

# Conservation and Reclamation INFORMATION LETTER

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## Winter Soil Evaluations

### APPLICATION

Pipelines that require soil surveys.

### BACKGROUND

A soil evaluation is required in support of a Development and Reclamation Application where arable land, potentially arable land, or pasture land is disturbed. The evaluation is to provide information about the soils and landforms along a proposed pipeline route to assist in soil conservation planning for pipeline construction. Recently there have been some concerns regarding the validity and accuracy of winter soil evaluations. Through a consultant funded by the Reclamation Research Technical Advisory Committee and the Canadian Petroleum Association, discussions were held with staff in various government departments and industry, and with consultants who are associated with or affected by winter soil evaluations for regulated pipelines, and a report prepared.

### DEFINITION

Winter soil evaluations are defined as those which take place under conditions where the soil is frozen into the subsoil over the majority of the pipeline route.

### ISSUES

The most serious problems identified for winter soil evaluations are the ability of the pedologist to distinguish horizons and classify soils properly when there is poor light, and when frozen conditions occur in the subsoil; and the ability of the pedologist to map accurately when the vegetation and landscape are masked by a covering of snow.

Some specific soil parameters may be difficult to measure or determine when the soil is fro-

zen, and the site inspection and sampling density may have to be increased substantially. Topsoil depth, land use, and the characteristics and quality of the topsoil and upper and lower subsoils are important parameters that have to be documented in soil evaluations for pipelines. Salt-affected soils are also of primary concern. These soils are easily recognized when only the topsoil is frozen but may be difficult to recognize if frost has penetrated deep into the subsoil.

Relative degrees of difficulty in carrying out winter (or summer) soils evaluations in the province have been identified. The depth of frost, the type of soils that are likely to be encountered, the experience of the pedologist, the amount and type of soils information already available, and the type of equipment that will be used to inspect the soils, are factors that have to be considered on a project-by-project basis, prior to initiation of a winter soil evaluation.

### POLICY

**Whenever possible, soil evaluations should be scheduled for summer.** If this is not possible, the evaluation may be carried out under less than ideal conditions in the winter, with regard to the following:

- Winter soil evaluations should be done with a drill truck capable of coring and/or augering to trench depth.
- Field work during a winter soil evaluation should be restricted to hours of optimal lighting.
- Winter soil evaluations require an increased density of core holes (up to 50% in excess of the maximum recommended density in the docu-

ment **Information Requirements for Regulated Pipelines in Alberta**) to obtain acceptable results in areas of the province marked "High" or "Severe" on the map on the flip side of this page.

- Winter soil evaluations must be discussed in advance with the regulatory authority for areas of the province identified on the map on the flip side of this page as "High" or "Severe".
- Winter soil evaluations require a pedologist with at least five years mapping experience in Alberta.

### REFERENCES

**Winter Soil Evaluations and Mapping for Regulated Pipelines.** A. Twardy, Pedocan Land Evaluation Ltd. Alberta Land Conservation and Reclamation Council Report RRTAC 91-2. 43 pp.

### CONTACTS





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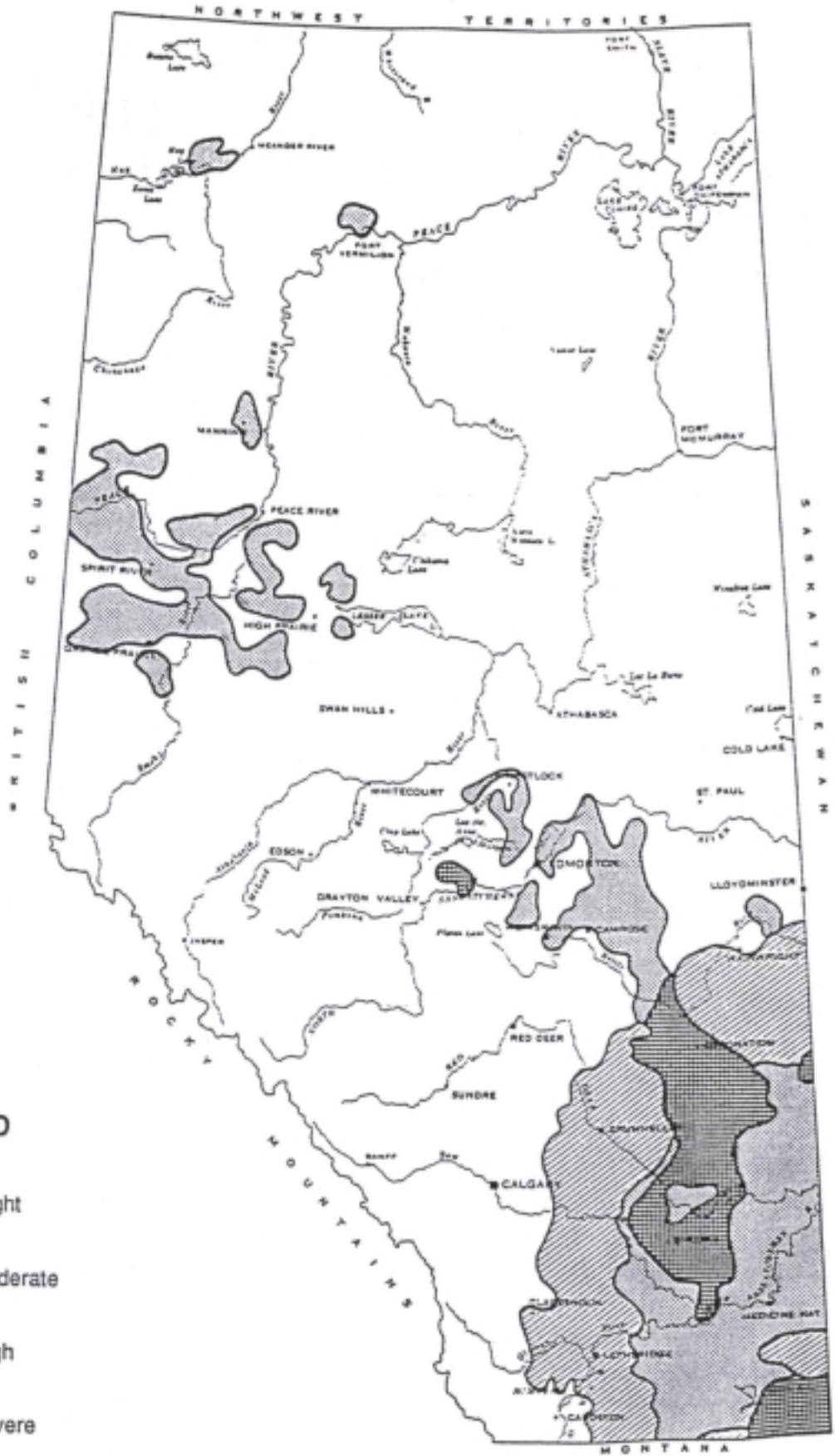
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**LEGEND**

-  Slight
-  Moderate
-  High
-  Severe



Degree of Difficulty in Conducting Winter Soil Evaluations in Alberta.