

Soil Survey of the
Little Red River Indian Reserve No. 106C
G.A. Padbury, H.B. Stonehouse

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Location

The Little Red River Reserve, located about 20 miles north of the city of Prince Albert, includes an area of approximately 32,000 acres. (All or portions of Sections 1 to 30 in Township 52, Range 27, Sections 5 to 8, 17, and 18 in Township 52, Range 26, Sections 1, 12, 13, 24, and 25 in Township 52, Range 28, and Section 34 in Township 51, Range 27, all west of the 2nd Principal Meridian, and Sections 1, 2, 11 to 14, and 23 to 26 in Township 52, Range 1, west of the 3rd Principal Meridian).

MAP LEGEND

The series of symbols which appear within each area, separated on the map by a soil boundary, are interpreted by means of the map legend.

There may be some terms in the legend which are unfamiliar to the reader. The booklet, "A Guide to Understanding Saskatchewan Soils"¹, will familiarize the reader with the terms used. To properly interpret the legend it is essential that the above-mentioned booklet be used as a reference.

Soils

Dominantly Black Chernozemic Soils

- Hamlin - Dominant Black Chernozemic soils developed on medium to moderately fine textured, sandy glacio-lacustrine deposits.
- Hm5 - Dominant* Orthic Black with significant** Gleysolics (Rego and Orthic Humics and Low Humics).
- Oxbow - Dominant Black Chernozemic soils developed on medium to moderately fine textured, calcareous glacial till.
- 07 - A combination of Orthic Black and Calcareous Black.
- Cudworth - Dominant Black Chernozemic soils developed on medium to moderately fine textured, moderately calcareous, silty lacustrine deposits.
- Cd4 - A dominant combination of Rego and Calcareous Black with significant salinized and gleysolic phases.

Dominantly Dark Gray Chernozemic Soils

- Rossall - Dominant Dark Gray Chernozemic soils developed on coarse to moderately coarse textured, sandy glacio-fluvial and glacio-lacustrine deposits.
- Rs1 - Dominant Orthic Dark Gray.
- Rs3 - Dominant Orthic Dark Gray with significant carbonated gleysolics.
- Shellbrook - Dominant Dark Gray Chernozemic soils developed on medium to moderately fine textured, sandy glacio-lacustrine deposits. Sb/I ... shallow deposits (less than 4 feet) overlying glacial till.
- Sb1 - Dominant Orthic Dark Gray.
- Sb3 - Dominant Orthic Dark Gray with a significant occurrence of undifferentiated Gleysolic soils.

*Series which are Dominant occupy over 40% of the Map Unit.

**Series which are Significant occupy over 15% of the Map Unit but less than 40%.

Whitewood - Dominant Dark Gray Chernozemic soils developed on medium to moderately fine textured, calcareous glacial till.

Wh1 - Dominant Orthic Dark Gray.

Wh5 - Dominant Orthic Dark Gray with a significant occurrence of undifferentiated Gleysolic soils.

Paddockwood - Dominant Dark Gray Chernozemic soils, developed on medium to moderately fine textured, highly calcareous, modified glacial till.

Pwl - Dominant Rego and Calcareous Dark Gray with a significant occurrence of undifferentiated Gleysolic soils.

Pelly - Dominant Dark Gray Chernozemic soils (thick Phase) developed on medium textured calcareous, modified glacial till.

P1 - A combination of Orthic and Eluviated Dark Gray.

P2 - Dominant Orthic Dark Gray with a significant occurrence of undifferentiated Gleysolic soils.

Glenbush - Dominant Dark Gray Chernozemic soils developed on coarse to moderately coarse textured glacio-fluvial deposits.

Gbl - Dominant Orthic Dark Gray.

Dominantly Podzolic Soils

Waitville - Dominant Podzolic soils developed on medium to moderately fine textured, calcareous glacial till.

Wv1 - Dominant Dark Gray Wooded.

Wv2 - Dominant Orthic Gray Wooded with a significant occurrence of undifferentiated Gleysolic soils.

Wv3 - Dominant Orthic Gray Wooded.

Sylvania - Dominant Podzolic soils developed on coarse to medium textured sandy glacio-fluvial and glacio-lacustrine deposits.

Syl - A combination of Dark Gray伍ded and Orthic Gray伍ded.

Bodmin - Dominant Podzolic soils developed on coarse to moderately coarse textured glacio-fluvial deposits.

Bd1 - Dominant Dark Gray伍ded.

Miscellaneous Soils

Alluvium - A group of soils developed on variable textured alluvial deposits.

Av6 - Dominant saline and carbonated Rego Humic Gleysols.

Av13 - Dominant saline and carbonated Chernozemic with significant saline and carbonated Gleysolics.

Av15 - A combination of Gleysolics and saline or carbonated Gleysolics.

Pine Sand - A group of Regosolic soils developed on coarse glacio-fluvial and fluvial lacustrine sands, some of which have been reworked by wind.

PS1 - A combination of Orthic Regosol and Arenic Podzic Regosol.

Runway - Rw - A mapping complex of soils developed on variable deposits of glacial meltwater channels.

Meadow Bog Complex - MBx - A complex of sedge peat varying from one to three feet in thickness and peaty Gleysolic soils.

Textural Groupings and Classes

Textural Group	Textural Class
Coarse textured	Sands (s), loamy sands (ls)
Moderately coarse textured	Sandy loam (s1), fine sandy loam (f1)
Medium textured	Very fine sandy loam (v1), loam (l), silt loam (sil)
Moderately fine textured	Sandy clay loam (scl), clay loam (cl), silty clay loam (sicl)
Fine textured	Sandy clay (sc), clay (c), silty clay (sic), heavy clay (hc)

Gravelly sandy loam (gs1) and gravelly loams (g1) are recorded where present.

Landforms

Name	Symbol	Description
<u>Glacial Till Landforms</u>		
Moraine	Ma	Gently to moderately rolling moraine with a knob and kettle pattern having no external drainage.
	Md	As above with external drainage.
Ground Moraine	Ga	Roughly undulating ground moraine with a knob and kettle pattern having no external drainage.
	Gd	As above with external drainage.

Glacio-Lacustrine Landforms

Glacial Lake Plain	La	Roughly undulating to gently rolling plain of knolls and depressions without external drainage.
	Ld	As above with external drainage.

Glacio-Fluvial Landforms

Outwash Plain	Fa	Gently rolling, kettled or pitted plain without external drainage.
	Fd	Very gently to gently sloping plain with external drainage or glacial drainage channels.

Glacio-Alluvial Landforms

Glacial Lake Delta and Post Glacial Alluvium Deposits	Aa	Gently undulating to gently rolling plain with a knoll and depression pattern having no external drainage.
	Ad	Very gently to gently sloping post glacial alluvium deposits with external drainage.

Topography

Description	Symbol	Percentage Slope
Very gently sloping or gently undulating	2	0.5-2%*
Gently sloping or roughly undulating	3	2-5%
Moderately sloping or gently rolling	4	5-9%
Strongly sloping or moderately rolling	5	9-15%

*A 2% slope means a rise or fall of 2 feet for every 100 feet of horizontal distance.

Other Map Symbols



Slough or depressional area which is periodically flooded.



Drainage way indicating direction of flow.



Soil boundary.



Township corner.

Tp

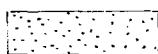
Township.

Rg

Range.



Not suitable for grain production.



Marginal for grain production.

SOIL CAPABILITY FOR AGRICULTURE

Class	Soil Capability for Agriculture
1	No significant limitations.
2	Moderate limitations.
3	Moderately severe limitations.
4	Severe limitations.
5	Serious limitations - not suitable for annual crops but suitable for improved pasture.
6	Very serious limitations - suited only for permanent pasture.
0	Unimproved or virgin organic soils including muskeg and peat which are not included in the classes above.

Kind of Limitations

Soil limitations - caused by unfavorable soil characteristics.

- m - insufficient soil moisture holding capacity.
- d - poor structure and/or permeability.
- n - excessive soil salinity.
- f - low soil fertility.

Landscape limitations

- w - excess water - applies to soils where excess water, apart from inundation, is a limitation in their use for agriculture.
- t - unfavorable topography.
- i - inundation - applies to soils subject to flooding by lakes and streams.
- e - erosion damage.

Guiding Criteria for Capability Classes in Saskatchewan

<u>Class</u>	<u>Degree of Limitations</u>	<u>Range of Adaptability</u>	<u>Productivity*</u>	<u>Other Characteristics</u>
1	No significant limitations.	Wide range of field crops.	Moderately high to high, 20-25 bu/acre (30.0 to 35.0 bu/acre)**	Deep, well drained, good water holding capacity. Natural high fertility.
2	Moderate limitations due to climate, soil or landscape.	Fairly wide range of field crops.	Moderately high to high, 15.5-20 bu/acre (24.0 to 30.0 bu/acre)**	Good water holding capacity. Natural high fertility or highly responsive to fertilizer.
3	Moderately severe limitations due to climate, soil or landscape.	Moderate range of field crops.	Medium to moderately high, 11.0 -15.5 bu/acre (19-24 bu/acre)**	Limitations adversely affect the timing and ease of tillage, planting, harvesting, and application of conservation practices.
4	Severe limitations due to climate, soil or landscape.	Narrow range of field crops.	Low to medium 9.0-11.0 bu/acre (13-15 bu/acre)**	The high incidence of low yields or disastrous failures suggests that some of these soils be removed from continued cultivation.
5	Serious soil or landscape limitations make them unsuitable for the production of annual crops.	Suited for the production of adapted grasses and legumes.		Soils within this class are responsive to improvement practices through the use of farm machinery. Improvement of 25% of an area can double the carrying capacity.
6	Very serious soil or landscape limitations restrict their use to native grazing.	Suited only to native pasture.		Soils in this class are not responsive to improvement practice.
7	Prevent agricultural use.	Unsuited for agricultural use.		Bodies of water, townsites, parks, airports, railroads.

*Estimated productivity of arable Classes 1-4 is expressed in terms of long-time (1932-1961) average wheat yields in bu/acre.

**Estimated potential productivity.

THE SOILS OF THE LITTLE RED RIVER INDIAN RESERVE NO. 106C

Interpretation of the Soil Symbol Sequence

The sequence of the soil symbols given for each area separated on the map is always arranged in the following order: Soil Association and Map Unit:Texture:Landform:Percentage Slope. An illustration of this is the symbol sequence Sb1:s1:La4 which occurs in Section 15, Township 52, Range 27.

The letters Sb represent the abbreviation for the Shellbrook Association described in the legend as "Dominant Dark Gray Chernozemic soils developed on medium to moderately fine textured, sandy glacio-lacustrine deposits". Medium to moderately fine textural groups are dominantly loam to clay loam textural classes. The number 1 indicates a Map Unit in the Shellbrook Association, namely Sb1, which is described as "Dominant Orthic Dark Gray". The letters s1 represent the specific textural class of the surface soil, namely sandy loam. The letters La described under the heading "Landforms" signify "A roughly undulating to gently rolling plain of knolls and depressions without external drainage". The topography of the area is indicated by the symbol 4, defined in the legend as slopes ranging from 5-9%.

It will be noted that the soil symbol sequence in certain areas contains two or more Associations and their Map Units, as in Section 5, Township 52, Range 27 where the symbols Sb3:f1-Wh5:f1 represent Shellbrook and Whitewood Associations and their Map Units. Where two or more Associations and their Map Units occur in the one sequence, the first mentioned Association is dominant. The reason that some areas are indicated as a complex, such as the one above, is that at the present scale of mapping and the expected land use it is not considered practical to separate these soils.

Interpretation of Soil Capability² Symbol Sequence

Each area separated on the map (by a soil boundary), contains not only the soil symbol sequence already described, but also a capability sequence. In the area containing the symbol Sbl:s1:La4 the symbols $3\frac{m}{t}^{10}$ occur and are interpreted as follows. The lower number indicates the capability class, the small letters indicate the limitations or adverse soil features which relegate the soil to its particular capability class. The upper number indicates the percentage of the soil area designated to a specific capability class. By referring to the heading in the legend designated as "Soil Capability for Agriculture", it can be seen that $3\frac{m}{t}^{10}$ describes an area of 100% Class 3 soil, which has moderately severe limitations due to unfavorable topography (t) and insufficient soil moisture holding capacity (m). It can, therefore, be concluded that this area of gently rolling Shellbrook sandy loam, subject to the limitations described, is suited to the production of annual crops.

EVALUATION OF THE AGRICULTURAL POTENTIAL OF THE LITTLE RED RIVER RESERVE NO. 106C

An evaluation of the agricultural potential may be made of any portion of the map area by interpreting the map symbols by means of the legend.

The area with the best potential is an area of Paddockwood (Pw) which is located in Sections 2 and 11, Township 52, Range 27. Areas of slightly lower potential include, an area of Pelly-Rossall (P-Rs) in Sections 1 and 2, Township 52, Range 1, and an area of Paddockwood-Whitewood (Pw-Wh) in Sections 13, 24 and 25, Township 52, Range 27. These areas represent approximately 2,100 acres of dominantly Class 2 soils which are well suited for annual crop production.

The remaining areas, within the unshaded portion of the map, represent approximately 20,500 acres of dominantly Class 3 soils. These soils have moderately severe limitations due to unfavorable topography and/or insufficient

moisture holding capacity, however, they can still be considered for development and the production of annual crops. Within this large area of soils the Rossall (Rs) soils are the poorest, the Shellbrook (Sb) and glacial till soils Whitewood (Wh) and Pelly (P) being slightly better agriculturally.

The shaded areas represent Class 4, 5, and 6 soils and, as such, should not be considered for continuous grain production. The area of Rossall-Sylvania-Glenbush (Rs-Sy-Gb) in Sections 20, 29, and 30, the area of Sylvania in Section 12, the area of Glenbush in Section 1, Township 52, Range 27, and the area of Glenbush in Sections 5, 6, 17, and 18, Township 52, Range 26 represent approximately 1,800 acres of Class 4 soils which are marginal for grain production and would best be utilized as areas for forage production. The shaded areas mapped as Class 5 soils, are suited only to improved pasture due mainly to unfavorable topography. The areas of alluvium are rated as Class 6 soil due to salinity and wetness and are suited only to permanent pasture.

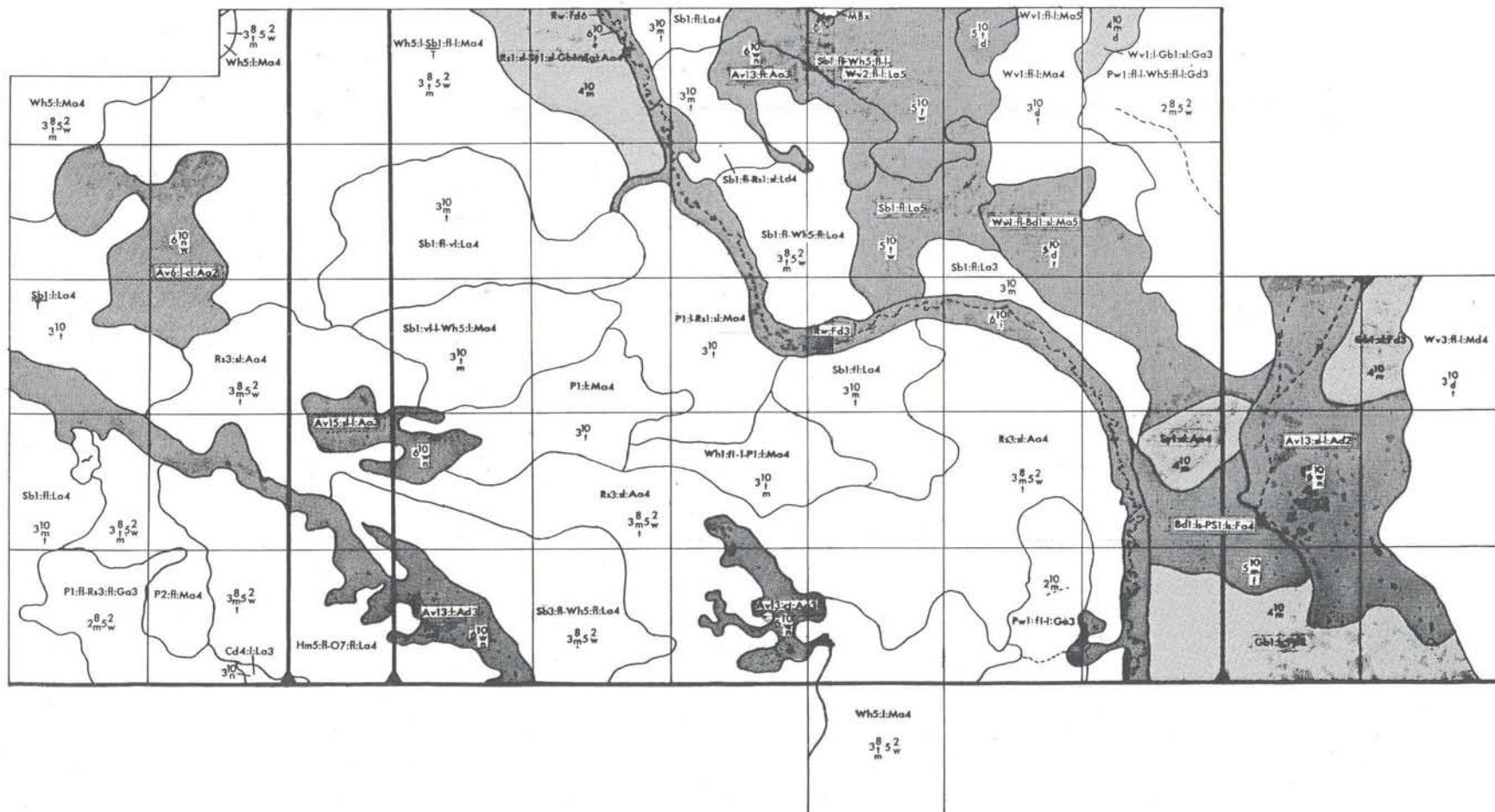
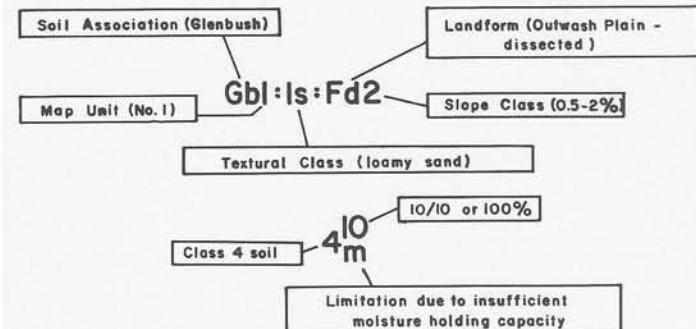
Acknowledgments

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References

1. A Guide to Understanding Saskatchewan Soils. H.C. Moss. 1965. Saskatchewan Institute of Pedology Publication M1. Extension Publication 175. Distributed by Extension Division, University of Saskatchewan, Saskatoon.
2. A Guide to Soil Capability and Land Inventory Maps in Saskatchewan. Saskatchewan Institute of Pedology Publication M8. Department of Soil Science, University of Saskatchewan, Saskatoon. 1968.

LITTLE RED RIVER INDIAN RESERVE NO 106 C



Rg. 1

Rg. 28

Rg. 27

Rg. 26