HYDROGEOLOGICAL MAP TAWATINAW ALBERTA

NTS 83I

Alberta RESEARCH

METEOROLOGY

LEGEND

Isohyet, mean annual precipitation in inches, approximate

Mean annual precipitation:
- 15-20 inches

Meteorological station

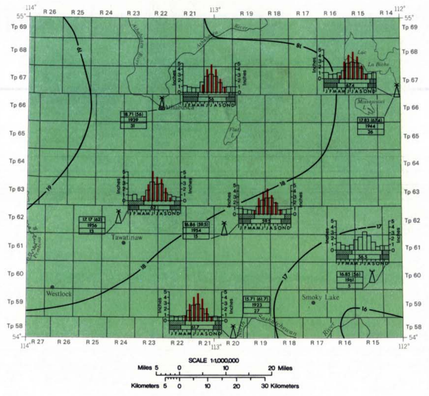
Standard rain gauge only

Precipitation data:
- Mean annual precipitation in inches (per cent rainfall)
- Year of commencement of observations
- Number of years of record used to calculate mean annual precipitation (or rainfall)
- Mean monthly potential evapotranspiration*
- Mean monthly precipitation
- Period when surface is usually snow covered
- Period with mean daily temperature below freezing (0°C)
- Figure indicates percentage of mean annual precipitation falling as rain

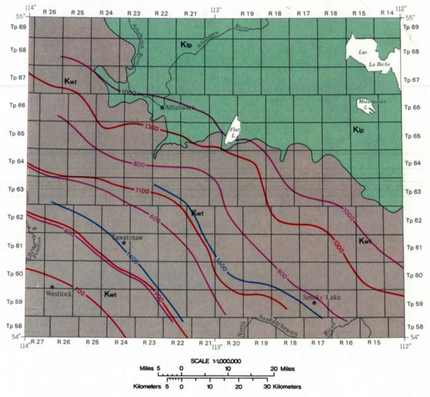
Sources of data:

Climatic Maps of Alberta (Longley, 1968), Monthly Record (Meteorological Observations Meteorological Branch, Canada Department of Transport), and Provincial Evaporation Maps of Canada, Department of Transport Circular 4531 (Bruce and Wiseman, 1967).

*Evapotranspiration estimates are based on the Provincial Evaporation Maps of Canada.



GEOLOGY



LEGEND

Kwt — Wapiti Formation: *sandstone, shale, scattered coal beds*

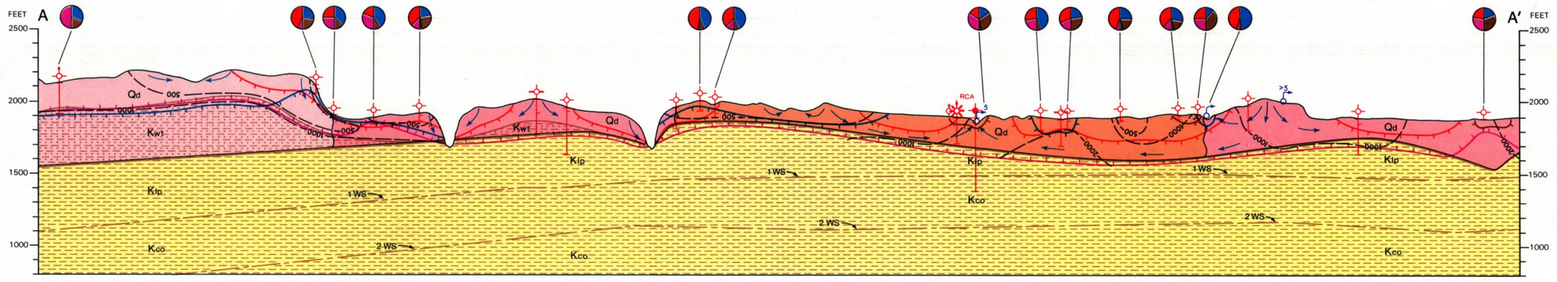
Klp — Lea Park Formation: *shale*

Rock unit boundary

Structure contour on top of Lea Park Formation

Structure contour on First White Specks marker

Structure contour on Second White Specks marker



MAIN MAP LEGEND

Topography

Surface contours and elevation in feet (interval 100 feet)

Geology

Geological boundary

Thalweg of buried valley, approximate

QUATERNARY

Qd — Unconsolidated deposits

CRETACEOUS

Kwt — Wapiti Formation

Klp — Lea Park Formation

Kco — Colorado Group

White Specks markers (1 WS; 2 WS)

Lithology

Sand

Sand and gravel

Sandstone

Coal

Shale

Hydrography

Lake or slough, perennial

Lake or slough, seasonal

Stream, perennial

Stream, intermittent

Marsh, muskeg

Surface water divide

Hydrometry

Stream gauging station

- Average annual discharge in cubic feet per second — 14.9
- Year of commencement of observations — 1966
- Number of years averaged for average annual discharge figure — 3
- Drainage area in square miles — 109

Source of data:

Surface Water Data Alberta (Inland Waters Branch, Department of Energy, Mines and Resources)

Hydrogeology

Spring, flow rate unknown

Spring and approximate rate of flow in imperial gallons per minute (measured or approximated in summer, 1970)

Nonpumping water-level contour (elevation in feet) and vertical component of groundwater movement — Upward flow / 2000 / Downward flow

Direction of groundwater flow

Groundwater divide

Boundary of area of artesian flow

Groundwater Probability†

Range of average expected yield of wells (in imperial gallons per minute)

- Probable: estimated from quantitative information (pump tests, bail tests, etc.)
- Possible: estimated from qualitative information (flow regime, lithology, etc.)

25-100
5-25
1-5
<1

Yield boundary

†The indicated average expected yields to wells are predictions based on the best data available at the time of map compilation; due to data shortcomings and special conditions, local discrepancies between predicted and actual yields are inevitable. Multiaquifer completion may be necessary to obtain the yield indicated.

Wells and Other Artificial Works

Water well

Water well, flowing

Water well, shallow depth

Water well, 20-year safe yield calculated from apparent transmissivity, and yield value in imperial gallons per minute

Water well, 20-year safe yield calculated from a good bail test or a short pump test

Water well, 20-year safe yield calculated from a pump test of sufficient length to reflect regional hydraulic conditions

Seismic shot hole reported to have flowed

Depth scale

FEET
0
100 — Depth to water
200
300
400 — Depth of well or seismic shot hole

Spring catchment

Research Council of Alberta test well — RCA

Location of test well

Line of hydrogeological profile — A A'

Hydrochemistry

Calcium, Magnesium, Sodium + potassium; Carbonate + bicarbonate, Sulfate, Chloride, Nitrate

Note: When the yellow Mg pie sector is absent, Ca + Mg are represented as a unit by the red pie sector.

Total dissolved solids in parts per million — 300

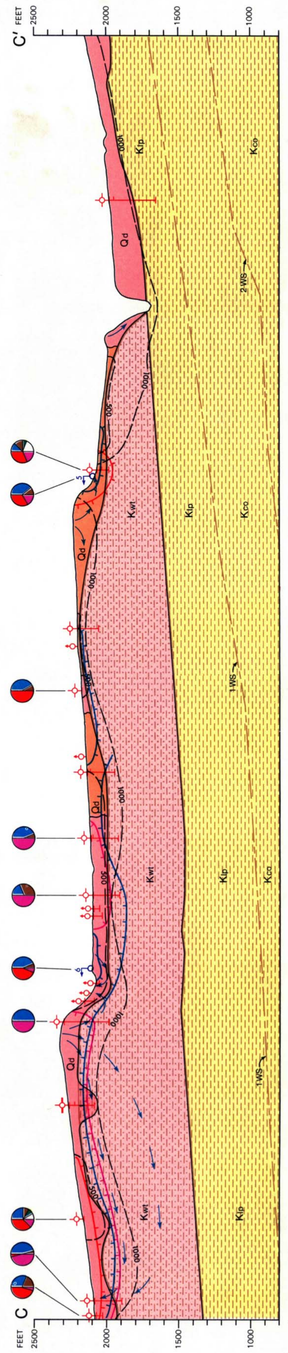
Isogram along which calcium + magnesium constitute 60 per cent of total cations*; teeth indicate direction of lesser calcium + magnesium content

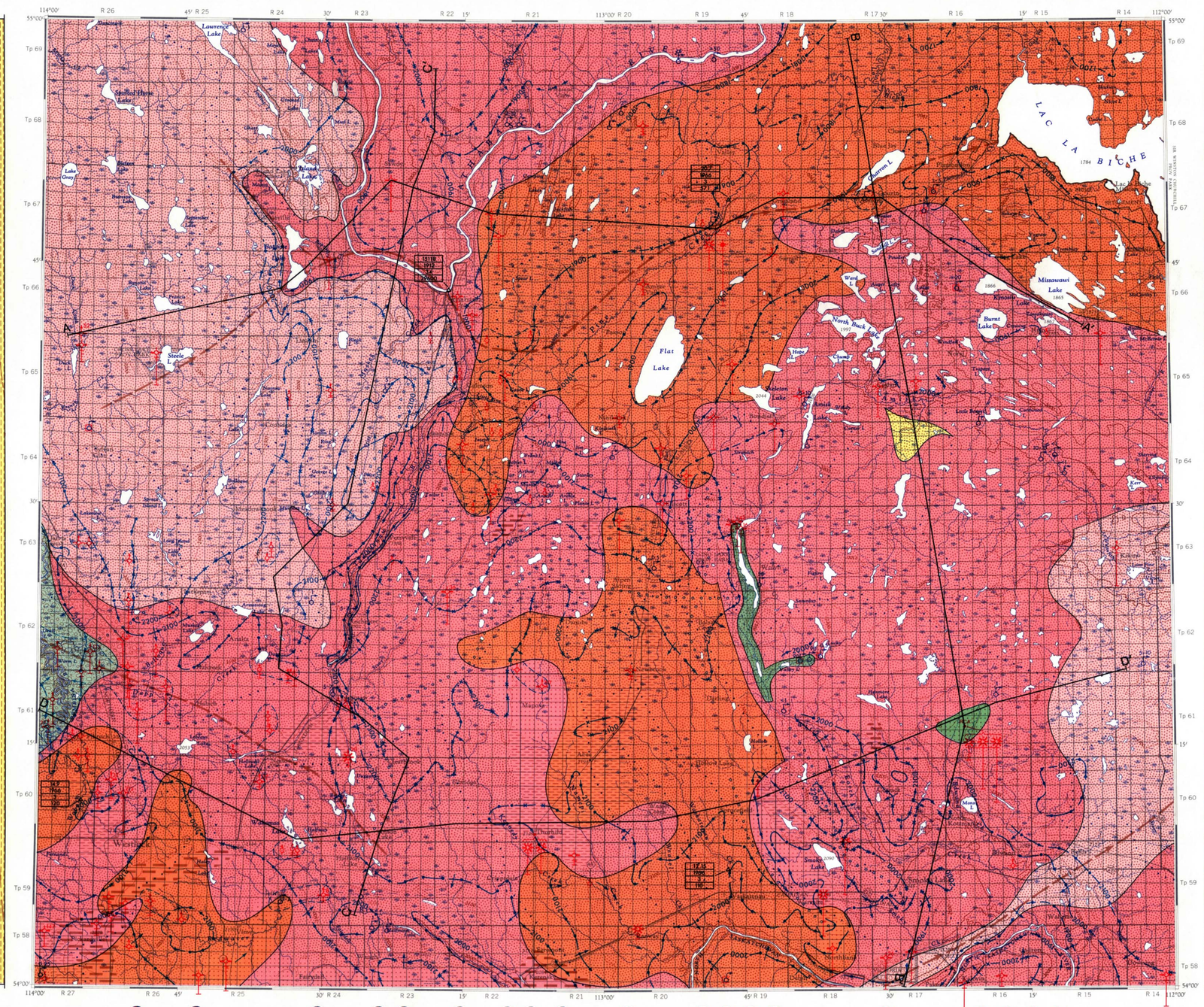
Isogram along which sodium + potassium constitute 60 per cent of total cations*; teeth indicate direction of lesser sodium + potassium content

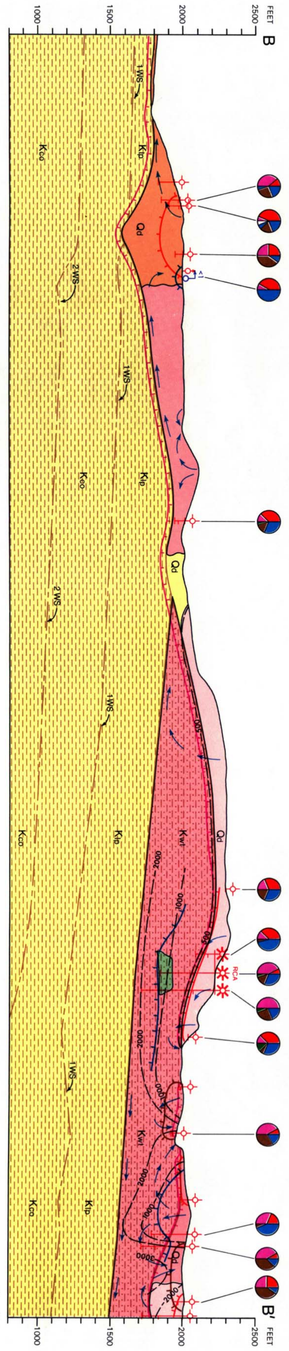
Isogram along which carbonate + bicarbonate constitute 60 per cent of total anions*; teeth indicate direction of lesser carbonate + bicarbonate content

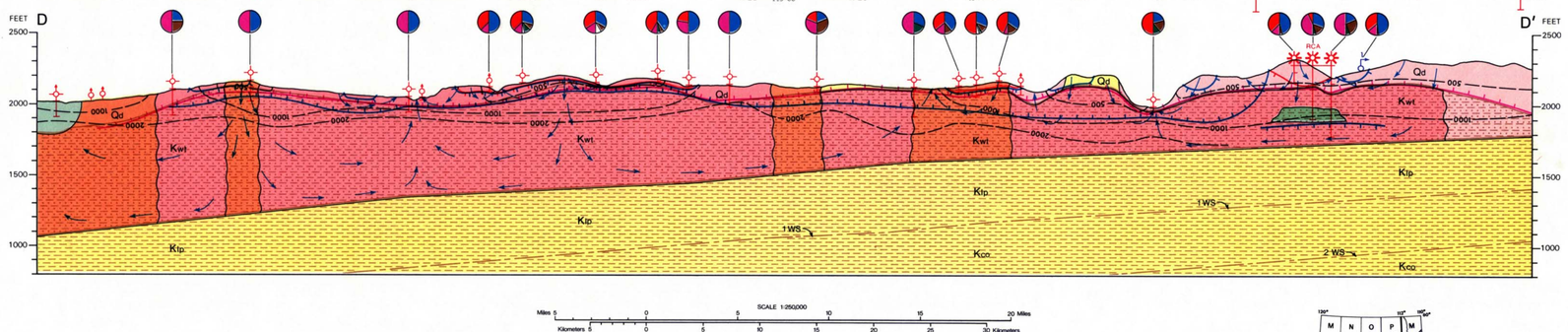
Isogram along which sulfate constitutes 60 per cent of total anions*; teeth indicate direction of lesser sulfate content

*Determined on equivalents per million basis.

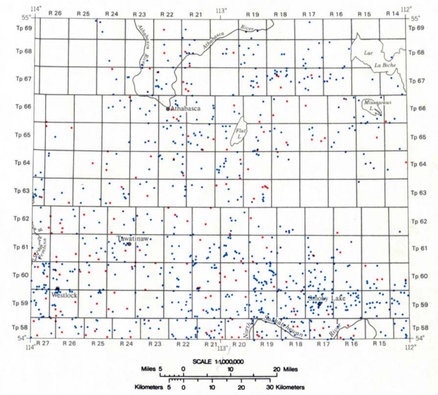








DATA DENSITY



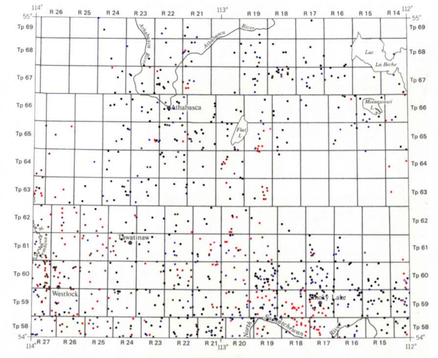
LEGEND

Data control point marking the location of a well with water level information only

Data control point marking the location of a well with yield information (i.e. production test)

Data control point marking the location of a hydrogeological surface feature

WELL DEPTH

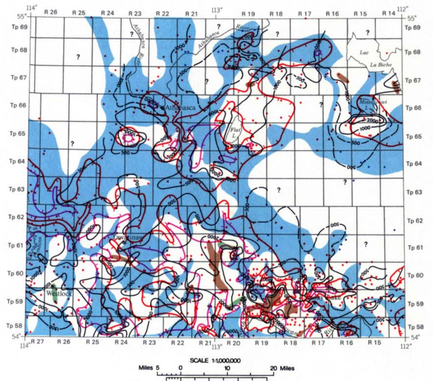


LEGEND

The distribution of wells within a particular depth interval (in feet) is defined according to the following code:

- 0 to 50
- 50 to 100
- 100 to 200
- 200 to 400
- 400 to 800
- > 800
- unknown

HYDROCHEMISTRY



LEGEND

Data control point marking the location of a well with a chemical analysis

Data control point marking the location of a spring or surface water feature with a chemical analysis

Total dissolved solids in parts per million: defined / approximate

Bicarbonate + carbonate constituting over 60 per cent of total anions*

Sulfate constituting over 60 per cent of total anions*

Chloride constituting over 60 per cent of total anions*

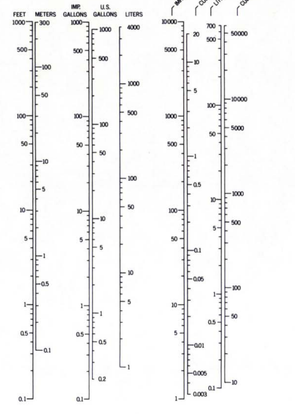
Isogram along which calcium + magnesium constitute 60 per cent of total cations*; teeth indicate direction of lesser calcium + magnesium content

Isogram along which sodium + potassium constitute 60 per cent of total cations*; teeth indicate direction of lesser sodium + potassium content

*Determined on equivalents per million basis.

CONVERSION TABLE

LOGARITHMIC SCALE



All elevations in feet above mean sea level.

Vertical exaggeration of the hydrogeological profiles is approximately 40X.

An expanded legend and explanatory notes for use with this hydrogeological map series is available from the Research Council of Alberta, Edmonton, Canada.

Map to accompany Report 72-11.

Hydrogeology by D. Borneuf, 1971, based on data collected in 1970

Cartographic editing by A. Badry

Drawn by R. Clouston