Map Unit Description (MN)

Pope County, Minnesota

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation]

Af--Alluvial land

Alluvial land, frequently flooded

Extent: 90 percent of the unit
Landform(s): flood plains on moraines, flood plains on outwash plains
Slope gradient: 0 to 2 percent
Parent material: mixed alluvial sediments
Restrictive feature(s): greater than 60 inches
Flooding: frequent
Ponding: none
Drainage class: poorly drained

Soil loss tolerance (T factor):
Wind erodibility group (WEG):
Wind erodibility index (WEI):
Kw factor (surface layer)
Land capability, nonirrigated 5w
Hydric soil: yes
Hydrologic group:
Potential for frost action:

Representative soil profile:

		Texture	Permeability	Available water capacity	pH

As--Arveson sandy loam

Arveson

Extent: 85 percent of the unit
Landform(s): flats on outwash plains, swales on outwash plains
Slope gradient: 0 to 2 percent
Parent material: loamy mantle over sandy and gravelly outwash
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: poorly drained

Soil loss tolerance (T factor): 2
Wind erodibility group (WEG): 3
Wind erodibility index (WEI): 86
Kw factor (surface layer) .17
Land capability, nonirrigated 3w
Hydric soil: yes
Hydrologic group: A/D
Potential for frost action: high

Representative soil profile:

		Texture	Permeability	Available water capacity	pH
A --	0 to 12 in	sandy loam	moderately rapid	1.54 to 1.77 in	7.4 to 8.4
Bkg --	12 to 15 in	sandy loam	moderately rapid	0.47 to 0.54 in	7.4 to 8.4
2Cg --	15 to 60 in	fine sand	rapid	2.24 to 6.73 in	7.4 to 8.4

BaA--Barnes loam, 0 to 2 percent slopes

Barnes

Extent: 85 percent of the unit
Landform(s): hillslopes on moraines
Slope gradient: 0 to 2 percent
Parent material: loamy glacial 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 1
Hydric soil: no
Hydrologic group: B
Potential for frost action: moderate

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A -- 0 to 8 in	loam	moderate	1.42 to 1.89 in	6.1 to 7.8
Bw -- 8 to 19 in	loam	moderate	1.65 to 2.09 in	6.1 to 7.8
Bk,C -- 19 to 60 in	loam	moderate	5.73 to 7.78 in	7.4 to 8.4

BbB2--Barnes-Langhei loams, 2 to 6 percent slopes, eroded

Barnes, eroded

Extent: 50 percent of the unit
Landform(s): hillslopes on moraines
Slope gradient: 2 to 6 percent
Parent material: loamy glacial 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 2e
Hydric soil: no
Hydrologic group: B
Potential for frost action: moderate

Representative soil profile:		*Texture*	*Permeability*	*Available water capacity*	*pH*
A --	0 to 8 in	loam	moderate	1.42 to 1.89 in	6.1 to 7.8
Bw --	8 to 19 in	loam	moderate	1.65 to 2.09 in	6.1 to 7.8
Bk,C --	19 to 60 in	loam	moderate	5.73 to 7.78 in	7.4 to 8.4

Langhei, eroded

Extent: 30 percent of the unit
Landform(s): hillslopes on moraines
Slope gradient: 2 to 6 percent
Parent material: loamy glacial 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): 4L
Wind erodibility index (WEI): 86
Kw factor (surface layer) .32
Land capability, nonirrigated 3e
Hydric soil: no
Hydrologic group: B
Potential for frost action: moderate

Representative soil profile:		*Texture*	*Permeability*	*Available water capacity*	*pH*
A --	0 to 8 in	loam	moderate	1.34 to 1.73 in	6.6 to 8.4
Bk,C --	8 to 60 in	loam	moderate	7.80 to 9.87 in	7.4 to 8.4

BbC2--Barnes-Langhei loams, 6 to 12 percent slopes, eroded

Barnes, eroded

Extent: 50 percent of the unit
Landform(s): hillslopes on moraines
Slope gradient: 6 to 12 percent
Parent material: loamy glacial 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 3e
Hydric soil: no
Hydrologic group: B
Potential for frost action: moderate

Representative soil profile:		*Texture*	*Permeability*	*Available water capacity*	*pH*
A --	0 to 8 in	loam	moderate	1.42 to 1.89 in	6.1 to 7.8
Bw --	8 to 19 in	loam	moderate	1.65 to 2.09 in	6.1 to 7.8
Bk,C --	19 to 60 in	loam	moderate	5.73 to 7.78 in	7.4 to 8.4

Langhei, eroded

Extent: 30 percent of the unit
Landform(s): hillslopes on moraines
Slope gradient: 6 to 12 percent
Parent material: loamy glacial 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): 4L
Wind erodibility index (WEI): 86
Kw factor (surface layer) .32
Land capability, nonirrigated 4e
Hydric soil: no
Hydrologic group: B
Potential for frost action: moderate

Representative soil profile:		*Texture*	*Permeability*	*Available water capacity*	*pH*
A --	0 to 8 in	loam	moderate	1.34 to 1.73 in	6.6 to 8.4
Bk,C --	8 to 60 in	loam	moderate	7.80 to 9.87 in	7.4 to 8.4

BdB2--Barnes-Langhei-Renshaw loams, 2 to 6 percent slopes, eroded

Barnes, eroded

Extent: 30 percent of the unit
Landform(s): hillslopes on moraines
Slope gradient: 2 to 6 percent
Parent material: loamy glacial 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 2e
Hydric soil: no
Hydrologic group: B
Potential for frost action: moderate

Representative soil profile:		*Texture*	*Permeability*	*Available water capacity*	*pH*
A --	0 to 8 in	loam	moderate	1.42 to 1.89 in	6.1 to 7.8
Bw --	8 to 19 in	loam	moderate	1.65 to 2.09 in	6.1 to 7.8
Bk,C --	19 to 60 in	loam	moderate	5.73 to 7.78 in	7.4 to 8.4

Langhei, eroded

Extent: 30 percent of the unit
Landform(s): hillslopes on moraines
Slope gradient: 2 to 6 percent
Parent material: loamy glacial 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): 4L
Wind erodibility index (WEI): 86
Kw factor (surface layer) .32
Land capability, nonirrigated 3e
Hydric soil: no
Hydrologic group: B
Potential for frost action: moderate

Representative soil profile:		*Texture*	*Permeability*	*Available water capacity*	*pH*
A --	0 to 8 in	loam	moderate	1.34 to 1.73 in	6.6 to 8.4
Bk,C --	8 to 60 in	loam	moderate	7.80 to 9.87 in	7.4 to 8.4

BdB2--Barnes-Langhei-Renshaw loams, 2 to 6 percent slopes, eroded

Renshaw, eroded

Extent: 20 percent of the unit
Landform(s): hillslopes on moraines
Slope gradient: 2 to 6 percent
Parent material: loamy mantle over sandy and gravelly outwash
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: somewhat excessively 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 4s
Hydric soil: no
Hydrologic group: B
Potential for frost action: low

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A -- 0 to 11 in	loam	moderate	1.98 to 2.20 in	6.1 to 7.8
Bw -- 11 to 19 in	loam	moderately rapid	0.87 to 1.42 in	6.6 to 8.4
2Bk,2C -- 19 to 60 in	gravelly sand	very rapid	1.23 to 2.46 in	6.6 to 8.4

BdC--Barnes-Langhei-Renshaw loams, 6 to 12 percent slopes

Barnes

Extent: 30 percent of the unit
Landform(s): hillslopes on moraines
Slope gradient: 6 to 12 percent
Parent material: loamy glacial 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 3e
Hydric soil: no
Hydrologic group: B
Potential for frost action: moderate

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A -- 0 to 8 in	loam	moderate	1.42 to 1.89 in	6.1 to 7.8
Bw -- 8 to 19 in	loam	moderate	1.65 to 2.09 in	6.1 to 7.8
Bk,C -- 19 to 60 in	loam	moderate	5.73 to 7.78 in	7.4 to 8.4

Langhei

Extent: 30 percent of the unit
Landform(s): hillslopes on moraines
Slope gradient: 6 to 12 percent
Parent material: loamy glacial 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): 4L
Wind erodibility index (WEI): 86
Kw factor (surface layer) .32
Land capability, nonirrigated 4e
Hydric soil: no
Hydrologic group: B
Potential for frost action: moderate

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A -- 0 to 8 in	loam	moderate	1.34 to 1.73 in	6.6 to 8.4
Bk,C -- 8 to 60 in	loam	moderate	7.80 to 9.87 in	7.4 to 8.4

BdC--Barnes-Langhei-Renshaw loams, 6 to 12 percent slopes

Renshaw

Extent: 20 percent of the unit
Landform(s): hillslopes on moraines
Slope gradient: 6 to 12 percent
Parent material: loamy mantle over sandy and gravelly outwash
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: somewhat excessively 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 6e
Hydric soil: no
Hydrologic group: B
Potential for frost action: low

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A -- 0 to 11 in	loam	moderate	1.98 to 2.20 in	6.1 to 7.8
Bw -- 11 to 19 in	loam	moderately rapid	0.87 to 1.42 in	6.6 to 8.4
2Bk,2C -- 19 to 60 in	gravelly sand	very rapid	1.23 to 2.46 in	6.6 to 8.4

Be--Bearden silt loam, 0 to 2 percent slopes

Bearden

Extent: 85 percent of the unit
Landform(s): rises on moraines, flats on moraines
Slope gradient: 0 to 2 percent
Parent material: silty glaciolacustrine deposits
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: somewhat poorly drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 4L
Wind erodibility index (WEI): 86
Kw factor (surface layer) .43
Land capability, nonirrigated 2s
Hydric soil: no
Hydrologic group: C/D
Potential for frost action: high

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap -- 0 to 8 in	silt loam	moderate	1.57 to 1.89 in	7.4 to 8.4
A,Ak -- 8 to 16 in	silt loam	moderately slow	1.32 to 1.82 in	7.4 to 8.4
Bk,C1 -- 16 to 28 in	silt loam	moderately slow	1.89 to 2.60 in	7.4 to 8.4
C2,C3 -- 28 to 60 in	silty clay loam	slow	5.10 to 7.02 in	7.4 to 8.4

Bh--Blue Earth silt loam

Blue Earth

Extent: 85 percent of the unit
Landform(s): depressions on moraines, lakebeds (relict) on moraines
Slope gradient: 0 to 1 percent
Parent material: coprogenous earth organic deposits
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: frequent
Drainage class: very poorly drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 2
Wind erodibility index (WEI): 134
Kw factor (surface layer) .02
Land capability, nonirrigated 3w
Hydric soil: yes
Hydrologic group: B/D
Potential for frost action: high

Representative soil profile:		*Texture*	*Permeability*	*Available water capacity*	*pH*
Oa --	0 to 8 in	muck	moderately rapid	2.76 to 3.78 in	7.4 to 8.4
Cg --	8 to 36 in	mucky silt loam	moderate	5.03 to 6.71 in	7.4 to 8.4
2Cg --	36 to 60 in	loam	moderate	3.36 to 3.84 in	7.4 to 8.4

Ca--Canisteo loam

Canisteo

Extent: 85 percent of the unit
Landform(s): flats on moraines, rims on depressions on moraines
Slope gradient: 0 to 2 percent
Parent material: loamy glacial till
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: poorly drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 4L
Wind erodibility index (WEI): 86
Kw factor (surface layer) .24
Land capability, nonirrigated 2w
Hydric soil: yes
Hydrologic group: B/D
Potential for frost action: high

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap -- 0 to 8 in	loam	moderate	1.57 to 1.73 in	7.4 to 8.4
A1,A2 -- 8 to 21 in	loam	moderate	1.95 to 2.47 in	7.4 to 8.4
Bkg -- 21 to 26 in	loam	moderate	0.61 to 0.92 in	7.4 to 8.4
Cg -- 26 to 60 in	loam	moderate	4.74 to 5.42 in	7.4 to 8.4

CmB--Clarion loam, 2 to 6 percent slopes

Clarion

Extent: 85 percent of the unit
Landform(s): hillslopes on moraines
Slope gradient: 2 to 6 percent
Parent material: loamy glacial 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 2e
Hydric soil: no
Hydrologic group: B
Potential for frost action: moderate

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A -- 0 to 12 in	loam	moderate	2.01 to 2.60 in	6.1 to 7.8
Bw -- 12 to 29 in	loam	moderate	2.60 to 3.29 in	6.6 to 7.8
C1,C2,C3 -- 29 to 60 in	loam	moderate	4.61 to 5.83 in	7.4 to 8.4

CmC2--Clarion loam, 6 to 12 percent slopes, eroded

Clarion, eroded

Extent: 85 percent of the unit
Landform(s): hillslopes on moraines
Slope gradient: 6 to 12 percent
Parent material: loamy glacial 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 3e
Hydric soil: no
Hydrologic group: B
Potential for frost action: moderate

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A -- 0 to 12 in	loam	moderate	2.01 to 2.60 in	6.1 to 7.8
Bw -- 12 to 29 in	loam	moderate	2.60 to 3.29 in	6.6 to 7.8
C1,C2,C3 -- 29 to 60 in	loam	moderate	4.61 to 5.83 in	7.4 to 8.4

Cn--Clontarf sandy loam, 0 to 2 percent slopes

Clontarf

Extent: 85 percent of the unit
Landform(s): swales on outwash plains, hillslopes on outwash plains
Slope gradient: 0 to 2 percent
Parent material: loamy over sandy outwash deposits
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: moderately well drained

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

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A,Bw1 -- 0 to 23 in	sandy loam	moderately rapid	2.97 to 4.11 in	6.1 to 7.3
Bw2,Bk -- 23 to 30 in	sandy loam	moderately rapid	0.85 to 1.35 in	6.1 to 7.8
2C -- 30 to 60 in	sand	rapid	1.50 to 2.69 in	6.6 to 7.8

Co--Colvin silty clay loam

Colvin

Extent: 85 percent of the unit
Landform(s): flats on moraines, swales on moraines
Slope gradient: 0 to 2 percent
Parent material: silty glaciolacustrine deposits
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: poorly drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 4L
Wind erodibility index (WEI): 86
Kw factor (surface layer) .32
Land capability, nonirrigated 2w
Hydric soil: yes
Hydrologic group: C/D
Potential for frost action: high

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap,A -- 0 to 15 in	silty clay loam	moderately slow	2.99 to 3.29 in	6.6 to 8.4
Bkg -- 15 to 25 in	silty clay loam	moderately slow	1.57 to 1.97 in	7.4 to 9.0
Cg -- 25 to 60 in	silty clay loam	moderate	5.26 to 7.01 in	7.4 to 8.4

Cp--Colvin silty clay loam, depressional

Colvin, depressional

Extent: 85 percent of the unit
Landform(s): depressions on moraines
Slope gradient: 0 to 1 percent
Parent material: silty glaciolacustrine deposits
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: frequent
Drainage class: very poorly drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 4L
Wind erodibility index (WEI): 86
Kw factor (surface layer) .32
Land capability, nonirrigated 3w
Hydric soil: yes
Hydrologic group: C/D
Potential for frost action: high

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap,A -- 0 to 15 in	silty clay loam	moderately slow	2.99 to 3.29 in	6.6 to 8.4
Bkg -- 15 to 25 in	silty clay loam	moderate	1.57 to 1.97 in	7.4 to 8.4
Cg -- 25 to 60 in	silty clay loam	moderate	5.26 to 7.01 in	7.4 to 8.4

DaB--Darnen silt loam, 0 to 4 percent slopes

Darnen

Extent: 85 percent of the unit
Landform(s): hillslopes on moraines
Slope gradient: 0 to 4 percent
Parent material: loamy slope alluvium over loamy glacial 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) .32
Land capability, nonirrigated 2e
Hydric soil: no
Hydrologic group: B
Potential for frost action: moderate

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap,A -- 0 to 20 in	silt loam	moderate	4.02 to 4.82 in	6.6 to 7.8
Bw -- 20 to 33 in	loam	moderate	1.95 to 2.47 in	6.1 to 7.8
C -- 33 to 60 in	loam	moderate	3.75 to 5.09 in	7.4 to 8.4

DcA--Dickinson sandy loam, 0 to 2 percent slopes

Dickinson

Extent: 90 percent of the unit
Landform(s): flats on outwash plains, rises on outwash plains
Slope gradient: 0 to 2 percent
Parent material: loamy over sandy outwash deposits
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: well drained

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

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap -- 0 to 9 in	sandy loam	moderately rapid	1.09 to 1.36 in	5.6 to 7.3
Bw1,Bw2 -- 9 to 20 in	sandy loam	moderately rapid	1.32 to 1.65 in	5.1 to 6.5
Bw3 -- 20 to 22 in	loamy sand	rapid	0.16 to 0.20 in	5.1 to 6.5
C1,C2,C3 -- 22 to 60 in	sand	rapid	0.76 to 1.51 in	5.6 to 7.3

DcB--Dickinson sandy loam, 2 to 6 percent slopes

Dickinson

Extent: 90 percent of the unit
Landform(s): hillslopes on outwash plains
Slope gradient: 2 to 6 percent
Parent material: loamy over sandy outwash deposits
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: well drained

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

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap -- 0 to 9 in	sandy loam	moderately rapid	1.09 to 1.36 in	5.6 to 7.3
Bw1,Bw2 -- 9 to 20 in	sandy loam	moderately rapid	1.32 to 1.65 in	5.1 to 6.5
Bw3 -- 20 to 22 in	loamy sand	rapid	0.16 to 0.20 in	5.1 to 6.5
C1,C2,C3 -- 22 to 60 in	sand	rapid	0.76 to 1.51 in	5.6 to 7.3

DlA--Doland silt loam, 0 to 2 percent slopes

Doland

Extent: 85 percent of the unit
Landform(s): hillslopes on moraines
Slope gradient: 0 to 2 percent
Parent material: silty lacustrine deposits over loamy glacial 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) .32
Land capability, nonirrigated 1
Hydric soil: no
Hydrologic group: B
Potential for frost action: moderate

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap -- 0 to 8 in	silt loam	moderate	1.89 to 2.20 in	6.1 to 7.3
Bw,Bw2 -- 8 to 22 in	silt loam	moderate	2.41 to 3.12 in	6.1 to 7.3
2Bw3,2Bk,2C -- 22 to 60 in	loam	moderate	5.29 to 7.18 in	6.6 to 8.4

DlB--Doland silt loam, 2 to 6 percent slopes

Doland

Extent: 85 percent of the unit
Landform(s): hillslopes on moraines
Slope gradient: 2 to 6 percent
Parent material: silty lacustrine deposits over loamy glacial 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) .32
Land capability, nonirrigated 2e
Hydric soil: no
Hydrologic group: B
Potential for frost action: moderate

Representative soil profile:			*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap	--	0 to 8 in	silt loam	moderate	1.89 to 2.20 in	6.1 to 7.3
Bw1,Bw2	--	8 to 22 in	silt loam	moderate	2.41 to 3.12 in	6.1 to 7.3
2Bw3,2Bk,2C	--	22 to 60 in	loam	moderate	5.29 to 7.18 in	6.6 to 8.4

Es--Estelline silt loam, 0 to 3 percent slopes

Estelline

Extent: 85 percent of the unit
Landform(s): hillslopes on outwash plains
Slope gradient: 0 to 3 percent
Parent material: silty lacustrine deposits over sandy and gravelly outwash
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: well drained

Soil loss tolerance (T factor): 3
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Kw factor (surface layer) .37
Land capability, nonirrigated 2s
Hydric soil: no
Hydrologic group: B
Potential for frost action: low

Representative soil profile:

		Texture	Permeability	Available water capacity	pH
Ap,A	0 to 14 in	silt loam	moderate	2.69 to 3.12 in	6.1 to 7.3
Bw1,Bw2	14 to 26 in	silt loam	moderate	2.13 to 2.48 in	6.1 to 7.8
Bw3,C1	26 to 32 in	loam	moderate	0.94 to 1.18 in	7.4 to 8.4
2C2	32 to 60 in	sand	very rapid	0.84 to 1.68 in	7.4 to 8.4

Et--Estelline silt loam, moderately well drained variant

Estelline, variant

Extent: 90 percent of the unit
Landform(s): flats on outwash plains, swales on outwash plains
Slope gradient: 0 to 2 percent
Parent material: silty lacustrine deposits over sandy and gravelly outwash
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) .37
Land capability, nonirrigated 2s
Hydric soil: no
Hydrologic group: C
Potential for frost action: high

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap,A -- 0 to 14 in	silt loam	moderate	2.69 to 3.12 in	5.6 to 7.3
Bw1,Bw2,Bw3 -- 14 to 30 in	silt loam	moderate	2.99 to 3.46 in	5.6 to 7.3
Bw4 -- 30 to 32 in	silt loam	moderate	0.33 to 0.39 in	7.4 to 8.4
2C -- 32 to 60 in	gravelly sand	rapid	0.84 to 1.68 in	7.4 to 8.4

EvA--Estherville loam, 0 to 2 percent slopes

Estherville

Extent: 90 percent of the unit
Landform(s): flats on outwash plains, rises on outwash plains
Slope gradient: 0 to 2 percent
Parent material: loamy mantle over sandy and gravelly outwash
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: somewhat excessively drained

Soil loss tolerance (T factor): 2
Wind erodibility group (WEG): 5
Wind erodibility index (WEI): 56
Kw factor (surface layer) .32
Land capability, nonirrigated 3s
Hydric soil: no
Hydrologic group: A
Potential for frost action: low

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap -- 0 to 6 in	loam	moderately rapid	1.12 to 1.30 in	5.6 to 7.3
Bw1,Bw2 -- 6 to 18 in	loam	moderately rapid	1.59 to 2.20 in	5.6 to 7.3
2B,2C -- 18 to 60 in	gravelly coarse sand	rapid	0.83 to 1.67 in	6.6 to 8.4

EvB--Estherville loam, 2 to 6 percent slopes

Estherville

Extent: 90 percent of the unit
Landform(s): hillslopes on outwash plains
Slope gradient: 2 to 6 percent
Parent material: loamy mantle over sandy and gravelly outwash
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: somewhat excessively drained

Soil loss tolerance (T factor): 2
Wind erodibility group (WEG): 5
Wind erodibility index (WEI): 56
Kw factor (surface layer) .32
Land capability, nonirrigated 3s
Hydric soil: no
Hydrologic group: A
Potential for frost action: low

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap -- 0 to 6 in	loam	moderately rapid	1.12 to 1.30 in	5.6 to 7.3
Bw1,Bw2 -- 6 to 18 in	loam	moderately rapid	1.59 to 2.20 in	5.6 to 7.3
2B3,2C -- 18 to 60 in	gravelly coarse sand	rapid	0.83 to 1.67 in	6.6 to 8.4

EvC2--Estherville loam, 6 to 12 percent slopes, eroded

Estherville, eroded

Extent: 90 percent of the unit
Landform(s): hillslopes on outwash plains
Slope gradient: 6 to 12 percent
Parent material: loamy mantle over sandy and gravelly outwash
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: somewhat excessively drained

Soil loss tolerance (T factor): 2
Wind erodibility group (WEG): 5
Wind erodibility index (WEI): 56
Kw factor (surface layer) .32
Land capability, nonirrigated 4s
Hydric soil: no
Hydrologic group: A
Potential for frost action: low

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap -- 0 to 6 in	loam	moderately rapid	1.12 to 1.30 in	5.6 to 7.3
Bw1,Bw2 -- 6 to 18 in	loam	moderately rapid	1.59 to 2.20 in	5.6 to 7.3
2B3,2C -- 18 to 60 in	gravelly coarse sand	rapid	0.83 to 1.67 in	6.6 to 8.4

EwA--Estherville loam, thick solum, 0 to 2 percent slopes

Estherville

Extent: 90 percent of the unit
Landform(s): swales on outwash plains, flats on outwash plains
Slope gradient: 0 to 2 percent
Parent material: loamy mantle over sandy and gravelly outwash
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: well drained

Soil loss tolerance (T factor): 3
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Kw factor (surface layer) .28
Land capability, nonirrigated 2s
Hydric soil: no
Hydrologic group: B
Potential for frost action: low

Representative soil profile:		*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap --	0 to 8 in	loam	moderate	1.57 to 1.73 in	6.1 to 7.3
Bw1,Bw2 --	8 to 24 in	loam	moderate	2.26 to 3.07 in	5.6 to 7.3
2Bw3,2C --	24 to 60 in	stratified gravelly coarse sand to sand	very rapid	0.72 to 1.43 in	6.6 to 8.4

EwB--Estherville loam, thick solum, 2 to 6 percent slopes

Estherville

Extent: 90 percent of the unit
Landform(s): hillslopes on outwash plains
Slope gradient: 2 to 6 percent
Parent material: loamy mantle over sandy and gravelly outwash
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: well drained

Soil loss tolerance (T factor): 3
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Kw factor (surface layer) .28
Land capability, nonirrigated 2e
Hydric soil: no
Hydrologic group: B
Potential for frost action: low

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap -- 0 to 8 in	loam	moderate	1.57 to 1.73 in	6.1 to 7.3
Bw1,Bw2 -- 8 to 24 in	loam	moderate	2.26 to 3.07 in	5.6 to 7.3
2Bw3,2C -- 24 to 60 in	stratified gravelly coarse sand to sand	very rapid	0.72 to 1.43 in	6.6 to 8.4

FlA--Flandreau silt loam, 0 to 2 percent slopes

Flandreau

Extent: 85 percent of the unit
Landform(s): flats on outwash plains
Slope gradient: 0 to 2 percent
Parent material: silty lacustrine deposits over sandy and 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): 6
Wind erodibility index (WEI): 48
Kw factor (surface layer) .32
Land capability, nonirrigated 2s
Hydric soil: no
Hydrologic group: B
Potential for frost action: moderate

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap,A1 -- 0 to 10 in	silt loam	moderate	1.97 to 2.17 in	5.6 to 7.3
Bw1,Bw2 -- 10 to 25 in	silt loam	moderate	2.46 to 3.38 in	6.1 to 7.3
2C1 -- 25 to 40 in	loamy fine sand	moderately rapid	1.35 to 1.94 in	6.6 to 7.8
2C2 -- 40 to 60 in	sand	rapid	1.18 to 1.97 in	7.4 to 8.4

FlB--Flandreau silt loam, 2 to 6 percent slopes

Flandreau

Extent: 85 percent of the unit
Landform(s): hillslopes on outwash plains
Slope gradient: 2 to 6 percent
Parent material: silty lacustrine deposits over sandy and 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): 6
Wind erodibility index (WEI): 48
Kw factor (surface layer) .32
Land capability, nonirrigated 2e
Hydric soil: no
Hydrologic group: B
Potential for frost action: moderate

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap,A1 -- 0 to 10 in	silt loam	moderate	1.97 to 2.17 in	5.6 to 7.3
Bw1,Bw2 -- 10 to 25 in	silt loam	moderate	2.46 to 3.38 in	6.1 to 7.3
2C1 -- 25 to 40 in	loamy fine sand	moderately rapid	1.35 to 1.94 in	6.6 to 7.8
2C2 -- 40 to 60 in	sand	rapid	1.18 to 1.97 in	7.4 to 8.4

FoA--Fordville loam, 0 to 2 percent slopes

Fordville

Extent: 85 percent of the unit
Landform(s): flats on outwash plains
Slope gradient: 0 to 2 percent
Parent material: loamy mantle over sandy and gravelly outwash
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: well drained

Soil loss tolerance (T factor): 3
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Kw factor (surface layer) .28
Land capability, nonirrigated 2s
Hydric soil: no
Hydrologic group: B
Potential for frost action: low

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap,A -- 0 to 15 in	loam	moderate	2.69 to 2.99 in	6.1 to 7.3
Bw1 -- 15 to 25 in	loam	moderate	1.84 to 2.15 in	6.1 to 7.8
Bw2 -- 25 to 27 in	sandy loam	moderately rapid	0.19 to 0.28 in	6.1 to 8.4
2Bw3,2C -- 27 to 60 in	gravelly sand	very rapid	0.99 to 1.98 in	7.4 to 8.4

FoB--Fordville loam, 2 to 6 percent slopes

Fordville

Extent: 85 percent of the unit
Landform(s): hillslopes on outwash plains
Slope gradient: 2 to 6 percent
Parent material: loamy mantle over sandy and gravelly outwash
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: well drained

Soil loss tolerance (T factor): 3
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Kw factor (surface layer) .28
Land capability, nonirrigated 2e
Hydric soil: no
Hydrologic group: B
Potential for frost action: low

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap,A -- 0 to 15 in	loam	moderate	2.69 to 2.99 in	6.1 to 7.3
Bw1 -- 15 to 25 in	loam	moderate	1.84 to 2.15 in	6.1 to 7.8
Bw2 -- 25 to 27 in	sandy loam	moderately rapid	0.19 to 0.28 in	6.1 to 8.4
2Bw3,2C -- 27 to 60 in	gravelly sand	very rapid	0.99 to 1.98 in	7.4 to 8.4

FrB2--Forman clay loam, 2 to 6 percent slopes, eroded

Forman, eroded

Extent: 85 percent of the unit
Landform(s): hillslopes on moraines
Slope gradient: 2 to 6 percent
Parent material: loamy glacial till
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: well drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Kw factor (surface layer) .24
Land capability, nonirrigated 2e
Hydric soil: no
Hydrologic group: C
Potential for frost action: moderate

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap -- 0 to 7 in	clay loam	moderate	1.20 to 1.35 in	6.6 to 7.8
Bw -- 7 to 25 in	clay loam	moderate	2.72 to 3.44 in	6.6 to 7.8
Bk,C -- 25 to 60 in	loam	moderately slow	4.85 to 6.58 in	7.4 to 8.4

FrC2--Forman clay loam, 6 to 12 percent slopes, eroded

Forman, eroded

Extent: 85 percent of the unit
Landform(s): hillslopes on moraines
Slope gradient: 6 to 12 percent
Parent material: loamy glacial till
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: well drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Kw factor (surface layer) .24
Land capability, nonirrigated 3e
Hydric soil: no
Hydrologic group: C
Potential for frost action: moderate

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap -- 0 to 7 in	clay loam	moderate	1.20 to 1.35 in	6.6 to 7.8
Bw -- 7 to 25 in	clay loam	moderate	2.72 to 3.44 in	6.6 to 7.8
Bk,C -- 25 to 60 in	loam	moderately slow	4.85 to 6.58 in	7.4 to 8.4

Gn--Glencoe silty clay loam

Glencoe

Extent: 85 percent of the unit
Landform(s): depressions on moraines
Slope gradient: 0 to 1 percent
Parent material: loamy slope alluvium over loamy glacial till
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: frequent
Drainage class: very poorly drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Kw factor (surface layer) .28
Land capability, nonirrigated 3w
Hydric soil: yes
Hydrologic group: B/D
Potential for frost action: high

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap,A -- 0 to 16 in	silty clay loam	moderate	2.91 to 3.55 in	6.1 to 7.8
Bg -- 16 to 30 in	loam	moderate	2.48 to 3.03 in	6.1 to 7.8
Cg -- 30 to 60 in	clay loam	moderate	4.49 to 5.69 in	6.6 to 7.8

GP--Gravel pits

Pits, gravel

Extent: 100 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:
Hydrologic group:
Potential for frost action:

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*

Hc--Hamar sandy loam

Hamar

Extent: 85 percent of the unit
Landform(s): swales on outwash plains, depressions on outwash plains
Slope gradient: 0 to 2 percent
Parent material: loamy mantle over sandy outwash 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) .24
Land capability, nonirrigated 3w
Hydric soil: yes
Hydrologic group: A/D
Potential for frost action: moderate

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap,A1,A2 -- 0 to 15 in	sandy loam	moderately rapid	1.65 to 2.54 in	6.1 to 7.8
Bg -- 15 to 24 in	loamy sand	rapid	0.91 to 1.09 in	6.6 to 8.4
Cg1,Cg2 -- 24 to 60 in	sand	rapid	2.15 to 2.87 in	7.4 to 8.4

Hd--Hamerly loam, 0 to 3 percent slopes

Hamerly

Extent: 85 percent of the unit
Landform(s): rises on moraines, flats on moraines
Slope gradient: 0 to 3 percent
Parent material: loamy glacial 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): 4L
Wind erodibility index (WEI): 86
Kw factor (surface layer) .28
Land capability, nonirrigated 2s
Hydric soil: no
Hydrologic group: B/D
Potential for frost action: high

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A -- 0 to 8 in	loam	moderate	1.57 to 1.89 in	6.6 to 8.4
Bk -- 8 to 15 in	loam	moderate	1.06 to 1.35 in	7.4 to 8.4
C1,C2,Cg -- 15 to 60 in	loam	moderate	6.28 to 8.53 in	7.4 to 8.4

Hv--Hecla loamy sand, 0 to 3 percent slopes

Hecla

Extent: 85 percent of the unit
Landform(s): rises on outwash plains
Slope gradient: 0 to 3 percent
Parent material: sandy outwash deposits
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: moderately well drained

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

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap,A -- 0 to 13 in	loamy sand	rapid	1.30 to 1.56 in	6.1 to 7.3
Bw1 -- 13 to 19 in	loamy sand	rapid	0.47 to 0.59 in	6.1 to 7.8
Bw2 -- 19 to 30 in	sand	rapid	0.66 to 1.10 in	6.6 to 8.4
C -- 30 to 60 in	sand	moderately rapid	1.80 to 2.99 in	6.6 to 8.4

La--Lake beaches, sandy

Beaches, sandy

Extent: 100 percent of the unit
Landform(s): beaches on lakeshores
Slope gradient: 0 to 1 percent
Parent material: sandy lakeshore deposits
Restrictive feature(s): greater than 60 inches
Flooding:
Ponding:
Drainage class:

Soil loss tolerance (T factor):
Wind erodibility group (WEG):
Wind erodibility index (WEI):
Kw factor (surface layer)
Land capability, nonirrigated
Hydric soil:
Hydrologic group:
Potential for frost action:

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*

Lb--Lake beaches, loamy

Beaches, loamy

Extent: 100 percent of the unit
Landform(s): beaches on lakeshores
Slope gradient: 0 to 1 percent
Parent material: loamy lakeshore deposits
Restrictive feature(s): greater than 60 inches
Flooding:
Ponding:
Drainage class:

Soil loss tolerance (T factor):
Wind erodibility group (WEG):
Wind erodibility index (WEI):
Kw factor (surface layer)
Land capability, nonirrigated
Hydric soil: yes
Hydrologic group:
Potential for frost action:

Representative soil profile:

Texture	Permeability	Available water capacity	pH

Lc--Lamoure silt loam

Lamoure, occasionally flooded

Extent: 85 percent of the unit
Landform(s): flats on flood plains
Slope gradient: 0 to 2 percent
Parent material: silty alluvial deposits
Restrictive feature(s): greater than 60 inches
Flooding: occasional
Ponding: none
Drainage class: poorly drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 4L
Wind erodibility index (WEI): 86
Kw factor (surface layer) .37
Land capability, nonirrigated 2w
Hydric soil: yes
Hydrologic group: B/D
Potential for frost action: high

Representative soil profile:

		Texture	Permeability	Available water capacity	pH
A1,A2	0 to 20 in	silt loam	moderate	3.81 to 4.42 in	7.4 to 8.4
A3	20 to 28 in	silt loam	moderate	1.34 to 1.57 in	7.4 to 8.4
Cg1	28 to 48 in	loam	moderate	3.41 to 4.02 in	7.4 to 8.4
2Cg2	48 to 60 in	stratified sandy loam to silty clay loam	moderate	1.06 to 2.13 in	7.4 to 8.4

Lh--Lamoure silt loam, wet

Lamoure, frequently flooded

Extent: 85 percent of the unit
Landform(s): flats on flood plains, oxbows on flood plains
Slope gradient: 0 to 2 percent
Parent material: silty alluvial deposits
Restrictive feature(s): greater than 60 inches
Flooding: frequent
Ponding: none
Drainage class: poorly drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 4L
Wind erodibility index (WEI): 86
Kw factor (surface layer) .37
Land capability, nonirrigated 5w
Hydric soil: yes
Hydrologic group: B/D
Potential for frost action: high

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A1,A2 -- 0 to 20 in	silt loam	moderate	3.81 to 4.42 in	7.4 to 8.4
A3 -- 20 to 28 in	silt loam	moderate	1.34 to 1.57 in	7.4 to 8.4
Cg1 -- 28 to 48 in	loam	moderate	3.41 to 4.02 in	7.4 to 8.4
2Cg2 -- 48 to 60 in	stratified sandy loam to silty clay loam	moderate	1.06 to 2.13 in	7.4 to 8.4

Lk--Lamoure complex

Lamoure, occasionally flooded

Extent: 60 percent of the unit
Landform(s): flats on flood plains
Slope gradient: 0 to 2 percent
Parent material: silty alluvial deposits
Restrictive feature(s): greater than 60 inches
Flooding: occasional
Ponding: none
Drainage class: poorly drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 4L
Wind erodibility index (WEI): 86
Kw factor (surface layer) .37
Land capability, nonirrigated 2w
Hydric soil: yes
Hydrologic group: B/D
Potential for frost action: high

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A1,A2 -- 0 to 27 in	silt loam	moderate	5.09 to 5.89 in	7.4 to 8.4
A3 -- 27 to 34 in	silt loam	moderate	1.20 to 1.42 in	7.4 to 8.4
Cg1 -- 34 to 43 in	loam	moderate	1.54 to 1.81 in	7.4 to 8.4
2Cg2 -- 43 to 60 in	stratified sandy loam to silty clay loam	moderate	1.52 to 3.05 in	7.4 to 8.4

Lamoure, frequently flooded

Extent: 35 percent of the unit
Landform(s): oxbows on flood plains
Slope gradient: 0 to 2 percent
Parent material: silty alluvail deposits
Restrictive feature(s): greater than 60 inches
Flooding: frequent
Ponding: none
Drainage class: poorly drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 4L
Wind erodibility index (WEI): 86
Kw factor (surface layer) .37
Land capability, nonirrigated 5w
Hydric soil: yes
Hydrologic group: B/D
Potential for frost action: high

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A1,A2 -- 0 to 20 in	silt loam	moderate	3.81 to 4.42 in	7.4 to 8.4
A3 -- 20 to 28 in	silt loam	moderate	1.34 to 1.57 in	7.4 to 8.4
Cg1 -- 28 to 48 in	loam	moderate	3.41 to 4.02 in	7.4 to 8.4
2Cg2 -- 48 to 60 in	stratified sandy loam to silty clay loam	moderate	1.06 to 2.13 in	7.4 to 8.4

LIE--Langhei loam, 18 to 25 percent slopes

Langhei

Extent: 85 percent of the unit
Landform(s): hillslopes on moraines
Slope gradient: 18 to 25 percent
Parent material: loamy glacial 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): 4L
Wind erodibility index (WEI): 86
Kw factor (surface layer) .32
Land capability, nonirrigated 6e
Hydric soil: no
Hydrologic group: B
Potential for frost action: moderate

Representative soil profile:		*Texture*	*Permeability*	*Available water capacity*	*pH*
A --	0 to 8 in	loam	moderate	1.34 to 1.73 in	6.6 to 8.4
Bk,C --	8 to 60 in	loam	moderate	7.80 to 9.87 in	7.4 to 8.4

LIF--Langhei loam, 25 to 40 percent slopes

Langhei

Extent: 85 percent of the unit
Landform(s): hillslopes on moraines
Slope gradient: 25 to 40 percent
Parent material: loamy glacial 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): 4L
Wind erodibility index (WEI): 86
Kw factor (surface layer) .28
Land capability, nonirrigated 7e
Hydric soil: no
Hydrologic group: B
Potential for frost action: moderate

Representative soil profile:		*Texture*	*Permeability*	*Available water capacity*	*pH*
A --	0 to 8 in	loam	moderate	1.34 to 1.73 in	6.6 to 8.4
Bk,C --	8 to 60 in	loam	moderate	7.80 to 9.87 in	7.4 to 8.4

LmF--Langhei stony loam, 6 to 40 percent slopes

Langhei

Extent: 85 percent of the unit
Landform(s): hillslopes on moraines
Slope gradient: 6 to 40 percent
Parent material: loamy glacial till
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: well drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 5
Wind erodibility index (WEI): 56
Kw factor (surface layer) .15
Land capability, nonirrigated 7e
Hydric soil: no
Hydrologic group: C
Potential for frost action: moderate

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A -- 0 to 4 in	stony loam	moderate	0.71 to 0.79 in	6.6 to 8.4
Bk,C -- 4 to 60 in	loam	moderately slow	8.94 to 11.18 in	7.4 to 8.4

LnB2--Langhei-Barnes loams, 2 to 6 percent slopes, eroded

Langhei, eroded

Extent: 50 percent of the unit
Landform(s): hillslopes on moraines
Slope gradient: 2 to 6 percent
Parent material: loamy glacial 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): 4L
Wind erodibility index (WEI): 86
Kw factor (surface layer) .32
Land capability, nonirrigated 3e
Hydric soil: no
Hydrologic group: B
Potential for frost action: moderate

Representative soil profile:		*Texture*	*Permeability*	*Available water capacity*	*pH*
A --	0 to 8 in	loam	moderate	1.34 to 1.73 in	6.6 to 8.4
Bk,C --	8 to 60 in	loam	moderate	7.80 to 9.87 in	7.4 to 8.4

Barnes, eroded

Extent: 30 percent of the unit
Landform(s): hillslopes on moraines
Slope gradient: 2 to 6 percent
Parent material: loamy glacial 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 2e
Hydric soil: no
Hydrologic group: B
Potential for frost action: moderate

Representative soil profile:		*Texture*	*Permeability*	*Available water capacity*	*pH*
A --	0 to 8 in	loam	moderate	1.42 to 1.89 in	6.1 to 7.8
Bw --	8 to 19 in	loam	moderate	1.65 to 2.09 in	6.1 to 7.8
Bk,C --	19 to 60 in	loam	moderate	5.73 to 7.78 in	7.4 to 8.4

LnC2--Langhei-Barnes loams, 6 to 12 percent slopes, eroded

Langhei, eroded

Extent: 50 percent of the unit
Landform(s): hillslopes on moraines
Slope gradient: 6 to 12 percent
Parent material: loamy glacial 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): 4L
Wind erodibility index (WEI): 86
Kw factor (surface layer) .32
Land capability, nonirrigated 3e
Hydric soil: no
Hydrologic group: B
Potential for frost action: moderate

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A -- 0 to 8 in	loam	moderate	1.34 to 1.73 in	6.6 to 8.4
Bk,C -- 8 to 60 in	loam	moderate	7.80 to 9.87 in	7.4 to 8.4

Barnes, eroded

Extent: 30 percent of the unit
Landform(s): hillslopes on moraines
Slope gradient: 6 to 12 percent
Parent material: loamy glacial 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 3e
Hydric soil: no
Hydrologic group: B
Potential for frost action: moderate

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A -- 0 to 8 in	loam	moderate	1.42 to 1.89 in	6.1 to 7.8
Bw -- 8 to 19 in	loam	moderate	1.65 to 2.09 in	6.1 to 7.8
Bk,C -- 19 to 60 in	loam	moderate	5.73 to 7.78 in	7.4 to 8.4

LnD2--Langhei-Barnes loams, 12 to 18 percent slopes, eroded

Langhei, eroded

Extent: 50 percent of the unit
Landform(s): hillslopes on moraines
Slope gradient: 12 to 18 percent
Parent material: loamy glacial 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): 4L
Wind erodibility index (WEI): 86
Kw factor (surface layer) .32
Land capability, nonirrigated 4e
Hydric soil: no
Hydrologic group: B
Potential for frost action: moderate

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A -- 0 to 8 in	loam	moderate	1.34 to 1.73 in	6.6 to 8.4
Bk,C -- 8 to 60 in	loam	moderate	7.80 to 9.87 in	7.4 to 8.4

Barnes, eroded

Extent: 30 percent of the unit
Landform(s): hillslopes on moraines
Slope gradient: 12 to 18 percent
Parent material: loamy glacial 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 4e
Hydric soil: no
Hydrologic group: B
Potential for frost action: moderate

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A -- 0 to 8 in	loam	moderate	1.42 to 1.89 in	6.1 to 7.8
Bw -- 8 to 19 in	loam	moderate	1.65 to 2.09 in	6.1 to 7.8
Bk,C -- 19 to 60 in	loam	moderate	5.73 to 7.78 in	7.4 to 8.4

LoD2--Langhei-Barnes-Sioux complex, 12 to 18 percent slopes, eroded

Langhei, eroded

Extent: 30 percent of the unit
Landform(s): hillslopes on moraines
Slope gradient: 12 to 18 percent
Parent material: loamy glacial 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): 4L
Wind erodibility index (WEI): 86
Kw factor (surface layer) .32
Land capability, nonirrigated 6e
Hydric soil: no
Hydrologic group: B
Potential for frost action: moderate

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A -- 0 to 8 in	loam	moderate	1.34 to 1.73 in	6.6 to 8.4
Bk,C -- 8 to 60 in	loam	moderate	7.80 to 9.87 in	7.4 to 8.4

Barnes, eroded

Extent: 30 percent of the unit
Landform(s): hillslopes on moraines
Slope gradient: 12 to 18 percent
Parent material: loamy glacial 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 4e
Hydric soil: no
Hydrologic group: B
Potential for frost action: moderate

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A -- 0 to 8 in	loam	moderate	1.42 to 1.89 in	6.1 to 7.8
Bw -- 8 to 19 in	loam	moderate	1.65 to 2.09 in	6.1 to 7.8
Bk,C -- 19 to 60 in	loam	moderate	5.73 to 7.78 in	7.4 to 8.4

LoD2--Langhei-Barnes-Sioux complex, 12 to 18 percent slopes, eroded

Sioux, eroded

Extent: 20 percent of the unit
Landform(s): hillslopes on moraines
Slope gradient: 12 to 18 percent
Parent material: sandy and gravelly outwash deposits
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: excessively drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 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

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap -- 0 to 8 in	sandy loam	rapid	0.79 to 0.94 in	5.6 to 7.8
BCk -- 8 to 14 in	gravelly coarse sand	rapid	0.19 to 0.63 in	6.1 to 7.8
C -- 14 to 60 in	gravelly coarse sand	very rapid	0.91 to 2.74 in	7.4 to 8.4

M-W--Water, miscellaneous

Water, miscellaneous

Extent: 100 percent of the unit
Landform(s):
Slope gradient:
Parent material:
Restrictive feature(s): greater than 60 inches
Flooding:
Ponding:
Drainage class:

Soil loss tolerance (T factor):
Wind erodibility group (WEG):
Wind erodibility index (WEI):
Kw factor (surface layer)
Land capability, nonirrigated
Hydric soil:
Hydrologic group:
Potential for frost action:

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*

MbC--Maddock loamy sand, 6 to 12 percent slopes

Maddock

Extent: 90 percent of the unit
Landform(s): hillslopes on moraines, hillslopes on outwash plains
Slope gradient: 6 to 12 percent
Parent material: sandy outwash deposits
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: well drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 2
Wind erodibility index (WEI): 134
Kw factor (surface layer) .17
Land capability, nonirrigated 6s
Hydric soil: no
Hydrologic group: A
Potential for frost action: low

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A,Bw1,Bw2 -- 0 to 15 in	loamy sand	rapid	1.50 to 1.80 in	6.6 to 7.8
Bw3,Bk,C -- 15 to 60 in	fine sand	rapid	2.24 to 5.39 in	6.6 to 8.4

MbE--Maddock loamy sand, 12 to 25 percent slopes

Maddock

Extent: 90 percent of the unit
Landform(s): hillslopes on moraines, hillslopes on outwash plains
Slope gradient: 12 to 25 percent
Parent material: sandy outwash deposits
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: well drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 2
Wind erodibility index (WEI): 134
Kw factor (surface layer) .17
Land capability, nonirrigated 6s
Hydric soil: no
Hydrologic group: A
Potential for frost action: low

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A,Bw2,Bw2 -- 0 to 15 in	loamy sand	rapid	1.50 to 1.80 in	6.6 to 7.8
Bw3,Bk,C -- 15 to 60 in	fine sand	rapid	2.24 to 5.39 in	6.6 to 8.4

MdA--Maddock sandy loam, 0 to 2 percent slopes

Maddock

Extent: 90 percent of the unit
Landform(s): flats on outwash plains
Slope gradient: 0 to 2 percent
Parent material: sandy outwash deposits
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: well drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 3
Wind erodibility index (WEI): 86
Kw factor (surface layer) .24
Land capability, nonirrigated 3s
Hydric soil: no
Hydrologic group: A
Potential for frost action: low

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A,Bw1,Bw2 -- 0 to 15 in	sandy loam	rapid	1.94 to 2.69 in	6.6 to 7.8
Bw3,Bk,C -- 15 to 60 in	fine sand	rapid	2.24 to 5.83 in	6.6 to 8.4

MdB--Maddock sandy loam, 2 to 6 percent slopes

Maddock

Extent: 90 percent of the unit
Landform(s): hillslopes on moraines, hillslopes on outwash plains
Slope gradient: 2 to 6 percent
Parent material: sandy outwash deposits
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: well drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 3
Wind erodibility index (WEI): 86
Kw factor (surface layer) .24
Land capability, nonirrigated 3e
Hydric soil: no
Hydrologic group: A
Potential for frost action: low

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A,Bw1,Bw2 -- 0 to 15 in	sandy loam	rapid	1.94 to 2.69 in	6.6 to 7.8
Bw3,Bk,C -- 15 to 60 in	fine sand	rapid	2.24 to 5.83 in	6.6 to 8.4

Mf--Malachy sandy loam, 0 to 2 percent slopes

Malachy

Extent: 85 percent of the unit
Landform(s): rises on outwash plains
Slope gradient: 0 to 2 percent
Parent material: loamy mantled over sandy outwash deposits
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): 3
Wind erodibility index (WEI): 86
Kw factor (surface layer) .20
Land capability, nonirrigated 2s
Hydric soil: no
Hydrologic group: A/D
Potential for frost action: high

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap,A1,A2k -- 0 to 18 in	sandy loam	moderately rapid	2.35 to 3.26 in	7.4 to 8.4
Bk1,Bk2 -- 18 to 26 in	sandy loam	moderately rapid	0.94 to 1.50 in	7.4 to 8.4
2C -- 26 to 60 in	sand	rapid	0.68 to 3.39 in	7.4 to 8.4

Mk--Marsh

Marsh

Extent: 100 percent of the unit
Landform(s): depressions on outwash plains, depressions on moraines
Slope gradient: 0 to 1 percent
Parent material: herbaceous organic material over till
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: frequent
Drainage class: very poorly drained

Soil loss tolerance (T factor):
Wind erodibility group (WEG): 8
Wind erodibility index (WEI): 0
Kw factor (surface layer)
Land capability, nonirrigated 8w
Hydric soil: yes
Hydrologic group:
Potential for frost action:

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*

Ml--Marysland loam

Marysland

Extent: 85 percent of the unit
Landform(s): flats on outwash plains, swales on outwash plains
Slope gradient: 0 to 2 percent
Parent material: loamy mantled over sandy and gravelly outwash deposits
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): 4L
Wind erodibility index (WEI): 86
Kw factor (surface layer) .20
Land capability, nonirrigated 2w
Hydric soil: yes
Hydrologic group: B/D
Potential for frost action: high

Representative soil profile:			*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap,Ak	--	0 to 10 in	loam	moderate	1.67 to 2.17 in	7.4 to 8.4
Bkg,Cg1	--	10 to 26 in	loam	moderate	2.42 to 3.07 in	7.4 to 8.4
2Cg2	--	26 to 60 in	stratified gravelly coarse sand to fine sand	rapid	0.68 to 2.37 in	7.4 to 8.4

Mn--Mayer loam

Mayer

Extent: 85 percent of the unit
Landform(s): swales on outwash plains, flats on outwash plains
Slope gradient: 0 to 2 percent
Parent material: loamy mantled over sandy and gravelly outwash deposits
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): 4L
Wind erodibility index (WEI): 86
Kw factor (surface layer) .28
Land capability, nonirrigated 2w
Hydric soil: yes
Hydrologic group: B/D
Potential for frost action: high

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A1,A2 -- 0 to 19 in	loam	moderate	3.78 to 4.16 in	7.4 to 8.4
Bg1,Bg2 -- 19 to 32 in	loam	moderate	2.08 to 2.47 in	7.4 to 8.4
2C -- 32 to 60 in	gravelly coarse sand	rapid	0.56 to 1.12 in	7.4 to 8.4

Mo--Mayer loam, depressional

Mayer, depressional

Extent: 85 percent of the unit
Landform(s): depressions on outwash plains
Slope gradient: 0 to 2 percent
Parent material: loamy mantled over sandy and gravelly outwash deposits
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): 4L
Wind erodibility index (WEI): 86
Kw factor (surface layer) .28
Land capability, nonirrigated 3w
Hydric soil: yes
Hydrologic group: B/D
Potential for frost action: high

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A1,A2 -- 0 to 19 in	loam	moderate	3.78 to 4.16 in	7.4 to 8.4
Bg1,Bg2 -- 19 to 32 in	loam	moderate	2.08 to 2.47 in	7.4 to 8.4
2C -- 32 to 60 in	gravelly coarse sand	rapid	0.56 to 1.12 in	7.4 to 8.4

Mr--Mayer loam, sandy subsoil variant

Mayer, sandy subsoil variant

Extent: 85 percent of the unit
Landform(s): flats on outwash plains, swales on outwash plains
Slope gradient: 0 to 2 percent
Parent material: loamy mantle over sandy outwash deposits
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): 4L
Wind erodibility index (WEI): 86
Kw factor (surface layer) .28
Land capability, nonirrigated 2w
Hydric soil: yes
Hydrologic group: B/D
Potential for frost action: high

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap,A1,A2 -- 0 to 17 in	loam	moderate	3.39 to 3.72 in	7.4 to 8.4
Bg1,Bg2 -- 17 to 27 in	sandy clay loam	moderate	1.57 to 1.87 in	7.4 to 8.4
2Cg1,2Cg2 -- 27 to 60 in	coarse sand	rapid	0.66 to 1.32 in	7.4 to 8.4

Ms--McIntosh silt loam, 0 to 2 percent slopes

McIntosh

Extent: 85 percent of the unit
Landform(s): rises on moraines, flats on moraines
Slope gradient: 0 to 2 percent
Parent material: silty lacustrine deposits over loamy glacial till
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: moderately well drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 4L
Wind erodibility index (WEI): 86
Kw factor (surface layer) .37
Land capability, nonirrigated 2s
Hydric soil: no
Hydrologic group: B/D
Potential for frost action: high

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap,Ak,Bk1 -- 0 to 16 in	silt loam	moderate	3.23 to 3.87 in	7.4 to 8.4
Bk2 -- 16 to 28 in	silty clay loam	moderate	1.89 to 2.60 in	7.4 to 8.4
2C1,2C2 -- 28 to 60 in	loam	moderate	4.46 to 6.06 in	7.4 to 8.4

Mt--Muck

Muck

Extent: 85 percent of the unit
Landform(s): depressions on outwash plains, depressions on moraines
Slope gradient: 0 to 1 percent
Parent material: highly decomosed herbaceous organic material
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: frequent
Drainage class: very poorly drained

Soil loss tolerance (T factor): 2
Wind erodibility group (WEG): 2
Wind erodibility index (WEI): 134
Kw factor (surface layer) .02
Land capability, nonirrigated 6w
Hydric soil: yes
Hydrologic group: A/D
Potential for frost action: high

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Oa1 -- 0 to 10 in	muck	moderately rapid	3.44 to 4.43 in	
Oa2 -- 10 to 60 in	muck	moderately rapid	17.50 to 22.50 in	

Mu--Muck, calcareous

Muck, calcareous

Extent: 85 percent of the unit
Landform(s): depressions on outwash plains, depressions on moraines
Slope gradient: 0 to 2 percent
Parent material: highly decomosed herbaceous organic material
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: frequent
Drainage class: very poorly drained
Soil loss tolerance (T factor): 2
Wind erodibility group (WEG): 2
Wind erodibility index (WEI): 134
Kw factor (surface layer) .02
Land capability, nonirrigated 6w
Hydric soil: yes
Hydrologic group: A/D
Potential for frost action: high

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Oa1 -- 0 to 10 in	muck	moderately rapid	3.44 to 4.43 in	
Oa2 -- 10 to 60 in	muck	moderately rapid	17.50 to 22.50 in	

Mv--Muck, calcareous, seeped

Muck, calcareous, seep

Extent: 85 percent of the unit
Landform(s): hillslopes on moraines
Slope gradient: 0 to 2 percent
Parent material: highly decomosed herbaceous organic material
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: very poorly drained
Soil loss tolerance (T factor): 2
Wind erodibility group (WEG): 8
Wind erodibility index (WEI): 0
Kw factor (surface layer) .02
Land capability, nonirrigated 7w
Hydric soil: yes
Hydrologic group: A/D
Potential for frost action: high

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Oa1 -- 0 to 10 in	muck	moderately rapid	3.44 to 4.43 in	
Oa2 -- 10 to 60 in	muck	moderately rapid	17.50 to 22.50 in	

Mw--Muck, calcareous, over loam

Muck, calcareous, over loam

Extent: 85 percent of the unit
Landform(s): depressions on moraines
Slope gradient: 0 to 2 percent
Parent material: highly decomposed organic materail over loamy glacial till
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: frequent
Drainage class: very poorly drained

Soil loss tolerance (T factor): 1
Wind erodibility group (WEG): 2
Wind erodibility index (WEI): 134
Kw factor (surface layer) .02
Land capability, nonirrigated 6w
Hydric soil: yes
Hydrologic group: B/D
Potential for frost action: high

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Oa1 -- 0 to 11 in	muck	moderately rapid	4.96 to 6.06 in	
Oa2 -- 11 to 23 in	sp	moderately rapid	4.13 to 5.31 in	
Cg3 -- 23 to 60 in	loam	moderate	4.07 to 7.03 in	

Mx--Muck, calcareous, over sand

Muck, calcareous, over sand

Extent: 85 percent of the unit
Landform(s): depressions on outwash plains
Slope gradient: 0 to 2 percent
Parent material: highly decomposed organic material over sandy outwash deposits
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: frequent
Drainage class: very poorly drained

Soil loss tolerance (T factor): 1
Wind erodibility group (WEG): 2
Wind erodibility index (WEI): 134
Kw factor (surface layer) .02
Land capability, nonirrigated 6w
Hydric soil: yes
Hydrologic group: A/D
Potential for frost action: high

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Oa1 -- 0 to 11 in	muck	moderately rapid	4.96 to 6.06 in	
Oa2 -- 11 to 23 in	sp	moderately rapid	4.13 to 5.31 in	
Cg -- 23 to 60 in	fine sand	rapid	1.11 to 2.96 in	

My--Muck over loam

Muck, over loam

Extent: 85 percent of the unit
Landform(s): depressions on moraines
Slope gradient: 0 to 2 percent
Parent material: highly decomposed organic material over loamy glacial till
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: frequent
Drainage class: very poorly drained

Soil loss tolerance (T factor): 1
Wind erodibility group (WEG): 2
Wind erodibility index (WEI): 134
Kw factor (surface layer) .02
Land capability, nonirrigated 6w
Hydric soil: yes
Hydrologic group: B/D
Potential for frost action: high

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Oa1 -- 0 to 11 in	muck	moderately rapid	4.96 to 6.06 in	
Oa2 -- 11 to 23 in	sp	moderately rapid	4.13 to 5.31 in	
Cg -- 23 to 60 in	loam	moderate	4.07 to 7.03 in	

Mz--Muck over sand

Muck, over sand

Extent: 85 percent of the unit
Landform(s): depressions on outwash plains
Slope gradient: 0 to 2 percent
Parent material: highly decomposed organic material over sandy outwash deposits
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: frequent
Drainage class: very poorly drained

Soil loss tolerance (T factor): 1
Wind erodibility group (WEG): 2
Wind erodibility index (WEI): 134
Kw factor (surface layer) .02
Land capability, nonirrigated 6w
Hydric soil: yes
Hydrologic group: A/D
Potential for frost action: high

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Oa -- 0 to 32 in	muck	moderately rapid	11.16 to 14.35 in	
Cg -- 32 to 60 in	coarse sand	rapid	0.84 to 2.24 in	

Nc--Nicollet loam, 0 to 3 percent slopes

Nicollet

Extent: 85 percent of the unit
Landform(s): hillslopes on moraines, rises on moraines
Slope gradient: 0 to 3 percent
Parent material: loamy glacial 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 1
Hydric soil: no
Hydrologic group: B/D
Potential for frost action: high

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap,A1,A2 -- 0 to 15 in	loam	moderate	2.99 to 3.29 in	6.1 to 7.3
Bw -- 15 to 30 in	clay loam	moderate	2.24 to 2.84 in	6.6 to 7.8
C -- 30 to 60 in	loam	moderate	4.49 to 5.69 in	7.4 to 8.4

NuA--Nutley silty clay loam, 0 to 2 percent slopes

Nutley

Extent: 85 percent of the unit
Landform(s): hillslopes on moraines
Slope gradient: 0 to 2 percent
Parent material: clayey lacustrine deposits and clayey glacial 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): 4
Wind erodibility index (WEI): 86
Kw factor (surface layer) .32
Land capability, nonirrigated 2s
Hydric soil: no
Hydrologic group: C
Potential for frost action: moderate

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap,A -- 0 to 12 in	silty clay loam	slow	1.18 to 1.89 in	6.6 to 8.4
Bss,C -- 12 to 60 in	clay	slow	3.84 to 7.20 in	7.4 to 8.4

NuB--Nutley silty clay loam, 2 to 6 percent slopes

Nutley

Extent: 85 percent of the unit
Landform(s): hillslopes on moraines
Slope gradient: 2 to 6 percent
Parent material: clayey lacustrine deposits and clayey glacial 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): 4
Wind erodibility index (WEI): 86
Kw factor (surface layer) .32
Land capability, nonirrigated 3e
Hydric soil: no
Hydrologic group: C
Potential for frost action: moderate

Representative soil profile:		*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap,A --	0 to 12 in	silty clay loam	slow	1.18 to 1.89 in	6.6 to 8.4
Bss,C --	12 to 60 in	clay	slow	3.84 to 7.20 in	7.4 to 8.4

Om--Oldham silty clay loam

Oldham

Extent: 85 percent of the unit
Landform(s): depressions on moraines, lakebeds (relict) on moraines
Slope gradient: 0 to 2 percent
Parent material: clayey slope alluvium
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: frequent
Drainage class: very poorly drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 4
Wind erodibility index (WEI): 86
Kw factor (surface layer) .28
Land capability, nonirrigated 2w
Hydric soil: yes
Hydrologic group: C/D
Potential for frost action: high

Representative soil profile:		*Texture*	*Permeability*	*Available water capacity*	*pH*
A1,A2 --	0 to 18 in	silty clay loam	moderately slow	2.35 to 3.44 in	6.6 to 7.8
A3g,A4g --	18 to 30 in	silty clay loam	moderately slow	1.65 to 2.36 in	7.4 to 8.4
Cg --	30 to 60 in	silty clay loam	moderately slow	4.19 to 5.98 in	7.4 to 8.4

Os--Osakis sandy loam, 0 to 2 percent slopes

Osakis

Extent: 90 percent of the unit
Landform(s): rises on outwash plains, hillslopes on outwash plains
Slope gradient: 0 to 2 percent
Parent material: loamy mantle over sandy and gravelly outwash
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: moderately well drained

Soil loss tolerance (T factor): 2
Wind erodibility group (WEG): 3
Wind erodibility index (WEI): 86
Kw factor (surface layer) .20
Land capability, nonirrigated 3s
Hydric soil: no
Hydrologic group: B
Potential for frost action: moderate

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap,A -- 0 to 12 in	sandy loam	moderately rapid	1.65 to 2.13 in	6.1 to 7.3
Bw -- 12 to 16 in	sandy loam	moderately rapid	0.61 to 0.82 in	6.1 to 7.3
2C1 -- 16 to 20 in	very gravelly coarse sand	rapid	0.16 to 0.24 in	6.1 to 7.3
2C2,2C3 -- 20 to 60 in	gravelly coarse sand	rapid	0.80 to 1.59 in	7.4 to 8.4

Pa--Parnell silty clay loam

Parnell

Extent: 85 percent of the unit
Landform(s): depressions on moraines
Slope gradient: 0 to 1 percent
Parent material: silty and clayey slope alluvium over loamy glacial till
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: frequent
Drainage class: very poorly drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Kw factor (surface layer) .32
Land capability, nonirrigated 3w
Hydric soil: yes
Hydrologic group: C/D
Potential for frost action: high

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A1,A2,A3 -- 0 to 18 in	silty clay loam	moderately slow	3.26 to 3.98 in	6.1 to 7.8
Btg -- 18 to 38 in	silty clay loam	slow	2.56 to 3.74 in	6.1 to 7.8
Cg -- 38 to 60 in	clay loam	slow	2.43 to 4.19 in	6.6 to 8.4

Pf--Parnell and Flom silty clay loams

Parnell

Extent: 50 percent of the unit
Landform(s): depressions on moraines
Slope gradient: 0 to 1 percent
Parent material: silty and clayey slope alluvium over loamy glacial till
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: frequent
Drainage class: very poorly drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Kw factor (surface layer) .32
Land capability, nonirrigated 3w
Hydric soil: yes
Hydrologic group: C/D
Potential for frost action: high

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A1,A2,A3 -- 0 to 18 in	silty clay loam	moderately slow	3.26 to 3.98 in	6.1 to 7.8
Btg -- 18 to 38 in	silty clay loam	slow	2.56 to 3.74 in	6.1 to 7.8
Cg -- 38 to 60 in	clay loam	slow	2.43 to 4.19 in	6.6 to 8.4

Flom

Extent: 35 percent of the unit
Landform(s): flats on moraines, swales on moraines
Slope gradient: 0 to 2 percent
Parent material: loamy glacial 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) .32
Land capability, nonirrigated 2w
Hydric soil: yes
Hydrologic group: C/D
Potential for frost action: high

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap,A1 -- 0 to 15 in	silty clay loam	moderately slow	2.69 to 3.29 in	6.1 to 7.8
A2,Bg -- 15 to 22 in	loam	moderately slow	1.06 to 1.35 in	6.6 to 8.4
Bkg,Cg -- 22 to 60 in	loam	moderately slow	5.29 to 7.18 in	7.4 to 8.4

Pr--Perella silty clay loam

Perella

Extent: 85 percent of the unit
Landform(s): swales on moraines
Slope gradient: 0 to 1 percent
Parent material: silty 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): 6
Wind erodibility index (WEI): 48
Kw factor (surface layer) .32
Land capability, nonirrigated 2w
Hydric soil: yes
Hydrologic group: B/D
Potential for frost action: high

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap,A1,A2 -- 0 to 22 in	silty clay loam	moderate	3.97 to 5.07 in	6.6 to 7.3
Bg -- 22 to 30 in	silty clay loam	moderate	1.18 to 1.73 in	6.6 to 7.3
Cg -- 30 to 60 in	silty clay loam	moderate	4.79 to 6.58 in	7.4 to 8.4

ReA--Renshaw loam, 0 to 2 percent slopes

Renshaw

Extent: 90 percent of the unit
Landform(s): flats on outwash plains
Slope gradient: 0 to 2 percent
Parent material: loamy mantle over sandy and gravelly outwash
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: somewhat excessively 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 3s
Hydric soil: no
Hydrologic group: B
Potential for frost action: low

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A1,A2 -- 0 to 11 in	loam	moderate	1.98 to 2.20 in	6.1 to 7.8
Bw -- 11 to 19 in	loam	moderately rapid	0.87 to 1.42 in	6.6 to 8.4
2Bk,2C -- 19 to 60 in	gravelly sand	very rapid	1.23 to 2.46 in	6.6 to 8.4

ReB--Renshaw loam, 2 to 6 percent slopes

Renshaw

Extent: 90 percent of the unit
Landform(s): hillslopes on outwash plains
Slope gradient: 2 to 6 percent
Parent material: loamy mantle over sandy and gravelly outwash
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: somewhat excessively 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 4s
Hydric soil: no
Hydrologic group: B
Potential for frost action: low

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A1,A2 -- 0 to 11 in	loam	moderate	1.98 to 2.20 in	6.1 to 7.8
Bw -- 11 to 19 in	loam	moderately rapid	0.87 to 1.42 in	6.6 to 8.4
2Bk,2C -- 19 to 60 in	gravelly sand	very rapid	1.23 to 2.46 in	6.6 to 8.4

ReC2--Renshaw loam, 6 to 12 percent slopes, eroded

Renshaw, eroded

Extent: 90 percent of the unit
Landform(s): hillslopes on outwash plains
Slope gradient: 6 to 12 percent
Parent material: loamy mantle over sandy and gravelly outwash
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: somewhat excessively 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 4e
Hydric soil: no
Hydrologic group: B
Potential for frost action: low

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A1,A2 -- 0 to 11 in	loam	moderate	1.98 to 2.20 in	6.1 to 7.8
Bw -- 11 to 19 in	loam	moderately rapid	0.87 to 1.42 in	6.6 to 8.4
2Bk,2C -- 19 to 60 in	gravelly sand	very rapid	1.23 to 2.46 in	6.6 to 8.4

SdB--Salida sandy loam, 0 to 6 percent slopes

Salida

Extent: 90 percent of the unit
Landform(s): hillslopes on outwash plains
Slope gradient: 0 to 6 percent
Parent material: sandy and gravelly outwash deposits
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: excessively drained

Soil loss tolerance (T factor): 3
Wind erodibility group (WEG): 3
Wind erodibility index (WEI): 86
Kw factor (surface layer) .28
Land capability, nonirrigated 6s
Hydric soil: no
Hydrologic group: A
Potential for frost action: low

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A -- 0 to 8 in	sandy loam	moderately rapid	0.94 to 1.18 in	6.1 to 8.4
Bw -- 8 to 18 in	gravelly coarse sand	very rapid	0.20 to 0.41 in	7.4 to 8.4
C -- 18 to 60 in	very gravelly coarse sand	very rapid	0.83 to 1.67 in	7.4 to 8.4

SdC2--Salida sandy loam, 6 to 12 percent slopes, eroded

Salida, eroded

Extent: 90 percent of the unit
Landform(s): hillslopes on outwash plains
Slope gradient: 6 to 12 percent
Parent material: sandy and gravelly outwash deposits
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: excessively drained

Soil loss tolerance (T factor): 3
Wind erodibility group (WEG): 3
Wind erodibility index (WEI): 86
Kw factor (surface layer) .28
Land capability, nonirrigated 6s
Hydric soil: no
Hydrologic group: A
Potential for frost action: low

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A -- 0 to 8 in	sandy loam	moderately rapid	0.94 to 1.18 in	6.1 to 8.4
Bw -- 8 to 18 in	gravelly coarse sand	very rapid	0.20 to 0.41 in	7.4 to 8.4
C -- 18 to 60 in	very gravelly coarse sand	very rapid	0.83 to 1.67 in	7.4 to 8.4

SeF--Salida gravelly sandy loam, 12 to 35 percent slopes

Salida

Extent: 90 percent of the unit
Landform(s): hillslopes on outwash plains
Slope gradient: 12 to 35 percent
Parent material: sandy and gravelly outwash deposits
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: excessively drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 5
Wind erodibility index (WEI): 56
Kw factor (surface layer) .17
Land capability, nonirrigated 7s
Hydric soil: no
Hydrologic group: A
Potential for frost action: low

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A -- 0 to 8 in	gravelly sandy loam	moderately rapid	0.79 to 0.94 in	6.1 to 8.4
Bw -- 8 to 18 in	gravelly coarse sand	very rapid	0.20 to 0.41 in	7.4 to 8.4
C -- 18 to 60 in	very gravelly coarse sand	very rapid	0.83 to 1.67 in	7.4 to 8.4

SlB--Sioux sandy loam, 0 to 6 percent slopes

Sioux

Extent: 90 percent of the unit
Landform(s): hillslopes on outwash plains
Slope gradient: 0 to 6 percent
Parent material: sandy and gravelly outwash deposits
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: excessively drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 3
Wind erodibility index (WEI): 86
Kw factor (surface layer) .24
Land capability, nonirrigated 6s
Hydric soil: no
Hydrologic group: A
Potential for frost action: low

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A -- 0 to 8 in	sandy loam	moderately rapid	1.02 to 1.18 in	5.6 to 7.8
BCk -- 8 to 14 in	gravelly coarse sand	rapid	0.19 to 0.63 in	6.1 to 7.8
C -- 14 to 60 in	very gravelly coarse sand	very rapid	0.91 to 2.74 in	7.4 to 8.4

SlC2--Sioux sandy loam, 6 to 12 percent slopes, eroded

Sioux, eroded

Extent: 90 percent of the unit
Landform(s): hillslopes on outwash plains
Slope gradient: 6 to 12 percent
Parent material: sandy and gravelly outwash deposits
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: excessively drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 3
Wind erodibility index (WEI): 86
Kw factor (surface layer) .24
Land capability, nonirrigated 6s
Hydric soil: no
Hydrologic group: A
Potential for frost action: low

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A -- 0 to 8 in	sandy loam	moderately rapid	1.02 to 1.18 in	5.6 to 7.8
BCk -- 8 to 14 in	gravelly coarse sand	rapid	0.19 to 0.63 in	6.1 to 7.8
C -- 14 to 60 in	very gravelly coarse sand	very rapid	0.91 to 2.74 in	7.4 to 8.4

SoF--Sioux gravelly sandy loam, 6 to 35 percent slopes

Sioux

Extent: 90 percent of the unit
Landform(s): hillslopes on outwash plains
Slope gradient: 6 to 35 percent
Parent material: sandy and gravelly outwash deposits
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: excessively drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 5
Wind erodibility index (WEI): 56
Kw factor (surface layer) .15
Land capability, nonirrigated 7s
Hydric soil: no
Hydrologic group: A
Potential for frost action: low

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A -- 0 to 8 in	gravelly sandy loam	rapid	0.24 to 1.02 in	5.6 to 7.8
BCk -- 8 to 14 in	gravelly coarse sand	rapid	0.19 to 0.63 in	6.1 to 7.8
C -- 14 to 60 in	very gravelly coarse sand	very rapid	0.91 to 2.74 in	7.4 to 8.4

SrE2--Storden-Clarion loams, 12 to 25 percent slopes, eroded

Storden, eroded

Extent: 50 percent of the unit
Landform(s): hillslopes on moraines
Slope gradient: 12 to 25 percent
Parent material: loamy glacial 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): 4L
Wind erodibility index (WEI): 86
Kw factor (surface layer) .32
Land capability, nonirrigated 6e
Hydric soil: no
Hydrologic group: B
Potential for frost action: moderate

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A -- 0 to 7 in	loam	moderate	1.42 to 1.56 in	7.4 to 8.4
Bk,C -- 7 to 60 in	loam	moderate	7.91 to 10.02 in	7.4 to 8.4

Clarion, eroded

Extent: 30 percent of the unit
Landform(s): hillslopes on moraines
Slope gradient: 12 to 25 percent
Parent material: loamy glacial 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: B
Potential for frost action: moderate

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A -- 0 to 12 in	loam	moderate	2.01 to 2.60 in	6.1 to 7.8
Bw -- 12 to 29 in	loam	moderate	2.60 to 3.29 in	6.6 to 7.8
C!,C2,C3 -- 29 to 60 in	loam	moderate	4.61 to 5.83 in	7.4 to 8.4

SuA--Svea loam, 0 to 2 percent slopes

Svea

Extent: 85 percent of the unit
Landform(s): rises on moraines, hillslopes on moraines
Slope gradient: 0 to 2 percent
Parent material: glacial 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 1
Hydric soil: no
Hydrologic group: B/D
Potential for frost action: moderate

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap,A -- 0 to 13 in	loam	moderate	2.34 to 2.60 in	6.1 to 7.8
Bw1,Bw2 -- 13 to 22 in	loam	moderate	1.54 to 1.99 in	6.6 to 7.8
Bk,C -- 22 to 60 in	loam	moderate	5.29 to 7.18 in	7.4 to 8.4

SuB--Svea loam, 2 to 4 percent slopes

Svea

Extent: 85 percent of the unit
Landform(s): hillslopes on moraines
Slope gradient: 2 to 4 percent
Parent material: loamy glacial till
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: moderately well drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Kw factor (surface layer) .28
Land capability, nonirrigated 2e
Hydric soil: no
Hydrologic group: B/D
Potential for frost action: moderate

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap,A -- 0 to 13 in	loam	moderate	2.34 to 2.60 in	6.1 to 7.8
Bw -- 13 to 22 in	loam	moderate	1.54 to 1.99 in	6.6 to 7.8
Bk,C -- 22 to 60 in	loam	moderate	5.29 to 7.18 in	7.4 to 8.4

SyB2--Sverdrup sandy loam, 2 to 6 percent slopes, eroded

Sverdrup, eroded

Extent: 85 percent of the unit
Landform(s): hillslopes on outwash plains
Slope gradient: 2 to 6 percent
Parent material: loamy mantle over sandy outwash deposits
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: well drained

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

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap,A,Bw1 -- 0 to 16 in	sandy loam	moderately rapid	2.10 to 2.42 in	6.1 to 7.3
Bw2 -- 16 to 20 in	sandy loam	moderately rapid	0.31 to 0.55 in	6.1 to 7.8
2Bw3,2C -- 20 to 60 in	sand	rapid	0.80 to 2.39 in	7.4 to 8.4

SyC2--Sverdrup sandy loam, 6 to 12 percent slopes, eroded

Sverdrup, eroded

Extent: 85 percent of the unit
Landform(s): hillslopes on outwash plains
Slope gradient: 6 to 12 percent
Parent material: loamy mantle over sandy outwash deposits
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: well drained

Soil loss tolerance (T factor): 3
Wind erodibility group (WEG): 3
Wind erodibility index (WEI): 86
Kw factor (surface layer) .20
Land capability, nonirrigated 4e
Hydric soil: no
Hydrologic group: A
Potential for frost action: low

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap,A,Bw1 -- 0 to 16 in	sandy loam	moderately rapid	2.10 to 2.42 in	6.1 to 7.3
Bw2 -- 16 to 20 in	sandy loam	moderately rapid	0.31 to 0.55 in	6.1 to 7.8
2Bw3,2C -- 20 to 60 in	sand	rapid	0.80 to 2.39 in	7.4 to 8.4

SzA--Sverdrup loam, 0 to 2 percent slopes

Sverdrup

Extent: 85 percent of the unit
Landform(s): flats on outwash plains
Slope gradient: 0 to 2 percent
Parent material: loamy mantle over sandy outwash deposits
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: well drained

Soil loss tolerance (T factor): 3
Wind erodibility group (WEG): 5
Wind erodibility index (WEI): 56
Kw factor (surface layer) .37
Land capability, nonirrigated 3s
Hydric soil: no
Hydrologic group: B
Potential for frost action: low

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap,A,Bw1 -- 0 to 16 in	loam	moderate	2.58 to 2.91 in	6.1 to 7.3
Bw2 -- 16 to 20 in	sandy loam	moderately rapid	0.31 to 0.55 in	6.1 to 7.8
2Bw3,2C -- 20 to 60 in	sand	rapid	0.80 to 2.39 in	7.4 to 8.4

Ta--Tara silt loam, 0 to 3 percent slopes

Tara

Extent: 85 percent of the unit
Landform(s): hillslopes on moraines, rises on moraines
Slope gradient: 0 to 3 percent
Parent material: silty lacustrine deposits over loamy glacial till
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: moderately well drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Kw factor (surface layer) .37
Land capability, nonirrigated 1
Hydric soil: no
Hydrologic group: B/D
Potential for frost action: high

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap,A -- 0 to 15 in	silt loam	moderate	2.99 to 3.59 in	6.1 to 7.3
Bw1,Bw2 -- 15 to 23 in	silt loam	moderate	1.34 to 1.73 in	6.6 to 7.8
2Bk -- 23 to 29 in	loam	moderate	1.07 to 1.32 in	7.4 to 8.4
2C -- 29 to 60 in	loam	moderate	4.61 to 5.83 in	7.4 to 8.4

To--Tonka silt loam

Tonka

Extent: 85 percent of the unit
Landform(s): depressions on moraines
Slope gradient: 0 to 1 percent
Parent material: silty and clayey slope alluvium over loamy glacial till
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: frequent
Drainage class: very poorly drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Kw factor (surface layer) .32
Land capability, nonirrigated 3w
Hydric soil: yes
Hydrologic group: C/D
Potential for frost action: high

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A,E1,E2 -- 0 to 16 in	silt loam	moderate	3.23 to 3.87 in	5.6 to 7.8
Bt -- 16 to 38 in	clay	slow	3.03 to 4.33 in	5.6 to 7.8
C1,C2 -- 38 to 60 in	clay loam	moderate	3.09 to 4.19 in	6.6 to 8.4

Va--Vallers silty clay loam

Vallers

Extent: 85 percent of the unit
Landform(s): swales on moraines, rims on depressions on moraines
Slope gradient: 0 to 2 percent
Parent material: loamy glacial till
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: poorly drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 4L
Wind erodibility index (WEI): 86
Kw factor (surface layer) .32
Land capability, nonirrigated 2w
Hydric soil: yes
Hydrologic group: C/D
Potential for frost action: high

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A1,A2 -- 0 to 12 in	silty clay loam	moderately slow	2.13 to 2.60 in	7.4 to 8.4
Bkg -- 12 to 21 in	clay loam	moderately slow	1.36 to 1.72 in	7.4 to 8.4
Cg -- 21 to 60 in	loam	moderately slow	6.63 to 7.41 in	7.4 to 8.4

W--Water

Water

Extent: 100 percent of the unit
Landform(s):
Slope gradient:
Parent material:
Restrictive feature(s): greater than 60 inches
Flooding:
Ponding:
Drainage class:

Soil loss tolerance (T factor):
Wind erodibility group (WEG):
Wind erodibility index (WEI):
Kw factor (surface layer)
Land capability, nonirrigated
Hydric soil:
Hydrologic group:
Potential for frost action:

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*

Wa--Wadena loam

Wadena

Extent: 90 percent of the unit
Landform(s): flats on moraines, hillslopes on moraines
Slope gradient: 0 to 2 percent
Parent material: loamy mantle over sandy and gravelly outwash
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: well drained

Soil loss tolerance (T factor): 3
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Kw factor (surface layer) .28
Land capability, nonirrigated 2s
Hydric soil: no
Hydrologic group: B
Potential for frost action: low

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap,A1,A2,A3 -- 0 to 25 in	loam	moderate	5.04 to 5.54 in	6.1 to 7.3
Bw1,Bw2,Bw3 -- 25 to 36 in	loam	moderate	1.49 to 2.02 in	5.6 to 7.3
2C1,2C2 -- 36 to 60 in	stratified gravelly coarse sand to sand	very rapid	0.48 to 0.96 in	6.6 to 8.4

WbA--Waukon loam, 0 to 2 percent slopes

Waukon

Extent: 85 percent of the unit
Landform(s): hillslopes on moraines
Slope gradient: 0 to 2 percent
Parent material: loamy glacial till
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: well drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 5
Wind erodibility index (WEI): 56
Kw factor (surface layer) .28
Land capability, nonirrigated 1
Hydric soil: no
Hydrologic group: B
Potential for frost action: moderate

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A -- 0 to 7 in	loam	moderate	1.42 to 1.70 in	6.1 to 7.3
Bt1,Bt2 -- 7 to 26 in	clay loam	moderate	2.83 to 3.59 in	6.1 to 8.4
Bk,C -- 26 to 60 in	loam	moderate	5.08 to 6.43 in	7.4 to 8.4

WbB--Waukon loam, 2 to 6 percent slopes

Waukon

Extent: 85 percent of the unit
Landform(s): hillslopes on moraines
Slope gradient: 2 to 6 percent
Parent material: loamy glacial till
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: well drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 5
Wind erodibility index (WEI): 56
Kw factor (surface layer) .28
Land capability, nonirrigated 2e
Hydric soil: no
Hydrologic group: B
Potential for frost action: moderate

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A -- 0 to 7 in	loam	moderate	1.42 to 1.70 in	6.1 to 7.3
Bt1,Bt2 -- 7 to 26 in	clay loam	moderate	2.83 to 3.59 in	6.1 to 8.4
Bk,C -- 26 to 60 in	loam	moderate	5.08 to 6.43 in	7.4 to 8.4

WbC--Waukon loam, 6 to 12 percent slopes

Waukon

Extent: 85 percent of the unit
Landform(s): hillslopes on moraines
Slope gradient: 6 to 12 percent
Parent material: loamy glacial till
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: well drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 5
Wind erodibility index (WEI): 56
Kw factor (surface layer) .28
Land capability, nonirrigated 3e
Hydric soil: no
Hydrologic group: B
Potential for frost action: moderate

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A -- 0 to 7 in	loam	moderate	1.42 to 1.70 in	6.1 to 7.3
Bt1,Bt2 -- 7 to 26 in	clay loam	moderate	2.83 to 3.59 in	6.1 to 8.4
Bk,C -- 26 to 60 in	loam	moderate	5.08 to 6.43 in	7.4 to 8.4

WbD--Waukon loam, 12 to 18 percent slopes

Waukon

Extent: 85 percent of the unit
Landform(s): hillslopes on moraines
Slope gradient: 12 to 18 percent
Parent material: loamy glacial till
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: well drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 5
Wind erodibility index (WEI): 56
Kw factor (surface layer) .28
Land capability, nonirrigated 4e
Hydric soil: no
Hydrologic group: B
Potential for frost action: moderate

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A -- 0 to 7 in	loam	moderate	1.42 to 1.70 in	6.1 to 7.3
Bt1,Bt2 -- 7 to 26 in	clay loam	moderate	2.83 to 3.59 in	6.1 to 8.4
Bk,C -- 26 to 60 in	loam	moderate	5.08 to 6.43 in	7.4 to 8.4

WdB2--Waukon clay loam, 2 to 6 percent slopes, eroded

Waukon, eroded

Extent: 85 percent of the unit
Landform(s): hillslopes on moraines
Slope gradient: 2 to 6 percent
Parent material: loamy glacial 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 2e
Hydric soil: no
Hydrologic group: C
Potential for frost action: moderate

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A -- 0 to 7 in	clay loam	moderately slow	1.20 to 1.49 in	6.1 to 7.3
Bt1,Bt2 -- 7 to 26 in	clay loam	moderate	2.83 to 3.59 in	6.1 to 8.4
Bk,C -- 26 to 60 in	loam	moderate	5.08 to 6.43 in	7.4 to 8.4

WdC2--Waukon clay loam, 6 to 12 percent slopes, eroded

Waukon, eroded

Extent: 85 percent of the unit
Landform(s): hillslopes on moraines
Slope gradient: 6 to 12 percent
Parent material: loamy glacial 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 3e
Hydric soil: no
Hydrologic group: C
Potential for frost action: moderate

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
A -- 0 to 7 in	clay loam	moderately slow	1.20 to 1.49 in	6.1 to 7.3
Bt1,Bt2 -- 7 to 26 in	clay loam	moderate	2.83 to 3.59 in	6.1 to 8.4
Bk,C -- 26 to 60 in	loam	moderate	5.08 to 6.43 in	7.4 to 8.4

We--Webster loam

Webster

Extent: 85 percent of the unit
Landform(s): flats on moraines, swales on moraines
Slope gradient: 0 to 2 percent
Parent material: loamy glacial 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 2w
Hydric soil: yes
Hydrologic group: B/D
Potential for frost action: high

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap,A1,A2,A3 -- 0 to 18 in	loam	moderate	3.44 to 3.80 in	6.6 to 7.3
Bg1,Bg2 -- 18 to 26 in	clay loam	moderate	1.26 to 1.42 in	6.6 to 7.8
Cg1,Cg2 -- 26 to 60 in	loam	moderate	4.74 to 6.43 in	7.4 to 8.4

Wn--Winger silty clay loam

Winger

Extent: 85 percent of the unit
Landform(s): swales on moraines, flats on moraines
Slope gradient: 0 to 2 percent
Parent material: silty lacustrine deposits over loamy glacial till
Restrictive feature(s): greater than 60 inches
Flooding: none
Ponding: none
Drainage class: poorly drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 4L
Wind erodibility index (WEI): 86
Kw factor (surface layer) .32
Land capability, nonirrigated 2w
Hydric soil: yes
Hydrologic group: B/D
Potential for frost action: high

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*
Ap,A -- 0 to 13 in	silty clay loam	moderate	2.86 to 3.12 in	7.4 to 8.4
Bkg1,Bkg2 -- 13 to 33 in	silty clay loam	moderate	4.42 to 4.82 in	7.4 to 8.4
2Cg -- 33 to 60 in	loam	moderate	3.75 to 5.09 in	7.4 to 8.4

Map Unit Description (MN)

Pope County, Minnesota

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.