U.S. Department of the Interior
U.S. Geological Survey

Prepared in cooperation with the

Long Island Water Conference
Nassau County Department of Public Works
New York City Department of Environmental Protection
Port Washington Water District
Suffolk County Department of Health Services
Towns of North Hempstead and Shelter Island

Manhasset-Lakeville Water District
Nassau Suffolk Water Commissioners Association
New York State Department of Environmental Conservation
Sands Point Water Department
Suffolk County Water Authority
Water Authority of Great Neck North

EXPLANATION

Inferred extent of the Lloyd aquifer

Inferred extent of the North Shore aquifer

Line of equal potentiometric-surface altitude—Shows altitude at which the water level would have stood in tightly cased wells, April–May 2013. Solid where approximately known; dashed where inferred. Contour interval 5 feet. Datum is NGVD 29.

S 58922
2.55

Monitoring well—Purple circle indicates observation well screened in the Lloyd aquifer; purple circle with thick border indicates supply well screened in the Lloyd aquifer; green circle indicates observation well screened in the North Shore aquifer. Upper number is well number assigned by the New York State Department of Environmental Conservation; lower number is potentiometric-surface altitude in feet, NGVD 29.

Land surface topography—Shows land surface altitude in feet, NAVD 88.

400 feet
300
200
100
0 feet

Lloyd and North Shore Aquifers

The Lloyd aquifer of upper Cretaceous age is the basal unit of Long Island's groundwater system. This aquifer continuously underlies most of Long Island and the offshore waters, except in parts of western and northern Kings, Queens, and Nassau Counties, and extreme northeastern Suffolk County, where it has been removed by erosion. The upper surface of the aquifer ranges in altitude from less than 100 feet (ft) below the National Geodetic Vertical Datum of 1929 (NGVD 29) in extreme northern parts of Queens County to more than 1,500 ft below NGVD 29 in south-central Suffolk County (Smolensky and others, 1989). Aquifer thickness ranges from zero in northern and western parts of Kings, Queens, and Nassau Counties and extreme northeastern Suffolk County to more than 500 ft in extreme southeastern Nassau and southwestern Suffolk Counties (Soren and Simmons, 1987).

This map depicts water levels during April–May 2013 in 66 wells screened in the Lloyd and North Shore aquifers. Wells screened in the Pleistocene deposits of the North Shore aquifer in northern Nassau County are included because in these areas the North Shore aquifer is hydraulically connected to the Lloyd aquifer (Stumm, 2001; Stumm and others, 2002 and 2004). The inferred northern extent of the Lloyd aquifer, the inferred extent of the North Shore aquifer, and the aquifer in which each well is screened are indicated on this map.

The general configuration of the potentiometric-surface altitude in the Lloyd aquifer is similar to those in the overlying water-table and Magothy aquifers. The potentiometric surface gradually rises from the western part of Long Island to form an east-west-trending mound in eastern Nassau County that continues east into central Suffolk County. The mound then gradually declines toward the eastern end of Long Island. Public-supply and golf-course pumping has lowered the potentiometric surface in the Lloyd aquifer below NGVD 29 in northwestern Nassau County (Stumm and others, 2002).

The potentiometric-surface altitude in the Lloyd aquifer on Long Island in 2013 ranged from about 14 ft below NGVD 29 in northwestern Nassau County to more than 49 ft above NGVD 29 in northeastern Nassau County. In Kings County, 3 measurements ranged from 5.87 to 8.80 ft; in Queens County, 7 measurements ranged from 6.59 to 17.38 ft; in Nassau County, 49 measurements ranged from -14.25 to 49.48 ft; and in Suffolk County, 7 measurements ranged from 14.47 to 37.25 above NGVD 29.

References Cited

Smolensky, D.A., Buxton, H.T., and Shernoff, P.K., 1989, Hydrologic framework of Long Island, New York: U.S. Geological Survey Hydrologic Investigations Atlas HA–709, 3 sheets, scale 1:250,000.

Soren, Julian, and Simmons, D.L., 1987, Thickness and hydrogeology of aquifers and confining units below the upper glacial aquifer on Long Island, New York: U.S. Geological Survey Water-Resources Investigations Report 86–4175, 3 sheets, scale 1:125,000.

Stumm, Frederick, 2001, Hydrogeology and extent of saltwater intrusion of the Great Neck peninsula, Great Neck, Long Island, New York: U.S. Geological Survey Water-Resources Investigations Report 99–4280, 41 p.

Stumm, Frederick, Lange, A.D., and Candela, J.L., 2002, Hydrogeology and extent of saltwater intrusion on Manhasset Neck, Nassau County, New York: U.S. Geological Survey Water-Resources Investigations Report 00–4193, 42 p.

Stumm, Frederick, Lange, A.D., and Candela, J.L., 2004, Hydrogeology and extent of saltwater intrusion in the northern part of the town of Oyster Bay, Nassau County, New York: U.S. Geological Survey Water-Resources Investigations Report 03–4288, 55 p.

Base from U.S. Geological Survey digital data 1:100,000 series
Lambert Conformal Conic projection
Standard parallels 40° 40' N and 41° 2' N, central meridian 74° 00' W
North American Datum of 1983

Hydrology by Michael Como

Water-Table and Potentiometric-Surface Altitudes in the Upper Glacial, Magothy, and Lloyd Aquifers of Long Island, New York, April–May 2013

By

Michael D. Como, Michael L. Noll, Jason S. Finkelstein, Jack Monti, Jr., and Ronald Busciolano

2015

For additional information write to:
Director, U.S. Geological Survey, 2045 Route 112, Coram, NY 11727

Copies of this report are available on-line at http://ny.water.usgs.gov

Suggested citation: Como, M.D., Noll, M.L., Finkelstein, J.S., Monti, Jack, Jr., and Busciolano, Ronald, 2015, Water-table and potentiometric-surface altitudes in the Upper Glacial, Magothy, and Lloyd aquifers of Long Island, New York, April–May 2013: U.S. Geological Survey Scientific Investigations Map 3326, 4 sh., http://dx.doi.org/10.3133/sim3326.

ISSN 2329-132X (online)
http://dx.doi.org/10.3133/sim3326