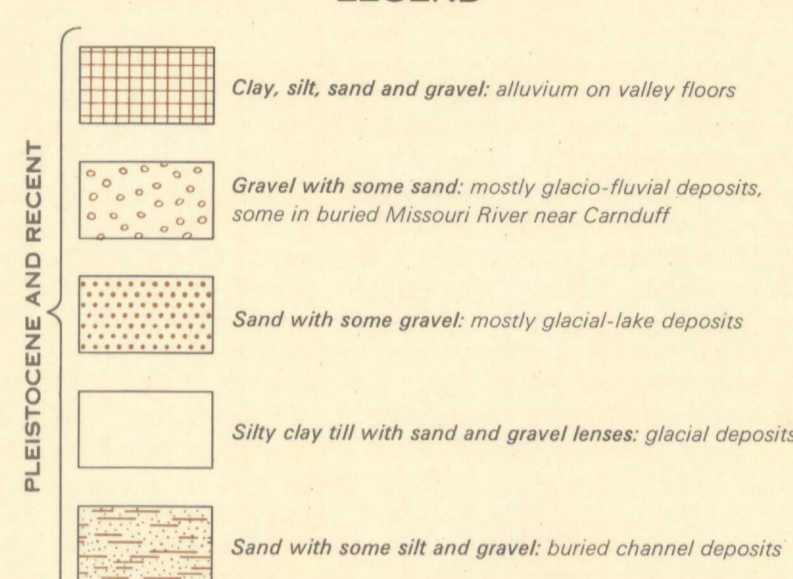
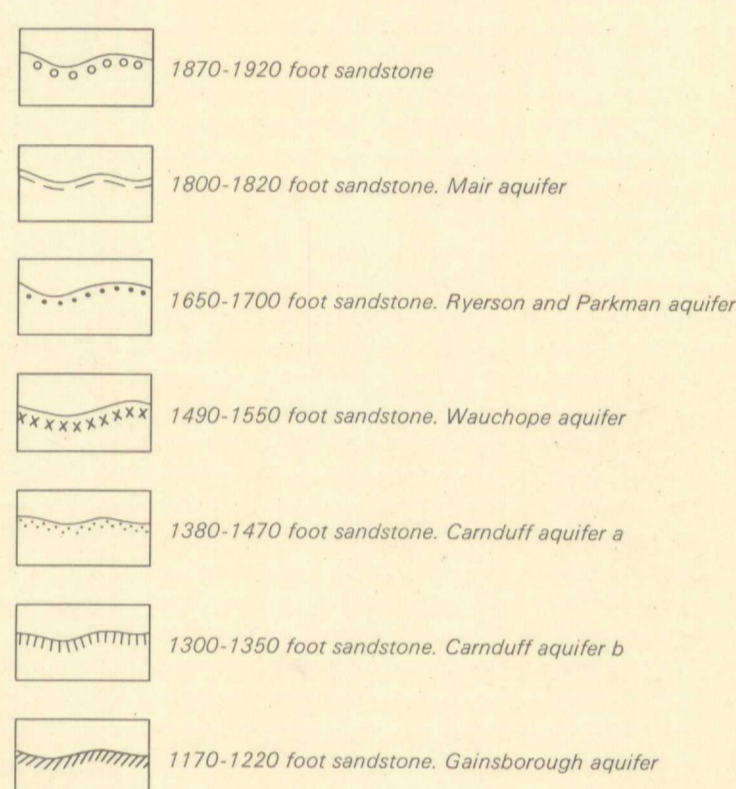


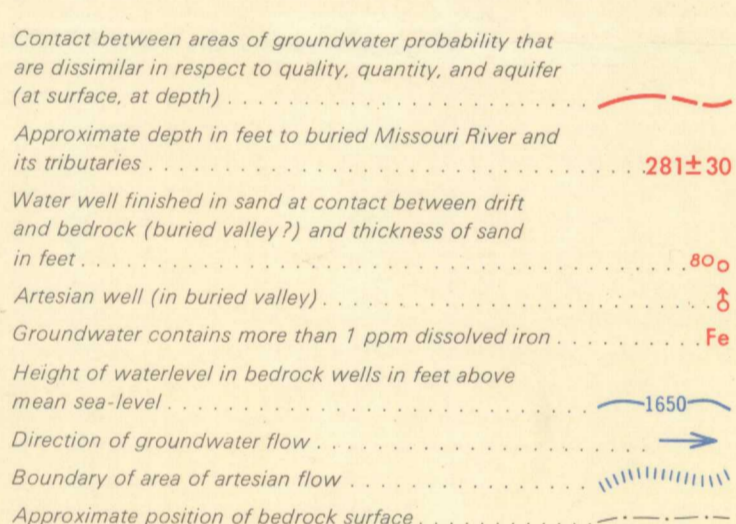
LEGEND



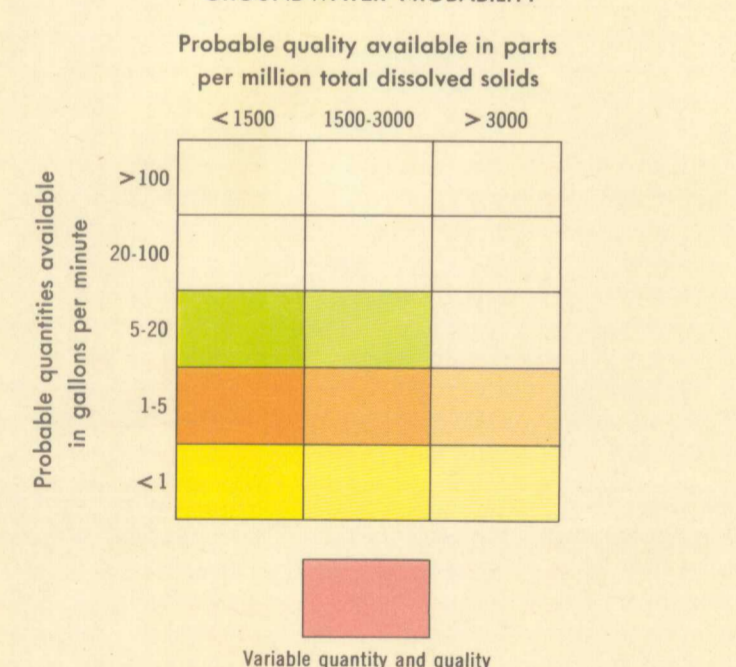
AQUIFER DESIGNATION IN RAVENSCRAG



Dashed boundary lines indicate that the aquifer is overlain by another aquifer. The true vertical relation of the various aquifers can be seen from the accompanying sections.



GROUNDWATER PROBABILITY

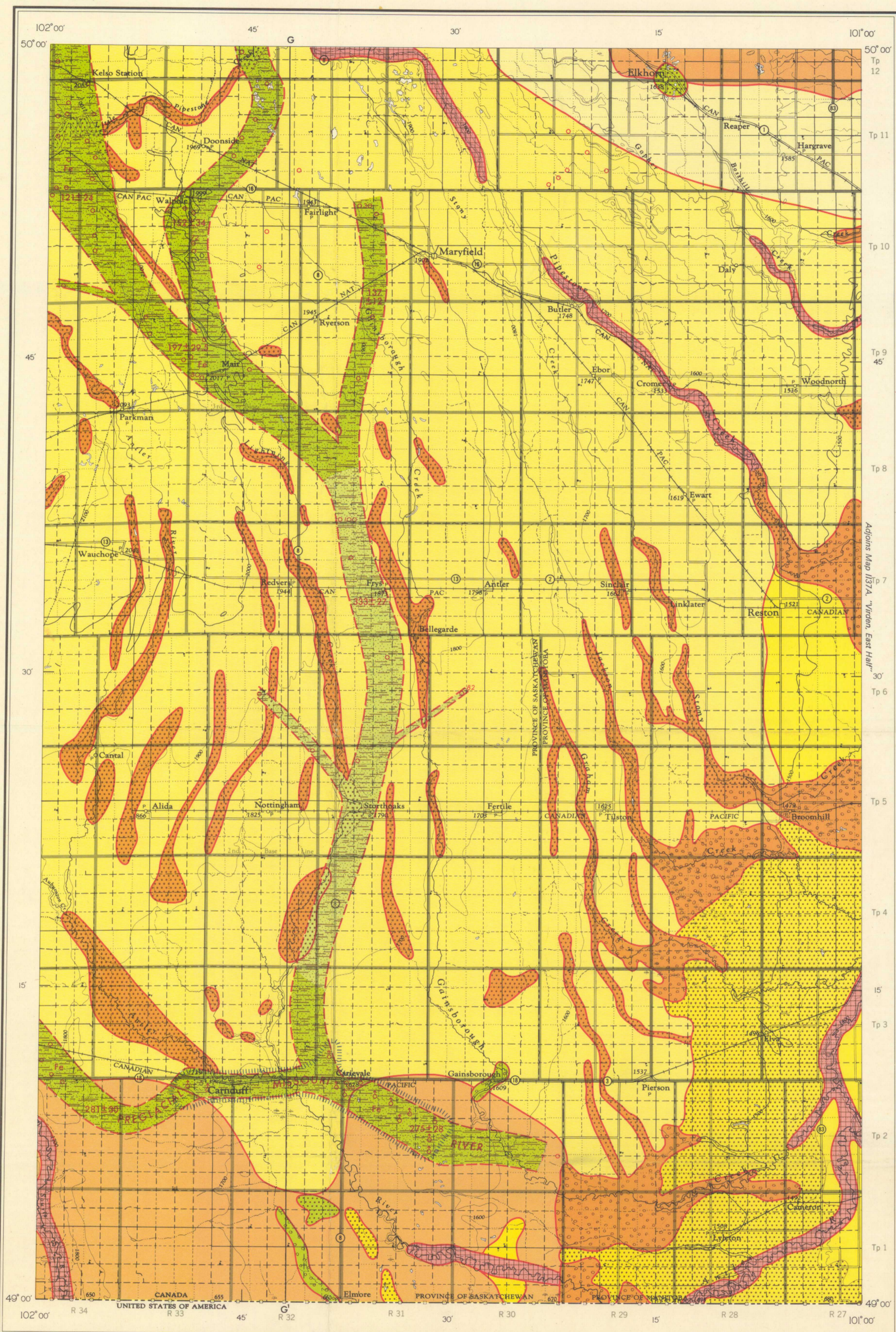


Compiled by P. Meyboom, 1963 from sources of information listed

Base map by the Surveys and Mapping Branch, 1955

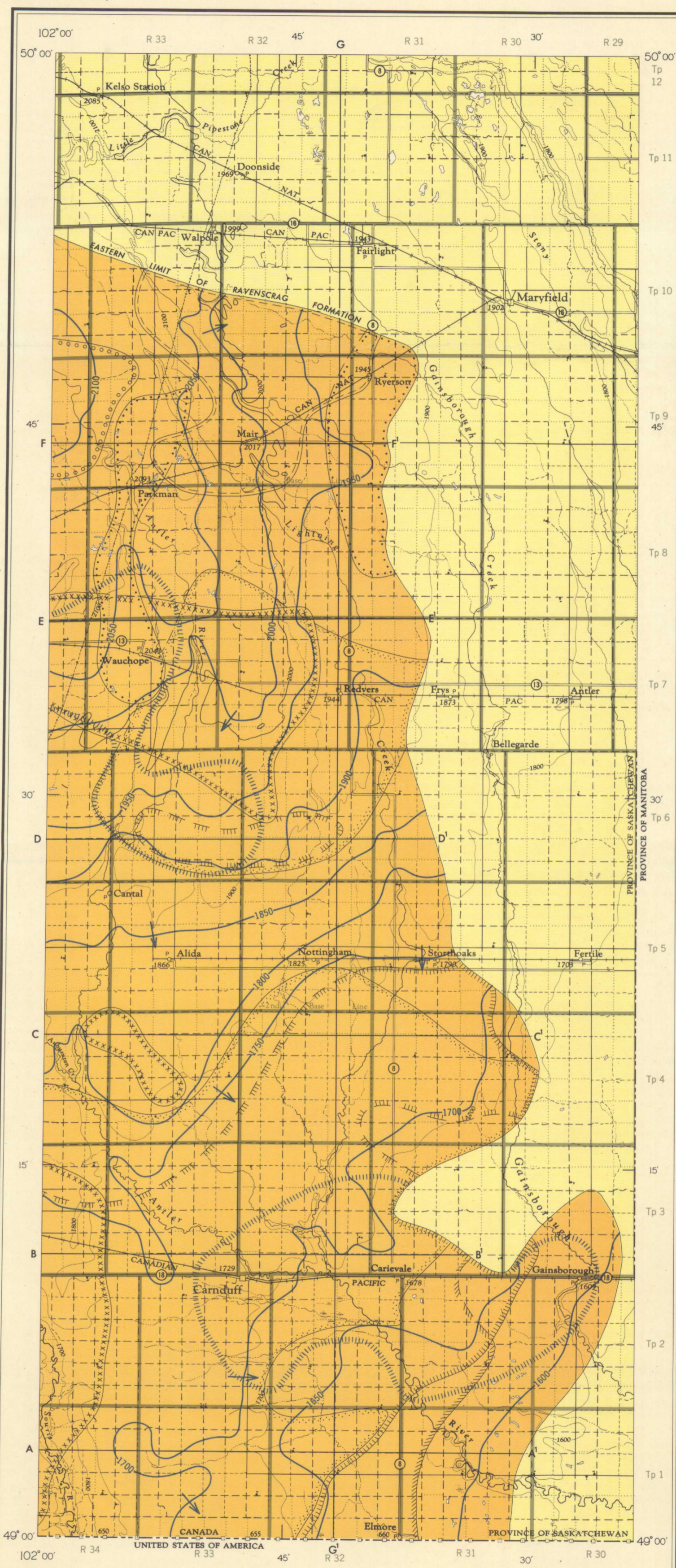
Mean magnetic declination 13°41' East, decreasing 1" annually. Readings vary from 12°40' in the SE corner to 14°32' in the NW corner of the map-area

62 F (West Half)

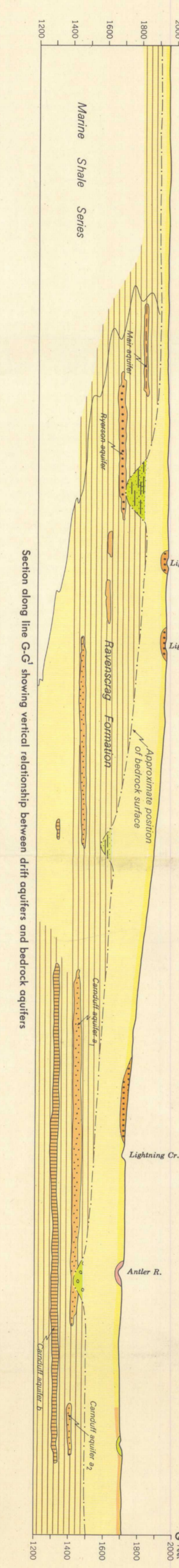


GROUNDWATER PROBABILITY IN DRIFT AQUIFERS

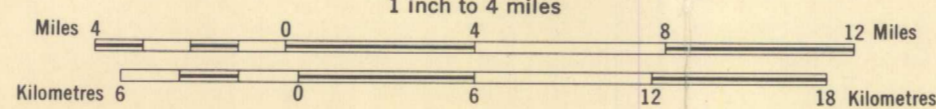
62 F (West Half)



GROUNDWATER PROBABILITY IN BEDROCK AQUIFERS (RAVENSCRAG FORMATION)



MAP 1157A
GROUNDWATER PROBABILITY
VIRDEN
(West Half)
WEST OF PRINCIPAL MERIDIAN
SASKATCHEWAN-MANITOBA
Scale 1:253,440
1 inch = 4 miles



USE OF THE MAP

1. Plot the well site on the map.
2. Note the probable quantity and quality of groundwater (coloured legend) in drift aquifers as well as in bedrock aquifers at that location.
3. Note the aquifer designation (black pattern) of the most promising aquifer and determine its stratigraphic position, either from the depth indication on the map (in the case of a buried valley) or from the accompanying sections (in case of bedrock aquifers).

AQUIFERS

Drift—Drift cover is 10-50 feet thick in the northern townships and 200-300 feet thick south of township 11 (section G-G'). Most of the drift is made up of till, which is an unsorted mixture of gravel, sand, and clay. The upper 30 feet of the till—commonly known as "yellow clay"—contains scattered pockets of sand and gravel, which are the main source of water for shallow dug wells throughout the area. Beneath the yellow clay is a more compact till, known as "blue clay". Water from sand or gravel lenses that may be present in the blue clay is generally unfit for human consumption because of its high alkalinity.

Fairly continuous deposits of outwash sands and gravels floor the valleys and small ravines or occur as gravel ridges in the glacial till. These deposits may be as thick as 30 feet and yield a fair supply of hard potable water in years of normal rainfall. The glacial lake sands that overlie the till in the southeastern corner of the map-area are too thin to be significant aquifers. Buried stream channels range in thickness from 30 to 100 feet. Up to 30 feet of gravel was reported from the buried Missouri River at Carnduff. The tributaries to the buried Missouri River are not likely to contain gravel deposits, but the permeability of the sand is expected to be sufficient to allow good water supplies. The quality of the water is marginal (up to 1200 ppm total dissolved solids) and excessive amounts of dissolved iron cause a reddish precipitate when the water comes into contact with air.

Bedrock—Bedrock aquifers are of significance only in the western half of the area. The aquifers are a series of interconnected sandstone layers and lenses in the Ravenscrag Formation. The zone in which these sandstone layers may be expected is an interval of 250-300 feet thick, ranging in elevation from 1200-1500 feet above sea-level in the southern part of the area, to 1600-1900 feet above sea-level in townships 9 and 10. East of range 31 the Ravenscrag Formation grades into the Marne Shale Series.

Water from the Ravenscrag sandstones contains more than 1500 ppm total dissolved solids, as can be seen from the values that are presented in some of the sections. Sodium sulphate predominates in groundwater from the aquifers between 1500 and 1900 feet above sea-level, whereas the other aquifers are characterized by sodium-chloride water. The salty taste of these waters makes them less desirable for human consumption.

ARTESIAN AREAS

There are two artesian areas in the map-area: one in the Carnduff district and one near Wauchope. Flowing wells in the Carnduff district yield water from both sandstones of the Carnduff aquifer, as well as from the channel deposits in the buried Missouri valley. Flows of up to 10 gpm have been reported from the buried Missouri. The artesian wells in the Wauchope area are all completed in the Wauchope aquifer (section E-E').

Some flowing wells have been reported along the eastern limit of the Ravenscrag Formation, but most of them ceased flowing shortly after having been developed.

SOURCES OF INFORMATION

Christiansen, E. A., Hydrogeology of Surficial and Bedrock Valley Aquifers in Southern Saskatchewan; Third Canadian Hydrology Symposium (1960), 319 (1963).

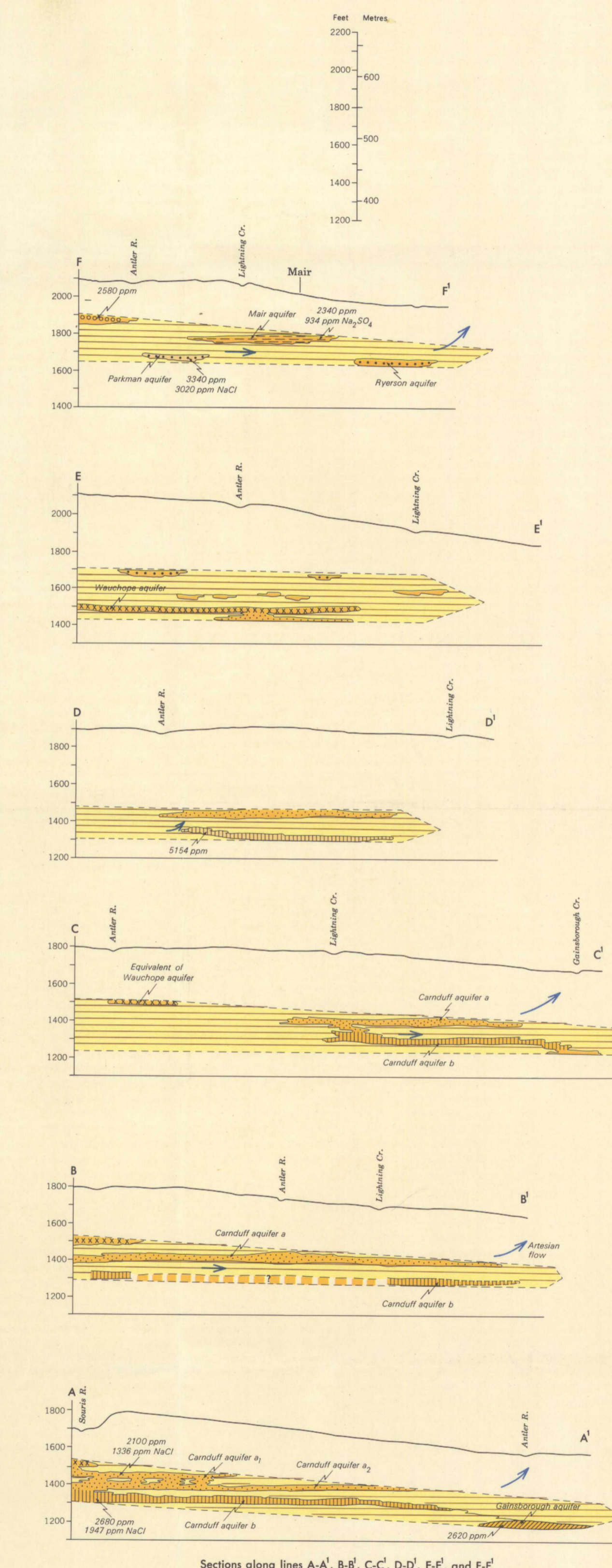
Haldstead, E. C., Geol. Surv. Can., Water Supply Papers: Nos. 298, 299 (1946); 319 (1953).

Haldstead, E. C. and Elson, J. A., Geol. Surv. Can., Water Supply Papers: Nos. 297 (1948); 299, 300 (1949).

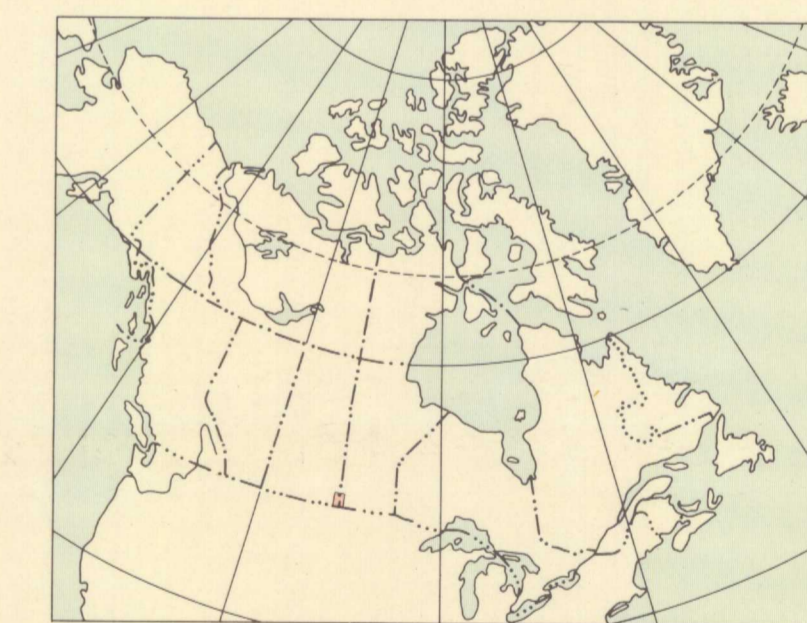
Johnson, W. A., Surface Deposits and Groundwater Supply of Winnipeg Map-area, Manitoba, Geol. Surv. Can., Mem. 174 (1954).

MacKay, B. R. and Haldstead, E. C., Geol. Surv. Can., Water Supply Papers: Nos. 5, 7, 12, 13, 18, 23, and 24 (1938).

Mendley, W. A., Christiansen, E. A., and Kusch, W. O., Pleistocene Missouri River in Saskatchewan, J. of Geology, vol. 65, No. 4, pp. 441-447 (1957).



Sections along lines A-A', B-B', C-C', D-D', E-E', and F-F'



INDEX MAP

NOT TO BE TAKEN FROM LIBRARY
NE PAS SORTIR DE LA BIBLIOTHÈQUE



1157A

5.1.3 Sask. Man - Virden (W. Half)
A. Best. J. 253,440
1966 Map no 1157A