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PUMPING TEST AT LEVITTOWN, NEW YORK, AT WELL N 3488  
(HICKSVILLE WATER DISTRICT WELL 5)

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PUMPING TEST AT LEVITTOWN, NEW YORK, AT WELL N 3488  
(HICKSVILLE WATER DISTRICT WELL 5)

An official 8-hour pumping test was run on July 1, 1950, at Levittown, N. Y., at a newly constructed well, N 3488 (Hicksville Water District well 5). The test was preceded by a trial run of approximately 90 minutes on June 30. Sufficient data were obtained on both days to determine the specific capacity of the well, the coefficient of transmissibility, and the screen and well losses.

The well is about 125 feet east of Jerusalem Avenue and nearly  $1\frac{1}{4}$  miles north of Hempstead Turnpike. The 12-inch 60-slot Johnson screen, 50 feet in length, was placed in the upper sand beds of the Magothy (?) formation of Upper Cretaceous Age. The well is gravel-packed. Other pertinent well data and geologic information are tabulated <sup>on</sup> ~~in~~ the attached sheets.

C. W. Lauman & Co., Inc., drillers, provided the necessary installations so that water-level measurements could be made not only inside the pumped well but also in the gravel pack. In the 1-inch observation well placed in the gravel pack immediately outside the screen, the depth to water was measured with a steel tape. In the 12-inch pumped well, however, splashing in the well prevented the use of the steel tape when the well was operating. Therefore most of the water-level readings could be obtained only with an air-line gage. A few measurements were made with an electrical line in the pumped well on June 30; but on the next day, because of a break in the electrical circuit, this line could not be used.

On July 1, the 12-inch well was pumped at an average rate of 1,120 gallons per minute for nearly 8 hours. About 1 hour before shut-down the discharge was increased to about 1,500 gallons per minute for a ten-minute period. A drawdown of 34.5 feet was measured as is indicated in the table (attached) in which are listed some of the many pumping test data obtained. The measured drawdown gives a specific capacity for the well of more than 32 gallons per minute per foot of drawdown. A coefficient of transmissibility of about 126,000 gallons per day per foot of width of aquifer was computed from a time-drawdown plotting on semilog paper (see plates 1 and 2). If the saturated thickness of the aquifer is accurately assumed as 80 feet, a coefficient of permeability of about 1,600 gallons per day per square foot is indicated. The drawdown increased very rapidly after the start of pumping, as revealed by the water-level measurements listed in the attached table. After the first hour, however, there was very little increase in the drawdown in the well, as shown by air-line readings in the well and substantiated by steel-tape readings in the observation well in the gravel pack. The slope of the time-drawdown curve in the semilog plotting decreased suddenly and by such a large amount that recharge was indicated. In this well, geologic evidence points to the very permeable water-bearing coarse brown sand and grit, overlying the fine brown sand in which the well was screened, as the source of recharge.

On the basis of comparison of water-level readings obtained in the pumped well and in the observation well screened in the gravel pack, the following differences were computed:

<u>Date</u>	<u>Pumping rate</u>	<u>Water level in observation well</u>
June 30	1,000 g.p.m.	0.4 foot above level in pumped well
June 30	1,580 g.p.m.	.6 foot above level in pumped well
July 1	1,120 g.p.m.	.7 <sup>±</sup> foot below level in pumped well
July 1	1,500 g.p.m.	1.0 foot above level in pumped well

The differences shown for June 30, based on readings taken with a steel tape and an electrical line, are considered accurate within 0.2 foot. *Those shown for July 1, obtained by means of an air-line gage, are* ~~The air-line gage used on July 1, is~~ much less accurate. In any case, even though more accurate differences could not be determined, the data were sufficient to show definitely that the screen and well losses were small. The formational losses immediately outside the gravel pack were not ascertained.

The water pumped from the well was discharged in the immediate vicinity into one large pit and two long, narrow excavations, around all of which a low earth embankment was constructed. The total capacity of this arrangement was not much more than 250,000 gallons, or the equivalent of about 4 hours of discharge at the average pumping rate of 1,120 gallons per minute. A large percentage of the water pumped during the last 4 hours of the test was piped from within the embankment onto the surrounding flat open field. The amount of infiltration that occurred during the period of the pumping test could not be determined with any degree of accuracy. But certainly during the period of the pumping test, the effect of the returning water on the drawdown in the well was negligible.

Pumping test at Levittown, N. Y., at well N 3488

(Hicksville Water District well 5)

Driller's log

Well drilled by C. W. Lauman & Co., Inc., July 1950. Jerusalem Avenue north Hempstead Turnpike. Altitude of land surface about 117 feet above mean sea level. Log begins at land surface.

	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Topsoil	1	1
Loam	2	3
Coarse brown sand and grit	85	88
Multicolored sandy clay	6½	94½
Medium-coarse brown clay	2½	97
Multicolored sandy clay	22	119
Fine brown sand	25	144
Layers of fine brown sand and sandy clay	33	177
Solid gray clay and layers of brown sandy clay	25	202

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Well data

Total depth: 171 feet

Casing:

20-inch, from land surface to 118 feet

12-inch, from land surface to 118 feet

Screen:

Type: Johnson 60-slot

Length: 52 feet 8 inches (over-all), 50 feet effective

Diameter: 12 inches (I.D.)

Setting: 118 to 171 feet

Gravel pack: Graded pea gravel placed and developed in 8-inch annular  
shell around screen

Observation well: in gravel pack

Diameter: 1 inch,

Depth: Land surface to 123 feet

Screen:

Diameter: 2 inches

Length: 2 feet

Setting: 123 to 125 feet

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Pumping-test data

Date	Hour	Inside pumped well			Outside pumped well		Difference in drawdown (outside minus inside) b/	Pumping rate	Remarks
		Air-line gage	Depth to water	Draw- down	Depth to water a/	Draw- down			
		DST	ft.	ft.	ft.	ft.	ft.	gpm.	
June 30, 1950	1:30 p.m.		a/ 81.4	34.4	81.0	34.0	-0.4	1000	Trial pumping. Do.
	2:00		a/ 96.6	49.6	96.0	49.0	-0.6	1590	
	3:00		a/ 47.0	0	47.0	0	.0	0	
July 1, 1950	6:15 a.m.	c/ 57.9	a/ 47.0	0	47.0	0	.0	0	Start of test.
	30	a/ 24.3	80.6	33.6	81.0	34.0		1120	
	45	a/ 23.7	81.2	34.2	81.9	34.9		1120	
	7:00	a/ 23.4	81.5	34.5	82.1	35.1		1120	
	30	a/ 23.5	81.4	34.4	81.8	34.8		1120	
	8:00	a/ 23.4	81.5	34.5	81.9	34.9		1120	
	20	a/ 23.3	81.6	34.6	82.1	35.1		1120	
		e/ 23.4	81.5	34.5				1120	
	9:00	e/ 23.5	81.4	34.4	82.1	35.1		1120	
	10:00	e/ 23.5	81.4	34.4	81.9	34.9		1120	
	11:00	e/ 23.5	81.4	34.4	82.1	35.1		1120	
	12:00	e/ 23.5	81.4	34.4	82.4	35.4		1120	
	1:00 p.m.	e/ 23.3	81.6	34.6	82.4	35.4		1120	
	1:20	e/ 15.0	89.9	42.9				1500	
	1:25	e/ 10.5	94.4	47.4	93.4	46.4	-1.0	1500	
	1:30	e/ 22.5	82.4	35.4				1500	
	1:45	e/ 23.5	81.4	34.4	82.5	35.5		1120	
	2:00	e/ 23.5	81.4	34.4	82.6	35.6		1120	
	2:10	e/ 23.5	81.4	34.4	82.6	35.6		1120	End of test.
	2:15	e/ 55.5	49.4	2.4	49.8	2.8		0	
	2:30				47.3	.3		0	
July 18, 1950	4:00 p.m.				47.0				

a/ Steel tape used for reading; depths given below same datum as for pumped well.

b/ Difference not computed when inside reading is above that outside of well. Accuracy of air-line gage not better than nearest foot.

c/ Gage tilted 45° to right from horizontal position; correction applied, +0.5 foot.

d/ Gage tilted 45° to left from horizontal position; correction applied, -0.5 foot.

e/ Gage in upright position; no correction applied.