

SATURATED THICKNESS OF THE VALLEY-FILL AQUIFER AND REPORTED WELL YIELDS

SATURATED THICKNESS

This map depicts the approximate thickness of the saturated sediments that form the valley-fill aquifer of the study area. Saturated-thickness values were estimated from published well- and test-boring logs (Davis, 1989; Frimpter, 1970, 1972; Miller, 1974) and unpublished well- and test-boring logs supplied by the New York State Department of Health, Department of Environmental Conservation and the USGS. Saturated-thickness contours were constructed by fitting lines of equal unconsolidated sediment thickness to well and boring points for which the water level was known or reasonably estimated. Over most of the study area, these unconsolidated sediments consist of kame sand and gravel, outwash sand and gravel, lacustrine sand, and alluvium. In places, the contours represent a generalization of complex conditions that result from the local variations in the makeup of the valley-fill deposits; thus, at some locations, the values include silt and clay layers.

Saturated thickness contours are incomplete in some parts of the study area because subsurface data were insufficient to enable their construction.

Well Yields

This map provides reported well yield information, where available, for wells finished in the unconsolidated aquifer. Reported well yield does not necessarily indicate maximum potential well yield at a given location.

The yield of any well finished in sand and gravel is subject to a number of variables, both natural and design related. Natural factors include saturated thickness, hydraulic conductivity, storage coefficient, available recharge to the aquifer, and the presence of nearby surface-water sources that could contribute induced infiltration to the well. The high transmissivity of this valley-fill aquifer, coupled with the potential for induced infiltration from the Delaware and Neversink Rivers, Bashel Kill and smaller creeks, allows for high sustained well yields in the vicinity of these streams. Design factors that affect well yield are specific to each well and include the type of well construction and development, screen length, well diameter, screen-slot size, and interference from adjacent pumping wells.

Studies of the 28-mile outwash aquifer located between Millford, Pa. and Summitville, N.Y., which includes the Port Jervis study area, conclude that vast amounts of ground water are available. A typical aquifer segment 2 miles long by 5,000 feet wide was estimated by Parker and others (1964) to have a ground-water storage capacity of 6 billion gallons. If 20 percent of this resource were used, the amount that could be obtained from storage is approximately 1.2 billion gallons, with an average rate of withdrawal of about 13 million gallons per day (mgd) over a 90-day period. Careful aquifer management would be needed to avoid stream depletion and to promote efficient use of the resource.

A computer modeling study of several aquifers in the Delaware River basin was conducted for the Delaware River Basin Commission to guide development of the water resources in the basin (R.E. Wright Associates, 1982). One of the areas studied included the Port Jervis Trough, a water-table aquifer extending from near Cuddebackville to Wurtsboro, 9 miles to the north. Results indicated that depending on the strategies of ground-water withdrawal and aquifer management, this aquifer could yield from 35 to 129 Mgal/d over a 120-day period with a recovery period of 1 to 4 years, respectively.

Both of the above estimates of ground-water yields are applicable to the study area. At present, the resource is under-used and development is feasible.

REFERENCES

Davis, D.K., 1989, Groundwater resources of pike county, Pennsylvania: Pennsylvania Geological Survey Water Resources Report 65, 101 p.

Frimpter, M.H., 1970, Ground-water basic data orange and ulster counties, New York: U.S. Geological Survey Bulletin 65, 93 p.

_____, 1972, Ground-water resources of orange and ulster counties, New York: U.S. Geological Survey Water-Supply Paper 1885, 80 p.

Miller, J.W., 1974, Geology and ground water resources of sussex county and the warren county portion of the tocks island impact area: New Jersey Department of Environmental Protection, Bureau of Geology and Topography, Bulletin 73, 143 p.

New York State Department of Environmental Conservation, 1990, Unpublished Open File Information. Bureau of Water Permits, Division of Water, Albany, N.Y.

New York State Department of Health, 1982, New York State Atlas of Community Water System Sources, 79p.

New York State Department of Health, 1990, Bureau of Public Water Supply Protection. Unpublished open file well information.

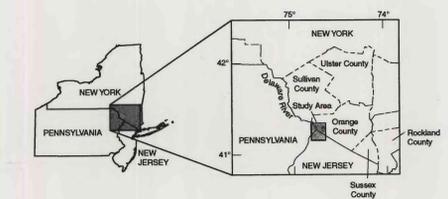
Parker, G.G., Hely, A.G., Keighton, W.B., and others, 1964, Water Resources of the Delaware River Basin: Geological Survey Professional Paper 381, 200 p.

U.S. Geological Survey, 1990, Unpublished well log information. Troy, N.Y.

Wright R.E., Associates, 1982, Special groundwater study of the upper Delaware River basin, Study Area III: Middletown, Pa., v.1, 137 p. plus appendices.

EXPLANATION

- 75 (60) DATA POINT — location of a well as shown on sheet 1. Top number is saturated thickness of sand and (or) gravel, in feet. A plus sign (+) following the top number indicates that the well did not reach bedrock, and saturated thicknesses are greater than shown; a minus sign (-) indicates that the saturated thickness is less than that shown. Bottom number (in parentheses) is reported yield of unconsolidated well, in gallons per minute; not always available. Bedrock yields are not shown. The reported yield for individual wells does not necessarily represent maximum obtainable yield.
- 100 --- SATURATED-THICKNESS CONTOUR — shows line of equal saturated thickness of sand and (or) gravel; contours are shown for 15, 50, 100, 200, and 400 feet. Dashed where approximately located.
- AQUIFER BOUNDARY — shows approximate extent of the valley-fill aquifer system. Dashed where arbitrarily truncated.



Base from New York State Department of Transportation
Port Jervis South, 1985, Port Jervis North, 1985, Otisville, 1985,
NY, 1:24,000

**HYDROGEOLOGY OF THE PORT JERVIS AREA, IN
ORANGE COUNTY, NEW YORK; PIKE COUNTY, PENNSYLVANIA; AND
SUSSEX COUNTY, NEW JERSEY**

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