Bulletin 68, 42p.

2, Part B Map 6, scale 1:70,000.

Smith, L. N., 2000a, Altitude of and depth to the bedrock

surface: Flathead Lake study area, Flathead and Lake Counties

Montana, Montana Bureau of Mines and Geology Ground-Water Assessment Atlas 2, Part B Map 7, scale 1:150,000.

Bureau of Mines and Geology Ground-Water Assessment Atlas

T 25N

R 19W

**R 20W** 

Smith, L. N., 2000b, Surficial geologic map of the Kalispell valley, Flathead County, northwestern, Montana, Montana

potentiometric surface estimated. Subtracting the potentiometric

surface altitude from the land surface altitude yields the approximate

This map was constructed by hand-contouring 281 water-level altitudes measured in wells between February 1996 and

September 1996 (most were measured between March and July).

Map accuracy is affected by data distribution, field measurement

errors, accuracy of well locations, and errors in interpretation.

Points at which water levels have been measured are distributed

unevenly across the map, and map accuracy is greater near points

(to within about 300 feet). Land-surface altitudes at well locations

were interpreted from U.S. Geological Survey (USGS) 1:24,000

of measurement. Well locations are accurate to the 2.5-acre level

MAP CONSTRUCTION

feet). The distribution of well depths within the sand and gravel

area on the map is 370 feet.

GROUND-WATER FLOW

deposits is variable. Depths, however, are generally greater in the

The potentiometric surface represents the altitudes to which

moves down the slope of the potentiometric surface, from higher

altitude to lower altitude, perpendicular to the contours. This map

shows the potentiometric surface of the deep aquifer based on

water-level measurements from the spring and summer of 1996.

The mountains that surround the Kalispell valley serve as the major recharge area to the deep aquifer. Most of the precipitation

water will rise in wells penetrating the aquifer. Ground water

southern part of the valley. The average well depth in the shaded level at which water will stand in, or rise above, a well.

in the mountains falls during the winter months, hence recharge topographic maps and are generally accurate to 5 to 10 ft based

(poorly sorted clayey gravel) deposited directly by glaciers, and

by glaciolacustrine deposits (clay and silt deposited in glacial

aquifer in the valley, calling it the "deep artesian aquifer," and

mapped part of its potentiometric surface at a scale of 1:70,000.

Briar and others (1996) presented a much smaller scale (1:750,000)

potentiometric surface map of the aquifer, and a summary description of the aquifer is presented in Kendy and Tresh (1996).

For this map the aquifer is called the "deep aquifer" and is defined

as sand and gravel deposits (deep alluvium) generally found at

depths greater than 100 feet below the land surface and in the

water to supply wells and springs. Non-aquifer materials (also

known as confining beds) also may be saturated but have low

or springs. The permeable layers of sand and gravel that form

Aquifers are saturated geologic materials that yield sufficient

permeability and do not produce usable amounts of water to wells

bedrock along the fringe of the valley.

lakes). Konizeski and others (1968) first studied the principal