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Prepared in cooperation with the
NASSAU COUNTY DEPARTMENT OF PUBLIC WORKS
NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES
SUFFOLK COUNTY WATER AUTHORITY
TOWN OF NORTH HEMPSTEAD
TOWN OF SHELTER ISLAND
AND THE U.S. ENVIRONMENTAL PROTECTION AGENCY

SCIENTIFIC INVESTIGATIONS MAP 3270
Potentiometric surface in the Magothy and Jameco aquifers—SHEET 2 of 4
Monti, Jack, Jr., Como, Michael, and Busciolano, Ronald, 2013,
Water-Table and Potentiometric-Surface Altitudes in the Upper Glacial, Magothy, and Lloyd Aquifers beneath Long Island, New York, April–May 2010

-74°
-73°30'
-73°
-72°30'
-72°
40°50'
40°40'
40°30'
41°10'
41°
NEW YORK
CONNECTICUT
NEW JERSEY
Long Island
ATLANTIC OCEAN
20 0 20 MILES
20 0 20 KILOMETERS
USGS 404025073463801 Q 2422. 1
NO DATA
USGS 404818073293101 N 11454. 1
NO DATA
USGS 404932073055902 S 33380. 1
NO DATA
USGS 403517073430702 N 6702. 1
USGS 404030073293703 N 180. 2
Daily Altitude above NGVD 1929, feet
Date
Oct 2009
Nov 2009
Dec 2009
Jan 2010
Feb 2010
Mar 2010
Apr 2010
May 2010
June 2010
July 2010
Aug 2010
Sep 2010
Oct 2010
EXPLANATION
Daily mean altitude above NGVD 1929
Water level shown on map (NGVD 1929)
LONG ISLAND SOUND
BLOCK ISLAND SOUND
ATLANTIC OCEAN
BRONX COUNTY
NEW YORK COUNTY
RICHMOND COUNTY
QUEENS COUNTY
KINGS COUNTY
NASSAU COUNTY
SUFFOLK COUNTY
UPPER NEW YORK BAY
LOWER NEW YORK BAY
JAMAICA BAY
SMITHTOWN BAY
GREAT SOUTH BAY
GREAT PECONIC BAY
GARDINERS BAY
FLANDERS BAY
SHINNECOCK BAY
MORICHES BAY
N12522 18.32
N2528 73.38
N11823 61.59
N12152 4.64
N3475 78.06
N7554 30.01
N11732 60.73
N11454 81.53
N11458 83.79
N6580 80.46
N11659 56.43
N7650 49.65
N3934 54.67
Q1812 27.55
Q2300 35.52
N7493 38.42
Q2443 29.19
N11577 29.80
N11168 35.08
N11396 56.53
Q3589 7.81
Q2422 8.21
Q2955 15.07
Q3109 4.68
Q3112 9.13
Q1187 11.16
N9 19.89
N11166 20.69
Q3110 6.47
N3867 6.05
N11579 15.00
N180 15.51
N3861 -1.05
N2790 4.93
K3407 1.33
K3414 5.56
N6510 6.14
N3862 4.41
N6702 -2.15
N11109 0.44
N6850 6.12
N8214 28.94
S79408 7.22
S21311 10.33
S15514 39.18
S15622 43.30
S 4460 39.02
S81831 23.57
S57980 42.01
S33500 47.34
S52490 54.68
S53360 52.63
S70488 61.49
S76673 65.80
S75454 70.76
S95965 78.70
S74284 75.10
S38491 42.17
S53498 48.60
S22577 45.48
S33380 54.60
S24773 50.03
S43641 45.88
S47453 48.09
S67197 37.31
S76016 46.21
S66138 48.29
S51298 39.18
S50546 29.53
S37681 30.89
S66145 29.14
S42762 20.38
S63618 21.00
S66156 14.25
S67074 41.25
S60812 27.75
S71785 39.02
S84806 27.10
S69364 21.28
S46713 15.30
S52163 17.23
S6455 42.35
S89534 28.00
S94489 19.20
S30230 14.97
S71576 12.48
S33073 15.28
S82939 4.85
S77436 11.25
S73998 7.25
S105710 11.92
S105711 13.89
S59992 7.24
S59793 13.33
S60123 9.77
0
10
20
30
40
50
60
70
80
?
10 0 10 MILES
10 0 10 KILOMETERS
SCALE=1:125,000
EXPLANATION
Inferred extent of the Magothy aquifer
Inferred extent of the Jameco aquifer
Line of equal potentiometric-surface altitude—Shows altitude at which the water level would have stood in tightly cased wells, April-May 2010. Solid where approximately known; dashed where inferred. Contour interval 10 feet. Datum is NGVD 29
Monitoring well—Red circle indicates the observation well is screened in the Magothy aquifer; Red circle with thick border indicates the supply well screened in the Magothy aquifer; Orange circle indicates the observation well is screened in the Jameco aquifer. Upper number is well number assigned by the New York State Department of Environmental Conservation; lower number is potentiometric-surface altitude, in feet above or below NGVD 29
S 58922 2.55
Land surface topography—Shows land surface altitude in feet above NAVD 88
388 feet
0 feet

Magothy and Jameco Aquifers

The Magothy aquifer of upper Cretaceous age is the most extensive unit in Long Island's groundwater system. This aquifer underlies most of Long Island and the offshore waters, except in parts of western and northern Kings and Queens Counties, northern Nassau County, and northwestern and northeastern Suffolk County, where it has been removed by erosion and glacial scour. The altitude of its upper surface ranges from more than 200 feet (ft) above NGVD 29 in parts of north-central Nassau County and west-central Suffolk County to more than 600 ft below NGVD 29 in north-central Suffolk County (Smolensky and others, 1989). Aquifer thickness ranges from zero in northern and western Kings and Queens Counties, northern Nassau County, and parts of northern Suffolk County to more than 1,000 ft in south-central Suffolk County (Soren and Simmons, 1987). The Magothy aquifer has become the principal source of water supply in Nassau and Suffolk Counties during the past 50 years (1963–2013) as a result of contamination in the upper glacial aquifer.

This map depicts water levels during April–May 2010 in wells screened in the Magothy aquifer and the hydraulically connected Jameco aquifer (in parts of western Long Island). Most water-level measurements used to prepare this map were made in wells screened near the middle of the aquifer and were supplemented by some measurements from the basal zone. Only a few measurements made in the upper part were used. Because vertical hydraulic gradients in the Magothy aquifer can be large, measured potentiometric heads at a given location can vary depending on the depth of the well screen.

The general configuration of the potentiometric surface in the Magothy aquifer is similar to that of the water table, rising gradually from the western part of Long Island to form an east-west-trending mound in Nassau and western Suffolk Counties. The surface of the mound then gradually declines toward the eastern end of Long Island. In areas where deep channels have been eroded into the Magothy aquifer and filled with glacial deposits, the potentiometric-surface contours were drawn from water levels measured in wells screened in these upper glacial aquifer deposits, which are laterally contiguous and hydraulically connected to the Magothy aquifer. The inferred northern limit of the Magothy aquifer, the inferred extent of the Jameco aquifer, and the aquifer in which each well is screened are indicated on this map. Public-supply pumping has lowered the potentiometric surface below NGVD 29 in southern Nassau County (Lusczynski and Swarzenski, 1966).

The altitude of the potentiometric surface in the Magothy aquifer on Long Island during April–May 2010 ranged from about 2 feet (ft) below NGVD 29 in extreme southwestern Nassau County to more than 83 ft above NGVD 29 in northeastern Nassau County. In Kings County, 2 measurements ranged from 1.33 to 5.56 ft; in Queens County, 9 measurements ranged from 4.68 to 35.52 ft; in Nassau County, 30 measurements ranged from -2.15 to 83.79 ft; and in Suffolk County, 53 measurements ranged from 4.85 to 78.70 ft above NGVD 29.

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

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2013

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