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Public Groundwater Supplies in Champaign County

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PUBLIC GROUNDWATER SUPPLIES IN CHAMPAIGN COUNTY

by Dorothy M. Waller

Introduction

This publication presents all available information on production wells used for public groundwater supplies in Champaign County. Bulletin 60, which is divided by county into separate publications, supersedes Bulletin 40 and its Supplements 1 and 2.

The definition of public water supply as contained in the Environmental Protection Act of 1970 was used to determine those water systems and wells to be included. Systems and wells described furnish water for drinking or general domestic use in: 1) incorporated municipalities; 2) unincorporated communities where 10 or more separate lots or properties are being served or are intended to be served; 3) state-owned parks and memorials; and 4) state-owned educational, charitable, or penal institutions.

This report includes separate descriptions for 24 groundwater supply systems furnishing water to 22 municipalities, 3 public water districts, 2 subdivisions, 1 state mental health zone center, 1 airport, and 1 university in Champaign County. These are preceded by brief summaries of the groundwater geology of the county and the development of groundwater sources for municipal use. An explanation of the format used in the descriptions is also given.

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Geology

The geology of Champaign County is summarized in general terms in Illinois State Geological Survey Circular 248, *Groundwater Geology in East-Central Illinois,* Circular 409, *Hydrogeology of Glacial Deposits of the Mahomet Bedrock Valley in East-Central Illinois,* and Illinois State Water Survey Circular 124, *Groundwater Availability in Champaign County.* Portions of State Geological Survey Bulletin 94, *Pleistocene Stratigraphy of Illinois,* and Guidebook Series 9, *Pleistocene Stratigraphy of East-Central Illinois,* also contain geologic information applicable to the county. The following brief discussion of geologic conditions in the county is taken largely from these publications. For a more detailed definition of the geology in this portion of the state, the reader is referred to the State Geological Survey which is located on the University of Illinois campus, Urbana.

Glacial till deposits of Wisconsinan, Illinoian, and Kansan age blanket all of Champaign County resulting in a relatively level plain broken only by isolated knobs, stream valleys, and long ridges (end moraines) formed at the front of the glaciers (see figure 1). These features were developed long ago when the glaciers, nourished by snow accumulation in Canada, several times advanced across Champaign County and melted away leaving vast quantities of rock debris. In front of the ice, sediment-laden meltwaters escaped down valleys, partially filling them with outwash materials of sorted and stratified formations of clay, silt, sand, and gravel. Thick extensive till sheets of unsorted clay, silt, sand, and pebbles also were laid down by the advancing ice or dumped into place during melting. The thickness of the glacial deposits varies from about 100 to nearly 400 ft, the thicker sections being asso-

GLACIAL DRIFT SECTION

TIME STRATIGRAPHY		PRINCIPAL ROCK STRATIGRAPHIC UNITS		GRAPHIC LOG	DESCRIPTION OF UNITS	WATER-YIELDING CHARACTERISTICS
QUATERNARY SYSTEM / PLEISTOCENE SERIES	HOLOCENE STAGE	Cahokia Alluvium			Mostly water-laid silt and sand; local gravel	Locally source of near surface supplies in principal stream valleys
	WISCONSINAN STAGE	WEDRON Fm. (15-140 ft)	Snyder till mbr		Gray clayey, silty till, NE part of county only; local sand and gravel at base and at till margin	Water-yielding only from thin sand and gravel lenses between tills, mainly small domestic and farm supplies
			Batestown till mbr		Gray silty till, thin local sand at base	
			Glen Burn till mbr		Grayish brown, thin, sandy, silty till. Locally thin basal sand	
		Robein Silt			Organic silt "soil"	Not water-yielding, source of drift gas
	SANGAMONIAN STAGE	GLASFORD Fm. (10-155 ft)	Berry Clay mbr		Thin silty clay "soil"	
	ILLINOIAN STAGE		Radnor till mbr		Gray, silty till; locally thin lenses of sand and gravel	Associated sand and gravel frequently source for small domestic and farm supplies
			Vandalia till mbr		Brownish gray, sandy till, locally extensive sand and gravel at top and bottom	Frequently water-yielding from sand and gravel. Major aquifer associated in W part of county
			Smithboro till mbr		Dark brown, dark gray silty till	Not water-yielding
	YARMOUTHIAN STAGE	BANNER Fm. (0-240 ft)	Lierle Clay mbr		Thin, silty clay "soil"	Not water-yielding, source of drift gas
	KANSAN STAGE		Tilton till mbr		Brownish gray, sandy silty till	Generally not water-yielding
			Hillery till mbr		Brown, reddish brown silty till	
			Harmatton till mbr		Gray, olive gray silty till	
			Hegeler till mbr		Greenish gray silty till	
			Mahomet Sand		Fine, medium sand in upper part, grading to medium to coarse sand and gravel, locally coarse at base	Most productive aquifer in region. Present only in Mahomet Bedrock Valley and its larger tributary valleys

UPPER BEDROCK SECTION

TIME STRATIGRAPHY		PRINCIPAL ROCK STRATIGRAPHIC UNITS	GRAPHIC LOG	DESCRIPTION OF UNITS	WATER-YIELDING CHARACTERISTICS
SYSTEM	SERIES OR GROUP				
PENNSYLVANIAN	McLEANSBORO GROUP	0-630 ft		Mainly shale with thin sandstone, limestone, coal beds	Water-yielding character variable. Locally shallow sandstone and creviced limestone yield small supplies. The shale is nonwater-yielding. Water quality becomes poorer with increasing depth, may require casing
	KEWANEE GROUP	0-350			
	McCORMICK GROUP	0-200			
MISSISSIPPIAN	CHESTERIAN SERIES	0-150		Shale, limestone, and sandstone	Too deeply buried to be considered as a source of groundwater in the county
	VALMEYERAN SERIES	Ste. Genevieve Fm St. Louis Fm 0-170		Limestone	May yield small supplies from the limestone intervals where these formations are present at shallow depth
		Borden Fm 0-700		Limestone with intermediate shale, cherty in lower part	
	KINDERHOOKIAN SERIES	0-100		Shale	Not water-yielding
DEVONIAN	UPPER SERIES MIDDLE SERIES	0-180		Shale and limestone	Water-yielding from crevices where encountered at a shallow depth
SILURIAN	NIAGARAN SERIES	0-600		Dolomite and limestone	
	ALEXANDRIAN SERIES	0-25			

Figure 1. Generalized column of rock stratigraphic units and aquifers in Champaign County
(From Illinois State Water Survey Circular 124)

ciated with the Champaign and Gifford end moraines and the bedrock valleys.

The upper glacial drift unit (Wedron Formation of Wisconsinan age) lies over all older materials and forms the present day land surface of Champaign County, except in most stream valleys where recent alluvium (Holocene) deposits are present. This upper drift unit consists primarily of till except for thin narrow strips or areally limited pockets of sand and gravel. Somewhat thicker and more extensive occurrences of this sand and gravel usually are found in the vicinity of the Champaign and Urbana moraines.

The middle glacial drift unit (Glasford Formation of Illinoian age) consists of relatively impermeable till interbedded with fairly continuous layers of sand and gravel. The thicker (10 to 50 ft) and generally more permeable sand and gravel zones within this drift section normally occur near the base of these materials in the southwest part of the county, and near the top in the northern part.

A major valley carved into the underlying bedrock surface crosses the northwest portion of Champaign County and is filled with extensive sand and gravel deposits that constitute the lower glacial drift unit (Banner Formation of Kansan age). This drift unit is as much as 200 ft thick in the deeper parts of the bedrock valley. In the bedrock upland areas away from this bedrock valley, these sand and gravel deposits become thinner and are absent at some locations.

The bedrock formations in Champaign County are layers of consolidated rocks of Pennsylvanian, Mississippian, Devonian, and Silurian geologic age (see figure 1). These rocks consist of beds of shale, sandstone, limestone, and dolomite arranged one upon the other; the top surface of these rocks is called the bedrock surface. Originally the bedrock formations were unconsolidated materials, deposited over many years as sediments in shallow seas or bordering marshes. They were then buried and hardened into solid rock during the few hundred million years after the seas retreated from the area.

Erosion of the bedrock was not uniform through the county. In areas where soft shale and sandstone formations were exposed to weathering, a major valley system was formed by running water and then by ice action, while the harder sandstone and limestone formations in adjacent areas resisted erosion and remained to form ridges and hills on the bedrock surface. The main bedrock feature in Champaign County is the wide deep valley, formed by the ancient Teays River which headed in the Blue Ridge Mountains in North Carolina, flowed northward into Ohio, then west across Indiana entering central Illinois near Hoopeston. In Illinois this valley is called the Mahomet Bedrock Valley, taking its name from the village of Mahomet located over the deepest part of the channel. It crosses the northwestern part of Champaign County directly north of Champaign-Urbana, trends through the northeastern part of Piatt County to Monticello, then westward and northwestward through Clinton in DeWitt County to an intersection with the ancient Mississippi River near Delavan in Tazewell County. In Champaign County the valley is completely filled with glacial deposits as previously discussed, and there is no surficial evidence of its presence.

Groundwater Development for Municipal Use

Groundwater is used as a source for 24 groundwater supply systems in Champaign County (figure 2). These systems serve Adler Zone Center, Bondville, Briarcliff Subdivision, Broadlands, Champaign, Dewey Public Water District, Fisher, Gifford, Greenwood Lake Subdivision, Homer, Ivesdale, Longview, Ludlow, Mahomet, Ogden, Penfield Public Water District, Pesotum, Philo, Rantoul, Royal, Sadorus, Sangamon Valley Public Water District, Savoy, Sidney, St. Joseph, Thomasboro, Tolono, University of Illinois, University of Illinois Willard Airport, and Urbana.

Sand and gravel deposits in the unconsolidated materials above bedrock are tapped as the sources for each water supply system. There are presently 64 public supply production and standby wells, ranging in depth from 26 to 340 ft, finished in the sand and gravel deposits. Their reported yields range from 25 to 3000 gpm depending primarily upon the type of well and the permeability, thickness, and areal extent of the sand and gravel unit tapped by each well. Production from these wells in 1973 and 1974 was estimated to be 16,000,000 gpd. According to Water Survey Circular 124, an estimated 23.3 million gallons of water is pumped from the aquifers of Champaign County each day to satisfy industrial, municipal, domestic, and rural needs. A much larger quantity of water, perhaps as much as 90,000,000 gpd, could probably be withdrawn without overdevelopment.

Past and present analyses of water from the 24 groundwater supplies in Champaign County indicate that the iron content ranges from 0.0 to 7.0 mg/l, and the hardness from 194 to 460 mg/l. Treatment of these supplies is as follows: 16 chlorinate, 20 fluoridate, 8 soften, 19 treat for iron removal, 1 adds polyphosphate to keep iron in solution, and 2 supplies provide no treatment.

Format

In this publication the descriptions of public groundwater supplies are presented in alphabetical order by place name.

At the beginning of each description the U.S. Census of population for 1970 is given for incorporated places. For

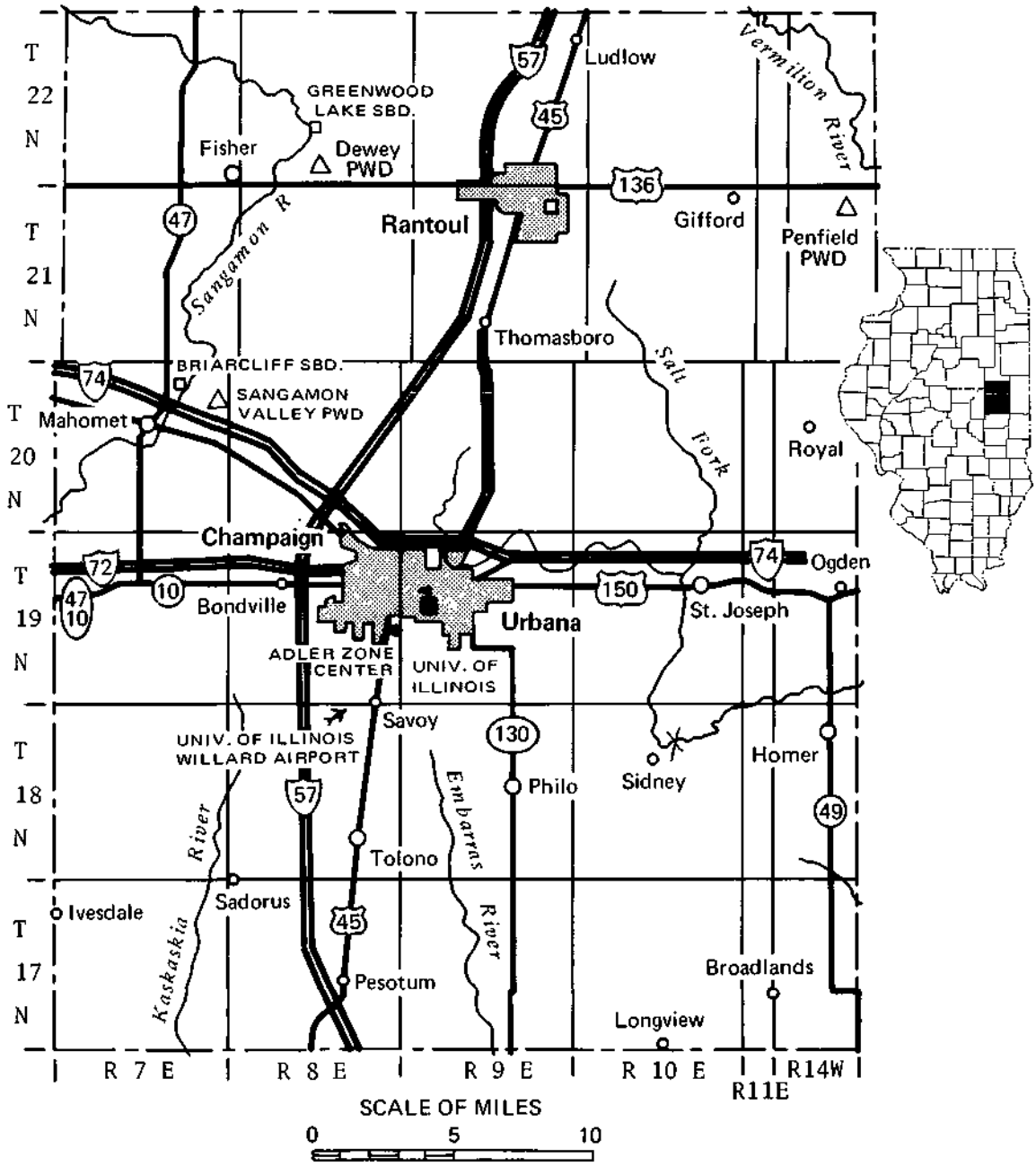

Figure 2. Location of public groundwater supply systems in Champaign County

unincorporated places, the population is estimated on the basis of the number of services or residential units and an assumed number of 3.5 persons per service.

The number of services and quantity of water distributed at each supply are given where available for the earliest and the latest reported values.

Individual production wells for each supply are described in the order of their construction. The description for each well includes the *aquifer tapped, date drilled, depth, driller, legal location, elevation in feet above mean sea level, log, construction features, yield, pumping equipment, and chemical analyses.*

When available, sample study logs by the Illinois State Geological Survey are presented. When these are not available, drillers logs are used as reported. Commonly used drillers terms such as clay, silt, or pebbly clay generally are synonymous with the glacial tills tabulated by the State Geological Survey.

The screen sizes given in this publication are for continuous slot type screens unless stated otherwise. Slot sizes given indicate the width of the slot openings in thousandths of an inch. For example, a 20 slot screen has slot openings 0.020 in. wide and a 100 slot screen has slots 0.100 in. wide. Approximate equivalent slot openings for other types of screens are given in parentheses after the screen designation.

Abbreviations Used

est	estimated
ft	foot (feet)
gal	gallon(s)
gpd	gallons per day
gpm	gallons per minute
HC1	hydrochloric acid
hp	horsepower
hr	hour(s)
HTH	high test hypochlorite
ID	inside diameter
in	inch(es)
Lab	laboratory
lb	pound(s)
me/1	milliequivalents per liter
mg/l	milligrams per liter
min	minute(s)
No.(s)	number(s)
OD	outside diameter
pc/L	picocuries per liter
R	range
rpm	revolutions per minute
T	township
TDH	total dynamic head

PUBLIC WATER SUPPLIES

ADLER ZONE CENTER

The Adler Zone Center of the Illinois Department of Mental Health obtains its water supply from the Northern Illinois Water Corporation *(see Champaign).*

BONDVILLE

The village of Bondville (446) installed a public water supply in 1973. Finished water for this supply is obtained from the Northern Illinois Water Corporation *(see Champaign).*

BRIARCLIFF SUBDIVISION

Briarcliff Subdivision (est. 118), located 1 mile northeast of Mahomet, installed a public water supply in 1964. The water system is owned and operated by the Briarcliff Homeowners Association. One well is in use. In 1966 there were 8 services, all metered. In 1974 there were 27 services, all metered; the estimated average and maximum daily pumpages were 7000 and 8500 gpd, respectively. The water is not treated.

WELL NO. 1, finished in sand and gravel, was completed in September 1963 to a depth of 240 ft by the Layne-Western Co., Aurora. The well is located in the center of the north side of the subdivision on lot 51, approximately 2000 ft S and 500 ft W of the NE corner of Section 10, T20N, R7E. The land surface elevation at the well is approximately 700 ft.

A drillers log of Well No. 1 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Brown silt, trace of clay	0.5	0.5
Brown silty clay, trace of gravel	12	12.5
Gray sandy clay	8.5	21
Brown fine sand to medium gravel	3.5	24.5
Gray sandy clay	22.5	47
Gray clay with sand seams	3.5	50.5
Gray fine sand to coarse gravel	4.5	55
Gray sandy clay	5	60
Fine sand to medium gravel	31	91
Medium sand and gravel	5	96
Gray sandy clay	2.5	98.5
Medium sand to coarse gravel	12.5	111
Medium sand to coarse gravel with clay layers	19.5	130.5
Gray gravelly clay	64.5	195
Fine sand	29	224
Medium sand to fine gravel	16	240

A 6-in. diameter hole was drilled to a depth of 240 ft. The well is cased with 6-in. cast iron pipe from 2 ft above land surface to a depth of 230 ft followed by 10 ft of 6-in. No. 20 slot Cook bronze screen.

A production test was conducted on September 27, 1963, by representatives of the driller, the State Water Survey, and Robert Anderson of Planned Communities. After 3.3 hr of pumping at a rate of 111 gpm, the drawdown was 5.60 ft from a nonpumping water level of 83.52 ft below land surface. Fifteen min after pumping was stopped, the water level had recovered to 83.55 ft. On the basis of the production test data, computations indicated that the well could be safely pumped at a rate of 100 gpm without eventually reducing the high well efficiency.

The pumping equipment presently installed is a Layne turbine pump set at 120 ft, rated at 70 gpm at about 260 ft TDH, and powered by a 7 1/2-hp U.S. Holloshaft electric motor.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. Bl25624) is for a water sample from the well collected February 18, 1975, after 8 hr of pumping at 80-100 gpm.

WELL NO. 1, LABORATORY NO. B125624

		mg/l	*me/l*			*mg/l*	*me/l*
Iron	Fe	2.1		Silica	SiO_2	21	
Manganese	Mn	0.0		Fluoride	F	0.3	0.02
Ammonium	NH_4	1.2	0.07	Boron	B	0.3	
Sodium	Na	18	0.78	Nitrate	NO_3	0.0	0.00
Potassium	K	1.1	0.03	Chloride	Cl	1	0.03
Calcium	Ca	74	3.69	Sulfate	SO_4	22	0.46
Magnesium	Mg	30	2.47	Alkalinity (as $CaCO_3$)		344	6.88
Arsenic	As	0.00					
Barium	Ba	0.1		Hardness (as $CaCO_3$)		308	6.16
Copper	Cu	0.00					
Cadmium	Cd	0.00		Total dissolved			
Chromium	Cr	0.00		minerals		408	
Lead	Pb	0.00					
Mercury	Hg	0.0000		pH (as rec'd)		7.9	
Nickel	Ni	0.0		Radioactivity			
Selenium	Se	0.00		Alpha *pc/l*		0.5	
Silver	Ag	0.00		±deviation		1.7	
Cyanide	CN	0.00		Beta *pc/1*		1.6	
Zinc	Zn	0.0		±deviation		1.3	

BROADLANDS

The village of Broadlands (315) installed a public water supply in 1955. One well is in use. In 1955 there were 65-70 services, none metered. In 1974 there were 150 services, all metered; the average daily pumpage was 19,000 gpd. The water is aerated, settled, and filtered.

Approximately 14 test holes were drilled for the village in 1954 by J. B. Ortman & Sons, Kokomo, Ind., prior to the installation of a public water supply. A well, finished in sand, was completed in September 1954 to a depth of 120 ft by J. B. Ortman & Sons, Kokomo, Ind. This well was never developed for the village supply. The well was located near the center of town, approximately 50 ft S and 850 ft W of the NE corner of Section 30, T17N, R11E. A 12-in. diameter hole was drilled to a depth of 120 ft and cased with 10-in. pipe from 2 ft above land surface to a depth of 116 ft followed by 4 ft of 10-in. No. 50 slot Johnson red brass screen. A production test using one observation well was conducted on September 30, 1954, by representatives of the driller, the village, the State Water Survey, and Snyder, McLellan & Watson, Consulting Engineers. After 7.2 hr of pumping at varying rates of 33.5 to 21.1 gpm, the final drawdown was 94.5 ft from a nonpumping water level of 14.5 ft below land surface. The water level recovered to 30.0 ft after pumping was stopped for 1.3 hr.

WELL NO. 1, finished in sand and gravel, was completed in March 1955 to a depth of 71.6 ft by J. B. Ortman & Sons, Kokomo, Ind. The well is located in the northwest corner of the village at the western end of Second St., approximately 600 ft N and 1300 ft W of the SE corner of Section 19, T17N, R11E. The land surface elevation at the well is approximately 680 ft.

A 10-in. diameter hole was drilled to a depth of 71.6 ft. The well is cased with 10-in. pipe from 0.6 ft above the pumphouse floor to a depth of 63.6 ft followed by 8 ft of No. 80 slot Cook red brass screen.

A production test using one observation well was conducted on March 14, 1955, by representatives of the driller, the village, the State Water Survey, and Nelson Watson, Jr. & Associates, Consulting Engineers. After 6.4 hr of pumping at varying rates of 80 to 84 gpm, with a shutdown in pumping for 23 min midway through the test, the final drawdown was 38.9 ft from a nonpumping water level of 6.0 ft below land surface. One hr after pumping was stopped, the water level had recovered to 19.1 ft.

The pumping equipment presently installed consists of a 2-hp 1725 rpm A. O. Smith electric motor, a 6-stage A. O. Smith turbine pump (Serial No. 7351840, size 6LKM) rated at 50 gpm, and 60 ft of 6-in. column pipe. A 5-ft section of 6-in. suction pipe is attached to the pump intake.

A samply study log of Well No. 1 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
PLEISTOCENE SERIES		
Soil, black, sandy	5	5
Till, dark brown, silty	5	10
Till, brownish-gray, sandy, gravelly, calcareous	5	15
Till, brownish-gray, sandy, calcareous; little gravel	5	20
Till, brownish-gray, sandy, gravelly, calcareous	5	25
Till, brownish-gray, very gravelly, calcareous	5	30
Sand, fine to very coarse, brownish-gray, dirty	5	35
Gravel, fine to medium, dirty, poorly sorted, calcareous, sand, fine to medium dirty, calcareous	5	40
Till, brownish-gray, calcareous; some gravel	5	45
Till, dark brown, sandy, calcareous	5	50
Till, brownish-gray, silty, sandy, gravelly, calcareous	5	55
Till, brownish-gray, silty, gravelly, calcareous	5	60
Sand, fine to very coarse, brownish-gray, poorly sorted; gravel, fine	5	65
Sample missing	6.6	71.6

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B114517) is for a water sample from the well collected May 6, 1974, after 2 hr of pumping at 45 gpm.

WELL NO. 1, LABORATORY NO. B114517

		mg/l	*me/l*			*mg/l*	*me/l*
Iron	Fe	1.00		Silica	SiO_2	20	
Manganese	Mn	0.00		Fluoride	F	0.8	0.04
Ammonium	NH_4	2.2	0.12	Boron	B	1.7	
Sodium	Na	68	2.96	Nitrate	NO_3	0.0	0.00
Potassium	K	1.1	0.03	Chloride	Cl	3	0.08
Calcium	Ca	49	2.44	Sulfate	SO_4	0	0.00
Magnesium	Mg	17	1.40	Alkalinity (as $CaCO_3$)		332	6.64
Arsenic	As	0.00					
Barium	Ba	0.3		Hardness	(as $CaCO_3$)	194	3.88
Copper	Cu	0.00					
Cadmium	Cd	0.00		Total dissolved			
Chromium	Cr	0.00		minerals		407	
Lead	Pb	0.00					
Mercury	Hg	0.0000		pH (as rec'd)		8.0	
Nickel	Ni	0.0		Radioactivity			
Selenium	Se	0.00		Alpha *pc/l*		0.0	
Silver	Ag	0.00		±deviation		0.0	
Cyanide	CN	0.00		Beta *pc/l*		3.1	
Zinc	Zn	0.00		±deviation		1.4	

CHAMPAIGN

The city of Champaign (56,532) installed a public water supply in 1885. The water system is owned and operated by the Northern Illinois Water Corporation. Seventeen wells (Nos. 35, 40-43, 45-48, and 53-60) are in use. Water from this system also supplies Adler Zone Center, Bondville, Savoy, University of Illinois, University of Illinois Willard Airport, and Urbana. In 1950 the system had 12,816 services, all metered; the average daily pumpage was 4,700,000 gpd. In

1974 the system had a total of 26,554 services, all metered; in 1973 the average and maximum daily pumpages were 13,100,000 and 19,900,000 gpd, respectively. The water is pumped to two separate softening plants where treatment consists of activated silica feed, lime softening, coagulation with ferric sulfate, sedimentation, chlorination, stabilization with sulfuric acid, fluoridation, and filtration.

Originally, water was obtained from a well in a coal shaft located under the engine room of the original pumping plant located in northwest Urbana. This well was abandoned prior to 1925.

WELL NO. 1, finished in sand and gravel, was completed prior to 1904 to a depth of 168 ft. This well was abandoned in 1948 and sealed prior to 1962. The well was located at the pumping station site in northwest Urbana between Goodwin and Lincoln Aves. and south of Church St. extended, approximately 1690 ft N and 560 ft W of the SE corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 730 ft.

The well was cased with 8-in. pipe to a depth of 152 ft followed by 16 ft of 8-in. Cook screen.

When in service, this well was pumped at rates of 43 to 69 gpm.

WELL NO. 2, finished in sand and gravel, was completed in 1906 to a depth of 160.5 ft. This well was abandoned and sealed about 1962. The well was located about 50 ft NNE of Well No. 1, approximately 1740 ft N and 550 ft W of the SE corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 730 ft.

The well was cased with 8-in. pipe to a depth of 150 ft and equipped with 16 ft (overall length) of 8-in. Cook screen.

On April 7, 1937, the nonpumping water level was reported to be 130.8 ft.

When in service, this well was pumped at rates of 29 to 80 gpm.

WELL NO. 3, finished in sand and gravel, was completed prior to 1904 to a depth of 170 ft. This well was abandoned and sealed prior to 1962. The well was located about 50 ft SE of Well No. 1, approximately 1670 ft N and 520 ft W of the SE corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 730 ft.

The well was cased with 8-in. pipe from above land surface to a depth of 154 ft followed by 16 ft of 8-in. Cook screen.

When in service, this well was pumped at rates of 32 to 104 gpm.

A production test was conducted on September 22, 1944, by representatives of the State Water Survey and the Water Company. After 4.4 hr of pumping at rates of 92 to 102 gpm, the final drawdown was 22.8 ft from a nonpumping water level of 128.9 ft below the top of the casing. Three min after pumping was stopped, the water level had recovered to 129.7 ft.

WELL NO. 4, finished in sand and gravel, was completed prior to 1904 to a depth of 162 ft (reported to be 159.8 ft deep in 1945). This well was abandoned prior to 1949 and sealed prior to 1962. The well was located about 70 ft NE of Well No. 1, approximately 1730 ft N and 500 ft W of the SE corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 730 ft.

The well was cased with 8-in. pipe to a depth of 149.5 ft followed by 10.3 ft of 8-in. Johnson screen. The screened section consisted of 6.8 ft of No. 8 slot, 1.5 ft of No. 15 slot, and 2 ft of No. 25 slot.

WELL NO. 5, finished in sand and gravel, was completed prior to 1904 to a depth of 174 ft. This well was abandoned and sealed prior to 1962. The well was located about 110 ft NE of Well No. 1, approximately 1690 ft N and 490 ft W of the SE corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 730 ft.

The well was cased with 8-in. pipe to a depth of 158 ft followed by 16 ft of 8-in. Cook screen.

When in service, this well was pumped at rates of 24 to 75 gpm.

WELL NO. 6, finished in sand and gravel, was completed prior to 1904 to a depth of 177 ft. This well was abandoned in 1939 and sealed prior to 1962. The well was located about 165 ft NE of Well No. 1, approximately 1760 ft N and 410 ft W of the SE corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 730 ft.

The well was cased with 8-in. pipe to a depth of 155 ft followed by 22 ft of 8-in. Cook screen.

When in service, this well was pumped at rates of 50 to 77 gpm.

WELL NO. 7, finished in sand and gravel, was completed prior to 1904 to a depth of 162.1 ft. This well was abandoned and sealed prior to 1962. The well was located about 210 ft NE of Well No. 1, approximately 1760 ft N and 360 ft W of the SE corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 730 ft.

The well was cased with 8-in. pipe to a depth of 146.9 ft followed by 15.5 ft (overall length) of 8-in. Cook screen. The screen section consisted of 11.2 ft of No. 6 slot and 4.2 ft of No. 57 slot.

On April 7, 1937, the nonpumping water level was reported to be 134.9 ft.

When in service, this well was pumped at rates of 32 to 85 gpm.

WELL NO. 8, finished in sand and gravel, was completed prior to 1904 to a depth of 176 ft. This well was abandoned in 1959 and sealed prior to 1962. The well was located about 290 ft NE of Well No. 1, approximately 1860 ft N and 325 ft W of the SE corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 730 ft.

The well was cased with 8-in. pipe to a depth of 160 ft followed by 16 ft of 8-in. Cook screen.

When in use, this well was pumped at rates of 40 to 90 gpm.

WELL NO. 9, finished in sand and gravel, was completed in 1904 to a depth of 165 ft. This well was abandoned in 1959 and sealed prior to 1962. The well was located about 220 ft E of Well No. 1, approximately 1700 ft N and 340 ft W of the SE corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 730 ft.

The well was cased with 8-in. pipe to a depth of 15 3.8 ft and equipped with 11.6 ft of 8-in. Cook screen.

When in service, this well was pumped at rates of 30 to 80 gpm.

WELL NO. 10, finished in sand and gravel, was completed in 1908 to a depth of 159.2 ft. This well was abandoned prior to 1962 and sealed after 1962. The well was located about 270 ft E of Well No. 1, approximately 1700 ft N and 290 ft W of the SE corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 730 ft.

The well was cased with 10-in. pipe to a depth of 147 ft followed by 12.2 ft of 10-in. Cook screen.

When in service, this well was pumped at rates of 80 to 160 gpm.

WELL NO. 11, finished in sand and gravel, was completed in 1908 to a depth of 161 ft. This well was abandoned in 1959 and sealed prior to 1962. The well was located about 370 ft NE of Well No. 1, approximately 1940 ft N and 290 ft W of the SE corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 730 ft.

The well was cased with 8-in. pipe to a depth of 152 ft followed by 9 ft of 8-in. Cook screen.

When in service, this well was pumped at rates between 27 and 83 gpm.

WELL NO. 12, finished in sand and gravel, was completed in 1908 to a depth of 171 ft. This well was abandoned and sealed prior to 1962. The well was located about 410 ft NE of Well No. 1, approximately 1885 ft N and 190 ft W of the SE corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 730 ft.

The well was cased with 8-in. pipe to a depth of 162.2 ft followed by 9 ft (overall length) of 8-in. Cook screen.

When in service, this well was pumped at rates of 16 to 68 gpm.

WELL NO. 1 3, finished in sand and gravel, was completed in 1910 to a depth of 166 ft. This well was abandoned and sealed prior to 1962. The well was located about 280 ft ENE of Well No. 1, approximately 1760 ft N and 290 ft W of the SE corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 730 ft.

The well was cased with 10-in pipe to a depth of 154 ft followed by 12 ft of 10-in. Cook screen.

When in service, this well was pumped at rates of 35 to 70 gpm.

WELL NO. 14, finished in sand and gravel, was completed in 1912 to a depth of 158 ft. This well was abandoned and sealed prior to 1962. The well was located about 390 ft ESE of Well No. 1, approximately 1600 ft N and 180 ft W of the SE corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 730 ft.

The well was cased with 8-in. pipe to a depth of 149.5 ft followed by 9 ft (overall length) of 8-in. Cook screen.

When in service, this well was pumped at rates of 40 to 90 gpm.

WELL NO. 15, finished in sand and gravel, was completed in 191 3 to a depth of 163 ft. This well was abandoned and sealed prior to 1962. The well was located about 375 ft E of Well No. 1, approximately 1730 ft N and 190 ft W of the SE corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 730 ft.

The well was cased with 8-in. pipe to a depth of 154 ft followed by 9 ft of 8-in. Cook screen.

When in service, this well was pumped at rates of 60 to 70 gpm.

WELL NO. 16, finished in sand and gravel, was completed in 1913 to a depth of 159 ft. This well was abandoned and sealed prior to 1962. The well was located about 250 ft ESE of Well No. 1, approximately 1630 ft N and 320 ft W of the SE corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 730 ft.

The well was cased with 8-in. pipe to a depth of 150 ft followed by 9 ft of 8-in. Cook screen.

When in service, this well was pumped at rates of 60 to 90 gpm.

WELL NO. 17, finished in sand and gravel, was completed in 1913 to a depth between 154 and 161 ft. This well was abandoned prior to 1939 and sealed prior to 1962. The well was located about 290 ft NNE of Well No. 1, approximately 1940 ft N and 420 ft W of the SE corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 730 ft.

The well was cased with 8-in. pipe and equipped with 10 or 12 ft of 8-in. Cook screen.

During the period of March 6-28, 1935, the nonpumping water levels ranged from 114.2 to 121 ft below the top of the casing.

WELL NO. 18, finished in sand and gravel, was completed in 1913 to a depth of 165 ft. This well was abandoned and sealed prior to 1962. The well was located about 320 ft NE of Well No. 1, approximately 1940 ft N and 360 ft W of the SE corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 730 ft.

The well was cased with 8-in. pipe to a depth of 156 ft followed by 9 ft of 8-in. Cook screen.

When in use, this well was pumped at rates of 25 to 95 gpm.

WELL NO. 19, finished in sand and gravel, was completed prior to 1921 to a depth of 172 ft. This well was abandoned in 1956 and sealed prior to 1962. The well was located on the east side of Goodwin Ave. about 1400 ft NW of the original pumping station, approximately 2210 ft S and 1220 ft W of the NE corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 740 ft.

A drillers log of Well No. 19 follows:

Strata	*Thickness /ft)*	*Depth (ft)*
Clay	21	21
Gravel and clay	11	32
Sand and clay	10	42
Clay and gravel	51	93
Clay and fine sand	21	114
Hard clay	9	123
Clay and sand	32	155
Coarse sand	10	165
Sand and clay	5	170

The well was cased with 8-in. pipe to a depth of 156.2 ft followed by 16 ft (overall length) of 8-in. screen.

When in service, this well was pumped at rates between 35 and 60 gpm.

WELL NO. 20, finished in sand and gravel, was completed prior to 1921 to a depth of 171 ft. This well was abandoned in 1942 and sealed prior to 1962. The well was located about 80 ft E of Well No. 19, approximately 2210 ft S and 1140 ft W of the NE corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 740 ft.

The well was cased with 8-in. pipe to a depth of 161 ft followed by 10 ft of 8-in. screen.

When in service, this well was pumped at rates of 20 to 70 gpm.

WELL NO. 21, finished in sand and gravel, was completed prior to 1921 to a depth of 173 ft. This well was abandoned in 1956 and sealed prior to 1962. The well was located about 160 ft E of Well No. 19, approximately 2210 ft S and 1060 ft W of the NE corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 740 ft.

The well was cased with 8-in. pipe to a depth of 161 ft followed by 12 ft of 8-in. screen.

When in service, this well was pumped at rates of 20 to 65 gpm.

WELL NO. 22, finished in sand and gravel, was completed prior to 1921 to a depth of 171 ft. This well was abandoned in 1956 and sealed prior to 1962. The well was located about 230 ft E of Well No. 19, approximately 2210 ft S and 990 ft W of the NE corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 740 ft.

The well was cased with 8-in. pipe to a depth of 159.3 ft followed by 12 ft (overall length) of 8-in. screen.

When in service, this well was pumped at rates of 35 to 100 gpm.

WELL NO. 23, finished in sand and gravel, was completed prior to 1921 to a depth of 173 ft. This well was abandoned in 1956 and sealed prior to 1962. The well was located about 120 ft N of Well No. 19, approximately 2090 ft S and 1210 ft W of the NE corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 740 ft.

The well was cased with 8-in. pipe to a depth of 160 ft and equipped with 12.2 ft of 8-in. screen.

When in service, this well was pumped at rates of 35 to 55 gpm.

WELL NO. 24, finished in sand and gravel, was completed prior to 1921 to a depth of 171 ft. This well was abandoned in 193 3 and sealed prior to 1962. The well was located about 70 ft E of Well No. 23, approximately 2090 ft S and 1140 ft W of the NE corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 740 ft.

The well was cased with 8-in. pipe to a depth of 159 ft followed by 12 ft of 8-in. screen.

In 1921, this well was pumped at a rate of 26 gpm.

During the period of March 6-28, 1935, the nonpumping water levels ranged from 124.3 to 126.8 ft below the top of the casing.

WELL NO. 25, finished in sand and gravel, was completed prior to 1921 to a depth of 169 ft. This well was abandoned in 1956 and sealed prior to 1962. The well was located about 150 ft E of Well No. 23, approximately 2090 ft S and 1060 ft W of the NE corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 740 ft.

The well was cased with 8-in. pipe to a depth of 159 ft followed by 10 ft of 8-in. screen.

When in service, this well was pumped at rates of 50 to 85 gpm.

WELL NO. 26, finished in sand and gravel, was completed prior to 1921 to a depth of 168.2 ft. This well was abandoned and sealed about 1962. The well was located in northwest Urbana east of Goodwin Ave. and south of Church St. at the original pumping station, approximately 1960 ft N and 1215 ft W of the SE corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 730 ft.

The well was cased with 12-in. pipe to a depth of 156.2 ft followed by 12 ft of 12-in. screen.

During a production test on June 1, 1935, the well reportedly produced at rates of 108 to 170 gpm with a final drawdown of 28.8 ft from a nonpumping water level of 129.5 ft.

During a second test on May 28, 1936, the well reportedly produced at rates of 100 to 180 gpm with a final drawdown of 29.9 ft from a nonpumping water level of 129.5 ft.

WELL NO. 27, finished in sand and gravel, was completed prior to 1921 to a depth of 156 ft. This well was abandoned prior to 1939 and sealed prior to 1962. The well was located about 60 ft NE of Well No. 15, approximately 1740 ft N and 280 ft W of the SE corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 730 ft.

The well was cased with 14-in. pipe to a depth of 150.5 ft followed by 9.2 ft (overall length) of 12-in. screen. The screened section consisted of 5.2 ft of No. 4 slot, 2 ft of No. 14 slot, and 2 ft of No. 4 slot.

When in service, this well was pumped at rates of 20 to 54 gpm.

WELL NO. 28, finished in sand and gravel, was completed prior to 1921 to a depth of 171 ft. This well was abandoned in 1956 and sealed prior to 1962. The well was located about 220 ft E of Well No. 23, approximately 2090 ft S and

990 ft W of the NE corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 740 ft.

The well was cased with 8-in. pipe to a depth of 161.9 ft followed by 10 ft (overall length) of 8-in. screen.

When in service, this well was pumped at rates of 60 to 95 gpm.

WELL NO. 29, finished in sand and gravel, was completed prior to 1921 to a depth of 167 ft. This well was abandoned and sealed prior to 1962. The well was located about 100 ft E of Well No. 26, approximately 1960 ft N and 1115 ft Wof the SE corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 730 ft.

The well was cased with 12-in. pipe from above land surface to a depth of 155 ft followed by 12 ft of 12-in. screen.

When in service, this well was pumped at rates of 85 to 110 gpm.

WELL NO. 30, finished in sand and gravel, was completed prior to 1921 to a depth of 163 ft. This well was abandoned and sealed prior to 1962. The well was located about 215 ft E of Well No. 26, approximately 1950 ft N and 1000 ft W of the SE corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 730 ft.

The well was cased with 12-in. pipe from above land surface to a depth of 154 ft followed by 9 ft of 12-in. screen.

When in service, this well was pumped at rates of 85 to 150 gpm.

WELL NO. 31, finished in sand and gravel, was completed prior to 1921 to a depth of 163 ft. This well was abandoned and sealed prior to 1962. The well was located about 315 ft E of Well No. 26, approximately 1950 ft N and 900 ft W of the SE corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 730 ft.

The well was cased with 12-in. pipe to a depth of 154 ft followed by 9 ft of 12-in. screen.

When in service, this well was pumped at rates of 50 to 1 20 gpm.

WELL NO. 32, finished in sand and gravel, was completed prior to 1921 to a depth of 163 ft. This well was abandoned and sealed prior to 1962. The well was located about 345 ft SE of Well No. 26, approximately 1840 ft N and 880 ft W of the SE corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 730 ft.

The well was cased with 12-in. pipe to a depth of 154 ft followed by 9 ft of 12-in. screen.

When in service, this well was pumped at rates of 100 to 150 gpm.

WELL NO. 33, finished in sand and gravel, was completed prior to 1921 to a depth of 169 ft. This well was abandoned and sealed prior to 1962. The well was located about 235 ft SE of Well No. 26, approximately 1850 ft N and 995 ft W of the SE corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 730 ft.

The well was cased with 12-in. pipe from above land surface to a depth of 160 ft followed by 9 ft of 12-in. screen.

When in service, this well was pumped at rates of 75 to 115 gpm.

Prior to the construction of Well No. 34, a well was drilled in 1921 to a depth of 166.3 ft, located on the south side of Curtis St. (Bradley Ave.) in line with Wright St. extended. The well was cased with 28-in. outer pipe and a 12-in. diameter screen. The annulus between the bore hole and screen was filled with gravel. During a production test in September 1921, the plug at the bottom of the well was pulled, damaging the equipment. This was replaced but the same mishap occurred again about March 25, 1922. This well was then abandoned and a new well constructed about 60 ft S.

WELL NO. 34, finished in sand and gravel, was completed in 1921 to a depth of 216 ft and reconstructed in 1929 to a depth of 190 ft. This well was abandoned and sealed prior to 1962 because of pumping too much sand and damaging the pumping equipment. The well was located in the extreme northwest corner of Urbana at the intersection of Bradley Ave. with Wright St. extended, approximately 160 ft S and 2640 ft W of the NE corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 740 ft.

A drillers log of Well No. 34 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Sand	?	196
Clay	2	198
Sand	18	216

Originally, the well was cased with 12-in. pipe from land surface to a depth of 194 ft followed by 22 ft of 12-in. No. 60 slot Johnson screen. In 1929, the well was reconstructed and a 20-in. diameter casing with perforations from 166 to 190 ft was installed. Inside this casing was placed a 12-in. diameter steel pipe from 162 to 176 ft with 1/4-in. holes in the bottom 10 ft. Attached below the pipe was 12 ft of 12-in. diameter Layne screen from 176 to 188 ft.

On October 4, 1921, the results of a 4.5-hr pumping test at rates of 350 to 470 gpm showed the specific capacity to range from 11.1 to 12.8 gpm/ft.

A production test was conducted on December 11-12, 1922. After 20 hr of pumping at a rate of 396 gpm, the pumping water level was 134.5 ft below the pump base.

During the period of March 8-28, 1935, the nonpumping water levels ranged from 131.8 to 136.4 ft below the top of the casing.

WELL NO. 35, finished in sand and gravel, was constructed in 1921 to a depth of 185 ft, and several years later deepened to an effective depth of 208 ft. The well is located in northwest Urbana at the southeast corner of Goodwin and Bradley Aves., approximately 100 ft S and 1230 ft W of the NE corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 740 ft.

During the deepening of this well, 40 ft of screen was installed with the bottom at a depth of 225 ft. The well failed to produce sand-free water, so gravel was placed in the bottom

of the well with a concrete plug on top making the effective depth of 208 ft. The well is cased with 18-in. outer pipe from land surface to a depth of 181.8 ft and 185.2 ft of. 10-in. inner pipe followed by 17.2 ft (effective length) of 10-in. No. 5 (0.105 in.) Layne shutter screen.

Upon completion, the nonpumping water level was reported to be 106 ft below land surface.

On April 18, 1930, the well reportedly produced 341 gpm with a drawdown of 16.1 ft from a nonpumping water level of 130.7 ft.

On October 21, 1935, after pumping at a rate of 395 gpm, the drawdown was 18.9 ft from a nonpumping water level of 145.5 ft.

On June 18, 1937, the well reportedly produced 320 gpm with a drawdown of 39.0 ft from a nonpumping water level of 139.2 ft.

In 1965, after pumping at a rate of 440 gpm, the drawdown was 22.0 ft from a nonpumping water level of 127.4 ft.

In 1974, the well reportedly produced 562 gpm with a drawdown of 24.0 ft from a nonpumping water level of 124.4 ft.

The pumping equipment presently installed is a 4-stage Peerless turbine pump set at 180 ft, rated at 500 gpm at about 203 ft TDH, and powered by a 40-hp 1800 rpm U.S. electric motor. The well is equipped with 180.2 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B101562) of a sample collected August 6, 1974, after pumping for 3 hr at 445 gpm, showed the water to have a hardness of 303 mg/l, total dissolved minerals of 424 mg/l, and an iron content of 2.2 mg/l. Methane gas was reported in a previous sample.

WELL NO. 36, finished in sand and gravel, was completed in 1923 to a depth of 201 ft. This well is presently in use only as an observation well. The well is located about 110 ft E of Well No. 35, approximately 100 ft Sand 1120 ft W of the NE corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 740 ft.

The well is cased with 12-in. pipe and equipped with 9 or 10 ft of 12-in. No. 60 slot Cook screen.

In 1925, with the pumps in Well Nos. 35 and 37 operating, the water level in this well was 119 ft.

During the period of July 1, 1943 to November 6, 1944, the nonpumping water levels ranged from 160.0 to 169.8 ft.

A mineral analysis of a sample (Lab. No. 143713) made in July 1957, showed the water to have a hardness of 260 mg/l, total dissolved minerals of 353 mg/l, and an iron content of 2.4 mg/l.

WELL NO. 37, finished in sand and gravel, was completed in 1923 to a depth of 209 ft. This well was abandoned in 1930 and sealed prior to 1962. The well was located about 112 ft E of Well No. 36, approximately 100 ft S and 1008 ft W of the NE corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 740 ft.

The well was cased with 14-in. pipe and equipped with 9 or 10 ft of 14-in. No. 60 slot Cook screen.

WELL NO. 38, finished in sand and gravel, was completed in October 1925 to a depth of 165.5 ft by the Layne & Bowler Co., Chicago. This well was abandoned in 1938 and sealed prior to 1962. The well was located about 60 ft W of Well No. 34, approximately 160 ft S and 2700 ft E of the NW corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 740 ft.

A drillers log of Well No. 38 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Soil	2	2
Yellow clay	18	20
Gray clay	55	75
Gravel, cemented	3	78
Gray clay, hard	22	100
Green sand, dry	11	111
Gravel	14	125
Gravel, streaked with clay	10	135
Gray clay, hard	5	140
Sand, water	24	164

A 30-in. diameter hole was drilled to a depth of 117 ft and finished 18 in. in diameter from 117 ft to the bottom. The well was cased with 30-in. outer pipe from land surface to a depth of 117 ft and 18-in. inner pipe from land surface to a depth of 110 ft followed by 30 ft of 18-in. screen, 10 ft of 18-in. blank pipe, and 15.5 ft of 18-in. screen. The annulus between the bore hole and screen was filled with gravel.

A production test was conducted on October 15, 1925, by representatives of the driller and the State Water Survey. After 10.2 hr of pumping at rates of 480 to 490 gpm, the drawdown was about 34 ft from a nonpumping water level of 110 ft below land surface.

A production test using one observation well was conducted by the State Water Survey on December 30, 1925. After 5.4 hr of pumping at rates of 405 to 423 gpm, the drawdown was 45.4 ft from a nonpumping water level of 111.6 ft. During this test, Well Nos. 35 and 37 were pumping continuously and Well No. 36 was pumping intermittently.

A mineral analysis of a sample (Lab. No. 80002) collected December 28, 1933, after pumping for 1 week, showed the water to have a hardness of 261 mg/l, total dissolved minerals of 325 mg/l, and an iron content of 1.4 mg/l.

WELL NO. 39, finished in sand and gravel, was completed in July 1926 to a depth of 216.2 ft by the Layne & Bowler Co., Chicago. This well was abandoned in 1935 and sealed prior to 1962. The well was located on the south side of Bradley Ave. about 250 ft E of Goodwin Ave., approximately 100 ft S and 1070 ft W of the NE corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 740 ft.

The well was cased with 30-in. outer pipe from land surface to a depth of 134.6 ft and 21-in. inner pipe from land surface to a depth of 167.4 ft followed by 48.8 ft of 21-in.

Layne shutter screen. The annulus between the bore hole and screen was filled with gravel.

On September 20, 1926, the well reportedly produced 743 gpm with a drawdown of 18 ft from a nonpumping water level of 126 ft below land surface.

During the period of September 20, 1926, to April 1, 1943, the nonpumping water levels ranged from 126.0 to 160.3 ft.

On May 23, 1935, after pumping at a rate of 493 gpm, the drawdown was 23.0 ft from a nonpumping water level of 136.1 ft.

On June 17, 1937, the well reportedly produced 395 gpm with a drawdown of 29.6 ft from a nonpumping water level of 138.4 ft.

A drillers log of Well No. 39 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Sand and clay	20	20
Sandy clay	25	45
Gravel and clay	10	55
Clay and boulders	18	73
Sand	4	77
Sandy clay with boulders	35	112
Sand, hard streak of clay	9	121
Gravel and clay with boulders	7	128
Hard shale and rock	14.8	142.8
Sandy clay	3.2	146
Sand	36	182
Gravel and sand	36	218
Clay	3	221

A mineral analysis of a sample (Lab. No. 80004) collected December 28, 1933, showed the water to have a hardness of 246 mg/l, total dissolved minerals of 332 mg/l, and an iron content of 0.4 mg/l. Methane gas was reported in a previous sample.

Prior to the construction of Well No. 40, six test holes located in Section 7, T19N, R9E, were drilled in 1927 by the Ohio Drilling Co., Massillon, Ohio, to depths ranging from 170 to 262 ft.

WELL NO. 40, finished in sand and gravel, was completed in September 1927 to a depth of 212 ft by the Ohio Drilling Co., Massillon, Ohio. The well is located on the south side of Bradley Ave. about 670 ft E of Goodwin Ave., approximately 100 ft S and 650 ft W of the NE corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 745 ft.

A drillers log of Well No. 40 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Clay	10	10
Clay and sand	33	43
Clay and gravel	40	83
Sand and little clay	37	120
Fine sand	21	141
Clay and sand	26	167
Fine sand and clay	11	178
Gravel, sand and clay	23	201
Fine sand and clay	10	211

The well is cased with 20-in. outer pipe from land surface to a depth of 160 ft and 12-in. inner pipe from 1.5 ft above land surface to a depth of 190 ft followed by 20 ft (effective length) of 12-in. Ohio bar screen. The annulus between the bore hole and screen is filled with gravel from 154 to 212 ft.

Upon completion, the well reportedly produced 485 gpm with a drawdown of 30.0 ft from a nonpumping water level of 130.5 ft below land surface.

After several months of continuous operation, a production test was conducted on March 28, 1928. After pumping at an estimated rate of 610 gpm, the drawdown was 36.8 ft from a nonpumping water level of 1 37.7 ft. During this test, Well Nos. 35 and 39 were pumping continuously.

During the period of September 1, 1927, to July 17, 1937, the nonpumping water levels ranged from 1 30.5 to 146.9 ft below the pump base.

The pumping equipment presently installed is a Peerless vertical turbine pump set at 170 ft, rated at 275 gpm at about 189.5 ft TDH, and powered by a 20-hp U.S. electric motor. The well is equipped with 169.83 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B101538) of a sample collected August 14, 1973, after pumping for 24 hr at 360 gpm, showed the water to have a hardness of 322 mg/l, total dissolved minerals of 404 mg/l, and an iron content of 3.3 mg/l. Methane gas was reported in a previous sample.

Prior to the construction of Well No. 41, two test holes located in Section 7, T19N, R9E were drilled in 1928 by the Ohio Drilling Co., Massillon, Ohio, to depths of 230 and 210 ft.

WELL NO. 41, finished in sand and gravel, was completed in November 1928 to a depth of 224 ft by the Ohio Drilling Co., Massillon, Ohio. The well is located about 280 ft SSE of Well No. 36, approximately 370 ft S and 1050 ft W of the NE corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 740 ft.

A drillers log of Well No. 41 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Clay	6	6
Clay and sand	4	10
Clay and gravel	121	131
Gravel and sand	20	151
Sand	26	177
Gravel and clay	33	210
Gravel, sand and clay	7	217
Fine sand and clay	1	218

The well is cased with 24-in. outer pipe from land surface to a depth of 139 ft and 16-in. inner pipe from land surface to a depth of 172 ft followed by 52 ft of 16-in. Ohio angle screen with 1/8-in. slot openings. The annulus between the bore hole and screen is filled with gravel.

Upon completion, after pumping at a rate of 800 gpm, the drawdown was 22.4 ft from a nonpumping water level of 143.2 ft below land surface.

After the well was reconditioned about 1933 by the Layne-Western Co., Aurora, a production test was conducted by this

company. After pumping at a rate of 700 gpm, the drawdown was 9.75 ft from a nonpumping water level of 149.70 ft below land surface.

In 1942 the well was reconditioned by pulling the screen and removing a heavy lime deposit. The screen was reinstalled and this reportedly was effective in increasing the capacity.

The pumping equipment presently installed is a Peerless turbine pump set at 201 ft, rated at 600 gpm at about 195 ft TDH, and powered by a 39-hp electric motor. The well is equipped with 201 ft of airline.

A mineral analysis made by the Illinois Enviornmental Protection Agency (Lab. No. B102842) of a sample collected September 4, 1974, after pumping for 6 hr at 680 gpm, showed the water to have a hardness of 340 mg/l, total dissolved minerals of 354 mg/l, and an iron content of 3.3 mg/l. Methane gas was reported in a previous sample.

WELL NO. 42, finished in sand and gravel, was completed in June 1937 to a depth of 217.5 ft by the Layne-Western Co., Aurora. The well is located about 290 ft S of Well No. 35, approximately 390 ft S and 1270 ft W of the NE corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 740 ft.

A drillers log of Well No. 42 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Soil	2	2
Clay, yellow	3	5
Clay, sandy, yellow	10	15
Clay, sandy, gray	33	48
Clay, sandy; little more sand	17	65
Clay, gray, with coarse sand	40	105
Sand and gravel	15	120
Hardpan	35	155
Sand, fine	35	190
Sand, coarse, and gravel	25	215
Blue clay below		

The well is cased with 36-in. OD pipe from 1 ft above land surface to a depth of 155 ft and 26-in. ID pipe from 2 ft above land surface to a depth of 167.5 ft followed by 50 ft of 26-in. No. 5 (0.105 in.) Layne shutter screen of which the bottom 5 ft is a 26- by 34-in. cone. The annulus between the bore hole and screen is filled with gravel.

Upon completion, after pumping at a rate of 1000 gpm, the drawdown was 10.0 ft from a nonpumping water level of 139.5 ft.

In March 1942, this well was treated with acid. The production was reportedly increased from 610 gpm with a drawdown of 13 ft to 750 gpm with a drawdown of 13 ft.

In October 1944, this well was treated with acid by the Layne-Western Co., Aurora. The production was reportedly increased from 470 gpm with a drawdown of 46.5 to 630 gpm with a drawdown of 25.0 ft.

The pumping equipment presently installed is a 12-in., 4-stage Peerless turbine pump set at 200 ft, rated at 700 gpm, and powered by a 60-hp electric motor. The well is equipped with 199.71 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B101364) of a sample collected August 1, 1974, after pumping for 17 hr, showed the water to have a hardness of 295 mg/l, total dissolved minerals of 399 mg/l, and an iron content of 1.8 mg/l. Methane gas was reported in a previous sample.

Prior to the construction of Well No. 43, five test holes located in Section 7, T19N, R9E, were drilled in 1938 by the Layne-Western Co., Aurora, to depths ranging from 200 to 250 ft.

WELL NO. 43, finished in sand and gravel, was completed in December 1938 to a depth of 224.5 ft by the Layne-Western Co., Aurora. The well is located on the north side of Bradley Ave. about 360 ft W of Goodwin Ave., approximately 25 ft N and 1680 ft W of the SE corner of Section 6, T19N, R9E. The land surface elevation at the well is approximately 740 ft.

A sample study and drillers log of Well No. 43 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
PLEISTOCENE SYSTEM		
"Soil and clay"	95	95
"Sand"	5	100
"Clay"	25	125
"Gravel and sand"	10	135
"Sand, dirty"	5	140
"Clay and gravel"	15	155
Till	5	160
Sand, clean	10	170
Sand,silty	10	180
Granule gravel, clean	15	195
Sand, clean	5	200
Sand, silty	5	205
Sand, clean	10	215
"Clay"	2	217
"Sand ended on clay"	6	223

The well is cased with 36-in. ID pipe from 1.5 ft above land surface to a depth of 166.2 ft and 26-in. ID pipe from 1.5 ft above land surface to a depth of 175.8 ft followed by 48.7 ft of 26-in. Layne shutter screen. The annulus between the bore hole and screen is filled with gravel.

Upon completion, the well reportedly produced 810 gpm with a drawdown of 16.8 ft from a nonpumping water level of 146.4 ft below the top of the casing.

On October 31, 1944, the nonpumping water level was reported to be 166.0 ft.

The pumping equipment presently installed consists of a 50-hp 1760 rpm General Electric motor, a 12-in., 4-stage Peerless turbine pump (No. 11157) rated at 700 gpm, and 200 ft of 8-in. column pipe. A 14-ft section of 8-in. suction pipe is attached to the pump intake. The well is equipped with 200 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. Bl 14381) of a sample collected June 4, 1974, after pumping for 24 hr at 750 gpm, showed the water to have a hardness of 244 mg/l, total dissolved minerals of 384 mg/l, and an iron content of 2.25 mg/l.

WELL NO. 44, finished in sand and gravel, was completed in June 1940 to a depth of 220 ft by the Layne-Western Co.,

Aurora. This well was abandoned and sealed prior to 1962. The well was located 700 ft N and 50 ft W of the intersection of Bradley and Lincoln Aves., approximately 700 ft N and 50 ft W of the SE corner of Section 6, T19N, R9E. The land surface elevation at the well is approximately 741 ft.

A summary sample study log of a test hole at the site of Well No. 44 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
PLEISTOCENE SYSTEM		
Wisconsinan glacial drift — till, gray	75	75
Sangamon interglacial sand, clayey	30	105
Illinoian glacial drift		
Till, gray	45	150
Sand, fine to medium, clean, water-bearing	15	165
Sand and granule gravel, silty, probably compact	5	170
Sand, fine to very coarse, clean, water-bearing	5	175
Compact sand and gravel, silty	24	199
Till, reddish brown	13	212
Sand, very fine to medium, clean	9	221
Yarmouth interglacial deposit		
Silt, brown	11	232
Sand and gravel, clean	5	237
Kansan glacial drift — till, brown	33	270

The well was cased with 36-in. pipe from 2 ft above land surface to a depth of 154 ft and 26-in. pipe from 2 ft above land surface to a depth of 170 ft followed by 50 ft of 26-in. No. 5 (0.105 in.) Layne shutter screen. The bottom 7 ft of the 26-in. casing was slotted with 1/16-in. by 10-in. openings spaced 4.5 in. apart. Inside the 26-in. screen beginning at a point 177.5 ft below land surface was set 29 ft of 12-in. steel pipe followed by 12 ft of 12-in. No. 5 (0.105 in.) Layne shutter screen ending on a plug 1.5 ft thick. The annulus between the 26-in. screen and the 12-in. pipe and screen was filled with gravel from 177.5 to 218.5 ft.

When in service, this well was pumped at a rate of about 240 gpm.

A mineral analysis of a sample (Lab. No. 143863) collected July 11, 1957, showed the water to have a hardness of 285 mg/l, total dissolved minerals of 362 mg/l, and an iron content of 4.0 mg/l.

Prior to the construction of Well No. 45, two test holes located in Section 7, T19N, R9E were drilled in 1941 by Hayes & Sims, Champaign, to depths of 199 and 206 ft.

WELL NO. 45, finished in sand and gravel, was completed in September 1941 to a depth of 197.2 ft by Hayes & Sims, Champaign. The well is located 560 ft E of Goodwin Ave. and 115 ft S of Bradley Ave., approximately 115 ft S and 760 ft W of the NE corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 740 ft.

Originally, the well was cased with 16-in. pipe from 2 ft above land surface to a depth of 175.9 ft and equipped with a 14-in. pipe and 25 ft of 16-in. Johnson red brass screen (32.2 ft overall length). In 1945, the screen was removed and a 10-in. pipe was set from 2 ft above land surface to a depth of 176.1 ft followed by 21.1 ft (26.6 ft overall length) of 10-in. Johnson Armco iron screen. The annulus between the bore hole and screen is filled with 4 tons of pea gravel.

In 1941, the nonpumping water level was reported to be 165.2 ft.

On November 1, 1949, the nonpumping water level was reported to be 166.2 ft below the pump base.

The pumping equipment presently installed consists of a 25-hp 1800 rpm U.S. electric motor, a 5-stage Peerless Moturbo pump set at 170 ft, rated at 375 gpm at about 156 ft TDH, and 170 ft of 6-in. column pipe. A 9.9-ft section of 6-in. suction pipe is attached to the pump intake. The well is equipped with 170.43 ft of airline.

A summary sample study log of a test hole at the site of Well No. 45 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
PLEISTOCENE SYSTEM		
Till, calcareous, buff	15	15
Till, calcareous, gray	5	20
Till, calcareous, buff	5	25
Till, calcareous, buff and gray	20	45
Gravel, calcareous, gray, angular, dirty, fine, some till, gray	5	50
Gravel, granular, calcareous, gray to brown, clean to dirty	5	55
Same but dirty	5	60
Till, calcareous, gravelly, pink	15	75
Sand, noncalcareous, yellow to brown, medium, iron stained	10	85
Sand, noncalcareous, brownish gray, medium, clean, spine fragments	5	90
Sand noncalcareous, yellow to brown, coarse to granular, dull, rusty surfaces, grading to fine gravel	10	100
Sand, calcareous, gray to buff, very coarse, fairly clean	5	105
Sand, calcareous, gray to buff, very coarse, silty, may be till	5	110
Sand, calcareous, brown, very fine to very coarse, silty, probably till	10	120
Till, calcareous, gray, gravelly, some soil and pink, yellow and gray till	10	130
Sand, calcareous, medium to coarse, dirty	10	140
Gravel, calcareous, fine to coarse, dirty	10	150
Till, calcareous, gray, clean sand streaks	31	181
Gravel, calcareous, clean, coarse	9	190
Till, sandy, with granular gravel, gray, calcareous	5	195
Gravel, medium to coarse, calcareous, slightly dirty	4	199

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B101561) of a sample collected August 6, 1974, after pumping for 3 hr at 375 gpm, showed the water to have a hardness of 315 mg/l, total dissolved minerals of 420 mg/l, and an iron content of 2.45 mg/l. Methane gas was reported in a previous sample.

A critical water shortage began to develop in 1944 and 1945 and a search was started for a new well supply. Approximately seven test holes, located from northwest of Champaign to Mahomet, were drilled in 1945 and 1946 by Hayes & Sims, Champaign, to depths ranging from 241.5 to 330 ft. Two test holes located in the area of Bradley Ave. between Goodwin and Lincoln Aves., were drilled in 1946 by Hayes & Sims, Champaign, to depths of 195 and 180 ft.

WELL NO. 46, finished in sand and gravel, was completed in June 1946 to a depth of 207.1 ft by Hayes & Sims, Champaign. The well is located about 330 ft E of Goodwin Ave.

and 100 ft S of Bradley Ave., approximately 990 ft W and 100 ft S of the NE corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 740 ft.

A summary sample study log of a test hole at the site of Well No. 46 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
PLEISTOCENE SYSTEM		
Wisconsinan drift		
Till, leached, yellow	5	5
Till, calcareous, yellow	10	15
Till, calcareous, gray	25	40
Same, sandy, gravelly	10	50
Till, calcareous, gray	30	80
Illinoian drift		
Sand, silty, slightly calcareous, ferruginous, yellowish-brown	5	85
Sand, silty, noncalcareous, yellowish-green, some gravel, possible till	10	95
Same, buff to brown	10	105
Sand, fine to coarse, gravelly, silty, gray	10	115
Same, very silty	5	120
Sand, coarse and gravel, granular, silty, calcareous, gray	40	160
Gravel, up to 1/2 in., clean	15	175
Kansan (?) drift		
Till, calcareous, yellowish-gray	15	190

The well is cased with 16-in. pipe from 1.8 ft above land surface to a depth of 181.2 ft and equipped with 30 ft (32.1 ft overall length) of 16-in. Johnson Everdur screen. The screened section from top to bottom consists of 10 ft of No. 14 slot, 7 ft of No. 20 slot, and 1 3 ft of No. 60 slot.

Upon completion, the well reportedly produced 400 gpm with a drawdown of 7.0 ft from a nonpumping water level of 163.2 ft.

The pumping equipment presently installed consists of a 25-hp U.S. electric motor, a 6-stage Peerless turbine pump set at 191 ft, rated at 350 gpm at about 200.3 ft TDH, and 181.2 ft of 6-in. column pipe. The well is equipped with 190.67 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B100102) of a sample collected July 2, 1974, after pumping for 24 hr at 450 gpm, showed the water to have a hardness of 313 mg/l, total dissolved minerals of 387 mg/l, and an iron content of 2.9 mg/l. Methane gas was reported in a previous sample.

WELL NO. 47, finished in sand and gravel, was completed in June 1946 to a depth of 217.2 ft by Hayes & Sims, Champaign. The well is located on the east side of Goodwin Ave. between Well Nos. 35 and 42, approximately 280 ft S and 1270 ft W of the NE corner of Section 7, T19N, R9E. The land surface elevation at the well is approximately 740 ft.

The well is cased with 16-in. blank pipe from 2 ft above land surface to a depth of 191.2 ft followed by 26 ft (32.2 ft overall length) of silica red brass screen. The screened section from top to bottom consists of 6 ft of No. 60 slot, 7 ft of No. 40 slot, 8 ft of No. 18 slot, and 5 ft of No. 12 slot.

Upon completion, the well reportedly produced 380 gpm with a drawdown of 29.9 ft from a nonpumping water level of 165.0 ft.

The pumping equipment presently installed consists of a 30-hp 1800 rpm U.S. electric motor (No. 551192), a 10-in., 5-stage Layne turbine pump set at 201 ft, rated at 385 gpm, and 200 ft of 6-in. column pipe. A 10-ft section of 6-in. suction pipe is attached to the pump intake. The well is equipped with 201 ft of airline.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B0016) is for a water sample from the well collected in July 1972.

WELL NO. 47, LABORATORY NO. BOO16

		mg/l	*me/1*			*mg/l*	*me/l*
Iron	Fe	1.26	0.04	Silica	SiO_2	20.4	
Manganese	Mn	0.0 3	0.00	Fluoride	F	0.3	0.0 2
Ammonium	NH_4	3.2	0.18	Boron	B	0.8 7	
Sodium	Na	33.8	1.47	Nitrate	NO_3	0.0	
Potassium	K	1.5	0.04	Chloride	Cl	2	0.06
Calcium	Ca	68.8	3.44	Sulfate	SO_4	10	0.21
Magnesium	Mg	31.2	2.56	Alkalinity (as $CaCO_3$)		359	7.18
Arsenic	As	0.00		Hardness (as $CaCCo_3$)		300	
Barium	Ba	0.0					
Copper	Cu	0.00		Total dissolved minerals		399	
Cadmium	Cd	0.00					
Chromium	Cr	0.0					
Lead	Pb	0.00		pH (as rec'd)		7.5	
Mercury	Hg	0.0000		Radioactivity			
Nickel	Ni	0.0		Alpha *pc/l*		0.6	
Selenium	Se	0.00		±deviation		1.6	
Silver	Ag	0.00		Beta *pc/l*		0.3	
Zinc	Zn	0.0		±deviation		1.1	

WELL NO. 48, finished in sand and gravel, was completed in May 1947 to a depth of 232 ft by the Kelly Well Co., Inc., Grand Island, Neb. The well is located about 2250 ft W of Mattis Ave. and 200 ft NE of U.S. Route 150, approximately 40 ft N and 2450 ft W of the SE corner of Section 34, T20N, R8E. The land surface elevation at the well is approximately 765 ft.

A correlated drillers log of Well No. 48 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
PLEISTOCENE SYSTEM		
Clay	41	41
Gravel and boulders	9	50
Clay and boulders	116	166
Sand	17	183
Gravel	21	204
Sand	6	210
Gravel	22	232
PENNSYLVANIAN SYSTEM		
Shale	at	232

A 38-in. diameter hole was drilled to a depth of 232 ft. The well is constructed with 4-ft sections of 17-in. ID by 22-in. OD concrete casing and screen placed as follows: casing between depths of 0 to 188 ft and 208 to 216 ft; screen between depths of 188 to 208 ft and 216 to 232 ft; and a concrete base section from 232 to 23 3 ft. Each screen section contains 184 openings of 6.75 in. by 3/16 in. The annulus between the bore hole and casing-screen assembly is filled with material from the mud pit from 0 to 152 ft and with 22 cubic yards of sand and gravel from 152 to 23 3 ft.

A production test was conducted by the State Water Sur-

vey on May 12-13, 1947. After 10.8 hr of pumping at rates ranging from 845 to 890 gpm, the drawdown was 15.5 ft from a nonpumping water level of 11 3.5 ft below the top of the casing. Pumping was continued for 1.1 hr at rates of 1035 to 1030 gpm with a final drawdown of 18.5 ft. Seventeen min after pumping was stopped, the water level had recovered to 115.1 ft, and 5.8 hr after the test, the water level was 112.5 ft.

The pumping equipment presently installed consists of a 60-hp 1770 rpm General Electric motor, a 12-in., 5-stage Peerless turbine pump set at 181 ft, rated at 700 gpm at about 225 ft head, and 150 ft of 8-in. column pipe. A 10-ft section of 8-in. suction pipe is attached to the pump intake.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B104092) is for a water sample from the well collected on November 14, 1972, after 20 hr of pumping at 700 gpm. Methane gas was reported in a previous sample.

WELL NO. 48, LABORATORY NO. B104092

		mg/l	rne/l		mng/l	me/l
Iron	Fe	2.5	0.09	Silica	SiO_2 20	
Manganese	Mn	0.05	0.00	Fluoride	F 0.4	0.02
Ammonium	NH_4	3.5	0.19	Boron	B 2.1	
Sodium	Na	66	2.87	Nitrate	NO_3 0.0	
Potassium	K	1.9	0.05	Chloride	Cl 1	0.03
Calcium	Ca	67	3.34	Sulfate	SO_4 12	0.25
Magnesium	Mg	28	2.30	Alkalinity (as $CaCO_3$)	400	8.00
Arsenic	As	0.00				
				Hardness (as $CaCO_3$)	282	
Barium	Ba	0.00				
Copper	Cu	0.00		Total dissolved		
Cadmium	Cd	0.00		minerals	405	
Chromium	Cr	0.00				
Lead	Pb	0.00		pH (as rec'd)	8.0	
Mercury	Hg	0.0000		Radioactivity		
Nickel	Ni	0.0		Alpha *pc/l*	1.1	
Selenium	Se	0.00		±deviation	1.7	
Silver	Ag	0.00		Beta *pc/l*	3.5	
Zinc	Zn	0.00		±deviation	1.8	

WELL NO. 49, finished in sand and gravel, was completed in April 1947 to a depth of 297 ft by the Layne-Western Co., Aurora. This well was abandoned and sealed in 1958 because of a cave-in. The well was located about 1.5 miles west of Well No. 48, approximately 935 ft S and 40 ft W of the NE corner of Section 5, T19N, R8E. The land surface elevation at the well is approximately 735 ft.

A drillers log of Well No. 49 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Top soil	4	4
Sandy clay	41	45
Hardpan	35	80
Sandy clay	80	160
Hardpan	25	185
Blue clay and gravel	25	210
Cemented sand with some clay	30	240
Clean sand and gravel	10	250
Sand gravel	19	269
Coarse gravel	11	280
Compact sand	20	300
Bedrock	1.5	301.5

A 30-in. diameter hole was drilled to a depth of 250 ft and finished at an unknown diameter from 250 to 297 ft. The well was cased with 24-in. OD steel pipe from 2 ft above land surface to a depth of 244.5 ft and 14-in. inner pipe from 2 ft above land surface to a depth of 247 ft followed by 50 ft of 14-in. No. 5 (0.105 in.) Layne silicon bronze shutter screen. The bottom 5 ft of screen was a 14-in. by 20-in. cone section with 21-in. OD cutting shoe. A 1-ft thick concrete plug was poured in the bottom of the screen. The annulus between the bore hole and 24-in. casing was filled with pit run gravel followed by tamped drill cuttings to a depth of 244.5 ft. The annulus between the bore hole and the 14-in. diameter casing-screen assembly was filled with 14.5 cubic yards of washed gravel from 235 to 297 ft.

A production test using one observation well was conducted on April 11,1947, by representatives of the driller, the State Water Survey, and the Water Co. After 12.1 hr of pumping at rates ranging from 915 to 1025 gpm, the final drawdown was 26.5 ft from a nonpumping water level of 76.0 ft below land surface. The water level recovered to 76.6 ft after the pump was stopped 2.5 hr, and after a total shutdown of 13.5 hr, full recovery was observed.

A mineral analysis of a sample (Lab. No. 143102) collected April 12, 1957, after pumping continuously at 900 gpm, showed the water to have a hardness of 259 mg/l, total dissolved minerals of 31 3 mg/l, and an iron content of 0.7 mg/l.

WELL NO. 50, finished in sand and gravel, was completed in November 1947 to a depth of 299 ft by the Kelly Well Co., Grand Island, Neb. This well was abandoned and sealed prior to 1962. The well was located about 1500 ft N of Well No. 49, approximately 562 ft N and 50 ft E of the SW corner of Section 33, T20N, R8E. The land surface elevation at the well is approximately 735 ft.

A drillers log of Well No. 50 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Clay, yellow	13	13
Gravel and rocks	16	29
Clay, blue, some rocks	56	85
Clay, green, softer than the blue clay	15	100
Clay, blue, some rocks	10	110
Quicksand (liner clay)	30	140
Gravel, coarse	5	145
Clay, sandy	20	165
Clay, blue, some rocks	39	204
Clay, sandy, hard	23	227
Sand	3	230
Gravel, coarse (water)	11	241
Sand, fine	4	245
Gravel, coarse, and sand	21	266
Sand, fine (water)	24	290
Sand	12	302

A 38-in. diameter hole was drilled to a depth of 302 ft. The well was constructed with 4-ft sections of 17-in. ID by 22-in. OD concrete casing and screen as follows: casing from 1 ft above land surface to a depth of 223 ft and from 295 to 299 ft; screen between depths of 223 to 295 ft; and a concrete base section from 299 to 299.8 ft. Each screen section contained 184 openings of 6.75 in. by 3/16 in. A 38-in. ID steel casing was placed from land surface to a depth of 31 ft.

The annulus between the casings and between the bore hole and casing-screen assembly was filled with clay from 0 to 30 ft, with material from the mud pit from 30 to 180 ft, and with 37 cubic yards of selected sand and gravel from 180 to 299.8 ft.

A production test using one observation well was conducted on November 21-22, 1947, by representatives of the driller and the State Water Survey. After 23.5 hr of intermittent pumping at rates ranging from 805 to 1116 gpm, the final drawdown was 12.0 ft from a nonpumping water level of 78.9 ft below land surface. One hr after pumping was stopped, the water level had recovered to 79.9 ft.

A mineral analysis of a sample (Lab. No. 142734) collected February 27, 1957, showed the water to have a hardness of 220 mg/l, total dissolved minerals of 316 mg/l, and an iron content of 0.8 mg/l.

Prior to the construction of Well No. 51, approximately 16 test holes were drilled in 1948, 1949, and 1950 by Hayes & Sims, Champaign, to depths ranging from 178 to 316.7 ft.

WELL NO. 51, finished in sand and gravel, was completed in August 1950 to a depth of 294 ft by the Kelly Well Co., Grand Island, Neb. This well was abandoned in 1956 and sealed prior to 1962. The well was located about 0.2 mile southwest of Well No. 50, approximately 40 ft N and 955 ft W of the SE corner of Section 32, T20N, R8E. The land surface elevation at the well is approximately 725 ft.

A drillers log of Well No. 51 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Clay	5	5
Sand and gravel	10	15
Till, blue	50	65
Sand, yellow	18	83
Clay,yellow with lots of gravel not too hard drilling	20	103
Till, blue	4	107
Sand, fine	4	111
Till, blue, very hard	7	118
Sand	12	130
Clay, sandy	5	135
Sand, fine	20	155
Till, blue, hard	45	200
Sand, fine	15	215
Sand, coarse, some gravel	10	225
Gravel, coarse	5	230
Gravel	29	259
Sand	35	294

A 38-in. diameter hole was drilled to a depth of 294 ft. The well was cased with 22-in. OD by 17-in. ID concrete pipe from 2 ft above land surface to a depth of 218 ft. A concrete screen of the same size having 184 openings of 4 3/4 by 3/16 in. extended from 218 to 294 ft with a concrete plug below. The annulus between the bore hole and casing-screen assembly was filled with concrete from 0 to 20 ft, with material from the mud pit from 20 to 192 ft, and with selected silica sand and gravel from 192 to 296 ft.

A production test using three observation wells was conducted on August 14-16, 1950, by representatives of the driller, the State Water Survey, and the Water Co. After 48.6 hr of nearly continuous pumping at rates ranging from 1180 to 965 gpm, the final drawdown was 11.0 ft from a nonpumping water level of 74.5 ft below land surface. Two hr after pumping was stopped, the water level had recovered to 75.6 ft and 24 hr after the test, full recovery was observed. During this test, Well Nos. 48 and 49 were pumping continuously.

By 1954, the specific capacity had declined from 88 to 50 gpm/ft of drawdown. A number of Calgon treatments were applied and reportedly improved the well only temporarily each time.

A mineral analysis of a sample (Lab. No. 130755) collected December 18, 1952, showed the water to have a hardness of 244 mg/l, total dissolved minerals of 315 mg/l, and an iron content of 0.84 mg/l.

Prior to the construction of Well No. 52, five test holes located in Sections 2, 3, and 10, T19N, R8E, were drilled in 1956 by Charles M. Hayes, Champaign, to depths ranging from 275 to 332 ft.

WELL NO. 52, finished in sand and gravel, was completed in September 1956 to a depth of 311.2 ft by the Thorpe Well Co., Des Moines, Iowa. This well is presently in use only as an observation well. The well is located about 2.5 miles west of Well No. 50, approximately 30 ft N and 2628 ft E of the SW corner of Section 36, T20N, R7E. The land surface elevation at the well is approximately 720 ft.

A drillers log of Well No. 52 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Top soil	3	3
Yellow clay	12	15
Blue clay, a little gravel, rocks	181	196
Fine sand	14	210
Medium fine sand to coarse gravel	35	245
Coarse sand and gravel	67	312
Gray shale	1	313

A 42-in. diameter hole was drilled to a depth of 220 ft and finished 48 in. in diameter from 220 to 314.6 ft. The well is cased with 36-in. pipe from 2 ft above land surface to a depth of 220 ft and 24-in. pipe from 2 ft above land surface to a depth of 236.2 ft followed by 75 ft of 24-in. stainless steel screen with slot openings of 5/32 in. by 2 in. The annulus between the bore hole and 36-in. casing is filled with cement grout from 0 to 10 ft, with sand backfill from 10 to 115 ft, with cement grout from 115 to 198 ft, and with sand from 198 to 220 ft. The annulus between the 36- and 24-in. casings and between the bore hole and screen is filled with cement grout from 0 to 50 ft and with Muscatine gravel from 50 to 311.2 ft.

A production test was conducted on September 21-23, 1956, by representatives of the driller, the State Water Survey, and the Water Co. After 48.2 hr of pumping at rates ranging from 1020 to 1795 gpm, the drawdown was 5.85 ft from a nonpumping water level of 74.45 ft below land surface. Twenty-seven min after pumping was stopped, the water level had recovered to 76.00 ft.

A mineral analysis of a sample (Lab. No. 141 514) collected in October 1956, after pumping for 48 hr at 1092

gpm, showed the water to have a hardness of 271 mg/l, total dissolved minerals of 492 mg/l, and an iron content of 0.2 mg/l.

WELL NO. 53, finished in sand and gravel, was completed in December 1956 to a depth of 289 ft by the Layne-Western Co., Aurora. The well is located on the east side of Mattis Ave. about 2690 ft N of the intersection of Bradley and Mattis Aves., approximately 2690 ft N and 57 ft E of the SW corner of Section 2, T19N, R8E. The land surface elevation at the well is approximately 757 ft.

A sample study log of a test hole at the site of Well No. 5 3 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
PLEISTOCENE SERIES		
Wisconsinan Stage		
Soil, brown, silty; till, light yellow, sandy	5	5
Till, yellowish gray to gray, sandy	75	80
Gravel, fine to medium, poorly sorted, dirty	5	85
Till, gray to brown, gravelly	20	105
Sand, very fine to medium, dirty, few pebbles	5	110
Till, dark brown, very sandy, gravelly	20	130
Sand, very fine to medium, poorly sorted	5	135
Illinoian Stage		
Till, yellow to brown, very sandy	5	140
Sand, very fine to medium, well sorted, dirty	5	145
Till, very sandy, gravelly	5	150
Sand, fine; rounded, well sorted, dirty	10	160
Sand, silty, very fine to medium, poorly sorted	25	185
Gravel, granular, clean; sand, medium to coarse; little silt	5	190
Gravel, fine to granular, clean sand fine to medium, clean	10	200
Gravel, granular to fine; little silt	10	210
Sand, medium to coarse, dirty; gravel granular, poorly sorted, dirty	10	220
Kansan Stage		
Till, gray, gravelly, sandy	15	235
Sand, silty, fine to medium, poorly sorted; little gravel, granular	35	270
Gravel, granular to medium, dirty; sand, medium to fine, dirty	10	280
Sand, coarse, well sorted; little gravel, granular	10	290

A 42-in. diameter hole was drilled to a depth of 289 ft. The well is cased with 26-in. outer pipe from 1.5 ft above land surface to a depth of 234 ft and 16-in. inner pipe from 1.5 ft above land surface to a depth of 234 ft followed by 55 ft of 16-in. No. 5 (0.105 in.) Layne stainless steel shutter screen. The annulus between the bore hole and 26-in. casing is filled with cement grout from 0 to 10 ft and with granular backfill from 10 to 234 ft and the annulus between the 26- and 16-in. casings and between the bore hole and screen is filled with gravel from 86 to 289 ft.

A production test was conducted by the driller on December 26-29, 1956. After 24 hr of pumping at rates of 935 to 1060 gpm, the drawdown was 9.70 ft from a nonpumping water level of 117.80 ft below the top of the casing. Pumping was continued at a rate of 1212 gpm for 2 hr with a drawdown of 11.10 ft. Pumping was continued for another 3 hr at 1404 gpm with a drawdown of 13.10 ft. After an additional 12 hr of pumping at 1500 gpm, the drawdown was 14.20 ft. During this test, Well Nos. 49 and 50 were operating continuously.

The pumping equipment presently installed consists of a 125-hp General Electric motor, an 11 3/8-in., 4-stage Layne & Bowler water-lubricated turbine pump set at 188 ft, rated at 2100 gpm at about 166 ft TDH, and 180 ft of 10-in. column pipe.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B104361) of a sample collected October 29, 1973, after pumping for 8 hr at 1950 gpm, showed the water to have a hardness of 256 mg/l, total dissolved minerals of 365 mg/l, and an iron content of 1.1 mg/l.

WELL NO. 54, finished in sand and gravel, was completed in November 1956 to a depth of 330.5 ft by the Layne-Western Co., Aurora. The well is located about 60 ft W of Well No. 51, approximately 40 ft N and 1016 ft W of the SE corner of Section 32, T20N, R8E. The land surface elevation at the well is approximately 726.2 ft.

A detailed sample study log of Well No. 54 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
PLEISTOCENE SERIES		
Soil, dark gray to black, yellow, oxidized	5	5
Gravel, poorly sorted, multicolored, less than 1/4 in. pebbles	5	10
Till, calcareous, gravelly, gray	5	15
Till, calcareous, sandy, gray, trace caved gravel	10	25
Till, calcareous, gravelly, partly sandy, grayish-buff	10	35
Till, as above, gravelly to very gravelly	15	50
Till, calcareous, sandy, buffish-gray, trace caved gravel	5	55
Till, calcareous, slightly gravelly, pinkish-gray to buffish-gray, little sand	5	60
Till, gravelly, yellow-orange, trace black, oxidized, looks like a buried soil	5	65
Gravel, poorly sorted, multicolored, many granules and small pebbles (to 1/4 in.)	5	70
Gravel, poorly sorted, multicolored, finer than above	5	75
Gravel, very sandy, multicolored; sand, clear fine to very coarse some (trace) granules	5	80
Sand, calcareous, white, little multicolored, fine to medium, trace coarse, subangular to subrounded	5	85
Till, extremely gravelly, calcareous, buff, buffish-gray	10	95
Till, calcareous, extremely gravelly, buff, little yellowish-buff; gravel partly very coarse, pebbly	5	100
Till, calcareous, slightly gravelly (may be caved), buff to gray	5	105
Till, calcareous, sandy, slightly gravelly, as above	5	110
Gravel, poorly sorted, multicolored, clean, some pebbles up to 3/8 in.	10	120
Gravel, as above, caved till, otherwise clean	15	135
Gravel, sandy, better sorted (average), multi-colored; sand, clear, very fine to fine, trace medium grains	5	140
Sand, calcareous, white, multicolored, very fine to fine, little medium	10	150
Till, calcareous, sandy, gray, little (caved?) gravel	15	165
Till, calcareous, sandy, slightly gravelly, gray to buffish-gray	10	175
Till, calcareous, gravelly, buffish-gray	5	180
Till, calcareous, slightly gravelly, sandy, gray to buffish-gray	10	190
Till, calcareous, sandy, gray to buffish-gray, trace to little gravel	5	195
Till, extremely sandy, buffish-gray; sand, fine to coarse, granules, subangular to rounded	5	200
Sand, calcareous, gravelly, multicolored, medium to very coarse, many granules, subangular to rounded (well)	5	205

Strata (continued)	Thickness (ft)	Depth (ft)
Sand, calcareous, multicolored, medium, little coarse to very coarse, trace granules, sub-angular to subrounded	5	210
Gravel, multicolored, average well sorted, some (trace) pebbles up to 1/4 in.	10	220
Gravel, as above, more poorly sorted, few pebbles	5	225
Gravel, sandy, multicolored, average well sorted, most sand, coarse to granules, pebbles less than 1/4 in.	10	235
Gravel multicolored, coarse, few pebbles up to 1/4 in.	5	240
Gravel, as above, coarser with pebbles to 3/8 in.	15	255
Sand, calcareous, gravelly, white, multicolored, little fine, medium to coarse, granules, sub-angular to subrounded	5	260
Sand, calcareous, multicolored, fine to medium, trace coarse, subangular to subrounded, trace gravel	5	265
Sand, calcareous, multicolored, fine, little medium, subangular to subrounded, well sorted	5	270
Sand, calcareous, as above, medium to coarse, trace very coarse	5	275
Sand, calcareous, as above, mostly fine to medium, trace coarse	5	280
Sand, as above, trace to little gravel, fine to medium, little coarse	15	295
Gravel, multicolored, few pebbles up to 1/4 in.	5	300
Gravel, sandy, multicolored, as above, sand, coarse	5	305
Gravel, multicolored, well sorted, few pebbles to 1/4 in.	10	315
Gravel, multicolored, very coarse, many pebbles over 1/4 in., few to 3/8 in.	5	320
Gravel, as above, few pebbles to 1/2 in.	5	325

A 48-in. diameter hole was drilled to a depth of 3 30.5 ft. The well is cased with 36-in. outer pipe from 1.5 ft above land surface to a depth of 255.5 ft and 24-in. inner pipe from 1.5 ft above land surface to a depth of 255.5 ft followed by 75 ft of 24-in. No. 5 (0.105 in.) Layne stainless steel shutter screen. The annulus between the bore hole and 36-in. casing and between the 36- and 24-in. casings and the bore hole and screen is filled with cement grout from 0 to 10 ft, with material from the mud pit from 10 to 160 ft, with cement from 160 to 170 ft, with gravel from 170 to 190 ft, and with Wisconsin gravel from 190 to 330.5 ft.

A production test was conducted by the driller on November 28-29, 1956. After 24 hr of pumping at a rate of 1080 gpm, the drawdown was 8.5 ft from a nonpumping water level of 90.0 ft. Pumping was continued at a rate of 1336 gpm for 2 hr with a drawdown of 10.5 ft. Pumping was continued for 2 hr at a rate of 1529 gpm with a drawdown of 12.3 ft. After an additional 20 hr of pumping at a rate of 165 5 gpm, the final drawdown was 14.0 ft.

The pumping equipment presently installed consists of a 250-hp General Electric motor, a 15-in., 4-stage Peerless water-lubricated turbine pump set at 181 ft, rated at 3000 gpm at about 250 ft head, and 160 ft of 14-in. column pipe.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. Bl14123) of a sample collected in May 1974, after pumping for 18 hr at 3100 gpm, showed the water to have a hardness of 261 mg/l, total dissolved minerals of 389 mg/l, and an iron content of 0.90 mg/l. Methane gas was reported in a previous sample.

WELL NO. 55, finished in sand and gravel, was completed in March 1958 to a depth of 300 ft by the Layne-Western Co., Aurora. The well is located about 80 ft N of Well No. 49, approximately 855 ft S and 50 ft W of the NE corner of Section 5, T19N, R8E. The land surface elevation at the well is approximately 735 ft.

A drillers log of Well No. 55 follows:

Strata	Thickness (ft)	Depth (ft)
Top soil	2	2
Clay	8	10
Clay, gray gravelly	39	49
Clay	46	95
Sand, clay streaks	5	100
Sand fine and clay blue hard	81	181
Sand and gravel	26	207
Sand, fine to coarse and gravel	41	248
Sand coarse clean and gravel	34	282
Sand medium fine to coarse	19	301
Shale	2	303

A 42-in. diameter hole was drilled to a depth of 301.5 ft. The well is cased with 24-in. outer pipe from land surface to a depth of 250 ft and 14-in. inner pipe from land surface to a depth of 250 ft followed by 50 ft of 14-in. Armco stainless steel screen. The annulus between the bore hole and 24-in. casing and between the 24-and 14-in. casings and the bore hole and screen is filled with cement from 0 to 10 ft, with sand from 10 to 210 ft, and with gravel from 210 to 301.5 ft.

Upon completion, after 48 hr of pumping at a rate of 900 gpm, the drawdown was 9.24 ft.

The pumping equipment presently installed is a 5-stage Peerless oil-lubricated turbine pump set at 171 ft, rated at 1000 gpm at about 225 ft TDH, and powered by a 75-hp U.S. electric motor.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. Bl 15486) of a sample collected June 27, 1974, after pumping for 6 hr at 900 gpm, showed the water to have a hardness of 248 mg/l, total dissolved minerals of 281 mg/l, and an iron content of 1.0 mg/l.

Prior to the construction of Well No. 56, approximately seven test holes were drilled in 1959 and 1960 by Charles M. Hayes, Champaign, to depths ranging from 298 to 343 ft.

WELL NO. 56, finished in sand and gravel, was completed in November 1960 to a depth of 318 ft by the Layne-Western Co., Aurora. The well is located about 0.5 mile WNW of Well No. 53, approximately 1700 ft S and 2250 ft W of the NE corner of Section 3, T19N, R8E. The land surface elevation at the well is approximately 760 ft.

A 42-in. diameter hole was drilled to a depth of 318 ft. The well is cased with 26-in. outer pipe from 1.5 ft above land surface to a depth of 263.5 ft and 16-in. inner pipe from 1.5 ft above land surface to a depth of 263.5 ft followed by 54.6 ft (55 ft overall length) of 16-in. No. 5 (0.105 in.) Layne shutter screen. The annulus between the bore hole and 26-in. casing and between the 26- and 16-in. casings and the bore hole and screen is filled with cement grout to

8.5 ft, with sand backfill from 8.5 to 25 3.5 ft, and with gravel from 253.5 to 318 ft.

The pumping equipment presently installed is a Layne & Bowler turbine pump set at 197.2 ft, rated at 2100 gpm, and powered by a 125-hp U.S. electric motor.

A drillers log of Well No. 56 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Black dirt	2	2
Clay and gravel streaks	34	36
Sand and gravel	14	50
Clay, blue	25	75
Clay sandy gravel	30	105
Clay soft, sandy gravel	25	130
Sand, fine and gravel	35	165
Sand compact, gravel	35	200
Sand coarse gravel	10	210
Gravelly clay	20	230
Sand and gravel	85.5	315.5
Shale	4.5	320

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. Bl 14122) of a sample collected in May 1974, after pumping for 12 hr at 1850 gpm, showed the water to have a hardness of 234 mg/l, total dissolved minerals of 357 mg/l, and an iron content of 1.25 mg/l.

WELL NO. 57, finished in sand and gravel, was completed in March 1962 to a depth of 297 ft by the Layne-Western Co., Aurora. The well is located just north of Bradley Ave. and 0.5 mile west of Mattis Ave., approximately 85 ft N and 2508 ft W of the SE corner of Section 3, T19N, R8E. The land surface elevation at the well is 752.3 ft.

A drillers log of Well No. 57 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Top soil	12	12
Clay, blue	119	131
Sand and gravel	84	215
Clay and boulders	25	240
Sand compact, gravel and clay	70	310
Sand and gravel with boulders	10	320
Sand, gravel and clay with boulders	12	332

A 42-in. diameter hole was drilled to a depth of 304 ft. The well is cased with 26-in. pipe from 3 ft above land surface to a depth of 242 ft and 16-in. pipe from 3 ft above land surface to a depth of 242 ft followed by 55 ft of 16-in. No. 5 (0.105 in.) Layne stainless steel shutter screen with a 7-ft length of 16-in. diameter pipe to a depth of 304 ft. The annulus between the bore hole and 26-in. casing is filled with cement from 0 to 10 ft, with sand backfill from 10 to 231 ft, and with gravel from 231 to 304 ft, and the annulus between the 26- and 16-in. casings and the bore hole and screen is filled with gravel from 108 to 304 ft.

The pumping equipment presently installed is a Layne & Bowler turbine pump set at 187 ft, rated at 2100 gpm at about 178.5 ft TDH, and powered by a 125-hp U.S. electric motor.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B104359) of a sample collected October 29, 1973, after pumping for 8 hr at 1900 gpm, showed the water to have a hardness of 249 mg/l, total dissolved minerals of 252 mg/l, and an iron content of 1.0 mg/l. Methane gas was reported in a previous sample.

WELL NO. 58, finished in sand and gravel, was completed in March 1964 to a depth of 326.5 ft by the Layne-Western Co., Aurora. The well is located just north of Bradley Ave. and about 700 ft E of Duncan Road, approximately 50 ft N and 700 ft E of the SW corner of Section 3, T19N, R8E. The land surface elevation at the well is 766.2 ft.

A drillers log of Well No. 58 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Clay	13	13
Dirty sand, gravel, boulders, and blue clay	3	16
Blue clay, boulders embedded, sand streaks	22	38
Sand, gravel and boulders	5	43
Clay	40	83
Sand and gravel	4	87
Clay, blue, hard with boulders	43	130
Sand, gravel and boulders with clay streaks	45	175
Dirty, fine sand	17	192
Coarse sand and gravel	23	215
Very hard blue clay and boulders	8	223
Very hard gray clay and boulders	20	243
Medium coarse sand & gravel, trace of coal, trace of fine sand	4	247
Fine to medium sand	3	250
Fine sand, trace of coarse gravel	6	256
Sand with some fine sand	7	263
Fine to coarse sand	17	280
Coarse sand, gravel and small boulders	41	321
Sand, gravel and boulders	5	326
Dirty, sand, gravel, boulders and clay	3	329
Rock	0.5	329.5

A 48-in. diameter hole was drilled to a depth of 10 ft and finished 42 in. in diameter from 10 to 329.5 ft. The well is cased with 30-in. outer steel pipe from 3 ft above land surface to a depth of 256.5 ft and 20-in. inner steel pipe from 3 ft above land surface to a depth of 256.5 ft followed by 70 ft of 20-in. No. 5 (0.105 in.) Layne stainless steel shutter screen with a 3-ft length of 20-in. diameter pipe to a depth of 329.5 ft. The annulus between the bore hole and 30-in. casing is filled with cement grout from 0 to 10 ft, with sand backfill from 10 to 238 ft, and with gravel from 238 to 256.5 ft, and the annulus between the 30- and 20-in. casings and between the bore hole and screen is filled with gravel from 126.5 to 329 ft.

Upon completion, the well reportedly produced 1158 gpm for 48 hr with a drawdown of 4 ft from a nonpumping water level of 148 ft below land surface.

The pumping equipment presently installed is a Layne & Bowler vertical turbine pump set at 200.7 ft, rated at 2800 gpm at about 200 ft TDH, and powered by a 200-hp Westinghouse electric motor.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B115105)of a sample collected June 19, 1974, after pumping for 24 hr at 2800 gpm, showed the water to have a hardness of 252 mg/l, total dissolved minerals of 339 mg/l, and an iron content of 1.10 mg/l. Methane gas was reported in a previous sample.

WELL NO. 59, finished in sand and gravel, was completed

in May 1962 to a depth of 338.4 ft by the Layne-Western Co., Aurora. The well is located about 1367 ft N of Well No. 55, approximately 512 ft N and 80 ft E of the SW corner of Section 33, T20N, R8E. The land surface elevation at the well is 731.55 ft.

A drillers log of Well No. 59 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Clay, yellow	13	13
Gravel and rocks	16	29
Clay, blue, some rocks	56	85
Clay, green	15	100
Clay, blue, some rock	10	110
Quicksand	30	140
Gravel, coarse	5	145
Clay, sandy	20	165
Clay, blue, some rock	39	204
Clay, sandy, hard	23	227
Sand	3	230
Gravel, coarse	11	241
Sand fine	4	245
Gravel coarse and sand	21	266
Sand fine (water)	24	290
Sand	12	302

A 42-in. diameter hole was drilled to a depth of 339 ft. The well is cased with 26-in. pipe from 3.3 ft above land surface to a depth of 230.4 ft and 16-in. pipe from 3.3 ft above land surface to a depth of 230.4 ft followed by 108.7 ft of 16-in. Layne stainless steel shutter screen and blank pipe. The screened section from top to bottom consists of 20 ft of No. 5 (0.105 in.) shutter, 53 ft of blank pipe, 35 ft of No. 5 (0.105 in.) shutter, and 0.7 ft of blank pipe. The annulus between the bore hole and 26-in. pipe is filled with cement from 0 to 10 ft, with sand backfill from 10 to 219.4 ft, and with gravel from 219.4 to 230.4 ft, and the annulus between the 26- and 16-in. casings and between the bore hole and screen is filled with gravel from 89.3 to 3 39 ft.

The pumping equipment presently installed is a Peerless vertical turbine pump set at 180.5 ft, rated at 2100 gpm at about 257 ft TDH, and powered by a 200-hp General Electric motor. The well is equipped with 180.46 ft of airline.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B104095) is for a water sample from the well collected on November 14, 1972, after 20 hr of pumping at 2250 gpm.

WELL NO. 59, LABORATORY NO. BI04095

		mg/l	*me/l*			*mg/l*	*me/l*
Iron	Fe	0.73	0.03	Silica	SiO_2	14	
Manganese	Mn	0.06	0.01	Fluoride	F	0.2	0.01
Ammonium	NH_4	1.0	0.06	Boron	B	0.60	
Sodium	Na	32.5	1.41	Nitrate	NO_3	0.0	
Potassium	K	2.4	0.06	Chloride	Cl	3	0.08
Calcium	Ca	60	2.99	Sulfate	SO_4	0	
Magnesium	Mg	32	2.63	Alkalinity (as $CaCO_3$)		328	6.56
Arsenic	As	0.00					
Barium	Ba	0.0		Hardness (as $CaCO_3$)		281	
Copper	Cu	0.00		Total dissolved			
Cadmium	Cd	0.00		minerals		371	
Chromium	Cr	0.00					
Lead	Pb	0.00		pH (as rec'd)		8.3	
Mercury	Hg	0.0000		Radioactivity			
Nickel	Ni	0.0		Alpha *pc/l*		2.5	
Selenium	Se	0.00		±deviation		1.9	
Silver	Ag	0.00		Beta *pc/l*		4.4	
Zinc	Zn	0.00		±deviation		1.7	

In 1968, twelve test holes were drilled by the Layne-Western Co., Aurora, to depths ranging from 295.5 to 360 ft.

WELL NO. 60, finished in sand and gravel, was completed in April 1971 to a depth of 340 ft by the Layne-Western Co., Aurora. The well is located 100 ft E of Duncan Road about 0.3 mile north of West Bradley Ave., approximately 1720 ft N and 100 ft E of the SW corner of Section 3, T19N, R8E. The land surface elevation at the well is approximately 770 ft.

A drillers log of Well No. 60 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Black top soil	2	2
Brown sandy clay	10.5	12.5
Gray sandy clay with coarse gravel	26	38.5
Medium to coarse gravel	6.5	45
Gray sandy clay, hard, with boulders	30	75
Sand and gravel	1	76
Gray clay and gravel streaks, boulders, caving sand and clay	11	87
Gray clay with sand and boulders	18	105
Hard pinkish clay with boulders embedded	38	143
Sand and gravel, some clay	3	146
Gray clay with gravel	10	156
Gray and brown fine sand	32	188
Gray clayey silt	3	191
Gray-brown fine sand	5	196
Medium to coarse gravel, fine to medium sand	4	200
Medium to coarse gravel	15	215
Gray gravelly clay with boulders embedded	5	220
Sand and gravel	2	222
Gray gravelly hardpan with boulders embedded	20	242
Gray fine silty sand with traces of gravel	5	247
Fine to medium sand, medium gravel (firm)	22	269
Coarse sand, medium gravel	31	300
Sand with fine and medium sand	8	308
Coarse sand and gravel	32	340
Shale	2	342

A 52-in. diameter hole was drilled to a depth of 13 ft, reduced to 48 in. between 13 and 86 ft, and finished 42 in. in diameter from 86 to 342 ft. The well is cased with 30-in. OD steel pipe from 3 ft above land surface to a depth of 240 ft and 20-in. OD steel pipe from 3 ft above land surface to a depth of 240 ft followed by 100 ft of 20-in. No. 7 (0.055 in.) Layne shutter screen. A 42-in. OD liner is installed from 66 ft to a depth of 86 ft. The annulus between the bore hole and 30-in. casing is filled with concrete from 0 to 13 ft, with fill sand from 13 to 205 ft, with cement from 205 to 220 ft, and with gravel from 220 to 240 ft, and the annulus between the 30- and 20-in. casings and between the bore hole and screen is filled with 78 tons of No. 2 Northern gravel from 120 to 342 ft.

A production test was conducted by the driller on April 6-8, 1971. After 48 hr of pumping at a rate of 1150 gpm, the drawdown was 6 ft from a nonpumping water level of 155 ft below land surface. Four min after pumping was stopped, full recovery was observed.

In 1972, the well reportedly produced 2480 gpm with a drawdown of 12 ft from a nonpumping water level of 161 ft.

In 1974, after pumping at 2329 gpm, the drawdown was 23 ft from a nonpumping water level of 159 ft.

The pumping equipment presently installed is a Johnston vertical turbine pump set at 210.9 ft, rated at 2400 gpm at

about 194 ft TDH, and powered by a 150-hp 1760 rpm General Electric motor.

The following mineral analysis (Lab. No. 186776) is for a water sample from the well collected October 4, 1971, after 3 days of pumping at 2500 gpm.

WELL NO. 60, LABORATORY NO. 186776

		mg/l	me/l			mg/l	me/l
Iron (total)	Fe	1.1		Silica	SiO_2	13.5	
Manganese	Mn	0.00		Fluoride	F	0.3	
Ammonium	NH_4	1.0	0.06	Boron	B	0.4	
Sodium	Na	26.0	1.13	Nitrate	NO_3	0.3	0.00
Potassium	K	1.7	0.04	Chloride	Cl	0	0.00
Calcium	Ca	54.4	2.71	Sulfate	SO_4	0.2	Tr
Magnesium	Mg	28.3	2.33	Alkalinity (as	$CaC0_3$)	312	6.24
Strontium	Sr	0.53	0.01				
Barium	Ba	0.2		Hardness	($asCaCO_3$)	252	5.04
Copper	Cu	0.00					
Cadmium	Cd	0.00		Total dissolved			
Chromium	Cr	0.00		minerals		303	
Lead	Pb	<0.05					
Lithium	Li	0.00		Turbidity	3		
Nickel	Ni	<0.05		Color	5		
Zinc	Zn	0.01		Odor	0		

WELL NO. 61, finished in sand and gravel, was completed in July 1974 to a depth of 296.5 ft by the Layne-Western Co., Aurora. As of April 1975, this well was not in service. The well is located about 3222 ft W of Well No. 58, approximately 175 ft N and 2608 ft E of the SW corner of Section 4, T19N, R8E. The land surface elevation at the well is 742.5 ft.

A drillers log of Well No.61 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Black top soil	2	2
Brown clay silty with sand and gravel seams	13.5	15.5
Gray sand and gravel, caving	3.5	29
Soft gray clay, silty with sand and gravel	9	38
Gray sandy clay	22	60
Very hard gray sandy clay	19	79
Pinkish colored sandy clay	5	84
Dark brown silt	3.5	87.5
Hard gray clay	3.5	91
Greenish colored sandy clay	10	101
Pinkish colored sandy clay, gravel intermixed	8	109
Medium sand to coarse gravel	7	116
Fine sand to medium gravel some coarse	14	130
Fine silty sand	6	136
Greenish clay, gravel intermixed	4	140
Fine gray sand, trace of fine gravel, silty and dirty	29	169
Fine sand to coarse gravel	24	193
Fine sand, boulder	9	202
Fine sand and coarse gravel	7	209
Very hard gray clay, gravel intermixed	17	226
Fine sand	7	233
Fine to coarse sand trace of gravel	13	246
Fine to medium sand trace of coal	4	250
Fine to coarse sand trace of gravel	25	275
Fine sand to coarse gravel	43	318
Gray sandy clay	1	319
Hard black shale	1	320

A 52-in. diameter hole was drilled to a depth of 10 ft and finished 42 in. in diameter from 10 to 320 ft. The well is cased with 30-in. steel pipe from 3 ft above land surface to a depth of 226 ft and 20-in. steel pipe from 3 ft above land surface to a depth of 216.5 ft followed by 80 ft of 20-in. No. 7 (0.055 in.) Layne stainless steel shutter screen. The annulus between the bore hole and 30-in. casing is filled with cement grout from 0 to 10 ft, with bank run sand from 10 to 205 ft, with cement grort from 205 to 215 ft, and with No. 2 Muscatine gravel from 215 to 226 ft, and the annulus between the 30- and 20-in. casings and between the bore hole and screen is filled with No. 2 Muscatine gravel from 7 to 320 ft.

A production test was conducted by the driller on July 9-11, 1974. After 48.5 hr of pumping at a rate of about 1218 gpm, the drawdown was about 10 ft from a nonpumping water level of 127 ft below land surface. One hr after pumping was stopped, the water level had recovered 1.3 ft.

The pumping equipment planned for installation is a Layne vertical turbine pump set at 180 ft, rated at 2100 gpm at about 226 ft TDH, and powered by a 150-hp 1770 rpm U.S. electric motor.

A mineral analysis of a sample (Lab. No. 196205) collected July 10, 1974, after pumping for 29 hr at 1050 gpm, showed the water to have a hardness of 248 mg/l, total dissolved minerals of 315 mg/l, and an iron content of 0.7 mg/l.

DEWEY PUBLIC WATER DISTRICT

The Dewey Public Water District (est. 210) installed a public water supply in 1970. The Water District treatment plant is located in the north central section of the unincorporated village of Dewey. One well is in use. In 1974 there were 57 services, all metered; the estimated average and maximum daily pumpages were 8672 and 12,500 gpd, respectively. The water is fed solutions of caustic soda and potassium permanganate by separate chemical pumps, filtered, and softened.

WELL NO. 1, finished in sand, was completed in April 1969 to a depth of 273 ft by Guy McElwee & Son, Sidney. The well is located on the plant grounds at the corner of Main and Third Sts., approximately 2100 ft S and 1800 ft E of the NW corner of Section 34, T22N, R8E. The land surface elevation at the well is approximately 730 ft.

A 6-in. diameter hole was drilled to a depth of 273 ft. The well is cased with 6-in. steel pipe from 0.5 ft above land surface to a depth of 258 ft followed by 15 ft of 6-in. No. 18 slot Johnson stainless steel screen.

A production test was conducted on June 17, 1969, by representatives of the driller, the State Water Survey, and C. S. Parsons & Associates, Consulting Engineers. After 3 hr of

pumping at a rate of 66 gpm, the drawdown was 3.0 ft from a nonpumping water level of 49.7 ft below land surface. Fifteen min after pumping was stopped, full recovery was observed. On the basis of the production test data, it was estimated that this well would yield 50 gpm (72,000 gpd) on a long-term basis.

The pumping equipment presently installed is a Jacuzzi submersible pump (Model No. 5S6 A10-T2A, Serial No. SUH230) set at 90 ft, rated at 50 gpm at about 265 ft TDH, and powered by a 5-hp Franklin electric motor (Model No. 2341172000).

A drillers log of Well No. 1 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Top soil, yellow clay	12	12
Gray, gravelly clay	11	23
Black peat and gravel	2	25
Gray, sandy clay	1.5	26.5
Gray clay	15.5	42
Hard, limey clay	1.5	43.5
Soft, sandy clay	7.5	51
Hard, limey, gray clay	79	130
Gray, limey sand and clay	43	173
Gray, limey sand	9	182
Hard limey, gray sand	2.5	184.5
Gravelly sand	22.5	207
Muddy, hard sand	14	221
Gravelly sand	23.5	244.5
Muddy gravel	2.5	247
Sand	26	273
Muddy sand, gravel	7	280
Muddy gravel	7	287
Sand	8	295

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B125385) is for a water sample from the well collected February 12, 1975, after 30 min of pumping.

WELL NO. 1, LABORATORY NO. B125385

		mg/l	*me/l*			*mg/l*	*me/l*
Iron	Fe	1.6		Silica	SiO_2	21	
Manganese	Mn	0.0		Fluoride	F	0.2	0.01
Ammonium	NH_4	0.8	0.04	Boron	B	0.1	
Sodium	Na	10	0.44	Nitrate	NO_3	0.0	0.00
Potassium	K	1.0	0.03	Chloride	Cl	0.2	0.01
Calcium	Ca	76	3.79	Sulfate	SO_4	0.6	0.01
Magnesium	Mg	30	2.47	Alkalinity (as	$CaCO_3$)	344	6.88
Arsenic	As	0.00					
Barium	Ba	0.1		Hardness	(as $CaCO_3$)	313	6.26
Copper	Cu	0.00					
Cadmium	Cd	0.00		Total dissolved			
Chromium	Cr	0.00		minerals		337	
Lead	Pb	0.00					
Mercury	Hg	0.0006		pH (as rec'd)		7.6	
Nickel	Ni	0.0		Radioactivity			
Selenium	Se	0.00		Alpha *pc/l*		0.0	
Silver	Ag	0.00		± deviation		0.0	
Cyanide	CN	0.00		Beta *pc/l*		2.2	
Zinc	Zn	0.0		±deviation		1.7	

FISHER

The village of Fisher (1525) installed a public water supply in 1936. Two wells (Nos. 1 and 3) are in use. In 1950 there were 265 services, 86 percent metered; the estimated average and maximum daily pumpages were 50,000 and 75,000 gpd, respectively. In 1973 there were 498 services, all metered; the average and maximum daily pumpages were 90,000 and 120,000 gpd, respectively. The water is aerated, filtered, softened, and fluoridated.

WELL NO. 1, finished in sand and gravel, was constructed in March 1936 to a depth of 204 ft by L. R. Burt, Decatur, and deepened in January 1949 to a depth of 236 ft. The well is located on the north side of Front St. about 720 ft W of Third St., approximately 2565 ft N and 1000 ft W of the SE corner of Section 36, T22N, R7E. The land surface elevation at the well is approximately 720 ft.

A summary sample study log of Well No. 1 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
PLEISTOCENE SYSTEM		
Wisconsinan		
Soil, silty, brown	5	5
Till, yellowish-brown and brownish-green, noncalcareous	6	11
Till, pebbly, brown, calcareous toward base	14	25
Till, pebbly, sandy, mottled gray and brown, calcareous	5	30
Till, sandy, scattered pebbles, brownish-gray, calcareous	9	39
Illinoian		
Sand, with little gravel, yellowish-brown, fine to coarse, washes clean	2	41
Gravel with little sand, gray, ranging up to 1/2 in. in diameter, clean, calcareous	3	44
Clay, gray, calcareous	8	52
Silt and sand, brown, organic, noncalcareous	3	55
Sand and silt, scattered pebbles, brown, organic, fragments, calcareous	11	66
Till, sandy, pebbly, pink, calcareous	13	79
Sand and silt, brown, carbonaceous flakes, slightly calcareous	11	90
Silt, brownish-green, micaceous, noncalcareous	3.5	93.5
Sand, gray and buff, fine to coarse, clean, calcareous	11.5	105
Till, silty, brown, calcareous	24	129
Till, silty, scattered sand and pebbles, brownish-gray, calcareous	6	135
Silt, slightly sandy, brownish-gray, calcareous	5	140
Silt, brownish-gray, micaceous, spores, calcareous	5	145
Sand, silty, brown, fine and very fine, calcareous	5	150
Kansan		
Clay, silty, brownish-gray, carbonaceous flakes, calcareous	2	152
Sand, brown, fine and very fine, clean, calcareous	14	166
Sand, light gray, medium, clean, some fine to coarse gravel in lower 5 ft	34	200
Interval not studied	36	236

The well was initially cased with 8-in. pipe to a depth of 186 ft followed by 18 ft (20 ft overall length) of 8-in. Johnson screen. The screened section consisted of 10 ft of No. 10 slot followed by 10 ft of No. 20 slot. When the well was deepened in 1949, it was cased with 8-in. pipe from 2 ft above the pump station floor to a depth of 204 ft, and 6-in. pipe from 204 ft to a depth of 226 ft followed by 10 ft of Johnson Everdur screen.

At the original depth, a production test was conducted by the State Water Survey on April 10, 1936. After 8 hr of pumping at an average rate of 182 gpm, the drawdown was 26 ft from a nonpumping water level of 30 ft below land surface.

In March 1947, the nonpumping water level was reported to be 31.5 ft below land surface.

On December 17, 1948, the nonpumping water level was reported to be 35.1 ft below the top of the pump base after Well No. 2 had been pumping for 6.5 hr.

The pumping equipment presently installed is a Peerless turbine pump set at 80 ft, rated at 125 gpm at about 90 ft TDH, and powered by a 5-hp 1800 rpm U.S. electric motor.

A mineral analysis of a sample (Lab. No. 199342) collected August 5, 1975, after pumping for 1.5 hr at 125 gpm, showed the water to have a hardness of 328 mg/l, total dissolved minerals of 457 mg/l, and an iron content of 1.5 mg/l.

Prior to the construction of Well No. 2, a test hole located 275 ft W of Well No. 1, was drilled in March 1947 to a depth of 271.5 ft by Hayes & Sims, Champaign.

A sample study log of Test Hole No. 1 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
PLEISTOCENE SYSTEM		
No record	35	35
Till	10	45
Sand and granule gravel, dirty	5	50
Till	15	65
Sand, partly dirty	5	70
Till	5	75
Sand, mostly clean	15	90
Sand, dirty, with clay	20	110
Sand, clean	25	135
Sand, some clay	70	205
Till	5	210
Sand, dirty at top, soil at 225 ft	20	230
Sand and granule gravel, clean	41.5	271.5

WELL NO. 2, finished in sand and gravel, was constructed in November 1947 to a depth of 239 ft by Hayes & Sims, Champaign, and deepened in April 1955 to a depth of 274 ft by L. F. Swanson & Son, Gibson City. This well was abandoned prior to 1959. The well is located at the west end of Front St. about 275 ft W of Well No. 1, approximately 2480 ft N and 1275 ft W of the SE corner of Section 36, T22N, R7E. The land surface elevation at the well is approximately 720 ft.

Originally, a 10-in. diameter hole was drilled to a depth of 190 ft and finished 8 in. in diameter from 190 to 239 ft. The well was cased with 10-in. pipe from land surface to a depth of 190 ft, and 8-in. pipe from 190 ft to a depth of 230 ft followed by 10 ft (10.8 ft overall length) of 8-in. No. 20 and 30 slot Johnson screen. When the well was deepened in 1955, it was cased with 8-in. pipe from 229 ft to a depth of 240.5 ft followed by 3 3.5 ft of 8-in. screen. The screened section consists from top to bottom of 10.4 ft of No. 20 and 28 slot, 7.6 ft of No. 12 slot, 9.8 ft of No. 10 slot, and 5.8 ft of No. 50 slot.

A production test using one observation well was conducted on June 26, 1948, by representatives of the village and the State Water Survey. After 3.7 hr of pumping at rates of 41.5 to 205 gpm, the final drawdown was 14.8 ft from a nonpumping water level of 26.5 ft below land surface. Twenty min after pumping was stopped, the water level had recovered to 32.5 ft.

A production test was conducted on November 10, 1948, by representatives of the village and the State Water Survey. After 1.5 hr of pumping at rates of 40 to 73 gpm, the final drawdown was 49.4 ft from a nonpumping water level of 24.8 ft below land surface. Fourteen min after pumping was stopped, the water level had recovered to 25.0 ft. This test indicated that the well efficiency had declined significantly from the previous test.

On November 22, 1948, this well was rehabilitated by Hayes & Sims and treated with 70 lb of HTH. The yield rate decreased from 73 to 25 gpm. Operations continued at this rate until December 2, 1948, when the well was surged with a bailer. A considerable quantity of fine sand having a reddish color and flakes of iron precipitate was removed. The well was placed in service December 4, 1948, and the yield was reported to be 110 gpm to the aerator.

In May 1951, the nonpumping water level was reported to be 38.5 ft below the airline gage.

In December 1954, the Waterworks Superintendent treated this well with Calgon and chlorine and surged it for several days.

In May 1955, after deepening, the well reportedly produced 205 gpm for 3 hr with a drawdown of 4 ft from a nonpumping water level of 32 ft below the pump base.

WELL NO. 3, finished in sand and gravel, was completed in August 1959 to a depth of 270 ft by the J. P. Miller Artesian Well Co., Brookfield. The well is located 40 ft W of the elevated tank, approximately 2611 ft N and 1275 ft W of the SE corner of Section 36, T22N, R7E. The land surface elevation at the well is approximately 720 ft.

A drillers log of Well No. 3 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Clay	19	19
Gravel and boulders	3	22
Sandy blue clay	3	25
Gravel	2	27
Blue clay	13	40
Sandy clay	27	67
Clay	10	77
Sand	16	93
Clay	4	97

Strata (continued)	Thickness (ft)	Depth (ft)
Sand (fine)	14	111
Blue clay	27	138
Sand	9	147
Clay	2	149
Sand with tight layers	45	194
Gravel	2	196
Hard clay	22	218
Coarse sand and gravel	52	270

A 27-in. diameter hole was drilled to a depth of 270 ft. The well is cased with 10-in. pipe from land surface to a depth of 250 ft followed by 20 ft of 10-in. No. 60 slot Cook stainless steel screen.

Upon completion, the well reportedly produced 300 gpm for 4 hr with a drawdown of 7 ft from a nonpumping water level of 27 ft below the top of the casing.

The pumping equipment presently installed is an American Well Works turbine pump (No. 71303) set at 80 ft, rated at 205 gpm, and powered by a 5-hp electric motor.

The following mineral analysis (Lab. No. 199343) is for a water sample from the well collected August 5, 1975, after 30 min of pumping at 125 gpm.

WELL NO. 3, LABORATORY NO. 199343

		mg/l	me/l			mg/l	me/l
Iron (total)	Fe	1.9		Silica	SiO_2	21.8	
Manganese	Mn	0.07		Fluoride	F	0.4	
Ammonium	NH_4	1.4	0.08	Boron	B	0.5	
Sodium	Na	28.1	1.22	Nitrate	NO_3	0.4	0.01
Potassium	K	1.3	0.03	Chloride	Cl	0	0.00
Calcium	Ca	88.8	4.43	Sulfate	SO_4	65.2	1.36
Magnesium	Mg	36.1	2.97	Alkalinity (as CaCC>3)		362	7.24
Strontium	Sr	0.38	0.01				
Barium	Ba	<0.1		Hardness (as $CaCO_3$)		370	7.40
Copper	Cu	0.00		Total dissolved minerals		456	
Cadmium	Cd	0.00					
Chromium	Cr	0.00					
Lead	Pb	<0.05		pH (in lab.)	7.5		
Lithium	Li	0.01		Turbidity	8		
Nickel	Ni	<0.05		Color	0		
Zinc	Zn	0.01		Odor	0		

GIFFORD

The village of Gifford (814) installed a public water supply in 1962. Two wells are in use. In 1962 there were 89 services, all metered. In 1974 there were 291 services, all metered; the average and maximum daily pumpages were 56,000 and 80,000 gpd, respectively. The water is fluoridated, aerated, settled, filtered, and chlorinated.

WELL NO. 1, finished in sand and gravel, was completed in September 1961 to a depth of 156.3 ft by the Layne-Western Co., Aurora. The well is located on the east side of town inside the treatment plant, approximately 1240 ft S and 1005 ft E of the NW corner of Section 1, T21N, R10E. The land surface elevation at the well is approximately 780 ft.

A drillers log of Well No. 1 follows:

Strata	Thickness (ft)	Depth (ft)
Black top soil	2	2
Yellow clay	10	12
Blue clay	94	106
Gravel, medium	2	108
Blue clay	33	141
Fine sand, medium gravel, boulders	16	157

An 8-in. diameter hole was drilled to a depth of 157 ft. The well is cased with 8-in. pipe from 1 ft above land surface to a depth of 141.3 ft followed by 15 ft of 8-in. No. 30 slot Keystone brass wire-wound screen.

A production test was conducted on September 5-6, 1961, by representatives of the driller, the village, the State Water Survey, and Caldwell-Rhoads Co., Consulting Engineers. After 24 hr of pumping at a rate of 115 gpm, the drawdown was 12.0 ft from a nonpumping water level of 92.0 ft below land surface. Thirty min after pumping was stopped, the water level had recovered to 96.3 ft. On the basis of the production test data, it was estimated that this well would yield 100 gpm (144,000 gpd) on a long-term basis.

The pumping equipment presently installed is a Layne vertical turbine pump (No. 43787) set at 130 ft, rated at 100 gpm at 150 ft TDH, and powered by a 10-hp U.S. electric motor (No. 3173659).

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B114180) of a sample collected May 29, 1974, after pumping for 1 hr at 115 gpm, showed the water to have a hardness of 301 mg/l, total dissolved minerals of 386 mg/l, and an iron content of 1.1 3 mg/l.

WELL NO. 2, finished in sand and gravel, was completed in March 1966 to a depth of 165 ft by the Layne-Western Co., Aurora. The well is located about 236 ft SE of Well No. 1, approximately 1474 ft S and 1039 ft E of the NW corner of Section 1, T21N, R10E. The land surface elevation at the well is approximately 780 ft.

A drillers log of Well No. 2 follows:

Strata	Thickness (ft)	Depth (ft)
Black top soil	1.5	1.5
Brown silty clay	6.5	8
Gray clay, gravel embedded, some sand seams	66	74
Gray sand and gravel	6	80
Gray clay	22	102
Fine sand to medium gravel	7	109
Clay	11	120
Gray clay with sand seam	28	148
Gray clay	3	151
Fine sand to medium gravel	12	163
Gray clay	2	165

A 15-in. diameter hole was drilled to a depth of 165 ft. The well is cased with 8-in. steel pipe from 1.5 ft above land surface to a depth of 150 ft followed by 15 ft of 8-in. No. 50 slot Cook stainless steel screen. The top of the well casing is equipped with a pitless adapter.

A production test using one observation well was conducted on March 1-2, 1966, by representatives of the driller, the

village, and Caldwell-Rhoads Co., Consulting Engineers. After 23 hr of pumping at rates of 153 to 155 gpm, the final drawdown was 35.30 ft from a nonpumping water level of 92.95 ft below land surface. Forty min after pumping was stopped, the water level had recovered to 96.00 ft. On the basis of the production test data, the Water Survey estimated that this well would yield 100 gpm (144,000 gpd) on a long-term basis.

The pumping equipment presently installed is a Sumo submersible pump (Model No. 4C71:50) set at 147 ft, rated at 102 gpm at 1 55 ft TDH, and powered by a 5-hp Sumo electric motor.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B102089) is for a water sample from the well collected August 28, 1973, after 1.5 hr of pumping at 100 gpm.

WELL NO.2, LABORATORY NO. B102089

		mg/l	me/l			mg/l	me/l
Iron	Fe	1.1		Silica	SiO_2	17	
Manganese	Mn	0.02		Fluoride	F	0.5	0.03
Ammonium	NH_4	0.9	0.05	Boron	B	0.7	
Sodium	Na	24.2	1.05	Nitrate	NO_3	0.0	0.00
Potassium	K	2.4	0.06	Chloride	Cl	0	0.00
Calcium	Ca	69	3.44	Sulfate	SO_4	0	0.00
Magnesium	Mg	31	2.55	Alkalinity (as $CaCO_3$)		344	6.88
Arsenic	As	0.00		Hardness (as $CaCO_3$)		296	5.92
Barium	Ba	0.1					
Copper	Cu	0.00		Total dissolved minerals		404	
Cadmium	Cd	0.00					
Chromium	Cr	0.00					
Lead	Pb	0.00		pH (as rec'd)		8.0	
Mercury	Hg	0.0000		Radioactivity			
Nickel	Ni	0.0		Alpha *pc/l*		1.5	
Selenium	Se	0.00		±deviation		1.7	
Silver	Ag	0.00		Beta *pc/l*		4.4	
Zinc	Zn	0.01		±deviation		1.8	

GREENWOOD LAKE SUBDIVISION

Greenwood Lake Subdivision (est. 50), located 2 miles northwest of Dewey, installed a public water supply in 1960. The water system is owned and operated by the Greenwood Lake Association. Two wells (Nos. 2 and 3) are in use. In 1973 there were 18 services, none metered. The water is not treated.

WELL NO. 1 (First Addition, Lot 9 well), finished in sand and gravel, was completed in 1949 to a depth of 46 ft by L. F. Swanson & Son, Gibson City. This well is not in use and plans are to abandon it. The well is located in the north end of the First Addition on lot 9, approximately 565 ft N and 2620 ft E of the SW corner of Section 21, T22N, R8E. The land surface elevation at the well is approximately 710 ft.

The well is cased with 8-in. outer pipe to a depth of 4 ft and 2-in. inner pipe followed by an unknown length of screen. The top of the well casing is equipped with a pitless adapter.

The pumping equipment presently installed is a Myers Ejecto jet pump (Serial No. 169369) rated at 7 gpm, and powered by a 1/2-hp electric motor.

WELL NO. 2 (First Addition, Outlot well), finished in sand and gravel, was constructed in September 1962 to a depth of 145 ft, and deepened in April 1965 to a depth of 187 ft by L. F. Swanson & Son, Gibson City. The well is located near the southeast corner of the First Addition just north of lot 22, approximately 190 ft N and 2070 ft E of the SW corner of Section 21, T22N, R8E. The land surface elevation at the well is approximately 710 ft.

A drillers log of Well No. 2 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Top soil	2	2
Yellow clay	13	15
Sand	2	17
Gray clay	13	30
Strata (continued)	*Thickness (ft)*	*Depth (ft)*
Sand	2	32
Gray clay	14	46
Sand and gravel	4	50
Clay	30	80
Sand	2	82
Hardpan	32	114
Brown clay	6	120
Hardpan	11	131
Coarse gravel	2	133
Hardpan	9	142
Coarse gravel	8	150
No record	37	187

A 4-in. diameter hole was drilled to a depth of 187 ft. The well is cased with 4-in. steel pipe from 3 ft above land surface to a depth of 179 ft followed by 8 ft of 4-in. No. 8 slot Johnson stainless steel screen.

On December 14, 1964, before deepening, the nonpumping water level was reported to be 23 ft.

The pumping equipment presently installed is a Jacuzzi submersible pump (Model No. 2S4D-S2 S99, Unit No. EN-14366) set at about 130 ft, rated at 50 gpm, and powered by a 2-hp Franklin electric motor.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B125622) of a sample collected February 17, 1975, after pumping for 30 min at 45 gpm, showed the water to have a hardness of 285 mg/l, total dissolved minerals of 336 mg/l, and an iron content of 0.8 mg/l.

WELL NO. 3 (Second Addition, Knox well), finished in sand and gravel, was completed in May 1968 to a depth of 196 ft by L. F. Swanson & Son, Gibson City. The well is located in the south portion of the Second Addition, approximately 480 ft N and 2460 ft W of the SE corner of Section 21, T22N, R8E. The land surface elevation at the well is approximately 710 ft.

A drillers log of Well No. 3 follows:

Strata	Thickness (ft)	Depth (ft)
Top soil	3	3
Clay	29.5	32.5
Medium sand	4	36.5
Hardpan	103.5	140
Fine sand	10	150
Hardpan	10	160
Medium sand	28	188
Coarse gravel	8	196

A 4-in. diameter hole was drilled to a depth of 196 ft. The well is cased with 4-in. black steel pipe from 0.5 ft above land surface to a depth of 188 ft followed by 8 ft of 4-in. Johnson stainless steel screen. The screened section consists of 4 ft of No. 18 slot followed by 4 ft of No. 16 slot.

Upon completion, the well reportedly produced 140 gpm for 1 hr with a nonpumping water level of 26.18 ft below land surface.

The pumping equipment presently installed is a Red Jacket submersible pump set at 109 ft, rated at 44 gpm, and powered by a 2-hp Franklin electric motor.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B125623) is for a water sample from the well collected February 17, 1975, after 30 min of pumping at 45 gpm.

WELL NO. 3, LABORATORY NO. B125623

		mg/l	me/l			mg/l	me/l
Iron	Fe	2.7		Silica	SiO_2	20	
Manganese	Mn	0.0		Fluoride	F	0.3	0.02
Ammonium	NH_4	1.0	0.06	Boron	B	0.2	
Sodium	Na	18	0.78	Nitrate	NO_3	0.0	0.00
Potassium	K	0.9	0.02	Chloride	Cl	0	0.00
Calcium	Ca	72	3.59	Sulfate	SO_4	4.4	0.09
Magnesium	Mg	28	2.30	Alkalinity (as $CaCO_3$)		344	6.88
Arsenic	As	0.00					
Barium	Ba	0.1		Hardness (as $CaCO_3$)		295	5.90
Copper	Cu	0.00					
Cadmium	Cd	0.00		Total dissolved minerals		363	
Chromium	Cr	0.00					
Lead	Pb	0.00					
Mercury	Hg	0.0000		pH(asrec'd)		7.7	
Nickel	Ni	0.0		Radioactivity			
Selenium	Se	0.00		Alpha *pc/l*		0.0	
Silver	Ag	0.00		±deviation		0.0	
Cyanide	CN	0.00		Beta *pc/l*		0.0	
Zinc	Zn	0.1		±deviation		1.4	

HOMER

The village of Homer (1354) installed a public water supply in 1940. Three wells are in use. In 1949 there were 28 services, 18 percent metered; the estimated average daily pumpage was 25,000 gpd. In 1973 there were 487 services, all metered; the average and maximum daily pumpages were 100,000 and 125,000 gpd, respectively. The water is chlorinated, aerated, settled, fluoridated, and filtered.

Prior to the construction of Well No. 1, nine test holes located within the village were constructed in 1939 by the Layne-Western Co., Aurora, to depths ranging from 58 to 95.7 ft.

WELL NO. 1, finished in sand and gravel, was completed in July 1939 to a depth of 72 ft by the Layne-Western Co., Aurora. The well is located in the main pumping station on the southwest corner of the village, approximately 2300 ft N and 1500 ft W of the SE corner of Section 8, T18N, R14W. The land surface elevation at the well is approximately 670 ft.

A drillers log of Well No. 1 follows:

Strata	Thickness (ft)	Depth (ft)
Top soil	2	2
Yellow clay	18	20
Blue and yellow clay mixed	10	30
Soft blue clay	5	35
Blue clay and boulders	5	40
Sand and gravel, blue clay showing	30	70
Blue clay containing gravel	5	75

A 16-in. diameter hole was drilled to a depth of 75 ft. The well is cased with 16-in. outer pipe from land surface to a depth of 40 ft and 8-in. inner pipe from land surface to a depth of 49.5 ft followed by 22.5 ft of 8-in. Layne shutter screen and blank pipe. The screened section from top to bottom consists of 10 ft of shutter screen, 7.5 ft of blank pipe, and 5 ft of shutter screen. The annulus between the bore hole and screen is filled with gravel.

A production test was conducted by the State Water Survey on July 7-8, 1939. After 7 hr of pumping at an average rate of 74 gpm, the drawdown was 22 ft from a nonpumping water level of 11 ft below land surface. Pumping was continued for 14.2 hr at rates of 83 to 80 gpm with a drawdown of 28 ft. After an additional 1.9 hr of pumping at rates of 100 to 105 gpm, the final drawdown was 35 ft. Seven min after pumping was stopped, the water level had recovered to 27 ft.

A production test was conducted by the State Water Survey on December 19, 1939. After 2 hr of pumping at rates of 110 to 108 gpm, the drawdown was 28 ft from a nonpumping water level of 13 ft below land surface.

On December 9, 1948, after a 14-hr idle period, the water level was 3 3.5 ft. The well was then pumped at an estimated rate of 50 gpm for 2 hr with a drawdown of 12.0 ft.

This well was treated with 500 gal of acid in March 195 3 by the Layne-Western Co. The production was reportedly increased from 50 to 85 gpm with approximately the same drawdown.

In October 1955, the nonpumping water level was reported to be 24 ft.

A production test was conducted on May 4, 1966, by representatives of the village and the State Water Survey. After 70 min of pumping at an average rate of 34 gpm, the

drawdown was 8.19 ft from a nonpumping water level of 32.32 ft below land surface. Fifteen min after pumping was stopped, the water level had recovered to 32.70 ft. Results of this test indicated that this well was practically as efficient as when constructed.

The pumping equipment presently installed is a 6-stage Layne turbine pump (No. 74010) set at 50 ft, rated at 50 gpm at about 80 ft TDH, and powered by a 3-hp 1730 rpm U.S. electric motor (No. 9310-00-A 63-28879-088). A 5-ft section of 4-in. suction pipe is attached to the pump intake.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B101006) of a sample collected July 31, 1973, after pumping for 30 min at 60 gpm, showed the water to have a hardness of 308 mg/l, total dissolved minerals of 456 mg/l, and an iron content of 0.75 mg/l.

A test well, located about 300 ft S of Well No. 1, was constructed in November 1947 to a depth of 68.3 ft by Hayes & Sims, Champaign. The well was cased with 12-in. pipe to a depth of 58.3 ft followed by 10 ft of 12-in. Johnson wire-wound screen. The screened section consisted of No. 30 slot and No. 25 slot. Upon completion, the well reportedly produced 35 gpm with a drawdown of 10 ft from a nonpumping water level of 20 ft. This well was deepened in 1949 to a depth of 246 ft by A. L. Stice, Danville. The hole was 6 in. in diameter. This well was never used and was abandoned because of insufficient yield.

Prior to the construction of Well No. 2, three test holes were drilled in 1947 by Hayes & Sims, Champaign, and two test holes were drilled in 1950 by Swartz & Biggs, Atwood. The depths ranged from 63 to 120 ft.

WELL NO. 2, finished in sand and gravel, was completed in June 1952 to a depth of 60.5 ft by the Layne-Western Co., Aurora. The well is located 45 3 ft W and 440 ft S of Well No. 1, approximately 1860 ft N and 1953 ft W of the SE corner of Section 8, T18N, R14W. The land surface elevation at the well is approximately 670 ft.

A correlated drillers log of Well No. 2 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
PLEISTOCENE SERIES		
Black top soil	2	2
Yellow clay	16	18
Blue clay	25	43
Fine sand with clay streaks	7	50
Medium gravel	10.5	60.5

A 28-in. diameter hole was drilled to a depth of 60.5 ft. The well is cased with 26-in. steel pipe from land surface to a depth of 40 ft and 12-in. steel pipe from 1 ft above land surface to a depth of 50.5 ft followed by 10 ft of 12-in. No. 6 (0.080 in.) Layne bronze shutter screen. The annulus between the bore hole and 26-in. casing is filled with cement from 0 to 3 ft and with clay from 3 to 40 ft, and the annulus between the 26- and 12-in. casings and between the bore hole and screen is filled with 3/8-in. gravel from 0 to 60.5 ft.

A production test was conducted by the driller on June 8-9, 1952. After 12 hr of pumping at rates of 75 to 81 gpm, the drawdown was 10 ft from a nonpumping water level of 21 ft.

On October 5, 1952, when pumping at capacity the drawdown was 6 ft from a nonpumping water level of 22 ft below the pump base.

The pumping equipment presently installed is a 2-stage Layne turbine pump (Serial No. 24889) set at 40 ft, rated at 80 gpm at about 65 ft TDH, and powered by a 5-hp 1800 rpm U.S. electric motor (Serial No. 2189247). The well is equipped with 50 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B101007) of a sample collected July 31, 1973, after pumping for 30 min at 110 gpm, showed the water to have a hardness of 254 mg/l, total dissolved minerals of 429 mg/l, and an iron content of 0.28 mg/l. Hydrogen sulfide was apparent when a previous sample was collected.

Prior to the construction of Well No. 3, five test holes were drilled in August and September 1959 by Charles M. Hayes, Champaign, to depths ranging from 75 to 149 ft.

WELL NO. 3, finished in sand, was completed in November 1959 to a depth of 59 ft by the J. P. Miller Artesian Well Co., Brookfield. The well is located about 0.2 mile west of the city limits and 870 ft W of Well No. 2, approximately 1820 ft N and 2457 ft E of the SW corner of Section 8, T18N, R14W. The land surface elevation at the well is approximately 670 ft.

A drillers log of Well No. 3 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Top soil, clay till	36	36
Sand	10	46
Clay	2	48
Fine to medium sand	11	59

A 36-in. diameter hole was drilled to a depth of 59 ft. The well is cased with 36-in. steel pipe from 0.2 ft above land surface to a depth of 12 ft and 12-in. steel pipe from 3.8 ft above land surface to a depth of 49 ft followed by 10 ft of 12-in. No. 60 slot Cater stainless steel screen. The annulus between the 36-and 12-in. casings and between the bore hole and screen is filled with gravel pack mixed with earth, torpedo sand, and bentonite from 0 to 34 ft and with graded silica gravel pack from 34 to 59 ft.

A production test was conducted on November 24, 1959, by representatives of the driller, the village, and Wilson & Anderson, Consulting Engineers. After 5 hr of pumping at rates ranging from 105 to 1 52 gpm, the maximum drawdown was more than 30 ft from a nonpumping water level of 24.2 ft below land surface. Ten min after pumping was stopped, the water level had recovered to 34.2 ft. Well Nos. 1 and 2 were operating the first 4 hr of this test.

A production test was conducted by the Sims Drilling Co.,

Savoy, on January 9, 1965. After 2 hr of pumping at a rate of 75 gpm, the drawdown was 10.0 ft from a nonpumping water level of 36.2 ft below the top of the pump base.

The pumping equipment presently installed consists of a 5-hp 1740 rpm Allis-Chalmers electric motor (Serial No. 51-401-086-7), a 4-in. Layne turbine pump (Serial No. 41312) set at 58 ft, rated at 100 gpm at about 85 ft TDH, and 50 ft of 4-in. column pipe. A 5-ft section of suction pipe is attached to the pump intake. The well is equipped with 50 ft of airline.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B0023) is for a water sample from the well collected June 28, 1972, after 30 min of pumping at 100 gpm. Hydrogen sulfide was apparent when a previous sample was collected.

WELL NO. 3, LABORATORY NO. B0023

		mg/l	me/l			mg/l	me/l
Iron	Fe	0.35	0.13	Silica	SiO_2	20.0	
Manganese	Mn	0.04	0.00	Fluoride	F	0.5	0.03
Ammonium	NH_4	2.1	0.12	Boron	B	1.28	
Sodium	Na	81.2	3.53	Nitrate	NO_3	0.0	
Potassium	K	1.6	0.04	Chloride	Cl	32	0.90
Calcium	Ca	72.7	3.63	Sulfate	SO_4	25	0.67
Magnesium	Mg	27.9	2.29	Alkalinity (as $CaCO_3$)		388	7.76
Arsenic	As	0.00		Hardness (as $CaCO_3$)		294	
Barium	Ba	0.1		Total dissolved minerals		531	
Copper	Cu	0.00					
Cadmium	Cd	0.00					
Chromium	Cr	0.00		pH (as rec'd)	7.5		
Lead	Pb	0.00		Radioactivity			
Nickel	Ni	0.0		Alpha *pc/l*	3.2		
Selenium	Se	0.00		±deviation	2.7		
Silver	Ag	0.00		Beta *pc/l*	3.9		
Zinc	Zn	0.0		±deviation	1.9		

IVESDALE

The village of Ivesdale (3 57) installed a public water supply in 1966. One well is in use. In 1966 there were 50 services, all metered. In 1974 there were 120 services, all metered; the estimated average daily pumpage was 34,000 gpd. The water is aerated, settled, filtered, softened, chlorinated, and fluoridated.

WELL NO. 1, finished in sand, was completed in September 1965 to a depth of 85 ft by the Sims Drilling Co., Savoy. The well is located at the corner of Colburn and Third Sts., approximately 2340 ft N and 1470 ft E of the SW corner of Section 7, T17N, R7E. The land surface elevation at the well is approximately 680 ft.

A summary sample study log of Well No. 1 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Till, yellow to buff	15	15
Sand and gravel, very dirty	10	25
Till, buff, sandy	20	45
Sand, fine, clean	5	50
Till, buff.silty	5	55
Gravel, granule buff, dirty	5	60
Gravel and sand, medium to coarse, clean	12	72
Sand, fine to coarse, some gravel, clean	2	74
Gravel, granule, some sand, clean	10	84
Sand, very fine to medium, clean	6	90

An 8-in. diameter hole was drilled to a depth of 85 ft. The well is cased with 8-in. steel pipe from 1 ft above land surface to a depth of 75 ft followed by 10 ft of 8-in. Johnson stainless steel screen. The screened section consists of 8 ft of No. 30 slot followed by 2 ft of No. 35 slot. The top of the casing is equipped with an 8-in. diameter Tubbs pitless adapter.

A production test was conducted on September 24, 1965, by representatives of the driller, the village, the State Water Survey, and Marbry & Johnson, Inc., Consulting Engineers. After 3 hr of pumping at an average rate of 50 gpm, the drawdown was 7.4 ft from a nonpumping water level of 23.1 ft below land surface. Thirty min after pumping was stopped, the water level had recovered to 24.7 ft. On the basis of the production test data, it was estimated that this well would yield 50 gpm (72,000 gpd) on a long-term basis.

The pumping equipment presently installed consists of a 3-hp Franklin electric motor, a 6-in. Red Jacket submersible pump (Model No. 300T4-12B, Serial No. BAF689) set at 53 ft, rated at 30 gpm at about 129 ft TDH, and 53 ft of 2-in. column pipe.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. Bl 12406) is for a water sample from the well collected May 14, 1974, after 2 hr of pumping.

WELL NO. 1, LABORATORY NO. Bl 12406

		mg/l	me/l			mg/l	me/l
Iron	Fe	2.14		Silica	SiO_2	24	
Manganese	Mn	0.00		Fluoride	F	0.5	0.03
Ammonium	NH_4	1.7	0.09	Boron	B	0.5	
Sodium	Na	30	1.30	Nitrate	NO_3	0.4	0.01
Potassium	K	1.7	0.04	Chloride	Cl	3	0.08
Calcium	Ca	84	4.19	Sulfate	SO_4	0	0.00
Magnesium	Mg	30	2.47	Alkalinity (as $CaCO_3$)		408	8.16
Arsenic	As	0.00					
Barium	Ba	0.1		Hardness (as $CaCO_3$)		333	6.66
Copper	Cu	0.01					
Cadmium	Cd	0.00		Total dissolved minerals		463	
Chromium	Cr	0.00					
Lead	Pb	0.00					
Mercury	Hg	0.0000		pH (as rec'd)	7.6		
Nickel	Ni	0.0		Radioactivity			
Selenium	Se	0.00		Alpha *pc/l*	0.0		
Silver	Ag	0.00		ideviation	0.0		
Cyanide	CN	0.00		Beta *pc/l*	2.5		
Zinc	Zn	0.00		ideviation	1.4		

LONGVIEW

The village of Longview (224) installed a public water supply in 1955. Although the village is in Champaign County, water is obtained from a well located in Douglas County. In 1956 there were 40 services, all metered; the estimated average daily pumpage was between 4000 and 4500 gpd. In 1974 there were 85 services, all metered; the average daily pumpage was 18,000 gpd. The water is chlorinated and fluoridated.

WELL NO. 1, finished in sand, was completed in May 1955 to a depth of 50 ft by J. B. Ortman & Sons, Kokomo, Ind. The well is located about 0.5 mile south and 1 mile west of the village, approximately 36 ft S and 288 ft E of the NW corner of Section 4, T16N, R10E, Douglas County. The land surface elevation at the well is approximately 660 ft.

A sample study log of Well No. 1 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
PLEISTOCENE SERIES		
Till, yellowish brown, sandy	20	20
Till, grayish brown, silty, sandy, some gravel	10	30
Sand, medium to very coarse, clean poorly sorted	10	40
Sand, medium, well sorted, clean	10	50

A 10-in. diameter hole was drilled to a depth of 50 ft. The well is cased with 10-in. steel pipe from within the concrete pump pedestal to a depth of 40 ft followed by 10 ft of 10-in. No. 25 slot red brass screen.

A production test using two observation wells was conducted on May 20-21, 1955, by representatives of the driller, the village, the State Water Survey, and Caldwell-Rhoads Co., Consulting Engineers. After 24 hr of pumping at rates of 80 to 60 gpm, the drawdown was 13.95 ft from a non-pumping water level of 1.25 ft below land surface. The water level recovered to 5.10 ft after pumping was stopped for 1.2 hr.

The pumping equipment presently installed consists of a 5-hp 1800 rpm U.S. electric motor (Serial No. 3794904-2), a Jacuzzi turbine pump (Model No. LCBAISIVGH90-178C) set at 30.3 ft, rated at 50 gpm, and 30 ft of 4-in. column pipe. A 10-ft section of 4-in. suction pipe is attached to the pump intake. The well is equipped with 48 ft of airline.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. Bl 1 3010) is for a water sample from the well collected May 20, 1974, after 30 min of pumping at 50 gpm.

WELL NO. 1, LABORATORY NO. Bl 13010

		mg/l	*me/l*			*mg/l*	*me/l*
Iron	Fe	1.30		Silica	SiO_2	17	
Manganese	Mn	0.05		Fluoride	F	0.6	0.03
Ammonium	NH_4	1.7	0.09	Boron	B	1.3	
Sodium	Na	54	2.35	Nitrate	NO_3	0.0	0.00
Potassium	K	1.5	0.04	Chloride	Cl	8	0.23
Calcium	Ca	52	2.60	Sulfate	SO_4	0	0.00
Magnesium	Mg	25	2.06	Alkalinity (as $CaCO_3$)		346	6.92
Arsenic	As	0.00					
Barium	Ba	0.2		Hardness (as $CaCO_3$)		232	4.64
Copper	Cu	0.00					
Cadmium	Cd	0.00		Total dissolved minerals		405	
Chromium	Cr	0.00					
Lead	Pb	0.00					
Mercury	Hg	0.0000		pH (as rec'd)		7.7	
Nickel	Ni	0.0		Radioactivity			
Selenium	Se	0.00		Alpha *pc/l*		0.7	
Silver	Ag	0.00		±deviation		1.6	
Cyanide	CN	0.00		Beta *pc/l*		2.4	
Zinc	Zn	0.01		±deviation		1.9	

LUDLOW

The village of Ludlow (531) installed a public water supply in 1948. Two wells are in use. In 1952 there were 104 services, 5 unmetered; the average daily pumpage was 4000 gpd. In 1974 there were 150 services, all metered; the average and maximum daily pumpages were 70,000 and 100,000 gpd, respectively. The water is fluoridated.

WELL NO. 1, finished in sand and gravel, was completed in October 1948 to a depth of 122 ft by Hayes & Sims, Champaign. The well is located about 50 ft N of Ludlow St. and 125 ft E of Oak St., approximately 830 ft N and 2140 ft W of of the SE corner of Section 1, T22N,R9E. The land surface elevation at the well is approximately 765 ft.

An 8-in. diameter hole was drilled to a depth of 125 ft. The well is cased with 8-in. pipe from 2 ft above land surface to a depth of 112 ft followed by 10 ft of 8-in. No. 20 slot Johnson Everdur screen.

A production test was conducted on October 15, 1948, by representatives of the driller, the State Water Survey, and the village engineer. After 7.7 hr of pumping at rates of 62.5 to 123 gpm, the final drawdown was 12 ft from a non-pumping water level of 70 ft below land surface. One min after pumping was stopped, full recovery was observed.

The pumping equipment presently installed is a Deming pump rated at 100 gpm at about 200 ft head, and powered by a 7 1/2-hp 1800 rpm U.S. electric motor. The well is equipped with 101 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. Bl 13505) of a sample collected May 23, 1974, after pumping for 45 min at 90 gpm, showed the water to have a hardness of 249 mg/l, total dissolved minerals of 396 mg/l, and an iron content of 1.15 mg/l.

WELL NO. 2, finished in sand and gravel, was completed in April 1960 to a depth of 121.5 ft by the Sims Drilling Co., Savoy. The well is located 76 ft NE of Well No. 1, approximately 880 ft N and 2090 ft W of the SE corner of Section 1, T22N, R9E. The land surface elevation at the well is approximately 765 ft.

A drillers log of Well No. 2 follows:

Strata	Thickness (ft)	Depth (ft)
Top soil	2	2
Clay, yellow	20	22
Clay, blue with peat streaks	29	51
Clay, blue, soft, peat showing	22	73
Peat with gravel streaks	16	89
Sand and gravel, dirty	17	106
Sand, coarse, clean, water bearing	16.5	122.5

An 8-in. diameter hole was drilled to a depth of 122.5 ft. The well is cased with 8-in. steel pipe from 1.5 ft above land surface to a depth of 111.5 ft followed by 10 ft of 8-in. No. 18 slot Johnson Everdur screen.

Upon completion, the well reportedly produced 160 gpm for 3 hr with a drawdown of 13 ft from a nonpumping water level of 72 ft below land surface.

The pumping equipment presently installed is a Deming submersible pump set at 105 ft, rated at 120 gpm, and powered by a 7 1/2-hp Franklin electric motor.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. Bl 10636) is for a water sample from the well collected April 16, 1974, after 30 min of pumping at 100 gpm. Hydrogen sulfide was apparent when a previous sample was collected.

WELL NO. 2, LABORATORY NO. B110636

		mg/l	me/l			mg/l	me/l
Iron	Fe	0.97		Silica	SiO_2	16	
Manganese	Mn	0.07		Fluoride	F	0.8	0.04
Ammonium	NH_4	1.3	0.07	Boron	B	1.3	
Sodium	Na	45	1.96	Nitrate	NO_3	0.0	0.00
Potassium	K	2.2	0.06	Chloride	Cl	1	0.03
Calcium	Ca	53	2.64	Sulfate	SO_4	0	0.00
Magnesium	Mg	28	2.30	Alkalinity (as $CaCO_3$)		344	6.88
Arsenic	As	0.00					
Barium	Ba	0.0		Hardness (as $CaCO_3$)		24 7	4.94
Copper	Cu	0.00					
Cadmium	Cd	0.00		Total dissolved			
Chromium	Cr	0.00		minerals		381	
Lead	Pb	0.00					
Mercury	Hg	0.0000		pH (as rec'd)		8.0	
Nickel	Ni	0.0		Radioactivity			
Selenium	Se	0.00		Alpha *pc/l*		1.0	
Silver	Ag	0.00		±deviation		1.3	
Cyanide	CN	0.00		Beta *pc/l*		5.2	
Zinc	Zn	0.01		±deviation		2.1	

MAHOMET

The village of Mahomet (1296) installed a public water supply in 1940. Two wells (Nos. 2 and 3) are in use. In 1950 there were 305 services, *99* percent metered. In 1973 there were 680 services, all metered; the average and maximum daily pumpages were 170,000 and 180,000 gpd, respectively. The water is aerated, settled, filtered, and fluoridated.

Prior to the installation of a public water supply, a 4-in. diameter test hole was drilled in August 1939 to a depth of 221 ft by Hayes & Sims, Champaign.

A sample study log of Test Hole No. 1 furnished by the State Geological Survey follows:

Strata	Thickness (ft)	Depth (ft)
PLEISTOCENE SYSTEM		
Soil and till	55	55
Sand, some gravel, clean	68	123
Till	27	150
Sand, some gravel, clean	5	155
Till	25	180
Gravel, sandy, very silty	10	190
Sand, clean	20	210
Sand and gravel	5	215
Gravel, sandy, clean	5	220

WELL NO. 1, finished in sand and gravel, was completed in September 1939 to a depth of 94 ft by Hayes & Sims, Champaign. This well was abandoned in 1964 because of a clogged well screen but it is still connected to the system. The well is located at the southeast corner of Vine and Dunbar Sts. adjacent to Test Hole No. 1, approximately 2350 ft S and 1100 ft E of the NW corner of Section 15, T20N, R7E. The land surface elevation at the well is approximately 718 ft.

The well is cased with 8-in. pipe from 2 ft above the treatment plant floor to a depth of 84 ft followed by 10 ft of 8-in. Johnson red brass screen. The screened section consists of 5 ft of No. 18 slot followed by 5 ft of No. 20 slot.

A production test was conducted by the State Water Survey on September 27, 1939. After 3 hr of pumping at a rate of 165 gpm, the drawdown was 8.8 ft from a nonpumping water level of 49.0 ft below the pump base. Pumping was continued for an additional 6.1 hr at an increased rate of 230 gpm with a final drawdown of 12.2 ft. Eight min after pumping was stopped, full recovery was observed.

The pumping equipment presently installed consists of a 5-hp U.S. electric motor (No. 176544), a 7-in., 4-stage American Well Works turbine pump (No. 63043) set at 60 ft, rated at 170 gpm at about 70 ft head, and 60 ft of 4.5-in. column pipe. A 5.5-ft section of 5-in. suction pipe is attached to the pump intake. The well is equipped with 65 ft of airline.

A mineral analysis of a sample (Lab. No. 116781) collected December 17, 1948, after pumping for 25 min at 170 gpm, showed the water to have a hardness of 502 mg/l, total dissolved minerals of 545 mg/l, and an iron content of 2.6 mg/l.

WELL NO. 2, finished in sand and gravel, was completed in 1945 to a depth of 97 ft by Hayes & Sims, Champaign. The well is located north of Well No. 1, approximately 2300 ft S and 1108 ft E of the NW corner of Section 15, T20N, R7E. The land surface elevation at the well is approximately 718 ft.

The well is cased with 8-in. pipe from 2 ft above the pump station floor to an unknown depth. In May 1952, Hayes & Sims installed a new 12-ft section of screen and it was reported that the well was chlorinated following this work.

The pumping equipment presently installed is a 7-in. American Well Works turbine pump (No. 70779) rated at 170 gpm at about 72 ft head, and powered by a 5-hp U.S. electric motor.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B112130) is for a water sample from the well collected May 14, 1974, after 30 min of pumping at 40 gpm.

WELL NO. 2, LABORATORY NO. B112130

		mg/l	me/l			mg/l	me/l
Iron	Fe	2.18		Silica	SiO_2	15	
Manganese	Mn	0.10		Fluoride	F	0.1	0.00
Ammonium	NH_4	0.6	0.03	Boron	B	0.1	
Sodium	Na	12	0.52	Nitrate	NO_3	0.0	0.00
Potassium	K	2.0	0.05	Chloride	Cl	18	0.51
Calcium	Ca	96	4.79	Sulfate	SO_4	94	1.96
Magnesium	Mg	46	3.79	Alkalinity (as	$CaCO_3$)	338	6.76
Arsenic	As	0.00					
Barium	Ba	0.1		Hardness	(as $CaCO_3$)	429	8.58
Copper	Cu	0.00					
Cadmium	Cd	0.00		Total dissolved			
Chromium	Cr	0.00		minerals		519	
Lead	Pb	0.0 0					
Mercury	Hg	0.0000		pH (as rec'd)	7.5		
Nickel	Ni	0.0		Radioactivity			
Selenium	Se	0.00		Alpha *pc/l*	0.2		
Silver	Ag	0.00		±deviation	1.8		
Cyanide	CN	0.00		Beta *pc/l*	2.6		
Zinc	Zn	0.00		±deviation	2.4		

Prior to the installation of Well No. 3, a test hole was drilled in April 1963 to a depth of 283 ft by Charles M. Hayes, Champaign.

A drillers log of the test hole follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Top soil	5	5
Yellow clay	5	10
Blue clay	17	27
Dirty sand and gravel	28	55
Sand, gravel, and boulders	41	96
Sand, boulders, and clay	9	105
Dirty sand and gravel	17	122
Hard gravelly clay, some boulders	70	192
Compact sand	23	215
Sand and gravel (compact at 272 ft)	60	275
Sand, gravel, boulders, and clay showing Blue shale	8	283

WELL NO. 3, finished in sand and gravel, was completed in July 1963 to a depth of 251.6 ft by the Layne-Western Co., Aurora. The well is located southeast of Well No. 2, approximately 2400 ft S and 1160 ft E of the NW corner of Section 15, T20N, R7E. The land surface elevation at the well is approximately 700 ft.

A 36-in. diameter hole was drilled to a depth of 251.6 ft. The well is cased with 12-in. pipe from land surface to a depth of 211.6 ft followed by 40 ft of 12-in. No. 4 (0.130 in.) Layne shutter screen. The annulus between the bore hole and casing-screen assembly is filled with pit run sand from 0 to 152 ft, with a concrete plug from 152 to 162 ft, and with 1/8- by 1/4-in. gravel from 162 to 251.6 ft.

A production test was conducted on July 3, 1963, by representatives of the driller and Wilson & Anderson, Consulting Engineers. After 4.6 hr of pumping at rates of 606 to 638 gpm, the drawdown was 9 ft from a nonpumping water level of 81 ft below land surface. Pumping was continued for an additional 3.2 hr at rates of 402 to 305 gpm with a final drawdown of 4 ft. Seven min after pumping was stopped, full recovery was observed.

The pumping equipment presently installed is a Deming turbine pump rated at 300 gpm, and powered by a 15-hp U.S. electric motor.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. Bl 121 31) is for a water sample from the well collected May 14, 1974, after 30 min of pumping at 160 gpm.

WELL NO. 3, LABORATORYNO. Bl 12131

		mg/l	me/l			mg/l	me/l
Iron	Fe	1.4 2		Silica	SiO_2	21	
Manganese	Mn	0.0 0		Fluoride	F	0.3	0.0 2
Ammonium	NH_4	1.6	0.09	Boron	B	0.4	
Sodium	Na	19	0.83	Nitrate	NO_3	0.0	0.00
Potassium	K	1.5	0.04	Chloride	Cl	1	0.03
Calcium	Ca	80	3.99	Sulfate	SO_4	2 5	0.5 2
Magnesium	Mg	30	2.47	Alkalinity (as	$CaCO_3$)	356	7.12
Arsenic	As	0.0 0					
Barium	Ba	0.1		Hardness	(as $CaCO_3$)	323	6.46
Copper	Cu	0.01					
Cadmium	Cd	0.00		Total dissolved			
Chromium	Cr	0.00		minerals		367	
Lead	Pb	0.00					
Mercury	Hg	0.0000		pH (as rec'd)	7.7		
Nickel	Ni	0.0		Radioactivity			
Selenium	Se	0.00		Alpha *pc/l*	0.2		
Silver	Ag	0.00		±deviation	1.3		
Cyanide	CN	0.00		Beta *pc/l*	1.0		
Zinc	Zn	0.00		±deviation	1.7		

OGDEN

The village of Ogden (703) installed a public water supply in 1952. Two wells are in use. In 1954 there were 135 services, none metered; the estimated average daily pumpage was 25,000 gpd. In 1974 there were 285 services, all metered; the average and maximum daily pumpages were 60,000 and 90,000 gpd, respectively. The water is aerated, settled, filtered, fluoridated, and chlorinated.

WELL NO. 1, finished in sand, was completed in September 1952 to a depth of 65 ft by the Layne-Western Co., Aurora. The well is located at Broadway St. and East Ave., approximately 189 ft N and 839 ft E of the SW corner of Section 9, T19N, R14W. The land surface elevation at the well is approximately 670 ft.

A sample study log of Well No. 1 furnished by the State Geological Survey follows:

Strata	Thickness (ft)	Depth (ft)
PLEISTOCENE SERIES		
Soil, brown to yellow brown, silty	5	5
Silty, gray brown to yellow brown, mottled	5	10
Till, olive brown, sandy silty	10	20
Till, gray, sandy silty	5	25
Till, gray brown, sandy, silty	5	30
Till, gray, sandy, silty	5	35
Till (?) gray, clayey	5	40
Sand, brown, fine to medium, very silty	5	45
Sand, medium to coarse, poorly sorted	5	50
Sand, fine to medium, light gray brown	5	55
Sand, coarse, well sorted	5	60
Sand, fine, well sorted light yellow brown	15	75

A 20-in. diameter hole was drilled to a depth of 10 ft and finished 16 in. in diameter from 10 to 75 ft. The well is cased with 16-in. OD pipe from 2 ft above land surface to a depth of 10 ft and 8-in. ID pipe from 2 ft above land surface to a depth of 50 ft followed by 15 ft of 8-in. No. 5 (0.105 in.) Layne bronze shutter screen. The annulus between the 16- and 8-in. casings and between the bore hole and 8-in. casing-screen assembly is filled with drill cuttings from 0 to about 30 ft, with bentonite and sand from about 30 to 35 ft, and with 1/8- by 1/4-in. gravel with sand from about 35 to 65 ft.

A production test was conducted on September 23, 1952, by representatives of the driller, the village, the State Water Survey, and Wilson & Anderson, Consulting Engineers. After 8.2 hr of pumping at rates of 5 3 to 230 gpm, the final drawdown was 37.7 ft from a nonpumping water level of 12.0 ft below land surface. Eleven min after pumping was stopped, the water level had recovered to 16.5 ft.

The pumping equipment presently installed consists of a 3-hp U.S. electric motor, a 5.7-in., 3-stage Deming turbine pump (No. T15633) rated at 100 gpm, and 50 ft of 4-in. column pipe. The well is equipped with 50 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. Bl 14520) of a sample collected June 6, 1974, after pumping for 30 min at 94 gpm, showed the water to have a hardness of 367 mg/l, total dissolved minerals of 415 mg/l, and an iron content of 2.25 mg/l.

WELL NO. 2, finished in sand and gravel, was completed in January 1966 to a depth of 67 ft by the Layne-Western Co., Aurora. The well is located about 50 ft N of Well No. 1, approximately 239 ft N and 839 ft E of the SW corner of Section 9, T19N, R14W. The land surface elevation at the well is approximately 670 ft.

A drillers log of Well No. 2 follows:

Strata	Thickness (ft)	Depth (ft)
Top soil	2	2
Yellow clay	12	14
Blue clay	27	41
Fine sand	2	43
Fine to coarse sand and fine gravel	5	48
Very fine sand	4	52
Fine to coarse sand and gravel	10	62
Very fine sand	1	63
Very fine to coarse sand and gravel	4	67
Very fine sand	3	70

A 34-in. diameter hole was drilled to a depth of 10 ft and finished 30 in. in diameter from 10 to 70 ft. The well is equipped with a Monitor pitless adapter from 3.5 ft above land surface to a depth of 4.2 ft and cased with 8-in. pipe to a depth of 50.9 ft followed by 16.1 ft of 8-in. No. 50 slot Cook bronze screen. The annulus between the bore hole and casing-screen assembly is filled with concrete from 4 to 7 ft, with torpedo sand from 7 to 27 ft, and with filter sand from 27 to 70 ft.

Upon completion, the well reportedly produced 125 gpm for 6 hr with a drawdown of 15 ft from a nonpumping water level of 14 ft below land surface.

The pumping equipment presently installed is a Sumo submersible pump set at 46 ft, rated at 125 gpm at about 64 ft TDH, and powered by a 3-hp Sumo electric motor.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. Bl 14519) is for a water sample from the well collected June 6, 1974, after 30 min of pumping at 70.8 gpm.

WELL NO. 2, LABORATORY NO. Bl 14519

		mg/l	me/l			mg/l	me/l
Iron	Fe	2.0		Silica	SiO_2	21	
Manganese	Mn	0.05		Fluoride	F	0.4	0.02
Ammonium	NH_4	1.4	0.08	Boron	B	0.2	
Sodium	Na	21	0.91	Nitrate	NO_3	0.0	0.00
Potassium	K	1.8	0.05	Chloride	Cl	9	0.25
Calcium	Ca	93	4.64	Sulfate	SO_4	10	0.21
Magnesium	Mg	33	2.72	Alkalinity (as $CaCO_3$)		380	7.60
Arsenic	As	0.00					
Barium	Ba	0.1		Hardness (as $CaCO_3$)		368	7.36
Copper	Cu	0.01					
Cadmium	Cd	0.00		Total dissolved minerals		405	
Chromium	Cr	0.00					
Lead	Pb	0.00					
Mercury	Hg	0.0000		pH (as rec'd)		7.6	
Nickel	Ni	0.0		Radioactivity			
Selenium	Se	0.00		Alpha pc/l		0.3	
Silver	Ag	0.00		±deviation		1.3	
Cyanide	CN	0.00		Beta pc/l		3.0	
Zinc	Zn	0.02		±deviation		1.9	

PENFIELD PUBLIC WATER DISTRICT

The Penfield Public Water District (est. 240) installed a public water supply in 1966. The Water District treatment plant is located at the southeast edge of the unincorporated village of Penfield. One well is in use. In 1966 there were 72 services, all metered. In 1974 there were 89 services, all metered; the estimated average and maximum daily pumpages were 7000 and 10,000 gpd, respectively. The water is aerated, settled, chlorinated, filtered, and fluoridated

WELL NO. 1, finished in sand, was completed in February 1966 to a depth of 195 ft by the Layne-Western Co., Aurora. The well is located inside of the treatment plant building, approximately 1645 ft N and 1240 ft E of the SW corner of

Section 4, T21N, R14W. The land surface elevation at the well is approximately 700 ft.

A drillers log of Well No. 1 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Black top soil	1	1
Brown sandy clay, hard	12	13
Sand	1.5	14.5
Gray clay with sand seams	147.5	162
Fine gray sand	41	203

A 12-in. diameter hole was drilled to a depth of 195 ft. The well is cased with 8-in. steel pipe from land surface to a depth of 180 ft followed by 15 ft of 8-in. No. 20 slot Cook bronze screen.

A production test was conducted on February 10-11, 1966, by representatives of the driller, the village, the State Water Survey, and Caldwell-Rhoads Co., Consulting Engineers. After 24 hr of pumping at a rate of 64 gpm, the drawdown was 21.81 ft from a nonpumping water level of 26.62 ft below the pump base. Ten min after pumping was stopped, the water level had recovered to 26.72 ft. On the basis of the production test data, it was estimated that this well would yield 50 gpm (72,000 gpd) on a long-term basis.

The pumping equipment presently installed is a Layne turbine pump set at 60 ft, rated at 50 gpm at about 90 ft TDH, and powered by a 2-hp U.S. electric motor.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B125199) is for a water sample from the well collected February 11, 1975, after 45 min of pumping at 50 gpm. Hydrogen sulfide was apparent when a previous sample was collected.

WELL NO. 1, LABORATORY NO. B125199

		mg/l	*me/l*			*mg/l*	*me/l*
Iron	Fe	0.9		Silica	SiO_2	14	
Manganese	Mn	0.0		Fluoride	F	0.6	0.03
Ammonium	NH_4	2.1	0.12	Boron	B	0.3	
Sodium	Na	46	2.00	Nitrate	NO_3	0.4	0.01
Potassium	K	1.7	0.04	Chloride	Cl	7.2	0.20
Calcium	Ca	58	2.89	Sulfate	SO_4	9.5	0.20
Magnesium	Mg	27	2.22	Alkalinity (as	$CaCO_3$)	348	6.96
Arsenic	As	0.00					
Barium	Ba	0.4		Hardness	(as $CaCO_3$)	256	5.12
Copper	Cu	0.00					
Cadmium	Cd	0.00		Total dissolved			
Chromium	Cr	0.00		minerals		363	
Lead	Pb	0.00					
Mercury	Hg	0.0000		pH (as rec'd)		7.9	
Nickel	Ni	0.0		Radioactivity			
Selenium	Se	0.00		Alpha *pc/l*		2.1	
Silver	Ag	0.00		± deviation		1.9	
Cyanide	CN	0.00		Beta *pc/l*		4.8	
Zinc	Zn	0.0		±deviation		1.9	

PESOTUM

The village of Pesotum (536) installed a public water supply in 1956. Two wells are in use. In 1957 there were 85 services, all metered; the average daily pumpage was between 6000 and 7000 gpd. In 1974 there were 208 services, all metered; the average and maximum daily pumpages were 40,000 and 80,000 gpd, respectively. The water is aerated, settled, fluoridated, chlorinated, and filtered.

WELL NO. 1, finished in sand and gravel, was completed in January 1956 to a depth of 190 ft by Swartz & Biggs, Atwood. The well is located at the elevated tank near the center of the village, approximately 2375 ft N and 54 ft W of the SE corner of Section 22, T17N, R8E. The land surface elevation at the well is approximately 710 ft.

A sample study summary log of Well No. 1 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
PLEISTOCENE SERIES		
Soil	2	2
Till, sandy, gravelly gray-brown	103	105
Gravel, very silty, gray-brown	5	110
Till, gravelly, sandy, gray-brown	25	135
Gravel, sandy, brownish gray, clean	10	145
Till, gravelly, sandy, reddish brown, calcareous	15	160
Gravel, silty, sandy, brownish gray	2	162
Sand, silty, brownish gray, fine to medium	16	178
Gravel and sand, light brown, gray, fine to very coarse	4	182
Sand, gravelly, light brown, fine to coarse	5	187
Sand, light brown-gray, very fine to medium	1	188

An 8-in. diameter hole was drilled to a depth of 190 ft. The well is cased with 8-in. pipe from 1 ft above the pumphouse floor to a depth of 180 ft followed by 10 ft of 7.5-in. No. 18 slot Johnson Everdur screen.

A production test was conducted on February 2-3, 1956, by representatives of the driller, the village, the State Water Survey, and Caldwell-Rhoads Co., Consulting Engineers. After 24 hr of pumping at a rate of 81 gpm, the drawdown was 21.5 ft from a nonpumping water level of 69.5 ft below land surface. One hr after pumping was stopped, the water level had recovered to 81.8 ft and after 5.7 hr it was 77.1 ft.

A production test was conducted on June 29, 1967, by representatives of the State Water Survey and Daily & Associates, Engineers, Inc. After pumping the well for 3 successive periods of 15 min each at rates of approximately 30, 112, and 134 gpm, the final drawdown was 14.01 ft from a nonpumping water level of 81.93 ft.

The pumping equipment presently installed is a Red Jacket submersible pump set at 120 ft, rated at 80 gpm, and powered by a 5-hp Jacuzzi electric motor.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. Bl 14357) of a sample collected June 3, 1974, after pumping for 2 hr at 105 gpm, showed the water to have a hardness of 207 mg/l, total dissolved minerals of 465 mg/l, and an iron content of 1.10 mg/l.

WELL NO. 2, finished in sand and gravel, was completed

in October 1967 to a depth of 190 ft by Dale Swartz, Atwood. The well is located about 41 ft N of Well No. 1, approximately 2416 ft N and 59 ft W of the SE corner of Section 22, T17N, R8E. The land surface elevation at the well is approximately 710 ft.

A drillers log of Well No. 2 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Top soil and clay	5	5
Yellow clay	10	15
Gray clay, hard	5	20
Soft blue clay	30	50
Blue and gray clay	30	80
Hard gray clay, gravelly	25	105
Soft blue clay	5	110
Hard blue clay, gravelly	15	125
Brown clay, hard, gravelly	45	170
Brown silty sand	10	180
White sand and gravel	10	190

A 6-in. diameter hole was drilled to a depth of 190 ft. The well is cased with 6-in. pipe from 1 ft above land surface to a depth of 181 ft and 10 ft (9 ft exposed) of No. 20 slot Johnson Everdur screen. The top of the well casing is equipped with a Baker pitless adapter.

A production test using one observation well was conducted on October 24, 1967, by representatives of the driller, the village, the State Water Survey, and Daily & Associates, Engineers, Inc. After 3 hr of pumping at a rate of 77 gpm, the drawdown was 16.55 ft from a nonpumping water level of 78.51 ft below land surface. Thirty min after pumping was stopped, the water level had recovered to 81.89 ft. On the basis of the production test data, it was estimated that this well would yield 80 gpm (115,200 gpd) on a long-term basis.

The pumping equipment presently installed is a Jacuzzi submersible pump set at 120 ft, rated at 80 gpm at about 130 ft TDH, and powered by a 5-hp Jacuzzi electric motor.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. Bl 14358) is for a water sample from the well collected June 3, 1974, after 1 hr of pumping at 105 gpm. Methane gas was reported in a previous sample.

WELL NO. 2, LABORATORY NO. Bl 14 358

		mg/l	*me/l*			*mg/l*	*me/l*
Iron	Fe	1.13		Silica	SiO_2	22	
Manganese	Mn	0.02		Fluoride	F	0.6	0.03
Ammonium	NH_4	2.2	0.12	Boron	B	0.7	
Sodium	Na	90	3.92	Nitrate	NO_3	0.0	0.00
Potassium	K	1.3	0.03	Chloride	Cl	7	0.20
Calcium	Ca	50	2.50	Sulfate	SO_4	0	0.00
Magnesium	Mg	21	1.73	Alkalinity (as $CaCO_3$)		390	7.80
Arsenic	As	0.00					
Barium	Ba	0.2		Hardness	(as $CaCO_3$)	211	4.22
Copper	Cu	0.01					
Cadmium	Cd	0.01		Total dissolved			
Chromium	Cr	0.00		minerals		395	
Lead	Pb	0.00					
Mercury	Hg	0.0000		pH (as rec'd)		8.0	
Nickel	Ni	0.0		Radioactivity			
Selenium	Se	0.00		Alpha *pc/l*		0.3	
Silver	Ag	0.00		±deviation		1.1	
Cyanide	CN	0.00		Beta *pc/l*		1.3	
Zinc	Zn	0.03		±deviation		1.7	

PHILO

The village of Philo (1022) installed a public water supply in 1940. Three wells (Nos. 2, 3, and 4) are in use. In 1950 there were 160 services, none metered; the estimated average daily pumpage was 18,000 gpd. In 1973 there were 365 services, all metered; the average and maximum daily pumpages were 90,000 and 105,000 gpd, respectively. The water is aerated, settled, filtered, and fluoridated.

WELL NO. 1, finished in sand and gravel, was completed in 1939 to a depth of 81 ft by Woollen Bros., Wapella. This well was abandoned about 1955. The well is located about 25 ft N of Washington St. and 50 ft E of Harrison St., approximately 1300 ft S and 1000 ft E of the NW corner of Section 23, T18N, R9E. The land surface elevation at the well is approximately 730 ft.

The well is cased with 10-in. pipe to a depth of 76 ft followed by 5 ft of No. 50 slot Cook wire-wound screen. The annulus between the bore hole and screen is filled with gravel.

A production test was conducted by the State Water Survey on March 6, 1939. After 2.8 hr of pumping at a rate of 73 gpm, the drawdown was 31 ft from a nonpumping water level of 33 ft below the top of the casing. Pumping was continued for 5.2 hr at a rate of 49 gpm with a drawdown of 32 ft. After an additional 2.4 hr of pumping at 49 gpm, the drawdown could not be measured but was estimated to be about 37 ft. The water level recovered to 39 ft after pumping was stopped for 20.8 hr and after a total of 60.8 hr the water level was 34 ft.

A partial analysis of a sample (Lab. No. 99701) collected April 5, 1944, after pumping for 15 min at 15 gpm, showed the water to have a hardness of 317 mg/l, total dissolved minerals of 379 mg/l, and an iron content of 2.8 mg/l.

Prior to the construction of Well No. 2, seventeen test holes were drilled in and west of the village in November 1944 by Hayes & Sims, Champaign, to depths ranging from 20 to 160.3 ft.

WELL NO. 2, finished in sand and gravel, was completed in May 1945 to a depth of 44.6 ft by Hayes & Sims, Champaign. The well is located about 0.5 mile west of the village 60 ft N of the Wabash RR, approximately 2140 ft S and 2040 ft W of the NE corner of Section 22, T18N, R9E. The land surface elevation at the well is approximately 700 ft.

A correlated drillers log of Well No. 2 furnished by the State Geological Survey follows:

Strata	Thickness (ft)	Depth (ft)
PLEISTOCENE SYSTEM		
Soil and clay	25	25
Gravel, dirty, some water	10	35
Gravel, slightly dirty, better	3	38
Gravel and sand, fairly clean, slightly silty	6	44

An 8-in. diameter hole was drilled to a depth of 44.6 ft. The well is cased with 8-in. pipe from 2 ft above the pump station floor to a depth of 37.3 ft and equipped with 8 ft (7.3 ft exposed) of 8-in. Johnson Everdur screen. The screened section consists of 3 ft of No. 50 slot followed by 5 ft of No. 30 slot.

A production test was conducted by the State Water Survey on May 31, 1945. After 3.9 hr of pumping at rates of 67 to 65 gpm, the drawdown was 20.5 ft from a non-pumping water level of 6.9 ft below land surface. Pumping was continued for 4.1 hr at rates ranging from 70 to 80 gpm with a final drawdown of 25.2 ft. Fifty-five min after pumping was stopped, the water level had recovered to 14.4 ft.

In July 1954, the Sims Drilling Co., Savoy, treated this well with Calgon, then surged and bailed it. A production test was conducted on July 13, 1954, by representatives of the Sims Drilling Co. and Wilson & Anderson, Consulting Engineers. After 1.8 hr of pumping at rates of 25 to 60 gpm, the drawdown was 11 ft from a nonpumping water level at approximately 17 ft. In November 1954, the Waterworks Superintendent reported to the Health Department that production was increased for a few days only.

The pumping equipment presently installed consists of a 5-hp General Electric motor, a 6-in. American Well Works turbine pump (No. 71596) rated at 23 gpm, and 30 ft of 4-in. column pipe. A 10-ft section of 3.5-in. suction pipe is attached to the pump intake.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B101192) of a sample collected August 6, 1973, after pumping for 2 hr at 40 gpm, showed the water to have a hardness of 377 mg/l, total dissolved minerals of 499 mg/l, and an iron content of 0.60 mg/l.

WELL NO. 3, finished in sand and gravel, was completed in March 1954 to a depth of 28.5 ft by the Sims Drilling Co., Savoy. The well is located 630 ft NW of Well No. 2, approximately 1925 ft S and 2630 ft W of the NE corner of Section 22, T18N, R9E. The land surface elevation at the well is approximately 700 ft.

A drillers log of Well No. 3 follows:

Strata	Thickness (ft)	Depth (ft)
Top soil and clay	16	16
Muddy sand and gravel	7	23
Clean coarse sand	3	26
Sand and gravel with clay streaks	2.5	28.5
Clay	1.5	30

A 16-in. diameter hole was drilled to a depth of 30 ft. The well is cased with 16-in. OD pipe from 2.5 ft above land surface to a depth of 20 ft and 8-in. ID pipe from 2 ft above land surface to a depth of 22.5 ft followed by 6 ft of 8-in. No. 80 slot Johnson Everdur bronze screen. The annulus between the bore hole and screen is filled with 1/8- by 1/4-in. graded gravel.

A production test using one observation well was conducted by Wilson & Anderson, Consulting Engineers, on March 27, 1954. After 2.6 hr of pumping at rates ranging from 44 to 55 gpm, the drawdown was 5.9 ft from a non-pumping water level approximately 12.5 ft below land surface. Fifteen min after pumping was stopped, the water level had recovered to 12.9 ft.

The pumping equipment presently installed is a Jacuzzi submersible pump rated at 60 gpm, and powered by a 2-hp U.S. electric motor.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B101193) of a sample collected August 6, 1973, after pumping for 2 hr at 50 gpm, showed the water to have a hardness of 334 mg/l, total dissolved minerals of 463 mg/l, and an iron content of 0.00 mg/l.

Prior to the construction of Well No. 4, eleven test holes were drilled in February and December 1961 by the Sims Drilling Co., Savoy, to depths ranging from 40 to 115 ft.

WELL NO. 4, finished in sand, was completed in December 1961 to a depth of 26 ft by the Sims Drilling Co., Savoy. The well is located about 1540 ft SW of Well No. 3 and about 40 ft N of the railroad, approximately 2600 ft N and 1 310 ft E of the SW corner of Section 22, T18N, R9E. The land surface elevation at the well is approximately 690 ft.

A drillers log of Well No. 4 follows:

Strata	Thickness (ft)	Depth (ft)
Top soil	2	2
Yellow clay	7	9
Gravelly yellow clay	1	10
Loose yellow sand	16	26
Silty yellow sand (tight)	34	60
Hardpan	5	65

An 18-in. diameter hole was drilled to a depth of 29 ft. The well is equipped with a 6-in. diameter pitless adapter from 3.8 ft above land surface to a depth of 4.3 ft and cased with 18-in. pipe from 5 ft below land surface to a depth of 14.5 ft and 6-in. pipe from 4.3 ft below land surface to a depth of 17.3 ft followed by 8.7 ft of 6-in. stainless steel screen.

A production test was conducted on October 11, 1962, by representatives of the driller and Wilson & Anderson, Consulting Engineers. After 1.8 hr of pumping at rates of 57.5 to 46 gpm, the drawdown was 4.5 ft from a nonpumping water level of 9.7 ft below land surface. Six min after pumping was stopped, full recovery was observed.

The pumping equipment presently installed is rated at 32 gPm

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B105634) is for a water sample from the well collected January 3, 1973, after 2.5 hr of pumping at 40 gpm.

WELL NO.4, LABORATORY NO. B105634

		mg/l	me/l			mg/l	me/l
Iron	Fe	0.10	0.00	Silica	SiO_2	9	
Manganese	Mn	0.05	0.00	Fluoride	F	0.1	0.00
Ammonium	NH_4	0		Boron	B	0.1	
Sodium	Na	5	0.22	Nitrate	NO_3	12	0.19
Potassium	K	0.7	0.02	Chloride	Cl	15	0.42
Calcium	Ca	85	4.24	Sulfate	SO_4	95	1.98
Magnesium	Mg	36	2.96	Alkalinity (as $CaCO_3$)		230	4.60
Arsenic	As	0.00		Hardness (as $CaCO_3$)		360	
Barium	Ba	0.0					
Copper	Cu	0.00		Total dissolved minerals		423	
Cadmium	Cd	0.01					
Chromium	Cr	0.01					
Lead	Pb	0.01		pH (as rec'd)		7.6	
Mercury	Hg	0.0000		Radioactivity			
Nickel	Ni	0.0		Alpha *pc/l*		0.1	
Selenium	Se	0.00		±deviation		1.1	
Silver	Ag	0.02		Beta *pc/l*		6.4	
Zinc	Zn	0.0		±deviation		2.2	

RANTOUL

The village of Rantoul (25,562) installed a public water supply in 1885. Five wells (Nos. 3, 4, 5, 6, and 7) are in use. This supply is also cross-connected with the Chanute Air Force Base water supply. In 1948 there were 1250 services, all metered; the estimated average daily pumpage was 700,000 gpd. In 1974 there were about 3000 services, all metered; the estimated average and maximum daily pumpages were 1,528,680 and 1,660,000 gpd, respectively. The water is aerated, two-thirds of it is lime softened and remixed with the one-third aerated water, and then the total is filtered, chlorinated and fluoridated.

The initial installation of a public water supply consisted of a well with a pump operated by a windmill. All wells are described in the order of year drilled.

The *first* well drilled, finished in sand and gravel, was completed in 1895 to a depth of 120 ft. This well was abandoned and sealed about 1924. The well was located at the northwestern corner of Ohio and Grove Aves., west of the Illinois Central RR, approximately 115 ft N and 1070 ft W of the SE corner of Section 34, T22N, R9E. The land surface elevation at the well is approximately 752 ft.

A 10-in. diameter hole was drilled to a depth of 120 ft. The well was cased with 10-in. pipe to a depth of 104 ft followed by 16 ft of 10-in. No. 60 slot Cook screen.

In March 1912 and May 1917, the nonpumping water level was reported to be 60 ft below land surface.

The *second* well drilled, finished in sand and gravel, was completed in 1895 to a depth of 120 ft. This well was abandoned and sealed prior to 1948. The well was located 15 ft N and 7 ft E of the first well drilled, approximately 130 ft N and 1063 ft W of the SE corner of Section 34, T22N, R9E. The land surface elevation at the well is approximately 752 ft.

A 10-in. diameter hole was drilled to a depth of 120 ft. The well was cased with 10-in. pipe to a depth of 104 ft followed by 16 ft of No. 60 slot Cook screen.

In March 1912 and May 1917, the nonpumping water level was reported to be 60 ft below land surface.

A mineral analysis of a sample (Lab. No. 38907) collected February 4, 1918, showed the water to have a hardness of 277 mg/l, total dissolved minerals of 350 mg/l, and an iron content of 1.8 mg/l.

The *third* well drilled, finished in sand and gravel, was completed in 1917 to a depth of 141 ft by John Boten, Rantoul. This well was abandoned in 1945 and sealed in 1950. The well was located in the main treatment building between the first two wells, approximately 1070 ft W and 126 ft N of the SE corner of Section 34, T22N, R9E. The land surface elevation at the well is approximately 752 ft.

A drillers log of the third well follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Clay and loam	40	40
Hardpan (white)	20	60
Yellow sand	60	120
Coarse clay, sand, and gravel (water bearing)	20	140

The well was cased with 10-in. pipe and equipped with 16 ft of No. 60 slot Cook screen.

In 1918, the nonpumping water level was reported to be 60 ft below land surface and when pumping the first and second wells at maximum capacity, the water level in this well was unchanged.

In 1934, the nonpumping water level was reported to be 75 ft below the suface of the concrete floor.

In 1949, the well reportedly produced 500 gpm with a drawdown of 50 ft from a nonpumping water level of 68 ft.

A mineral analysis of a sample (Lab. No. 80026) collected January 3, 1934, showed the water to have a hardness of 280 mg/l, total dissolved minerals of 305 mg/l, and an iron content of 1.0 mg/l. Methane gas was reported in a subsequent sample in 1938.

WELL NO. 1 (the *fourth* well drilled), finished in sand and gravel, was completed in 1922 to a depth of 142 ft by John Boten, Rantoul. This well was abandoned and sealed in 1961. The well was located 23 ft N of the third well drilled and south of the lime softening plant, approximately 149 ft N and 1070 ft W of the SE corner of Section 34, T22N, R9E. The land surface elevation at the well is approximately 752 ft.

A drillers log of Well No. 1 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Black soil and clay	60	60
Blue clay	20	80
Coarse sand	62	142

A 10-in. diameter hole was drilled to a depth of 142 ft. The well was cased with 10-in. pipe from the pumphouse floor to a depth of 126 ft followed by 16 ft of No. 40 slot Cook screen.

In 1934, the nonpumping water level was reported to be 72 ft.

In 1949, the well reportedly produced 800 gpm with a drawdown of 24 ft from a nonpumping water level of 72 ft.

A mineral analysis of a sample (Lab. No. 74486) collected April 26, 1934, showed the water to have a hardness of 274 mg/l, total dissolved minerals of 333 mg/l, and an iron content of 1.4 mg/l.

The *fifth* well drilled, finished in sand and gravel, was completed in March 1925 to a depth of 138 ft by John Boten, Rantoul. This well was abandoned and sealed in 1933 because of poor well alignment. The well was located 25 ft N and 15 ft E of the first well drilled, approximately 140 ft N and 105 5 ft W of the SE corner of Section 34, T22N, R9E. The land surface elevation at the well is approximately 752 ft.

A 10-in. diameter hole was drilled to a depth of 138 ft. The well was cased with 10-in. pipe and equipped with 14 ft of 10-in. No. 80 slot Cook screen.

The *sixth* well drilled, finished in sand and gravel, was completed in March 1934 to a depth of 284.5 ft by E. W. Johnson, Bloomington. This well was abandoned and sealed about 1954. The well was located about 15 ft N of the fourth well drilled, approximately 165 ft N and 1070 ft W of the SE corner of Section 34, T22N, R9E. The land surface elevation at the well is approximately 752 ft.

A sample study and drillers log of the sixth well furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
PLEISTOCENE SYSTEM		
"Soil and clay"	83	83
"Sand and gravel, water"	12	95
Sand and gravel, clean	45	140
Clay	2.8	142.8
Sand, very silty	7.2	150
Till	87.7	237.7
Gravel, sandy, partly silty and clayey	2.3	240
Clay and silt	17	257
Sand and gravel	34	291
Clay	2	293

A 10-in. diameter hole was drilled to a depth of 162 ft, reduced to 8 in. between 162 and 284.5 ft, and finished 6 in. in diameter from 284.5 to 293 ft. The well was cased with 8-in. pipe from 0.2 ft above the pump station floor to a depth of 269.5 ft followed by 15 ft (16.2 ft overall length) of 7.5-in. No. 40 slot Cook screen.

A production test was conducted on May 21, 1934, by representatives of the driller, the village, and the State Water Survey. After 1.8 hr of pumping at rates ranging from 270 to 250 gpm, the drawdown was 50.60 ft from a nonpumping water level of 64.80 ft below land surface. Pumping was continued at rates of 197 to 190 gpm for 20 min with a drawdown of 35.60 ft. After 40 min of shutdown the pump was started again and was pumped at rates ranging from 116 to 400 gpm for 40 min with a final drawdown of 78.60 ft.

In 1952, the well reportedly produced 500 gpm with a drawdown of 50 ft from a nonpumping water level of 68 ft below the pump base.

A mineral analysis of a sample (Lab. No. 116796) collected December 18, 1948, after pumping for 1 hr at 450 gpm, showed the water to have a hardness of 331 mg/l, total dissolved minerals of 395 mg/l, and an iron content of 1.4 mg/l.

WELL NO. 3 (the *seventh* well drilled), finished in sand and gravel, was completed in 1939 to a depth of 137 ft by John Bolliger, Fairbury. The well is located 185 ft N of the center of Grove Ave. and 180 ft E of the center of Penfield St., about 20 ft N and 70 ft W of the sixth well drilled, approximately 185 ft N and 1140 ft W of the SE corner of Section 34, T22N, R9E. The land surface elevation at the well is approximately 752 ft.

A drillers log of Well No. 3 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
No record	100	100
Sand - gravel	5	105
Gravel	20	125
Sand	10	135
Sand and gravel	2	137

A 10-in. diameter hole was drilled to a depth of 137 ft. The well is cased with 10-in. pipe from 0.5 ft above the pumphouse floor to a depth of 115 ft followed by 22 ft (24.5 ft overall length) of 10-in. Cook screen.

A production test was conducted by the State Water Survey on December 5, 1939. After 3 hr of pumping at rates of 440 to 445 gpm, the drawdown was 26.0 ft from a nonpump-

ing water level of 64.0 ft below land surface. Pumping was continued at a reduced rate of 295 gpm for 1.4 hr with a drawdown of 17.5 ft. After an additional 5 min of pumping at 480 gpm, the final drawdown was 28.0 ft. Five min after pumping was stopped, the water level had recovered to 66.0 ft.

On October 31, 1944, the nonpumping water level was reported to be 72 ft.

On December 18, 1948, after 2 hr of pumping at a rate of 480 gpm, the water level was 95 ft below the pump base. Thirty min after pumping was stopped, the water level had recovered to 82 ft.

On March 14, 1952, the well reportedly produced 800 gpm with a drawdown of 24 ft from a nonpumping water level of 72 ft below the pump base.

The pumping equipment presently installed is a Peerless vertical turbine pump set at 100 ft, rated at 650 gpm, and powered by a 40-hp U.S. electric motor.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B110916) of a sample collected April 23, 1974, after pumping for 2.5 hr at 600 gpm, showed the water to have a hardness of 272 mg/l, total dissolved minerals of 330 mg/l, and an iron content of 2.0 mg/l. Methane gas was reported in a previous sample.

The *eighth* well drilled, finished in sand and gravel, was completed in May 1949 to a depth of 1 39 ft by J. Bolliger & Sons, Fairbury. This well has been abandoned. The well was located at Tanner St. and Ohio Ave., approximately 537 ft N and 890 ft W of the SE corner of Section 34, T22N, R9E. The land surface elevation at the well is approximately 752 ft.

A drillers log of the eighth well follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Soil	1	1
Yellow clay	14	15
Blue clay	65	80
Dirty sand and gravel	30	110
Sand and gravel	29	139

The well was cased with 12-in. wrought steel pipe from 1.5 ft above land surface to a depth of 119 ft followed by 20 ft (21.2 ft overall length) of 12-in. Johnson Everdur screen. The screened section consisted of 9 ft of No. 30 slot followed by 11 ft of No. 10 slot.

A production test was conducted on May 23, 1949, by representatives of the driller, the village, the State Water Survey, and Wilson & Anderson, Consulting Engineers. After 3.1 hr of pumping at rates of 138 to 354 gpm, the final drawdown was 44.0 ft from a nonpumping water level of 69.7 ft below the top of the casing.

A mineral analysis of a sample (Lab. No. 118258) collected May 24, 1949, after pumping for 1.5 hr at 354 gpm, showed the water to have a hardness of 342 mg/l, total dissolved minerals of 341 mg/l, and an iron content of 1.9 mg/l.

WELL NO. 4 (the *ninth* well drilled), finished in sand and gravel, was completed in 1950 to a depth of 150 ft by J. Bolliger & Sons, Fairbury. The well is located 220 ft NE of the water plant at the corner of Tanner St. and Ohio Ave., approximately 490 ft N and 885 ft W of the SE corner of Section 34, T22N, R9E. The land surface elevation at the well is approximately 752 ft.

A 10-in. diameter hole was drilled to a depth of 150 ft. The well is cased with 10-in. pipe from the pumphouse floor to a depth of 122 ft followed by 28 ft of Johnson screen.

On May 3, 1951, the well reportedly produced at rates of 350 to 400 gpm with a drawdown of 12 ft from a nonpumping water level of 70 ft below the pump base.

The pumping equipment presently installed is a Worthington vertical turbine pump set at 110 ft, rated at 350 gpm, and powered by a 20-hp U.S. electric motor.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. Bl 10915) of a sample collected April 2 3, 1974, after pumping for 2 hr at 100 gpm, showed the water to have a hardness of 292 mg/l, total dissolved minerals of 364 mg/l, and an iron content of 2.4 mg/l.

WELL NO. 2 (the *tenth* well drilled), finished in sand and gravel, was completed in 1954 to a depth of 293 ft by J. Bolliger & Sons, Fairbury. This well was abandoned and sealed in 1964. The well was located about 80 ft S of the southwest corner of the new treatment plant about 16 ft N of Well No. 1, approximately 165 ft N and 1069 ft W of the SE corner of Section 34, T22N, R9E. The land surface elevation at the well is approximately 752 ft.

A 12-in. diameter hole was drilled to a depth of 293 ft. The well was cased with 12-in. pipe from 0.7 ft above land surface to a depth of 279 ft followed by 14 ft of 12-in. Johnson Everdur screen.

Upon completion, the nonpumping water level was reported to be 80 ft.

A partial analysis of a sample (Lab. No. 144329) collected July 26, 1957, showed the water to have a hardness of 326 mg/l, total dissolved minerals of 394 mg/l, and an iron content of 0.8 mg/l.

WELL NO. 5 (the *eleventh* well drilled), finished in sand and gravel, was completed in 1963 to a depth of 291 ft by J. Bolliger & Sons, Fairbury. The well is located 20 ft S of the water plant and 80 ft E of Well No. 3, approximately 180 ft N and 1060 ft W of the SE corner of Section 34, T22N, R9E. The land surface elevation at the well is approximately 752 ft.

A 12-in. diameter hole was drilled to a depth of 291 ft. The well is cased with 12-in. steel pipe from 0.5 ft above the pumphouse floor to a depth of 271 ft followed by 20 ft of screen.

The pumping equipment presently installed is an 8-stage Peerless vertical turbine pump rated at 800 gpm, and powered by a 50-hp U.S. electric motor. The well is equipped with 200 ft of airline.

A mineral analysis made by the Illinois Environmental

Protection Agency (Lab. No. B101363) of a sample collected August 9, 1973, after pumping for 1 hr at 600 gpm, showed the water to have a hardness of 315 mg/l, total dissolved minerals of 399 mg/l, and an iron content of 0.80 mg/l.

WELL NO. 6 (the *twelfth* well drilled), finished in sand and gravel, was completed in May 1964 to a depth of 142 ft by J. Bolliger & Sons, Fairbury. The well is located 80 ft NE of the water plant, approximately 340 ft N and 950 ft W of the SE corner of Section 34, T22N, R9E. The land surface elevation at the well is approximately 752 ft.

A drillers log of Well No. 6 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Top soil	2	2
Yellow clay	3	5
Reddish clay	2	7
Yellow sandy clay	13	20
Blue clay	44	64
Brown sandy clay	16	80
Dirty brown sand	24	104
Clean sand	11	115
Coarse sand	5	120
Fine sand	12	132
Coarse sand	8	140

A 12-in. diameter hole was drilled to a depth of 142 ft. The well is cased with 12-in. steel pipe from 0.5 ft above the pumphouse floor to a depth of 116 ft followed by 26 ft of No. 20 slot Johnson Everdur screen.

The pumping equipment presently installed is a Peerless vertical turbine pump rated at 500 gpm at about 54.5 ft TDH, and powered by a 25-hp General Electric motor. The well is equipped with 113 ft of airline.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B115218) is for a water sample from the well collected June 20, 1974, after 1 hr of pumping at 200 gpm.

WELL NO. 6, LABORATORY NO. B115218

		mg/l	*me/l*			*mg/l*	*me/l*
Iron	Fe	3.25		Silica	SiO_2	12	
Manganese	Mn	0.15		Fluoride	F	0.3	0.02
Ammonium	NH_4	2.6	0.14	Boron	B	0.3	
Sodium	Na	19	0.83	Nitrate	NO_3	0.2	0.00
Potassium	K	1.8	0.05	Chloride	Cl	1	0.03
Calcium	Ca	55	2.74	Sulfate	SO_4	0	0.00
Magnesium	Mg	36	2.96	Alkalinity (as $CaCO_3$)		336	6.72
Arsenic	As	0.12					
Barium	Ba	0.0		Hardness (as $CaCO_3$)		291	5.82
Copper	Cu	0.10					
Cadmium	Cd	0.00		Total dissolved			
Chromium	Cr	0.00		minerals		348	
Lead	Pb	0.00					
Mercury	Hg	0.0000		pH (as rec'd)		7.8	
Nickel	Ni	0.0		Radioactivity			
Selenium	Se	0.00		Alpha *pc/l*		0.5	
Silver	Ag	0.00		±deviation		1.2	
Cyanide	CN	0.00		Beta *pc/l*		3.4	
Zinc	Zn	0.02		±deviation		1.9	

Prior to the construction of Well No. 7, a test hole located several hundred ft N of the water plant was drilled in 1968 to a depth of 290 ft by J. Bolliger & Sons, Fairbury.

WELL NO. 7 (the *thirteenth* well drilled), finished in sand and gravel, was completed in December 1970 to a depth of 279 ft by the J. P. Miller Artesian Well Co., Brookfield. The well is located one half block south and two blocks west of the water plant, approximately 255 ft S and 2600 ft W of the NE corner of Section 3, T21N, R9E. The land surface elevation at the well is approximately 740 ft.

A drillers log of Well No. 7 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Blue clay	84	84
Sand and gravel	46	130
Clay with gravel	100	230
Sand and gravel	51	281

A 36-in. diameter hole was drilled to a depth of 281 ft. The well is cased with 16-in. steel pipe from 2 ft above land surface to a depth of 239 ft followed by 40 ft of 16-in. No. 60 slot Johnson stainless steel screen. The annulus between the bore hole and casing-screen assembly is filled with cement from 0 to 20 ft, with torpedo sand and bentonite from 20 to 190 ft, and with No. 2 Northerngravel from 190 to 281 ft.

A production test was conducted by the driller on December 23, 1970. After 8 hr of pumping at rates of 1050 to 1150 gpm, the final drawdown was 29 ft from a nonpumping water level of 75 ft below land surface. Thirty min after pumping was stopped, the water level had recovered to 80 ft.

The pumping equipment presently installed consists of a 60-hp 1760 rpm U.S. electric motor, an 11.5-in., 3-stage Peerless vertical turbine pump (No. 223763) set at 130 ft, rated at 1050 gpm at about 150 ft TDH, and 130 ft of 8-in. column pipe. A 10-ft section of 8-in. suction pipe is attached to the pump intake. The well is equipped with 130 ft of airline.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. Bl 15217) is for a water sample from the well collected June 20, 1974, after 5 hr of pumping at 750 gpm.

WELL NO. 7, LABORATORY NO. B115217

		mg/l	*me/l*			*mg/l*	*me/l*
Iron	Fe	1.35		Silica	SiO_2	16	
Manganese	Mn	0.06		Fluoride	F	0.2	0.01
Ammonium	NH_4	4.5	0.25	Boron	B	0.8	
Sodium	Na	38	1.65	Nitrate	NO_3	0.0	0.00
Potassium	K	2.2	0.06	Chloride	Cl	1	0.03
Calcium	Ca	75	3.74	Sulfate	SO_4	0	0.00
Magnesium	Mg	29	2.39	Alkalinity (as $CaC0_3$)		420	8.40
Arsenic	As	0.00					
Barium	Ba	0.1		Hardness (as $CaCO_3$)		309	6.18
Copper	Cu	0.00					
Cadmium	Cd	0.00		Total dissolved			
Chromium	Cr	0.00		minerals		412	
Lead	Pb	0.01					
Mercury	Hg	0.0000		pH (as rec'd)		7.7	
Nickel	Ni	0.0		Radioactivity			
Selenium	Se	0.00		Alpha *pc/l*		0.0	
Silver	Ag	0.00		±deviation		0.0	
Cyanide	CN	0.00		Beta *pc/l*		2.0	
Zinc	Zn	0.00		±deviation		1.5	

ROYAL

The village of Royal (197) installed a public water supply in 1968. One well is in use. In 1968 there were 85 services, all metered; the average daily pumpage was 12,475 gpd. In 1974 there were 104 services, all metered; the average daily pumpage was 13,228 gpd. The water is aerated, settled, fluoridated, chlorinated, and filtered.

WELL NO. 1, finished in sand and gravel, was completed in January 1968 to a depth of 106.5 ft by the Sims Drilling Co., Savoy. The well is located about 100 ft E of the elevated tank, approximately 2365 ft S and 2380 ft E of the NW corner of Section 17, T20N, R14W. The land surface elevation at the well is approximately 680 ft.

A drillers log of Well No. 1 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Top soil	2	2
Yellow sandy clay	14	16
Brown gravelly clay with large gravel stones	20	36
Sandy blue clay	42	78
Fine sand	2	80
Fine clean sand, some gravel	15	95
Silty coarse sand, lots of gravel stones	11.5	106.5
Hardpan, compact sand below		

An 8-in. diameter hole was drilled to a depth of 106.5 ft. The well is cased with 8-in. steel pipe from 2 ft above the pumphouse floor to a depth of 96.5 ft followed by 10.8 ft (10 ft exposed) of 8-in. No. 20 slot Johnson Silicon red brass screen.

A production test was conducted on January 9-10, 1968, by representatives of the driller, the village, the State Water Survey, and Caldwell-Rhoads Co., Consulting Engineers. After 24 hr of pumping at a rate of 50 gpm, the drawdown was 2.01 ft from a nonpumping water level of 9.17 ft below land surface. Thirty min after pumping was stopped, the water level had recovered to 9.48 ft. On the basis of the production test data, it was estimated that this well would yield 50 gpm (72,000 gpd) on a long-term basis.

The pumping equipment presently installed is a Jacuzzi turbine pump set at 70 ft, rated at 50 gpm at about 100 ft TDH, and powered by a 2-hp 1750 rpm U.S. Holloshaft electric motor.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B114176) is for a water sample from the well collected June 3, 1974, after 2 hr of pumping.

WELL NO. 1, LABORATORY NO. B114176

		mg/l	*me/l*			*mg/l*	*me/1*
Iron	Fe	1.67		Silica	SiO_2	20	
Manganese	Mn	0.10		Fluoride	F	0.2	0.01
Ammonium	NH_4	0.8	0.04	Boron	B	0.1	
Sodium	Na	11	0.48	Nitrate	NO_3	0	0.00
Potassium	K	1.3	0.03	Chloride	Cl	1	0.03
Calcium	Ca	71	3.54	Sulfate	SO_4	0	0.00
Magnesium	Mg	32	2.63	Alkalinity (as	$CaC0_3$)	328	6.56
Arsenic	As	0.00					
Barium	Ba	0.0		Hardness	(as$CaCO_3$)	309	6.18
Copper	Cu	0.00					
Cadmium	Cd	0.00		Total dissolved			
Chromium	Cr	0.00		minerals		367	
Lead	Pb	0.00					
Mercury	Hg	0.0000		pH(asrec'd)		7.8	
Nickel	Ni	0.0		Radioactivity			
Selenium	Se	0.00		Alpha *pc/l*		0.2	
Silver	Ag	0.00		±deviation		0.9	
Cyanide	CN	0.00		Beta *pc/l*		0.8	
Zinc	Zn	0.01		±deviation		1.6	

SADORUS

The village of Sadorus (454) installed a public water supply in 1965. Two wells are in use. In 1967 there were 125 services, all metered; the estimated average and maximum daily pumpages were 15,000 and 20,000 gpd, respectively. In 1974 there were 1 50 services, all metered; the average and maximum daily pumpages were 17,000 and 25,000 gpd, respectively. The water is aerated, settled, chlorinated, filtered, softened, and fluoridated.

WELL NO. 1, finished in sand and gravel, was completed in June 1963 to a depth of 114 ft by E. C. Baker & Sons, Sigel. The well is located about 10 ft N of the treatment plant on Second St. just east of the corner of Center and Second Sts., approximately 550 ft S and 3400 ft W of the NE corner of Section 6, T17N, R8E. The land surface elevation at the well is approximately 690 ft.

A drillers log of Well No. 1 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Soil	2	2
Yellow clay	13	15
Blue clay	46	61
Packed sand gravel	40	101
Fine sand	5	106
Sand, medium coarse	8	114
Brown sandy clay	5	119

An 8-in. diameter hole was drilled to a depth of 114 ft. The well is cased with 8-in. steel pipe from 2 ft above land surface to a depth of 107.8 ft and equipped with 6 ft of 8-in. Cook red brass screen. The screened section consists of 4 ft of No. 8 slot followed by 2 ft of No. 20 slot.

A production test was conducted on June 21, 1963, by representatives of the driller, the village, the State Water Survey, and Marbry & Johnson, Consulting Engineers. After 3.3 hr of pumping at a rate of 30 gpm, the drawdown was 61.8 ft from a nonpumping water level of 31.0 ft below land surface. Thirty min after pumping was stopped, full recovery was observed. On the basis of the production test data, it was estimated that this well would yield 10 gpm (14,400 gpd) on a long-term basis.

The pumping equipment presently installed is a Rapidayton submersible pump set at 100 ft, rated at 30 gpm at about 95 ft TDH, and powered by a 1-hp Tait electric motor.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B100687) of a sample collected July 16, 1974, after pumping for 30 min at 30 gpm, showed the water to have a hardness of 249 mg/l, total dissolved minerals of 450 mg/l, and an iron content of 1.76 mg/l.

WELL NO. 2, finished in sand, was completed in September 1963 to a depth of 112.5 ft by E. C. Baker & Sons, Sigel. The well is located 100 ft S and 400 ft E of Well No. 1, approximately 650 ft S and 3000 ft W of the NE corner of Section 6, Tl 7N, R8E. The land surface elevation at the well is approximately 690 ft.

A drillers log of Well No. 2 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Soil	5	5
Yellow clay	5	10
Blue clay	20	30
Blue sandy clay	66	96
Sand	4	100
Sand {coarse to fine)	7	107
Sand and gravel	5	112
Brown sandy clay	14	126
Sand (dirty)	3	129
Sandy clay	18	147
Sand (dirty)	2	149
Sandy clay	47	196
Green clay	11	207
Shale	3.5	210.5

An 8-in. diameter hole was drilled to a depth of 112.5 ft. The well is cased with 8-in. steel pipe from 1.5 ft above land surface to a depth of 108.6 ft followed by 4 ft of 8-in. No. 60 slot Cook red brass screen.

A production test using one observation well was conducted on September 6, 1963, by representatives of the driller, the village, the State Water Survey, and Marbry & Johnson, Consulting Engineers. After 5 hr of pumping at ratesof 60 to 56 gpm, the final drawdown was 14.0 ft from a nonpumping water level of 28.0 ft below land surface. Thirty min after pumping was stopped, the water level had recovered to 29.6 ft. On the basis of the production test data, it was estimated that this well would yield 50 gpm (72,000 gpd) on a long-term basis.

The pumping equipment presently installed is a Rapidayton submersible pump set at 100 ft, rated at 30 gpm at about 84 ft TDH, and powered by a 1-hp Tait electric motor. The well is equipped with 90 ft of airline.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B100690) is for a water sample from the well collected July 16, 1974, after 1 hr of pumping at 30 gpm.

WELL NO. 2, LABORATORY NO. B100690

		mg/l	*me/l*			*mg/l*	*me/l*
Iron	Fe	1.73		Silica	SiO_2	18	
Manganese	Mn	0.02		Fluoride	F	0.5	0.03
Ammonium	NH_4	1.5	0.08	Boron	B	0.8	
Sodium	Na	72	3.13	Nitrate	NO_3	0.0	0.00
Potassium	K	1.8	0.05	Chloride	Cl	6	0.17
Calcium	Ca	58	2.89	Sulfate	SO_4	0.0	0.00
Magnesium	Mg	26	2.14	Alkalinity (as	$CaCO_3$)	396	7.92
Arsenic	As	0.0 2					
Barium	Ba	0.2		Hardness	(as $CaCO_3$)	252	5.04
Copper	Cu	0.00					
Cadmium	Cd	0.00		Total dissolved			
Chromium	Cr	0.00		minerals		451	
Lead	Pb	0.00					
Mercury	Hg	0.0000		pH (as rec'd)		7.7	
Nickel	Ni	0.0		Radioactivity			
Selenium	Se	0.00		Alpha *pc/l*		0.4	
Silver	Ag	0.0 0		± deviation		1.6	
Cyanide	CN	0.00		Beta *pc/l*		1.4	
Zinc	Zn	0.0		±deviation		2.1	

SANGAMON VALLEY PUBLIC WATER DISTRICT

The Sangamon Valley Public Water District (est. 2000) installed a public water supply in 1968. The Water District treatment plant is located about 1.2 miles northeast of the village of Mahomet and east of the community center for the Candlewood Estates Mobile Home Park. One well (No. 1) is in use and another well (No. 2) is available for emergency use. In 1968 there were 5 services, all metered plus 1 large meter for the Candlewood Estates Mobile Home Park which contained 175 trailers. In September 1974 there were 97 services, all metered (included a trailer park of 459 spaces and an apartment complex of 147 units); in 1974 the estimated average and maximum daily pumpages were 187,000 and 225,000 gpd, respectively. The water is softened, fluoridated, chlorinated, and fed a caustic soda solution; the water from Well No. 1 is also treated with polyphosphate to keep iron in solution.

WELL NO. 1, finished in sand and gravel, was completed in September 1967 to a depth of 283.1 ft by the Layne-Western Co., Aurora. The well is located adjacent to the water plant which is west of the Candlewood Estates Mobile Home Park, approximately 1370 ft N and 620 ft E of the SW corner of Section 12, T20N, R7E. The land surface elevation at the well is approximately 740 ft.

A drillers log of Well No. 1 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Black soil	2	2
Yellow clay	9	11
Gray clay	34	45
Medium sand, some gravel, trace clay	4	49
Gray clay	14	63
Sand and clay	5	68
Gray clay	9	77
Peat and black clay (sticky)	8	85
Gray clay (sticky)	8	93

Strata (continued)	*Thickness (ft)*	*Depth (ft)*
Medium coarse sand and some gravel, trace of fine sand	14	107
Clay, few sand lenses	11	118
Gravelly clay (firm)	4	122
Gravelly clay (firm), trace of sand	6	128
Medium sand, some gravel boulders (tight)	9	137
Sand, gravelly clay, few boulders medium	13	150
Sand, gravelly clay	69	219
Sand and fine sand, trace of clay	16	235
Medium sand to medium coarse sand, trace of fine sand	5	240
Medium coarse sand, some gravel, trace of fine sand	45	285
Medium to medium coarse sand	15	300
Medium coarse sand, some gravel	10	310
Medium to medium coarse sand	10	320
Medium coarse sand, some gravel	5	325
Sand to medium sand	20	345
Sand and fine sand	27.5	372.5
Blue shale below		

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B124722) is for a water sample from the well collected February 10, 1975, after 30 min of pumping at 750 gpm.

WELL NO. 1, LABORATORY NO. B124722

		mg/l	*me/l*			*mg/l*	*me/l*
Iron	Fe	1.1		Silica	SiO_2	19	
Manganese	Mn	0.0		Fluoride	F	0.4	0.02
Ammonium	NH_4	1.8	0.10	Boron	B	0.3	
Sodium	Na	19	0.83	Nitrate	NO_3	0.0	0.00
Potassium	K	1.4	0.04	Chloride	Cl	1.0	0.03
Calcium	Ca	77	3.84	Sulfate	SO_4	8.4	0.18
Magnesium	Mg	32	2.63	Alkalinity (as $CaCO_3$)		379	7.58
Arsenic	As	0.00					
Barium	Ba	0.1		Hardness (as $CaCO_3$)		324	6.48
Copper	Cu	0.09					
Cadmium	Cd	0.00		Total dissolved minerals		382	
Chromium	Cr	0.00					
Lead	Pb	0.00					
Mercury	Hg	0.0000		pH (as rec'd)		8.0	
Nickel	Ni	0.0		Radioactivity			
Selenium	Se	0.00		Alpha *pc/l*		0.0	
Silver	Ag	0.00		± deviation		0.0	
Cyanide	CN	0.00		Beta *pc/l*		4.5	
Zinc	Zn	0.2		±deviation		2.0	

A 38-in. diameter hole was drilled to a depth of 10 ft, reduced to 34 in. between 10 and 20 ft, and finished 30 in. in diameter from 20 to 283.1 ft. The well is cased with 12-in. steel pipe from 1.5 ft above land surface to a depth of 252.5 ft and equipped with 30 ft of 12-in. No. 5 (0.105 in.) Layne stainless steel shutter screen. The annulus between the bore hole and casing-screen assembly is filled with concrete from 0 to 20 ft, with sand fill from 20 to 202 ft, and with No. 3 Muscatine gravel from 202 to 283.1 ft.

A production test using one observation well was conducted on October 2, 1967, by representatives of the driller, the State Water Survey, and C. S. Parsons & Associates, Consulting Engineers. After 8 hr of pumping at varying rates of 844 to 812 gpm,the drawdown was 10.00 ft from a nonpumping water level of 111.37 ft below land surface. Thirty min after pumping was stopped, the water level had recovered to 111.50 ft.

The pumping equipment presently installed is a Layne vertical turbine pump (No. 57922) set at 140 ft, rated at 750 gpm, and powered by a 60-hp 1700 rpm U.S. Holloshaft electric motor (Serial No. 4102057). The well is equipped with 140 ft of airline.

WELL NO. 2, finished in sand and gravel, was completed in September 1967 to a depth of 289 ft by the Layne-Western Co., Aurora. This well is available for emergency use. The well is located about 29.5 ft SW of Well No. 1, approximately 1355 ft N and 595 ft E of the SW corner of Section 12, T20N, R7E. The land surface elevation at the well is approximately 740 ft.

A drillers log of Well No. 2 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Black soil	2	2
Yellow clay	9	11
Gray clay	34	45
Medium sand, some gravel, trace of clay	4	49
Gray clay	14	63
Sand and clay	5	68
Gray clay	9	77
Black clay	8	85
Gray clay	8	93
Medium to coarse sand and gravel, trace of fine sand	9	102
Medium to coarse sand and gravel, trace of clay	5	107
Clay, few sand lenses	11	118
Gravelly clay	4	122
Gravelly clay, trace of sand	6	128
Medium sand, some gravel, boulder	9	137
Hard gravelly clay, few boulders	13	150
Hard gravelly clay	69	219
Sand and fine sand, trace of clay	16	235
Medium sand to coarse sand, trace of fine sand	5	240
Medium to coarse sand, some gravel, trace of fine sand	45	285
Medium to coarse sand, trace of fine sand	15	300

A 12.2 in. diameter hole was drilled to a depth of 289 ft. The well is cased with 8-in. pipe from 2 ft above land surface to a depth of 279 ft followed by 10 ft of 8-in. Layne shutter screen. The top of the well casing is equipped with a pitless adapter.

In September 1973, the well reportedly produced 201 gpm for 1.5 hr with a drawdown of 10 ft from a nonpumping water level of 107 ft below land surface.

The pumping equipment presently installed is a Layne submersible pump (Serial No. 74411) set at 147 ft, rated at 175 gpm at about 250 ft TDH, and powered by a 20-hp 3600 rpm Franklin electric motor. The well is equipped with 147 ft of airline.

A partial analysis of a sample (Lab. No. 194853) collected February 16, 1974, showed the water to have a hardness of 336 mg/l, total dissolved minerals of 394 mg/l, and an iron content of 1.6 mg/l.

SAVOY

The village of Savoy (592) installed a public water supply in 1961. Finished water for this supply is obtained from the Northern Illinois Water Corporation *(see Champaign).*

SIDNEY

The village of Sidney (915) installed a public water supply in 1940. Two wells are in use. In 1950 there were 185 services, 87 percent metered; the estimated average daily pumpage was 26,000 gpd. In 1974 there were 351 services, all metered; the average daily pumpage was 62,000 gpd. The water is aerated, settled, filtered, fluoridated, and chlorinated.

Prior to the installation of a public water supply, two 6-in. diameter test wells were drilled for the village in 1939 by Guy McElwee, Sidney. The first test well was drilled to a depth of 63 ft and located 1020 ft S and 1660 ft W of the NE corner of Section 16, T18N, R10E. The second test well, located 22 ft S of the first test well, was drilled to a depth of 48 ft. This test well was cased with 6-in. pipe to a depth of 38 ft followed by 2 ft of blank pipe on top of 8 ft of 6-in. No. 14 slot Cook brass screen. A production test was conducted by the State Water Survey on August 15, 1939. After 9 hr of pumping at rates ranging from 37 to 30 gpm, the drawdown was greater than 13 ft from a non-pumping water level of 22 ft below the top of the casing. Thirty min after pumping was stopped, the water level had recovered to 23 ft.

WELL NO. 1, finished in sand and gravel, was completed in July 1939 to a depth of 56 ft by Guy McElwee, Sidney. The well is located east of David St. and south of the Wabash RR tracks, approximately 1040 ft S and 1660 ft W of the NE corner of Section 16, T18N, R10E. The land surface elevation at the well is approximately 665 ft.

A sample study log of Well No. 1 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
PLEISTOCENE SYSTEM		
Sand, clayey	20	20
Till	18	38
Sand, slightly silty	2	40
No record	9	49
Sand and gravel, clean	3	52
Sand, slightly silty	4	56
Silt and sand below		

A 6-in. diameter hole was drilled to a depth of 56 ft. The well is cased with 6-in. pipe from 1.3 ft above the pumphouse floor to a depth of 46 ft followed by 2 ft of blank pipe on top of 8 ft of 6-in. No. 14 slot Cook brass screen.

In December 1948, it was reported that the pump would break suction after 7 hr of pumping at 65 gpm and was throttled to 55 gpm.

The pumping equipment presently installed is a Deming turbine pump set at 42.5 ft, rated at 75 gpm, and powered by a 1 1/2-hp U.S. electric motor.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. Bl 14808) of a sample collected June 11, 1974, after pumping for 30 min at 60 gpm, showed the water to have a hardness of 246 mg/l, total dissolved minerals of 459 mg/l, and an iron content of 1.40 mg/l.

Prior to the installation of Well No. 2, at least five test holes were drilled in 1954 by Charles M. Hayes, Champaign, ranging in depth from 54 to 105 ft.

WELL NO. 2, finished in sand and gravel, was completed in November 1954 to a depth of 58.8 ft by Guy McElwee & Son, Sidney. The well is located southeast of Well No. 1, approximately 1090 ft S and 1600 ft W of the NE corner of Section 16, T18N, R10E. The land surface elevation at the well is approximately 665 ft.

A drillers log of Well No. 2 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Top soil	2	2
Yellow clay	8	10
Blue clay	25	35
Dark, gravelly clay	11.5	46.5
Sand and gravel	12.5	59
Silty sand	2	61

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. Bl 14806) is for a water sample from the well collected June 11, 1974, after 2 hr of pumping at 125 gpm.

WELL NO. 2, LABORATORY NO. B114 806

		mg/l	*me/l*			*mg/l*	*me/l*
Iron	Fe	2.50		Silica	SiO_2	17	
Manganese	Mn	0.09		Fluoride	F	0.5	0.0 3
Ammonium	NH_4	4.1	0.2 3	Boron	B	0.9	
Sodium	Na	66	2.87	Nitrate	NO_3	0.0	0.00
Potassium	K	1.7	0.04	Chloride	Cl	20	0.56
Calcium	Ca	64	3.19	Sulfate	SO_4	0	0.00
Magnesium	Mg	28	2.30	Alkalinity (as	$CaCO_3$)	396	7.92
Arsenic	As	0.01					
Barium	Ba	0.2		Hardness	(as $CaCO_3$)	275	5.50
Copper	Cu	0.00					
Cadmium	Cd	0.00		Total dissolved			
Chromium	Cr	0.00		minerals		4 75	
Lead	Pb	0.00					
Mercury	Hg	0.0000		pH {as rec'd)		7.7	
Nickel	Ni	0.0		Radioactivity			
Selenium	Se	0.00		Alpha *pc/l*		1.3	
Silver	Ag	0.00		±deviation		1.6	
Cyanide	CN	0.00		Beta *pc/l*		0.4	
Zinc	Zn	0.00		± deviation		1.8	

A 16-in. diameter hole was drilled to a depth of 58.8 ft. The well is cased with 16-in. outer pipe from 2.5 ft above land surface to a depth of 46.2 ft and 8-in. inner pipe from 2.2 ft above land surface to a depth of 45.8 ft followed by 13 ft of 8-in. No. 50 slot bronze screen. The annulus between the 16- and 8-in. casings and between the bore hole and screen is filled with 1/4- to 3/8-in. Covington gravel.

A production test was conducted on November 16, 1954, by representatives of the driller, the village, the State Water Survey, and Wilson & Anderson, Consulting Engineers. After 5.2 hr of pumping at rates ranging from 133 to 340 gpm, the maximum drawdown was 13.70 ft from a nonpumping water level of 25.00 ft below the top of the casing. Fifteen min after pumping was stopped, the water level had recovered to 31.25 ft.

In July 1974, the well pump was reportedly breaking suction with the pumping water level about 47.7 ft below the pump base. On July 23, 1974, Jack McElwee, Sidney, cleaned the well using Johnson's Nu-Well acid and then pumped it with air. After this work the nonpumping water level was 32.4 ft while Well No. 1 was operating. When the pump was reinstalled, the pumping water level was reported to be 42.6 ft.

The pumping equipment presently installed is a Deming vertical turbine pump set at 43.9 ft, rated at 140 gpm, and powered by a 3-hp U.S. electric motor. A 10-ft section of suction pipe is attached to the pump intake. The length of the airline was reported to be 50.1 ft below the pump base in 1974.

A test well, finished in sand and gravel, was completed in September 1974 to a depth of 57 ft by Jack McElwee, Sidney. The test well was located approximately 2640 ft N and 1980 ft W of the SE corner of Section 16, T18N, R10E. A 4-in. diameter hole was drilled to a depth of 57 ft, cased with 4-in. pipe from 1 ft above land surface to a depth of 47.8 ft, and equipped with 4.8 ft of blank pipe on top of 8 ft of 4-in. No. 15 slot Johnson stainless steel screen with the bottom set at 57 ft. A production test was conducted on October 9, 1974, by representatives of the driller, the village, the State Water Survey, and Daily & Associates, Engineers, Inc. After 8 hr of pumping at a rate of 12 gpm, the final drawdown was 7.17 ft from a nonpumping water level of 32.00 ft below land surface. Thirty min after pumping was stopped, the water level had recovered to 32.41 ft. On the basis of the production test data, it was estimated that this test well would yield 1 5 gpm (21,600 gpd) on a long-term basis.

ST. JOSEPH

The village of St. Joseph (1554) installed a public water supply in 1941. Two wells (Nos. 1 and 3) are in use and another well (No. 2) is available for emergency use. In 1949 there were 245 services, 80 percent metered; the estimated average daily pumpage was 33,000 gpd. In 1974, there were 652 services, all metered; the average and maximum daily pumpages were 161,203 and 280,000 gpd, respectively. The water is aerated, settled, chlorinated, filtered, and fluoridated.

WELL NO. 1, finished in sand and gravel, was completed in September 1940 to a depth of 76 ft by Hayes & Sims, Champaign. The well is located 40 ft E of Second St. and 40 ft N of the New York Central RR right-of-way, approximately 360 ft S and 1420 ft E of the NW corner of Section 14, T19N, R10E. The land surface elevation at the well is approximately 670 ft.

A 16-in. diameter hole was drilled to a depth of 76 ft. The well is cased with 16-in. OD pipe from 2 ft above land surface to a depth of 61 ft and 8-in. ID pipe from 2 ft above land surface to a depth of 63.3 ft followed by 12.7 ft of 8-in. No. 70 slot Johnson red brass screen. The annulus between the bore hole and screen is filled with 7.5 cubic yards of 1/8-by 3/8-in. gravel.

A production test was conducted by the State Water Survey on September 20, 1940. After 4.1 hr of pumping at rates ranging from 93 to 132 gpm, the maximum drawdown was 28.1 ft from a nonpumping water level of 10.0 ft below land surface. Forty-nine min after pumping was stopped, the water level had recovered to 13.3 ft.

In anticipation of rehabilitating this well, a test was conducted on February 4, 1946. The production was reported to be 84 gpm with a drawdown of 47 ft. On February 26, 1946, the well was treated with 500 gal of 15 percent HCl over a period of 3 hr. On March 1, 1946, the well reportedly produced at an average rate of 109 gpm for 20 min with a drawdown of 38.0 ft from a nonpumping water level of 11.0 ft. One month later the production rate was reported to be 94.1 gpm with a drawdown of 41.5 ft.

A brief production test using one observation well was conducted by the State Water Survey on December 9, 1947. After 3.8 hr of pumping at an average rate of 47.8 gpm, the pumping water level was below the 60-ft airline. The nonpumping water level was 12.2 ft. On December 14, 1947, this well was treated with 50 lb of Calgon, 15 lb of HTH, and 5 lb of washing soda. After treatment the well reportedly produced 60 gpm for 3.7 hr with a final drawdown of 47.3 ft from a nonpumping water level of 12.0 ft.

On September 14, 1950, the pump was removed and the well was treated with 75 lb of Calgon, 10 lb of HTH, and 5 lb of soda ash. The well was then surged and bailed and on September 16, it was reported that at least 15 cubic ft of fine

sand and silt had been removed. Another solution of the same quantity of chemicals was added to the well on September 18 and surging and bailing was continued for about 9 hr. This additional treatment produced about the same volume of fine sand as before. On September 19, after 3 hr of pumping at rates of 127 to 125 gpm, the drawdown was 21.0 ft from a nonpumping water level of 11.3 ft below the top of the pump base.

A production test using one observation well was conducted by the State Water Survey on May 28, 1958. After 7.6 hr of pumping at rates of 180 to 162 gpm, the final drawdown was 3 3.1 ft from a nonpumping water level of 10.0 ft.

A production test was conducted by the State Water Survey on February 7, 1964. After pumping the well for five successive periods of 15 min each at rates of approximately 25, 50, 75, 100, and 125 gpm, the final drawdown was 26.55 ft from a nonpumping water level of 13.00 ft below the pumphouse floor.

A production test was conducted by the Layne-Western Co., Aurora, on July 9, 1970, after treating with acid. The well reportedly produced at rates ranging from 96 to 125 gpm for 20 min with a maximum drawdown of 39 ft from a nonpumping water level of 16 ft below land surface. After additional acid was applied, further testing on July 10, 1970, revealed that the well produced at rates of 96 to 1 30 gpm for 50 min with a final drawdown of 39 ft from a nonpumping water level of 16 ft.

The pumping equipment presently installed is a 6-in., 5-stage Layne turbine pump (No. 48048) set at 50 ft, rated at 125 gpm at about 61 ft TDH, and powered by a 3-hp U.S. electric motor. A 20-ft section of 4-in suction pipe is attached to the pump intake. The well is equipped with 70 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B115444) of a sample collected June 27, 1974, after pumping for 1 hr at 90 gpm, showed the water to have a hardness of 306 mg/l, total dissolved minerals of 388 mg/l, and an iron content of 1.9 mg/l. Hydrogen sulfide and methane gas have been reported in previous samples.

Prior to the construction of Well No. 2, five test holes were drilled in May 1948 by Hayes & Sims, Champaign, to depths ranging from 77 to 118.7 ft.

A summary sample study log of a test hole at the location of Well No. 2 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
PLEISTOCENE SYSTEM		
Wisconsinan drift		
Silt, clayey, sandy, noncalcareous, dusky yellow, micaceous flakes	5	5
Till, very sandy, partly calcareous, dusky yellow	10	15
Till, calcareous, greenish gray	10	25
Sand, calcareous, coarse, gray, clean; little granule gravel	5	30
Till, calcareous, greenish gray	10	40
Sand, calcareous, fine, buff, clean; little granule gravel	5	45
Till, calcareous, light brownish gray	5	50
Sand, medium to very coarse; gravel, granule to fine pebbles, calcareous, brownish gray, very dirty (may be till)	5	55
Till, very sandy and gravelly, calcareous, brownish gray	5	60
Sand, calcareous, fine to coarse, clean, gray; little granule gravel	17	77
Sangamon Soil		
Clay, silty, noncalcareous, gray grading to calcareous, brownish gray, few fragments dark brown soil	3	80

WELL NO. 2, finished in sand and gravel, was completed in June 1948 to a depth of 72.5 ft by Hayes & Sims, Champaign. This well is available for emergency use. The well is located about 170 ft S and 520 ft W of Well No. 1 at the northeast corner of Elm St. and the New York Central RR right-of-way, approximately 5 30 ft S and 900 ft E of the NW corner of Section 14, T19N, R10E. The land surface elevation at the well is approximately 670 ft.

A 16-in. diameter hole was drilled to a depth of 72.5 ft. The well is cased with 16-in. OD pipe from 2 ft above land surface to a depth of 61 ft and 8-in. pipe from 2 ft above land surface to a depth of 60.5 ft followed by 12 ft (12.8 ft overall length) of 8-in. No. 60 slot Johnson Everdur screen. The annulus between the bore hole and screen is filled with 7 cubic yards of gravel.

A production test using one observation well was conducted on June 10, 1948, by representatives of the driller, the village, the State Water Survey, and Wilson & Anderson, Consulting Engineers. After 5.2 hr of pumping at rates of 65 to 187 gpm, the final drawdown was 43.5 ft from a nonpumping water level of 9.0 ft below land surface. Thirty-nine min after pumping was stopped, the water level had recovered to 12.0 ft.

On December 14, 1948, after a 15-min idle period, the water level was 23 ft. The well was then pumped at a rate of 120 gpm for 20 min with a drawdown of 26 ft below the pump base.

A production test using one observation well was conducted by the State Water Survey on June 5, 1958. After 7.6 hr of pumping at rates of 149 to 136 gpm, the final drawdown was 37.2 ft from a nonpumping water level of 20.7 ft. The water level recovered to 23.4 ft after pumping was stopped for 1.2 hr.

A production test was conducted by the State Water Survey on February 7, 1964. After pumping the well for five successive periods of 15 min each at rates of approximately 25, 50, 75, 100, and 125 gpm, the final drawdown was 29.7 ft from a nonpumping water level of 21.7 ft below the pumphouse floor.

The pumping equipment presently installed consists of a 3-hp 1750 rpm U.S. electric motor, a 6-stage Layne turbine pump (No. 65429L) set at 5 3.5 ft, rated at 80 gpm at

about 75 ft TDH, and 50 ft of 4-in. column pipe. A 5-ft section of 4-in. suction pipe is attached to the pump intake. The well is equipped with 5 5 ft of airline.

A partial analysis of a sample (Lab. No. 146815) collected June 5, 1958, showed the water to have a hardness of 318 mg/l, total dissolved minerals of 380 mg/l, and an iron content of 2.5 mg/l.

WELL NO. 3, finished in sand and gravel, was completed in July 1971 to a depth of 72 ft by the Layne-Western Co., Aurora. The well is located at the corner of Sherman and Water Sts., approximately 898 ft S and 21 ft W of the NE corner of Section 15, T19N, R10E. The land surface elevation at the well is approximately 660 ft.

A drillers log of Well No. 3 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Fill	2	2
Brown top soil	1	3
Brown sandy clay	11	14
Gray sandy gravelly clay	25.5	39.5
Fine sand	17.5	57
Fine sand to fine gravel	16	73

A 19-in. diameter hole was drilled to a depth of 73 ft. The well is cased with 10-in. steel pipe from 2 ft above the pumphouse floor to a depth of 61 ft followed by 12 ft of 10-in. No. 40 slot Johnson stainless steel screen. The annulus between the bore hole and casing-screen assembly is filled with concrete from 2 to 20 ft and with No. 1 Muscatine gravel from 20 to 73 ft.

A production test was conducted by the driller on July 15, 1971. After 4 hr of pumping at rates of 130 to 126 gpm, the drawdown was 27 ft from a nonpumping water level of 13 ft below land surface. Thirty min after pumping was stopped, the water level had recovered to 15 ft. On the basis of the production test data, it was estimated that this well would yield 125 gpm (180,000 gpd) on a long-term basis.

The pumping equipment presently installed is an 8-in., 3-stage Layne vertical turbine pump (No. 70647) set at 55 ft, rated at 125 gpm at about 85 ft TDH, and powered by a 7 1/2-hp 1745 rpm U.S. Holloshaft electric motor (Model No. 61-01294, Serial No. 2957-00). The well is equipped with 58 ft of airline.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. Bl15445) is for a water sample from the well collected June 27, 1974, after 1 hr of pumping at 135 gpm.

WELL NO. 3, LABORATORY NO. B115445

		mg/l	*me/1*			*mg/l*	*me/1*
Iron	Fe	2.0		Silica	SiO_2	21	
Manganese	Mn	0.13		Fluoride	F	0.4	0.02
Ammonium	NH_4	2.1	0.12	Boron	B	0.3	
Sodium	Na	31	1.35	Nitrate	NO_3	0.0	0.00
Potassium	K	1.6	0.04	Chloride	Cl	5	0.14
Calcium	Ca	72	3.59	Sulfate	SO_4	0	0.00
Magnesium	Mg	28	2.30	Alkalinity (as	$CaOC_3$)	352	7.04
Arsenic	As	0.00					
Barium	Ba	0.2		Hardness	(as$CaCO_3$)	298	5.96
Copper	Cu	0.00					
Cadmium	Cd	0.00		Total dissolved			
Chromium	Cr	0.00		minerals		369	
Lead	Pb	0.0 0					
Mercury	Hg	0.000 2		pH(asrec'd)		7.6	
Nickel	Ni	0.0		Radioactivity			
Selenium	Se	0.00		Alpha *pc/l*		1.6	
Silver	Ag	0.00		±deviation		1.9	
Cyanide	CN	0.00		Beta *pc/l*		1.7	
Zinc	Zn	0.0		±deviation		2.0	

THOMASBORO

The village of Thomasboro (806) installed a public water supply in 1961. Two wells are in use. In 1962 there were 130 services with only the commercial users metered; the average and maximum daily pumpages were 32,000 and 55,000 gpd, respectively. In 1973 there were 297 services, all metered; the average and maximum daily pumpages were 85,000 and 130,000 gpd, respectively. The water is aerated, settled, chlorinated, and fluoridated.

WELL NO. 1, finished in sand and gravel, was completed in April 1960 to a depth of 230 ft by the Holt Bros. Drilling Co., Darlington, Ind. The well is located about 0.5 mile S and 0.5 mile W of the center of the village, approximately 145 ft N and 150 ft E of the SW corner of Section 28, T21N, R9E. The land surface elevation at the well is approximately 730 ft.

A 10-in. diameter hole was drilled to a depth of 230 ft. The well is cased with 10-in. pipe from the top of the concrete pedestal to a depth of 220 ft followed by 10 ft of No. 40 slot Everdur screen.

A production test was conducted on April 18, 1960, by representatives of the driller, the village, the State Water Survey, and Nelson Watson, Jr. & Associates, Consulting Engineers. After 6 hr of pumping at rates of 210 to 214 gpm, the drawdown was 12.1 ft from a nonpumping water level of 65.0 ft below land surface. One hr after pumping was stopped, full recovery was observed. On the basis of the production test data, it was recommended that this well should not be pumped at rates of more than 110 gpm (158,400 gpd) in order to avoid rapid clogging of the screen.

The pumping equipment presently installed consists of a 5-hp U.S. electric motor, a Peerless turbine pump set at 100 ft, rated at 100 gpm, and 100 ft of column pipe.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. Bl 15050) of a sample collected June 18, 1974, after pumping for 30 min at 100 gpm, showed the water to have a hardness of 287 mg/l, total dissolved minerals of 347 mg/l, and an iron content of 1.45 mg/l. Hydrogen sulfide was apparent when a previous sample was collected.

WELL NO. 2, finished in sand and gravel, was completed in February 1966 to a depth of 238 ft by Swisher & Swank, Crawfordsville, Ind. The well is located about 150 ft N of the treatment building, approximately 400 ft N and 150 ft E of the SW corner of Section 28, T21N, R9E. The land surface elevation at the well is approximately 730 ft.

A drillers log of Well No. 2 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Sandy clay	100	100
Very fine sand	5	105
Sandy clay	106	211
Sand and gravel	30	241

A 10-in. diameter hole was drilled to a depth of 241 ft. The well is cased with 10-in. steel pipe from 1 ft above land surface to a depth of 223 ft followed by 15 ft of 10-in. No. 40 slot Cook Everdur screen.

A production test was conducted on March 1, 1966, by representatives of the State Water Survey and Nelson Watson, Jr. & Associates, Consulting Engineers. After 3 hr of pumping at a rate of 239 gpm, the drawdown was 9.0 ft from a nonpumping water level of 67.5 ft below land surface. Fifteen min after pumping was stopped, full recovery was observed. On the basis of the production test data, it was estimated that this well would yield 100 gpm (144,000 gpd) on a long-term basis. Well No. 1 was operated throughout much of this test.

The pumping equipment presently installed is a Layne turbine pump set at 100 ft, rated at 100 gpm, and powered by a 5-hp U.S. electric motor.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. Bl 15048) is for a water sample from the well collected June 18, 1974, after 30 min of pumping at 100 gpm.

WELL NO. 2, LABORATORY NO. B115048

		mg/l	*me/l*			*mg/l*	*me/l*
Iron	Fe	1.55		Silica	SiO_2	17	
Manganese	Mn	0.07		Fluoride	F	0.5	0.03
Ammonium	NH_4	1.5	0.08	Boron	B	0.5	
Sodium	Na	25	1.09	Nitrate	NO_3	0.0	0.00
Potassium	K	1.6	0.04	Chloride	Cl	1	0.03
Calcium	Ca	64	3.19	Sulfate	SO_4	0	0.00
Magnesium	Mg	30	2.47	Alkalinity (as $CaCO_3$)		336	6.72
Arsenic	As	0.00					
Barium	Ba	0.1		Hardness ($asCaCO_3$)		286	5.72
Copper	Cu	0.00					
Cadmium	Cd	0.00		Total dissolved minerals		359	
Chromium	Cr	0.01					
Lead	Pb	0.00					
Mercury	Hg	0.0000		pH (asrec'd)		7.8	
Nickel	Ni	0.0		Radioactivity			
Selenium	Se	0.00		Alpha pc/l		0.8	
Silver	Ag	0.00		± deviation		1.1	
Cyanide	CN	0.00		Beta pc/l		2.9	
Zinc	Zn	0.00		± deviation		2.0	

TOLONO

The village of Tolono (2027) installed a public water supply in 1895. Two wells (Nos. 11 and 12) are in use and another well (No. 9) is available for emergency use. In 1949 there were 290 services, 88 percent metered; the average daily pumpage was 72,000 gpd. In 1974 there were 725 services, all metered; the estimated average and maximum daily pumpages were 150,000 and 175,000 gpd, respectively. The water is aerated, settled, filtered, softened, chlorinated, and fluoridated.

WELL NO. 1, finished in sand and gravel, was completed in 1895 to a depth of 145 ft by the Fairbanks-Morse Co., Chicago. This well was abandoned soon after 1934 and sealed in or before 1942. The well was located at the waterworks plant on Holden St. east of Bourne St., approximately 1873 ft N and 450 ft W of the SE corner of Section 26, T18N, R8E. The land surface elevation at the well is approximately 730 ft.

The well was cased with 6-in. pipe to a depth of 133 ft followed by 12 ft of No. 60 slot Cook screen.

In 1934, the well reportedly produced 50 gpm for 10 hr with no noticeable drawdown from a nonpumping water level of 40 ft below the concrete floor.

A mineral analysis of a sample (Lab. No. 80029) collected January 4, 1934, showed the water to have a hardness of 397 mg/l, total dissolved minerals of 705 mg/l, and an iron content of 1.5 mg/l.

WELL NO. 2, finished in sand and gravel, was completed in 1895 to a depth of 146 ft. This well was abandoned about 1897 and sealed about 1942 because of a strong flow of gas. The well was located 20 ft W of Well No. 1, approximately 1873 ft N and 470 ft W of the SE corner of Section 26, T18N, R8E. The land surface elevation at the well is approximately 730 ft.

The well was cased with 8-in. pipe from land surface to a depth of 138 ft followed by 8 ft of Cook screen.

WELL NO. 3, finished in sand and gravel, was completed in 1901 to a depth of 157.5 ft by the Fairbanks-Morse Co., Chicago. This well was abandoned in 1962 and sealed prior to 1967. The well was located 200 ft E of Bourne St., 100 ft N of Holden St., and 37 ft N of Well No. 1, approximately 1910 ft N and 450 ft W of the SE corner of Section 26, T18N, R8E. The land surface elevation at the well is approximately 730 ft.

An 8-in. diameter hole was drilled to a depth of 157.5 ft. The well was cased with 8-in. pipe from 1.5 ft above floor level to a depth of 145.5 ft followed by 12 ft of No. 60 slot Cook screen.

Nonpumping water levels were reported as follows: 40 ft

below land surface in 1914, 70 ft in 1928, and 80 ft on June 19, 1942.

A partial analysis of a sample (Lab. No. 123181) collected in October 1950, after pumping for 18 hr at 70 gpm, showed the water to have a hardness of 431 mg/l, total dissolved minerals of 726 mg/l, and an iron content of 5.0 mg/l.

WELL NO. 4, finished in sand and gravel, was completed in July 1934 to a depth of 186.2 ft by E. W. Johnson, Bloomington. This well was abandoned in 1938 and sealed about 1949 because the yield declined. The well was located just outside the east wall of the pumping station and 15 ft SE of Well No. 3, approximately 1900 ft N and 440 ft Wof the SE corner of Section 26, T18N, R8E. The land surface elevation at the well is approximately 730 ft.

A sample study log of Well No. 4 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
PLEISTOCENE SYSTEM		
Soil and till	130	130
Sand and silt	5	135
Sand and granule gravel	7	142
Till	12.3	154.3
Gravel and sand	2.7	157
Till	26	183
Sand, clean	1.5	184.5
PENNSYLVANIAN SYSTEM		
Siltstone	24.5	209

The well was cased with 10-in. pipe to a depth of 168 ft and 8-in. pipe from 168 ft to a depth of 178.4 ft followed by 7.8 ft of 8-in. No. 40 slot Cook screen.

A production test was conducted by the driller on July 1, 1934. After 1.8 hr of pumping at rates ranging from 53 to 83 gpm, the pump broke suction with a drawdown of about 114 ft from a nonpumping water level of 71.8 ft.

A mineral analysis of a sample (Lab. No. 74759) collected July 2, 1934, showed the water to have a hardness of 235 mg/l, total dissolved minerals of 466 mg/l, and an iron content of 1.0 mg/l.

Prior to the construction of Well No. 5, a test hole located at Locust St. and Central Ave. was drilled in 1936 by E. W. Johnson, Bloomington, to a depth of 185 ft.

WELL NO. 5, finished in sand and gravel, was completed in 1937 to a depth of 185 ft by L. R. Burt, Decatur. This well was abandoned and sealed in 1962. The well was located 40 ft S and 200 ft E of the intersection of Locust St. and Central Ave., approximately 1880 ft S and 600 ft E of the NW corner of Section 25, T18N, R8E. The land surface elevation at the well is approximately 737 ft.

A sample study log of Well No. 5 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
PLEISTOCENE SYSTEM		
Wisconsinan Glacial Drift		
Silt, noncalcareous, yellow and gray	10	10
Till, calcareous, silty, sandy, gravelly, light brown	5	15
Strata (continued)	*Thickness (ft)*	*Depth (ft)*
Till, calcareous, sandy, silty, brownish gray to grayish brown, pebbles of siltstone and dolomite mostly	87.5	102.5
Illinoian Glacial Drift		
Silt, noncalcareous, dark brown, slightly sandy	1.5	104
"Blue clay, hard"	3	107
Gravel and sand, light buff, fine to coarse, clean, siltstone and igneous pebbles	2.5	109.5
Silt, very sandy, clayey, dark brownish gray, slightly calcareous	5.5	115
Same, noncalcareous	1	116
Till, calcareous, very silty and sandy, gravelly, light grayish brown	14	130
Sand, calcareous, very silty and clayey, light brown, very fine to fine	5	135
Sand, calcareous, gravelly, light buff, very fine to coarse, clean	5	140
Gravel, calcareous, sandy, light buff, mostly dolomite, clean	5	145
No sample	3	148
Sand, calcareous, gravelly, slightly silty, light brown, fine to coarse	9	157
Till, calcareous, silty, sandy and gravelly, red and reddish brown	2	159
Till, calcareous, yellowish brown, brown and gray, flakey, sandy and gravelly	15	174
Sand, calcareous, light buff, fine to coarse, clean	3	177
Gravel, sandy, calcareous, light buff, clean	1	178
"Blue clay"	2	180
Gravel, calcareous, slightly sandy, clean	2	182
Same; little till, light brown, calcareous, sandy	2	184
Till, calcareous, light brown and reddish brown, sandy		184

The well was cased with 10-in. pipe from 0.8 ft above the pump station floor to a depth of 170 ft followed by 15 ft of Johnson screen having slot sizes varying from No. 10 to No. 60.

In a production test conducted by the driller, the yield reportedly did not exceed 25 gpm.

In 1938, Woollen Bros., Wapella, removed the 10-in. casing and screen, slotted the lower 15 ft of casing and replaced it with the bottom set at 185 ft. The slot openings were 1/8 in. by 18 in.

A production test was conducted by the State Water Survey on July 25, 1938. After 4.8 hr of pumping at rates ranging from 105 to 93 gpm, the final drawdown was 62 ft from a nonpumping water level of 76 ft below the top of the casing.

In 1950, this well was rebuilt and a new 8-in. diameter 3-ft length of Everdur screen was placed inside the old slotted steel pipe.

In 1950, the well reportedly produced 48.5 gpm for 1.3 hr with a drawdown of 62.5 ft from a nonpumping water level of 77.5 ft below the top of the pump base.

A partial analysis of a sample (Lab. No. 135064) collected June 15, 1954, after pumping for 1.3 hr at 48.5 gpm, showed the water to have a hardness of 312 mg/l, total dissolved minerals of 543 mg/l, and an iron content of 0.7 mg/l.

Prior to the construction of Well No. 6, two test holes located within the village were drilled in November 1941 by the Woollen Bros., Wapella, to depths of 199 and 188 ft.

WELL NO. 6, finished in sand and gravel, was completed

in June 1942 to a depth of 145 ft by the Woollen Bros., Wapella. This well was abandoned in 1947 and sealed in 1952. The well was located on the east side of Third Ave., 200 ft N of Locust St., approximately 1560 ft S and 50 ft W of the NE corner of Section 26, T18N, R8E. The land surface elevation at the well is approximately 735 ft.

A 10-in diameter hole was drilled to a depth of 145 ft. The well was cased with 10-in. ID pipe from 1.5 ft above land surface to a depth of 140.5 ft followed by 4.5 ft (6.8 ft overall length) of No. 100 slot Johnson Armco iron screen.

A production test was conducted by the State Water Survey on June 18, 1942. After 6.1 hr of pumping at rates ranging from 93 to 102 gpm, the final drawdown was 60 ft from a nonpumping water level of 77 ft below the top of the casing. Ten min after pumping was stopped, the water level had recovered to 81 ft and 1.5 hr after shutdown, full recovery was observed.

In March 1945, because of organic growth clogging the screen, the well was treated with 500 gal of 30 percent HC1. The treatment did not dispose of the growth. During the treatment, gas (possibly due to effervescence between the acid and carbonate material) was released along the outside of the casing and was controlled by alternate pumping and backwashing of the well. When the release of gas stopped, the space around the casing had to be backfilled with 2600 lb of gravel. After the treatment was completed, the water was clear, and the pump would operate continuously at 101 gpm, but at any higher rate would break suction.

Prior to the construction of Well No. 7, nine test holes were drilled in December 1948 by Hayes & Sims, Champaign, to depths ranging from 157 to 190 ft and one test hole was drilled in 1951 by Charles M. Hayes, Champaign, to a depth of 200 ft.

WELL NO. 7, finished in sand and gravel, was completed in March 1952 to a depth of 164 ft by the Kelly Well Co., Grand Island, Neb. This well was abandoned in 195 3 and sealed prior to 1960. The well was located about 115 ft S of Well No. 3, approximately 1795 ft N and 450 ft W of the SE corner of Section 26, T18N, R8E. The land surface elevation at the well is approximately 730 ft.

A drillers log of Well No. 7 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Top soil	5	5
Yellow clay with gravel	5	10
Yellow clay with gravel, very hard	7	17
Blue clay and gravel and stones	68	85
Blue clay and gravel hard	10	95
Green clay, easy drilling	10	105
Dirty sand	3	108
Hard blue gravelly clay	22.5	130.5
Fine sand (some small gravel)	9	139.5
Hard blue gravelly clay (very hard)	6	145.5
Sand and some gravel	8.5	154
Sand and some gravel with some clay	7	161
Clay	4	165

A 38-in. diameter hole was drilled to a depth of 165 ft. The well was cased with 22-in. OD by 18-in. ID concrete pipe from 2 ft above land surface to a depth of 1 32 ft and from 144 ft to a depth of 148 ft. A perforated concrete screen of the same size extended from 1 32 to 144 ft and from 148 to 164 ft with a concrete plug on the bottom. The annulus between the bore hole and casing-screen assembly was filled with pea gravel from 112 to 122 ft, and with torpedo sand and pea gravel from 122 to 164 ft.

A production test was conducted on March 12, 1952, by representatives of the driller, the village, and the State Water Survey. After 9.2 hr of pumping at rates ranging from 112 to 157 gpm, the final drawdown was 30.25 ft from a nonpumping water level of 76.92 ft below land surface. Twenty-three min after pumping was stopped, the water level had recovered to 82.25 ft.

WELL NO. 8, finished in sand and gravel, was completed in March 1953 to a depth of 158.5 ft by the Kelly Well Co., Grand Island, Neb. This well was abandoned in 1955 and sealed prior to 1960 because of poor well alignment. The well was located about 26 ft S of Well No. 7, approximately 1769 ft N and 450 ft W of the SE corner of Section 26, T18N, R8E. The land surface elevation at the well is approximately 730 ft.

A drillers log of Well No. 8 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Top soil	2	2
Yellow clay	8	10
Blue clay and some boulders	50	60
Small boulders gravelly clay	10	70
Gravelly clay occasional boulders	35	105
Sand and clay	3	108
Sand	2	110
Cemented sand, gravel some boulders	10	120
Boulders hard gravelly clay	10.5	130.5
Fine sand continuing clay boulders	9	139.5
Hard gravelly clay and boulders	6	145.5
Sand	7	152.5
Clay	2	154.5
Sand compact with clay showing	4	158.5
Hard clay	2	160.5
Boulders		

A 38-in. diameter hole was drilled to a depth of 160.5 ft. The well was cased with 22-in. OD by 17-in. ID concrete pipe from 1.5 ft above land surface to a depth of 130.5 ft. A perforated concrete screen of the same size extended from 130.5 to 158.5 ft and a concrete plug extended to 159.5 ft. The annulus between the bore hole and screen was filled with block sand and torpedo sand in a 2:1 ratio from 93.5 to 158.5 ft.

A production test using two observation wells was conducted on March 23, 1953, by representatives of the driller, the village, and the State Water Survey. After 7 hr of pumping at rates ranging from 103 to 68 gpm, the final drawdown was 64.6 ft from a nonpumping water level of 80.5 ft below the top of the casing.

A production test was conducted on April 10, 195 3, by representatives of the driller, the village, and the State Water Survey. After 7 hr of pumping at rates ranging from 128 to 71 gpm, the final drawdown was 72.1 ft from a nonpumping

water level of 81.2 ft below the top of the casing. Thirteen min after pumping was stopped, the water level had recovered to 101.0 ft.

A mineral analysis of a sample (Lab. No. 131673) collected April 11, 1953, after pumping for 6.2 hr at 71 gpm, showed the water to have a hardness of 368 mg/l, total dissolved minerals of 683 mg/l, and an iron content of 3.4 mg/l.

Prior to the construction of Well No. 9, five test holes were drilled in 1955 by Charles M. Hayes, Champaign, to depths ranging from 179 to 192.5 ft.

WELL NO. 9, finished in sand and gravel, was completed in June 1955 to a depth of 179 ft by the Kelly Well Co., Grand Island, Neb. This well is available for emergency use. The well is located on the east side of the village south of Main St., approximately 2175 ft N and 2020 ft E of the SW corner of Section 25, T18N, R8E. The land surface elevation at the well is approximately 730 ft.

A drillers log of Well No. 9 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Top soil	2	2
Gravelly blue clay	28	30
Blue clay and boulders	21	51
Dirty sand	4	55
Blue clay	5	60
Clay gravel	35	95
Peat clay	7	102
Dirty sand	3	105
Gravel	2	107
Cemented clay and gravel	13	120
Sand and gravel	15	135
Sand gravel and boulders	24	159
Hard clay	3	162
Sand and gravel	3	165
Hard clay	9	174
Sand and gravel	6	180

A 36-in. diameter hole was drilled to a depth of 180 ft. The well is cased with 22-in. OD by 17-in. ID concrete pipe from 2 ft above land surface to a depth of 139 ft. A perforated concrete screen of the same size extends from 139 to 179 ft and a concrete plug extends to 180 ft. The annulus between the bore hole and casing-screen assembly is filled with concrete from 0 to 24 ft, with puddled clay from 24 to 80 ft, and with selected gravel from 80 to 180 ft.

In January 1956, the well reportedly produced 250 gpm for 4 hr with a drawdown of 29 ft from a nonpumping water level of 80 ft below the top of the pump base.

The pumping equipment presently installed is a Layne pump rated at 150 gpm at about 200 ft TDH, and powered by a 15-hp 1800 rpm U.S. electric motor (Model No. 8F1.15, Serial No. 1012164).

A mineral analysis of a sample (Lab. No. 162156) collected February 5, 1964, after pumping for 15 min at 250 gpm, showed the water to have a hardness of 391 mg/l, total dissolved minerals of 669 mg/l, and an iron content of 5.4 mg/l. Considerable methane gas has been reported in this well.

WELL NO. 10, finished in sand and gravel, was completed in October 1961 to a depth of 180 ft by the Gibbs Well Drilling Co., Lincoln. This well was abandoned in 1970 because it pumped sand. The well is located at the intersection of Main and Washington Sts., approximately 2370 ft N and 2150 ft E of the SW corner of Section 25, T18N, R8E. The land surface elevation at the well is approximately 730 ft.

A drillers log of Well No. 10 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Top soil	2	2
Yellow clay boulders	8	10
Blue clay	28	38
Blue clay gravel	1	39
Fine sand gravel	4	43
Blue clay gravel boulders	50	93
Green clay	6	99
Sand and gravel	2	101
Gray sandy clay	1.5	102.5
Gray clay	17.5	120
Fine sand	4	124
Coarse sand gravel	2	126
Gray clay boulders	8	134
Coarse sand gravel	20	154
Blue clay	4	158
Coarse sand gravel	7	165
Blue clay	6	171
Coarse sand gravel	5	176
Blue clay	4	180
Gravel and stones	1.5	181.5

A 36-in. diameter hole was drilled to a depth of 181.5 ft. The well is cased with 22-in. OD by 17-in. ID concrete pipe from 1 ft above land surface to a depth of 128 ft, from 152 to 160 ft, and from 164 to 168 ft. A perforated concrete screen of the same size extends from 128 to 152 ft, from 160 to 164 ft, and from 168 to 180 ft. A 36-in. protective steel casing is placed to a depth of 20 ft. The annulus between the steel pipe and concrete pipe is filled with concrete from 0 to 24 ft, and the annulus between the bore hole and concrete casing-screen assembly is filled with puddled clay from 24 to 75 ft, and with gravel from 75 to 180 ft.

A production test was conducted on December 29, 1961, by representatives of the driller, the village, and the State Water Survey. After 3.8 hr of pumping at rates ranging from 357 to 372 gpm, the final drawdown was 42.7 ft from a nonpumping water level of 84.5 ft below land surface. One hr after pumping was stopped, the water level had recovered to 87.2 ft. On the basis of the production test data, it was estimated that this well would yield 250 gpm (360,000 gpd) on a long-term basis.

On February 5, 1964, the well reportedly produced 400 gpm for 15 min with a drawdown of 15 ft from a nonpumping water level of 85 ft below the top of the casing.

A production test using two observation wells was conducted on October 28-29, 1965, by representatives of the State Water Survey and the Layne-Western Co., Aurora. After 18.5 hr of pumping at rates of 128 to 121 gpm, the final drawdown was 14.43 ft from a nonpumping water level of 86.67 ft below land surface. One hr after pumping was stopped, the water level had recovered to 89.19 ft.

A partial analysis of a sample (Lab. No. 162499) collected March 30, 1964, after pumping for 1 hr at 125 gpm, showed

the water to have a hardness of 288 mg/l, total dissolved minerals of 522 mg/l, and an iron content of 3.4 mg/l. Considerable methane gas has been reported in this well.

Prior to the construction of Well No. 11, five test holes were drilled in October and December 1965 by the Layne-Western Co., Aurora, to depths ranging from 190 to 200 ft.

WELL NO. 11, finished in sand and gravel, was completed in February 1966 to a depth of 181 ft by the Layne-Western Co., Aurora. The well is located about 518 ft SW of Well No. 9, approximately 1870 ft N and 1590 ft E of the SW corner of Section 25, T18N, R8E. The land surface elevation at the well is approximately 730 ft.

A drillers log of Well No. 11 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Yellow clay	8	8
Blue clay -	112	120
Very fine gray sand	10	130
Very fine to medium sand, some gravel	7	137
Hard blue clay, boulders	7	144
Fine to medium sand, some gravel	13	157
Brown clay	14	171
Fine to coarse sand	11	182

A 38-in. diameter hole was drilled to a depth of 10 ft and finished 34 in. in diameter from 10 to 182 ft. The well is equipped with 10-in. steel pipe from 2 ft above land surface to a depth of 142 ft, a 10-in. No. 7 (0.055 in.) Layne stainless steel shutter screen from 142 ft to a depth of 157 ft, a 10-in. steel pipe from 157 ft to a depth of 171 ft, and a 10-in. No. 7 (0.055 in.) Layne stainless steel shutter screen from 171 ft to a depth of 181 ft. The annulus between the bore hole and casing-screen assembly is filled with cement from 0 to 25 ft, with pea gravel from 25 to 110 ft, and with No. 2 Muscatine gravel from 110 to 181 ft.

A production test using one observation well was conducted on February 16-17, 1966, by representatives of the driller and the State Water Survey. After 24 hr of pumping at rates ranging from 210 to 216 gpm, the final drawdown was 22.0 ft from a nonpumping water level of 83.0 ft below land surface. Thirty min after pumping was stopped, the water level had recovered to 87.0 ft. During this test, Well No. 10 was pumping intermittently. In 1969, it was estimated that with Well No. 10 pumping at 110 gpm, this well , could be pumped at 200 gpm without lowering the pumping water levels below the top of the well screens. This analysis assumed that no well deterioration had occurred since either well was built.

The pumping equipment presently installed is a combination Byron Jackson and Layne vertical turbine pump set at 150 ft, rated at 150 gpm, and powered by a 30-hp 1750 rpm A. O. Smith electric motor (Model No. P326UX4A7, Serial No. 29F61).

The following mineral analysis (Lab. No. 197126) is for a water sample from the well collected October 16, 1974, after 30 min of pumping at 125 gpm. Considerable methane gas has been reported in this well.

WELL NO. 11, LABORATORY NO. 197126

		mg/l	*me/l*			*mg/l*	*me/l*
Iron (total)	Fe	3.1		Silica	SiO_2	24.2	
Manganese	Mn	0.03		Fluoride	F	0.3	
Ammonium	NH_4	8.5	0.47	Boron	B	0.7	
Sodium	Na	98.9	4.30	Nitrate	NO_3	0.9	0.01
Potassium	K	3.0	0.08	Chloride	Cl	7	0.20
Calcium	Ca	82.4	4.11	Sulfate	SO_4	0.0	0.00
Magnesium	Mg	29.8	2.45	Alkalinity (as	$CaCO_3$)	555	11.10
Strontium	Sr	0.28	0.01				
Barium	Ba	0.4		Hardness	(as $CaCO_3$)	328	6.56
Copper	Cu	0.00					
Cadmium	Cd	0.00		Total dissolved			
Chromium	Cr	0.00		minerals		576	
Lead	Pb	<0.05					
Lithium	Li	0.01		Turbidity	18		
Nickel	Ni	<0.05		Color	15		
Zinc	Zn	0.00		Odor	0		

Prior to the construction of Well No. 12, a test hole was drilled in 1970 by the Sims Drilling Co., Savoy, to a depth of 195 ft.

WELL NO. 12, finished in sand and gravel, was completed in December 1972 to a depth of 182 ft by the Layne-Western Co., Aurora. The well is located 15 ft NW of Well No. 10, approximately 2380 ft N and 2140 ft E of the SW corner of Section 25, T18N, R8E. The land surface elevation at the well is approximately 730 ft.

A drillers log of Well No. 12 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Black top soil	2.5	2.5
Brown sandy gravelly clay	1	3.5
Brown sand	2.5	6
Brown sandy clay	6	12
Gray sandy clay with gravel	23	35
Soft gray clay	52	87
Dark gray sandy clay	12	99
Gray sandy clay with gravel (hard)	26	125
Hard sandy silt	4	129
Hard gray sandy clay with gravel	15	144
Fine to medium sand and gravel	16	160
Fine to medium sand	4	164
Fine to medium sand and gravel	14	178
Fine to coarse sand, medium gravel	4.5	182.5

A 34-in. diameter hole was drilled to a depth of 182.5 ft. The well is equipped with 26-in. pipe from land surface to a depth of 25 ft, a 10-in. steel pipe from 1.5 ft above land surface to a depth of 144.5 ft, a 10-in. No. 7 (0.055 in.) Layne shutter screen from 144.5 ft to a depth of 159.5 ft, a 10-in. steel pipe from 159.5 ft to a depth of 172 ft, and a 10-in. No. 7 (0.055 in.) Layne shutter screen from 172 ft to a depth of 182 ft. The annulus between the 26- and 10-in. casings and between the bore hole and screen is filled with cement from 0 to 20 ft, with sand from 20 to 110 ft, and with 27 tons of No. 2 Muscatine gravel from 110 to 182 ft.

A production test was conducted by the driller on December 20, 1972. After 8 hr of pumping at rates of 160 to 190 gpm, the final drawdown was 25.5 ft from a nonpumping water level of 97.0 ft below land surface.

The pumping equipment presently installed is a Layne turbine pump set at 150 ft, rated at 150 gpm, and powered by a 25-hp U.S. electric motor.

A partial analysis of a sample (Lab. No. 192796) collected July 26, 1973, showed the water to have a hardness of 348 mg/l, total dissolved minerals of 590 mg/l, and an iron content of 6.4 mg/l.

UNIVERSITY OF ILLINOIS

The University of Illinois (est. 45,000) obtains its water supply from the Northern Illinois Water Corporation *(see Champaign).*

UNIVERSITY OF ILLINOIS WILLARD AIRPORT

The University of Illinois Willard Airport (est. 450) installed a public water supply in 1946. Finished water for this supply is obtained from the Northern Illinois Water Corporation *(see Champaign).*

URBANA

The city of Urbana (32,800) installed a public water supply in 1885. Finished water for this supply is obtained from the Northern Illinois Water Corporation *(see Champaign).*

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