

POTENTIAL YIELDS OF WELLS IN THE SAND-AND-GRAVEL AQUIFER OF CHIPPEWA COUNTY, WISCONSIN

MISCELLANEOUS MAP SERIES

I.D. LIPPELT
1988

This map of potential yields of wells in the sand-and-gravel aquifer is a part of the Chippewa County Ground-water Resource Investigation, a joint project of the Wisconsin Geological and Natural History Survey and the Chippewa County Board of Supervisors.

Potential yields in the sand-and-gravel aquifer can vary greatly over short horizontal distances because of the steep sides of some of the river valleys and the variability of the aquifer. In the western part of Chippewa County, potential yields usually increase in or adjacent to rivers and streams and decrease in upland areas. In the northeastern and north-central parts of Chippewa County, potential yields are usually less than 100 gallons of water per minute. The sand-and-gravel aquifer is absent in much of the southeastern part of the county. During extended periods of drought, maximum obtainable yields may decrease as a result of a reduction in the thickness of saturated aquifer.

The sand-and-gravel aquifer overlies bedrock, which in Chippewa County consists of Cambrian sandstone and Precambrian crystalline rock. In some areas of Chippewa County, the sandstone bedrock is deeply weathered and is poorly lithified. This weathered material is considered bedrock for the purpose of this map, although well drillers may commonly report sand when drilling this material. Therefore, some of the well constructor's reports have been reinterpreted, primarily on the basis of the geologic interpretations of the area north of latitude 45°N by Mudrey and others (1957) and south of latitude 45°N by Brown (1988).

In areas where both the sand-and-gravel and the bedrock aquifers are present, well owners may wish to consider water quality when choosing which aquifer to use. Natural water quality usually varies from one aquifer to another. Water from the bedrock aquifer may be harder or may contain more iron than water from the sand-and-gravel aquifer. However, the sand-and-gravel aquifer, particularly in river valleys, is usually more susceptible to contamination from the surface.

Explanation

potential yield (in gallons of water per minute) of wells that are appropriately constructed and fully developed; dashed where approximately located

Potential yields are based on saturated thickness of the aquifer and on yields obtained from existing irrigation, industrial, and domestic wells.

Data have not been field checked.

Aquifer potential categories, in gallons of water per minute

- saturated sand-and-gravel aquifer is absent
- 0-100 aquifer varies greatly; it may be thin, may contain clay or silt, or may be poorly sorted and densely packed
- 100-500 aquifer is commonly more than 20 ft thick and has sufficient recharge
- 500-1000 aquifer is commonly more than 50 ft thick or is composed of coarse or well sorted sand and gravel and has sufficient recharge
- 1000+ extent of this category is based on existing high-capacity wells.

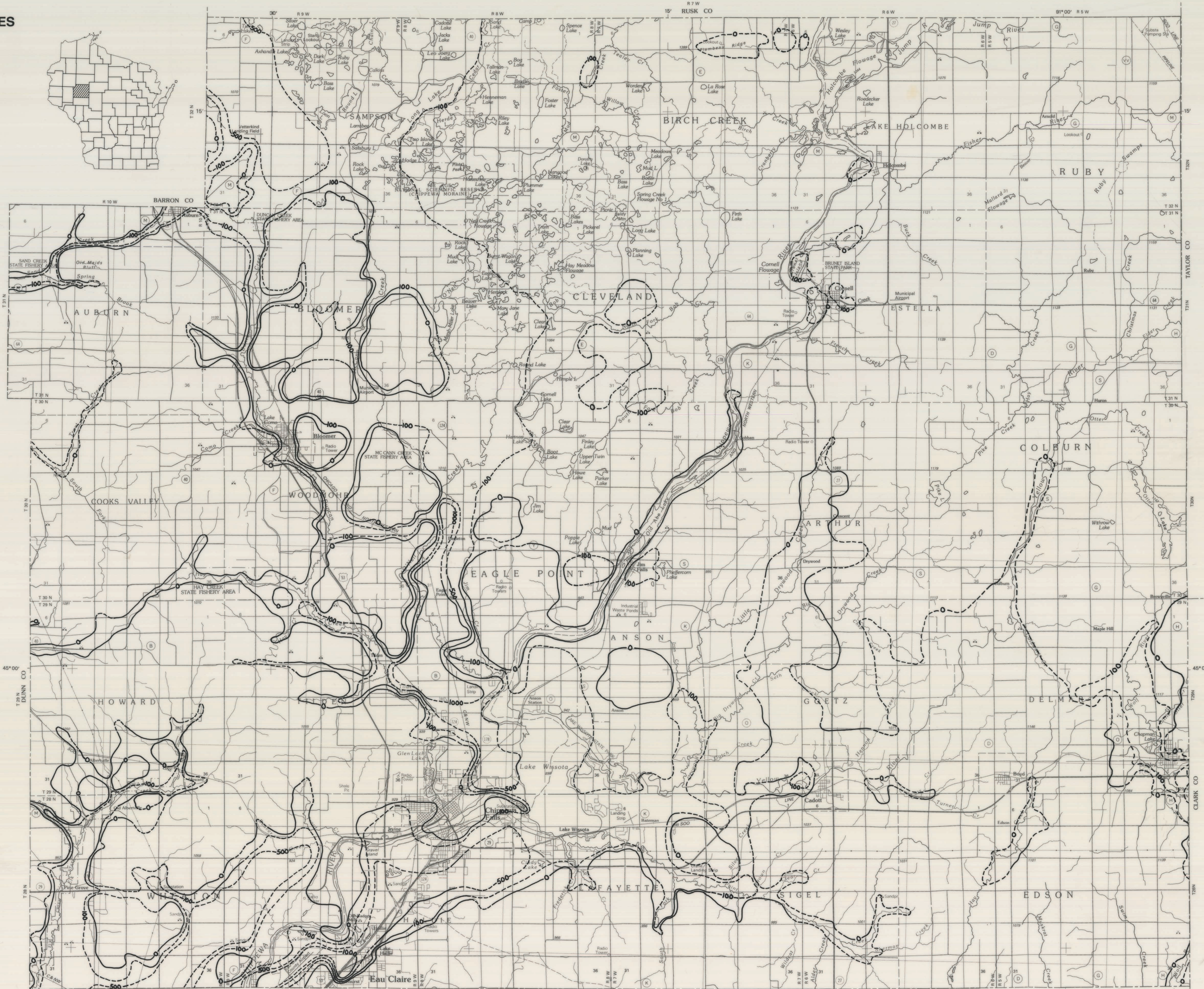
This map is intended to be a general guide to the aquifer potential of surficial deposits in Chippewa County. Detailed site-specific information is required, users are advised to verify potential yields with test borings and pumping tests.

Sources of data

- * Wisconsin Department of Natural Resources well constructor's reports (1936-86).
- * Wisconsin Geological and Natural History Survey published and unpublished geologic logs (1896-1986).
- * Depth to Bedrock of Chippewa County, Wisconsin, by I.D. Lippelt, 1988, Wisconsin Geological and Natural History Survey Miscellaneous Map Series, Map 88-3, scale 1:100,000.
- * United States Geological Survey quadrangles (7.5-minute series, topographic; 1971-79).
- * Generalized Water-Table Elevation of Chippewa County, Wisconsin by I.D. Lippelt, 1988, Wisconsin Geological and Natural History Survey Miscellaneous Map Series, Map 88-1, scale 1:100,000.
- * Bedrock Geology of Wisconsin, Northwest Sheet, by M.G. Mudrey, Jr., G.L. LaBerge, P.E. Myers, and W.S. Cordua, 1987, Wisconsin Geological and Natural History Survey Regional Map Series, Map 87-11, scale 1:250,000.
- * Bedrock Geology of Wisconsin, West-Central Sheet, by B.A. Brown, 1988, Wisconsin Geological and Natural History Survey Regional Map Series, Map 88-7, scale 1:250,000.
- * Soils of Chippewa County and Their Ability to Attenuate Contaminants, by A.W. Sutherland and F.W. Madison, 1987, Wisconsin Geological and Natural History Survey Map 87-3, scale 1:100,000.
- * Wisconsin Geological and Natural History Survey Geology of Wisconsin Outcrop Descriptions.

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