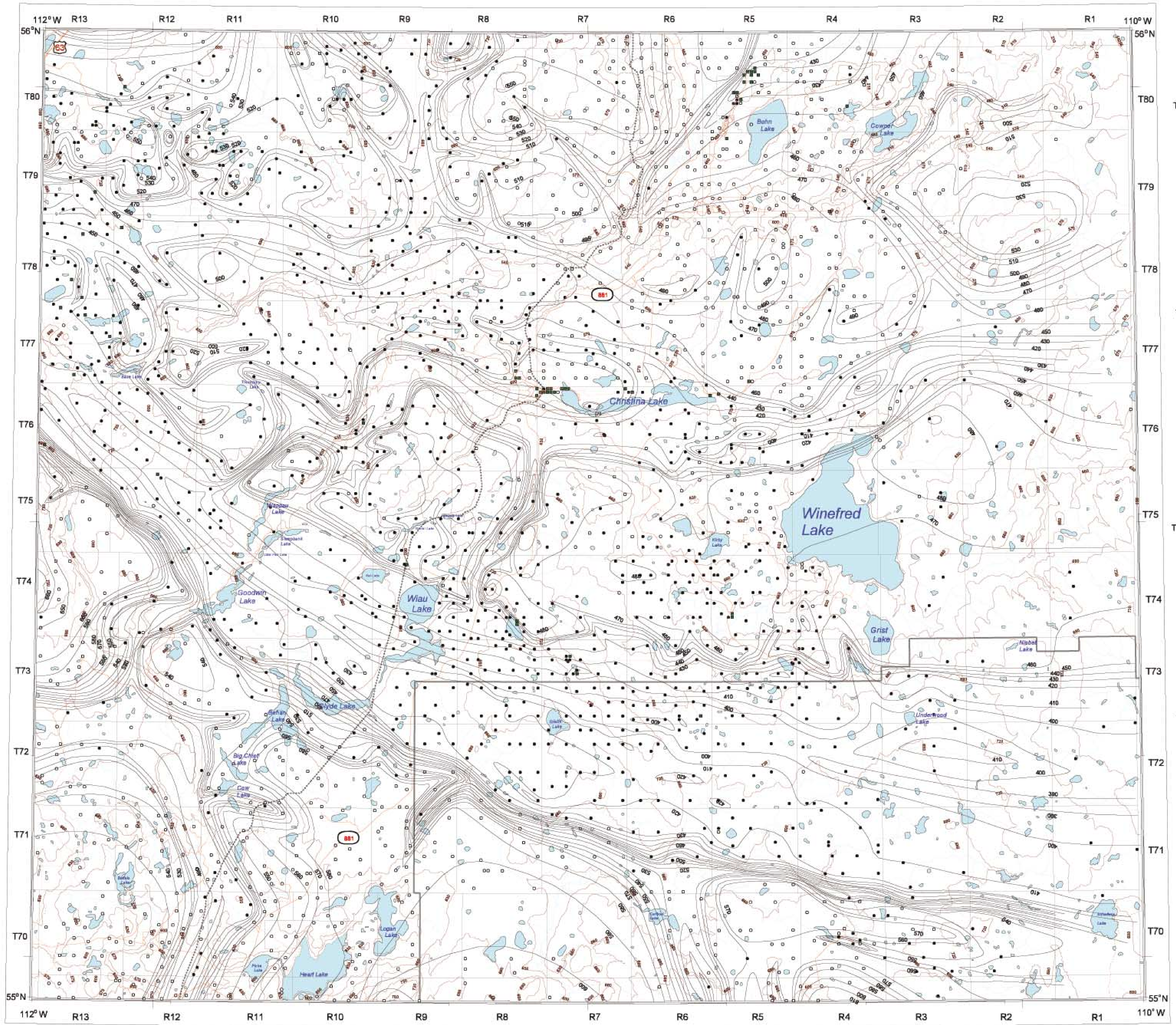
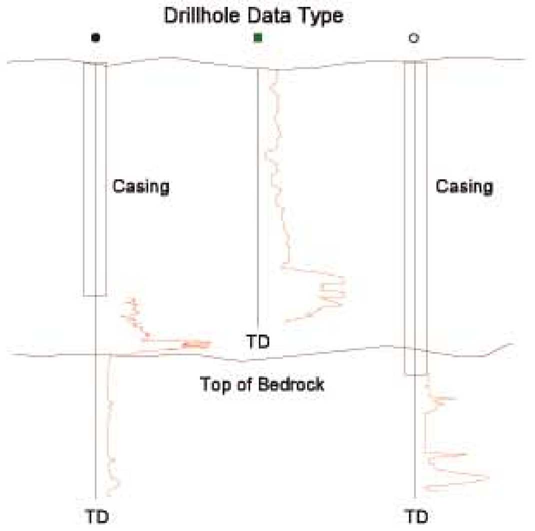




- Drill hole location where the top of bedrock is intersected and defined on petrophysical or lithology logs
- Drill hole location where the top of bedrock is intersected but lies above the top of the petrophysical or lithology logs
- Location of a shallow drill hole where the top of bedrock was not reached
- Bedrock contours: (in metres)
- Surface contours: (in metres)
- Cold Lake Air Weapon Range Boundary
- Paved road
- Gravel road (improved and unimproved)
- Truck trail
- Railway

BEDROCK TOPOGRAPHY OF THE WINEFRED LAKE MAP AREA, NTS 73M, ALBERTA

Map 250

L.D. Andriashek, I. Ranger, and S. Stewart

G.I.S. and Cartography by D.K. Chao

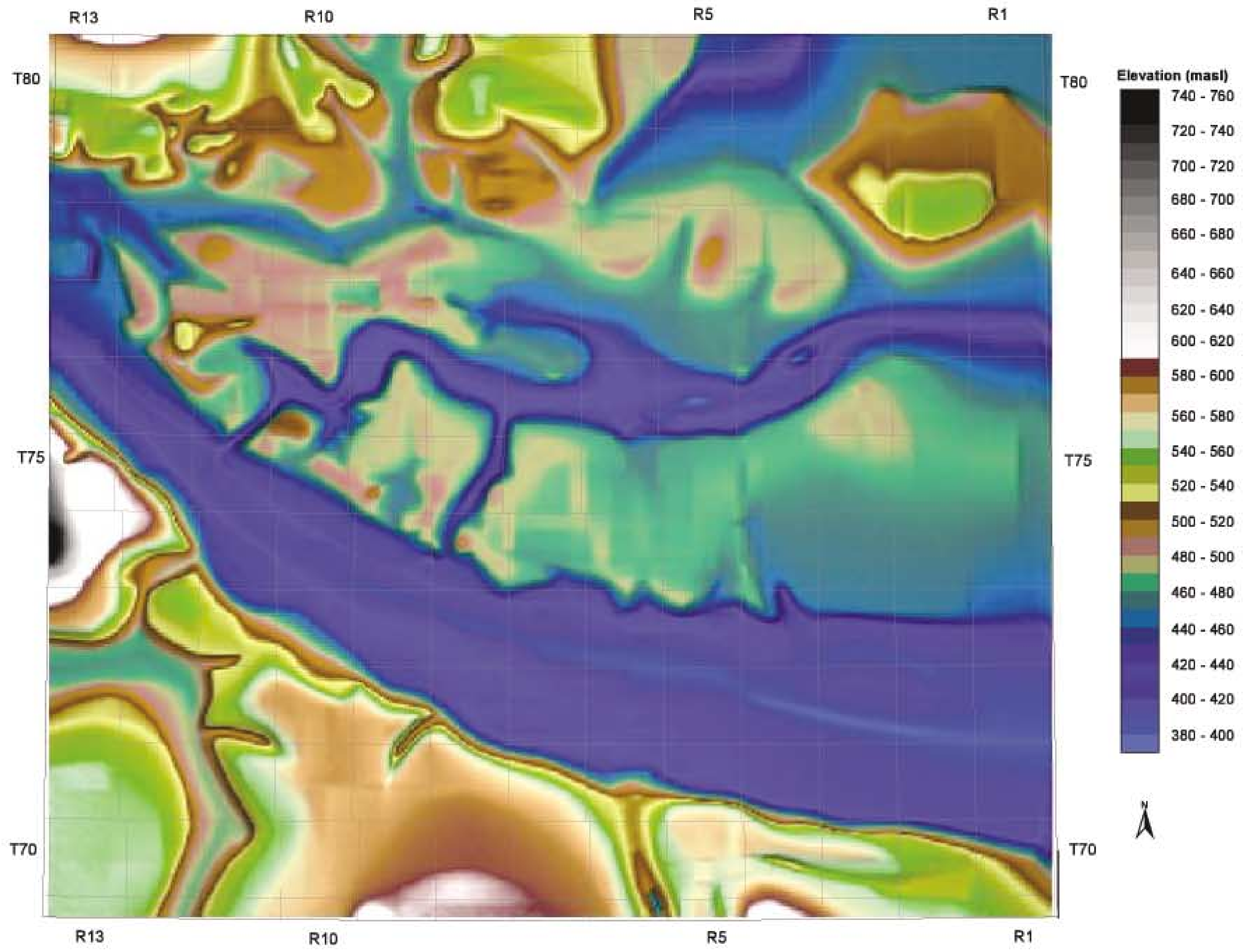
Published date: June 2001

Projection: UTM Zone 12
Datum: NAD 83

1: 250 000
Kilometres
Miles

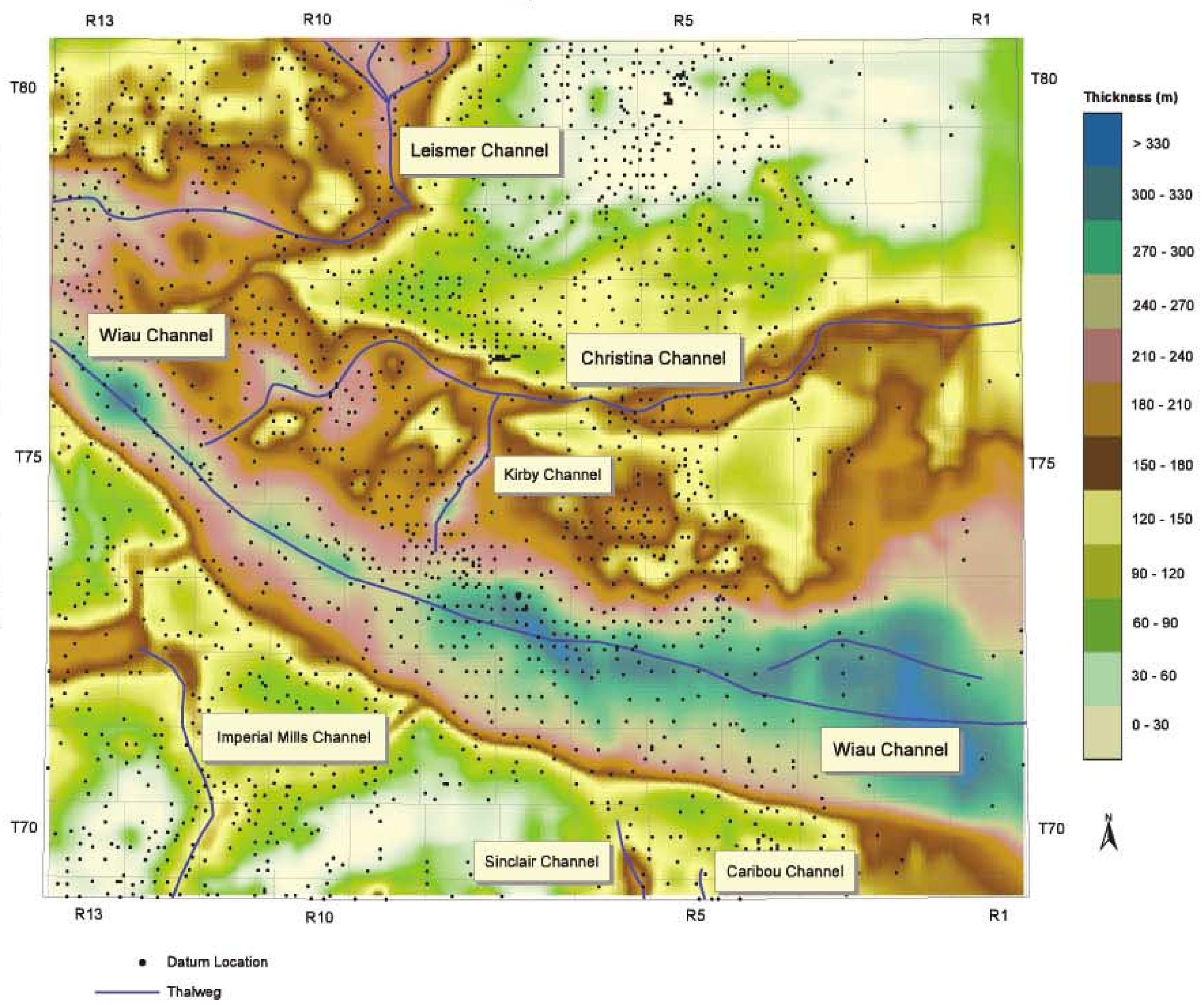
Bedrock Topography

1: 500,000

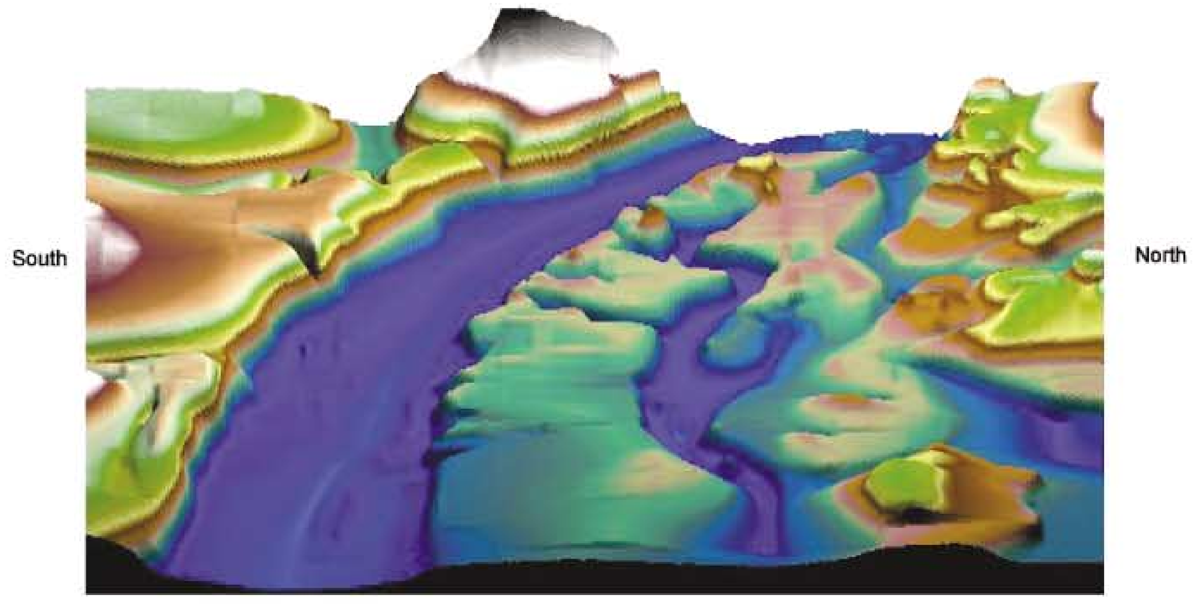


Drift Thickness and Buried Channels

1: 500,000



Perspective View of the Bedrock Topography (vertical exaggeration 30x)



East (Alberta & Saskatchewan Border)

Provenance

Initial investigations on the bedrock topography of NTS 73M were undertaken by C. Gold on behalf of Alberta Environment (Gold, 1983) but were not published in map form. Aspects of bedrock topography were also depicted in a series of hydrogeological cross-sections prepared by O. Tokarsky for Alberta Environment (Alberta Environment, 1988, their cross-sections A-A', V-V'). L. Andriashek, S. Stewart, and M. Fenton prepared more recent interpretations of the bedrock topography in an unpublished Alberta Research Council report in 1993. These interpretations were subsequently released in the form as an Alberta Geological Survey Open File Report (Andriashek, et al., 1998).

Data

Data used to construct the bedrock topographic surface consist primarily of stratigraphic picks made on petrophysical logs (gamma, resistivity) from the petroleum sector. These picks were supplemented with picks from lithologs and petrophysical logs recorded by the water-well industry and other hydrogeological investigations conducted in the area. Approximately 2050 well logs were evaluated in the interpretation of the bedrock surface and drift thickness, most of which were resistivity logs run through the uncased section of the borehole.

The bedrock surface and drift thickness could only be accurately defined in those boreholes where petrophysical log traces originated in the drift and extended deep into the bedrock. These data points are shown as a solid black circle on the map. In many locations in the study area, boreholes were cased through the drift and into the bedrock. In such cases, the bedrock surface lies at an unknown elevation above the bottom of the cased well. These data points, shown as white circles on the map, provide minimum values for the bedrock surface elevation at their respective locations. In the specific case where holes were not drilled down to bedrock, such as shallow water-wells for example, the bedrock top lies at some unknown depth below the bottom of the hole. These data points, shown as a filled square on the map, provide maximum elevation values at their respective locations.

Interpretation Methods

Contours depicted on the bedrock topography map represent digital versions of hand-drawn interpretation lines. The accompanying drift thickness map represents a computer-generated model of drift thickness determined by the subtraction of a digital model of the bedrock surface from a digital elevation model of the present-day land surface. Drift thickness maps have a lower degree of accuracy, which results from the presence of local variations in both the bedrock and present-day land surface. This high-frequency spatial variability cannot be captured at the map scale presented here.

Bedrock Channel Names

The most prominent features on the bedrock surface are fluvial channels eroded into the bedrock surface during the late Cenozoic Era (Tertiary and Quaternary). The largest of these is the Wiau Channel, which was first named by C. Gold (pers. Comm., 1983). The Imperial Mills and Sinclair channels were named by C. Gold et al., in the bedrock topography map of the Sand River map area NTS 73L, 1983. The Christina and Caribou channels were named by L. Andriashek in 1993, and released in AGS OFR1998-05. The Leismer Channel was also mapped in that earlier study, but at the time was referred to as the Conklin Channel. The Conklin Channel name has been subsequently changed to the Leismer Channel in this study to better reflect the geographic name of the area, and to avoid association with the location of the Conklin community, which is, in fact, situated above the Christina Channel. The location of the Kirby Channel was mapped by L. Andriashek et al in AGS OFR1998-05, but not named until now.

References

1. C. M. Gold, 1983: Tertiary drainage in the Western Canada Sedimentary Basin. Abstract presented at the annual Geological Association of Canada meeting, Victoria, 1983, pg. A28.
2. C. M. Gold, L.D. Andriashek and M.M. Fenton, 1983: Bedrock topography of the Sand River map area, NTS 73L, Alberta. 1:250,000 scale map, Alberta Research Council, Alberta Geological Survey.
3. O. Tokarsky, 1988: Hydrogeological cross-sections A-A', and V-V', Winefred Lake NTS 73M. Alberta Environment, Earth Science Division.
4. L. D. Andriashek, R. Stein, S. Stewart and M.M. Fenton, 1998: Bedrock topography and drift aquifers in the Winefred map area, NTS 73M. Alberta Geological Survey Open File Report 1998-05.

Funding for the preparation of this map was provided by Western Economic Diversification Canada under the Western Economic Partnership Agreement (WEPA) with the Province of Alberta.

Digital copies of this map may be obtained from:
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