

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth 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]

1007--Udorthents, shallow (sanitary landfill), 0 to 8 percent slopes

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>
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1010--Pits, quarry

Rock outcrop

Extent: 100 percent of the unit

Landform(s): moraines

Slope gradient: 0 to 70 percent

Parent material: bedrock

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

Flooding:

Ponding:

Drainage class:

Soil loss tolerance (T factor):

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Kw factor (surface layer)

Land capability, nonirrigated

Hydric soil:

Hydrologic group:

Potential for frost action:

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

St. Louis County, Minnesota, Duluth Part

1014A--Uskabwanka peat, 0 to 1 percent slopes

Rifle, depressional

Extent: 25 to 75 percent of the unit

Landform(s): closed depressions on lake plains

Slope gradient: 0 to 0 percent

Parent material: herbaceous organic material

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 7

Wind erodibility index (WEI): 38

Kw factor (surface layer) .02

Land capability, nonirrigated 8w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oi -- 0 to 12 in	peat	very rapid	6.50 to 7.68 in	
Oe -- 12 to 43 in	mucky peat	rapid	14.17 to 17.32 in	
Oa1 -- 43 to 59 in	muck	moderately rapid	5.51 to 7.09 in	
Oa2 -- 59 to 80 in	muck	moderately rapid	7.30 to 9.39 in	

Uskabwanka, depressional

Extent: 20 to 50 percent of the unit

Landform(s): closed depressions on lake plains

Slope gradient: 0 to 0 percent

Parent material: herbaceous organic material

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: very poorly drained

Soil loss tolerance (T factor): 1

Wind erodibility group (WEG): 7

Wind erodibility index (WEI): 38

Kw factor (surface layer) .02

Land capability, nonirrigated 8w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oi -- 0 to 10 in	peat	very rapid	5.41 to 6.40 in	
Oe1 -- 10 to 40 in	mucky peat	rapid	13.64 to 16.67 in	
2Oe2 -- 40 to 70 in	water	impermeable		
Oe3 -- 70 to 80 in	mucky peat	rapid	4.43 to 5.41 in	

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth 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, Duluth 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, Duluth Part

1026A--Udifluents, loamy, 0 to 2 percent slopes, occasionally flooded

Udifluents, occas. flooded, moderately well drained

Extent: 25 to 65 percent of the unit

Landform(s): flood plains

Slope gradient: 0 to 2 percent

Parent material: alluvium

Restrictive feature(s): greater than 60 inches

Flooding: 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 2w

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
C -- 6 to 80 in	stratified silt loam to gravelly loamy coarse sand	rapid	4.44 to 16.28 in	5.6 to 7.3

Udifluents, occas. flooded, somewhat poorly drained

Extent: 15 to 50 percent of the unit

Landform(s): flood plains

Slope gradient: 0 to 2 percent

Parent material: alluvium

Restrictive feature(s): greater than 60 inches

Flooding: occasional

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 2w

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 gravelly loamy coarse sand	rapid	4.44 to 16.28 in	5.6 to 7.3

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

1028A--Urban land-Udorthents-Aquents complex, 0 to 8 percent slopes

Urban land

Extent: 20 to 55 percent of the unit

Landform(s): shores, spits, urban land

Slope gradient: 2 to 8 percent

Parent material: loamy alluvium, sandy beach materials and dredge materials

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class:

Soil loss tolerance (T factor):

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Kw factor (surface layer)

Land capability, nonirrigated

Hydric soil:

Hydrologic group:

Potential for frost action:

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

Extent: 20 to 55 percent of the unit

Landform(s): flats on shores, rises on shores, flats on spits, rises on spits

Slope gradient: 0 to 8 percent

Parent material: loamy alluvium, sandy beach materials and dredge materials

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: B

Potential for frost action:

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

St. Louis County, Minnesota, Duluth Part

1028A--Urban land-Udorthents-Aquents complex, 0 to 8 percent slopes

Aquents

Extent: 20 to 55 percent of the unit

Landform(s): flats on shores, depressions on shores, flats on spits, depressions on spits

Slope gradient: 0 to 2 percent

Parent material: loamy alluvium, sandy beach materials and dredge materials

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: poorly drained

Soil loss tolerance (T factor):

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Kw factor (surface layer) .17

Land capability, nonirrigated

Hydric soil: yes

Hydrologic group: D

Potential for frost action:

<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	0.38 to 0.69 in	5.1 to 6.5
Cg --	3 to 80 in	stratified loamy coarse sand to silt loam	rapid	4.61 to 16.89 in	5.6 to 7.3

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

1034A--Udifluents and Fluvaquents, loamy, 0 to 2 percent slopes, rarely flooded

Udifluents, rarely flooded, moderately well drained

Extent: 25 to 65 percent of the unit

Landform(s): flood plains

Slope gradient: 0 to 2 percent

Parent material: alluvium

Restrictive feature(s): greater than 60 inches

Flooding: 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 2w

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
C -- 6 to 80 in	stratified silt loam to gravelly loamy coarse sand	rapid	4.44 to 16.28 in	5.6 to 7.3

Udifluents, rarely flooded, somewhat poorly drained

Extent: 15 to 50 percent of the unit

Landform(s): flood plains

Slope gradient: 0 to 2 percent

Parent material: alluvium

Restrictive feature(s): greater than 60 inches

Flooding: rare

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 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 gravelly loamy coarse sand	rapid	4.44 to 16.28 in	5.6 to 7.3

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

1035--Urban land

Urban land

Extent: 90 to 100 percent of the unit

Landform(s): moraines

Slope gradient: 0 to 8 percent

Parent material: fill material from surrounding uplands, gravel pits and blasted bedrock.

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class:

Soil loss tolerance (T factor):

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Kw factor (surface layer)

Land capability, nonirrigated

Hydric soil:

Hydrologic group:

Potential for frost action:

Representative soil profile:

Texture

Permeability

*Available water
capacity*

pH

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth 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, Duluth 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, Duluth 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, Duluth 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, Duluth 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, Duluth 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, Duluth 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, Duluth 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, Duluth 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, Duluth 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, Duluth 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, Duluth 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, Duluth 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, Duluth 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, Duluth Part

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

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth 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, Duluth 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, Duluth 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, Duluth 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, Duluth 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, Duluth Part

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, Duluth 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, Duluth Part

B81A--Cathro muck, depressional, duluth catena, 0 to 1 percent slopes

Cathro, depressional

Extent: 60 to 90 percent of the unit

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

Slope gradient: 0 to 1 percent

Parent material: organic material over loamy till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 2

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw factor (surface layer) .02

Land capability, nonirrigated 7w

Hydric soil: yes

Hydrologic group: D

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	moderately slow	0.95 to 1.04 in	5.1 to 6.5
2Cg -- 40 to 50 in	stratified sandy loam to silty clay loam	slow	1.67 to 2.36 in	5.6 to 7.3
2C,2BC -- 50 to 80 in	loam	slow	3.89 to 5.69 in	6.1 to 7.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

B101A--Schisler-Ellsburg-Baden, depressional, complex, 0 to 2 percent slopes

Schisler

Extent: 30 to 45 percent of the unit

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

Slope gradient: 0 to 2 percent

Parent material: loamy material over 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): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .15

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	fine sandy loam	moderately rapid	0.55 to 0.94 in	4.5 to 6.0
Bg,Bw -- 4 to 35 in	stratified loamy sand to silt loam	moderately rapid	2.49 to 6.84 in	4.5 to 6.0
2Bt -- 35 to 60 in	clay loam	slow	3.22 to 4.71 in	5.1 to 6.5
2C -- 60 to 80 in	loam	slow	2.61 to 3.81 in	6.1 to 7.8

Ellsburg

Extent: 20 to 40 percent of the unit

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

Slope gradient: 0 to 2 percent

Parent material: loamy and or silty material over 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) .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>
A -- 0 to 4 in	silt loam	moderate	0.55 to 0.94 in	4.5 to 6.0
E,E/B,B/E -- 4 to 20 in	silt loam	moderate	2.26 to 3.55 in	4.5 to 6.0
2Bt,2B/E -- 20 to 65 in	clay loam	slow	5.83 to 8.53 in	5.1 to 6.5
2C -- 65 to 80 in	loam	slow	1.94 to 2.84 in	6.1 to 7.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

B101A--Schisler-Ellsburg-Baden, depressional, complex, 0 to 2 percent slopes

Baden, depressional

Extent: 10 to 20 percent of the unit

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

Slope gradient: 0 to 1 percent

Parent material: silty material over loamy till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 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: high

Representative soil profile:

		<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa --	0 to 2 in	muck	moderately rapid	0.69 to 0.89 in	
A --	2 to 6 in	mucky silt loam	moderate	0.75 to 0.94 in	4.5 to 6.0
Eg,Bg --	6 to 20 in	silt loam	moderate	2.13 to 3.12 in	4.5 to 6.0
2Bw --	20 to 45 in	loam	slow	3.22 to 4.71 in	5.6 to 7.3
2C --	45 to 80 in	loam	slow	4.56 to 6.66 in	6.1 to 7.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

B102A--Hellwig-Ellsburg-Baden, depressional, complex, 0 to 2 percent slopes

Hellwig

Extent: 35 to 50 percent of the unit

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

Slope gradient: 0 to 2 percent

Parent material: sandy material over 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): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .15

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 3 in	sandy loam	moderately rapid	0.38 to 0.76 in	4.5 to 6.0
E,Bw -- 3 to 32 in	sand	rapid	1.44 to 3.16 in	4.5 to 6.0
2Bt -- 32 to 60 in	clay loam	slow	3.63 to 5.31 in	5.1 to 6.5
2C -- 60 to 80 in	loam	slow	2.61 to 3.81 in	6.1 to 7.8

Ellsburg

Extent: 15 to 30 percent of the unit

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

Slope gradient: 0 to 2 percent

Parent material: loamy and or silty material over 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) .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>
A -- 0 to 4 in	silt loam	moderate	0.55 to 0.94 in	4.5 to 6.0
E,E/B,B/E -- 4 to 20 in	silt loam	moderate	2.26 to 3.55 in	4.5 to 6.0
2Bt,2B/E -- 20 to 65 in	clay loam	slow	5.83 to 8.53 in	5.1 to 6.5
2C -- 65 to 80 in	loam	slow	1.94 to 2.84 in	6.1 to 7.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

B102A--Hellwig-Ellsburg-Baden, depressional, complex, 0 to 2 percent slopes

Baden, depressional

Extent: 10 to 30 percent of the unit

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

Slope gradient: 0 to 1 percent

Parent material: silty material over loamy till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 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: high

Representative soil profile:

		Texture	Permeability	Available water capacity	pH
Oa --	0 to 2 in	muck	moderately rapid	0.69 to 0.89 in	
A --	2 to 6 in	mucky silt loam	moderate	0.75 to 0.94 in	4.5 to 6.0
Eg,Bg --	6 to 20 in	silt loam	moderate	2.13 to 3.12 in	4.5 to 6.0
2Bw --	20 to 45 in	loam	slow	3.22 to 4.71 in	5.6 to 7.3
2C --	45 to 80 in	loam	slow	4.56 to 6.66 in	6.1 to 7.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

B103A--Melrude-Schisler-Baden, depressional, complex, 0 to 2 percent slopes

Melrude

Extent: 40 to 60 percent of the unit

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

Slope gradient: 0 to 2 percent

Parent material: stratified loamy material

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) .15

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 3 in	loam	moderate	0.44 to 0.76 in	4.5 to 6.0
E,Bw -- 3 to 60 in	stratified loamy sand to silt loam	moderately rapid	4.54 to 12.47 in	4.5 to 6.0
2C -- 60 to 80 in	loam	slow	2.61 to 3.81 in	6.1 to 7.8

Schisler

Extent: 20 to 40 percent of the unit

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

Slope gradient: 0 to 2 percent

Parent material: loamy material over 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): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .15

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	fine sandy loam	moderately rapid	0.55 to 0.94 in	4.5 to 6.0
Bg,Bw -- 4 to 35 in	stratified loamy sand to silt loam	moderately rapid	2.49 to 6.84 in	4.5 to 6.0
2Bt -- 35 to 60 in	clay loam	slow	3.22 to 4.71 in	5.1 to 6.5
2C -- 60 to 80 in	loam	slow	2.61 to 3.81 in	6.1 to 7.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

B103A--Melrude-Schisler-Baden, depressional, complex, 0 to 2 percent slopes

Baden, depressional

Extent: 10 to 30 percent of the unit

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

Slope gradient: 0 to 1 percent

Parent material: silty material over loamy till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 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: high

Representative soil profile:

		<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa --	0 to 2 in	muck	moderately rapid	0.69 to 0.89 in	
A --	2 to 6 in	mucky silt loam	moderate	0.75 to 0.94 in	4.5 to 6.0
Eg,Bg --	6 to 20 in	silt loam	moderate	2.13 to 3.12 in	4.5 to 6.0
2Bw --	20 to 45 in	loam	slow	3.22 to 4.71 in	5.6 to 7.3
2C --	45 to 80 in	loam	slow	4.56 to 6.66 in	6.1 to 7.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

B104A--Ellsburg-Baden complex, 0 to 2 percent slopes

Ellsburg

Extent: 40 to 65 percent of the unit

Landform(s): flats on till plains, rises on till plains, flats on moraines, drainageways on moraines

Slope gradient: 0 to 2 percent

Parent material: loamy and or silty material over 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) .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>
A -- 0 to 4 in	silt loam	moderate	0.55 to 0.94 in	4.5 to 6.0
E,E/B,B/E -- 4 to 20 in	silt loam	moderate	2.26 to 3.55 in	4.5 to 6.0
2Bt,2B/E -- 20 to 65 in	clay loam	slow	5.83 to 8.53 in	5.1 to 6.5
2C -- 65 to 80 in	loam	slow	1.94 to 2.84 in	6.1 to 7.8

Baden, depressional

Extent: 15 to 35 percent of the unit

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

Slope gradient: 0 to 1 percent

Parent material: silty material over loamy till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 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: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa -- 0 to 2 in	muck	moderately rapid	0.69 to 0.89 in	
A -- 2 to 6 in	mucky silt loam	moderate	0.75 to 0.94 in	4.5 to 6.0
Eg,Bg -- 6 to 20 in	silt loam	moderate	2.13 to 3.12 in	4.5 to 6.0
2Bw -- 20 to 45 in	loam	slow	3.22 to 4.71 in	5.6 to 7.3
2C -- 45 to 80 in	loam	slow	4.56 to 6.66 in	6.1 to 7.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

B104A--Ellsburg-Baden complex, 0 to 2 percent slopes

B107A--Baden muck, depressional, 0 to 1 percent slopes

Baden, depressional

Extent: 60 to 90 percent of the unit

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

Slope gradient: 0 to 1 percent

Parent material: silty material over loamy till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 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: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa -- 0 to 2 in	muck	moderately rapid	0.69 to 0.89 in	
A -- 2 to 6 in	mucky silt loam	moderate	0.75 to 0.94 in	4.5 to 6.0
Eg,Bg -- 6 to 20 in	silt loam	moderate	2.13 to 3.12 in	4.5 to 6.0
2Bw -- 20 to 45 in	loam	slow	3.22 to 4.71 in	5.6 to 7.3
2C -- 45 to 80 in	loam	slow	4.56 to 6.66 in	6.1 to 7.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

B118A--Rifle soils, duluth catena, 0 to 1 percent slopes

Rifle, depressional

Extent: 0 to 95 percent of the unit

Landform(s): swamps on till plains, swamps 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	

Rifle

Extent: 0 to 95 percent of the unit

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

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

B120A--Mooselake mucky peat, duluth catena, 0 to 1 percent slopes

Mooselake

Extent: 60 to 90 percent of the unit

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

B121A--Merwin peat, duluth catena, 0 to 1 percent slopes

Merwin

Extent: 60 to 90 percent of the unit

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

Slope gradient: 0 to 1 percent

Parent material: organic material over loamy 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 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 56 in	stratified sandy loam to silty clay loam	slow	1.67 to 2.36 in	5.6 to 7.3
2C,2BC -- 56 to 80 in	loam	slow	3.12 to 4.56 in	6.1 to 7.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

B122A--Tacoosh mucky peat, duluth catena, 0 to 1 percent slopes

Tacoosh

Extent: 60 to 90 percent of the unit

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

Slope gradient: 0 to 1 percent

Parent material: organic material over loamy till

Restrictive feature(s): dense material at 40 to 80 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 50 in	stratified sandy loam to silty clay loam	slow	2.41 to 3.40 in	5.6 to 7.3
2C,2BC -- 50 to 80 in	loam	slow	3.89 to 5.69 in	6.1 to 7.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

B123A--Blackhoof-Cathro-Baden complex, depressional, 0 to 1 percent slopes

Blackhoof, depressional

Extent: 60 to 80 percent of the unit

Soil loss tolerance (T factor): 3

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

Wind erodibility group (WEG): 2

Slope gradient: 0 to 1 percent

Wind erodibility index (WEI): 134

Parent material: thin highly decomposed organic material over loamy till

Kw factor (surface layer) .02

Restrictive feature(s): greater than 60 inches

Land capability, nonirrigated 6w

Flooding: none

Hydric soil: yes

Ponding: frequent

Hydrologic group: D

Drainage class: very poorly drained

Potential for frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa -- 0 to 12 in	muck	moderately rapid	4.13 to 5.31 in	
A -- 12 to 15 in	silt loam	moderate	0.63 to 0.76 in	4.5 to 6.0
Bg -- 15 to 17 in	silt loam	moderate	0.30 to 0.43 in	4.5 to 6.0
2Bw -- 17 to 42 in	loam	moderate	3.28 to 4.79 in	5.1 to 6.5
2C -- 42 to 80 in	loam	slow	4.54 to 7.18 in	6.1 to 7.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

B123A--Blackhoof-Cathro-Baden complex, depressional, 0 to 1 percent slopes

Baden, depressional

<p><i>Extent:</i> 10 to 20 percent of the unit</p> <p><i>Landform(s):</i> depressions on till plains, drainageways on till plains, depressions on moraines, drainageways on moraines</p> <p><i>Slope gradient:</i> 0 to 1 percent</p> <p><i>Parent material:</i> silty material over loamy till</p> <p><i>Restrictive feature(s):</i> greater than 60 inches</p> <p><i>Flooding:</i> none</p> <p><i>Ponding:</i> frequent</p> <p><i>Drainage class:</i> very poorly drained</p>	<p><i>Soil loss tolerance (T factor):</i> 5</p> <p><i>Wind erodibility group (WEG):</i> 2</p> <p><i>Wind erodibility index (WEI):</i> 134</p> <p><i>Kw factor (surface layer)</i> .02</p> <p><i>Land capability, nonirrigated</i> 6w</p> <p><i>Hydric soil:</i> yes</p> <p><i>Hydrologic group:</i> D</p> <p><i>Potential for frost action:</i> high</p>
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<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa -- 0 to 2 in	muck	moderately rapid	0.69 to 0.89 in	
A -- 2 to 6 in	mucky silt loam	moderate	0.75 to 0.94 in	4.5 to 6.0
Eg,Bg -- 6 to 20 in	silt loam	moderate	2.13 to 3.12 in	4.5 to 6.0
2Bw -- 20 to 45 in	loam	slow	3.22 to 4.71 in	5.6 to 7.3
2C -- 45 to 80 in	loam	slow	4.56 to 6.66 in	6.1 to 7.8

Cathro, depressional

<p><i>Extent:</i> 10 to 20 percent of the unit</p> <p><i>Landform(s):</i> depressions on till plains, depressions on moraines</p> <p><i>Slope gradient:</i> 0 to 1 percent</p> <p><i>Parent material:</i> organic material over loamy till</p> <p><i>Restrictive feature(s):</i> greater than 60 inches</p> <p><i>Flooding:</i> none</p> <p><i>Ponding:</i> frequent</p> <p><i>Drainage class:</i> very poorly drained</p>	<p><i>Soil loss tolerance (T factor):</i> 2</p> <p><i>Wind erodibility group (WEG):</i> 2</p> <p><i>Wind erodibility index (WEI):</i> 134</p> <p><i>Kw factor (surface layer)</i> .02</p> <p><i>Land capability, nonirrigated</i> 7w</p> <p><i>Hydric soil:</i> yes</p> <p><i>Hydrologic group:</i> D</p> <p><i>Potential for frost action:</i> high</p>
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<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa -- 0 to 36 in	muck	moderately rapid	12.54 to 16.12 in	
A -- 36 to 40 in	mucky silt loam	moderately slow	0.95 to 1.04 in	5.1 to 6.5
2Cg -- 40 to 50 in	stratified sandy loam to silty clay loam	slow	1.08 to 2.26 in	5.6 to 7.3
2C -- 50 to 80 in	loam	slow	3.89 to 5.69 in	6.1 to 7.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

B123A--Blackhoof-Cathro-Baden complex, depressional, 0 to 1 percent slopes

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

B124A--Dusler-Ellsburg complex, 0 to 3 percent slopes

Dusler

Extent: 40 to 55 percent of the unit

Landform(s): rises on moraines

Slope gradient: 1 to 3 percent

Parent material: loamy and or silty material over 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) .24

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 5 in	silt loam	moderate	0.72 to 1.23 in	4.5 to 6.0
E,E/B,B/E -- 5 to 15 in	silt loam	moderate	1.38 to 2.17 in	4.5 to 6.0
2Bt,2B/E -- 15 to 66 in	clay loam	slow	6.65 to 9.72 in	5.1 to 6.5
2C -- 66 to 80 in	loam	slow	1.79 to 2.62 in	6.1 to 7.8

Ellsburg

Extent: 30 to 45 percent of the unit

Landform(s): flats on moraines, drainageways on moraines

Slope gradient: 0 to 2 percent

Parent material: loamy and or silty material over 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) .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>
A -- 0 to 4 in	silt loam	moderate	0.55 to 0.94 in	4.5 to 6.0
E,E/B,B/E -- 4 to 20 in	silt loam	moderate	2.26 to 3.55 in	4.5 to 6.0
2Bt,2B/E -- 20 to 65 in	clay loam	slow	5.83 to 8.53 in	5.1 to 6.5
2C -- 65 to 80 in	loam	slow	1.94 to 2.84 in	6.1 to 7.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

B125B--Culver silt loam, 3 to 8 percent slopes

Culver

Extent: 85 to 95 percent of the unit

Landform(s): moraines

Slope gradient: 3 to 8 percent

Parent material: loamy and or silty material over loamy till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .24

Land capability, nonirrigated 2e

Hydric soil: no

Hydrologic group: B

Potential for frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 4 in	silt loam	moderate	0.55 to 0.94 in	4.5 to 6.0
E,E/B,Bw -- 4 to 16 in	silt loam	moderate	1.71 to 2.69 in	4.5 to 6.0
2Bt,2B/E -- 16 to 52 in	clay loam	slow	4.66 to 6.81 in	5.1 to 6.5
2C -- 52 to 80 in	loam	slow	3.63 to 5.31 in	6.1 to 7.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

B126D--Duluth-Culver complex, 3 to 18 percent slopes

Duluth

Extent: 55 to 80 percent of the unit

Landform(s): moraines

Slope gradient: 8 to 18 percent

Parent material: loamy and or silty material over loamy till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .17

Land capability, nonirrigated 4e

Hydric soil: no

Hydrologic group: B

Potential for frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 5 in	fine sandy loam	moderately rapid	0.72 to 1.23 in	4.5 to 6.0
E,E/B,B/E -- 5 to 18 in	silt loam	moderate	1.82 to 2.86 in	4.5 to 6.0
2Bt,2B/E -- 18 to 38 in	clay loam	slow	2.61 to 3.81 in	5.1 to 6.5
2C,2BC -- 38 to 80 in	loam	slow	5.43 to 7.93 in	6.1 to 7.8

Culver

Extent: 15 to 30 percent of the unit

Landform(s): moraines

Slope gradient: 3 to 8 percent

Parent material: loamy and or silty material over loamy till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .24

Land capability, nonirrigated 2e

Hydric soil: no

Hydrologic group: B

Potential for frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 4 in	silt loam	moderate	0.55 to 0.94 in	4.5 to 6.0
E,E/B,Bw -- 4 to 16 in	silt loam	moderate	1.71 to 2.69 in	4.5 to 6.0
2Bt,2B/E -- 16 to 52 in	clay loam	slow	4.66 to 6.81 in	5.1 to 6.5
2C -- 52 to 80 in	loam	slow	3.63 to 5.31 in	6.1 to 7.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

B126E--Duluth silt loam, 18 to 45 percent slopes

Duluth

Extent: 70 to 90 percent of the unit

Landform(s): moraines

Slope gradient: 18 to 45 percent

Parent material: loamy and or silty material over loamy till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .17

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 5 in	fine sandy loam	moderately rapid	0.72 to 1.23 in	4.5 to 6.0
E,E/B,B/E -- 5 to 18 in	silt loam	moderate	1.82 to 2.86 in	4.5 to 6.0
2Bt,2B/E -- 18 to 38 in	clay loam	slow	2.61 to 3.81 in	5.1 to 6.5
2C,2BC -- 38 to 80 in	loam	slow	5.43 to 7.93 in	6.1 to 7.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

B127B--Culver-Dusler-Ellsburg complex, 0 to 8 percent slopes

Culver

Extent: 40 to 55 percent of the unit

Landform(s): moraines

Slope gradient: 3 to 8 percent

Parent material: loamy and or silty material over loamy till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .24

Land capability, nonirrigated 2e

Hydric soil: no

Hydrologic group: B

Potential for frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 4 in	silt loam	moderate	0.55 to 0.94 in	4.5 to 6.0
E,E/B,Bw -- 4 to 16 in	silt loam	moderate	1.71 to 2.69 in	4.5 to 6.0
2Bt,2B/E -- 16 to 52 in	clay loam	slow	4.66 to 6.81 in	5.1 to 6.5
2C -- 52 to 80 in	loam	slow	3.63 to 5.31 in	6.1 to 7.8

Dusler

Extent: 20 to 30 percent of the unit

Landform(s): moraines

Slope gradient: 1 to 3 percent

Parent material: loamy and or silty material over 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) .24

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 5 in	silt loam	moderate	0.72 to 1.23 in	4.5 to 6.0
E,E/B,B/E -- 5 to 15 in	silt loam	moderate	1.38 to 2.17 in	4.5 to 6.0
2Bt,2B/E -- 15 to 66 in	clay loam	slow	6.65 to 9.72 in	5.1 to 6.5
2C -- 66 to 80 in	loam	slow	1.79 to 2.62 in	6.1 to 7.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

B127B--Culver-Dusler-Ellsburg complex, 0 to 8 percent slopes

Ellsburg

Extent: 10 to 25 percent of the unit

Landform(s): moraines

Slope gradient: 0 to 2 percent

Parent material: loamy and or silty material over 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) .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>
A -- 0 to 4 in	silt loam	moderate	0.55 to 0.94 in	4.5 to 6.0
E,E/B,B/E -- 4 to 20 in	silt loam	moderate	2.26 to 3.55 in	4.5 to 6.0
2Bt,2B/E -- 20 to 65 in	clay loam	slow	5.83 to 8.53 in	5.1 to 6.5
2C -- 65 to 80 in	loam	slow	1.94 to 2.84 in	6.1 to 7.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

B128D--Duluth-Culver-Cathro, depressional, complex, 0 to 18 percent slopes

Duluth

Extent: 40 to 50 percent of the unit

Landform(s): moraines

Slope gradient: 8 to 18 percent

Parent material: loamy and or silty material over loamy till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .17

Land capability, nonirrigated 4e

Hydric soil: no

Hydrologic group: B

Potential for frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 5 in	fine sandy loam	moderately rapid	0.72 to 1.23 in	4.5 to 6.0
E,E/B,B/E -- 5 to 18 in	silt loam	moderate	1.82 to 2.86 in	4.5 to 6.0
2Bt,2B/E -- 18 to 38 in	clay loam	slow	2.61 to 3.81 in	5.1 to 6.5
2C,2BC -- 38 to 80 in	loam	slow	5.43 to 7.93 in	6.1 to 7.8

Culver

Extent: 20 to 30 percent of the unit

Landform(s): moraines

Slope gradient: 3 to 8 percent

Parent material: loamy and or silty material over loamy till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .24

Land capability, nonirrigated 2e

Hydric soil: no

Hydrologic group: B

Potential for frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 4 in	silt loam	moderate	0.55 to 0.94 in	4.5 to 6.0
E,E/B,Bw -- 4 to 16 in	silt loam	moderate	1.71 to 2.69 in	4.5 to 6.0
2Bt,2B/E -- 16 to 52 in	clay loam	slow	4.66 to 6.81 in	5.1 to 6.5
2C -- 52 to 80 in	loam	slow	3.63 to 5.31 in	6.1 to 7.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

B128D--Duluth-Culver-Cathro, depressional, complex, 0 to 18 percent slopes

Cathro, depressional

Extent: 5 to 20 percent of the unit

Landform(s): depressions on moraines

Slope gradient: 0 to 1 percent

Parent material: organic material over loamy till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 2

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .02

Land capability, nonirrigated 7w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa -- 0 to 36 in	muck	moderately rapid	12.54 to 16.12 in	
A -- 36 to 40 in	mucky silt loam	moderately slow	0.95 to 1.04 in	5.1 to 6.5
2Cg -- 40 to 50 in	stratified sandy loam to silty clay loam	slow	1.08 to 2.26 in	5.6 to 7.3
2C -- 50 to 80 in	loam	slow	3.89 to 5.69 in	6.1 to 7.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

B129B--Culver-Culver, coarse substratum-Ellsburg complex, 0 to 8 percent slopes

Culver

Extent: 35 to 55 percent of the unit

Landform(s): moraines

Slope gradient: 3 to 8 percent

Parent material: loamy and or silty material over loamy till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .24

Land capability, nonirrigated 2e

Hydric soil: no

Hydrologic group: B

Potential for frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 4 in	silt loam	moderate	0.55 to 0.94 in	4.5 to 6.0
E,E/B,Bw -- 4 to 16 in	silt loam	moderate	1.71 to 2.69 in	4.5 to 6.0
2Bt,2B/E -- 16 to 52 in	clay loam	slow	4.66 to 6.81 in	5.1 to 6.5
2C -- 52 to 80 in	loam	slow	3.63 to 5.31 in	6.1 to 7.8

Culver, coarse substratum

Extent: 20 to 30 percent of the unit

Landform(s): moraines

Slope gradient: 3 to 8 percent

Parent material: loamy and or silty material over loamy till over 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): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .24

Land capability, nonirrigated 2e

Hydric soil: no

Hydrologic group: B

Potential for frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 3 in	silt loam	moderate	0.44 to 0.76 in	4.5 to 6.0
E,E/B,Bw -- 3 to 15 in	silt loam	moderate	1.65 to 2.60 in	4.5 to 6.0
2Bt,2B/E -- 15 to 48 in	clay loam	slow	4.30 to 6.28 in	5.1 to 6.5
2BC -- 48 to 62 in	loam	slow	1.79 to 2.62 in	6.1 to 7.8
3C -- 62 to 80 in	very gravelly sand	very rapid	0.18 to 1.63 in	5.6 to 6.5

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

B129B--Culver-Culver, coarse substratum-Ellsburg complex, 0 to 8 percent slopes

Ellsburg

Extent: 5 to 25 percent of the unit

Landform(s): moraines

Slope gradient: 0 to 2 percent

Parent material: loamy and or silty material over 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) .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>
A -- 0 to 4 in	silt loam	moderate	0.55 to 0.94 in	4.5 to 6.0
E,E/B,B/E -- 4 to 20 in	silt loam	moderate	2.26 to 3.55 in	4.5 to 6.0
2Bt,2B/E -- 20 to 65 in	clay loam	slow	5.83 to 8.53 in	5.1 to 6.5
2C -- 65 to 80 in	loam	slow	1.94 to 2.84 in	6.1 to 7.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

B130D--Duluth-Duluth, coarse substratum-Ellsburg complex, 0 to 18 percent slopes

Duluth

Extent: 35 to 55 percent of the unit

Landform(s): moraines

Slope gradient: 8 to 18 percent

Parent material: loamy and or silty material over loamy till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .17

Land capability, nonirrigated 4e

Hydric soil: no

Hydrologic group: B

Potential for frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 5 in	fine sandy loam	moderately rapid	0.72 to 1.23 in	4.5 to 6.0
E,E/B,B/E -- 5 to 18 in	silt loam	moderate	1.82 to 2.86 in	4.5 to 6.0
2Bt,2B/E -- 18 to 38 in	clay loam	slow	2.61 to 3.81 in	5.1 to 6.5
2C,2BC -- 38 to 80 in	loam	slow	5.43 to 7.93 in	6.1 to 7.8

Duluth, coarse substratum

Extent: 20 to 30 percent of the unit

Landform(s): moraines

Slope gradient: 8 to 18 percent

Parent material: loamy and or silty material over loamy till over outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .17

Land capability, nonirrigated 4e

Hydric soil: no

Hydrologic group: B

Potential for frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 4 in	fine sandy loam	moderately rapid	0.55 to 0.94 in	4.5 to 6.0
E,E/B,B/E -- 4 to 16 in	silt loam	moderate	1.71 to 2.69 in	4.5 to 6.0
2Bt,2B/E -- 16 to 69 in	clay loam	slow	6.86 to 10.02 in	5.1 to 6.5
3C -- 69 to 80 in	very gravelly sand	very rapid	0.11 to 0.99 in	5.6 to 6.5

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

B130D--Duluth-Duluth, coarse substratum-Ellsburg complex, 0 to 18 percent slopes

Ellsburg

Extent: 5 to 20 percent of the unit

Landform(s): moraines

Slope gradient: 0 to 2 percent

Parent material: loamy and or silty material over 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) .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>
A -- 0 to 4 in	silt loam	moderate	0.55 to 0.94 in	4.5 to 6.0
E,E/B,B/E -- 4 to 20 in	silt loam	moderate	2.26 to 3.55 in	4.5 to 6.0
2Bt,2B/E -- 20 to 65 in	clay loam	slow	5.83 to 8.53 in	5.1 to 6.5
2C -- 65 to 80 in	loam	slow	1.94 to 2.84 in	6.1 to 7.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

B131F--Duluth-Duluth, coarse substratum complex, 18 to 45 percent slopes

Duluth

Extent: 40 to 60 percent of the unit

Landform(s): moraines

Slope gradient: 18 to 45 percent

Parent material: loamy and or silty material over loamy till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .17

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 5 in	fine sandy loam	moderately rapid	0.72 to 1.23 in	4.5 to 6.0
E,E/B,B/E -- 5 to 18 in	silt loam	moderate	1.82 to 2.86 in	4.5 to 6.0
2Bt,2B/E -- 18 to 38 in	clay loam	slow	2.61 to 3.81 in	5.1 to 6.5
2C,2BC -- 38 to 80 in	loam	slow	5.43 to 7.93 in	6.1 to 7.8

Duluth, coarse substratum

Extent: 20 to 40 percent of the unit

Landform(s): moraines

Slope gradient: 18 to 45 percent

Parent material: loamy and or silty material over loamy till over outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .17

Land capability, nonirrigated 7e

Hydric soil: no

Hydrologic group: B

Potential for frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 4 in	fine sandy loam	moderately rapid	0.55 to 0.94 in	4.5 to 6.0
E,E/B,B/E -- 4 to 16 in	silt loam	moderate	1.71 to 2.69 in	4.5 to 6.0
2Bt,2B/E -- 16 to 69 in	clay loam	slow	6.86 to 10.02 in	5.1 to 6.5
3C -- 69 to 80 in	very gravelly sand	very rapid	0.11 to 0.99 in	5.6 to 6.5

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

B143B--Dinham-Dusler complex, 1 to 8 percent slopes

Dinham

Extent: 20 to 80 percent of the unit

Landform(s): moraines

Slope gradient: 3 to 8 percent

Parent material: sandy material over loamy till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .15

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 5 in	sandy loam	moderately rapid	0.56 to 1.13 in	4.5 to 6.0
Bw1 -- 5 to 10 in	sandy loam	moderately rapid	0.47 to 0.66 in	4.5 to 6.0
Bw2,Bw3,Bw4 -- 10 to 38 in	sand	rapid	1.13 to 3.12 in	4.5 to 6.0
2Bt,2B/E -- 38 to 80 in	clay loam	slow	5.43 to 7.93 in	5.1 to 6.5

Dusler

Extent: 10 to 40 percent of the unit

Landform(s): moraines

Slope gradient: 1 to 3 percent

Parent material: loamy and or silty material over 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) .24

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 5 in	silt loam	moderate	0.72 to 1.23 in	4.5 to 6.0
E,E/B,B/E -- 5 to 15 in	silt loam	moderate	1.38 to 2.17 in	4.5 to 6.0
2Bt,2B/E -- 15 to 66 in	clay loam	slow	6.65 to 9.72 in	5.1 to 6.5
2C -- 66 to 80 in	loam	slow	1.79 to 2.62 in	6.1 to 7.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

B144A--Ellsburg-Dusler complex, 0 to 3 percent slopes

Ellsburg

Extent: 50 to 70 percent of the unit

Landform(s): drumlins

Slope gradient: 0 to 2 percent

Parent material: loamy and or silty material over 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) .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>
A -- 0 to 4 in	silt loam	moderate	0.55 to 0.94 in	4.5 to 6.0
E,E/B,B/E -- 4 to 20 in	silt loam	moderate	2.26 to 3.55 in	4.5 to 6.0
2Bt,2B/E -- 20 to 65 in	clay loam	slow	5.83 to 8.53 in	5.1 to 6.5
2C -- 65 to 80 in	loam	slow	1.94 to 2.84 in	6.1 to 7.8

Dusler

Extent: 30 to 50 percent of the unit

Landform(s): drumlins

Slope gradient: 1 to 3 percent

Parent material: loamy and or silty material over 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) .24

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 5 in	silt loam	moderate	0.72 to 1.23 in	4.5 to 6.0
E,E/B,B/E -- 5 to 15 in	silt loam	moderate	1.38 to 2.17 in	4.5 to 6.0
2Bt,2B/E -- 15 to 66 in	clay loam	slow	6.65 to 9.72 in	5.1 to 6.5
2C -- 66 to 80 in	loam	slow	1.79 to 2.62 in	6.1 to 7.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

B145B--Dusler-Culver complex, 1 to 8 percent slopes

Dusler

Extent: 35 to 90 percent of the unit

Landform(s): drumlins

Slope gradient: 1 to 3 percent

Parent material: loamy and or silty material over 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) .24

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 5 in	silt loam	moderate	0.72 to 1.23 in	4.5 to 6.0
E,E/B,B/E -- 5 to 15 in	silt loam	moderate	1.38 to 2.17 in	4.5 to 6.0
2Bt,2B/E -- 15 to 66 in	clay loam	slow	6.65 to 9.72 in	5.1 to 6.5
2C -- 66 to 80 in	loam	slow	1.79 to 2.62 in	6.1 to 7.8

Culver

Extent: 5 to 25 percent of the unit

Landform(s): drumlins

Slope gradient: 4 to 8 percent

Parent material: loamy and or silty material over loamy till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .24

Land capability, nonirrigated 2e

Hydric soil: no

Hydrologic group: B

Potential for frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 4 in	silt loam	moderate	0.55 to 0.94 in	4.5 to 6.0
E,E/B,Bw -- 4 to 16 in	silt loam	moderate	1.71 to 2.69 in	4.5 to 6.0
2Bt,2B/E -- 16 to 52 in	clay loam	slow	4.66 to 6.81 in	5.1 to 6.5
2C -- 52 to 80 in	loam	slow	3.63 to 5.31 in	6.1 to 7.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

B148A--Greenwood soils, duluth catena, 0 to 1 percent slopes

Greenwood

Extent: 0 to 95 percent of the unit

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

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 till plains, bogs 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): 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, Duluth Part

B150D--Dinham-Duluth complex, 8 to 18 percent slopes

Duluth

Extent: 20 to 50 percent of the unit

Landform(s): moraines

Slope gradient: 8 to 18 percent

Parent material: loamy and or silty material over loamy till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .17

Land capability, nonirrigated 4e

Hydric soil: no

Hydrologic group: B

Potential for frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 5 in	fine sandy loam	moderately rapid	0.72 to 1.23 in	4.5 to 6.0
E,E/B,B/E -- 5 to 18 in	silt loam	moderate	1.82 to 2.86 in	4.5 to 6.0
2Bt,2B/E -- 18 to 38 in	clay loam	slow	2.61 to 3.81 in	5.1 to 6.5
2C,2BC -- 38 to 80 in	loam	slow	5.43 to 7.93 in	6.1 to 7.8

Dinham

Extent: 20 to 50 percent of the unit

Landform(s): moraines

Slope gradient: 8 to 18 percent

Parent material: sandy material over loamy till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .15

Land capability, nonirrigated 4s

Hydric soil: no

Hydrologic group: B

Potential for frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 5 in	sandy loam	moderately rapid	0.56 to 1.13 in	4.5 to 6.0
Bw1 -- 5 to 10 in	sandy loam	moderately rapid	0.47 to 0.66 in	4.5 to 6.0
Bw2,Bw3,Bw4 --	sand	rapid	1.13 to 3.12 in	4.5 to 6.0
2Bt,2B/E -- 38 to 80 in	clay loam	slow	5.43 to 7.93 in	5.1 to 6.5

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth 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, Duluth 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>
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E1A--Fluvaquents, clayey, 0 to 1 percent slopes, frequently flooded

Fluvaquents, frequently flooded

Extent: 90 to 98 percent of the unit

Landform(s): flats on flood plains

Slope gradient: 0 to 1 percent

Parent material: clayey alluvium over clayey till

Restrictive feature(s): greater than 60 inches

Flooding: frequent

Ponding: none

Drainage class: very poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 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 15 in	silt loam	moderate	3.29 to 3.59 in	4.5 to 6.6
Cg1 -- 15 to 60 in	stratified silty clay to silt loam	slow	4.49 to 9.87 in	5.1 to 6.5
Cg2 -- 60 to 80 in	clay	slow	1.61 to 2.01 in	7.9 to 8.4

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

E2B--Cuttre-Fluvaquents, frequently flooded, complex, 0 to 8 percent slopes

Cuttre

Extent: 70 to 90 percent of the unit

Landform(s): till plains

Slope gradient: 3 to 8 percent

Parent material: clayey till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 3w

Hydric soil: no

Hydrologic group: D

Potential for frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 5 in	silt loam	moderate	0.87 to 1.23 in	4.5 to 6.6
BE,EB -- 5 to 8 in	silty clay loam	moderately slow	0.28 to 0.55 in	5.1 to 6.0
Bt -- 8 to 26 in	clay	very slow	1.45 to 1.99 in	6.6 to 7.8
Btk -- 26 to 65 in	clay	very slow	3.12 to 4.29 in	7.4 to 8.4
BC,C -- 65 to 80 in	clay	slow	1.20 to 1.80 in	7.9 to 8.4

Fluvaquents, frequently flooded

Extent: 10 to 30 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): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

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>
A1 -- 0 to 11 in	silt loam	moderate	2.43 to 2.65 in	4.5 to 6.6
A2 -- 11 to 59 in	stratified silt loam to gravelly clay loam	moderate	7.20 to 9.13 in	5.6 to 7.3
C -- 59 to 80 in	stratified silty clay to silt loam	moderately slow	2.09 to 4.59 in	5.1 to 6.5

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

E3A--Cuttre complex, 0 to 3 percent slopes

Cuttre

Extent: 40 to 75 percent of the unit

Landform(s): rises on till plains

Slope gradient: 1 to 3 percent

Parent material: clayey till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 3w

Hydric soil: no

Hydrologic group: D

Potential for frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 5 in	silt loam	moderate	0.87 to 1.23 in	4.5 to 6.6
BE,EB -- 5 to 8 in	silty clay loam	moderately slow	0.28 to 0.55 in	5.1 to 6.0
Bt -- 8 to 26 in	clay	very slow	1.45 to 1.99 in	6.6 to 7.8
Btk -- 26 to 65 in	clay	very slow	3.12 to 4.29 in	7.4 to 8.4
BC,C -- 65 to 80 in	clay	slow	1.20 to 1.80 in	7.9 to 8.4

Cuttre, poorly drained

Extent: 20 to 60 percent of the unit

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

Slope gradient: 0 to 1 percent

Parent material: clayey till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: poorly drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 4w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 3 in	silt loam	moderate	0.54 to 0.76 in	4.5 to 6.6
BE,EB -- 3 to 5 in	silty clay loam	moderately slow	0.20 to 0.39 in	5.1 to 6.0
Bt -- 5 to 20 in	clay	very slow	1.20 to 1.65 in	6.6 to 7.8
Btk -- 20 to 56 in	clay	very slow	2.87 to 3.94 in	7.4 to 8.4
BC,C -- 56 to 80 in	clay	slow	1.92 to 2.88 in	7.9 to 8.4

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

E3B--Cuttre complex, 0 to 8 percent slopes

Cuttre

Extent: 60 to 85 percent of the unit

Landform(s): till plains

Slope gradient: 2 to 8 percent

Parent material: clayey till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 3w

Hydric soil: no

Hydrologic group: D

Potential for frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 5 in	silt loam	moderate	0.87 to 1.23 in	4.5 to 6.6
BE,EB -- 5 to 8 in	silty clay loam	moderately slow	0.28 to 0.55 in	5.1 to 6.0
Bt -- 8 to 26 in	clay	very slow	1.45 to 1.99 in	6.6 to 7.8
Btk -- 26 to 65 in	clay	very slow	3.12 to 4.29 in	7.4 to 8.4
BC,C -- 65 to 80 in	clay	slow	1.20 to 1.80 in	7.9 to 8.4

Cuttre, poorly drained

Extent: 10 to 40 percent of the unit

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

Slope gradient: 0 to 2 percent

Parent material: clayey till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: poorly drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 4w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 3 in	silt loam	moderate	0.54 to 0.76 in	4.5 to 6.6
BE,EB -- 3 to 5 in	silty clay loam	moderately slow	0.20 to 0.39 in	5.1 to 6.0
Bt -- 5 to 20 in	clay	very slow	1.20 to 1.65 in	6.6 to 7.8
Btk -- 20 to 56 in	clay	very slow	2.87 to 3.94 in	7.4 to 8.4
BC,C -- 56 to 80 in	clay	slow	1.92 to 2.88 in	7.9 to 8.4

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

E4B--Cuttre-Eutrudepts, complex, 0 to 8 percent slopes

Cuttre

Extent: 20 to 50 percent of the unit

Landform(s): till plains

Slope gradient: 2 to 8 percent

Parent material: clayey till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 3w

Hydric soil: no

Hydrologic group: D

Potential for frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 5 in	silt loam	moderate	0.87 to 1.23 in	4.5 to 6.6
BE,EB -- 5 to 8 in	silty clay loam	moderately slow	0.28 to 0.55 in	5.1 to 6.0
Bt -- 8 to 26 in	clay	very slow	1.45 to 1.99 in	6.6 to 7.8
Btk -- 26 to 65 in	clay	very slow	3.12 to 4.29 in	7.4 to 8.4
BC,C -- 65 to 80 in	clay	slow	1.20 to 1.80 in	7.9 to 8.4

Eutrudepts

Extent: 20 to 40 percent of the unit

Landform(s): till plains

Slope gradient: 3 to 8 percent

Parent material: loamy material over clayey till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .20

Land capability, nonirrigated 3s

Hydric soil: no

Hydrologic group: 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	0.59 to 0.87 in	5.1 to 6.5
Bw -- 4 to 64 in	fine sandy loam	moderately rapid	7.83 to 13.25 in	4.5 to 6.5
2C -- 64 to 80 in	clay	slow	1.26 to 1.89 in	7.9 to 8.4

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

E4B--Cuttre-Eutrudepts, complex, 0 to 8 percent slopes

Cuttre, poorly drained

Extent: 10 to 30 percent of the unit

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

Slope gradient: 0 to 2 percent

Parent material: clayey till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: poorly drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 4w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 3 in	silt loam	moderate	0.54 to 0.76 in	4.5 to 6.6
BE,EB -- 3 to 5 in	silty clay loam	moderately slow	0.20 to 0.39 in	5.1 to 6.0
Bt -- 5 to 20 in	clay	very slow	1.20 to 1.65 in	6.6 to 7.8
Btk -- 20 to 56 in	clay	very slow	2.87 to 3.94 in	7.4 to 8.4
BC,C -- 56 to 80 in	clay	slow	1.92 to 2.88 in	7.9 to 8.4

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

E5A--Palmers, depressional-Cuttre complex, 0 to 1 percent slopes

Palmers, depressional

Extent: 40 to 90 percent of the unit

Landform(s): depressions on till plains

Slope gradient: 0 to 1 percent

Parent material: clayey till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 6w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 11 in	silt loam	moderate	1.87 to 2.65 in	4.5 to 6.6
Bw -- 11 to 37 in	clay	slow	2.34 to 3.38 in	6.6 to 7.8
Bk -- 37 to 62 in	clay	slow	1.98 to 3.22 in	7.4 to 8.4
BC,C -- 62 to 80 in	clay	slow	1.45 to 2.17 in	7.4 to 8.4

Cuttre, poorly drained

Extent: 10 to 60 percent of the unit

Landform(s): rises on till plains

Slope gradient: 0 to 1 percent

Parent material: clayey till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: poorly drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 4w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 3 in	silt loam	moderate	0.54 to 0.76 in	4.5 to 6.6
BE,EB -- 3 to 5 in	silty clay loam	moderately slow	0.20 to 0.39 in	5.1 to 6.0
Bt -- 5 to 20 in	clay	very slow	1.20 to 1.65 in	6.6 to 7.8
Btk -- 20 to 56 in	clay	very slow	2.87 to 3.94 in	7.4 to 8.4
BC,C -- 56 to 80 in	clay	slow	1.92 to 2.88 in	7.9 to 8.4

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

E6D--Amnicon-Cuttre complex, 3 to 18 percent slopes

Amnicon

Extent: 35 to 60 percent of the unit

Landform(s): till plains

Slope gradient: 8 to 18 percent

Parent material: clayey till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 3e

Hydric soil: no

Hydrologic group: D

Potential for frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 4 in	silt loam	moderate	0.67 to 0.94 in	4.5 to 6.6
E -- 4 to 8 in	silt loam	moderate	0.79 to 0.87 in	4.5 to 5.0
BE,EB -- 8 to 13 in	silty clay loam	moderately slow	0.51 to 1.02 in	5.1 to 6.0
Bt -- 13 to 30 in	clay	very slow	1.35 to 1.86 in	6.6 to 7.8
Btk -- 30 to 45 in	clay	very slow	1.20 to 1.65 in	7.4 to 8.4
BC,C -- 45 to 80 in	clay	slow	2.80 to 4.20 in	7.9 to 8.4

Cuttre

Extent: 25 to 45 percent of the unit

Landform(s): till plains

Slope gradient: 3 to 8 percent

Parent material: clayey till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 3w

Hydric soil: no

Hydrologic group: D

Potential for frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 5 in	silt loam	moderate	0.87 to 1.23 in	4.5 to 6.6
BE,EB -- 5 to 8 in	silty clay loam	moderately slow	0.28 to 0.55 in	5.1 to 6.0
Bt -- 8 to 26 in	clay	very slow	1.45 to 1.99 in	6.6 to 7.8
Btk -- 26 to 65 in	clay	very slow	3.12 to 4.29 in	7.4 to 8.4
BC,C -- 65 to 80 in	clay	slow	1.20 to 1.80 in	7.9 to 8.4

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

E6D--Amnicon-Cuttre complex, 3 to 18 percent slopes

E7B--Cuttre silt loam, 3 to 8 percent slopes

Cuttre

Extent: 80 to 95 percent of the unit

Landform(s): till plains

Slope gradient: 3 to 8 percent

Parent material: clayey till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 3w

Hydric soil: no

Hydrologic group: D

Potential for frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 5 in	silt loam	moderate	0.87 to 1.23 in	4.5 to 6.6
BE,EB -- 5 to 8 in	silty clay loam	moderately slow	0.28 to 0.55 in	5.1 to 6.0
Bt -- 8 to 26 in	clay	very slow	1.45 to 1.99 in	6.6 to 7.8
Btk -- 26 to 65 in	clay	very slow	3.12 to 4.29 in	7.4 to 8.4
BC,C -- 65 to 80 in	clay	slow	1.20 to 1.80 in	7.9 to 8.4

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

E8D--Amnicon-Fluvaquents, frequently flooded, complex, 0 to 18 percent slopes

Amnicon

Extent: 50 to 70 percent of the unit

Landform(s): till plains

Slope gradient: 8 to 18 percent

Parent material: clayey till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 3e

Hydric soil: no

Hydrologic group: D

Potential for frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 4 in	silt loam	moderate	0.67 to 0.94 in	4.5 to 6.6
E -- 4 to 8 in	silt loam	moderate	0.79 to 0.87 in	4.5 to 5.0
BE,EB -- 8 to 13 in	silty clay loam	moderately slow	0.51 to 1.02 in	5.1 to 6.0
Bt -- 13 to 30 in	clay	very slow	1.35 to 1.86 in	6.6 to 7.8
Btk -- 30 to 45 in	clay	very slow	1.20 to 1.65 in	7.4 to 8.4
BC,C -- 45 to 80 in	clay	slow	2.80 to 4.20 in	7.9 to 8.4

Fluvaquents, frequently flooded

Extent: 20 to 50 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): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

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>
A1 -- 0 to 11 in	silt loam	moderate	2.43 to 2.65 in	4.5 to 6.6
A2 -- 11 to 59 in	stratified silt loam to gravelly clay loam	moderate	7.20 to 9.13 in	5.6 to 7.3
C -- 59 to 80 in	stratified silty clay to silt loam	moderately slow	2.09 to 4.59 in	5.1 to 6.5

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

E9E--Miskoaki-Fluvaqueunts, frequently flooded, complex, 0 to 45 percent slopes

Miskoaki

Extent: 40 to 70 percent of the unit

Landform(s): till plains

Slope gradient: 18 to 45 percent

Parent material: clayey till

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): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 6e

Hydric soil: no

Hydrologic group: D

Potential for frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 3 in	silt loam	moderate	0.54 to 0.76 in	4.5 to 6.6
BE,EB -- 3 to 6 in	silty clay loam	moderately slow	0.28 to 0.55 in	5.1 to 6.0
Bt -- 6 to 19 in	clay	very slow	1.04 to 1.43 in	6.6 to 7.8
Btk -- 19 to 48 in	clay	very slow	2.33 to 3.20 in	7.4 to 8.4
BC,C -- 48 to 80 in	clay	slow	2.55 to 3.83 in	7.9 to 8.4

Fluvaqueunts, frequently flooded

Extent: 25 to 50 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): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

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>
A1 -- 0 to 11 in	silt loam	moderate	2.43 to 2.65 in	4.5 to 6.6
A2 -- 11 to 59 in	stratified silt loam to gravelly clay loam	moderate	7.20 to 9.13 in	5.6 to 7.3
C -- 59 to 80 in	stratified silty clay to silt loam	moderately slow	2.09 to 4.59 in	5.1 to 6.5

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

E10D--Amnicon-Udifluents, frequently flooded, complex, 0 to 18 percent slopes

Amnicon

Extent: 50 to 70 percent of the unit

Landform(s): till plains

Slope gradient: 8 to 18 percent

Parent material: clayey till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 3e

Hydric soil: no

Hydrologic group: D

Potential for frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 4 in	silt loam	moderate	0.67 to 0.94 in	4.5 to 6.6
E -- 4 to 8 in	silt loam	moderate	0.79 to 0.87 in	4.5 to 5.0
BE,EB -- 8 to 13 in	silty clay loam	moderately slow	0.51 to 1.02 in	5.1 to 6.0
Bt -- 13 to 30 in	clay	very slow	1.35 to 1.86 in	6.6 to 7.8
Btk -- 30 to 45 in	clay	very slow	1.20 to 1.65 in	7.4 to 8.4
BC,C -- 45 to 80 in	clay	slow	2.80 to 4.20 in	7.9 to 8.4

Udifluents, frequently flooded

Extent: 10 to 25 percent of the unit

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

Slope gradient: 0 to 3 percent

Parent material: alluvium

Restrictive feature(s): greater than 60 inches

Flooding: frequent

Ponding: none

Drainage class: 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 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 8 in	sandy loam	moderately rapid	0.87 to 1.89 in	4.5 to 6.0
C -- 8 to 43 in	stratified very gravelly coarse sandy loam to sandy loam	moderately rapid	0.70 to 7.71 in	5.1 to 6.5
Ab -- 43 to 48 in	sandy loam	moderately rapid	0.51 to 0.67 in	4.5 to 6.0
Cb -- 48 to 80 in	stratified loamy sand to gravelly silt loam	moderate	1.91 to 7.02 in	6.1 to 7.3

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

E10D--Amnicon-Udifluents, frequently flooded, complex, 0 to 18 percent slopes

Udifluents, occasionally flooded

Extent: 5 to 20 percent of the unit

Landform(s): levees on flood plains

Slope gradient: 2 to 5 percent

Parent material: alluvium

Restrictive feature(s): greater than 60 inches

Flooding: occasional

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .05

Land capability, nonirrigated 5w

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 8 in	extremely gravelly loam	moderate	0.71 to 1.73 in	4.5 to 6.0
C -- 8 to 80 in	stratified extremely gravelly loam to sand	moderate	2.16 to 13.69 in	4.5 to 6.0

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

E11E--Miskoaki-Rock outcrop complex, 18 to 70 percent slopes

Miskoaki

Extent: 50 to 80 percent of the unit

Landform(s): till plains

Slope gradient: 18 to 45 percent

Parent material: clayey till

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): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 6e

Hydric soil: no

Hydrologic group: D

Potential for frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 3 in	silt loam	moderate	0.54 to 0.76 in	4.5 to 6.6
BE,EB -- 3 to 6 in	silty clay loam	moderately slow	0.28 to 0.55 in	5.1 to 6.0
Bt -- 6 to 19 in	clay	very slow	1.04 to 1.43 in	6.6 to 7.8
Btk -- 19 to 48 in	clay	very slow	2.33 to 3.20 in	7.4 to 8.4
BC,C -- 48 to 80 in	clay	slow	2.55 to 3.83 in	7.9 to 8.4

Rock outcrop

Extent: 10 to 25 percent of the unit

Landform(s): channels on flood plains

Slope gradient: 30 to 70 percent

Parent material: bedrock escarpment

Restrictive feature(s): lithic bedrock

Flooding: frequent

Ponding: none

Drainage class:

Soil loss tolerance (T factor):

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Kw factor (surface layer)

Land capability, nonirrigated

Hydric soil:

Hydrologic group: D

Potential for frost action:

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

St. Louis County, Minnesota, Duluth Part

E11E--Miskoaki-Rock outcrop complex, 18 to 70 percent slopes

Moderately well drained soils

Extent: 0 to 25 percent of the unit

Landform(s): till plains

Slope gradient: 8 to 18 percent

Parent material: clayey till over bedrock

Restrictive feature(s): lithic bedrock at 15 to 25 inches

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 2

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 8s

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 5 in	silt loam	moderate	0.87 to 1.23 in	4.5 to 6.6
E -- 5 to 8 in	silt loam	moderate	0.55 to 0.61 in	4.5 to 5.0
BE,EB -- 8 to 12 in	silty clay loam	moderately slow	0.39 to 0.79 in	5.1 to 6.0
Bt -- 12 to 16 in	clay	very slow	0.35 to 0.43 in	6.6 to 7.8
2R -- 16 to 80 in	bedrock	impermeable		

Rock outcrop, frequently flooded

Extent: 10 to 25 percent of the unit

Landform(s): escarpments on drainageways on till plains

Slope gradient: 1 to 3 percent

Parent material: bedrock channel

Restrictive feature(s): lithic bedrock

Flooding: frequent

Ponding: none

Drainage class:

Soil loss tolerance (T factor):

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Kw factor (surface layer)

Land capability, nonirrigated

Hydric soil:

Hydrologic group: D

Potential for frost action:

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

St. Louis County, Minnesota, Duluth Part

E12A--Udifluents complex, 0 to 3 percent slopes, flooded

Udifluents, frequently flooded

Extent: 50 to 75 percent of the unit

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

Slope gradient: 0 to 3 percent

Parent material: alluvium

Restrictive feature(s): greater than 60 inches

Flooding: frequent

Ponding: none

Drainage class: 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 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 8 in	sandy loam	moderately rapid	0.87 to 1.89 in	4.5 to 6.0
C -- 8 to 43 in	stratified very gravelly coarse sandy loam to silt loam	moderately rapid	0.70 to 7.71 in	5.1 to 6.5
Ab -- 43 to 48 in	sandy loam	moderately rapid	0.51 to 0.67 in	4.5 to 6.0
Cb -- 48 to 80 in	stratified loamy sand to gravelly silt loam	moderate	1.91 to 7.02 in	6.1 to 7.3

Udifluents, occasionally flooded

Extent: 15 to 45 percent of the unit

Landform(s): levees on flood plains

Slope gradient: 0 to 3 percent

Parent material: alluvium

Restrictive feature(s): greater than 60 inches

Flooding: occasional

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .05

Land capability, nonirrigated 5w

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 8 in	extremely gravelly loam	moderate	0.71 to 1.73 in	4.5 to 6.0
C -- 8 to 80 in	stratified extremely gravelly loam to sand	moderate	2.16 to 13.69 in	4.5 to 6.0

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

E13E--Udifluents, occasionally flooded-Rollins complex, 0 to 30 percent slopes

Udifluents, occasionally flooded

Extent: 40 to 70 percent of the unit

Landform(s): terraces on flood plains

Slope gradient: 0 to 3 percent

Parent material: alluvium

Restrictive feature(s): greater than 60 inches

Flooding: occasional

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .05

Land capability, nonirrigated 2w

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 8 in	extremely gravelly loam	moderate	0.71 to 1.73 in	4.5 to 6.0
Bw -- 8 to 40 in	extremely gravelly loam	moderate	0.97 to 6.13 in	4.5 to 6.0
C -- 40 to 80 in	extremely gravelly loam	moderate	0.80 to 7.56 in	6.1 to 7.3

Rollins

Extent: 25 to 50 percent of the unit

Landform(s): levees on flood plains

Slope gradient: 8 to 30 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	sandy loam	moderately rapid	0.56 to 1.02 in	5.1 to 6.5
Bw -- 5 to 14 in	gravelly sandy loam	moderately rapid	0.72 to 1.63 in	5.1 to 6.5
2BC,2C -- 14 to 80 in	extremely gravelly sand	rapid	0.66 to 4.60 in	5.6 to 6.5

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

E14B--Barto-Greysolon-Rock outcrop complex, 0 to 8 percent slopes

Barto

Extent: 20 to 60 percent of the unit

Landform(s): till plains

Slope gradient: 3 to 8 percent

Parent material: drift over bedrock

Restrictive feature(s): lithic bedrock at 8 to 20 inches

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 2

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .15

Land capability, nonirrigated 8s

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 2 in	gravelly sandy loam	moderately rapid	0.20 to 0.47 in	4.5 to 6.0
Bw -- 2 to 13 in	gravelly sandy loam	moderately rapid	0.88 to 1.98 in	4.5 to 6.0
2R -- 13 to 80 in	bedrock	impermeable		

Greysolon

Extent: 10 to 50 percent of the unit

Landform(s): till plains

Slope gradient: 3 to 8 percent

Parent material: loamy material over bedrock

Restrictive feature(s): lithic bedrock 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): 56

Kw factor (surface layer) .17

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: B

Potential for frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 3 in	sandy loam	moderately rapid	0.35 to 0.72 in	4.5 to 6.0
Bw -- 3 to 25 in	gravelly sandy loam	moderately rapid	1.76 to 4.19 in	4.5 to 6.0
2R -- 25 to 80 in	bedrock	impermeable		

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

E14B--Barto-Greysolon-Rock outcrop complex, 0 to 8 percent slopes

Rock outcrop

Extent: 5 to 20 percent of the unit

Landform(s): till plains

Slope gradient: 0 to 8 percent

Parent material: bedrock

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

Flooding:

Ponding:

Drainage class:

Soil loss tolerance (T factor):

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Kw factor (surface layer)

Land capability, nonirrigated

Hydric soil:

Hydrologic group: D

Potential for frost action:

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

St. Louis County, Minnesota, Duluth Part

E14D--Barto-Greysolon-Rock outcrop complex, 0 to 18 percent slopes

Barto

Extent: 20 to 60 percent of the unit

Landform(s): till plains

Slope gradient: 8 to 18 percent

Parent material: drift over bedrock

Restrictive feature(s): lithic bedrock at 8 to 20 inches

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 2

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .15

Land capability, nonirrigated 8s

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 2 in	gravelly sandy loam	moderately rapid	0.20 to 0.47 in	4.5 to 6.0
Bw -- 2 to 13 in	gravelly sandy loam	moderately rapid	0.88 to 1.98 in	4.5 to 6.0
2R -- 13 to 80 in	bedrock	impermeable		

Greysolon

Extent: 10 to 50 percent of the unit

Landform(s): till plains

Slope gradient: 8 to 18 percent

Parent material: loamy material over bedrock

Restrictive feature(s): lithic bedrock 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): 56

Kw factor (surface layer) .17

Land capability, nonirrigated 6s

Hydric soil: no

Hydrologic group: B

Potential for frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 3 in	sandy loam	moderately rapid	0.35 to 0.72 in	4.5 to 6.0
Bw -- 3 to 25 in	gravelly sandy loam	moderately rapid	1.76 to 3.75 in	4.5 to 6.0
2R -- 25 to 80 in	bedrock	impermeable		

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

E14D--Barto-Greysolon-Rock outcrop complex, 0 to 18 percent slopes

Rock outcrop

Extent: 5 to 20 percent of the unit

Landform(s): till plains

Slope gradient: 0 to 15 percent

Parent material: bedrock

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

Flooding:

Ponding:

Drainage class:

Soil loss tolerance (T factor):

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Kw factor (surface layer)

Land capability, nonirrigated

Hydric soil:

Hydrologic group: D

Potential for frost action:

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

St. Louis County, Minnesota, Duluth Part

E15A--Badriver complex, 0 to 3 percent slopes

Badriver

Extent: 50 to 75 percent of the unit

Landform(s): rises on till plains

Slope gradient: 1 to 3 percent

Parent material: clayey till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 4

Wind erodibility index (WEI): 86

Kw factor (surface layer) .28

Land capability, nonirrigated 3w

Hydric soil: no

Hydrologic group: D

Potential for frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 3 in	silt loam	moderate	0.54 to 0.76 in	4.5 to 6.6
E -- 3 to 4 in	silty clay loam	moderately slow	0.08 to 0.16 in	5.1 to 6.0
Bt -- 4 to 34 in	clay	slow	2.39 to 3.29 in	6.6 to 7.8
Bk -- 34 to 48 in	silty clay	slow	1.13 to 1.56 in	7.4 to 8.4
2C -- 48 to 80 in	silty clay loam	slow	2.55 to 3.83 in	7.9 to 8.4

Badriver, poorly drained

Extent: 20 to 50 percent of the unit

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

Slope gradient: 0 to 1 percent

Parent material: clayey till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: poorly drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 4w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 3 in	silt loam	moderate	0.54 to 0.76 in	4.5 to 6.6
BE,EB -- 3 to 5 in	silty clay loam	moderately slow	0.20 to 0.39 in	5.1 to 6.0
Bt -- 5 to 20 in	clay	slow	1.20 to 1.65 in	6.6 to 7.8
Btk -- 20 to 56 in	clay	slow	2.87 to 3.94 in	7.4 to 8.4
BC,C -- 56 to 80 in	silty clay loam	slow	1.92 to 2.88 in	7.9 to 8.4

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

E15B--Badriver complex, 0 to 8 percent slopes

Badriver

Extent: 60 to 80 percent of the unit

Landform(s): till plains

Slope gradient: 2 to 8 percent

Parent material: clayey till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 4

Wind erodibility index (WEI): 86

Kw factor (surface layer) .28

Land capability, nonirrigated 3w

Hydric soil: no

Hydrologic group: D

Potential for frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 3 in	silt loam	moderate	0.54 to 0.76 in	4.5 to 6.6
E -- 3 to 4 in	silty clay loam	moderately slow	0.08 to 0.16 in	5.1 to 6.0
Bt -- 4 to 34 in	clay	slow	2.39 to 3.29 in	6.6 to 7.8
Bk -- 34 to 48 in	silty clay	slow	1.13 to 1.56 in	7.4 to 8.4
2C -- 48 to 80 in	silty clay loam	slow	2.55 to 3.83 in	7.9 to 8.4

Badriver, poorly drained

Extent: 10 to 40 percent of the unit

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

Slope gradient: 0 to 2 percent

Parent material: clayey till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: poorly drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 4w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 3 in	silt loam	moderate	0.54 to 0.76 in	4.5 to 6.6
BE,EB -- 3 to 5 in	silty clay loam	moderately slow	0.20 to 0.39 in	5.1 to 6.0
Bt -- 5 to 20 in	clay	slow	1.20 to 1.65 in	6.6 to 7.8
Btk -- 20 to 56 in	clay	slow	2.87 to 3.94 in	7.4 to 8.4
BC,C -- 56 to 80 in	silty clay loam	slow	1.92 to 2.88 in	7.9 to 8.4

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

E16D--Amnicon-Cuttre complex, 5 to 18 percent slopes

Amnicon

Extent: 50 to 70 percent of the unit

Landform(s): till plains

Slope gradient: 8 to 18 percent

Parent material: clayey till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 3e

Hydric soil: no

Hydrologic group: D

Potential for frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 4 in	silt loam	moderate	0.67 to 0.94 in	4.5 to 6.6
E -- 4 to 8 in	silt loam	moderate	0.79 to 0.87 in	4.5 to 5.0
BE,EB -- 8 to 13 in	silty clay loam	moderately slow	0.51 to 1.02 in	5.1 to 6.0
Bt -- 13 to 30 in	clay	very slow	1.35 to 1.86 in	6.6 to 7.8
Btk -- 30 to 45 in	clay	very slow	1.20 to 1.65 in	7.4 to 8.4
BC,C -- 45 to 80 in	clay	slow	2.80 to 4.20 in	7.9 to 8.4

Cuttre

Extent: 20 to 50 percent of the unit

Landform(s): till plains

Slope gradient: 5 to 8 percent

Parent material: clayey till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 3w

Hydric soil: no

Hydrologic group: D

Potential for frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 5 in	silt loam	moderate	0.87 to 1.23 in	4.5 to 6.6
BE,EB -- 5 to 8 in	silty clay loam	moderately slow	0.28 to 0.55 in	5.1 to 6.0
Bt -- 8 to 26 in	clay	very slow	1.45 to 1.99 in	6.6 to 7.8
Btk -- 26 to 65 in	clay	very slow	3.12 to 4.29 in	7.4 to 8.4
BC,C -- 65 to 80 in	clay	slow	1.20 to 1.80 in	7.9 to 8.4

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

E16D--Amnicon-Cuttre complex, 5 to 18 percent slopes

E18A--Urban land-Cuttre-Rock outcrop complex, 0 to 3 percent slopes

Urban land

Extent: 40 to 80 percent of the unit

Landform(s): till plains

Slope gradient: 0 to 3 percent

Parent material: fill material from surrounding uplands, gravel pits and blasted bedrock.

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class:

Soil loss tolerance (T factor):

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Kw factor (surface layer)

Land capability, nonirrigated

Hydric soil:

Hydrologic group:

Potential for frost action:

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
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Cuttre, poorly drained

Extent: 5 to 20 percent of the unit

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

Slope gradient: 0 to 1 percent

Parent material: clayey till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 4w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 3 in	silt loam	moderate	0.54 to 0.76 in	4.5 to 6.6
BE,EB -- 3 to 5 in	silty clay loam	moderately slow	0.20 to 0.39 in	5.1 to 6.0
Bt -- 5 to 20 in	clay	very slow	1.20 to 1.65 in	6.6 to 7.8
Btk -- 20 to 56 in	clay	very slow	2.87 to 3.94 in	7.4 to 8.4
BC,C -- 56 to 80 in	clay	very slow	1.92 to 2.88 in	7.9 to 9.0

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

E18B--Urban land-Cuttre-Rock outcrop complex, 0 to 8 percent slopes

Urban land

Extent: 40 to 80 percent of the unit

Landform(s): till plains

Slope gradient: 0 to 8 percent

Parent material: fill material from surrounding uplands, gravel pits and blasted bedrock.

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class:

Soil loss tolerance (T factor):

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Kw factor (surface layer)

Land capability, nonirrigated

Hydric soil:

Hydrologic group:

Potential for frost action:

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

Extent: 5 to 25 percent of the unit

Landform(s): till plains

Slope gradient: 0 to 8 percent

Parent material: clayey till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 3w

Hydric soil: no

Hydrologic group: D

Potential for frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 5 in	silt loam	moderate	0.87 to 1.23 in	4.5 to 6.6
BE,EB -- 5 to 8 in	silty clay loam	moderately slow	0.28 to 0.55 in	5.1 to 6.0
Bt -- 8 to 26 in	clay	very slow	1.45 to 1.99 in	6.6 to 7.8
Btk -- 26 to 65 in	clay	very slow	3.12 to 4.29 in	7.4 to 8.4
BC,C -- 65 to 80 in	clay	very slow	1.20 to 1.80 in	7.9 to 9.0

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

E22D--Sanborg-Badriver complex, 3 to 18 percent slopes

Sanborg

Extent: 35 to 65 percent of the unit

Landform(s): till plains

Slope gradient: 8 to 18 percent

Parent material: clayey till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 3e

Hydric soil: no

Hydrologic group: D

Potential for frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 4 in	silt loam	moderate	0.67 to 0.94 in	4.5 to 6.6
E -- 4 to 8 in	silt loam	moderate	0.79 to 0.87 in	4.5 to 5.0
BE,EB -- 8 to 13 in	silty clay loam	moderately slow	0.51 to 1.02 in	5.1 to 6.0
Bt -- 13 to 30 in	clay	slow	1.35 to 1.86 in	6.6 to 7.8
Btk -- 30 to 45 in	clay	slow	1.20 to 1.65 in	7.4 to 8.4
BC,C -- 45 to 80 in	silty clay loam	slow	2.80 to 4.20 in	7.9 to 8.4

Badriver

Extent: 35 to 65 percent of the unit

Landform(s): till plains

Slope gradient: 3 to 8 percent

Parent material: clayey till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 3

Wind erodibility group (WEG): 4

Wind erodibility index (WEI): 86

Kw factor (surface layer) .28

Land capability, nonirrigated 3w

Hydric soil: no

Hydrologic group: D

Potential for frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 3 in	silt loam	moderate	0.54 to 0.76 in	4.5 to 6.6
E -- 3 to 4 in	silty clay loam	moderately slow	0.08 to 0.16 in	5.1 to 6.0
Bt -- 4 to 34 in	silty clay	slow	2.39 to 3.29 in	6.6 to 7.8
Bk -- 34 to 48 in	silty clay	slow	1.13 to 1.56 in	7.4 to 8.4
2C -- 48 to 80 in	silty clay loam	slow	2.55 to 3.83 in	7.9 to 8.4

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

E22D--Sanborg-Badriver complex, 3 to 18 percent slopes

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

E23F--Miskoaki-Udifluents, flooded, complex, 1 to 45 percent slopes

Miskoaki

Extent: 40 to 75 percent of the unit

Landform(s): till plains

Slope gradient: 18 to 45 percent

Parent material: clayey till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 6e

Hydric soil: no

Hydrologic group: D

Potential for frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 3 in	silt loam	moderate	0.54 to 0.76 in	4.5 to 6.6
BE,EB -- 3 to 6 in	silty clay loam	moderately slow	0.28 to 0.55 in	5.1 to 6.0
Bt -- 6 to 19 in	clay	very slow	1.04 to 1.43 in	6.6 to 7.8
Btk -- 19 to 48 in	clay	very slow	2.33 to 3.20 in	7.4 to 8.4
BC,C -- 48 to 80 in	clay	slow	2.55 to 3.83 in	7.9 to 8.4

Udifluents, frequently flooded

Extent: 10 to 50 percent of the unit

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

Slope gradient: 1 to 3 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): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .17

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 8 in	sandy loam	moderately rapid	0.87 to 1.89 in	4.5 to 6.0
C -- 8 to 43 in	stratified very gravelly coarse sandy loam to silt loam	moderately rapid	0.70 to 7.71 in	5.1 to 6.5
Ab -- 43 to 48 in	sandy loam	moderately rapid	0.51 to 0.67 in	4.5 to 6.0
Cb -- 48 to 80 in	stratified loamy sand to gravelly silt loam	moderate	1.91 to 7.02 in	6.1 to 7.3

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

E23F--Miskoaki-Udifluents, flooded, complex, 1 to 45 percent slopes

Udifluents, occasionally flooded

Extent: 10 to 50 percent of the unit

Landform(s): levees on flood plains

Slope gradient: 1 to 3 percent

Parent material: alluvium

Restrictive feature(s): greater than 60 inches

Flooding: occasional

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .05

Land capability, nonirrigated 2w

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 8 in	extremely gravelly loam	moderate	0.71 to 1.73 in	4.5 to 6.0
C -- 8 to 80 in	stratified extremely gravelly loam to sand	moderate	2.16 to 13.69 in	4.5 to 6.0

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

E24F--Miskoaki-Cuttre complex, 5 to 45 percent slopes

Miskoaki

Extent: 50 to 70 percent of the unit

Landform(s): till plains

Slope gradient: 18 to 45 percent

Parent material: clayey till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 6e

Hydric soil: no

Hydrologic group: D

Potential for frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 3 in	silt loam	moderate	0.54 to 0.76 in	4.5 to 6.6
BE,EB -- 3 to 6 in	silty clay loam	moderately slow	0.28 to 0.55 in	5.1 to 6.0
Bt -- 6 to 19 in	clay	very slow	1.04 to 1.43 in	6.6 to 7.8
Btk -- 19 to 48 in	clay	very slow	2.33 to 3.20 in	7.4 to 8.4
BC,C -- 48 to 80 in	clay	slow	2.55 to 3.83 in	7.9 to 8.4

Cuttre

Extent: 20 to 40 percent of the unit

Landform(s): till plains

Slope gradient: 5 to 8 percent

Parent material: clayey till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 3w

Hydric soil: no

Hydrologic group: D

Potential for frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 5 in	silt loam	moderate	0.87 to 1.23 in	4.5 to 6.6
BE,EB -- 5 to 8 in	silty clay loam	moderately slow	0.28 to 0.55 in	5.1 to 6.0
Bt -- 8 to 26 in	clay	very slow	1.45 to 1.99 in	6.6 to 7.8
Btk -- 26 to 65 in	clay	very slow	3.12 to 4.29 in	7.4 to 8.4
BC,C -- 65 to 80 in	clay	slow	1.20 to 1.80 in	7.9 to 8.4

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

E25D--Urban land-Amnicon-Rock outcrop complex, 0 to 18 percent slopes

Urban land

Extent: 50 to 90 percent of the unit

Landform(s): till plains

Slope gradient: 8 to 18 percent

Parent material: fill material from surrounding uplands, gravel pits and blasted bedrock.

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class:

Soil loss tolerance (T factor):

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Kw factor (surface layer)

Land capability, nonirrigated

Hydric soil:

Hydrologic group:

Potential for frost action:

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

Extent: 8 to 30 percent of the unit

Landform(s): till plains

Slope gradient: 8 to 18 percent

Parent material: clayey till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 6

Wind erodibility index (WEI): 48

Kw factor (surface layer) .28

Land capability, nonirrigated 3e

Hydric soil: no

Hydrologic group: D

Potential for frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 4 in	silt loam	moderate	0.67 to 0.94 in	4.5 to 6.6
E -- 4 to 8 in	silt loam	moderate	0.79 to 0.87 in	4.5 to 5.0
BE,EB -- 8 to 13 in	silty clay loam	moderately slow	0.51 to 1.02 in	5.1 to 6.0
Bt -- 13 to 30 in	clay	very slow	1.35 to 1.86 in	6.6 to 7.8
Btk -- 30 to 45 in	clay	very slow	1.20 to 1.65 in	7.4 to 8.4
BC,C -- 45 to 80 in	clay	very slow	2.80 to 4.20 in	7.9 to 9.0

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F32A--Merwin peat, 0 to 1 percent slopes

Merwin

Extent: 60 to 90 percent of the unit

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

Slope gradient: 0 to 1 percent

Parent material: organic material over glaciofluvial sediments

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

Representative soil profile:

		<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

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F33A--Cathro muck, depressional, dense substratum, 0 to 1 percent slopes

Cathro, depressional

Extent: 60 to 90 percent of the unit

Landform(s): swamps on moraines, swamps on interdrumlins

Slope gradient: 0 to 1 percent

Parent material: organic material over dense loamy till

Restrictive feature(s): dense material at 40 to 80 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 1.04 in	5.1 to 6.5
Cg -- 40 to 48 in	stratified loamy fine sand to loam	moderate	1.02 to 1.50 in	5.1 to 7.3
2Cd -- 48 to 80 in	gravelly sandy loam	very slow	1.28 to 2.87 in	5.6 to 6.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

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

Cathro, depressional

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): 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

Representative soil profile:

		<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, Duluth 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, Duluth Part

F102A--Nevens stony loam, 0 to 2 percent slopes, very stony

Nevens, very stony

Extent: 70 to 90 percent of the unit

Landform(s): drumlins

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

F103B--Brimson stony fine sandy loam, 2 to 5 percent slopes, very stony

Brimson, very stony

Extent: 50 to 85 percent of the unit

Landform(s): drumlins

Slope gradient: 2 to 5 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: 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, Duluth Part

F104B--Toimi stony loam, 3 to 8 percent slopes, very stony

Toimi, very stony

Extent: 60 to 85 percent of the unit

Landform(s): drumlins

Slope gradient: 3 to 8 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: 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

F104D--Toimi stony loam, 8 to 18 percent slopes, very stony

Toimi, very stony

Extent: 50 to 70 percent of the unit

Landform(s): drumlins

Slope gradient: 8 to 18 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: 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

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F104E--Toimi stony loam, 18 to 45 percent slopes, very stony

Toimi, very stony

Extent: 60 to 90 percent of the unit

Landform(s): drumlins

Slope gradient: 18 to 45 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: 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 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	0.43 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

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F105D--Toimi-Brimson-Rock outcrop complex, 0 to 20 percent slopes

Toimi, very stony

Extent: 30 to 60 percent of the unit

Landform(s): drumlins

Slope gradient: 3 to 20 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: 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

Brimson, very stony

Extent: 15 to 50 percent of the unit

Landform(s): drumlins

Slope gradient: 0 to 5 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: 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, Duluth 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, Duluth 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, Duluth 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, Duluth 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, Duluth Part

F109A--Wahbegon, depressional-Eldes complex, 0 to 2 percent slopes

Wahbegon, depressional

Extent: 65 to 95 percent of the unit

Landform(s): depressions on moraines

Slope gradient: 0 to 1 percent

Parent material: friable loamy till over dense loamy till

Restrictive feature(s): dense material at 60 to 80 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) .37

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>
A1 -- 0 to 12 in	mucky silt loam	moderate	2.13 to 2.83 in	4.5 to 6.0
A2 -- 12 to 15 in	loam	moderate	0.44 to 0.76 in	4.5 to 6.0
Bw -- 15 to 48 in	loam	moderate	4.96 to 7.28 in	4.5 to 6.5
BC -- 48 to 60 in	loam	moderate	1.77 to 2.60 in	5.6 to 7.3
2Cd -- 60 to 80 in	gravelly sandy loam	very slow	0.80 to 1.81 in	5.6 to 7.3

Eldes

Extent: 5 to 35 percent of the unit

Landform(s): rises on moraines

Slope gradient: 0 to 2 percent

Parent material: loamy and/or silty material over friable loamy till over dense loamy till

Restrictive feature(s): dense material at 60 to 80 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) .37

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	loam	moderate	0.55 to 0.94 in	4.5 to 6.0
Bw,B/E,E/B -- 4 to 15 in	loam	moderate	1.54 to 2.43 in	4.5 to 5.5
2Bt -- 15 to 50 in	loam	moderate	5.26 to 7.71 in	5.1 to 6.0
2BC -- 50 to 60 in	loam	moderate	1.48 to 2.17 in	5.6 to 6.5
3C -- 60 to 80 in	gravelly sandy loam	very slow	1.61 to 3.41 in	5.6 to 7.3

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F110A--Hegberg-Eldes complex, 0 to 3 percent slopes

Hegberg

Extent: 40 to 65 percent of the unit

Landform(s): rises on moraines

Slope gradient: 0 to 3 percent

Parent material: loamy and/or silty material over friable loamy till over dense loamy till

Restrictive feature(s): dense material at 60 to 80 inches

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .37

Land capability, nonirrigated 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 6 in	loam	moderate	0.83 to 1.42 in	4.5 to 6.0
Bw,B/E,E/B -- 6 to 17 in	loam	moderate	1.54 to 2.43 in	4.5 to 6.0
2Bt -- 17 to 45 in	loam	moderate	4.19 to 6.15 in	5.1 to 6.0
2BC -- 45 to 65 in	loam	moderate	3.01 to 4.42 in	5.6 to 6.5
3BCd -- 65 to 80 in	gravelly sandy loam	very slow	0.60 to 1.35 in	5.6 to 7.3

Eldes

Extent: 20 to 50 percent of the unit

Landform(s): flats on moraines

Slope gradient: 0 to 2 percent

Parent material: loamy and/or silty material over friable loamy till over dense loamy till

Restrictive feature(s): dense material at 60 to 80 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) .37

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	loam	moderate	0.55 to 0.94 in	4.5 to 6.0
Bw,B/E,E/B -- 4 to 15 in	loam	moderate	1.54 to 2.43 in	4.5 to 5.5
2Bt -- 15 to 48 in	loam	moderate	4.96 to 7.28 in	5.1 to 6.0
2BC -- 48 to 72 in	loam	moderate	3.60 to 5.28 in	5.6 to 6.5
3C -- 72 to 80 in	gravelly sandy loam	very slow	0.63 to 1.34 in	5.6 to 7.3

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F110A--Hegberg-Eldes complex, 0 to 3 percent slopes

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F111B--Augustana-Hegberg complex, 1 to 8 percent slopes

Augustana

Extent: 30 to 70 percent of the unit

Landform(s): moraines

Slope gradient: 3 to 8 percent

Parent material: loamy and/or silty material over friable loamy till over dense loamy till

Restrictive feature(s): dense material at 60 to 80 inches

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .37

Land capability, nonirrigated 2e

Hydric soil: no

Hydrologic group: B

Potential for frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 8 in	silt loam	moderate	1.10 to 1.89 in	4.5 to 6.0
E/B,B/E,Bw -- 8 to 12 in	very fine sandy loam	moderate	0.55 to 0.87 in	4.5 to 5.5
2Bt -- 12 to 30 in	loam	moderate	2.72 to 3.98 in	5.1 to 6.0
2BC,2C -- 30 to 79 in	loam	moderate	7.38 to 10.83 in	5.6 to 6.5
3Cd -- 79 to 80 in	gravelly sandy loam	very slow	0.03 to 0.07 in	5.6 to 7.3

Hegberg

Extent: 20 to 55 percent of the unit

Landform(s): moraines

Slope gradient: 1 to 3 percent

Parent material: loamy and/or silty material over friable loamy till over dense loamy till

Restrictive feature(s): dense material at 60 to 80 inches

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .37

Land capability, nonirrigated 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 6 in	loam	moderate	0.83 to 1.42 in	4.5 to 6.0
Bw,B/E,E/B -- 6 to 17 in	loam	moderate	1.54 to 2.43 in	4.5 to 6.0
2Bt -- 17 to 45 in	loam	moderate	4.19 to 6.15 in	5.1 to 6.0
2BC -- 45 to 65 in	loam	moderate	3.01 to 4.42 in	5.6 to 6.5
3BCd -- 65 to 80 in	gravelly sandy loam	very slow	0.60 to 1.35 in	5.6 to 7.3

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F111B--Augustana-Hegberg complex, 1 to 8 percent slopes

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F112D--Forbay-Augustana complex, 3 to 18 percent slopes

Forbay

Extent: 40 to 70 percent of the unit

Landform(s): moraines

Slope gradient: 8 to 18 percent

Parent material: loamy and/or silty material over friable loamy till over dense loamy till

Restrictive feature(s): dense material at 60 to 80 inches

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .37

Land capability, nonirrigated 4e

Hydric soil: no

Hydrologic group: B

Potential for frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 7 in	loam	moderate	0.99 to 1.70 in	4.5 to 6.0
E/B,B/E,Bw -- 7 to 15 in	loam	moderate	1.10 to 1.73 in	4.5 to 5.5
2Bt -- 15 to 55 in	loam	moderate	6.02 to 8.83 in	5.1 to 6.0
2C -- 55 to 79 in	loam	moderate	3.60 to 5.28 in	5.6 to 6.5
3Cd -- 79 to 80 in	gravelly sandy loam	very slow	0.03 to 0.07 in	5.6 to 7.3

Augustana

Extent: 20 to 50 percent of the unit

Landform(s): moraines

Slope gradient: 4 to 8 percent

Parent material: loamy and/or silty material over friable loamy till over dense loamy till

Restrictive feature(s): dense material at 60 to 80 inches

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .37

Land capability, nonirrigated 2e

Hydric soil: no

Hydrologic group: B

Potential for frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 8 in	silt loam	moderate	1.10 to 1.89 in	4.5 to 6.0
E/B,B/E,Bw -- 8 to 12 in	loam	moderate	0.55 to 0.87 in	4.5 to 5.5
2Bt -- 12 to 30 in	loam	moderate	2.72 to 3.98 in	5.1 to 6.0
2BC,2C -- 30 to 79 in	loam	moderate	7.38 to 10.83 in	5.6 to 6.5
3Cd -- 79 to 80 in	gravelly sandy loam	very slow	0.03 to 0.07 in	5.6 to 7.3

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F112D--Forbay-Augustana complex, 3 to 18 percent slopes

F113E--Forbay loam, 18 to 45 percent slopes

Forbay

Extent: 80 to 95 percent of the unit

Landform(s): moraines

Slope gradient: 18 to 45 percent

Parent material: loamy and/or silty material over friable loamy till over dense loamy till

Restrictive feature(s): dense material at 60 to 80 inches

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .37

Land capability, nonirrigated 6e

Hydric soil: no

Hydrologic group: B

Potential for frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Ap -- 0 to 7 in	loam	moderate	0.99 to 1.70 in	4.5 to 6.0
E/B,B/E,Bw -- 7 to 15 in	loam	moderate	1.10 to 1.73 in	4.5 to 5.5
2Bt -- 15 to 55 in	loam	moderate	6.02 to 8.83 in	5.1 to 6.0
2C -- 55 to 79 in	loam	moderate	3.60 to 5.28 in	5.6 to 6.5
3Cd -- 79 to 80 in	gravelly sandy loam	very slow	0.03 to 0.07 in	5.6 to 7.3

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F115A--Merwin peat, dense substratum, 0 to 1 percent slopes

Merwin

Extent: 60 to 90 percent of the unit

Landform(s): bogs on moraines, bogs on interdrumlins

Slope gradient: 0 to 1 percent

Parent material: organic material over dense loamy till

Restrictive feature(s): dense material at 40 to 80 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 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 56 in	stratified loamy fine sand to loam	moderate	1.28 to 1.87 in	5.1 to 7.3
3Cd -- 56 to 80 in	gravelly sandy loam	very slow	0.96 to 2.16 in	5.6 to 6.8

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	

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F117A--Rollins sandy loam, 0 to 3 percent slopes

Rollins

Extent: 70 to 90 percent of the unit

Landform(s): 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 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 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 5 in	sandy loam	moderately rapid	0.51 to 1.02 in	5.1 to 6.5
Bw -- 5 to 14 in	gravelly sandy loam	moderately rapid	0.63 to 1.63 in	5.1 to 6.5
2BC,2C -- 14 to 80 in	extremely gravelly sand	very rapid	0.66 to 4.60 in	5.6 to 6.5

F117B--Rollins sandy loam, 2 t 8 percent slopes

Rollins

Extent: 80 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: 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 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 5 in	sandy loam	moderately rapid	0.51 to 1.02 in	5.1 to 6.5
Bw -- 5 to 14 in	gravelly sandy loam	moderately rapid	0.63 to 1.63 in	5.1 to 6.5
2BC,2C -- 14 to 80 in	extremely gravelly sand	very rapid	0.66 to 4.60 in	5.6 to 6.5

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F117D--Rollins sandy loam, 8 to 18 percent slopes

Rollins

Extent: 70 to 80 percent of the unit

Landform(s): 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 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 5 in	sandy loam	moderately rapid	0.51 to 1.02 in	5.1 to 6.5
Bw -- 5 to 14 in	gravelly sandy loam	moderately rapid	0.63 to 1.63 in	5.1 to 6.5
2BC,2C -- 14 to 80 in	extremely gravelly sand	very rapid	0.66 to 4.60 in	5.6 to 6.5

F117F--Rollins sandy loam, 18 to 45 percent slopes

Rollins

Extent: 80 to 90 percent of the unit

Landform(s): eskers

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 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 5 in	sandy loam	moderately rapid	0.51 to 1.02 in	5.1 to 6.5
Bw -- 5 to 14 in	gravelly sandy loam	moderately rapid	0.63 to 1.63 in	5.1 to 6.5
2BC,2C -- 14 to 80 in	extremely gravelly sand	very rapid	0.66 to 4.60 in	5.6 to 6.5

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F118B--Aldenlake-Pequaywan complex, 0 to 6 percent slopes

Aldenlake

Extent: 50 to 80 percent of the unit

Landform(s): outwash plains

Slope gradient: 2 to 6 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): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .20

Land capability, nonirrigated 2e

Hydric soil: no

Hydrologic group: B

Potential for frost action: 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 1.02 in	5.1 to 6.5
Bw -- 5 to 34 in	sandy loam	moderately rapid	2.30 to 5.17 in	5.1 to 6.5
2BC,2C -- 34 to 80 in	very gravelly sand	very rapid	0.46 to 4.15 in	5.6 to 6.5

Pequaywan

Extent: 20 to 40 percent of the unit

Landform(s): 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: 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 4s

Hydric soil: no

Hydrologic group: B

Potential for frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 2 in	fine sandy loam	moderately rapid	0.20 to 0.39 in	5.1 to 6.5
Bw -- 2 to 30 in	sandy loam	moderately rapid	2.24 to 5.03 in	5.1 to 6.5
2BC,2C -- 30 to 80 in	very gravelly sand	very rapid	0.50 to 4.50 in	5.6 to 6.5

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F119B--Urban land-Greysolon-Normanna-Rock outcrop complex, 1 to 20 percent slopes

Urban land

Extent: 40 to 75 percent of the unit

Landform(s): moraines

Slope gradient: 1 to 8 percent

Parent material: fill material from surrounding uplands, gravel pits and blasted bedrock.

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class:

Soil loss tolerance (T factor):

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Kw factor (surface layer)

Land capability, nonirrigated

Hydric soil:

Hydrologic group:

Potential for frost action:

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

Extent: 10 to 30 percent of the unit

Landform(s): moraines

Slope gradient: 3 to 8 percent

Parent material: loamy material over bedrock

Restrictive feature(s): lithic bedrock 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): 56

Kw factor (surface layer) .17

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	sandy loam	moderately rapid	0.35 to 0.72 in	4.5 to 6.0
Bw -- 3 to 25 in	gravelly sandy loam	moderately rapid	1.76 to 3.75 in	4.5 to 6.0
2R -- 25 to 80 in	bedrock	impermeable		

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F119B--Urban land-Greysolon-Normanna-Rock outcrop complex, 1 to 20 percent slopes

Normanna

Extent: 10 to 30 percent of the unit

Landform(s): moraines

Slope gradient: 3 to 8 percent

Parent material: loamy material over dense loamy till

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

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .17

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	0.55 to 0.94 in	4.5 to 6.0
Bw -- 4 to 45 in	gravelly sandy loam	moderately rapid	3.69 to 8.19 in	5.1 to 6.0
2Bw,BC,2BC -- 45 to 48 in	gravelly sandy loam	slow	0.25 to 0.54 in	5.6 to 6.8
2BCd -- 48 to 80 in	gravelly sandy loam	very slow	1.28 to 2.87 in	5.6 to 6.8

Rock outcrop

Extent: 5 to 15 percent of the unit

Landform(s): moraines

Slope gradient: 3 to 20 percent

Parent material: bedrock

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

Flooding:

Ponding:

Drainage class:

Soil loss tolerance (T factor):

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Kw factor (surface layer)

Land capability, nonirrigated

Hydric soil:

Hydrologic group:

Potential for frost action:

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

St. Louis County, Minnesota, Duluth Part

F120A--Grayling-Cromwell complex, 0 to 3 percent slopes

Grayling

Extent: 40 to 60 percent of the unit

Landform(s): 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: excessively drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw factor (surface layer) .15

Land capability, nonirrigated 4s

Hydric soil: no

Hydrologic group: A

Potential for frost action: low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 5 in	loamy sand	rapid	0.26 to 0.61 in	5.1 to 6.5
Bw -- 5 to 17 in	loamy sand	rapid	0.59 to 1.30 in	5.1 to 6.5
C -- 17 to 80 in	sand	very rapid	1.26 to 6.30 in	5.6 to 6.5

Cromwell

Extent: 35 to 55 percent of the unit

Landform(s): flats on outwash plains

Slope gradient: 0 to 3 percent

Parent material: loamy material over sandy 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 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 0.57 in	5.1 to 6.5
Bw -- 3 to 15 in	sandy loam	moderately rapid	1.06 to 2.01 in	5.1 to 6.5
2C -- 15 to 80 in	sand	very rapid	1.30 to 4.55 in	5.6 to 6.5

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F120B--Grayling-Cromwell complex, 2 to 8 percent slopes

Grayling

Extent: 35 to 75 percent of the unit

Landform(s): outwash plains

Slope gradient: 2 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) .15

Land capability, nonirrigated 4s

Hydric soil: no

Hydrologic group: A

Potential for frost action: low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 5 in	loamy sand	rapid	0.26 to 0.61 in	5.1 to 6.5
Bw -- 5 to 17 in	loamy sand	rapid	0.59 to 1.30 in	5.1 to 6.5
C -- 17 to 80 in	sand	very rapid	1.26 to 6.30 in	5.6 to 6.5

Cromwell

Extent: 25 to 50 percent of the unit

Landform(s): outwash plains

Slope gradient: 2 to 8 percent

Parent material: loamy material over sandy 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 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 0.57 in	5.1 to 6.5
Bw -- 3 to 15 in	sandy loam	moderately rapid	1.06 to 2.01 in	5.1 to 6.5
2C -- 15 to 80 in	sand	very rapid	1.30 to 4.55 in	5.6 to 6.5

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F120D--Grayling-Cromwell complex, 8 to 18 percent slopes

Grayling

Extent: 35 to 75 percent of the unit

Landform(s): 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: excessively drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw factor (surface layer) .15

Land capability, nonirrigated 4s

Hydric soil: no

Hydrologic group: A

Potential for frost action: low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 5 in	loamy sand	rapid	0.26 to 0.61 in	5.1 to 6.5
Bw -- 5 to 17 in	loamy sand	rapid	0.59 to 1.30 in	5.1 to 6.5
C -- 17 to 80 in	sand	very rapid	1.26 to 6.30 in	5.6 to 6.5

Cromwell

Extent: 25 to 50 percent of the unit

Landform(s): outwash plains

Slope gradient: 8 to 18 percent

Parent material: loamy material over sandy 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 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 0.57 in	5.1 to 6.5
Bw -- 3 to 15 in	sandy loam	moderately rapid	1.06 to 2.01 in	5.1 to 6.5
2C -- 15 to 80 in	sand	very rapid	1.30 to 4.55 in	5.6 to 6.5

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F120F--Grayling-Cromwell complex, 18 to 45 percent slopes

Grayling

Extent: 45 to 65 percent of the unit

Landform(s): outwash plains

Slope gradient: 18 to 45 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) .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 5 in	loamy sand	rapid	0.26 to 0.61 in	5.1 to 6.5
Bw -- 5 to 17 in	loamy sand	rapid	0.59 to 1.30 in	5.1 to 6.5
C -- 17 to 80 in	sand	very rapid	1.26 to 6.30 in	5.6 to 6.5

Cromwell

Extent: 35 to 55 percent of the unit

Landform(s): outwash plains

Slope gradient: 18 to 45 percent

Parent material: loamy material over sandy 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 7s

Hydric soil: no

Hydrologic group: A

Potential for frost action: low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 3 in	sandy loam	moderately rapid	0.31 to 0.57 in	5.1 to 6.5
Bw -- 3 to 15 in	sandy loam	moderately rapid	1.06 to 2.01 in	5.1 to 6.5
2C -- 15 to 80 in	sand	very rapid	1.30 to 4.55 in	5.6 to 6.5

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F121A--Aldenlake sandy loam, 0 to 3 percent slopes

Aldenlake

Extent: 80 to 95 percent of the unit

Landform(s): 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: 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: 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	sandy loam	moderately rapid	0.51 to 1.02 in	5.1 to 6.5
Bw -- 5 to 34 in	sandy loam	moderately rapid	2.30 to 5.17 in	5.1 to 6.5
2BC,2C -- 34 to 80 in	very gravelly sand	very rapid	0.46 to 4.15 in	5.6 to 6.5

F121B--Aldenlake sandy loam, 2 to 8 percent slopes

Aldenlake

Extent: 80 to 95 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): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .20

Land capability, nonirrigated 2e

Hydric soil: no

Hydrologic group: B

Potential for frost action: 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 1.02 in	5.1 to 6.5
Bw -- 5 to 34 in	sandy loam	moderately rapid	2.30 to 5.17 in	5.1 to 6.5
2BC,2C -- 34 to 80 in	very gravelly sand	very rapid	0.46 to 4.15 in	5.6 to 6.5

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F121D--Aldenlake sandy loam, 8 to 18 percent slopes

Aldenlake

Extent: 60 to 80 percent of the unit

Landform(s): 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): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .20

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 5 in	sandy loam	moderately rapid	0.51 to 1.02 in	5.1 to 6.5
Bw -- 5 to 34 in	sandy loam	moderately rapid	2.30 to 5.17 in	5.1 to 6.5
2BC,2C -- 34 to 80 in	very gravelly sand	very rapid	0.46 to 4.15 in	5.6 to 6.5

F121F--Aldenlake sandy loam, 18 to 45 percent slopes

Aldenlake

Extent: 70 to 95 percent of the unit

Landform(s): 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): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .20

Land capability, nonirrigated 7e

Hydric soil: no

Hydrologic group: B

Potential for frost action: 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 1.02 in	5.1 to 6.5
Bw -- 5 to 34 in	sandy loam	moderately rapid	2.30 to 5.17 in	5.1 to 6.5
2BC,2C -- 34 to 80 in	very gravelly sand	very rapid	0.46 to 4.15 in	5.6 to 6.5

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F122B--Aldenlake-Pequaywan complex, pitted, 0 to 8 percent slopes

Aldenlake

Extent: 35 to 60 percent of the unit

Landform(s): pitted 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): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .20

Land capability, nonirrigated 2e

Hydric soil: no

Hydrologic group: B

Potential for frost action: 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 1.02 in	5.1 to 6.5
Bw -- 5 to 34 in	sandy loam	moderately rapid	2.30 to 5.17 in	5.1 to 6.5
2BC,2C -- 34 to 80 in	very gravelly sand	very rapid	0.46 to 4.15 in	5.6 to 6.5

Pequaywan

Extent: 15 to 30 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) .20

Land capability, nonirrigated 3s

Hydric soil: no

Hydrologic group: B

Potential for frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 2 in	fine sandy loam	moderately rapid	0.20 to 0.39 in	5.1 to 6.5
Bw -- 2 to 30 in	sandy loam	moderately rapid	2.24 to 5.03 in	5.1 to 6.5
2BC,2C -- 30 to 80 in	very gravelly sand	very rapid	0.50 to 4.50 in	5.6 to 6.5

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F122D--Aldenlake-Pequaywan complex, pitted, 0 to 18 percent slopes

Aldenlake

Extent: 45 to 70 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): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .20

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 5 in	sandy loam	moderately rapid	0.51 to 1.02 in	5.1 to 6.5
Bw -- 5 to 34 in	sandy loam	moderately rapid	2.30 to 5.17 in	5.1 to 6.5
2BC,2C -- 34 to 80 in	very gravelly sand	very rapid	0.46 to 4.15 in	5.6 to 6.5

Pequaywan

Extent: 10 to 25 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) .20

Land capability, nonirrigated 3s

Hydric soil: no

Hydrologic group: B

Potential for frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 2 in	fine sandy loam	moderately rapid	0.20 to 0.39 in	5.1 to 6.5
Bw -- 2 to 30 in	sandy loam	moderately rapid	2.24 to 5.03 in	5.1 to 6.5
2BC,2C -- 30 to 80 in	very gravelly sand	very rapid	0.50 to 4.50 in	5.6 to 6.5

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F122F--Aldenlake-Pequaywan complex, pitted, 0 to 45 percent slopes

Aldenlake

Extent: 50 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): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .20

Land capability, nonirrigated 7e

Hydric soil: no

Hydrologic group: B

Potential for frost action: 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 1.02 in	5.1 to 6.5
Bw -- 5 to 34 in	sandy loam	moderately rapid	2.30 to 5.17 in	5.1 to 6.5
2BC,2C -- 34 to 80 in	very gravelly sand	very rapid	0.46 to 4.15 in	5.6 to 6.5

Pequaywan, pitted

Extent: 10 to 25 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) .20

Land capability, nonirrigated 3s

Hydric soil: no

Hydrologic group: B

Potential for frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 2 in	fine sandy loam	moderately rapid	0.20 to 0.39 in	5.1 to 6.5
Bw -- 2 to 30 in	sandy loam	moderately rapid	2.24 to 5.03 in	5.1 to 6.5
2BC,2C -- 30 to 80 in	very gravelly sand	very rapid	0.50 to 4.50 in	5.6 to 6.5

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F123B--Grayling-Grytal-Cromwell complex, pitted, 0 to 8 percent slopes

Grayling

Extent: 30 to 50 percent of the unit

Landform(s): pitted outwash plains

Slope gradient: 2 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) .15

Land capability, nonirrigated 4s

Hydric soil: no

Hydrologic group: A

Potential for frost action: low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 5 in	loamy sand	rapid	0.26 to 0.61 in	5.1 to 6.5
Bw -- 5 to 17 in	loamy sand	rapid	0.59 to 1.30 in	5.1 to 6.5
C -- 17 to 80 in	sand	very rapid	1.26 to 6.30 in	5.6 to 6.5

Grytal

Extent: 25 to 40 percent of the unit

Landform(s): depressions on pitted outwash plains

Slope gradient: 0 to 3 percent

Parent material: loamy material over sandy 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) .17

Land capability, nonirrigated 4s

Hydric soil: no

Hydrologic group: B

Potential for frost action: low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 2 in	sandy loam	moderately rapid	0.22 to 0.35 in	5.1 to 6.5
Bw,E -- 2 to 20 in	sandy loam	moderately rapid	1.99 to 3.08 in	5.1 to 6.5
2C -- 20 to 80 in	sand	very rapid	1.20 to 5.98 in	5.6 to 6.5

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F123B--Grayling-Grytal-Cromwell complex, pitted, 0 to 8 percent slopes

Cromwell

Extent: 20 to 30 percent of the unit

Landform(s): pitted outwash plains

Slope gradient: 2 to 8 percent

Parent material: loamy material over sandy 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 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 0.57 in	5.1 to 6.5
Bw -- 3 to 15 in	sandy loam	moderately rapid	1.06 to 2.01 in	5.1 to 6.5
2C -- 15 to 80 in	sand	very rapid	1.30 to 4.55 in	5.6 to 6.5

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F123D--Grayling-Grytal-Cromwell complex, pitted, 0 to 18 percent slopes

Grayling

Extent: 30 to 50 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: excessively drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw factor (surface layer) .15

Land capability, nonirrigated 4s

Hydric soil: no

Hydrologic group: A

Potential for frost action: low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 5 in	loamy sand	rapid	0.26 to 0.61 in	5.1 to 6.5
Bw -- 5 to 17 in	loamy sand	rapid	0.59 to 1.30 in	5.1 to 6.5
C -- 17 to 80 in	sand	very rapid	1.26 to 6.30 in	5.6 to 6.5

Grytal

Extent: 20 to 30 percent of the unit

Landform(s): depressions on pitted outwash plains

Slope gradient: 0 to 3 percent

Parent material: loamy material over sandy 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) .17

Land capability, nonirrigated 4s

Hydric soil: no

Hydrologic group: B

Potential for frost action: low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 2 in	sandy loam	moderately rapid	0.22 to 0.35 in	5.1 to 6.5
Bw,E -- 2 to 20 in	sandy loam	moderately rapid	1.99 to 3.08 in	5.1 to 6.5
2C -- 20 to 80 in	sand	very rapid	1.20 to 5.98 in	5.6 to 6.5

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F123D--Grayling-Grytal-Cromwell complex, pitted, 0 to 18 percent slopes

Cromwell

Extent: 20 to 30 percent of the unit

Landform(s): pitted outwash plains

Slope gradient: 8 to 18 percent

Parent material: loamy material over sandy 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 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 0.57 in	5.1 to 6.5
Bw -- 3 to 15 in	sandy loam	moderately rapid	1.06 to 2.01 in	5.1 to 6.5
2C -- 15 to 80 in	sand	very rapid	1.30 to 4.55 in	5.6 to 6.5

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F124B--Rollins-Pequaywan complex, pitted, 0 to 8 percent slopes

Rollins

Extent: 35 to 60 percent of the unit

Landform(s): pitted 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 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 5 in	sandy loam	moderately rapid	0.51 to 1.02 in	5.1 to 6.5
Bw -- 5 to 14 in	gravelly sandy loam	moderately rapid	0.63 to 1.63 in	5.1 to 6.5
2BC,2C -- 14 to 80 in	extremely gravelly sand	very rapid	0.66 to 4.60 in	5.6 to 6.5

Pequaywan

Extent: 10 to 30 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) .20

Land capability, nonirrigated 3s

Hydric soil: no

Hydrologic group: B

Potential for frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 2 in	fine sandy loam	moderately rapid	0.20 to 0.39 in	5.1 to 6.5
Bw -- 2 to 30 in	sandy loam	moderately rapid	2.24 to 5.03 in	5.1 to 6.5
2BC,2C -- 30 to 80 in	very gravelly sand	very rapid	0.50 to 4.50 in	5.6 to 6.5

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F124D--Rollins-Pequaywan complex, pitted, 0 to 18 percent slopes

Rollins

Extent: 40 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: 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 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 5 in	sandy loam	moderately rapid	0.51 to 1.02 in	5.1 to 6.5
Bw -- 5 to 14 in	gravelly sandy loam	moderately rapid	0.63 to 1.63 in	5.1 to 6.5
2BC,2C -- 14 to 80 in	extremely gravelly sand	very rapid	0.66 to 4.60 in	5.6 to 6.5

Pequaywan

Extent: 10 to 25 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) .20

Land capability, nonirrigated 4s

Hydric soil: no

Hydrologic group: B

Potential for frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 2 in	fine sandy loam	moderately rapid	0.20 to 0.39 in	5.1 to 6.5
Bw -- 2 to 30 in	sandy loam	moderately rapid	2.24 to 5.03 in	5.1 to 6.5
2BC,2C -- 30 to 80 in	very gravelly sand	very rapid	0.50 to 4.50 in	5.6 to 6.5

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F124F--Rollins-Pequaywan complex, pitted, 0 to 45 percent slopes

Rollins

Extent: 50 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: 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 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 5 in	sandy loam	moderately rapid	0.51 to 1.02 in	5.1 to 6.5
Bw -- 5 to 14 in	gravelly sandy loam	moderately rapid	0.63 to 1.63 in	5.1 to 6.5
2BC,2C -- 14 to 80 in	extremely gravelly sand	very rapid	0.66 to 4.60 in	5.6 to 6.5

Pequaywan

Extent: 10 to 25 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) .20

Land capability, nonirrigated 4s

Hydric soil: no

Hydrologic group: B

Potential for frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 2 in	fine sandy loam	moderately rapid	0.20 to 0.39 in	5.1 to 6.5
Bw -- 2 to 30 in	sandy loam	moderately rapid	2.24 to 5.03 in	5.1 to 6.5
2BC,2C -- 30 to 80 in	very gravelly sand	very rapid	0.50 to 4.50 in	5.6 to 6.5

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F125A--Pequaywan fine sandy loam, 0 to 3 percent slopes

Pequaywan

Extent: 70 to 95 percent of the unit

Landform(s): 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: 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 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	fine sandy loam	moderately rapid	0.20 to 0.39 in	5.1 to 6.5
Bw -- 2 to 30 in	sandy loam	moderately rapid	2.24 to 5.03 in	5.1 to 6.5
2BC,2C -- 30 to 80 in	very gravelly sand	very rapid	0.50 to 4.50 in	5.6 to 6.5

F126A--Grytal sandy loam, 0 to 3 percent slopes

Grytal

Extent: 70 to 95 percent of the unit

Landform(s): flats on outwash plains

Slope gradient: 0 to 3 percent

Parent material: loamy material over sandy 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) .17

Land capability, nonirrigated 4s

Hydric soil: no

Hydrologic group: B

Potential for frost action: low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 2 in	sandy loam	moderately rapid	0.22 to 0.35 in	5.1 to 6.5
Bw,E -- 2 to 20 in	sandy loam	moderately rapid	1.99 to 3.08 in	5.1 to 6.5
2C -- 20 to 80 in	sand	very rapid	1.20 to 5.98 in	5.6 to 6.5

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F127A--Hulligan mucky fine sandy loam, depressional, 0 to 1 percent slopes

Hulligan, depressional

Extent: 75 to 95 percent of the unit

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

Slope gradient: 0 to 1 percent

Parent material: loamy material over gravelly outwash

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .20

Land capability, nonirrigated 6w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 7 in	mucky fine sandy loam	moderately rapid	0.99 to 1.20 in	5.1 to 6.5
Bw -- 7 to 45 in	sandy loam	moderately rapid	2.65 to 6.80 in	5.1 to 6.5
2BC,2C -- 45 to 80 in	very gravelly sand	very rapid	0.35 to 3.15 in	5.6 to 6.5

F128A--Hulligan fine sandy loam, 0 to 1 percent slopes

Hulligan

Extent: 70 to 90 percent of the unit

Landform(s): flats on outwash plains

Slope gradient: 0 to 1 percent

Parent material: loamy material over gravelly outwash

Restrictive feature(s): greater than 60 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: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 5 in	fine sandy loam	moderately rapid	0.72 to 0.87 in	5.1 to 6.5
Bw -- 5 to 41 in	sandy loam	moderately rapid	2.51 to 6.45 in	5.1 to 6.5
2BC,2C -- 41 to 80 in	very gravelly sand	very rapid	0.39 to 3.51 in	5.6 to 6.5

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

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

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	
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, Duluth Part

F134A--Giese muck, depressional, 0 to 1 percent slope

Giese, depressional

Extent: 70 to 90 percent of the unit

Landform(s): depressions on moraines

Slope gradient: 0 to 1 percent

Parent material: loamy material over dense loamy till

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

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw factor (surface layer) .02

Land capability, nonirrigated 6w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa -- 0 to 1 in	muck	moderately rapid	0.41 to 0.53 in	
A -- 1 to 6 in	silt loam	moderate	0.52 to 1.13 in	4.5 to 6.0
Eg,E -- 6 to 11 in	silt loam	moderate	0.72 to 1.02 in	4.5 to 6.0
Bg,Bw -- 11 to 30 in	gravelly sandy loam	moderately rapid	1.70 to 3.78 in	5.1 to 6.0
2Bw,2BC -- 30 to 36 in	gravelly sandy loam	slow	0.47 to 1.00 in	5.6 to 6.8
2BCd,2Cd -- 36 to 80 in	gravelly sandy loam	very slow	1.76 to 3.97 in	5.6 to 6.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F135A--Hermantown-Canosia-Giese, depressional, complex, 0 to 3 percent slopes

Hermantown

Extent: 35 to 55 percent of the unit

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

Slope gradient: 1 to 3 percent

Parent material: loamy material over dense loamy till

Restrictive feature(s): dense material at 30 to 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) .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>
A -- 0 to 4 in	silt loam	moderate	0.55 to 0.94 in	4.5 to 6.0
E -- 4 to 7 in	silt loam	moderate	0.41 to 0.63 in	4.5 to 6.0
Bw -- 7 to 31 in	gravelly sandy loam	moderately rapid	2.16 to 4.80 in	5.1 to 6.0
2Bw,2BC -- 31 to 53 in	gravelly sandy loam	slow	1.76 to 3.75 in	5.6 to 6.8
2BCd -- 53 to 80 in	gravelly sandy loam	very slow	1.07 to 2.41 in	5.6 to 6.8

Canosia

Extent: 25 to 45 percent of the unit

Landform(s): flats on moraines, depressions on moraines

Slope gradient: 0 to 2 percent

Parent material: loamy material over dense loamy till

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

Flooding: none

Ponding: none

Drainage class: 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 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	loam	moderate	0.72 to 1.23 in	4.5 to 6.0
Bw -- 5 to 25 in	gravelly sandy loam	moderately rapid	1.81 to 4.02 in	5.1 to 6.0
2Bw,2BC -- 25 to 34 in	gravelly sandy loam	slow	0.69 to 1.47 in	5.6 to 6.8
2BCd -- 34 to 80 in	gravelly sandy loam	very slow	1.84 to 4.15 in	5.6 to 6.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F135A--Hermantown-Canosia-Giese, depressional, complex, 0 to 3 percent slopes

Giese, depressional

Extent: 10 to 20 percent of the unit

Landform(s): depressions on moraines

Slope gradient: 0 to 1 percent

Parent material: loamy material over dense loamy till

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

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw factor (surface layer) .02

Land capability, nonirrigated 6w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa -- 0 to 1 in	muck	moderately rapid	0.41 to 0.53 in	
A -- 1 to 6 in	silt loam	moderate	0.52 to 1.13 in	4.5 to 6.0
Eg,E -- 6 to 11 in	silt loam	moderate	0.72 to 1.02 in	4.5 to 6.0
Bg,Bw -- 11 to 30 in	gravelly sandy loam	moderately rapid	1.70 to 3.78 in	5.1 to 6.0
2Bw,2BC -- 30 to 36 in	gravelly sandy loam	slow	0.47 to 1.00 in	5.6 to 6.8
2BCd,2Cd -- 36 to 80 in	gravelly sandy loam	very slow	1.76 to 3.97 in	5.6 to 6.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F136A--Hermantown silt loam, 1 to 3 percent slopes

Hermantown

Extent: 70 to 90 percent of the unit

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

Slope gradient: 1 to 3 percent

Parent material: loamy material over dense loamy till

Restrictive feature(s): dense material at 30 to 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) .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>
A -- 0 to 4 in	silt loam	moderate	0.55 to 0.94 in	4.5 to 6.0
E -- 4 to 7 in	silt loam	moderate	0.41 to 0.63 in	4.5 to 6.0
Bw -- 7 to 31 in	gravelly sandy loam	moderately rapid	2.16 to 4.80 in	5.1 to 6.0
2Bw,2BC -- 31 to 53 in	gravelly sandy loam	slow	1.76 to 3.75 in	5.6 to 6.8
2BCd -- 53 to 80 in	gravelly sandy loam	very slow	1.07 to 2.41 in	5.6 to 6.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F137B--Normanna-Canosia-Hermantown complex, 0 to 8 percent slopes

Normanna

Extent: 30 to 60 percent of the unit

Landform(s): moraines

Slope gradient: 3 to 8 percent

Parent material: loamy material over dense loamy till

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

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .17

Land capability, nonirrigated 3e

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	0.55 to 0.94 in	4.5 to 6.0
Bw -- 4 to 45 in	gravelly sandy loam	moderately rapid	3.69 to 8.19 in	5.1 to 6.0
2Bw,BC,2BC -- 45 to 48 in	gravelly sandy loam	slow	0.25 to 0.54 in	5.6 to 6.8
2BCd -- 48 to 80 in	gravelly sandy loam	very slow	1.28 to 2.87 in	5.6 to 6.8

Canosia

Extent: 10 to 40 percent of the unit

Landform(s): depressions on moraines

Slope gradient: 0 to 2 percent

Parent material: loamy material over dense loamy till

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

Flooding: none

Ponding: none

Drainage class: 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 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	loam	moderate	0.72 to 1.23 in	4.5 to 6.0
Bw -- 5 to 25 in	gravelly sandy loam	moderately rapid	1.81 to 4.02 in	5.1 to 6.0
2Bw,2BC -- 25 to 34 in	gravelly sandy loam	slow	0.69 to 1.47 in	5.6 to 6.8
2BCd -- 34 to 80 in	gravelly sandy loam	very slow	1.84 to 4.15 in	5.6 to 6.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F137B--Normanna-Canosia-Hermantown complex, 0 to 8 percent slopes

Hermantown

Extent: 10 to 30 percent of the unit

Landform(s): moraines

Slope gradient: 1 to 3 percent

Parent material: loamy material over dense loamy till

Restrictive feature(s): dense material at 30 to 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) .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>
A -- 0 to 4 in	silt loam	moderate	0.55 to 0.94 in	4.5 to 6.0
E -- 4 to 7 in	silt loam	moderate	0.41 to 0.63 in	4.5 to 6.0
Bw -- 7 to 31 in	gravelly sandy loam	moderately rapid	2.16 to 4.80 in	5.1 to 6.0
2Bw,2BC -- 31 to 53 in	gravelly sandy loam	slow	1.76 to 3.75 in	5.6 to 6.8
2BCd -- 53 to 80 in	gravelly sandy loam	very slow	1.07 to 2.41 in	5.6 to 6.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F138D--Ahmeek-Normanna-Canosia complex, 0 to 18 percent slopes

Ahmeek

Extent: 40 to 60 percent of the unit

Landform(s): moraines

Slope gradient: 8 to 18 percent

Parent material: loamy material over dense loamy till

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

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

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 2 in	silt loam	moderate	0.28 to 0.47 in	4.5 to 6.0
E -- 2 to 4 in	silt loam	moderate	0.24 to 0.39 in	4.5 to 6.0
Bw -- 4 to 14 in	gravelly sandy loam	moderately rapid	0.92 to 2.05 in	5.1 to 6.0
2Bw,2BC -- 14 to 33 in	gravelly sandy loam	slow	1.51 to 3.21 in	5.6 to 6.8
2BCd -- 33 to 80 in	gravelly sandy loam	very slow	1.87 to 4.22 in	5.6 to 6.8

Normanna

Extent: 20 to 40 percent of the unit

Landform(s): moraines

Slope gradient: 3 to 8 percent

Parent material: loamy material over dense loamy till

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

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .17

Land capability, nonirrigated 3e

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	0.55 to 0.94 in	4.5 to 6.0
Bw -- 4 to 45 in	gravelly sandy loam	moderately rapid	3.69 to 8.19 in	5.1 to 6.0
2Bw,BC,2BC -- 45 to 48 in	gravelly sandy loam	slow	0.25 to 0.54 in	5.6 to 6.8
2BCd -- 48 to 80 in	gravelly sandy loam	very slow	1.28 to 2.87 in	5.6 to 6.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F138D--Ahmeek-Normanna-Canosia complex, 0 to 18 percent slopes

Canosia

Extent: 5 to 15 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 30 to 60 inches

Flooding: none

Ponding: none

Drainage class: 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 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	loam	moderate	0.72 to 1.23 in	4.5 to 6.0
Bw -- 5 to 25 in	gravelly sandy loam	moderately rapid	1.81 to 4.02 in	5.1 to 6.0
2Bw,2BC -- 25 to 34 in	gravelly sandy loam	slow	0.69 to 1.47 in	5.6 to 6.8
2BCd -- 34 to 80 in	gravelly sandy loam	very slow	1.84 to 4.15 in	5.6 to 6.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F139F--Ahmeek fine sandy loam, 18 to 45 percent slopes

Ahmeek

Extent: 60 to 80 percent of the unit

Landform(s): moraines

Slope gradient: 18 to 45 percent

Parent material: loamy material over dense loamy till

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

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

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 2 in	silt loam	moderate	0.28 to 0.47 in	4.5 to 6.0
E -- 2 to 4 in	silt loam	moderate	0.24 to 0.39 in	4.5 to 6.0
Bw -- 4 to 14 in	gravelly sandy loam	moderately rapid	0.92 to 2.05 in	5.1 to 6.0
2Bw,2BC -- 14 to 33 in	gravelly sandy loam	slow	1.51 to 3.21 in	5.6 to 6.8
2BCd -- 33 to 80 in	gravelly sandy loam	very slow	1.87 to 4.22 in	5.6 to 6.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F140B--Normanna-Giese, depressional, complex, pitted, 0 to 8 percent slopes

Normanna

Extent: 40 to 60 percent of the unit

Landform(s): moraines

Slope gradient: 3 to 8 percent

Parent material: loamy material over dense loamy till

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

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .17

Land capability, nonirrigated 3e

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	0.55 to 0.94 in	4.5 to 6.0
Bw -- 4 to 45 in	gravelly sandy loam	moderately rapid	3.69 to 8.19 in	5.1 to 6.0
2Bw,BC,2BC -- 45 to 48 in	gravelly sandy loam	slow	0.25 to 0.54 in	5.6 to 6.8
2BCd -- 48 to 80 in	gravelly sandy loam	very slow	1.28 to 2.87 in	5.6 to 6.8

Giese, depressional

Extent: 15 to 30 percent of the unit

Landform(s): depressions on moraines

Slope gradient: 0 to 1 percent

Parent material: loamy material over dense loamy till

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

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw factor (surface layer) .02

Land capability, nonirrigated 6w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa -- 0 to 1 in	muck	moderately rapid	0.41 to 0.53 in	
A -- 1 to 6 in	silt loam	moderate	0.52 to 1.13 in	4.5 to 6.0
Eg,E -- 6 to 11 in	silt loam	moderate	0.72 to 1.02 in	4.5 to 6.0
Bg,Bw -- 11 to 30 in	gravelly sandy loam	moderately rapid	1.70 to 3.78 in	5.1 to 6.0
2Bw,2BC -- 30 to 36 in	gravelly sandy loam	slow	0.47 to 1.00 in	5.6 to 6.8
2BCd,2Cd -- 36 to 80 in	gravelly sandy loam	very slow	1.76 to 3.97 in	5.6 to 6.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F141D--Ahmeek-Normanna-Cathro, depressional, complex, pitted, 0 to 25 percent slopes

Ahmeek

Extent: 45 to 60 percent of the unit

Landform(s): moraines

Slope gradient: 8 to 25 percent

Parent material: loamy material over dense loamy till

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

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

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 2 in	silt loam	moderate	0.28 to 0.47 in	4.5 to 6.0
E -- 2 to 4 in	silt loam	moderate	0.24 to 0.39 in	4.5 to 6.0
Bw -- 4 to 14 in	gravelly sandy loam	moderately rapid	0.92 to 2.05 in	5.1 to 6.0
2Bw,2BC -- 14 to 33 in	gravelly sandy loam	slow	1.51 to 3.21 in	5.6 to 6.8
2BCd -- 33 to 80 in	gravelly sandy loam	very slow	1.87 to 4.22 in	5.6 to 6.8

Normanna

Extent: 10 to 35 percent of the unit

Landform(s): moraines

Slope gradient: 3 to 8 percent

Parent material: loamy material over dense loamy till

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

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .17

Land capability, nonirrigated 3e

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	0.55 to 0.94 in	4.5 to 6.0
Bw -- 4 to 45 in	gravelly sandy loam	moderately rapid	3.69 to 8.19 in	5.1 to 6.0
2Bw,BC,2BC -- 45 to 48 in	gravelly sandy loam	slow	0.25 to 0.54 in	5.6 to 6.8
2BCd -- 48 to 80 in	gravelly sandy loam	very slow	1.28 to 2.87 in	5.6 to 6.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F141D--Ahmeek-Normanna-Cathro, depressional, complex, pitted, 0 to 25 percent slopes

Cathro, depressional

Extent: 10 to 25 percent of the unit

Landform(s): depressions on moraines

Slope gradient: 0 to 1 percent

Parent material: organic material over dense loamy till

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 2

Wind erodibility group (WEG): 8

Wind erodibility index (WEI): 0

Kw factor (surface layer) .02

Land capability, nonirrigated 7w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

<i>Representative soil profile:</i>		<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa --	0 to 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 48 in	stratified loamy fine sand to loam	moderate	1.02 to 1.50 in	5.1 to 7.3
2Cd --	48 to 80 in	gravelly sandy loam	very slow	1.28 to 2.55 in	5.6 to 6.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F142A--Canosia loam, 0 to 2 percent slopes

Canosia

Extent: 80 to 95 percent of the unit

Landform(s): flats on moraines

Slope gradient: 0 to 2 percent

Parent material: loamy material over dense loamy till

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

Flooding: none

Ponding: none

Drainage class: 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 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	loam	moderate	0.72 to 1.23 in	4.5 to 6.0
Bw -- 5 to 25 in	gravelly sandy loam	moderately rapid	1.81 to 4.02 in	5.1 to 6.0
2Bw,2BC -- 25 to 34 in	gravelly sandy loam	slow	0.69 to 1.47 in	5.6 to 6.8
2BCd -- 34 to 80 in	gravelly sandy loam	very slow	1.84 to 4.15 in	5.6 to 6.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F143B--Normanna-Aldenlake-Canosia complex, 0 to 8 percent slopes

Normanna

Extent: 25 to 60 percent of the unit

Landform(s): moraines

Slope gradient: 3 to 8 percent

Parent material: loamy material over dense loamy till

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

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .17

Land capability, nonirrigated 3e

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	0.55 to 0.94 in	4.5 to 6.0
Bw -- 4 to 45 in	gravelly sandy loam	moderately rapid	3.69 to 8.19 in	5.1 to 6.0
2Bw,BC,2BC -- 45 to 48 in	gravelly sandy loam	slow	0.25 to 0.54 in	5.6 to 6.8
2BCd -- 48 to 80 in	gravelly sandy loam	very slow	1.28 to 2.87 in	5.6 to 6.8

Aldenlake

Extent: 10 to 50 percent of the unit

Landform(s): moraines

Slope gradient: 0 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): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .20

Land capability, nonirrigated 3s

Hydric soil: no

Hydrologic group: B

Potential for frost action: low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 5 in	sandy loam	moderately rapid	0.56 to 1.02 in	5.1 to 6.5
Bw -- 5 to 34 in	sandy loam	moderately rapid	2.30 to 5.17 in	5.1 to 6.5
2BC,2C -- 34 to 80 in	very gravelly sand	very rapid	0.46 to 4.15 in	5.6 to 6.5

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F143B--Normanna-Aldenlake-Canosia complex, 0 to 8 percent slopes

Canosia

Extent: 2 to 15 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 30 to 60 inches

Flooding: none

Ponding: none

Drainage class: 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 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	loam	moderate	0.72 to 1.23 in	4.5 to 6.0
Bw -- 5 to 25 in	gravelly sandy loam	moderately rapid	1.81 to 4.02 in	5.1 to 6.0
2Bw,2BC -- 25 to 34 in	gravelly sandy loam	slow	0.69 to 1.47 in	5.6 to 6.8
2BCd -- 34 to 80 in	gravelly sandy loam	very slow	1.84 to 4.15 in	5.6 to 6.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F144D--Aldenlake-Ahmeek complex, 8 to 18 percent slopes

Aldenlake

Extent: 20 to 50 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: 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 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 5 in	sandy loam	moderately rapid	0.56 to 1.02 in	5.1 to 6.5
Bw -- 5 to 34 in	sandy loam	moderately rapid	2.30 to 5.17 in	5.1 to 6.5
2BC,2C -- 34 to 80 in	very gravelly sand	very rapid	0.46 to 4.15 in	5.6 to 6.5

Ahmeek

Extent: 20 to 50 percent of the unit

Landform(s): moraines

Slope gradient: 8 to 18 percent

Parent material: loamy material over dense loamy till

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

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

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 2 in	silt loam	moderate	0.28 to 0.47 in	4.5 to 6.0
E -- 2 to 4 in	silt loam	moderate	0.24 to 0.39 in	4.5 to 6.0
Bw -- 4 to 14 in	gravelly sandy loam	moderately rapid	0.92 to 2.05 in	5.1 to 6.0
2Bw,2BC -- 14 to 33 in	gravelly sandy loam	slow	1.51 to 3.21 in	5.6 to 6.8
2BCd -- 33 to 80 in	gravelly sandy loam	very slow	1.87 to 4.22 in	5.6 to 6.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F145F--Ahmeek-Aldenlake complex, 18 to 45 percent slopes

Ahmeek

Extent: 20 to 50 percent of the unit

Landform(s): moraines

Slope gradient: 18 to 45 percent

Parent material: loamy material over dense loamy till

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

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

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 2 in	silt loam	moderate	0.28 to 0.47 in	4.5 to 6.0
E -- 2 to 4 in	silt loam	moderate	0.24 to 0.39 in	4.5 to 6.0
Bw -- 4 to 14 in	gravelly sandy loam	moderately rapid	0.92 to 2.05 in	5.1 to 6.0
2Bw,2BC -- 14 to 33 in	gravelly sandy loam	slow	1.51 to 3.21 in	5.6 to 6.8
2BCd -- 33 to 80 in	gravelly sandy loam	very slow	1.87 to 4.22 in	5.6 to 6.8

Aldenlake

Extent: 20 to 50 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: 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 7e

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	sandy loam	moderately rapid	0.56 to 1.02 in	5.1 to 6.5
Bw -- 5 to 34 in	sandy loam	moderately rapid	2.30 to 5.17 in	5.1 to 6.5
2BC,2C -- 34 to 80 in	very gravelly sand	very rapid	0.46 to 4.15 in	5.6 to 6.5

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F146A--Giese muck, 0 to 2 percent slopes, rubbly

Giese, rubbly

Extent: 60 to 90 percent of the unit

Landform(s): flats on moraines

Slope gradient: 0 to 2 percent

Parent material: loamy material over dense loamy till

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

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw factor (surface layer) .02

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>
Oa -- 0 to 1 in	muck	moderately rapid	0.41 to 0.53 in	
A -- 1 to 6 in	silt loam	moderate	0.52 to 1.13 in	4.5 to 6.0
Eg,E -- 6 to 11 in	silt loam	moderate	0.72 to 1.02 in	4.5 to 6.0
Bg,Bw -- 11 to 30 in	gravelly sandy loam	moderately rapid	1.70 to 3.78 in	5.1 to 6.0
2Bw,2BC -- 30 to 36 in	gravelly sandy loam	slow	0.47 to 1.00 in	5.6 to 6.8
2BCd,2Cd -- 36 to 80 in	gravelly sandy loam	very slow	1.76 to 3.97 in	5.6 to 6.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F147D--Ahmeek-Canosia-Rock outcrop complex, 0 to 25 percent slopes

Ahmeek

Extent: 30 to 60 percent of the unit

Landform(s): moraines

Slope gradient: 8 to 25 percent

Parent material: loamy material over dense loamy till

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

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

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 2 in	silt loam	moderate	0.28 to 0.47 in	4.5 to 6.0
E -- 2 to 4 in	silt loam	moderate	0.24 to 0.39 in	4.5 to 6.0
Bw -- 4 to 14 in	gravelly sandy loam	moderately rapid	0.92 to 2.05 in	5.1 to 6.0
2Bw,2BC -- 14 to 33 in	gravelly sandy loam	slow	1.51 to 3.21 in	5.6 to 6.8
2BCd -- 33 to 80 in	gravelly sandy loam	very slow	1.87 to 4.22 in	5.6 to 6.8

Canosia

Extent: 10 to 20 percent of the unit

Landform(s): depressions on moraines

Slope gradient: 0 to 2 percent

Parent material: loamy material over dense loamy till

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

Flooding: none

Ponding: none

Drainage class: 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 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 5 in	loam	moderate	0.72 to 1.23 in	4.5 to 6.0
Bw -- 5 to 25 in	gravelly sandy loam	moderately rapid	1.81 to 4.02 in	5.1 to 6.0
2Bw,2BC -- 25 to 34 in	gravelly sandy loam	slow	0.69 to 1.47 in	5.6 to 6.8
2BCd -- 34 to 80 in	gravelly sandy loam	very slow	1.84 to 4.15 in	5.6 to 6.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F148F--Ahmeek-Rock outcrop-Fluvaquents, frequently flooded, complex, 0 to 50 percent slopes

Ahmeek

Extent: 40 to 80 percent of the unit

Landform(s): moraines

Slope gradient: 18 to 50 percent

Parent material: loamy material over dense loamy till

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

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

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 2 in	silt loam	moderate	0.28 to 0.47 in	4.5 to 6.0
E -- 2 to 4 in	silt loam	moderate	0.24 to 0.39 in	4.5 to 6.0
Bw -- 4 to 14 in	gravelly sandy loam	moderately rapid	0.92 to 2.05 in	5.1 to 6.0
2Bw,2BC -- 14 to 33 in	gravelly sandy loam	slow	1.51 to 3.21 in	5.6 to 6.8
2BCd -- 33 to 80 in	gravelly sandy loam	very slow	1.87 to 4.22 in	5.6 to 6.8

Rock outcrop

Extent: 5 to 20 percent of the unit

Landform(s): moraines

Slope gradient: 0 to 50 percent

Parent material: bedrock

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

Flooding:

Ponding:

Drainage class:

Soil loss tolerance (T factor):

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Kw factor (surface layer)

Land capability, nonirrigated

Hydric soil: unranked

Hydrologic group:

Potential for frost action:

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

St. Louis County, Minnesota, Duluth Part

F148F--Ahmeek-Rock outcrop-Fluvaquents, frequently flooded, complex, 0 to 50 percent slopes

Fluvaquents, frequently flooded

Extent: 5 to 20 percent of the unit

Landform(s): moraines

Slope gradient: 0 to 2 percent

Parent material: alluvium

Restrictive feature(s): greater than 60 inches

Flooding: frequent

Ponding: none

Drainage class: poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 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	1.18 to 1.42 in	5.6 to 7.3
Cg --	6 to 80 in	stratified silt loam to gravelly loamy coarse sand	rapid	4.44 to 16.28 in	5.6 to 7.3

F149D--Aldenlake-Rock outcrop complex, 3 to 20 percent slopes

Aldenlake

Extent: 60 to 85 percent of the unit

Landform(s): outwash plains

Slope gradient: 3 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): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .20

Land capability, nonirrigated 3e

Hydric soil: no

Hydrologic group: B

Potential for frost action: 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 1.02 in	5.1 to 6.5
Bw --	5 to 34 in	sandy loam	moderately rapid	2.30 to 5.17 in	5.1 to 6.5
2BC,2C --	34 to 80 in	very gravelly sand	very rapid	0.46 to 4.15 in	5.6 to 6.5

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F150A--Twig-Tacoosh-Giese complex, depressional, 0 to 1 percent slopes

Twig, depressional

<i>Extent:</i> 30 to 75 percent of the unit	<i>Soil loss tolerance (T factor):</i> 4
<i>Landform(s):</i> depressions on moraines	<i>Wind erodibility group (WEG):</i> 5
<i>Slope gradient:</i> 0 to 1 percent	<i>Wind erodibility index (WEI):</i> 56
<i>Parent material:</i> organic material over loamy material over dense loamy till	<i>Kw factor (surface layer)</i> .02
<i>Restrictive feature(s):</i> dense material at 30 to 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> high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oe -- 0 to 12 in	mucky peat	rapid	5.31 to 6.50 in	
A1 -- 12 to 18 in	mucky silt loam	moderate	1.13 to 1.51 in	4.5 to 6.0
A2 -- 18 to 20 in	silt loam	moderate	0.35 to 0.47 in	4.5 to 6.0
Eg,2Btg,2Bw -- 20 to 48 in	gravelly sandy loam	slow	2.52 to 5.87 in	5.1 to 6.0
2BCd,2Cd -- 48 to 80 in	gravelly sandy loam	very slow	1.28 to 2.87 in	5.6 to 6.8

Tacoosh, depressional

<i>Extent:</i> 20 to 60 percent of the unit	<i>Soil loss tolerance (T factor):</i> 2
<i>Landform(s):</i> depressions on moraines	<i>Wind erodibility group (WEG):</i> 5
<i>Slope gradient:</i> 0 to 1 percent	<i>Wind erodibility index (WEI):</i> 56
<i>Parent material:</i> organic material over loamy material over dense loamy till	<i>Kw factor (surface layer)</i> .02
<i>Restrictive feature(s):</i> dense material at 40 to 80 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 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 48 in	stratified loamy fine sand to loam	moderate	1.10 to 1.95 in	5.1 to 7.3
2Cd -- 48 to 80 in	gravelly sandy loam	very slow	1.28 to 2.87 in	5.6 to 6.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F150A--Twig-Tacoosh-Giese complex, depressional, 0 to 1 percent slopes

Giese, depressional

Extent: 5 to 20 percent of the unit

Landform(s): depressions on moraines

Slope gradient: 0 to 1 percent

Parent material: loamy material over dense loamy till

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

Flooding: none

Ponding: frequent

Drainage class: very poorly drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw factor (surface layer) .02

Land capability, nonirrigated 6w

Hydric soil: yes

Hydrologic group: D

Potential for frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
Oa -- 0 to 1 in	muck	moderately rapid	0.41 to 0.53 in	
A -- 1 to 6 in	silt loam	moderate	0.52 to 1.13 in	4.5 to 6.0
Eg,E -- 6 to 11 in	silt loam	moderate	0.72 to 1.02 in	4.5 to 6.0
Bg,Bw -- 11 to 30 in	gravelly sandy loam	moderately rapid	1.70 to 3.78 in	5.1 to 6.0
2Bw,2BC -- 30 to 36 in	gravelly sandy loam	slow	0.47 to 1.00 in	5.6 to 6.8
2BCd,2Cd -- 36 to 80 in	gravelly sandy loam	very slow	1.76 to 3.97 in	5.6 to 6.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F151A--Tacoosh mucky peat, dense substratum, 0 to 1 percent slopes

Tacoosh

Extent: 60 to 90 percent of the unit

Landform(s): swamps on moraines, swamps on interdrumlins

Slope gradient: 0 to 1 percent

Parent material: organic material over loamy material over dense loamy till

Restrictive feature(s): dense material at 50 to 80 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:

		Texture	Permeability	Available water capacity	pH
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	
2Cg --	40 to 48 in	stratified loamy fine sand to loam	moderate	1.02 to 1.50 in	5.1 to 7.3
3Cd --	48 to 80 in	gravelly sandy loam	very slow	1.28 to 2.87 in	5.6 to 6.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F152A--Aquepts complex, 0 to 2 percent slopes

Aquepts, poorly drained

Extent: 40 to 60 percent of the unit

Landform(s): flats on lake plains

Slope gradient: 0 to 1 percent

Parent material: loamy lacustrine deposits

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .20

Land capability, nonirrigated 4w

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 7 in	fine sandy loam	moderately rapid	1.06 to 1.56 in	5.1 to 6.5
Bw -- 7 to 42 in	fine sandy loam	moderately rapid	4.56 to 7.71 in	4.5 to 6.5
C -- 42 to 80 in	stratified silt loam to loamy very fine sand	rapid	3.02 to 8.31 in	4.5 to 6.5

Aquepts, very poorly drained

Extent: 35 to 60 percent of the unit

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

Slope gradient: 0 to 1 percent

Parent material: loamy lacustrine 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): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .20

Land capability, nonirrigated 6w

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 7 in	fine sandy loam	moderately rapid	1.06 to 1.56 in	5.1 to 6.5
Bw -- 7 to 42 in	fine sandy loam	moderately rapid	4.56 to 7.71 in	4.5 to 6.5
C -- 42 to 80 in	stratified silt loam to loamy very fine sand	rapid	3.02 to 8.31 in	4.5 to 6.5

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F153B--Eutrudepts complex, 1 to 8 percent slopes

Eutrudepts, moderately well drained

Extent: 60 to 80 percent of the unit

Landform(s): lake plains

Slope gradient: 1 to 8 percent

Parent material: loamy lacustrine deposits

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .20

Land capability, nonirrigated 3s

Hydric soil: no

Hydrologic group: 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 8 in	fine sandy loam	moderately rapid	1.18 to 1.73 in	5.1 to 6.5
Bw -- 8 to 55 in	fine sandy loam	moderately rapid	6.14 to 10.39 in	4.5 to 6.5
C -- 55 to 80 in	stratified silt loam to loamy very fine sand	rapid	1.98 to 5.46 in	4.5 to 6.5

Eutrudepts, somewhat poorly drained

Extent: 15 to 30 percent of the unit

Landform(s): lake plains

Slope gradient: 1 to 3 percent

Parent material: loamy lacustrine deposits

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .20

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 7 in	fine sandy loam	moderately rapid	1.06 to 1.56 in	5.1 to 6.5
Bw -- 7 to 65 in	fine sandy loam	moderately rapid	7.52 to 12.73 in	4.5 to 6.5
C -- 65 to 80 in	stratified silt loam to loamy very fine sand	rapid	1.20 to 3.29 in	4.5 to 6.5

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F154A--Urban land-Hermantown-Canosia complex, 0 to 3 percent slopes

Urban land

Extent: 40 to 75 percent of the unit

Landform(s): moraines

Slope gradient: 0 to 3 percent

Parent material: fill material from surrounding uplands, gravel pits and blasted bedrock.

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class:

Soil loss tolerance (T factor):

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Kw factor (surface layer)

Land capability, nonirrigated

Hydric soil:

Hydrologic group:

Potential for frost action:

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

Extent: 10 to 30 percent of the unit

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

Slope gradient: 1 to 3 percent

Parent material: loamy material over dense loamy till

Restrictive feature(s): dense material at 30 to 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) .28

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 4 in	silt loam	moderate	0.55 to 0.94 in	4.5 to 6.0
E -- 4 to 7 in	silt loam	moderate	0.41 to 0.63 in	4.5 to 6.0
Bw -- 7 to 31 in	gravelly sandy loam	moderately rapid	2.16 to 4.80 in	5.1 to 6.0
2Bw,2BC -- 31 to 53 in	gravelly sandy loam	slow	1.76 to 3.75 in	5.6 to 6.8
2BCd -- 53 to 80 in	gravelly sandy loam	very slow	1.07 to 2.41 in	5.6 to 6.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F154A--Urban land-Hermantown-Canosia complex, 0 to 3 percent slopes

Canosia

Extent: 10 to 30 percent of the unit

Landform(s): flats on moraines, depressions on moraines

Slope gradient: 0 to 2 percent

Parent material: loamy material over dense loamy till

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

Flooding: none

Ponding: none

Drainage class: 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 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 5 in	loam	moderate	0.72 to 1.23 in	4.5 to 6.0
Bw -- 5 to 25 in	gravelly sandy loam	moderately rapid	1.81 to 4.02 in	5.1 to 6.0
2Bw,2BC -- 25 to 34 in	gravelly sandy loam	slow	0.69 to 1.47 in	5.6 to 6.8
2BCd -- 34 to 80 in	gravelly sandy loam	very slow	1.84 to 4.15 in	5.6 to 6.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F155B--Udalfs-Eutrudepts complex, 0 to 8 percent slopes

Glossudalfs

Extent: 20 to 50 percent of the unit

Landform(s): glacial lakes (relict)

Slope gradient: 2 to 8 percent

Parent material: stratified lacustrine

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .24

Land capability, nonirrigated 3s

Hydric soil: no

Hydrologic group: B

Potential for frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 3 in	silt loam	moderate	0.50 to 0.76 in	4.5 to 6.0
E -- 3 to 10 in	silt loam	moderate	1.00 to 1.47 in	4.5 to 6.0
EB, BE -- 10 to 22 in	silt loam	moderate	1.71 to 2.69 in	4.5 to 6.0
2Bt -- 22 to 28 in	silty clay loam	moderately slow	0.59 to 1.18 in	5.1 to 6.5
3BC -- 28 to 40 in	stratified very fine sandy loam to silty clay loam	moderate	2.07 to 2.44 in	6.1 to 7.3
3C -- 40 to 80 in	stratified very fine sandy loam to silty clay loam	moderate	6.76 to 7.95 in	6.1 to 7.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F155B--Udalfs-Eutrudepts complex, 0 to 8 percent slopes

Hapludalfs

Extent: 20 to 50 percent of the unit

Landform(s): glacial lakes (relict)

Slope gradient: 0 to 4 percent

Parent material: stratified lacustrine

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 5 in	fine sandy loam	moderately rapid	0.82 to 1.13 in	4.5 to 6.0
Bw -- 5 to 21 in	fine sandy loam	moderately rapid	1.42 to 3.46 in	4.5 to 6.0
Bt -- 21 to 32 in	loam	moderate	0.88 to 2.09 in	5.1 to 6.5
2BC -- 32 to 48 in	stratified very fine sandy loam to clay loam	moderate	2.26 to 3.55 in	6.1 to 7.3
2C -- 48 to 80 in	stratified loamy fine sand to silty clay	moderate	2.55 to 7.02 in	6.1 to 7.8

Eutrudepts

Extent: 20 to 50 percent of the unit

Landform(s): glacial lakes (relict)

Slope gradient: 2 to 8 percent

Parent material: stratified lacustrine

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .32

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	very fine sandy loam	moderate	0.63 to 0.69 in	4.5 to 6.0
E -- 3 to 4 in	very fine sandy loam	moderate	0.12 to 0.17 in	4.5 to 6.0
Bw -- 4 to 50 in	stratified loamy very fine sand to silty clay loam	moderate	3.69 to 10.13 in	5.1 to 6.5
BC,C -- 50 to 80 in	stratified loamy very fine sand to silty clay	moderate	2.39 to 6.58 in	6.1 to 7.3

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F155B--Udalfs-Eutrudepts complex, 0 to 8 percent slopes

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F155G--Udalfs-Eutrudepts complex, 25 to 70 percent slopes

Hapludalfs

Extent: 20 to 50 percent of the unit

Landform(s): glacial lakes (relict)

Slope gradient: 25 to 70 percent

Parent material: stratified lacustrine

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .32

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 5 in	very fine sandy loam	moderate	0.67 to 1.23 in	4.5 to 6.0
Bw -- 5 to 25 in	very fine sandy loam	moderate	1.20 to 4.42 in	4.5 to 6.0
E -- 25 to 35 in	very fine sandy loam	moderate	1.38 to 2.17 in	4.5 to 6.0
E&Bt,Bt&E -- 35 to 50 in	very fine sandy loam	moderate	0.75 to 3.29 in	5.1 to 6.5
BC -- 50 to 60 in	silt loam	moderate	1.38 to 2.17 in	6.1 to 7.3
2C -- 60 to 80 in	loamy very fine sand	moderately rapid	1.00 to 4.42 in	6.1 to 7.3

Eutrudepts

Extent: 20 to 40 percent of the unit

Landform(s): glacial lakes (relict)

Slope gradient: 25 to 70 percent

Parent material: stratified lacustrine

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .37

Land capability, nonirrigated 7e

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 5 in	silt loam	moderate	0.67 to 1.23 in	4.5 to 6.0
Bw -- 5 to 40 in	silt loam	moderate	1.75 to 7.71 in	5.1 to 6.5
C -- 40 to 80 in	silt loam	moderate	1.99 to 8.75 in	6.1 to 7.3

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F155G--Udalfs-Eutrudepts complex, 25 to 70 percent slopes

Glossudalfs, stratified substratum

Extent: 10 to 25 percent of the unit

Landform(s): glacial lakes (relict)

Slope gradient: 12 to 45 percent

Parent material: stratified lacustrine

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) .37

Land capability, nonirrigated 6e

Hydric soil: no

Hydrologic group: C

Potential for frost action: high

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 3 in	silt loam	moderate	0.41 to 0.76 in	4.5 to 6.0
E -- 3 to 5 in	silt loam	moderate	0.33 to 0.43 in	4.5 to 6.0
E/B -- 5 to 12 in	silt loam	moderate	1.20 to 1.47 in	4.5 to 6.0
Bt -- 12 to 35 in	silty clay loam	moderately slow	1.86 to 5.11 in	5.1 to 6.5
2C -- 35 to 80 in	stratified very fine sandy loam to silty clay	moderate	4.49 to 9.87 in	6.1 to 7.3

Glossudalfs

Extent: 10 to 25 percent of the unit

Landform(s): glacial lakes (relict)

Slope gradient: 12 to 45 percent

Parent material: stratified lacustrine

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .37

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	very fine sandy loam	moderate	0.51 to 0.94 in	4.5 to 6.0
E -- 4 to 10 in	very fine sandy loam	moderate	1.00 to 1.30 in	4.5 to 6.0
B/E -- 10 to 18 in	very fine sandy loam	moderate	0.83 to 1.82 in	5.1 to 6.5
2Bt -- 18 to 24 in	clay loam	moderately slow	0.47 to 1.30 in	6.1 to 7.3
2C -- 24 to 80 in	clay	slow	4.47 to 12.30 in	6.1 to 7.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F156D--Rock outcrop-Ahmeek, bedrock substratum-Barto complex, 4 to 18 percent slopes

Rock outcrop

Extent: 15 to 60 percent of the unit

Landform(s): moraines

Slope gradient: 8 to 18 percent

Parent material: bedrock

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

Flooding:

Ponding:

Drainage class:

Soil loss tolerance (T factor):

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Kw factor (surface layer)

Land capability, nonirrigated

Hydric soil:

Hydrologic group:

Potential for frost action:

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
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Ahmeek, bedrock substratum

Extent: 10 to 40 percent of the unit

Landform(s): moraines

Slope gradient: 8 to 18 percent

Parent material: loamy material over dense loamy till over bedrock

Restrictive feature(s): lithic bedrock at 60 to 80 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) .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 3 in	silt loam	moderate	0.44 to 0.76 in	4.5 to 6.0
Bw -- 3 to 26 in	gravelly sandy loam	moderately rapid	2.06 to 4.57 in	5.1 to 6.0
2Cd -- 26 to 65 in	gravelly sandy loam	very slow	1.56 to 3.51 in	5.6 to 6.8
3R -- 65 to 80 in	bedrock	impermeable		

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F156D--Rock outcrop-Ahmeek, bedrock substratum-Barto complex, 4 to 18 percent slopes

Barto

Extent: 10 to 50 percent of the unit

Landform(s): moraines

Slope gradient: 4 to 18 percent

Parent material: loamy material over bedrock

Restrictive feature(s): lithic bedrock at 8 to 20 inches

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 2

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .15

Land capability, nonirrigated 8s

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 2 in	gravelly sandy loam	moderately rapid	0.20 to 0.47 in	4.5 to 6.0
Bw --	2 to 13 in	gravelly sandy loam	moderately rapid	0.88 to 1.98 in	4.5 to 6.0
2R --	13 to 80 in	bedrock	impermeable		

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F157C--Udipsamments-Urban land complex, 1 to 20 percent slopes

Udipsamments

Extent: 20 to 70 percent of the unit

Landform(s): spits

Slope gradient: 2 to 20 percent

Parent material: sandy beach materials

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: excessively drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw factor (surface layer) .15

Land capability, nonirrigated 4s

Hydric soil: no

Hydrologic group: A

Potential for frost action: low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 5 in	loamy sand	rapid	0.46 to 0.77 in	5.1 to 6.5
Bw -- 5 to 17 in	loamy sand	rapid	0.59 to 1.30 in	5.1 to 6.5
C -- 17 to 80 in	sand	very rapid	1.26 to 6.30 in	5.6 to 6.5

Urban land

Extent: 20 to 50 percent of the unit

Landform(s): spits

Slope gradient: 2 to 8 percent

Parent material: sandy beach materials

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class:

Soil loss tolerance (T factor):

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Kw factor (surface layer)

Land capability, nonirrigated

Hydric soil:

Hydrologic group:

Potential for frost action:

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

St. Louis County, Minnesota, Duluth Part

F158B--Urban land-Normanna-Canosia complex, 0 to 8 percent slopes

Urban land

Extent: 40 to 75 percent of the unit

Landform(s): moraines

Slope gradient: 0 to 8 percent

Parent material: fill material from surrounding uplands, gravel pits and blasted bedrock.

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class:

Soil loss tolerance (T factor):

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Kw factor (surface layer)

Land capability, nonirrigated

Hydric soil:

Hydrologic group:

Potential for frost action:

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

Extent: 10 to 30 percent of the unit

Landform(s): depressions on moraines

Slope gradient: 0 to 2 percent

Parent material: loamy material over dense loamy till

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

Flooding: none

Ponding: none

Drainage class: 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 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 5 in	loam	moderate	0.72 to 1.23 in	4.5 to 6.0
Bw -- 5 to 25 in	gravelly sandy loam	moderately rapid	1.81 to 4.02 in	5.1 to 6.0
2Bw,2BC -- 25 to 34 in	gravelly sandy loam	slow	0.69 to 1.47 in	5.6 to 6.8
2BCd -- 34 to 80 in	gravelly sandy loam	very slow	1.84 to 4.15 in	5.6 to 6.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F158B--Urban land-Normanna-Canosia complex, 0 to 8 percent slopes

Normanna

Extent: 10 to 30 percent of the unit

Landform(s): moraines

Slope gradient: 3 to 8 percent

Parent material: loamy material over dense loamy till

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

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .17

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	0.55 to 0.94 in	4.5 to 6.0
Bw -- 4 to 45 in	gravelly sandy loam	moderately rapid	3.69 to 8.19 in	5.1 to 6.0
2Bw,BC,2BC -- 45 to 48 in	gravelly sandy loam	slow	0.25 to 0.54 in	5.6 to 6.8
2BCd -- 48 to 80 in	gravelly sandy loam	very slow	1.28 to 2.87 in	5.6 to 6.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F159D--Urban land-Ahmeek-Normanna complex, 3 to 18 percent slopes

Urban land

Extent: 40 to 75 percent of the unit

Landform(s): moraines

Slope gradient: 8 to 18 percent

Parent material: fill material from surrounding uplands, gravel pits and blasted bedrock.

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class:

Soil loss tolerance (T factor):

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Kw factor (surface layer)

Land capability, nonirrigated

Hydric soil:

Hydrologic group:

Potential for frost action:

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

Extent: 10 to 30 percent of the unit

Landform(s): moraines

Slope gradient: 8 to 18 percent

Parent material: loamy material over dense loamy till

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

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .28

Land capability, nonirrigated 3e

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 2 in	silt loam	moderate	0.28 to 0.47 in	4.5 to 6.0
E -- 2 to 4 in	silt loam	moderate	0.24 to 0.39 in	4.5 to 6.0
Bw -- 4 to 14 in	gravelly sandy loam	moderately rapid	0.92 to 2.05 in	5.1 to 6.0
2Bw,2BC -- 14 to 33 in	gravelly sandy loam	slow	1.51 to 3.21 in	5.6 to 6.8
2BCd -- 33 to 80 in	gravelly sandy loam	very slow	1.87 to 4.22 in	5.6 to 6.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F159D--Urban land-Ahmeek-Normanna complex, 3 to 18 percent slopes

Normanna

Extent: 10 to 30 percent of the unit

Landform(s): moraines

Slope gradient: 3 to 18 percent

Parent material: loamy material over dense loamy till

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

Flooding: none

Ponding: none

Drainage class: moderately well drained

Soil loss tolerance (T factor): 4

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .17

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	0.55 to 0.94 in	4.5 to 6.0
Bw -- 4 to 45 in	gravelly sandy loam	moderately rapid	3.69 to 8.19 in	5.1 to 6.0
2Bw,BC,2BC -- 45 to 48 in	gravelly sandy loam	slow	0.25 to 0.54 in	5.6 to 6.8
2BCd -- 48 to 80 in	gravelly sandy loam	very slow	1.28 to 2.87 in	5.6 to 6.8

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F160F--Rock outcrop-Mesaba-Barto complex, 18 to 60 percent slopes

Rock outcrop

Extent: 30 to 70 percent of the unit

Landform(s): moraines

Slope gradient: 18 to 60 percent

Parent material: bedrock

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

Flooding:

Ponding:

Drainage class:

Soil loss tolerance (T factor):

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Kw factor (surface layer)

Land capability, nonirrigated

Hydric soil:

Hydrologic group:

Potential for frost action:

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

Extent: 15 to 45 percent of the unit

Landform(s): moraines

Slope gradient: 18 to 45 percent

Parent material: loamy material over bedrock

Restrictive feature(s): lithic bedrock at 20 to 40 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) .17

Land capability, nonirrigated 6e

Hydric soil: no

Hydrologic group: B

Potential for frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 3 in	gravelly sandy loam	moderately rapid	0.35 to 0.72 in	4.5 to 6.0
Bw -- 3 to 28 in	gravelly sandy loam	moderately rapid	1.98 to 4.22 in	4.5 to 6.0
2R -- 28 to 80 in	bedrock	impermeable		

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F160F--Rock outcrop-Mesaba-Barto complex, 18 to 60 percent slopes

Barto

Extent: 5 to 35 percent of the unit

Landform(s): moraines

Slope gradient: 18 to 60 percent

Parent material: loamy material over bedrock

Restrictive feature(s): lithic bedrock at 8 to 20 inches

Flooding: none

Ponding: none

Drainage class: well drained

Soil loss tolerance (T factor): 2

Wind erodibility group (WEG): 5

Wind erodibility index (WEI): 56

Kw factor (surface layer) .15

Land capability, nonirrigated 8s

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 2 in	gravelly sandy loam	moderately rapid	0.20 to 0.47 in	4.5 to 6.0
Bw -- 2 to 13 in	gravelly sandy loam	moderately rapid	0.88 to 1.98 in	4.5 to 6.0
2R -- 13 to 80 in	bedrock	impermeable		

F161A--Mooselake muck, dense substratum, 0 to 1 percent slopes

Mooselake

Extent: 60 to 90 percent of the unit

Landform(s): swamps on moraines, swamps on interdrumlins

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	

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F162A--Spidercreek sandy loam, 0 to 1 percent slopes

Spidercreek

Extent: 85 to 100 percent of the unit

Landform(s): flats 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: none

Drainage class: poorly drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 3

Wind erodibility index (WEI): 86

Kw factor (surface layer) .17

Land capability, nonirrigated 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	sandy loam	moderately rapid	0.35 to 0.71 in	5.1 to 6.5
Bw,E --	4 to 9 in	sandy loam	moderately rapid	0.41 to 0.87 in	5.1 to 6.5
C --	9 to 80 in	coarse sand	very rapid	1.42 to 7.09 in	5.6 to 6.5

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F163D--Urban land-Mesaba-Rock outcrop complex, 1 to 18 percent slopes

Urban land

Extent: 50 to 70 percent of the unit

Landform(s): moraines

Slope gradient: 8 to 18 percent

Parent material: fill material from surrounding uplands, gravel pits and blasted bedrock.

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class:

Soil loss tolerance (T factor):

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Kw factor (surface layer)

Land capability, nonirrigated

Hydric soil:

Hydrologic group:

Potential for frost action:

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

Extent: 10 to 30 percent of the unit

Landform(s): moraines

Slope gradient: 8 to 18 percent

Parent material: loamy material over bedrock

Restrictive feature(s): lithic bedrock at 20 to 40 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) .17

Land capability, nonirrigated 3e

Hydric soil: no

Hydrologic group: B

Potential for frost action: moderate

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 3 in	gravelly sandy loam	moderately rapid	0.35 to 0.72 in	4.5 to 6.0
Bw -- 3 to 28 in	gravelly sandy loam	moderately rapid	1.98 to 4.22 in	4.5 to 6.0
2R -- 28 to 80 in	bedrock	impermeable		

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F163D--Urban land-Mesaba-Rock outcrop complex, 1 to 18 percent slopes

Rock outcrop

Extent: 5 to 15 percent of the unit

Landform(s): moraines

Slope gradient: 3 to 20 percent

Parent material: bedrock

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

Flooding:

Ponding:

Drainage class:

Soil loss tolerance (T factor):

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Kw factor (surface layer)

Land capability, nonirrigated

Hydric soil:

Hydrologic group:

Potential for frost action:

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

St. Louis County, Minnesota, Duluth Part

F170A--Rifle soils, dense substratum, 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 moraines, swamps on interdrumlins	<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>
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 moraines, swamps on interdrumlins	<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, Duluth Part

F171D--Udipsamments complex, 4 to 20 percent slopes

Udipsamments, excessively drained

Extent: 40 to 75 percent of the unit

Landform(s): spits

Slope gradient: 8 to 18 percent

Parent material: sandy beach materials

Restrictive feature(s): greater than 60 inches

Flooding: none

Ponding: none

Drainage class: excessively drained

Soil loss tolerance (T factor): 5

Wind erodibility group (WEG): 2

Wind erodibility index (WEI): 134

Kw factor (surface layer) .15

Land capability, nonirrigated 4s

Hydric soil: no

Hydrologic group: A

Potential for frost action: low

<i>Representative soil profile:</i>	<i>Texture</i>	<i>Permeability</i>	<i>Available water capacity</i>	<i>pH</i>
A -- 0 to 5 in	loamy sand	rapid	0.46 to 0.77 in	5.1 to 6.5
Bw -- 5 to 17 in	loamy sand	rapid	0.59 to 1.30 in	5.1 to 6.5
C -- 17 to 80 in	sand	very rapid	1.26 to 6.30 in	5.6 to 6.5

Udipsamments, moderately well drained

Extent: 10 to 30 percent of the unit

Landform(s): flats on spits, rises on spits

Slope gradient: 0 to 4 percent

Parent material: sandy beach materials

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	0.25 to 0.38 in	4.5 to 6.5
Bw1 -- 3 to 24 in	sand	rapid	1.04 to 1.67 in	4.5 to 6.5
Bw2 -- 24 to 40 in	sand	rapid	0.65 to 1.13 in	4.5 to 7.3
C -- 40 to 80 in	sand	rapid	1.59 to 2.39 in	5.6 to 7.3

Map Unit Description (MN)

St. Louis County, Minnesota, Duluth Part

F175A--Greenwood soils, dense substratum, 0 to 1 percent slopes

Greenwood

Extent: 0 to 95 percent of the unit

Landform(s): bogs on moraines, bogs on interdrumlins

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 interdrumlins

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, Duluth Part

GP--Pits, gravel-Udipsamments complex

Pits, gravel

Extent: 60 to 95 percent of the unit

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

Slope gradient: 0 to 50 percent

Parent material: sandy and gravelly outwash

Restrictive feature(s): greater than 60 inches

Flooding:

Ponding:

Drainage class:

Soil loss tolerance (T factor):

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Kw factor (surface layer)

Land capability, nonirrigated

Hydric soil: unranked

Hydrologic group:

Potential for frost action:

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

Extent: 5 to 40 percent of the unit

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

Slope gradient: 0 to 25 percent

Parent material: outwash

Restrictive feature(s): greater than 60 inches

Flooding:

Ponding:

Drainage class: well drained

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: B

Potential for frost action:

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

St. Louis County, Minnesota, Duluth Part

I-W--Water, intermittent

Water, intermittent

Extent: 100 percent of the unit

Landform(s): lakes

Slope gradient: 0 to 0 percent

Parent material:

Restrictive feature(s): greater than 60 inches

Flooding:

Ponding:

Drainage class:

Soil loss tolerance (T factor):

Wind erodibility group (WEG):

Wind erodibility index (WEI):

Kw factor (surface layer)

Land capability, nonirrigated

Hydric soil: unranked

Hydrologic group:

Potential for frost action:

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

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