PREPARED IN COOPERATION WITH THE
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

POTENTIOMETRIC SURFACE

The potentiometric surface is the level to which water rises in wells that tap the glacial and alluvial aquifer. In most areas the aquifer is unconfined, although confined conditions may prevail locally in some low areas adjacent to streams where alluvial flood-plain deposits of very fine sand, silt, and silty gravel overlie the aquifer.

The potentiometric contours are based on (1) water levels measured once in about 50 wells and test holes completed in the glacial and alluvial aquifer during 1945-82, and (2) elevations of streams and ponds as shown on the topographic map, measured at stream gages, or surveyed. (Water levels in wells tapping sand and gravel deposits buried beneath the glaciolacustrine confining unit were not used.) Depth to water in the wells and test holes typically ranges from 3 to 15 ft below land surface.

Although long-term water-level records of wells in the study area are lacking, the water table probably did not fluctuate appreciably during 1945-82 because ground-water withdrawals are relatively small, induced recharge from streams is relatively large, and the water-level declines are minimal; accordingly, water levels during 1945-82 probably are similar to long-term average water levels in the area. Hydrographs for other wells in similar glacial aquifers in upstate New York indicate that long-term water-level declines have not occurred (U.S. Geological Survey, 1982 and 1985). Although water-level measurements were made during various seasons and years and since water levels typically fluctuate seasonally from only 3 to 10 ft, most water-level data plotted on the map would fit correctly within the 20-ft contour interval that was used to construct the potentiometric surface.

Recharge, Ground-Water Flow, and Discharge

The aquifer is recharged by (1) precipitation that infiltrates through the unsaturated zone to the water table, (2) seepage from tributary streams that cross the aquifer, (3) seepage of runoff from slopes of adjacent hillsides, and (4) underflow from till and bedrock along the valley sides. Ground water flows from the edges of the valleys to the center, where most of it discharges into the Canisteo River and Canacadea Creek, but some flows downvalley. Some ground water also discharges to pumped wells.

SELECTED REFERENCES

U.S. Geological Survey, 1982, Water Resources Data, New York, Water Year 1981: U.S. Geological Survey Water Data Report NY-81-3, Volume 3, Western N.Y., 223 p.

U.S. Geological Survey, 1985, National water summary 1984: U.S. Geological Survey Water-Supply Paper 2275, 467 p.

EXPLANATION

- 1160 — POTENTIOMETRIC CONTOUR--Shows approximate altitude at which water would rise in properly constructed wells that tap the glacial and alluvial aquifer. Water-level measurements were made during 1945-82. Arrows indicate direction of ground-water flow. Contour interval 20 feet. Dashed where inferred. Datum is sea level
- AQUIFER BOUNDARY--Dashed where full extent of aquifer is not shown
- GROUND-WATER DIVIDE
- BOUNDARY OF STUDY AREA
- MAJOR INFLOW TO AQUIFER--Streamflow and ground-water flow in main valleys beyond mapped area
- MAJOR OUTFLOW FROM AQUIFER--Streamflow and ground-water flow in main valley beyond mapped area
- △ 00631000 — PUBLIC WATER-SUPPLY RESERVOIR--Number is community water-supply number assigned by New York State Department of Health
- ○ 11501344 — PUBLIC WATER-SUPPLY WELL--Number is community water-supply number assigned by New York State Department of Health
- 00183000 — SPRING--Tail indicates direction of flow. Number is community water-supply number assigned by New York State Department of Health
- X — DATA POINT--Well or test hole at which water-level measurements were made

Base from New York State Department of Transportation, Arkport, NY, 1978; Canaseraga, NY, 1976; Canisteo, NY, 1978; and Hornell, NY, 1978

GEOHYDROLOGY OF THE SURFICIAL AQUIFER IN THE HORNELL AREA, IN STEUBEN AND ALLEGANY COUNTIES, NEW YORK

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POTENTIOMETRIC SURFACE