EXPLANATION OF FIELD NAMES
for
CanSIS SOIL NAMES FILE (SNF)
and
SOIL NAMES OF CANADA FILE (SNCF)

the old SNF as sent here

SNF	EXPLANATION	VALUES
Province	Province	2 character prov code
Soil_name	Soil name	Soil name unique for Canada
Soil_code	Soil code	Soil code unique within province
Modifier	Soil code modifier	Provincially assigned
Lu	Land use flag	A Agricultural soil profile N Native soil profile X Both
Kind	Kind of soil material	M Mineral O Organic N True nonsoil U Unclassified/incomplete
Watertbl	Presence of watertable	- Not applicable NO Not present anytime YU Present at unspecified time YG Present at growing season YN Present at non-growing season YB Present both seasons
Rootrestri	Soil layer restricting root growth	- Not applicable (Kind = N or U) 0 Not present 1-9 Restricting layer number
Restr_type	Type of root restricting layer	- Not applicable UN Undifferentiated BN Solonetzic B horizon SA Salinity (conductivity > 4dS/m) CT Compact (Basal) till OR Ortstein horizon FP Fragipan LI Lithic (consolidated bedrock) CR Cryic (frozen) horizon DU Duric horizon PL Placic horizon

Drainage	Removal of water from soil profile	- Not applicable VR Very rapidly drained R Rapidly drained W Well drained MW Moderately well drained I Imperfectly drained P Poorly drained VP Very poorly drained
Mdep1 Mdep2 Mdep3	Mode of deposition 1,2,3	See Omdep1,2,3
Order	Soil order 2nd edition	- Not applicable BR Brunisolic CH Chernozemic CY Cryosolic GL Gleysolic LU Luvisolic OR Organic PZ Podzolic RG Regosolic SZ Solonetzic
S_group	Soil subgroup 2nd edition	See CSSC 2nd edition (p33-36)
G_group	Great group 2nd edition	See CSSC 2nd edition (p33-36)
Profile	Header from Detail II file	Any value (including -)
Order3	Soil order 3rd edition	- Not applicable BR Brunisolic CH Chernozemic CY Cryosolic GL Gleysolic LU Luvisolic OR Organic PZ Podzolic RG Regosolic SZ Solonetzic VE Vertisolic
S_group3	Soil subgroup 3rd edition	See CSSC 3rd edition p23-26)
G_group3	Great group 3rd edition	See CSSC 3rd edition p23-26)

SNCF	EXPLANATION	VALUES
Opr	Province	2 character prov code
Osoilcode	CanSIS soil code	3 character code unique within province
Osoil_name	Unique soil name	Soil name unique for Canada
Report	Soil report number	Soil survey report number
Level	Level of detail	SER Series SMU Single map unit CMU1 Compound mu1 CMU2 Compound mu2 CMU3 Compound mu3 CMU4 Compound mu4
Phasco3	Carbonated	Y Yes N No
Phaslith	Lithic	Y Yes N No
Phaspeat	Peaty	Y Yes N No
Phassal	Saline	Y Yes N No
Pmtex1 Pmtex2 Pmtex3	Parent material texture group 1,2,3	- Not applicable (2,3 only) UD Undifferentiated CS Coarse skeletal C Coarse VC Very coarse FR Fragmental M Medium MS Medium skeletal MC Moderately coarse MF Moderately fine F Fine FS Fine skeletal VF Very fine FI Fibric ME Mesic HU Humic SM Stratified (mineral) SU Stratified (mineral and organic)
Pmcalc1 Pmcalc2 Pmcalc3	Chemical composition of parent material 1,2,3	- Not applicable (2,3 only) UD Undifferentiated EA Extremely acidic

		AN Medium acid to neutral
		WC Weakly calcareous(1 to 6% CaCO3)
		VC Moderately to very strongly calcareous (6 to 40% CaCO3)
		EC Extremely calcareous (>40%CaCO3)
		SA Calcareous and saline
Omdep1 Omdep2 Omdep3	Mode of deposition 1,2,3	- Not applicable AMPT Amorphous peat ANTH Anthropogenic AQUA Aquatic BMFN Brown moss fen COLL Colluvial COPE Coprogenous earth DIAE Diatomaceous earth EOLI Eolian FLEO Fluvioeolian FLLC Fluviolacustrine FLMA Fluviomarine FLUV Fluvial FMPT Feather moss peat FNPT Fen peat FOPT Forest peat GLFL Glaciofluvial GLLC Glaciolacustrine GLMA Glaciomarine ICE Ice LACU Lacustrine LATL Lacustro-till MARI Marine MARL Marl MXPT Mixed peat RESD Residual RKEX Extrusive bedrock RKIG Igneous bedrock RKIN Intrusive bedrock RKLS Limestone bedrock RKMM Metamorphic bedrock RKSH Shale bedrock RKSS Sandstone bedrock RKUD Undifferentiated bedrock SAPR Saprolite SEPT Sedimentary peat SGPT Sedge peat SPPT Sphagnum peat TILL Morainal till UNDM Undifferentiated mineral UNDO Undifferentiated organic VOLC Volcanic WDPT Woody peat WDSG Woody sedge

MINERAL/ORGANIC SOIL FAMILY CRITERIA FOR THE DOMINANT PEDON

Partszc	Particle size of control section		
		AY	Ashy
		AY/CN	Ashy/cindery
		AY/LS	Ashy/loamy skeletal
		AY/LY	Ashy/loamy
		AS	Ashy skeletal
		CY	Clayey
		CY/FR	
Clayey/fragmental			
		CY/LY	Clayey/loamy
		CY/LS	Clayey/loamy skeletal
		CY/SS	Clayey/sandy skeletal
		CY/SY	Clayey/sandy
		CS	Clayey skeletal
		CS/FR	Clayey skeletal/fragmental
		CS/SS	Clayey skeletal/sandy skeletal
		CS/SY	Clayey skeletal/sandy
		FC	Fine clayey
		FC/FR	Fine clayey/fragmental
		FC/LY	Fine clayey/loamy
		FC/LS	Fine clayey/loamy skeletal
		FC/SS	Fine clayey/sandy skeletal
		FC/SY	Fine clayey/sandy
		VFC	Very fine clayey
		VFC/FR	Very fine clayey/fragmental
		VFC/SS	Very fine clayey/sandy skeletal
		VFC/LS	Very fine clayey/loamy skeletal
		VFC/SY	Very fine clayey/sandy
		VFC/LY	Very fine clayey/loamy
		CN	Cindery
		CN/LY	Cindery/loamy
		CN/SY	Cindery/sandy
		CN/SS	Cindery/sandy skeletal
		CZ	Coarse silty
		CZ/FR	Coarse silty/fragmental
		CZ/SS	Coarse silty/sandy skeletal
		CZ/SY	Coarse silty/sandy
		CZ/CY	Coarse silty/clayey
		FZ	Fine silty
		FZ/FR	Fine silty/fragmental
		FZ/SS	Fine silty/sandy skeletal
		FZ/SY	Fine silty/sandy
		FZ/CY	Fine silty/clayey
		FR	Fragmental
		FR/LS	Fragmental/loamy skeletal

		FR/CS	Fragmental/clayey skeletal
		FR/SY	Fragmental/sandy
		FR/LY	Fragmental/loamy
		FR/CY	Fragmental/clayey
		GR	Grumic
		LY	Loamy
		LY/FR	Loamy/fragmental
		LY/SY	Loamy/sandy
		LY/SS	Loamy/sandy skeletal
		LS	Loamy skeletal
		LS/CY	Loamy skeletal/clayey
		LS/FR	Loamy skeletal/fragmental
		FL	Fine loamy
		FL/FR	Fine loamy/fragmental
		FL/SS	Fine loamy/sandy skeletal
		FL/SY	Fine loamy/sandy
		FL/CY	Fine loamy/clayey
		CL	Coarse loamy
		CL/CY	Coarse loamy/clayey
		CL/FR	Coarse loamy/fragmental
		CL/SS	Coarse loamy/sandy skeletal
		SY	Sandy
		SS	Sandy skeletal
		SS/CS	Sandy skeletal/clayey skeletal
		SY/CS	Sandy/clayey skeletal
		SY/LY	Sandy/loamy
		SY/CY	Sandy/clayey
		SS/LY	Sandy skeletal/loamy
		SS/CY	Sandy skeletal/clayey
		TX	Thixotropic
		TX/FR	Thixotropic/fragmental
		TX/LS	Thixotropic/loamy skeletal
		TX/SS	Thixotropic/sandy skeletal
		TX/SY	Thixotropic/sandy
		TX/LY	Thixotropic/loamy
		TS	Thixotropic skeletal
Calc_c	Calcareousness of control section	EC	Extremely calcareous
		SC	Strongly calcareous
		WC	Weakly calcareous
Stemp	Soil temperature	MILD	Mild
		COOL	Cool
		COLD	Cold
		VCLD	Very cold
		XCLD	Extremely cold

Orgsurt	Organic surface tier	FE	Fennic
		HU	Humid
		ME	Mesic
		SP	Sphagnic
		SI	Silvic
Minrcs	Mineralogy of control section	CARB	Carbonatic
		CHLO	Chloritic
		GYPS	Gypsic
		ILLI	Illitic
		KAOL	Kaolinitic
		MICA	Micaceous
		MXCL	Mixed clay
		MXNC	Mixed nonclay
		MONT	Montmorillonitic
		SERP	Serpentinitic
		SILI	Siliceous
		SULF	Sulfureous
		VERM	Vermiculitic
Dpthlth	Depth to lithic contact	MD	Moderately deep
		SH	Shallow
Smoist	Soil moisture	AQUI	Aquic
		PRAQ	Peraquic
		SBAQ	Subaquic
		ARID	Arid
		SMAR	Semiarid
		SBAR	Subarid
		HUMI	Humid
		PRHU	Perhumid
		SBHU	Subhumid
Minsurt	Mineral surface tier	CY	Clayey
		CL	Coarse loamy
		CS	Coarse silty
		FL	Fine loamy
		FZ	Fine silty
		SY	Sandy
Reactc	Reaction of c	AC	Acid
		AL	Alkaline
		NE	Neutral
Sdpth	Soil depth	XSLI	Extremely shallow lithic
		VSLI	Very shallow lithic
		SHLI	Shallow lithic
		XSCR	Extremely shallow cryic
		VSCR	Very shallow cryic

Reactorg	Reaction of organic	DY	Dysic
		EU	Eusic
Pstl	Particle size terric layer	CY	Clayey
		CS	Clayey skeletal
		FR	Fragmental
		LY	Loamy
		LS	Loamy skeletal
		SY	Sandy
		SS	Sandy skeletal
Limnic	Limnic material	MARL	Marl
		DIAT	Diatomaceous
		COPR	Coprogenous

03/07/17

Parent Material Texture Classes for the CanSIS Soil Names File New CanSIS SNF

W. Fraser May7/03

The new SLCv3 Component File will include a number of soil attribute fields from the CanSIS Soil Names File. These will include many current SNF data fields such as DRAINAGE, MDEP1 and MDEP2. It will also have 4 new "extended SNF" data fields (PMTEX1, PMTEX2, PMCALC1, PMCALC2) to further define the top two parent materials of each soil component. These fields and the data for them will be appended from the original (pre 1985) CanSIS SNF ("White forms").

The original SNF White forms from all provinces have now been manually scanned, run through an optical character recognition program, and are being converted from long text names to shorter connotative codes that will work better in a dbf file format. The original SNF Chemical Composition1,2,3 fields, with codes such as "A204** "Weakly Calcareous"and "A206** Extremely calcareous" will simply be converted to equivalent 2 character codes ("WC', "EC", etc.). Only the first 2 fields (PMCALC1 and PMCALC2) will be shown in the new CMP, although 3 parent materials will be shown in the new extended SNF (to match MDEP1,2,3).

The old White form Physical Composition1,2,3 data fields will be the source for the new Parent Material Texture Group fields (PMTEX1,2,3). The originally Physical Composition groups (15) used family designations, such as "A106** Clayey" ,"A105** Fine loamy and fine silty", etc. It was decided at the Nov/02 SLC TAG that these could be reformatted to match conventional USDA textural groups. **We are now at the point where we must finalize the new Parent Material Textural Groups (PMTEX1,2,3) classes and codes.** The final step will be to append the reformatted data fields as an extension of the current provincial SNFs, based on common PROVINCE + SOIL_CODEs. The new draft extended SNFs will be sent out to the regional staff for review and editing, hopefully before summer 2003. Some newer (post 1985) soil series won't have any older extended SNF data, but we expect that most soils will have reasonable PMTEX1,2,3 and PMCALC1,2,3 data. We can edit and fill in the missing ones later, based on values for similar soils.

During the last SLC TAG Meeting, two major concerns were raised regarding the new Physical Composition texture classes:

1. Shouldn't we use the more specific USDA textural classes, and

2. Many of the current classes (ie., Fine loamy and fine silty, Clayey) sound too much like Soil Family classes. As Tony Brierley pointed out, the Family Particle Size classes "are regarded as a compromise between engineering and pedological classifications" (CSSC 1998 p. 136). It would be preferable to use classes that relate or nest directly with USDA textural classes that we use to describe soils in the field.

In response to the first concern, the 15 Physical Composition classes in the original CanSIS SNF represents the best available data, so these are the groups we have to work with. The Physical Composition classes were designed to be broad enough to represent the typical textural ranges of most named soil series. Fewer, broader classes would lump soils together that belong in separate Catenas. Too many narrowly defined classes would unreasonably separate soils that belong to the same Catenas. The 1991 SLC Procedures Manual and User's Handbook, pages 38-39, lists 38 separate USDA textural classes, and many more gravelly, very gravelly and cobbly modifier combinations can also occur. These classes are appropriate for describing mineral soil horizons, but are too specific for show soil series relationships in the SNF. Most soils series in the provincial SNFs are already defined in terms of Catenas in historical soil reports and map legends. The new extended SNF fields should allow us to conveniently organize the SNF soils into Soil Catenas (ie., all SNF records with common MDEP1,2,3 +

PMTEX1,2,3 + PMCALC1,2,3 codes). This is useful for many soil correlation purposes, including compilation and editing of the Soil Layer Files. For example, soils in the same Catena should have similar C horizon textures, pH, CaCO3 values, etc. This is a "top down" approach to building and correlating SNF and SLF files.

Regarding the second concern, the actual Soil Family data, including family particle size classes, has also been captured from page 2 of the original CanSIS SNF White forms, and this may be reintroduced later. The 15 Physical Composition classes (PMTEX1,,2,3) are separate from this, and can be translated into textural groups, so that they are "nested" as combinations of USDA textural classes. The attached table shows the original and new proposed PMTEX1,2,3 data field class names, and the specific sets of USDA textural classes within each new group. The textural group names, (ie., Coarse, Moderately Fine, Fine, etc.) also described in the 1974 System of Soil Classification for Canada "Gray Book", pages 168,169. These terms have been commonly used to describe soil textural groups in historical soil reports.

Here are some additional points to note regarding the table:

1. Each of the 15 original Physical Composition classes has been matched with its closest textural group equivalent. Some have an exact fit (ie., "Sandy" = "Coarse"), while others are approximate (ie., "Loamy" = "Medium"). A comparison of the new "Catena groups" (an index of all SNF soils on MDEP1,2,3 + PMTEX1,2,3 + CHEMCOMP1,2,3) with the Catena soils described in historical soil reports should allow us to confirm or further refine the new classes for particular soils.

2. The Very Coarse ("VC") and Very Fine ("VF") classes are proposed subdivisions of the new Coarse (C) and Fine (F) textural groups respectively. These define separate soil series in some provinces. Where they are required, pedologists will have to manually edit the new PMTEX1,2,3 codes from "C" (Coarse) to "VC" (Very Coarse) for very coarse sandy soils, and from "F " (Fine) to "VF" (Very Fine) for heavy clay soils (>60% clay). Manitoba has 35 SNF soil records in the Very Coarse class, and a much larger number of soils in the Very Fine class.

3. The "Not applicable" class ("- ") follows standard CanSIS convention, to be used where soil parent material 1, 2 or 3 doesn't exist. Note that "Undifferentiated" ("UD") is a separate code, indicating that a parent material is present, but the texture may vary without affecting the soil component name. Typical soil components here may be "Hill wash", "Eroded slopes", "Salt flats" or "Marsh".

4. The standard USDA textural triangle shows Sand and Loamy sand (LS), but doesn't show the various grades of sand. While all sands (CoS, MB, FS, VFS) may have low clay contents, VFS has a significantly higher water holding capacity. For this reason, standard practice in Manitoba and elsewhere is to place VFS in the Moderately Coarse group, and VFSL was put in the Medium group.

5. The proposed PMTEX1,2,3 classes include gravelly and cobbly versions of each USDA textural classes (ie., those with 15 to 35% coarse fragments by volume). Only common combinations are shown.

6. Very Gravelly and very cobbly USDA textural classes have 35 to 60% coarse fragments by volume. These are considered skeletal (>35% coarse fragments), so have been assigned to the appropriate Coarse, Medium and Fine skeletal classes. Only common combinations are shown here. Some combinations (Fine skeletal) may be rare or non existent.

Physical Composition 1,2,3 Class (White form)	New Code	New PMTEX1,2,3 Class (Proposed)	USDA Symbol	USDA texture classes
(part of Sandy)	**VC**	**Very Coarse**	VCoS	Very coarse sand
			CoS	Coarse sand
			S or MS	Medium sand
			GS	Gravelly sand
			CBS	Cobbly sand
Sandy	**C**	**Coarse**	FS	Fine sand
			LCoS	Loamy coarse sand
			LS	Loamy sand
			LFS	Loamy fine sand
			GLS	Gravelly loamy sand
			CBLS	Cobbly loamy sand
Coarse loamy & coarse silty	**MC**	**Moderately Coarse**	VFS	Very fine sand
			LVFS	Loamy very fine sand
			CoSL	Coarse sandy loam
			SL	Sandy loam
			FSL	Fine sandy loam
			GSL	Gravelly sandy loam
			CBSL	Cobbly sandy loam
			GFSL	Gravelly fine sandy loam
Loamy	**M**	**Medium**	VFSL	Very fine sandy loam
			L	Loam
			SiL	Silt loam
			Si	Silt
			GL	Gravelly loam
			GSiL	Gravelly silt loam
Fine loamy & fine silty	**MF**	**Moderately Fine**	SCL	Sandy clay loam
			FSCL	Fine sandy clay loam
			VFSCL	Very fine sandy clay loam
			CL	Clay loam

			SiCL	Silty clay loam
			GSCL	Gravelly sandy clay loam
			GL	Gravelly loam
			CBCL	Cobbly clay loam
Clayey	**F**	**Fine**	SC	Sandy clay
			SiC	Silty clay
			C	Clay
			GSiC	Gravelly silty clay
(Part of Clayey)	**VF**	**Very Fine**	HC	Heavy clay (>60% clay)
Sandy skeletal	**CS**	**Coarse skeletal**	VGS	Very gravelly sand
			VGLS	Very gravelly loamy sand
Loamy skeletal	**MS**	**Medium skeletal**	VGSL	Very gravelly sandy loam
			VGL	Very gravelly loam
Clayey skeletal	**FS**	**Fine skeletal**	VGC	Very gravelly clay
Fragmental	**FR**	**Fragmental**		
Stratified (mineral)	**SM**	**Stratified (mineral)**		
Stratified (mineral and organic)	**SU**	**Stratified (mineral and organic)**		
Fibric	**FI**	**Fibric**		
Mesic	**ME**	**Mesic**		
Humic	**HU**	**Humic**		
Undifferentiated	**UD**	**Undifferentiated**		
	-	**Not applicable**		