Hydrogeologic Data from an Investigation of Water Resources near Greenport, Suffolk County, New York

By Elizabeth R. McNew-Cartwright

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CONVERSION FACTORS, ABBREVIATIONS, AND VERTICAL DATUM

Multiply	By	To Obtain
	Length	
inch (in.)	2.54	centimeter
foot (ft)	0.3048	meter
	Area	
square mile (mi^2)	2.59	square kilometer
	Temperature	
degree Fahrenheit (°F)	5/9 x (°F-32)	degree Celsius

Specific conductance

Microsiemens per centimeter at 25 degrees Celsius (µS/cm)

Sea level: In this report, "sea level" refers to the National Geodetic Vertical Datum of 1929 (NGVD of 1929)--a geodetic datum derived from a general adjustment of the first-order level nets of the United States and Canada, formerly called Sea Level Datum of 1929.

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Abstract

A ground-water-resources investigation to define ground-water levels and delineate the saltwater-freshwater interface was conducted in a 6-square-mile area near Greenport, on the North Fork of Suffolk County, Long Island, N.Y. Data on ground-water levels, rainfall amounts, ground-water pumpage, and chloride concentrations at 41 wells in 1989-90, and some from before 1989, are presented. Downhole geophysical logs from gamma and electromagnetic induction methods of 16 wells are included.

INTRODUCTION

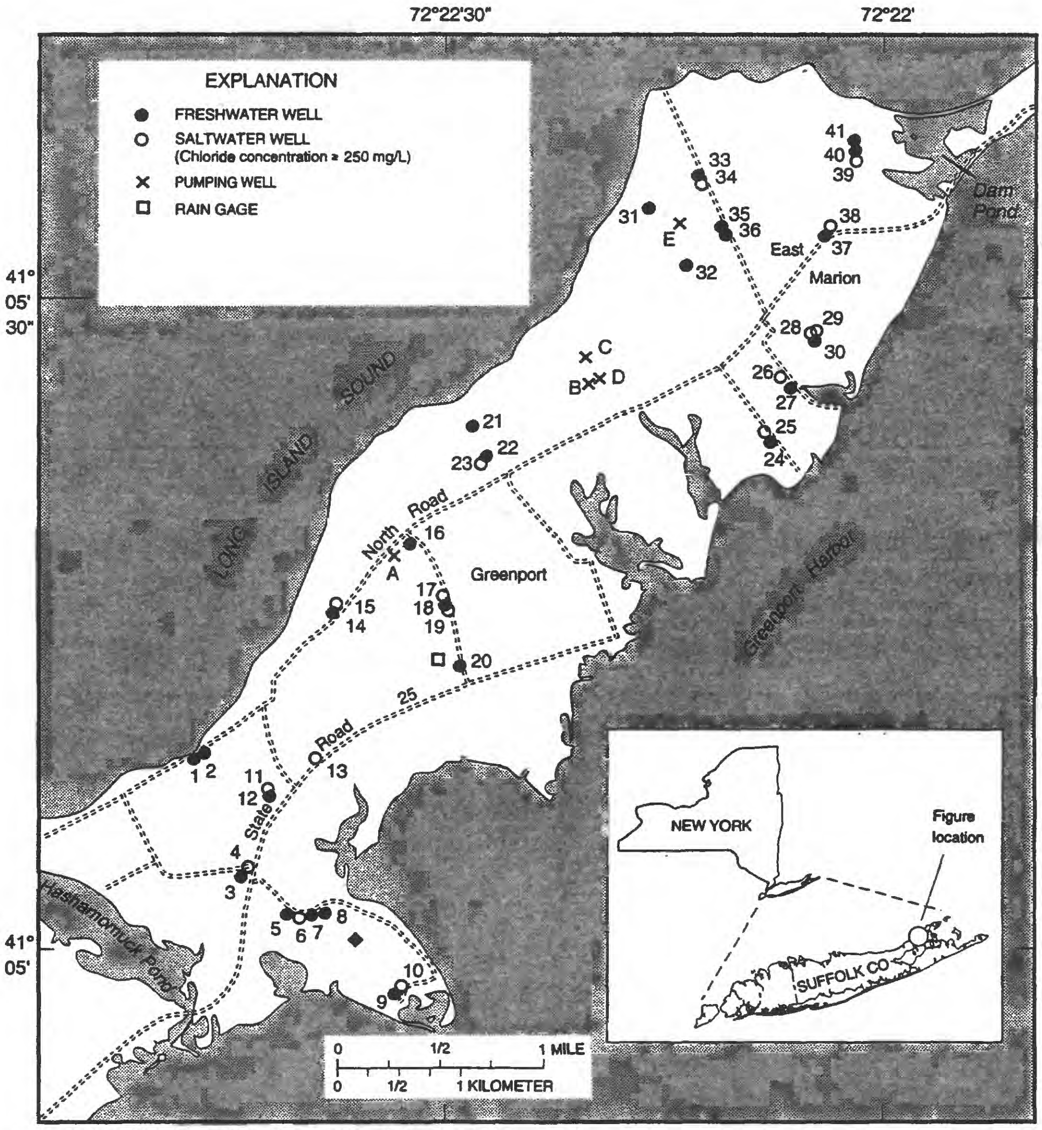
Ground water is the sole source of drinking water on the North Fork of Long Island, N.Y. (fig. 1). The North Fork is a largely agricultural and vacation area and, because it is susceptible to saltwater intrusionfrom overpumping, the freshwater supply is limited (Soren and Stelz, 1984, and Prince, 1986). In 1989, the U.S. Geological Survey (USGS), began a study in cooperation with the Suffolk County Water Authority (SCWA) and the Suffolk County Department of Health Services (SCDHS) to investigate the water resources of the North Fork. As part of that study, a 6-mi^2 area near Greenport (fig. 1) was chosen for detailed investigation to document the ground-water quantity and quality.

Purpose and Scope

Data collected in the study area during 1989-90 and data recorded earlier but not published elsewhere are presented in this report. The data include water levels from 41 observation wells completed in the upper glacial aquifer, chloride analyses of water from selected wells, rainfall amounts, pumpage records, and downhole geophysical logs from 16 wells.

Study Area

The North Fork of Long Island forms the northeastern tip of Suffolk County. The 6-mi^2 study area (fig. 1) extends from Hashahomuck Pond to Dam Pond on the North Fork and includes the Villages of Greenport and East Marion. The area is bounded on the north by Long Island Sound and on the south by Greenport Harbor, which connects Peconic Bay and Gardiners Bay. Both Hashahomuck and Dam Ponds are open to Greenport Harbor and thus contain saltwater. The study area contains a few ponds (mostly seasonal) but no significant streams. The permanent population of Greenport Village and the hamlet of East Marion combined is estimated to be about 4,000 (LILCO, 1991); the summer population is at least twice that number.



Base from New York State Department of Transportation,
Southold, Greenport, and Orient quadrangles, 1981, 1:24,000

Well	Well number	Well	Well number	Well	Well number	Well	Well number
1	S95422	13	S95442	25	S95433	37	S95428
2	S95421	14	S95448	26	S95441	38	S95429
3	S95439	15	S95449	27	S53330	39	S95443
4	S95440	16	S16783	28	S95425	40	S95444
5	S95420	17	S95434	29	S95426	41	S95445
6	S95419	18	S95435	30	S95427	A	S1678*
7	S95450	19	S95436	31	S85598	B	S3697
8	S95728	20	S53539	32	S85599	C	S3698
9	S95437	21	S53323	33	S95424	D	S15795
10	S95438	22	S95446	34	S95727	E	S71873
11	S95430	23	S95447	35	S95423		
12	S95431	24	S95432	36	S53331		

*this well replaced the original well S178

Figure 1. Major geographic features and well locations in the study area, North Fork of Long Island, New York.

The 1989-90 investigation focused on the upper glacial aquifer; all 41 wells sampled for chemical water quality are screened in this aquifer. Ground water is the source of all irrigation water and municipal water supply in the area. The demand for water is much larger in the summer (vacation season) than at other times, but because rainfall in the summers of 1989 and 1990 was adequate for crops, no pumping for irrigation was needed. In years when ground water is pumped for agricultural purposes, some of the water applied to the fields is not taken up by crops and returns to the upper glacial aquifer as recharge.

Methods of Investigation

Five observation wells with records of water levels and water-quality analyses prior to this study (S16783, S53331, S53330, S53323, S53539) were available. Two other wells (S85598 and S85599) were available for water-level measurements and water-quality sampling, but no previous measurements from these wells were available. This study included installation of 34 new wells at 16 sites; most sites were clusters of wells screened at different depths. Well locations shown in figure 1 indicate wells that are screened in zones of saline water. New wells were installed with 2-in polyvinyl-chloride (PVC) pipe casing and screens. The deepest wells at sites were logged by downhole geophysical techniques in 1989 and 1990. Water levels were periodically measured at all wells and samples were collected and analyzed for chloride concentration and specific conductance during 1989 and 1990; some wells also were sampled and analyzed for dissolved solids. Well construction information is given in table 1.

GEOHYDROLOGIC SETTING

All freshwater for drinking-water supply in the study area is pumped from the upper glacial aquifer, which contains both fresh and saline ground water. Deeper aquifers in this part of Long Island mostly contain saline water and are not used for water supply.

Geology

The unconsolidated deposits on the North Fork are a sequence of geologic units that overlie crystalline bedrock of Precambrian age and range in age from late Cretaceous to Pleistocene. Bedrock lies about 670 ft (200 m) below land surface (Veatch and others, 1906, p. 333) and is overlain by a mix of unconsolidated clay, silt, and sand deposits of Cretaceous age (Crandell, 1963, p. 12). These are, in turn, overlain by Pleistocene glacial deposits of clay, silt, sand, and gravel and known as the upper glacial aquifer, the unit of concern in this study. Further details on the geology of the North Fork are given in Crandell (1963).

Drilling records indicate that most of the study area is underlain by sandy sediments, although the western part contains thin, discontinuous clay and silt lenses at or close to land surface. For example, western wells S95419, S95439, and S95448 penetrated a clayey zone near land surface that corresponds to the largest peaks on the gamma logs for these wells (figs. 6A, 6J and 6P, respectively, at end of report); and eastern wells S95428, S95443, and S95432 penetrated a silty layer near sea level that corresponds to the largest peaks in the gamma logs for these wells (figs. 6F, 6M, and 6H, respectively, at end of report).

Hydrology

Precipitation that falls on land surface either returns to the atmosphere through evapotranspiration, runs off as overland flow into streams and the ocean, or infiltrates into the soil and enters the ground-water

Table 1. Diameter, depth, and screened interval of observation wells in the study area near Greenport, on the North Fork of Long Island, N.Y.

[Locations shown in fig. 1]

Well number	Well name (by location)	Altitude of land surface (feet above sea level)	Well diameter (inches)	Depth (feet below land surface)	Screen length (feet)	Top of screen (feet above or below sea level)
S16783	Moore's Lane at County Road 48	16.0	2	28.0	4	-4.13
S53323	Sound Drive	30.0	4	52.3	10	-10.1
S53330	Gillette fire well	15.0	4	50.5	10	-12.5
S53331	Rocky Point Road south group	47.0	4	69.5	10	-9.73
S53539	Moore's Lane south	12.2	4	36.5	10	2.73
S85598	The Long Way north	41.8	2	79.0	2.5	-35.5
S85599	The Long & Cross Way south	39.2	2	81.0	2.5	-39.5
S95419	Kerwin Blvd. middle well	6.5	2	50.0	2	-41.7
S95420	Kerwin Blvd. west well	6.6	2	24.0	2	-13.6
S95421	Soundview Inn east well	10.8	2	55.0	5	-29.3
S95422	Soundview Inn west well	10.1	2	35.0	2	-20.1
S95423	Rocky Point Road south group	47.9	2	118	5	-55.3
S95424	Rocky Point Road north group	47.9	2	80.0	2	-20.2
S95425	Old Orchard Lane middle well	23.6	2	142	2	-115
S95426	Old Orchard Lane south well	23.6	2	110	2	-74.6
S95427	Old Orchard Lane north well	23.8	2	36.0	2	-10.4
S95428	East Marion schoolyard north	21.0	2	122	4	-96.2
S95429	East Marion schoolyard south	21.0	2	80.0	2	-47.4
S95430	LILCO Site north well	8.0	2	55.0	2	-43.2
S95431	LILCO Site south well	9.3	2	17.0	4	-7.81
S95432	Shipyard Lane south well	21.9	2	145	2	-121
S95433	Shipyard Lane north well	21.9	2	50	2	-24.2
S95434	Moore's Lane west well	19.0	2	60	4	-35.1
S95435	Moore's Lane middle well	18.9	2	147.5	2	-125
S95436	Moore's Lane east well	18.9	2	50	2	-27.3
S95437	Islandview Lane south sell	7.1	2	42.8	2	-31.9
S95438	Islandview Lane north well	7.1	2	22.4	2	-11.5
S95439	Albertson Lane northwest well	5.0	2	60	2	-51.8
S95440	Albertson Lane southeast well	4.7	2	15.5	2	6.92
S95441	Gillette Lane north (deep well)	24.1	2	145	2	-117
S95442	Old Main Road	11.3	2	60	2	-44.9
S95443	Fire lane 2 south well	23.1	2	125	2	-98.2
S95444	Fire lane 2 middle well	23.1	2	90	2	-63.0
S95445	Fire lane 2 north well	23.1	2	60	2	-33.2
S95446	Sutton Lane south well	20.2	2	145	2	-121
S95447	Sutton Lane north well	21.6	2	50	2	-24.6
S95448	Clark's Beach south well	27.9	2	145	2	-113
S95449	Clark's Beach north well	27.8	2	28	2	3.61
S95450	Kerwin Blvd. east well	6.5	4	31	25	-10.3
S95727	Rocky Point Road north (deep)	50.0	4	275	2	-86.3
S95728	Bayshore Drive	7.2	4	24	2	-13.0

system. Ground water that is not pumped for water supply moves downward and laterally and eventually discharges into the surrounding oceans and bays.

Fresh ground water on the North Fork consists of precipitation that infiltrates into the soil to recharge the upper glacial (water-table) aquifer. The amount of water that recharges the water table fluctuates from year to year and is determined by the type, intensity, and frequency of rainfall; by the composition, extent, and moisture content of the soils; by the type and amount of vegetation at land surface; and by the air temperature. Previous studies on Long Island have indicated that 50 percent of rainfall infiltrates to become ground-water recharge (Peterson, 1987; Miller and Frederick, 1969). Studies by the Cornell University Experiment Station (located west of the study area) have refined this estimate and indicate that 75 to 90 percent of the rainfall between October 15 and May 15 becomes recharge (Steenhuis and others, 1985) and rainfall at other times of the year evaporates or is taken up by plants and does not generally reach the water table.

Water in the upper glacial aquifer generally is under unconfined (water-table) conditions, and, on the North Fork, this aquifer contains both fresh and salty water. The freshwater zone or lens is underlain by salty water, and the boundary between freshwater and salty water is known as the saltwater interface. Freshwater is less dense than saline water and therefore "floats" as a lens-shaped body above the saline ground water. The depth to saltwater varies locally, but drilling records indicate a maximum of about 140 ft (or about -65 ft altitude) at well S95727; the minimum depth to saltwater is near zero (at land surface) along the shore. Because the upper glacial aquifer within this study area has a fairly uniform composition (mostly sand and gravel) and assuming static (no flow) conditions, the depth to saline ground water could be estimated by the Ghyben-Herzberg principle, which states that the fresh ground water extends 40 ft below sea level for each foot of water-table altitude above sea level. This defines the general shape of the freshwater body as an asymmetrical lens with 40 times more fresh ground water below sea level than above at any given point. The shape can, however, be altered by ground-water flow, the transient nature of recharge to the aquifer from rainfall, conditions near pumping wells, and return flow of water used by the area's residents (from irrigation of agriculture, lawns, and gardens and from use of cesspools).

All recharge to the aquifer is from rainfall. The Village of Greenport has sufficient pavement and storm sewers, and closely spaced buildings to reduce the amount of rainfall that becomes recharge. It also has a wastewater-collection system and a treatment plant that discharges to Long Island Sound; thus, much of the water use in this area is consumptive. Outside of the Village of Greenport, where buildings and paved surfaces are more widely spaced and septic tanks and cesspools return wastewater to the ground, more of the water use is nonconsumptive. The Village of East Marion is not heavily developed and has no public-supply wells; residents obtain water from private wells and use septic systems.

DATA

Data collected during the 1989-90 investigation include water levels, rainfall records, pumpage, results of chloride analyses, and downhole geophysical logs. Results of the application of surface geophysical techniques for delineating the saltwater interface in the study area are presented in McNew-Cartwright and Arav (1995).

Water-Table Altitude

Ground water in the upper glacial aquifer flows from areas of high hydraulic head (near the central part of the study area) to areas of lower hydraulic head (near the shore). Most of the fresh ground water discharges along the edge of the freshwater lens into the surrounding surface saltwater bodies; the rest is discharged to pumping wells. A small amount of freshwater probably seeps out of the cliffs along the northern shore of the study area, but the volume is negligible in relation to the total water budget.

Water levels were recorded at least once in 1989 and several times in 1990 in new and older wells and at variable intervals in the older wells before 1989 (in table 4, at end of report). The water-table altitude in the study area on October 4, 1989, is presented in figure 2; monthly water levels at a shallow freshwater well (S16783, fig. 1) during 1988-90 are plotted in figure 3A, and water levels during 1952-91 are plotted in figure 3B. This well is midway between Long Island Sound and Greenport Harbor, and water levels at this well do not show a measurable response to the tidal cycle. Near this well is a pumping center that has been used to withdraw small amounts of ground water, mostly for emergency purposes, but the fluctuations in this observation well probably are representative of those throughout the study area.

Precipitation in the study area infiltrates readily because the soils are mostly sandy and thus highly permeable. For example, the highest water level (5.01 ft) in well S16783 (fig. 3B) was on February 1, 1979, when rainfall the previous month was 13.35 in., which is unusually high, and a large storm 7 days before the water-level measurement produced 3.06 in. of rain. The January rainfall was 27 percent of the total rainfall for 1979 (50.22 in.).

Water levels during 1988-91 at well S16783 (fig. 3A) show a typical seasonal pattern. Water levels at this well decrease in the summer and usually are lowest near the end of the growing season, in late summer or fall. The aquifer generally begins to receive recharge from precipitation after the growing season and continues through winter, into early spring; from mid-May through early fall, evapotranspiration and runoff prevent precipitation from infiltrating into the aquifer (Steenhuis and others, 1989). A heavy rainfall during the months of recharge is likely to produce high water levels in wells, as in February 1979 (fig. 3B).

Rainfall

Daily rainfall data have been collected at the rainfall gage in Greenport (fig. 1) since 1959. The percentage of rainfall that becomes recharge depends on several variables: the season (air temperature and growing/non-growing); the type and density of vegetation, soil, slope and texture at the land surface; and the rainfall intensity. Monthly rainfall for 1988-90 is plotted in figure 4A; annual rainfall for 1979-91 is plotted in figure 4B. Rainfall data during the recharge period from October 15 through the next May 15 (Steenhuis and others, 1985) for 1959-91 are listed in table 2 along with rainfall by calendar year and water year.

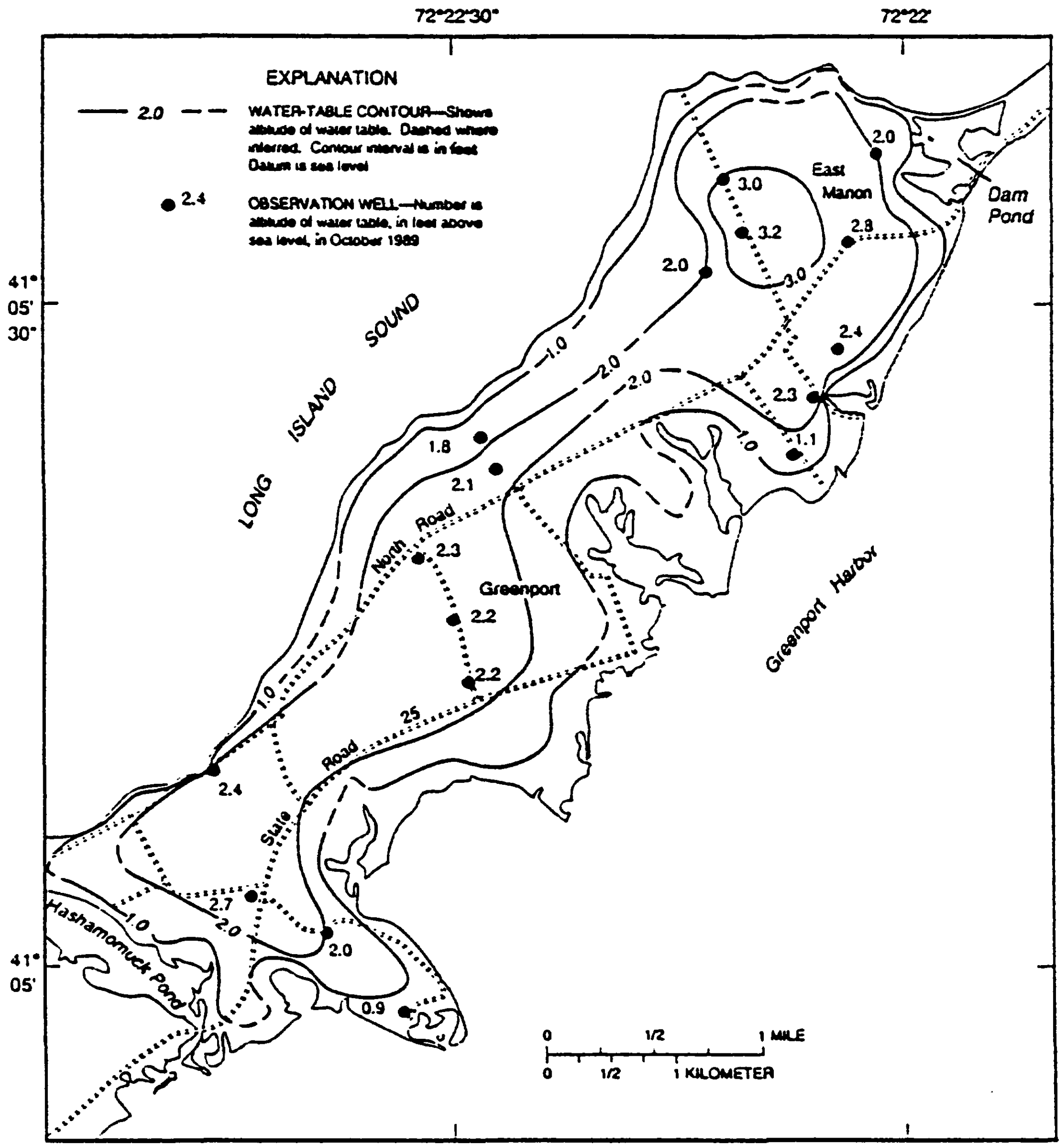
Pumpage

Ground water in the study area is pumped by the Village of Greenport and distributed to residents within the water-franchise area (which is larger than this study area); it is also pumped from domestic wells in the Village of East Marion. Locations of Greenport's public-supply wells are shown in figure1; pumpage data for these wells are plotted in figure 5, and the amounts pumped are listed in table 3. Other wells that supply water to the Greenport water-franchise area are outside this study area and therefore are not documented herein.

Water Quality

Water samples were collected during 1989-90 from the study area wells for water-quality analysis. Analyses included (1) dissolved chloride concentration, (2) specific conductance, and in some samples, (3) the dissolved-solids concentration. The water-quality data collected during this study and those that were available from five older wells are given in table 5 (at end of report).

Chloride concentration in samples from each well was measured by the USGS and SCDHS in one of three ways: (1) the USGS used an ion-selective electrode in the field; (2) the SCDHS laboratory used a mixed color reagent test; or (3) the USGS National Water-Quality Laboratory used an ion-exchange chromatographic technique. All three techniques required dilution of the sample for concentrations higher



Base from New York State Department of Transportation, Southold, Greenport, and Orient quadrangles, 1981, 1:24,000

Figure 2. Water-table configuration in October 1989, near Greenport, N.Y.

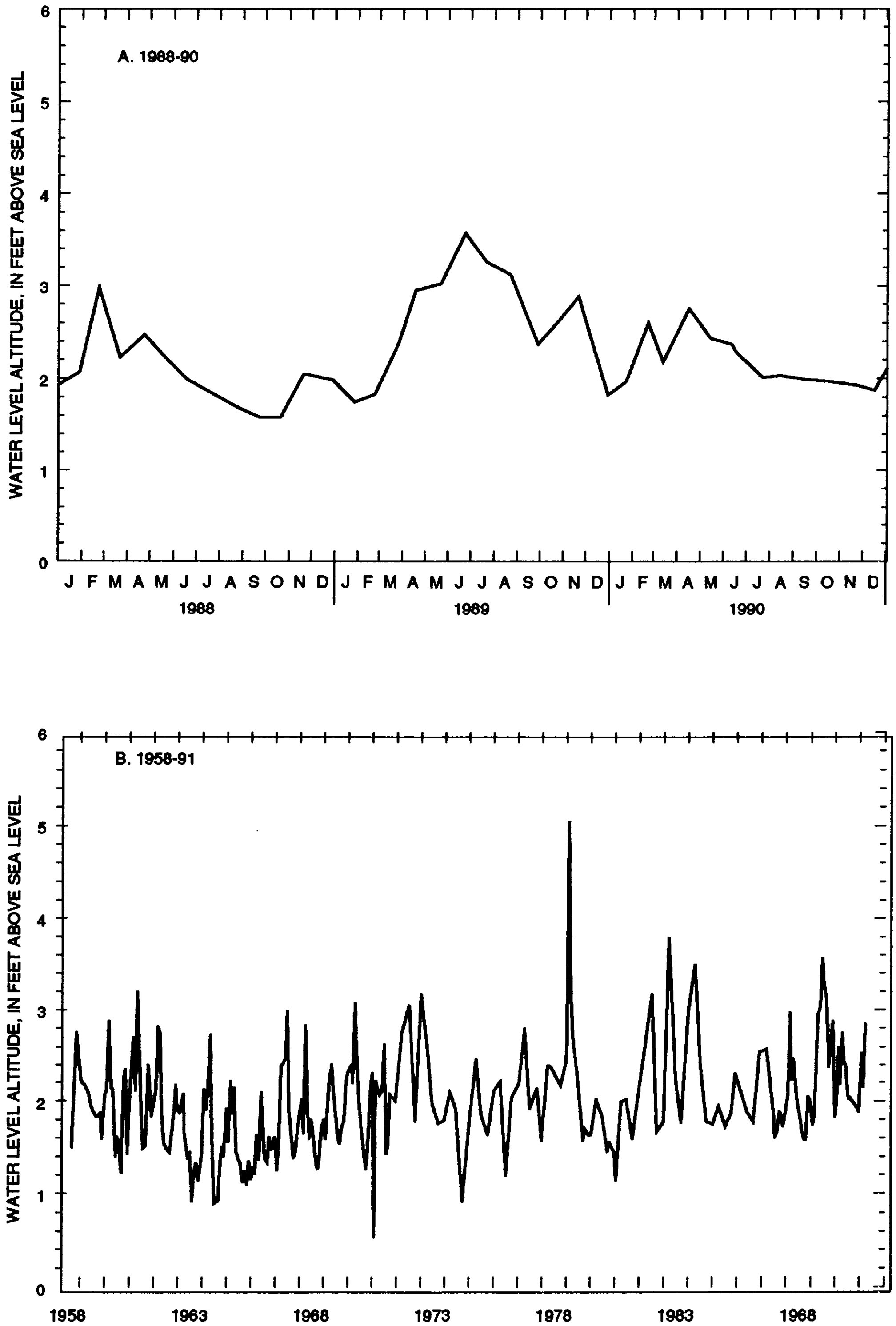
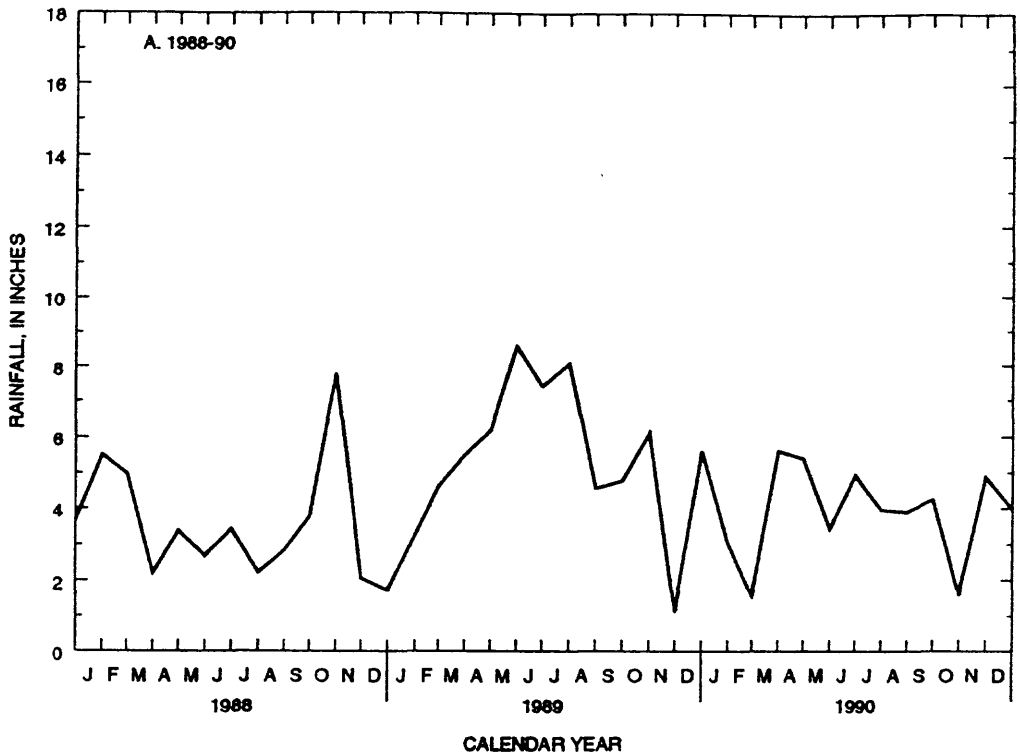


Figure 3. Water levels at S16783 (location is shown in fig. 1). A. 1988-90, measured monthly. B. 1958-91, measured monthly or quarterly.



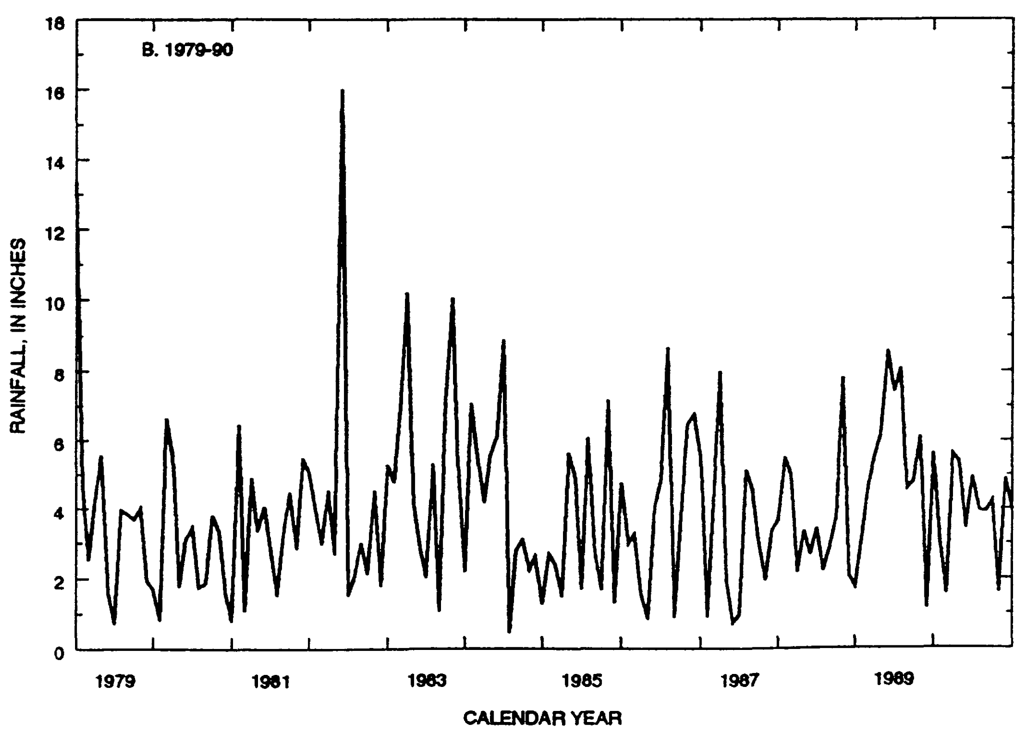


Figure 4. Rainfall in Greenport, N.Y. A. Monthly values, 1988-90. B. Monthly values showing seasonal trends, 1979-90.

Table 2. Rainfall in Greenport, N.Y., 1959-91

[All values are calculated from daily values at one rain gage. All values are in inches]

Year	Calendar year	Recharge period (Oct. 15-May 15)	Water year (Oct. 1-Sept. 30)
1959	45.35*	26.68	43.29
1960	43.29*	25.88	46.69*
1961	42.74	26.74	43.06
1962	42.04	21.46	38.53
1963	35.35	20.69	38.39
1964	29.91**	26.95	33.73**
1965	14.79**	6.424**	15.30**
1966	36.63	16.25	31.64
1967	38.85**	23.21	43.06
1968	32.78**	13.08**	23.79**
1969	27.57*	25.03*	37.85*
1970	**	**	**
1971	**	**	**
1972	47.58**	11.88**	29.02**
1973	51.70	34.41	58.10
1974	36.71	27.62	39.23
1975	49.6	29.60	47.54
1976	46.06	26.61	48.19
1977	42.26**	22.55	43.78
1978	53.21*	21.84**	49.12**
1979	50.22	37.49	52.71
1980	35.32	21.84	36.23
1981	41.00	21.26	36.98
1982	50.08	27.85	54.42
1983	64.93	35.43	50.96
1984	50.63	38.99	65.10
1985	39.31	18.07	36.63
1986	48.57	21.94	42.28
1987	40.16	33.62	48.68
1988	44.43	23.02	39.18
1989	61.88	30.58	63.49
1990	48.16	28.85	49.43
1991	45.95	26.61	44.17

* Missing no more than 8 values.
** Missing more than 8 values.

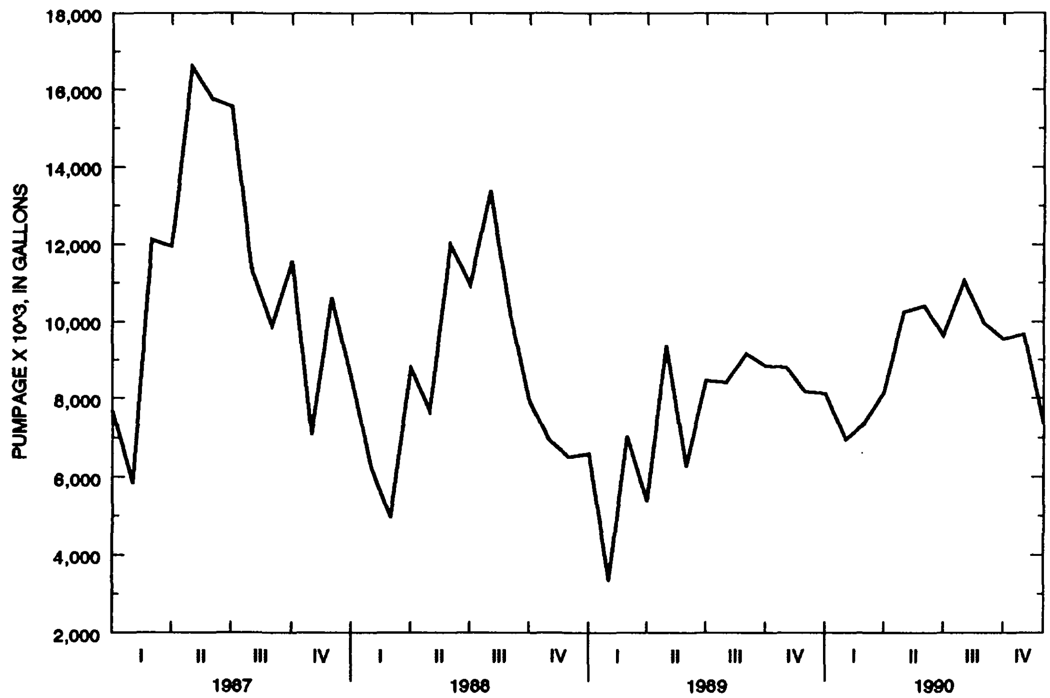


Figure 5. Seasonal water-supply pumpage in the Village of Greenport, N.Y., 1987-90. Values are plotted as mon'hly totals from daily values provided by the Village of Greenport (data are given in table 3).

than 500 mg/L. Field measurements that required dilutions have the greatest uncertainty in the measured value. The SCDHS laboratory did not always provide all of the dilutions necessary, but noted the value at which they discontinued the dilutions. In tests of the USGS laboratory method, the relative standard deviation ranged from 1.0 to 8.8 percent at chloride concentrations of 119 and 2.72 mg/L, respectively (Fishman and Friedman, 1989, p. 523). Chloride concentration is reported to two significant figures.

All samples also were measured in the field for specific conductance, which can be correlated with dissolved-solids and chloride concentrations. Dissolved-solids concentration, an index commonly used to indicate the presence of saltwater, was determined from the weight of the solid residue after evaporation of the sample at 180°C, and is reported to three significant figures (Fishman and Friedman, 1989, p. 437).

Downhole Geophysical Logs

Thirty-four wells were drilled in the summer of 1989, and downhole geophysical logs were collected at 16 of these wells during 1989-90 (the deepest well at a site with several wells was chosen for logging). Wells were logged with an electromagnetic (EM) induction probe (McNeill, 1986) and a natural gamma probe; one deep well (S95727, fig. 1) was also logged with a long- and short-normal resistivity probe. Most of the wells (S95419-S95450, and S95728) were drilled with an auger drill rig, and lithologic samples from most wells were described in a lithologic log. Lithologic, EM-induction, and natural-gamma logs from each site are presented in figures 6A-Q; these wells were logged through their PVC casings. A deep well-resistivity log for well S95727 is included in figure 6Q; this well was logged while the well was held open by drilling fluid. Also included in figure 6 are chloride concentrations in samples from the screen

Table 3. Public-supply pumpage within Village of Greenport, N.Y., 1987-90

[Values are in thousands of gallons. Locations are shown in fig. 1]

Date	Well number S1678	S3697	S3698	S15795	S71873	Total
1-87	126	483	0	3,362	3,720	7,691
2-87	0	1,464	0	1,889	2,492	5,845
3-87	261	3,654	0	3,423	4,765	12,103
4-87	99	660	4,484	3,339	3,361	11,943
5-87	1,635	1,162	3,922	2,886	6,990	16,595
6-87	2,753	2,329	926	4,898	4,838	15,744
7-87	4,232	1,356	4,962	2,579	2,431	15,560
8-87	498	1,820	6,667	1,846	471	11,302
9-87	0	260	6,207	2,266	1,151	9,884
10-87	785	2,101	4,577	2,131	1,960	11,554
11-87	256	748	5,568	0	515	7,087
12-87	191	1,200	6,635	1,911	658	10,595
1-88	67	2,940	3,426	2,094	0	8,527
2-88	83	2,738	3,025	382	0	6,228
3-88	90	2,356	1,469	217	825	4,957
4-88	86	1,931	4,236	1,077	1,450	8,780
5-88	183	306	2,177	34	4,980	7,680
6-88	664	1,706	3,354	355	5,894	11,973
7-88	1,833	2839	4662	1,056	530	10,920
8-88	2,344	2,333	2,291	2,754	3,648	13,370
9-88	737	1,763	4,871	836	2,021	10,228
10-88	275	1,367	4,512	1,253	528	7,935
11-88	0	2,396	3,773	600	175	6,944
12-88	34	3,025	3,324	60	67	6,510
1-89	0	2,302	2,592	1,661	36	6,591
2-89	0	1,483	0	0	1873	3,356
3-89	46	1,072	3,253	1,521	1,146	7,038
4-89	0	3,376	0	1,899	105	5,380
5-89	505	115	3511	0	5,233	9,364
6-89	87	0	2,653	202	3319	6,261
7-89	0	909	2,639	0	4,914	8,462
8-89	169	2,448	1,849	574	3,369	8,409
9-89	0	2,563	1,310	798	4,485	9,156
10-89	151	443	2,861	927	4,461	8,843
11-89	0	597	5,613	393	2,203	8,806
12-89	107	1,124	1,127	1,307	4,509	8,174
1-90	166	1,526	3,136	223	3,067	8,118
2-90	0	0	5,226	1,732	0	6,958
3-90	0	0	3,146	2,574	1,630	7,350
4-90	137	0	5,564	2,280	151	8,132
5-90	0	0	3,847	623	5,760	10,230
6-90	151	0	5,171	887	4,181	10,390
7-90	624	457	2,165	413	5,972	9,631
8-90	643	180	1,073	1,853	7,295	11,044
9-90	145	0	0	2,015	7,785	9,945
10-90	118	0	0	1,997	7,439	9,554
11-90	0	0	0	3,734	5,924	9,658
12-90	104	0	0	3,571	3,691	7366
Mean	425	1,282	2,954	1,509	2,959	9,129
Standard deviation	822	1,085	2,008	1,204	2,346	2,726

zone of the well logged and from nearby wells; the concentrations given in figure 6 represent several dates during the study (1989-91). Most wells were logged only once in the summer of 1990, but wells S95435, S95727, and S95443 were logged twice (about 9 months apart); their EM-induction logs plotted as practically identical.

EM-induction logs measure electrical conductivity near the well but are not affected by the conductivity of the fluid in the well. Changes in the salinity of ground water produce changes in ground-conductivity values that can be detected by the EM-induction probe (McNeill, 1986).

A natural gamma logger records the amount of natural gamma radiation that is emitted by the material surrounding the well casing (Keys and MacCary, 1971, p. 64). This is useful in identifying lithology because the natural gamma activity of clay-bearing sediments is much higher than that of quartz sands. The unconsolidated deposits within this study area are sand and gravel, and clay-bearing zones are evident in natural gamma logs.

Normal-resistivity probes measure the electrical resistivity of a known or assumed volume of soil to which an electric current is directly applied (Keys and MacCary, 1971, p. 37). Normal-resistivity logging requires a well drilled with drilling mud but without a casing. This type of logging was done on one well (S95727); the results indicate a large change in resistivity where saline ground water occurs (fig. 6P).

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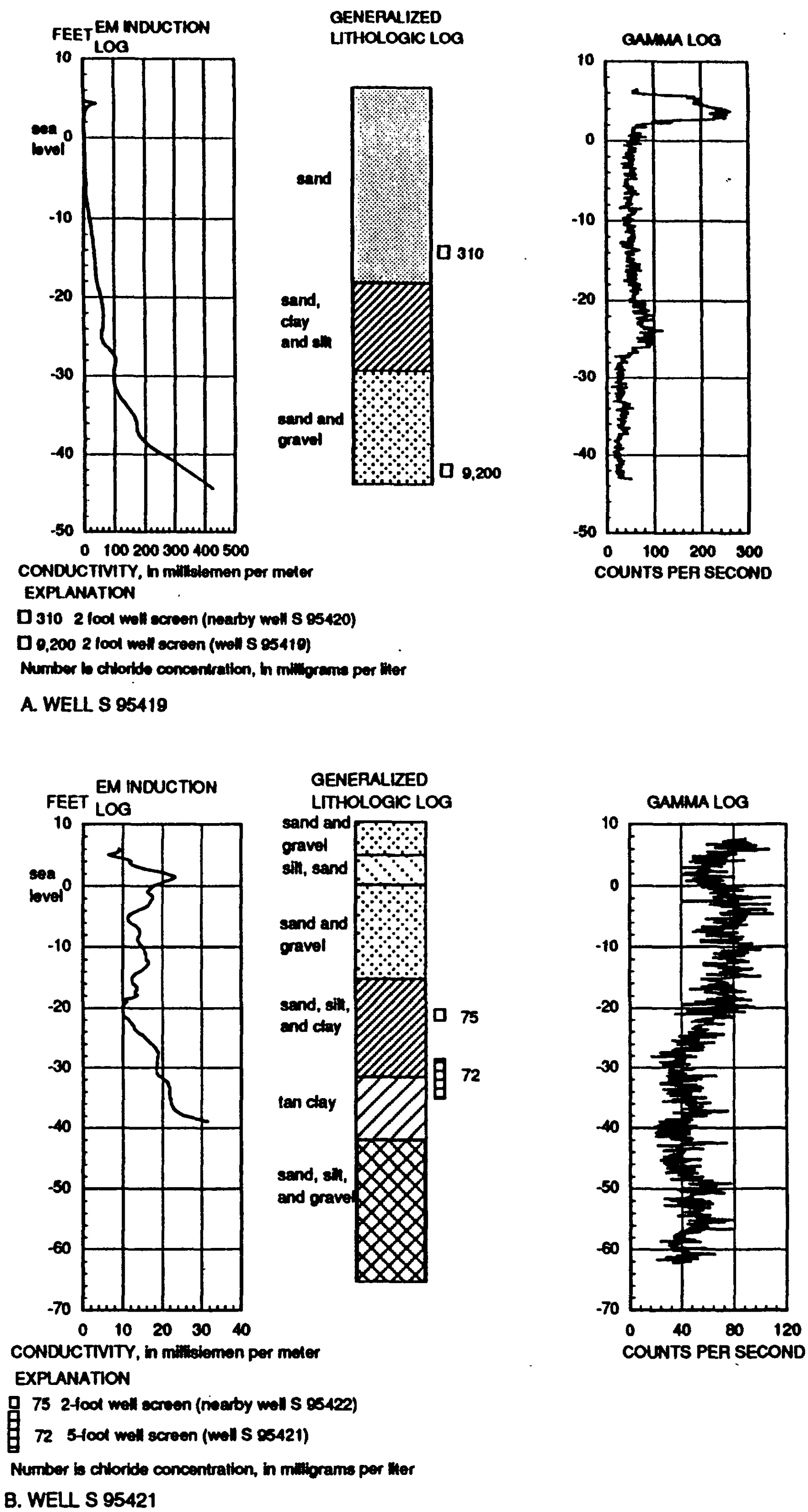


Figure 6. Electromagnetic (EM) log, generalized lithologic log, and gamma log from wells: A. Well S95419. B. Well S95421. (Well locations are shown in fig. 1.)

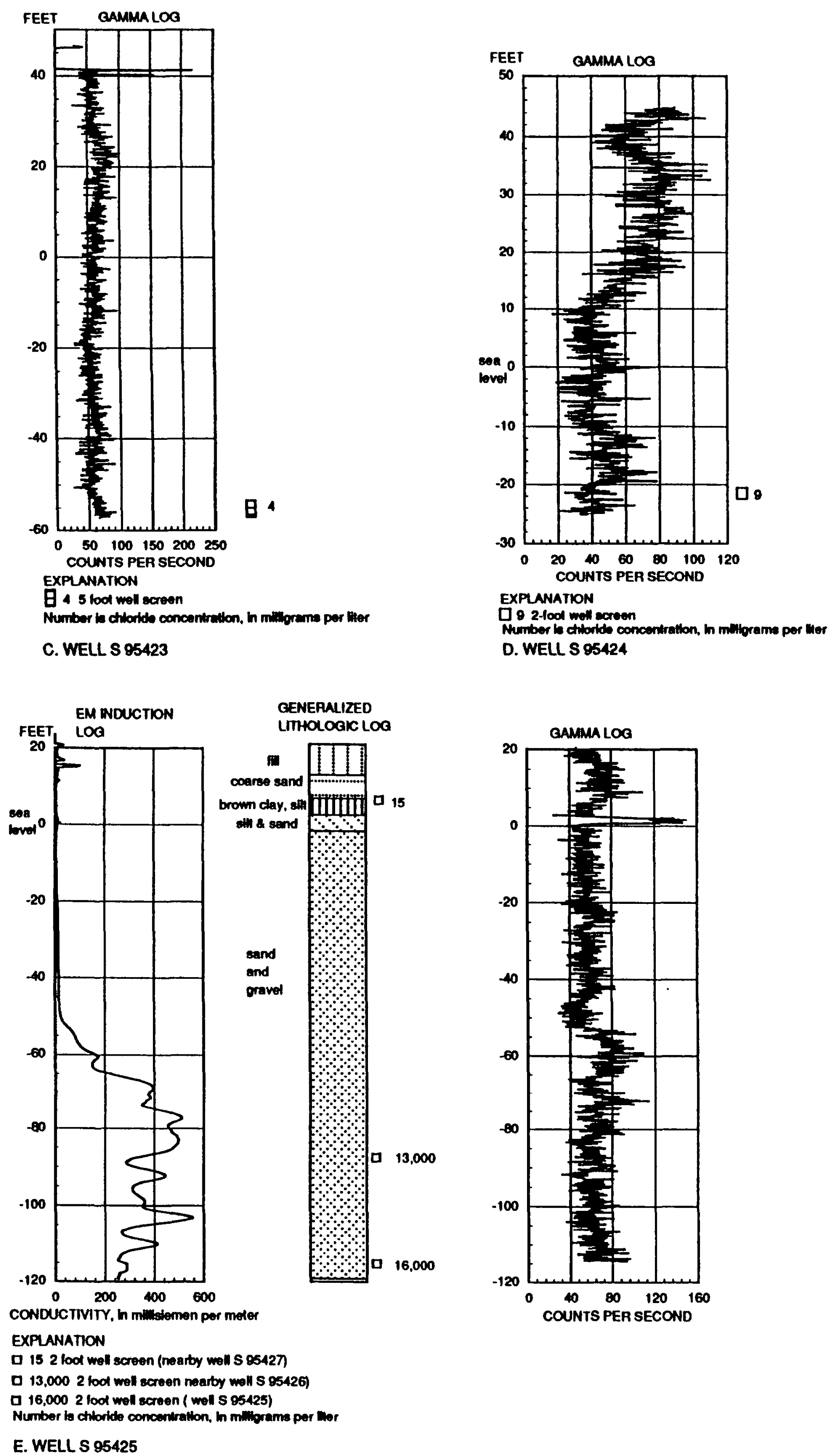
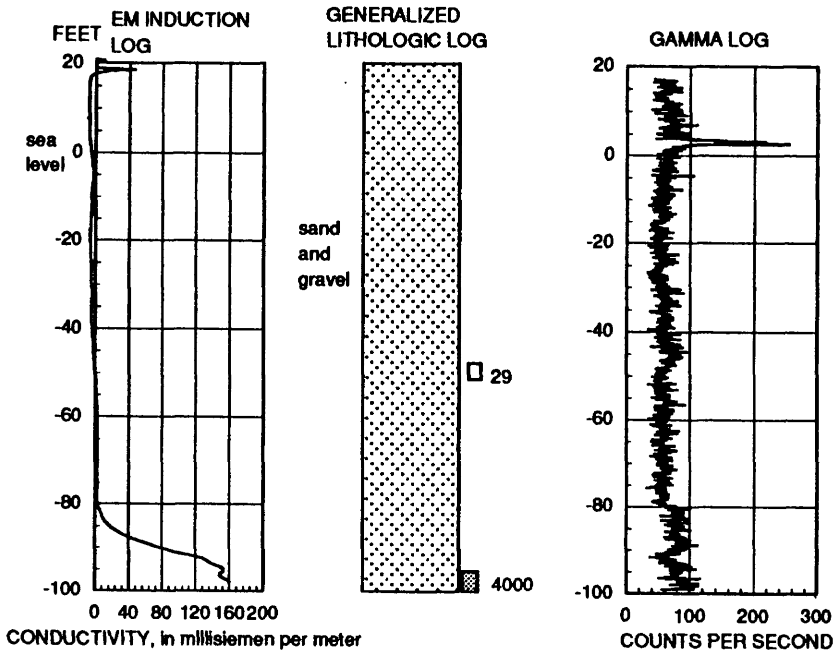


Figure 6. Electromagnetic (EM) log, generalized lithologic log, and gamma log from wells: C. Well S95423. D. Well S95424. E. Well S95425. (Well locations are shown in fig. 1.)



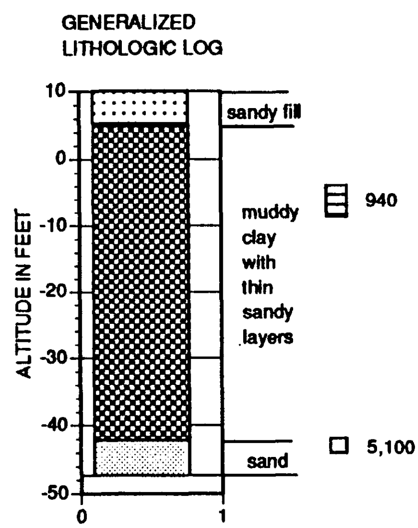
EXPLANATION

29 4 foot well screen (nearby well S 95429)

4000 2 foot well screen (well S 95428)

Numbers are chloride concentration, in milligrams per liter

F. WELL S 95428



EXPLANATION

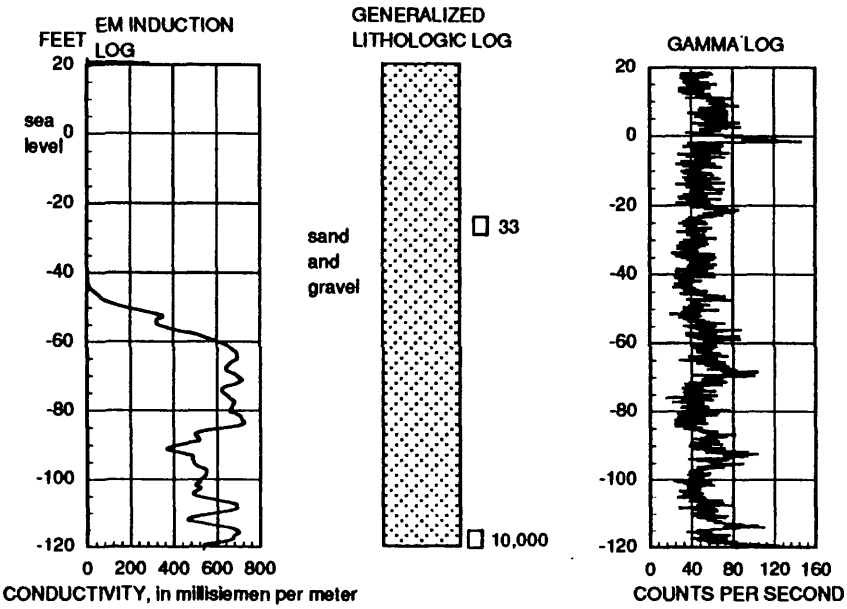
5,100 2 foot well screen (well S 95430)

940 4 foot well screen (nearby well S 95431)

Number is chloride concentration, in milligrams per liter

G. Well S95430

Figure 6. Electromagnetic (EM) log, generalized lithologic log, and gamma log from wells: F. Well S95428. G. Well S95430. (Well locations are shown in fig. 1.)



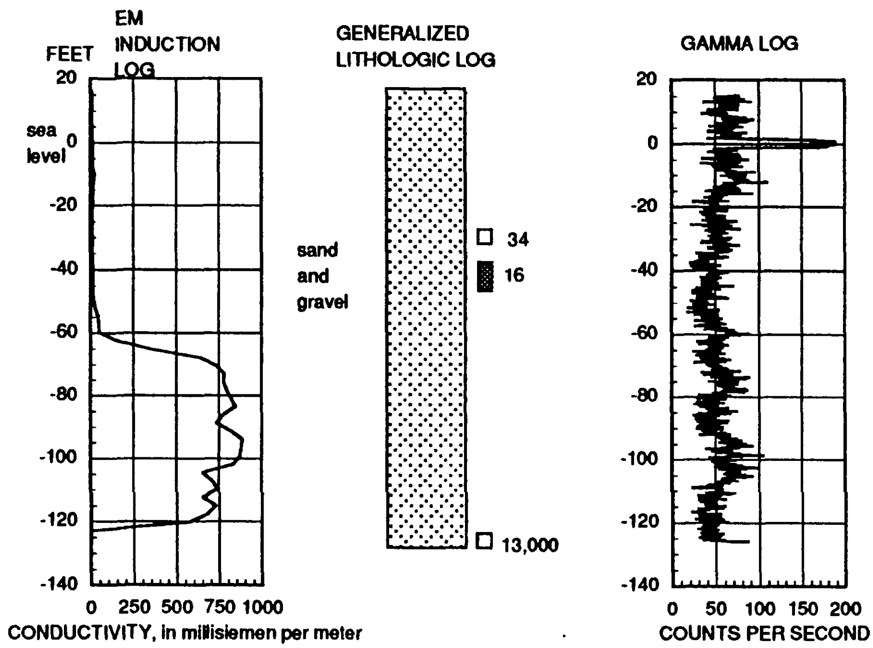
EXPLANATION

□ 33 2 foot well screen (nearby well S 95433)

□ 10,000 2 foot well screen (well S 95432)

Number is chloride concentration, in milligram per liter

H. WELL S 95432



EXPLANATION

□ 34 2 foot well screen (nearby well S 95436)

▮ 16 4 foot well screen (nearby well S 95434)

□ 16,000 2 foot well screen (well S 95435)

Number is chloride concentration, in milligrams per liter

I. WELL S 95435

Figure 6. Electromagnetic (EM) log, generalized lithologic log, and gamma log from wells: H. Well S95432. I. Well S95435. (Well locations are shown in fig. 1.)

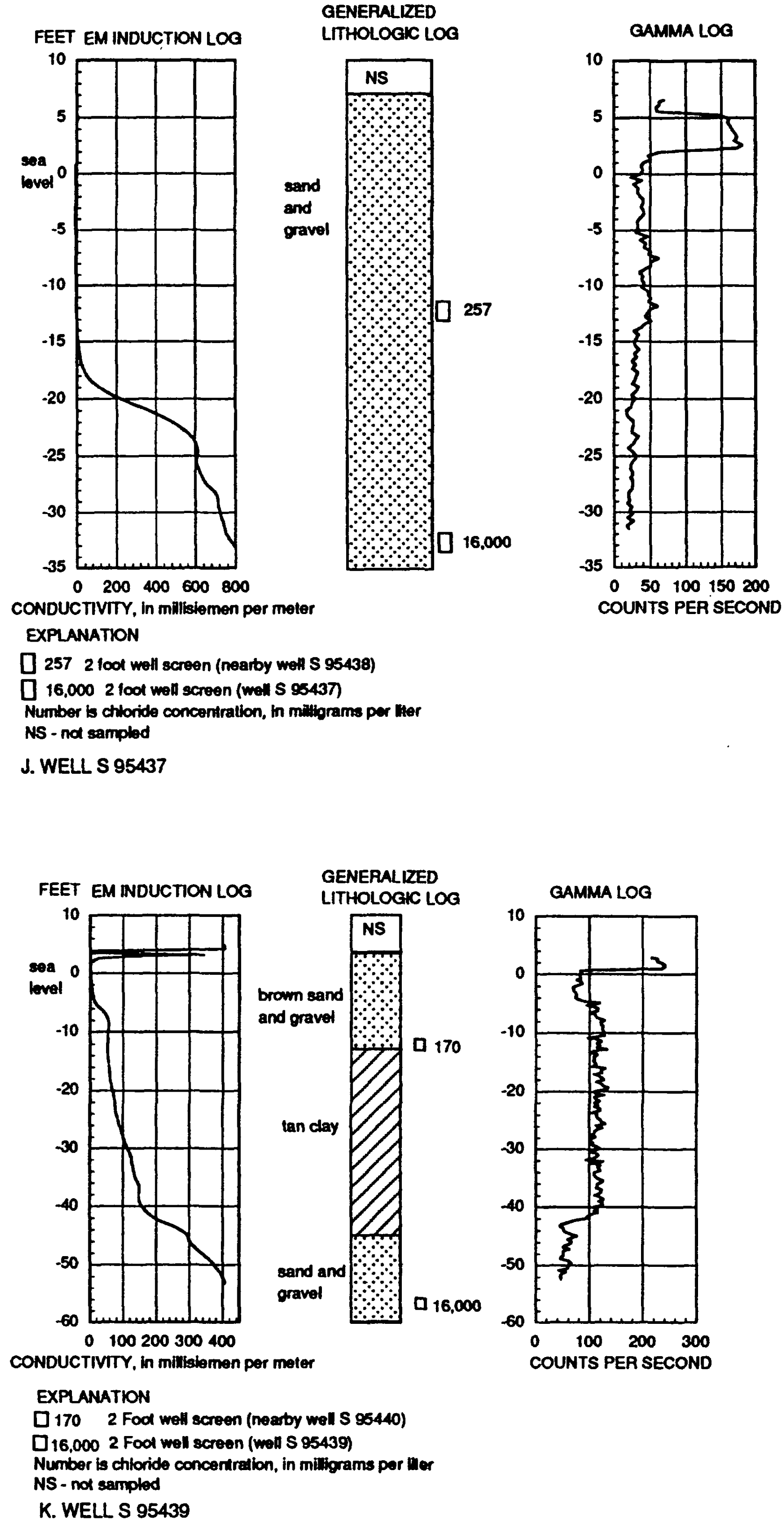


Figure 6. Electromagnetic (EM) log, generalized lithologic log, and gamma log from wells: J. Well S95437. K. Well S95439. (Well locations are shown in fig. 1.)

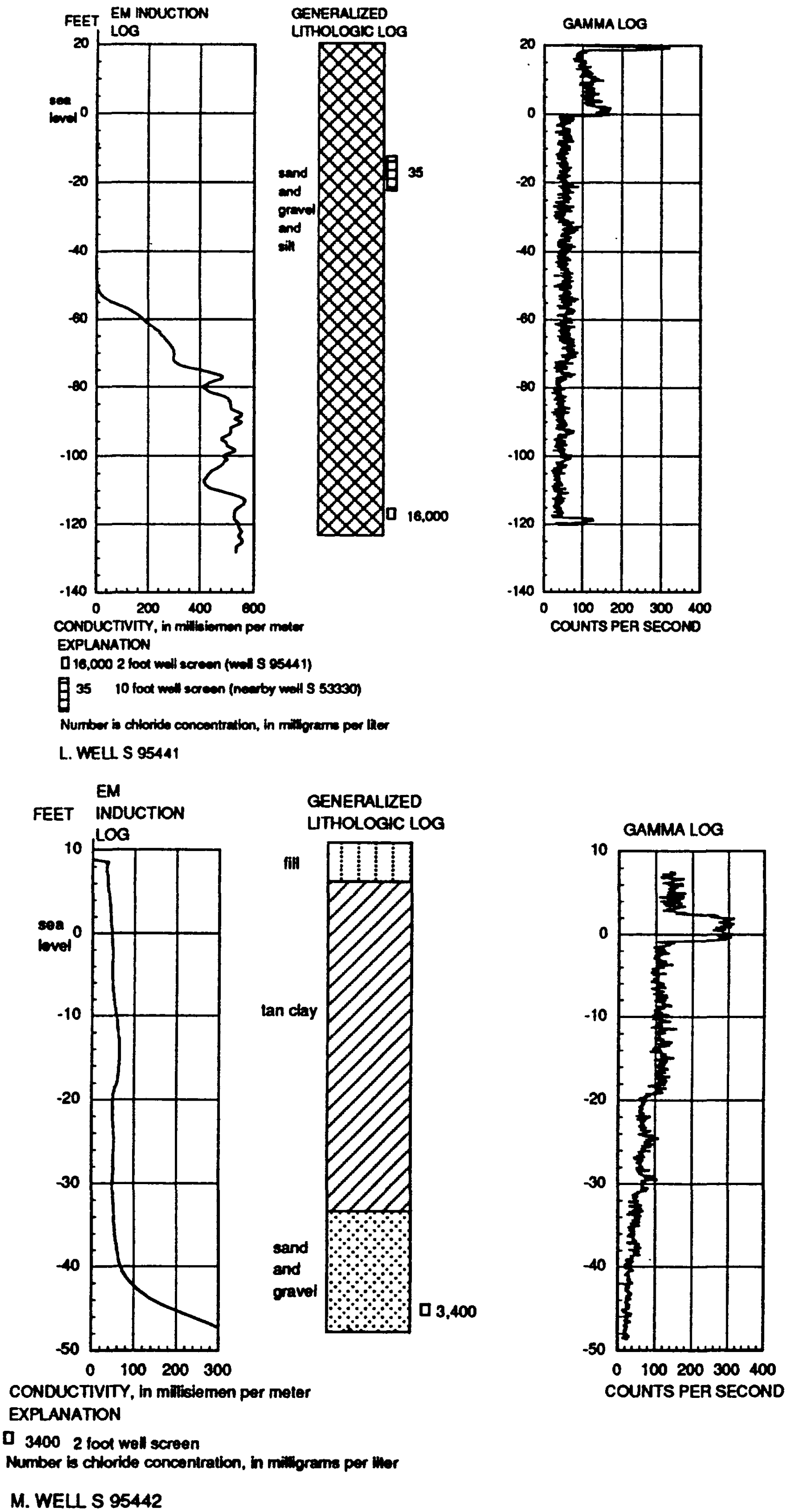


Figure 6. Electromagnetic (EM) log, generalized geologist's log, and gamma log from selected wells: L. Well S95441. M. Well S95442. (Well locations are shown in fig. 1.)

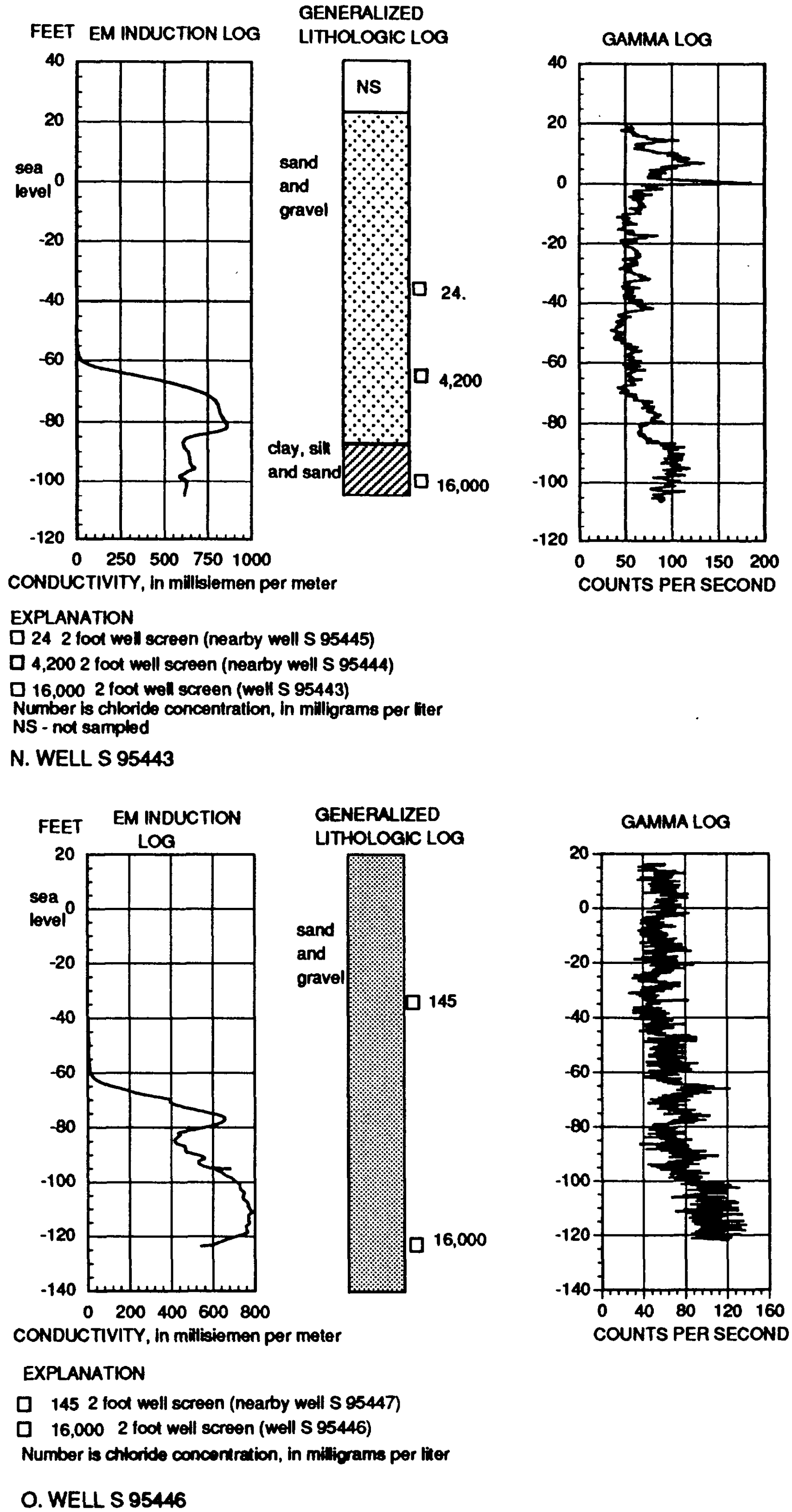
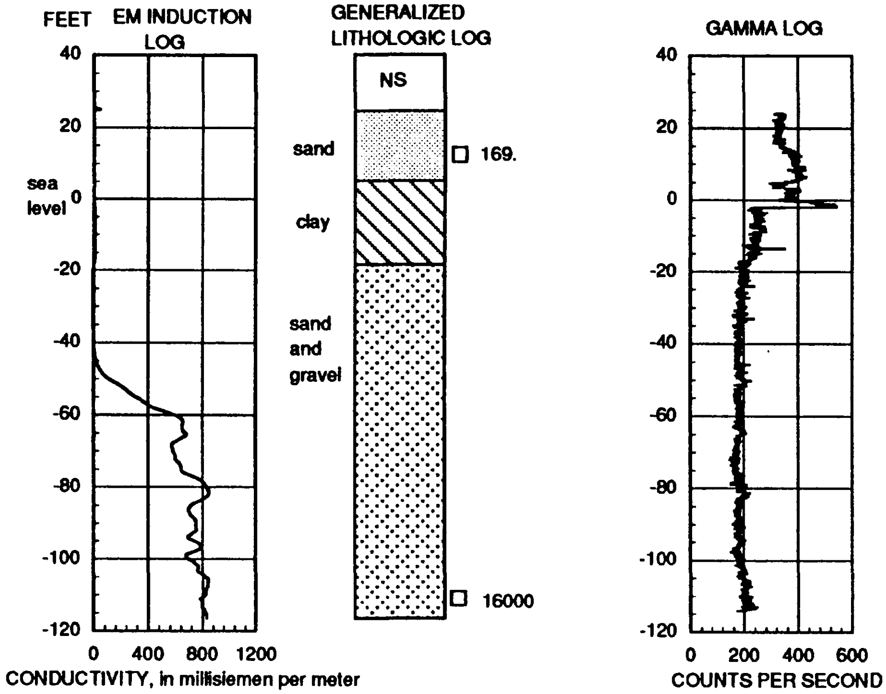


Figure 6. Electromagnetic (EM) log, generalized lithologic log, and gamma log from wells: N. Well S95443. O. Well S95446. (Well locations are shown in fig. 1.)



EXPLANATION

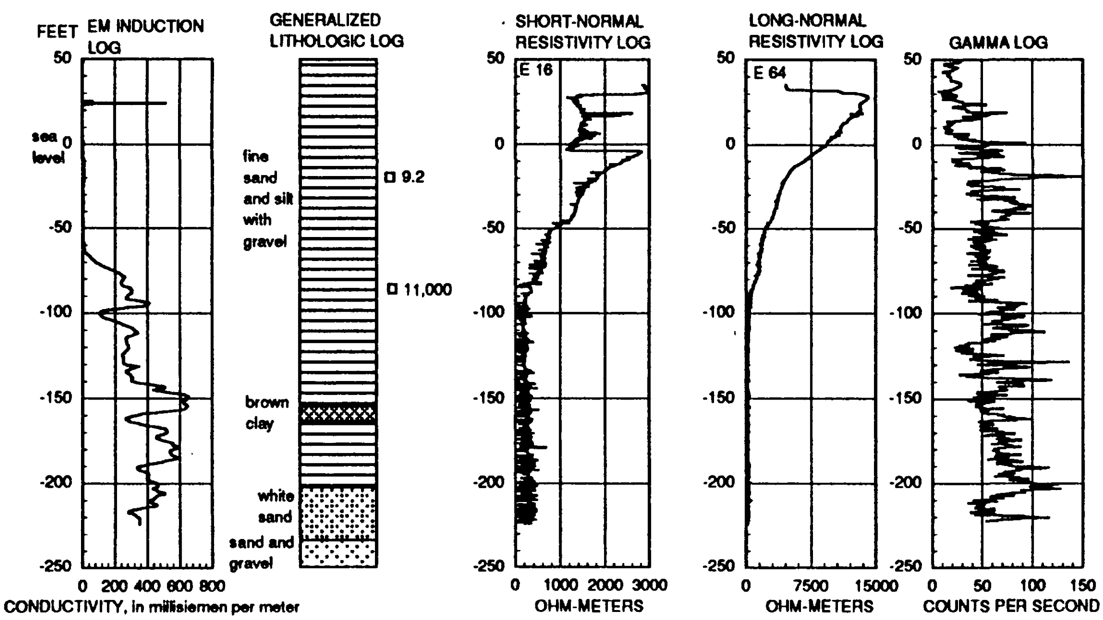
☐ 169 2 foot well screen (nearby well S 95449)

☐ 16,000 2 foot well screen (well S 95448)

Number is chloride concentration, in milligrams per liter

NS - not sampled

P. WELL S 95448



EXPLANATION

☐ 9.2 2 foot well screen (nearby well 95424)

☐ 11,000 2 foot well screen (well 95727)

Number is chloride concentration, in milligram per liter

Q. WELL S 95727

Figure 6. Electromagnetic (EM) log, generalized lithologic log, and gamma log from wells: P. Well S95448. Q. Well S95727. (Well locations are shown in fig. 1.)

Table 4. Water-levels in wells on North Fork of Long Island, N.Y., 1982-90

[All measurements by U.S. Geological Survey unless otherwise noted. Water levels are in feet above or below (-) mean sea level. -- indicates no data available. Locations are shown in fig. 1]

Well number	Date	Time	Water level	Remarks[1]	Well number	Date	Time	Water level	Remarks[1]
S16783	7-8-82	1235	3.17		S16783	4-18-89	1450	2.95	
	9-21-82	1110	1.67			5-22-89	1540	3.02	
	10-21-82	1200	1.58			6-23-89	1430	3.57	
	12-29-82	0845	1.77			7-21-89	1410	3.26	
	3-18-83	1125	3.79			8-22-89	1420	3.12	
	6-22-83	0835	2.24			9-28-89	1445	2.37	
	9-23-83	0915	1.76			10-4-89	1340	2.32	
	12-30-83	1605	2.98			10-24-89	1450	2.61	
	4-11-84	1300	3.50			11-21-89	1310	2.88	
	6-22-84	1712	2.43			1-3-90	1330	1.82	
	9-27-84	1900	1.78			1-19-90	1015	1.88	
	1-9-85	1818	1.75			1-23-90	1500	1.96	
	3-28-85	1933	1.94			2-21-90	1420	2.60	
	7-11-85	1835	1.72			3-13-90	0954	2.17	
	10-8-85	1255	1.86			3-13-90	1138	2.19	K
	12-5-85	1220	2.30			3-13-90	1317	2.18	
	6-3-86	0740	1.88			3-13-90	1507	2.19	
	9-4-86	1530	1.77			3-13-90	1715	2.19	
	12-3-86	1115	2.54			3-26-90	1255	2.17	
	3-20-87	1130	2.57			4-16-90	1310	2.75	
	6-24-87	0741	1.89			4-27-90	1440	2.60	
	7-21-87	1040	1.60			5-15-90	1415	2.43	
	8-26-87	1230	1.67			6-5-90	1125	2.47	
	9-24-87	1210	1.89			6-12-90	1100	2.37	
	10-23-87	1055	1.81			6-12-90	1416	2.37	K
	11-20-87	1340	1.72			6-12-90	1719	2.37	
	12-28-87	1335	1.91			6-18- 90	1335	2.28	
	1-29-88	1325	2.07			7-11-90	1405	2.11	
	2-23-88	1320	2.97			7-23-90	0822	2.00	
	3-22-88	1310	2.23			7-23-90	1126	1.98	K
	4-23-88	1240	2.47			7-23-90	1300	2.01	
	5-25-88	1725	2.19			8-15-90	1445	2.03	
	6-20-88	1230	1.98			8-20-90	1157	2.07	
	7-25-88	1400	1.82			9-19-90	1331	1.99	
	9-23-88	1200	1.58			9-20-90	0832	1.99	
	11-21-88	1310	2.05			9-20-90	1117	1.99	K
	12-29-88	1315	1.98			9-20-90	1338	1.99	
	1-27-89	1510	1.74			10-16-90	1440	1.97	
	2-23-89	1500	1.83			11-26-90	1748	1.92	
	3-27-89	1615	2.38			12-17-90	1257	1.87	

[1] K, measured at high tide

G, water level measurements by Suffolk County Department of Health Services laboratory

Table 4. Complete water-level observations--continued

Well number	Date	Time	Water level	Remarks[1]	Well number	Date	Time	Water level	Remarks[1]
S53323	6-12-75	--	1.75	G	S53323	3-17-86	--	1.77	
	10-3-75	--	1.52	G		6-10-86	--	1.50	
	12-17-75	--	1.76	G		9-22-86	--	1.44	
	4-2-76	--	1.72	G		12-15-86	--	1.58	
	6-28-76	--	1.35	G		3-6-87	--	1.73	
	10-12-76	--	1.68	G		6-16-87	--	1.70	
	1-5-77	--	.96	G		9-2-87	--	1.51	
	4-6-77	--	2.14	G		12-8-87	--	1.35	
	6-24-77	--	2.56	G		3-23-88	--	1.40	
	9-26-77	--	1.96	G		6-8-88	--	1.84	
	12-15-77	--	1.59	G		6-12-89	1015	2.32	
	4-1-78	--	1.65	G		10-4-89	1307	1.82	
	8-7-78	--	1.54	G		1-16-90	1320	1.50	
	10-6-78	--	2.08	G		3-13-90	1036	1.70	K
	12-19-78	--	1.49	G		3-13-90	1208	1.68	K
	3-5-79	--	2.15	G		3-13-90	1210	1.67	K
	6-6-79		2.93	G		3-13-90	1415	1.71	K
	12-4-79	--	1.15	G		3-13-90	1545	1.72	K
	3-6-80	--	1.23	G		3-21-90	1324	1.84	
	3-26-80	--	1.65	G		6-12-90	1135	2.06	K
	6-13-80	--	1.52	G		6-12-90	1444	2.06	K
	9-11-80	--	1.23	G		6-12-90	1751	2.08	
	12-18-80	--	1.21	G		7-23-90	0755	1.87	
	3-5-81	--	1.45	G		7-23-90	0923	1.86	
	6-5-81	1125	1.58	G		7-23-90	1047	1.86	
	9-29-81	--	1.41	G		7-23-90	1209	1.86	K
	12-7-81	--	1.57	G		7-23-90	1321	1.86	
	3-11-82	--	1.47	G		8-8-90	1400	1.84	
	6-9-82	--	4.65	G		9-20-90	0821	1.88	
	9-21-82	--	1.55	G		9-20-90	1107	1.87	K
	12-21-82	--	1.82	G		9-20-90	1329	1.89	
	3-30-83	--	2.42	G	S53330	3-4-75	--	1.35	G
	6-9-83	--	1.99			6-12-75	-	1.50	G
	9-15-83	--	1.72			10-3-75	--	1.31	G
	12-16-83	--	2.57			12-17-75	--	1.49	G
	3-16-84	--	2.36			4-2-76	--	1.56	G
	6-7-84	--	2.38			6-28-76	--	1.13	G
	9-7-84	--	1.79			10-12-76	--	1.47	G
	12-19-84	--	1.43			1-5-77	--	.74	G
	3-5-85	--	1.23			4-6-77	--	1.69	G
	6-10-85	--	1.62			6-24-77	--	1.30	G
	9-4-85	--	1.70			9-26-77	--	1.72	G
	12-10-85	--	1.73			12-15-77	--	1.49	G

Table 4. Complete water-level observations--continued

Well number	Date	Time	Water level	Remarks[1]	Well number	Date	Time	Water level	Remarks[1]
S53330	4-1-78	--	1.76	G	S53330	7-23-90	1002	2.16	
	8-7-78	--	1.38	G		7-23-90	1128	2.16	
	10-12-78	--	1.53	G		7-23-90	1243	2.17	
	12-19-78	--	1.17	G		7-23-90	1354	2.18	
	3-5-79	--	2.16	G		9-20-90	0804	2.14	
	6-6-79	--	2.40	G		9-20-90	1052	2.15	K
	9-4-79	--	.95	G		9-20-90	1315	2.17	
	12-7-79	--	1.42	G	S53331	4-9-75	--	2.98	G
	3-26-80	--	1.54	G		6-12-75	--	2.94	G
	6-23-80	--	1.26	G		7-31-75	--	2.61	G
	9-11-80	--	.94	G		10-3-75	--	2.28	G
	12-18-80	--	.94	G		12-17-75	--	2.43	G
	3-4-81	--	1.28	G		4-2-76	--	2.94	G
	6-5-81	--	1.26	G		6-28-76	--	2.30	G
	9-29-81	--	1.33	G		10-12-76	--	2.58	G
	12-7-81	--	1.25	G		1-5-77	--	2.10	G
	3-11-82	--	1.28	G		4-6-77	--	2.61	G
	6-9-82	--	4.27	G		6-24-77	--	2.71	G
	9-13-82	--	1.40	G		9-26-77	--	2.23	G
	12-21-82	--	1.49	G		12-15-77	--	2.20	G
	3-30-83	--	2.01	G		4-1-78	--	3.45	G
	12-19-84	--	1.23			1-9-79	--	2.36	G
	3-5-85	--	1.01			3-5-79	--	4.84	G
	6-10-85	--	1.30			6-6-79	--	5.16	G
	9-4-85	--	1.45			9-12-79	--	2.26	G
	12-10-85	--	1.45			12-4-79	--	1.96	G
	3-17-86	--	1.57			3-6-80	--	1.58	G
	6-10-86	--	1.28			3-26-80	--	1.73	G
	9-22-86	--	1.19			6-13-80	--	2.88	G
	12-15-86	--	1.35			9-11-80	--	1.91	G
	3-6-87	--	1.71			12-18-80	--	1.82	G
	6-16-87	--	1.52			3-5-81	--	1.72	G
	9-2-87	--	1.24			6-5-81	--	1.94	G
	12-8-87	--	1.07			10-1-81	--	1.98	G
	3-23-88	--	1.12			12-7-81	-	2.04	G
	6-8-88	--	1.57			3-11-82	--	2.80	G
	10-4-89	1214	2.30			6-9-82	--	4.40	G
	4-18-90	1045	2.63			9-21-82	--	2.58	G
	3-13-90	0955	1.97			12-21-82	--	1.98	G
	3-13-90	1130	1.91	K		3-30-83	--	2.66	G
	3-13-90	1338	1.90			5-29-86	1345	1.98	
	3-13-90	1511	1.97			10-4-89	1329	3.21	
	7-23-90	0856	2.15			1-5-90	1520	2.84	

Table 4. Complete water-level observations--continued

Well number	Date	Time	Water level	Remarks[1]	Well number	Date	Time	Water level	Remarks[1]
S53331	2-22-90	1225	2.79		S53539	3-5-81	--	2.16	G
	3-9-90	--	2.85	G		6-5-81	1145	1.79	G
	3-13-90	0938	2.84			9-29-81	--	1.85	G
	3-13-90	1119	2.87			12-4-81	--	2.04	G
	3-13-90	1319	2.86	K		3-11-82	--	1.83	G
	3-13-90	1505	2.83			6-9-82	--	6.49	G
	3-21-90	1021	2.80	K		9-21-82	--	1.65	G
	3-26-90	1243	2.81			12-21-82	--	1.84	G
	6-12-90	1025	3.08			3-30-83	--	3.06	G
	6-12-90	1300	3.09	K		12-19-84	--	1.66	
	7-23-90	0900	2.60			3-6-85	--	1.55	
	7-23-90	1018	2.60			6-10-85	--	1.93	
	7-23-90	1117	2.59			9-4-85	--	2.02	
	7-23-90	1231	2.63			12-10-85	--	2.14	
	7-23-90	1332	2.60			3-17-86	--	2.41	
	8-8-90	1100	2.51			6-10-86	--	1.77	
	9-20-90	0830	2.45			9-22-86	--	1.62	
	9-20-90	0926	2.42			12-15-86	--	2.37	
	9-20-90	1048	2.42	K		3-6-87	--	2.24	
	9-20-90	1151	2.45			6-16-87	-	1.83	
	9-20-90	1301	2.41			9-2-87	--	1.82	
S53539	10-6-75	--	1.74	G		12-8-87	--	1.63	
	12-17-75	--	2.03	G		3-23-88	--	1.84	
	4-2-76	--	2.10	G		6-8-88	-	2.00	
	6-28-76	--	1.38	G		10-4-89	1331	2.24	
	10-12-76	--	2.19	G		1-3-90	1400	1.51	
	1-5-77	--	1.07	G		3-9-90	--	1.78	G
	4-6-77	--	2.70	G		3-13-90	1011	1.85	
	6-24-77	--	1.73	G		3-13-90	1152	1.87	K
	9-26-77	--	2.26	G		3-13-90	1337	1.81	
	12-15-77	--	2.08	G		3-13-90	1525	1.83	
	3-30-78	--	2.23	G		3-13-90	1755	1.72	
	8-7-78	--	2.02	G		4-18-90	0947	2.35	
	10-10-78	--	2.51	G		6-12-90	1116	2.09	
	12-19-78	--	2.20	G		6-12-90	1429	2.12	K
	3-5-79	--	2.74	G		6-12-90	1735	2.12	
	6-6-79	--	2.11	G		7-23-90	0935	1.86	
	12-4-79	--	1.44	G		7-23-90	1140	1.86	K
	3-6-80	--	.71	G		7-23-90	1316	1.87	
	3-26-80	--	2.59	G		8-8-90	1355	1.95	
	6-13-80	--	1.76	G		9-20-90	0843	1.97	
	9-11-80	--	1.40	G		9-20-90	1126	1.98	K
	12-18-80	--	1.26	G	S85598	3-13-90	1017	.94	K

Table 4. Complete water-level observations--continued

Well number	Date	Time	Water level	Remarks[1]	Well number	Date	Time	Water level	Remarks[1]
S85598	3-13-90	1018	0.94	K	S95419	8-22-89	0815	2.42	
	3-13-90	1153	.97	K		8-28-89	0934	2.22	
	3-13-90	1400	.94	K		8-28-89	0935	2.22	
	3-13-90	1533	.94	K		9-14-89	1100	1.76	
	6-12-90	1110	1.44	K		10-4-89	1206	1.32	
	6-12-90	1325	1.44	K		11-189	1212	1.84	
	7-23-90	0831	1.02			12-6-89	1153	1.09	
	7-23-90	0948	1.02			2-13-90	1327	1.55	
	7-23-90	1114	1.02	K		3-13-90	0852	.96	
	7-23-90	1233	1.03			3-13-90	1057	1.16	F
	7-23-90	1341	1.04			3-13-90	1224	1.22	
	8-15-90	1007	.13			3-13-90	1425	1.19	
	9-20-90	0847	1.13			3-13-90	1640	.99	
	9-20-90	0940	1.13			4-9-90	1405	1.09	
	9-20-90	1102	1.16	K		5-30-90	0845	1.44	
	9-20-90	1206	1.18			6-12-90	0958	1.48	
	9-20-90	1320	1.18			6-12-90	1206	1.53	
S85599	10-4-89	1400	1.99			6-12-90	1340	1.65	F
	3-13-90	1006	1.49	K		6-12-90	1521	1.79	
	3-13-90	1145	1.50	K		6-12-90	1632	1.83	
	3-13-90	1351	1.47	K		7-23-90	0910	1.42	
	3-13-90	1524	1.50	K		7-23-90	1010	1.52	
	3-21-90	1414	1.61	K		7-23-90	1058	1.60	
	6-12-90	1100	1.80	K		7-23-90	1120	1.62	
	6-12-90	1320	1.78	K		7-23-90	1150	1.64	F
	7-23-90	0825	1.42			7-23-90	1220	1.65	
	7-23-90	0944	1.42			7-23-90	1303	1.65	
	7-23-90	1110	1.42	K		8-21-90	0930	1.82	
	7-23-90	1229	1.42			9-20-90	0814	1.26	
	7-23-90	1338	1.42			9-20-90	0925	1.40	
	8-14-90	1325	1.34			9-20-90	1055	1.57	F
	9-20-90	0854	1.32			9-20-90	1154	1.60	
	9-20-90	0946	1.31			9-20-90	1308	1.59	
	9-20-90	1108	1.35	K	S95420	3-13-89	1055	2.02	F
	9-20-90	1213	1.36			8-21-89	0900	2.72	
	9-20-90	1332	1.34			8-21-89	1058	2.72	
S95419	8-21-89	0903	1.41			8-21-89	1109	2.72	
	8-21-89	1000	1.49			8-21-89	1231	2.72	
	8-21-89	1105	1.63			8-21-89	1308	2.72	
	8-21-89	1229	1.85			8-21-89	1345	2.72	
	8-21-89	1305	1.93			8-21-89	1508	2.72	F
	8-21-89	1343	1.99	K		8-22-89	1213	2.67	
	8-21-89	1510	2.03			8-28-89	1215	1.94	

Table 4. Complete water-level observations--continued

Well number	Date	Time	Water level	Remarks[1]	Well number	Date	Time	Water level	Remarks[1]
S95420	8-28-89	1215	1.94		S95421	3-13-90	1451	1.87	
	9-14-89	1218	1.87			3-13-90	1715	1.10	
	10-4-89	1220	1.70			4-10-90	1320	2.54	
	11-1-89	1220	2.40			6-12-90	1044	1.41	
	12-6-89	1219	2.13			6-12-90	1230	1.86	
	2-13-90	1320	2.65			6-12-90	1405	2.39	K
	3-13-90	0850	2.00			6-12-90	1551	2.82	
	3-13-90	1055	2.02			6-12-90	1705	2.73	
	3-13-90	1222	1.98	K		7-23-90	0857	2.36	
	3-13-90	1228	1.99			7-23-90	0949	2.04	
	3-13-90	1230	1.99			7-23-90	1047	2.40	
	3-13-90	1420	1.99			7-23-90	1154	2.68	K
	3-13-90	1639	1.99			7-23-90	1246	2.64	
	4-9-90	1340	2.70			7-23-90	1231	2.43	
	5-30-90	0845	2.65			8-20-90	1105	2.49	
	6-12-90	1002	1.89			9-20-90	0850	1.71	
	6-12-90	1343	1.89	K		9-20-90	0953	1.63	
	6-12-90	1524	1.89			9-20-90	1123	2.51	K
	6-12-90	1634	1.88			9-20-90	1221	2.46	
	7-23-90	0905	1.33			9-20-90	1340	2.24	
	7-23-90	1005	1.33	K	S95422	8-21-89	0922	.94	
	7-23-90	1300	1.33			8-21-89	1021	1.33	
	8-21-90	1001	1.47			8-21-89	1119	1.81	
	9-20-90	0813	1.24			8-21-89	1244	2.37	
	9-20-90	0924	1.24			8-21-89	1329	2.62	
	9-20-90	1055	1.24	K		8-21-89	1423	2.74	K
	9-20-90	1153	1.24			9-28-89	0900	2.56	
	9-20-90	1307	1.24			10-4-89	1235	2.34	
S95421	8-21-89	0918	2.28			11-1-89	1315	3.13	K
	8-21-89	1012	2.64			11-7-89	1106	1.61	
	8-21-89	1119	3.15			11-7-89	1404	1.40	
	8-21-89	1242	3.72			1-3-90	1053	.56	
	8-21-89	1321	3.97			2-8-90	1006	3.22	
	8-21-89	1415	4.14	K		3-13-90	0934	1.65	
	10-4-89	1237	2.42			3-13-90	1128	2.22	
	11-1-89	1316	3.13			3-13-90	1300	2.35	K
	11-7-89	1104	1.66			3-13-90	1443	1.85	
	11-7-89	1406	2.72			3-13-90	1712	1.06	
	1-3-90	1116	.73			4-10-90	1300	2.55	
	2-13-90	1004	3.23			6-12-90	1035	1.34	
	3-13-90	0935	1.71			6-12-90	1225	1.81	
	3-13-90	1125	2.26			6-12-90	1402	2.35	K
	3-13-90	1303	2.40	K		6-12-90	1548	2.78	

Table 4. Complete water-level observations--continued

Well number	Date	Time	Water level	Remarks[1]	Well number	Date	Time	Water level	Remarks[1]
S95422	6-12-90	1702	2.72		S95424	6-12-90	1310	2.90	K
	7-23-90	0852	.95			7-23-90	0910	2.57	
	7-23-90	0946	2.00			7-23-90	1026	2.57	
	7-23-90	1044	2.36			7-23-90	1124	2.57	K
	7-23-90	1153	2.65	K		7-23-90	1241	2.61	
	7-23-90	1244	2.62			7-23-90	1338	2.58	
	7-23-90	1328	2.41			9-20-90	0840	2.43	
	8-20-90	1125	4.78			9-20-90	0932	2.43	
	9-20-90	0846	1.65			9-20-90	1055	2.43	K
	9-20-90	0951	2.09			9-20-90	1159	2.44	
	9-20-90	1121	2.48	K		9-20-90	1312	2.41	
	9-20-90	1219	2.55		S95425	12-7-89	1346	1.87	
	9-20-90	1337	2.23			6-12-90	1015	2.33	K
S95423	9-7-89	1338	3.60			6-12-90	1210	2.34	K
	10-4-89	1325	4.26			6-12-90	1250	2.38	K
	12-7-89	1410	3.13			7-23-90	0845	2.21	
	1-5-90	1515	2.91			7-23-90	1006	2.19	
	2-22-90	1222	2.94			7-23-90	1105	2.20	
	3-13-90	0937	2.92			7-23-90	1219	2.21	
	3-13-90	1122	2.93			7-23-90	1321	2.24	
	3-13-90	1321	2.95	K		8-16-90	1130	1.44	
	3-13-90	1451	2.93			9-20-90	0824	2.00	
	6-12-90	1020	3.14			9-20-90	0922	2.03	
	6-12-90	1300	3.16	K		9-20-90	1041	2.07	K
	7-23-90	0905	2.90	A		9-20-90	1144	2.07	
	7-23-90	1022	2.77			9-20-90	1253	2.08	
	7-23-90	1120	2.90		S95426	9-7-89	1252	1.69	
	7-23-90	1237	2.90	K		9-11-89	1036	1.69	
	7-23-90	1335	2.80	A		9-12-89	1145	1.68	
	9-20-90	0832	2.55			10-4-89	1200	1.44	
	9-20-90	0927	2.61			12-7-89	1336	1.25	
	9-20-90	1050	2.63	AK		3-13-90	0930	1.18	
	9-20-90	1153	2.60			3-13-90	1111	1.22	
	9-20-90	1303	2.60			3-13-90	1312	1.26	
S95424	9-7-89	1345	3.29			3-13-90	1443	1.23	
	10-4-89	1335	2.99			3-22-90	1414	1.23	
	1-5-90	1510	2.64			6-12-90	1015	1.49	
	2-22-90	1310	2.63			6-12-90	1140	1.62	K
	3-13-90	0949	2.68			6-12-90	1210	1.62	
	3-13-90	1129	2.64	K		6-12-90	1255	1.58	
	3-13-90	1330	2.63			6-12-90	1340	1.54	
	3-13-90	1501	2.62			7-23-90	0855	1.33	
	6-12-90	1040	2.88			7-23-90	1010	1.36	

Table 4. Complete water-level observations--continued

Well number	Date	Time	Water level	Remarks[1]	Well number	Date	Time	Water level	Remarks[1]
S95426	7-23-90	1110	1.37	K	S95428	6-12-90	1000	2.96	
	7-23-90	1325	1.39			6-12-90	1245	2.95	K
	7-23-90	1328	1.39			6-20-90	0950	-1.12	
	8-16-90	1113	1.43			7-23-90	0835	2.50	
	9-20-90	0823	1.29			7-23-90	1000	2.47	
	9-20-90	0919	1.34			7-23-90	1056	2.48	K
	9-20-90	1040	1.36	K		7-23-90	1211	2.49	
	9-20-90	1142	1.37			7-23-90	0111	2.57	
	9-20-90	1251	1.37			8-13--90	0150	2.47	
S95427	9-7-89	1250	2.68			9-20-90	0816	2.29	
	9-11-89	1035	2.67			9-20-90	0912	2.29	K
	9-12-89	1141	2.65			9-20-90	1034	2.29	
	10-4-89	1200	2.44			9-20-90	1136	2.25	
	12-7-89	1324	2.38			9-20-90	1340	2.25	
	3-13-90	0928	2.19		S95429	8-18-89	1310	3.30	
	3-13-90	1109	2.24	K		8-28-89	0908	3.18	
	3-13-90	1311	2.21	K		9-7-89	1301	3.08	
	3-13-90	1444	2.20			9-11-89	1000	3.02	
	6-12-90	1015	2.39			10-4-89	1315	2.89	
	6-12-90	1250	2.44	K		10-26-89	0905	2.81	
	7-23-90	0850	2.22			10-26-89	1120	2.82	
	7-23-90	1008	2.23			10-26-89	1250	2.81	
	7-23-90	1108	2.22	K		12-7-89	1159	2.89	
	7-23-90	1221	2.23			3-13-90	0917	2.69	
	7-23-90	1324	2.26			3-13-90	1105	3.13	
	9-20-90	0821	2.16			3-13-90	1304	2.70	K
	9-20-90	0920	2.19			3-13-90	1438	2.68	
	9-20-90	1043	2.17	K		6-12-90	1005	2.48	
	9-20-90	1145	2.17			6-12-90	1130	2.48	
	9-20-90	1255	2.20			6-12-90	1205	2.48	
S95428	8-18-89	1300	3.33			6-12-90	1245	2.48	K
	8-28-89	0915	3.32			7-23-90	0840	2.50	
	9-7-89	1300	3.26			7-23-90	1003	2.49	
	9-11-89	0958	3.19			7-23-90	1100	2.50	K
	10-4-89	1315	2.99			7-23-90	1214	2.50	
	10-26-89	0900	2.87			7-23-90	1315	2.49	
	10-26-89	1115	2.89			8-13-90	1345	2.61	
	10-26-89	1248	2.89			9-20-90	0815	2.36	
	12-7-89	1157	3.03			9-20-90	0914	2.37	
	3-13-90	0920	2.74			9-20-90	1035	2.36	K
	3-13-90	1100	2.71			9-20-90	1138	2.35	
	3-13-90	1302	2.73	K		9-20-90	1342	2.37	
	3-13-90	1435	2.69		S95430	10-4-89	1225	1.47	

Table 4. Complete water-level observations--continued

Well number	Date	Time	Water level	Remarks[1]	Well number	Date	Time	Water level	Remarks[1]
S95430	12-6-89	1348	1.46		S95431	7-23-90	0850	6.32	
	2-8-90	1215	1.94			7-23-90	0955	6.31	
	3-13-90	0920	1.28			7-23-90	1055	6.30	
	3-13-90	1115	1.32	K		7-23-90	1115	6.30	
	3-13-90	1245	1.39			7-23-90	1145	6.30	
	3-13-90	1438	1.43			7-23-90	1215	6.30	
	3-13-90	1702	1.40			7-23-90	1245	6.30	
	4-10-90	1200	1.28			8-15-90	1300	6.94	
	6-12-90	1025	1.86			9-20-90	0830	5.98	
	6-12-90	1215	1.80			9-20-90	0937	5.97	
	6-12-90	1352	1.82	K		9-20-90	1108	5.94	K
	6-12-90	1538	1.89			9-20-90	1324	5.91	
	6-12-90	1651	1.94		S95432	9-7-89	1119	.12	
	7-19-90	1200	1.43			9-7-89	1318	.23	
	7-23-90	0745	1.54			9-10-89	1430	.28	
	7-23-90	0950	1.57			9-11-89	1138	.18	
	7-23-90	1050	1.61			10-4-89	1230	- .01	
	7-23-90	1110	1.61			10-25-89	1140	.24	
	7-23-90	1150	1.64	K		10-25-89	1755	.05	
	7-23-90	1210	1.69	K		2-22-90	1321	- .43	
	7-23-90	1240	1.70			3-13-90	1024	- .31	
	8-15-90	1341	1.56			3-13-90	1200	- .26	K
	9-20-90	0835	1.56			3-13-90	1407	- .30	
	9-20-90	0940	1.70			6-12-90	1120	.82	
	9-20-90	1111	1.62	K		6-12-90	1200	- .10	
	9-20-90	1207	1.68			6-12-90	1230	- .05	
	9-20-90	1327	1.75			6-12-90	1330	- .04	K
S95431	10-4-89	1223	7.13			6-12-90	1358	-.04	K
	12-6-89	1419	6.98			6-20-90	1251	- .17	
	2-8-90	1212	7.18			7-23-90	0818	- .30	
	3-13-90	0915	7.29			7-23-90	0938	- .21	
	3-13-90	1114	7.20	K		7-23-90	1103	- .15	K
	3-13-90	1243	7.15			7-23-90	1224	- .14	
	3-13-90	1435	7.14			7-23-90	1333	- .14	
	3-13-90	1659	7.14			8-16-90	1336	- .27	
	4-10-90	1120	7.17			9-20-90	0814	- .30	
	5-31-90	0925	7.17			9-20-90	0937	- .21	
	6-12-90	1020	6.99			9-20-90	1101	- .15	K
	6-12-90	1210	6.97			9-20-90	1219	- .14	
	6-12-90	1347	6.95			9-20-90	1324	- .17	
	6-12-90	1535	6.94		S95433	9-7-89	1116	1.07	
	6-12-90	1650	6.91			9-7-89	1319	1.07	
	7-19-90	1155	6.61			9-10-89	1235	.87	

Table 4. Complete water-level observations--continued

Well number	Date	Time	Water level	Remarks[1]	Well number	Date	Time	Water level	Remarks[1]
S95433	9-11-89	1141	1.10		S95434	9-20-90	0836	2.10	
	10-25-89	1140	1.10			9-20-90	0944	2.11	
	10-25-89	1755	1.05			9-20-90	1121	2.16	K
	2-22-90	1323	1.58			9-20-90	1228	2.18	
	3-13-90	1025	.51	K		9-20-90	1343	2.21	
	3-13-90	1200	.52	K	S95435	9-11-89	1158	1.25	
	3-13-90	1400	.50	K		9-11-89	1201	1.25	
	3-13-90	1541	.51	K		9-21-89	0830	1.27	
	6-12-90	1120	.93	K		10-4-89	1320	.87	
	6-12-90	1335	.88			10-23-89	1120	1.26	
	6-12-90	1400	.88			10-23-89	1425	1.22	
	7-23-90	0814	.77			12-7-89	1444	.67	
	7-23-90	0937	.77			1-16-90	1258	.46	
	7-23-90	1102	.78	K		3-13-90	1002	.58	
	7-23-90	1222	.78			3-13-90	1145	.63	K
	7-23-90	1330	.78			3-13-90	1325	.65	
	9-20-90	0812	.81			3-13-90	1331	.65	
	9-20-90	1059	.83	K		3-13-90	1515	.66	
	9-20-90	1322	.83			3-13-90	1746	.71	
	9-11-89	1156	2.51			4-16-90	1408	1.00	
	9-21-89	1035	2.49			6-12-90	1245	.87	K
	10-4-89	1322	2.39			6-12-90	1422	.88	
	10-23-89	1112	2.83			6-12-90	1607	.92	
	10-23-89	1420	2.80			6-12-90	1727	.94	
	12-7-89	1428	2.34			7-23-90	0835	.60	
	1-16-90	1259	2.08			7-23-90	0928	.60	
S95434	3-13-90	0959	1.04			7-23-90	1031	.63	
	3-13-90	1142	2.08	K		7-23-90	1134	.65	K
	3-13-90	1322	2.11			7-23-90	1231	.68	
	3-13-90	1513	2.10			7-23-90	1309	.69	
	3-13-90	1743	2.07			8-20-90	1320	.78	
	4-16-90	1416	2.50			9-20-90	0838	.58	
	6-12-90	1105	2.33			9-20-90	0946	.58	
	6-12-90	1242	2.33			9-20-90	1122	.62	K
	6-12-90	1420	2.35	K		9-20-90	1230	.64	
	6-12-90	1606	2.39			9-20-90	1344	.65	
	6-12-90	1724	2.41		S95436	9-11-89	1205	2.20	
	7-23-90	0833	2.06			9-21-89	1155	2.17	
	7-23-90	0925	2.08			10-4-89	1324	2.07	
	7-23-90	1030	2.09			10-23-89	1122	1.56	
	7-23-90	1132	2.12	K		10-23-89	1425	2.47	
	7-23-90	1229	2.16			12-7-89	1434	1.94	
	7-23-90	1308	2.27			1-16-90	1256	1.58	

Table 4. Complete water-level observations--continued

Well number	Date	Time	Water level	Remarks[1]
S95436	3-13-90	1004	1.78	
	3-13-90	1148	1.82	K
	3-13-90	1330	1.85	
	3-13-90	1518	1.95	
	3-13-90	1750	1.81	
	4-16-90	1343	2.21	
	6-12-90	1110	.84	
	6-12-90	1247	2.09	K
	6-12-90	1423	2.09	
	6-12-90	1610	2.14	
	6-12-90	1729	2.16	
	7-23-90	0836	1.80	
	7-23-90	0930	1.83	
	7-23-90	1028	1.84	
	7-23-90	1130	1.86	
	7-23-90	1227	1.89	
	7-23-90	1306	1.91	
	9-20-90	0839	1.85	
	9-20-90	0948	1.87	
	9-20-90	1123	1.90	K
	9-20-90	1232	1.92	
	9-20-90	1345	1.94	
S95437	4-9-89	1100	.51	
	9-7-89	1405	-.39	
	10-4-89	1351	1.76	
	11-1-89	1010	1.28	
	11-1-89	1116	1.41	
	12-6-89	1120	.59	
	3-13-90	0838	.40	
	3-13-90	1045	.41	
	3-13-90	1215	.49	K
	3-13-90	1412	.54	
	3-13-90	1629	.48	
	3-13-90	1632	.46	
	4-9-90	1100	.51	
	6-12-90	0952	1.01	
	6-12-90	1200	.94	
	6-12-90	1327	.98	K
	6-12-90	1515	1.08	
	6-12-90	1623	1.12	
	6-20-90	1427	.86	
	7-23-90	0930	.76	
	7-23-90	1020	.83	
S95437	7-23-90	1100	0.85	
	7-23-90	1125	.89	
	7-23-90	1200	.91	K
	7-23-90	1225	.93	
	7-23-90	1315	.95	
	8-20-90	1108	1.25	
	9-20-90	0800	.75	
	9-20-90	0917	.77	
	9-20-90	1032	.83	
	9-20-90	1048	1.85	K
	9-20-90	1147	.89	
	9-20-90	1301	.94	
S95438	9-7-89	1410	1.08	
	10-4-89	1200	.83	
	10-4-89	1350	.89	
	11-1-89	1011	1.44	
	11-1-89	1117	1.47	
	12-6-89	1120	.69	
	3-13-90	0840	.63	
	3-13-90	1050	.71	
	3-13-90	1217	.78	
	3-13-90	1414	.82	
	3-13-90	1632	.74	
	4-9-90	1220	.79	
	6-12-90	0950	1.33	
	6-12-90	1155	1.27	
	6-12-90	1325	1.30	K
	6-12-90	1513	1.39	
	6-12-90	1621	1.45	
	7-23-90	0955	1.10	
	7-23-90	1025	1.15	
	7-23-90	1105	1.20	
	7-23-90	1128	1.21	
	7-23-90	1205	1.25	K
	7-23-90	1230	1.26	
	7-23-90	1316	1.29	
	9-20-90	0802	1.10	
	9-20-90	0915	1.09	
	9-20-90	1032	1.15	
	9-20-90	1047	1.18	K
	9-20-90	1146	1.21	
	9-20-90	1300	1.25	
S95439	10-11-89	0923	1.80	

Table 4. Complete water-level observations--continued

Well number	Date	Time	Water level	Remarks[1]	Well number	Date	Time	Water level	Remarks[1]
S95439	10-11-89	1230	1.93		S95440	9-20-90	0824	1.81	
	11-1-89	1224	1.89			9-20-90	0933	1.81	
	12-6-89	1305	1.33			9-20-90	1104	1.78	K
	2-13-90	1054	1.44			9-20-90	1200	1.79	
	3-13-90	0910	1.17			9-20-90	1317	1.78	
	3-13-90	1110	1.23		S95441	9-4-89	1445	1.38	
	3-13-90	1239	1.29			9-7-89	1101	1.28	
	3-13-90	1431	1.36			9-7-89	1314	1.36	
	3-13-90	1655	1.31			9-11-89	1112	1.37	
	4-10-90	1023	1.06			9-21-89	0725	1.30	
	6-12-90	1013	1.80			10-4-89	1225	1.85	
	6-12-90	1344	1.71	K		10-11-89	1212	.79	K
	6-12-90	1530	1.81			3-13-90	1001	.57	K
	6-12-90	1643	1.87			3-13-90	1140	.59	K
	7-23-90	0855	1.47			3-13-90	1340	.57	K
	7-23-90	1000	1.50			3-13-90	1515	.53	K
	7-23-90	1250	1.66	K		7-23-90	0852	.77	
	8-16-90	1435	1.43			7-23-90	0958	.82	
	9-20-90	0826	1.49			7-23-90	1125	.88	K
	9-20-90	0935	1.50			7-23-90	1238	.87	
	9-20-90	1105	1.59	K		7-23-90	1351	.86	
	9-20-90	1202	1.64			8-15-90	1120	.83	
	9-20-90	1319	1.71			9-20-90	0808	.71	
S95440	10-4-89	1217	2.73			9-20-90	0932	.79	
	10-4-89	1400	2.71			9-20-90	1054	.86	K
	10-11-89	0905	2.83			9-20-90	1215	.86	
	10-11-89	0906	2.53			9-20-90	1318	.85	
	12-6-89	1303	2.70		S95442	10-4-89	1236	1.56	
	2-13-90	1051	2.92			1-3-90	1151	.87	
	3-13-90	0907	2.68			2-8-90	1108	2.09	
	3-13-90	1108	2.68			3-13-90	0925	1.32	
	3-13-90	1235	2.68			3-13-90	1120	1.42	K
	3-13-90	1429	2.68			3-13-90	1250	1.52	
	3-13-90	1653	2.66			3-13-90	1444	1.54	
	4-10-90	1100	2.94			3-13-90	1708	1.44	
	6-12-90	1015	2.40			6-12-90	1030	1.87	
	6-12-90	1345	2.37	K		6-12-90	1220	1.82	
	6-12-90	1531	2.36			6-12-90	1357	1.91	K
	6-12-90	1645	2.36			6-12-90	1543	2.01	
	7-23-90	0900	2.02			6-12-90	1636	2.07	
	7-23-90	1000	1.99			7-23-90	0845	1.59	
	7-23-90	1255	1.98	K		7-23-90	0940	1.63	
	8-15-90	1435	2.34			7-23-90	1037	1.72	

Table 4. Complete water-level observations--continued

Well number	Date	Time	Water level	Remarks[1]	Well number	Date	Time	Water level	Remarks[1]
S95442	7-23-90	1147	1.80		S95444	3-13-90	1427	1.71	
	7-23-90	1237	1.87	K		3-22-90	1230	1.69	
	7-23-90	1322	1.90			6-12-90	1000	1.96	
	8-16-90	1400	1.62			6-12-90	1240	1.99	
	9-20-90	0840	1.62			7-23-90	0815	1.67	
	9-20-90	0945	1.66			7-23-90	0950	1.71	
	9-20-90	1115	1.79	K		7-23-90	1047	1.79	K
	9-20-90	1213	1.85			7-23-90	1202	1.73	
	9-20-90	1332	1.90			7-23-90	1303	1.74	
S95443	9-12-89	1000	3.17			8-13--90	1025	1.84	
	10-4-89	1255	.82			9-20-90	0806	1.69	
	10-4-89	1415	.79			9-20-90	0906	1.71	
	10-5-89	0838	.75			9-20-90	1028	1.72	K
	10-5-89	0930	.75			9-20-90	1127	1.75	
	10-26-89	1352	.91			9-20-90	1331	1.74	
	12-7-89	1035	.88		S95445	9-12-89	0950	2.45	
	3-13-90	0858	.63			10-4-89	1200	2.09	
	3-13-90	1050	.65			10-4-89	1255	2.12	
	3-13-90	1254	.67			10-4-89	1410	2.09	
	3-13-90	1426	.63			10-5-89	0830	2.03	
	3-22-90	1136	.63			10-26-89	1350	2.23	
	6-12-90	1000	.88			12-7-89	1036	2.25	
	6-12-90	1240	.93	K		3-13-90	0905	2.00	K
	6-20-90	0850	.82			3-13-90	1054	2.01	K
	7-23-90	0810	.62			3-13-90	1257	2.04	K
	7-23-90	0945	.63			3-13-90	1429	2.02	K
	7-23-90	1044	.66	K		3-22-90	1250	2.01	
	7-23-90	1159	.66			6-12-90	1000	2.27	K
	7-23-90	1301	.67			6-12-90	1240	2.29	K
	8-13-90	1020	.68			7-23-90	0820	1.96	
	9-20-90	0807	.63			7-23-90	0955	1.99	
	9-20-90	0905	.64			7-23-90	1049	2.00	K
	9-20-90	1027	.66	K		7-23-90	1205	1.98	
	9-20-90	1126	.67			7-23-90	1307	2.01	
	9-20-90	1229	.65			8-13-90	1030	2.07	
S95444	10-4-89	1255	1.72			9-20-90	0805	1.96	
	10-5-89	0835	1.70			9-20-90	0907	1.99	
	10-5-89	0930	1.72			9-20-90	1029	1.99	K
	10-26-89	1351	1.88			9-20-90	1130	2.00	
	12-7-89	1030	1.88			9-20-90	1233	2.02	
	3-13-90	0900	1.66		S95446	10-4-89	1302	-.40	
	3-13-90	1053	1.67			1-3-90	1459	-.86	
	3-13-90	1255	1.70	K		1-5-90	1122	-1.05	

Table 4. Complete water-level observations--continued

Well number	Date	Time	Water level	Remarks[1]	Well number	Date	Time	Water level	Remarks[1]
S95446	3-13-90	1020	-0.69		S95448	11-2-89	1425	1.80	
	3-13-90	1159	-.70			1-3-90	1255	.37	
	3-13-90	1347	-.70			1-19-90	1210	.36	
	3-13-90	1533	-.70			3-13-90	0950	2.80	
	3-13-90	1800	-.70			3-13-90	1135	3.31	K
	4-16-90	1220	-.33			3-13-90	1726	2.48	
	6-12-90	1128	-.43	K		3-13-90	1313	3.54	
	6-12-90	1539	-.42	K		3-13-90	1501	3.20	
	6-12-90	1745	-.42	K		4-16-90	1150	2.61	
	6-20-90	1350	-1.30			6-12-90	1053	.30	
	7-23-90	0803	-.64			6-12-90	1237	.64	
	7-23-90	0930	-.63			6-12-90	1413	1.10	K
	7-23-90	1053	-.64			6-12-90	1559	1.56	
	7-23-90	1215	-.64			6-12-90	1715	1.60	
	7-23-90	1325	-.64			6-20-90	1520	.37	
	8-14-90	1215	-.59			7-23-90	0908	.46	
	9-20-90	0827	-.83			7-23-90	1000	.79	
	9-20-90	1112	-.83	K		7-23-90	1054	1.11	
	9-20-90	1335	-.84			7-23-90	1206	1.47	
S95447	10-4-89	1300	2.07			7-23-90	1255	1.51	
	1-3-90	1457	1.63			7-23-90	1339	1.41	
	1-5-90	1120	1.60			8-14-90	1020	.68	
	3-13-90	1028	1.80			9-20-90	0854	.57	
	3-13-90	1200	1.81	K		9-20-90	0953	.92	
	3-13-90	1353	1.81			9-20-90	1133	1.40	K
	3-13-90	1530	1.81			9-20-90	1237	1.51	
	3-13-90	0600	1.81			9-20-90	1353	1.31	
	4-16-90	1200	2.22		S95449	10-4-89	1250	16.01	
	6-12-90	1125	2.11			10-4-89	1251	16.01	
	6-12-90	1537	2.11	K		10-4-89	1252	16.01	
	6-12-90	1744	2.11			11-2-89	1343	16.01	
	7-23-90	0801	1.86			11-2-89	1430	15.97	
	7-23-90	0927	1.86			1-3-90	1250	15.71	
	7-23-90	1051	1.86			1-18-90	1010	15.48	
	7-23-90	1213	1.87	K		3-13-90	0945	16.51	
	7-23-90	1324	1.87			3-13-90	1133	16.52	K
	8-14-90	1218	1.96			3-13-90	1310	16.52	
	9-20-90	0825	1.90			3-13-90	1500	16.51	
	9-20-90	1110	1.90	K		3-13-90	1723	16.42	
	9-20-90	1333	1.90			4-16-90	1145	16.97	
S95448	10-4-89	1245	.96			6-12-90	1050	16.44	
	10-4-89	1253	.97			6-12-90	1235	16.43	K
	11-2-89	1320	-1.20			6-12-90	1410	16.43	

Table 4. Complete water-level observations--continued

Well number	Date	Time	Water level	Remarks[1]	Well number	Date	Time	Water level	Remarks[1]
S95449	6-12-90	1556	16.43		S95727	3-13-90	1325	1.59	K
	6-12-90	1712	16.43			3-13-90	1455	1.80	
	7-23-90	0906	15.27			3-21-90	1022	1.66	
	7-23-90	0957	15.27			6-12-90	1030	1.71	
	7-23-90	1200	15.26	K		6-12-90	1145	1.75	
	7-23-90	1337	15.26			6-12-90	1215	1.76	
	8-14-90	0852	14.88			6-12-90	1310	1.79	
	9-20-90	0852	13.91			6-12-90	1345	1.80	K
	9-20-90	1132	13.91	K		7-23-90	0915	1.41	
	9-20-90	1350	13.91			7-23-90	1030	1.42	
S95450	9-14-89	1100	1.71			7-23-90	1129	1.47	K
	10-4-89	1202	1.65			7-23-90	1246	1.52	
	11-1-89	1213	2.38			7-23-90	1342	1.54	
	12-6-89	1155	2.12			8-8-90	1100	1.29	
	2-13-90	1330	2.60			9-20-90	0827	1.26	
	3-13-90	0852	1.99			9-20-90	0930	1.30	
	3-13-90	1100	1.99	K		9-20-90	1052	1.34	K
	3-13-90	1225	1.99			9-20-90	1157	1.37	
	3-13-90	1427	1.99			9-20-90	1309	1.39	
	3-13-90	1643	1.99		S95728	11-1-89	1216	2.33	
	4-9-90	1500	2.68			2-13-90	1350	2.56	
	5-31-90	0845	2.33			3-13-90	0902	1.95	
	6-12-90	0956	1.88			3-13-90	1103	1.96	
	6-12-90	1338	1.88	K		3-13-90	1227	1.94	K
	6-12-90	1630	1.87			3-13-90	1424	1.94	
	7-23-90	0915	1.33			3-13-90	1645	1.94	
	7-23-90	1012	1.32			4-9-90	1520	2.65	
	7-23-90	1307	1.32			6-12-90	1005	1.85	K
	8-21-90	0848	1.46			6-12-90	1340	1.85	
	9-20-90	0815	1.24			6-12-90	1636	1.85	
	9-20-90	0926	1.24			7-23-90	0920	1.31	
	9-20-90	1057	1.24	K		7-23-90	1015	1.30	K
	9-20-90	1155	1.24			7-23-90	1310	1.30	
	9-20-90	1309	1.24			8-21-90	1036	1.48	
S95727	1-5-90	1521	1.44			9-20-90	0817	1.22	
	2-22-90	1251	1.56			9-20-90	1059	1.22	K
	3-13-90	0944	1.49			9-20-90	1312	1.22	
	3-13-90	1125	1.54						

Table 5. Chloride concentration, specific conductance, and dissolved-solids concentration of water from wells on the North Fork of Long Island, N.Y., 1974-91

[Well locations are shown in fig. 1. Concentrations are in milligrams per liter (mg/L). Specific conductance values are in microsiemens per centimeter at 25°C (degrees Celsius). Dissolved-solids concentration is the residue after evaporation at 180°C in milligrams per liter. --, no data available. >, greater than]

Well number	Date	Time	Chloride Concentration	Chloride Method of measurement[1]	Specific conductance	Dissolved solids
S16783	1-3-90	1344	170	P	741	--
	4-16-90	1330	160	P	878	--
	8-20-90	1115	91	SC	689	--
S53323	11-27-74	1545	32	SC*	296	--
	11-3-75	1230	40	SC*	300	-
	2-9-77	1030	39	SC*	285	--
	1-9-78	1315	38	SC*	290	--
	10-4-79	1300	34	SC*	255	--
	2-29-80	1200	35	SC*	235	--
	2-25-81	1330	31	SC*	215	--
	6-9-81	1100	35	SC*	210	--
	6-10-82	1300	37	SC*	225	--
	3-15-84	--	32	SC*	200	--
	3-21-90	1350	10	P	260	--
	8-8-90	1426	34	SC	249	--
S53330	1-8-75	1515	26	SC*	420	--
	10-14-75	1345	28	SC*	335	--
	1-12-77	0930	30	SC*	370	--
	2-7-77	1500	27	SC*	340	--
	1-12-78	0930	30	SC*	370	--
	10-3-79	1300	28	SC*	330	--
	3-12-80	1300	28	SC*	--	--
	2-25-81	1330	38	SC*	295	--
	6-8-81	1300	42	SC*	310	--
	6-10-82	1100	33	SC*	320	--
	9-13-82	1400	40	SC*	300	--
	3-7-83	1000	41	SC*	290	--
	8-23-83	1300	34	SC*	280	--
	6-23-86	1100	35	SC*	280	--
	12-18-86	1100	40	SC*	--	--
	3-2-87	1100	38	SC*	--	--
	5-18-87	1100	36	SC*	380	--
	4-18-90	1115	38	P	340	--
S53330	8-15-90	1105	--	SC	345	--
S53331	12-9-74	1315	32	SC*	225	--
	11-3-75	1315	33	SC*	175	--

[1] P = U.S. Geological Survey field measurement made with a chloride probe. Probe accuracy measures concentrations between 1 and 500 mg/L

SC = Suffolk County Department of Health Services laboratory measurement made with mixed color reagent

* = SC measurement made before 1989

USGS = U.S. Geological Survey National Water-Quality Laboratory measurement made with ion-exchange chromatographic technique

Table 5. Chloride concentration, specific conductance, and dissolved-solids concentration of water from wells on the North Fork of Long Island, N.Y., 1974-91--continued

Well number	Date	Time	Chloride Concentration	Chloride Method of measurement[1]	Specific conductance	Dissolved solids
S53331	1-12-77	1030	23	SC*	160	--
	2-7-77	1230	22	SC*	160	--
	10-4-79	0900	20	SC*	155	--
	2-29-80	1400	22	SC*	146	--
	2-25-81	1:00	22	SC*	142	--
	6-8-81	1100	26	SC*	145	--
	6-10-82	1000	25	SC*	145	--
	9-13-82	1300	260	SC*	130	--
	3-3-83	1300	24	SC*	145	--
	8-24-83	1100	18	SC*	130	--
	3-14-84	--	19	SC*	115	--
	6-23-86	1000	20	SC*	85	--
	7-29-86	1520	19	SC*	141	--
	12-17-86	1400	16	SC*	--	--
	2-26-87	1300	16	SC*	--	--
	5-18-87	1300	17	SC*	113	--
	5-18-87	1300	17	SC	113	--
	3-21-90	1215	20	P	125	--
	8-8-90	1238	13	SC	130	--
S53539	12-20-74	1230	14	SC*	260	--
	10-14-75	1300	22	SC*	235	--
	2-9-77	0915	22	SC*	240	--
	1-9-78	1430	18	SC*	220	--
	10-4-79	1000	21	SC*	225	--
	2-29-80	1030	19	SC*	177	--
	2-24-81	1130	10	SC*	118	--
	6-8-81	1400	16	SC*	150	--
	6-16-82	1000	14	SC*	120	--
	8-30-82	1400	17	SC*	185	--
	3-15-84	--	15	SC*	150	--
	7-29-85	1030	14	SC*	132	--
	8-13-85	1300	12	SC*	137	--
	1-3-90	1445	19	P	147	--
	4-18-90	1020	11	P	125	--
	8-8-90	1510	19	SC	227	--
S85598	4-12-90	1310	12	P	289	--
	8-15-90	0945	22	SC	258	--
S85599	4-12-90	1205	23	P	459	--
	8-14-90	1446	35	SC	582	--
S95419	6-19-89	--	4,100	P	16,500	--
	12-6-89	1220	5,800	P	21,800	--
	4-9-90	1415	15,000	P	19,500	--
	8-21-90	1037	>9,400	SC	24,500	--
	1-7-91	1220	9,200	USGS	23,200	15,900
S95420	6-19-89	--	800	P	2,880	--
	12-6-89	1212	590	P	1,630	--
	4-9-90	1345	830	P	1,140	--

Table 5. Chloride concentration, specific conductance, and dissolved-solids concentration of water from wells on the North Fork of Long Island, N.Y., 1974-91--continued

			Chloride			
Well number	Date	Time	Concentration	Method of measurement[1]	Specific conductance	Dissolved solids
S95420	8-21-90	1109	280	SC	1,430	--
	1-7-91	1241	310	USGS	1,260	694
S95421	6-27-89	--	370	P	1,840	--
	8-31-89	--	93	P	735	--
	1-3-90	1128	110	P	881	--
	4-10-90	1330	88	P	949	--
	8-20-90	1016	72	SC	630	--
S95422	6-27-89	--	65	P	805	--
	1-3-90	1110	87	P	755	--
	4-10-90	1300	94	P	730	--
	8-20-90	1040	75	P	754	--
	8-20-90	1040	75	SC	754	--
S95423	7-13-89	--	4.8	P	107	--
	4-12-90	1028	4.3	P	118	--
S95424	4-12-90	1008	9.2	P	161	--
S95425	8-16-90	1115	>14,000	SC	38,800	--
	1-10-91	1030	16,000	USGS	35,800	28,100
S95426	9-14-89	--	20	P	440	--
	12-7-90	1400	9,700	P	29,200	--
	12-7-89	1400	8,300	USGS	29,200	20,000
	4-12-90	1415	9,400	P	25,000	--
	8-16-90	1200	>12,000	SC	30,100	--
	1-10-91	1045	13,000	USGS	31,900	21,300
S95427	9-14-89	--	6.6	P	455	--
	12-7-89	1333	11	P	100	--
	4-12-90	1442	3.5	P	151	--
	1-7-91	1300	15	USGS	131	99
S95428	8-8-89	--	--	P	--	--
	12-6-89	1243	450	P	1,150	--
	4-10-89	1210	--	P	660	--
	8-13-90	1400	3,600	P	8,140	--
	8-13-90	1400	3,000	SC	8,140	--
	8-13-90	1630	4,500	P	10,700	--
	8-13-90	1630	3,700	SC	10,700	--
	1-10-91	1300	4,000	USGS	11,000	7,260
S95429	12-7-89	1220	28	P	481	--
	4-10-90	1140	35	P	458	--
	8-13-90	1415	30	SC	480	--
	1-10-90	1155	29	USGS	440	321
S95430	9-11-89	--	1,600	P	13,400	--
	12-6-89	1400	4,300	P	14,900	--
	4-10-90	1305	8,500	P	11,000	--
	8-15-90	1256	>2,800	SC	15,100	--
	1-29-91	1157	5,100	USGS	14,100	9,470
S95431	9-11-89	--	65	P	--	--
	12-6-89	1450	310	P	986	--
	8-15-90	1230	46	SC	416	--

Table 5. Chloride concentration, specific conductance, and dissolved-solids concentration of water from wells on the North Fork of Long Island, N.Y., 1974-91--continued

Well number	Date	Time	Chloride Concentration	Chloride Method of measurement[1]	Specific conductance	Dissolved solids
S95431	1-29-91	1250	940	USGS	2,620	1,560
S95432	8-31-89	--	900	P	17,900	--
	4-13-90	1240	9,000	P	12,400	--
	8-16-90	1319	>14,000	SC	41,900	--
	12-13-90	1610	10,000	USGS	42,200	29,100
S95433	8-31-89	--	11	P	309	--
	4-18-90	1145	23	SC	272	--
	12-13-90	1620	33	USGS	305	202
S95434	9-7-89	--	30	P	128	--
	9-21-89	--	14	P	122	--
	12-7-89	1440	16	P	105	--
	4-16-90	1430	13	P	111	--
	1-10-91	1300	16	USGS	120	89
S95435	9-21-89	--	9,500	P	20,200	--
	12-7-89	1450	17,000	P	40,500	--
	4-16-90	1410	18,500	P	38,000	--
	8-20-90	1140	>14,000	SC	33,800	--
	1-10-91	1300	13,000	USGS	42,500	28,200
S95436	9-21-89	--	14	P	100	--
	12-7-89	1445	18	P	103	--
	4-16-90	1356	17	P	110	--
	1-10-91	1300	34	USGS	157	98
S95437	9-1-89	--	4,150	P	49,500	--
	12-6-89	1130	14,000	P	41,800	--
	4-9-90	1110	22,000	P	23,600	--
	8-20-90	1329	>15,000	SC	41,600	--
	12-3-90	1255	16,000	USGS	40,100	28,500
S95438	9-1-89	--	17	P	301	--
	12-6-89	1135	92	P	431	--
	4-9-90	1220	45	P	182	--
	12-3-90	1311	37	USGS	257	--
S95439	8-30-89	--	550	P	1,730	--
	12-6-89	1320	5,800	P	18,700	--
	4-10-90	1130	8,600	P	11,100	--
	8-16-90	0940	>3,200	SC	19,400	--
	12-3-90	1410	17	USGS	18,500	12,300
S95440	8-30-89	--	68	P	602	--
	12-6-89	1329	120	P	570	--
	4-10-90	1100	220	P	598	--
	8-15-90	1350	160	SC	876	--
	12-3-90	1430	170	USGS	783	--
S95441	9-11-89	--	6,000	P	51,000	--
	9-21-89	--	13,000	P	31,900	--
	4-13-90	1115	16,000	P	28,800	--
	8-15-90	1220	>14,000	SC	41,000	--
	1-29-91	1457	18,000	USGS	40,700	28,300
S95442	8-31-89	-	650	P	9,960	--

Table 5. Chloride concentration, specific conductance, and dissolved-solids concentration of water from wells on the North Fork of Long Island, N.Y., 1974-91--continued

Well number	Date	Time	Chloride: Concentration	Chloride: Method of measurement[1]	Specific conductance	Dissolved solids
S95442	1-3-90	1205	9,000	P	11,800	--
	4-18-90	1310	4,600	P	11,500	--
	8-16-90	1429	>2,400	SC	11,900	--
	1-29-91	1338	3,400	USGS	12,000	7,650
S95443	12-7-89	1113	16,000	P	40,000	--
	4-10-90	1230		P	31,000	--
	8-13-90	1200	>16,000	SC	43,600	--
	12-13-90	1300	16,000	USGS	42,600	29,600
S95444	9-13-89	--	320	P	9,850	--
	12-7-89	1058	4,600	P	14,600	--
	4-10-90	1042	8,100	P	11,900	--
	8-13-90	1152	4,800	SC	12,000	--
	12-13-90	1315	4,200	USGS	11,500	7,520
S95445	9-13-89	--	11	P	287	--
	12-7-89	1050	27	P	140	--
	4-10-90	1145	<47	P	133	--
	8-13-90	1340	35	P	138	--
	8-13-90	1340	27	SC	138	--
	12-13-90	1330	24	USGS	227	--
S95446	8-14-90	--	>14,000	SC	39,500	--
	1-29-91	1030	16,000	USGS	38,700	26,500
S95447	9-12-89	--	27	P	142	--
	4-16-90	1210	18	P	145	--
	1-29-91	1110	25	USGS	150	112
S95448	9-12-89	--	2,100	P	6620	--
	4-19-90	1325	>16,000	P	40,400	--
	8-14-90	1030	>16,000	SC	43,000	--
	2-4-91	1150	14,000	USGS	44,200	29,300
S95449	9-12-89	--	26	P	270	--
	1-3-90	1308	28	P	148	--
	4-16-90	1145	26	P	147	--
	2-4-91	1220	29	USGS	169	111
S95450	12-6-90	1228	620	P	1,620	--
	4-9-90	1500	970	P	1,310	--
	8-21-90	0953	520	SC	1,890	--
	1-7-91	1201	720	USGS	2,480	1,440
S95727	9-7-89	--	880	P	--	--
	3-21-90	1110	8,700	P	26,600	--
	8-8-90	1155	>11,000	SC	31,100	--
	1-7-91	1030	11,000	USGS	31,200	21,200
S95728	10-2-89	--	500	P	1,380	--
	10-2-89	--	470	P	1,380	--
	10-4-89	--	440	P	1,380	--
	12-6-89	1243	450	P	1,150	--
	4-9-90	1520	630	P	855	--
	8-21-90	1143	230	SC	931	--
	1-7-91	1125	400	USGS	1,540	830

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