 in | |
| Oe -- 6 to 46 in | mucky peat | rapid | 18.07 to 22.09 in | |
| Cg -- 46 to 80 in | stratified loamy fine sand to silty clay | moderate | 3.39 to 6.09 in | 5.6 to 7.8 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B66C--Entisols, channeled, 0 to 20 percent slopes, rarely to frequently flooded

Udifuluents, occasionally flooded

Extent: 15 to 50 percent of the unit

Landform(s): levees on flood plains

Slope gradient: 2 to 10 percent

Parent material: alluvium

Restrictive feature(s): greater than 60 inches

Flooding: occasional

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .24

Land capability, nonirrigated 3w

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 6 in | silt loam | moderate | 1.18 to 1.42 in | 5.6 to 7.3 |
| Cg -- 6 to 80 in | stratified silt loam to loamy coarse sand | rapid | 4.44 to 16.28 in | 5.6 to 7.3 |

Udipsamments, rarely flooded

Extent: 10 to 35 percent of the unit

Landform(s): valley sides on flood plains

Slope gradient: 4 to 20 percent

Parent material: alluvium

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): 2

Wind erodibility index (WEI): 134

Kw factor (surface layer) .17

Land capability, nonirrigated 4s

Hydric soil: no

Hydrologic group: A

Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|------------|
| A -- 0 to 3 in | loamy sand | rapid | 0.25 to 0.38 in | 4.5 to 6.5 |
| Bw -- 3 to 22 in | coarse sand | very rapid | 0.76 to 1.32 in | 4.5 to 6.5 |
| C -- 22 to 80 in | coarse sand | very rapid | 2.31 to 3.47 in | 5.6 to 7.3 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B66C--Entisols, channeled, 0 to 20 percent slopes, rarely to frequently flooded

Udifluvents, frequently flooded

Extent: 10 to 30 percent of the unit

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

Slope gradient: 0 to 6 percent

Parent material: alluvium

Restrictive feature(s): greater than 60 inches

Flooding: frequent

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .24

Land capability, nonirrigated 5w

Hydric soil: yes

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 6 in | silt loam | moderate | 1.18 to 1.42 in | 5.6 to 7.3 |
| Cg -- 6 to 80 in | stratified silt loam to loamy coarse sand | rapid | 4.44 to 16.28 in | 5.6 to 7.3 |

Fluvaquents, frequently flooded

Extent: 10 to 25 percent of the unit

Landform(s): flats on flood plains

Slope gradient: 0 to 3 percent

Parent material: alluvium

Restrictive feature(s): greater than 60 inches

Flooding: frequent

Ponding: none

Drainage class: poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .24

Land capability, nonirrigated 5w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|---|---------------------|---------------------------------|------------|
| A -- 0 to 6 in | mucky silt loam | moderate | 1.30 to 1.54 in | 5.6 to 7.3 |
| Cg -- 6 to 80 in | stratified silt loam to loamy coarse sand | rapid | 4.44 to 16.28 in | 5.6 to 7.3 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B67A--Rifle soils, hibbing catena, 0 to 1 percent slopes

Rifle

Extent: 0 to 95 percent of the unit

Landform(s): swamps on moraines, swamps on till plains

Slope gradient: 0 to 1 percent

Parent material: organic material

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 7

Wind erodibility index (WEI): 38

Kw factor (surface layer) .02

Land capability, nonirrigated 7w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|-----------|
| Oe1 -- 0 to 12 in | mucky peat | rapid | 5.31 to 6.50 in | |
| Oe2 -- 12 to 42 in | mucky peat | rapid | 13.64 to 16.67 in | |
| Oa -- 42 to 52 in | muck | moderately rapid | 3.44 to 4.43 in | |
| Oe3 -- 52 to 80 in | mucky peat | rapid | 12.58 to 15.37 in | |

Rifle, depressional

Extent: 0 to 95 percent of the unit

Landform(s): swamps on moraines, swamps on till plains

Slope gradient: 0 to 1 percent

Parent material: organic material

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .02

Land capability, nonirrigated 7w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|-----------|
| Oe1 -- 0 to 12 in | mucky peat | rapid | 5.31 to 6.50 in | |
| Oe2 -- 12 to 42 in | mucky peat | rapid | 13.64 to 16.67 in | |
| Oa -- 42 to 52 in | muck | moderately rapid | 3.44 to 4.43 in | |
| Oe3 -- 52 to 80 in | mucky peat | rapid | 12.58 to 15.37 in | |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B73A--Spoooner-Buhl-Littleswan complex, 0 to 3 percent slopes

Spoooner

Extent: 20 to 50 percent of the unit

Landform(s): flats on lake plains

Slope gradient: 0 to 2 percent

Parent material: silty glaciolacustrine deposits

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .32

Land capability, nonirrigated 3w

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

Littleswan

Extent: 15 to 35 percent of the unit

Landform(s): rises on lake plains

Slope gradient: 1 to 3 percent

Parent material: silty glaciolacustrine deposits

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .32

Land capability, nonirrigated 2w

Hydric soil: no

Hydrologic group: C

Potential for frost action: high

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|-----------------|---------------------|---------------------------------|------------|
| A -- 0 to 4 in | silt loam | moderate | 0.87 to 0.94 in | 5.6 to 7.3 |
| E -- 4 to 11 in | silt loam | moderate | 1.20 to 1.56 in | 5.6 to 7.3 |
| Bt -- 11 to 32 in | silty clay loam | moderately slow | 3.76 to 4.59 in | 6.1 to 7.3 |
| Cg1 -- 32 to 41 in | silt loam | moderate | 1.54 to 1.99 in | 7.4 to 8.4 |
| Cg2 -- 41 to 80 in | silt loam | moderate | 6.63 to 8.57 in | 7.4 to 8.4 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B73A--Spooner-Buhl-Littleswan complex, 0 to 3 percent slopes

Buhl

Extent: 15 to 40 percent of the unit

Landform(s): rises on lake plains

Slope gradient: 1 to 3 percent

Parent material: loamy material over dense fine till

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

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .24

Land capability, nonirrigated 3w

Hydric soil: no

Hydrologic group: D

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|------------|
| A -- 0 to 3 in | loam | moderate | 0.63 to 0.69 in | 4.5 to 5.5 |
| E -- 3 to 13 in | loam | moderate | 1.48 to 2.07 in | 4.5 to 5.5 |
| 2B/E -- 13 to 18 in | clay loam | slow | 0.41 to 0.77 in | 5.1 to 6.0 |
| 2Bt1 -- 18 to 32 in | clay | slow | 1.10 to 2.07 in | 5.1 to 6.0 |
| 2Bt2 -- 32 to 58 in | clay | slow | 2.08 to 3.90 in | 5.1 to 6.5 |
| 2BCd -- 58 to 80 in | clay | slow | 0.88 to 1.76 in | 6.1 to 8.4 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B74A--Kapla, depressional-Wabuse complex, 0 to 2 percent slopes

Kapla, depressional

Extent: 35 to 60 percent of the unit

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

Slope gradient: 0 to 1 percent

Parent material: eolian and/or glaciolacustrine materials

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .02

Land capability, nonirrigated 6w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

Representative soil profile:

| | | Texture | Permeability | Available water capacity | pH |
|--------|-------------|--|------------------|--------------------------|------------|
| Oe -- | 0 to 5 in | mucky peat | rapid | 2.30 to 2.81 in | |
| A -- | 5 to 12 in | fine sandy loam | moderately rapid | 0.80 to 1.41 in | 4.5 to 6.0 |
| Bg1 -- | 12 to 24 in | fine sandy loam | moderately rapid | 1.46 to 2.44 in | 4.5 to 6.5 |
| Bg2 -- | 24 to 37 in | loamy very fine sand | moderately rapid | 1.56 to 2.60 in | 5.1 to 6.5 |
| Cg -- | 37 to 80 in | stratified loamy fine sand to loamy very fine sand to fine sandy loam to very fine sandy loam to silt loam | moderately rapid | 5.58 to 7.30 in | 5.6 to 7.8 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B74A--Kapla, depressional-Wabuse complex, 0 to 2 percent slopes

Wabuse

Extent: 20 to 50 percent of the unit

Landform(s): flats on lake plains, flats on outwash plains

Slope gradient: 0 to 2 percent

Parent material: sandy eolian, glaciolacustrine or outwash material and underlying loamy glaciolacustrine sediments

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .20

Land capability, nonirrigated 3w

Hydric soil: yes

Hydrologic group: 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 | moderately rapid | 0.50 to 0.57 in | 4.5 to 6.0 |
| E -- | 3 to 6 in | fine sandy loam | moderately rapid | 0.30 to 0.50 in | 4.5 to 6.0 |
| Bg1 -- | 6 to 28 in | loamy fine sand | rapid | 1.98 to 3.31 in | 5.1 to 6.5 |
| 2Bg2 -- | 28 to 60 in | stratified loamy fine sand to loamy very fine sand to fine sandy loam to very fine sandy loam to silt loam | moderately rapid | 3.51 to 5.10 in | 5.1 to 6.5 |
| 2Cg -- | 60 to 80 in | stratified loamy fine sand to loamy very fine sand to fine sandy loam to very fine sandy loam to silt loam | moderately rapid | 2.21 to 3.21 in | 5.6 to 7.8 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

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

Rifle

Extent: 0 to 95 percent of the unit

Landform(s): swamps on lake plains

Slope gradient: 0 to 1 percent

Parent material: organic material

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 7

Wind erodibility index (WEI): 38

Kw factor (surface layer) .02

Land capability, nonirrigated 7w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|-----------|
| Oe1 -- 0 to 12 in | mucky peat | rapid | 5.31 to 6.50 in | |
| Oe2 -- 12 to 42 in | mucky peat | rapid | 13.64 to 16.67 in | |
| Oa -- 42 to 52 in | muck | moderately rapid | 3.44 to 4.43 in | |
| Oe3 -- 52 to 80 in | mucky peat | rapid | 12.58 to 15.37 in | |

Rifle, depressional

Extent: 0 to 95 percent of the unit

Landform(s): swamps on lake plains

Slope gradient: 0 to 1 percent

Parent material: organic material

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .02

Land capability, nonirrigated 7w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|-----------|
| Oe1 -- 0 to 12 in | mucky peat | rapid | 5.31 to 6.50 in | |
| Oe2 -- 12 to 42 in | mucky peat | rapid | 13.64 to 16.67 in | |
| Oa -- 42 to 52 in | muck | moderately rapid | 3.44 to 4.43 in | |
| Oe3 -- 52 to 80 in | mucky peat | rapid | 12.58 to 15.37 in | |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

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

Greenwood

Extent: 0 to 95 percent of the unit

Landform(s): bogs on lake plains

Slope gradient: 0 to 1 percent

Parent material: organic material

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: very poorly drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 7

Wind erodibility index (WEI): 38

Kw factor (surface layer) .02

Land capability, nonirrigated 7w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|-----------|
| Oi -- 0 to 10 in | peat | very rapid | 5.41 to 6.40 in | |
| Oe1 -- 10 to 24 in | mucky peat | rapid | 6.38 to 7.80 in | |
| Oe2 -- 24 to 80 in | mucky peat | rapid | 25.16 to 30.75 in | |

Greenwood, depressional

Extent: 0 to 95 percent of the unit

Landform(s): bogs on lake plains

Slope gradient: 0 to 1 percent

Parent material: organic material

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 7

Wind erodibility index (WEI): 38

Kw factor (surface layer) .02

Land capability, nonirrigated 7w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|-----------|
| Oi -- 0 to 10 in | peat | very rapid | 5.41 to 6.40 in | |
| Oe1 -- 10 to 24 in | mucky peat | rapid | 6.38 to 7.80 in | |
| Oe2 -- 24 to 80 in | mucky peat | rapid | 25.16 to 30.75 in | |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B99A--Cathro-Sago complex, depressional, 0 to 1 percent slopes

Cathro, depressional

Extent: 30 to 65 percent of the unit

Landform(s): swamps on lake plains

Slope gradient: 0 to 1 percent

Parent material: organic material over glaciolacustrine sediments

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) .02

Land capability, nonirrigated 7w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|---|---------------------|---------------------------------|------------|
| Oa -- 0 to 36 in | muck | moderately rapid | 12.54 to 16.12 in | |
| A -- 36 to 40 in | mucky silt loam | moderate | 0.95 to 1.13 in | 5.1 to 6.5 |
| Cg -- 40 to 80 in | stratified loamy fine sand to silt loam | moderately rapid | 5.17 to 7.56 in | 5.6 to 7.8 |

Sago, depressional

Extent: 30 to 60 percent of the unit

Landform(s): swamps on lake plains, -- error in exists on --

Slope gradient: 0 to 1 percent

Parent material: organic material over glaciolacustrine sediments

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .02

Land capability, nonirrigated 7w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|---|---------------------|---------------------------------|------------|
| Oe -- 0 to 5 in | mucky peat | rapid | 2.30 to 2.81 in | |
| Oa -- 5 to 13 in | muck | moderately rapid | 2.76 to 3.54 in | |
| A -- 13 to 15 in | fine sandy loam | moderately rapid | 0.22 to 0.41 in | 4.5 to 6.0 |
| Bg -- 15 to 41 in | stratified loamy fine sand to silt loam | moderately rapid | 3.38 to 4.94 in | 5.1 to 6.5 |
| Cg -- 41 to 80 in | stratified loamy fine sand to silt loam | moderately rapid | 5.07 to 7.41 in | 5.6 to 7.8 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B99A--Cathro-Sago complex, depressional, 0 to 1 percent slopes

B108A--Cathro muck, depressional, upham basin, 0 to 1 percent sloes

Cathro, depressional

Extent: 60 to 90 percent of the unit

Landform(s): swamps on lake plains

Slope gradient: 0 to 1 percent

Parent material: organic material over glaciolacustrine or glaciofluvial sediments

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: D

Potential for frost action: high

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|--|---------------------|---------------------------------|------------|
| Oa -- 0 to 36 in | muck | moderately rapid | 12.54 to 16.12 in | |
| A -- 36 to 40 in | mucky silt loam | moderate | 0.95 to 1.13 in | 5.1 to 6.5 |
| Cg -- 40 to 80 in | stratified loamy fine sand to silty clay | moderate | 3.98 to 7.16 in | 5.6 to 7.8 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B119A--Tacoosh mucky peat, upham basin, 0 to 1 percent slopes

Tacoosh

Extent: 60 to 90 percent of the unit

Landform(s): swamps on lake plains

Slope gradient: 0 to 1 percent

Parent material: organic material over glaciolacustrine or glaciofluvial sediments

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 2

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .02

Land capability, nonirrigated 7w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

Representative soil profile:

| | | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|--------|-------------|--|---------------------|---------------------------------|------------|
| Oe1 -- | 0 to 12 in | mucky peat | rapid | 5.31 to 6.50 in | |
| Oe2 -- | 12 to 32 in | mucky peat | rapid | 9.04 to 11.04 in | |
| Oa -- | 32 to 36 in | muck | moderately rapid | 1.38 to 1.77 in | |
| Cg -- | 36 to 80 in | stratified loamy fine sand to silty clay | moderate | 4.41 to 7.94 in | 6.1 to 7.8 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B147A--Rifle soils, upham basin, 0 to 1 percent slopes

Rifle

Extent: 0 to 95 percent of the unit

Landform(s): swamps on lake plains

Slope gradient: 0 to 1 percent

Parent material: organic material

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 7

Wind erodibility index (WEI): 38

Kw factor (surface layer) .02

Land capability, nonirrigated 7w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|-----------|
| Oe1 -- 0 to 12 in | mucky peat | rapid | 5.31 to 6.50 in | |
| Oe2 -- 12 to 42 in | mucky peat | rapid | 13.64 to 16.67 in | |
| Oa -- 42 to 52 in | muck | moderately rapid | 3.44 to 4.43 in | |
| Oe3 -- 52 to 80 in | mucky peat | rapid | 12.58 to 15.37 in | |

Rifle, depressional

Extent: 0 to 95 percent of the unit

Landform(s): swamps on lake plains

Slope gradient: 0 to 1 percent

Parent material: organic material

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .02

Land capability, nonirrigated 7w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|-----------|
| Oe1 -- 0 to 12 in | mucky peat | rapid | 5.31 to 6.50 in | |
| Oe2 -- 12 to 42 in | mucky peat | rapid | 13.64 to 16.67 in | |
| Oa -- 42 to 52 in | muck | moderately rapid | 3.44 to 4.43 in | |
| Oe3 -- 52 to 80 in | mucky peat | rapid | 12.58 to 15.37 in | |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

B152A--Greenwood soils, hibbing catena, 0 to 1 percent slopes

Greenwood

Extent: 0 to 95 percent of the unit

Landform(s): bogs on moraines, bogs on till plains

Slope gradient: 0 to 1 percent

Parent material: organic material

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: very poorly drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 7

Wind erodibility index (WEI): 38

Kw factor (surface layer) .02

Land capability, nonirrigated 7w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|-----------|
| Oi -- 0 to 10 in | peat | very rapid | 5.41 to 6.40 in | |
| Oe1 -- 10 to 24 in | mucky peat | rapid | 6.38 to 7.80 in | |
| Oe2 -- 24 to 80 in | mucky peat | rapid | 25.16 to 30.75 in | |

Greenwood, depressional

Extent: 0 to 95 percent of the unit

Landform(s): bogs on moraines, bogs on till plains

Slope gradient: 0 to 0 percent

Parent material: organic material

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 7

Wind erodibility index (WEI): 38

Kw factor (surface layer) .02

Land capability, nonirrigated 7w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|-----------|
| Oi -- 0 to 10 in | peat | very rapid | 5.41 to 6.40 in | |
| Oe1 -- 10 to 24 in | mucky peat | rapid | 6.38 to 7.80 in | |
| Oe2 -- 24 to 80 in | mucky peat | rapid | 25.16 to 30.75 in | |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

DA--Denied access

Denied Access

Extent: 100 percent of the unit

Landform(s):

Slope gradient:

Parent material:

Restrictive feature(s): greater than 60 inches

Flooding:

Ponding:

Drainage class:

Soil loss tolerance (T factor):

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Kw factor (surface layer)

Land capability, nonirrigated

Hydric soil: unranked

Hydrologic group:

Potential for frost action:

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

F1C--Eaglesnest stony loam, 4 to 12 percent slopes, very bouldery

Eaglesnest, very bouldery

Extent: 75 to 90 percent of the unit

Landform(s): moraines

Slope gradient: 4 to 12 percent

Parent material: loamy material over dense till

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

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .24

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

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

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

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

Eaglesnest, bouldery

Extent: 30 to 60 percent of the unit

Landform(s): moraines

Slope gradient: 2 to 8 percent

Parent material: loamy material over dense till

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

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .24

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

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

Wahlsten, bouldery

Extent: 20 to 50 percent of the unit

Landform(s): moraines

Slope gradient: 2 to 8 percent

Parent material: loamy material over dense till

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

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 2

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .24

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|--------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 3 in | stony loam | moderate | 0.41 to 0.60 in | 4.5 to 6.0 |
| Bw1 -- 3 to 9 in | stony loam | moderate | 0.59 to 1.06 in | 4.5 to 6.0 |
| Bw2 -- 9 to 17 in | gravelly loam | moderate | 0.63 to 1.26 in | 5.1 to 6.5 |
| 2Cd -- 17 to 37 in | very gravelly sandy loam | slow | 0.60 to 1.41 in | 5.1 to 6.5 |
| R -- 37 to 80 in | bedrock | impermeable | | |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

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

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

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

Eveleth, bouldery

Extent: 30 to 50 percent of the unit

Landform(s): moraines

Slope gradient: 8 to 18 percent

Parent material: loamy material over dense till

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

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .24

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

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

Eaglesnest, bouldery

Extent: 15 to 35 percent of the unit

Landform(s): moraines

Slope gradient: 6 to 10 percent

Parent material: loamy material over dense till

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

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .24

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

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

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

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

Conic, bouldery

Extent: 15 to 30 percent of the unit

Landform(s): moraines

Slope gradient: 8 to 18 percent

Parent material: loamy material over dense till

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

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 2

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .24

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

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

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F4E--Eveleth-Conic, bouldery-Rock outcrop complex, 18 to 30 percent slopes

Eveleth, bouldery

Extent: 45 to 65 percent of the unit

Landform(s): moraines

Slope gradient: 18 to 30 percent

Parent material: loamy material over dense till

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

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .24

Land capability, nonirrigated 6e

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

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

Conic, bouldery

Extent: 20 to 35 percent of the unit

Landform(s): moraines

Slope gradient: 18 to 30 percent

Parent material: loamy material over dense till

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

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 2

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .24

Land capability, nonirrigated 6e

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

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

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F4E--Eveleth-Conic, bouldery-Rock outcrop complex, 18 to 30 percent slopes

Rock outcrop

Extent: 10 to 20 percent of the unit

Landform(s): moraines

Slope gradient: 18 to 30 percent

Parent material:

Restrictive feature(s): greater than 60 inches

Flooding:

Ponding:

Drainage class:

Soil loss tolerance (T factor):

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Kw factor (surface layer)

Land capability, nonirrigated

Hydric soil:

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)

St. Louis County, Minnesota, Embarrass Part

F5B--Babbitt, bouldery-Wahlsten, bouldery-Aquepts, rubbly, complex, 0 to 8 percent slopes

Babbitt, bouldery

Extent: 30 to 50 percent of the unit

Landform(s): moraines

Slope gradient: 1 to 4 percent

Parent material: loamy material over dense till

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

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .24

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

| <i>Representative soil profile:</i> | | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|-------------|--------------------------|---------------------|---------------------------------|------------|
| A -- | 0 to 5 in | stony loam | moderate | 0.67 to 0.97 in | 4.5 to 6.0 |
| Bw1 -- | 5 to 14 in | stony loam | moderate | 0.72 to 1.45 in | 4.5 to 6.0 |
| Bw2 -- | 14 to 30 in | gravelly sandy loam | moderate | 1.10 to 2.36 in | 5.1 to 6.5 |
| 2BC -- | 30 to 50 in | very gravelly sandy loam | moderately slow | 1.20 to 2.81 in | 5.1 to 6.5 |
| 2Cd -- | 50 to 80 in | very gravelly sandy loam | slow | 0.60 to 1.50 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F5B--Babbitt, bouldery-Wahlsten, bouldery-Aquepts, rubbly, complex, 0 to 8 percent slopes

Wahlsten, bouldery

Extent: 20 to 30 percent of the unit

Landform(s): moraines

Slope gradient: 3 to 8 percent

Parent material: loamy material over dense till

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

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 2

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .24

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|--------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 3 in | stony loam | moderate | 0.41 to 0.60 in | 4.5 to 6.0 |
| Bw1 -- 3 to 9 in | stony loam | moderate | 0.59 to 1.06 in | 4.5 to 6.0 |
| Bw2 -- 9 to 17 in | gravelly loam | moderate | 0.63 to 1.26 in | 5.1 to 6.5 |
| 2Cd -- 17 to 37 in | very gravelly sandy loam | slow | 0.60 to 1.41 in | 5.1 to 6.5 |
| R -- 37 to 80 in | bedrock | impermeable | | |

Aquepts, rubbly

Extent: 10 to 20 percent of the unit

Landform(s): drainageways on moraines

Slope gradient: 0 to 1 percent

Parent material: glaciofluvial sediments

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): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .05

Land capability, nonirrigated 8s

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 4 in | extremely stony sandy loam | moderate | 0.16 to 0.31 in | 4.5 to 6.0 |
| Bg -- 4 to 40 in | very stony loam | moderate | 1.45 to 4.71 in | 4.5 to 6.0 |
| Cg -- 40 to 80 in | cobbly sandy loam | moderately slow | 2.78 to 6.36 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F6B--Soudan-Eaglesnest-Babbitt complex, 1 to 8 percent slopes, bouldery

Soudan, bouldery

Extent: 35 to 55 percent of the unit

Landform(s): moraines

Slope gradient: 2 to 8 percent

Parent material: sandy outwash and/or eloian material over dense till

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

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .17

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 3 in | fine sandy loam | moderately rapid | 0.44 to 0.57 in | 4.5 to 6.0 |
| Bw1 -- 3 to 17 in | sandy loam | moderately rapid | 1.38 to 2.34 in | 4.5 to 6.0 |
| Bw2 -- 17 to 36 in | loamy sand | rapid | 0.94 to 1.89 in | 4.5 to 6.0 |
| 2BC -- 36 to 57 in | very cobbly sandy loam | moderately slow | 0.85 to 1.91 in | 5.1 to 6.5 |
| 2Cd -- 57 to 80 in | very cobbly sandy loam | slow | 0.46 to 1.14 in | 5.1 to 6.5 |

Eaglesnest, bouldery

Extent: 15 to 35 percent of the unit

Landform(s): moraines

Slope gradient: 2 to 8 percent

Parent material: loamy material over dense till

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

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .24

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

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

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F6B--Soudan-Eaglesnest-Babbitt complex, 1 to 8 percent slopes, bouldery

Babbitt, bouldery

Extent: 15 to 35 percent of the unit

Landform(s): moraines

Slope gradient: 1 to 4 percent

Parent material: loamy material over dense till

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

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .24

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|--------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 5 in | stony loam | moderate | 0.67 to 0.97 in | 4.5 to 6.0 |
| Bw1 -- 5 to 14 in | stony loam | moderate | 0.72 to 1.45 in | 4.5 to 6.0 |
| Bw2 -- 14 to 30 in | gravelly sandy loam | moderate | 1.10 to 2.36 in | 5.1 to 6.5 |
| 2BC -- 30 to 50 in | very gravelly sandy loam | moderately slow | 1.20 to 2.81 in | 5.1 to 6.5 |
| 2Cd -- 50 to 80 in | very gravelly sandy loam | slow | 0.60 to 1.50 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

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

Biwabik

Extent: 40 to 70 percent of the unit

Landform(s): outwash plains

Slope gradient: 1 to 8 percent

Parent material: gravelly outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: excessively drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .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 | sandy loam | moderately rapid | 0.24 to 0.30 in | 4.5 to 6.0 |
| Bw -- 2 to 9 in | gravelly sandy loam | moderately rapid | 0.64 to 0.92 in | 4.5 to 6.0 |
| E -- 9 to 32 in | gravelly loamy sand | rapid | 0.69 to 1.60 in | 4.5 to 6.0 |
| E and B -- 32 to 64 in | gravelly loamy sand | rapid | 0.97 to 1.94 in | 5.1 to 6.0 |
| C -- 64 to 80 in | gravelly coarse sand | very rapid | 0.31 to 0.94 in | 5.1 to 6.5 |

Graycalm

Extent: 25 to 55 percent of the unit

Landform(s): outwash plains

Slope gradient: 1 to 8 percent

Parent material: sandy outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat excessively drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw factor (surface layer) .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 | 4.5 to 6.0 |
| Bw -- 2 to 37 in | loamy sand | rapid | 2.10 to 3.85 in | 4.5 to 6.0 |
| E and Bt -- 37 to 48 in | sand | rapid | 0.55 to 0.99 in | 5.1 to 6.0 |
| C -- 48 to 80 in | coarse sand | very rapid | 0.64 to 2.23 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

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

Biwabik

Extent: 30 to 60 percent of the unit

Landform(s): pitted outwash plains

Slope gradient: 8 to 18 percent

Parent material: gravelly outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: excessively drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .17

Land capability, nonirrigated 4e

Hydric soil: no

Hydrologic group: A

Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------------|---------------------|---------------------------------|------------|
| A -- 0 to 2 in | sandy loam | moderately rapid | 0.24 to 0.30 in | 4.5 to 6.0 |
| Bw -- 2 to 9 in | gravelly sandy loam | moderately rapid | 0.64 to 0.92 in | 4.5 to 6.0 |
| E -- 9 to 32 in | gravelly loamy sand | rapid | 0.69 to 1.60 in | 4.5 to 6.0 |
| E and B -- 32 to 64 in | gravelly loamy sand | rapid | 0.97 to 1.94 in | 5.1 to 6.0 |
| C -- 64 to 80 in | gravelly coarse sand | very rapid | 0.31 to 0.94 in | 5.1 to 6.5 |

Graycalm

Extent: 30 to 60 percent of the unit

Landform(s): pitted outwash plains

Slope gradient: 8 to 18 percent

Parent material: sandy outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat excessively drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw factor (surface layer) .17

Land capability, nonirrigated 4e

Hydric soil: no

Hydrologic group: A

Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|------------|
| A -- 0 to 2 in | loamy sand | rapid | 0.20 to 0.24 in | 4.5 to 6.0 |
| Bw -- 2 to 37 in | loamy sand | rapid | 2.10 to 3.85 in | 4.5 to 6.0 |
| E and Bt -- 37 to 48 in | sand | rapid | 0.55 to 0.99 in | 5.1 to 6.0 |
| C -- 48 to 80 in | coarse sand | very rapid | 0.64 to 2.23 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

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

Friendship, depressional

Extent: 10 to 20 percent of the unit

Landform(s): depressions on pitted outwash plains

Slope gradient: 0 to 3 percent

Parent material: sandy outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw factor (surface layer) .17

Land capability, nonirrigated 4s

Hydric soil: no

Hydrologic group: A

Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|------------|
| A -- 0 to 3 in | loamy sand | rapid | 0.31 to 0.38 in | 4.5 to 6.0 |
| Bw1 -- 3 to 24 in | sand | rapid | 0.63 to 2.30 in | 4.5 to 6.0 |
| Bw2 -- 24 to 40 in | sand | rapid | 0.32 to 1.13 in | 4.5 to 6.0 |
| C -- 40 to 80 in | sand | rapid | 0.80 to 2.78 in | 5.1 to 6.5 |

F9A--Cloquet loam, 0 to 2 percent slopes

Cloquet

Extent: 70 to 90 percent of the unit

Landform(s): flats on outwash plains

Slope gradient: 0 to 2 percent

Parent material: loamy material over gravelly outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .24

Land capability, nonirrigated 3s

Hydric soil: no

Hydrologic group: B

Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|---------------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 2 in | loam | moderately rapid | 0.39 to 0.43 in | 4.5 to 6.0 |
| Bw -- 2 to 22 in | loam | moderate | 3.01 to 4.42 in | 4.5 to 6.0 |
| 2C -- 22 to 80 in | very gravelly loamy coarse sand | rapid | 0.58 to 2.31 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F9B--Cloquet loam, 2 to 8 percent slopes

Cloquet

Extent: 75 to 90 percent of the unit

Landform(s): outwash plains

Slope gradient: 2 to 8 percent

Parent material: loamy material over gravelly outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .24

Land capability, nonirrigated 3s

Hydric soil: no

Hydrologic group: B

Potential for frost action: low

| <i>Representative soil profile:</i> | | | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|-------------|---------------------------------|----------------|---------------------|---------------------------------|------------|
| A -- | 0 to 2 in | loam | | moderately rapid | 0.39 to 0.43 in | 4.5 to 6.0 |
| Bw -- | 2 to 22 in | loam | | moderate | 3.01 to 4.42 in | 4.5 to 6.0 |
| 2C -- | 22 to 80 in | very gravelly loamy coarse sand | | rapid | 0.58 to 2.31 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F10D--Cloquet-Pequaywan complex, pitted, 0 to 18 percent slopes

Cloquet

Extent: 65 to 80 percent of the unit

Landform(s): pitted outwash plains

Slope gradient: 8 to 18 percent

Parent material: loamy material over gravelly outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .24

Land capability, nonirrigated 4e

Hydric soil: no

Hydrologic group: B

Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|---------------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 2 in | loam | moderately rapid | 0.39 to 0.43 in | 4.5 to 6.0 |
| Bw -- 2 to 22 in | loam | moderate | 3.01 to 4.42 in | 4.5 to 6.0 |
| 2C -- 22 to 80 in | very gravelly loamy coarse sand | rapid | 0.58 to 2.31 in | 5.1 to 6.5 |

Pequaywan

Extent: 10 to 20 percent of the unit

Landform(s): depressions on pitted outwash plains

Slope gradient: 0 to 2 percent

Parent material: loamy material over gravelly outwash

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 3s

Hydric soil: no

Hydrologic group: B

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|--------------------|---------------------|---------------------------------|------------|
| A -- 0 to 2 in | loam | moderately rapid | 0.39 to 0.43 in | 4.5 to 6.0 |
| Bw1, Bw2 -- 2 to 20 in | loam | moderate | 2.72 to 3.98 in | 4.5 to 6.0 |
| Bw3 -- 20 to 30 in | sandy loam | moderately rapid | 0.79 to 1.77 in | 4.5 to 6.0 |
| 2C -- 30 to 80 in | very gravelly sand | rapid | 0.50 to 2.00 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F10E--Cloquet-Pequaywan complex, pitted, 0 to 45 percent slopes

Cloquet

Extent: 60 to 80 percent of the unit

Landform(s): pitted outwash plains

Slope gradient: 18 to 45 percent

Parent material: loamy material over gravelly outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .24

Land capability, nonirrigated 6e

Hydric soil: no

Hydrologic group: B

Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|---------------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 2 in | loam | moderately rapid | 0.39 to 0.43 in | 4.5 to 6.0 |
| Bw -- 2 to 22 in | loam | moderate | 3.01 to 4.42 in | 4.5 to 6.0 |
| 2C -- 22 to 80 in | very gravelly loamy coarse sand | rapid | 0.58 to 2.31 in | 5.1 to 6.5 |

Pequaywan

Extent: 10 to 20 percent of the unit

Landform(s): depressions on pitted outwash plains

Slope gradient: 0 to 3 percent

Parent material: loamy material over gravelly outwash

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 3s

Hydric soil: no

Hydrologic group: B

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|--------------------|---------------------|---------------------------------|------------|
| A -- 0 to 2 in | loam | moderately rapid | 0.39 to 0.43 in | 4.5 to 6.0 |
| Bw1, Bw2 -- 2 to 20 in | loam | moderate | 2.72 to 3.98 in | 4.5 to 6.0 |
| Bw3 -- 20 to 30 in | sandy loam | moderately rapid | 0.79 to 1.77 in | 4.5 to 6.0 |
| 2C -- 30 to 80 in | very gravelly sand | rapid | 0.50 to 2.00 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F11B--Eaglesnest stony loam, 2 to 8 percent slopes, bouldery

Eaglesnest, bouldery

Extent: 70 to 90 percent of the unit

Landform(s): till plains

Slope gradient: 2 to 8 percent

Parent material: loamy material over dense till

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

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .24

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

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

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F12B--Eaglesnest-Babbitt complex, 1 to 8 percent slopes, bouldery

Eaglesnest, bouldery

Extent: 35 to 55 percent of the unit

Landform(s): rises on till plains

Slope gradient: 2 to 8 percent

Parent material: loamy material over dense till

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

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .24

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

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

Babbitt, bouldery

Extent: 30 to 50 percent of the unit

Landform(s): flats on till plains

Slope gradient: 1 to 4 percent

Parent material: loamy material over dense till

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

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .24

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|--------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 5 in | stony loam | moderate | 0.67 to 0.97 in | 4.5 to 6.0 |
| Bw1 -- 5 to 14 in | stony loam | moderate | 0.72 to 1.45 in | 4.5 to 6.0 |
| Bw2 -- 14 to 30 in | gravelly sandy loam | moderate | 1.10 to 2.36 in | 5.1 to 6.5 |
| 2BC -- 30 to 50 in | very gravelly sandy loam | moderately slow | 1.20 to 2.81 in | 5.1 to 6.5 |
| 2Cd -- 50 to 80 in | very gravelly sandy loam | slow | 0.60 to 1.50 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F12B--Eaglesnest-Babbitt complex, 1 to 8 percent slopes, bouldery

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F13A--Babbitt, bouldery-Aquepts, rubbly, complex, 0 to 3 percent slopes

Babbitt, bouldery

Extent: 35 to 55 percent of the unit

Landform(s): rises on till plains

Slope gradient: 0 to 3 percent

Parent material: loamy material over dense till

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

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .24

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|--------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 5 in | stony loam | moderate | 0.67 to 0.97 in | 4.5 to 6.0 |
| Bw1 -- 5 to 14 in | stony loam | moderate | 0.72 to 1.45 in | 4.5 to 6.0 |
| Bw2 -- 14 to 30 in | gravelly sandy loam | moderate | 1.10 to 2.36 in | 5.1 to 6.5 |
| 2BC -- 30 to 50 in | very gravelly sandy loam | moderately slow | 1.20 to 2.81 in | 5.1 to 6.5 |
| 2Cd -- 50 to 80 in | very gravelly sandy loam | slow | 0.60 to 1.50 in | 5.1 to 6.5 |

Aquepts, rubbly

Extent: 30 to 50 percent of the unit

Landform(s): depressions on till plains, drainageways on till plains

Slope gradient: 0 to 1 percent

Parent material: glaciofluvial sediments

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): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .05

Land capability, nonirrigated 8s

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 4 in | extremely stony sandy loam | moderate | 0.16 to 0.31 in | 4.5 to 6.0 |
| Bg -- 4 to 40 in | very stony loam | moderate | 1.45 to 4.71 in | 4.5 to 6.0 |
| Cg -- 40 to 80 in | cobbly sandy loam | moderately slow | 2.78 to 6.36 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F14D--Eveleth stony loam, 8 to 18 percent slopes, bouldery

Eveleth, bouldery

Extent: 80 to 95 percent of the unit

Landform(s): till plains

Slope gradient: 8 to 18 percent

Parent material: loamy material over dense till

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

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .24

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

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

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F15E--Rollins cobbly sandy loam, 18 to 35 percent slopes, stony

Rollins, stony

Extent: 85 to 95 percent of the unit

Landform(s): eskers

Slope gradient: 18 to 35 percent

Parent material: loamy material over gravelly outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat excessively drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .20

Land capability, nonirrigated 6e

Hydric soil: no

Hydrologic group: A

Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|---------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 5 in | cobbly sandy loam | moderately rapid | 0.51 to 0.72 in | 4.5 to 6.0 |
| Bw -- 5 to 14 in | gravelly sandy loam | moderately rapid | 0.81 to 1.45 in | 4.5 to 6.0 |
| 2BC -- 14 to 25 in | very gravelly sand | rapid | 0.22 to 0.55 in | 4.5 to 6.0 |
| 2C -- 25 to 80 in | very gravelly coarse sand | very rapid | 0.55 to 2.74 in | 5.1 to 6.5 |

F16B--Shawano loamy fine sand, 1 to 8 percent slopes

Shawano

Extent: 75 to 95 percent of the unit

Landform(s): end moraines

Slope gradient: 1 to 8 percent

Parent material: eolian sand

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat excessively drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw factor (surface layer) .17

Land capability, nonirrigated 3s

Hydric soil: no

Hydrologic group: A

Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|-----------------|---------------------|---------------------------------|------------|
| A -- 0 to 5 in | loamy fine sand | rapid | 0.51 to 0.67 in | 4.5 to 6.0 |
| Bw -- 5 to 21 in | loamy fine sand | rapid | 1.10 to 1.73 in | 5.1 to 6.5 |
| C -- 21 to 80 in | fine sand | rapid | 3.54 to 5.91 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F17A--Aquepts, 0 to 2 percent slopes, rubbly

Aquepts, rubbly

Extent: 65 to 90 percent of the unit

Landform(s): depressions on till plains, drainageways on till plains

Slope gradient: 0 to 2 percent

Parent material: glaciofluvial sediments

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): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .05

Land capability, nonirrigated 8s

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 4 in | extremely stony sandy loam | moderate | 0.16 to 0.31 in | 4.5 to 6.0 |
| Bg -- 4 to 40 in | very stony loam | moderate | 1.45 to 4.71 in | 4.5 to 6.0 |
| Cg -- 40 to 80 in | cobbly sandy loam | moderately slow | 2.78 to 6.36 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F18A--Babbitt stony loam, 0 to 3 percent slopes, bouldery

Babbitt, bouldery

Extent: 70 to 90 percent of the unit

Landform(s): rises on till plains

Slope gradient: 0 to 3 percent

Parent material: loamy material over dense till

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

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .24

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|--------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 5 in | stony loam | moderate | 0.67 to 0.97 in | 4.5 to 6.0 |
| Bw1 -- 5 to 14 in | stony loam | moderate | 0.72 to 1.45 in | 4.5 to 6.0 |
| Bw2 -- 14 to 30 in | gravelly sandy loam | moderate | 1.10 to 2.36 in | 5.1 to 6.5 |
| 2BC -- 30 to 50 in | very gravelly sandy loam | moderately slow | 1.20 to 2.81 in | 5.1 to 6.5 |
| 2Cd -- 50 to 80 in | very gravelly sandy loam | slow | 0.60 to 1.50 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F19A--Pequaywan loam, 0 to 3 percent slopes

Pequaywan

Extent: 75 to 95 percent of the unit

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

Slope gradient: 0 to 3 percent

Parent material: loamy material over gravelly outwash

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 3s

Hydric soil: no

Hydrologic group: B

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|--------------------|---------------------|---------------------------------|------------|
| A -- 0 to 2 in | loam | moderately rapid | 0.39 to 0.43 in | 4.5 to 6.0 |
| Bw1, Bw2 -- 2 to 20 in | loam | moderate | 2.72 to 3.98 in | 4.5 to 6.0 |
| Bw3 -- 20 to 30 in | sandy loam | moderately rapid | 0.79 to 1.77 in | 4.5 to 6.0 |
| 2C -- 30 to 80 in | very gravelly sand | rapid | 0.50 to 2.00 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F20A--Barronett-Barronett, depressional, complex, 0 to 1 percent slopes

Barronett

Extent: 50 to 70 percent of the unit

Landform(s): flats on lake plains

Slope gradient: 0 to 1 percent

Parent material: silty glaciolacustrine sediments

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .32

Land capability, nonirrigated 3w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------------|---------------------|---------------------------------|------------|
| A -- 0 to 5 in | silt loam | moderate | 1.02 to 1.13 in | 5.1 to 6.0 |
| Eg -- 5 to 9 in | very fine sandy loam | moderate | 0.63 to 0.71 in | 5.1 to 6.0 |
| Btg -- 9 to 20 in | silt loam | moderately slow | 1.87 to 2.20 in | 5.1 to 6.5 |
| BCg -- 20 to 24 in | silt loam | moderate | 0.67 to 0.79 in | 5.1 to 6.5 |
| Cg -- 24 to 80 in | silt loam | moderate | 9.50 to 11.18 in | 5.1 to 6.5 |

Barronett, depressional

Extent: 25 to 45 percent of the unit

Landform(s): depressions on lake plains

Slope gradient: 0 to 1 percent

Parent material: silty glaciolacustrine sediments

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .28

Land capability, nonirrigated 6w

Hydric soil: yes

Hydrologic group: 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 9 in | mucky silt loam | moderate | 1.99 to 2.90 in | 5.1 to 6.0 |
| Eg -- 9 to 19 in | very fine sandy loam | moderate | 1.57 to 1.77 in | 5.1 to 6.0 |
| Btg -- 19 to 27 in | silt loam | moderately slow | 1.41 to 1.65 in | 5.1 to 6.5 |
| BCg -- 27 to 33 in | silt loam | moderate | 1.00 to 1.18 in | 5.1 to 6.5 |
| Cg -- 33 to 80 in | silt loam | moderate | 7.96 to 9.37 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

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

Quetico, stony

Extent: 30 to 60 percent of the unit

Landform(s): moraines

Slope gradient: 2 to 15 percent

Parent material: loamy glacial drift

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

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 1

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .20

Land capability, nonirrigated 7s

Hydric soil: no

Hydrologic group: D

Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|--------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 1 in | fine sandy loam | moderately rapid | 0.11 to 0.17 in | 4.5 to 6.0 |
| Bw -- 1 to 7 in | gravelly fine sandy loam | moderately rapid | 0.47 to 0.77 in | 4.5 to 6.0 |
| R -- 7 to 80 in | bedrock | impermeable | | |

Rock outcrop

Extent: 20 to 40 percent of the unit

Landform(s): moraines

Slope gradient: 2 to 15 percent

Parent material:

Restrictive feature(s): greater than 60 inches

Flooding:

Ponding:

Drainage class:

Soil loss tolerance (T factor):

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Kw factor (surface layer)

Land capability, nonirrigated 8

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)

St. Louis County, Minnesota, Embarrass Part

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

Quetico, stony

Extent: 30 to 60 percent of the unit

Landform(s): moraines

Slope gradient: 15 to 35 percent

Parent material: loamy glacial drift

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

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 1

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .20

Land capability, nonirrigated 7s

Hydric soil: no

Hydrologic group: D

Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|--------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 1 in | fine sandy loam | moderately rapid | 0.11 to 0.17 in | 4.5 to 6.0 |
| Bw -- 1 to 7 in | gravelly fine sandy loam | moderately rapid | 0.47 to 0.77 in | 4.5 to 6.0 |
| R -- 7 to 80 in | bedrock | impermeable | | |

Rock outcrop

Extent: 20 to 40 percent of the unit

Landform(s): moraines

Slope gradient: 15 to 35 percent

Parent material:

Restrictive feature(s): greater than 60 inches

Flooding:

Ponding:

Drainage class:

Soil loss tolerance (T factor):

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Kw factor (surface layer)

Land capability, nonirrigated 8

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)

St. Louis County, Minnesota, Embarrass Part

F21F--Quetico, stony-Rock outcrop complex, 35 to 60 percent slopes

Quetico, stony

Extent: 30 to 60 percent of the unit

Landform(s): moraines

Slope gradient: 35 to 60 percent

Parent material: loamy glacial drift

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

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 1

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .20

Land capability, nonirrigated 7e

Hydric soil: no

Hydrologic group: D

Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|--------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 1 in | fine sandy loam | moderately rapid | 0.11 to 0.17 in | 4.5 to 6.0 |
| Bw -- 1 to 7 in | gravelly fine sandy loam | moderately rapid | 0.47 to 0.77 in | 4.5 to 6.0 |
| R -- 7 to 80 in | bedrock | impermeable | | |

Rock outcrop

Extent: 25 to 50 percent of the unit

Landform(s): moraines

Slope gradient: 35 to 60 percent

Parent material:

Restrictive feature(s): greater than 60 inches

Flooding:

Ponding:

Drainage class:

Soil loss tolerance (T factor):

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Kw factor (surface layer)

Land capability, nonirrigated 8

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)

St. Louis County, Minnesota, Embarrass Part

F22F--Eveleth-Conic complex, 20 to 50 percent slopes, very bouldery

Eveleth, very bouldery

Extent: 50 to 70 percent of the unit

Landform(s): moraines

Slope gradient: 20 to 50 percent

Parent material: loamy material over dense till

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

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .24

Land capability, nonirrigated 7e

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

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

Conic, very bouldery

Extent: 15 to 30 percent of the unit

Landform(s): moraines

Slope gradient: 20 to 50 percent

Parent material: loamy material over dense till

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

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 2

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .24

Land capability, nonirrigated 7e

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

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

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F22F--Eveleth-Conic complex, 20 to 50 percent slopes, very bouldery

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F23B--Rollins-Biwabik complex, 1 to 8 percent slopes

Rollins

Extent: 25 to 50 percent of the unit

Landform(s): moraines

Slope gradient: 1 to 8 percent

Parent material: loamy material over gravelly outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat excessively drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .20

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: A

Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|---------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 5 in | sandy loam | moderately rapid | 0.51 to 0.72 in | 4.5 to 6.0 |
| Bw -- 5 to 14 in | gravelly sandy loam | moderately rapid | 0.81 to 1.45 in | 4.5 to 6.0 |
| 2BC -- 14 to 25 in | very gravelly sand | rapid | 0.22 to 0.55 in | 4.5 to 6.0 |
| 2C -- 25 to 80 in | very gravelly coarse sand | very rapid | 0.55 to 2.74 in | 5.1 to 6.5 |

Biwabik

Extent: 20 to 40 percent of the unit

Landform(s): moraines

Slope gradient: 1 to 8 percent

Parent material: gravelly outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: excessively drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .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 | sandy loam | moderately rapid | 0.24 to 0.30 in | 4.5 to 6.0 |
| Bw -- 2 to 9 in | gravelly sandy loam | moderately rapid | 0.64 to 0.92 in | 4.5 to 6.0 |
| E -- 9 to 32 in | gravelly loamy sand | rapid | 0.69 to 1.60 in | 4.5 to 6.0 |
| E and B -- 32 to 64 in | gravelly loamy sand | rapid | 0.97 to 1.94 in | 5.1 to 6.0 |
| C -- 64 to 80 in | gravelly coarse sand | very rapid | 0.31 to 0.94 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F23D--Rollins-Biwabik complex, 8 to 18 percent slopes

Rollins

Extent: 30 to 60 percent of the unit

Landform(s): moraines

Slope gradient: 8 to 18 percent

Parent material: loamy material over gravelly outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat excessively drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .20

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: A

Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|---------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 5 in | sandy loam | moderately rapid | 0.51 to 0.72 in | 4.5 to 6.0 |
| Bw -- 5 to 14 in | gravelly sandy loam | moderately rapid | 0.81 to 1.45 in | 4.5 to 6.0 |
| 2BC -- 14 to 25 in | very gravelly sand | rapid | 0.22 to 0.55 in | 4.5 to 6.0 |
| 2C -- 25 to 80 in | very gravelly coarse sand | very rapid | 0.55 to 2.74 in | 5.1 to 6.5 |

Biwabik

Extent: 20 to 50 percent of the unit

Landform(s): moraines

Slope gradient: 8 to 18 percent

Parent material: gravelly outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: excessively drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .17

Land capability, nonirrigated 4e

Hydric soil: no

Hydrologic group: A

Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------------|---------------------|---------------------------------|------------|
| A -- 0 to 2 in | sandy loam | moderately rapid | 0.24 to 0.30 in | 4.5 to 6.0 |
| Bw -- 2 to 9 in | gravelly sandy loam | moderately rapid | 0.64 to 0.92 in | 4.5 to 6.0 |
| E -- 9 to 32 in | gravelly loamy sand | rapid | 0.69 to 1.60 in | 4.5 to 6.0 |
| E and B -- 32 to 64 in | gravelly loamy sand | rapid | 0.97 to 1.94 in | 5.1 to 6.0 |
| C -- 64 to 80 in | gravelly coarse sand | very rapid | 0.31 to 0.94 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F24A--Gnesen loam, 0 to 3 percent slopes

Gnesen

Extent: 75 to 90 percent of the unit

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

Slope gradient: 0 to 3 percent

Parent material: loamy material over gravelly outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .17

Land capability, nonirrigated 3s

Hydric soil: no

Hydrologic group: B

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|------------|
| A -- 0 to 3 in | loam | moderately rapid | 0.63 to 0.69 in | 4.5 to 6.0 |
| Bw -- 3 to 30 in | sandy loam | moderately rapid | 2.94 to 5.09 in | 4.5 to 6.0 |
| 2C -- 30 to 80 in | gravelly sand | rapid | 0.50 to 3.50 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F25D--Rollins-Cloquet complex, 8 to 18 percent slopes

Rollins

Extent: 45 to 65 percent of the unit

Landform(s): pitted outwash plains

Slope gradient: 8 to 18 percent

Parent material: loamy material over gravelly outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat excessively drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .20

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: A

Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|---------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 5 in | sandy loam | moderately rapid | 0.51 to 0.72 in | 4.5 to 6.0 |
| Bw -- 5 to 14 in | gravelly sandy loam | moderately rapid | 0.81 to 1.45 in | 4.5 to 6.0 |
| 2BC -- 14 to 25 in | very gravelly sand | rapid | 0.22 to 0.55 in | 4.5 to 6.0 |
| 2C -- 25 to 80 in | very gravelly coarse sand | very rapid | 0.55 to 2.74 in | 5.1 to 6.5 |

Cloquet

Extent: 25 to 35 percent of the unit

Landform(s): pitted outwash plains

Slope gradient: 8 to 18 percent

Parent material: loamy material over gravelly outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .24

Land capability, nonirrigated 4e

Hydric soil: no

Hydrologic group: B

Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|---------------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 2 in | loam | moderately rapid | 0.39 to 0.43 in | 4.5 to 6.0 |
| Bw -- 2 to 22 in | loam | moderate | 3.01 to 4.42 in | 4.5 to 6.0 |
| 2C -- 22 to 80 in | very gravelly loamy coarse sand | rapid | 0.58 to 2.31 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F26C--Shagawa-Beargrease complex, 2 to 15 percent slopes, extremely bouldery

Shagawa, extremely bouldery

Extent: 30 to 60 percent of the unit

Landform(s): end moraines

Slope gradient: 2 to 15 percent

Parent material: loamy material over glacial till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .15

Land capability, nonirrigated 7s

Hydric soil: no

Hydrologic group: B

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|--------------------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 3 in | stony loam | moderate | 0.44 to 0.57 in | 4.5 to 6.0 |
| Bw1 -- 3 to 13 in | stony loam | moderate | 0.79 to 1.48 in | 4.5 to 6.0 |
| 2Bw2 -- 13 to 32 in | very gravelly coarse sandy loam | moderately rapid | 1.13 to 1.70 in | 5.1 to 6.5 |
| 2C -- 32 to 80 in | extremely gravelly loamy coarse sand | rapid | 1.44 to 3.84 in | 5.1 to 6.5 |

Beargrease, extremely bouldery

Extent: 25 to 50 percent of the unit

Landform(s): end moraines

Slope gradient: 2 to 15 percent

Parent material: loamy material over sandy-skeletal outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .15

Land capability, nonirrigated 7s

Hydric soil: no

Hydrologic group: A

Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|-----------------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 2 in | very stony loam | moderate | 0.22 to 0.31 in | 4.5 to 6.0 |
| Bw1 -- 2 to 14 in | very stony sandy loam | moderately rapid | 0.73 to 1.59 in | 4.5 to 6.0 |
| 2Bw2 -- 14 to 22 in | extremely stony loamy coarse sand | rapid | 0.08 to 0.39 in | 4.5 to 6.0 |
| 2BC -- 22 to 46 in | extremely gravelly coarse sand | very rapid | 0.24 to 0.96 in | 4.5 to 6.5 |
| 2C -- 46 to 80 in | extremely cobbly coarse sand | very rapid | 0.34 to 1.35 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F26E--Shagawa-Beargrease complex, 8 to 30 percent slopes, extremely bouldery

Shagawa, extremely bouldery

Extent: 30 to 60 percent of the unit

Landform(s): end moraines

Slope gradient: 8 to 30 percent

Parent material: loamy material over glacial till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .15

Land capability, nonirrigated 7e

Hydric soil: no

Hydrologic group: B

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|--------------------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 3 in | stony loam | moderate | 0.44 to 0.57 in | 4.5 to 6.0 |
| Bw1 -- 3 to 13 in | stony loam | moderate | 0.79 to 1.48 in | 4.5 to 6.0 |
| 2Bw2 -- 13 to 32 in | very gravelly coarse sandy loam | moderately rapid | 1.13 to 1.70 in | 5.1 to 6.5 |
| 2C -- 32 to 80 in | extremely gravelly loamy coarse sand | rapid | 1.44 to 3.84 in | 5.1 to 6.5 |

Beargrease, extremely bouldery

Extent: 25 to 45 percent of the unit

Landform(s): end moraines

Slope gradient: 8 to 30 percent

Parent material: loamy material over sandy-skeletal outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .15

Land capability, nonirrigated 7e

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 | very stony loam | moderate | 0.22 to 0.31 in | 4.5 to 6.0 |
| Bw1 -- 2 to 14 in | very stony sandy loam | moderately rapid | 0.73 to 1.59 in | 4.5 to 6.0 |
| 2Bw2 -- 14 to 22 in | extremely stony loamy coarse sand | rapid | 0.08 to 0.39 in | 4.5 to 6.0 |
| 2BC -- 22 to 46 in | extremely gravelly coarse sand | very rapid | 0.24 to 0.96 in | 4.5 to 6.5 |
| 2C -- 46 to 80 in | extremely cobbly coarse sand | very rapid | 0.34 to 1.35 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F26G--Shagawa-Beargrease complex, 35 to 60 percent slopes, extremely bouldery

Shagawa, extremely bouldery

Extent: 30 to 60 percent of the unit

Landform(s): end moraines

Slope gradient: 35 to 60 percent

Parent material: loamy material over glacial till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .15

Land capability, nonirrigated 7e

Hydric soil: no

Hydrologic group: B

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|--------------------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 3 in | stony loam | moderate | 0.44 to 0.57 in | 4.5 to 6.0 |
| Bw1 -- 3 to 13 in | stony loam | moderate | 0.79 to 1.48 in | 4.5 to 6.0 |
| 2Bw2 -- 13 to 32 in | very gravelly coarse sandy loam | moderately rapid | 1.13 to 1.70 in | 5.1 to 6.5 |
| 2C -- 32 to 80 in | extremely gravelly loamy coarse sand | rapid | 1.44 to 3.84 in | 5.1 to 6.5 |

Beargrease, extremely bouldery

Extent: 25 to 45 percent of the unit

Landform(s): end moraines

Slope gradient: 35 to 60 percent

Parent material: loamy material over sandy-skeletal outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .15

Land capability, nonirrigated 7e

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 | very stony loam | moderate | 0.22 to 0.31 in | 4.5 to 6.0 |
| Bw1 -- 2 to 14 in | very stony sandy loam | moderately rapid | 0.73 to 1.59 in | 4.5 to 6.0 |
| 2Bw2 -- 14 to 22 in | extremely stony loamy coarse sand | rapid | 0.08 to 0.39 in | 4.5 to 6.0 |
| 2BC -- 22 to 46 in | extremely gravelly coarse sand | very rapid | 0.24 to 0.96 in | 4.5 to 6.5 |
| 2C -- 46 to 80 in | extremely cobbly coarse sand | very rapid | 0.34 to 1.35 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F27C--Beargrease very stony loam, 2 to 15 percent slopes, extremely stony

Beargrease, extremely stony

Extent: 75 to 95 percent of the unit

Landform(s): pitted outwash plains

Slope gradient: 2 to 15 percent

Parent material: loamy material over sandy-skeletal outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .15

Land capability, nonirrigated 7e

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 | very stony loam | moderate | 0.22 to 0.31 in | 4.5 to 6.0 |
| Bw1 -- 2 to 14 in | very stony sandy loam | moderately rapid | 0.73 to 1.59 in | 4.5 to 6.0 |
| 2Bw2 -- 14 to 22 in | extremely stony loamy coarse sand | rapid | 0.08 to 0.39 in | 4.5 to 6.0 |
| 2BC -- 22 to 46 in | extremely gravelly coarse sand | very rapid | 0.24 to 0.96 in | 4.5 to 6.5 |
| 2C -- 46 to 80 in | extremely cobbly coarse sand | very rapid | 0.34 to 1.35 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F27E--Beargrease very stony loam, 10 to 35 percent slopes, extremely stony

Beargrease, extremely stony

Extent: 75 to 90 percent of the unit

Landform(s): pitted outwash plains

Slope gradient: 10 to 35 percent

Parent material: loamy material over sandy-skeletal outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .15

Land capability, nonirrigated 7e

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 | very stony loam | moderate | 0.22 to 0.31 in | 4.5 to 6.0 |
| Bw1 -- 2 to 14 in | very stony sandy loam | moderately rapid | 0.73 to 1.59 in | 4.5 to 6.0 |
| 2Bw2 -- 14 to 22 in | extremely stony loamy coarse sand | rapid | 0.08 to 0.39 in | 4.5 to 6.0 |
| 2BC -- 22 to 46 in | extremely gravelly coarse sand | very rapid | 0.24 to 0.96 in | 4.5 to 6.5 |
| 2C -- 46 to 80 in | extremely cobbly coarse sand | very rapid | 0.34 to 1.35 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F28B--Oysterlake complex, 0 to 4 percent slopes, extremely stony

Oysterlake, extremely stony

| | |
|--|---|
| <i>Extent:</i> 40 to 65 percent of the unit | <i>Soil loss tolerance (T factor):</i> 4 |
| <i>Landform(s):</i> rises on outwash plains | <i>Wind erodibility group (WEG):</i> 8 |
| <i>Slope gradient:</i> 0 to 4 percent | <i>Wind erodibility index (WEI):</i> 0 |
| <i>Parent material:</i> loamy material over sandy-skeletal outwash | <i>Kw factor (surface layer)</i> .15 |
| <i>Restrictive feature(s):</i> greater than 60 inches | <i>Land capability, nonirrigated</i> 7s |
| <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> moderate |

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|--------------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 4 in | stony loam | moderate | 0.55 to 0.75 in | 4.5 to 6.0 |
| Bw1 -- 4 to 16 in | stony loam | moderate | 0.85 to 1.83 in | 4.5 to 6.0 |
| Bw2 -- 16 to 26 in | gravelly loam | moderate | 0.59 to 1.38 in | 4.5 to 6.5 |
| 2BC -- 26 to 42 in | extremely gravelly coarse sand | very rapid | 0.16 to 0.65 in | 5.1 to 6.5 |
| 2C -- 42 to 80 in | extremely cobbly coarse sand | very rapid | 0.38 to 1.51 in | 5.1 to 6.5 |

Oysterlake, wet, extremely stony

| | |
|---|---|
| <i>Extent:</i> 20 to 45 percent of the unit | <i>Soil loss tolerance (T factor):</i> 4 |
| <i>Landform(s):</i> flats on outwash plains, swales on outwash plains | <i>Wind erodibility group (WEG):</i> 8 |
| <i>Slope gradient:</i> 0 to 2 percent | <i>Wind erodibility index (WEI):</i> 0 |
| <i>Parent material:</i> loamy material over sandy-skeletal outwash | <i>Kw factor (surface layer)</i> .15 |
| <i>Restrictive feature(s):</i> greater than 60 inches | <i>Land capability, nonirrigated</i> 7s |
| <i>Flooding:</i> none | <i>Hydric soil:</i> no |
| <i>Ponding:</i> none | <i>Hydrologic group:</i> B |
| <i>Drainage class:</i> somewhat poorly drained | <i>Potential for frost action:</i> moderate |

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|--------------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 4 in | stony loam | moderate | 0.55 to 0.75 in | 4.5 to 6.0 |
| Bw1 -- 4 to 16 in | stony loam | moderate | 0.85 to 1.83 in | 4.5 to 6.0 |
| Bw2 -- 16 to 26 in | gravelly loam | moderate | 0.59 to 1.38 in | 4.5 to 6.5 |
| 2BC -- 26 to 42 in | extremely gravelly coarse sand | very rapid | 0.16 to 0.65 in | 5.1 to 6.5 |
| 2C -- 42 to 80 in | extremely cobbly coarse sand | very rapid | 0.38 to 1.51 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F29E--Shagawa, extremely stony-Beargrease, extremely stony-Tacoosh complex, 0 to 35 percent slopes

Shagawa, extremely bouldery

Extent: 30 to 50 percent of the unit

Landform(s): end moraines

Slope gradient: 10 to 35 percent

Parent material: loamy material over glacial till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .15

Land capability, nonirrigated 7e

Hydric soil: no

Hydrologic group: B

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|--------------------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 3 in | stony loam | moderate | 0.44 to 0.57 in | 4.5 to 6.0 |
| Bw1 -- 3 to 13 in | stony loam | moderate | 0.79 to 1.48 in | 4.5 to 6.0 |
| 2Bw2 -- 13 to 32 in | very gravelly coarse sandy loam | moderately rapid | 1.13 to 1.70 in | 5.1 to 6.5 |
| 2C -- 32 to 80 in | extremely gravelly loamy coarse sand | rapid | 1.44 to 3.84 in | 5.1 to 6.5 |

Beargrease, extremely bouldery

Extent: 20 to 30 percent of the unit

Landform(s): end moraines

Slope gradient: 10 to 35 percent

Parent material: loamy material over sandy-skeletal outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .15

Land capability, nonirrigated 7e

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 | very stony loam | moderate | 0.22 to 0.31 in | 4.5 to 6.0 |
| Bw1 -- 2 to 14 in | very stony sandy loam | moderately rapid | 0.73 to 1.59 in | 4.5 to 6.0 |
| 2Bw2 -- 14 to 22 in | extremely stony loamy coarse sand | rapid | 0.08 to 0.39 in | 4.5 to 6.0 |
| 2BC -- 22 to 46 in | extremely gravelly coarse sand | very rapid | 0.24 to 0.96 in | 4.5 to 6.5 |
| 2C -- 46 to 80 in | extremely cobbly coarse sand | very rapid | 0.34 to 1.35 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F29E--Shagawa, extremely stony-Beargrease, extremely stony-Tacoosh complex, 0 to 35 percent slopes

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F29G--Shagawa, extremely stony-Beargrease, extremely stony-Tacoosh complex, 0 to 60 percent slopes

Shagawa, extremely bouldery

Extent: 30 to 60 percent of the unit

Landform(s): end moraines

Slope gradient: 25 to 60 percent

Parent material: loamy material over glacial till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .15

Land capability, nonirrigated 7e

Hydric soil: no

Hydrologic group: B

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|--------------------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 3 in | stony loam | moderate | 0.44 to 0.57 in | 4.5 to 6.0 |
| Bw1 -- 3 to 13 in | stony loam | moderate | 0.79 to 1.48 in | 4.5 to 6.0 |
| 2Bw2 -- 13 to 32 in | very gravelly coarse sandy loam | moderately rapid | 1.13 to 1.70 in | 5.1 to 6.5 |
| 2C -- 32 to 80 in | extremely gravelly loamy coarse sand | rapid | 1.44 to 3.84 in | 5.1 to 6.5 |

Beargrease, extremely bouldery

Extent: 20 to 40 percent of the unit

Landform(s): end moraines

Slope gradient: 25 to 60 percent

Parent material: loamy material over sandy-skeletal outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .15

Land capability, nonirrigated 7e

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 | very stony loam | moderate | 0.22 to 0.31 in | 4.5 to 6.0 |
| Bw1 -- 2 to 14 in | very stony sandy loam | moderately rapid | 0.73 to 1.59 in | 4.5 to 6.0 |
| 2Bw2 -- 14 to 22 in | extremely stony loamy coarse sand | rapid | 0.08 to 0.39 in | 4.5 to 6.0 |
| 2BC -- 22 to 46 in | extremely gravelly coarse sand | very rapid | 0.24 to 0.96 in | 4.5 to 6.5 |
| 2C -- 46 to 80 in | extremely cobbly coarse sand | very rapid | 0.34 to 1.35 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F29G--Shagawa, extremely stony-Beargrease, extremely stony-Tacoosh complex, 0 to 60 percent slopes

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F30G--Conic, very bouldery-Insula, very bouldery-Rock outcrop complex, 20 to 70 percent slopes

Conic, very bouldery

Extent: 30 to 60 percent of the unit

Landform(s): moraines

Slope gradient: 20 to 50 percent

Parent material: loamy material over dense till

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

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 2

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .24

Land capability, nonirrigated 7e

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

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

Insula, very bouldery

Extent: 15 to 40 percent of the unit

Landform(s): moraines

Slope gradient: 20 to 50 percent

Parent material: loamy glacial drift

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

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 1

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .17

Land capability, nonirrigated 7e

Hydric soil: no

Hydrologic group: D

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|--------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 3 in | gravelly sandy loam | moderately rapid | 0.28 to 0.44 in | 4.5 to 6.0 |
| Bw1 -- 3 to 11 in | gravelly sandy loam | moderately rapid | 0.63 to 1.26 in | 4.5 to 6.0 |
| Bw2 -- 11 to 17 in | gravelly fine sandy loam | moderately rapid | 0.41 to 0.89 in | 5.1 to 6.5 |
| R -- 17 to 80 in | bedrock | impermeable | | |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F30G--Conic, very bouldery-Insula, very bouldery-Rock outcrop complex, 20 to 70 percent slopes

Rock outcrop

Extent: 10 to 40 percent of the unit

Landform(s): moraines

Slope gradient: 20 to 70 percent

Parent material:

Restrictive feature(s): greater than 60 inches

Flooding:

Ponding:

Drainage class:

Soil loss tolerance (T factor):

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Kw factor (surface layer)

Land capability, nonirrigated 8

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> |
|-------------------------------------|----------------|---------------------|---------------------------------|-----------|
|-------------------------------------|----------------|---------------------|---------------------------------|-----------|

F31B--Oysterlake, extremely stony-Tacoosh complex, 0 to 4 percent slopes

Oysterlake, extremely stony

Extent: 45 to 70 percent of the unit

Landform(s): rises on outwash plains

Slope gradient: 0 to 4 percent

Parent material: loamy material over sandy-skeletal outwash

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): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .15

Land capability, nonirrigated 7s

Hydric soil: no

Hydrologic group: B

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|--------------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 4 in | stony loam | moderate | 0.55 to 0.75 in | 4.5 to 6.0 |
| Bw1 -- 4 to 16 in | stony loam | moderate | 0.85 to 1.83 in | 4.5 to 6.0 |
| Bw2 -- 16 to 26 in | gravelly loam | moderate | 0.59 to 1.38 in | 4.5 to 6.5 |
| 2BC -- 26 to 42 in | extremely gravelly coarse sand | very rapid | 0.16 to 0.65 in | 5.1 to 6.5 |
| 2C -- 42 to 80 in | extremely cobbly coarse sand | very rapid | 0.38 to 1.51 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F32A--Merwin peat, 0 to 1 percent slopes

Merwin

| | |
|---|--|
| <i>Extent:</i> 60 to 90 percent of the unit | <i>Soil loss tolerance (T factor):</i> 2 |
| <i>Landform(s):</i> bogs on till plains, bogs on outwash plains, bogs on end moraines | <i>Wind erodibility group (WEG):</i> 7 |
| <i>Slope gradient:</i> 0 to 1 percent | <i>Wind erodibility index (WEI):</i> 38 |
| <i>Parent material:</i> organic material over glaciofluvial sediments | <i>Kw factor (surface layer)</i> .02 |
| <i>Restrictive feature(s):</i> greater than 60 inches | <i>Land capability, nonirrigated</i> 7w |
| <i>Flooding:</i> none | <i>Hydric soil:</i> yes |
| <i>Ponding:</i> none | <i>Hydrologic group:</i> D |
| <i>Drainage class:</i> very poorly drained | <i>Potential for frost action:</i> high |

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|------------------------------------|---------------------|---------------------------------|------------|
| Oi -- 0 to 6 in | peat | very rapid | 3.25 to 3.84 in | |
| Oe -- 6 to 46 in | mucky peat | rapid | 18.07 to 22.09 in | |
| 2Cg -- 46 to 80 in | stratified loamy fine sand to loam | moderate | 4.40 to 6.43 in | 5.1 to 7.3 |

F34A--Cathro muck, depressional, 0 to 1 percent slopes

Cathro, depressional

| | |
|---|--|
| <i>Extent:</i> 60 to 90 percent of the unit | <i>Soil loss tolerance (T factor):</i> 2 |
| <i>Landform(s):</i> swamps on end moraines, swamps on outwash plains, swamps on till plains | <i>Wind erodibility group (WEG):</i> 2 |
| <i>Slope gradient:</i> 0 to 1 percent | <i>Wind erodibility index (WEI):</i> 134 |
| <i>Parent material:</i> organic material over glaciofluvial sediments | <i>Kw factor (surface layer)</i> .02 |
| <i>Restrictive feature(s):</i> greater than 60 inches | <i>Land capability, nonirrigated</i> 7w |
| <i>Flooding:</i> none | <i>Hydric soil:</i> yes |
| <i>Ponding:</i> frequent | <i>Hydrologic group:</i> D |
| <i>Drainage class:</i> very poorly drained | <i>Potential for frost action:</i> high |

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|------------------------------------|---------------------|---------------------------------|------------|
| Oa -- 0 to 36 in | muck | moderately rapid | 12.54 to 16.12 in | |
| A -- 36 to 40 in | mucky silt loam | moderate | 0.95 to 1.13 in | 5.1 to 6.5 |
| 2Cg -- 40 to 80 in | stratified loamy fine sand to loam | moderate | 5.17 to 7.56 in | 5.1 to 7.3 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F35D--Eveleth, bouldery-Conic, bouldery-Aquepts, rubbly, complex, 0 to 18 percent slopes

Eveleth, bouldery

Extent: 25 to 50 percent of the unit

Landform(s): moraines

Slope gradient: 8 to 18 percent

Parent material: loamy material over dense till

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

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .24

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

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

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F35D--Eveleth, bouldery-Conic, bouldery-Aquepts, rubbly, complex, 0 to 18 percent slopes

Conic, bouldery

Extent: 15 to 30 percent of the unit

Landform(s): moraines

Slope gradient: 8 to 18 percent

Parent material: loamy material over dense till

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

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 2

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .24

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

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

Aquepts, rubbly

Extent: 15 to 30 percent of the unit

Landform(s): drainageways on moraines

Slope gradient: 0 to 2 percent

Parent material: glaciofluvial sediments

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): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .05

Land capability, nonirrigated 8s

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 4 in | extremely stony sandy loam | moderate | 0.16 to 0.31 in | 4.5 to 6.0 |
| Bg -- 4 to 40 in | very stony loam | moderate | 1.45 to 4.71 in | 4.5 to 6.0 |
| Cg -- 40 to 80 in | cobbly sandy loam | moderately slow | 2.78 to 6.36 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F35E--Eveleth, bouldery-Conic, bouldery-Aquepts, rubbly, complex, 0 to 30 percent slopes

Eveleth, bouldery

Extent: 25 to 50 percent of the unit

Landform(s): moraines

Slope gradient: 18 to 30 percent

Parent material: loamy material over dense till

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

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .24

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

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

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F35E--Eveleth, bouldery-Conic, bouldery-Aquepts, rubbly, complex, 0 to 30 percent slopes

Conic, bouldery

Extent: 15 to 30 percent of the unit

Landform(s): moraines

Slope gradient: 18 to 30 percent

Parent material: loamy material over dense till

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

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 2

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .24

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

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

Aquepts, rubbly

Extent: 15 to 30 percent of the unit

Landform(s): drainageways on moraines

Slope gradient: 0 to 3 percent

Parent material: glaciofluvial sediments

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): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .05

Land capability, nonirrigated 8s

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 4 in | extremely stony sandy loam | moderate | 0.16 to 0.31 in | 4.5 to 6.0 |
| Bg -- 4 to 40 in | very stony loam | moderate | 1.45 to 4.71 in | 4.5 to 6.0 |
| Cg -- 40 to 80 in | cobbly sandy loam | moderately slow | 2.78 to 6.36 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

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

Conic, bouldery

Extent: 30 to 50 percent of the unit

Landform(s): moraines

Slope gradient: 8 to 25 percent

Parent material: loamy material over dense till

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

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 2

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .24

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

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

Insula, bouldery

Extent: 20 to 40 percent of the unit

Landform(s): moraines

Slope gradient: 8 to 25 percent

Parent material: loamy glacial drift

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

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 1

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .17

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: D

Potential for frost action: moderate

| <i>Representative soil profile:</i> | | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|-------------|--------------------------|---------------------|---------------------------------|------------|
| A -- | 0 to 3 in | gravelly sandy loam | moderately rapid | 0.28 to 0.44 in | 4.5 to 6.0 |
| Bw1 -- | 3 to 11 in | gravelly sandy loam | moderately rapid | 0.63 to 1.26 in | 4.5 to 6.0 |
| Bw2 -- | 11 to 17 in | gravelly fine sandy loam | moderately rapid | 0.41 to 0.89 in | 5.1 to 6.5 |
| R -- | 17 to 80 in | bedrock | impermeable | | |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

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

Rock outcrop

Extent: 15 to 30 percent of the unit

Landform(s): moraines

Slope gradient: 8 to 25 percent

Parent material:

Restrictive feature(s): 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)

St. Louis County, Minnesota, Embarrass Part

F37B--Foglake-Babbitt, bouldery, complex, 0 to 4 percent slopes

Foglake

Extent: 40 to 60 percent of the unit

Landform(s): flats on lake plains

Slope gradient: 0 to 2 percent

Parent material: glaciolacustrine deposits

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .24

Land capability, nonirrigated 3w

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

Babbitt, bouldery

Extent: 20 to 45 percent of the unit

Landform(s): rises on lake plains

Slope gradient: 1 to 4 percent

Parent material: loamy material over dense till

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

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .24

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|--------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 5 in | stony loam | moderate | 0.67 to 0.97 in | 4.5 to 6.0 |
| Bw1 -- 5 to 14 in | stony loam | moderate | 0.72 to 1.45 in | 4.5 to 6.0 |
| Bw2 -- 14 to 30 in | gravelly sandy loam | moderate | 1.10 to 2.36 in | 5.1 to 6.5 |
| 2BC -- 30 to 50 in | very gravelly sandy loam | moderately slow | 1.20 to 2.81 in | 5.1 to 6.5 |
| 2Cd -- 50 to 80 in | very gravelly sandy loam | slow | 0.60 to 1.50 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F38B--Longsiding-Eaglesnest, bouldery, complex, 0 to 8 percent slopes

Longsiding

Extent: 40 to 60 percent of the unit

Landform(s): lake plains

Slope gradient: 1 to 8 percent

Parent material: glaciolacustrine deposits

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 2w

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

Eaglesnest, bouldery

Extent: 25 to 45 percent of the unit

Landform(s): lake plains

Slope gradient: 3 to 8 percent

Parent material: loamy material over dense till

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

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .24

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

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

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F39A--Foglake-Aquepts, rubbly-Hassman, depressional, complex, 0 to 2 percent slopes

Foglake, bouldery

Extent: 30 to 50 percent of the unit

Landform(s): flats on lake plains

Slope gradient: 0 to 2 percent

Parent material: glaciolacustrine deposits

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .24

Land capability, nonirrigated 4w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|-----------------|---------------------|---------------------------------|------------|
| Ap -- 0 to 8 in | silt loam | moderate | 1.73 to 1.89 in | 5.1 to 6.5 |
| Eg -- 8 to 16 in | silt loam | moderate | 1.41 to 1.82 in | 5.1 to 7.3 |
| Btg, BCg -- 16 to 47 in | silty clay loam | slow | 2.76 to 5.83 in | 5.1 to 7.3 |
| Cg -- 47 to 80 in | silty clay loam | moderately slow | 5.95 to 7.28 in | 7.4 to 8.4 |

Aquepts, rubbly

Extent: 20 to 40 percent of the unit

Landform(s): drainageways on lake plains, swales on lake plains

Slope gradient: 0 to 1 percent

Parent material: glaciofluvial sediments

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): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .05

Land capability, nonirrigated 8s

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 4 in | extremely stony sandy loam | moderate | 0.16 to 0.31 in | 4.5 to 6.0 |
| Bg -- 4 to 40 in | very stony loam | moderate | 1.45 to 4.71 in | 4.5 to 6.0 |
| Cg -- 40 to 80 in | cobbly sandy loam | moderately slow | 2.78 to 6.36 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F39A--Foglake-Aquepts, rubbly-Hassman, depressional, complex, 0 to 2 percent slopes

Hassman, depressional

Extent: 15 to 30 percent of the unit

Landform(s): drainageways 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: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 7

Wind erodibility index (WEI): 38

Kw factor (surface layer) .28

Land capability, nonirrigated 6w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

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

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F40B--Rollins cobbly sandy loam, 2 to 8 percent slopes

Rollins

Extent: 70 to 90 percent of the unit

Landform(s): kames, outwash plains

Slope gradient: 2 to 8 percent

Parent material: loamy material over gravelly outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat excessively drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .20

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: A

Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|---------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 5 in | cobbly sandy loam | moderately rapid | 0.51 to 0.72 in | 4.5 to 6.0 |
| Bw -- 5 to 14 in | gravelly sandy loam | moderately rapid | 0.81 to 1.45 in | 4.5 to 6.0 |
| 2BC -- 14 to 25 in | very gravelly sand | rapid | 0.22 to 0.55 in | 4.5 to 6.0 |
| 2C -- 25 to 80 in | very gravelly coarse sand | very rapid | 0.55 to 2.74 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F40D--Rollins cobbly sandy loam, 8 to 18 percent slopes

Rollins

Extent: 70 to 90 percent of the unit

Landform(s): kames, outwash plains

Slope gradient: 8 to 18 percent

Parent material: loamy material over gravelly outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat excessively drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .20

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: A

Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|---------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 5 in | cobbly sandy loam | moderately rapid | 0.51 to 0.72 in | 4.5 to 6.0 |
| Bw -- 5 to 14 in | gravelly sandy loam | moderately rapid | 0.81 to 1.45 in | 4.5 to 6.0 |
| 2BC -- 14 to 25 in | very gravelly sand | rapid | 0.22 to 0.55 in | 4.5 to 6.0 |
| 2C -- 25 to 80 in | very gravelly coarse sand | very rapid | 0.55 to 2.74 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F41B--Wurtsmith-Friendship complex, MLRA 93, 1 to 4 percent slopes

Wurtsmith

Extent: 30 to 60 percent of the unit

Landform(s): outwash plains

Slope gradient: 1 to 4 percent

Parent material: sandy outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw factor (surface layer) .17

Land capability, nonirrigated 4s

Hydric soil: no

Hydrologic group: A

Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|------------|
| A -- 0 to 3 in | loamy sand | rapid | 0.31 to 0.38 in | 4.5 to 6.0 |
| Bw -- 3 to 18 in | sand | rapid | 0.45 to 1.65 in | 4.5 to 6.0 |
| BC -- 18 to 33 in | sand | rapid | 0.30 to 1.05 in | 4.5 to 6.0 |
| C -- 33 to 80 in | sand | rapid | 0.94 to 3.28 in | 5.1 to 6.5 |

Friendship

Extent: 30 to 55 percent of the unit

Landform(s): outwash plains

Slope gradient: 1 to 4 percent

Parent material: sandy outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw factor (surface layer) .17

Land capability, nonirrigated 4s

Hydric soil: no

Hydrologic group: A

Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|------------|
| A -- 0 to 3 in | loamy sand | rapid | 0.31 to 0.38 in | 4.5 to 6.0 |
| Bw1 -- 3 to 24 in | sand | rapid | 0.63 to 2.30 in | 4.5 to 6.0 |
| Bw2 -- 24 to 40 in | sand | rapid | 0.32 to 1.13 in | 4.5 to 6.0 |
| C -- 40 to 80 in | sand | rapid | 0.80 to 2.78 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F42A--Meehan sandy loam, 0 to 2 percent slopes

Meehan

Extent: 70 to 85 percent of the unit

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

Slope gradient: 0 to 2 percent

Parent material: sandy outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .17

Land capability, nonirrigated 4s

Hydric soil: no

Hydrologic group: A

Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|------------|
| A -- 0 to 3 in | sandy loam | moderately rapid | 0.31 to 0.38 in | 4.5 to 6.0 |
| Bw1 -- 3 to 12 in | loamy sand | rapid | 0.52 to 0.95 in | 4.5 to 6.0 |
| Bw2 -- 12 to 47 in | sand | rapid | 0.70 to 3.15 in | 4.5 to 6.0 |
| C -- 47 to 80 in | coarse sand | very rapid | 0.66 to 2.31 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F43A--Roscommon muck, depressional, MLRA 93, 0 to 1 percent slopes

Roscommon, depressional

Extent: 70 to 85 percent of the unit

Landform(s): depressions on outwash plains, drainageways on outwash plains

Slope gradient: 0 to 1 percent

Parent material: sandy outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw factor (surface layer) .02

Land capability, nonirrigated 6w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: moderate

Representative soil profile:

| | | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------|-------------|----------------|---------------------|---------------------------------|------------|
| Oa -- | 0 to 3 in | muck | moderately rapid | 1.10 to 1.42 in | 4.5 to 6.0 |
| Eg -- | 3 to 8 in | sand | rapid | 0.14 to 0.52 in | 4.5 to 6.0 |
| Bg -- | 8 to 33 in | sand | rapid | 0.50 to 2.52 in | 4.5 to 6.0 |
| Cg -- | 33 to 80 in | sand | very rapid | 0.94 to 3.28 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F44D--Soudan-Eveleth complex, 8 to 18 percent slopes, bouldery

Soudan, bouldery

Extent: 40 to 65 percent of the unit

Landform(s): moraines

Slope gradient: 8 to 18 percent

Parent material: sandy outwash and/or eloian material over dense till

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

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .17

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 3 in | fine sandy loam | moderately rapid | 0.44 to 0.57 in | 4.5 to 6.0 |
| Bw1 -- 3 to 17 in | sandy loam | moderately rapid | 1.38 to 2.34 in | 4.5 to 6.0 |
| Bw2 -- 17 to 36 in | loamy sand | rapid | 0.94 to 1.89 in | 4.5 to 6.0 |
| 2BC -- 36 to 57 in | very cobbly sandy loam | moderately slow | 0.85 to 1.91 in | 5.1 to 6.5 |
| 2Cd -- 57 to 80 in | very cobbly sandy loam | slow | 0.46 to 1.14 in | 5.1 to 6.5 |

Eveleth, bouldery

Extent: 20 to 40 percent of the unit

Landform(s): moraines

Slope gradient: 8 to 18 percent

Parent material: loamy material over dense till

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

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .24

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

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

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F101A--Bugcreek extremely stony sandy loam, 0 to 1 percent slopes, rubbly

Bugcreek, rubbly

Extent: 85 to 95 percent of the unit

Landform(s): drainageways on interdrumlins, rims on bogs, rims on swamps

Slope gradient: 0 to 1 percent

Parent material: loamy material over dense loamy till

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

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .15

Land capability, nonirrigated 8s

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 6 in | extremely stony sandy loam | moderately rapid | 0.65 to 1.12 in | 4.5 to 6.0 |
| Bw1,Bw2 -- 6 to 20 in | extremely stony sandy loam | moderately rapid | 1.42 to 2.41 in | 4.5 to 6.0 |
| Bw3,Bw4,Bw5 -- 20 to 58 in | stony fine sandy loam | moderately rapid | 3.40 to 6.43 in | 4.5 to 6.0 |
| 2BCd,2Cd -- 58 to 80 in | gravelly sandy loam | very slow | 0.88 to 1.32 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F106B--Toimi-Nevens-Brimson complex, 0 to 8 percent slopes, very stony

Toimi, very stony

Extent: 25 to 50 percent of the unit

Landform(s): moraines

Slope gradient: 3 to 8 percent

Parent material: loamy material over dense till

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

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 48

Kw factor (surface layer) .15

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|-----------------------|---------------------|---------------------------------|------------|
| A -- 0 to 4 in | stony loam | moderate | 0.43 to 0.79 in | 4.5 to 6.0 |
| Bw -- 4 to 35 in | stony fine sandy loam | moderately rapid | 2.80 to 5.60 in | 4.6 to 6.0 |
| 2BCd,2Cd -- 35 to 80 in | gravelly sandy loam | very slow | 1.80 to 2.69 in | 5.1 to 6.5 |

Nevens, very stony

Extent: 20 to 40 percent of the unit

Landform(s): moraines

Slope gradient: 0 to 2 percent

Parent material: loamy material over dense loamy till

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

Flooding: none

Ponding: none

Drainage class: poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 48

Kw factor (surface layer) .15

Land capability, nonirrigated 6s

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|-----------------------|---------------------|---------------------------------|------------|
| A -- 0 to 5 in | stony loam | moderate | 0.56 to 1.02 in | 4.5 to 6.0 |
| Bw -- 5 to 37 in | stony fine sandy loam | moderately rapid | 2.87 to 5.74 in | 4.5 to 6.0 |
| 2BCd,2Cd -- 37 to 80 in | gravelly sandy loam | very slow | 1.72 to 2.57 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F106B--Toimi-Nevens-Brimson complex, 0 to 8 percent slopes, very stony

Brimson, very stony

Extent: 15 to 50 percent of the unit

Landform(s): moraines

Slope gradient: 2 to 5 percent

Parent material: loamy material over dense till

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

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 56

Kw factor (surface layer) .15

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|-----------------------|---------------------|---------------------------------|------------|
| A -- 0 to 5 in | stony fine sandy loam | moderately rapid | 0.56 to 1.02 in | 4.5 to 6.0 |
| Bw -- 5 to 35 in | stony fine sandy loam | moderately rapid | 2.69 to 5.39 in | 4.5 to 6.0 |
| 2BCd,2Cd -- 35 to 80 in | gravelly sandy loam | very slow | 1.80 to 2.69 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F107D--Toimi-Nevens complex, 0 to 18 percent slopes, very stony

Toimi, very stony

Extent: 40 to 65 percent of the unit

Landform(s): moraines

Slope gradient: 8 to 18 percent

Parent material: loamy material over dense till

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

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 48

Kw factor (surface layer) .15

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|-----------------------|---------------------|---------------------------------|------------|
| A -- 0 to 4 in | stony loam | moderate | 0.43 to 0.79 in | 4.5 to 6.0 |
| Bw -- 4 to 35 in | stony fine sandy loam | moderately rapid | 2.80 to 5.60 in | 4.6 to 6.0 |
| 2BCd,2Cd -- 35 to 80 in | gravelly sandy loam | very slow | 1.80 to 2.69 in | 5.1 to 6.5 |

Nevens, very stony

Extent: 15 to 35 percent of the unit

Landform(s): moraines

Slope gradient: 0 to 2 percent

Parent material: loamy material over dense loamy till

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

Flooding: none

Ponding: none

Drainage class: poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 48

Kw factor (surface layer) .15

Land capability, nonirrigated 6s

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|-----------------------|---------------------|---------------------------------|------------|
| A -- 0 to 5 in | stony loam | moderate | 0.56 to 1.02 in | 4.5 to 6.0 |
| Bw -- 5 to 37 in | stony fine sandy loam | moderately rapid | 2.87 to 5.74 in | 4.5 to 6.0 |
| 2BCd,2Cd -- 37 to 80 in | gravelly sandy loam | very slow | 1.72 to 2.57 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F108B--Brimson, very stony-Bugcreek, rubbly, complex, 0 to 5 percent slopes

Brimson, very stony

Extent: 30 to 60 percent of the unit

Landform(s): moraines

Slope gradient: 2 to 5 percent

Parent material: loamy material over dense till

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

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 56

Kw factor (surface layer) .15

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|-----------------------|---------------------|---------------------------------|------------|
| A -- 0 to 5 in | stony fine sandy loam | moderately rapid | 0.56 to 1.02 in | 4.5 to 6.0 |
| Bw -- 5 to 35 in | stony fine sandy loam | moderately rapid | 2.69 to 5.39 in | 4.5 to 6.0 |
| 2BCd,2Cd -- 35 to 80 in | gravelly sandy loam | very slow | 1.80 to 2.69 in | 5.1 to 6.5 |

Bugcreek, rubbly

Extent: 20 to 40 percent of the unit

Landform(s): depressions on moraines

Slope gradient: 0 to 1 percent

Parent material: loamy material over dense till

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

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .15

Land capability, nonirrigated 8s

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 6 in | extremely stony sandy loam | moderately rapid | 0.65 to 1.12 in | 4.5 to 6.0 |
| Bw1,Bw2 -- 6 to 20 in | extremely stony sandy loam | moderately rapid | 1.42 to 2.41 in | 4.5 to 6.0 |
| Bw3,Bw4,Bw5 -- 20 to 58 in | stony fine sandy loam | moderately rapid | 3.40 to 6.43 in | 4.5 to 6.0 |
| 2BCd,2Cd -- 58 to 80 in | gravelly sandy loam | very slow | 0.88 to 1.32 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F116A--Mooselake muck, 0 to 1 percent slopes

Mooselake

Extent: 60 to 85 percent of the unit

Landform(s): swamps on end moraines, swamps on outwash plains, swamps on till plains

Slope gradient: 0 to 1 percent

Parent material: organic material

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 7

Wind erodibility index (WEI): 38

Kw factor (surface layer) .02

Land capability, nonirrigated 7w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|-----------|
| Oa -- 0 to 36 in | muck | moderately rapid | 12.54 to 16.12 in | |
| Oe -- 36 to 80 in | mucky peat | rapid | 19.84 to 24.25 in | |

F129A--Tacoosh mucky peat, 0 to 1 percent slopes

Tacoosh

Extent: 60 to 90 percent of the unit

Landform(s): swamps on end moraines, swamps on outwash plains, swamps on till plains

Slope gradient: 0 to 1 percent

Parent material: organic material over glaciofluvial sediments

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 2

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .02

Land capability, nonirrigated 7w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|------------------------------------|---------------------|---------------------------------|------------|
| Oe1 -- 0 to 12 in | mucky peat | rapid | 5.31 to 6.50 in | |
| Oe2 -- 12 to 32 in | mucky peat | rapid | 9.04 to 11.04 in | |
| Oa -- 32 to 36 in | muck | moderately rapid | 1.38 to 1.77 in | |
| 2Cg -- 36 to 80 in | stratified loamy fine sand to loam | moderate | 5.73 to 8.38 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F164B--Beargrease-Biwabik-Rollins complex, 2 to 8 percent slopes, very stony

Beargrease, very stony

Extent: 35 to 60 percent of the unit

Landform(s): end moraines

Slope gradient: 2 to 8 percent

Parent material: loamy material over sandy-skeletal outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .15

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: A

Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|-----------------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 2 in | very stony loam | moderate | 0.22 to 0.31 in | 4.5 to 6.0 |
| Bw1 -- 2 to 14 in | very stony sandy loam | moderately rapid | 0.73 to 1.59 in | 4.5 to 6.0 |
| 2Bw2 -- 14 to 22 in | extremely stony loamy coarse sand | rapid | 0.08 to 0.39 in | 4.5 to 6.0 |
| 2BC -- 22 to 46 in | extremely gravelly coarse sand | very rapid | 0.24 to 0.96 in | 4.5 to 6.5 |
| 2C -- 46 to 80 in | extremely cobbly coarse sand | very rapid | 0.34 to 1.35 in | 5.1 to 6.5 |

Rollins, very stony

Extent: 15 to 35 percent of the unit

Landform(s): end moraines

Slope gradient: 2 to 8 percent

Parent material: loamy material over sandy-skeletal outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat excessively drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .20

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: A

Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|---------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 5 in | cobbly sandy loam | moderately rapid | 0.51 to 0.72 in | 4.5 to 6.0 |
| Bw -- 5 to 14 in | gravelly sandy loam | moderately rapid | 0.81 to 1.45 in | 4.5 to 6.0 |
| 2BC -- 14 to 25 in | very gravelly sand | rapid | 0.22 to 0.55 in | 4.5 to 6.0 |
| 2C -- 25 to 80 in | very gravelly coarse sand | very rapid | 0.55 to 2.74 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F164B--Beargrease-Biwabik-Rollins complex, 2 to 8 percent slopes, very stony

Biwabik, very stony

Extent: 15 to 35 percent of the unit

Landform(s): end moraines

Slope gradient: 2 to 8 percent

Parent material: gravelly outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: excessively drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .17

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: A

Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------------|---------------------|---------------------------------|------------|
| A -- 0 to 2 in | sandy loam | moderately rapid | 0.24 to 0.30 in | 4.5 to 6.0 |
| Bw -- 2 to 9 in | gravelly sandy loam | moderately rapid | 0.64 to 0.92 in | 4.5 to 6.0 |
| E -- 9 to 32 in | gravelly loamy sand | rapid | 0.69 to 1.60 in | 4.5 to 6.0 |
| E and B -- 32 to 64 in | gravelly loamy sand | rapid | 0.97 to 1.94 in | 5.1 to 6.0 |
| C -- 64 to 80 in | gravelly coarse sand | very rapid | 0.31 to 0.94 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F164E--Beargrease-Biwabik-Rollins complex, 8 to 35 percent slopes, very stony

Beargrease, very stony

Extent: 35 to 60 percent of the unit

Landform(s): end moraines

Slope gradient: 8 to 35 percent

Parent material: loamy material over sandy-skeletal outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .15

Land capability, nonirrigated 6e

Hydric soil: no

Hydrologic group: A

Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|-----------------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 2 in | very stony loam | moderate | 0.22 to 0.31 in | 4.5 to 6.0 |
| Bw1 -- 2 to 14 in | very stony sandy loam | moderately rapid | 0.73 to 1.59 in | 4.5 to 6.0 |
| 2Bw2 -- 14 to 22 in | extremely stony loamy coarse sand | rapid | 0.08 to 0.39 in | 4.5 to 6.0 |
| 2BC -- 22 to 46 in | extremely gravelly coarse sand | very rapid | 0.24 to 0.96 in | 4.5 to 6.5 |
| 2C -- 46 to 80 in | extremely cobbly coarse sand | very rapid | 0.34 to 1.35 in | 5.1 to 6.5 |

Rollins, very stony

Extent: 15 to 35 percent of the unit

Landform(s): end moraines

Slope gradient: 8 to 35 percent

Parent material: loamy material over sandy-skeletal outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat excessively drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .20

Land capability, nonirrigated 6e

Hydric soil: no

Hydrologic group: A

Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|---------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 5 in | cobbly sandy loam | moderately rapid | 0.51 to 0.72 in | 4.5 to 6.0 |
| Bw -- 5 to 14 in | gravelly sandy loam | moderately rapid | 0.81 to 1.45 in | 4.5 to 6.0 |
| 2BC -- 14 to 25 in | very gravelly sand | rapid | 0.22 to 0.55 in | 4.5 to 6.0 |
| 2C -- 25 to 80 in | very gravelly coarse sand | very rapid | 0.55 to 2.74 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F164E--Beargrease-Biwabik-Rollins complex, 8 to 35 percent slopes, very stony

Biwabik, very stony

Extent: 15 to 35 percent of the unit

Landform(s): end moraines

Slope gradient: 8 to 35 percent

Parent material: gravelly outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: excessively drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .17

Land capability, nonirrigated 6e

Hydric soil: no

Hydrologic group: A

Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------------|---------------------|---------------------------------|------------|
| A -- 0 to 2 in | sandy loam | moderately rapid | 0.24 to 0.30 in | 4.5 to 6.0 |
| Bw -- 2 to 9 in | gravelly sandy loam | moderately rapid | 0.64 to 0.92 in | 4.5 to 6.0 |
| E -- 9 to 32 in | gravelly loamy sand | rapid | 0.69 to 1.60 in | 4.5 to 6.0 |
| E and B -- 32 to 64 in | gravelly loamy sand | rapid | 0.97 to 1.94 in | 5.1 to 6.0 |
| C -- 64 to 80 in | gravelly coarse sand | very rapid | 0.31 to 0.94 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F165C--Insula, very bouldery-Rock outcrop-Wahlsten, very bouldery, complex, 2 to 12 percent slopes

Rock outcrop

Extent: 20 to 35 percent of the unit

Landform(s): moraines

Slope gradient: 2 to 12 percent

Parent material:

Restrictive feature(s): greater than 60 inches

Flooding:

Ponding:

Drainage class:

Soil loss tolerance (T factor):

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Kw factor (surface layer)

Land capability, nonirrigated

Hydric soil:

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> |
|-------------------------------------|----------------|---------------------|---------------------------------|-----------|
|-------------------------------------|----------------|---------------------|---------------------------------|-----------|

Insula, very bouldery

Extent: 20 to 35 percent of the unit

Landform(s): moraines

Slope gradient: 2 to 12 percent

Parent material: loamy glacial drift

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

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 1

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .17

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: D

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|--------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 3 in | gravelly sandy loam | moderately rapid | 0.28 to 0.44 in | 4.5 to 6.0 |
| Bw1 -- 3 to 11 in | gravelly sandy loam | moderately rapid | 0.63 to 1.26 in | 4.5 to 6.0 |
| Bw2 -- 11 to 17 in | gravelly fine sandy loam | moderately rapid | 0.41 to 0.89 in | 5.1 to 6.5 |
| R -- 17 to 80 in | bedrock | impermeable | | |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F165C--Insula, very bouldery-Rock outcrop-Wahlsten, very bouldery, complex, 2 to 12 percent slopes

Wahlsten, very bouldery

Extent: 15 to 30 percent of the unit

Landform(s): moraines

Slope gradient: 2 to 8 percent

Parent material: loamy material over dense till

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

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 2

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .24

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

| <i>Representative soil profile:</i> | | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|-------------|--------------------------|---------------------|---------------------------------|------------|
| A -- | 0 to 3 in | stony loam | moderate | 0.41 to 0.60 in | 4.5 to 6.0 |
| Bw1 -- | 3 to 9 in | stony loam | moderate | 0.59 to 1.06 in | 4.5 to 6.0 |
| Bw2 -- | 9 to 17 in | gravelly loam | moderate | 0.63 to 1.26 in | 5.1 to 6.5 |
| 2Cd -- | 17 to 37 in | very gravelly sandy loam | slow | 0.60 to 1.41 in | 5.1 to 6.5 |
| R -- | 37 to 80 in | bedrock | impermeable | | |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F166A--Aquepts, rubbly-Tacoosh-Rifle complex, 0 to 2 percent slopes

Aquepts, rubbly

Extent: 30 to 50 percent of the unit

Landform(s): drainageways on moraines

Slope gradient: 0 to 2 percent

Parent material: glaciofluvial sediments

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): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .05

Land capability, nonirrigated 8s

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 4 in | extremely stony sandy loam | moderate | 0.16 to 0.31 in | 4.5 to 6.0 |
| Bg -- 4 to 40 in | very stony loam | moderate | 1.45 to 4.71 in | 4.5 to 6.0 |
| Cg -- 40 to 80 in | cobbly sandy loam | moderately slow | 2.78 to 6.36 in | 5.1 to 6.5 |

Tacoosh, depressional

Extent: 15 to 30 percent of the unit

Landform(s): drainageways on moraines

Slope gradient: 0 to 1 percent

Parent material: organic material over glaciofluvial sediments

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 2

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .02

Land capability, nonirrigated 7w

Hydric soil: yes

Hydrologic group: 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 7 in | mucky peat | rapid | 3.19 to 3.90 in | |
| Oe2 -- 7 to 30 in | mucky peat | rapid | 10.28 to 12.56 in | |
| Oa -- 30 to 40 in | muck | moderately rapid | 3.58 to 4.61 in | |
| 2Bg -- 40 to 56 in | very stony loam | moderate | 0.63 to 2.05 in | 5.1 to 6.5 |
| 2Cg -- 56 to 80 in | cobbly sandy loam | moderately slow | 1.68 to 3.84 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F166A--Aquepts, rubbly-Tacoosh-Rifle complex, 0 to 2 percent slopes

Rifle

Extent: 15 to 30 percent of the unit

Landform(s): drainageways on moraines

Slope gradient: 0 to 1 percent

Parent material: organic material

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .02

Land capability, nonirrigated 7w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|-----------|
| Oe1 -- 0 to 12 in | mucky peat | rapid | 5.31 to 6.50 in | |
| Oe2 -- 12 to 42 in | mucky peat | rapid | 13.64 to 16.67 in | |
| Oa -- 42 to 52 in | muck | moderately rapid | 3.44 to 4.43 in | |
| Oe3 -- 52 to 80 in | mucky peat | rapid | 12.58 to 15.37 in | |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

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

Wahlsten, bouldery

Extent: 25 to 45 percent of the unit

Landform(s): moraines

Slope gradient: 1 to 8 percent

Parent material: loamy material over dense till

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

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 2

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .24

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

| <i>Representative soil profile:</i> | | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|-------------|--------------------------|---------------------|---------------------------------|------------|
| A -- | 0 to 3 in | stony loam | moderate | 0.41 to 0.60 in | 4.5 to 6.0 |
| Bw1 -- | 3 to 9 in | stony loam | moderate | 0.59 to 1.06 in | 4.5 to 6.0 |
| Bw2 -- | 9 to 17 in | gravelly loam | moderate | 0.63 to 1.26 in | 5.1 to 6.5 |
| 2Cd -- | 17 to 37 in | very gravelly sandy loam | slow | 0.60 to 1.41 in | 5.1 to 6.5 |
| R -- | 37 to 80 in | bedrock | impermeable | | |

Insula, bouldery

Extent: 15 to 30 percent of the unit

Landform(s): moraines

Slope gradient: 2 to 10 percent

Parent material: loamy glacial drift

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

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 1

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .17

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: D

Potential for frost action: moderate

| <i>Representative soil profile:</i> | | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|-------------|--------------------------|---------------------|---------------------------------|------------|
| A -- | 0 to 3 in | gravelly sandy loam | moderately rapid | 0.28 to 0.44 in | 4.5 to 6.0 |
| Bw1 -- | 3 to 11 in | gravelly sandy loam | moderately rapid | 0.63 to 1.26 in | 4.5 to 6.0 |
| Bw2 -- | 11 to 17 in | gravelly fine sandy loam | moderately rapid | 0.41 to 0.89 in | 5.1 to 6.5 |
| R -- | 17 to 80 in | bedrock | impermeable | | |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

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

Rock outcrop

Extent: 15 to 30 percent of the unit

Landform(s): moraines

Slope gradient:

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

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

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

Foglake

Extent: 35 to 60 percent of the unit

Landform(s): flats on lake plains

Slope gradient: 0 to 2 percent

Parent material: glaciolacustrine deposits

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .24

Land capability, nonirrigated 3w

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

Hassman, depressional

Extent: 25 to 50 percent of the unit

Landform(s): swales 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): 7

Wind erodibility index (WEI): 38

Kw factor (surface layer) .28

Land capability, nonirrigated 6w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

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

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

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

Longsiding

Extent: 35 to 55 percent of the unit

Landform(s): moraines

Slope gradient: 1 to 4 percent

Parent material: glaciolacustrine deposits

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 2w

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

Grasston

Extent: 10 to 35 percent of the unit

Landform(s): moraines

Slope gradient: 1 to 6 percent

Parent material: glaciolacustrine deposits

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 2e

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

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F172B--Westoo-Barber-Vasso complex, MLRA 93A, 0 to 6 percent slopes

Westoo

Extent: 20 to 40 percent of the unit

Landform(s): lake plains

Slope gradient: 1 to 6 percent

Parent material: eolian 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: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|-----------------|---------------------|---------------------------------|------------|
| A -- 0 to 5 in | loamy fine sand | rapid | 0.51 to 0.67 in | 4.5 to 6.0 |
| Bw1 -- 5 to 17 in | loamy fine sand | rapid | 1.06 to 1.89 in | 4.5 to 6.5 |
| Bw2 -- 17 to 44 in | loamy fine sand | rapid | 1.63 to 2.72 in | 5.1 to 6.5 |
| C -- 44 to 74 in | fine sand | rapid | 1.80 to 2.99 in | 5.1 to 6.5 |
| Cg -- 74 to 80 in | fine sand | rapid | 0.35 to 0.59 in | 5.1 to 6.5 |

Barber

Extent: 20 to 40 percent of the unit

Landform(s): lake plains

Slope gradient: 0 to 4 percent

Parent material: eolian 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) .20

Land capability, nonirrigated 3w

Hydric soil: no

Hydrologic group: C

Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|-----------------|---------------------|---------------------------------|------------|
| A -- 0 to 5 in | fine sandy loam | moderately rapid | 0.82 to 0.92 in | 4.5 to 6.0 |
| E -- 5 to 8 in | fine sandy loam | moderately rapid | 0.28 to 0.47 in | 4.5 to 6.0 |
| Bw1 -- 8 to 19 in | loamy fine sand | rapid | 1.10 to 1.76 in | 4.5 to 6.5 |
| Bw2 -- 19 to 27 in | loamy fine sand | rapid | 0.50 to 0.83 in | 5.1 to 6.5 |
| Bg -- 27 to 53 in | fine sand | rapid | 1.56 to 2.60 in | 5.1 to 6.5 |
| C -- 53 to 80 in | fine sand | rapid | 1.61 to 2.68 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F172B--Westoo-Barber-Vasso complex, MLRA 93A, 0 to 6 percent slopes

Vasso

Extent: 15 to 25 percent of the unit

Landform(s): lake plains

Slope gradient: 0 to 3 percent

Parent material: sandy eolian or glaciolacustrine material and underlying loamy glaciolacustrine sediments

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) .20

Land capability, nonirrigated 2w

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

| <i>Representative soil profile:</i> | | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|-------------|--|---------------------|---------------------------------|------------|
| A -- | 0 to 4 in | fine sandy loam | moderately rapid | 0.63 to 0.75 in | 4.5 to 6.0 |
| E -- | 4 to 6 in | fine sandy loam | moderately rapid | 0.18 to 0.33 in | 4.5 to 6.0 |
| Bw1 -- | 6 to 18 in | loamy fine sand | rapid | 0.37 to 1.22 in | 4.5 to 6.5 |
| Bw2 -- | 18 to 38 in | fine sand | rapid | 0.60 to 2.01 in | 5.1 to 6.5 |
| 2Bg -- | 38 to 50 in | stratified loamy fine sand to loamy very fine sand to fine sandy loam to very fine sandy loam to silt loam | moderately rapid | 1.30 to 1.89 in | 5.1 to 6.5 |
| 2Cg -- | 50 to 80 in | stratified loamy fine sand to loamy very fine sand to fine sandy loam to very fine sandy loam to silt loam | moderately rapid | 3.29 to 4.79 in | 5.6 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F173A--Wabuse-Vasso complex, MLRA 93A, 0 to 3 percent slopes

Wabuse

Extent: 30 to 50 percent of the unit

Landform(s): flats on lake plains

Slope gradient: 0 to 2 percent

Parent material: sandy eolian, glaciolacustrine or outwash material and underlying loamy glaciolacustrine sediments

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .20

Land capability, nonirrigated 3w

Hydric soil: yes

Hydrologic group: 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 | sandy loam | moderately rapid | 1.18 to 1.36 in | 4.5 to 6.0 |
| Bg1 -- | 9 to 16 in | loamy fine sand | rapid | 0.28 to 0.78 in | 4.5 to 6.0 |
| Bg2 -- | 16 to 27 in | loamy sand | rapid | 0.44 to 1.21 in | 5.1 to 6.5 |
| Bg3 -- | 27 to 32 in | loamy coarse sand | rapid | 0.19 to 0.52 in | 5.1 to 6.5 |
| 2Bg4 -- | 32 to 54 in | silt loam | moderate | 3.75 to 4.85 in | 5.6 to 6.5 |
| 2Cg -- | 54 to 80 in | silt loam | moderate | 4.42 to 5.20 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F173A--Wabuse-Vasso complex, MLRA 93A, 0 to 3 percent slopes

Vasso

Extent: 20 to 40 percent of the unit

Landform(s): rises on lake plains

Slope gradient: 1 to 3 percent

Parent material: sandy eolian, glaciolacustrine or outwash material and underlying loamy glaciolacustrine sediments

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) .20

Land capability, nonirrigated 2w

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

| <i>Representative soil profile:</i> | | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|-------------|-----------------|---------------------|---------------------------------|------------|
| A -- | 0 to 4 in | fine sandy loam | moderately rapid | 0.63 to 0.75 in | 4.5 to 6.0 |
| E -- | 4 to 6 in | fine sandy loam | moderately rapid | 0.18 to 0.33 in | 4.5 to 6.0 |
| Bw1 -- | 6 to 18 in | loamy fine sand | rapid | 0.37 to 1.22 in | 4.5 to 6.5 |
| Bw2 -- | 18 to 38 in | fine sand | rapid | 0.60 to 2.01 in | 5.1 to 6.5 |
| 2Bg -- | 38 to 50 in | silt loam | moderate | 2.01 to 2.60 in | 5.6 to 6.5 |
| 2Cg -- | 50 to 80 in | silt loam | moderate | 5.09 to 5.98 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F174B--Keenan-Vasso complex, 0 to 4 percent slopes

Vasso

Extent: 35 to 55 percent of the unit

Landform(s): rises on lake plains

Slope gradient: 0 to 3 percent

Parent material: sandy eolian, glaciolacustrine or outwash material and underlying loamy glaciolacustrine sediments

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) .20

Land capability, nonirrigated 2w

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

| <i>Representative soil profile:</i> | | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|-------------|--|---------------------|---------------------------------|------------|
| A -- | 0 to 4 in | fine sandy loam | moderately rapid | 0.63 to 0.75 in | 4.5 to 6.0 |
| E -- | 4 to 6 in | fine sandy loam | moderately rapid | 0.18 to 0.33 in | 4.5 to 6.0 |
| Bw1 -- | 6 to 18 in | loamy fine sand | rapid | 0.37 to 1.22 in | 4.5 to 6.5 |
| Bw2 -- | 18 to 38 in | fine sand | rapid | 0.60 to 2.01 in | 5.1 to 6.5 |
| 2Bg -- | 38 to 50 in | stratified loamy fine sand to loamy very fine sand to fine sandy loam to very fine sandy loam to silt loam | moderately rapid | 1.30 to 1.89 in | 5.1 to 6.5 |
| 2Cg -- | 50 to 80 in | stratified loamy fine sand to loamy very fine sand to fine sandy loam to very fine sandy loam to silt loam | moderately rapid | 3.29 to 4.79 in | 5.6 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F174B--Keenan-Vasso complex, 0 to 4 percent slopes

Keenan

Extent: 35 to 55 percent of the unit

Landform(s): rises on lake plains

Slope gradient: 1 to 4 percent

Parent material: sandy eolian, glaciolacustrine or outwash material and underlying loamy glaciolacustrine sediments

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: moderate

| <i>Representative soil profile:</i> | | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|-------------|--|---------------------|---------------------------------|------------|
| A -- | 0 to 4 in | fine sandy loam | moderately rapid | 0.63 to 0.71 in | 4.5 to 6.0 |
| Bw1 -- | 4 to 12 in | loamy fine sand | rapid | 0.31 to 0.87 in | 4.5 to 6.5 |
| Bw2 -- | 12 to 32 in | fine sand | rapid | 0.60 to 2.01 in | 5.1 to 6.5 |
| 2Bw3 -- | 32 to 54 in | stratified loamy fine sand to loamy very fine sand to fine sandy loam to very fine sandy loam to silt loam | moderately rapid | 2.43 to 3.53 in | 5.1 to 6.5 |
| 2C -- | 54 to 80 in | stratified loamy fine sand to loamy very fine sand to fine sandy loam to very fine sandy loam to silt loam | moderately rapid | 2.86 to 4.16 in | 5.6 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F176A--Sago muck, depressional, 0 to 1 percent slopes

Sago, depressional

Extent: 70 to 90 percent of the unit

Landform(s): flats on outwash plains, drainageways on outwash plains, depressions on outwash plains, drainageways on till plains, depressions on till plains, flats on till plains

Slope gradient: 0 to 1 percent

Parent material: organic material over glaciofluvial sediments

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .02

Land capability, nonirrigated 6w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

| <i>Representative soil profile:</i> | | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|-------------|--|---------------------|---------------------------------|------------|
| Oa -- | 0 to 13 in | muck | moderately rapid | 4.55 to 5.85 in | |
| A -- | 13 to 15 in | fine sandy loam | moderately rapid | 0.22 to 0.41 in | 4.5 to 6.0 |
| Bg -- | 15 to 41 in | stratified loamy fine sand to loamy very fine sand to fine sandy loam to very fine sandy loam to silt loam | moderately rapid | 3.38 to 4.94 in | 5.1 to 6.5 |
| Cg -- | 41 to 80 in | stratified loamy fine sand to silt loam | moderately rapid | 5.07 to 7.41 in | 5.6 to 7.3 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F177C--Eveleth-Eaglesnest complex, 2 to 20 percent slopes, very bouldery

Eveleth, very bouldery

Extent: 45 to 70 percent of the unit

Landform(s): moraines

Slope gradient: 6 to 20 percent

Parent material: loamy material over dense till

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

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .24

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

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

Eaglesnest, very bouldery

Extent: 15 to 40 percent of the unit

Landform(s): moraines

Slope gradient: 2 to 8 percent

Parent material: loamy material over dense till

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

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .24

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

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

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F177C--Eveleth-Eaglesnest complex, 2 to 20 percent slopes, very bouldery

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F178C--Urban land-Wahlsten-Biwabik complex, 0 to 15 percent slopes

Urban land

Extent: 50 to 70 percent of the unit

Landform(s): moraines

Slope gradient: 0 to 8 percent

Parent material:

Restrictive feature(s): greater than 60 inches

Flooding:

Ponding:

Drainage class:

Soil loss tolerance (T factor):

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Kw factor (surface layer)

Land capability, nonirrigated

Hydric soil:

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> |
|-------------------------------------|----------------|---------------------|---------------------------------|-----------|
|-------------------------------------|----------------|---------------------|---------------------------------|-----------|

Wahlsten, bouldery

Extent: 15 to 30 percent of the unit

Landform(s): moraines

Slope gradient: 1 to 8 percent

Parent material: loamy material over dense till

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

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 2

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .24

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: C

Potential for frost action: moderate

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|--------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 3 in | stony loam | moderate | 0.41 to 0.60 in | 4.5 to 6.0 |
| Bw1 -- 3 to 9 in | stony loam | moderate | 0.59 to 1.06 in | 4.5 to 6.0 |
| Bw2 -- 9 to 17 in | gravelly loam | moderate | 0.63 to 1.26 in | 5.1 to 6.5 |
| 2Cd -- 17 to 37 in | very gravelly sandy loam | slow | 0.60 to 1.41 in | 5.1 to 6.5 |
| R -- 37 to 80 in | bedrock | impermeable | | |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F178C--Urban land-Wahlsten-Biwabik complex, 0 to 15 percent slopes

Biwabik

Extent: 15 to 30 percent of the unit

Landform(s): moraines

Slope gradient: 0 to 15 percent

Parent material: gravelly outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: excessively drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .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 | sandy loam | moderately rapid | 0.24 to 0.30 in | 4.5 to 6.0 |
| Bw -- 2 to 9 in | gravelly sandy loam | moderately rapid | 0.64 to 0.92 in | 4.5 to 6.0 |
| E -- 9 to 32 in | gravelly loamy sand | rapid | 0.69 to 1.60 in | 4.5 to 6.0 |
| E and B -- 32 to 64 in | gravelly loamy sand | rapid | 0.97 to 1.94 in | 5.1 to 6.0 |
| C -- 64 to 80 in | gravelly coarse sand | very rapid | 0.31 to 0.94 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F179B--Urban land-Biwabik-Slimlake complex, 0 to 6 percent slopes

Urban land

Extent: 50 to 70 percent of the unit

Landform(s): knolls on till plains, flats on till plains

Slope gradient: 0 to 6 percent

Parent material:

Restrictive feature(s): greater than 60 inches

Flooding:

Ponding:

Drainage class:

Soil loss tolerance (T factor):

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Kw factor (surface layer)

Land capability, nonirrigated

Hydric soil:

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> |
|-------------------------------------|----------------|---------------------|---------------------------------|-----------|
|-------------------------------------|----------------|---------------------|---------------------------------|-----------|

Slimlake

Extent: 15 to 25 percent of the unit

Landform(s): outwash plains

Slope gradient: 0 to 6 percent

Parent material: sandy outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .20

Land capability, nonirrigated 3s

Hydric soil: no

Hydrologic group: A

Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|------------|
| A -- 0 to 4 in | sandy loam | moderately rapid | 0.51 to 0.59 in | 4.5 to 6.0 |
| Bw1 -- 4 to 16 in | sandy loam | moderately rapid | 1.10 to 2.07 in | 4.5 to 6.0 |
| Bw2 -- 16 to 44 in | sand | rapid | 0.56 to 2.52 in | 4.5 to 6.0 |
| C -- 44 to 80 in | coarse sand | very rapid | 0.72 to 2.51 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F179B--Urban land-Biwabik-Slimlake complex, 0 to 6 percent slopes

Biwabik

Extent: 15 to 25 percent of the unit

Landform(s): outwash plains

Slope gradient: 0 to 4 percent

Parent material: gravelly outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: excessively drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .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 | sandy loam | moderately rapid | 0.24 to 0.30 in | 4.5 to 6.0 |
| Bw -- 2 to 9 in | gravelly sandy loam | moderately rapid | 0.64 to 0.92 in | 4.5 to 6.0 |
| E -- 9 to 32 in | gravelly loamy sand | rapid | 0.69 to 1.60 in | 4.5 to 6.0 |
| E and B -- 32 to 64 in | gravelly loamy sand | rapid | 0.97 to 1.94 in | 5.1 to 6.0 |
| C -- 64 to 80 in | gravelly coarse sand | very rapid | 0.31 to 0.94 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F180A--Aquic Dystrudepts, 0 to 2 percent slopes

Aquic Dystrudepts

Extent: 70 to 90 percent of the unit

Landform(s): flats on outwash plains

Slope gradient: 0 to 2 percent

Parent material: sandy outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .20

Land capability, nonirrigated 3w

Hydric soil: no

Hydrologic group: A

Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|------------|
| A -- 0 to 3 in | sandy loam | moderately rapid | 0.41 to 0.47 in | 4.5 to 6.0 |
| Bw1 -- 3 to 12 in | sandy loam | moderately rapid | 0.78 to 1.47 in | 4.5 to 6.0 |
| Bw2 -- 12 to 47 in | sand | rapid | 0.70 to 3.15 in | 4.5 to 6.0 |
| C -- 47 to 80 in | coarse sand | very rapid | 0.66 to 2.31 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F181A--Aquepts-Humaquepts, depressional, complex, 0 to 1 percent slopes

Humaquepts, depressional

| | |
|---|---|
| <i>Extent:</i> 35 to 55 percent of the unit | <i>Soil loss tolerance (T factor):</i> 5 |
| <i>Landform(s):</i> depressions on outwash plains, drainageways on outwash plains | <i>Wind erodibility group (WEG):</i> 2 |
| <i>Slope gradient:</i> 0 to 1 percent | <i>Wind erodibility index (WEI):</i> 134 |
| <i>Parent material:</i> organic material over sandy outwash | <i>Kw factor (surface layer)</i> .02 |
| <i>Restrictive feature(s):</i> greater than 60 inches | <i>Land capability, nonirrigated</i> 6w |
| <i>Flooding:</i> none | <i>Hydric soil:</i> yes |
| <i>Ponding:</i> frequent | <i>Hydrologic group:</i> D |
| <i>Drainage class:</i> very poorly drained | <i>Potential for frost action:</i> moderate |

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|------------|
| Oa -- 0 to 9 in | muck | moderately rapid | 3.17 to 4.07 in | 4.5 to 6.0 |
| A -- 9 to 12 in | sandy loam | moderately rapid | 0.36 to 0.41 in | 4.5 to 6.0 |
| Bg -- 12 to 40 in | sand | rapid | 0.57 to 2.83 in | 4.5 to 6.0 |
| Cg -- 40 to 80 in | sand | very rapid | 0.80 to 2.78 in | 5.1 to 6.5 |

Aquepts

| | |
|---|---|
| <i>Extent:</i> 35 to 55 percent of the unit | <i>Soil loss tolerance (T factor):</i> 5 |
| <i>Landform(s):</i> flats on outwash plains | <i>Wind erodibility group (WEG):</i> 3 |
| <i>Slope gradient:</i> 0 to 1 percent | <i>Wind erodibility index (WEI):</i> 86 |
| <i>Parent material:</i> sandy outwash | <i>Kw factor (surface layer)</i> .20 |
| <i>Restrictive feature(s):</i> greater than 60 inches | <i>Land capability, nonirrigated</i> 4w |
| <i>Flooding:</i> none | <i>Hydric soil:</i> yes |
| <i>Ponding:</i> none | <i>Hydrologic group:</i> D |
| <i>Drainage class:</i> poorly drained | <i>Potential for frost action:</i> moderate |

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|------------|
| A -- 0 to 4 in | sandy loam | moderately rapid | 0.51 to 0.59 in | 4.5 to 6.0 |
| Bg -- 4 to 18 in | sandy loam | moderately rapid | 1.28 to 2.41 in | 4.5 to 6.0 |
| Cg1 -- 18 to 48 in | sand | rapid | 0.60 to 2.69 in | 4.5 to 6.0 |
| Cg2 -- 48 to 80 in | coarse sand | very rapid | 0.64 to 2.23 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F182B--Cromwell-Slimlake complex, 0 to 4 percent slopes

Cromwell

Extent: 40 to 65 percent of the unit
Landform(s): rises on outwash plains
Slope gradient: 0 to 4 percent
Parent material: sandy outwash
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: somewhat excessively drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 3
Wind erodibility index (WEI): 86
Kw factor (surface layer) .20
Land capability, nonirrigated 3s
Hydric soil: no
Hydrologic group: A
Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|------------|
| A -- 0 to 4 in | sandy loam | moderately rapid | 0.51 to 0.59 in | 4.5 to 6.0 |
| Bw1 -- 4 to 16 in | sandy loam | moderately rapid | 1.10 to 2.07 in | 4.5 to 6.0 |
| Bw2 -- 16 to 44 in | sand | rapid | 0.56 to 2.52 in | 4.5 to 6.0 |
| C -- 44 to 80 in | coarse sand | very rapid | 0.72 to 2.51 in | 5.1 to 6.5 |

Slimlake

Extent: 25 to 45 percent of the unit
Landform(s): flats on outwash plains
Slope gradient: 0 to 4 percent
Parent material: sandy outwash
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: moderately well drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 3
Wind erodibility index (WEI): 86
Kw factor (surface layer) .20
Land capability, nonirrigated 3s
Hydric soil: no
Hydrologic group: A
Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|------------|
| A -- 0 to 4 in | sandy loam | moderately rapid | 0.51 to 0.59 in | 4.5 to 6.0 |
| Bw1 -- 4 to 16 in | sandy loam | moderately rapid | 1.10 to 2.07 in | 4.5 to 6.0 |
| Bw2 -- 16 to 44 in | sand | rapid | 0.56 to 2.52 in | 4.5 to 6.0 |
| C -- 44 to 80 in | coarse sand | very rapid | 0.72 to 2.51 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F183B--Cromwell-Biwabik complex, 0 to 4 percent slopes

Cromwell

Extent: 45 to 65 percent of the unit

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

Slope gradient: 0 to 4 percent

Parent material: sandy outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat excessively drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .20

Land capability, nonirrigated 3s

Hydric soil: no

Hydrologic group: A

Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|----------------|---------------------|---------------------------------|------------|
| A -- 0 to 4 in | sandy loam | moderately rapid | 0.51 to 0.59 in | 4.5 to 6.0 |
| Bw1 -- 4 to 16 in | sandy loam | moderately rapid | 1.10 to 2.07 in | 4.5 to 6.0 |
| Bw2 -- 16 to 44 in | sand | rapid | 0.56 to 2.52 in | 4.5 to 6.0 |
| C -- 44 to 80 in | coarse sand | very rapid | 0.72 to 2.51 in | 5.1 to 6.5 |

Biwabik

Extent: 30 to 50 percent of the unit

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

Slope gradient: 0 to 4 percent

Parent material: gravelly outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: excessively drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .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 | sandy loam | moderately rapid | 0.24 to 0.30 in | 4.5 to 6.0 |
| Bw -- 2 to 9 in | gravelly sandy loam | moderately rapid | 0.64 to 0.92 in | 4.5 to 6.0 |
| E -- 9 to 32 in | gravelly loamy sand | rapid | 0.69 to 1.60 in | 4.5 to 6.0 |
| E and B -- 32 to 64 in | gravelly loamy sand | rapid | 0.97 to 1.94 in | 5.1 to 6.0 |
| C -- 64 to 80 in | gravelly coarse sand | very rapid | 0.31 to 0.94 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F184B--Biwabik-Rollins complex, 1 to 6 percent slopes

Biwabik

Extent: 45 to 65 percent of the unit

Landform(s): outwash plains

Slope gradient: 1 to 6 percent

Parent material: gravelly outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat excessively drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

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

Rollins

Extent: 15 to 40 percent of the unit

Landform(s): outwash plains

Slope gradient: 1 to 6 percent

Parent material: very gravelly outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat excessively drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .20

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: A

Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|---------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 5 in | sandy loam | moderately rapid | 0.51 to 0.72 in | 4.5 to 6.0 |
| Bw -- 5 to 14 in | gravelly sandy loam | moderately rapid | 0.81 to 1.45 in | 4.5 to 6.0 |
| 2BC -- 14 to 25 in | very gravelly sand | rapid | 0.22 to 0.55 in | 4.5 to 6.0 |
| 2C -- 25 to 80 in | very gravelly coarse sand | very rapid | 0.55 to 2.74 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F185B--Lamellic Dystrudepts, 1 to 8 percent slopes

Lamellic Dystrudepts

Extent: 70 to 90 percent of the unit

Landform(s): dunes

Slope gradient: 1 to 8 percent

Parent material: eolian material

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat excessively drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .20

Land capability, nonirrigated 3s

Hydric soil: no

Hydrologic group: A

Potential for frost action: low

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|-----------------|---------------------|---------------------------------|------------|
| A -- 0 to 3 in | fine sandy loam | moderately rapid | 0.50 to 0.57 in | 4.5 to 6.0 |
| Bw1 -- 3 to 15 in | fine sandy loam | moderately rapid | 1.42 to 2.36 in | 4.5 to 6.5 |
| Bw2 -- 15 to 35 in | fine sand | rapid | 1.20 to 2.01 in | 5.1 to 6.5 |
| E and Bt -- 35 to 80 in | fine sand | rapid | 2.69 to 4.49 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F186C--Dystrudepts-Udipsamments complex, 2 to 12 percent slopes

Dystrudepts

| | |
|---|--|
| <i>Extent:</i> 30 to 55 percent of the unit | <i>Soil loss tolerance (T factor):</i> 5 |
| <i>Landform(s):</i> moraines, outwash plains | <i>Wind erodibility group (WEG):</i> 3 |
| <i>Slope gradient:</i> 2 to 12 percent | <i>Wind erodibility index (WEI):</i> 86 |
| <i>Parent material:</i> eolian sand over very cobbly outwash or ablation till | <i>Kw factor (surface layer)</i> .20 |
| <i>Restrictive feature(s):</i> greater than 60 inches | <i>Land capability, nonirrigated</i> 3s |
| <i>Flooding:</i> none | <i>Hydric soil:</i> no |
| <i>Ponding:</i> none | <i>Hydrologic group:</i> A |
| <i>Drainage class:</i> somewhat excessively drained | <i>Potential for frost action:</i> low |

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|------------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 3 in | fine sandy loam | moderately rapid | 0.50 to 0.57 in | 4.5 to 6.0 |
| Bw1 -- 3 to 15 in | fine sandy loam | moderately rapid | 1.42 to 2.36 in | 4.5 to 6.5 |
| Bw2 -- 15 to 35 in | fine sand | rapid | 1.20 to 2.01 in | 5.1 to 6.5 |
| E and Bt -- 35 to 54 in | fine sand | rapid | 1.13 to 1.89 in | 5.1 to 6.5 |
| 2C -- 54 to 80 in | extremely cobbly coarse sand | very rapid | 0.26 to 1.04 in | 5.1 to 6.5 |

Udipsamments

| | |
|---|--|
| <i>Extent:</i> 15 to 35 percent of the unit | <i>Soil loss tolerance (T factor):</i> 5 |
| <i>Landform(s):</i> moraines, outwash plains | <i>Wind erodibility group (WEG):</i> 2 |
| <i>Slope gradient:</i> 2 to 12 percent | <i>Wind erodibility index (WEI):</i> 134 |
| <i>Parent material:</i> sandy outwash over very cobbly outwash or ablation till | <i>Kw factor (surface layer)</i> .17 |
| <i>Restrictive feature(s):</i> greater than 60 inches | <i>Land capability, nonirrigated</i> 4s |
| <i>Flooding:</i> none | <i>Hydric soil:</i> no |
| <i>Ponding:</i> none | <i>Hydrologic group:</i> A |
| <i>Drainage class:</i> somewhat excessively drained | <i>Potential for frost action:</i> low |

| <i>Representative soil profile:</i> | <i>Texture</i> | <i>Permeability</i> | <i>Available water capacity</i> | <i>pH</i> |
|-------------------------------------|------------------------------|---------------------|---------------------------------|------------|
| A -- 0 to 2 in | loamy sand | rapid | 0.20 to 0.24 in | 4.5 to 6.0 |
| Bw -- 2 to 37 in | loamy sand | rapid | 2.10 to 3.85 in | 4.5 to 6.0 |
| E and Bt -- 37 to 48 in | sand | rapid | 0.55 to 0.99 in | 5.1 to 6.0 |
| 2C -- 48 to 80 in | extremely cobbly coarse sand | very rapid | 0.32 to 1.28 in | 5.1 to 6.5 |

Map Unit Description (MN)

St. Louis County, Minnesota, Embarrass Part

F187A--Dora mucky peat, 0 to 1 percent slopes

Dora

Extent: 60 to 90 percent of the unit

Landform(s): swamps on moraines

Slope gradient: 0 to 1 percent

Parent material: organic material over glaciolacustrine deposits

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

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 2

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .02

Land capability, nonirrigated 7w

Hydric soil: yes

Hydrologic group: 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> |
|-------------------------------------|----------------|---------------------|---------------------------------|------------|
| Oe -- 0 to 8 in | mucky peat | rapid | 3.54 to 4.33 in | |
| Oa -- 8 to 33 in | muck | moderately rapid | 8.82 to 11.34 in | |
| Cg -- 33 to 80 in | silty clay | slow | 4.22 to 8.90 in | 7.4 to 8.4 |

GP--Pits, gravel-Udipsamments complex

Pits, sand and gravel

Extent: 100 percent of the unit

Landform(s): moraines, outwash plains, terraces

Slope gradient:

Parent material: outwash

Restrictive feature(s): greater than 60 inches

Flooding:

Ponding:

Drainage class:

Soil loss tolerance (T factor):

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Kw factor (surface layer)

Land capability, nonirrigated

Hydric soil:

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)

St. Louis County, Minnesota, Embarrass Part

M-W--Water, miscellaneous

Water, miscellaneous

Extent: 100 percent of the unit

Landform(s):

Slope gradient:

Parent material:

Restrictive feature(s): greater than 60 inches

Flooding:

Ponding:

Drainage class:

Soil loss tolerance (T factor):

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Kw factor (surface layer)

Land capability, nonirrigated

Hydric soil: unranked

Hydrologic group:

Potential for frost action:

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

USFS--U.S. Forest Service mapping

USFS and other lands

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)

St. Louis County, Minnesota, Embarrass Part

W--Water

Water

Extent: 100 percent of the unit

Landform(s): lakes

Slope gradient: 0 to 0 percent

Parent material:

Restrictive feature(s): greater than 60 inches

Flooding:

Ponding:

Drainage class:

Soil loss tolerance (T factor):

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Kw factor (surface layer)

Land capability, nonirrigated

Hydric soil: unranked

Hydrologic group:

Potential for frost action:

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

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.