

# **B.C. SOIL INFORMATION SYSTEM VOLUME IV**

Validation Procedures

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# **BRITISH COLUMBIA SOIL INFORMATION SYSTEM VALIDATION PROCEDURES**

(BCSIS Volume 4)

by  
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## **OVERVIEW OF THE BRITISH COLUMBIA SOIL INFORMATION SYSTEM (BCSIS)**

BCSIS is a computer based soil information system incorporating site, morphological, and laboratory data. The main objectives of the system are: to increase accessibility and reliability of soils information; to increase accuracy, volume, speed of response, and sophistication of interpretations; to increase speed of legend development; to increase ability to integrate soils data with other resource data. The system includes a number of easy to use functions related to data control, data management, and report generation. For data analysis, BCSIS is designed to be used in conjunction with the commercially available Statistical Analysis System (SAS). BCSIS resides on the Victoria mainframe computer but is accessible as well in other cities through the DATAPAC and SNA communications networks.

An extension of BCSIS is the Soil Laboratory System (SLS). SLS is an interactive, PDP 11/24 based minicomputer system designed to capture physical and chemical soils data determined in the soils laboratory in Kelowna. The main objectives of the system are: to increase the volume of samples which the lab can process, by eliminating or reducing the need to maintain lab notebooks and paper administrative records; to allow quick and accurate entry of the data into BCSIS files, by providing for the transference of final results to the mainframe in Victoria over the DATAPAC network. Raw data are entered into a number of video terminals located in the lab. Virtually all calculated results are performed automatically by the computer, provided that the raw data required by the calculations have already been entered. Reports on the laboratory analyses are printed and sent to the soil scientist requesting the analyses. The data may also be accessed and manipulated through BCSIS and SAS.

This document is one of a series describing BCSIS. These documents are written primarily for the professional soil scientist or ecologist, as opposed to the computer specialist. The titles within the series are as follows:

User Manual for the British Columbia Soil Information System (BCSIS Volume 1).

Data Entry Procedures for Ecosystem Description Forms (BCSIS Volume 2).

Data Entry Procedures for Soil Laboratory Forms (BCSIS Volume 3).

British Columbia Soil Information System Validation Procedures (BCSIS Volume 4).

Manipulation of Soils Data Using the British Columbia Soil Information System (BCSIS Volume 5).

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Mark Sondheim

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## **Purpose**

The British Columbia Soil Information System contains a series of algorithms designed to determine whether the site, soil, and laboratory entries meet various definition and consistency rules. These algorithms, as described in this document, compose the validation process. The process is defined in terms of three modules:

- Part I      considers consistency among data elements
- Part II     concerns the conditions and definitions of soil horizons
- Part III    involves validation of a pedon's taxonomic classification

These functions are explained in detail later in this volume. Note that the validation process is used to test whether entries may or may not be erroneous; the user has the option of ignoring any error messages produced by the routines. If he consciously does this, he can instruct the system to consider the data as acceptable by changing the validation status from 'not ok' to 'ok'.

This document is required to decipher the error messages produced by the validation procedure of BCSIS. Examples of these error messages and of the appropriate responses to them may be found in BCSIS Volume 1.

## **Introduction**

In the tables which follow, an entry of '1' on the table indicates that the correspondence between the two values of the variables defining the table appears reasonable; that is, it appears to fall within our preconceived biases. Entries read as blank indicate that the correspondence seems unlikely. These should produce a message suggesting a possible error in the data.

The parameters used in each consistency table are listed above each table. The field name abbreviations are usually indicated as (vertical variable) vs (horizontal variable). In the case of more than one vertical variable, the remainder are listed consecutively and in the same format.

## CONSISTENCY TABLES

**Table #**

1	Bulk Density	vs.	Type of Organic (O) Master Horizon
2	Consistence Moist	vs.	Consistence - Dry - Wet - Plasticity
3	Effervescence	vs.	pH - CaCl <sub>2</sub>
4	Free Water	vs.	Soil Drainage
5	Horizon Porosity	vs.	Perviousness
6	Master Horizon and Suffixes	vs.	Effervescence
7	Master Horizon and Suffixes	vs.	Structure - Primary - Kind
8	Soil H <sub>2</sub> O Ret. 10.0 K a	vs.	Type of Organic (O) Master Horizon
9	Mottles	vs.	Soil Drainage
10	Nutrient Regime	vs.	Surface Substrate - % Cover
11	Percent Rubbed Fibre	vs.	Type of Organic (O) Master Horizon
12	Perviousness	vs.	Soil Drainage
13	Site Position Meso	vs.	Ecological Moisture Regime
14	Site Position Meso	vs.	Nutrient Regime
15	Site Position Meso	vs.	Ratio of Meso Upslope Length / Meso Slope Length
16	Site Position Meso	vs.	Soil Drainage
17	Slope Percent	vs.	Soil Drainage
18	Soil Classification	vs.	Flood Hazard
19	Soil Classification	vs.	Humus Form Classification
20	Soil Classification	vs.	Slope Percent
21	Soil Classification	vs.	Soil Drainage
22	Soil Classification	vs.	Soil Moisture Subclass
23	Soil Classification	vs.	Soil Temperature Class
24	Soil Moisture Subclass	vs.	Soil Drainage
25	Soil Texture	vs.	Consistence
26	Soil Texture	vs.	Family Particle Size
27	Soil Texture	vs.	Structure - Primary - Kind
28	Soil Texture	vs.	Texture (Lab Determined)
29	Terrain Surface Expression	vs.	Site Position Meso
30	Terrain Texture	vs.	Perviousness
31	Von Post Scale	vs.	Type of Organic (O) Master Horizon



**TABLE 1: BULKDEN vs HDESMSTS**

<u>Bulk Density</u>	<u>Type of Organic Master Horizon</u>		
	If Master Horizon is O and corresponding Suffix is:		
	<b>F</b>	<b>M</b>	<b>H</b>
< 0.075	1		
0.075; 0.195		1	
> 0.195			1

**TABLE 2: CONSMSTS vs CONSDRY, CONSMST vs CONSWET, CONSMST vs CONSPLST**

<u>Consistence</u> <u>Moist</u>	<u>Consistence</u>																
	Dry							Wet				Plasticity					
	1	2	3	4	5	6	7		1	2	3	4		1	2	3	4
1	1								1					1			
2		1	1						1	1				1	1		
3			1	1	1					1	1				1	1	
4				1	1	1				1	1	1			1	1	1
5					1	1					1	1				1	1
6							1			1	1	1			1	1	1

**TABLE 3: EFFDEGR vs pH**

<u>Effervescence</u>	<u>pH - CaCl<sub>2</sub></u>	
	$\leq 6.5$	$> 6.5$
X	1	
VW		1
W		1
M		1
S		1

**TABLE 4: FREEWTR vs SOILDRNG**

<u>Free Water</u>	<u>Soil Drainage</u>					
	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>
A				1	1	1
B	1	1	1	1	1	

**TABLE 5: TXT+HPOR vs PERV**

	<u>Horizon Porosity</u>	<u>Perviousness</u>		
		<b>A</b>	<b>B</b>	<b>C</b>
Soil Texture is coarse:	S, CS, MS, FS, VFS, LS, LSCS, LMS, LFS, LVFS, SL, CSL, MSL, FSL, VFSL			
	S		1	1
	M	1	1	1
	H	1	1	1
Soil Texture is medium:	L, SIL, SI, SCL, CL, SICL			
	S			1
	M		1	1
	H	1	1	1
Soil Texture is fine:	SC, SIC, C, HC			
	S			1
	M		1	1
	H	1	1	1

**TABLE 6: HDESMSTS vs EFFDEGR**

<u>Master Horizon &amp; Suffixes</u>	<u>Effervescence</u>				
	X	V W	W	M	S
Any level with k or ca suffix		1	1	1	1
All other entries	1				

**TABLE 7: HDESMSTS vs STRCKND1**

<u>Master Horizon &amp; Suffixes</u>	<u>Structure-Primary-Kind</u>								
	<u>S</u> <u>G</u> <u>R</u>	<u>M</u> <u>A</u> <u>A</u>	<u>A</u> <u>B</u> <u>K</u>	<u>S</u> <u>B</u> <u>K</u>	<u>G</u> <u>R</u> <u>L</u>	<u>P</u> <u>P</u> <u>R</u>	<u>P</u> <u>P</u> <u>R</u>	<u>C</u> <u>O</u> <u>L</u>	<u>C</u> <u>D</u> <u>Y</u>
A with p only	1	1	1	1	1	1			1
A with h only			1	1	1	1	1	1	
A with h and e only			1	1	1	1	1	1	
A with e only	1			1	1	1			
A with ej only	1			1	1	1			
A with e and g only	1	1	1	1	1	1			
AB (no suffixes)	1	1	1	1	1	1	1	1	
BA (no suffixes)	1	1	1	1	1	1	1	1	
B with m only	1	1	1	1	1	1	1	1	
B with t only			1	1			1	1	
B with f only or with h & f only			1	1	1				
B with h only			1	1	1				
B with g only			1	1	1				1
BC (no suffixes)	1	1	1	1					
CB (no suffixes)	1	1	1	1					
C (no suffixes)	1	1	1	1					
C with g only	1	1	1	1					
L (inc. LF, LH, LFH)		1				1			
F (inc. FH)		1			1	1			
H		1	1	1	1	1			1
All other entries	1	1	1	1	1	1	1	1	

**TABLE 8: MOISSTAT vs HDESMSTS**

<u>Soil H<sub>2</sub>O Ret. 10.0 KPa</u>	<u>Type of Organic Master Horizon</u>		
	If Master Horizon is O and corresponding Suffix is:		
	<u>F</u>	<u>M</u>	<u>H</u>
< 0.48	1		
0.48, 0.70		1	
> 0.70			1

**TABLE 9: MOTABUN1 vs DRNG/HUP, MOTSIZE1 vs DRNG/HUP, MOTCON1 vs DRNG/HUP**

		<u>Horizon Upper Boundary &lt; 50</u>						<u>Horizon Upper Boundary &gt; 50</u>					
		<u>Soil Drainage</u>						<u>Soil Drainage</u>					
<u>Mottles</u>		<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>	<u>F</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>	<u>F</u>
Abundance	X	1	1	1				1	1				
	F				1	1	1			1	1	1	1
	C				1	1	1				1	1	1
	M				1	1	1				1	1	1
Size	F				1	1	1			1	1	1	1
	C				1	1	1			1	1	1	1
	M				1	1	1			1	1	1	1
Contrast	F				1	1	1			1	1	1	1
	D					1	1				1	1	1
	P					1	1				1	1	1

**TABLE 10: NUTREG vs COVER**

<u>Nutrient Regime</u>	<u>Surface Substrate - % Cover</u>					
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>
A	1	1	1	1		1
B	1	1	1	1		1
C	1			1	1	1
D				1	1	1
E				1	1	1
F				1	1	1

- |                             |            |
|-----------------------------|------------|
| 1. Decaying Wood: > 75      | (DECWOOD)  |
| 2. Bedrock: > 75            | (BEDROCK)  |
| 3. Cobbles and Stones: > 75 | (COBSTONE) |
| 4. Mineral Soil: > 75       | (MINSOIL)  |
| 5. Organic Matter: > 75     | (ORGMAT)   |
| 6. Water: > 75              | (WATER)    |

**TABLE 11: RUBFIBR% vs HDESMSTS**

<u>% Rubbed Fibre</u>	<u>Type of Organic Master Horizon</u> If Master Horizon is 0 and corresponding Suffix is:		
	<b>F</b>	<b>M</b>	<b>H</b>
> 40	1		
40, 10		1	
< 10			1

**TABLE 12: PERV vs SOILDRNG**

<u>Perviousness</u>	<u>Soil Drainage</u>					
	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>
A	1	1				
B		1	1	1	1	1
C		1	1	1	1	1

**TABLE 13: STPOSMES vs ECOMSTRG**

<u>Site Position Meso</u>	<u>Ecological Moisture Regime</u>								
	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>	<b>H</b>	<b>I</b>
A	1	1	1	1					
B	1	1	1	1	1				
C	1	1	1	1	1	1			
D		1	1	1	1	1	1	1	
E				1	1	1	1	1	1
F					1	1	1	1	1
G	1	1	1	1	1	1	1	1	1

**TABLE 14: STPOSMES vs NUTREG**

<u>Site Position Meso</u>	<u>Nutrient Regime</u>					
	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>	<u>F</u>
A	1	1				
B	1	1	1			
C		1	1	1		
D		1	1	1	1	
E			1	1	1	1
F			1	1	1	1
G	1	1	1	1	1	1

**TABLE 15: STPOSMES vs USLP/SLP**

<u>Site Position Meso</u>	<u>Ratio of Meso Upslope Length/Meso Slope Length</u>			
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
A	1			
B	1	1		
C		1	1	
D			1	1
E			1	1
F				1
G	1			1

1.  $\leq 0.25$
2.  $> 0.25, \leq 0.50$
3.  $> 0.50, \leq 0.75$
4.  $> 0.75$

**TABLE 16: STPOSMES vs SOILDRNG**

<u>Site Position Meso</u>	<u>Soil Drainage</u>					
	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>	<u>F</u>
A	1	1	1			
B	1	1	1			
C	1	1	1			
D	1	1	1	1		
E	1	1	1	1	1	
F	1	1	1	1	1	1
G	1	1	1	1	1	1

**TABLE 17: SLOPE vs SOILDRNG**

<u>Slope Percent</u>	<u>Soil Drainage</u>					
	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>	<u>F</u>
0.5	1	1	1	1	1	1
> 0.5, 2.5	1	1	1	1	1	1
> 2.5, 5	1	1	1	1	1	1
> 5, 10	1	1	1	1	1	
>10, 15	1	1	1	1	1	
> 15, 30	1	1	1	1	1	
> 30, 45	1	1	1	1		
> 45, 70	1	1	1	1		
> 70, 100	1	1	1			
> 100	1	1				



**TABLE 18: SCLS78 vs FLDHZRD**

<b><u>Soil Classification</u></b>	<b><u>Flood Hazard</u></b>				
	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>
Orthic Melanic Brunisol O.MB				1	1
Eluviated Melanic Brunisol E.MB				1	1
Gleyed Melanic Brunisol GL.MB			1	1	1
Gleyed Eluviated Melanic Brunisol GLE.MB			1	1	1
Orthic Eutric Brunisol O.EB				1	1
Eluviated Eutric Brunisol E.EB				1	1
Gleyed Eutric Brunisol GL.EB			1	1	1
Gleyed Eluviated Eutric Brunisol GLE.EB			1	1	1
Orthic Sombric Brunisol O.SB				1	1
Eluviated Sombric Brunisol E.SB				1	1
Duric Sombric Brunisol DU.SB			1	1	1
Gleyed Sombric Brunisol GL.SB			1	1	1
Gleyed Eluviated Sombric Brunisol GLE.SB			1	1	1
Orthic Dystric Brunisol O.DYB				1	1
Eluviated Dystric Brunisol E.DYB				1	1
Duric Dystric Brunisol DU.DYB			1	1	1
Gleyed Dystric Brunisol GL.DYB			1	1	1
Gleyed Eluviated Dystric Brunisol GLE.DYB			1	1	1
Orthic Brown O.B				1	1
Rego Brown R.B				1	1
Calcareous Brown CA.B				1	1
Eluviated Brown E.B				1	1
Solonetzic Brown SZ.B				1	1
Gleyed Brown GL.B			1	1	1
Gleyed Rego Brown GLR.B			1	1	1
Gleyed Calcareous Brown GLCA.B			1	1	1
Gleyed Eluviated Brown GLE.B			1	1	1
Gleyed Solonetzic Brown GLSZ.B			1	1	1
Orthic Dark Brown O.DB				1	1
Rego Dark Brown R.DB				1	1
Calcareous Dark Brown CA.DB				1	1
Eluviated Dark Brown E.DB				1	1
Solonetzic Dark Brown SZ.DB				1	1
Gleyed Dark Brown GL.DB			1	1	1
Gleyed Rego Dark Brown GLR.DB			1	1	1
Gleyed Calcareous Dark Brown GLCA.DB			1	1	1
Gleyed Eluviated Dark Brown GLE.DB			1	1	1
Gleyed Solonetzic Dark Brown GLSZ.DB			1	1	1
Orthic Black O.BL				1	1
Rego Black R.BL				1	1
Calcareous Black CA.BL				1	1
Eluviated Black E.BL				1	1
Solonetzic Black SZ.BL				1	1
Gleyed Black GL.BL			1	1	1
Gleyed Rego Black GLR.BL			1	1	1
Gleyed Calcareous Black GLCA.BL			1	1	1
Gleyed Eluviated Black GLE.BL			1	1	1

**Soil Classification****Flood Hazard**

	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>
Gleyed Solonetzic Black GLSZ.BL			1	1	1
Orthic Dark Grey O.DG				1	1
Rego Dark Grey R.DG				1	1
Calcareous Dark Grey CA.DG				1	1
Solonetzic Dark Grey SZ.DG				1	1
Gleyed Dark Grey GL.DG			1	1	1
Gleyed Rego Dark Grey GLR.DG			1	1	1
Gleyed Calcareous Dark Grey GLCA.DG			1	1	1
Gleyed Solonetzic Dark Grey GLSZ.DG			1	1	1
Orthic Turbic Cryosol O.TC				1	1
Brunisolic Turbic Cryosol BR.TC				1	1
Regosolic Turbic Cryosol R.TC				1	1
Gleysolic Turbic Cryosol GL.TC	1	1	1	1	1
Orthic Static Cryosol O.SC				1	1
Brunisolic Static Cryosol BR.SC				1	1
Regosolic Static Cryosol R.SC				1	1
Gleysolic Static Cryosol GL.SC	1	1	1	1	1
Fibric Organic Cryosol FI.OC				1	1
Mesic Organic Cryosol ME.OC				1	1
Humic Organic Cryosol HU.OC				1	1
Terric Fibric Organic Cryosol TFI.OC				1	1
Terric Mesic Organic Cryosol TME.OC				1	1
Terric Humic Organic Cryosol THU.OC				1	1
Glacic Organic Cryosol GC.OC				1	1
Orthic Humic Gleysol O.HG	1	1	1	1	1
Rego Humic Gleysol R.HG	1	1	1	1	1
Fera Humic Gleysol FE.HG	1	1	1	1	1
Orthic Gleysol O.G	1	1	1	1	1
Rego Gleysol R.G	1	1	1	1	1
Fera Gleysol FE.G	1	1	1	1	1
Orthic Luvisol O.LG	1	1	1	1	1
Humic Luvisol HU.LG	1	1	1	1	1
Fera Luvisol FE.LG	1	1	1	1	1
Fragic Luvisol FR.LG	1	1	1	1	1
Orthic Grey Brown Luvisol O.GBL				1	1
Brunisolic Grey Brown Luvisol BR.GBL				1	1
Podzolic Grey Brown Luvisol PZ.GBL				1	1
Gleyed Grey Brown Luvisol GL.GBL			1	1	1
Gleyed Brunisolic Grey Brown Luvisol GLBR.GBL			1	1	1
Gleyed Podzolic Grey Brown Luvisol BLPZ.GBL			1	1	1
Orthic Grey Luvisol O.GL				1	1
Dark Grey Luvisol D.GL				1	1
Brunisolic Grey Luvisol BR.GL				1	1
Podzolic Grey Luvisol PZ.GL				1	1
Solonetzic Grey Luvisol SZ.GL				1	1
Fragic Grey Luvisol FR.GL				1	1
Gleyed Grey Luvisol GL.GL			1	1	1
Gleyed Dark Grey Luvisol GLD.GL			1	1	1

**Soil Classification****Flood Hazard**

	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>
Gleyed Brunisolic Grey Luvisol GLBR.GL			1	1	1
Gleyed Podzolic Grey Luvisol GLPZ.GL			1	1	1
Gleyed Solonetzic Grey Luvisol GLSZ.GL			1	1	1
Gleyed Fragic Grey Luvisol GLFR.GL			1	1	1
Typic Fibrisol TY.F	1	1	1	1	1
Mesic Fibrisol ME.F	1	1	1	1	1
Humic Fibrisol HU.F	1	1	1	1	1
Limno Fibrisol LM.F	1	1	1	1	1
Cumulo Fibrisol CU.F	1	1	1	1	1
Terric Fibrisol T.F	1	1	1	1	1
Terric Mesic Fibrisol TME.Fsol	1	1	1	1	1
Terric Humic Fibrisol THU.F	1	1	1	1	1
Hydric Fibrisol HY.F	1	1	1	1	1
Typic Mesisol TY.M	1	1	1	1	1
Fibric Mesisol FI.M	1	1	1	1	1
Humic Mesisol HU.M	1	1	1	1	1
Limno Mesisol LM.M	1	1	1	1	1
Cumulo Mesisol CU.M	1	1	1	1	1
Terric Mesisol T.M	1	1	1	1	1
Terric Fibric Mesisol TFI.M	1	1	1	1	1
Terric Humic Mesisol THU.M	1	1	1	1	1
Hydric Mesisol HY.M	1	1	1	1	1
Typic Humisol TY.H	1	1	1	1	1
Fibric Humisol FI.H	1	1	1	1	1
Mesic Humisol ME.H	1	1	1	1	1
Limno Humisol LM.H	1	1	1	1	1
Cumulo Humisol CU.H	1	1	1	1	1
Terric Humisol T.H	1	1	1	1	1
Terric Fibric Humisol TFI.H	1	1	1	1	1
Terric Mesic Humisol TME.H	1	1	1	1	1
Hydric Humisol HY.H	1	1	1	1	1
Typic Folisol TY.FO					1
Orthic Humic Podzol O.HP				1	1
Ortstein Humic Podzol OT.HP				1	1
Placic Humic Podzol P.HP				1	1
Duric Humic Podzol DU.HP				1	1
Fragic Humic Podzol FR.HP				1	1
Orthic Ferro-Humic Podzol O.FHP				1	1
Ortstein Ferro-Humic Podzol OT.FHP				1	1
Placic Ferro-Humic Podzol P.FHP				1	1
Duric Ferro-Humic Podzol DU.FHP				1	1
Fragic Ferro-Humic Podzol FR.FHP				1	1
Luvisolic Ferro-Humic Podzol LU.FHP				1	1
Sombric Ferro-Humic Podzol SM.FHP				1	1
Gleyed Ferro-Humic Podzol GL.FHP			1	1	1
Gleyed Ortstein Ferro-Humic Podzol GLOT.FHP			1	1	1
Gleyed Sombric Ferro-Humic Podzol GLSM.FHP			1	1	1
Orthic Humo-Ferric Podzol O.HFP				1	1
Ortstein Humo-Ferric Podzol OT.HFP				1	1
Placic Humo-Ferric Podzol P.HFP				1	1

**Soil Classification****Flood Hazard**

	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>
Duric Humo-Ferric Podzol DU.HFP				1	1
Fragic Humo-Ferric Podzol FR.HFP				1	1
Luvisolic Humo-Ferric Podzol LU.HFP				1	1
Sombric Humo-Ferric Podzol SM.HFP				1	1
Gleyed Humo-Ferric Podzol GL.HFP			1	1	1
Gleyed Ortstein Humo-Ferric Podzol GLOT.HFP			1	1	1
Gleyed Sombric Humo-Ferric Podzol GLSM.HFP			1	1	1
Orthic Regosol O.R	1	1	1	1	1
Cumulic Regosol CU.R	1	1	1	1	1
Gleyed Regosol GL.R	1	1	1	1	1
Gleyed Cumulic Regosol GLCU.R	1	1	1	1	1
Orthic Humic Regosol O.HR	1	1	1	1	1
Cumulic Humic Regosol CU.HR	1	1	1	1	1
Gleyed Humic Regosol GL.HR	1	1	1	1	1
Gleyed Cumulic Humic Regosol GLCU.HR	1	1	1	1	1
Brown Solonetz B.SZ				1	1
Dark Brown Solonetz DBSZ				1	1
Black Solonetz BL.SZ				1	1
Alkaline Solonetz A.SZ				1	1
Gleyed Brown Solonetz GLB.SZ			1	1	1
Gleyed Dark Brown Solonetz GLDB.SZ			1	1	1
Gleyed Black Solonetz GLBL.SZ			1	1	1
Brown Solodized Solonetz B.SS				1	1
Dark Brown Solodized Solonetz DB.SS				1	1
Black Solodized Solonetz BL.SS				1	1
Dark Grey Solodized Solonetz DG.SS				1	1
Grey Solodized Solonetz G.SS				1	1
Gleyed Brown Solodized Solonetz GLB.SS			1	1	1
Gleyed Dark Brown Solodized Solonetz GLDB.SS			1	1	1
Gleyed Black Solodized Solonetz GLBL.SS			1	1	1
Gleyed Dark Grey Solodized Solonetz GLDG.SS			1	1	1
Gleyed Grey Solodized Solonetz GLG.SS			1	1	1
Brown Solod B.SO				1	1
Dark Brown Solod DB.SO				1	1
Black Solod BL.SO				1	1
Dark Grey Solod DG.SO				1	1
Grey Solod G.SO				1	1
Gleyed Brown Solod GLB.SO			1	1	1
Gleyed Dark Brown Solod GLDB.SO			1	1	1
Gleyed Black Solod GLBL.SO			1	1	1
Gleyed Dark Grey Solod GLDG.SO			1	1	1
Gleyed Grey Solod GLG.SO			1	1	1

**TABLE 19: SCLS78 vs HUMCLS**

<u>Soil Classification</u>	<u>Humus Form Classification</u>																
	Z • M U	R • M U	T • M D	W • M D	M L • M D	F • M R	H F • M R	H • M R	F H • M R	F P • M R	M P • M R	H P • M R	• M N	• M U	• M D	• M R	P • M R
Orthic Melanic Brunisol O.MB	1	1												1			
Eluviated Melanic Brunisol E.MB	1	1												1			
Gleyed Melanic Brunisol GL.MB	1	1												1			
Gleyed Eluviated Melanic Brunisol GLE.MB	1	1												1			
Orthic Eutric Brunisol O.EB		1		1										1	1		
Eluviated Eutric Brunisol E.EB		1		1										1	1		
Gleyed Eutric Brunisol GL.EB	1	1		1	1									1	1		
Gleyed Eluviated Eutric Brunisol GLE.EB				1	1										1		
Orthic Sombric Brunisol O.SB	1	1		1										1	1		
Eluviated Sombric Brunisol E.SB	1	1		1										1	1		
Duric Sombric Brunisol DU.SB	1	1		1										1	1		
Gleyed Sombric Brunisol GL.SB	1	1		1										1	1		
Gleyed Eluviated Sombric Brunisol GLE.SB	1	1		1										1	1		
Orthic Dystric Brunisol O.DYB				1		1									1	1	
Eluviated Dystric Brunisol E.DYB						1	1									1	
Duric Dystric Brunisol DU.DYB						1	1									1	
Gleyed Dystric Brunisol GL.DYB							1	1	1							1	
Gleyed Eluviated Dystric Brunisol GLE.DYB							1	1	1							1	
Orthic Brown O.B		1												1			
Rego Brown R.B		1												1			
Calcareous Brown CA.B		1												1			
Eluviated Brown E.B		1												1			
Solonetzic Brown SZ.B		1												1			
Gleyed Brown GL.B	1	1												1			
Gleyed Rego Brown GLR.B	1	1												1			
Gleyed Calcareous Brown GLCA.B	1	1												1			
Gleyed Eluviated Brown GLE.B	1	1												1			
Gleyed Solonetzic Brown GLSZ.B	1	1												1			
Orthic Dark Brown O.DB		1												1			
Rego Dark Brown R.DB		1												1			
Calcareous Dark Brown CA.DB		1												1			
Eluviated Dark Brown E.DB		1												1			
Solonetzic Dark Brown SZ.DB		1												1			
Gleyed Dark Brown GL.DB	1	1												1			
Gleyed Rego Dark Brown GLR.DB	1	1												1			
Gleyed Calcareous Dark Brown GLCA.DB	1	1												1			
Gleyed Eluviated Dark Brown GLE.DB	1	1												1			
Gleyed Solonetzic Dark Brown GLSZ.DB	1	1												1			
Orthic Black O.BL		1												1			
Rego Black R.BL		1												1			
Calcarious Black CA.BL		1												1			
Eluviated Black E.BL		1												1			
Solonetzic Black SZ.BL		1												1			
Gleyed Black GL.BL	1	1												1			
Gleyed Rego Black GLR.BL	1	1												1			
Gleyed Calcareous Black GLCA.BL	1	1												1			

	Z • M U	R • M U	T • M D	W • M D	M L • M D	F • M R	H F • M R	H • M R	F H • M R	F P • M R	M P • M R	H P • M R	• M N	• M U	• M D	• M R	P • M R
Gleyed Eluviated Black GLE.BL	1	1												1			
Gleyed Solonetzic Black GLSZ.BL	1	1												1			
Orthic Dark Grey O.DG		1												1			
Rego Dark Grey R.DG		1												1			
Calcareous Dark Grey CA.DG		1												1			
Solonetzic Dark Grey SZ.DG		1												1			
Gleyed Dark Grey GL.DG	1	1												1			
Gleyed Rego Dark Grey GLR.DG	1	1												1			
Gleyed Calcareous Dark Grey GLCA.DG	1	1												1			
Gleyed Solonetzic Dark Grey GLSZ.DG	1	1												1			
Orthic Turbic Cryosol O.TC						1	1									1	
Brunisolic Turbic Cryosol BR.TC						1	1									1	
Regosolic Turbic Cryosol R.TC						1	1									1	
Gleysolic Turbic Cryosol GL.TC							1									1	
Orthic Static Cryosol O.SC						1	1									1	
Brunisolic Static Cryosol BR.SC						1	1									1	
Regosolic Static Cryosol R.SC						1	1									1	
Gleysolic Static Cryosol GL.SC							1									1	
Fibric Organic Cryosol FI.OC										1	1					1	1
Mesic Organic Cryosol ME.OC										1	1					1	1
Humic Organic Cryosol HU.OC											1	1				1	1
Terric Fibric Organic Cryosol TFI.OC										1						1	1
Terric Mesic Organic Cryosol TME.OC											1					1	1
Terric Humic Organic Cryosol THU.OC												1				1	1
Glacic Organic Cryosol GC.OC										1	1					1	1
Orthic Humic Gleysol O.HG									1							1	
Rego Humic Gleysol R.HG									1							1	
Fera Humic Gleysol FE.HG									1							1	
Orthic Gleysol O.G	1					1	1	1	1	1	1			1		1	1
Rego Gleysol R.G	1					1	1	1	1	1	1			1		1	1
Fera Gleysol FE.G						1	1	1	1	1	1					1	1
Orthic Luvic Gleysol O.LG	1					1	1			1	1			1		1	1
Humic Luvic Gleysol HU.LG	1						1	1	1	1	1			1		1	1
Fera Luvic Gleysol FE.LG							1	1	1	1	1					1	1
Fragic Luvic Gleysol FR.LG							1	1	1	1	1					1	1
Orthic Grey Brown Luvisol O.GBL	1		1											1	1		
Brunisolic Grey Brown Luvisol BR.GBL	1		1						1					1	1	1	
Podzolic Grey Brown Luvisol PZ.GBL	1		1				1		1					1	1	1	
Gleyed Grey Brown Luvisol GL.GBL	1													1			
Gleyed Brunisolic Grey Brown Luvisol GLBR.GBL	1		1				1		1					1	1	1	
Gleyed Podzolic Grey Brown Luvisol BLPZ.GBL	1		1				1	1	1					1	1	1	
Orthic Grey Luvisol O.GL			1	1		1									1	1	
Dark Grey Luvisol D.GL	1	1	1			1	1							1	1	1	
Brunisolic Grey Luvisol BR.GL				1		1	1								1	1	
Podzolic Grey Luvisol PZ.GL						1	1									1	
Solonetzic Grey Luvisol SZ.GL			1	1	1												
Fragic Grey Luvisol FR.GL		1	1	1	1									1	1		
Gleyed Grey Luvisol GL.GL			1	1		1	1		1						1	1	
Gleyed Dark Grey Luvisol GLD.GL		1	1	1	1			1						1	1	1	
Gleyed Brunisolic Grey Luvisol GLBR.GL				1		1	1		1						1	1	
Gleyed Podzolic Grey Luvisol GLPZ.GL						1	1		1							1	

	Z • M U	R • M U	T • M D	W • M D	M L • M D	F • M R	H F • M R	H • M R	F H • M R	F P • M R	M P • M R	H P • M R	• M N	• M U	• M D	• M R	P • M R
Gleyed Solonetzic Grey Luvisol GLSZ.GL	1	1	1		1									1	1		
Gleyed Fragic Grey Luvisol GLFR.GL		1				1	1	1	1						1	1	
Typic Fibrisol TY.F																	
Mesic Fibrisol ME.F																	
Humic Fibrisol HU.F																	
Limno Fibrisol LM.F																	
Cumulo Fibrisol CU.F																	
Terric Fibrisol T.F																	
Terric Mesic Fibri TME.Fsol																	
Terric Humic Fibrisol THU.F																	
Hydric Fibrisol HY.F																	
Typic Mesisol TY.M																	
Fibric Mesisol FI.M																	
Humic Mesisol HU.M																	
Limno Mesisol LM.M																	
Cumulo Mesisol CU.M																	
Terric Mesisol T.M																	
Terric Fibric Mesisol TFI.M																	
Terric Humic Mesisol THU.M																	
Hydric Mesisol HY.M																	
Typic Humisol TY.H																	
Fibric Humisol FI.H																	
Mesic Humisol ME.H																	
Limno Humisol LM.H																	
Cumulo Humisol CU.H																	
Terric Humisol T.H																	
Terric Fibric Humisol TFI.H																	
Terric Mesic Humisol TME.H																	
Hydric Humisol HY.H																	
Typic Folisol TY.FO																	
Orthic Humic Podzol O.HP						1	1	1	1		1	1				1	1
Ortstein Humic Podzol OT.HP						1	1	1	1		1	1				1	1
Placic Humic Podzol P.HP						1	1	1	1		1	1				1	1
Duric Humic Podzol DU.HP						1	1	1	1		1	1				1	1
Fragic Humic Podzol FR.HP						1	1	1	1		1	1				1	1
Orthic Ferro-Humic Podzol O.FHP						1	1		1		1	1				1	1
Ortstein Ferro-Humic Podzol OT.FHP						1	1		1		1	1				1	1
Placic Ferro-Humic Podzol P.FHP						1	1		1		1	1				1	1
Duric Ferro-Humic Podzol DU.FHP						1	1		1		1	1				1	1
Fragic Ferro-Humic Podzol FR.FHP						1	1		1		1	1				1	1
Luvisolic Ferro-Humic Podzol LU.FHP						1	1		1		1	1				1	1
Sombritic Ferro-Humic Podzol SM.FHP	1	1					1		1		1	1		1		1	1
Gleyed Ferro-Humic Podzol GL.FHP						1	1	1	1		1	1				1	1
Gleyed Ortstein Ferro-Humic Podzol GLOT.FHP						1	1	1	1		1	1				1	1
Gleyed Sombritic Ferro-Humic Podzol GLSM.FHP							1	1	1		1	1				1	1
Orthic Humo-Ferric Podzol O.HFP						1	1		1							1	1
Ortstein Humo-Ferric Podzol OT.HFP						1	1		1							1	1
Placic Humo-Ferric Podzol P.HFP						1	1	1	1		1					1	1
Duric Humo-Ferric Podzol DU.HFP						1	1		1							1	1
Fragic Humo-Ferric Podzol FR.HFP						1	1		1							1	1
Luvisolic Humo-Ferric Podzol LU.HFP						1	1		1							1	1
Sombritic Humo-Ferric Podzol SM.HFP	1	1					1		1					1		1	1
Gleyed Humo-Ferric Podzol GL.HFP							1	1	1		1	1	1			1	1
					M		H		F	F	M	H					

	Z • M U	R • M U	T • M D	W • M D	L • M D	F • M R	F • M R	H • M R	H • M R	P • M R	P • M R	P • M R	• M N	• M U	• M D	• M R	P • M R
Gleyed Ortstein Humo-Ferric Podzol GLOT.HFP							1	1	1		1	1	1			1	1
Gleyed Sombria Humo-Ferric Podzol GLSM.HFP	1	1					1	1	1		1	1	1	1		1	1
Orthic Regosol O.R	1	1	1	1	1	1	1	1	1					1	1	1	
Cumulic Regosol CU.R	1	1	1	1	1	1	1	1	1					1	1	1	
Gleyed Regosol GL.R	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1
Gleyed Cumulic Regosol GLCU.R	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1
Orthic Humic Regosol O.HR	1	1	1	1	1		1	1	1					1	1	1	
Cumulic Humic Regosol CU.HR	1	1	1	1	1		1	1	1					1	1	1	
Gleyed Humic Regosol GL.HR	1	1	1	1	1		1	1	1		1	1	1	1	1	1	1
Gleyed Cumulic Humic Regosol GLCU.HR	1	1	1	1	1		1	1	1		1	1	1	1	1	1	1
Brown Solonetz B.SZ	1	1	1	1	1									1	1		
Dark Brown Solonetz DBSZ	1	1	1	1	1									1	1		
Black Solonetz BL.SZ	1	1	1		1									1	1		
Alkaline Solonetz A.SZ	1	1	1		1								1	1	1		
Gleyed Brown Solonetz GLB.SZ	1	1	1		1								1	1	1		
Gleyed Dark Brown Solonetz GLDB.SZ	1	1	1		1								1	1	1		
Gleyed Black Solonetz GLBL.SZ	1	1	1		1								1	1	1		
Brown Solodized Solonetz B.SS	1	1	1		1									1	1		
Dark Brown Solodized Solonetz DB.SS	1	1	1		1									1	1		
Black Solodized Solonetz BL.SS	1	1	1		1									1	1		
Dark Grey Solodized Solonetz DG.SS	1	1	1		1									1	1		
Grey Solodized Solonetz G.SS	1	1	1		1									1	1		
Gleyed Brown Solodized Solonetz GLB.SS	1	1	1		1								1	1	1		
Gleyed Dark Brown Solodized Solonetz GLDB.SS	1	1	1		1								1	1	1		
Gleyed Black Solodized Solonetz GLBL.SS	1	1	1		1								1	1	1		
Gleyed Dark Grey Solodized Solonetz GLDG.SS	1	1	1		1								1	1	1		
Gleyed Grey Solodized Solonetz GLG.SS	1	1	1		1								1	1	1		
Brown Solod B.SO	1	1	1		1									1	1		
Dark Brown Solod DB.SO	1	1	1		1									1	1		
Black Solod BL.SO	1	1	1		1									1	1		
Dark Grey Solod DG.SO	1	1	1		1									1	1		
Grey Solod G.SO	1	1	1		1									1	1		
Gleyed Brown Solod GLB.SO	1	1	1		1								1	1	1		
Gleyed Dark Brown Solod GLDB.SO	1	1	1		1								1	1	1		
Gleyed Black Solod GLBL.SO	1	1	1		1								1	1	1		
Gleyed Dark Grey Solod GLDG.SO	1	1	1		1								1	1	1		
Gleyed Grey Solod GLG.SO	1	1	1		1								1	1	1		



**TABLE 20: SCLS78 vs SLOPE**

<b><u>Soil Classification</u></b>	<b><u>Slope Percent</u></b>									
	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>	<b>H</b>	<b>I</b>	<b>J</b>
Orthic Melanic Brunisol O.MB	1	1	1	1	1	1	1	1	1	1
Eluviated Melanic Brunisol E.MB	1	1	1	1	1	1	1	1		
Gleyed Melanic Brunisol GL.MB	1	1	1	1	1	1				
Gleyed Eluviated Melanic Brunisol GLE.MB	1	1	1	1	1	1				
Orthic Eutric Brunisol O.EB	1	1	1	1	1	1	1	1	1	1
Eluviated Eutric Brunisol E.EB	1	1	1	1	1	1	1	1		
Gleyed Eutric Brunisol GL.EB	1	1	1	1	1	1				
Gleyed Eluviated Eutric Brunisol GLE.EB	1	1	1	1	1	1				
Orthic Sombric Brunisol O.SB	1	1	1	1	1	1	1	1	1	1
Eluviated Sombric Brunisol E.SB	1	1	1	1	1	1	1	1		
Duric Sombric Brunisol DU.SB	1	1	1	1	1	1	1	1		
Gleyed Sombric Brunisol GL.SB	1	1	1	1	1	1				
Gleyed Eluviated Sombric Brunisol GLE.SB	1	1	1	1	1	1				
Orthic Dystric Brunisol O.DYB	1	1	1	1	1	1	1	1	1	1
Eluviated Dystric Brunisol E.DYB	1	1	1	1	1	1	1	1		
Duric Dystric Brunisol DU.DYB	1	1	1	1	1	1	1	1		
Gleyed Dystric Brunisol GL.DYB	1	1	1	1	1	1				
Gleyed Eluviated Dystric Brunisol GLE.DYB	1	1	1	1	1	1				
Orthic Brown O.B	1	1	1	1	1	1	1	1		
Rego Brown R.B	1	1	1	1	1	1	1	1	1	1
Calcareous Brown CA.B	1	1	1	1	1	1	1	1	1	1
Eluviated Brown E.B	1	1	1	1	1	1	1	1		
Solonetzic Brown SZ.B	1	1	1	1	1	1				
Gleyed Brown GL.B	1	1	1	1						
Gleyed Rego Brown GLR.B	1	1	1	1						
Gleyed Calcareous Brown GLCA.B	1	1	1	1						
Gleyed Eluviated Brown GLE.B	1	1	1	1						
Gleyed Solonetzic Brown GLSZ.B	1	1	1	1						
Orthic Dark Brown O.DB	1	1	1	1	1	1	1	1		
Rego Dark Brown R.DB	1	1	1	1	1	1	1	1	1	1
Calcareous Dark Brown CA.DB	1	1	1	1	1	1	1	1	1	1
Eluviated Dark Brown E.DB	1	1	1	1	1	1	1	1		
Solonetzic Dark Brown SZ.DB	1	1	1	1	1	1				
Gleyed Dark Brown GL.DB	1	1	1	1						
Gleyed Rego Dark Brown GLR.DB	1	1	1	1						
Gleyed Calcareous Dark Brown GLCA.DB	1	1	1	1						
Gleyed Eluviated Dark Brown GLE.DB	1	1	1	1						
Gleyed Solonetzic Dark Brown GLSZ.DB	1	1	1	1						
Orthic Black O.BL	1	1	1	1	1	1	1			
Rego Black R.BL	1	1	1	1	1	1	1	1	1	1
Calcareous Black CA.BL	1	1	1	1	1	1	1	1	1	1
Eluviated Black E.BL	1	1	1	1	1	1	1	1		
Solonetzic Black SZ.BL	1	1	1	1	1					
Gleyed Black GL.BL	1	1	1	1						
Gleyed Rego Black GLR.BL	1	1	1	1						
Gleyed Calcareous Black GLCA.BL	1	1	1	1						

**Soil Classification****Slope Percent**

	A	B	C	D	E	F	G	H	I	J
Gleyed Eluviated Black GLE.BL	1	1	1	1						
Gleyed Solonetzic Black GLSZ.BL	1	1	1	1						
Orthic Dark Grey O.DG	1	1	1	1	1	1	1	1		
Rego Dark Grey R.DG	1	1	1	1	1	1	1	1	1	1
Calcareous Dark Grey CA.DG	1	1	1	1	1	1	1			
Solonetzic Dark Grey SZ.DG	1	1	1	1						
Gleyed Dark Grey GL.DG	1	1	1	1						
Gleyed Rego Dark Grey GLR.DG	1	1	1	1						
Gleyed Calcareous Dark Grey GLCA.DG	1	1	1	1						
Gleyed Solonetzic Dark Grey GLSZ.DG	1	1	1	1						
Orthic Turbic Cryosol O.TC	1	1	1	1	1	1	1	1		
Brunisolic Turbic Cryosol BR.TC	1	1	1	1	1	1	1	1		
Regosolic Turbic Cryosol R.TC	1	1	1	1	1	1	1	1	1	1
Gleysolic Turbic Cryosol GL.TC	1	1	1	1	1	1	1			
Orthic Static Cryosol O.SC	1	1	1	1	1	1	1	1		
Brunisolic Static Cryosol BR.SC	1	1	1	1	1	1	1	1		
Regosolic Static Cryosol R.SC	1	1	1	1	1	1	1	1	1	1
Gleysolic Static Cryosol GL.SC	1	1	1	1	1	1	1			
Fibric Organic Cryosol FI.OC	1	1	1	1	1					
Mesic Organic Cryosol ME.OC	1	1	1	1	1					
Humic Organic Cryosol HU.OC	1	1	1	1	1					
Terric Fibric Organic Cryosol TFI.OC	1	1	1	1	1					
Terric Mesic Organic Cryosol TME.OC	1	1	1	1	1					
Terric Humic Organic Cryosol THU.OC	1	1	1	1	1					
Glacic Organic Cryosol GC.OC	1	1	1	1	1					
Orthic Humic Gleysol O.HG	1	1	1	1						
Rego Humic Gleysol R.HG	1	1	1	1						
Fera Humic Gleysol FE.HG	1	1	1	1						
Orthic Gleysol O.G	1	1	1	1	1	1				
Rego Gleysol R.G	1	1	1	1	1	1				
Fera Gleysol FE.G	1	1	1	1	1	1				
Orthic Luvic Gleysol O.LG	1	1	1	1	1					
Humic Luvic Gleysol HU.LG	1	1	1	1	1					
Fera Luvic Gleysol FE.LG	1	1	1	1	1					
Fragic Luvic Gleysol FR.LG	1	1	1	1	1					
Orthic Grey Brown Luvisol O.GBL	1	1	1	1	1	1	1	1		
Brunisolic Grey Brown Luvisol BR.GBL	1	1	1	1	1	1	1	1		
Podzolic Grey Brown Luvisol PZ.GBL	1	1	1	1	1	1	1	1		
Gleyed Grey Brown Luvisol GL.GBL	1	1	1	1	1	1				
Gleyed Brunisolic Grey Brown Luvisol GLBR.GBL	1	1	1	1	1	1				
Gleyed Podzolic Grey Brown Luvisol BLPZ.GBL	1	1	1	1	1	1				
Orthic Grey Luvisol O.GL	1	1	1	1	1	1	1	1		
Dark Grey Luvisol D.GL	1	1	1	1	1	1	1			
Brunisolic Grey Luvisol BR.GL	1	1	1	1	1	1	1			
Podzolic Grey Luvisol PZ.GL	1	1	1	1	1	1	1			
Solonetzic Grey Luvisol SZ.GL	1	1	1	1						
Fragic Grey Luvisol FR.GL	1	1	1	1	1	1	1	1		
Gleyed Grey Luvisol GL.GL	1	1	1	1	1	1				

**Soil Classification****Slope Percent**

	A	B	C	D	E	F	G	H	I	J
Gleyed Dark Grey Luvisol GLD.GL	1	1	1	1	1	1				
Gleyed Brunisolic Grey Luvisol GLBR.GL	1	1	1	1	1	1				
Gleyed Podzolic Grey Luvisol GLPZ.GL	1	1	1	1	1	1				
Gleyed Solonetzic Grey Luvisol GLSZ.GL	1	1	1	1	1	1				
Gleyed Fragic Grey Luvisol GLFR.GL	1	1	1	1	1	1				
Typic Fibrisol TY.F	1	1	1	1	1					
Mesic Fibrisol ME.F	1	1	1	1	1					
Humic Fibrisol HU.F	1	1	1	1						
Limno Fibrisol LM.F	1	1	1	1						
Cumulo Fibrisol CU.F	1	1	1	1						
Terric Fibrisol T.F	1	1	1	1						
Terric Mesic Fibrisol TME.Fsol	1	1	1	1						
Terric Humic Fibrisol THU.F	1	1	1	1						
Hydric Fibrisol HY.F	1	1	1	1						
Typic Mesisol TY.M	1	1	1	1	1					
Fibric Mesisol FI.M	1	1	1	1	1					
Humic Mesisol HU.M	1	1	1	1						
Limno Mesisol LM.M	1	1	1	1						
Cumulo Mesisol CU.M	1	1	1	1						
Terric Mesisol T.M	1	1	1	1						
Terric Fibric Mesisol TFI.M	1	1	1	1						
Terric Humic Mesisol THU.M	1	1	1	1						
Hydric Mesisol HY.M	1	1	1	1						
Typic Humisol TY.H	1	1	1	1	1					
Fibric Humisol FI.H	1	1	1	1	1					
Mesic Humisol ME.H	1	1	1	1						
Limno Humisol LM.H	1	1	1	1						
Cumulo Humisol CU.H	1	1	1	1						
Terric Humisol T.H	1	1	1	1						
Terric Fibric Humisol TFI.H	1	1	1	1						
Terric Mesic Humisol TME.H	1	1	1	1						
Hydric Humisol HY.H	1	1	1	1						
Typic Folisol TY.FO	1	1	1	1	1	1	1	1	1	
Orthic Humic Podzol O.HP	1	1	1	1	1	1	1	1	1	
Ortstein Humic Podzol OT.HP	1	1	1	1	1	1				
Placic Humic Podzol P.HP	1	1	1	1	1					
Duric Humic Podzol DU.HP	1	1	1	1	1	1	1	1		
Fragic Humic Podzol FR.HP	1	1	1	1	1	1	1	1		
Orthic Ferro-Humic Podzol O.FHP	1	1	1	1	1	1	1	1	1	
Ortstein Ferro-Humic Podzol OT.FHP	1	1	1	1	1	1				
Placic Ferro-Humic Podzol P.FHP	1	1	1	1	1					
Duric Ferro-Humic Podzol DU.FHP	1	1	1	1	1	1	1	1		
Fragic Ferro-Humic Podzol FR.FHP	1	1	1	1	1	1	1	1		
Luvisolic Ferro-Humic Podzol LU.FHP	1	1	1	1	1	1	1	1		
Sombric Ferro-Humic Podzol SM.FHP	1	1	1	1	1	1	1	1	1	
Gleyed Ferro-Humic Podzol GL.FHP	1	1	1	1	1	1				
Gleyed Ortstein Ferro-Humic Podzol GLOT.FHP	1	1	1	1	1	1				
Gleyed Sombric Ferro-Humic Podzol GLSM.FHP	1	1	1	1	1	1				
Orthic Humo-Ferric Podzol O.HFP	1	1	1	1	1	1	1	1	1	
Ortstein Humo-Ferric Podzol OT.HFP	1	1	1	1	1	1				

**Soil Classification****Slope Percent**

	A	B	C	D	E	F	G	H	I	J
Placic Humo-Ferric Podzol P.HFP	1	1	1	1	1					
Duric Humo-Ferric Podzol DU.HFP	1	1	1	1	1	1	1	1	1	
Fragic Humo-Ferric Podzol FR.HFP	1	1	1	1	1	1	1	1		
Luviosolic Humo-Ferric Podzol LU.HFP	1	1	1	1	1	1	1	1		
Sombric Humo-Ferric Podzol SM.HFP	1	1	1	1	1	1	1	1	1	
Gleyed Humo-Ferric Podzol GL.HFP	1	1	1	1	1	1				
Gleyed Ortstein Humo-Ferric Podzol GLOT.HFP	1	1	1	1	1	1				
Gleyed Sombric Humo-Ferric Podzol GLSM.HFP	1	1	1	1	1	1				
Orthic Regosol O.R	1	1	1	1	1	1	1	1	1	
Cumulic Regosol CU.R	1	1	1	1	1	1	1	1	1	
Gleyed Regosol GL.R	1	1	1	1	1	1				
Gleyed Cumulic Regosol GLCU.R	1	1	1	1	1	1				
Orthic Humic Regosol O.HR	1	1	1	1	1	1	1	1	1	
Cumulic Humic Regosol CU.HR	1	1	1	1	1	1	1	1	1	
Gleyed Humic Regosol GL.HR	1	1	1	1	1	1				
Gleyed Cumulic Humic Regosol GLCU.HR	1	1	1	1	1	1				
Brown Solonetz B.SZ	1	1	1	1	1					
Dark Brown Solonetz DBSZ	1	1	1	1	1					
Black Solonetz BL.SZ	1	1	1	1	1					
Alkaline Solonetz A.SZ	1	1	1	1	1					
Gleyed Brown Solonetz GLB.SZ	1	1	1	1	1					
Gleyed Dark Brown Solonetz GLDB.SZ	1	1	1	1	1					
Gleyed Black Solonetz GLBL.SZ	1	1	1	1	1					
Brown Solodized Solonetz B.SS	1	1	1	1	1					
Dark Brown Solodized Solonetz DB.SS	1	1	1	1	1					
Black Solodized Solonetz BL.SS	1	1	1	1	1					
Dark Grey Solodized Solonetz DG.SS	1	1	1	1	1					
Grey Solodized Solonetz G.SS	1	1	1	1	1					
Gleyed Brown Solodized Solonetz GLB.SS	1	1	1	1	1					
Gleyed Dark Brown Solodized Solonetz GLDB.SS	1	1	1	1	1					
Gleyed Black Solodized Solonetz GLBL.SS	1	1	1	1	1					
Gleyed Dark Grey Solodized Solonetz GLDG.SS	1	1	1	1	1					
Gleyed Grey Solodized Solonetz GLG.SS	1	1	1	1	1					
Brown Solod B.SO	1	1	1	1	1					
Dark Brown Solod DB.SO	1	1	1	1	1					
Black Solod BL.SO	1	1	1	1	1					
Dark Grey Solod DG.SO	1	1	1	1	1					
Grey Solod G.SO	1	1	1	1	1					
Gleyed Brown Solod GLB.SO	1	1	1	1	1					
Gleyed Dark Brown Solod GLDB.SO	1	1	1	1	1					
Gleyed Black Solod GLBL.SO	1	1	1	1	1					
Gleyed Dark Grey Solod GLDG.SO	1	1	1	1	1					
Gleyed Grey Solod GLG.SO	1	1	1	1	1					

A	0.5	F	> 15, 30
B	> 0.5, 2.5	G	> 30, 45
C	> 2.5, 5	H	> 45, 70
D	> 5, 10	I	> 70, 100
E	> 10, 15	J	> 100

**TABLE 21: SCLS78 vs SOILDRNG**

<b><u>Soil Classification</u></b>	<b><u>Soil Drainage</u></b>					
	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>
Orthic Melanic Brunisol O.MB	1	1	1			
Eluviated Melanic Brunisol E.MB	1	1	1			
Gleyed Melanic Brunisol GL.MB				1	1	
Gleyed Eluviated Melanic Brunisol GLE.MB				1	1	
Orthic Eutric Brunisol O.EB	1	1	1			
Eluviated Eutric Brunisol E.EB	1	1	1			
Gleyed Eutric Brunisol GL.EB				1	1	
Gleyed Eluviated Eutric Brunisol GLE.EB				1	1	
Orthic Sombric Brunisol O.SB	1	1	1			
Eluviated Sombric Brunisol E.SB	1	1	1			
Duric Sombric Brunisol DU.SB	1	1	1	1	1	
Gleyed Sombric Brunisol GL.SB				1	1	
Gleyed Eluviated Sombric Brunisol GLE.SB				1	1	
Orthic Dystric Brunisol O.DYB	1	1	1			
Eluviated Dystric Brunisol E.DYB	1	1	1			
Duric Dystric Brunisol DU.DYB	1	1	1	1	1	
Gleyed Dystric Brunisol GL.DYB				1	1	
Gleyed Eluviated Dystric Brunisol GLE.DYB				1	1	
Orthic Brown O.B	1	1	1			
Rego Brown R.B	1	1	1			
Calcareous Brown CA.B	1	1	1			
Eluviated Brown E.B		1	1			
Solonetzic Brown SZ.B		1	1			
Gleyed Brown GL.B				1	1	
Gleyed Rego Brown GLR.B				1	1	
Gleyed Calcareous Brown GLCA.B				1	1	
Gleyed Eluviated Brown GLE.B				1	1	
Gleyed Solonetzic Brown GLSZ.B				1	1	
Orthic Dark Brown O.DB	1	1	1			
Rego Dark Brown R.DB	1	1	1			
Calcareous Dark Brown CA.DB	1	1	1			
Eluviated Dark Brown E.DB		1	1			
Solonetzic Dark Brown SZ.DB		1	1			
Gleyed Dark Brown GL.DB				1	1	
Gleyed Rego Dark Brown GLR.DB				1	1	
Gleyed Calcareous Dark Brown GLCA.DB				1	1	
Gleyed Eluviated Dark Brown GLE.DB				1	1	
Gleyed Solonetzic Dark Brown GLSZ.DB				1	1	
Orthic Black O.BL		1	1			
Rego Black R.BL		1	1			
Calcareous Black CA.BL		1	1			
Eluviated Black E.BL		1	1			
Solonetzic Black SZ.BL		1	1			
Gleyed Black GL.BL				1	1	
Gleyed Rego Black GLR.BL				1	1	
Gleyed Calcareous Black GLCA.BL				1	1	

**Soil Classification****Soil Drainage**

	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>
Gleyed Eluviated Black GLE.BL				1	1	
Gleyed Solonetzic Black GLSZ.BL				1	1	
Orthic Dark Grey O.DG		1	1			
Rego Dark Grey R.DG		1	1			
Calcareous Dark Grey CA.DG		1	1			
Solonetzic Dark Grey SZ.DG		1	1			
Gleyed Dark Grey GL.DG				1	1	
Gleyed Rego Dark Grey GLR.DG				1	1	
Gleyed Calcareous Dark Grey GLCA.DG				1	1	
Gleyed Solonetzic Dark Grey GLSZ.DG				1	1	
Orthic Turbic Cryosol O.TC			1	1		
Brunisolic Turbic Cryosol BR.TC		1	1	1		
Regosolic Turbic Cryosol R.TC		1	1	1		
Gleysolic Turbic Cryosol GL.TC					1	1
Orthic Static Cryosol O.SC		1	1	1		
Brunisolic Static Cryosol BR.SC		1	1	1		
Regosolic Static Cryosol R.SC		1	1	1		
Gleysolic Static Cryosol GL.SC					1	1
Fibric Organic Cryosol FI.OC					1	1
Mesic Organic Cryosol ME.OC					1	1
Humic Organic Cryosol HU.OC					1	1
Terric Fibric Organic Cryosol TFI.OC					1	1
Terric Mesic Organic Cryosol TME.OC					1	1
Terric Humic Organic Cryosol THU.OC					1	1
Glacic Organic Cryosol GC.OC					1	1
Orthic Humic Gleysol O.HG					1	1
Rego Humic Gleysol R.HG					1	1
Fera Humic Gleysol FE.HG					1	1
Orthic Gleysol O.G					1	1
Rego Gleysol R.G					1	1
Fera Gleysol FE.G					1	1
Orthic Luvic Gleysol O.LG					1	1
Humic Luvic Gleysol HU.LG					1	1
Fera Luvic Gleysol FE.LG					1	1
Fragic Luvic Gleysol FR.LG					1	1
Orthic Grey Brown Luvisol O.GBL		1	1			
Brunisolic Grey Brown Luvisol BR.GBL		1	1			
Podzolic Grey Brown Luvisol PZ.GBL		1	1			
Gleyed Grey Brown Luvisol GL.GBL				1	1	
Gleyed Brunisolic Grey Brown Luvisol GLBR.GBL				1	1	
Gleyed Podzolic Grey Brown Luvisol BLPZ.GBL				1	1	
Orthic Grey Luvisol O.GL		1	1			
Dark Grey Luvisol D.GL		1	1			
Brunisolic Grey Luvisol BR.GL		1	1			
Podzolic Grey Luvisol PZ.GL		1	1			
Solonetzic Grey Luvisol SZ.GL		1	1			
Fragic Grey Luvisol FR.GL		1	1			
Gleyed Grey Luvisol GL.GL				1	1	

**Soil Classification****Soil Drainage**

	A	B	C	D	E	F
Gleyed Dark Grey Luvisol GLD.GL				1	1	
Gleyed Brunisolic Grey Luvisol GLBR.GL				1	1	
Gleyed Podzolic Grey Luvisol GLPZ.GL				1	1	
Gleyed Solonetzic Grey Luvisol GLSZ.GL				1	1	
Gleyed Fragic Grey Luvisol GLFR.GL				1	1	
Typic Fibrisol TY.F				1	1	1
Mesic Fibrisol ME.F					1	1
Humic Fibrisol HU.F					1	1
Limno Fibrisol LM.F					1	1
Cumulo Fibrisol CU.F					1	1
Terric Fibrisol T.F					1	1
Terric Mesic Fibri TME.Fsol					1	1
Terric Humic Fibrisol THU.F					1	1
Hydric Fibrisol HY.F					1	1
Typic Mesisol TY.M					1	1
Fibric Mesisol FI.M					1	1
Humic Mesisol HU.M					1	1
Limno Mesisol LM.M					1	1
Cumulo Mesisol CU.M					1	1
Terric Mesisol T.M					1	1
Terric Fibric Mesisol TFI.M					1	1
Terric Humic Mesisol THU.M					1	1
Hydric Mesisol HY.M					1	1
Typic Humisol TY.H					1	1
Fibric Humisol FI.H					1	1
Mesic Humisol ME.H					1	1
Limno Humisol LM.H					1	1
Cumulo Humisol CU.H					1	1
Terric Humisol T.H					1	1
Terric Fibric Humisol TFI.H					1	1
Terric Mesic Humisol TME.H					1	1
Hydric Humisol HY.H					1	1
Typic Folisol TY.FO	1	1	1	1		
Orthic Humic Podzol O.HP		1	1	1		
Ortstein Humic Podzol OT.HP		1	1	1		
Placic Humic Podzol P.HP			1	1	1	
Duric Humic Podzol DU.HP			1	1		
Fragic Humic Podzol FR.HP			1	1		
Orthic Ferro-Humic Podzol O.FHP		1	1			
Ortstein Ferro-Humic Podzol OT.FHP		1	1			
Placic Ferro-Humic Podzol P.FHP		1	1	1	1	
Duric Ferro-Humic Podzol DU.FHP		1	1	1		
Fragic Ferro-Humic Podzol FR.FHP		1	1	1		
Luvisolic Ferro-Humic Podzol LU.FHP		1	1	1		
Sombric Ferro-Humic Podzol SM.FHP		1	1			
Gleyed Ferro-Humic Podzol GL.FHP				1	1	
Gleyed Ortstein Ferro-Humic Podzol GLOT.FHP				1	1	
Gleyed Sombric Ferro-Humic Podzol GLSM.FHP				1	1	
Orthic Humo-Ferric Podzol O.HFP	1	1	1			
Ortstein Humo-Ferric Podzol OT.HFP	1	1	1			

**Soil Classification****Soil Drainage**

	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>
Placic Humo-Ferric Podzol P.HFP	1	1	1	1	1	
Duric Humo-Ferric Podzol DU.HFP	1	1	1	1		
Fragic Humo-Ferric Podzol FR.HFP	1	1	1	1		
Luvisolic Humo-Ferric Podzol LU.HFP	1	1	1	1		
Sombric Humo-Ferric Podzol SM.HFP	1	1	1			
Gleyed Humo-Ferric Podzol GL.HFP				1	1	
Gleyed Ortstein Humo-Ferric Podzol GLOT.HFP				1	1	
Gleyed Sombric Humo-Ferric Podzol GLSM.HFP				1	1	
Orthic Regosol O.R	1	1	1			
Cumulic Regosol CU.R	1	1	1			
Gleyed Regosol GL.R				1	1	
Gleyed Cumulic Regosol GLCU.R				1	1	
Orthic Humic Regosol O.HR	1	1	1			
Cumulic Humic Regosol CU.HR	1	1	1			
Gleyed Humic Regosol GL.HR				1	1	
Gleyed Cumulic Humic Regosol GLCU.HR				1	1	
Brown Solonetz B.SZ		1	1			
Dark Brown Solonetz DBSZ		1	1			
Black Solonetz BL.SZ		1	1			
Alkaline Solonetz A.SZ		1	1	1		
Gleyed Brown Solonetz GLB.SZ				1	1	
Gleyed Dark Brown Solonetz GLDB.SZ				1	1	
Gleyed Black Solonetz GLBL.SZ				1	1	
Brown Solodized Solonetz B.SS		1	1			
Dark Brown Solodized Solonetz DB.SS		1	1			
Black Solodized Solonetz BL.SS		1	1			
Dark Grey Solodized Solonetz DG.SS		1	1			
Grey Solodized Solonetz G.SS		1	1			
Gleyed Brown Solodized Solonetz GLB.SS				1	1	
Gleyed Dark Brown Solodized Solonetz GLDB.SS				1	1	
Gleyed Black Solodized Solonetz GLBL.SS				1	1	
Gleyed Dark Grey Solodized Solonetz GLDG.SS				1	1	
Gleyed Grey Solodized Solonetz GLG.SS				1	1	
Brown Solod B.SO		1	1			
Dark Brown Solod DB.SO		1	1			
Black Solod BL.SO		1	1			
Dark Grey Solod DG.SO		1	1			
Grey Solod G.SO		1	1			
Gleyed Brown Solod GLB.SO				1	1	
Gleyed Dark Brown Solod GLDB.SO				1	1	
Gleyed Black Solod GLBL.SO				1	1	
Gleyed Dark Grey Solod GLDG.SO				1	1	
Gleyed Grey Solod GLG.SO				1	1	



**TABLE 22: SCLS78 vs SLMSTSUB**

<b><u>Soil Classification</u></b>	<b><u>Soil Moisture Subclass</u></b>									
	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>	<b>H</b>	<b>I</b>	<b>J</b>
Orthic Melanic Brunisol O.MB				1	1	1	1			
Eluviated Melanic Brunisol E.MB					1	1	1			
Gleyed Melanic Brunisol GL.MB								1		
Gleyed Eluviated Melanic Brunisol GLE.MB								1		
Orthic Eutric Brunisol O.EB				1	1	1	1			
Eluviated Eutric Brunisol E.EB					1	1	1			
Gleyed Eutric Brunisol GL.EB								1		
Gleyed Eluviated Eutric Brunisol GLE.EB								1		
Orthic Sombric Brunisol O.SB				1	1	1	1			
Eluviated Sombric Brunisol E.SB					1	1	1			
Duric Sombric Brunisol DU.SB					1	1	1	1		
Gleyed Sombric Brunisol GL.SB								1		
Gleyed Eluviated Sombric Brunisol GLE.SB								1		
Orthic Dystric Brunisol O.DYB				1	1	1	1			
Eluviated Dystric Brunisol E.DYB					1	1	1			
Duric Dystric Brunisol DU.DYB					1	1	1	1		
Gleyed Dystric Brunisol GL.DYB								1		
Gleyed Eluviated Dystric Brunisol GLE.DYB								1		
Orthic Brown O.B			1	1						
Rego Brown R.B			1	1						
Calcareous Brown CA.B			1	1						
Eluviated Brown E.B			1	1						
Solonetzic Brown SZ.B			1	1						
Gleyed Brown GL.B								1		
Gleyed Rego Brown GLR.B								1		
Gleyed Calcareous Brown GLCA.B								1		
Gleyed Eluviated Brown GLE.B								1		
Gleyed Solonetzic Brown GLSZ.B								1		
Orthic Dark Brown O.DB			1	1	1					
Rego Dark Brown R.DB			1	1	1					
Calcareous Dark Brown CA.DB			1	1	1					
Eluviated Dark Brown E.DB			1	1	1					
Solonetzic Dark Brown SZ.DB			1	1	1					
Gleyed Dark Brown GL.DB								1		
Gleyed Rego Dark Brown GLR.DB								1		
Gleyed Calcareous Dark Brown GLCA.DB								1		
Gleyed Eluviated Dark Brown GLE.DB								1		
Gleyed Solonetzic Dark Brown GLSZ.DB								1		
Orthic Black O.BL				1	1					
Rego Black R.BL				1	1					
Calcareous Black CA.BL				1	1					
Eluviated Black E.BL				1	1					
Solonetzic Black SZ.BL				1	1					
Gleyed Black GL.BL							1	1		
Gleyed Rego Black GLR.BL							1	1		
Gleyed Calcareous Black GLCA.BL							1	1		

**Soil Classification****Soil Moisture Subclass**

	A	B	C	D	E	F	G	H	I	J
Gleyed Eluviated Black GLE.BL							1	1		
Gleyed Solonetzic Black GLSZ.BL							1	1		
Orthic Dark Grey O.DG				1	1					
Rego Dark Grey R.DG				1	1					
Calcareous Dark Grey CA.DG				1	1					
Solonetzic Dark Grey SZ.DG				1	1					
Gleyed Dark Grey GL.DG							1	1		
Gleyed Rego Dark Grey GLR.DG							1	1		
Gleyed Calcareous Dark Grey GLCA.DG							1	1		
Gleyed Solonetzic Dark Grey GLSZ.DG							1	1		
Orthic Turbic Cryosol O.TC						1	1	1		
Brunisolic Turbic Cryosol BR.TC						1	1	1		
Regosolic Turbic Cryosol R.TC						1	1	1		
Gleysolic Turbic Cryosol GL.TC							1	1	1	1
Orthic Static Cryosol O.SC						1	1	1		
Brunisolic Static Cryosol BR.SC						1	1	1		
Regosolic Static Cryosol R.SC						1	1	1		
Gleysolic Static Cryosol GL.SC							1	1	1	1
Fibric Organic Cryosol FI.OC									1	1
Mesic Organic Cryosol ME.OC									1	1
Humic Organic Cryosol HU.OC									1	1
Terric Fibric Organic Cryosol TFI.OC									1	1
Terric Mesic Organic Cryosol TME.OC									1	1
Terric Humic Organic Cryosol THU.OC									1	1
Glacic Organic Cryosol GC.OC									1	1
Orthic Humic Gleysol O.HG								1	1	1
Rego Humic Gleysol R.HG								1	1	1
Fera Humic Gleysol FE.HG								1	1	1
Orthic Gleysol O.G								1	1	1
Rego Gleysol R.G								1	1	1
Fera Gleysol FE.G								1	1	1
Orthic Luvic Gleysol O.LG								1	1	1
Humic Luvic Gleysol HU.LG								1	1	1
Fera Luvic Gleysol FE.LG								1	1	1
Fragic Luvic Gleysol FR.LG								1	1	1
Orthic Grey Brown Luvisol O.GBL					1	1				
Brunisolic Grey Brown Luvisol BR.GBL					1	1				
Podzolic Grey Brown Luvisol PZ.GBL					1	1				
Gleyed Grey Brown Luvisol GL.GBL							1	1		
Gleyed Brunisolic Grey Brown Luvisol GLBR.GBL							1	1		
Gleyed Podzolic Grey Brown Luvisol BLPZ.GBL							1	1		
Orthic Grey Luvisol O.GL					1	1	1			
Dark Grey Luvisol D.GL					1	1	1			
Brunisolic Grey Luvisol BR.GL					1	1	1			
Podzolic Grey Luvisol PZ.GL					1	1	1			
Solonetzic Grey Luvisol SZ.GL					1	1	1			
Fragic Grey Luvisol FR.GL					1	1	1			
Gleyed Grey Luvisol GL.GL							1	1		

**Soil Classification****Soil Moisture Subclass**

	A	B	C	D	E	F	G	H	I	J
Gleyed Dark Grey Luvisol GLD.GL							1	1		
Gleyed Brunisolic Grey Luvisol GLBR.GL							1	1		
Gleyed Podzolic Grey Luvisol GLPZ.GL							1	1		
Gleyed Solonetzic Grey Luvisol GLSZ.GL							1	1		
Gleyed Fragic Grey Luvisol GLFR.GL							1	1		
Typic Fibrisol TY.F									1	1
Mesic Fibrisol ME.F									1	1
Humic Fibrisol HU.F									1	1
Limno Fibrisol LM.F									1	1
Cumulo Fibrisol CU.F									1	1
Terric Fibrisol T.F									1	1
Terric Mesic Fibrisol TME.Fsol									1	1
Terric Humic Fibrisol THU.F									1	1
Hydric Fibrisol HY.F										1
Typic Mesisol TY.M									1	1
Fibric Mesisol FI.M									1	1
Humic Mesisol HU.M									1	1
Limno Mesisol LM.M									1	1
Cumulo Mesisol CU.M									1	1
Terric Mesisol T.M									1	1
Terric Fibric Mesisol TFI.M									1	1
Terric Humic Mesisol THU.M									1	1
Hydric Mesisol HY.M										1
Typic Humisol TY.H									1	1
Fibric Humisol FI.H									1	1
Mesic Humisol ME.H									1	1
Limno Humisol LM.H									1	1
Cumulo Humisol CU.H									1	1
Terric Humisol T.H									1	1
Terric Fibric Humisol TFI.H									1	1
Terric Mesic Humisol TME.H									1	1
Hydric Humisol HY.H										1
Typic Folisol TY.FO				1	1	1	1			
Orthic Humic Podzol O.HP							1	1		
Ortstein Humic Podzol OT.HP							1	1		
Placic Humic Podzol P.HP							1	1		
Duric Humic Podzol DU.HP							1	1		
Fragic Humic Podzol FR.HP							1	1		
Orthic Ferro-Humic Podzol O.FHP						1	1			
Ortstein Ferro-Humic Podzol OT.FHP						1	1			
Placic Ferro-Humic Podzol P.FHP						1	1	1		
Duric Ferro-Humic Podzol DU.FHP						1	1	1		
Fragic Ferro-Humic Podzol FR.FHP						1	1	1		
Luvisolic Ferro-Humic Podzol LU.FHP						1	1	1		
Sombritic Ferro-Humic Podzol SM.FHP						1	1			
Gleyed Ferro-Humic Podzol GL.FHP							1	1		
Gleyed Ortstein Ferro-Humic Podzol GLOT.FHP							1	1		
Gleyed Sombritic Ferro-Humic Podzol GLSM.FHP							1	1		
Orthic Humo-Ferric Podzol O.HFP					1	1	1			
Ortstein Humo-Ferric Podzol OT.HFP					1	1	1			

**Soil Classification****Soil Moisture Subclass**

	A	B	C	D	E	F	G	H	I	J
Placic Humo-Ferric Podzol P.HFP					1	1	1	1		
Duric Humo-Ferric Podzol DU.HFP					1	1	1	1		
Fragic Humo-Ferric Podzol FR.HFP					1	1	1	1		
Luvisolic Humo-Ferric Podzol LU.HFP					1	1	1	1		
Sombric Humo-Ferric Podzol SM.HFP					1	1	1			
Gleyed Humo-Ferric Podzol GL.HFP							1	1		
Gleyed Ortstein Humo-Ferric Podzol GLOT.HFP							1	1		
Gleyed Sombric Humo-Ferric Podzol GLSM.HFP							1	1		
Orthic Regosol O.R		1	1	1	1	1	1			
Cumulic Regosol CU.R				1	1	1	1			
Gleyed Regosol GL.R							1	1		
Gleyed Cumulic Regosol GLCU.R							1	1		
Orthic Humic Regosol O.HR		1	1	1	1	1	1			
Cumulic Humic Regosol CU.HR				1	1	1	1			
Gleyed Humic Regosol GL.HR							1	1		
Gleyed Cumulic Humic Regosol GLCU.HR							1	1		
Brown Solonetz B.SZ		1	1	1						
Dark Brown Solonetz DBSZ		1	1	1						
Black Solonetz BL.SZ		1	1	1	1					
Alkaline Solonetz A.SZ		1	1	1						
Gleyed Brown Solonetz GLB.SZ							1	1		
Gleyed Dark Brown Solonetz GLDB.SZ							1	1		
Gleyed Black Solonetz GLBL.SZ							1	1		
Brown Solodized Solonetz B.SS		1	1	1						
Dark Brown Solodized Solonetz DB.SS		1	1	1						
Black Solodized Solonetz BL.SS			1	1	1					
Dark Grey Solodized Solonetz DG.SS			1	1	1					
Grey Solodized Solonetz G.SS			1	1	1					
Gleyed Brown Solodized Solonetz GLB.SS							1	1		
Gleyed Dark Brown Solodized Solonetz GLDB.SS							1	1		
Gleyed Black Solodized Solonetz GLBL.SS							1	1		
Gleyed Dark Grey Solodized Solonetz GLDG.SS							1	1		
Gleyed Grey Solodized Solonetz GLG.SS							1	1		
Brown Solod B.SO		1	1	1						
Dark Brown Solod DB.SO		1	1	1	1					
Black Solod BL.SO			1	1	1					
Dark Grey Solod DG.SO			1	1	1					
Grey Solod G.SO				1	1					
Gleyed Brown Solod GLB.SO							1	1		
Gleyed Dark Brown Solod GLDB.SO							1	1		
Gleyed Black Solod GLBL.SO							1	1		
Gleyed Dark Grey Solod GLDG.SO							1	1		
Gleyed Grey Solod GLG.SO							1	1		

**TABLE 23: SCLS78 vs SLTMPCLS**

<b><u>Soil Classification</u></b>	<b><u>Soil Temperature Class</u></b>				
	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>
Orthic Melanic Brunisol O.MB		1	1	1	1
Eluviated Melanic Brunisol E.MB		1	1	1	1
Gleyed Melanic Brunisol GL.MB		1	1	1	1
Gleyed Eluviated Melanic Brunisol GLE.MB		1	1	1	1
Orthic Eutric Brunisol O.EB		1	1	1	1
Eluviated Eutric Brunisol E.EB		1	1	1	1
Gleyed Eutric Brunisol GL.EB		1	1	1	1
Gleyed Eluviated Eutric Brunisol GLE.EB		1	1	1	1
Orthic Sombric Brunisol O.SB		1	1	1	1
Eluviated Sombric Brunisol E.SB		1	1	1	1
Duric Sombric Brunisol DU.SB		1	1	1	1
Gleyed Sombric Brunisol GL.SB		1	1	1	1
Gleyed Eluviated Sombric Brunisol GLE.SB		1	1	1	1
Orthic Dystric Brunisol O.DYB		1	1	1	1
Eluviated Dystric Brunisol E.DYB		1	1	1	1
Duric Dystric Brunisol DU.DYB		1	1	1	1
Gleyed Dystric Brunisol GL.DYB		1	1	1	1
Gleyed Eluviated Dystric Brunisol GLE.DYB		1	1	1	1
Orthic Brown O.B			1	1	1
Rego Brown R.B			1	1	1
Calcareous Brown CA.B			1	1	1
Eluviated Brown E.B			1	1	1
Solonetzic Brown SZ.B			1	1	1
Gleyed Brown GL.B			1	1	1
Gleyed Rego Brown GLR.B			1	1	1
Gleyed Calcareous Brown GLCA.B			1	1	1
Gleyed Eluviated Brown GLE.B			1	1	1
Gleyed Solonetzic Brown GLSZ.B			1	1	1
Orthic Dark Brown O.DB			1	1	1
Rego Dark Brown R.DB			1	1	1
Calcareous Dark Brown CA.DB			1	1	1
Eluviated Dark Brown E.DB			1	1	1
Solonetzic Dark Brown SZ.DB			1	1	1
Gleyed Dark Brown GL.DB			1	1	1
Gleyed Rego Dark Brown GLR.DB			1	1	1
Gleyed Calcareous Dark Brown GLCA.DB			1	1	1
Gleyed Eluviated Dark Brown GLE.DB			1	1	1
Gleyed Solonetzic Dark Brown GLSZ.DB			1	1	1
Orthic Black O.BL			1	1	
Rego Black R.BL			1	1	
Calcarious Black CA.BL			1	1	
Eluviated Black E.BL			1	1	
Solonetzic Black SZ.BL			1	1	
Gleyed Black GL.BL			1	1	
Gleyed Rego Black GLR.BL			1	1	
Gleyed Calcareous Black GLCA.BL			1	1	
Gleyed Eluviated Black GLE.BL			1	1	

**Soil Classification****Soil Temperature Class**

	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>
Gleyed Solonetzic Black GLSZ.BL			1	1	
Orthic Dark Grey O.DG			1	1	
Rego Dark Grey R.DG			1	1	
Calcareous Dark Grey CA.DG			1	1	
Solonetzic Dark Grey SZ.DG			1	1	
Gleyed Dark Grey GL.DG			1	1	
Gleyed Rego Dark Grey GLR.DG			1	1	
Gleyed Calcareous Dark Grey GLCA.DG			1	1	
Gleyed Solonetzic Dark Grey GLSZ.DG			1	1	
Orthic Turbic Cryosol O.TC	1	1			
Brunisolic Turbic Cryosol BR.TC	1	1			
Regosolic Turbic Cryosol R.TC	1	1			
Gleysolic Turbic Cryosol GL.TC	1	1			
Orthic Static Cryosol O.SC	1	1			
Brunisolic Static Cryosol BR.SC	1	1			
Regosolic Static Cryosol R.SC	1	1			
Gleysolic Static Cryosol GL.SC	1	1			
Fibric Organic Cryosol FI.OC	1	1			
Mesic Organic Cryosol ME.OC	1	1			
Humic Organic Cryosol HU.OC	1	1			
Terric Fibric Organic Cryosol TFI.OC	1	1			
Terric Mesic Organic Cryosol TME.OC	1	1			
Terric Humic Organic Cryosol THU.OC	1	1			
Glacic Organic Cryosol GC.OC					
Orthic Humic Gleysol O.HG		1	1	1	1
Rego Humic Gleysol R.HG		1	1	1	1
Fera Humic Gleysol FE.HG		1	1	1	1
Orthic Gleysol O.G		1	1	1	1
Rego Gleysol R.G		1	1	1	1
Fera Gleysol FE.G		1	1	1	1
Orthic Luvic Gleysol O.LG		1	1	1	1
Humic Luvic Gleysol HU.LG		1	1	1	1
Fera Luvic Gleysol FE.LG		1	1	1	1
Fragic Luvic Gleysol FR.LG		1	1	1	1
Orthic Grey Brown Luvisol O.GBL					1
Brunisolic Grey Brown Luvisol BR.GBL					1
Podzolic Grey Brown Luvisol PZ.GBL					1
Gleyed Grey Brown Luvisol GL.GBL					1
Gleyed Brunisolic Grey Brown Luvisol GLBR.GBL					1
Gleyed Podzolic Grey Brown Luvisol BLPZ.GBL					1
Orthic Grey Luvisol O.GL			1	1	
Dark Grey Luvisol D.GL			1	1	
Brunisolic Grey Luvisol BR.GL		1	1	1	
Podzolic Grey Luvisol PZ.GL		1	1	1	
Solonetzic Grey Luvisol SZ.GL			1	1	
Fragic Grey Luvisol FR.GL			1	1	
Gleyed Grey Luvisol GL.GL			1	1	

**Soil Classification****Soil Temperature Class**

	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>
Gleyed Dark Grey Luvisol GLD.GL			1	1	
Gleyed Brunisolic Grey Luvisol GLBR.GL		1	1	1	
Gleyed Podzolic Grey Luvisol GLPZ.GL		1	1	1	
Gleyed Solonetzic Grey Luvisol GLSZ.GL			1	1	
Gleyed Fragic Grey Luvisol GLFR.GL			1	1	
Typic Fibrisol TY.F		1	1	1	1
Mesic Fibrisol ME.F		1	1	1	1
Humic Fibrisol HU.F		1	1	1	1
Limno Fibrisol LM.F		1	1	1	1
Cumulo Fibrisol CU.F		1	1	1	1
Terric Fibrisol T.F		1	1	1	1
Terric Mesic Fibrisol TME.Fsol		1	1	1	1
Terric Humic Fibrisol THU.F		1	1	1	1
Hydric Fibrisol HY.F		1	1	1	1
Typic Mesisol TY.M		1	1	1	1
Fibric Mesisol FI.M		1	1	1	1
Humic Mesisol HU.M		1	1	1	1
Limno Mesisol LM.M		1	1	1	1
Cumulo Mesisol CU.M		1	1	1	1
Terric Mesisol T.M		1	1	1	1
Terric Fibric Mesisol TFI.M		1	1	1	1
Terric Humic Mesisol THU.M		1	1	1	1
Hydric Mesisol HY.M		1	1	1	1
Typic Humisol TY.H		1	1	1	1
Fibric Humisol FI.H		1	1	1	1
Mesic Humisol ME.H		1	1	1	1
Limno Humisol LM.H		1	1	1	1
Cumulo Humisol CU.H		1	1	1	1
Terric Humisol T.H		1	1	1	1
Terric Fibric Humisol TFI.H		1	1	1	1
Terric Mesic Humisol TME.H		1	1	1	1
Hydric Humisol HY.H		1	1	1	1
Typic Folisol TY.FO		1	1	1	
Orthic Humic Podzol O.HP		1	1	1	
Ortstein Humic Podzol OT.HP		1	1	1	
Placic Humic Podzol P.HP		1	1	1	
Duric Humic Podzol DU.HP		1	1	1	
Fragic Humic Podzol FR.HP		1	1	1	
Orthic Ferro-Humic Podzol O.FHP		1	1	1	
Ortstein Ferro-Humic Podzol OT.FHP		1	1	1	
Placic Ferro-Humic Podzol P.FHP		1	1	1	
Duric Ferro-Humic Podzol DU.FHP		1	1	1	
Fragic Ferro-Humic Podzol FR.FHP		1	1	1	
Luvisolic Ferro-Humic Podzol LU.FHP		1	1	1	
Sombric Ferro-Humic Podzol SM.FHP		1	1	1	
Gleyed Ferro-Humic Podzol GL.FHP		1	1	1	
Gleyed Ortstein Ferro-Humic Podzol GLOT.FHP		1	1	1	
Gleyed Sombric Ferro-Humic Podzol GLSM.FHP		1	1	1	
Orthic Humo-Ferric Podzol O.HFP		1	1	1	
Ortstein Humo-Ferric Podzol OT.HFP		1	1	1	

**Soil Classification****Soil Temperature Class**

	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>
Placic Humo-Ferric Podzol P.HFP		1	1	1	
Duric Humo-Ferric Podzol DU.HFP		1	1	1	
Fragic Humo-Ferric Podzol FR.HFP		1	1	1	
Luvisolic Humo-Ferric Podzol LU.HFP		1	1	1	
Sombric Humo-Ferric Podzol SM.HFP		1	1	1	
Gleyed Humo-Ferric Podzol GL.HFP		1	1	1	
Gleyed Ortstein Humo-Ferric Podzol GLOT.HFP		1	1	1	
Gleyed Sombric Humo-Ferric Podzol GLSM.HFP		1	1	1	
Orthic Regosol O.R		1	1	1	1
Cumulic Regosol CU.R		1	1	1	1
Gleyed Regosol GL.R		1	1	1	1
Gleyed Cumulic Regosol GLCU.R		1	1	1	1
Orthic Humic Regosol O.HR		1	1	1	1
Cumulic Humic Regosol CU.HR		1	1	1	1
Gleyed Humic Regosol GL.HR		1	1	1	1
Gleyed Cumulic Humic Regosol GLCU.HR		1	1	1	1
Brown Solonetz B.SZ			1	1	
Dark Brown Solonetz DBSZ			1	1	
Black Solonetz BL.SZ			1	1	
Alkaline Solonetz A.SZ			1	1	
Gleyed Brown Solonetz GLB.SZ			1	1	
Gleyed Dark Brown Solonetz GLDB.SZ			1	1	
Gleyed Black Solonetz GLBL.SZ			1	1	
Brown Solodized Solonetz B.SS			1	1	
Dark Brown Solodized Solonetz DB.SS			1	1	
Black Solodized Solonetz BL.SS			1	1	
Dark Grey Solodized Solonetz DG.SS			1	1	
Grey Solodized Solonetz G.SS			1	1	
Gleyed Brown Solodized Solonetz GLB.SS			1	1	
Gleyed Dark Brown Solodized Solonetz GLDB.SS			1	1	
Gleyed Black Solodized Solonetz GLBL.SS			1	1	
Gleyed Dark Grey Solodized Solonetz GLDG.SS			1	1	
Gleyed Grey Solodized Solonetz GLG.SS			1	1	
Brown Solod B.SO			1	1	
Dark Brown Solod DB.SO			1	1	
Black Solod BL.SO			1	1	
Dark Grey Solod DG.SO			1	1	
Grey Solod G.SO			1	1	
Gleyed Brown Solod GLB.SO			1	1	
Gleyed Dark Brown Solod GLDB.SO			1	1	
Gleyed Black Solod GLBL.SO			1	1	
Gleyed Dark Grey Solod GLDG.SO			1	1	
Gleyed Grey Solod GLG.SO			1	1	



**TABLE 24: SLMSTSUB vs SOILDRNG**

<u>Soil Moisture Subclass</u>	<u>Soil Drainage</u>					
	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>
A	1					
B	1	1				
C	1	1				
D	1	1	1			
E	1	1	1			
F	1	1	1	1		
G		1	1	1		
H				1	1	
I					1	1
J						1

**TABLE 25: SOILTEXT vs CONSDRY, SOILTEXT vs CONSMST, SOILTEXT vs CONSWET,  
SOILTEXT vs CONSPLST**

Soil Texture	Consistence(Four Independent Tables)																											
	Dry							Moist						Wet				Plasticity										
	1	2	3	4	5	6	7	1	2	3	4	5	6	1	2	3	4	1	2	3	4							
S	1							1						1				1				1						
CS	1							1						1				1				1						
MS	1							1						1				1				1						
FS	1							1						1				1				1						
VFS	1							1						1				1				1						
LS	1	1	1					1	1					1	1			1	1			1						
LCS	1	1	1					1	1					1	1			1	1			1						
LMS	1	1	1					1	1					1	1			1	1			1						
LFS	1	1	1					1	1					1	1			1	1			1						
LVFS	1	1	1					1	1					1	1			1	1			1						
SL		1	1						1	1	1	1		1	1	1		1	1	1		1	1					
CSL		1	1						1	1	1	1		1	1	1		1	1	1		1	1					
MSL		1	1						1	1	1	1		1	1	1		1	1	1		1	1					
FSL		1	1						1	1	1	1		1	1	1		1	1	1		1	1					
VFSL		1	1						1	1	1	1		1	1	1		1	1	1		1	1					
L		1	1	1					1	1	1	1		1	1	1		1	1	1		1	1	1				
SIL		1	1	1					1	1	1	1		1	1	1		1	1	1		1	1	1				
SI		1	1						1	1	1	1		1	1			1	1			1	1					
SCL			1	1	1	1				1	1	1			1	1	1			1	1	1			1	1		
CL			1	1	1	1				1	1	1				1	1			1	1				1	1		
SICL			1	1	1					1	1	1				1	1			1	1				1	1		
SC				1	1	1	1				1	1	1				1				1				1	1		
SIC				1	1	1					1	1					1				1				1	1		
C				1	1	1	1				1	1	1				1				1				1	1		
HC					1	1	1					1	1				1				1					1		

**TABLE 26: SOILTEXT vs SCFPS1/2**

Soil Texture	Family Particle Size*																		
	V F C	F C	C	F S I	C S I	F L	C L	L	S	C S	L S	S S	F	C I	A	T	A S	T S	G
S									1			1	1	1	1		1		
CS									1			1	1	1	1		1		
MS									1			1	1	1	1		1		
FS									1			1	1	1	1		1		
VFS									1			1	1	1	1		1		
LS									1			1	1	1	1		1		
LCS									1			1	1	1	1		1		
LMS									1			1	1	1	1		1		
LFS									1			1	1	1	1		1		
LVFS									1			1	1	1	1		1		
SL						1	1	1			1			1	1		1		
CSL						1	1	1			1			1	1		1		
MSL						1	1	1			1			1	1		1		
FSL						1	1	1			1			1	1		1		
VFSL						1	1	1			1			1	1		1		
L						1	1	1			1			1	1		1		
SIL				1	1	1	1	1			1			1	1		1		
SI							1	1		1	1				1		1		
SCL						1		1			1							1	1
CL		1	1			1		1		1	1					1			1
SICL		1	1	1		1		1		1	1					1			1
SC		1	1							1						1		1	1
SIC		1	1							1						1			1
C		1	1							1						1			1
HC	1		1							1						1			1

**TABLE 27: SOILTEXT vs STRCKND1**

<u>Soil Texture</u>	<u>Structure - Primary - Kind</u>								
	S G R	M A	A B K	S B K	G R	P L	P R	C O L	C D Y
S	1	1							
CS	1								
MS	1	1							
FS	1	1	1	1	1	1			
VFS	1	1	1	1	1	1			
LS	1	1	1	1	1				
LCS	1	1		1	1				
LMS	1	1	1	1	1				
LFS	1	1	1	1	1				
LVFS	1	1	1	1	1				1
SL	1	1	1	1	1	1			1
CSL	1	1	1	1	1	1			1
MSL	1	1	1	1	1	1			1
FSL		1	1	1	1	1			1
VFSL		1	1	1	1	1			1
L		1	1	1	1	1	1	1	1
SIL		1	1	1	1	1	1	1	1
SI		1	1	1	1	1			1
SCL		1	1	1	1	1	1	1	1
CL		1	1	1	1	1	1	1	1
SICL		1	1	1	1	1	1	1	1
SC		1	1	1		1	1	1	1
SIC		1	1	1		1	1	1	1
C		1	1	1		1	1	1	1
HC		1	1	1		1	1	1	1

**TABLE 28: SOILTEXT vs LABSLTXT**

<u>Soil Texture</u>	<u>Texture (Lab Determined)</u>																							
	S	C	M	F	V	L	L	L	L	V	S	C	M	F	V	S	I	S	C	C	S	I	C	H
	S	S	S	S	S	S	S	S	S	S	L	L	L	L	L	L	L	L	L	L	L	L	L	L
S	1	1	1	1	1																			
CS	1	1																						
MS	1		1																					
FS	1			1																				
VFS	1				1																			
LS						1	1	1	1	1														
LCS						1	1																	
LMS						1		1																
LFS						1			1															
LVFS						1				1														
SL											1	1	1	1	1									
CSL											1	1												
MSL											1		1											
FSL											1			1										
VFSL											1				1									
L																1								
SIL																	1							
SI																		1						
SCL																			1					
CL																				1				
SICL																					1			
SC																						1		
SIC																							1	
C																								1
HC																								1

**TABLE 29: STRSRF11, STRSRF12, STRSRF13 (All for Stratum 1) vs STPOSMES**

<u>Terrain Surface Expression</u>	<u>Site Position Meso</u>						
	A	B	C	D	E	F	G
A				1	1		
B	1	1	1	1	1		
F				1	1		
H	1	1	1	1	1	1	
L	1				1	1	1
M	1	1	1	1	1	1	1
R	1	1	1	1	1		
S	1	1	1	1			
T					1		1
V	1	1	1	1	1		1

**TABLE 30: STRTXT1 (for Stratum 1) vs PERV**

<u>Terrain Texture</u>	<u>Perviousness</u>		
	A	B	C
C			1
I		1	1
S	1	1	
P	1		
K	1		
B	1		
F		1	1
G	1		
R	1		
A	1		
E, xE, Ex;x M or H	1	1	
M, xM, Mx;x H	1	1	1
H, xH, Hx		1	1
C\$, \$C		1	1
CS, SC		1	1
CP, PC		1	1
CK, KC		1	1
CB, BC		1	1
CF, FC		1	1
CG, GC		1	1
CR, RC		1	1
CA, AC		1	1
\$S, \$S		1	1
\$P, \$P	1	1	
\$K, \$K	1	1	
\$B, \$B	1	1	
\$F, \$F		1	1
\$G, \$G	1	1	
\$R, \$R	1	1	

<u>Terrain Texture</u>	<u>Perviousness</u>		
	A	B	C
\$A, A\$	1	1	
SP, PS	1	1	
SK, KS	1	1	
SB, BS	1	1	
SF, FS		1	1
SG, GS	1	1	
SR, RS	1	1	
SA, AS	1		
PK, KP	1		
PB, BP	1		
PF, FP		1	1
PG, GP	1		
PR, RP	1		
PA, AP	1		
KB, BK	1		
KF, FK		1	1
KG, GK	1		
KR, RK	1		
KA, AK	1		
BF, FB		1	1
BG, GB	1		
BR, RB	1		
BA, AB	1		
FG, GF		1	1
FR, RF		1	1
FA, AF		1	1
GR, RG	1		
GA, AG	1		
RA, AR	1		

**TABLE 31: ORMATVNP vs HDESMSTS**

**Von Post Scale**

**Type of 0 Organic Master Horizon**

If Master Horizon is O and corresponding Suffix is:

	<b>F</b>	<b>M</b>	<b>H</b>
1	1		
2	1		
3	1		
4	1		
5		1	
6		1	
7			1
8			1
9			1
10			1

### **Horizon Validation - Conditions and Definition**

In the material which follows all double number (x.y) statements represent allowable conditions. In Sections 1. and 2. the conditions are entirely independent of one another. In Section 3. and 4. a set of conditions is listed for each Suffix.

If there is insufficient information to evaluate a condition, assume the condition is met, unless otherwise stated.

The structure of this material is that of independent conditions and definitions. It does not classify a Master Horizon of Suffix. Instead it tells:

- (i) what Master Horizons and Suffixes are allowable;
- (ii) what combinations of Master Horizons and Suffixes are allowable;
- (iii) what the conditions are for a given Suffix (sometimes in conjunction with a specific Master Horizon);
- (iv) what the conditions are for the various Mottle Contrasts.

Output of this material should be as follows:

If all Master Horizons and Suffixes appear correct, state:

ALL MASTER HORIZONS AND SUFFIXES APPEAR CORRECT.

If certain Master Horizons and/or Suffixes appear incorrect, state:

ERROR: Parent Material Discontinuity - Master Horizon - Suffixes: STATEMENT (S) VIOLATED:  
x.y, etc.

The surveyors will be supplied with all specifications, and consequently, they will be able to decipher the numbers.



## **Horizon Validation**

### **1. Master Horizons**

- 1.1** Master Horizon designations must be one of the following: O, L, F, H, LF, FL, LH, HL, FH, HF, LFH, LHF, FLH FHL, HLF, HFL, A, B, C, AB, BC, BA, CB, AC, CA, A&B, B&A, A&C, C&A, B&C, C&B, D1 through D20, W, R, ASH
- 1.2** All Organic Master Horizons \* must contain > 17% Organic Carbon.
- 1.3** All Mineral Master Horizons \*\* must contain 17% Organic Carbon

\* Organic Master Horizons include O, L, F, H, LF, FL, LH, HL, FH, HF, LFH, LHF, FLH, FHL, HLF, HFL.

\*\* Mineral Master Horizons include A, B, C, AB, BC, BA, CB, AC, CA, A&B, B&A, A&C, C&A, B&C, C&B, and ASH, only.

### **2. Suffixes**

- 2.1** The following are allowable suffixes, subject to certain restrictions; CA, CC, CO, SA, EJ, TJ, FJ, NJ, GF, GJ, C, S, E, T, F, N, G, H, B, K, M, P, U, X, Y, Z.
- 2.2** CA not allowed with Organic Master Horizons.
- 2.3** CO allowed only with 0 Master Horizons.
- 2.4** E and EJ allowed only with A Master Horizon.
- 2.5** F allowed only with B or 0 Master Horizon.
- 2.6** FJ allowed only with B Master Horizon.
- 2.7** GF allowed only with B Master Horizon.
- 2.8** H allowed only with A, B, or 0 Master Horizon.
- 2.9** HF allowed only with B Master Horizon.
- 2.10** M allowed only with B or 0 Master Horizon.
- 2.11** M allowed only by itself or with one of the following suffixes: B, GJ, K, S, W, Y, Z. Combinations of M with other Suffixes not allowed.
- 2.12** N allowed only with B Master Horizon.
- 2.13** P allowed only with A or O Master Horizon.
- 2.14** T and TJ allowed only with B Master Horizon.
- 2.15** The sequence EH is not allowed. (The sequence HE is allowed.)
- 2.16** The sequences FT and TF are not allowed.
- 2.17** The sequences GH, HG, GP and PG are not allowed.
- 2.18** The sequence TN is not allowed. (The sequences NT and TNJ are allowed.)
- 2.19** When U is used with A or B Master Horizons, at least one other suffix must be present.
- 2.20** With either an A, or B, or a O Master Horizon, there must be at least one Suffix.
- 2.21** With either a BC or C Master Horizon the only permissible Suffixes are: G, GJ, C, CA, K, S, SA, U, Y, Z.

### **3. Specific Suffix Restrictions - Mineral Horizons**

All conditions for a given Suffix must be met if the Suffix is to be considered correct.

CA:

- 3.1** (a) Thickness \* of the Master Horizon > 10 cm;
- 3.2** (b) If CaCO<sub>3</sub> Equivalent of Master Horizon 5.0 + that of first C Master Horizon below it, assuming that these two Master Horizons have the same Parent Material Discontinuity designation.
- 3.3** (c) If CaCO<sub>3</sub> Equivalent of Master Horizon 15%, then CaCO<sub>3</sub> Equivalent of Master Horizon 1.33 x that of first C Master Horizon below it, assuming

that these two Master Horizons have the same Parent Material Discontinuity designation.

- F: (excluding the Suffixes GF, HF, and FJ, including sequence FG; and with Master Horizon B0)
- 3.4** (a) Organic Carbon > 0.5 % and 5.0 % and
- 3.5** (b) Pyrophosphate Fe + Pyrophosphate Al 0.6 if Field Texture is not S, CS, MS, FS, or VFS, or Pyrophosphate Fe + Pyrophosphate Al 0.4 if Field Texture is S, CS, MS, FS, or VFS, and 3.6.
- 3.6** (c) Ratio of Pyrophosphate Fe + Pyrophosphate Al to % Total Clay > 0.05, and
- 3.7** (d) Pyrophosphate Fe 0.3, or  
Organic Carbon < 20 x Pyrophosphate Fe.
- 3.8** (e) If Aspect of Colour 1 is 7,  
Value of Colour 1 3, or  
Chroma of Colour 1 > 3.
- G: (excluding Suffix GJ; and with Master Horizon A or C)
- 3.9** (a) Colour 1 Chroma 1.0, and  
Colour 1 Aspect = 1 or 2 or 3 or 4, OR  
Colour 1 Chroma 2/0, and  
Alpha part of Colour 1 Hue = YR, and  
Colour 1 Aspect = 1 or 2 or 3 or 4, and  
Mottle Contrast = P, and  
Mottle Abundance F, OR  
Colour 1 Chroma 3.0, and  
Alpha part of Colour 1 Hue = YR, and  
Colour 1 Aspect = 1 or 2 or 3 or 4, and  
Mottle Contrast = P, and  
Mottle Abundance F, OR  
Alpha part of Colour 1 Hue = GY or G or BG or B, and  
Colour 1 Aspect = 1 or 2 or 3 or 4.
- G: (excluding Suffix GJ; and with Master Horizon B or BC)
- 3.10** (a) As in G - (a) above (3.9)
- 3.11** (b) At least one of the Structure Primary or Structure Secondary fields must differ from the corresponding value of the first C Master Horizon below it, when the B and this C Master Horizon have the same Parent Material Discontinuity designation. This condition is assumed to be true if all these fields have been left blank for both horizons; otherwise, blanks are treated as legitimate values in all comparisons.
- GF: (not to be confused with Suffixes FG; and with Master Horizon B)
- 3.12** (a) Dithionite Fe 1.0 + Dithionite Fe of the first C Master Horizon, when the B and this C Master Horizon have the same Parent Material Discontinuity designation.
- 3.13** (b) Statement F - (b) above (3.5) is False.
- H:
- 3.14** (a) (Value of Colour 1) + 1.0 Value of Colour 1 of Master Horizon directly below, or Organic Carbon - 0.5 Organic Carbon of the first C Master Horizon, when the A and this C Master Horizon have the same Parent Material Discontinuity designation.
- H: (with Master Horizon B)
- 3.15** (a) Organic Carbon > 1.0, and
- 3.16** (b) Pyrophosphate Fe < 0.3, and

- 3.17** (c) Organic Carbon 20.0 x Pyrophosphate Fe.  
HF: (with Master Horizon B)
- 3.18** (a) Organic Carbon > 5.0  
**3.19** (b) as in F - (b) above (3.5)  
**3.20** (c) as in F - (c) above (3.6)  
**3.21** (d) as in F - (d) above (3.7)  
**3.22** (e) as in F - (e) above (3.8)  
M: (with Master Horizon B)
- 3.23** (a) At least one of the Colour 1, Colour 2, Mottles, Structure Primary, or Structure Secondary fields must differ from the corresponding value of the first C Master Horizon below it, when the B and this C Master Horizon have the same Parent Material Discontinuity designation. This condition is assumed to be true if all these fields have been left blank for both horizons; otherwise, blanks are treated as legitimate values in all comparisons.
- N: (excluding Suffix NJ; and with Master Horizon B)
- 3.24** (a) Exchangeable Cations Ca 10 x Exchangeable Cations Na.  
**3.25** (b) Primary Structure Kind is either PR or COL.  
**3.26** (c) Consistence Dry is either 4 or 5 or 6 or 7.  
SA:
- 3.27** (a) Electrical Conductivity 4.  
**3.28** (b) Electrical Conductivity of B Master Horizon x 0.75 Electrical Conductivity of the first C Master Horizon below it, when the B and this C Master Horizon have the same Parent Material Discontinuity designations.
- 3.29** (c) The thickness of the B Master Horizon 10.  
T: (excluding Suffix TJ; and with Master Horizon B)
- 3.30** (a) If there exists an A Master Horizon above the B Master Horizon (if more than 1 A Master Horizon, then choose the closest), and if the B and this A Master Horizon have the same Parent Material Discontinuity designation, then one of the following must be true:
- (i) if the Total Clay of the A Master Horizon < 15%, then % of Total Clay of the A Master Horizon + 3.0 % Total Clay of the B Master Horizon, OR
  - (ii) if the % Total Clay of the A Master Horizon 15% and 40%, then  
Total Clay of the B Master Horizon 1.2, x % Total Clay of the Master Horizon, OR
  - (iii) if the % Total Clay of the A Master Horizon > 40%, then % Total Clay of the A Master Horizon + 80 % of Total Clay of the B Master Horizon.
- 3.31** (b) The thickness of the B Master Horizon 5.  
**3.32** (c) If Structure Primary Kind is MA, then  
Clay Films Location is 2 and 5.  
**3.33** (d) Clay Films Frequency is F, C, M or CS.

\* Thickness of a Master Horizon = absolute value of (Horizon Lower Boundary - Horizon Upper Boundary)

#### 4. Specific Suffix Restrictions - Organic Horizons

All conditions for a given Suffix must be met if the Suffix is to be considered correct.

- F: (with Master Horizon O)
- 4.1** (a) % Fibre Rubbed 40;

- 4.2 (b) If % Fibre Rubbed < 75, then  
the Pyrophosphate Index (Lab) 5.
- 4.3 (c) If % Fibre Rubbed < 75, then  
the Pyrophosphate Index (Field) 5.
- H: (with Master Horizon O)
- 4.4 (a) % Fibre Rubbed < 10,
- 4.5 (b) The Pyrophosphate Index (Lab) 3.
- 4.6 (c) The Pyrophosphate Index (Field) 3.
- M: (with Master Horizon O)
- 4.7 (a) % Fibre Rubbed 10 and < 40,
- 4.8 (b) The Pyrophosphate Index (Lab) 3 and 5.
- 4.9 (c) The Pyrophosphate Index (Field) 3 and 5.

## 5. Mottle Contrast Definitions

Let = Absolute Value of (Colour 1 Hue Code\* - Mottle Colour Hue Code\*)

Let = Absolute Value of (Colour 1 Value - Mottle Colour Value)

Let = Absolute Value of (Colour 1 Chroma - Mottle Colour Chroma)

- 5.1 F: < 2.5, and, < 1, and < 1
- 5.2 D: ( < 2.5, or, < 1, or, < 1) and, (<5, and, <3, and, <3)
- 5.3 P: 5, or, 3, or, 3

### \* Hue Code: for Colour 1 Hue & for Mottle Colour Hue

If Alpha part of Hue is R, Hue Code = 0

If Alpha part of Hue is YR, Hue Code = numeric part of Hue

If Alpha part of Hue is Y, Hue Code = 10 + numeric part of Hue

If Alpha part of Hue is GY, Hue Code = 17.5

If Alpha part of Hue is G, Hue Code = 20

If Alpha part of Hue is BG, Hue Code = 22.5

If Alpha part of Hue is B, Hue Code = 25

If Alpha part of either Colour 1 Hue or Mottle Colour Hue is N,

Hue Code for each Colour = numeric part of Hue for that Colour

### **Pedon Validation - A Hierarchical / Sequential Key**

In the material which follows, three types of statements exist:

- (i) Logical Statements - triple numbered (x. y. z) and with values of either true or false;
- (ii) Definitions - specific terms used in Logical Statements;
- (iii) If Statements - based primarily on Logical Statements; for classifying, for directing to other parts of the key, and for indicating appropriate output.

The following rules are to be used when data may be missing:

- (i) If a particular Master Horizon or Suffix is specified in a Logical Statement, and if the Master Horizon or Suffix cannot be found assume it does not exist.
- (ii) Otherwise, if there is insufficient information to evaluate a Logical Statement (or a portion of a logical statement), then assume that the Logical Statement is true (or that the condition contained in the portion of the Logical Statement is met).
- (iii) The above statement does not hold should an If Statement(s) be given which provides for the possibility that a Logical Statement may not be answerable because of insufficient information.

The structure of the key is hierarchical with three levels: Order, Great Group, and Subgroup. Within each of these levels, the key is sequential. The key classifies the soil down to the Subgroup level. Comparison is then made between the Soil Classification designation of the surveyor and that obtained by this program. Output is discussed in Section 4.

## 1. Pedon Validation - to Order Level - Sequential Key

### 1.1 Cryosolic Order

- 1.1.1 There exists at least one Master Horizon with a Z Suffix and with a Horizon Upper Boundary 100,
- 1.1.2 There exists at least one Master Horizon with a Z Suffix and with a Horizon Upper Boundary 200, and with at least one Master Horizon above it with a Y Suffix.

If (1.1.1 or 1.1.2) soil is in Cryosolic Order (.TC or .SC or .OC) go to 2.3.

If (not 1.1.1 and not 1.1.2) go to 1.2.

### 1.2 Organic Order

- 1.2.1 Every Master Horizon with a Horizon Upper Boundary < 60 is an O.
- 1.2.2 Every Master Horizon with a Horizon Upper Boundary < 40 is an O and of these horizons, the sum of thicknesses of those with an F suffix is less than the sum of thicknesses of those with an M suffix and less than the sum of thicknesses of those with an H suffix.
- 1.2.3 There exists an R Master Horizon, with a Horizon Upper Boundary < 40, and with the sum of the thicknesses of all O Master Horizons 10, and with the sum of the thicknesses of all Mineral Master Horizons < 10, and with the former sum > 2 times the latter sum.
- 1.2.4 < 40, and  
40, where  
= the sum of thicknesses of all Mineral Master Horizons whose Horizon Upper Boundary is < the Horizon Upper Boundary of the first O Master Horizon, and  
= the sum of thicknesses of all O Master Horizons whose Horizon Upper Boundary is  $\geq$  the Horizon Upper Boundary of the first O Master Horizon.
- 1.2.5 There exists a Mineral Master Horizon, with a Horizon Upper Boundary  $\leq$  40 and with + > 40 where  
= sum of thicknesses of all O Master Horizons whose Horizon Lower Boundaries are 80;  
= zero if there is no O Master Horizon whose Horizon Upper Boundary < 80 and whose Horizon Lower Boundary > 80;  
= (80 - Horizon Upper Boundary) where the Horizon Upper Boundary refers to that of an O Master Horizon whose Horizon Upper Boundary < 80 and whose Horizon Lower Boundary > 80.
- 1.2.6 Each and every Master Horizon is one of the following: L, F, H, LF, FL, LH, HL, FH, HF, LFH, LHF, FLH, FHL, HLF, HFL, C, or R, and the sum of the thicknesses of all L, F, H, LF, FL, LH, HL, FH, HF, LFH, LHF, FLH, FHL, HLF, HFL Horizons is 10, and for all C Master Horizons both of the following conditions are false:  
Family Particle Size F,  
Coarse Fragment % by Volume < 90.
- 1.2.7 The sum of the thicknesses of all Mineral Master Horizons is < 10, and this sum < 0.5 times the sum of the thicknesses of all L, F, H, LF, FL, LH, HL, FH, HF, LFH, LHF, FLH, FHL, HLF, and HFL Horizons.

If (1.2.1 or 1.2.2 or 1.2.3 or 1.2.4 or 1.2.5 or 1.2.6 or 1.2.7) soil is in Organic Order (.F or .M or .H or .FO) go to 2.6.

### 1.3 Podzolic Order

- 1.3.1** There does not exist a B Master Horizon with a T Suffix (TJ Suffix not ok), and with a Horizon Upper Boundary  $\leq 50$  cm.
- 1.3.2** There exists a B Master Horizon with either an H, and HF, or an F Suffix (FJ Suffix not ok), and with all of the following properties:
- (a) thickness 10 cm, and
  - (b) Field Texture HC, or C, and
  - (c) if Aspect of Colour 1 is 7, then EITHER  
Alpha code of Colour is YR or R and  
Value of Colour 1  $\geq 3$  or Chroma of Colour 1  $> 3$ , OR  
Colour 1 is 2.5Y 2/0 or 5Y 2.5/1 or 5Y 2.5/2.

If (1.3.1 and 1.3.2) soil is in Podzolic Order (.HP or .FHP or .HFP) go to 2.7.

If (not 1.3.1 or not 1.3.2) go to 1.4.

### 1.4 Gleysolic Order

- 1.4.1** There exists at least one Master Horizon with a Horizon Upper Boundary  $\leq 50$  and with a G or a GF Suffix (FG and GJ Suffix not ok).

If (1.4.1) soil is in Gleysolic Order (.HG or .G or .LG) go to 2.4.

If (not 1.4.1) go to 1.5.

### 1.5 Solonetzic Order

- 1.5.1** There exists a B Master Horizon with an N Suffix (NT Suffixes ok; NJ Suffix not ok).

If (1.5.1) soil is in Solonetzic Order (.SZ or .SS or .SO) go to 2.9.

If (not 1.5.1) go to 1.6.

### 1.6 Chernozemic Order

- 1.6.1** There exists an A Master Horizon with all of the following properties:
- (a) thickness  $\geq 10$  cm;
  - (b) if the Colour 1 Aspect is 1 or 3 or 5 or 7 then the Colour 1 Chroma  $< 3.5$  and Colour 1 Value  $< 3.5$ ;
  - (c) if the Colour 1 Aspect is 2 or 4 or 6 or 8 then the Colour 1 Value  $< 5.5$ ;
  - (d) if the Colour 1 Aspect is the same as that of the first C Master Horizon, and if the Parent Material Discontinuity of these two Master Horizons are equal, then the A Master Horizon Colour 1 Value  $\geq 1.0 +$  the C Master Horizon Colour 1 Values;
  - (e) Organic Carbon  $\geq 1.0$ ;
  - (f) ratio of Organic Carbon to Nitrogen  $< 17$
  - (g) ratio of (sum of Exchangeable Cations: Ca + Mg + Na + K) to (CEC determined buffered)  $> 0.8$ ;
  - (h) Soil Moisture Subclass F or G or H or I or J;
  - (i) Soil Temperature Class A.

- 1.6.2** At least one of the following four statements is true:
- (a) There does not exist an A Master Horizon with an E Suffix (EJ Suffix not ok).
  - (b) There exists an A Master Horizon with an EJ Suffix and if the Colour 1 Aspect is 2 or 4 or 6 or 8, the Colour 1 Value  $< 5$ ;
  - (c) There exists an A Master Horizon with an H or a P Suffix and there exists another A Master Horizon with an E Suffix, such that the Horizon Upper Boundary of the former  $<$  the Horizon Upper

Boundary of the latter, and such that the thickness of the former > the thickness of the latter;

- (d) The Master Horizon recognized in 1.6.1 has the following two suffixes: H and E (EJ not ok); and there exists another A Master Horizon with an E Suffix (EJ not ok), and a thickness < 5.

If (1.6.1 and 1.6.2) soil is in Chernozemic Order (.B or .DB or .BL or .DG) go to 2.2.

If (not 1.6.1 or not 1.6.2) go to 1.7.

## **1.7 Luvisolic Order**

**1.7.1** There exists a B Master Horizon with a T Suffix (TJ Suffix not ok)

If (1.7.1) soil is in Luvisolic Order (.GBL or .GL) go to 2.5.

If (not 1.7.1) go to 1.8.

## **1.8 Brunisolic Order**

**1.8.1** There exists a B Master Horizon with a thickness  $\geq 5$ .

If (1.8.1) soil is in Brunisolic Order (.MB or .EB or .SB or .DYB) go to 2.1.

If (not 1.8.1) go to 1.9.

## **1.9 Regosolic Order**

**1.9.1** The sum of the thicknesses of all Mineral Master Horizons is  $\geq 10$ .

If (1.9.1) soil is in Regosolic Order (.R or .HR) go to 2.8.

## **1.10 Non-Soil**

If this stage is reached, the taxonomic classification should be blank, as the material does not officially qualify as a soil. Go to 4.

# **2. Pedon Validation - to Great Group Level - Sequential Key**

## **2.1 Brunisolic Order**

**2.1.1** There exists an A Master Horizon with an H Suffix, and with a thickness  $\geq 10$ .

**2.1.2** There exists an A Master Horizon with a P Suffix, and with a thickness  $\geq 10$  and if Colour 1 Aspect = 1 or 3 or 5 or 7, Colour 1 Value < 4.

**2.1.3** There exists a B Master Horizon with a thickness  $\geq 5$  and with a Horizon Upper Boundary < 25 + Horizon Upper Boundary of first, i.e. uppermost, B Master Horizon, and with a pH - CaCl<sub>2</sub> value  $\geq 5.5$ .

If ((2.1.1 or 2.1.2) and 2.1.3) soil is Melanic Brunisol (.MB). go to 3.1.

If (2.1.3) soil is Eutric Brunisol (.EB). go to 3.2.

If ((2.1.1 or 2.1.2) and not 2.1.3) soil is Sombric Brunisol (.SB). go to 3.3.

If (not 2.1.3) soil is Dystric Brunisol (.DB). go to 3.4.

If ((2.1.1 or 2.1.2) with 2.1.3 not answerable) soil is Melanic Brunisol or Sombric Brunisol.

If Great Group designated is one of these (.MB or .SB), assume it is correct and go to 3.1 or 3.3, respectively. If it is not one of these, it is wrong. - FLAG & STOP.

If (not (2.1.1 or 2.1.2) with 2.1.3 not answerable) soil is Eutric Brunisol or Dystric Brunisol.

If Great Group designated is one of these (.EB or .DB) assume it is correct and go to 3.2 or 3.4, respectively. If it is not one of these, it is wrong. - FLAG & STOP.

## **2.2 Chernozemic Order**

The following nine Statements concern the A Master Horizon recognized in 1.6.1.

**2.2.1** There exists an E Suffix.

**2.2.2** There exists a P Suffix.

**2.2.3** If the Colour 1 Aspect is 1 or 3 or 5 or 7, then the Colour 1 Chroma < 1.5.

**2.2.4** If the Colour 1 Aspect is 1 or 3 or 5 or 7, then the Colour 1 Chroma > 1.5.

**2.2.5** If the Colour 1 Aspect is 2 or 4 or 6 or 8, then the Colour 1 Value  $\geq 4.5$  and  $\leq 5.5$ .

**2.2.6** If the Colour 1 Aspect is 2 or 4 or 6 or 8, then the Colour 1 Value  $\geq 3.5$  and  $\leq 4.5$ .

**2.2.7** If the Colour 1 Aspect is 2 or 4 or 6 or 8, then the Colour 1 Value < 3.5.

**2.2.8** If the Colour 1 Aspect is 2 or 4 or 6 or 8, then the Colour 1 Value < 4.5.



**2.2.9** If the Colour 1 Aspect is 2 or 4 or 6 or 8, then the Colour 1 Value >5.0.

**2.2.1** The Soil Moisture Subclass is C.

**0**

**2.2.1** The Soil Moisture Subclass is D.

**1**

**2.2.1** The Soil Moisture Subclass is E.

**2**

If ((2.2.4 and 2.2.5) and 2.2.10) soil is Brown Chernozem (.B) go to 3.5.

If (2.2.5 and 2.2.11) soil is Brown Chernozem (.B) go to 3.5.

If (2.2.6 and 2.2.11) soil is Dark Brown Chernozem (.DB) go to 3.6.

If (2.2.4 and 2.2.11) soil is Brown or Dark Brown (.B or .DB) go to 3.5 or 3.6, respectively. If not one of these, it is wrong. - FLAG & STOP.

If (2.2.7 and 2.2.12) soil is Black Chernozem (.BL) go to 3.7.

If ((2.2.3 or ((not 2.2.7) and 2.2.8)) and (2.2.1 or (2.2.2 and 2.2.9))) soil is Dark Grey Chernozem (.DG) go to 3.8.

If insufficient information to classify by any of the above, assume Great Group designation is correct. Proceed to 3.5 or 3.6 or 3.7 or 3.8, according to whether designation is .B or .DB or .BL or .DG, respectively.

### **2.3 Cryosolic Order**

**2.3.1** Excluding all L, F, H, LF, LH, FH, and LFH Master Horizons, the first Master Horizon is an O Master Horizon with one of the following three properties:

- (a) thickness > 40 cm;
- (b) thickness > 10 cm and R Master Horizon is next Master Horizon below;
- (c) thickness > 10 cm and W Master Horizon is next Master Horizon below, and if the thickness of this W Horizon  $\geq$  30 cm, or has no Horizon Lower Boundary specified, or is the lowest Horizon given.

**2.3.2** There exists a Mineral Master Horizon with a Y Suffix.

If (2.3.1) soil is Organic Cryosol (.CO) go to 3.11.

If (2.3.2) soil is Turbic Cryosol (.TC) go to 3.9.

Soil is Static Cryosol (>SC) go to 3.10.

### **2.4 Gleysolic Order**

**2.4.1** There exists a B Master Horizon with a T Suffix.

**2.4.2** There exists an A Master Horizon with an H Suffix and with thickness  $\geq$  10.

**2.4.3** There exists an A Master Horizon with the following five properties:

- (a) P Suffix,
- (b) thickness  $\geq$  15,
- (c) organic carbon > 2,
- (d) if Colour 1 Aspect = 1 or 3 or 5 or 7, Colour 1 Value  $\geq$  3.5.  
if Colour 1 Aspect = 2 or 4 or 6 or 8, Colour 1 Value  $\geq$  5.0.
- (e) if the Colour 1 Aspect = 1 or 3 or 5 or 7 and if for the underlying Master Horizon Colour 1 Aspect = 1 or 3 or 5 or 7, then one of the following:
  - if the underlying Master Horizon Colour 1 Value  $\geq$  4,  
the Horizon Colour 1 Value + 1.5  $\geq$  underlying Horizon Colour 1 Value;
  - if the underlying Master Horizon Colour 1 Value < 4,  
the Horizon Colour 1 Value + 1.0  $\geq$  underlying Horizon Colour 1 Value.

If (2.4.1) soil is Luvic Gleysol (.LG) go to 3.14.

If (2.4.2 or 2.4.3) soil is Humic Gleysol (.HG) go to 3.12.

Soil is Gleysol (.G) go to 3.13.

### **2.5 Luvisolic Order**

### 2.5.1 Soil Temperature Class = E,

If (2.5.1) soil is Grey Brown Luvisol (.GBL) go to 3.15.

If (not 2.5.1) soil is Grey Luvisol (.GL) go to 3.16.

If (2.5.1 not answerable) assume Great Group designation is correct as given and if .GBL go to 3.15 and if .GL go to 3.16.

## 2.6 Organic Order

The following definitions are required.

For a given O Master Horizon, let

$\Delta$  = (the smaller of: 120, Horizon Lower Boundary) - (the larger of: 40, Horizon Upper Boundary)

If  $\Delta < 0$ , reset  $\Delta = 0$ .

Calculate  $\Delta$  for every O Master Horizon with an F, M, or H Suffix.

Let:

F = Sum of all  $\Delta$  values for all O Master Horizons with an F Suffix.

M = Sum of all  $\Delta$  values for all O Master Horizons with an M Suffix.

H = Sum of all  $\Delta$  values for all O Master Horizons with an H Suffix.

For a given O Master Horizon, let

$\Delta$  = (the smaller of: 160, Horizon Lower Boundary) - (the larger of: 40, Horizon Upper Boundary)

If  $\Delta < 0$ , reset  $\Delta = 0$ .

Let:

F = Sum of all  $\Delta$  values for all O Master Horizons with an F Suffix.

M = Sum of all  $\Delta$  values for all O Master Horizons with an M Suffix.

H = Sum of all  $\Delta$  values for all O Master Horizons with an H Suffix.

For a given O Master Horizon, let

$\Delta$  = (the smaller of: 120, Horizon Lower Boundary) - (Horizon Upper Boundary)

If  $\Delta < 0$ , reset  $\Delta = 0$ .

Let:

F = Sum of all  $\Delta$  values for all O Master Horizons with an F Suffix.

M = Sum of all  $\Delta$  values for all O Master Horizons with an M Suffix.

H = Sum of all  $\Delta$  values for all O Master Horizons with an H Suffix.

For a given Organic Horizon, let

$\Delta$  = (the smaller of: 160, Horizon Lower Boundary) - (the larger of: 40, Horizon Upper Boundary)

If  $\Delta < 0$ , reset  $\Delta = 0$ .

Let:

F = Sum of all  $\Delta$  values for all O Master Horizons with an F Suffix.

M = Sum of all  $\Delta$  values for all O Master Horizons with an M Suffix.

H = Sum of all  $\Delta$  values for all O Master Horizons with an H Suffix.

L = Sum of all  $\Delta$  values for all O Master Horizons with a CO Suffix.

For a given Mineral Horizon, let

$\Delta$  = (the smaller of: 160, Horizon Lower Boundary) - (the larger of: 40, Horizon Upper Boundary)

If  $\Delta < 0$ , reset  $\Delta = 0$ .

Let:

T = Sum of all  $\Delta$  values for all Mineral Horizons.

**2.6.1** There exists a W Master Horizon with a Horizon Upper Boundary  $< 120$  cm.

**2.6.2** Same as 1.2.6.

**2.6.3** Same as 1.2.7.

**2.6.4**  $T >$

**2.6.5**  $F > M$  and  $F > H$

**2.6.6** M > F and M > H

**2.6.7** H M and H F

**2.6.8** F > M and F > H

**2.6.9** M F and M H

**2.6.1** H > M and H F

**0**

If (2.6.2 or 2.6.3) soil is Folisol (.FO) go to 3.20.

If ((2.6.1 or 2.6.4) and 2.6.8) soil is Fibrisol (.F) go to 3.17.

If ((2.6.1 or 2.6.4) and 2.6.9) soil is Mesisol (.M) go to 3.18.

If ((2.6.1 or 2.6.4) and 2.6.10) soil is Humisol (.H) go to 3.19.

If (2.6.5) soil is Fibrisol (.F) go to 3.17.

If (2.6.6) soil is Mesisol (.M) go to 3.18.

If (2.6.7) soil is Humisol (.H) go to 3.19.

Soil cannot be classified. FLAG & STOP.

## **2.7 Podzolic Order**

The following three Statements concern the B Master Horizon recognized in 1.3.2.

**2.7.1** There exists an H Suffix.

**2.7.2** There exists an HF Suffix.

If (2.7.1) soil is Humic Podzol (.HP) go to 3.21.

If (2.7.2) soil is Ferro - Humic Podzol (.FHP) go to 3.22.

Soil is Humo - Ferric Podzol (.HFP) go to 3.23.

## **2.8 Regosolic Order**

**2.8.1** The first Mineral Horizon is an A Master Horizon, with an H Suffix, and with a thickness  $\geq 10$ .

If (2.8.1) soil is Humic Regosol (.HR) go to 3.25.

Soil is Regosol (.R) go to 3.24.

## **2.9 Solonetzic Order**

**2.9.1** There exists an A Master Horizon with an E Suffix and with Horizon Boundary Distinctness = A, and with Thickness Min 2.

**2.9.2** There exists an AB or a BA Master Horizon.

If (not 2.9.1) soil is Solonetz (.SZ) go to 3.26.

If (2.9.2) soil is Solod (.SO) go to 3.28.

Soil is Solodized Solonetz (.SS) go to 3.27.

## **3. Pedon Validation - to Subgroup Level - Sequential Key**

### **3.1 Melanic Brunisol**

**3.1.1** There exists a Master Horizon with one of the following:

(a) a G Suffix and with a Horizon Upper Boundary < 100;

(b) a GJ Suffix and with a Horizon Upper Boundary  $\leq 50$ ;

(c) a GJ Suffix and with a Horizon Upper Boundary < 100 and with Mottle Contrast F.

**3.1.2** There exists an A Master Horizon with an E or EJ Suffix, and with a thickness  $\geq 2$ .

If (3.1.1 and 3.1.2) soil is GLE.MB. go to 4.

If (3.1.1) soil is GL.MB. go to 4.

If (3.1.2) Soil is E.MB. go to 4.

Soil is O.MB. go to 4.

### **3.2 Eutric Brunisol**

**3.2.1** Same as 3.1.1.

**3.2.2** Same as 3.1.2.

If (3.2.1 and 3.2.2) soil is GLE.EB. go to 4.

If (3.2.1) soil is GL.EB. go to 4.

If (3.2.2) Soil is E.EB. go to 4.

Soil is O.EB. go to 4.

### **3.3 Sombric Brunisol**

**3.3.1** Same as 3.1.1.

**3.3.2** Same as 3.1.2.

**3.3.3** There exists a B or BC Master Horizon with  
(a) a C Suffix, and  
(b) Cementation degree = S or I, and  
(c) Cementation Extent = C.

If (3.3.3) soil is DU.SB. go to 4.

If (3.3.1 and 3.3.2) Soil is GLE.SB. go to 4.

If (3.3.1) soil is GL.SB. go to 4.

If (3.3.2) soil is E.SB. go to 4.

Soil is O.SB. go to 4.

### **3.4 Dystric Brunisol**

**3.4.1** Same as 3.1.1.

**3.4.2** Same as 3.1.2.

**3.4.3** Same as 3.3.3.

If (3.4.3) soil is DU.DYB. go to 4.

If (3.4.1 and 3.4.2) Soil is GLE.DYB. go to 4.

If (3.4.1) soil is GL.DYB. go to 4.

If (3.4.2) soil is E.DYB. go to 4.

Soil is O.DYB. go to 4.

### **3.5 Brown Chernozem**

**3.5.1** There exists a Master Horizon with a GJ Suffix and with a Horizon Upper Boundary  $< 50$ .

**3.5.2** There exists an A Master Horizon with an E or EJ Suffix, and with a thickness  $\geq 2$ .

**3.5.3** There does not exist a B Master Horizon with a thickness  $\geq 5$ .

**3.5.4** There exists a B Master Horizon with an NJ Suffix.

**3.5.5** There exists a B Master Horizon with a K Suffix.

If (3.5.1 and 3.5.4) soil is GLSZ.B. go to 4.

If (3.5.1 and 3.5.2) soil is GLE.B. go to 4.

If (3.5.1 and 3.5.5) soil is GLCA.B. go to 4.

If (3.5.1 and 3.5.3) soil is GLR.B. go to 4.

If (3.5.1) soil is GL.B. go to 4.

If (3.5.4) soil is SZ.B. go to 4.

If (3.5.2) soil is E.B. go to 4.

If (3.5.5) soil is CA.B. go to 4.

If (3.5.3) Soil is R.B. go to 4.

Soil O.B. go to 4.

### **3.6 Dark Brown Chernozem**

**3.6.1** Same as 3.5.1.

**3.6.2** Same as 3.5.2.

**3.6.3** Same as 3.5.3.

**3.6.4** Same as 3.5.4.

**3.6.5** Same as 3.5.5.

If (3.6.1 and 3.6.4) soil is GLSZ.DB. go to 4.

If (3.6.1 and 3.6.2) soil is GLE.DB. go to 4.

If (3.6.1 and 3.6.5) soil is GLCA.DB. go to 4.

If (3.6.1 and 3.6.3) soil is GLR.DB. go to 4.

If (3.6.1) soil is GL.DB. go to 4.

If (3.6.4) soil is SZ.DB. go to 4.  
If (3.6.2) soil is E.DB. go to 4.  
If (3.6.5) soil is CA.DB. go to 4.  
If (3.6.3) Soil is R.DB. go to 4.  
Soil O.DB. go to 4.

### **3.7 Black Chernozem**

- 3.7.1** Same as 3.5.1.
- 3.7.2** Same as 3.5.2.
- 3.7.3** Same as 3.5.3.
- 3.7.4** Same as 3.5.4.
- 3.7.5** Same as 3.5.5.

If (3.7.1 and 3.7.4) soil is GLSZ.BL. go to 4.  
If (3.7.1 and 3.7.2) soil is GLE.BL. go to 4.  
If (3.7.1 and 3.7.5) soil is GLCA.BL. go to 4.  
If (3.7.1 and 3.7.3) soil is GLR.BL. go to 4.  
If (3.7.1) soil is GL.BL. go to 4.  
If (3.7.4) soil is SZ.BL. go to 4.  
If (3.7.2) soil is E.BL. go to 4.  
If (3.7.5) soil is CA.BL. go to 4.  
If (3.7.3) Soil is R.BL. go to 4.  
Soil O.BL. go to 4.

### **3.8 Dark Grey Chernozem**

- 3.8.1** Same as 3.5.1.
- 3.8.2** Same as 3.5.3.
- 3.8.3** Same as 3.5.4.
- 3.8.4** Same as 3.5.5.

If (3.8.1 and 3.8.3) soil is GLSZ.DG. go to 4.  
If (3.8.1 and 3.8.4) soil is GLCA.DG. go to 4.  
If (3.8.1 and 3.8.2) soil is GLR.DG. go to 4.  
If (3.8.1) soil is GL.DG. go to 4.  
If (3.8.3) soil is SZ.DG. go to 4.  
If (3.8.4) soil is CA.DG. go to 4.  
If (3.8.2) soil is R.DG. go to 4.  
Soil is O.DG. go to 4.

### **3.9 Turbic Cryosol**

- 3.9.1** There exists a B or C Master Horizon with a G Suffix.
- 3.9.2** There does not exist a B Master Horizon.
- 3.9.3** There exists a B Master Horizon without a Y Suffix.

If (3.9.1) soil is GL.TC. go to 4.  
If (3.9.2) soil is R.TC. go to 4.  
If (3.9.3) soil is BR.TC. go to 4.  
Soil is O.TC. go to 4.

### **3.10 Static Cryosol**

- 3.10.** Same as 3.9.1.  
**1**
- 3.10.** Same as 3.9.2.  
**2**
- 3.10.** Same as 3.9.3.  
**3**

If (3.10.1) soil is GL.SC. go to 4.  
If (3.10.2) soil is R.SC. go to 4.

If (3.10.3) soil is BR.SC. go to 4.

Soil is O.SC. go to 4.

### **3.11 Organic Cryosol**

**3.11.** There exists a Mineral Master Horizon with a Horizon Upper Boundary  $\leq 100$  cm.

**1**

**3.11.** There exists a W Master Horizon with a Horizon Upper Boundary  $\leq 100$  cm and with either a thickness  $> 30$  cm or with no Horizon Lower Boundary specified.

**2**

**3.11.** There exists an O Master Horizon with an H Suffix but with no Z Suffix.

**3**

**3.11.** There exists an O Master Horizon with an M Suffix but with no Z Suffix.

**4**

**3.11.** There exists an O Master Horizon with an F Suffix but with no Z Suffix.

**5**

**3.11.** There exists an O Master Horizon with both H and Z Suffixes.

**6**

**3.11.** There exists an O Master Horizon with both M and Z Suffixes.

**7**

**3.11.** There exists an O Master Horizon with both F and Z Suffixes.

**8**

If (3.11.2) soil is GC.OC. go to 4.

If (3.11.1 and 3.11.3) soil is THU.OC. go to 4.

If (3.11.1 and 3.11.4) soil is TME.OC. go to 4.

If (3.11.1 and 3.11.5) soil is TFI.OC. go to 4.

If (3.11.6) soil is HU.OC. go to 4.

If (3.11.7) soil is ME.OC. go to 4.

If (3.11.8) soil is FI.OC. go to 4.

If none of the above then FLAG (.OC - can go no further) & STOP.

### **3.12 Humic Gleysol**

**3.12.** There exists a B Master Horizon with a GF Suffix.

**1**

**3.12.** There does not exist a B Master Horizon with a thickness  $\geq 5$ .

**2**

If (3.12.1) soil is FE.HG. go to 4.

If (3.12.2) soil is R.HG. go to 4.

Soil is O.HG. go to 4.

### **3.13 Gleysol**

**3.13.** Same as 3.12.1.

**1**

**3.13.** Same as 3.12.2.

**2**

If (3.13.1) soil is FE.G. go to 4.

If (3.13.2) soil is R.G. go to 4.

Soil is O.G. go to 4.

### **3.14 Luvic Gleysol**

**3.14.** Same as 3.12.1.

**1**

**3.14.** There exists a B Master Horizon with an X Suffix.

**2**

If (3.14.2) soil is FR.LG. go to 4.

If (3.14.1) soil is FE.LG. go to 4.

If (2.4.2 or 2.4.3) soil is HU.LG. go to 4.

Soil is O.LG. go to 4.

### **3.15 Grey Brown Luvisols**

**3.15.** There exists a B Master Horizon with an FJ or GJ or M Suffix and with a thickness **1** > 5, and if the Colour 1 Aspect = 1 or 3 or 5 or 7, the Colour 1 Chroma  $\geq$  3.

**3.15.** There exists a B Master Horizon with an F Suffix and with a thickness **2** > 10.

**2**

**3.15.** There exists a Master Horizon with one of the following:

**3**

(a) a G Suffix and with a Horizon Upper Boundary < 100;

(b) a GJ Suffix and with a Horizon Upper Boundary  $\leq$  50 and with Mottle Contrast = D;

(c) a GJ Suffix and with a Horizon Upper Boundary < 100 and with Mottle Contrast = P.

**3.15.** There exists a B Master Horizon with an F Suffix.

**4**

If (3.15.2 and 3.15.3) soil is GLPZ.GBL. go to 4.

If ((3.15.1 or 3.15.4) and 3.15.3) soil is GLBR.GBL. go to 4.

If (3.15.3) soil is GL.GBL. go to 4.

If (3.15.2) soil is PZ.GBL. go to 4.

If (3.15.1 or 3.15.4) soil is BR.GBL. go to 4.

Soil is O.GBL.

### **3.16 Grey Luvisol**

**3.16.** The same as 3.15.1.

**1**

**3.16.** The same as 3.15.2.

**2**

**3.16.** There exists an A Master Horizon with an H Suffix and with a thickness > 5.

**3**

**3.16.** There exists an A Master Horizon with a P Suffix and with a thickness > 5 and if **4** the Colour 1 Aspect is 2 or 4 or 6 or 8, the Colour 1 Value > 3.5 and < 5.

**3.16.** Same as 3.15.3.

**5**

**3.16.** There exists a B or BC Master Horizon with an X Suffix.

**6**

**3.16.** Same as 3.5.4.

**7**

**3.16.** Same as 3.15.4.

**8**

If (3.16.5 and 3.16.6) soil is GLFR.GL. go to 4.

If (3.16.5 and 3.16.7) soil is GLSZ.GL. go to 4.

If (3.16.2 and 3.16.5) soil is GLPZ.GL. go to 4.

If ((3.16.1 or 3.16.8) and 3.16.5) soil is GLBR.GL. go to 4.

If ((3.16.3 or 3.16.4) and 3.16.5) soil is GLD.GL. go to 4.

If (3.16.5) soil is GL.GL. go to 4.

If (3.16.6) soil is FR.GL. go to 4.

If (3.16.7) soil is SZ.GL. go to 4.

If (3.16.2) soil is PZ.GL. go to 4.

If (3.16.1 or 3.16.8) soil is BR.GL. go to 4.

If (3.16.3 or 3.16.4) soil is D.GL. go to 4.

Soil is O.GL. go to 4.

### **3.17 Fibrisol**

**3.17.** There exists a W Master Horizon with a Horizon Upper Boundary < 160.

**1**

**3.17.** T 30.

**2**

**3.17.** T 5.

**3**

**3.17.** M 25.

**4**

**3.17.** H 12.

**5**

**3.17.** L 5.

**6**

**3.17.** M 25.

**7**

**3.17.** H 12.

**8**

If (3.17.1) soil is HY.F. go to 4.

If (3.17.2 and 3.17.3) soil is THU.F. go to 4.

If (3.17.2 and 3.17.4) soil is TME.F. go to 4.

If (3.17.2) soil is T.F. go to 4.

If (3.17.6) soil is LM.F. go to 4.

If (3.17.3) soil is CU.F. go to 4.

If (3.17.8) soil is HU.F. go to 4.

If (3.17.7) soil is ME.F. go to 4.

Soil is TY.F. go to 4.

### **3.18 Mesisol**

**3.18.** Same as 3.17.1.

**1**

**3.18.** T 30.

**2**

**3.18.** T 5.

**3**

**3.18.** F 25.

**4**

**3.18.** H 25.

**5**

**3.18.** L 5.

**6**

**3.18.** F 25.

**7**

**3.18.** H 25.

**8**

If (3.18.1) soil is HY.M. go to 4.

If (3.18.2 and 3.18.5) soil is THU.M. go to 4.

If (3.18.2 and 3.18.4) soil is TFI.M. go to 4.

If (3.18.2) soil is T.M. go to 4.

If (3.18.6) soil is LM.M. go to 4.

If (3.18.3) soil is CU.M. go to 4.

If (3.18.8) soil is HU.M. go to 4.

If (3.18.7) soil is FI.M. go to 4.

Soil is TY.M. go to 4.



### 3.19 Humisol

3.19. Same as 3.17.1.

1

3.19. T 30.

2

3.19. T 5.

3

3.19. F 12.

4

3.19. M 25.

5

3.19. L 5.

6

3.19. F 12.

7

3.19. M 25.

8

If (3.19.1) soil is HY.H. go to 4.

If (3.19.2 and 3.19.5) soil is TME.H. go to 4.

If (3.19.2 and 3.19.4) soil is TFI.H. go to 4.

If (3.19.2) soil is T.H. go to 4.

If (3.19.6) soil is LM.H. go to 4.

If (3.19.3) soil is CU.H. go to 4.

If (3.19.8) soil is ME.H. go to 4.

If (3.19.7) soil is FI.H. go to 4.

Soil is TY.H. go to 4.

### 3.20 Folisol

Soil is TY.FO. go to 4.

### 3.21 Humic Podzol

3.21. There exists a B Master Horizon with all of the following:

1

- (a) an H, and HF, or an F Suffix;
- (b) a C Suffix;
- (c) Cementation Degree = S or I;
- (d) thickness 3.

3.21. There exists a B Master Horizon with all of the following:

2

- (a) an H, an HF, or an F Suffix;
- (b) a C Suffix;
- (c) Cementation Degree = S or I.

3.21. Soil Classification Subgroup is P.

3

3.21. There exists a BC Master Horizon with all of the following:

4

- (a) a C Suffix;
- (b) Cementation Degree = S or I.
- (c) Cementation Extent = C.

3.21. Same as 3.14.2.

5

If (3.21.1 and not 3.21.3) soil is OT.HP. go to 4.

If (3.21.2 and 3.21.3) soil is P.HP. go to 4.

If (3.21.4) soil is DU.HP. go to 4.

If (3.21.5) soil is FR.HP. go to 4.

Soil is O.HP. go to 4.

### **3.22 Ferro - Humic Podzol**

**3.22.** There exists a Master Horizon with one of the following:

**1**

- (a) a G Suffix and with a Horizon Upper Boundary < 100;
- (b) a GJ Suffix and with a Horizon Upper Boundary < 100 and with Mottle Contrast F.

**3.22.** There exists an A Master Horizon with both of the following:

**2**

- (a) an H Suffix;
- (b) thickness 10.

**3.22.** Same as 3.21.1.

**3**

**3.22.** Same as 3.21.2.

**4**

**3.22.** Same as 3.21.3.

**5**

**3.22.** Same as 3.21.4.

**6**

**3.22.** Same as 3.21.2.

**7**

**3.22.** There exists a B Master Horizon with a T Suffix.

**8**

If (3.22.1 and 3.22.3 and not 3.22.5) soil is GLOT.FHP. go to 4.

If (not 3.22.1 and 3.22.3 and not 3.22.5) soil is OT.FHP. go to 4.

If (3.22.4 and 3.22.5) soil is P.FHP. go to 4.

If (3.22.6) soil is DU.FHP. go to 4.

If (3.22.7) soil is FR.FHP. go to 4.

If (3.22.8) soil is LU.FHP. go to 4.

If (3.22.1 and 3.22.2) soil is GLSM.FHP. go to 4.

If (3.22.1) soil is GL.FHP. go to 4.

If (3.22.2) soil is SM.FHP. go to 4.

Soil is O.FHP. go to 4.

### **3.23 Humo - Ferric Podzol**

**3.23.** Same as 3.22.1.

**1**

**3.23.** Same as 3.22.2.

**2**

**3.23.** Same as 3.22.3.

**3**

**3.23.** Same as 3.22.4.

**4**

**3.23.** Same as 3.22.5.

**5**

**3.23.** Same as 3.22.6.

**6**

**3.23.** Same as 3.22.7.

**7**

**3.23.** Same as 3.22.8.

**8**

If (3.23.1 and 3.23.3 and not 3.23.5) soil is GLOT.HFP. go to 4.  
 If (not 3.23.1 and 2.23.3 and not 3.23.5) soil is OT.HFP. go to 4.  
 If (3.23.4 and 3.23.5) soil is P.HFP. go to 4.  
 If (3.23.6) Soil is DU.HFP. go to 4.  
 If (3.23.7) Soil is FR.HFP. go to 4.  
 If (3.23.8) Soil is LU.HFP. go to 4.  
 If (3.23.1 and 3.23.2) soil is GLSM.HFP. go to 4.  
 If (3.23.1) soil is GL.HFP. go to 4.  
 If (3.23.2) soil is SM.HFP. go to 4.  
 Soil is O.HFP. go to 4.

### **3.24 Regosol**

**3.24.** There exists a Master Horizon with a B Suffix.

**1**

**3.24.** There exists a Master Horizon with a GJ Suffix.

**2**

If (3.24.1 and 3.24.2) soil is GLCU.R. go to 4.  
 If (3.24.2) soil is GL.R. go to 4.  
 If (3.24.1) soil is CU.R. go to 4.  
 Soil is O.R. go to 4.

### **3.25 Humic Regosol**

**3.25.** Same as 3.24.1.

**1**

**3.25.** Same as 3.24.2.

**2**

If (3.25.1 and 3.25.2) soil is GLCU.HR. go to 4.  
 If (3.25.2) soil is GL.HR. go to 4.  
 If (3.25.1) soil is CU.HR. go to 4.  
 Soil is O.HR. go to 4.

### **3.26 Solonetz**

**3.26.** There exists an A Master Horizon with a pH - CaCl<sub>2</sub> value 8.5.

**1**

**3.26.** There exists an A Master Horizon such that If Colour 1 Aspect = 2 or 4 or 6 or 8,  
**2** Colour 1 Value > 4.5.

**3.26.** There exists an A Master Horizon such that If Colour 1 Aspect = 2 or 4 or 6 or 8,  
**3** Colour 1 Value 4.5 and 3.5.

**3.26.** There exists an A Master Horizon such that If Colour 1 Aspect = 2 or 4 or 6 or 8,  
**4** Colour 1 Value < 3.5.

**3.26.** There exists a Master Horizon with a GJ Suffix, and with a Horizon Upper  
**5** Boundary 50.

If (3.26.1) soil is A.SZ. go to 4. If 3.26.1 not answerable and A.SZ is designated, assume it is correct and go to 4.  
 If (3.26.2 and 3.26.5) soil is GLB.SZ. go to 4.  
 If (3.26.3 and 3.26.5) soil is GLDB.SZ. go to 4.  
 If (3.26.4 and 3.26.5) soil is GLBL.SZ. go to 4.  
 If (3.26.5 and 3.26.2 not answerable) soil is GLB.SZ or GLDB.SZ or GLBL.SZ. If designation is one of these assume correct and go to 4. If it is not one of these, it is wrong. FLAG & STOP.  
 If (3.26.2) soil is B.SZ. go to 4.  
 If (3.26.3) soil is DB.SZ. go to 4.  
 If (3.26.4) soil is BL.SZ. go to 4.  
 If (3.26.2 not answerable) assume designation is correct and go to 4.

### **3.27 Solodized Solonetz**

**3.27.** Same as 3.26.2.

**1**

**3.27.** Same as 3.26.3.

**2**

**3.27.** Same as 3.26.4.

**3**

**3.27.** Same as 3.26.5.

**4**

If (3.27.1 and 3.27.4) soil is GLB.SS or GLG.SS. If designation is one of these assume correct and go to 4. If not one of these, wrong. FLAG & STOP.

If (3.27.2 and 3.27.4) soil is GLDB.SS or GLDG.SS. If designation is one of these assume correct and go to 4. If not one of these, it is wrong. FLAG & STOP.

If (3.27.3 and 3.27.4) soil is GLBL.SS. go to 4.

If (3.27.4 and 3.27.1 not answerable) soil is GLB.SS or GLG.SS or GLDB.SS or GLDG.SS or GLBL.SS. If designation is one of these assume correct and go to 4. If not one of these, it is wrong. FLAG & STOP.

If (3.27.1) soil is B.SS or G.SS. If designation is one of these assume correct and go to 4. If not one of these, it is wrong. FLAG & STOP.

If (3.27.2) soil is DB.SS or DG.SS. If designation is one of these assume correct and go to 4. If not one of these, it is wrong. FLAG & STOP.

If (3.27.3) soil is BL.SS go to 4.

If (3.27.1 not answerable) assume designation is correct and go to 4.

### **3.28 Solod**

**3.28.** Same as 3.26.2.

**1**

**3.28.** Same as 3.26.3.

**2**

**3.28.** Same as 3.26.4.

**3**

**3.28.** Same as 3.26.5.

**4**

If (3.28.1 and 3.28.4) soil is GLB.SO or GLG.SO. If designation is one of these assume correct and go to 4. If not one of these, it is wrong. FLAG & STOP.

If (3.28.2 and 3.28.4) soil is GLDB.SO or GLDG.SO. If designation is one of these assume correct and go to 4. If not one of these, wrong. FLAG & STOP.

If (3.28.3 and 3.28.4) soil is GLBL.SO go to 4.

If (3.28.4 and 3.28.1 not answerable) soil is GLB.SO or GLG.SO or GLDB.SO or GLDG.SO or GLBL.SO. If designation is one of these assume correct and go to 4. If not one of these, it is wrong. FLAG & STOP.

If (3.28.1) soil is B.SO or G.SO. If designation is one of these assume correct and go to 4. If not one of these, it is wrong. FLAG & STOP.

If (3.28.2) soil is DB.SO or DG.SO. If designation is one of these assume correct and go to 4. If not one of these, it is wrong. FLAG & STOP.

If (3.28.3) soil is BL.SO. go to 4.

If (3.28.1 not answerable) assume designation is correct and go to 4.

## **4. Output**

If Classification matches designation, indicate by Statement:

SOIL CLASSIFICATION APPPEAR CORRECT.

If Classification does not match designation, indicate by the following:

SOIL CLASSIFICATION FOR FOMID 82-99999 APPEARS INCORRECT.

YOU HAVE CLASSIFIED SOIL AS: xxxx.xxx.

COMPUTED CLASSIFICATION IS: xxxx.xxx

(Where serveral possibilities exist, they should be listed.)