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NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

WATER-RESOURCES INVESTIGATIONS REPORT 85-4157
PLATE 6--SATURATED THICKNESS OF THE UPPER AQUIFER

# HYDROGEOLOGY OF THE OLEAN AREA, CATTARAUGUS COUNTY, NEW YORK

by
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SATURATED THICKNESS OF THE UPPER AQUIFER

## SATURATED THICKNESS OF THE VALLEY-FILL AQUIFER

This map depicts the thickness of water-bearing sand and gravel of the valley-fill aquifer. The map is based partly on the potentiometric-surface map (pl. 5), which shows the influence of pumping at two large industrial well fields. At the time water-level measurements were made, pumping had reduced the average saturated thickness in North Olean by approximately 25 feet, and near the Allegheny well field by about 10 feet (Mc. P. Bergeron, in press). The saturated thickness shown here also includes deeper outwash deposits that are hydraulically connected to the upper aquifer but are separated in places by discontinuous lenses of silt and clay. In many areas, stratigraphic records are sparse, and the extent of permeable and impermeable layers are not well known. Consequently, thickness values given here are approximate in many areas.

The valley-fill aquifer consists of outwash and icecontact sand and gravel deposited during at least two ice advances. These deposits form a productive aquifer that is thickest in the center of the valley and pinches out toward the valley walls. These deposits are also generally thicker downstream (west) than upstream (east). In some places, fine-grained modern alluvial deposits or till cap the aquifer and may locally inhibit recharge. In addition, till or other impermeable layers that cap older sand and gravel may also restrict ground-water flow laterally into younger outwash or ice-contact deposits. For example, the remnant outwash terrace between Allegheny and Olean, which is capped by till, may restrict flow toward the younger outwash and alluvial deposits in the valley. (See east side of geologic section I-I', pl. 3.)

In the area of East Olean, the principal aquifer is confined beneath till and recent alluvium at depths ranging from 40 to 85 feet below land surface and has a saturated thickness ranging from 10 to 40 feet. In addition, a surficial aquifer composed of alluvial sand and gravel lies along the Allegheny River in this area.

## SELECTED REFERENCE

Bergeron, M. P., 1967, Effect of reductions of industrial pumpage on the migration of dissolved nitrogen in an outwash aquifer at Olean, Cattaraugus County, New York: N.Y. Geological Survey Water-Resources Investigations 85-4082, 64 p.

## EXPLANATION

WELL OF TEST HOLE--Source of hydrogeologic data for construction of saturated-thickness map.

BOUNDARY--designates zones of approximately equal saturated thickness of the surficial outwash aquifer. Approximately located; dashed where inferred.

ZONES OF APPROXIMATELY EQUAL SATURATED THICKNESS--of the surficial outwash valley-fill aquifer, in feet. Includes combined thickness of upper and lower outwash units where separated by discontinuous silt and clay lenses.

1 less than 20 feet
2 20 to 40 feet
3 40 to 60 feet
4 greater than 60 feet. Unit 4 is typically between 60 and 80 feet but in places may be as much as 125 feet

AQUIFER BOUNDARY--approximate limit of valley-fill aquifer.

INSUFFICIENT DATA

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Base from New York State Department of Transportation, 1:24,000 series:
Olean, N.Y., 1975; Knapp Creek, N.Y., 1975; Portville, N.Y., 1976

NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD of 1929)--a geodetic datum derived from a general adjustment of the first-order level nets of both the United States and Canada, formerly called "Mean Sea Level".

0 ½ 1 2 MILES
0 ½ 1 2 KILOMETERS

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