GROUND-WATER AVAILABILITY

Unconsolidated sediments form both the most and least productive aquifers in southwestern New York. Coarse sand and gravel deposits are highly permeable and are capable of sustaining high yields. In contrast, clay is relatively impermeable and yields insignificant amounts of water to wells.

Most of the unconsolidated sediments were deposited during the last period of glaciation. Vast amounts of water and rock fragments were discharged from the melting glacier, and low-lying areas were flooded and became covered with sediments ranging in texture from clay to coarse gravel. In upland areas, most of the glacially derived sediments are deposits of till.

Residual deposits that formed from weathered bedrock in the unglaciated part of the study area are similar to till in composition and hydrologic properties. Stream-laid deposits of sand and gravel that are hydrologically comparable to outwash underlie the valley floors in this area.

Thick saturated deposits of sand and gravel outwash in valleys are the most permeable of the water-yielding units in the area and form the most productive aquifers. They also have the highest recharge potential of all aquifers in the area because of their position in valley bottoms. Yields of more than 1,500 gal/min (gallons per minute) have been obtained in the study area from properly constructed wells screened in outwash.

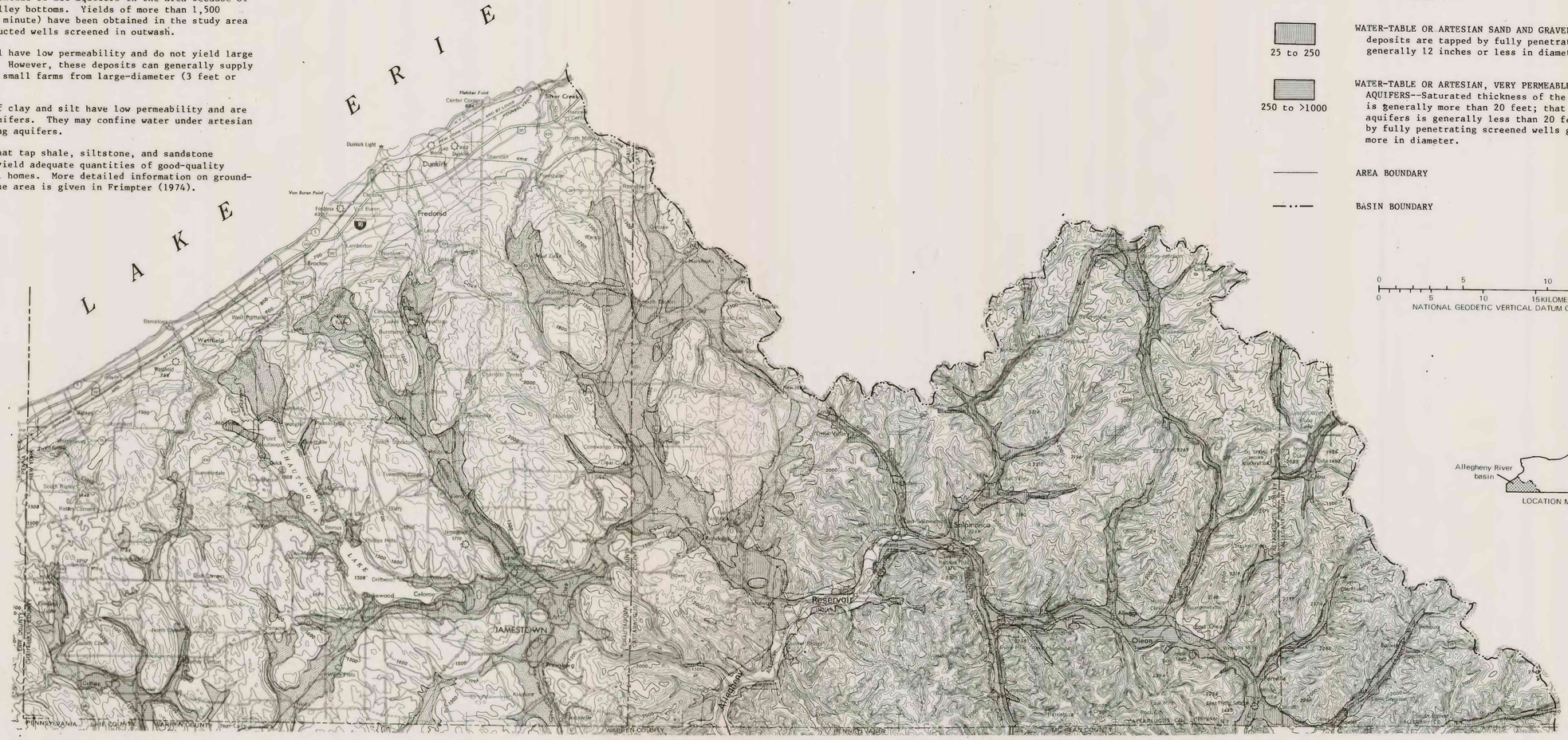
Deposits of till have low permeability and do not yield large quantities of water. However, these deposits can generally supply individual homes and small farms from large-diameter (3 feet or more) wells.

Lake deposits of clay and silt have low permeability and are not considered as aquifers. They may confine water under artesian pressure in underlying aquifers.

Drilled wells that tap shale, siltstone, and sandstone (bedrock) generally yield adequate quantities of good-quality water to supply rural homes. More detailed information on ground-water potential in the area is given in Frimpter (1974).

REFERENCE CITED

Frimpter, M. H., 1974, Ground-water resources, Allegheny River basin and part of the Lake Erie basin, New York: New York State Department of Environmental Conservation, Basin Planning Report ARB-2, 98 p.



EXPLANATION

The values shown below indicate estimated yield to individual wells that tap the most productive aquifer underlying each area. Yields are based on aquifer permeability, thickness, and topographic position, and on reported yields of existing wells. Several areas have more than one aquifer, but only the yield of the most productive one is indicated.

Yield, in gallons per minute	Rock type and well characteristics
0.1 to 20	AQUIFERS OF TILL, BEDROCK, AND VERY SMALL ISOLATED DEPOSITS OF SAND AND GRAVEL--Open-hole drilled wells are constructed in the bedrock. Large-diameter, open-jointed fieldstone wells are constructed in the till and shallow sand and gravel deposits. Well points also are used to tap the shallow sand and gravel deposits.
5 to 50	WATER-TABLE OR ARTESIAN SAND AND GRAVEL AQUIFERS, 10 TO 20 FEET THICK, INCLUDING MORAINES--These are tapped by fully penetrating screened wells, generally 6 inches or less in diameter.
25 to 250	WATER-TABLE OR ARTESIAN SAND AND GRAVEL AQUIFERS--These deposits are tapped by fully penetrating screened wells generally 12 inches or less in diameter.
250 to >1000	WATER-TABLE OR ARTESIAN, VERY PERMEABLE SAND AND GRAVEL AQUIFERS--Saturated thickness of the water-table aquifers is generally more than 20 feet; that of the artesian aquifers is generally less than 20 feet. These are tapped by fully penetrating screened wells generally 10 inches or more in diameter.
———	AREA BOUNDARY
—·—·—	BASIN BOUNDARY

Base from U.S. Geological Survey, 1:250,000 scale

Hydrology by M.H. Frimpter, 1967

SURFICIAL GEOLOGY AND GROUND-WATER AVAILABILITY IN THE ALLEGHENY RIVER BASIN AND PART OF THE LAKE ERIE BASIN, NEW YORK

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