

Soil Information Resources for the Prairies: **The Saskatchewan Soil Resource Database**

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and Saskatchewan Land Resource Centre, U. of S., Saskatoon

1. Introduction

This paper will provide the reader with the present status of the Saskatchewan Soil Resource Database as well as some background on the processes in developing a comprehensive soil resource database for the province. Although the title of this presentation indicated Soil Information Resources for the Prairies, I will be restricting my presentation to the Saskatchewan Soil Resource Database. Soil resource information for Alberta, Saskatchewan and Manitoba can be obtained by contacting the agencies listed at the back of this paper.

2. Saskatchewan Soil Survey

The first broad soil information coverage for the agricultural area of Saskatchewan was realized with the publication of the No. 12 Soil Survey Report in 1944 which covered the agricultural area of the province from the 49th parallel up to and including Township 48. The agricultural area of the province north of Township 48 was covered by the No. 13 Soil Survey Report which was published in 1950. It was soon realized that more detailed soil resource data was required for a variety of applications, and there was a need to better classify and organize soil resource information by applying the new National system of soil classification to the soils in Saskatchewan. A semi-detailed soil survey of the agricultural area of the province started in 1958 with soil mapping in Regina map sheet area. Over a period of 38 years from 1958 until 1996, the agricultural area of the province was re-mapped at a semi-detailed scale by the Saskatchewan Soil Survey; the Saskatchewan Soil Survey was composed of staff funded by the province and also by staff funded by Agriculture and Agri-Food Canada, all working cooperatively out of the University of Saskatchewan to provide soil resource data to the public. The focus of the Saskatchewan Soil Survey has primarily been to map the location and extent of the different soil types in the province, and to compile this information into map format to show the distribution of the different soil types and to produce accompanying soil reports to describe the nature and properties of the soils encountered. Since about 1980, an emphasis was placed on collecting more information and providing a wide range of interpretations. Research in Soil Genesis, Soil Quality, establishment of Benchmark Sites for monitoring changes in soil quality, soil transects, and support of graduate programs are other activities that have all added to the body of knowledge about the province's soil resources.

3. Saskatchewan Land Resource Centre

The cooperative relationship and work by provincially-funded and federally-funded personnel continues today, but rather under the Saskatchewan Land Resource Centre (SLRC). The focus has shifted markedly from data gathering: the immediate focus now is creation of a seamless soil resource database for the province that is suitable for use at a scale of 1:100,000. Soil Survey

evolved over the 38 years, with new concepts in soil mapping, soil information being presented in somewhat different formats, and increasingly greater amounts of information being collected. The late 1970's and early 1980's saw the computerization of the soil data which greatly facilitated the task of storing and managing a large and ever-increasing soil polygon and attribute database; management of the soil resource database is accomplished in a Geographic Information System environment. The Saskatchewan Soil Resource Database is a large database. There are in excess of 80,000 soil polygons with 13 attributes being available for each soil polygon in map sheet areas and 19 attributes being available for each soil polygon in R.M. map areas. Over the last several years, soil information has been attached or digitized to 1:50,000 scale digital base maps. The Saskatchewan Land Resource Centre and P.F.R.A. are cooperating through the Soil Conflation Project, which has as its goal, to match all 1:100,000 soil line data to 1:50,000 digital base maps, and to create a continuous and standardized, seamless soil line and attribute coverage for all of the agricultural area of the province; the digital base maps are considered the provincial standard and are supplied by SaskGeomatics, Regina, Saskatchewan. At the end of this project there will be no artificial boundaries such as R.M. boundaries or NTS map sheet boundaries. This project has involved a significant amount of re-digitizing of soil lines, particularly for those R.M.'s that occurred in former soil reports defined as map sheet areas, as well as adjustment of soil lines along sharp topographic breaks and along hydrographic features. The SLRC is now in the stage of making final corrections to line work.

Other important goals of the SLRC are to provide effective management and update of the seamless soil resource database, to establish the infrastructure to ensure long-term and effective access to soil information, to promote and illustrate the utility of the data for making sound decisions about use and management of our soil resources, and to provide effective client consultations to understand, interpret and utilize the data.

4. Soil Mapping in Saskatchewan

From 1958 to about 1978, soil mapping was on a map sheet basis (an area defined by a 1:250,000 map sheet); from 1978 to 1996, mapping was done on an R.M. basis. Approximately 60% of the agricultural area of the province has been mapped on an R.M. basis with the other 40% being mapped on a map sheet basis. Those areas mapped on a mapsheet basis include Regina, Willow Bunch Lake, Rosetown, Swift Current, Weyburn-Virden, Saskatoon and Hudson Bay.

5. Comparison of Map Sheet and R.M. format databases

Map sheet maps have evolved over the years with data being presented in different formats. In consideration of developing a seamless soil resource database, a Unified legend was developed for all map sheet areas; this involved numerous conversions, with the structure of the R.M. database being the template. Data in all fields in the map sheet database have been converted to the same format as the R.M. database. As an example, in the map sheet areas, two or three soil associations would typically be listed for a soil polygon: this has been trimmed to a two association complex: this is not to say that more than two associations may be listed in the soil description, however, only two soil associations are listed in a map unit. Given that there has been numerous conversions of map sheet attribute data to R.M. format, descriptions for new soil

association complexes, in particular, will have to be created to support the new standardized format for map sheet areas. R.M. format maps have had significantly more data attached to them, particularly interpretations, and this has required updating the map sheet database to near the level of the R.M. database. Fields that have been updated in the map sheet database include agricultural capability, surface pH, salinity, and irrigation suitability; those fields yet to be updated include potential Wind and Water Erosion. Certain data was not collected in some or all of the map sheet areas: this includes slope length, past wind and water erosion, stones, salinity, and wetland information. Salinity was derived from assessment data for map sheet soil areas: it consists of a single character code, and all salinity is assumed moderate... the best that can be done without going out into the field.

6. Soil Resource Data Formats

Information that is presently available from the Saskatchewan Land Resource Centre includes:

1. Hard Copy: soil maps and reports exist in somewhat different formats for all agricultural areas of the province, at scales of 1:126,720, 1:125,000, and 1:100,000.
2. Electronic Format: it is estimated that the soil conflation project will not be completed until about the end of June 2000. Digital soil line data as well as accompanying attribute information is available for all agricultural areas of the province, although until the soil conflation project is finished in 2000, the original or non-conflated data will be supplied to clients; data supplied for map sheet areas will not include the new fields of information. The original digital data supplied at present is georeferenced, but is not matched to the 1:50,000 digital base map as is the new conflated data. The original digital data fits together fairly well in most areas, but will not be comparable with the fit of the conflated data to the 1:50,000 digital base map. The non-conflated data will occur in UTM Zone 12, 13 or 14, whereas the conflated data will fall into an extended Zone 13. The datum for both at present is NAD27.

7. Release and Distribution of Digital Soil Resource Data

There is a rather simple release policy at present: data is for the use of the original purchaser, is not to be sold to a different client, and the Saskatchewan Land Resource Centre shall be acknowledged as the supplier of the digital soil data in project maps created by clients. The SLRC is the sole vendor of the original digital soil information. A memorandum of understanding exists with SaskGeomatics that they will sell the conflated soil line data.

8. Pricing of Soil Resource Data

At present, the cost of digital soil data is related only to the time it takes to extract and process the data, to transfer the data to a CD, and provide some minor explanations for the client.

To obtain Soil Resource Information for the Prairies please contact the respective agency for each province.

In Saskatchewan:

Saskatchewan Land Resource Centre
G.A. Padbury, Section Head
5C26 Agriculture Bldg
51 Campus Drive, U. of S.
Saskatoon, Sask. S7N 5A8
Ph: (306) 975-4060 FAX: (306) 966-4226
E-mail: landinfo@digger.usask.ca

In Alberta:

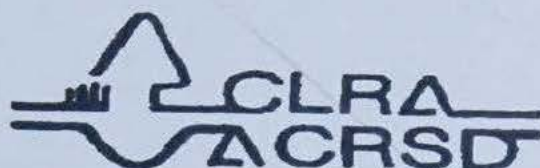
Conservation and Development Branch
Attn: Mr Tony Breirley
Alberta Agriculture, Food and Rural Development
#206 O'Donoghue Building
7000 - 113 Street
Edmonton, Alberta T6H 5T6
Ph: (780) 427-3781 FAX: (780) 422-0474

In Manitoba:

Manitoba Land Resource Unit
R.G. Eilers, Unit Head
Room 362 Ellis Bldg., Univ of Manitoba
Winnipeg, Manitoba R3T 2N2
Ph: (204) 474-6118 FAX: (204) 474-7633

Perspectives in Land Reclamation and Restoration

Presented by:



Canadian Land Reclamation Association/
Association Canadienne De Réhabilitation Des Sites Dégradés



Including the Canadian Land Reclamation Association's
24th Annual Meeting

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7:00 - 9:00 Registration Booth Open

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7:15 - 7:45 AM Registration

7:45 - 8:00 AM Bus Loading from Saskatoon Inn Lobby

8:00 AM Field Tour Departure (no delays)

7:00 - 10:00 PM Wine and Cheese, Registration

Wednesday, September 29th

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7:30 Registration

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Tracy Patterson (CLRA) and Theresa Salamone (SEIMA) n/a

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Resource Management n/a

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Session Chair: Lorne Veitch – Saskatchewan Agriculture and
Food, Lands Branch, Swift Current

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8:45 – 9:05 Saskatchewan upstream petroleum sites remediation guidelines.
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