ISWS/BUL-60(32)/86
BULLETIN 60-32
STATE OF ILLINOIS
DEPARTMENT OF ENERGY AND NATURAL RESOURCES

Public Ground-Water Supplies in DuPage County

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ILLINOIS STATE WATER SURVEY
CHAMPAIGN
1986

Funds derived from University of Illinois administered grants and contracts were used to produce this report.

Printed by authority of the State of Illinois

(9-86-500)

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Introduction

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

This report includes separate descriptions for 65 public water supplies in Du Page County. These are preceded by brief summaries of the ground-water geology of the county and the development of ground-water sources for public use. An explanation of the format used in the descriptions is also given.

Acknowledgments. This report was prepared under the general direction of Stanley A. Changnon, Jr., Chief of the Illinois State Water Survey, and James P. Gibb, Head of the Ground Water Section. Special thanks are given to R. T. Sasman, Hydrologist, who checked all of the data and reviewed the manuscript. John W. Brother, Jr., supervised the preparation of the illustrations, and James R. Kirk assisted in the final preparation of the manuscript. The chemical analyses, unless otherwise stated, were made by personnel of the Water Survey Analytical Chemistry Laboratory Unit under the supervision of James C. Whitney. The analyses made by personnel of the Illinois Environmental Protection Agency were under the supervision of Roger Selburg. Ross D. Brower, Associate Geologist, Illinois State Geological Survey, reviewed the geological information in the manuscript. Grateful acknowledgment also is given to consulting engineers, well drillers, water superintendents, and municipal officials who have provided valuable information used in this report.

Ground-water Geology

The geology of Du Page County is described in Illinois State Geological Survey Circular 198, "Groundwater Possibilities in Northeastern Illinois"; Circular 406, "Bedrock Aquifers of Northeastern Illinois"; Circular 460, "Summary of the Geology of the Chicago Area"; and Report of Investigation 218, "Cambrian and Ordovician Strata of Northeastern Illinois"; and in Illinois State Water Survey and State Geological Survey Cooperative Ground-Water Report 1, "Preliminary Report on Ground-Water Resources of the Chicago Region, Illinois," and Cooperative Ground-Water Report 2, "Ground-Water Resources of Du Page County, Illinois." The following brief discussion of geologic conditions in the county is taken largely from these publications. More detailed information on the geology in this portion of the state can be obtained from the State Geological Survey, which is located on the campus of the University of Illinois at Urbana-Champaign.

The glacial drift deposits of the Prairie Aquigroup in Du Page County generally range in thickness from 50 to 150 ft in most of the county and reach 180 ft in a buried bedrock valley in the north central area in T40N, R10E, and in other scattered sites. Sand and gravel deposits offering possibilities for the development of moderate quantities of water (50 to 200 gpm) from individual wells are present within the glacial drift in more than half of the county.

Beneath the glacial deposits, the upper bedrock formations consist principally of dolomite (a limestone-like rock) and minor amounts of shale that dip easterly at about 10 ft per mile. Rock formations underlying Du Page County range in age from Silurian to Precambrian (see generalized stratigraphic sequence in figure 1).

Dolomites of the Silurian System underlie the glacial drift throughout almost the entire county. This unit is part of the geohydrolcgic system present throughout northeastern Illinois that is referred to as the shallow Upper Bedrock Aquigroup. These rocks are encountered by wells beneath the drift about 25 to 200 ft below the surface. They range in thickness from about 50 to 175 ft in most of the county but reach a thickness of 225 ft along the eastern edge. In the north central area, there is a narrow east-west band in which erosion has exposed the underlying Maquoketa Group. The yield capability of the Silurian depends primarily upon the number, size, and degree of interconnection of water-filled cracks and crevices in the rocks that are penetrated by a well bore. In some areas the Silurian rocks directly underlie permeable deposits of water-bearing sand and gravel. Under such geohydrologic conditions, the presence of solution cracks and crevices and free exchange of water from the glacial drift to the bedrock are enhanced, thereby increasing the yield capability of the Upper Bedrock Aquigroup.

The Maquoketa Group (Ordovician age) underlies the Silurian System throughout Du Page County, except for a narrow band in T40N, R10E, and consists primarily of shales that yield little or no water and that separate the Silurian from deeper water-bearing units. These shales lie at depths from about 150 ft in areas in the northwestern part of the county to more than 250 ft in the eastern part of the county. The Maquoketa ranges from about 140 to 235 ft thick from south to north across the county. The Maquoketa Group generally is not considered as a source for large water supplies. Locally, supplies adequate for small subdivisions and domestic use are obtained from systems of cracks and crevices in the more dolomitic parts of this group, which average at least 50 ft thick.

Below the Maquoketa Group occurs a thick succession of hydrologically connected rocks that are referred to as the Midwest Aquigroup (Cambrian-Ordovician aquifer system) in Du Page County. This aquigroup consists in downward order of the Galena and Platteville Dolomite Groups, Glenwood-St. Peter Sandstone, Prairie du Chien Group, Eminence-Potosi Dolomite, Franconia Formation, and Ironton-Galesville Sandstone.

Dolomite of the Galena and Platteville Groups (Ordovician age) lies at depths of about 350 ft in the western areas of the county to about 450 ft in the eastern regions. It is relatively uniform in thickness throughout the county, ranging from about 300 to 355 ft. Water from this aquifer is obtained from cracks and crevices so that the yield of an individual well depends primarily upon the number, size, and degree of interconnection of the crevices intersected by a well bore.

The Glenwood-St. Peter Sandstone (Ordovician age) lies below the Galena-Platteville. This sandstone aquifer is encountered at depths from about 650 ft along the west edge of the county to approximately 800 ft near the east border. It ranges from about 200 to 300 ft thick in the south part of the county to more than 300 ft in the north and is 400 ft thick in small areas east and west of Wheaton. Its total range in thickness is from about 95 to 445 ft. It is estimated that the Galena-Platteville and the Glenwood-St. Peter produce about 15 percent of the total potential yield from the Midwest Aquigroup.

Below the Glenwood-St. Peter lie the Prairie du Chien Group (Ordovician age), the Eminence-Potosi Dolomite (Cambrian age), and the Franconia Formation that consists of interbedded sandstones, shales, and dolomites. These units are encountered at depths ranging from about 850 ft in the southwest to about 1150 ft in the northeast and have total thicknesses varying from about 50 to 400 ft. The shales and dolomites yield small quantities of water, but the sandy parts of these formations may contribute moderate quantities of water to wells where they are not cased off by liners. It is estimated that these formations produce about 35 percent of the total yield from the Midwest Aquigroup. Wells tapping only these strata are seldom constructed.

The Ironton-Galesville Sandstone (Cambrian age) is the most consistently permeable and productive unit of the Midwest Aquigroup in northeastern Illinois. It is usually about 175 to 200 ft thick in Du Page County and lies at a depth of about 1100 ft in the northwest corner to about 1300 ft at Wheaton to about 1450 ft in the southeast corner along the Des Plaines River. It is estimated that this unit produces about 50 percent of the total yield of the Midwest Aquigroup.

Below the Ironton-Galesville Sandstone lies the Eau Claire Formation. The upper and middle parts of the

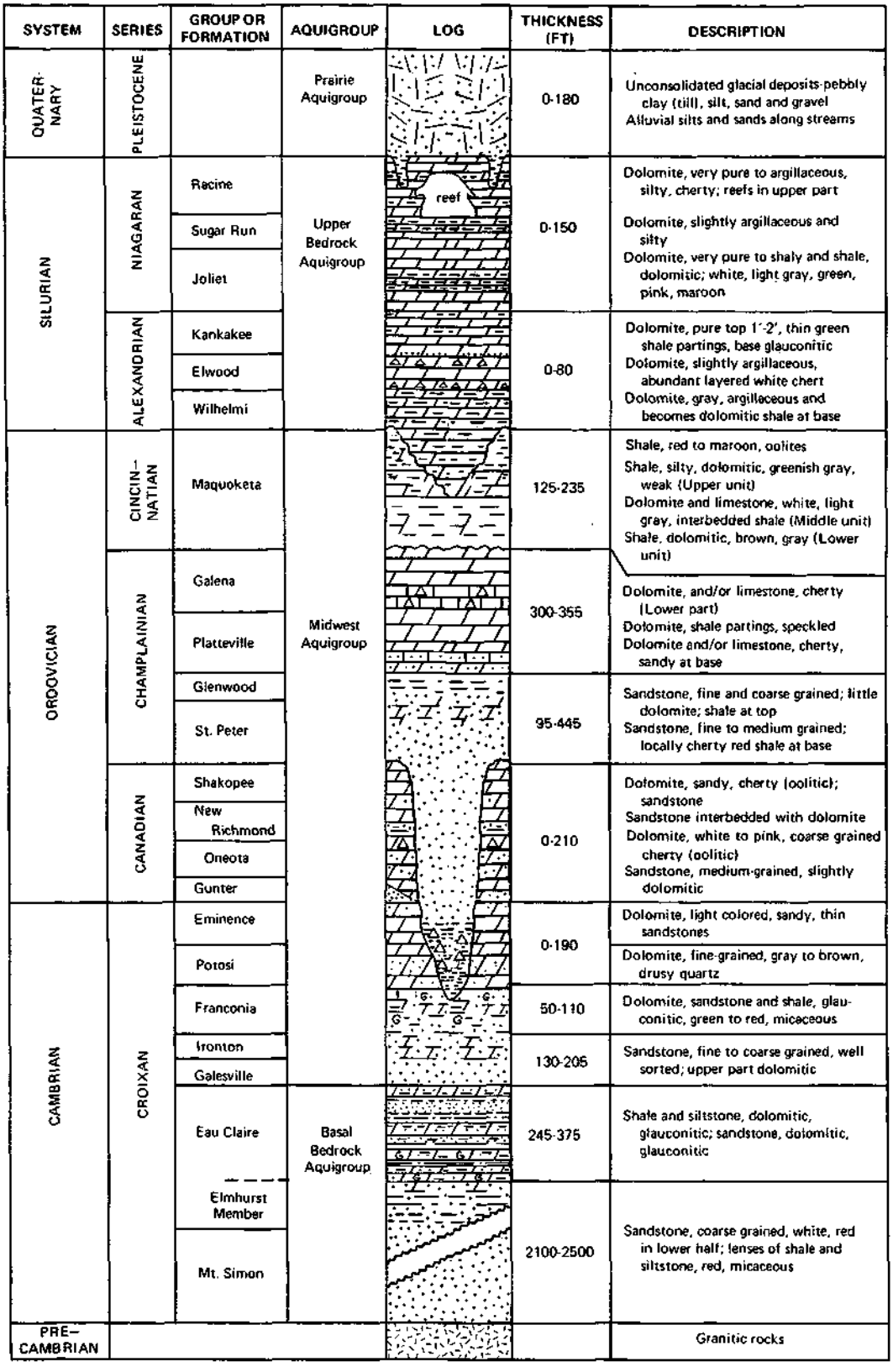


Figure 1. Generalized column of rock stratigraphic units and aquigroups in DuPage County

Eau Claire are composed primarily of shales, siltstones, and dolomite that yield almost no water and that separate the Midwest Aquigroup from deeper water-bearing units. The Elmhurst Sandstone Member at the base of the Eau Claire Formation and the underlying Mt. Simon Sandstone are hydrologically connected and form the Basal Bedrock Aquigroup, the deepest fresh-water aquifer in northern Illinois. In Du Page County this aquifer lies at depths ranging from about 1700 ft in the northwest to more than 1900 ft in the southeast and ranges in thickness from about 2100 ft in the northwest part to about 2500 ft in the southern part of the county. Water wells usually penetrate only a few hundred feet into this aquifer because the quality of the water deteriorates with depth. Water obtained below an elevation of about 1300 ft below sea level is generally too highly mineralized for use.

Ground-water Development For Public Use

Ground water is used as a source for 65 public water supplies in Du Page County. The locations of these supplies are shown in figure 2.

Sand and gravel deposits in the unconsolidated materials of the Prairie Aquigroup above bedrock are tapped by 5 public water supply systems in Du Page County as a partial source of their water supply. There are presently 6 production and standby wells, ranging in depth from 61 to 136 ft, tapping only the sand and gravel deposits. Their reported pumping rates range from 20 to 750 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 for 1984 was estimated to be about 1,130,000 gpd.

The analyses of water from these wells show that the iron content generally ranges from 0.0 to 2.7 mg/1, sulfates from 38 to 410 mg/1, hardness from 292 to 696 mg/1, and total dissolved minerals from 396 to 970 mg/1. Treatment provided for these supplies is as follows: 5 chlorinate, 5 fluoridate, 1 softens, and 3 add polyphosphate to keep iron in solution.

The upper bedrock units in Du Page County, the Upper Bedrock Aquigroup (Silurian dolomite and the Maquoketa Group), are tapped by 59 public water systems as a source of all or a portion of their water supply. There are presently 176 production and standby wells finished in these units (including 4 wells at Addison, 1 well at Roselle, and 1 well at Wheaton which also tap overlying sand and gravel deposits). They range in depth from 75 to 425 ft and are pumped at rates of about 20 to 2500 gpm. The yield of an individual well depends primarily on the thickness of the aquifer and the number, size, and degree of interconnection of the crevices intersected by the well bore. Withdrawals from the upper bedrock units for 1984 were estimated to be about 45,759,000 gpd.

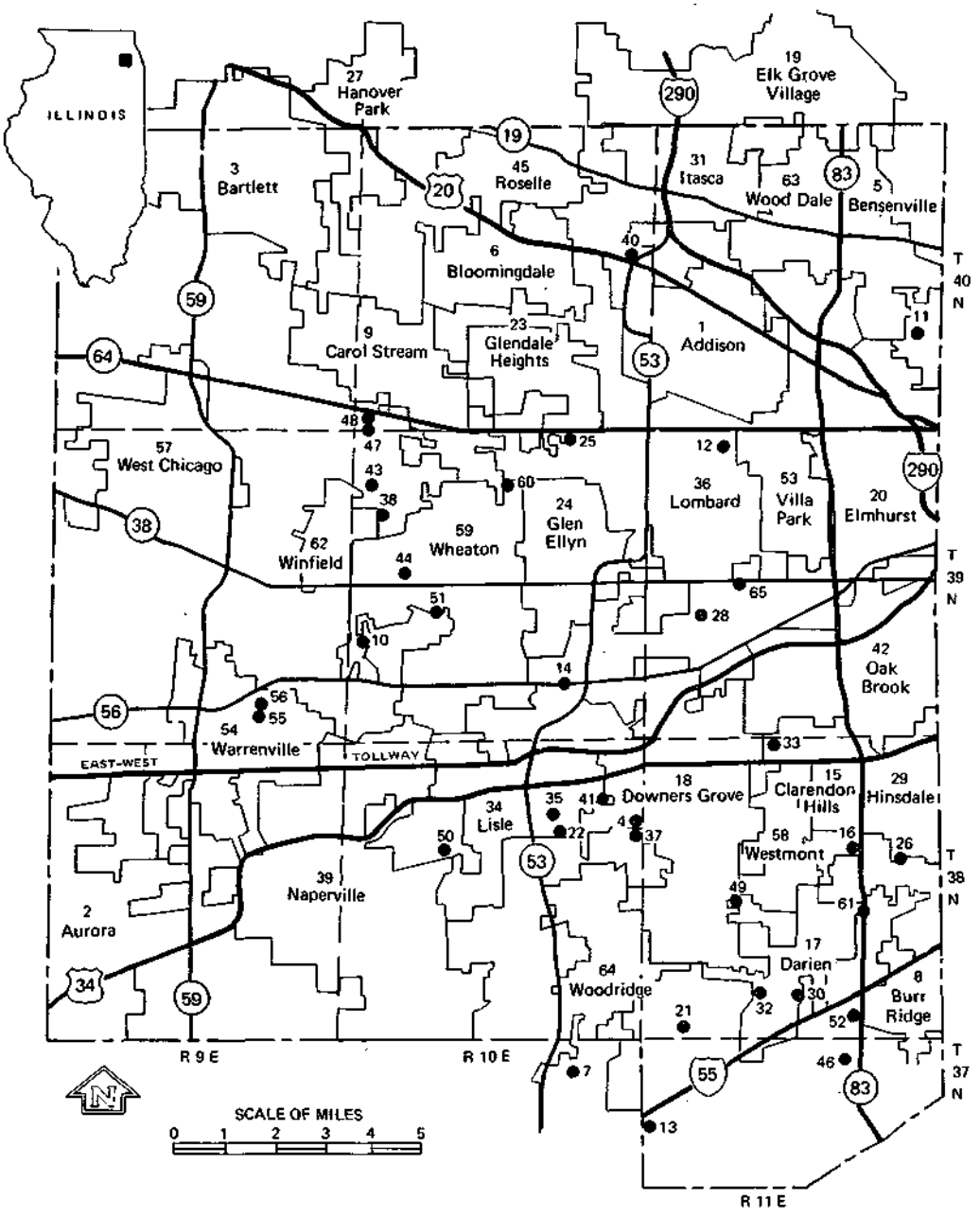
Analyses of water from these wells show that the iron content usually ranges from 0.0 to 5.8 mg/1, sulfates from 34 to 530 mg/1, hardness from 16 to 945 mg/1, and total dissolved minerals from 357 to 1252 mg/1. The chloride content of water from 1 well exceeds the recommended limit of 250 mg/1. Hydrogen sulfide gas was also noted in water from 5 wells. Treatment provided at the 59 supply systems is as follows: 56 chlorinate, 47 fluoridate, 26 add polyphosphate to keep iron in solution, 9 soften, 5 aerate, 3 treat with silicate, 2 filter, 2 treat for iron removal, and 2 provide no treatment.

Wells tapping combinations of formations within the Midwest Aquigroup (Cambrian-Ordovician aquifer system) are used by 19 public water systems as a source for a portion of their water supply. There are presently 45 production wells, ranging in depth from 1356 to 1630 ft, finished within the Midwest Aquigroup. These wells are pumped at rates of about 500 to 1350 gpm. Production from these wells for 1984 was estimated to be about 28,035,000 gpd.

The analyses of water from these wells show that the iron content usually ranges from 0.0 to 1.9 mg/1, fluoride from 0.1 to 3.8 mg/1, sulfates from 6 to 436.7 mg/I, hardness from 188 to 638 mg/1, and total dissolved minerals from 290 to 755 mg/1. The barium content of water from these wells ranges from 0.0 to 4.9 mg/1. Hydrogen sulfide gas was also noted in water from 5 wells. Water treatment for these supplies is as follows: 19 chlorinate, 9 fluoride, 3 soften, 3 aerate, 1 treats for iron removal, 1 filters, and 10 add polyphosphate to keep iron in solution.

Throughout most of northeastern Illinois the Midwest Aquigroup (Cambrian-Ordovician aquifer system) has been overdeveloped, resulting in marked declines in water levels of this aquifer. In Du Page County water levels have declined at an average rate of about 13 ft per year for the period 1971 to 1975 and about 12 ft per year for the period 1975 to 1980.

Wells tapping combinations of formations within the Midwest and Basal Bedrock Aquigroups (Cambrian-Ordovician and the Elmhurst-Mt. Simon



1 - Add i son
2 - Aurora
3 - Bartlett
4 - Belmont-Highwood Public Water District
5 - Bensenville
6 - Bloomingdale
7 - Bolingbrook
8 - Burr Ridge
9 - Carol Stream
10 - Citizens Arrowhead Division
11 - Citizens Country Club Highlands Subd.
12 - Citizens Lombard Heights Division
13 - Citizens Santa Fe Division
14 - Citizens Valley View Division
15 - Clarendon Hills
16 - Clarendon Water Company
17 - Darien
18 - Downers Grove
19 - Elk Grove Village
20 - Elmhurst
21 - Farmingdale Utility Co.
22 - Four Lakes Village Subdivision
23 - Gtendate Heights
24 - Glen Ellyn
25 - Glen Ellyn Heights Subdivision
26 - Godair Homes
27 - Hanover Park
28 - Highland Hills Sanitary District
29 - Hinsdale
30 - Hinswood Subdivision
31 - Itasca
32 - Lake in the Woods Subdivision
33 - Liberty Park Homeowners Association
34 - Lisle
35 - Lisle (Oakview Subdivision)
36 - Lombard
37 - Maple Hill Improvement Association
38 - Metro Utility Liberty Ridge Division
39 - Naperville
40 - Nordic Park Water and Sewer Co., Inc.
41 - Northwest Belmont Improvement Assoc.
42 - Oak Brook
43 - Pleasant Hill Community Association
44 - Polo Drive and Saddle Road Subdivision
45 - Roselle
46 - Rosewood Trace Subdivision
47 - St. Charles Community Well Fund 3
48 - South Burdette Water Co.
49 - South Grove Subdivision
50 - Steeple Run Subdivision
51 - Tee & Green Subdivision
52 - Tri-State Village
53 - Villa Park
54 - Warrenville
55 - Warrenville (Albright St. Homeowners)
56 - Warrenville {Ray St. Homeowners)
57 - West Chicago
58 - Westmont
59 - Wheaton
60 - Wheaton Farms Subdivision
61 - Willowbrook
62 - Winfield
63 - Wood Dale
64 - Woodridge
65 - York Center Co-op

Figure 2. Location of public ground-water supply systems in DuPage County

aquifer systems) are used by 4 public water systems as a source for a portion of their water supply. There are presently 7 production wells, ranging in depth from 1793 to 2062 ft, finished within the Midwest and the Basal Bedrock Aquigroups. These wells are pumped at rates of about 750 to 1000 gpm. Production from these wells for 1984 was estimated to be about 3,186,000 gpd.

The analyses of water from these wells show that the iron content usually ranges from 0.0 to 0.9 mg/1, hardness from 105 to 316 mg/1, and total dissolved minerals from 303 to 561 mg/1. The barium content of water from these wells ranges from 0.0 to 3.64 mg/1. Hydrogen sulfide gas was also noted in water from 1 well. Treatment of water for these supplies is as follows: 4 chlorinate, 2 fluoridate, 1 aerates, and 1 adds polyphosphate to keep iron in solution.

The Elmhurst-Mt. Simon aquifer system has not been extensively developed in Du Page County, and nonpumping water levels in this aquifer sytem may be about 50 ft higher than those in the overlying Cambrian-Ordovician aquifer system.

The total public water supply pumpage from the aquifers in Du Page County for 1984 was about 78,110,000 gpd. Of this total approximately 1 percent was obtained from sand and gravel aquifers, 59 percent from the Silurian dolomite and Maquoketa Group, 36 percent from combinations of formations within the Cambrian-Ordovician aquifer system, and 4 percent from combinations within the Cambrian-Ordovician and the Elmhurst-Mt. Simon aquifer systems.

Format

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

At the beginning of each description the U. S. Census of population for 1980 is given for incorporated places. For 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 or aquifers 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 prepared 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. Similarly, limestones or dolomites reported by drillers usually are carbonate rocks which in most of Illinois are dolomitic in composition. When the bedrock aquifers tapped by a well are mentioned, the sample study log provided by the State Geological Survey and the drillers casing record are used to determine the geohydrologic units open to the hole. If only a drillers log is available and the geohydrologic units cannot be readily determined, only the principal rock type as described by the driller is given (dolomite, sandstone, etc.).

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 description.

Abbreviations Used

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

ADDISON

The village of Addison (28,836) installed a public water supply in 1925. Seven wells (Nos. 1, 6A, 7, 8, 9, 10, and 11) are in use and another well (No. 4) is available for emergency use. In 1949 there were 150 services, all metered; the estimated average pumpage was 81,600 gpd. In 1984 there were 7762 services, all metered; the average pumpage was 3,825,300 gpd. The water is chlorinated, fluoridated, and treated with polyphosphate to keep iron in solution; in addition, the water from Well No. 1 is discharged through an iron removal filter.

WELL NO. 1, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in 1924 to a depth of 155 ft by George A. Morris, Bensenville. The well is located in the Civil Defense Garage on Lake St. east of Iowa Ave., approximately 1350 ft S and 2000 ft W of the NE corner of Section 28, T40N, R11E. The land surface elevation at the well is 691.4 ft.

A drillers log of Well No. 1 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Glacial drift	SO	90
Silurian dolomite	65	155

A 10-in. diameter hole was drilled to a depth of 155 ft. The well is cased with 10-in. pipe from about 1.5 ft above land surface to a depth of 90 ft.

Upon completion, after 10 hr of pumping at a rate of 150 gpm, the drawdown was 2 ft from a nonpumping water level of 18 ft.

In February 1934, the well reportedly produced 200 gpm for 6 hr with a drawdown of 10 ft from a nonpumping water level of 20 ft below land surface.

Nonpumping water levels were reported to be 28 ft below the pump base in September 1943, and 25 ft in June 1956.

In October 1964, after pumping at a rate of 600 gpm, the drawdown was 16 ft from a nonpumping water level of 30 ft.

Nonpumping water levels were reported to be 32 ft in February 1967, 33 ft in July 1969, 28 ft in July 1970, and 32 ft in August 1971.

In 1976, this well was acidized.

In April 1977, the well reportedly produced 550 gpm with a drawdown of 17 ft from a nonpumping water level of 68 ft.

On July 10, 1979, the nonpumping water level was reported to be 72 ft.

The pumping equipment presently installed consists of a 40-hp 1765 rpm General Electric motor, a 10-in., 5-stage Byron Jackson turbine pump set at 130 ft, rated at 600 gpm at about 160 ft head, and has 130 ft of 8-in. column pipe. The well is equipped with 130 ft of airline.

A mineral analysis of a sample (Lab. No. 211306) collected July 10, 1979, after pumping for 24 hr at 550 gpm, showed the water to have a hardness of 618 mg/1, total dissolved minerals of 816 mg/1, and an iron content of 2.3 mg/1.

WELL NO. 2, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in 1908 to a depth of 115 ft (reported to be 91 ft in 1950). This well, originally used for fire protection and sprinkling streets, was connected to the system in 1925. This well was abandoned and sealed about 1971. The well was located on the village lot about 70 ft south of Well No. 1, approximately 1420 ft S and 2010 ft W of the NE corner of Section 28, T40N, R11E. The land surface elevation at the well is approximately 690 ft.

The well was originally reported to be cased with 4-in. pipe from land surface to a depth of 90 ft. In 1950, the S. B. Geiger & Co., Chicago, reported the hole to be 6 in. in diameter to a depth of 70 ft and 4.5 in. from 70 to 91 ft. The casing was reported to be 6 in. in diameter from about 1.5 ft above the wellhouse floor to a depth of 70 ft.

A production test was conducted on September 15, 1950, by representatives of the village, S. B. Geiger & Co., the State Water Survey, and the Edwin Hancock Engineering Co. After 2.2 hr of intermittent pumping at rates of 75 to 98 gpm, the drawdown was 7 ft from a nonpumping water level of 41 ft below the top of the casing. During this test, Well No. 1 was operated intermittently at a rate of 160 gpm.

In June 1956, the nonpumping water level was reported to be 25 ft.

On January 12, 1961, the well reportedly produced about 100 gpm for 1.5 hr with a drawdown of 8.0 ft from a nonpumping water level of 43.0 ft below the pump base.

In October 1961, the nonpumping water level was reported to be 30 ft.

A partial analysis of a sample (Lab. No. 154017) collected January 12, 1961, after pumping for 1.5 hr at about 100 gpm, showed the water to have a hardness of 442 mg/1, total dissolved minerals of 515 mg/1, and an iron content of 1.3 mg/1.

WELL NO. 3 was completed in 1956 to a depth of 221 ft by the J. P. Miller Artesian Well Co., Brookfield. This well was abandoned in 1971 and sealed in 1973. The major water-yielding unit in this well was dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrated shale in the upper part of the Maquoketa Group. The well was located on the east side of Michigan Ave. north of Fullerton Ave., approximately 160 ft N and 1540 ft W of the SE corner of Section 28, T40N, R11E. The land surface elevation at the well is approximately 687 ft.

A drillers log of Well No. 3 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift	71	71
Limestone	119	190
Shale	31	221

A 14-in. diameter hole was drilled to a depth of 110 ft and finished 13.4 in. in diameter from 110 to 221 ft. The well was cased with 14-in. OD pipe from land surface to a depth of 78 ft and 10-in. pipe from about 1.5 ft above the wellhouse floor to a depth of 110 ft (cemented in).

After acidizing, a production test was conducted by the driller on July 24, 1956. After 8 hr of pumping at a rate of 500 gpm, the drawdown was 104 ft from a nonpumping water level of 14 ft below land surface.

Nonpumping water levels were reported to be 30 ft in October 1962, and 32 ft in February 1967.

On June 27, 1969, the well reportedly produced 250 gpm for 2 hr with a drawdown of 86 ft from a nonpumping water level of 44 ft below the pump base.

A partial analysis of a sample (Lab. No. 154018) collected January 12, 1961, after pumping for 5 min at 875 gpm, showed the water to have a hardness of 404 mg/1, total dissolved minerals of 450 mg/1, and an iron content of 0.7 mg/1.

WELL NO. 4 (former Pleasant View Acres Subdivision well), open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in December 1954 to a depth of 250 ft (reported to be 192 ft deep in 1963) by James W. Bilskey, Westmont. This well, purchased by the village prior to 1957, is available for emergency use. The well is located behind the Overton Gear and Tool Corporation plant at 530 Westgate Drive, approximately 1350 ft S and 1050 ft E of the NW corner of Section 33, T40N, R11E. The land surface elevation at the well is approximately 710 ft.

A correlated drillers log of Well No. 4 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
Drift	74	74
SILURIAN SYSTEM		
Limestone	176	250
Shale	-	250

The following mineral analysis (Lab. No. 190419) is for a water sample from the well collected November 13, 1972, after 18 hr of pumping.

WELL NO. 4, LABORATORY NO. 100410

		mg/l	*me/I*			*mg/1*	*me/I*
Iron(total)	Fe	1.4		Silica	SiO_2	21.2	
Manganese	Mn	0.00		Fluoride	F	0.3	
Ammonium	NH_4	0.2	0.01	Boron	B	0.2	
Sodium	Na	16.1	0.70	Nitrate	NO_3	0.2	0.00
Potassium	K	2.9	0.07	Chloride	CI	24	0.68
Calcium	Ca	151.2	7.54	Sulfate	SO_4	288.8	6.01
Magnesium	Mg	68.8	5.66	Alkalinity (as $CaCO_3$)		374	7.48
Strontium	Sr	0.78	0.02				
				Hardness (as $CaCO_3$)		660	13.20
Barium	Ba	<0.1					
Cadmium	Cd	0.00		Total dissolved			
Chromium	Cr	0.00		minerals		826	
Copper	Cu	2.7					
Lead	Pb	<0.05		Turbidity		6	
Lithium	Li	0.01		Color		5	
Nickel	Ni	<0.05		Odor		0	
Zinc	Zn	0.37		Temp (reported)		54.5F	

The well is cased with 10-in. ID pipe from about 1.5 ft above land surface to a depth of 81 ft.

In May 1956, the nonpumping water level was reported to be 30 ft.

On October 21, 1964, the well reportedly produced 500 gpm with a drawdown of 12 ft from a nonpumping water level of 28 ft.

Nonpumping water levels were reported to be 30 ft in February 1967, 50 ft in July 1970, and 38 ft in August 1971.

In June 1973, this well was acidized with 2000 gal of 15 percent treating acid by the Layne-Western Co.,

Aurora. On June 25, 1973, the well reportedly produced 289 gpm with a drawdown of 59 ft from a nonpumping water level of 55 ft.

In March 1977, the nonpumping water level was reported to be 66 ft.

The pumping equipment presently installed consists of a 40-hp Westinghouse electric motor, an 8-in., 13-stage Layne turbine pump set at 165 ft, rated at 375 gpm at about 300 ft TDH, and has 165 ft of 5-in. column pipe. A 10-ft section of 6-in. suction pipe is attached to the pump intake. The well is equipped with 165 ft of airline.

A test hole was constructed in June 1964 to a depth of 80 ft by the J. P. Miller Artesian Well Co., Brookfield. The bole was located approximately 72 ft S and 170 ft W of the NE corner of the NW quarter of Section 32, T40N, R11E. The hole was cased with 6-in. pipe from land surface to a depth of 55 ft. Upon completion, the hole reportedly produced 130 gpm for 4 hr with a drawdown of 37 ft from a nonpumping water level of 18 ft below land surface.

WELL NO. 5, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in December 1962 to a depth of 155 ft by the Shaver Well Drilling Co., Lombard. This well has been capped since it was completed. The well is located in the southwest part of Old Mill Park about 100 ft north of Byron St. and 75 ft east of Park Place, approximately 2625 ft S and 4550 ft E of the NW corner of Section 20, T40N, R11E. The land surface elevation at the well is approximately 690 ft.

A drillers log of Well No. 5 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift	80	80
Limestone	75	155

A 19.2-in. diameter hole was drilled to a depth of 125 ft and finished 15.2 in. in diameter from 125 to 155 ft. The well is cased with 20-in. pipe from about 2 ft above land surface to a depth of 99 ft and 16-in. pipe from land surface to a depth of 125 ft (cemented in).

Upon completion, the nonpumping water level was reported to be 8 ft below land surface.

WELL NO. 6, finished in sand and gravel of the Prairie Aquigroup, was completed in December 1964 to a depth of 67 ft by the J. P. Miller Artesian Well Co., Brookfield. This well was abandoned prior to August 1971 and capped in 1973. The well is located on the south side of Fullerton Ave. about 0.3 mile west of Grace St., approximately 145 ft S and 1150 ft E of the NW corner of Section 32, T40N, R11E. The land surface elevation at the well is approximately 702 ft.

A drillers log of Well No. 6 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Yellow clay	15	15
Blue clay	17	32
Dirty sand and gravel	8	40
Clay and boulders	15	55
Coarse gravel and boulders	9	64
Boulders	4	68
Boulders in clay	2	70

A 42-in. diameter hole was drilled to a depth of 67 ft. The well is cased with 16-in. OD pipe from about 1 ft above the wellhouse floor to a depth of 55 ft followed by 12 ft of 16-in. No. 125 slot Cook stainless steel screen. The annulus between the bore hole and the casing-screen assembly is filled with concrete from 0 to 16 ft, with a mixture of aquagel and sand from 16 to 46 ft, and with gravel from 46 to 67 ft.

A production test using five observation wells was conducted on December 17-18, 1964, by representatives of the driller and the State Water Survey. After 24 hr of pumping at rates of 245 to 200 gpm, the final drawdown was 20.7 ft from a nonpumping water level of 21.5 ft below land surface. Twenty-six min after pumping was stopped, the water level had recovered to 22.3 ft.

On December 29, 1964, the well reportedly produced 200 gpm for 24 hr with a drawdown of 24 ft from a nonpumping water level of 18 ft below land surface.

On March 23, 1965, after 1.5 hr of pumping at a rate of 450 gpm, the drawdown was over 27 ft from a nonpumping water level of 28 ft below the pump base.

On July 9, 1965, the well reportedly produced 300 gpm for 20 days with a drawdown of 25.5 ft from a nonpumping water level of 21.5 ft.

In January 1966, the nonpumping water level was reported to be 21 ft.

In February 1967, after pumping at a rate of 400 gpm, the drawdown was 26 ft from a nonpumping water level of 21 ft.

Nonpumping water levels were reported to be 18 ft in July 1970, and 21 ft in August 1971.

A partial analysis of a sample (Lab. No. 166625) collected July 9, 1965, after pumping for 20 days at 300 gpm, showed the water to have a hardness of 444

mg/1, total dissolved minerals of 502 mg/1, and an iron content of 1.2 mg/1.

WELL NO. 6A was completed in February 1973 to a depth of 160 ft by the J. P. Miller Artesian Well Co., Brookfield. The major water-yielding units in this well are sand and gravel of the Prairie Aquigroup and dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located about 10 ft south of Well No. 6, approximately 155 ft S and 1150 ft E of the NW corner of Section 32, T40N, R11E. The land surface elevation at the well is approximately 702 ft.

A drillers log of Well No. 6A follows:

Strata	***Thickness (ft)***	***Depth (ft)***
Clay	35	35
Sand and gravel	41	76
Dolomite	74	150
Shale	10	160

A 42-in. diameter hole was drilled to a depth of 76 ft, reduced to 34 in. between 76 and 80 ft, reduced to 19.2 in. between 80 and 86.5 ft, and finished 17.2 in. in diameter from 86.5 to 160 ft. The well is cased with 20-in. pipe from about 0.8 ft above land surface to a depth of 62.5 ft, and with 18-in. pipe from 75.5 ft to a depth of 77.5 ft, and from 81.5 ft to a depth of 86.5 ft. One section of 20-in. stainless steel shutter screen is installed from 62.5 to 75.5 ft, and one section of 18-in. stainless steel screen is installed from 77.5 to 81.5 ft. The annulus between the bore hole and the casing-screen assembly is filled with cement from 0 to 20 ft, with clay from 20 to 59 ft, and with No. 3 Muscatine gravel from 59 to 80 ft.

A production test using two observation wells was conducted by the driller on February 2, 1973. After 14.5 hr of intermittent pumping at rates ranging from 420 to 300 gpm, the drawdown was more than 118 ft from a nonpumping water level of 39 ft below the top of the casing.

A production test using two observation wells was conducted by the driller on February 5, 1973, with intermittent surging. After 3.3 hr of pumping at rates ranging from 320 to 440 gpm, the maximum drawdown was 90 ft from a nonpumping water level of 39 ft below the top of the casing.

After the well was treated with 3000 gal of acid, production tests using two observation wells were conducted by the driller. On February 6, 1973, after 13.3 hr of intermittent pumping at rates ranging from 570 to 680 gpm, the final drawdown was 17 ft from a nonpumping water level of 39 ft below the top of the casing. On February 7, the well reportedly produced 650 to 740 gpm for 2.8 hr with a final drawdown of 24 ft from a nonpumping water level of 39 ft below the top of the casing.

After the well was treated again with 5000 gal of acid, a production test using two observation wells was conducted by the driller on February 8, 1973. After 12 hr of pumping at rates of 740 to 1000 gpm, the final drawdown was 21 ft from a nonpumping water level of 39 ft below the top of the casing. Five min after pumping was stopped, the water level had recovered to 43 ft. During this test, Well Nos. 7 and 8 were pumping.

In March 1977, the nonpumping water level was reported to be 54 ft.

The pumping equipment presently installed is a 2-stage Peerless vertical turbine pump rated at 900 gprn at about 122 ft TDH, and powered by a 50-hp General Electric motor. The well is equipped with 93 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B40598) of a sample collected April 7, 1977, after pumping for 3 hr, showed the water to have a hardness of 558 mg/1, total dissolved minerals of 703 mg/1, and an iron content of 4.0 mg/1.

WELL NO. 7 was completed in October 1965 to a depth of 84.5 ft by the J. P. Miller Artesian Well Co., Brookfield. The water-yielding units in this well are sand and gravel of the Prairie Aquigroup and dolomite of the Upper Bedrock Aquigroup (Silurian System). The well is located about 300 ft south of Well No. 6, approximately 445 ft S and 1150 ft E of the NW corner of Section 32, T40N, R11E. The land surface elevation at the well is approximately 695 ft.

A drillers log of Well No. 7 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Till	40	40
Till and gravel	10	50
Sand, gravel and clay	6	56
Sand and gravel	11	67
Limestone	17.5	84.5

A 42-in. diameter hole was drilled to a depth of 67 ft and finished 36 in. in diameter from 67 to 84.5 ft. The well is cased with 16-in. pipe from about 0.8 ft above land surface to a depth of 55.8 ft followed by 28.7 ft of 16-in. stainless steel screen. The annulus between the bore hole and the casing-screen assembly

is filled with concrete fill from 0 to 17 ft, with clay fill from 17 to 39 ft, and with gravel from 39 to 84.5 ft.

A production test using five observation wells was conducted on October 8-9, 1965, by representatives of the driller and the State Water Survey. After 24 hr of pumping at rates ranging from 600 to 1049 gpm, the final drawdown was 35.0 ft from a nonpumping water level of 13.0 ft below land surface. Ten min after pumping was stopped, the water level had recovered to 17.5 ft.

Nonpumping water levels were reported to be 12 ft in January 1966, 13 ft in July 1969, 30 ft in July 1970, 27 ft in August 1971, and 45 ft in March 1977.

The pumping equipment presently installed is a Peerless vertical turbine pump rated at 600 gpm, and powered by a 75-hp U. S. Holloshaft electric motor. The well is equipped with 73 ft of airline.

A mineral analysis of a sample (Lab. No. 211308) collected July 10, 1979, after pumping for 24 hr, showed the water to have a hardness of 680 mg/1, total dissolved minerals of 867 mg/1, and an iron content of 2.7 mg/1.

WELL NO. 8 was completed in November 1967 to a depth of 75 ft by the J. P. Miller Artesian Well Co., Brookfield. The water-yielding units in this well are sand and gravel of the Prairie Aquigroup and dolomite of the Upper Bedrock Aquigroup (Silurian System). The well is located approximately 1125 ft S and 1300 ft E of the NW corner of Section 32, T40N, R11E. The land surface elevation at the well is approximately 690 ft.

A drillers log of Well No. 8 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift - clay	50	50
Drift - gravel	10	60
Limestone	15	75

A 36-in. diameter hole was drilled to a depth of 56 ft and finished 30 in. in diameter from 56 to 75 ft. The well is cased with 16-in. steel pipe from about 0.8 ft above land surface to a depth of 53 ft followed by 22 ft (23 ft overall length) of 16-in. Johnson stainless steel screen. The screen section consists of 10 ft of No. 80 slot followed by 12 ft of No. 100 slot. The annulus between the bore hole and casing-screen assembly is filled with cement from 0 to 20 ft, with clay from 20 to 36 ft, and with gravel from 36 to 75 ft.

A production test using five observation wells was conducted by the driller on November 21-22, 1967. After 24 hr of pumping at rates ranging from 500 to 1100 gpm, the final drawdown was 30.5 ft from a nonpumping water level of 19.5 ft below land surface. Two min after pumping was stopped, the water level had recovered to 22.0 ft.

After acidizing with 2000 gal of treating acid, production tests using four observation wells were conducted by the driller. On November 28, 1967, after 9.2 hr of pumping at rates of 525 to 1200 gpm, the drawdown was 25 ft from a nonpumping water level of 20 ft below land surface. On November 29, the well reportedly produced 1200 gpm for 16 hr with a final drawdown of 28 ft from a nonpumping water level of 21 ft below land surface. Ten min after pumping was stopped, the water level had recovered to 22 ft.

Nonpumping water levels were reported to be 30 ft in August 1971, and 46 ft in March 1977.

The pumping equipment presently installed consists of a 50-hp General Electric motor, a 12-in., 2-stage Peerless turbine pump set at 55 ft, rated at 1150 gpm, and has 55 ft of 10-in. column pipe. A 10-ft section of 10-in. suction pipe is attached to the pump intake.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. C005219) of a sample collected April 19, 1977, after pumping for 3.5 hr at 250 gpm, showed the water to have a hardness of 749 mg/1, total dissolved minerals of 902 mg/1, and an iron content of 2.7 mg/1.

Prior to the construction of Well No. 9, a test hole was drilled in April 1973 to a depth of 138 ft by the J. P. Miller Artesian Well Co., Brookfield. The hole was located about 200 ft west of Swift Road, approximately 900 ft S and 200 ft W of the NE corner of the SW quarter of Section 24, T40N, R10E. Upon completion, the nonpumping water level was reported to be 53 ft.

WELL NO. 9 was completed in February 1974 to a depth of 185 ft (filled with pea gravel up to 130 ft) by the J. P. Miller Artesian Well Co., Brookfield. The water-yielding units in this well are sand and gravel of the Prairie Aquigroup and dolomite of the Upper Bedrock Aquigroup (Silurian System). The well is located on the west side of Swift Road about 0.4 mile north of Army Trail Road, approximately 1765 ft N and 2525 ft E of the SW corner of Section 24, T40N, R10E. The land surface elevation at the well is approximately 744 ft.

A drillers log of Well No. 9 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Soil and fill	3	3
Blue clay	67	70
Clay with gravel	15	85
Sand and gravel	28	113
Niagaran dolomite	67	180
Maquoketa shale	5	185

A 42-in. diameter hole was drilled to a depth of 112 ft, reduced to 36 in. between 112 and 121 ft, reduced to 19.2 in. between 121 and 126.4 ft, and finished 17.2 in. in diameter from 126.4 to 185 ft. Upon completion, the well was cased with 20-in. OD steel pipe from about 0.4 ft above land surface to a depth of 91.3 ft. One section of 20-in. Doerr stainless steel screen was installed from 91.3 to 119.3 ft and one section of 18-in. Doerr stainless steel screen was installed from 116.8 to 126.4 ft. The annulus between the bore hole and the casing-screen assembly was filled with cement from 0 to 13 ft, with clay from 13 to 50 ft, and with graded gravel from 50 to 121 ft. In 1981, an additional 12-in. steel pipe was placed from above land surface to a depth of 90 ft followed by 40 ft of 12-in. No. 40 slot stainless steel screen. The annulus between the 12-in. casing-screen assembly and the original casing-screen assembly is filled with neat cement, backfill, and No. 2 graded gravel. The open hole from 130 to 185 ft was filled with pea gravel.

A production test was conducted by the driller on February 14, 1974. After 1.1 hr of pumping at rates of 470 to 400 gpm, the drawdown was 35 ft from a nonpumping water level of 55 ft below land surface.

A second production test was conducted by the driller on February 15, 1974. After 1.6 hr of pumping and surging at rates of 440 to 400 gpm. the drawdown was 33 ft from a nonpumping water level of 55 ft below land surface.

After acidizing with 3000 gal of acid, production tests were conducted by the driller. On February 18, 1974, after 2.8 hr of pumping at rates ranging from 400 to 500 gpm, the drawdown was 35 ft from a nonpumping water level of 55 ft below land surface. On February 19, the well reportedly produced at rates ranging from 425 to 525 gpm for 7 hr with a drawdown of 35 ft from a nonpumping water level of 55 ft below land surface.

After the well was treated again with 5000 gal of acid, a production test was conducted by the driller on February 20, 1974. After 5.8 hr of pumping at rates of 525 to 500 gpm, the final drawdown was 33 ft from a nonpumping water level of 55 ft below land surface.

Nonpumping water levels were reported to be 70 ft in March 1977; 81 ft on July 10, 1979; and 80 ft in 1981.

In August 1981, this well was rehabilitated by the J. P. Miller Artesian Well Co. A 12-in. diameter casing and screen were installed.

On April 13, 1984, the nonpumping water level was reported to be 70 ft.

The pumping equipment presently installed is a Peerless vertical turbine pump (No. 302359) set at 100 ft, rated at 500 gpm, and powered by a 50-hp Westinghouse electric motor. The well is equipped with 100 ft of airline.

The following mineral analysis (Lab. No. 211309) is for a water sample from the well collected July 10, 1979, after 24 hr of pumping at 430 gpm.

WELL NO. 0, LABORATORY NO. 211309

		mg/1	*me/I*		*mg/l*		*me/l*
Iron(total)	Fe	1.6		Silica	SiO_2	22.3	
Manganese	Mn	0.03		Fluoride	F	0.3	
Ammonium	NH_4	0.6	0.03	Boron	B	0.2	
Sodium	Na	23.4	1.02	Nitrate	NO_3	0.0	0.00
Potassium	K	2.6	0.07	Chloride	CI	30	0.85
Calcium	Ca	120	5.99	Sulfate	SO_4	248	5.16
Magnesium	Mg	67.7	5.57	Alkalinity (as	$CaCO_3$)	326	6.52
Strontium	Sr	1.55	0.04				
				Hardness (as	$CaCO_3$)	578	11.56
Barium	Ba	0.00					
Cadmium	Cd	0.01		Total dissolved			
Chromium	Cr	0.00		minerals		727	
Copper	Cu	0.01					
Lead	Pb	0.03					
Lithium	Li	0.02		Turbidity		8	
Nickel	Ni	0.01		Color		0	
Silver	Ag	0.00		Odor		0	
Zinc	Zn	0.01		Temp.(reported)		54F	

WELL NO. 10 (former Golden Gate Estates Subdivision well) was completed in December 1962 to a depth of 220 ft by the Layne-Western Co., Aurora. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. This well was acquired from the Golden Gate Estates Development Co. in 1976. The well is located south of Lake St. about 300 ft west of Lombard Road and north of Goldengate Drive, approximately 1600 ft S and 1400 ft W of the NE corner of Section 19, T40N, R11E. The land surface elevation at the well is approximately 731 ft.

A drillers log of Well No. 10 follows:

Strata	Thickness (ft)	Depth (ft)
Drift	95	95
Limestone	107	202
Shale	18	220

A 19-in. diameter hole was drilled to a depth of 220 ft. The well is cased with 20-in. steel pipe from about 1.2 ft above land surface to a depth of 99 ft.

A production test was conducted by the driller on December 29, 1962. After 8 hr of pumping at rates ranging from 401 to 72C gpm, the final drawdown was 45 ft from a nonpumping water level of 44 ft below land surface.

In April 1966, the nonpumping water level was reported to be 45 ft.

The pumping equipment presently installed is an 8-stage Layne turbine pump set at 165 ft, rated at 300 gpm at about 215 ft TDH, and powered by a 30-hp 1750 rpm U. S. electric motor and a 32-hp Continental natural gas engine. The well is equipped with 165 ft of airline.

A mineral analysis of a sample (Lab. No. 212272) collected October 4, 1979, after pumping for 24 hr at 300 gpm, showed the water to have a hardness of 416 mg/1, total dissolved minerals of 550 mg/1, and an iron content of 0.6 mg/1.

WELL NO. 11 (former Golden Gate Estates Subdivision well) was completed in October 1969 to a depth of 220 ft by the Shaver Well Drilling Co., Lombard. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. This well was acquired from the Golden Gate Estates Development Co. in 1976. The well is located about 200 ft west and 100 ft north of Well No. 10, approximately 1500 ft S and 1600 ft W of the NE corner of Section 19, T40N, R11E. The land surface elevation at the well is approximately 729 ft.

A drillers log of Well No. 11 follows:

Strata	Thickness (ft)	Depth (ft)
Clay	50	50
Gravel	40	90
Lime	112	202
Shale	18	220

A 24-in. diameter hole was drilled to a depth of 112 ft and finished 22 in. in diameter from 112 to 220 ft. The well is cased with 24-in. OD steel pipe from about 1.2 ft above land surface to a depth of 112 ft.

Upon completion, this well was treated with 6000 gal of acid by the Holland Well Service. The production of the well was reportedly increased from 650 to 1150 gpm.

In April 1971, the nonpumping water level was reported to be 45 ft.

The pumping equipment presently installed is a Layne & Bowler turbine pump set at 180 ft, rated at 1000 gpm at about 340 ft head, and powered by a 100-hp U. S. Holloshaft electric motor and an 8-cylinder Ford Industrial natural gas engine.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B38306) is for a water sample from the well collected February 9, 1981, after pumping at 1000 gpm.

WELL NO. 11, LABORATORY NO. B88806

		mg/1	me/I			mg/1	me/I
Iron	Fe	1.066		Silica	SiO_2	20	
Manganese	Mn	0.007		Fluoride	F	0.45	0.02
Ammonium	NH_4	0.6	0.03	Boron	B	0.39	
Sodium	Na	30	1.30	Cyanide	CN	<0.005	
Potassium	K	2.8	0.07	Nitrate	NO_3	<0.4	
Calcium	Ca	83	4.14	Chloride	CI	5.2	0.15
Magnesium	Mg	42.8	3.52	Sulfate	SO_4	139	2.89
Strontium	Sr	1.964		Alkalinity (as $CaCO_3$)		291	5.82
Arsenic	As	0.004		Hardness (as $CaCO_3$)		380	7.60
Barium	Ba	0.033					
Beryllium	Be	<0.0005		Total dissolved			
Cadmium	Cd	<0.003		minerals		496	
Chromium	Cr	<0.005					
Cobalt	Co	<0.005					
Copper	Cu	0.005					
Lead	Pb	<0.005					
Mercury	Hg	<0.00005					
Nickel	Ni	<0.003					
Selenium	Se	<0.0005					
Silver	Ag	<0.005					
Vanadium	V	<0.004					
Zinc	Zn	0.029		pH (as rec'd)		7.3	

Two 5-in. diameter test holes were constructed in April 1984 to depths of 128.5 and 125 ft by Peerless-Midwest, Inc., Granger, Ind. The first hole (No. 84A) was located about 5.5 ft west and 14 ft south of the southwest corner of the pumphouse for Well No. 9. The second hole (No. 84B) was located about 22 ft east and 55 ft south of the southeast corner of the pumphouse for Well No. 9.

Two test wells were constructed in April 1985 to depths of 83.5 and 109 ft by Peerless-Midwest, Inc., Granger, Ind. The first test well (No. 85A) was located about 420 ft west of Swift Road and 0.6 mile north of Army Trail Road, approximately 1767 ft N

and 2330 ft E of the SW corner of Section 24, T40N, R10E. This test well was abandoned and sealed in 1985. An 8-in. diameter hole was drilled and cased with 8-in. pipe from land surface to a depth of 73 ft followed by 10 ft of 6-in. screen. The second test well (No. 85B) was located about 490 ft west of Swift Road and 0.6 mile north of Army Trail Road, approximately 1730 ft N and 2258 ft E of the SW corner of Section 24, T40N, R10E. A 2.5-in. diameter hole was drilled and cased with 2-in. PVC pipe from land surface to a depth of 79.5 ft followed by 5 ft of 2-in. PVC screen.

AURORA

The city of Aurora (81,293) installed a public water supply in 1886. This city is in Kane County but one of the wells (No. 22) is located in Du Page County. Eleven wells (Nos. 8, 12A. 15, 16, 17, 18, 19, 21, 22, 23, and 25) are in use and another well (Pioneer Park Well No. 101) is available for emergency use. In 1949 there were 15.300 services, all metered; the estimated average and maximum pumpages were 4,420,000 and 7,200.000 gpd, respectively. In 1984 there were 23.999 services, all metered; the average pumpage was 10,458,500 gpd. The water is chlorinated and treated with polyphosphate to keep iron in solution.

Initially. water was obtained from a well and filter gallery excavated in a gravel formation located on an island in the Fox River on the north side of the city. This source of water supply was abandoned in 1902.

WELL NO. 1 was constructed in 1892 to a depth of 1381 ft by the American Well Works Co., Aurora, and deepened in 1898 to a depth of 2235 ft by the J. P. Miller Artesian Well Co., Brookfield. This well was abandoned and sealed in 1928. The water-yielding units in this well were the Midwest Aquigroup (Cambrian-Ordovician aquifer) and the Basal Bedrock Aquigroup (Elmhurst-Mt. Simon aquifer). The well was located on the bank of the Fox River on the north side of the city, approximately 790 ft S and 2505 ft W of the NE corner of Section 15, T38N, R8E, Kane County. The land surface elevation at the well is approximately 640 ft.

The well apparently was cased with 8-in. pipe to a depth of 150 ft and when deepened in 1898, the hole was finished 6 in. in diameter at the bottom.

In 1894, this well reportedly flowed. In 1910, the production of this well was reported to be 550 gpm when pumping in combination with Well Nos. 2, 3, and 4.

WELL NO. 2 was completed in 1893 to a depth of 2440 ft by the American Well Works Co., Aurora. This well was abandoned and sealed in 1928. The water-yielding units in this well were the Midwest Aquigroup (Cambrian-Ordovician aquifer) and the Basal Bedrock Aquigroup (Elmhurst-Mt. Simon aquifer). The well was located about 310 ft northwest of Well No. 1, approximately 495 ft S and 2605 ft W of the NE corner of Section 15, T38N, R8E, Kane County. The land surface elevation at the well is approximately 640 ft.

The well apparently was cased with 12-in. pipe to a depth of 160 ft, and the hole was finished 6 in. in diameter at the bottom.

In 1894. this well reportedly flowed. In 1910, the production of this well was reported to be 350 gpm when pumping in combination with Well Nos. 1, 3, and 4.

A partial analysis of a sample (Lab. No. 31010) made in August 1915, showed the water to have a hardness of 432 mg/1, total dissolved minerals of 1248 mg/1. and an iron content of 0.1 mg/1.

WELL NO. 3 was completed in 1893 to a depth of 2274 ft by the J. P. Miller Artesian Well Co., Brookfield. This well was abandoned and sealed in 1928. The water-yielding units in this well were the Midwest Aquigroup (Cambrian-Ordovician aquifer) and the Basal Bedrock Aquigroup (Elmhurst-Mt. Simon aquifer). The well was located about. 185 ft northwest of Well No. 1, approximately 640 ft S and 2615 ft W of the NE corner of Section 15, T38N, R8E, Kane County. The land surface elevation at the well is approximately 635 ft.

An 8- or 10-in. diameter hole was drilled to a depth of 610 ft and finished 6 in. in diameter from 610 to 2274 ft. The well apparently was cased with 8- or 10-in. pipe to a depth of 150 ft.

In 1894, this well reportedly flowed. In 1910, the production of this well was reported to be 500 gpm when pumping in combination with Well Nos. 1, 2, and 4.

WELL NO. 4 was completed in 1895 to a depth of 2445 ft (backfilled to a depth of 2250 ft) by the J. P. Miller Artesian Well Co., Brookfield. This well was abandoned and sealed in 1928. The water-yielding units in this well were the Upper Bedrock Aquigroup (Silurian System), the Midwest Aquigroup (Cambrian-Ordovician aquifer), and the Basal Bedrock Aquigroup (Elmhurst-Mt. Simon aquifer). The well was located about 85 ft west of Well No. 1, approximately 800 ft S and 2590 ft W of the NE corner of Section 15, T38N, R8E, Kane County. The land surface elevation at the well is approximately 635 ft.

A correlated drillers log of Well No. 4 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
Surface	10	10
SILURIAN SYSTEM		
Niagaran and Alexandrian Series		
Limestone	95	105
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Shale	140	245
Champlainian Series		
Galena and Platteville Groups		
Limestone	325	570
Ancell Group		
Glenwood-St. Peter Sandstone		
Sandstone	195	765
ORDOVICIAN AND CAMBRIAN SYSTEMS (Undifferentiated)		
Shale	135	900
Sandstone	190	1090
CAMBRIAN SYSTEM		
Croixan Series		
Franconia Formation		
Shale	75	1165
Ironton-Galesville Sandstone		
Sandstone	185	1350
Eau Claire Formation		
Shale	190	1540
Limestone	26	1565
Shale	165	1730
Mt. Simon Sandstone		
Sandstone	715	2445

A 10-in. diameter hole was drilled to a depth of 76 ft, reduced to 8 in. between 76 and 1700 ft, and finished 6 in. in diameter from 1700 to 2445 ft. The well was cased with 10-in. pipe to a depth of 76 ft.

In 1910, the production of this well was reported to be 400 gpm when pumping in combination with Well Nos. 1, 2, and 3.

WELL NO. 5 was completed in 1910 to a depth of 2250 ft by Timmes and Beckwith. This well was abandoned in 1970 and has not been sealed. The water-yielding units in this well are the Midwest Aquigroup (Cambrian-Ordovician aquifer) and the Basal Bedrock Aquigroup (Elmhurst-Mt. Simon aquifer). The well is located immediately east of the main pumping station on North Aurora Ave. about 145 ft southeast of Well No. 1, approximately 850 ft S and 2375 ft W of the NE corner of Section 15, T38N, R8E, Kane County. The land surface elevation at the well is approximately 655 ft.

A correlated drillers log of Well No. 5 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
Clay	2	2
SILURIAN SYSTEM		
Limestone, white	123	125
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Shale	120	245
Champlainian Series		
Galena and Platteville Groups		
Limestone, blue	340	585
Ancell Group		
Glenwood-St. Peter Sandstone		
Sandstone, white	220	805
Shale, blue	25	830
Canadian Series		
Prairie du Chien Group		
Oneota Dolomite		
Limestone, gray	100	930
CAMBRIAN SYSTEM		
Croixan Series		
Eminence-Potosi Dolomite		
Limestone. gray	175	1105
Franconia Formation		
Shale and white sandstone	70	1175
Ironton-Galesville Sandstone		
Sandstone, white	190	1365
Eau Claire Formation		
Limestone, blue	25	1390
Shale and limestone	160	1550
Limestone, blue	180	1730
Mt. Simon Sandstone		
Sandstone	520	2250

A 22-in. diameter hole was drilled to a depth of 12 ft, reduced to 18 in. between 12 and 255 ft, reduced to 16 in. between 255 and 500 ft, reduced to 13 in. between 500 and 900 ft, reduced to 10 in. between 900 and 1500 ft, and finished 8 in. in diameter from 1500 to 2250 ft. The well is cased with 16-in. pipe from about 1 ft above the floor of a 7-ft deep pit to a depth of 350 ft.

In December 1942, when the.well reportedly produced 600 gpm, the pumping water level was about 320 ft below. the pump base.

In July. 1947, the well reporte.dly produced 575 gpm. with an average drawdown of 153 ft from a nonpumping water level of 172 ft.

During the period of March 31-September 23, 1949, the nonpumping water levels ranged from 280 to 207 ft.

A mineral analysis of a sample.(Lab. No. 95181) collected February 2, 1943, after pumping for 9 hr at 600 gpm, showed the water to have, a hardness of. 305. mg/l, total dissolved minerals of; 562 mg/1, and an iron content of 0.1 mg/1.

WELL NO. 6 was completed in 1915 to a depth of. 2185 ft (cleaned out to 2100 ft in 1952) by the S. B. Geiger & Co., Chicago. This well, not in use since. August 1972 because the sand remover could not remove all the sand, is presently used as an observation well. The water-yielding units in this well are the Midwest Aquigroup (Cambria.n-Ordovipian aquifer), and the Basal Bedrock Aquigroup (Elmhurst-Mt. Simon aquifer). The well is located; at the southeast corner of Talma and Binder Sts., approximately 180 ft N and 2540 ft W of the SE corner of Section 27, T38N, R8E, Kane County. The land surface elevation at the well is approximately 670 ft.

An 18-in. diameter hole was drilled to a depth of 400 ft and finished 15 in. in diameter from 400 to 2185 ft. The well is cased with 18-in. pipe. from above the floor of a 7-ft deep pit to a depth of 400 ft. After the well was cleaned in 1952, a 16-in. casing was pressure grouted inside the l8-in. pipe from above the pit floor to a depth of 400 ft.

In 1923, the well reportedly produced from 600 to 650 gpm with a drawdown of- 220 ft from a nonpumping water level of 50 ft below the pump base.

In July 1947, after pumping at a rate of 500 gpm, the drawdown was 203 ft from a nonpumping water level of 70 ft below the pump base.

During the period of March 22-September 19, 1949, the nonpumping water levels ranged from 74 to 63 ft.

This well was logged by Schlumberger on January 26, 1952, and later shot with nitrogelatin at the following depths: 2060, 2000, 1950, 1900, 1850, 1420, 1370, 1320, 1280, 1270, 1220, and 1170 ft. The well was cleaned out to 2100 ft and a new casing installed.

On June 21, 1952, the well reportedly produced 950 gpm with a drawdown of 120 ft from a nonpumping water level of 207 ft below the pump base.

This well was rehabilitated in March 1968 but no report of the work accomplished is available.

Monthly measurements of the nonpumping water level during the period April 1979 to January 1982 ranged from about 543 to 589 ft below land surface.

A mineral analysis of a sample (Lab. No. 149497) collected April 28, 1959, after pumping at 700 gpm, showed the water to have a hardness of 258 mg/1, total dissolved minerals of 365 mg/1, and an iron content of 0.5 mg/1.

WELL NO. 7 (River St. well) was completed in 1915 to a depth of 2262 ft (cleaned out in 1944 to 2221 ft and plugged back in 1950 to 1420 ft) by the S. B. Geiger & Co., Chicago. This well was abandoned and sealed in 1968. The water-yielding unit in this well after it was plugged back to 1420 ft was the Midwest Aquigroup (Cambrian-Ordovician aquifer). The well also penetrated the upper part of the Eau Claire Formation. The well was located on South River St. near Sard Aye., approximately 2650 ft N and 2530 ft W of the SE corner of. Section 28, T38N, R8E, Kane County. The land surface elevation at the well is approximately 630 ft.

A geologically interpreted summary log of Well No. 7 furnished by the State Geological Survey follows:

Strata	*Thickness ' (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series	6	6
SILURIAN SYSTEM		
Niagaran Series		
Dolomite	84	90
Alexandrian Series		
Dolomite	30	120
ORDOVIC1AN SYSTEM		
Cincinnatian Series		
Maquoketa Shale Group	119	239
Champlainian Series		
Galena and Pla.ttev.ille Dolomite Groups	336	575
Ancell Group		
Glenwood-St. Peter Sandstone	176	751
Canadian Series (?)		
No samples	254	1005
CAMBRIAN SYSTEM		
Croixan Series		
Potosi Dolomite	95	1100
Franconia Formation	108	1208
Ironton-Galesville Sandstone	152	1360
Eau Claire Formation	395	1755
Mt. Simon Sandstone	408	2163

The well was cased with 17-in. pipe from about 0.7 ft above the floor of a well pit to a depth of 248 ft. When the well was cleaned in November 1944, a 14-in. casing was installed from about 0.7 ft above the pit floor to a depth of 291 ft (cemented in) and two 12-in.

liners were placed between the depths of 721 and 1198 ft and between 1395 and 1895 ft.

On October 25, 1924, the nonpumping water level was reported to be 50 ft below the pump base.

In November 1944, bridges at depths of 770 and 1200 ft were removed, and material below 1700 ft was cleaned out to a depth of 2221 ft.

On June 4-5, 1945, after 21.8 hr of pumping at 360 to 400 gpm, the drawdown was 145 ft from a nonpumping water level of 75 ft below the pump base.

In July 1947, the well reportedly produced 500 gpm with a drawdown of 155 ft from a nonpumping water level of 90 ft below the pump base.

During the period of March 22-September 19, 1949, the nonpumping water levels ranged from 114 to 105 ft.

A mineral analysis of a sample (Lab. No. 149492) collected April 28, 1959, after pumping at 390 gpm, showed the water to have a hardness of 393 mg/1, total dissolved minerals of 926 mg/1, and an iron content of 1.6 mg/1. The iron content in previous samples has been as low as 0.1 mg/1.

WELL NO. 8 (Stolps Island well) was completed in 1916 to a depth of 2280 ft (plugged back to 1500 ft in 1949, sounded at 1440 ft in May 1954, and reported to be 1380 ft deep in 1976) by the S. B. Geiger & Co., Chicago. The water-yielding unit in this well is presently the Midwest Aquigroup (Cambrian-Ordovician aquifer). The well also penetrates the upper part of the Eau Claire Formation. The well is located behind the site of the old city hall between Benton and Fox Sts., approximately 1300 ft N and 1000 ft E of the SW corner of Section 22, T38N, R8E, Kane County. The land surface elevation at the well is approximately 630 ft.

Originally, the well was cased with 18-in. OD pipe from about 1.4 ft above the floor of a 10-ft deep pit to a depth of 400 ft, and the hole was finished 15 in. in diameter from 400 to 2280 ft. In May 1954, the hole was reamed out to 25 in. in diameter to 310 ft and 19 in. in diameter from 310 to 1000 ft. After the well was reamed out, it was recased with 26-in. OD drive pipe from about 2.6 ft above the pumphouse basement floor to a depth of 25 ft and 20-in. OD pipe from about 2.6 ft above the pumphouse basement floor to a depth of 310 ft (cemented in).

Upon completion, the well reportedly flowed.

On October 25, 1924, the nonpumping water level was reported to be 60 ft below the top of the casing.

A sample study log of Well No. 8 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
Soil and glacial drift	18	18
SILURIAN SYSTEM		
Niagaran and Alexandrian Series		
Dolomite	142	160
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Shale Group	170	330
Champlainian Series		
Galena and Platteville Dolomite Groups	280	610
Ancell Group		
Glenwood-St. Peter Sandstone		
Sandstone	250	860
Conglomerate; shale and chert	50	910
Canadian Series		
Prairie du Chien Group		
Oneota Dolomite and dolomitic sandstone	100	1010
CAMBRIAN SYSTEM		
Croixan Series		
Eminence-Potosi Dolomite	120	1130
Franconia Formation		
Shale and dolomite	100	1230
Ironton-Galesville Sandstone	190	1420
Eau Claire Formation		
Shale, dolomite, some sandstone	350	1770
Mt. Simon Sandstone	470	2240
No samples	40	2280

Nonpumping water levels below the pump base have been reported as follows: 106 ft from September 1942 to January 1943; 112 ft on October 24, 1944, October 30, 1945, and February 5, 1946.

This well was rehabilitated in November 1949 by the Layne-Western Co., Aurora. The well was cleaned out and then plugged at about 1500 ft because of high chloride content. The well was shot with 50 qt of nitrogel at the following levels: 1410, 1400, 1375, 1350, and 1324 ft. A broken casing and liner were also cleaned out of the well.

On January 19, 1950, after 4.2 hr of pumping at rates of 617 to 844 gpm, the drawdown was 143 ft from a nonpumping water level of 154 ft below land surface.

In March 1954, L. Cliff Neely, Batavia, cleaned out this well and a 20-ft length of 9-in. pipe was fished out. After reaming out the hole and recasing the well, a production test was conducted by L. Cliff Neely on July 19-20, 1954. After 24 hr of pumping at a rate of 810 gpm, the drawdown was 152 ft from a nonpumping water level of 166 ft below land surface.

This well was rebuilt in 1967 because of a fire in 1966. No details on the repair work are available.

In January 1973, the Layne-Western Co., reported that the well produced 1176 gpm with a drawdown of 170 ft from a nonpumping water level of 456 ft.

On February 13, 1976, the Layne-Western Co. reported that the well produced 1235 gpm for 3.5 hr with a drawdown of 180 ft from a nonpumping water level of 451 ft.

In 1984, the well reportedly produced 1088 gpm for 17.5 days with a drawdown of 200 ft from a nonpumping water level of 532 ft.

The pumping equipment presently installed consists of a 350-hp Byron Jackson electric motor, a 12-in., 13-stage Byron Jackson submersible turbine pump set at 790 ft, rated at 1200 gpm at about 900 ft TDH, and has 790 ft of 8-in. column pipe. The well is equipped with 792 ft of airline.

A mineral analysis made by *the* Illinois Environmental Protection Agency (Lab. No. C003195) of a sample collected in March 1978, showed the water to have a hardness of 269 mg/I, total dissolved minerals of 430 mg/I, and an iron content of 0.3 mg/1.

WELL NO. 9 (Wood St. well) was completed in 1923 to a depth of 2285 ft (cleaned and sounded in 1943 at 2220 ft deep) by the S. B. Geiger & Co., Chicago. This well was abandoned and sealed in 1967. The water-yielding units in this wellwere the Midwest Aquigroup (Cambrian-Ordovician aquifer) and the Basal Bedrock Aquigroup (Elmhurst-Mt. Simon aquifer). The well was located at Wood St. and Indian Ave. extended, approximately 500 ft S and 1300 ft E of the NW corner of Section 23, T38N, R8E, Kane County. The land surface elevation at the well is approximately 695 ft.

An 18-in. diameter hole was drilled to a depth of 325 ft, reduced to 17 in. between 325 and 861 ft, reduced to 16 in. between 861 and 1200 ft, and finished 14 in. in diameter from 1200 to 2285 ft. The well was cased with 18-in. OD pipe from above the pumphouse floor to a depth of 325 ft and a 16-in. OD liner from 795 ft to a depth of 865 ft. After cleaning in 1943, a 16-in. steel pipe was placed from above the pumphouse floor to a depth of 350.3 ft (cemented in to a depth of 150 ft) and a 10-in. ID steel liner was placed to a depth of 1755 ft and suspended by a connection with the 16-in. pipe. Various portions of the liner were slotted to provide inlets from the water-bearing formations of potential importance.

In 1923, after 8 hr of pumping at 1400 gpm, the pumping water level was 167 ft below land surface.

On October 25, 1924, the nonpumping water level was reported to be 50 ft below land surface.

A correlated drillers log of Well No. 9 furnished by the State Geplogical Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
Gravel and sand	32	32
SILURIAN SYSTEM		
Niagaran and Alexandrian Series		
Limestone, gray	113	145
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Slate, gray	70	215
Champlainian Series		
Galena and Platteville Groups		
Limestone	375	590
Ancell Group		
Glenwood-St. Peter Sandstone		
Sandstone, white, fine	210	800
Slate, blue	5	805
Shale, white, cave	15	820
Canadian Series		
Prairie du Chien Group		
Oneota Dolomite		
Limestone, blue, white	90	910
Gunter Sandstone		
Sandstone, white	15	925
CAMBRIAN SYSTEM		
Croixan Series		
Eminence-Potosi Dolomite		
Limestone, gray	135	1060
Rock, pink, very hard	10	1070
Limestone, gray	5	1075
Rock, pink, bard	25	1100
Franconia Formation		
Sandstone, dark gray	15	1115
Slate, blue	45	1160
Limestone, gray	8	1168
Slate, blue .	22	1190
Ironton-Galesville Sandstone		
Sandstone, white	10	1200
Limestone, blue	180	1380
Eau Claire Formation		
Slate, red	100	1480
Limestone, hard, gray	75	1555
Limestone, hard, blue	175	1730
Flint, blue, hard	15	1745
Mt. Simon Sandstone		
Sandstone, red tinted	425	2170
Sandstone, white	90	2260

From December 28, 1942 to May i9, 1943, this well was rehabilitated by the Layne-Western Co., Aurora. The well was shot by the American Glycerine Co., Robinson, with 30 qt of nitroglycerin per shot at each of the following depths: 2185, 2135, 2085, 2035, 1984, 1935, 1885, and 1833 ft. The weil was cleaned out and the bottom sounded at a depth of 2220 ft.

A production test was conducted on May 24-26, 1943, by representatives of the city, the Layne-Western Co., and the State Water Survey. After 26.7 hr of pumping at rates of 900 to 840 gpm, the drawdown was 81.0 ft from a nonpumping water level of

145.0 ft below the top of the casing. Pumping was continued for 4.8 hr at rates of 1305 to 1280 gpm with a drawdown of 122.0 ft. After an additional 12.4 hr of pumping at rates of 1370 to 1435 gpm, the drawdown was 143.5 ft. Pumping was continued for 4.1 hr at decreased rates of 1000 to 1015 gpm with a final drawdown of 101.0 ft. After pumping was stopped for 5.2 hr, the water level had recovered to 130.8 ft and after 15.8 hr, the water level was 124.5 ft (20.5 ft above the beginning nonpumping water level).

A water level recorder was installed by the State Water Survey from July 20, 1943 to November 23, 1943. Water levels below the top of the casing were: 116.5 ft on July 20, 119 ft on August 14 and September 3, and 118 ft on October 30.

On December 20, 1943, the well reportedly produced 1120 gpm for 30 min with a drawdown of 115 ft from a nonpumping water level of 118 ft below land surface. On the following day after 3.5 hr of pumping at 1120 gpm, the drawdown was 111 ft from a nonpumping water level of 122 ft below land surface.

During the period of March 29-September 21, 1949, the nonpumping water levels ranged from 165 to 178 ft.

A mineral analysis of a sample (Lab. No. 96231) collected May 26, 1943, after pumping for 24 hr at 1015 gpm, showed the water to have a hardness of 402 mg/1, total dissolved minerals of 924 mg/1, and an iron content of 1.8 mg/1. The iron content in previous samples has been as low as 0.4 mg/1.

WELL NO. 10 was completed in 1924 to a depth of 2299 ft by the S. B. Geiger & Co., Chicago. This well has not been used since 1964 and has been disconnected from the system. The water-yielding units in this well are the Midwest Aquigroup (Cambrian-Ordovician aquifer) and the Basal Bedrock Aquigroup (Elmhurst-Mt. Simon aquifer). The well is located on Russell and West Park Aves., approximately 650 ft S and 3200 ft W of the NE corner of Section 21, T38N, R8E, Kane County. The land surface elevation at the well is approximately 680 ft.

An 18-in. diameter hole was drilled to a depth of 400 ft, reduced to 17 in. between 400 and 935 ft, and finished 16 in. in diameter from 935 to 2299 ft. The well is cased with 18-in. OD pipe from above the floor of a 7-ft deep pit to a depth of 400 ft and a 16-in. liner from 829 ft to a depth of 935 ft.

Nonpumping water levels below the pump base were reported as follows: 137 to 141 ft in August and September 1942; 131 to 133 ft in December 1942, January 1943, and February 1943; 142 to 146 ft between August and November 1943; 138 to 143 ft between December 1943 and May 1944; 153 to 160 ft between June and November 1944; 143 to 159 ft

A correlated drillers log of Well No. 10 furnished by the State Geological Survey follows:

Strata	*Thicknтss (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
Clay, yellow, and stone	25	25
SILURIAN SYSTEM		
Niagaran Series		
Limestone, gray	80	105
Limestone, red	15	120
Alexandrian Series		
Limestone, gray	50	170
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Shale Group		
Slate	165	335
Champlainian Series		
Galena and Platteville Groups		
Limestone, gray	280	615
Sand, white	10	625
Limestone, very hard, brown	35	660
Ancell Group		
Glenwood-St. Peter Sandstone		
Sand, white	185	845
Cave	0.2	845.2
Shale, white	4.8	850
Canadian Series		
Prairie du Chien Group		
Oneota Dolomite		
Limestone, gray; cave at 870 ft	35	885
Gunter Sandstone		
Sand, white	50	935
CAMBRIAN SYSTEM		
Croixan Series		
Eminence-Potosi Dolomite		
Limestone, gray	25	960
Limestone, gray, very hard	72	1032
Franconia Formation		
Mixed clay and limestone	8	1040
Limestone, gray	160	1200
Sand, white	6	1206
Limestone, blue, and sandstone	21	1227
Ironton-Galesville Sandstone		
Sandstone, mixed with limestone	38	1265
Sand, white	115	1380
Eau Claire Formation		
Limestone	25	1405
Shale	245	1650
Limestone, hard	130	1780
Mt. Simon Sandstone		
Sand, white	70	1850
Slate	4	1854
Red tinted sand	266	2120
Sand, light brown	10	2130
Red tinted sand	80	2210
Sand, white	3	2213
Red rock, very hard	43	2256
Sand, white	43	2299

between December 1914 and March 1945; 161 ft in June, July, and November 1945; and 159 ft in December 1945 and February 1946.

During the period of March 27-August 29, 1949, the nonpumping water levels ranged from 169 to 180 ft.

The pumping equipment presently installed is a Byron Jackson turbine pump.

A mineral analysis of a sample (Lab. No. 95185) collected February 1, 1943, after pumping for 9 hr at 1050 gprn, showed the water to have a hardness of 388 mg/1, total dissolved minerals of 917 mg/1, and a trace of iron.

WELL NO. 11 was completed in 1928 to a depth of 2250 ft (cleaned in 1941 to 2253 ft and filled to 1434 ft in 1971) by the S. B. Geiger & Co., Chicago. This well is disconnected from the system. The water-yielding unit in this well is presently the Midwest Aquigroup (Cambrian-Ordovician aquifer). The well also penetrates the upper part of the Eau Claire Formation. The well is located at the Aurora Ave. pumping station about 325 ft southwest of Aurora Ave. and about 155 ft northwest of Well No. 1, approximately 665 ft S and 2595 ft W of the NE corner of Section 15, T38N, R8E, Kane County. The land surface elevation at the well is approximately 635 ft.

The well is cased with 18-in. OD pipe from about 1 ft above the floor of a 6-ft deep pit to a depth of 405 ft, and the hole was finished 17 in. in diameter to a depth of 2250 ft. After cleaning the well in 1941, a 12-in. ID slotted liner was placed from 1370 ft to a depth of 1770 ft.

Nonpumping water levels below the pump base were reported to be 80 ft in 1929 and 130 ft in i938.

After a decrease in production in 1941, this well was rehabilitated by the Layne-Western Co., Aurora. Caving conditions and bridging were found from 1350 to 1687 ft. The well was shot by the American Glycerine Co., Robinson, with 250 qt of nitroglycerin at depths of 2159, 2077, 2030, 1950, 1894, 1848, and 1800 ft, and the well was cleaned out to a depth of 2253 ft.

A production test was conducted by the State Water Survey on February 28-March 2, 1942. After 22 hr of pumping at rates decreasing from 1008 to 945 gpm, the drawdown was 99.0 ft from a nonpumping water level of 132.5 ft below the pump base. Pumping was continued for 24.2 hr at rates ranging from 1313 to 1263 gpm with a drawdown of 132.0 ft. After an additional 7 hr of pumping at rates ranging from 1398 to 1476 gpm, the final drawdown was 139.0 ft. Ten min after pumping was stopped, the water level had recovered to 156.5 ft. Well Nos. 5, 12, and 12A were operated alternately during portions of this test.

A sample study log of Well No. 11 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
Sandy silt.	15	15
SILURIAN SYSTEM		
Alexandrian Series		
Kankakee Dolomite	40	55
Elwood Dolomite	20	75
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Dolomite	45	120
Shale	**110**	230
Champlainian Series		
Galena and Platteville Dolomite Groups	335	565
Ancell Group		
Glenwood Dolomitic Sandstone	30	595
St. Peter Sandstone		
Sandstone, water bearing	145	740
Shale, chert, and sandstone	15	755
Canadian Series		
Prairie du Chien Group		
Oneota Dolomite	150	905
Gunter Sandstone, dolomitic	55	960
CAMBRIAN SYSTEM		
Croixan Series		
Eminence-Potosi Dolomite	135	1095
Franconia Formation		
Shale.and sandstone	65	1160
Dolomitic sandstone	35	1195
Ironton-Galesville Sandstone, water bearing	145	1340
Eau Claire Formation		
Shale and sandstone	170	1510
Dolomite	130	1640
Shale and dolomite	75	1715
Mt. Simon Sandstone, water bearing	535	2250

Nonpumping water levels below the pump base were reported as follows: 125 to 136 ft in December 1942; 125 to 148 ft in 1943; 133 ft on February 7, 1944; and 155 ft on August 27, 1944.

Nonpumping water levels were reported to be 166 ft on August 31, 1949, and 175 ft on September 23, 1949.

In May-July 1971, this well was backfilled with pea gravel from 1434 ft to a depth of 1610 ft. A cement plug was placed from 1610 to 1620 ft, and the remainder of the hole was filled with pea gravel. After filling and plugging, this well was shot with Birdwell shots (2 per ft) between the depths of 1190 and 1340 ft.

On March 1, 1972, the Layne-Western Go. reported that the well produced 735 gpm for 2 hr with a draw-

down of 83 ft from a nonpumping water level of 435 ft.

The pumping equipment presently installed is a Byron Jackson turbine pump set at 795 ft, and powered by a 200-hp Byron Jackson electric motor.

The following mineral analysis (Lab. No. 187923) is for a water sample from the well collected March 1, 1972, after 2 hr of pumping. The iron content in previous samples has been as low as 0.2 mg/1.

WELL NO. 11, LABORATORY NO. 187928

		mg/l	*me/I*			*mg/l*	*me/I*
Iron	Fe	2.1		Silica	SiO_2	8.3	
Manganese	Mn	0.07		Fluoride	F	1.4	0.07
Ammonium	NH_4	0.6	0.03	Boron	B	0.6	
Sodium	Na	379	16.49	Nitrate	NO_3	0.9	0.01
Potassium	K	20.2	0.52	Chloride	CI	850	23.97
Calcium	Ca	186	9.28	Sulfate	SO_4	76.7	1.60
Magnesium	Mg	50.1	4.12	Alkalinity (as	$CaCO_3$)	232	**4.64**
Strontium	Sr	4.24					
				Hardness (as	$CaCO_3$)	670	13.40
Barium	Ba	<0.1					
Cadmium	Cd	0.00		Total dissolved			
Chromium	Cr	0.00		minerals		1734	
Copper	Cu	0.06		Turbidity	16		
Lead	Pb	<0.05		Color	0		
Lithium	Li	0.14		Odor	0		
Nickel	Ni	<0.05		pH (as rec'd)	7.3		
Zinc	Zn	0.08		Temp. (reported)	61.0F		

WELL NO. 12 was completed in 1929 to a depth of 2253 ft (cleaned to 2190 ft in November 1947) by William H. Cater, Chicago. This well is disconnected from the system. The water-yielding units in this well are the Midwest Aquigroup (Cambrian-Ordovician aquifer) and the Basal Bedrock Aquigroup (Elmhurst-Mt. Simon aquifer). The well is located east of the Aurora Ave. pumping station about 110 ft southeast of Well No. 1 and 25 ft northwest of Well No. 5, approximately 825 ft S and 2400 ft W of the NE corner of Section 15, T38N, R8E, Kane County. The land surface elevation at the well is approximately 650 ft.

A 24-in. diameter hole was drilled to a depth of 12 ft, reduced to 20 in. between 12 and 400 ft, and finished 17 in. in diameter from 400 to 2253 ft. The well is cased with 22-in. OD pipe to a depth of 12 ft and 18-in. OD pipe from about 2.4 ft above the floor of the well pit to a depth of 400 ft. In 1947, 14-in. slotted liners were placed between 761 and 839 ft and between 1300 and 1700 ft.

On March 15, 1930, the well reportedly produced 1307 gpm with a drawdown of 234 ft from a nonpumping water level of 100 ft below the pump base.

A correlated drillers log of Well No. 12 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
Clay	3	3
SILURIAN SYSTEM		
Niagaran and Alexandrian Series		
Limestone, white to cream	118	121
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Shale, gray to green	119	240
Champlainian Series		
Galena and Platteville Groups		
Dolomite, buff to gray to blue	340	580
Ancell Group		
Glenwood-St. Peter Sandstone		
Sandstone, white, medium rounded grains	175	755
Shale, gray to green	35	790
ORDOVICIAN AND CAMBRIAN SYSTEMS		
Canadian and Croixan Series		
Oneota-Eminence-Potosi Dolomites		
Dolomite, gray to brown	305	1095
CAMBRIAN SYSTEM		
Croixan Series		
Franconia Formation		
Sandstone, gray to white with green shale	70	1165
Ironton-Galesville Sandstone		
Sandstone, white	180	**1345**
Eau Claire Formation		
Limestone gray	15	1360
Shale, gray	25	1385
Shale, and limestone, brown	140	1525
Dolomite, brown to blue	105	1630
Dolomite, brown; shale, green	95	1725
Mt. Simon Sandstone		
Sandstone, white to pink	528	2253

In the winter of 1942-43, after pumping at a rate of 1050 gpm, the drawdown was about 212 ft from a nonpumping water level of about 138 ft below the pump base.

In August 1947, when the pump was pulled, a bridge was found at a depth of about 1625 ft and a backfill of 32 ft at the bottom. In November 1947, the Layne-Western Co., Aurora, shot the well with 420 qt of nitroglycerin at the following depths: 2154, 2100, 1854, 1327, 1280, and 1228 ft. The well was then cleaned to a depth of 2190 ft.

A production test was conducted on March 9-10, 1948. After 24.9 hr of pumping at rates of 1175 to 1065 gpm, the final drawdown was 135 ft from a nonpumping water level of 199 ft. Eleven min after pumping was stopped, the water level had recovered to 212 ft.

During the period of April 1-September 23, 1949, the nonpumping water levels ranged from 145 to 213 ft.

In March 1969, the well reportedly produced 910 gpm with a drawdown of 90 ft from a nonpumping water level of 445 ft.

The pumping equipment presently installed consists of a 200-hp 1750 rpm Byron Jackson electric motor, a 12-in., 11-stage Byron Jackson submersible pump set at 720 ft, rated at 1000 gpm at about 660 ft head, and has 720 ft of 8-in. column pipe.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. C003865) of a sample collected November 27, 1973, after pumping at 1350 gpm, showed the water to have a hardness of 345 mg/1, total dissolved minerals of 896 mg/1, and an iron content of 0.7 mg/1.

WELL NO. 12A was completed in March 1936 to a depth of 2251 ft (reported to be 1660 ft deep in 1979) by the Layne-Western Co., Aurora. The water-yielding units in this well are the Midwest Aquigroup (Cambrian-Ordovician aquifer) and the Basal Bedrock Aquigroup (Elmhurst-Mt. Simon aquifer). The well is located east of the Aurora Ave. pumping station about 700 ft east of Aurora Ave., approximately 200 ft S and 1800 ft W of the NE corner of Section 15, T38N, R8E, Kane County. The land surface elevation at the well is approximately 670 ft.

A 22-in. diameter hole was drilled to a depth of 455 ft, reduced to 17 in. between 455 and 1633 ft, and finished 15 in. in diameter from 1633 to 2251 ft. The well is cased with 22-in. pipe from about 1.1 ft above the floor of an 8-ft deep pit to a depth of 31.7 ft, 18-in. pipe from about 1.1 ft above the floor of an 8-ft deep pit to a depth of 455 ft, and two 16-in. liners were placed between 771 and 838.6 ft and between 1333 and 1633 ft.

A production test was conducted by the State Water Survey on September 24-25, 1936. After 4 hr of pumping at a rate of 1100 gpm, the drawdown was 98.0 ft from a nonpumping water level of 128.7 ft below the top of the casing. Pumping was continued for 21 hr at rates ranging from 1325 to 1300 gpm with a final drawdown of 132.5 ft. Well No. 11, about 920 ft southwest, was pumping for the first 22.7 hr of the test, and Well No. 12, about 250 ft southeast, was pumping for the last 6,8 hr of the test.

Nonpumping water levels during 1943 were reported to be 157 to 178 ft below the pump base. In 1944 they varied from 161 ft on January 18 to 188 ft on September 19. On February 25, 1946, the nonpumping water level was reported to be 166 ft below the pump base. During the period of April 2-September 24, 1949, the nonpumping water levels ranged from 172 to 194 ft.

A sample study log of Well No. 12A furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
Silt, sand, and pebbles	10	10
Gravel, silty	5	15
SILURIAN SYSTEM		
Niagaran and Alexandrian Series		
Dolomites	85	100
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Shale, some limestone and dolomite	158	258
Champlainian Series		
Galena and Platteville Groups		
Limestone and dolomite	332	590
Ancell Group		
Glenwood Formation		
Sandstone, dolomitic	10	600
St. Peter Sandstone		
Sandstone	185	785
Sandstone, shale and chert	35	820
Canadian Series		
Prairie du Chien Group		
Oneota Dolomite and Gunter Sandstone	160	980
CAMBRIAN SYSTEM		
Croixan Series		
Eminence-Potosi Dolomite	120	1100
Franconia Formation		
Sandstone and shale	90	1190
Ironton-Galesville Sandstone		
Sandstone, some dolomite	120	1310
Sandstone, incoherent	20	1330
Sandstone, dolomitic	35	1365
Eau Claire Formation		
Sandstone, siltstone, shale and dolomite	365	1730
Mt. Simon Sandstone	521	2251

In 1984, the well reportedly produced 1400 gpm for 72 hr with a drawdown of 232 ft from a nonpumping water level of 325 ft.

The pumping equipment presently installed consists of a 250-hp 1760 rpm Byron Jackson electric motor (Serial No. 14-892-4-2), a 12-in., 8-stage Byron Jackson submersible pump set at 690 ft, rated at 1200 gpm at about 645 ft head, and has 690 ft of 10-in. column pipe. The well is equipped with 690 ft of airline.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. 03720) is for a water sample from the well collected January 19, 1972, after 48 hr of pumping at about 450 gpm.

WELL NO. 12A, LABORATORY NO. 03720

		mg/l	me/I			mg/l	me/l
Iron	Fe	0.0		Silica	SiO_2	9	
Manganese	Mn	0.0		Fluoride	F	1.5	0.08
Ammonium	NH_4	0.6	0.03	Boron	B	0.3	
Sodium	Na	145	6.31	Nitrate	NO_3	0.0	
Potassium	K	14	0.36	Chloride	CI	288	8.12
Calcium	Ca	85	4.24	Sulfate	SO_4	39	0.81
Magnesium	Mg	32.4	2.66	Alkalinity (as $CaCO_3$)		228	4.56
				Hardness (as $CaCO_3$)		340	
Barium	Ba	0.2					
Cadmium	Cd	0.00		Total dissolved			
Chromium	Cr	0.0		minerals		780	
Copper	Cu	0.0		pH (as rec'd)		7.5	
Lead	Pb	0.01		Radioactivity			
Mercury	Hg	<0.0005		Alpha *pc/l*		6	
Nickel	Ni	0.0		± deviation		3	
Silver	Ag	0.0		Beta *pc/l*		27	
Zinc	Zn	0.0		± deviation		4	

WELL NO. 14 (former Phillips Park well) was completed in June 1909 to a depth of 2460 ft. This well was abandoned and sealed in 1970. The water-yielding units in this well were the Midwest Aquigroup (Cambrian-Ordovician aquifer) and the Basal Bedrock Aquigroup (Elmhurst-Mt. Simon aquifer). The well was located in Phillips Park about 0.2 mile in from the Route 30 entrance and about 340 ft east of the south end of Smith Blvd. and 90 ft northeast of the center of North Circle Drive, approximately 200 ft S and 2200 ft E of the NW corner of Section 35, T38N, R8E, Kane County. The land surface elevation at the well is approximately 705 ft.

A drillers log of Well No. 14 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Clay, sand, and gravel	131	131
Lime and shale	187	318
Limerock	337	655
Sandrock	295	950
Shale and red muck	15	965
Sandrock	15	980
Lime and shale	35	1015
Sandy lime	45	1060
Limerock	100	1160
Red rock	45	1205
Shale	90	1295
Sandrock	170	1465
Shale	377	1842
Sandrock	618	2460

The well was cased with 10-in. pipe from about 2 ft above the floor of the well pit to a depth of 133.7 ft, a 6.2-in. liner from 934 ft to a depth of 1015 ft, and a 5-in. liner from 1715 ft to a depth of 2015 ft, and the hole was finished 5 in. in diameter to a depth of 2460 ft.

A mineral analysis of a sample (Lab. No. 95189) collected February 2, 1943, after pumping for 18 hr at 280 gpm, showed the water to have a hardness of 459 mg/l, total dissolved minerals of 551 mg/l, and an iron content of 0.2 mg/l.

WELL NO. 15 was completed in March 1951 to a depth of 2150 ft (plugged to 1719 ft in January 1970) by the Layne-Western Co., Aurora. The water-yielding unit in this well is presently the Midwest Aquigroup (Cambrian-Ordovician aquifer) except for dolomites of the Galena and Platteville Groups. The well also penetrates the upper part of the Eau Claire Formation. The well is located at Prairie and Hartford Sts., approximately 164 ft S and 700 ft W of the NE corner of Section 29, T38N, R8E, Kane County. The land surface elevation at the well is approximately 670 ft.

A sample study log of Well No. 15 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
Glacial drift	45	45
SILURIAN SYSTEM		
Niagaran and Alexandrian Series		
Dolomite	95	140
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Shale and dolomite	152	292
Champlainian Series		
Galena Group		
Dolomite, yellowish brown to light gray, medium crystalline	243	535
Platteville Group		
Dolomite, yellowish gray to gray, fine crystalline	91	626
Ancell Group		
Glenwood-St. Peter Sandstone		
Sandstone, light gray, incoherent	266	892
Canadian Series		
Prairie du Chien Group		
Oneota Dolomite		
Dolomite, very light pinkish gray, medium crystalline	93	985
Gunter Sandstone		
Sandstone, dolomitic	25	1010
CAMBRIAN SYSTEM		
Croixan Series		
Eminence-Potosi Dolomite		
Dolomite, gray, glauconitic	148	1158
Franconia Formation		
Sandstone, shaly, greenish gray, glauconitic	92	1250
Ironton-Galesville Sandstone		
Sandstone, light gray, incoherent	180	1430
Eau Claire Formation		
Sandstone, shale, dolomite, interbedded	400	1830
Mt. Simon Sandstone	320	2150

A 30-in. diameter hole was drilled to a depth of 14 ft, reduced to 25 in. between 14 and 632 ft, reduced to 19 in. between 632 and 898 ft, reduced to 15 in. between 898 and 1420 ft, and finished 12 in. in diameter from 1420 to 2150 ft. The well is cased with 30-in. OD pipe from land surface to a depth of 14 ft, 26-in. OD drive pipe from about 2 ft above the pumphouse floor to a depth of 49 ft, 20-in. OD pipe from about 2 ft above the pumphouse floor to a depth of 632 ft (cemented in), 16-in. OD perforated liner from 818 ft to a depth of 898 ft, and a 12-in. liner from 1420 ft to a depth of 1790 ft.

The well was shot with 750 qt of nitro at the following depths: 2160, 2085, 2035, 1985, 1930, 1880, 1850, 1400, 1375, 1350, 1325, 1300, and 1275 ft. After shooting, a production test was conducted on March 14-15, 1951, by representatives of the driller and the city. After 21.5 hr of pumping at a rate of 1115 gpm, the drawdown was 181 ft from a nonpumping water level of 155 ft below land surface.

In January 1970, this well was plugged at a depth of 1719 ft. No details of this work are available.

In 1984, the well reportedly produced 938 gpm for 69 days with a drawdown of 220 ft from a nonpumping water level of 543 ft.

The pumping equipment presently installed consists of a 350-hp 1800 rpm Byron Jackson electric motor, a 12-in., 17-stage Byron Jackson submersible pump set at 783 ft, rated at 1000 gpm at about 990 ft head, and has 783 ft of 8-in. column pipe. The well is equipped with 778 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. C003867) of a sample collected November 27, 1973, after pumping for 24 hr at 1100 gpm, showed the water to have a hardness of 247 mg/1, total dissolved minerals of 394 mg/1, and an iron content of 0.1 mg/1.

WELL NO. 16 was completed in 1952 to a depth of 2139 ft (reported to be 2128 ft deep in 1979) by the Layne-Western Co., Aurora. The water-yielding units in this well are the Midwest Aquigroup (Cambrian-Ordovician aquifer) except for dolomites of the Galena and Platteville Groups, and the Basal Bedrock Aquigroup (Elmhurst-Mt. Simon aquifer). The well is located at Lafayette and Parker Aves. about 2 miles southeast of Well No. 15, approximately 1100 ft S and 600 ft E of the NW corner of Section 34, T38N, R8E, Kane County. The land surface elevation at the well is approximately 650 ft.

A sample study log of Well No. 16 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
Glacial drift		
Till, yellowish brown	20	20
Gravel, sandy, yellowish gray	60	80
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Dolomite, light gray	25	105
Dolomite, cherty, yellowish gray; shale	95	200
Shale, dark yellowish gray	50	250
Champlainian Series		
Galena Group		
Dolomite, pale yellowish gray	220	470
Platteville Group		
Dolomite, light gray to yellowish brown	108	578
Ancell Group		
Glenwood-St. Peter Sandstone		
Sandstone, silty, light gray	142	720
Shale, sandy, green	5	725
Canadian Series		
Prairie du Chien Group		
Shakopee Dolomite		
Dolomite, cherty, pale yellowish brown	10	735
New Richmond Sandstone		
Sandstone, silty, yellowish gray	35	770
Oneota Dolomite		
Dolomite, cherty, light yellowish gray	85	855
Dolomite, cherty, white; shale	35	890
Dolomite, cherty, sandy, yellowish gray	85	975
Gunter Sandstone		
Sandstone, light gray	7	982
CAMBRIAN SYSTEM		
Croixan Series		
Eminence Dolomite		
Dolomite, sandy, cherty, yellowish gray	58	1040
Potosi Dolomite		
Dolomite, pale grayish brown	75	1115
Franconia Formation		
Sandstone, light greenish gray	20	1135
Shale, sandy, greenish gray; sandstone	30	1165
Sandstone, grayish green; shale	35	1200
Ironton Sandstone		
Sandstone, yellowish gray	15	1215
Dolomite, sandy, pinkish gray	10	1225
Sandstone, yellowish gray	85	1310
Galesville Sandstone		
Sandstone, yellowish gray	35	1345
Eau Claire Formation		
Dolomite, sandy, brown; sandstone, gray	35	1380
Shale, sandy, green; sandstone, yellow	35	1415
Sandstone, yellow; siltstone; shale	180	1595
Dolomite, sandy, yellowish gray; shale	150	1745
Mt. Simon Sandstone		
Sandstone, gray	10	1755
Sandstone, pink, incoherent	245	2000
No samples	139	2139

A 26-in. diameter hole was drilled to a depth of 79 ft, reduced to 24 in. between 79 and 586 ft, reduced to 19 in. between 586 and 1734 ft, and finished 15 in. in diameter from 1734 to 2139 ft. The well is cased with

26-in. OD drive pipe from about 2 ft above the pumphouse floor to a depth of 79 ft, 20-in. OD pipe from about 2 ft above the pumphouse floor to a depth of 586 ft (cemented in), and a 16-in. OD perforated liner from 1357 ft to a depth of 1734 ft.

The well was shot with blasting gel at the following depths: 1260, 1300, 1340, 1775, 1850, 1900, 1950, 2025, 2075, and 2125 ft. Before shooting the nonpumping water level was reported to be 187 ft below land surface and after shooting it was 210 ft.

On July 9-11, 1952, the well reportedly produced from 784 to 1078 gpm with a final drawdown of 145 ft from a nonpumping water level of 189 ft. Sand was then cleaned out of the well and on August 15-26, 1952, the well reportedly produced 1120 gpm with a drawdown of 170 ft from a nonpumping water level of 160 ft.

A production test was conducted by the driller on October 22, 1979. After 1.9 hr of pumping at rates ranging from 1227 to 1263 gpm, the final drawdown was 176 ft from a nonpumping water level of 445 ft.

In 1984, the well reportedly produced 1350 gpm for 15.8 days with a drawdown of 230 ft from a nonpumping water level of 476 ft.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B040775) is for a water sample from the well collected April 5, 1982.

WELL NO. 16, LABORATORY NO. B040775

		mg/l	*me/l*			*mg/l*	me//
Iron	Fe	0.45		Silica	SiO_2	7.6	
Manganese	Mn	0.019		Fluoride	F	1.45	0.08
Ammonium	NH_4	0.7	0.04	Boron	B	0.38	
Sodium	Na	55	2.39	Cyanide	CN	<0.005	
Potassium	K	15	0 38	Nitrate	NO_3	<0 4	
Calcium	Ca	59	2.94	Chloride	CI	50	1.41
Magnesium	Mg	21	1.73	Sulfate	SO_4	28	0.58
Strontium	Sr	1.87		Alkalinity (as $CaCO_3$)		265	5.30
Arsenic	As	<0 001		Hardness (as $CaCO_3$)		230	4.60
Bariun	Ba	0 151					
Beryllium	Be	<0 0005		Total dissolved			
Cadmium	Cd	<0.003		minerals		409	
Chromium	Cr	<0.005					
Cobalt	Co	<0.00S					
Copper	Cu	<0.003					
Lead	Pb	<0.005					
Mercury	Hg	<0.00005					
Nickel	Ni	<0.003					
Selenium	Se	<0 001					
Silver	Ag	<0.005					
Vanadium	V	<0.004					
Zinc	Zn	0.010		pH (as rec'd)		7.4	

The pumping equipment presently installed consists of a 350-hp 1775 rpm Byron Jackson electric motor (Serial No. 16-094-4-2RB), a 12-in., 13-stage Byron Jackson submersible pump (Serial No. 721-C-0068) set at 911 ft, rated at 1000 gpm at about 920 ft head, and has 911 ft of 8-in. column pipe.

WELL NO. 17 was completed in November 1958 to a depth of 2152 ft by the Layne-Western Co., Aurora. The water-yielding units in this well are the Midwest Aquigroup (Cambrian-Ordovician aquifer) except for dolomites of the Galena and Platteville Groups, and the Basal Bedrock Aquigroup (Elmhurst-Mt. Simon aquifer). The well is located just north of the intersection of Highland and New Haven Aves., about 1.2 miles southwest of Well No. 5 and 1.2 miles northwest of Well No. 8, approximately 2100 ft N and 2350 ft W of the SE corner of Section 16, T38N, R8E, Kane County. The land surface elevation at the well is approximately 695 ft.

A 25-in. diameter hole was drilled to a depth of 660 ft, reduced to 19 in. between 660 and 962 ft, reduced to 15 in. between 962 and 1233 ft, reduced to 12 in. between 1233 and 1538 ft, reduced to 10 in. between 1538 and 1758 ft, and finished 8 in. in diameter from 1758 to 2152 ft. The well is cased with 26-in. steel drive pipe from land surface to a depth of 56.8 ft, 20-in. steel pipe from land surface to a depth of 660 ft (cemented in), 16-in. steel liner from 887 ft to a depth of 962 ft, 12-in. steel perforated liner from 1164.5 ft to a depth of 1233 ft, 10-in. steel liner from 1428 ft to a depth of 1538 ft, and an 8-in. steel liner from 1677 ft to a depth of 1758 ft.

After drilling, shots were placed as follows: 6 shots (150 lb each) between 2140 and 1880 ft, and 4 shots (150, 200, 250, and 200 lb) between 1350 and 1300 ft. After the well was shot and cleaned out, a production test was conducted by the driller on November 13-14, 1958. After 21 hr of pumping at rates of 662 to 1016 gpm, the final drawdown was 155 ft from a nonpumping water level of 274 ft below the top of the casing.

In 1984, the well reportedly produced 785 gpm for 11 days with a drawdown of 290 ft from a nonpumping water level of 390 ft.

The pumping equipment presently installed consists of a 250-hp Byron Jackson electric motor, a 12-in., 14-stage Byron Jackson submersible turbine pump set at 840 ft, rated at 1000 gpm at about 750 ft head, and has 840 ft of 8-in. column pipe. The well is equipped with 840 ft of airline.

A sample study log of Well No. 17 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
Soil and glacial drift	38	38
SILURIAN SYSTEM		
Niagaran Series		
Dolomite, white.	62	100
Alexandrian Series		
Dolomite, partly cherty, buff	80	180
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Dolomite, very argillaceous, green, gray, fine, granular; and shale, sandy, dolomitic, becoming calcareous at base	135	315
Champlainian Scries		
Galena Group		
Dolomite, buff, fine to medium crystalline; cherty dolomite (540 to 560 ft)	245	560
Platteville Group		
Dolomite, buff, gray, fine to very fine	93	653
Ancell Group		
Glenwood-St. Peter Sandstone		
Sandstone, white, medium, fine, incoherent	262	915
Canadian Series		
Prairie du Chien Group		
Oneota Dolomite		
Dolomite, cherty, pink, medium	85	1000
Gunter. Sandstone		
Sandstone, slightly dolomitic, white, medium, fine, incoherent, little friable,, dolomite, very sandy, white, fine to very fine, crystalline	35	1035
CAMBRIAN SYSTEM		
Croixan Series		
Eminence Dolomite		
Dolomite, sandy, glauconitic	65	1100
Potosi Dolomite		
Dolomite, clayey, reddish-buff	75	1175
Franconia Formation		
Sandstone, very glauconitic, dolomitic, greenish-gray, fine	75	1250
Ironton-Galesville Sandstone		
Sandstone, buff, medium to coarse, incoherent	178	1428
Eau Claire Formation		
Sandstone, dolomite, shale, interbedded	374	1802
Elmhurst Member		
Sandstone, gray, medium to very coarse, sooty	23	1825
Mt. Simon Sandstone		
Sandstone, gray, buff, medium to fine, some very coarse	327	2152

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B16077) of a sample collected October 4, 1978, after pumping for 240 hr at 866 gpm, showed the water to have a hardness of 231 mg/1, total dissolved minerals of 358 mg/I, and an iron content of 0.30 mg/1.

WELL NO. 18 was completed in September 1961 to a depth of 2150 ft (plugged back to 1486 ft in August 1974) by the Layne-Western Co., Aurora. The water-yielding unit in this well is presently the Midwest Aquigroup (Cambrian-Ordovician aquifer) except for dolomites of the Galena and Platteville Groups and the Glenwood-St. Peter Sandstone. The well also penetrates the upper part of the Eau Claire Formation. The well is located southeast of Hillside and Collidge Aves., approximately 1850 ft N and 900 ft E of the SW corner of Section 24, T38N, R8E, Kane County. The land surface elevation at the well is approximately 715 ft.

A 25-in. diameter hole was drilled to a depth of 656 ft, reduced to 19 in. between 656. and 943 ft, reduced to 16 in. between 943 and 1755 ft, and finished 12 in. in diameter from 1755 to 2150 ft. The well is cased with 26-in. drive, pipe from about 1.5 ft above the pump station floor to a depth of 123 ft, 20-in. pipe from about 1.5 ft above the pump station floor to a depth of 656 ft (cemented in), 16-in. perforated liner from 856 ft to a depth of 943 ft (removed in 1977), and a 12-in. perforated liner from 1439 ft to a depth of 1755 ft. In 1977, the well was reamed to 17 in. in diameter from 943 to 1439 ft. The 16-in. perforated liner was removed and an 18-in. solid liner was then placed from 650 ft to a depth of 943 ft.

After shooting with 575 qt of nitroglycerin, a production test was conducted by the driller on September 7-8, 1961. After 24.5 hr of pumping at rates of 931 to 1035 gpm, the final drawdown was 179 ft from a nonpumping water level of 324 ft below land surface.

In August 1974, the Layne-Western Co. filled the lower portion of this well with gravel and placed a cement plug at a depth of 1486 ft.

In 1977, this well was rehabilitated by the Layne-Western Co.. The 16-in. perforated liner was removed, the well was reamed and cleaned out, and a new 18-in. solid liner was installed to case out the St. Peter Sandstone. The pump was then reinstalled at a lower setting. On August 31, 1977, the well reportedly produced 1150 gpm with a drawdown of 168 ft from a nonpumping water level of 578 ft below the top of the casing.

In 1984, the well reportedly produced 944 gpm for 12.2 days with a drawdown of 90 ft from a nonpumping water level of 666 ft.

A sample study log of Well No. 18 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
Glacial drift	119	119
SILURIAN SYSTEM		
Niagaran and Alexandrian Series		
Dolomite, cherty, silty, light gray	86	205
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Shale, gray	32	237
Dolomite, white, fine to medium	18	255
Shale, brownish-gray	65	320
Champlainian Series		
Galena Group		
Dolomite, light buff, buff, medium	253	573
Platteville Group		
Dolomite, buffish-gray, finely crystalline	77	650
Ancell Group		
Glenwood-St. Peter Sandstone		
Sandstone, white, fine medium, incoherent	207	857
Canadian Series		
Prairie du Chien Group		
Oneota Dolomite		
Dolomite, pinkish-buff, medium crystalline	134	991
Gunter Sandstone		
Sandstone, white, fine to coarse grained	13	1004
CAMBRIAN SYSTEM		
Croixan Series		
Eminence Dolomite		
Dolomite, slightly sandy, buff	81	1085
Potosi Dolomite		
Dolomite, pinkish buff, finely crystalline	85	1170
Franconia Formation		
Sandstone, glauconitic, very fine to fine; little dolomite and shale	100	1270
Ironton-Galesville Sandstone		
Sandstone, white, medium to coarse	190	1460
Eau Claire Formation		
Sandstone, shale, and dolomite, interbedded	350	1810
Elmhurst Member		
Sandstone, white, medium to coarse, little fine, "sooty"; little dolomite	50	1860
Mt. Simon Sandstone		
Sandstone, pink, fine to very coarse, few granules, incoherent	290	2150

The pumping equipment presently installed consists of a 350-hp Byron Jackson electric motor, a 12-in., 12-stage Byron Jackson submersible turbine pump set at 904 ft, rated at 1200 gpm at about 800 ft head, and has 904 ft of 8-in. column pipe.

WELL NO. 19 was completed in April 1962 to a depth of 2150 ft (plugged back to 1424 ft in 1969) by the Layne-Western Co., Aurora. The water-yielding unit in this well is presently the Midwest Aquigroup (Cambrian-Ordovician aquifer) except for dolomites of the Galena and Platteville Groups. The well is located on Prairie St. at Palmer Ave., approximately 123 ft N and 2725 ft W of the SE corner of Section 19, T38N, R8E, Kane County. The land surface elevation at the well is approximately 685 ft.

A drillers log of Well No. 19 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Yellow clay	7	7
Gravel and clay	11	18
Blue clay	12	30
Gravel and clay	10	40
Gravel	5	45
Gray lime	103	148
Red rock and shale	2	150
Gray lime	9	159
Lime and shale	66	225
Gray lime	10	235
Shale	60	295
Gray lime	31	326
Brown lime	13	339
Gray lime	52	391
Brown lime, hard	91	482
Gray lime, hard	80	562
Brown lime	58	620
Sandy lime	17	637
Sandstone	203	840
Red rock lime and shale	12	852
Sandy lime	18	870
Sandstone	15	885
Green shale	5	890
Lime	19	909
Red shale	1	910
Lime	9	919
Shale	1	920
Lime	10	930
Shale	3	933
Lime	262	1195
Green shale	5	1200
Sandy lime and shale	14	1214
Lime and green shale	27	1241
Sandy lime	24	1265
Sandstone	163	1428
Sandy lime	22	1450
Green shale	2	1452
Lime	6	1458
Shale	14	1472
Shale mixed with lime	348	1820
Sand, white	40	1860
Sand, pink	219	2079
Sand, pink with shale breaks	71	2150

A 25-in. diameter hole was drilled to a depth of 640 ft, reduced to 19.2 in. between 640 and 946 ft, reduced to 15.2 in. between 946 and 1759 ft, and finished 12 in. in diameter from 1759 to 2150 ft. The well is cased with 26-in. drive pipe from about 0.8 ft above land surface to a depth of 55.5 ft, 20-in. pipe

from about 0.8 ft above land surface to a depth of 640 ft (cemented in), 16-in. liner from 840 ft to a depth of 946 ft, and a 12-in. liner from 1427 ft to a depth of 1759 ft. The top of the casing is equipped with a Baker pitless adapter.

After shooting with 1450 lb of solidified gelatin between 1290 and 1385 ft and 1860 and 2100 ft, a production test was conducted by the driller on April 30-May 1, 1962. After 22 hr of pumping at rates ranging from 857 to 979 gpm, the final drawdown was 179 ft from a nonpumping water level of 278 ft below land surface.

In May 1969, this well was rehabilitated by the Layne-Western Co., and was bridged to 1765 ft, backfilled with pea gravel to 1455 ft, and plugged with cement to 1424 ft. Before plugging the nonpumping water level was reported to be 279 ft and after plugging, the water level was reported to be 307 ft on May 27. 1969.

On July 21, 1909, the well reportedly produced 400 gpm with a drawdown of 270 ft from a nonpumping water level of 330 ft.

On April 24, 1984, the nonpumping water level was reported to be 450 ft.

After treating the well with 8000 gal of acid, a production test was conducted by the driller on July 25, 1985. After 3.2 hr of pumping at rates ranging from 964 to 1160 gpm, the drawdown was 298 ft from a nonpumping water level of 569 ft.

The pumping equipment presently installed consists of a 300-hp 1751 rpm Byron Jackson electric motor (Serial No. 14-5330-4-1), a 13-in., 14-stage Byron Jackson submersible turbine pump (Serial No. 841-C-0410) set at 1017 ft, rated at 1000 gpm at about 980 ft TDH, and has 1008 ft of 8-in. column pipe. The well is equipped with 1017 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. C006206) of a sample collected June 14, 1977, after pumping for 30 hr at 694 gpm, showed the water to have a hardness of 261. mg/1, total dissolved minerals of 330 mg/1, and an iron content of 0.1 mg/1.

WELL NO. 20 was completed in March 1967 to a depth of 1400 ft by the Layne-Western Co., Aurora. This well is disconnected from the system. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer) except for dolomites of the Galena and Platteville Groups. The well also penetrates the upper part of the Eau Claire Formation. The well is located northeast of the Stephens-Adamson Manufacturing Co. on North Farnsworth Ave., approximately 1350 ft N and 1250 ft W of the SE corner of Section 1, T38N, R8E, Kane County. The land surface elevation at the well is approximately 715 ft.

A drillers log of Well No. 20 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Yellow clay	5	5
Clay and gravel	15	20
Blue clay and gravel (boulders at 20 to 25 ft)	45	65
Gray lime, medium hard	10	75
Buff lime, medium hard	10	85
Gray lime, medium hard	95	180
Lime, second shale, gray, medium hard	80	260
Gray shale, medium hard	50	310
Hard gray lime	**140**	450
Hard brown lime	75	525
Hard gray lime	45	570
Hard brown lime	10	580
Hard gray lime	55	635
Hard white sandy lime	5	640
Hard white sandstone	20	660
Medium hard white sandstone	190	850
Hard white sandy lime	25	875
Hard white sandstone	18	893
Medium hard gray shale	2	895
Medium hard gray shaly lime	15	910
Hard gray limestone	15	925
Lime mixed with shale	5	930
Gray lime	15	945
Lime with shale streaks	10	955
Sandy lime	20	975
Hard gray lime	70	1045
Lime with red shale	10	1055
Hard gray lime	70	1125
Lime with shale streaks	20	1145
Sandy lime with shale streaks	45	1190
Hard gray lime	20	1210
Sandy lime	25	1235
Sandstone	145	1380
Hard lime	20	1400

A 26-in. diameter hole was drilled to a depth of 67 ft, reduced to 25 in. between 67 and 675 ft, reduced to 21 in. between 675 and 977 ft, and finished 17.2 in. in diameter from 977 to 1400 ft. The well is cased with 26-in. pipe from land surface to a depth of 67 ft, 22-in. pipe from land surface to a depth of 641 ft (cemented in), and an 18-in. slotted liner from 877.5 ft to a depth of 977 ft. The top of the casing is equipped with a pitless adapter.

This well was shot with 100 percent nitrogel as follows: 50 lb at 1355 ft, 50 lb at 1325 ft, 100 lb at 1300 ft, 100 lb at 1275 ft, and 100 lb at 1250 ft. After shooting, a production test was conducted by the driller on March 31-April 1, 1967. After 24 hr of pumping at rates ranging from 713 to 1059 gpm, the final drawdown was 79 ft from a nonpumping water level of 430 ft below the top of the casing. Twenty

min after pumping was stopped, the water level had recovered to 451 ft.

The pumping equipment presently installed consists of a 350-hp Byron Jackson electric motor, a 12-in., 11-stage Byron Jackson submersible pump set at 750 ft, rated at 1200 gpm at about 750 ft head, and has 750 ft of 8-in. column pipe.

. A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B32676) of a sample collected January 22, 1980, after pumping for 480 hr at 1300 gpm, showed the water to have a hardness of 251 mg/1, total dissolved minerals of 341 mg/1, and an iron content of 0.20 mg/1.

PIONEER PARK WELL NO. 101, finished in sand and gravel of the Prairie Aquigroup, was completed in December 1970 to a depth of 116 ft by the Layne-Western Co., Aurora. This well is available for emergency use. The well is located in Pioneer Park west of the city about 150 ft south of West Galena Blvd., approximately 150 ft S and 1850 ft E of the NW corner of Section 24, T38N, R7E, Kane County. The land surface elevation at the well is approximately 672 ft.

A drillers log of Pioneer Park Well No. 101 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Black sandy clay and medium to large gravel	4	4
Brown silty clay	3	7
Fine to medium sand and gravel	24	31
Fine sand	3	34
Hard gray silty sandy clay, gravel embedded boulders	40.5	74.5
Fine to medium sand and gravel	9	83.5
Fine to medium sand, some gravel	29.5	113
Medium to coarse gravel	4.5	117.5
Broken lime		

A 42-in. diameter hole was drilled to a depth of 116 ft. The well is cased with 12-in. pipe from about 2.8 ft above land surface to a depth of 86 ft followed by 30 ft of 12-in. No. 6 (0.080 in.) Layne stainless steel shutter screen. The annulus between the bore hole and casing-screen assembly is filled with ready mix cement from 0 to 20 ft, with pit run gravel from 20 to 35 ft, with pit run gravel and bentonite from 35 to 45 ft, with pit run gravel from 45 to 50 ft, and with No. 3 Muscatine sand from 50 to 116 ft.

A production test using three observation wells was conducted by the driller on December 28-29, 1970. After 24 hr of pumping at rates ranging from 798 to 818 gpm, the final drawdown was 62.3 ft from a nonpumping water level of 2.0 ft below land surface. One hr after pumping was stopped, the water level had recovered to 13.3 ft. On the basis of the production test data, the State Water Survey estimated that this well would yield 700 gpm (1,008,000 gpd) on a long-term basis.

On February 10, 1972, the well reportedly produced 810 gpm for 48 hr with a drawdown of 67 ft from a nonpumping water level of 5 ft below land surface.

The pumping equipment presently installed consists of a 60-hp General Electric Holloshaft motor, a 10-in. 7-stage Byron Jackson turbine pump set at 78 ft, rated at 700 gpm at about 283 ft TDH, and has 78 ft of 8-in. column pipe.

A partial analysis of a sample (Lab. No. 187889) collected February 12, 1972, after pumping for 48 hr at 810 gpm, showed the water to have a hardness of 338 mg/1, total dissolved minerals of 365 mg/1, and an iron content of 1.0 mg/1. Hydrogen sulfide was apparent when a previous sample was collected.

Five test holes were constructed in January and February 1971 by the Layne-Western Co., Aurora, to depths ranging from 60 to 132 ft. The holes were located in Sections 2 and 31, T38N, R7E, Kane County, and in Sections 1 and 11, T37N, R6E, and Section 6, T37N, R7E, Kendall County.

WELL NO. 21 was completed in June 1972 to a depth of 1447 ft (measured at 1442 ft deep in 1982) by the Henry Boysen Co., Libertyville. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer) except for dolomites of the Galena and Platteville Groups. The well also penetrates the upper part of the Eau Claire Formation. The well is located adjacent to Pioneer Park Well No. 101, approximately 135 ft S and 1823 ft E of the NW corner of Section 24, T38N, R7E, Kane County. The land surface elevation at the well is approximately 670 ft.

A 25-in. diameter hole was drilled to a depth of 660 ft, reduced to 21 in. between 660 and 947 ft, and finished 17 in. in diameter from 947 to 1447 ft. The well is cased with 26-in. drive pipe from land surface to a depth of 123 ft, 22-in. pipe from land surface to a depth of 656 ft (cemented in), and an 18-in. liner from 843 ft to a depth of 947 ft. The top of the casing is equipped with a Baker pitless adapter.

A production test was conducted by the driller on June 29, 1972. After 6.7 hr of pumping at rates of 508 to 1190 gpm, the maximum drawdown was 320 ft from a nonpumping water level of 292 ft below the top of the casing.

A drillers log of Well No. 21 follows:

Strata	Thickness (ft)	Depth (ft)
Sand, gravel	34	34
Clay, boulders	38	72
Gravel, sandy	21	93
Heaving sand	14	107
Sand, gravel	10	117
Limestone	42	159
Limestone, shale	92	251
Brown and gray shale	54	305
Brown lime - chert	242	547
Galena-Platteville lime	97	644
Sand	16	660
Sand, white	159	819
Sand, pink to white	28	847
Conglomerate, red shale	47	894
Sand, mucky	18	912
Red shale, dolomite (caving)	12	924
Limestone	83	1007
Sand	10	1017
Limestone, little shale	153	1170
Sandy shale and lime shells	92	1262
Sand, squeeze rock, dirty	104	1366
Sand	20	1386
Green shale	1	1387
Sand, white, fine	40	1427
Shale and limestone	20	1447

A second production test was conducted by the driller on July 5-6, 1972. After 24 hr of pumping at rates ranging from 599 to 1280 gpm, the maximum drawdown was 325 ft from a nonpumping water level of 343 ft below the top of the casing.

A production test was conducted by the Layne-Western Co., Aurora, on May 13, 1982. After 3.7 hr of pumping at rates ranging from 1360 to 1160 gpm, the final drawdown was 404 ft from a nonpumping water level of 387 ft.

The pumping equipment presently installed consists of a 350-hp 1775 rpm Byron Jackson electric motor (Serial No. 16-304-4-2RBDD), a 13-in., 12-stage Byron Jackson submersible turbine pump (Serial No. 816-M-0302RS) set at 1101 ft, rated at 1250 gpm at about 860 ft TDH, and has 1095 ft of 10-in. column pipe. The well is equipped with 1101 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. C006208) of a sample collected June 14, 1977, after pumping for 5 hr at 867 gpm, showed the water to have a hardness of 244 mg/1, total dissolved minerals of 344 mg/1, and an iron content of 0.2 mg/1.

Ten test holes were constructed in July, August, and September 1972 by the Layne-Western Co., Aurora, to depths ranging from 63 to 155 ft. The holes were located in Sections 5, 11, 26, 27, 28, 29, and 31, T38N, R7E, Kane County, and Section 32, T39N, R7E, Kane County.

WELL NO. 22 was completed in October 1973 to a depth of 1420 ft by the Layne-Western Co., Aurora. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer) except for dolomites of the Galena and Platteville Groups. The well also penetrates the upper part of the Eau Claire Formation. The well is located west of the E. J. & E. RR between U. S. Highway 34 and Aurora Ave., approximately 1415 ft S and 2815 ft W of the NE corner of Section 29, T38N, R9E, Du Page County. The land surface elevation at the well is approximately 684 ft.

A 26-in. diameter hole was drilled to a depth of 73 ft, reduced to 25 in. between 73 and 636 ft, reduced to 21 in. between 636 and 1109 ft, and finished 17 in. in diameter from 1109 to 1420 ft. The well is cased with 25-in. pipe from land surface to a depth of 73 ft and 22-in. pipe from land surface to a depth of 636 ft (cemented in). The top of the casing is equipped with a Baker pitless adapter.

A production test was conducted by the driller on October 24-25, 1973. After 24 hr of pumping at rates ranging from 600 to 1134 gpm, the final drawdown was 236 ft from a nonpumping water level of 515 ft below the top of the casing. After pumping was stopped for 1.5 hr, the water level had recovered to 535 ft.

A production test was conducted by the driller on July 20, 1985. After 2.7 hr of pumping at rates ranging from 1094 to 1227 gpm, the drawdown was 325 ft from a nonpumping water level of 603 ft.

The pumping equipment presently installed consists of a 350-hp 1775 rpm Byron Jackson electric motor (Serial No. 16-123-4-1RB), a 13-in., 12-stage Byron Jackson submersible turbine pump (Serial No. 841-C-0407) set at 1072 ft, rated at 1000 gpm at about 1000 ft TDH, and has 1065 ft of 10-in. column pipe. The well is equipped with 1072 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B040774) of a sample collected April 5, 1982, showed the water to have a hardness of 256 mg/I, total dissolved minerals of 393 mg/1, and an iron content of 0.130 mg/I.

A drillers log of Well No. 22 follows:

Strata	Thickness (ft)	Depth (ft)
Surface	5	5
Coarse gravel and boulders	10	15
Blue clay and gravel	35	50
Fine clean gravel	19	60
Hard gray limestone	46	115
Hard gray limestone with shale breaks	10	125
Medium red limestone with shale breaks	10	135
Medium gray limestone and shale	70	205
Medium to hard gray limestone	10	215
Medium gray limestone and shale	20	235
Medium gray shale	25	260
Medium gray limestone and shale	20	280
Hard brown limestone	35	315
Hard gray limestone	85	400
Medium gray limestone	10	410
Hard gray limestone	45	455
Hard brown limestone	10	465
Hard gray limestone	70	535
Medium gray limestone	25	560
Hard dark gray limestone	45	605
Hard brown limestone	10	615
Hard gray limestone	9	624
Hard white sandstone	36	660
Medium to hard white sandstone	10	670
Medium white sandstone	70	740
Medium to hard white sandstone	20	760
Hard dark gray sandstone	10	770
Hard gray limestone with shale seams	10	780
Medium white sandstone	21	801
Hard gray limestone	34	835
Medium gray limestone	95	930
Hard pink limestone with streaks of red dolomite	5	935
Hard gray limestone	20	955
Pink sandy dolomite with streaks of green shale	10	965
Hard gray limestone and shale	20	985
Hard gray limestone and dolomite	60	1045
Medium gray limestone	40	1085
Hard gray limestone	5	1090
Hard gray dolomite	15	1105
Hard pink dolomite	5	1110
Hard red dolomite	30	1140
Hard gray limestone with seams of gray-green shale	5	1145
Medium gray sandy limestone and shale	65	1210
Hard dark gray limestone	30	1240
Hard white sandy dolomite	5	1245
Hard white sandstone with streaks of dolomite	30	1275
Medium to hard white sandstone	10	1285
Hard white sandstone with streaks of dolomite	5	1290
Medium white sandstone with streaks of dolomite	15	1305
Medium to soft white sandstone	10	1315
Medium to hard white sandstone	15	1330
Medium white sandstone	30	1360
Hard white sandy dolomite	15	1375
Hard gray sandy limestone	5	1380
Medium to soft white sandstone	20	1400
Hard dark gray shale and limestone	5	1405
Hard gray limestone	15	1420

WELL NO. 23 was completed in May 1973 to a depth of 1420 ft by the Layne-Western Co., Aurora. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer) except for dolomites of the Galena and Platteville Groups. The well also penetrates the upper part of the Eau Claire Formation. The well is located at Jericho and Barnes Roads, approximately 1000 ft N and 2500 ft E of the SW corner of Section 25, T38N, R7E, Kane County. The land surface elevation at the well is approximately 670 ft.

A drillers log of Well No. 23 follows:

Strata	Thickness (ft)	Depth (ft)
Coarse gravel	15	15
Sand, gravel, some blue clay, compact	10	25
Medium coarse gravel - clean	15	40
Compact gravel	10	50
Gravel - clean	5	55
Hard gray lime	70	125
Hard gray lime with shale seams	10	135
Hard gray lime	10	145
Hard dark gray lime	5	150
Hard gray lime	25	175
Medium dark gray lime and shale	50	225
Medium dark gray shale	5	230
Medium brown shale	5	235
Medium gray shale	50	285
Hard brown lime	5	290
Hard gray lime	115	405
Hard brown lime	45	450
Hard gray lime	20	470
Hard gray lime, white squeeze shale	5	475
Hard gray lime	25	500
Hard dark gray lime	60	560
Hard gray lime	30	590
Hard dark gray lime	10	600
Hard brown lime	15	615
Hard white sandy lime	5	620
Hard white sandstone	55	675
Medium white sandstone	55	730
Medium to soft white sandstone	5	735
Medium white sandstone	75	810
Medium to hard pink sandstone	5	815
Hard pink sandstone	5	820
Hard white sandstone	5	825
Hard red sandy shale	5	830
Hard red sandy lime	15	845
Hard red sandy lime shale	5	850
Hard pink sandstone	5	855
Medium pink sandstone, shale seams	15	870
Medium red rock and shale	5	875
Hard gray lime	30	905
Hard gray small shale break	5	910
Hard gray lime hole caving	5	915
Hard gray lime	55	970
Hard gray lime small shale break	5	975
Hard gray lime	5	980
Hard white sandy chert and shale	S	985
Hard white sandy chert	5	990
Hard gray lime	35	1025
Hard gray sandy lime	5	1030
Hard gray lime	25	1055
Hard gray lime and dolomite	40	1095
Hard brown dolomite	30	1125
Hard pink dolomite	5	1130
Hard red dolomite	10	1140
Hard gray sandy dolomite	15	1155
Hard gray dolomite	10	1165
Hard gray sandy dolomite and green shale	15	1180
Hard gray lime	5	1185

Strata	Thickness (ft)	Depth (ft)
Hard dark gray sandy dolomite	5	1190
Hard white sandy dolomite	10	1200
Hard sandy dolomite streaks green shale	5	1205
Hard white sandy dolomite shale seams	30	1235
Hard dark gray dolomite	15	1250
Hard white sandstone	5	1255
Hard pink sandy dolomite	25	1280
Hard white sandstone and dolomite	5	1285
Hard white sandstone	25	1310
Medium to hard white sandstone	10	1320
Hard white sandstone dolomite	15	1335
Hard pink sandstone	20	1355
Hard white sandstone	45	1400
Hard dark gray sandy lime, some shale	20	1420

A 26-in. diameter hole was drilled to a depth of 55 ft, reduced to 25 in. between 55 and 631 ft, reduced to 21 in. between 631 and 931 ft, and finished 17 in. in diameter from 931 to 1420 ft. The well is cased with 26-in. pipe from land surface to a depth of 55 ft, 22-in. pipe from land surface to a depth of 631 ft (cemented in), and an 18-in. slotted liner from 805 ft to a depth of 931 ft. The top of the casing is equipped with a Baker pitless adapter.

This well was shot by Birdwell Division from 1205 to 1400 ft with 390 Thor shots (4 3/8 in.). After shooting, a production test was conducted by the driller on May 9, 1973. After 11.5 hr of pumping at rates ranging from 933 to 617 gpm, the maximum drawdown was 327 ft from a nonpumping water level of 390 ft below the top of the casing. Two hr after pumping was stopped, the water level had recovered to 470 ft.

A second production test was conducted by the driller on May 21-22, 1973. After 25.5 hr of pumping at rates ranging from 633 to 1364 gpm, the final drawdown was 254 ft from a nonpumping water level of 395 ft below the top of the casing.

A third production test was conducted by the driller on May 31, 1973. After 5.5 hr of pumping at rates ranging from 825 to 1356 gpm, the final drawdown was 214 ft from a nonpumping water level of 395 ft below the top of the casing.

In 1984, the well reportedly produced 700 gpm for 2.5 days with a drawdown of 120 ft from a nonpumping water level of 495 ft.

A production test was conducted by the driller on April 30, 1985. After 2.2 hr of pumping at rates ranging from 1020 to 1100 gpm, the drawdown was 196 ft from a nonpumping water level of 445 ft.

The pumping equipment presently installed consists of a 350-hp 1775 rpm Byron Jackson electric motor (Serial No. 16-5023-4-2RB), a 13-in., 11-stage Byron Jackson submersible turbine pump (Serial No. 721-C-0068) set at 911 ft, rated at 1200 gpm at about 800 ft TDH, and has 904 ft of 10-in. column pipe. The well is equipped with 911 ft of airline.

A partial analysis of a sample (Lab. No. 102094) collected May 22, 1973, after pumping for 25.5 hr at 1334 gpm, showed the water to have a hardness of 258 mg/1, total dissolved minerals of 351 mg/1, and an iron content of 0.3 mg/1.

WELL NO. 24 - The site for this well has been selected, but construction has not been initiated.

WELL NO. 25 was constructed in August 1974 to a depth of 925 ft and deepened in October 1974 to a depth of 1460 ft by the Layne-Western Co., Aurora. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer) except for dolomites of the Galena and Platteville Groups. The well also penetrates the upper part of the E'au Claire Formation. The well is located north of Indian Trail Road and east of Randall Road, approximately 2472 ft S and 1926 ft W of the NE corner of Section 8, T38N, R8E, Kane County. The land surface elevation at the well is approximately 695 ft.

A 26-in. diameter hole was drilled to a depth of 53. ft, reduced to 25 in. between 53 and 668 ft, and finished 21 in. in diameter from 668 to 1460 ft. The well is cased with 26-in. pipe from land surface to a depth of 53 ft and 22-in. pipe from land surface to a depth of 667 ft (cemented in). The top of the casing is equipped with a pitless adapter.

Before deepening, a production test was conducted by the driller on August 15, 1974. After 2.9 hr of pumping at rates ranging from 145 to 448 gpm, the drawdown was 211 ft from a nonpumping water level of 393 ft. Fifty min after pumping was stopped, the water level had recovered to 415 ft.

After deepening, a production test was conducted by the driller on October 21-22, 1974. After 21.2 hr of pumping at rates ranging from 863 to 1585 gpm, the drawdown was 157 ft from a nonpumping water level of 448 ft below the top of the casing.

A production test was conducted by the driller on October 28, 1974. After 1 hr of pumping at a rate of 1560 gpm, the drawdown was 53 ft from a nonpumping water level of 408 ft below the top of the casing. Pumping was continued for 1 hr at a rate of 1845 gpm with a drawdown of 88 ft. After an additional 7 hr of pumping at rates ranging from 2000 to 1905 gpm, the final drawdown was 163 ft. Fifteen min

A drillers log of Well No. 25 follows:

Strata	Thickness (ft)	Depth (ft)
Clay	20	20
Blue clay and coarse gravel	10	30
Blue clay and boulders	15	45
Fine clean gravel	7	52
Hard gray limestone	58	110
Medium gray limestone and shale	5	115
Medium gray shale	20	135
Hard gray limestone	65	200
Hard gray limestone with shale seams	15	215
Medium gray shale with lime shells	75	290
Medium gray shale	45	335
Hard gray limestone	165	500
Hard brown limestone	120	620
Hard gray limestone	10	630
Hard brown limestone	20	650
Hard gray sandy limestone	10	660
Hard buff sandstone	5	665
Hard white sandstone	20	685
Medium white sandstone	50	735
Medium to hard white sandstone	15	750
Hard white sandstone	10	760
Hard white sandy dolomite and shale	5	765
Hard white sandstone	10	775
Medium white sandstone	10	785
Hard white sandstone	20	805
Medium white sandstone	5	810
Hard white sandstone	60	870
Medium white sandstone	5	875
Hard white sandstone	5	880
Hard pink sandstone	5	885
Medium pink sandstone	5	890
Medium white sandstone	10	900
Hard white sandstone	15	915
Hard pink sandstone	5	920
Hard limestone and gray shale	5	925
Hard red sandy limestone and shale	5	930
Hard red sandy shale	5	935
Hard red sandstone	10	945
Hard pink sandstone	5	950
Hard pink limestone and chert	15	965
Hard gray limestone with shale seams	10	975
Hard gray limestone, crevice at 981 and 1021 ft	45	1020
Hard gray chert and dolomite	5	1025
Hard gray sandy dolomite	10	1035
Hard gray limestone and shale seams	5	1040
Hard white sandy dolomite	5	1045
Hard gray dolomite with shale seams	5	1050
Hard gray limestone and dolomite, crevice at 1063 ft	15	1065
Hard white sandy dolomite	5	1070
Hard gray sandstone, crevice at 1077 ft	20	1090
Hard gray limestone and dolomite	70	1160
Hard brown limestone and dolomite	15	1175
Hard gray limestone and dolomite, crevice at 1182 ft	20	1195
Hard limestone with green shale seams	5	1200
Hard dark gray limestone and dolomite	5	1205
Hard dark gray sandy dolomite and shale	35	1240
Hard white sandy dolomite	35	1275
Hard white sandstone	10	1285
Hard white sandstone and dolomite	15	1300
Hard white sandstone	5	1305
Hard white sandstone with streaks of red dolomite	10	1315
Hard white sandstone	20	1335
Medium to hard white sandstone	10	1345
Hard white sandstone and red dolomite	5	1350
Hard white sandstone and dolomite	20	1370
Medium to hard white sandstone	30	1400
Medium to soft white sandstone	5	1405
Soft white sandstone	30	1435
Medium white sandstone	5	1440
Hard dark gray limestone	5	1445
Hard dark gray limestone and shale	15	1460

after pumping was stopped, the water level had recovered to 504 ft.

In 1984, the well reportedly produced 860 gpm for 4.3 days with a drawdown of 207 ft from a nonpumping water level of 627 ft.

The pumping equipment presently installed is a 13-in., 9-stage Byron Jackson submersible turbine pump (Serial No. 751-C-0329) set at 969 ft, rated at 1400 gpm at about 775 ft TDH, and powered by a 400-hp 1775 rpm Byron Jackson electric motor. The well is equipped with 969 ft of airline.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. C006210) is **for** a water sample from the well collected June 14, 1977, after 14 hr of pumping at 1340 gpm.

WELL NO. 25, LABORATORY NO. **C006210**

		mg/l	me/1			mg/l	me/l
Iron	Fe	0.1		Silica	SiO_2	6	
Manganese	Mn	0.00		Fluoride	F	1.2	0.06
Ammonium	NH_4	0.67	0.04	Boron	B	0.6	
Sodium	Na	34	1.48	Cyanide	CN	0.00	
Potassium	K	14.4	0.37	Nitrate	NO_3	0.57	0.01
Calcium	Ca	58	2.89	Chloride	CI	10	0.28
Magnesium	Mg	25	2.06	Sulfate	SO_4	49	1.02
				Alkalinity (as $CaCO_3$)		280	5.60
Arsenic	As	0.000					
Barium	Ba	0.1		Hardness (as $CaCO_3$)		248	4.96
Cadmium	Cd	0.00					
Chromium	Cr	0.00		Total dissolved			
Copper	Cu	0.00		minerals		376	
Lead	Pb	0.00					
Mercury	Hg	0.0000					
Nickel	Ni	0.0					
Selenium	Se	0.00					
Silver	Ag	0.00					
Zinc	Zn	0.02		pH (as rec'd)		8.6	

An exploratory test drilling program is underway to locate sites for sand and gravel wells. As of July 1985, eleven test holes had been constructed. These test holes range from 50 to 130 ft deep and were drilled by the Layne-Western Co., Aurora. They were located in Section 25, T38N, R7E, Kane County; Sections 1, 18, 33, and 34, T38N, R8E, Kane County; and Section 29, T38N, ROE, Du Page County.

BARTLETT

The village of Bartlett (13,254) installed a public water supply in 1923. This village also extends into Cook County and four of the wells are located there. Seven wells are in use. This supply also furnishes water to Herrick House. In 1952 there were 206 services. In 1984 there were 4014 services, all metered; the average pumpage was 1,438,500 gpd. The water is chlorinated; in addition, the water from Well Nos. 1, 2, and 3 is aerated, fluoridated, and treated with polyphosphate to keep iron in solution; and the water from Well Nos. 5 and 7 is fluoridated.

WELL NO. 1, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in November 1923 to a depth of 200 ft by the W. L. Thome Co., Des Plaines. The well is located west of Main St. adjacent to the elevated tank, approximately 1300 ft N and 400 ft W of the SE corner of Section 34, T41N, R9E, Cook County. The land surface elevation at the well is approximately 805 ft.

A drillers log of Well No. 1 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Clay, sand and gravel	40	40
Sand and gravel, water	25	65
Clay	20	85
Sand and gravel	15	100
Clay, sand and gravel	10	110
Limestone and sand	10	120
Sand and gravel	10	130
Sand and limestone	15	145
Limestone	55	200

An 8-in. diameter hole was drilled to a depth of 200 ft. The well is cased with 8-in. cast iron pipe from about 0.8 ft above the wellhouse floor to a depth of 155 ft.

A production test was conducted by Suhr & Berryman, Engineers, upon completion in 1923. After 8 hr of pumping at a rate of 265 gpm, the drawdown was 0.3 ft from a nonpumping water level of 33.0 ft below the pump base.

In 1925, the well reportedly produced 300 gpm with a drawdown of 6 ft from a nonpumping water level of 46 ft below land surface.

In 1936, after pumping for 3.5 hr at a rate of 263 gpm, the drawdown was 4 ft from a nonpumping water level of 37 ft below the pump base.

Nonpumping water levels were reported to be 34.9 ft on November 17, 1954; 45 ft in October 1963; 53 ft in 1974; 66 ft on July 18, 1979; and 64 ft on February 22, 1985.

The pumping equipment presently installed is a Byron Jackson turbine pump set at 100 ft, rated at 300 gpm, and powered by a 20-hp U. S. electric motor.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B018345) of a sample collected December 15, 1982, after pumping for 3 hr at 300 gpm, showed the water to have a hardness of 479 mg/1, total dissolved minerals of 567 mg/1, and an iron content of 1.7 mg/1.

WELL NO. 2, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in November 1945 to a depth of 200 ft by Henry Boysen, Jr., Libertyville. The well is located west of Main St. about 65 ft east of Well No. 1, approximately 1300 ft N and 335 ft W of the SE corner of Section 34, T41N, R9E, Cook County. The land surface elevation at the well is approximately 805 ft.

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

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
Soil, yellow and blue clay	48	48
Gravel, dirty (water bearing)	50	98
Quicksand	28	126
Stony blue clay	5	131
Lake sand (water bearing)	12	143
Sand and gravel (water bearing)	8	151
SILURIAN SYSTEM		
Niagaran Series		
Limestone (water)	49	200

An 8-in. diameter hole was drilled to a depth of 200 ft. The well is cased with 8-in. black wrought steel pipe from about 0.8 ft above the wellhouse floor to a depth of 151 ft.

Nonpumping water levels were reported to be 36 ft below land surface upon completion; 37 ft below the top of the casing in 1946 when Well No. 1 was idle; and 57 ft below the pump base on October 31, 1957.

On February 19, 1959, the well reportedly produced 349 gpm for 1.5 hr (Well No. 1 not pumping) with a drawdown of 7 ft from a nonpumping water level of 60 ft below the pump base. Pumping was continued

with Well No. 1 pumping more than 320 gpm with a total drawdown in Well No. 2 of 14 ft.

In October 1963, the nonpumping water level was reported to be 45 ft.

In 1974, the well reportedly produced 300 gpm with a drawdown of 5 ft from a nonpumping water level of 54 ft.

The pumping equipment presently installed is an American Well Works turbine pump set at 100 ft, rated at 300 gpm, and powered by a 15-hp 1800 rpm U. S. electric motor.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. C000566) is for a water sample from the well collected August 9, 1978, after 30 min of pumping at 300 gpm.

WELL NO. 2, LABORATORY NO. C000568

		mg/l	*me/l*			*mg/l*	*me/l*
Iron	Fe	1.3		Silica	SiO_2	26	
Manganese	Mn	0.04		Fluoride	F	0.5	0.03
Ammonium	NH_4	0.56	0.03	Boron	B	0.1	
Sodium	Na	10	0.44	Cyanide	CN	0.00	
Potassium	K	11.2	0.29	Nitrate	NO_3	0.00	0.00
Calcium	Ca	86	4.29	Chloride	CI	13	0.37
Magnesium	Mg	56	4.61	Sulfate	SO_4	80	1.66
				Alkalinity (as $CaCO_3$)		374	7.48
Arsenic	As	0.000					
Barium	Ba	0.2		Hardness (as $CaCO_3$)		447	8.94
Cadmium	Cd	0.00					
Chromium	Cr	0.00		Total dissolved			
Copper	Cu	0.00		minerals		506	
Lead	Pb	0.00					
Mercury	Hg	0.0000					
Nickel	Ni	0.0					
Selenium	Se	0.00					
Silver	Ag	0.00					
Zinc	Zn	0.01		pH (as rec'd)		7.7	

WELL NO. 3, finished in sand and gravel of the Prairie Aquigroup, was completed in October 1960 to a depth of 97 ft by the J. P. Miller Artesian Well Co., Brookfield. The well is located adjacent to the pumphouse on Main St., approximately 950 ft N and 300 ft W of the SE corner of Section 34, T41N, R9E, Cook County. The land surface elevation at the well is approximately 795 ft.

A 36-in. diameter hole was drilled to a depth of 99 ft. The well is cased with 30-in. pipe from about 3 ft above land surface to a depth of 41.5 ft and 12-in. pipe from about 1.5 ft above land surface to a depth of 52 ft followed by 45 ft of 12-in. screen. The annulus between the bore hole and 30-in. casing is filled with cement from 0 to 41.5 ft, and the annulus between the 30- and 12-in. casings and the bore hole and casing-screen assembly is filled with gravel from 52 to 99 ft. No record is available for materials placed in the annulus from 0 to 52 ft.

A drillers log of Well No. 3 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Clay	10	10
Clay and boulders	37	47
Gravel	9	56
Clay	7	63
Clean gravel	21	84
Sand	8	92
Clay	3.5	95.5
Gravel	1.5	97
Clay	2	99

The following mineral analysis (Lab. No. 211414) is for a water sample from the well collected July 18, 1979, after pumping at 600 gpm.

WELL NO. 3, LABORATORY NO. 211414

		mg/l	*me/l*			*mg/l*	*me/l*
Iron	Fe	2.5		Silica	SiO_2	27.5	
Manganese	Mn	0.02		Fluoride	F	0.2	
Ammonium	NH_4	0.4	0.02	Boron	B	0.2	
Sodium	Na	10.2	0.44	Nitrate	NO_3	0.3	0.00
Potassium	K	2.7	0.07	Chloride	CI	9	0.25
Calcium	Ca	99.2	4.95	Sulfate	SO_4	98.7	2.05
Magnesium	Mg	58.5	4.81	Alkalinity (as $CaCO_3$)		396	7.92
Strontium	Sr	0.47	0.01				
				Hardness (as $CaCO_3$)		488	9.76
Barium	Ba	<0.05					
Cadmium	Cd	0.00		Total dissolved			
Chromium	Cr	0.00		minerals		566	
Copper	Cu	0.01					
Lead	Pb	0.00					
Lithium	Li	0.01		Turbidity	16		
Nickel	Ni	0.00		Color	0		
Silver	Ag	0.01		Odor	0		
Zinc	Zn	0.00		Temp.(reported)	51.5F		

Upon completion, the well reportedly produced 510 gpm with a drawdown of 6 ft from a nonpumping water level of 32 ft below land surface.

On May 24, 1962, the well reportedly produced about 800 gpm for 15 min with a drawdown of 9.5 ft from a nonpumping water level of 35.5 ft below land surface.

In October 1963, the nonpumping water level was reported to be 38 ft.

A production test was conducted by the driller on October 26, 1965, after the well was acidized with 500 gal of concentrated acid. After 11 hr of pumping at rates of 520 to 690 gpm, the drawdown was 9 ft from a nonpumping water level of 44 ft below land surface.

On May 10, 1968, the well reportedly produced 700 gpm for 4 hr with a drawdown of 31 ft from a nonpumping water level of 41 ft below the pump base.

On July 18, 1979, the nonpumping water level was reported to be 42 ft.

In February 1982, this well was acidized with 1000 gal of 15 percent HC1. On February 17, 1982, the nonpumping water level was reported to be 54 ft.

The pumping equipment presently installed consists of a 30-hp U. S. electric motor, a 12-in., 2-stage Peerless turbine pump (No. 138651) set at 65 ft, rated at 750 gpm at about 95 ft TDH, and has 65 ft of 8-in. column pipe. The well is equipped with 65 ft of airline.

A test hole was constructed in May 1968 to a depth of 174 ft by the J. P. Miller Artesian Well Co., Brookfield. The hole was located approximately 100 ft S and 50 ft E of the NW corner of Section 35, T41N, R9E, Cook County. The hole was cased with 2-in. galvanized pipe to a depth of 170 ft and equipped with 3 ft of 2-in. No. 40 slot Johnson well point screen. Upon completion, the nonpumping water level was reported to be 50 ft below land surface.

WELL NO. 4 was completed in April 1975 to a depth of 1985 ft by the J. P. Miller Artesian Well Co., Brookfield. The water-yielding units in this well are the Midwcst Aquigroup (Cambrian-Ordovician aquifer) except for dolomites of the Galena and Platteville Groups and the Glenwood-St. Peter Sandstone, and the Basal Bedrock Aquigroup (Elmhurst-Mt. Simon aquifer). The well is located about 0.3 mile east of Bartlett Road just north of Stearns Road, approximately 100 ft S and 1850 ft E of the NW corner of Section 11, T40N, R9E, Du Page County. The land surface elevation at the well is approximately 770 ft.

A drillers log of Well No. 4 follows:

Strata	*Thicknтss (ft)*	*Depth (ft)*
Drift	91	91
Niagaran lime	70	161
Maquoketa shale	211	372
Galena-PlatteviMe dolomite	336	708
St. Peter sandstone	200	908
Prairie du Chien dolomite, sand, shale	342	1250
Galesville sandstone	110	1360
Eau Claire dolomite, sand, shale	410	1770
Mt. Simon sandstone	215	1985

A 28-in. diameter hole was drilled to a depth of 95 ft, reduced to 21 in. between 95 and 1044 ft, reduced to 15 in. between 1044 and 1423 ft, and finished 13.8 in. in diameter from 1423 to 1985 ft. The well is cased with 22-in. pipe from land surface to a depth of 95 ft (cemented in) and 16-in. pipe from about 3 ft above land surface to a depth of 1044 ft (cemented in).

A production test was conducted by the driller on April 25, 1975. After 8 hr of pumping at rates of 1100 to 1075 gpm, the final drawdown was 285 ft from a nonpumping water level of 445 ft.

A second production test was conducted by the driller on April 28, 1975. After 16.5 hr of pumping at a rate of 1100 gpm, the final drawdown was 210 ft from a nonpumping water level of 520 ft.

The pumping equipment presently installed is a Peerless turbine pump set at 920 ft, rated at 1000 gpm, and powered by a 400-hp Ideal electric motor.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B052691) of a sample collected April 27, 1981, after pumping for 2 hr at about 1100 gpm, showed the water to have a hardness of 157 mg/1, total dissolved minerals of 312 mg/1, and an iron content of 0.28 mg/1.

WELL NO. 5 (former Apple Orchard Subdivision well) was completed in October 1959 to a depth of 392 ft by the Layne-Western Co., Aurora. This well was purchased by the village in June 1975. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located north of Stearns Road and northwest of a clubhouse, approximately 1100 ft N and 2300 ft E of the SW corner of Section 3, T40N, R9E, Du Page County. The land surface elevation at the well is approximately 810 ft.

A 16-in. diameter hole was drilled to a depth of 155 ft and finished 15.2 in. in diameter from 155 to 392 ft. The well is cased with 16-in. pipe from about 1.5 ft above the wellhouse floor to a depth of 155 ft.

A production test was conducted by the driller on October 3, 1959. After 10 hr of pumping at rates of 180 to 214 gpm, the drawdown was 136 ft from a nonpumping water level of 56 ft below land surface. The pump broke suction and the rate was reduced to 201 gpm for 30 min with a final drawdown of 135 ft.

In November 1960, the nonpumping water level was reported to be 57 ft.

On June 6, 1963, after 10 min of pumping at rates of 340 to 310 gpm, the drawdown was 14.1 ft from a nonpumping water level of 60.9 ft. On the basis of these data, it was concluded that this well had improved considerably since the original test.

A drillers log of Well No. 5 follows:

Strata	Thickness (ft)	Depth (ft)
Top soil	3	3
Yellow clay, sandy	17	20
Yellow clay, sand and boulders	5	25
Gravel and boulders	45	70
Gravel and clay, blue	32	102
Silty clay	8	110
Silty sand	5	115
Gravel	15	130
Fine and coarse gravel, some water	10	140
Fine sand	5	145
Fine sand and gravel	9	154
Lime, gray	6	160
Lime, brown medium	10	170
Lime, pinkish hard	10	180
Lime, gray hard	45	225
Lime shale streaks medium	5	230
Lime shale gray medium	15	245
Blue shale	15	260
Lime gray hard	10	270
Lime shale medium	35	305
Lime and shale, gray medium	5	310
Lime gray hard	25	335
Lime shale hard	25	360
Lime and shale medium	10	370
Lime and shale hard	10	380
Lime hard	5	385
Shale and lime, gray hard	5	390
Shale	2	392

On October 16, 1963, the well reportedly produced 350 gpm with a drawdown of 17 ft from a nonpumping water level of 63 ft.

Nonpumping water levels were reported to be 75 ft in October 1966, 76 ft in March 1969, 77 ft in November 1970, and 74 ft in December 1971.

The pumping equipment presently installed is a Hayward Tyler submersible pump set at 300 ft, rated at 730 gpm, and powered by a 100-hp Hayward Tyler electric motor.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B44989) of a sample collected May 10, 1979, showed the water to have a hardness of 389 mg/1, total dissolved minerals of 440 mg/1, and an iron content of 0.97 mg/1. Hydrogen sulfide was apparent when a previous sample was collected.

WELL NO. 6, finished in sand and gravel of the Prairie Aquigroup, was completed in April 1977 to a depth of 61 ft by the J. P. Miller Artesian Well Co., Brookfield. The well is located on the north side of Stearns Road about 0.4 mile east of Bartlett Road, approximately 75 ft S and 1900 ft E of the NW corner of Section 11, T40N, R9E, Du Page County. The land surface elevation at the well is approximately 770 ft.

A drillers log of Well No. 6 follows:

Strata	Thickness (ft)	Depth (ft)
Brown clay	14	14
Gray clay	37	51
Sand and gravel with boulders	14	65
Gray clay with gravel below		

A 48-in. diameter hole was drilled to a depth of 61 ft. The well is equipped with a pitless adapter from land surface to a depth of 6 ft and cased with 20-in. steel pipe from 6 ft below land surface to a depth of 49 ft followed by 12 ft of 20-in. No. 125 slot stainless steel screen. The annulus between the bore hole and casing-screen assembly is filled with cement grout from 0 to 14 ft, with impervious fill from 14 to 30 ft, and with 1/4- by 1/8-in. gravel from 30 to 61 ft.

A production test was conducted by the driller on April 4-5, 1977. After 29 hr of pumping at rates ranging from 800 to 400 gpm, the maximum drawdown was 15.7 ft from a nonpumping water level of 21.0 ft below the top of the casing. One hr after pumping was stopped, the water level had recovered to 23.0 ft.

The pumping equipment presently installed is a Pleuger submersible pump (No. 405179) rated at 600 gpm at about 280 ft TDH, and powered by a 60-hp electric motor. The well is equipped with 51.5 ft of airline.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B041601) is for a water sample from the well collected June 7, 1983, after 2 hr of pumping at 800 gpm.

WELL NO. 6, LABORATORY NO. B041801

		mg/l	me/I			mg/1	me/l
Iron	Fe	2.6		Silica	SiO_2	23	
Manganese	Mn	0.048		Fluoride	F	0.20	0.01
Ammonium	NH_4	0.2	0.01	Boron	B	0.06	
Sodium	Na	25	1.09	Cyanide	CN	<0.005	
Potassium	K	2.7	0.07	Nitrate	NO_3	<0.4	
Calcium	Ca	104	5.19	Chloride	CI	41	1.16
Magnesium	Mg	61.5	5.06	Sulfate	SO_4	135	2.81
Strontium	Sr	0.274		Alkalinity (as $CaCO_3$)		386	7.72
Arsenic	As	0.001		Hardness (as $CaCO_3$)		511	10.22
Barium	Ba	0.069					
Beryllium	Be	<0.0005		Total dissolved			
Cadmium	Cd	<0.003		minerals		610	
Chromium	Cr	<0.005					
Cobalt	Co	<0.005					
Copper	Cu	<0.003					
Lead	Pb	<0.005					
Mercury	Hg	<0 00010					
Nickel	Ni	<0.010					
Selenium	Se	0.002					
Silver	Ag	<0.005					
Vanadium	V	<0.010					
Zinc	Zn	<0.002		pH (as rec'd)		7.9	

A test well was constructed in May 1979 to a depth of 80 ft by the J. P. Miller Artesian Well Co., Brookfield. It was located approximately 2500 ft S and 2500 ft W of the NE corner of Section 2, T40N, R9E. The test well was cased with 8-in. pipe to a depth of 65 ft followed by 15 ft of screen. Upon completion, it reportedly produced 150 gpm for 8 hr with a drawdown of 30 ft from a nonpumping water level of 25 ft below land surface.

WELL NO. 7 was completed in February 1981 to a depth of 2001 ft by the Layne-Western Co., Aurora. The water-yielding units in this well are the Midwest Aquigroup (Cambrian-Ordovician aquifer) except for dolomites of the Galena and Platteville Groups and the Glenwood-St. Peter Sandstone, and the Basal Bedrock Aquigroup (Elmhurst-Mt. Simon aquifer). The well is located about 750 ft north of Stearns Road, 0.6 mile east of Route 59, and 50 ft north of Well No. 5, approximately 1150 ft N and 2300 ft E of the SW corner of Section 3, T40N, R9E, Du Page County. The land surface elevation at the well is approximately 812 ft.

A 26-in. diameter hole was drilled to a depth of 156 ft, reduced to 25.2 in. between 156 and 381 ft, reduced to 22 in. between 381 and 1027 ft, reduced to 15 in. between 1027 and 1082 ft, and finished 12.5 in. in diameter from 1082 to 2001 ft. The well is cased with 26-in. steel pipe from land surface to a depth of 156 ft, 16-in. steel pipe from about 3 ft above land surface to a depth of 1027 ft (cemented in), and 13.4-in. steel slotted pipe from 1015 ft to a depth of 1082 ft.

During drilling, a production test was conducted at a depth of 1463 ft by the driller on December 18, 1980. After 5.5 hr of pumping at rates ranging from 354 to 403 gpm, the maximum drawdown was 169 ft from a nonpumping water level of 675 ft.

A second production test was conducted at the final depth of 2001 ft by the driller on February 18-20, 1981. After 4.8 hr of pumping at rates ranging from 448 to 476 gpm, the drawdown was 210 ft from a nonpumping water level of 570 ft. Pumping was continued for 6.5 hr at a rate of 623 gpm with a drawdown of 264 ft. Pumping was continued for 11.3 hr at a rate of 807 gpm with a drawdown of 316 ft. The water level recovered to 653 ft after pumping had been stopped for 1.1 hr. Pumping was then continued for 1.1 hr at rates ranging from 571 to 807 gpm with a drawdown of 340 ft. Fifty-five min after pumping was stopped, the water level had recovered to 650 ft. Pumping was continued for 1.1 hr at rates of 759 to 734 gpm with a final drawdown of 338 ft. One hr after pumping was stopped, the water level had recovered to 656 ft.

A third production test was conducted by the driller on April 14, 1982. After 3.7 hr of pumping at rates ranging from 775 to 830 gpm, the final drawdown was 330 ft from a nonpumping water level of 570 ft.

A drillers log of Well No. 7 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Top soil	2	2
Yellow and brown clay - sandy and some gravel	26	28
Coarse gravel with boulders	24	52
Gray clay with gravel and boulders	16	68
Fine gravel	6	74
Gray clay with gravel	26	100
Silty sand with little gravel	17	117
Hardpan clay and coarse gravel	13	130
Silty sand and gravel	24	154
Limestone - brown and green	68	222
Gray and red shale	3	225
Gray shale and some lime	25	250
Hard lime and shale - medium	60	310
Shale and lime shells - medium	69	379
Lime - brown - hard	6	385
Lime and shale - gray - medium	39	424
Lime - brown - medium to hard	334	758
Sandy lime - brown - hard	2	760
Sand - gray - hard	10	770
Fine sand - white - hard	49	819
Sandy lime and shale - hard	9	828
Fine white sand, little gray shale - hard	143	971
Sand - pink hard	11	982
Sand - brown and white - hard	13	995
Shale - red and green - medium to hard	2	997
Sand - white - hard	6	1003
Shale - red and green - medium to hard	4	1007
Sand and some red shale - medium to hard	9	1016
Lime - brown with some red shale - hard	14	1030
Lime - brown with red and green shale seams - medium to hard	123	1153
Sand, gray with some red shale - hard	7	1160
Lime, brown, sandy, some red shale - medium	5	1165
Sand, gray, medium to hard	50	1215
Lime, gray, sandy, some shale - hard	10	1225
Sand, gray, some lime - hard	10	1235
Lime, gray, sandy - hard	9	1244
Sand, white - medium to soft to hard	169	1413
Lime and shale, gray - hard	10	1423
Lime, dark gray - hard	17	1440
Shale, gray - medium to hard	44	1484
Lime, gray - hard	6	1490
Lime with streaks shale - hard	44	1534
Shale - medium	28	1562
Lime, gray - hard	132	1694
Green shale and gray lime - medium	16	1710
Sand - medium	13	1723
Lime, sandy - hard	47	1770
Lime with shale streaks - hard	20	1790
Sand, brown - medium to hard	211	2001

A fourth production test was conducted by the driller on October 1, 1982. After 6.8 hr of intermittent pumping at rates of 725 to 775 gpm, the final drawdown was 215 ft from a nonpumping water level of 720 ft.

The pumping equipment presently installed is an 11-in., 18-stage Layne & Bowler turbine pump (Serial No. 96875) rated at 750 gpm, and powered by a 450-hp U. S. electric motor. The well is equipped with 990 ft of airline.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B041597) is for a water sample from the well collected June 7, 1983, after 2 hr of pumping at 600 gpm.

WELL NO. 7, LABORATORY NO. B041507

		mg/l	*mt/l*			*mg/l*	*me/I*
Iron	Fe	0.41		Silica	SiO_2	8.0	
Manganese	Mn	0.019		Fluoride	F	1.81	0.10
Ammonium	NH_4	0.7	0.04	Boron	B	0.47	
Sodium	Na	43	1.87	Cyanide	CN	<0.005	
Potassium	K	13.0	0.33	Nitrate	NO_3	<0.4	
Calcium	Ca	SO	2.50	Chloride	CI	24	0.68
Magnesium	Mg	14.5	1.19	Sulfate	SO_4	39	0.81
Strontium	Sr	1.24		Alkalinity (as $CaC0_3$)		224	**4.48**
Arsenic	As	0.001		Hardness (as $CaCO_3$)		185	3.70
Barium	Ba	0.020					
Beryllium	Be	<0.0005		Total dissolved			
Cadmium	Cd	<0 003		minerals		333	
Chromium	Cr	<0.005					
Cobalt	Co	<0.005					
Copper	Cu	<0.003					
Lead	Pb	<0.005					
Mercury	Hg	<0.00010					
Nickel	Ni	<0.010					
Selenium	Se	0.001					
Silver	Ag	<0.005					
Vanadium	V	<0.004					
Zinc	Zn	<0.002		pH (as rec'd)		7.9	

BELMONT-HIGHWOOD PUBLIC WATER DISTRICT

Belmont-Highwood Public Water District (est. 581), located just west of Downers Grove, installed a public water supply in 1924. Two wells are in use. In 1952 there were 130 services, all metered. In 1984 there were 166 services, all metered; the average pumpage was 69,200 gpd. The water is chlorinated and fluoridated.

WELL NO. 1 (Water District No. 2), open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was constructed in 1924 to a depth of 143 ft by O. K. Hawkyard, Downers Grove, and deepened in 1954 to a reported depth of 148 ft by the J. P. Miller Artesian Well Co., Brookfield. The well is located on the south side of Hitchcock Ave. east of Belmont Road, approximately 2500 ft N and 1000 ft W of the SE corner of Section 12, T38N, R10E. The land surface elevation at the well is approximately 695 ft.

The well is cased with 5-in. pipe from about 0.8 ft above land surface to a depth of 58.5 ft.

Nonpumping water levels before deepening were reported to be 41 ft in 1924, and 41.4 ft below land surface in 1934.

In 1954, the J. P. Miller Artesian Well Co. cleaned and deepened the well to a depth of 148 ft, and installed a new pump. The nonpumping water level was then reported to be 45 ft.

In August 1957, the nonpumping water level was reported to be 58 ft.

The pumping equipment presently installed is a turbine pump set at 89 ft, rated at 100 gpm, and powered by a 15-hp U. S. electric motor.

WELL NO. 2 (Water District No. 1), open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in September 1954 to a depth of 295 ft by the Layne-Western Co., Aurora. The well is located on the south side of East Elmore Ave. east of Belmont Road, approximately 780 ft N and 950 ft W of the SE corner of Section 12, T38N, R10E. The land surface elevation at the well is approximately 740 ft.

A 10-in. diameter hole was drilled to a depth of 295 ft. The well is cased with 10-in. black iron pipe from about 2 ft above the wellhouse floor to a depth of 90 ft.

A production test was conducted on September 28, 1954, by representatives of the driller and the State Water Survey. After 3.7 hr of pumping at rates ranging from 299 to 340 gpm, the drawdown was 4 ft from a nonpumping water level of 83 ft below land surface.

A summary sample study log of Well No. 2 furnished by the State Geological Survey follows:

Strata	Thickness (ft)	Depth (ft)
QUATERNARY SYSTEM		
Pleistocene Series		
Till, yellowish brown, dark grayish brown, brown	45	45
Gravel and sand, gray, brown	45	90
SILURIAN SYSTEM		
Niagaran Series		
Dolomite, silty, cherty, gray to light gray, little slightly porous, slightly argillaceous, little yellow, pink lower 15 ft, very fine	150	240
Alexandrian Series		
Dolomite, slightly silty, light gray, greenish gray to light brown, very fine	50	290
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Formation		
Shale, dolomitic, maroon, green, weak; dolomite, very argillaceous, green, purple, yellow, very fine	5	295

Nonpumping water levels were reported to be 95 ft on June 14, 1958; 96 ft in September 1959; 95 ft in October 1961; 97 ft in November 1962; 99 ft in February 1965; 100 ft in January 1971; 98 ft in October 1972 and October 1973; and 104 ft in April 1979.

The pumping equipment presently installed consists of a 30-hp 1750 rpm U. S. electric motor (No. 2355464), a 10-in., 5-stage Layne turbine pump (No. 29631) set at 110 ft, rated at 400 gpm at about 205 ft TDH, and has 110 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 110 ft of airline.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. C005657) is for a water sample from the well collected May 10, 1977, after 15 min of pumping.

WELL NO. 2, LABORATORY NO. C005657

		mg/l	me/l			mg/l	me/l
Iron	Fe	0.0		Silica	SiO_2	12	
Manganese	Mn	0.00		Fluoride	F	0.2	0.01
Ammonium	NH_4	0.20	0.01	Boron	B	0.2	
Sodium	Na	51	2.22	Cyanide	CN	0.00	
Potassium	K	4.9	0.12	Nitrate	NO_3	10.56	0.17
Calcium	Ca	120	5.99	Chloride	CI	127	3.58
Magnesium	Mg	53	4.36	Sulfate	SO_4	138	2.87
				Alkalinity (as $CaCO_3$)		320	6.40
Arsenic	As	0.000					
Barium	Ba	0.0		Hardness (as $CaCO_3$)		517	10.34
Cadmium	Cd	0.00					
Chromium	Cr	0.00		Total dissolved			
Copper	Cu	0.00		minerals		744	
Lead	Pb	0.00					
Mercury	Hg	0.0000					
Nickel	Ni	0.0					
Selenium	Se	0.00					
Silver	Ag	0.00					
Zinc	Zn	0.00		pH (as rec'd)		8.1	

BENSENVILLE

The village of Bensenville (16,124) installed a public water supply in 1925. Five wells (Nos. 2, 3, 4, 6, and 7) are in use. This supply is also cross connected with the cities of Elmhurst and Wood Dale and the village of Elk Grove Village. In 1949 there were 900 services, all metered; the average and maximum pumpages were 255,000 and 315,000 gpd, respectively. In 1984 there were 4753 services, all metered; the average pumpage was 2,708,000 gpd. The water is chlorinated.

WELL NO. 1 was completed in 1924 to a depth of 1445 ft (cleaned to a depth of 1440 ft in 1938, reported to be 1430 ft deep in November 1946, and measured at 1414 ft in 1967) by the W. L. Thorne Co., Des Plaines. This well was abandoned in 1962 and sealed in 1967. The water-yielding units in this well were the Upper Bedrock Aquigroup (Silurian System) and the Midwest Aquigroup (Cambrian-Ordovician aquifer) except for the Galena and Platteville Groups and the Franconia Formation. The well was located on the east side of York Road about 1.5 blocks south of Irving Park Road, approximately 2530 ft S and 80 ft E of the NW corner of Section 13, T40N, R11E. The land surface elevation at the well is approximately 677 ft.

A 12-in. diameter hole was drilled to a depth of 334 ft, reduced to 10 in. between 334 and 791 ft, reduced to 8 in. between 791 and 1216 ft, reduced to 7 in. between 1216 and 1332 ft, and finished 6 in. in diameter from 1332 to 1445 ft. The well was cased with 12-in. pipe from about 2 ft above the pumphouse floor to a depth of 114 ft, 10-in. liner from 218 ft to a depth of 334 ft, 8-in. liner from 334 ft to a depth of 791 ft, 7-in. liner from 1113 ft to a depth of 1216 ft, and a 6-in. liner from 1216 ft to a depth of 1332 ft.

A drillers log of Well No. 1 follows:

Strata	Thickness (ft)	Depth (ft)
Drift	114.5	114.5
Lime	122.5	237
Shale	97	334
Lime	11	345
Shale	34	379
Lime	10	389
Shale	74	463
Lime, hard and broken	157	620
Lime, caving	110	730
Lime, some water	55	785
Sandstone, St. Peter	275	1060
Lime	34	1094
Shale	16	1110
Lime, shale, caving bad	90	1200
Sand, first Potsdam	240	1440
Shale	5	1445

Upon completion, the well reportedly produced 147 gpm with a drawdown of 23.5 ft from a nonpumping water level of 168.5 ft. Pumping was continued at a rate of 176 gpm with a drawdown of 35.5 ft.

Considerable pump trouble was experienced between 1929 and 1938 and the well was only operated occasionally. In March 1938, the J. P. Miller Artesian Well Co., Brookfield, removed the pump. The well was sounded and found bridged at a depth of 1091 ft. The nonpumping water level was reported to be 234.5 ft below the pump base. The well was cleaned to a depth of 1440 ft and a new pump installed. A production test was then conducted on May 23-24, 1938, by representatives of the J. P. Miller Artesian Well Co., the State Water Survey, and Marr, Green, & Opper. After 6.5 hr of pumping at rates ranging from 213 to 145 gpm, the drawdown was 67.5 ft from a nonpumping water level of 234.0 ft below the pump base. After an additional 17.2 hr of pumping at rates ranging from 202 to 192 gpm, the final drawdown was 96.0 ft.

Nonpumping water levels were reported to be 250 ft on February 22, 1943; 290 ft below the pump base in July 1943; 265 ft below the pump base on August 10, 1943; and 305 ft on August 7 and 8, 1945.

This well was out of service during the greater part of 1946 because of pumping difficulties. In November 1946, the pump was pulled by the J. P. Miller Artesian Well Co. and the depth of the well was found to be 1430 ft. After a new pump was installed, a production test was conducted on November 26, 1946, by representatives of the J. P. Miller Artesian Well Co., the village, and the State Water Survey. After 1.9 hr of pumping at rates ranging from 240 to 247.5 gpm, the drawdown was 96.0 ft from a nonpumping water level of 317.5 ft. Well No. 2 was then turned on and after 1.1 hr of simultaneous operation, the drawdown was 101.5 ft in Well No. 1 while pumping at rates of 240 to 235 gpm.

On May 15, 1947, the well reportedly produced 225 gpm for 2 hr with a drawdown of 84.5 ft from a nonpumping water level of 313.0 ft below the pump base. Three hr after pumping was stopped, the water level had recovered to 327.5 ft. Well No. 2 was operating during the 3-hr recovery period.

Nonpumping water levels were reported to be 335 ft in September 1949, and 342 ft in September 1950.

On June 8, 1951, the well reportedly produced at rates ranging from 230 to 205 gpm for 2.5 hr with a drawdown of 55 ft from a nonpumping water level of 350 ft. Well No. 2 was pumping during the first hr of this test.

Nonpumping water levels were reported to be 364 ft in December 1952; 388 ft below the pump base on September 20, 1954; 402 ft in February 1956; and 439 ft in December 1957.

A partial analysis of a sample (Lab. No. 135814) collected September 20, 1954, after pumping for 4 hr at 230 gpm, showed the water to have a hardness of 252 mg/1, total dissolved minerals of 358 mg/1, and an iron content of 0.1 mg/1.

WELL NO. 2 was completed in 1929 to a depth of 1442 ft by the W. L. Thorne Co., Des Plaines. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer). The well also penetrates the upper part of the Eau Claire Formation. The well is located about 25 ft south and 75 ft east of Well No. 1, approximately 2555 ft S and 155 ft E of the NW corner of Section 13, T40N, R11E. The land surface elevation at the well is approximately 676 ft.

A 22-in. diameter hole was drilled to a depth of 106 ft, reduced to 20 in. between 106 and 322 ft, reduced to 15 in. between 322 and 622 ft, reduced to 12 in. between 622 and 1300 ft, and finished 10 in. in diameter from 1300 to 1442 ft. The well is cased with 20-in. OD pipe from about 1.5 ft above the pumphouse floor to a depth of 106 ft, 17-in. OD pipe from 98 ft to a depth of 322 ft, 12-in. ID pipe from 301 ft to a depth of 622 ft, and a 10-in. liner from 1083 ft to a depth of 1165 ft and from 1244 ft to a depth of 1300 ft. In 1950, a leak in the casing was discovered at a depth of 103 ft and the J. P. Miller Artesian Well Co., Brookfield, installed 126 ft of 12-in. liner pipe below the pump base.

A sample study log of Well No. 2 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
" Soil and gravel"	110	110
SILURIAN SYSTEM		
Niagaran and Alexandrian Series		
"Limestone"	127	237
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
"Shale and limestone"	233	470
Champlainian Series		
Galena and Platteville Groups		
Dolomites	307	777
Ancell Group		
Glenwood Formation		
Sandstone and some shale	58	835
St. Peter Sandstone		
Sandstone	235	1070
Chert, shale, and sandstone	5	1075
CAMBRIAN SYSTEM		
Croixan Series		
Potosi Dolomite		
Dolomite	80	1155
Franconia Formation		
Sandstone, some shale	75	1230
Ironton-Galesville Sandstone		
Sandstone, partly dolomitic	110	1340
Sandstone, incoherent	85	1425
Eau Claire Formation		
Sandstone, some dolomite	17	1442

In November 1929, the well reportedly produced 400 gpm for 10 hr with a drawdown of 34 ft from a nonpumping water level of 200 ft below land surface.

A production test was conducted by the village on May 16, 1944. After 4.5 hr of pumping at rates of 345 to 320 gpm, the drawdown was 43.5 ft from a nonpumping water level of 304.0 ft. Well No. 1 was then turned on and after 1 hr of simultaneous pumping from both wells, the drawdown in Well No. 2 was 48.5 ft after pumping at rates of 310 to 300 gpm.

On May 15, 1947, the nonpumping water level was reported to be 320.0 ft below the pump base. After Well No. 1 was pumping for 2 hr, the nonpumping water level in this well was 327.0 ft. After Well No. 1 was turned off, this well was pumped for 3 hr at 300 gpm with a drawdown of 30.5 ft.

Nonpumping water levels were reported to be 343 ft in September 1949, and 340.4 ft on March 31, 1950.

After a leak in the casing was discovered in 1950, a new liner and pump were installed. A production test was then conducted on May 4, 1950, by representatives of the J. P. Miller Artesian Well Co., the village, and the State Water Survey. After 1.4 hr of pumping at rates ranging from 620 to 680 gpm, the drawdown was 78.5 ft from a nonpumping water level of 348.0 ft.

Nonpumping water levels were reported to be 344 ft in September 1950, and 365 ft in December 1952.

On November 12, 1954, the well reportedly produced 600 gpm for 5 hr with a drawdown of 60 ft from a nonpumping water level of 389 ft below the pump base.

Nonpumping water levels were reported to be 402 ft in February 1956; 437 ft on September 3, 1957; and 439 ft in December 1957.

In November 1958, the well reportedly produced 625 gpm with a drawdown of 68 ft from a nonpumping water level of 457 ft.

Nonpumping water levels were reported to be 590 ft on October 28, 1963; 595 ft in November 1964; 605 ft in November 1965 and December 1967; 637 ft in May 1969; and 655 ft in March 1972.

The pumping equipment presently installed is a Johnston vertical turbine pump set at 945 ft, rated at 600 gpm, and powered by an electric motor.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B103323) of a sample collected October 1, 1973, after pumping for 2 hr at 500 gpm, showed the water to have a hardness of 354 mg/1, total dissolved minerals of 566 mg/1, and an iron content of 0.19 mg/1.

WELL NO. 3 was completed in August 1954 to a depth of 1445 ft by the J. P. Miller Artesian Well Co., Brookfield. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer). The well also penetrates the upper part of the Eau Claire Formation. The well is located at the northeast corner of Main St. and Church Road about 0.5 mile west of Well No. 2, approximately 2200 ft S and 2500 ft W of the NE corner of Section 14, T40N, R11E. The land surface elevation at the well is approximately 670 ft.

A 25-in. diameter hole was drilled to a depth of 476 ft, reduced to 19.2 in. between 476 and 1210 ft, and finished 15 in. in diameter from 1210 to 1445 ft. The well is cased with 26-in. pipe from land surface to a depth of 80 ft, 20-in. pipe from land surface to a depth of 476 ft (cemented in), and a 16-in. liner from 1084.7 ft to a depth of 1210 ft.

Upon completion, the well was shot with 6 charges (228 to 570 lb shots) of 100 percent nitrogel from 1370 to 1420 ft. The well then reportedly produced 1000 to

A summary sample study log of Well No. 3 furnished by the State Geological Survey follows:

Strata	Thickness (ft)	Depth (ft)
No samples	50	50
SILURIAN SYSTEM		
Niagaran Series		
Racine, Sugar Run and Joliet Dolomites		
Dolomite, white to buff, very fine	10	60
Dolomite, white to buff, cherty	85	145
Markgraf Member		
Dolomite, argillaceous, buff to gray	25	170
Brandon Bridge Member		
Dolomite, white, gray, red, pink, fine	15	185
Alexandrian Series		
Kankakee Dolomite		
Dolomite, white to buff, very fine to fine	35	220
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Brainard Shale and Ft. Atkinson Dolomite		
Shale, light greenish gray, weak	10	230
Dolomite, gray, green; shale, silty, green	45	275
Shale, silty, greenish gray, weak	15	290
Dolomite, buff, gray, green, fine	5	295
Shale, silty, greenish gray, weak	35	330
Dolomite, buff, gray, green, fine	5	335
Shale, silty, greenish gray, weak	10	345
Scales Shale		
Dolomite, brown to grayish brown, fine	10	355
Shale, silty, greenish gray, weak	12	367
Dolomite, brown to grayish brown, fine	23	390
Shale, silty, greenish gray to brown	55	445
Champlainian Series		
Galena Group		
Kimmswick Subgroup		
Dolomite, buff, fine to medium, porous	160	605
Decorah Subgroup		
Dolomite, buff, red, fine, cherty, porous	25	630
Platteville Group		
Dolomite, buff to gray, cherty, fine	154	784
Ancell Group		
Glenwood Formation		
Sandstone, white to light gray, frosted	36	820
St. Peter Sandstone		
Sandstone, white, silty, rounded, frosted	173	993
Shale, sandy, light buff, brittle	5	998
Canadian Series		
Oneota Dolomite		
Dolomite, sandy, light buff to gray	12	1010
Dolomite, white to pink, cherty, fine	50	1060
Dolomite, sandy, white to buff, medium	5	1065
Dolomite, cherty (oolitic), white, pink	15	1080
CAMBRIAN SYSTEM		
Croixan Series		
Eminence-Potosi Dolomite		
Dolomite, sandy, white to buffish red	45	1125
Sandstone, reddish brown, fine to medium	10	1135
Shale, reddish brown, green, weak to tough	10	1145
Sandstone, brown; shale, green, purple	10	1155
Franconia Formation		
Dolomite, glauconitic, sandy, gray, brown	10	1165
Sandstone, shaly, gray to reddish brown	10	1175
Shale, sandy, green to reddish brown	10	1185
Sandstone, shaly, gray to reddish brown	15	1200
Shale, sandy, green to reddish brown	5	1205
Sandstone, shaly, gray to reddish brown	10	1215
Shale, sandy; sandstone, reddish brown	20	1235
Ironton Sandstone		
Sandstone, white to pinkish buff, rounded	70	1305
Galesville Sandstone		
Sandstone, white, buff, silty, incoherent	122	1427
Eau Claire Formation		
Dolomite, sandy, buff, pink, brown, white	18	1445

1100 gpm for 24 hr with a drawdown of 79 ft from a nonpumping water level of 370 ft below the top of the casing.

Nonpumping water levels were reported to be 396 ft in February 1956; 416.5 ft on September 3, 1957; 418 ft in December 1957; 431 ft below the pump base on May 1, 1958; 406 ft in November 1958; 556 ft in November 1962; 574 ft on October 28, 1963; 588 ft in November 1964; and 615 ft in November 1965.

In 1965, the J. P. Miller Artesian Well Co. cleaned out the well to 1445 ft, added a pump stage, lowered the pump to 850 ft, and installed a new motor.

Nonpumping water levels were reported to be 635 ft in December 1967, 650 ft in May 1969, and 670 ft in March 1972.

In February 1975, this well was cleaned out.

The pumping equipment presently installed consists of a 400-hp 1750 rpm Ideal electric motor, an 11-in., 18-stage Peerless turbine pump (No. 110311) set at 1000 ft, rated at 1210 gpm, and has 1000 ft of 10-in. column pipe. A 10-ft section of 10-in. suction pipe is attached to the pump intake.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B32625) of a sample collected April 6, 1983, after pumping for 2 hr at 1064 gpm, showed the water to have a hardness of 274 mg/1, total dissolved minerals of 436 mg/1, and an iron content of 0.04 mg/1.

WELL NO. 4 was completed in June 1961 to a depth of 1494 ft by the J. P. Miller Artesian Well Co., Brookfield. The water-yielding unit in this well is the

Midwest Aquigroup (Cambrian-Ordovician aquifer). The well also penetrates the upper part of the Eau Claire Formation. The well is located at 340 Meyer Road in the industrial district, approximately 670 ft N and 1175 ft W of the SE corner of Section 11, T40N, RUE. The land surface elevation at the well is approximately 675 ft.

A drillers log of Well No. 4 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Yellow and blue clay	28	28
Blue clay and mud	44	72
Large boulders	8	80
Brown formation - some shale	25	105
Light clean lime	5	110
Lime, medium	30	140
Lime, hard	5	145
Lime, medium	20	165
Light lime, hard	10	175
Light gray lime, medium	35	210
Lime changing to brown	30	240
Shaly lime	5	245
Brown shaly lime	3	248
Shale	97	345
Shaly lime, brown	5	350
Shale	50	400
Shale, dark	73	473
Lime, brown	82	555
Light brown lime	85	640
Light gray lime	90	730
Changing to light brown	55	785
Brown sandy lime	11	796
St. Peter sand	251	1047
Gray shale and lime	16	1063
Light lime	10	1073
Lime and shale breaks	40	1113
Red rock	7	1120
Red mud, shale	55	1175
Brown sandy lime	55	1230
Brown lime	26	1256
Galesville sand	64	1320
Galesville sand, bottom of sand	126	1446
Shale and lime	48	1494

A 26-in. diameter hole was drilled to a depth of 501 ft, reduced to 19.2 in. between 501 and 1179 ft, and finished 15.2 in. in diameter from 1179 to 1494 ft. The well is cased with 26-in. pipe from about 0.5 ft above the wellhouse floor to a depth of 106 ft, 20-in. pipe from about 0.5 ft above the wellhouse floor to a depth of 499 ft (cemented in), and a 16-in. OD liner from 966.5 ft to a depth of 1179 ft.

Upon completion, the well reportedly produced 1120 gpm for 22 hr with a drawdown of 100 ft from a non-pumping water level of 528 ft below the top of the casing.

Nonpumping water levels were reported to be 573 ft in November 1962, and 633 ft on July 30, 1963.

The pumping equipment presently installed consists of a 350-hp 1775 rpm Ideal electric motor, a 14-in., 11-stage Peerless turbine pump set at 1015 ft, rated at 1000 gpm at about 750 ft TDH, and has 1015 ft of 10-in. column pipe. A 10-ft section of 10-in. suction pipe is attached to the pump intake.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B000769) of a sample collected July 6, 1983, after pumping for 24 hr at 950 gpm, showed the water to have a hardness of 291 mg/1, total dissolved minerals of 468 mg/1, and an iron content of 0.12 mg/1.

WELL NO. 5 was completed in February 1969 to a depth of 1450 ft by the Milaeger Well & Pump Co., Brookfield, Wis. This well is not in use. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer). The well also penetrates the upper part of the Eau Claire Formation. The well is located at 701 West Foster Ave., approximately 2114 ft S and 2324 ft W of the NE corner of Section 11, T40N, R11E. The land surface elevation at the well is approximately 672 ft.

A drillers log of Well No. 5 follows:

Strata	*Thickness* ***(ft)***	*Depth* ***(ft)***
Clay and gravel	80	80
Gravel	28	108
Niagara lime	9	117
Lime	165	282
Shale	48	330
Shale and lime	78	408
Shale	55	463
Lime	279	742
Limestone, hard	23	765
Lime	10	775
Lime, hard	10	785
Sand, hard	15	800
Sand	202	1002
Sand and shale	43	1045
Lime	10	1055
Sand and lime	25	1080
Lime, hard	10	1090
Lime	15	1105
Lime and red rock	12	1117
Red rock	23	1140
Red rock, caving	4	1144
Lime	13	1157
Sand, hard	188	1345
Sand	10	1355
Sandstone	20	1375
Sandstone, hard	10	1385
Sandstone	5	1390
Eau Claire dolomite	10	1400
Eau Claire dolomite, sandy	20	1420
Eau Claire, sandstone	11	1431
Shale	19	1450

A 26-in. diameter hole was drilled to a depth of 187 ft, reduced to 25 in. between 187 and 480 ft, reduced to 19.2 in. between 480 and 1152 ft, and finished 15 in. in diameter from 1152 to 1450 ft. The well is cased with 26-in. steel pipe from about 1 ft above land

surface to a depth of 108 ft and 20-in. steel pipe from about 4 ft above land surface to a depth of 480 ft (cemented in). Originally, a 16-in. liner was placed from 1026 ft to a depth of 1152 ft. In 1977, the 16-in. liner was removed and a 16-in. casing was installed from land surface to a depth of 985 ft. In 1980, the 16-in. casing was removed and no further rehabilitation work has been accomplished.

A production test was conducted by the driller on February 13-14, 1969. After 16.5 hr of pumping at rates ranging from 760 to 600 gpm, the drawdown was 224 ft from a nonpumping water level of 488 ft below land surface. Pumping was continued for 7.5 hr at rates of 700 to 812 gpm with a final drawdown of 248 ft. One hr after pumping was stopped, the water level had recovered to 547 ft.

After this well was shot with 3100 lb (100 and 150 lb shots) of dynamite from 1200 to 1375 ft, a production test was conducted by the driller on April 7-9, 1969. After 46.5 hr of pumping at rates ranging from 600 to 912 gpm, the final drawdown was 239 ft from a nonpumping water level of 498 ft below land surface. The water level recovered to 567 ft after pumping had been stopped for 1.2 hr.

In March 1972, the nonpumping water level was reported to be 675 ft.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. C002404) is for a water sample from the well collected September 15, 1975, after pumping at 700 gpm. Hydrogen sulfide was apparent when previous samples were collected.

WELL NO. 5, LABORATORY NO. C002404

		mg/l	*me/l*			*mg/l*	*me/l*
Iron	Fe	0.2		Silica	SiO_2	8.0	
Manganese	Mn	0.00		Fluoride	F	1.0	0.05
Ammonium	NH_4	0.95	0.05	Boron	B	0.6	
Sodium	Na	53	2.31	Cyanide	CN	0.00	
Potassium	K	11.7	0.30	Nitrate	NO_3	**2.2**	0.04
Calcium	Ca	64	3.19	Chloride	CI	**21**	0.59
Magnesium	Mg	27	2.22	Sulfate	SO_4	**116**	**2.41**
				Alkalinity (as	$CaCO_3$)	258	5.16
Arsenic	As	0.000					
Barium	Ba	0.0		Hardness (as	$CaCO_3$)	**271**	5.42
Cadmium	Cd	0.00					
Chromium	Cr	0.00		Total dissolved			
Copper	Cu	0.00		minerals		492	
Lead	Pb	0.00		pH (as rec'd)		7.8	
Mercury	Hg	0.0000		Radioactivity			
Nickel	Ni	0.0		Alpha pc/l		40.0	
Selenium	Se	0.00		+/-deviation		6.1	
Silver	Ag	0.00		Beta pc/l		30.0	
Zinc	Zn	0.03		+/- deviation		3.4	

In 1977, this well was rehabilitated by the J. P. Miller Artesian Well Co., Brookfield.

In January 1979, the nonpumping water level was reported to be 765 ft.

WELL NO. 6 was completed in February 1980 to a depth of 1900 ft by the Wehling Well Works, Beecher. The water-yielding units in this well are the Midwest Aquigroup (Ironton-Galesville Sandstone) and the Basal Bedrock Aquigroup (Elmhurst-Mt. Simon aquifer). The well is located south of Belmont St. (extended) about 0.2 mile west of York Road, approximately 30 ft S and 1350 ft W of the NE corner of Section 26, T40N, R11E. The land surface elevation at the well is approximately 684 ft.

A drillers log of Well No. 6 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift	81	81
Lime	187	268
Shale	215	483
Lime	165	648
Dolomite	60	708
Lime	95	803
St. Pete and sand	260	1063
Lime	120	1183
Sand and shale	90	1273
Sand and lime	15	1288
Sand	165	1453
Shale	175	1628
Sand with shale	35	1663
Sand with shale black	50	1713
Sand white	30	1743
Sand with shale	157	1900

A 26-in. diameter hole was drilled to a depth of 93 ft, reduced to 25 in. between 93 and 805 ft, reduced to 22 in. between 805 and 1278 ft, reduced to 17 in. between 1278 and 1415 ft, and finished 15 in. in diameter from 1415 to 1900 ft. The well is cased with 26-in. black steel pipe from land surface to a depth of 93 ft, 22-in. pipe from about 3.5 ft above land surface to a depth of 805 ft (cemented in), and an 18-in. steel pipe from about 3.5 ft above land surface to a depth of 1278 ft (cemented in).

On March 3-4, 1980, this well was shot with 2 charges (500 lb each) of explosive between the depths of 1883 to 1900 ft and 1400 to 1432 ft.

A production test was conducted by the driller on July 17-18, 1980. The well was pumped for 16.7 hr at rates ranging from 436 to 566 gpm. Fifty-five min after pumping was stopped, the water level had recovered to 809.5 ft below land surface.

The pumping equipment presently installed consists of a 450-hp U. S. electric motor, a 14-in., 12-stage

Johnston vertical turbine pump set at 1050 ft, and has 1050 ft of 10-in. column pipe.

WELL NO. 7 was completed in November 1979 to a depth of 1900 ft by the Wehling Well Works, Beecher. The water-yielding units in this well are the Midwest Aquigroup (Franconia Formation and the Ironton-Galesville Sandstone) and the Basal Bedrock Aquigroup (Elmhurst-Mt. Simon aquifer). The well is located about 300 ft south of Foster Ave. west of the railroad spur, approximately 2340 ft N and 2340 ft W of the SE corner of Section 11, T40N, R11E. The land surface elevation at the well is approximately 680 ft.

A drillers log of Well No. 7 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift	110	110
Lime	150	260
Shale	215	475
Lime	155	630
Dolomite	120	750
Lime	50	800
Sand	280	1080
Lime	65	1145
Red shale - green	60	1205
Sand with shale	15	1220
Sand with lime and shale	115	1335
Sand	105	1440
Shale	175	1615
Lime with shale	85	1700
Sand	20	1720
Lime with shale	95	1815
Sand	85	1900

A 26-in. diameter hole was drilled to a depth of 110 ft, reduced to 25.2 in. between 110 and 838 ft, reduced to 22 in. between 838 and 1242 ft, and finished 11.9 in. in diameter from 1242 to 1900 ft. The well is cased with 26-in. black steel pipe from about 1 ft above land surface to a depth of 110 ft, 22-in. black steel pipe from about 1.5 ft above land surface to a depth of 838 ft (cemented in), and 18-in. black steel pipe from about 1.5 ft above land surface to a depth of 1242 ft (cemented in).

A production test was conducted by the driller on December 12-13, 1979. The well was pumped for 24 hr at rates ranging from 720 to 1200 gpm. The water level recovered to 795.5 ft below land surface after pumping had been stopped for 1.5 hr. The well was then shot with 1000 lb of nitroglycerin from 1425 to 1371 ft.

A second production test was conducted by the driller on June 2-5, 1980. After 69.5 hr of pumping at rates ranging from 780 to 1396 gpm, the maximum drawdown was 148.0 ft from a nonpumping water level of 771.5 ft below land surface.

On February 2, 1981, the well reportedly produced 850 gpm for 30 min with a drawdown of 59.0 ft from a nonpumping water level of 799.5 ft below land surface.

The pumping equipment presently installed is a 14-in. Johnston vertical turbine pump set at 1000 ft, rated at 1000 gpm, and powered by a 350-hp Ideal polyphase induction motor. The well is equipped with 1000 ft of airline.

A partial analysis of a sample (Lab. No. 215137) collected February 2, 1981, showed the water to have a hardness of 132 mg/1, total dissolved minerals of 361 mg/1, and an iron content of 0.7 mg/1.

BLOOMINGDALE

The village of Bloomingdale (12,659) annexed Suncrest Highlands in 1959 which had installed a public water supply in 1956. Five wells (Nos. 2, 5, 7, 8, and 9) are in use. In 1960 there were 170 services, none metered; the estimated average pumpage in 1959 was 18,000 gpd. In 1984 there were 4704 services, all metered; the average pumpage was 1,489,000 gpd. The water is chlorinated; in addition, the water from Well Nos. 5 and 9 is treated with phosphate, and the water from Well No. 9 is also fluoridated.

WELL NO. 1 was completed in 1956 to a depth of 420 ft by the Milaeger Well & Pump Co., Brookfield, Wis. This well was abandoned prior to July 1971. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located at 160 South Prairie Ave., approximately 1800 ft N and 540 ft E of the SW corner of Section 14, T40N, R10E. The land surface elevation at the well is approximately 750 ft.

A drillers log of Well No. 1 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Glacial drift	65	65
Limestone	98	163
Shale	257	420

A 12-in. diameter hole was drilled to a depth of 420 ft. The well is cased with 12-in. pipe from about 0.7 ft above land surface to a depth of 65 ft.

On October 18, 1957, the nonpumping water level was reported to be 50.2 ft.

In March 1963, the well reportedly produced 30 gpm with a drawdown of 100 ft from a nonpumping water level of 60 ft.

In June 1965, this well was treated with 1000 gal of acid by the J. P. Miller Artesian Well Co., Brookfield.

On June 18, 1965, after 4 hr of pumping at a rate of 35 gpm, the drawdown was 102 ft from a nonpumping water level of 50 ft below the top of the casing.

Nonpumping water levels were reported to be 59 ft on October 12, 1965, and 105 ft in October 1967.

A partial analysis of a sample (Lab. No. 166321) collected June 18, 1965, after pumping for 4 hr at 35 gpm, showed the water to have a hardness of 332 mg/1, total dissolved minerals of 515 mg/1, and an iron content of 0.9 mg/1.

WELL NO. 2 was completed in October 1956 to a depth of 1395 ft by the Milaeger Well & Pump Co., Brookfield, Wis. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer). The well also penetrates the upper part of the Eau Claire Formation. The well is located about 10 ft east of Well No. 1, approximately 1800 ft N and 550 ft E of the SW corner of Section 14, T40N, R10E. The land surface elevation at the well is approximately 750 ft.

A sample study summary log of Well No. 2 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
Till, yellowish buff to dark gray	38	38
Gravel, slightly silty, very coarse	12	50
Till, very gravelly, slightly sandy, grayish-brown	15	65
SILURIAN SYSTEM		
Niagaran Series		
Dolomite, white to light gray, very fine to medium	70	135
Alexandrian Series		
Kankakee Dolomite		
Dolomite, buff to light gray, fine to medium	28	163
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Shale, reddish-brown, green, gray, weak; little dolomite, very fine to fine	72	235
Dolomite, light gray to gray, very fine to medium, little shale, gray, buff, weak	50	285
Shale, grayish brown, weak, tough in lower part	96	381
Champlainian Series		
Galena Group		
Kimmswick Subgroup		
Dolomite, grayish-buff to buff, very fine to fine	184	565
Decorah Subgroup		
Dolomite, grayish-buff to gray, very fine to medium	30	595
Platteville Group		
Dolomite, buff to grayish buff, very fine to medium; limestone gray to buff, extra fine to very fine	115	710
Ancell Group		
Glenwood Formation		
Sandstone, light gray to light buff, very fine to coarse, incoherent, little compact	35	745
St. Peter Sandstone		
Sandstone, light gray to buff, fine to medium, little coarse; little shale, reddish-brown, purple, weak to brittle at base	320	1065
CAMBRIAN SYSTEM		
Croixan Series		
Potosi Dolomite		
Dolomite, light gray to pinkish-buff, very fine to fine, little shale, reddish brown; green, weak to brittle	75	1140
Franconia Formation		
Shale, light green, gray to brown, weak; sandstone, light gray, very fine to fine, incoherent	50	1190
Ironton Sandstone		
Sandstone, silty, light pinkish buff, very fine to coarse, incoherent	145	1335
Galesville Sandstone		
Sandstone, very silty, light grayish-buff, very fine to fine, incoherent to friable; little dolomite, pinkish to light buff, fine	45	1380
Eau Claire Formation		
Dolomite, brown to light, brown very fine to crystalline; shale, brown, gray, weak to tough	15	1395

A 20-in. diameter hole was drilled to a depth of 104 ft, reduced to 19 in. between 104 and 423 ft, reduced to 15 in. between 423 and 1160 ft, and finished 12 in. in diameter from 1160 to 1395 ft. The well is cased with 20-in. steel pipe from land surface to a depth of 104 ft, 16-in. steel pipe from about 1 ft above land surface to a depth of 423 ft (cemented in), and a 12-in. steel liner from 1027 ft to a depth of 1160 ft.

On May 1, 1958, the well reportedly produced 400 gpm for 10 min with a drawdown of 100 ft from a nonpumping water level of 325 ft.

Nonpumping water levels were reported to be 480 ft on March 26, 1962, and 537 ft in October 1965.

After the well was shot with 103 lb of nitroglycerin, production tests were conducted by L. Cliff Neely, Batavia. On March 2, 1966, after 15 hr of pumping at rates ranging from 855 to 1091 gpm, the drawdown was 130 ft from a nonpumping water level of 545 ft below land surface. On March 3, after 5.5 hr of pumping at rates of 1084 to 1056 gpm, the drawdown was 130 ft from a nonpumping water level of 545 ft below land surface. Pumping was continued for 1.8 hr at a rate of 620 gpm with a final drawdown of 80 ft.

Nonpumping water levels were reported to be 539 ft in October 1966, 621 ft in February 1969, 630 ft in July 1971, 678 ft in September 1972, 680 ft in October 1973, and 690 ft in September 1974.

In February 1977, the well reportedly produced 950 gpm with a drawdown of 70 ft from a nonpumping water level of 680 ft.

On June 19, 1981, after 7 hr of pumping at a rate of 1026 gpm, the drawdown was 95 ft from a nonpumping water level of 783 ft.

In November 1983, the pump was pulled and sand was bailed from the hole from 1301 to 1395 ft by the Layne-Western Co., Aurora. The well was then surged by airlifting which was reported to eliminate most of the sand.

On February 22, 1984, the well reportedly produced 1068 gpm with a drawdown of 90 ft from a nonpumping water level of 795 ft.

On September 7, 1984, after 12 hr of pumping at a rate of 950 gpm, the drawdown was 93 ft from a nonpumping water level of 861 ft.

The pumping equipment presently installed is an 11-in., 18-stage Layne vertical turbine pump set at 1000 ft, rated at 750 gpm, and powered by a 400-hp U. S. Holloshaft electric motor. The well is equipped with 1000 ft of airline. In 1975, a sand separator was attached to the pump discharge line.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B20848) of a sample collected October 21, 1980, after pumping for 24 hr at 700 gpm, showed the water to have a hardness of 248 mg/1, total dissolved minerals of 386 mg/1, and an iron content of 0.07 mg/1.

WELL NO. 3 was completed in April 1962 to a depth of 290 ft by Meadow Equipment Sales & Service, Lombard. This well was abandoned and sealed in 1984. The major water-yielding unit in this well was dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrated shale in the upper part of the Maquoketa Group. The well was located on the east side of Circle Ave. north of Lake St., approximately 1250 ft S and 250 ft E of the NW corner of Section 14, T40N, R10E. The land surface elevation at the well is approximately 712 ft.

A drillers log of Well No. 3 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Glacial drift	59	59
Limestone	221	280
Shale	10	290

An 8-in. diameter hole was drilled to a depth of 290 ft. The well was cased with 8-in. pipe from about 2 ft above land surface to a depth of 60.5 ft.

On May 7, 1962, the nonpumping water level was reported to be 23.65 ft below land surface.

On June 17, 1965, the well reportedly produced 60 gpm for 24 hr with a drawdown of 34 ft from a nonpumping water level of 26 ft.

Nonpumping water levels were reported to be 23 ft on April 12, 1966, and 32 ft in September 1974.

A mineral analysis of a sample (Lab. No. 176121) collected August 28, 1968, showed the water to have a hardness of 40 mg/1, total dissolved minerals of 1237 mg/1, and an iron content of 1.0 mg/1.

WELL NO. 4, finished in sand and gravel of the Prairie Aquigroup, was completed in December 1964 to a depth of 100 ft by the J. P. Miller Artesian Well Co., Brookfield. This well was abandoned prior to July 1971 and sealed in April 1977. The well was located on the east side of Cardinal Drive about 600 ft south of Schick Road, approximately 2075 ft N and 100 ft W of the SE corner of Section 16, T40N, R10E. The land surface elevation at the well is approximately 787 ft.

A drillers log of Well No. 4 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Clay	10	10
Clay and boulders	80	90
Gravel and boulders	10	100

The well was cased with 6-in. ID pipe from land surface to a depth of 90 ft followed by 10 ft of 6-in. No.

30 slot stainless steel screen. The annulus between the bore hole and the casing-screen assembly was filled with puddled clay and bentonite from 0 to 82 ft and with graded gravel from 82 to 100 ft.

Upon completion, the well reportedly produced 100 gpm for 24 with a drawdown of 79 ft from a nonpumping water level of 6 ft below land surface.

In October 1967, the nonpumping water level was reported to be 13 ft.

A partial analysis of a sample (Lab. No. 164781) collected during the initial production test, after pumping for 24 hr at 100 gpm, showed the water to have a hardness of 342 mg/1, total dissolved minerals of 493 rr g/l, and an iron content of 1.3 mg/1.

An 11-in. diameter test well was constructed in August 1965 to a depth of 56 ft by the J. P. Miller Artesian Well Co., Brookfield. The well was located about 600 ft S and 10 ft E of the NW corner of Section 14, T40N, R10E. The test well was cased with 6-in. steel pipe to a depth of 46 ft followed by 10 ft of Howco stainless steel screen. Upon completion, the test well reportedly produced 100 gpm for 32 hr with a drawdown of 13 ft from a nonpumping water level of 28 ft below the top of the casing.

WELL NO. 5 was completed in April 1966 to a depth of 220 ft by L. Cliff Neely, Batavia. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located about 15 ft northwest of Well No. 4, approximately 2090 ft N and 110 ft W of the SE corner of Section 16, T40N, R10E. The land surface elevation at the well is approximately 787 ft.

A drillers log of Well No. 5 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Black dirt	2	2
Yellow clay	4	6
Yellow clay and sandy gravel	9	15
Blue mud	35	50
Gray mud and gravel stones	65	115
Gravel	15	130
Lime rock (Niagara)	69	199
Shale	21	220

A 16-in. diameter hole was drilled to a depth of 220 ft. The well is cased with 16-in. OD wrought iron pipe from about 2 ft above land surface to a depth of 134 ft.

A production test was conducted by the driller on April 12, 1966. After 3 hr of pumping at rates of 37.5 to 30 gpm, the drawdown was 105.0 ft from a nonpumping water level of 68.5 ft below land surface.

After acidizing with 4000 gal of 15 percent HC1, a production test was conducted by the driller on April 20, 1966. After 3.2 hr of pumping at a rate of 289 gpm, the drawdown was 40.0 ft from a nonpumping water level of 68.5 ft below land surface.

Production tests were conducted by the driller on April 28 and 29, 1966, after the well was acidized with 4000 gal of 15 percent HC1. On April 28, the well reportedly produced 553 gpm for 2.8 hr with a drawdown of 95.0 ft from a nonpumping water level of 63.5 ft below land surface. On April 29, after 8 hr of pumping at rates of 563 to 278 gpm, the maximum drawdown was 110.0 ft from a nonpumping water level of 63.5 ft below land surface. Two min after pumping was stopped, full recovery was observed.

Nonpumping water levels were reported to be 105 ft in October 1967, 80 ft in February 1969, 90 ft in September 1972, and 105 ft in October 1973.

In February 1977, the well reportedly produced 575 gpm with a drawdown of 32 ft from a nonpumping water level of 105 ft.

In 1983, this well was reported to have been acidized.

On September 13, 1984, after 6 hr of pumping at a rate of 550 gpm, the drawdown was 31 ft from a nonpumping water level of 95 ft.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. C007928) is for a water sample from the well collected April 15, 1975, after 3 hr of pumping.

WELL NO. 5, LABORATORY NO. C007928

		mg/l	*me/l*			*mg/l*	*me/l*
Iron	Fe	0.6		Silica	SiO_2	**18.0**	
Manganese	Mn	0.00		Fluoride	F	0.7	0.04
Ammonium	NH_4	0.82	0.04	Boron	B	0.6	
Sodium	Na	34	1.48	Cyanide	CN	0.00	
Potassium	K	2.1	0.05	Nitrate	NO_3	0.4	0.01
Calcium	Ca	69	3.44	Chloride	CI	8	0.23
Magnesium	Mg	31	2.55	Sulfate	SO_4	149	3.10
				Alkalinity (as $CaCO_3$)		228	4.56
Arsenic	As	0.002					
Barium	Ba	0.0		Hardness (as $CaCO_3$)		301	6.02
Cadmium	Cd	0.00					
Chromium	Cr	0.00		Total dissolved			
Copper	Cu	0.00		minerals		452	
Lead	Pb	0.00		pH (as rec'd)	7.6		
Mercury	Hg	0.0000		Radioactivity			
Nickel	Ni	0.0		Alpha *pc/l*	0.3		
Selenium	Se	0.00		± deviation	1.6		
Silver	Ag	0.00		Beta *pc/l*	4.5		
Zinc	Zn	0.00		± deviation	2.0		

The pumping equipment presently installed is a Fairbanks Morse Pomona turbine pump set at 180 ft, rated at 400 gpm at about 311 ft head, and powered by a 50-hp U. S. electric motor. The well is equipped with 180 ft of airline.

WELL NO. 6 was completed in 1972 to a depth of 171 ft by the Wehling Well Works, Beecher. This well was abandoned and sealed in July 1977. The water-yielding units in this well were dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well was located east of Royce Drive on the south side of Edgewater Drive on school site (Winnebag Elementary School), approximately 1500 ft S and 350 ft E of the NW corner of Section 23, T40N, R10E. The land surface elevation at the well is approximately 725 ft.

A drillers log of Well No. 6 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Clay	30	30
Gravel	18	48
Gravel and mud	27	75
Broken lime	23	98
Lime	35	133
Brown shale	5	138
Shale	5	143
Brown shale	17	160
Blue shale - some lime	7	167
Blue shale	27	194

A 21.2-in. diameter hole was drilled to a depth of 171 ft. The well was cased with 22-in. black pipe from land surface to a depth of 98 ft.

During drilling at a depth of 143 ft, a production test was conducted by the driller on June 9, 1972. After 4 hr of pumping at rates ranging from 207 to 187 gpm, the drawdown was 70 ft from a nonpumping water level of 27 ft below land surface.

After acidizing with 1000 gal of HC1, a production test was conducted by the driller on June 21, 1972, at a depth of 143 ft. After 6.6 hr of pumping at rates ranging from 380 to 166 gpm, the drawdown was 79 ft from a nonpumping water level of 13 ft below land surface.

After drilling to a depth of 194 ft, a production test was conducted by the driller on August 1, 1972. After 6.6 hr of pumping at rates ranging from 520 to 141 gpm, the drawdown was 92 ft from a nonpumping water level of 13 ft below land surface. Pumping was continued intermittently on August 2 during surging of the well. After testing, the well was reported to have filled in to 171 ft.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. C009111) is for a water sample from the well collected June 25, 1974, after 6 hr of pumping at 150 gpm.

WELL NO. 6, LABORATORY NO. C009111

		mg/l	*me/I*			*mg/1*	*me/I*
Iron	Fe	2.6		Silica	SiO_2	19.0	
Manganese	Mn	0.10		Fluoride	F	0.5	0.03
Ammonium	NH_4	0.83	0.05	Boron	B	0.5	
Sodium	Na	29	1.26	Cyanide	CN	0.00	
Potassium	K	2.2	0.06	Nitrate	NO_3	0.1	0.00
Calcium	Ca	63	3.14	Chloride	CI	3	0.08
Magnesium	Mg	35	2.88	Sulfate	SO_4	116	2.41
				Alkalinity (as $CaC0_3$)		236	4.72
Arsenic	As	0.000					
Barium	Ba	0.0		Hardness (as $CaCO_3$)		306	6.12
Cadmium	Cd	0.00					
Chromium	Cr	0.00		Total dissolved			
Copper	Cu	0.05		minerals		424	
Lead	Pb	0.00		pH (as rec'd)	8.2		
Mercury	Hg	0.0000		Radioactivity			
Nickel	Ni	0.0		Alpha *pc/l*	2.6		
Selenium	Se	0.00		± deviation	2.0		
Silver	Ag	0.00		Beta *pc/l*	1.9		
Zinc	Zn	0.00		± deviation	2.4		

WELL NO. 7 was completed in June 1975 to a depth of 1420 ft by the Milaeger Well & Pump Co., Brookfield, Wis. and the Wehling Well Works, Beecher. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer) except for dolomites of the Galena and Platteville Groups and the Glenwood-St. Peter Sandstone. The well also penetrates the upper part of the Eau Claire Formation. The well is located on the north side of Lawrence Ave. about 0.2 mile east of Garden Ave., approximately 100 ft N and 2100 ft W of the SE corner of Section 9, T40N, R10E. The land surface elevation at the well is approximately 780 ft.

A 21-in. diameter hole was drilled to a depth of 1156 ft and finished 17.2 in. in diameter from 1156 to 1420 ft. The well is cased with 26-in. steel pipe from land surface to a depth of 144 ft and 18-in. black steel pipe from land surface to a depth of 1156 ft (cemented in).

Upon completion, this well was shot as follows: 100 lb each at depths of 1380, 1360, 1340, 1320, 1200, 1280, and 1260 ft; 132 lb each at depths of 1370, 1350, 1340, 1310, 1280, and 1260 ft; and 150 lb each at depths of 1282, 1310, 1350, and 1370 ft.

A drillers log of Well No. 7 follows:

Strata	Thickness (ft)	Depth (ft)
Clay	4	4
Gravel	24	28
Clay and gravel	99	127
Sand and gravel (some clay)	3	130
Sand and gravel	13	143
Limestone	8	151
Limestone and shale streak	26	177
Limestone	21	198
Limestone and shale streak	69	267
Shale	144	411
Shale - streaks of lime	5	416
Limestone	66	482
Limestone - shale streak	188	670
Lime (?)	40	710
Sand	340	1050
Sand with lime	265	1315
Sand	55	1370
Sand with shale and lime	50	1420

A production test was conducted by the driller on August 18-19, 1975. After 24 hr of pumping at rates ranging from 291 to 860 gpm, the drawdown was 319 ft from a nonpumping water level of 497 ft below the top of the casing. The water level recovered to 662 ft after pumping had been stopped for 1.5 hr.

A second production test was conducted by the driller on October 14-15, 1975. After 33.6 hr of pumping at rates ranging from 680 to 980 gpm, the final drawdown was 314 ft from a nonpumping water level of 525 ft below the top of the casing.

A production test was conducted under the supervision of Urban Investment and Development Co. on May 24-27, 1977. After 70 hr of pumping at rates ranging from 610 to 1120 gpm, the final drawdown was 211 ft from a nonpumping water level of 678 ft below the top of the casing.

On January 22, 1984, the well reportedly produced 750 gpm for 2 hr with a drawdown of 65 ft from a nonpumping water level of 843 ft.

The pumping equipment presently installed is a 13-in., 10-stage Byron Jackson submersible turbine pump set at 1000 ft, rated at 1000 gpm, and powered by a 350-hp Byron Jackson electric motor. The well is equipped with 1000 ft of airline.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. C006105) is for a water sample from the well collected June 8, 1977, after 1.2 hr of pumping at 600 gpm. Hydrogen sulfide was apparent when a previous sample was collected.

WELL NO. 7, LABORATORY NO. C008106

		mg/l	me/l			mg/l	mt/l
Iron	Fe	0.4		Silica	SiO_2	7	
Manganese	Mn	0.01		Fluoride	F	1.4	0.07
Ammonium	NH_4	1.3	0.07	Boron	B	0.7	
Sodium	Na	40	1.74	Cyanide	CN	0.00	
Potassium	K	13.8	0.35	Nitrate	NO_3	0.66	0.01
Calcium	Ca	64	3.19	Chloride	CI	11	0.31
Magnesium	Mg	27	2.22	Sulfate	SO_4	68	1.41
				Alkalinity (as $CaCO_3$)		300	6.00
Arsenic	As	0.000					
Barium	Ba	0.0		Hardness (as $CaC0_3$)		271	5.42
Cadmium	Cd	0.00					
Chromium	Cr	0.00		Total dissolved			
Copper	Cu	0 00		minerals		436	
Lead	Pb	0.00					
Mercury	Hg	0.0003					
Nickel	Ni	0.0					
Selenium	Se	0.00					
Silver	Ag	0.00					
Zinc	Zn	0.02		pH (as rec'd)		7.9	

WELL NO. 8 was completed in March 1980 to a depth of 1415 ft by the Wehling Well Works, Beecher. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer) except for dolomites of the Galena and Platteville Groups and the Glenwood-St. Peter Sandstone. The well also penetrates the upper part of the Eau Claire Formation. The well is located about 100 ft west of Gary Ave. and 1000 ft north of Army Trail Road, approximately 1300 ft S and 2500 ft W of the NE corner of Section 20, T40N, R10E. The land surface elevation at the well is approximately 765 ft.

A drillers log of Well No. 8 follows:

Strata	Thickness (ft)	Depth (ft)
Clay	68	68
Coarse gravel	24	92
Gravel - hardpan clay conglomerate	40	132
Broken lime	11	143
Lime	30	173
Shale	215	388
Lime	90	478
Dolomite	70	548
Lime	95	643
Dolomite	70	713
St. Peter	5	718
Sand	390	1108
Sand with red shale	10	1118
Shale with lime	15	1133
Sand with red shale	15	1148
Shale with lime	65	1213
Lime with shale	10	1223
Sand	165	1388
Shale	27	1415

A 24-in. diameter hole was drilled to a depth of 148 ft, reduced to 23 in. between 148 and 1178 ft, and finished 17 in. in diameter from 1178 to 1415 ft. The

well is cased with 24-in. black steel pipe from land surface to a depth of 148 ft and 18-in. black steel pipe from about 1 ft above land surface to a depth of 1178 ft (cemented in).

A production test was conducted by the driller on March 31, 1980. After 4.2 hr of pumping at rates of 897 to 1110 gpm, the final drawdown was 197 ft from a nonpumping water level of 696 ft below land surface.

A production test was conducted by the driller on November 17, 1980. After 3.1 hr of pumping at rates ranging from 928 to 1204 gpm, the final drawdown was 183 ft from a nonpumping water level of 743 ft.

On January 22, 1984, the well reportedly produced 1275 gpm for 3 hr with a drawdown of 214 ft from a nonpumping water level of 823 ft.

The pumping equipment presently installed is a 13-in., 13-stage Byron Jackson submersible pump (Serial No. 806-M-0300) set at 1103 ft,'rated at 1200 gpm, and powered by a 400-hp Byron Jackson electric motor. The well is equipped with 1103 ft of airline.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B036462) is for a water sample from the well collected March 26, 1984, after 8 hr of pumping at 1200 gpm.

WELL NO. 8, LABORATORY NO. B036462

		mg/l	*me/l*			***mg/l***	*me/l*
Iron	Fe	0.14		Silica	SiO_2	6.3	
Manganese	Mn	<0.005		Fluoride	F	0.95	
Ammonium	NH_4	0.2	0 01	Boron	B	0.30	
Sodium	Na	19	0.83	Cyanide	CN	<0.005	
Potassium	K	8.4	0.24	Nitrate	NO_3	<0.4	
Calcium	Ca	61	3 04	Chloride	CI	1.5	0.04
Magnesium	Mg	17.3	1.42	Sulfate	SO_4	12	0.25
Strontium	Sr	3.60	0 08	Alkalinity (as CaCO)		251	5.02
Aluminum	Al	<0.05		Hardness (as $CaCO_3$)		226	4.52
Arsenic	As	<0.001					
Barium	Ba	3.85	0.06	Total dissolved			
Beryllium	Be	<0 003		minerals		300	
Cadmium	Cd	<0.003					
Chromium	Cr	<0.005					
Cobalt	Co	<0.005					
Copper	Cu	<0.005					
Lead	Pb	<0.005					
Mercury	Hg	0.00024					
Nickel	Ni	0.009					
Selenium	Se	<0 001					
Silver	Ag	<0.005					
Vanadium	V	<0.005					
Zinc	Zn	0.017		pH (as rec'd)		7.8	

A test well (No. 1-82) was constructed in June 1982 to a depth of 136 ft by the Layne-Western Co., Aurora. This test hole was backfilled with sand in June 1982. It was located about 70 ft west-northwest of Well No. 8, approximately 1275 ft S and 2560 ft W of the NE corner of Section 20, T40N, R10E. A 15-in. diameter hole was drilled to a depth of 137 ft. The test well was equipped with 10-in. standard steel pipe from land surface to a depth of 73 ft, 8-in. No. 7 (0.055 in.) Layne shutter screen from 73 ft to a depth of 83 ft, 8-in. standard steel pipe from 83 ft to a depth of 116 ft, and 8-in. No. 7 (0.055 in.) Layne shutter screen from 116 ft to a depth of 136 ft. The annulus between the bore hole and casing-screen assembly was filled with 100 bags of No. 3 Muscatine gravel from 70 to 137 ft. Upon completion, the test well reportedly produced 653 gpm for 25 hr with a drawdown of 25.53 ft from a nonpumping water level of 40.00 ft.

WELL NO. 9, finished in sand and gravel of the Prairie Aquigroup, was completed in September 1982 to a depth of 136 ft by the Layne-Western Co., Aurora. The well is located about 70 ft west-northwest of Well No. 8, approximately 1260 ft S and 2560 ft W of the NE corner of Section 20, T40N, R10E. The land surface elevation at the well is approximately 765 ft.

A drillers log of Well No. 9 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Brown silty clay, some gravel	10	10
Gray silty clay	18	28
White coarse sand to coarse gravel	13	41
Gray silty clay, some gravel intermixed	19	60
Gray silty clay with sand and gravel layers	8	68
White medium sand to coarse gravel	15	83
Soft gray very silty clay with layers of silty sand	12	95
Brown medium sand (loose)	20.5	115.5
White fine sand to coarse gravel with some layers of fine to coarse sand and some silty pockets	12.5	128
Coarse limestone gravel and boulders and ledges with layers of fine to coarse sand and trace of silt	8	136
Brown and gray limestone with soft seams	1	137

A 48-in. diameter hole was drilled to a depth of 10 ft and finished 42 in. in diameter from 10 to 137 ft. The well is equipped with 16-in. OD steel casing from about 1.2 ft above land surface to a depth of 73 ft, 16-in. No. 80 slot Layne/Johnson stainless steel screen from 73 ft to a depth of 83 ft, 16-in. OD steel casing from 83 ft to a depth of 116 ft, and 16-in. No. 80 slot Layne/Johnson stainless steel screen from 116 ft to a depth of 136 ft. The annulus between the bore hole and casing-screen assembly is filled with concrete from 8.5 to 28.5 ft, with sand from 28.5 to 31 ft, and with Northern gravel from 31 to 136 ft. The top of the casing is equipped with a Baker pitless adapter.

A production test using three observation wells was conducted by the driller on September 28, 1982. After 6 hr of pumping at a rate of 807 gpm, the final drawdown was 14.80 ft from a nonpumping water level of 40.17 ft below land surface. Two hr after pumping was stopped, the water level had recovered to 41.34 ft.

On January 22, 1984, the well reportedly produced 445 gpm for 24 hr with a drawdown of 4 ft from a nonpumping water level of 49 ft.

The pumping equipment presently installed is a Byron Jackson submersible pump set at 100 ft, rated at 750 gpm, and powered by an electric motor.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B011703) is for a water sample from the well collected September 18, 1984.

WELL NO. 0, LABORATORY NO. B011703

		mg/l	*me/I*			*mg/l*	*me/I*
Iron	Fe	1.2		Silica	SiO_2	21	
Manganese	Mn	0.016		Fluoride	F	0.34	
Ammonium	NH_4	0.4	0.02	Boron	B	0.26	
Sodium	Na	24	**1.04**	Cyanide	CN	<0.005	
Potassium	K	2.0	0.05	Nitrate	NO_3	<0.4	
Calcium	Ca	72	3.59	Chloride	CI	13	0.37
Magnesium	Mg	43.0	3.54	Sulfate	SO_4	108	2.25
Strontium	Sr	1.21	0.03	Alkalinity (as $CaCO_3$)		289	5.78
Aluminum	Al	0.02		Hardness (as $CaCO_3$)		367	7.34
Arsenic	As	0.002					
Barium	Ba	0.065	0.00	Total dissolved			
Beryllium	Be	<0.0005		minerals		486	
Cadmium	Cd	0.004					
Chromium	Cr	<0.005					
Cobalt	Co	<0.005					
Copper	Cu	0.012					
Lead	Pb	<0.005					
Mercury	Hg	<0.0001					
Nickel	Ni	0.013					
Selenium	Se	<0.001					
Silver	Ag	<0.005					
Vanadium	V	<0.004					
Zinc	Zn	0.005		pH (as rec'd)		7.7	

BOLINGBROOK

The village of Bolingbrook (37,261) installed a public water supply in 1970. This village also extends into Will County and seven of the wells are located there. Eight wells (Nos. 1-6, 10, and 11) are in use. This supply is also cross connected with the village of Woodridge. Part of this village is served by Citizens West Suburban described in Bulletin 60-29 for Will County (see Bolingbrook - Citizens West Suburban). In 1984 there were 3292 services for the village system, all metered; the average pumpage was 1,537,000 gpd. The water is chlorinated, fluoridated, and treated with polyphosphate to keep iron in solution.

WELL NO. 1, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in October 1970 to a depth of 320 ft by the Shaver Well Drilling Co., Lombard. The well is located at 382 East Boughton Road, approximately 1300 ft N and 1900 ft W of the SE corner of Section 2, T37N, R10E, Will County. The land surface elevation at the well is approximately 730 ft.

A drillers log of Well No. 1 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift	118	118
Niagara lime	197	315
Shale	5	320

A 12-in. diameter hole was drilled to a depth of 320 ft. The well is cased with 12-in. pipe from about 1.2 ft above land surface to a depth of 118 ft. The top of the casing is equipped with a pitless adapter.

Upon completion, the well reportedly produced 1000 gpm for 24 hr with a drawdown of 45 ft from a nonpumping water level of 90 ft.

The pumping equipment presently installed is a Sumo submersible pump set at 175 ft, rated at 500 gpm at about 260 ft TDH, and powered by a 50-hp Sumo electric motor.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B100777) of a sample collected July 24, 1973, after pumping for 1.5 hr at 500 gpm, showed the water to have a hardness of 552 mg/l, total dissolved minerals of 683 mg/l, and an iron content of 0.48 mg/l.

WELL NO. 2, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in March 1971 to a depth of 320 ft by the Shaver Well Drilling Co., Lombard. The well is located about 200 ft south of Well No. 1, approximately 1100 ft N and 1900 ft W of the SE corner of Section 2, T37N, R10E, Will County. The land surface elevation at the well is approximately 725 ft.

A drillers log of Well No. 2 follows:

Strata	Thickness (ft)	Depth (ft)
Drift	109.5	109.5
Niagara limestone	210.5	320

A 12-in. diameter hole was drilled to a depth of 320 ft. The well is cased with 12-in. pipe from about 1.5 ft above land surface to a depth of 109.5 ft. The top of the casing is equipped with a pitless adapter.

On July 1, 1971, the well reportedly produced 1000 gpm with a drawdown of 35 ft from a nonpumping water ievel of 120 ft.

The pumping equipment presently installed is a Peerless submersible pump set at 175 ft, rated at 500 gpm at about 305 ft TDH, and powered by a 60-hp electric motor.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. A17172), of a sample collected February 22, 1977, after pumping for 8 hr at 500 gpm. showed the water to have a hardness of 505 mg/l, total dissolved minerals of 700 mg/1, and an iron content of 0.58 mg/1.

WELL NO. 3 was completed in March 1974 to a depth of 320 ft by the Layne-Western Co., Aurora. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located southeast of the intersection of Rockhurst Road and Melissa St., approximately 2550 ft N and 1400. ft E of the SW corner of Section 12, T37N, R10E, Will County. The land surface elevation at the well is approximately 750 ft.

A drillers log of Well No. 3 follows:

Strata	Thickness (ft)	Depth (ft)
Black Soil	1	1
Yellow clay and boulders	9	10
Gray clay and boulders	58	68
Boulder	2	70
Cemented sand and gravel, clay streaks	33	103
Sand and gravel, trace of clay.	17	120
Clay	15	135
Lime, some chert	131	266
Lime, streaks of blue shale	9	275
Shale, little lime	45	320

A 17.2-in. diameter hole was drilled to a depth of 138 ft and finished 12 in. in diameter from 138 to 320 ft. The well is cased with 12-in. steel pipe from about 4 ft above land surface to a depth of 139 ft. The annulus between the bore hole and casing is filled with cement from 0 to 40 ft and with drill cuttings and clay from 40 to 138 ft.

A production test was conducted by the driller on March 8, 1974. After 8 hr of pumping at rates ranging from 556 to 599 gpm, the final drawdown was 26 ft from a nonpumping water level of 104 ft below land surface.

On September 14, 1979, the nonpumping water level was reported to be 109 ft.

The pumping equipment presently installed consists of a 50-hp 1770 rpm U. S. electric motor, a 10-in., 7-stage Layne turbine pump (No. 74206A) set at 180 ft, rated at 500 gpm at about 299 ft TDH, and has 180 ft of 8-in. column pipe. A 10-ft section of 6-in. suction pipe is attached to the pump intake. The well is equipped with 180 ft of airline.

A mineral analysis of a sample (Lab. No. 211978) collected September 14, 1979, after pumping for 3 hr at 500 gpm, showed the water to have a hardness of 546 mg/1, total dissolved minerals of 694 mg/1, and an iron content of 1.4 mg/1.

WELL NO. 4 was completed in April 1974 to a depth of 305 ft by the Layne-Western Co., Aurora. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upperpart of the Maquoketa Group. The well is located southwest of the intersection of Rockhurst Road and Janes Ave., approximately 2400 ft N and 2500 ft E of the SW corner of Section 12, T37N, R10E, Will County. The land surface elevation at the well is approximately 757 ft.

A drillers log of Well No. 4 follows:

Strata	Thickness (ft)	Depth (ft)
Black soil	1	1
Brown clay and stones.	15	16
Gray clay and stones	58	74
Cemented sand and gravel, boulders	27	101
Sand and gravel	9	110
Shale	32	142
Lime	130	272
Shale, lime lenses	8	280
Shale	25	305

A 17.2-in. diameter hole was drilled to a depth of 145.5 ft and finished 12 in. in diameter from 145.5 to 305 ft. The well is cased with 12-in. steel pipe from about 3 ft above land surface to a depth of 145.5 ft. The annulus between the bore hole and casing is filled with cement grout from 0 to 40 ft and with drill cuttings and clay from 40 to 145.5 ft.

A production test was conducted by the driller on April 1, 1974. After 8 hr of pumping at rates ranging from 496 to 776 gpm, the final drawdown was 40 ft from a nonpumping water level of 118 ft below land surface.

The pumping equipment presently installed consists of a 60-hp 1770 rpm U. S. electric motor, a 10-in., 8-stage Layne turbine pump (No. 71658A) set at 180 ft, rated at 500 gpm at about 315 ft TDH, and has 180 ft of 8-in. column pipe. A 10-ft section of 6-in. suction pipe is attached to the pump intake. The well is equipped with 180 ft of airline.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B29593) is for a water sample from the well collected January 27, 1976, after 0.5 hr of pumping at 500 gpm.

WELL NO. 4, LABORATORY NO. B29593

		mg/l	*me/I*			*mg/l*	*me/l*
Iron	Fe	0.9		Silica	SiO_2	12	
Manganese	Mn	0.05		Fluoride	F	0.3	0.02
Ammonium	NH_4	0.30	0.02	Boron	B	0.2	
Sodium	Na	12	0.52	Cyanide	CN	0.00	
Potassium	K	2.1	0.05	Nitrate	NO_3	0.09	0.00
Calcium	Ca	106	5.29	Chloride	CI	25	0.70
Magnesium	Mg	39	3.21	Sulfate	SO_4	170	3.54
				Alkalinity (as $CaCO_3$)		260	5.20
Arsenic	As	0.00					
Barium	Ba	0.1		Hardness (as $CaCO_3$)		425	8.50
Cadmium	Cd	0.00					
Chromium	Cr	0.00		Total dissolved			
Copper	Cu	0.12		minerals		585	
Lead	Pb	0.00		pH (as rec'd)	7.9		
Mercury	Hg	0.0000		Radioactivity			
Nickel	Ni	0.0		Alpha *pc/l*	2.5		
Selenium	Se	0.00		± deviation	2.1		
Silver	Ag	0.00		Beta *pc/l*	5.9		
Zinc	Zn	0.0		± deviation	2.1		

WELL NO. 5 was completed in April 1976 to a depth of 338 ft by the J. P. Miller Artesian Well Co., Brookfield. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located about 175 ft south of Falcon Ridge Way and 120 ft west of Sword Way, approximately 300 ft S and 925 ft E of the NW corner of Section 12, T37N, R10E, Will County. The land surface elevation at the well is approximately 740 ft.

A drillers log of Well No. 5 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift	119	119
Limestone	208	327
Shale	11	338

A 19.2-in. diameter hole was drilled to a depth of 129 ft and finished 15.2 in. in diameter from 129 to 338 ft. The well is cased with 20-in. OD pipe from land surface to a depth of 119 ft and 16-in. OD pipe from about 1.5 ft above the wellhouse floor to a depth of 129.5 ft (cemented in).

Upon completion, the well reportedly produced 1040 gpm for 5 hr with a drawdown of 7 ft from a nonpumping water level of 90 ft below the top of the casing.

The pumping equipment presently installed is a 12-in., 5-stage Peerless turbine pump set at 182 ft, rated at 1000 gpm at about 233 ft TDH, and powered by a 100-hp 1760 rpm Ideal electric motor.

A partial analysis of a sample (Lab. No. 202078) collected June 3, 1976, showed the water to have a hardness of 492 mg/l, total dissolved minerals of 620 mg/l, and an iron content of 0.5 mg/l.

WELL NO. 6 was completed in April 1977 to a depth of 361 ft by the J. P. Miller Artesian Well Co., Brookfield. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located on the west side of Janes Ave. about 0.2 mile south of 83rd St., approximately 1320 ft N and 2500 ft E of the SW corner of Section 36, T38N, R10E, Du Page County. The land surface elevation at the well is approximately 755 ft.

A drillers log of Well No. 6 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift	130	130
Niagaran dolomite	221	351
Shale	10	361

A 20-in. diameter hole was drilled to a depth of 136 ft and finished 15.2 in. in diameter from 136 to 361 ft. The well is cased with 20-in. steel pipe from land surface to a depth of 130 ft and 16-in. steel pipe from land surface to a depth of 136 ft (cemented in).

Upon completion, the well reportedly produced 1150 gpm for 2 hr with a drawdown of 9 ft from a nonpumping water level of 114 ft below land surface.

The pumping equipment presently installed consists of a 150-hp electric motor, a 12-in., 5-stage Peerless turbine pump, and has 150 ft of 8-in. column pipe. A 10-ft section of suction pipe is attached to the pump intake. The well is equipped with 150 ft of airline.

WELL NOS. 7, 8, and 9 - Not yet drilled.

WELL NO. 10 (former Oak Tree Subdivision Well No. 2) was completed in November 1977 to a depth of 170 ft by the J. P. Miller Artesian Well Co., Brookfield. This well was acquired from the Oak Tree Sewer and Water Company. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located about 200 ft south of Boughton Road and 0.4 mile west of Washington St. near the elevated tank, approximately 1230 ft N and 1980 ft W of the SE corner of Section 7, T37N, R10E, Will County. The land surface elevation at the well is approximately 675 ft.

A drillers log of Well No. 10 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift	62	62
Limestone	70	132
Limestone and shale	21	153
Shale	17	170

A 15-in. diameter hole was drilled to a depth of 72 ft and finished 12 in. in diameter from 72 to 170 ft. The well is cased with 16-in. steel pipe from about 2 ft above land surface to a depth of 62 ft and 12-in. pipe from about 3 ft above the wellhouse floor to a depth of 72 ft (cemented in).

A production test was conducted by the driller on November 25, 1977. After 4.8 hr of pumping at rates ranging from 360 to 300 gpm, the drawdown was 54 ft from a nonpumping water level of 41 ft below land surface. During the next 15 min, the production rate was increased and the pump broke suction. Pumping was then continued for 3.2 hr at rates of 230 to 255 gpm with a final drawdown of 32 ft. Five min after pumping was stopped, full recovery was observed.

After acidizing with 1000 gal of HC1, a production test was conducted by the driller on November 29, 1977. After 7.5 hr of pumping at rates ranging from 600 to 300 gpm, the final drawdown was 22 ft from a nonpumping water level of 41 ft below land surface.

On September 14, 1979, the nonpumping water level was reported to be 56 ft.

The pumping equipment presently installed consists of a 30-hp electric motor, an 8-in., 8-stage Peerless turbine pump rated at 300 gpm at about 195 ft TDH, and has 110 ft of 6-in. column pipe. A 10-ft section of 6-in. suction pipe is attached to the pump intake.

A mineral analysis of a sample (Lab. No. 211979) collected September 14, 1979, after pumping for 10 min at 350 gpm, showed the water to have a hardness of 362 mg/1, total dissolved minerals of 409 mg/1, and an iron content of 0.3 mg/1.

WELL NO. 11 (former Oak Tree Subdivision Well No. 1), presently open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in September 1972 to a depth of 150 ft (filled in to 93 ft in 1977) by the Shaver Well Drilling Co., Lombard. This well was acquired from the Oak Tree Sewer and Water Company. The well is located at the northwest corner of Heritage Drive and Plymouth Square, approximately 2200 ft S and 1400 ft W of the NE corner of Section 7, T37N, R10E, Will County. The land surface elevation at the well is approximately 635 ft.

A drillers log of Well No. 11 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Black Clay	5	S
Yellow clay	5	10
Gray clay, some gravel	5	15
Gray clay, heavy gravel	5	20
Gray clay boulders	5	25
White coarse gravel, boulders	5	30
Yellow lime boulders	5	35
Yellow lime soft	5	40
White lime clay	5	45
White lime medium	5	50
White lime hard	10	60
White lime hard, some water	5	65
White lime gray clay	5	70
White lime hard	20	90
White lime, white clay	5	95
White lime red chert	10	105
Broken lime	5	110
Red shale, broken lime	5	115
Red shale	5	120
Red and green shale	30	150

The well is cased with 12.8-in. pipe from land surface to a depth of 42 ft.

On June 16, 1977, after the well had been filled in to 93 ft by the Layne-Western Co., Aurora, the well reportedly produced 54 gpm for 1.5 hr with a drawdown of 49 ft from a nonpumping water level of 15 ft.

The pumping equipment presently installed is an 8-in., 5-stage Aurora pump set at 80 ft, and powered by a 15-hp Westinghouse electric motor.

BURR RIDGE

The village of Burr Ridge (3833) installed a public water supply in 1969. The village annexed Carriage Way Subdivision about 1976 which had installed a public water supply about 1964. Finished water for this supply is obtained from the Justice-Willow Springs Water Commission. Three wells (Nos. 1, 4, and 5) are available for emergency use. This village also extends into Cook County and two of the wells are located there. In 1984 there were 1107 services, all metered; the average pumpage from the wells was 310,360 gpd. The water from all the wells is chlorinated; in addition, the water from Well Nos. 1, 4, and 5 is ion-exchange softened and fluoridated.

WELL NO. 1 (Carriage Way Subdivision well), open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in July 1964 to a depth of 365 ft by L. Cliff Neely, Batavia. This well is available for emergency use. The well is located on the east side of Frontage Road at the northeast corner of the intersection of Interstate 55 and County Line Road, approximately 100 ft N and 300 ft E of the SW corner of Section 19, T38N, R12E, Cook County. The land surface elevation at the well is approximately 697 ft.

A drillers log of Well No. 1 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Clay	25	25
Gravel	5	30
Blue mud	24	54
Mud with gravel stones	6	60
Limestone	305	365

A 10-in. diameter hole was drilled to a depth of 365 ft. The well is cased with 10-in. pipe from about 1.5 ft above land surface to a depth of 63 ft.

On July 24, 1964, this well was acidized with 2000 gal of HC1 with little change in well capacity. The well was acidized again on July 28, 1964, with 2000 gal of HC1. On July 29, the well reportedly produced 160 gpm for 2.5 hr with a drawdown of 132 ft and the well was acidized again with 2000 gal of HC1. On July 31, after 2.2 hr of pumping at a rate of 280 gpm, the drawdown was 132 ft. The well was acidized again with 2000 gal of HC1.

A production test was conducted by the driller on August 3, 1964. After 8.2 hr of pumping at rates ranging from 250 to 450 gpm, the final drawdown was 109 ft from a nonpumping water level of 61 ft below land surface. Thirty min after pumping was stopped, the water level had recovered to 65 ft.

On May 7, 1970, the well reportedly produced 250 gpm for 15 min with a drawdown of 24 ft from a nonpumping water level of 85 ft.

On September 7, 1979, the nonpumping water level was reported to be 101 ft.

The pumping equipment presently installed is a Peerless turbine pump rated at 300 gpm, and powered by a 30-hp electric motor.

A mineral analysis of a sample (Lab. No. 211838) collected September 7, 1979, after pumping for 10 min at 250 gpm, showed the water to have a hardness of 608 mg/1, total dissolved minerals of 836 mg/1, and an iron content of 0.5 mg/1.

WELL NO. 2 (Carriage Way Subdivision well), open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in August 1972 to a depth of 354 ft by the J. P. Miller Artesian Well Co., Brookfield. This well was abandoned and sealed in 1984. The well was located east of the south end of Tomlin Drive and south of Gregford Road, approximately 1930 ft N and 2210 ft E of the SW corner of Section 18, T38N, R12E, Cook County. The land surface elevation at the well is approximately 645 ft.

A drillers log of Well No. 2 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift	29	29
Niagaran dolomite	324	353
Shale	1	354

A 14-in. diameter hole was drilled to a depth of 29 ft, reduced to 13.2 in. between 29 and 50 ft, and finished 10 in. in diameter from 50 to 354 ft. The well was cased with 14-in. OD pipe from land surface to a depth of 29 ft and 10-in. ID pipe from land surface to a depth of 50 ft (cemented in).

A production test was conducted by the driller on August 9, 1972. After 8 hr of pumping at rates ranging from 190 to 390 gpm, the drawdown was 127 ft from a nonpumping water level of 30 ft.

A mineral analysis of a sample (Lab. No. 201677) collected April 23, 1976, showed the water to have a hardness of 570 mg/1, total dissolved minerals of 779 mg/1, and an iron content of 1.1 mg/1.

WELL NO. 3 (Hinsdale Industrial Park well), open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in July 1971 to a depth of 290 ft by the Lockport Well & Pump Co., Joliet. This

well is not in use. The well is located near the southeast corner of 79th St. and Garfield Ave., approximately 100 ft S and 2550 ft W of the NE corner of Section 36, T38N, R11E, Du Page County. The land surface elevation at the well is approximately 715 ft.

The well is cased with 12-in. pipe from about 1.7 ft above land surface to a depth of about 100 ft.

Upon completion, this well was treated with 1000 gal of acid.

On September 7, 1979, the nonpumping water level was reported to be 118 ft.

The pumping equipment presently installed is a 4-stage Red Jacket submersible pump set at 150 ft, rated at 345 gpm at about 240 ft TDH, and powered by a 30-hp electric motor.

A mineral analysis of a sample (Lab. No. 211839) collected September 7, 1979, after pumping for 10 min at 325 gpm, showed the water to have a hardness of 995 mg/1, total dissolved minerajs of 1348 mg/1, and an iron content of 2.3 mg/1.

WELL NO. 4 (Hinsdale Industrial Park well), open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in September 1969 to a depth of 353 ft by the J. P. Miller Artesian Well Co., Brookfield. This well is available for emergency use. The well is located about 400 ft west of Madison St. on the north side of 83rd St., approximately 2555 ft S and 380 ft W of the NE corner of Section 35, T38N, R11E, Du Page County. The land surface elevation at the well is approximately 737 ft.

A drillers log of Well No. 4 follows:

Strata	*Thickness (ftj*	*Depth (ft)*
Drift	160	160
Limestone	185	345
Shale	8	353

A 20-in. diameter hole was drilled to a depth of 178 ft and finished 15.2 in. in diameter from 178 to 353 ft. The well is cased with 20-in. pipe from about 1 ft above the pumphouse floor to a depth of 178 ft and 16-in. pipe from about 1 ft above the pumphouse floor to a depth of 178 ft (cemented in).

A production test was conducted by the driller on September 30-October 1, 1969. After 27.6 hr of pumping at rates ranging from 480 to 200 gpm, the final drawdown was 101 ft from a nonpumping water level of 109 ft below the top of the casing.

In October 1972, the nonpumping water level was reported to be 113 ft.

In September 1973, the well reportedly produced 280 gpm with a drawdown of 42 ft from a nonpumping water level of 117 ft.

On September 7, 1979, the nonpumping water level was reported to be 130 ft.

The pumping equipment presently installed consists of a 30-hp U. S. electric motor, a 10-stage Peerless turbine pump set at 225 ft, rated at 280 gpm, and has 225 ft of 5-in. column pipe.

A mineral analysis of a sample (Lab. No. 211840) collected September 7, 1979, after pumping for 75 hr at 230 gpm, showed the water to have a hardness of 594 mg/1, total dissolved minerals of 778 mg/1, and an iron content of 1.3 mg/1.

WELL NO. 5 was completed in October 1978 to a depth of 320 ft by the Layne-Western Co., Aurora. This well is available for emergency use. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located south of 81st St. (extended) and about 400 ft west of Madison St., approximately 1500 ft S and 400 ft W of the NE corner of Section 35, T38N, R11E, Du Page County. The land surface elevation at the well is approximately 710 ft.

A drillers log of Well No. 5 follows:

Strata	*Thickness* ***(ft)***	*Depth* ***(ft)***
Black top soil	3	3
Brown clay	9	12
Gray gravelly clay	16	28
Boulders	1	29
Gray clayey silt with sand, gravel and boulders	55	84
Sand and gravel with layers of gray clayey silt	36	120
Gray limestone	190	310
Gray shale	10	320

A 20-in. diameter hole was drilled to a depth of 128.7 ft and finished 15.2 in. in diameter from 128.7 to 320 ft. The well is cased with 16-in. pipe from about 1.8 ft above land surface to a depth of 128.7 ft (cemented in from 3 to 55 ft). The top of the casing is equipped with a Baker pitless adapter.

A production test was conducted by the driller on September 12, 1978. After 4.2 hr of pumping with intermittent surging at a rate of 55 gpm, the maximum drawdown was 150 ft from a nonpumping water level of 90 ft.

After acidizing with 2000 gal of muriatic acid, a production test was conducted by the driller on September 14, 1978. After 4.5 hr of pumping at rates of 350 to 280 gpm, the maximum drawdown was 60 ft from a nonpumping water level of 90 ft.

A production test was conducted by the driller on September 27, 1978. After 1.5 hr of pumping at rates ranging from 144 to 164 gpm, the maximum drawdown was 27 ft from a nonpumping water level of 101 ft.

A production test was conducted by the driller on October 4, 1978. After 8 hr of pumping at rates ranging from 350 to 293 gpm, the maximum drawdown was 134 ft from a nonpumping water level of 101 ft below land surface.

The pumping equipment presently installed consists of a 50-hp General Electric motor, a 10-in., 10-stage Layne & Bowler submersible pump (No. 91785) set at 254 ft, rated at 290 gpm at about 420 ft TDH, and has 254 ft of 6-in. column pipe. The well is equipped with 254 ft of airline.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B31549) is for a water sample from the well collected March 29, 1983, after 1.5 hr of pumping at 300 gpm.

WELL NO. 5, LABORATORY NO. B3154S

		mg/l	*me/l*		*mg/l*	*me/I*
Iron	Fe	1.4	Silica	SiO_2	18	
Manganese	Mn	0.016	Fluoride	F	0.35	0.02
Ammonium	NH_4	0.8 0.04	Boron	B	0.24	
Sodium	Na	25 1.09	Cyanide	CN	<0.005	
Potassium	K	2.5 0.06	Nitrate	NO_3	<0.4	
Calcium	Ca	135 6.74	Chloride	CI	33	0.93
Magnesium	Mg	42.8 3.52	Sulfate	SO	151	3.14
Strontium	Sr	1.43	Alkalinity (as CaCOJ		363	7.26
Arsenic	As	0.005	Hardness (as CaCOJ		505	10.10
Barium	Ba	0.045				
Beryllium	Be	<0.0005	Total dissolved			
Cadmium	Cd	<0.003	minerals		655	
Chromium	Cr	<0.005				
Cobalt	Co	<0.005				
Copper	Cu	<0.003				
Lead	Pb	<0.005				
Mercury	Hg	<0.00005				
Nickel	Ni	<0.003				
Selenium	Se	<0.001				
Silver	Ag	<0.005				
Vanadium	V	<0.004				
Zinc	Zn	0.002	pH (as rec'd)		7.3	

CAROL STREAM

The village of Carol Stream (15,472) installed a public water supply in 1958. Five wells (Nos. 1-5) are in use. This supply is also cross connected with the village of Glendale Heights. In 1962 there were 426 services, all metered; the estimated average pumpage was 81,000 gpd. In 1984 there were 4318 services, all metered; the average and maximum pumpages were 2,722,100 and 4,033,000 gpd, respectively. The water is chlorinated and treated with polyphosphate to keep iron in solution; in addition, the water from Well Nos. 1 and 3 is fluoridated.

WELL NO. 1 was completed in August 1958 to a depth of 335 ft (reported to be 323 ft deep in 1984) by the Layne-Western Co., Aurora. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located in the northwest corner of the village south of Cochise Court, east of Arrowhead Trail, approximately 1033 ft S and 925 ft W of the NE corner of Section 31, T40N, R10E. The land surface elevation at the well is approximately 764 ft.

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

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
Till, yellowish brown to dark yellowish brown, gravelly at base	35	35
Gravel and sand, little slightly silty	75	**110**
SILURIAN SYSTEM		
Niagaran Series		
Dolomite, slightly silty, slightly argillaceous, brown to gray, little pink and green at base, very fine crystalline to granular	70	180
Alexandrian Series		
Dolomite, little slightly silty, little argillaceous, light brownish gray, very fine, crystalline	55	235
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Shale, dolomitic, red, green, very dark, greenish brown, weak; dolomite, green to dark gray, fine, crystalline	100	335

A 10-in. diameter hole was drilled to a depth of 335 ft. The well is cased with 10-in. steel pipe from about 1.5 ft above land surface to a depth of 118 ft.

A production, test was conducted by the driller on August 15, 1958. After 2.5 hr of pumping at rates of 307 to 317 gpm, the drawdown. was 7 ft from a nonpumping water level of 40 ft below the top of the casing. Pumping was continued for 2.8 hr at rates of 408 to 406 gpm with a drawdown of 9 ft. After an additional 2.7 hr of pumping at a rate of 509 gpm, the final drawdown was 13 ft.

Nonpumping water levels were reported to be 47 ft below the pump base on December 1, 1958; 40 ft in April 1962; 44 ft on April 7, 1965; and 47.62 ft on May 24, 1979.

A production test was conducted by the driller on June 28, 1984. After 1.2 hr of pumping at rates ranging from 506 to 570 gpm, the final drawdown was 8 ft from a nonpumping water level of 59 ft.

The pumping equipment presently installed consists of a 40-hp U. S. electric motor, a 9-in., 5-stage Layne turbine pump (Serial. No. 59508) set at 110 ft, rated at 500 gpm at about 227 ft TDH, and has 110 ft of 6-in. column pipe. The well is equipped with 110 ft of airline.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. C007461) is for a water sample from the. well collected March 31, 1975, after 1 hr of pumping at 500 gpm.

WELL NO. 1, LABORATORY NO. **C007461**

		mg/l	*me/I*			*mg/l*	*me/I*
Iron	Fe	2.8		Silica	SiO_2	20.0	
Manganese	Mn	0.03		Fluoride	F	0.5	0.03
Ammonium	NH_4	0.54	0.03	Boron	B	0.2	
Sodium	Na	13	0.57	Cyanide	CN	0.00	
Potassium	K	1.6	0.04	Nitrate	NO_3	0.6	0.01
Calcium	Ca	112	5.59	Chloride	CI	10	0.28
Magnesium	Mg	57	4.69	Sulfate	SO_4	213	4.43
				Alkalinity (as $CaCO_3$)		324	6.48
Arsenic	As	0.000					
Barium	Ba	0.2		Hardness (as $CaCO_3$)		519	10.38
Cadmium	Cd	0.00					
Chromium	Cr	0.00		Total dissolved			
Copper	Cu	0.00		minerals		632	
Lead	Pb	0.00		pH (as rec'd)	8.1		
Mercury	Hg	0.0000		Radioactivity			
Nickel	Ni	0.0		Alpha *pe/l*	1.9		
Selenium	Se	0.00		± deviation	2.4		
Silver	Ag	0.00		Beta *pe/l*	2.1		
Zinc	Zn	0.02		± deviation	2.3		

WELL NO. 2 was completed in March 1961 to a depth of 335 ft (reported to be 307 ft deep in 1985) by the Layne-Western Co., Aurora. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located southeast of the Public Works Building and southwest of the intersection of Bonnie Lane and Randy Drive, approximately 1675 ft N and 20 ft W of the SE corner of Section 32, T40N, R10E. The land surface elevation at the well is approximately 790 ft.

A drillers log of Well No. 2 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Top soil	3	3
Yellow clay	9	12
Brown clay	13	25
Sandy brown clay	35	60
Sand and gravel	48	108
Fine sand	22	130
Hard gray limestone	40	170
Medium gray limestone	5	175
Medium brown limestone	37	212
Limestone with shale streaks	6	218
Gray shale	17	235
Medium gray limestone	5	240
Limestone with shale streaks	5	245
Medium gray limestone	15	260
Soft gray limestone? - no samples	10	270
Medium gray limestone	20	290
Soft gray limestone? - no samples	5	295
Soft gray limestone - few cuttings	5	300
Medium gray limestone	30	330
Gray shale	5	335

A 10-in. diameter hole was drilled to a depth of 335 ft. The well is cased with 10-in. steel pipe from about 1.5 ft above land surface to a depth of 132 ft.

A production test was conducted by the driller on March 8, 1961. After 8.3 hr of pumping at rates ranging from 421 to 759 gpm, the maximum drawdown was 52 ft from a nonpumping water level of 95 ft.

Nonpumping water levels were reported to be 110 ft on April 7, 1965, and 102 ft in May 1967.

In 1971, this well was treated with 2000 gal of acid by the J. P. Miller Artesian Well Co., Brookfield. The production was then reported to be 750 gpm with a drawdown of 12 ft.

On June 5, 1973, this well was treated with 4000 gal of acid by the J. P. Miller Artesian Well Co. The production was then reported to be 750 gpm with 13 ft of drawdown.

Nonpumping water levels were reported to be 133 ft in July 1973, 130 ft in May 1977, and 168 ft in 1984.

A production test was conducted by the Layne-Western Co. on June 3, 1985. After 1.3 hr of pumping at rates of 670 to 450 gpm, the drawdown was 6 ft

from a nonpumping water level of 152 ft. Five min after pumping was stopped, the water level had recovered to 153 ft.

The pumping equipment presently installed is a 10-in., 7-stage Layne & Bowler vertical turbine pump (Serial No. 42974) set at 210 ft, rated at 500 gpm at about 298 ft TDH, and powered by a 50-hp 1800 rpm U. S. electric motor and a 63-hp 1800 rpm Continental gas engine. The well is equipped with 210 ft of airline.

A partial analysis of a sample (Lab. No. 154301) collected during the initial production test, showed the water to have a hardness of 320 mg/1, total dissolved minerals of 463 mg/1, and an iron content of 0.4 mg/1.

WELL NO. 3 was completed in November 1967 to a depth of 336 ft by the J. P. Miller Artesian Well Co., Brookfield. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located north of Fullerton Ave., approximately 926 ft N and 500 ft E of the SW corner of Section 28, T40N, R10E. The land surface elevation at the well is approximately 805 ft.

A drillers log of Well No. 3 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift	138	138
Limestone	70	208
Shale	77	285
Lime and shale	15	300
Lime	29	329
Shale	7	336

A 15.2-in. diameter hole was drilled to a depth of 336 ft. The well is cased with 16-in. OD pipe from about 0.5 ft above land surface to a depth of 143 ft.

After acidizing with 6000 gal of HC1, a production test was conducted by the driller on November 6, 1967. After 7.5 hr of pumping at rates ranging from 250 to 300 gpm, the drawdown was more than 72 ft from a nonpumping water level of 100 ft below land surface.

The well was acidized again on November 8, 1967, with 4000 gal of HC1, and a production test was conducted by the driller on November 10. After 8.5 hr of pumping at rates ranging from 820 to 660 gpm, the drawdown was 52 ft from a nonpumping water level of 118 ft below land surface. Ten min after pumping was stopped, the water level had recovered to 123 ft.

After acidizing again with 8000 gal of HC1 on November 15, 1967, a production test was conducted on November 15-16. After 4.5 hr of pumping at rates of 560 to 950 gpm, the drawdown was 36 ft from a nonpumping water level of 116 ft below land surface. The pump was then turned off for 4.5 hr. After this idle period, the well was pumped again for 8.5 hr at rates of 950 to 1000 gpm with a final drawdown of 36 ft.

In May 1977, the nonpumping water level was reported to be 152 ft.

The pumping equipment presently installed consists of a 125-hp 1800 rpm General Electric motor, a 12-in., 6-stage Peerless turbine pump set at 220 ft, rated at 1000 gpm, and has 220 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. B027949) is for a water sample from the well collected January 25, 1985, after 24 hr of pumping at 1000 gpm.

WELL NO. 3, LABORATORY NO. B027949

		mg/1	*me/I*			*mg/1*	*me/I*
Iron	Fe	0.41		Silica	SiO_2	16	
Manganese	Mn	0.014		Fluoride	F	0.53	
Ammonium	NH_4	0.6	0.03	Boron	B	0.26	
Sodium	Na	31	1.35	Cyanide	CN	<0.005	
Potassium	K	2.7	0.07	Nitrate	NO_3	<0.4	
Calcium	Ca	77	3.84	Chloride	CI	12	0.34
Magnesium	Mg	44.8	3.68	Sulfate	SO_4	135	2.81
Strontium	Sr	3.97	0.09	Alkalinity (as $CaCO_3$)		275	5.50
Aluminum	Al	<0.005		Hardness (as $CaCO_3$)		373	7.46
Arsenic	As	0.004					
Barium	Ba	0.031	0.00	Total dissolved			
Beryllium	Be	<0.0005		minerals		529	
Cadmium	Cd	<0.003					
Chromium	Cr	<0 005					
Cobalt	Co	<0.005					
Copper	Cu	<0.003					
Lead	Pb	0.005					
Mercury	Hg	<0.00001					
Nickel	Ni	<0.003					
Selenium	Se	<0.001					
Silver	Ag	<0.005					
Vanadium	V	<0.004					
Zinc	Zn	0.003		pH (as rec'd)		7.5	

WELL NO. 4 was completed in March 1975 to a depth of 1963 ft (measured at 1919 ft deep in 1985) by the Wehling Well Works, Beecher. The water-yielding units in this well are the Midwest Aquigroup (Cambrian-Ordovician aquifer) except for dolomites of the Galena and Platteville Groups and the Glenwood-St. Peter Sandstone, and the Basal Bedrock Aquigroup (Elmhurst-Mt. Simon aquifer). The well is located south of the Public Works Building and southwest of the intersection of Bonnie Lane and Randy Drive, approximately 1600 ft N and 200 ft W of the SE corner of Section 32, T40N, R10E. The

land surface elevation at the well is approximately 790 ft.

A drillers log of Well No. 4 follows:

Strata	Thickness (ft)	Depth (ft)
Drift	120	120
Lime	70	190
Lime and shale	50	240
Shale	190	430
Dolomite	26	456
Dolomite and some shale	19	475
Dolomite	220	695
Dolomite with some show of sand	5	700
Dolomite	37	737
St. Peter sandstone	333	1070
Lime	40	1110
Shaley red rock with some lime	85	1195
Lime, red rock and shale	50	1245
Lime, some red rock	25	1270
Shale with red rock and lime	35	1305
Sand, some red rock	50	1355
Red rock	35	1390
Sandstone	25	1415
Lime and shale, trace of sand	182	1597
Lime	23	1620
Lime and shale	166	1786
Sandstone	177	1963

A 26-in. diameter hole was drilled to a depth of 135 ft, reduced to 22 in. between 135 and 1074 ft, reduced to 17 in. between 1074 and 1450 ft, and finished 15 in. in diameter from 1450 to 1963 ft. The well is cased with 26-in. black steel pipe from land surface to a depth of 135 ft, 18-in. black steel pipe from about 1.5 ft above land surface to a depth of 1074 ft (cemented in), and 14-in. perforated black steel pipe from 1050 ft to a depth of 1450 ft. The top of the casing is equipped with a Baker pitless adapter.

This well was shot on April 1, 1975, with 466 lb of nitrogel and on May 2, 1975, with 900 lb of nitrogel.

A production test was conducted by the driller on May 29-30, 1975. After 30 hr of pumping at rates ranging from 510 to 957 gpm, the final drawdown was 265 ft from a nonpumping water level of 521 ft.

A second production test was conducted by the driller on June 9-10, 1975. After 24 hr of pumping at rates ranging from 1350 to 920 gpm, the maximum drawdown was 242 ft from a nonpumping water level of 610 ft.

On July 29, 1985, the nonpumping water level was reported to be 761 ft.

The pumping equipment presently installed is a 14-stage Johnston submersible pump set at 995 ft, rated at 800 gpm at about 1023 ft TDH, and powered by a 400-hp General Electric motor.

A partial analysis of a sample (Lab. No. 208185) collected January 30, 1978, showed the water to have a hardness of 126 mg/1, total dissolved minerals of 396 mg/1, and an iron content of 0.6 mg/1.

WELL NO. 5, was completed in 1977 to a depth of 1357 ft by the Wehling Well Works, Beecher. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer) except for dolomites of the Galena and Platteville Groups and the Glenwood-St. Peter Sandstone. The well is located about 0.3 mile south of Army Trail Road and 0.5 mile east of Fair Oaks Road, approximately 2580 ft S and 50 ft W of the NE corner of Section 23, T40N, R9E. The land surface elevation at the well is approximately 775 ft.

A drillers log of Well No. 5 follows:

Strata	Thickness (ft)	Depth (ft)
Clay	13	13
Rock	30	43
Gravel	30	73
Lime	5	78
Lime with shale	20	98
Lime	60	158
Shale	210	368
Lime	60	428
Dolomite	150	578
Lime	20	598
Dolomite	90	688
Lime	10	698
Sand	160	858
Sand with shale	185	1043
Lime with shale	125	1168
Sand with lime and shale	30	1198
Sand and shale	22	1220
Sand	78	1298
Sandstone	59	1357

A 30-in. diameter hole was drilled to a depth of 110 ft, reduced to 23 in. between 110 and 1213 ft, and finished 17 in. in diameter from 1213 to 1357 ft. The well is cased with 24-in. black steel pipe from about 1 ft above land surface to a depth of 110 ft (cemented in) and 18-in. black steel pipe from about 4 ft above land surface to a depth of 1213 ft (cemented in). The top of the casing is equipped with a pitless adapter.

A production test was conducted by the driller on August 15, 1977. After 4 hr of pumping at rates ranging from 833 to 1167 gpm, the maximum drawdown was 235 ft from a nonpumping water level of 644 ft below land surface. Pumping was continued for 2.2 hr at rates of 983 to 880 gpm with a final drawdown of 205 ft.

The pumping equipment presently installed is a Byron Jackson submersible pump set at 900 ft, rated at 1000 gpm at about 1070 ft TDH, and powered by a 400-hp electric motor.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B023392)

is for a water sample from the well collected December 9, 1983, after 3 hr of pumping at 950 gpm.

WELL NO. 6, LABORATORY NO. B028893

		mg/l	*me/t*			*mg/l*	*me/I*
Iron	Fe	0.19		Silica	SiO_2	6.8	
Manganese	Mn	<0.005		Fluoride	F	0.88	
Ammonium	NH_4	0.5	0.03	Boron	B	0.29	
Sodium	Na	21	0.91	Cyanide	CN	<0.005	
Potassium	K	11	0.28	Nitrate	NO_3	<0.4	
Calcium	Ca	56	2.79	Chloride	CI	2	0.06
Magnesium	Mg	17.2	1.41	Sulfate	SO_4	<10	
Strontium	Sr	2.82		Alkalinity (as $CaCO_3$)		277	5.54
Aluminum	Al	<0.05		Hardness (as $CaCO_3$)		220	**4.40**
Arsenic	As	<0.001					
Barium	Ba	1.57		Total dissolved			
Beryllium	Be	<0.0005		minerals		293	
Cadmium	Cd	<0.003					
Chromium	Cr	<0.005					
Cobalt	Co	<0.005					
Copper	Cu	<0.005					
Lead	Pb	0.023					
Mercury	Hg	<0.00010					
Nickel	Ni	0.008					
Selenium	Se	<0.001					
Silver	Ag	<0.005					
Vanadium	V	<0.005					
Zinc	Zn	0.014		pH (as rec'd)		7.7	

WELL NO. 6 (Armstrong Park well), open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in January 1985 to a depth of 310 ft by the Milaeger Well & Pump Co., Brookfield, Wis. As of August 1985, this well was not in use yet. The well is located about 200 ft south of the south end of Idaho St., approximately 2450 ft N and 50 ft W of the SE corner of Section 30, T40N, R10E. The land surface elevation at the well is approximately 758 ft.

A drillers log of Well No. 6 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Glacial drift.	100	100
Limestone	210	310

The well is cased with 12-in. ID pipe from about 1 ft above land surface to a depth of 100 ft (cemented in). Below the casing, the hole was finished 11.5 in. in diameter to the bottom.

Upon completion, the well reportedly produced 948 gpm for 12 hr with very little drawdown from a nonpumping water level of 49 ft below land surface.

The pumping equipment presently installed is an 11-in., 5-stage Byron Jackson submersible pump set at 87 ft, rated at 750 gpm at about 247 ft TDH, and powered by a 60-hp 1800 rpm Byron Jackson electric motor. The well is equipped with 87 ft of airline.

WELL NO. 7 (Shelburne well), open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in April 1985 to a depth of 305 ft by the Milaeger Well & Pump Co., Brookfield, Wis. As of August 1985, this well was not in use yet. The well is located about 600 ft west of Kuhn Road and 400 ft south of Shelburne Drive, approximately 2200 ft S and 900 ft E of the NW corner of Section 31, T40N, R10E. The land surface elevation at the well is approximately 748 ft.

A drillers log of Well No. 7 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Glacial drift	105	105
Niagara limestone	200	305

The well is cased with 12-in. pipe from about 1 ft above land surface to a depth of 105 ft (cemented in). Below the casing, the hole was finished 12 in. in diameter to the bottom.

Upon completion, the well reportedly produced 602 gpm with a drawdown of 15 ft from a nonpumping water level of 78 ft below land surface.

As of August 1985, the permanent pumping equipment had not been installed.

WELL NO. 8 (Tubeway Drive well), open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in April 1985 to a depth of 303 ft by the Milaeger Well & Pump Co., Brookfield, Wis. As of August 1985, this well was not in use yet. The well is located about 850 ft west of Gary Ave. and 310 ft south of Tubeway Drive, approximately 2325 ft S and 3550 ft W of the NE corner of Section 5, T39N, R10E. The land surface elevation at the well is approximately 770 ft.

A drillers log of Well No. 8 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Glacial drift	124	124
Limestone	179	303

The well is cased with 12-in. pipe from about 1 ft above land surface to a depth of 124 ft (cemented in). Below the casing, the hole was finished 12 in. in diameter to the bottom.

Upon completion, the well reportedly produced 503 gpm for 24 hr with a drawdown of 17 ft from a nonpumping water level of 78 ft below land surface.

As of August 1985, the permanent pumping equipment had not been installed.

CITIZENS ARROWHEAD DIVISION

Citizens Arrowhead Division (est. 1879), located about 1 mile southwest of Wheaton, installed a public water supply in 1959. The water system is owned and operated by the Citizens Utilities Co. of Illinois. One well (No. 2) is in use and another well (No. 1) is available for emergency use. In 1963 there were 40 services, all metered; the maximum pumpage was 17,360 gpd. In 1984 there were 591 services, all metered; the average pumpage was 211,160 gpd. The water is chlorinated, fluoridated, and treated with sodium silicate.

WELL NO. 1 was completed in July 1959 to a depth of 335 ft by the Layne-Western Co., Aurora. This well is available for emergency use. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located about 150 ft north of the Burning Trail Cul-de-sac Unit No. 1, approximately 360 ft S and 410 ft W of the NE corner of Section 30, T39N, R10E. The land surface elevation at the well is approximately 740 ft.

A drillers log of Well No. 1 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Soil	5	5
Sandy clay	10	15
Gray clay, sandy	25	40
Sand, clay and gravel	25	65
Gravel	5	70
Sand and gravel	5	75
Gravel	5	80
Limestone, gray	100	180
Limestone, brown	45	225
Dolomite, with shale streaks	60	285
Limestone, gray	30	315
Dolomite, with shale streaks	20	335

A 12-in. diameter hole was drilled to a depth of 335 ft. The well is cased with 12-in. pipe from about 1.5 ft above the pumphouse floor to a depth of 87 ft.

A production test was conducted by the driller on July 31, 1959. After 8 hr of pumping at rates of 703 to 759 gpm, the final drawdown was 13 ft from a nonpumping water level of 40 ft.

Nonpumping water levels were reported to be 55 ft in April 1969, 30 ft in June 1971, and 35 ft in September 1973.

The pumping equipment presently installed is a Layne &. Bowler turbine pump set at 130 ft, rated at 700 gpm, and powered by a 50-hp U. S. electric motor.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B029875) of a sample collected February 3, 1984, after pumping for 1.5 hr, showed the water to have a hardness of 604 mg/1, total dissolved minerals of 819 mg/1, and an iron content of 2.4 mg/1.

WELL NO. 2 was completed in March 1970 to a depth of 328 ft by the Layne-Western Co., Aurora. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located at Cree St. and Butterfield Road, approximately 509 ft N and 627 ft W of the SE corner of Section 30, T39N, R10E. The land surface elevation at the well is approximately 745 ft.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B028328) is for a water sample from the well collected January 24, 1984, after 2.1 hr of pumping at about 540 gpm.

WELL NO. 2, LABORATORY NO. B028828

		mg/1	*me/l*			*mg/l*	*me/l*
Iron	Fe	1.7		Silica	SiO_2	16	
Manganese	Mn	0.058		Fluoride	F	0.15	
Ammonium	NH_4	0.7	0.04	Boron	B	0.07	
Sodium	Na	9	0.39	Cyanide	CN	<0.005	
Potassium	K	3.1	0.08	Nitrate	NO_3	<0 4	
Calcium	Ca	97	4.84	Chloride	CI	25	0.71
Magnesium	Mg	51.9	4.27	Sulfate	SO_4	100	2.08
Strontium	Sr	0.284	0.01	Alkalinity (as $CaCO_3$)		338	6.76
Aluminum	Al	<0.05		Hardness (as $CaCO_3$)		458	9.16
Arsenic	As	<0.001					
Barium	Ba	0.083	0.00	Total dissolved			
Beryllium	Be	<0.0005		minerals		549	
Cadmium	Cd	0.004					
Chromium	Cr	<0.005					
Cobalt	Co	0.008					
Copper	Cu	<0.005					
Lead	Pb	<0.005					
Mercury	Hg	<0.00010					
Nickel	Ni	0.020					
Selenium	Se	<0.001					
Silver	Ag	<0.005					
Vanadium	V	<0.005					
Zinc	Zn	0.007		pH (as ree'd)		7.4	

A 17-in. diameter hole was drilled to a depth of 99 ft and finished 12 in. in diameter from 99 to 328 ft. The well is cased with 12-in. pipe from about 1.5 ft above the wellhouse floor to a depth of 99 ft. The annulus between the bore hole and casing is filled with a slurry of drill mud and cuttings from 0 to 99 ft.

A drillers log of Well No. 2 follows:

Strata	Thickness (ft)	Depth (Jt)
Black soil	2	2
Yellow clay	6	8
Sand, medium gravel	4	12
Gray clay, some gravel embedded	38	50
Sand and gravel, some clay	7	57
Clay and sand	26	83
Clay	4	87
Lime	3	90
Sand and gravels, boulders	9	99
Lime, few white shale lenses	41	240
Lime, few green shale lenses	75	315
Shale	13	328

A production test was conducted by the driller on March 18, 1970. After 8.5 hr of pumping at rates ranging from 536 to 584 gpm, the final drawdown was 19 ft from a nonpumping water level of 42 ft below land surface.

Nonpumping water levels were reported to be 59 ft in September 1973, and 68 ft on July 17, 1979.

The pumping equipment presently installed is a Layne & Bowler turbine pump (No. 63319) set at 100 ft, rated at 500 gpm, and powered by a 50-hp 1765 rpm U. S. Holloshaft electric motor.

CITIZENS COUNTRY CLUB HIGHLANDS SUBDIVISION

Citizens Country Club Highlands Subdivision (est. 1526), located about 1 mile south of Bensenville, installed a public water supply in 1956. The water system is owned and operated by the Citizens Utilities Co. of Illinois. Two wells are in use. This supply is also cross connected with the city of Elmhurst. In 1962 there were 209 services, all metered; the average and maximum pumpages were 75,000 and 196,000 gpd, respectively. In 1984 there were 447 services, all metered; the average pumpage was 122,730 gpd. The water is fluoridated, chlorinated, and treated with polyphosphate to keep iron in solution.

WELL NO. 1, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in July 1956 to a depth of 226 ft by the J. P. Miller Artesian Well Co., Brookfield. The well is located inside the pumping station about 300 ft south of Grand Ave. at the northeast corner of the subdivision, approximately 1720 ft S and 2590 ft E of the NW corner of Section 25, T40N, R11E. The land surface elevation at the well is approximately 680 ft.

A drillers log of Well No. 1 follows:

Strata	Thickness (ft)	Depth (ft)
Clay	20	20
Sand gravel	10	30
Blue mud	20	50
Blue mud sand	10	60
Sand and gravel, water	10	70
Sand and gravel	10	80
Sand gravel and lime shell (top of lime at 85 ft)	10	90
Gray lime and water	10	100
Gray lime	40	140
White lime, hard	70	210
Dark gray lime	10	220
Red rock	6	226

A 12-in. diameter hole was drilled to a depth of 226 ft. The well is cased with 12-in. genuine wrought iron pipe from about 1.5 ft above the pump station floor to a depth of 89 ft.

Upon completion, the well reportedly produced 190 gpm for 12 hr with a drawdown of 46 ft from a nonpumping water level of 41 ft below the pump base.

Nonpumping water levels were reported to be 44 ft on April 21, 1958; 41 ft in October 1962; 31 ft in October 1964; 41 ft in April 1969; 87 ft in May 1970; 106 ft in June 1971; 68 ft in August 1973; 80 ft in August 1975; and 88 ft in August 1976.

The pumping equipment presently installed is an 8-stage Layne turbine pump set at 180 ft, rated at 200 gpm, and powered by a 20-hp 1800 rpm U. S. electric motor.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B039537) of a sample collected March 23, 1982, after pumping for 4 hr, showed the water to have a hardness of 507 mg/1, total dissolved minerals of 719 mg/I, and an iron content of 0.54 mg/1.

WELL NO. 2, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in March 1966 to a depth of 228 ft by the Layne-Western Co., Aurora. The well is located about 100 ft south of Grand Ave. and 150 ft west of Crown Road, approximately 1550 ft S and 1300 ft E of the NW corner of Section 25, T40N, R11E. The land surface elevation at the well is approximately 685 ft.

A drillers log of Well No. 2 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Top soil	2	2
Yellow clay	10	12
Dark yellow clay	2	14
Gray clay	26	40
Sandy gray clay	15	55
Gravelly gray clay	30	85
Gravel	10	95
Limestone	131	226
Shale	2	228

A 12-in. diameter hole was drilled to a depth of 228 ft. The well is cased with 12-in. steel pipe from land surface to a depth of 97 ft.

Upon completion, this well was acidized twice with 1000 gal of 15 percent HC1, once with 500 gal of concentrated acid, and also treated with 100 lb of phosphate.

A production test was conducted by the driller on March 4, 1966. After 5.2 hr of pumping at rates ranging from 120 to 84 gpm, the final drawdown was 115 ft from a nonpumping water level of 63 ft below land surface.

Nonpumping water levels were reported to be 65 ft in April 1969, 105 ft in August 1973, 84 ft in March 1976, and 104 ft on July 17, 1979.

The pumping equipment presently installed is an 8-in., 10-stage Layne & Bowler turbine pump set at 180 ft, rated at 200 gpm at about 250 ft TDH, and powered by a 10-hp U. S. electric motor.

The following mineral analysis (Lab. No. 211640) is for a water sample from the well collected July 17, 1979, after 48 hr of pumping at 65 gpm.

WELL NO. 2, LABORATORY NO. 211840

		mg/l	*me/I*			*mg/l*	***me/I***
Iron(total)	Fe	0.7		Silica	SiO_2	16.8	
Manganese	Mn	0.01		Fluoride	F	0.4	
Ammonium	NH_4	0.7	0.04	Boron	B	0.8	
Sodium	Na	61.2	2.66	Nitrate	NO_3	0.5	0.01
Potassium	K	4.61	0.12	Chloride	CI	13	0.37
Calcium	Ca	112	5.59	Sulfate	SO_4	357.9	**7.44**
Magnesium	Mg	57.8	4.75	Alkalinity (as $CaCO_3$)		276	5.52
Strontium	Sr	3.20	0.07				
				Hardness (as $CaCO_3$)		520	10.40
Barium	Ba	**<0.05**					
Cadmium	Cd	0.00		Total dissolved			
Chromium	Cr	0.00		minerals		815	
Copper	Cu	0.02					
Lead	Pb	0.00					
Lithium	Li	0.03		Turbidity	3		
Nickel	Ni	0.00		Color	0		
Silver	Ag	0.00		Odor	0		
Zinc	Zn	0.01		Temp.(reported)	54F		

CITIZENS LOMBARD HEIGHTS DIVISION

Citizens Lombard Heights Division (est. 980), located on the northeast edge of Lombard, installed a public water supply in 1954. The water system is owned and operated by the Citizens Utilities Co. of Illinois. One well is in use. In 1956 there were 200 services, all metered. In 1984 there were 275 services, all metered; the average pumpage was 78,310 gpd. The water is chlorinated, fluoridated, and treated with polyphosphate to keep iron in solution.

WELL NO. 1, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in March 1954 to a depth of 209 ft by the Layne-Western Co., Aurora. The well is located on the east side of Joyce Ave. about 2 blocks south of North Ave. between Marcus Drive and Sunset Ave., approximately 1067 ft S and 3600 ft E of the NW corner of Section 5, T39N, R11E. The land surface elevation at the well is approximately 720 ft.

A 15.2-in. diameter hole was drilled to a depth of 209 ft. The well is cased with 16-in. OD pipe from about 0.7 ft above the pumphouse floor to a depth of 87 ft.

Nonpumping water levels were reported to be 35 ft in March 1956, and 43 ft on January 28, 1958.

On November 15, 1958, the well reportedly produced 335 gpm for 10 hr with a drawdown of 33 ft from a nonpumping water level of 47 ft below the pump base.

Nonpumping water levels were reported to be 48 ft in September 1959, 42 ft in October 1962 and October 1964, 65 ft in May 1970, 59 ft in June 1971, and 75 ft in December 1976.

In June 1977, the well reportedly produced 330 gpm with a drawdown of 6 ft from a nonpumping water level of 84 ft.

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

Strata	Thickness (ft)	Depth (ft)
QUATERNARY SYSTEM		
Pleistocene Series		
Soil, dark grayish brown leached	5	5
Till, sandy, slightly gravelly, to gravelly, buff, grayish buff	SO	55
Till, extremely gravelly and sandy, grayish buff	15	70
Gravel and sand, multicolored, clean	15	85
SILURIAN SYSTEM		
Niagaran Series		
Dolomite, slightly calcareous, light buff, white, extra fine to very fine, crystalline, some visible porosity (vugular)	10	95
Dolomite, cherty, white, little buff, fine to very fine, crystalline	10	. 105
Dolomite, slightly silty, slightly argillaceous, white, little yellow, buff, grayish-buff, very fine, crystalline	50	155
Alexandrian Series		
Kankakee Dolomite		
Dolomite, white, light buff, very fine, crystalline, partly granular	40	195
Dolomite, trace glauconite slightly silty to silty, buff, dark brown, fine to very fine, crystalline	10	205
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Shale slightly dolomitic, slightly ferruginous, green, reddish-brown to yellowish brown, very weak (plastic), with small rounded dark pellets	5	210

On July 17, 1979, the nonpumping water level was reported to be 68 ft.

The pumping equipment presently installed consists of a 30-hp U. S. electric motor, an 8-stage Layne turbine pump (No. 27708) set at 120 ft, rated at 300 gpm at about 220 ft TDH, and has 120 ft of column pipe. The well is equipped with 120 ft of airline.

The following mineral analysis (Lab. No. 211655) is for a water sample from the well collected July 17, 1979, after 10 min of pumping at about 360 gpm.

WELL NO. 1, LABORATORY NO. 211655

		mg/l	me/l			mg/l	me/I
Iron(total)	Fe	3.0		Silica	SiO_2	23.4	
Manganese	Mn	0.05		Fluoride	F	0.3	
Ammonium	NH_4	0.6	0.03	Boron	B	0.2	
Sodium	Na	26.6	1.16	Nitrate	NO_3	0.2	0.00
Potassium	K	2.9	0.07	Chloride	CI	50	1.41
Calcium	Ca	191	9.53	Sulfate	SO_4	394	8.20
Magnesium	Mg	79.9	6.57	Alkalinity (as	$CaCO_3$)	396	7.92
Strontium	Sr	0.68	0.02				
				Hardness (as	$CaCO_3$)	805	16.10
Barium	Ba	<0.05					
Cadmium	Cd	0.00		Total dissolved			
Chromium	Cr	0.00		minerals		1040	
Copper	Cn	0.01					
Lead	Pb	0.00					
Lithium	Li	0.02		Turbidity	23		
Nickel	Ni	0.00		Color	0		
Silver	Ag	0.00		Odor	0		
Zinc	Zn	0.01		Temp.(reported)	53F		

CITIZENS SANTA FE DIVISION

Citizens Santa Fe Division (est. 367) is located southeast of Bolingbrook. The water system is owned and operated by the Citizens Utilities Co. Two wells are in use. This supply, located in Will and Du Page Counties, is also interconnected with the Bolingbrook (Citizens West Suburban) supply. In 1973 there were 2 services, all metered; the average pumpage was 26,000 gpd. In 1984 there were 10 services, all metered; the average pumpage was 50,900 gpd. The water is chlorinated, fluoridated, and treated with sodium silicate.

WELL NO. 1, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in February 1966 to a depth of 274 ft by the Layne-Western Co., Aurora. The well is located at Joliet and Frontage Roads, approximately 650 ft N and 100 ft E of the SW corner of Section 7, T37N, R11E, Du Page County. The land surface elevation at the well is approximately 750 ft.

A drillers log of Well No. 1 follows:

Strata	Thickness (ft)	Depth (ft)
Top soil	2	2
Clay	28	30
Gravel and clay	35	65
Broken limestone and sand	70	135
Gravel, hole dry water required for drilling to 148 ft	3	138
Gray lime	52	190
Brown limestone	84	274

A 12-in. diameter hole was drilled to a depth of 274 ft. The well is cased with 12-in. pipe from about 1.7 ft above land surface to a depth of 139.6 ft.

A production test was conducted by the driller on February 3, 1966. After 8 hr of pumping at rates of 508 to 760 gpm, the final drawdown was 8 ft from a nonpumping water level of 114 ft below land surface.

In August 1973, the well reportedly produced 500 gpm with a drawdown of 11 ft from a nonpumping water level of 121 ft.

The pumping equipment presently installed is a turbine pump set at 150 ft, rated at 500 gpm, and powered by a 50-hp U. S. electric motor.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B28408) is for a water sample from the well collected December 26, 1979, after 4 hr of pumping at 310 gpm.

WELL NO. 1, LABORATORY NO. B28408

		mg/l	*me/I*			***mg/l***	*me/I*
Iron	Fe	1.52		Silica	SiO_2	16	
Manganese	Mn	0.029		Fluoride	F	0.25	
Ammonium	NH_4	0.5	0.03	Boron	B	0.12	
Sodium	Na	14	0.61	Cyanide	CN	<0.005	
Potassium	K	2.7	0.07	Nitrate	NO_3	<0.4	
Calcium	Ca	119	5.94	Chloride	CI	31	0.87
Magnesium	Mg	44	3.62	Sulfate	SO_4	153	3.18
Strontium	Sr	0.895		Alkalinity (as $CaCO_3$)		295	5.90
Arsenic	As	0.003		Hardness (as $CaCO_3$)		487	9.74
Barium	Ba	0.04					
Beryllium	Be	<0.0005		Total dissolved			
Cadmium	Cd	0.001		minerals		560	
Chromium	Cr	<0.005					
Cobalt	Co	<0.05					
Copper	Cu	<0.005					
Lead	Pb	0.02					
Lithium	Li	<0.1					
Mercury	Hg	0.00005					
Nickel	Ni	<0.00S					
Selenium	Se	<0.001					
Silver	Ag	<0.005					
Zinc	Zn	<0.005		pH (as rec'd)		7.4	

WELL NO. 2 was completed in August 1967 to a depth of 243 ft by the Layne-Western Co., Aurora. The major water-yielding units in this well are sand and gravel of the Prairie Aquigroup and dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located about 0.8 mile north of the White Fence Farm and west of Highway 66, approximately 400 ft S and 1100 ft W of the NE corner of Section 23, T37N, R10E, Will County. The land surface elevation at the well is approximately 715 ft.

A drillers log of Well No. 2 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Top soil, clay and boulders	25	25
Blue clay, gravel and boulders	91	116
Broken limestone	5	121
Medium hard gray limestone	54	175
Medium hard gray limestone creviced	10	185
Medium gray limestone	45	230
Green shale	13	243

A 12-in. diameter hole was drilled to a depth of 243 ft. The well is cased with 12-in. steel pipe from about 2.5 ft above land surface to a depth of 121 ft (bottom 20 ft slotted).

A production test was conducted by the driller on August 17, 1967. After 8 hr of pumping at rates ranging from 414 to 616 gpm, the maximum drawdown was 87 ft from a nonpumping water level of 90 ft.

On July 18, 1979, the nonpumping water level was reported to be 89 ft.

The pumping equipment presently installed is a turbine pump set at 200 ft, rated at 500 gpm, and powered by a 75-hp U. S. electric motor.

The following mineral analysis (Lab. No. 211671) is for a water sample from the well collected July 18, 1979, after 10 min of pumping at 350 gpm. The iron content has been less on other analyses.

WELL NO. 2, LABORATORY NO. 211671

		mg/l	*me/I*			*mg/l*	*me/I*
Iron(total)	Fe	4.4		Silica	SiO_2	21.6	
Manganese	Mn	0.07		Fluoride	F	0.1	
Ammonium	NH_4	0.1	0 01	Boron	B	0.1	
Sodium	Na	7.8	0.34	Nitrate	NO_3	0.0	0.00
Potassium	K	3.0	0.08	Chloride	CI	8	0.23
Calcium	Ca	151	7.53	Sulfate	SO_4	310	6.45
Magnesium	Mg	75.0	6.17	Alkalinity (as $CaCO_3$)		378	7.56
Strontium	Sr	0.13	0.00				
				Hardness (as $CaCO_3$)		685	13.70
Barium	Ba	<0.05					
Cadmium	Cd	0.00		Total dissolved			
Chromium	Cr	0.00		minerals		819	
Copper	Cu	0.01		Total organic carbon		0.8	
Lead	Pb	0.00					
Lithium	Li	0.01		Turbidity		28	
Nickel	Ni	0.00		Color		0	
Silver	Ag	0.00		Odor		0	
Zinc	Zn	0.03		Temp.(reported)		53F	

CITIZENS VALLEY VIEW DIVISION

Citizens Valley View Division (est. 8600), located about 1.5 miles south of Glen Ellyn, installed a public water supply in 1957. The water system is owned and operated by the Citizens Utilities Co. of Illinois. Three wells (Nos. 3, 4, and 5) are in use and two wells (Nos. 1 and 6) are available for emergency use. In 1969 there were 1969 services, all metered; the average pumpage was 586,000 gpd. In 1984 there were 2485 services, all metered; the average pumpage was 862,450 gpd. The water is chlorinated and treated with polyphosphate to keep iron in solution. The water from Wells 1, 3, 4, and 6 is fluoridated.

WELL NO. 1 was completed in May 1957 to a depth of 290 ft by the Layne-Western Co., Aurora. This well is available for emergency use. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located at the north end of Birchwood Drive, approximately 875 ft S and 1630 ft E of the NW corner of Section 35, T39N, R10E. The land surface elevation at the well is approximately 745 ft.

A drillers log of Well No. 1 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Soil	5	5
Clay and gravel	60	65
Fine gravel	20	85
Sand and gravel	26	111
Limestone	88	199
Red shale	1	200
Limestone	61	261
Red shale	29	290

A 12-in. diameter hole was drilled to a depth of 290 ft. The well is cased with 12-in. steel pipe from about 1 ft above land surface to a depth of 117 ft.

A production test was conducted by the driller on May 27, 1957. After 8 hr of pumping at rates of 503 to 620 gpm, the final drawdown was 14 ft from a nonpumping water level of 78 ft below land surface.

Nonpumping water levels were reported to be 67 ft below the pump base on June 12, 1958; 80 ft in April 1969; and 75 ft on January 28, 1971.

On March 8, 1971, the driller reported that the well produced 530 gpm for 1 hr with a drawdown of 12 ft from a nonpumping water level of 78 ft.

Nonpumping water levels were reported to be 78 ft in June 1971; 79 ft in July 1972; 76 ft in August 1973; 85 ft in July 1976; 87 ft on July 17, 1979; and 78 ft in 1982.

The pumping equipment presently installed consists of a 30-hp 1760 rpm U. S. Holloshaft electric motor (No. 84V132), a 10-in., 4-stage Layne turbine pump (No. 38105) set at 120 ft, rated at 500 gpm at about 170 ft TDH, and has 120 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 120 ft of airline.

A mineral analysis of a sample (Lab. No. 211436) collected July 17, 1979, after pumping for 10 min at 375 gpm, showed the water to have a hardness of 512 mg/1, total dissolved minerals of 751 mg/1, and an iron content of 0.6 mg/1.

WELL NO. 2 was completed in June 1957 to a depth of 230 ft by the Layne-Western Co., Aurora. This well was abandoned and sealed in 1957 immediately after it was drilled. The major water-yielding unit in this well was dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrated shale in the upper part of the Maquoketa Group. The well was located on Burr Oak Drive south of Arboretum Road, approximately 1170 ft S and 1400 ft W of the NE corner of Section 35, T39N, R10E. The land surface elevation at the well is approximately 680 ft.

A drillers log of Well No. 2 follows:

Strata	*Thickness* ***(ft)***	*Depth* ***(ft)***
Rock and gravel	11	11
Gravel and clay	9	20
Gravel and sand	32	52
Clay and gravel	4	56
Gravel	9	65
Broken lime	7	72
Lime	8	80
Lime, gray, medium hard	10	90
Lime, gray, soft	5	95
Lime, medium hard	41	136
Lime, hard	64	200
Lime	9	209
Green shale	5	214
Green and red shale	16	230

A 12-in. diameter hole was drilled to a depth of 230 ft. The well was cased with 12-in. pipe from land surface to a depth of 67 ft.

Upon completion, the well reportedly produced 59 gpm with a drawdown of 130 ft from a nonpumping water level of 10 ft below the top of the casing.

WELL NO. 3 was completed in July 1957 to a depth of 250 ft by the Layne-Western Co., Aurora. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located about 150 ft north of Birchwood Drive about 400 ft southeast of Well No. 1, approximately 1100 ft S and 2000 ft E of the NW corner of Section 35, T39N, R10E. The land surface elevation at the well is approximately 700 ft.

A summary sample study log of Well No. 3 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
Silt, buff; broken dolomite (?)	50	50
SILURIAN SYSTEM		
Niagaran Series		
Dolomite, white, buff, gray, purple at base, fine to very fine, compact, crystalline	145	195
Alexandrian Series		
Dolomite, buff, white, little greenish gray, compact	45	240
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Shale, grayish green, purple-red, weak; dolomite, buff, fine	10	250

A 12-in. diameter hole was drilled to a depth of 250 ft. The well is cased with 12-in. steel pipe from about 1 ft above land surface to a depth of 81 ft.

A production test was conducted by the driller on July 17, 1957. After 12 hr of pumping at rates of 542 to 560 gpm, the drawdown was 7.5 ft from a nonpumping water level of 32.0 ft below the top of the casing.

On June 12, 1958, the nonpumping water level was reported to be 35 ft below the pump base.

In June 1971, the well reportedly produced 500 gpm with a drawdown of 10 ft from a nonpumping water level of 39 ft.

Nonpumping water levels were reported to be 38 ft in July 1972 and September 1976, and 40 ft in 1982.

The pumping equipment presently installed consists of a 25-hp 1760 rpm Westinghouse electric motor (No. 1733829), a 10-in., 4-stage Layne turbine pump (No. 38374) set at 60 ft, rated at 500 gpm at about 150 ft TDH, and has 60 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 60 ft of airline.

A partial analysis of a sample (Lab. No. 144001) collected July 17, 1957, after pumping for 12 hr at rates of 542 to 560 gpm, showed the water to have a hardness of 308 mg/1, total dissolved minerals of 378 mg/1, and an iron content of 0.3 mg/1.

WELL NO. 4 (Butterfield), open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in May 1961 to a depth of 298 ft by the Layne-Western Co., Aurora. The well is located about 150 ft east of Lloyd Ave. and 200 ft north of Butterfield Road, approximately 1050 ft N and 50 ft W of the SE corner of Section 25, T39N, R10E. The land surface elevation at the well is approximately 755 ft.

A drillers log of Well No. 4 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift	128	128
Limestone	168	296
Shale	2	298

A 12-in. diameter hole was drilled to a depth of 298 ft. The well is cased with 12-in. steel pipe from about 0.3 ft above land surface to a depth of 132 ft.

A production test was conducted by the driller on May 24, 1961. After 10 hr of pumping at a rate of 602 gpm, the drawdown was 33 ft from a nonpumping water level of 75 ft below land surface.

Nonpumping water levels were reported to be 84 ft in May 1970, 87 ft in July 1972, 77 ft in August 1973, 85 ft in July 1976, and 87 ft in 1982.

The pumping equipment presently installed is a 10-in., 7-stage Layne vertical turbine pump set at 130 ft, rated at 690 gpm at about 278 ft head, and powered by a 60-hp 1760 rpm U. S. Holloshaft electric motor.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B039390) of a sample collected March 22, 1982, after pumping for 2 hr at about 740 gpm, showed the water to have a hardness of 740 mg/1, total dissolved minerals of 1010 mg/1, and an iron content of 1.94 mg/1.

WELL NO. 5 (Fox Croft) was completed in February 1969 to a depth of 420 ft by the Layne-Western Co., Aurora. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located at the southwest corner of Lambert Road and Foxcroft Drive, approximately 200 ft N and 1500 ft W of the SE corner of Section 27, T39N, R10E. The land surface elevation at the well is approximately 760 ft.

A drillers log of Well No. 5 follows:

Strata	Thickness (ft)	Depth (ft)
Brown sandy clay	9	0
Brown sand	4	13
Gray sandy clay	57	70
Gray gravelly clay	27	87
Soft gray limestone	6	103
Hard gray limestone	97	200
Red and green shale	4	204
White lime, thin layers of green shale	61	265
Red and blue-gray shale with layers of white lime	20	285
Hard white lime layers, green shale	34	319
Gray lime, soft	28	347
Gray shale, layers gray lime	14	361
Hard gray lime	28	389
Hard gray lime and brown shale	2	391
Gray shale	4	395
White and brown lime	1	396
Gray shale	5	401
White and brown lime	5	406
Gray shale	7	413
White and brown lime	3	416
Gray shale	4	420

The following mineral analysis (Lab. No. 211437) is for a water sample from the well collected July 17, 1979, after 60 days of pumping at 320 gpm.

WELL NO. 5, LABORATORY NO. **211437**

		mg/l	me/I			mg/l	me/I
Iron(total)	Fe	0.3		Silica	SiO_2	13.5	
Manganese	Mn	0.00		Fluoride	F	1.6	
Ammonium	NH_4	0 6	0.03	Boron	B	1.0	
Sodium	Na	171	7.44	Nitrate	NO_3	0.1	0.00
Potassium	K	5.7	0.14	Chloride	CI	48	1.35
Calcium	Ca	55.2	2.75	Sulfate	SO_4	179	3.73
Magnesium	Mg	26.4	2.17	Alkalinity (as $CaCO_3$)		366	7.32
Strontium	Sr	0.69	0.02				
				Hardness (as $CaCO_3$)		246	4.92
Barium	Ba	<0.05					
Cadmium	Cd	0.00		Total dissolved			
Chromium	Cr	0.00		minerals		732	
Copper	Cu	0.00					
Lead	Pb	0.00					
Lithium	Li	0.06		Turbidity		1	
Nickel	Ni	0.00		Color		0	
Silver	Ag	0.00		Odor		0	
Zinc	Zn	0.01		Temp.(reported)		53F	

A 17-in. diameter hole was drilled to a depth of 20 ft and finished 12 in. in diameter from 20 to 420 ft. The well is cased with 12-in. pipe from about 1.5 ft above land surface to a depth of 103 ft.

A production test was conducted by the driller on February 25, 1969. After 8 hr of pumping at rates of 305 to 350 gpm, the drawdown was 57 ft from a nonpumping water level of 92 ft below land surface.

Nonpumping water levels were reported to be 70 ft in June 1971, 98 ft in August 1973, and 125 ft in May 1976.

The pumping equipment presently installed is a Layne & Bowler vertical turbine pump set at 260 ft, rated at 350 gpm, and powered by a 50-hp U. S. electric motor.

WELL NO. 6 was completed in December 1972 to a depth of 214 ft by the Layne-Western Co., Aurora. This well is available for emergency use. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located about 100 ft north of 22nd St. east of Mayfield Ave., approximately 162 ft S and 2283 ft E of the NW corner of Section 25, T39N, R10E. The land surface elevation at the well is approximately 680 ft.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. C008199) is for a water sample from the well collected April 24, 1976, after 100 hr of pumping at 340 gpm.

WELL NO. 8, LABORATORY NO. C008199

		mg/l	me/I			mg/l	me/I
Iron	Fe	1.2		Silica	SiO_2	12.0	
Manganese	Mn	0.03		Fluoride	F	0.2	0.01
Ammonium	NH_4	0.48	0.03	Boron	B	0.1	
Sodium	Na	25	1.09	Cyanide	CN	0.00	
Potassium	K	3.2	0.08	Nitrate	NO_3	0.18	0.00
Calcium	Ca	130	6.49	Chloride	CI	63	1.78
Magnesium	Mg	58	4.77	Sulfate	SO_4	225	4.68
				Alkalinity (as $CaCO_3$)		312	6.24
Arsenic	As	0.000					
Barium	Ba	0.0		Hardness (as $CaCO_3$)		565	11.30
Cadmium	Cd	0.00					
Chromium	Cr	0.00		Total dissolved			
Copper	Cu	0.00		minerals		760	
Lead	Pb	0.00		pH (as rec'd)		7.6	
Mercury	Hg	0.0000		Radioactivity			
Nickel	Ni	0.0		Alpha *pc/l*		2.9	
Selenium	Se	0.00		± deviation		2.8	
Silver	Ag	0.00		Beta *pc/l*		8.4	
Zinc	Zn	0.00		± deviation		2.5	

A 20-in. diameter hole was drilled to a depth of 20 ft, reduced to 15 in. between 20 and 57 ft, and finished 12 in. in diameter from 57 to 214 ft. The well is cased with 12-in. pipe from about 1.5 ft above land surface to a depth of 57 ft.

A drillers log of Well No. 6 follows:

Strata	Thickness (ft)	Depth (ft)
Sand, gravel, boulders, and clay	5	5
Soft black clay	2	7
Loose brown fine sand, coarse gravel	8	15
Loose green fine sand, coarse gravel and boulders	35	50
Broken limestone	4	54
Limestone with some fractures	11	65
Light green very hard limestone	68	133
Gray limestone	14	147
Gray and red limestone, some fractures	22	169
Green limestone, some fractures	15	184
Very fractured green limestone	26	210
Blue-gray shale some limestone	4	214

A production test was conducted by the driller on December 14, 1972. After 8 hr of pumping at a rate of 1002 gpm, the drawdown was 9 ft from a nonpumping water level of 5 ft below land surface.

In 1982, the nonpumping water level was reported to be 14 ft.

The pumping equipment presently installed is a 12-in., 5-stage Layne & Bowler vertical turbine pump (Serial No. 76033) set at 55 ft, rated at 1000 gpm at 320 ft TDH, and powered by a 100-hp U. S. Holloshaft electric motor.

CLARENDON HILLS

The village of Clarendon Hills (6857) installed a public water supply in 1923. One well (No. 7) is in use and two wells (Nos. 4 and 6) are available for emergency use. This supply is also cross connected with Westmont and the Clarendon Water Co. In 1949 there were 700 services, all metered; the average and maximum pumpages were 127,000 and 160,000 gpd, respectively. In 1984 there were 2161 services, all metered; the average pumpage was 762,830 gpd. The water is aerated, chlorinated, filtered, and softened. A fluoridator is available when the emergency wells are in use.

WELL NO. 1 was completed in 1923 to a depth of 970 ft by F. M. Gray, Jr., Milwaukee, Wis. This well was abandoned in 1932 and sealed in i980. The water-yielding units in this well were dolomites and sandstones of the Upper Bedrock Aquigroup (Silurian System) and the Midwest Aquigroup (Galena and Platteville Groups and the Glenwood-St. Peter Sandstone). The well was located about 20 ft east of the old village hall on the south side of Burlington Ave., approximately 2400 ft S and 500 ft W of the NE corner of Section 10, T38N, R11E. The land surface elevation at the well is approximately 730 ft.

An 8-in. diameter hole was drilled to a depth of 532 ft, reduced to 6 in. between 532 and 875 ft, and finished 5 in. in diameter from 875 to 970 ft. The well was cased with 8-in. pipe from land surface to a depth of 140 ft and a 6-in. liner from 327 ft to a depth of 532 ft.

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

A correlated drillers log of Well No. 1 furnished by the State Geological Survey follows:

Strata	Thickness (ft)	Depth (ft)
QUATERNARY SYSTEM		
Pleistocene Series		
Drift	140	140
SILURIAN SYSTEM		
Niagaran and Alexandrian Series		
Limestone ,	192	332
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Shale	174	506
Champlainian Series		
Galena and Platteville Groups		
Limestone	312	818
Ancell Group		
Glenwocd-St. Peter Sandstone		
Sandstone	57	875
No record	95	970

In 1932, the well reportedly produced 75 gpm with a drawdown of 270 ft from a nonpumping water level of 95 ft below the pump base.

WELL NO. 2, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in March 1932 to a depth of 250 ft by Henry Boysen, Jr., Libertyville. This well is not in use. The well is located on the south side of Burlington Ave. about 100 ft west of the village hall, approximately 2450 ft S and 700 ft W of the NE corner of Section 10, T38N, R11E. The land surface elevation at the well is approximately 733 ft.

A drillers log of Well No. 2 follows:

Strata	Thickness (ft)	Depth (ft)
Drift	HO	**140**
Limestone	110	250

A 12-in. diameter hole was drilled to a depth of 250 ft. The well is cased with 12-in. ID pipe from about 1 ft above the pumphouse floor to a depth of 145 ft.

Upon completion, the well reportedly produced 150 gpm with a drawdown of 11.5 ft from a nonpumping water level of 95.0 ft below land surface.

In 1938, the nonpumping water level was reported to be 97 ft.

On May 19, 1947, after 2 hr of pumping at a rate of 300 gpm, the drawdown was 4.5 ft. Thirty min after pumping was stopped, the water level had recovered to 113.0 ft.

Nonpumping water levels were reported to be 110 ft in July and August 1957, 116 ft in May 1960, and 112 ft in May 1961.

In May 1963, the well reportedly produced 525 gpm with a drawdown of 8 ft from a nonpumping water level of 118 ft.

Nonpumping water levels were reported to be 119 ft in May 1964, 112 ft in May 1966, 125 ft in February 1968 and June 1969, 112 ft in April 1971, and 128 ft in May 1972.

The pumping equipment presently installed consists of a 20-hp 1800 rpm Fairbanks-Morse electric motor, a 10-in., 4-stage Layne turbine pump set at 150 ft, operated at about 435 gpm, and has 150 ft of 6-in. column pipe. A 10-ft section of suction pipe is attached to the pump intake. The well is equipped with 150 ft of airline.

A partial analysis of a sample (Lab. No. 177584) collected March 3, 1969, after pumping for 2 hr, showed the water to have a hardness of 546 mg/1, total dissolved minerals of 685 mg/1, and an iron content of 1.5 mg/1.

WELL NO. 3, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was constructed in May 1945 to a depth of 354 ft, and deepened in April 1963 to a reported depth of 380 ft by the Layne-Western Co., Aurora. This well was abandoned in June 1971 and has been used as an observation well since November 1975. The well is located at the northeast corner of Ann St. and Sheridan Ave., approximately 650 ft N and 2225 ft E of the SW corner of Section 11, T38N, R11E. The land surface elevation at the well is approximately 737 ft.

A sample study log of Well No. 3 furnished by the State Geological Survey follows:

Strata	Thickness (ft)	Depth (ft)
QUATERNARY SYSTEM		
Pleistocene Series		
Glacial Drift		
Soil, black	10	10
Till, gray, slightly calcareous	45	55
Till, gray, very gravelly	55	110
Gravel, clean	5	115
SILURIAN SYSTEM		
Niagaran Series		
Dolomite, cherty, light gray/light buff	60	175
Dolomite, white to yellow, fine	35	210
Dolomite, cherty, silly, buff	25	235
Dolomite, silty, light gray	10	245
Dolomite, white, pink, green, yellow	25	270
Alexandrian Series		
Dolomite, buff, fine	20	290
Dolomite, glauconitic, cherty, buff	10	300
Dolomite, cherty, light buff, yellow	15	315
Dolomite, cherty, silty, buff	20	335
Same, partly shaly	10	345
Dolomite, cherty at top, buff mottled	9	354
"Limestone"	24	378
"Shale"	2	380

A 12-in. diameter hole was drilled to a depth of 380 ft. The well is cased with 12-in. pipe from about 1 ft above the pumphouse floor to a depth of 127 ft.

A production test was conducted on May 19, 1945. After 9.3 hr of pumping at rates ranging from 353 to 498 gpm, the final drawdown was 22.0 ft from a nonpumping water level of 91.8 ft below the pump base. One min after pumping was stopped, the water level had recovered to 93.5 ft.

Nonpumping water levels were reported to be 98 ft on October 10, 1951; 99.5 ft on December 11, 1952; 101.9 ft on February 8, 1954; 106 ft on April 1, 1958; 106.3 ft on June 25, 1958; and 104 ft in May 1961.

In May 1963, the well reportedly produced 670 gpm with a drawdown of 19.9 ft from a nonpumping water level of 115.0 ft.

Nonpumping water levels were reported to be 107 ft in May 1964; 107 ft in May 1966; 120 ft on February 5, 1968; and 120 ft in June 1969.

On January 24, 1972, after the well was taken out of service, it reportedly produced at rates of 150 to 200 gpm for 4 hr with a drawdown of 116.17 ft from a nonpumping water level of 133.83 ft.

Monthly measurements of the nonpumping water level during the period October 1971 to January 1982

ranged from about 122.9 to 135.6 ft below land surface.

A partial analysis of a sample (Lab. No. 187664) collected January 24, 1972, after pumping for 4 hr at 150 to 200 gpm, showed the water to have a hardness of 510 mg/1, total dissolved minerals of 679 mg/1, and an iron content of 2.8 mg/1.

WELL NO. 4, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in April 1956 to a depth of 370 ft by the Layne-Western Co., Aurora. This well is available for emergency use. The well is located on the east side of Ann St. at the east end of Bonnie Lane just west of Illinois Route 83 about 0.2 mile north of Well No. 3, approximately 2100 ft N and 2900 ft W of the SE corner of Section 11, T38N, R11E. The land surface elevation at the well is approximately 715 ft.

A drillers log of Well No. 4 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Blue clay	42	42
Gravel	15	57
Blue clay and gravel	23	80
Blue clay	18	98
Brown clay and gravel	17	115
Limestone	52	367
Shale	3	370

A 12-in. diameter hole was drilled to a depth of 370 ft. The well is cased with 12-in. ID steel pipe from about 0.5 ft above the wellhouse floor to a depth of 121 ft.

A production test was conducted on April 12, 1956, by representatives of the driller, the State Water Survey, and Wight and Co., Consulting Engineers. After 8 hr of intermittent pumping at rates ranging from 818 to 1029 gpm, the drawdown was 11.0 ft from a nonpumping water level of 90.5 ft below the pump base. Ten min after pumping was stopped, the water level had recovered to 92.8 ft.

Nonpumping water levels were reported to be 88 ft on June 26, 1958; 90 ft in May 1960; and 91 ft in May 1961.

In May 1963, the well reportedly produced about 750 gpm with a drawdown of 1 ft from a nonpumping water level of 97 ft.

Nonpumping water levels were reported to be 115 ft in May 1964; 106 ft in November 1965; 110 ft in May 1966; 114 ft on February 5, 1968, and in June 1969; 120 ft in April 1971; 126 ft in June 1971; 129 ft in May 1972; 131 ft in July 1972; and 124 ft on September 6, 1979.

The pumping equipment presently installed consists of a 50-hp 1750 rpm U. S. electric motor (No. 1059451), a 10-in., 5-stage Layne turbine pump (No. 34254) set at 150 ft, rated at 800 gpm at about 172 ft head, and has 150 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 150 ft of airline.

A partial analysis of a sample (Lab. No. 177586) collected March 3, 1969, after pumping for 1 hr at 750 gpm, showed the water to have a hardness of 512 mg/1, total dissolved minerals of 660 mg/1, and an iron content of 1.0 mg/1.

WELL NO. 5, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in December 1965 to a depth of 368 ft by the Layne-Western Co., Aurora. This well is capped and not used. The well is located at Ann and Eastern Sts. just west of Illinois Route 83, approximately 1400 ft N and 2200 ft E of the SW corner of Section 11, T38N, R11E. The land surface elevation at the well is approximately 720 ft.

A drillers log of Well No. 5 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Fill	1	1
Black dirt	4	5
Black clay	10	15
Gray clay	25	40
Sand and gray clay	15	55
Sand and clay	25	80
Gravel	10	90
Gravel and clay	20	110
Limestone and sand	16	126
Medium limestone	4	130
White limestone	10	140
Medium gray limestone	40	180
Medium brown limestone	40	220
Medium gray limestone	50	270
Medium brown limestone	85	355
Medium gray limestone	8	363
Medium gray shale	5	368

A 12-in. diameter hole was drilled to a depth of 368 ft. The well is cased with 12-in. steel pipe from land surface to a depth of 126 ft.

A production test was conducted on December 27, 1965, by representatives of the driller and Wight and Co., Consulting Engineers. After 4.7 hr of pumping at rates ranging from 310 to 250 gpm, the final drawdown was 65 ft from a nonpumping water level of 102 ft below land surface.

The well was acidized twice on December 28, 1965, each time with 1000 gal of 15 percent HC1.

A second production test was conducted on December 30, 1965, by representatives of the driller and Wight and Co., Consulting Engineers. After 5.5 hr of pumping at rates of 393 to 350 gpm, the final drawdown was 25 ft from a nonpumping water level of 102 ft below land surface.

In April 1971, the nonpumping water level was reported to be 118 ft.

The pumping equipment presently installed consists of a 30-hp U. S. electric motor, a 10-in., 5-stage Layne turbine pump set at 150 ft, rated at 400 gpm at about 180 ft TDH, and has 150 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 150 ft of airline.

A partial analysis of a sample (Lab. No. 177587) collected March 3, 1969, after pumping for 1 hr at 280 gpm, showed the water to have a hardness of 496 mg/1, total dissolved minerals of 637 mg/1, and an iron content of 1.5 mg/1.

WELL NO. 6 was completed in January 1971 to a depth of 352 ft by the Layne-Western Co., Aurora. This well is available for emergency use. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located at the northwest corner of 55th St. and Holmes Ave., approximately 90 ft N and 1250 ft E of the SW corner of Section 11, T38N, R11E. The land surface elevation at the well is approximately 750 ft.

A drillers log of Well No. 6 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Fill	5	5
Yellow clay	5	10
Yellow blue clay	10	20
Yellow clay and boulders	35	55
Soft sand	15	70
Boulders, sand, gravel, clay	30	100
Clay and boulders	10	110
Sand and boulders	10	120
Sandy limestone	15	135
Sand	5	140
Broken limestone	5	145
Hard gray limestone	15	160
Medium gray limestone	180	340
Medium gray limestone with shale streaks	5	345
Blue shale	7	352

A 12.9-in. diameter hole was drilled to a depth of 146 ft and finished 12 in. in diameter from 146 to 352 ft. The well is cased with 12-in. steel pipe from about 0.5 ft above the wellhouse floor to a depth of 147 ft.

A production test was conducted by the driller on January 27, 1971. After 8.5 hr of pumping at rates ranging from 576 to 714 gpm, the maximum drawdown was 10.0 ft from a nonpumping water level of 143.5 ft below land surface.

In May 1972, the nonpumping water level was reported to be 148 ft.

The pumping equipment presently installed is a 10-in., 6-stage Layne turbine pump (No. 15022) set at 180 ft, rated at 630 gpm at about 160 ft TDH, and powered by a 50-hp 1800 rpm U. S. electric motor.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. 4308) is for a water sample from the well collected February 28, 1972, after 2 hr of pumping.

WELL NO. 8, LABORATORY NO. 4308

		mg/1	*me/I*			*mg/l*	*me /I*
Iron	Fe	0.0		Silica	SiO_2	16.0	
Manganese	Mn	0.0		Fluoride	F	0.40	0.02
Ammonium	NH_4	0.9	0.05	Boron	B	0.4	
Sodium	Na	20.0	0.87	Nitrate	NO_3	0.0	0.00
Potassium	K	3.2	0.08	Chloride	CI	27.0	0.76
Calcium	Ca	134	6.69	Sulfate	SO_4	163	3.39
Magnesium	Mg	41.0	3.37	Alkalinity (as $CaCO_3$)		332	**6.64**
				Hardness (as $CaCO_3$)		508	
Barium	Ba	0.5					
Cadmium	Cd	0.00		Total dissolved			
Chromium	Cr	0.0		minerals		554	
Copper	Cu	0.0		pH (as rec'd)	7.2		
Lead	Pb	0.00		Radioactivity			
Mercury	Hg	<0.0005		Alpha *pc/l*	0		
Nickel	Ni	0.0		± deviation	1		
Silver	Ag	0.0		Beta *pc/l*	2		
Zinc	Zn	0.0		± deviation	2		

WELL NO. 7 was completed in December 1972 to a depth of 1585 ft by the Layne-Western Co., Aurora. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer). The well also penetrates the upper part of the Eau Claire Formation. The well is located at the northeast corner of Ann St. and Eastern Ave. about 25 ft north of Well No. 5, approximately 1425 ft N and 2205 ft E of the SW corner of Section 11, T38N, R11E. The land surface elevation at the well is approximately 722 ft.

A 26-in. diameter hole was drilled to a depth of 125 ft, reduced to 25 in. between 125 and 524 ft, reduced to 21 in. between 524 and 1036 ft, and finished 17 in. in diameter from 1036 to 1585 ft. The well is cased with 26-in. pipe from land surface to a depth of 125 ft, 22-in. pipe from land surface to a depth of 524 ft (cemented in), and an 18-in. liner from 951 ft to a depth of 1036 ft.

A production test was conducted by the driller on December 19, 1972. After 4 hr of pumping at rates ranging from 825 to 838 gpm, the drawdown was 263 ft from a nonpumping water level of 655 ft below the top of the casing.

A drillers log of Well No. 7 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Fill, black dirt, rock and clay	5	5
Soft black peat	13	18
Soft gritty gray clay	27	45
Gravel	2	47
Dark gray clay with large rocks	66	113
Yellow and gray medium limestone	7	120
Hard gray limestone	35	155
Hard brown limestone	60	215
Hard gray limestone	50	265
Hard brown limestone	10	275
Hard gray and brown limestone	80	355
Hard gray limestone with streaks of shale	15	370
Hard gray limestone with shale streaks	50	420
Shale and lime shells	40	460
Muddy gray shale	35	495
Gray shale	9	504
Hard gray limestone	41	515
Medium hard gray limestone	150	695
Medium and hard gray limestone	140	835
Hard gray sandstone	5	840
Medium hard gray sandstone	110	950
Hard gray sandstone	10	960
Medium hard gray sandstone	40	1000
Hard gray sandstone with streaks of shale	10	1010
Hard lime shells and gray shale	15	1025
Hard gray sandy limestone	15	1040
Hard gray limestone	40	1080
Very hard gray limestone	25	1105
Hard gray sandy limestone	35	1140
Hard gray limestone	90	1230
Hard brown limestone	10	1240
Hard gray limestone (crevice at 1286 ft)	50	1290
Brown to gray hard sandstone	5	1295
Hard sandy limestone with green shale breaks	35	1330
Hard gray sandy limestone	20	1350
Hard sandy gray limestone with green shale streaks	10	1360
Hard gray sandy limestone	20	1380
Hard gray limestone	15	1395
Hard gray sandstone	65	1460
Medium hard gray sandstone	20	1480
Hard gray sandstone	10	1490
Gray sandstone with hard and soft streaks	10	1500
Soft gray sandstone	15	1515
Hard to medium gray sandstone	10	1525
Soft to medium gray sandstone	25	1550
Hard gray sandstone	20	1570
Hard dark gray limestone	15	1585

The well was shot with 540 lb of 100 percent nitrogel (6 shots of 90 lb each) as follows: 1440 to 1455 ft, 1460 to 1475 ft, 1480 to 1495 ft, 1500 to 1515 ft, 1520 to 1535 ft, and 1540 to 1555 ft. After shooting, a production test was conducted by the driller on January 9-10, 1973. After 19 hr of intermittent pumping at rates ranging from 968 to 617 gpm, the maximum drawdown was 155 ft from a nonpumping water level of 645 ft below the top of the casing.

A production test was conducted by the driller on January 25, 1973. After 8.2 hr of pumping at rates ranging from 698 to 1289 gpm, the final drawdown was 135 ft from a nonpumping water level of 640 ft below the top of the casing.

The pumping equipment presently installed is a Byron Jackson submersible turbine pump set at 901 ft, rated at 1200 gpm at about 800 ft TDH, and powered by a 350-hp Byron Jackson electric motor. The well is equipped with 900 ft of airline.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B16266) is for a water sample from the well collected October 9, 1979, after 12 hr of pumping at 850 gpm.

WELL NO. 7, LABORATORY NO. B16266

		mg/l	**me/l**		*mg>l/l*	*me/I*
Iron	Fe	0.107		Silica	SiO_2 7.2	
Manganese	Mn	0.011		Fluoride	F 1.11	0.06
Ammonium	NH_4	0.8	0.04	Boron	B 0.6	
Sodium	Na	55	2.39	Cyanide	CN <0.00S	
Potassium	K	15	0.38	Nitrate	NO_3 <0.4	
Calcium	Ca	72	3.59	Chloride	CI 21	0.59
Magnesium	Mg	23	1.89	Sulfate	SO_4 113	2.35
Strontium	Sr	3.5		Alkalinity (as $CaCO_3$)	276	5.52
Arsenic	As	<0.001		Hardness (as $CaCO_3$)	283	5.66
Barium	Ba	<0.05				
Cadmium	Cd	0.001		Total dissolved		
Chromium	Cr	<0.005		minerals	474	
Cobalt	Co	0.010				
Copper	Cu	0.008				
Lead	Pb	0.01				
Mercury	Hg	0 00071				
Nickel	Ni	<0.006				
Selenium	Se	<0.001				
Silver	Ag	<0.005				
Zinc	Zn	<0 005		pH (as rec'd)	7.3	

CLARENDON WATER COMPANY

Clarendon Water Company (est. 1350), located about 0.2 mile south of Clarendon Hills, installed a public water supply in 1965. The water system is owned and operated by Utilities, Inc. Two wells are in use. This supply is also connected with the village of Clarendon Hills. In 1968 there were 287 services; the average and maximum pumpages were 60,000 and 84,000 gpd, respectively. In 1984 there were 264 services; the average pumpage was 153,110 gpd. The water from Well No. 1 is chlorinated and treated with polyphosphate to keep iron in solution, and the water from Well No. 2 is fluoridated.

WELL NO. 1, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was constructed in 1965 to a depth of 200 ft by E. G. Eilrich, Bensenville, and reconstructed in June 1971 to a reported depth of 400 ft. The well is located at the northeast corner of 58th St. and Holmes Ave., approximately 1900 ft S and 1400 ft E of the NW corner of Section 14, T38N, R11E. The land surface elevation at the well is approximately 727 ft.

Originally, a 5-in. diameter hole was drilled to a depth of 200 ft and cased with 5-in. pipe to an unknown depth. After reconstruction, the well was reported to be cased with 8-in. pipe from about 3 ft above land surface to a depth of 140 ft. The diameter of the hole after reconstruction is not recorded.

The pumping equipment presently installed consists of a 20-hp Franklin electric motor, a Barnes submersible pump set at 315 ft, rated at 220 gpm, and has 315 ft of 3-in. column pipe.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B37719) of a sample collected March 23, 1976, after pumping for 1 hr at 150 gpm, showed the water to have a hardness of 499 mg/1, total dissolved minerals of 685 mg/1, and an iron content of 1.5 mg/1.

WELL NO. 2, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in June 1965 to a depth of 325 ft by George Neely, Elgin. The well is located about 25 ft west of Well No. 1, approximately 1900 ft S and 1375 ft E of the NW corner of Section 14, T38N, R11E. The land surface elevation at the well is approximately 730 ft.

A 10-in. diameter hole was drilled to a depth of 325 ft. The well is cased with 10-in. pipe from about 3 ft above land surface to a depth of 135 ft.

A drillers log of Well No. 2 follows:

Strata	*Thickness (jtj*	*Depth (ft)*
Soil	1	1
Clay	65	66
Sand	28	94
Sand and gravel	3	97
Clay	23	120
Sand and gravel	15	135
Limestone	190	325

Upon completion, the well reportedly produced about 300 gpm for 4 hr with very little drawdown from a nonpumping water level of 125 ft.

Nonpumping water levels were reported to be 119 ft below land surface on May 1, 1967; 125 ft in April 1971; and 137 ft on August 23, 1979.

The pumping equipment presently installed is a Barnes submersible pump set at 294 ft, operated at 250 gpm, and powered by a 20-hp Franklin electric motor. The well is equipped with 294 ft of airline.

The following mineral analysis (Lab. No. 211863) is for a water sample from the well collected August 23, 1979, after 20 min of pumping at 250 gpm.

WELL NO. 2, LABORATORY NO. **211883**

		mg/l	*me/l*		*mg/l*	*me/l*
Iron(total)	Fe	0.9		Silica	SiO_2 15.8	
Manganese	Mn	0.02		Fluoride	F 0.3	
Ammonium	NH_4	0.9	0.05	Boron	B 0.3	
Sodium	Na	25.0	1.09	Nitrate	NO_3 0.0	0.00
Potassium	K	3.5	0.09	Chloride	CI 38	1.07
Calcium	Ca	148	7.39	Sulfate	SO_4 194.6	4.05
Magnesium	Mg	44.9	3.69	Alkalinity (as $CaCO_3$)	360	7.20
Strontium	Sr	1.52	0.03			
				Hardness (as $CaCO_3$)	554	11.08
Barium	Ba	<0.05				
Cadmium	Cd	0.00		Total dissolved		
Chromium	Cr	0.00		minerals	706	
Copper	Cu	0.00				
Lead	Pb	0.00				
Lithium	Li	0.03		Turbidity	7	
Nickel	Ni	0.00		Color	0	
Silver	Ag	0.00		Odor	0	
Zinc	Zn	0.03		Temp.(reported)	53F	

DARIEN

The city of Darien (14,968) annexed Brookhaven Manor Subdivision in 1975, which had installed a public water supply in 1957. Six wells are in use. This supply is also cross connected with Lake in the Woods Subdivision and the villages of Downers Grove and Willowbrook. In 1959 there were 26 services. In 1984 there were 3459 services, all metered (including services to W.H.W. Water Co.); the average pumpage was 1,406,000 gpd. The water is softened, chlorinated, and fluoridated.

WELL NO. 1, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in April 1957 to a depth of 310 ft by the James W. Bilskey Co., Westmont. The well is located east of Cass Ave. and north of Plainfield Road, approximately 3200 ft S and 400 ft E of the NW corner of Section 27, T38N, R11E. The land surface elevation at the well is approximately 750 ft.

A correlated drillers log of Well No. 1 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
Top soil	3.5	3.5
Yellow clay	20	23.5
Blue clay	21.5	45
Gravel and blue clay	10	55
Blue clay	53	108
Fine sand	7	115
SILURIAN SYSTEM		
Limestone	195	310

A 16-in. diameter hole was drilled to a depth of 115 ft and finished 15.2 in. in diameter from 115 to 310 ft. The well is cased with 16-in. black iron pipe from about 2 ft above land surface to a depth of 115 ft.

Nonpumping water levels were reported to be 110 ft below land surface upon completion, and 114.3 ft below the pump base on February 18, 1958.

In February 1959, after pumping at a rate of 287 gpm, the drawdown was 140 ft from a nonpumping water level of 110 ft.

Nonpumping water levels were reported to be 114.4 ft on March 21, 1959; 115 ft on April 7, 1960; 115.6 ft on June 14, 1960; and 144.1 ft on September 9, 1966.

On February 8, 1974, the well reportedly produced 160 gpm with a drawdown of 104 ft from a nonpumping water level of 140 ft.

In July 1975, this well was acidized with 1000 gal of treating acid by the Wehling Well Works, Beecher, and the yield was reported to be improved.

In 1982, after pumping at a rate of 150 gpm, the drawdown was 87 ft from a nonpumping water level of 146 ft.

The pumping equipment presently installed is an 8-in., 13-stage Johnston turbine pump set at 288 ft, operated at 180 gpm, and powered by a 40-hp General Electric motor.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B15691) of a sample collected October 8, 1979, after pumping for 4 hr at 165 gpm, showed the water to have a hardness of 550 mg/1, total dissolved minerals of 750 mg/1, and an iron content of 0.14 mg/1.

WELL NO. 2, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in June 1960 to a depth of 317 ft by the James W. Bilskey Co., Westmont. The well is located west of Cass Ave. north of Plainfield Road behind Brookhaven Plaza, approximately 1750 ft N and 500 ft W of the SE corner of Section 28, T38N, R11E. The land surface elevation at the well is approximately 760 ft.

A drillers log of Well No. 2 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift	99	99
Limestone	218	317

A 16-in. diameter hole was drilled to a depth of 317 ft. The well is cased with 16-in. pipe from about 2 ft above land surface to a depth of 101 ft.

A production test using one observation well (No. 1) was conducted by the driller on June 14-15, 1960. After 27.2 hr of pumping at rates ranging from 80 to 150 gpm. the drawdown was 100 ft from a nonpumping water level of 114 ft below land surface. Sixteen min after pumping was stopped, the water level had recovered to 131 ft. The well was then shot with about 500 ft of prima cord and with a total of 100 lb of 100 percent nitrogel in 3 equal shots at depths of 277, 257, and 237 ft.

On September 16, 1966, the nonpumping water level was reported to be 126.2 ft.

In August 1975, this well was acidized with 1000 gal of treating acid by the Wehling Well Works, Beecher, and the yield was reported to be improved.

On September 7, 1979, the nonpumping water level was reported to be 167 ft.

The pumping equipment presently installed is an 8-in., 12-stage Aurora vertical turbine pump set at 272 ft, operated at 220 gpm, and powered by a 40-hp General Electric motor.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B15687) of a sample collected October 8, 1979, after pumping for 4 hr at 225 gpm, showed the water to have a hardness of 574 mg/1, total dissolved minerals of 764 mg/1, and an iron content of 0.39 mg/1.

WELL NO. 3, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in September 1967 to a depth of 322 ft by the Wehling Well Works, Beecher. The well is located south and west of the intersection of Cass Ave. and 75th St. in the Brookhaven Plaza parking lot, approximately 2845 ft S and 195 ft W of the NE corner of Section 28, T38N, R11E. The land surface elevation at the well is approximately 755 ft.

A drillers log of Well No. 3 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Mud	15	15
Gravel	5	20
Mud	15	35
Gravel	5	40
Mud	30	70
Gravel	S	75
Mud	15	90
Gravel	4	94
Rock	31	125
Lime	192	317
Sbale	5	322

A 10-in. diameter hole was drilled to a depth of 100 ft and finished 9.9 in. in diameter from 100 to 322 ft. The well is cased with 10-in. pipe from about 1.5 ft above land surface to a depth of 99.8 ft.

A production test was conducted by the driller on September 21, 1967. After 8 hr of pumping at rates of 180 to 350 gpm, the final drawdown was 70 ft from a nonpumping water level of 128 ft below land surface.

On November 1, 1974, the well reportedly produced 450 gpm with a drawdown of 54 ft from a nonpumping water level of 124 ft.

The pumping equipment presently installed is a Johnston turbine pump set at 283 ft, operated at 290 gpm, and powered by a 40-hp electric motor.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B15692) of a sample collected October 8, 1979, after pumping at 285 gpm, showed the water to have a hardness of 608 mg/1, total dissolved minerals of 788 mg/1, and an iron content of 0.45 mg/1.

WELL NO. 4 was completed in April 1968 to a depth of 1612 ft by the Wehling Well Works, Beecher. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer). The well also penetrates the upper part of the Eau Claire Formation. The well is located west of Cass Ave. north of Plainfield Road about 200 ft northwest of Well No. 2, approximately 1900 ft N and 640 ft W of the SE corner of Section 28, T38N, R11E. The land surface elevation at the well is approximately 760 ft.

A drillers log of Well No. 4 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Mud and gravel	98	98
Lime	220	318
Shale	109	427
Lime and shale	40	467
Shale	78	545
Lime	325	870
Sand	320	1190
Shale	10	1200
Lime	150	1350
Sand and shale	32	1382
Shale and lime	42	1424
Lime	30	1454
Sand	150	1604
Lime	8	1612

A 23.2-in. diameter hole was drilled to a depth of 564 ft, reduced to 19.2 in. between 564 and 1215 ft, and finished 15.2 in. in diameter from 1215 to 1612 ft. The well is cased with 24-in. OD drive pipe from land surface to a depth of 102 ft, 20-in. OD pipe from about 0.2 ft above land surface to a depth of 564 ft (cemented in), and a 16-in. OD liner from 1153 ft to a depth of 1215 ft.

Upon completion, this well was shot with 900 lb of dynamite explosive between the depths of 1590 to 1600 ft, 1573 to 1583 ft, 1566 to 1573 ft, 1559 to 1566 ft, 1553 to 1560 ft, 1545 to 1552 ft, 1536 to 1545 ft, 1530 to 1536 ft, and 1524 to 1530 ft.

A production test, was conducted by the driller on April 24-25, 1968. After 24.5 hr of pumping at rates ranging from 600 to 680 gpm, the final drawdown was

114 ft from a nonpumping water level of 623 ft below land surface.

Nonpumping water levels were reported to be 628 ft in November 1971, and 760 ft in November 1976.

The pumping equipment presently installed is a Johnston vertical turbine pump set at 872 ft, operated at 500 gpm, and powered by a 300-hp electric motor.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B0024137) is for a water sample from the well collected June 10, 1972, after 3 hr of pumping.

WELL NO. *4,* LABORATORY NO. **B0024137**

		mg/l	*me/l*			*mg/l*	*me/l*
Iron	Fe	0.1	0.00	Silica	SiO_2	8.0	
Manganese	Mn	0.0		Fluoride	F	1.4	0.07
Ammonium	NH_4	0.9	0.05	Boron	B	0 72	
Sodium	Na	63.9	2.78	Nitrate .	NO_3	0.0	
Potassium	K	12.2	0.31	Chloride	CI	23	0.65
Calcium	Ca	64	3.19	Sulfate	SO_4	100	2.02
Magnesium	Mg	24.2	1.99	Alkalinity (as $CaCO_3$)		284	5.68
				Hardness (as $CaCO_3$)		260	
Barium	Ba	0 0					
Cadmium	Cd	0.00		Total dissolved			
Chromium	Cr	0.0		minerals		465	
Copper	Cu	0.01		pH (as rec'd)	7.5		
Lead	Pb	0.00		Radioactivity			
Mercury	Hg	<0.0005		Alpha *pc/l*	5.7		
Nickel	Ni	0.0		± deviation	3.3		
Silver	Ag	0.0		Beta *pc/l*	7.3		
Zinc	Zn	0.0		± deviation	2.3		

WELL NO. 5, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in January 1972 to a depth of 320 ft by the Wehling Well Works, Beecher. The well is located north of Manning Road and west of Florence Ave., approximately 500 ft N and 450 ft E of the SW corner of Section 28, T38N, R11E. The land surface elevation at the well is approximately 765 ft.

A drillers log of Well No. 5 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift	108	108
Rock	212	320

A 10-in. diameter hole was drilled to a depth of 320 ft. The well is cased with 10-in. pipe from about 2 ft above land surface to a depth of 108 ft.

A production test was conducted by the driller on February 15, 1972. After 1.8 hr of pumping at rates of 550 to 692 gpm, the final drawdown was 20 ft from a nonpumping water level of 133 ft below the top of the casing. Fifteen min after pumping was stopped, the water level had recovered to 135 ft.

Nonpumping water levels were reported to be 133.3 ft on February 6, 1974; 133 ft on February 8, 1974; and 141 ft in May 1975.

In 1983, the well reportedly produced 360 gpm with a drawdown of 16 ft from a nonpumping water level of 137 ft.

The pumping equipment presently installed is a Johnston vertical turbine pump set at 198 ft, operated at 400 gpm, and powered by a 50-hp electric motor.

A partial analysis of a sample (Lab. No. 194953) collected February 8, 1974, after pumping for 30 min at 500 gpm, showed the water to have a hardness of 462 mg/l, total dissolved minerals of 594 mg/l, and an iron content of 0.1 mg/l.

WELL NO. 6, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in April 1972 to a depth of 310 ft by the Wehling Well Works, Beecher. The well is located about 125 ft south-southeast of Well No. 5, approximately 375 ft N and 480 ft E of the SW corner of Section 28, T38N, RUE. The land surface elevation at the well is approximately 760 ft.

The following mineral analysis (Lab. No. 211880) is for a water sample from the well collected September 7, 1979, after 5 hr of pumping at 450 gpm.

WELL NO. 6, LABORATORY NO. 211880

		mg/l	*me/l*			*mg/l*	*me/I*
Iron(total)	Fe	0.1		Silica	SiO_2	14.0	
Manganese	Mn	0.01		Fluoride	F	0.3	
Ammonium	NH_4	0.4	0.02	Boron	B	0.2	
Sodium	Na	41.0	1.78	Nitrate	NO_3	0.0	0.00
Potassium	K	3.9	0 10	Chloride	CI	80	2.26
Calcium	Ca	143	7.15	Sulfate	SO_4	219	4.56
Magnesium	Mg	47.8	3.93	Alkalinity (as $CaCO_3$)		318	6.36
Strontium	Sr	1.15	0.03				
				Hardness (as $CaCO_3$)		554	11.08
Barium	Ba	<0.05					
Cadmium	Cd	0.00		Total dissolved			
Chromium	Cr	0.00		minerals		744	
Copper	Cu	0.01					
Lead	Pb	0.02					
Lithium	Li	0.02		Turbidity	1		
Nickel	Ni	0 01		Color	0		
Silver	Ag	0.00		Odor	0		
Zinc	Zn	0.01		Temp.(reported)	52F		

A drillers log of Well No. 6 follows:

Strata	Thickness (ft)	Depth (ft)
Drift	99	99
Lime	211	310

A 10-in. diameter hole was drilled to a depth of 310 ft. The well is cased with 10-in. black pipe from about 0.2 ft above land surface to a depth of 101 ft.

A production test using one observation well (No. 5) was conducted by the driller on June 24, 1972. After 1.2 hr of pumping at rates ranging from 420 to 600 gpm, the final drawdown was 15 ft from a nonpumping water level of 128 ft below the top of the casing.

Nonpumping water levels were reported to be 134.2 ft on February 6, 1974; 131 ft on February 8, 1974; 139 ft in November 1976; and 141 ft on September 7, 1979.

The pumping equipment presently installed is an 8-in., 12-stage Johnston turbine pump set at 193 ft, operated at 450 gpm, and powered by a 50-hp General Electric motor.

DOWNERS GROVE

The village of Downers Grove (39,274) installed a public water supply in 1894. Nine wells (Nos. 6, 7, 8, 9, 10, 11, 12, 13, and 14) are in use. This supply is also cross connected with the city of Darien and the village of Westmont. In 1950 there were about 3500 services, all metered; the average and maximum pumpages were 750,000 and 2,250,000 gpd, respectively. In 1984 there were 11,923 services, all metered; the average pumpage was 5,845,000 gpd. The water is chlorinated and fluoridated; in addition, the water from Well Nos. 7, 9, 11, 12, 13, and 14 is treated with polyphosphate.

WELL NO. 1, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in 1894 to a depth of 240 ft. This well was abandoned and sealed prior to 1927. The well was located at the southeast corner of Middaugh and Warren Aves., approximately 2000 ft S and 600 ft W of the NE corner of Section 7, T38N, RUE. The land surface elevation at the well is approximately 715 ft.

The well was cased with 10-in. pipe to a depth of about 100 ft.

In 1918, the nonpumping water level was reported to be 80 ft below land surface.

WELL NO. 2 was completed in 1907 to a depth of 2021 ft by the J. P. Miller Artesian Well Co., Brookfield. This well was abandoned and sealed prior to 1927. The water-yielding units in this well were the Upper Bedrock Aquigroup (Silurian System), the Midwest Aquigroup (Cambrian-Ordovician aquifer), and the Basal Bedrock Aquigroup (Elmhurst-Mt. Simon aquifer). The well was located in the NE quarter of Section 7, T38N, R11E. The land surface elevation at the well is approximately 716 ft.

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

Strata	Thickness (ft)	Depth (ft)
QUATERNARY SYSTEM		
Pleistocene Series		
Clay, sand and gravel	83	83
SILURIAN SYSTEM		
Niagaran and Alexandrian Series		
Limestone	187	270
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Brainard Shale		
Shale	65	335
Ft. Atkinson Limestone		
Limestone	45	380
Scales Shale		
Shale	100	480
Champlainian Series		
Galena and Platteville Groups		
Limestone	337	817
Ancell Group		
Glenwood-St. Peter Sandstone		
Sandstone	223	1040
CAMBRIAN SYSTEM		
Croixan Series		
Eminence Dolomite		
Limestone and shale	20	1060
Limestone	55	1115
Shale or marl - red	23	1138
Potosi Dolomite		
Limestone	152	1290
Franconia Formation		
Sandstone	43	1333
Shale	75	1408
Limestone, sandy	27	1435
Ironton Sandstone		
Sandstone, hard	60	1495
Galesville Sandstone		
Sandstone, softer	110	1605
Eau Claire Formation		
Limestone and shale	25	1630
Shale	40	1670

Strata	Thickness (ft)	Depth (ft)
Shale, sandy	85	1755
Shale, blue streaks of lime	85	1840
Limestone	60	1900
Shale	5	1905
Mt. Simon Sandstone		
Sandstone	116	2021

A 12-in. diameter hole was drilled to a depth of 90 ft, reduced to 10 in. between 90 and 200 ft, reduced to 8.2 in. between 200 and 501 ft, reduced to 6.2 in. between 501 and 1080 ft, and finished 5 in. in diameter from 1080 to 2021 ft. The well was cased with 12-in. pipe to a depth of 90 ft.

A mineral analysis of a sample (Lab. No. 44728) collected February 22, 1921, showed the water to have a hardness of 431 mg/l, total dissolved minerals of 563 mg/l, and an iron content of 0.1 mg/1.

WELL NO. 3, finished in sandstone, was completed in 1921 to a depth of 850 ft. This well was abandoned prior to 1925 and sealed prior to 1927. The well was located in the NE quarter of Section 7, T38N, R11E.

No information on the hole or casing record is available.

WELL NO. 4, finished in sand and gravel of the Prairie Aquigroup, was completed in September 1924 to a depth of 104 ft by the Kelly Well Co., Grand Island, Neb. This well was abandoned in 1927. The well is located on the west side of Park Ave. between Randall and Summit Sts., approximately 1200 ft N and 2600 ft W of the SE corner of Section 8, T38N, R11E. The land surface elevation at the well is approximately 730 ft.

A drillers log of Well No. 4 follows:

Strata	Thickness (ft)	Depth (ft)
Yellow clay and boulders	10	10
Blue clay and boulders	51	61
Gravel	2	63
Hard gravel and boulders	20	83
Hard gravel	1	84
Gravel and boulders	11	95
Fine sand	5	100
Sand and gravel	5	105

A 34-in. diameter hole was drilled to a depth of 95 ft and finished 30 in. in diameter from 95 to 105 ft. The well is cased with 18-in. ID by 24-in. OD concrete pipe from land surface to a depth of 82.3 ft. A concrete screen of the same size extends from 82.3 to 104 ft and a concrete plug extends from 104 to 105 ft.

Upon completion, after pumping at a rate of 450 gpm, the drawdown was 5.5 ft from a nonpumping water level of 76.0 ft.

A mineral analysis of a sample (Lab. No. 53266) collected February 18, 1925, showed the water to have a hardness of 445 mg/l, total dissolved minerals of 478 mg/1, and an iron content of 0.2 mg/1.

WELL NO. 5, finished in sand and gravel of the Prairie Aquigroup, was completed in 1926 to a depth of 100.6 ft by the American Water Corporation, Aurora. This well was abandoned in 1929. The well is located on Park Ave. about 200 ft east of Well No. 4, approximately 1175 ft N and 2400 ft W of the SE corner of Section 8, T38N, R11E. The land surface elevation at the well is approximately 730 ft.

A drillers log of Well No. 5 follows:

Strata	Thickness (ft)	Depth (ft)
Soil and yellow clay	9	9
Clay, blue boulders	18	27
Boulders	3	30
Clay, blue and boulders	30	60
Shale, sandy	15	75
Sand, dry and gravel	4	79
Limestone and boulders	3	82
Gravel and boulders	8	90
Gravel	5	95
Sand	5	100
Limestone	0.6	100.6

The well is cased with 26-in. pipe. Originally, 22 ft of 18-in. wrought iron screen was installed, but after pumping at a rate of 450 gpm, the water contained sand and dirt. A 16-in. diameter Johnson screen was then installed inside the 18-in. screen, which held out the sand and dirt, but the discharge rate was reduced to 150 gpm.

WELL NO. 6 (Lee Ave. well), open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in December 1928 to a depth of 250 ft. The well is located on the west side of Lee Ave. south of Gilbert Ave. on the west side of the village, approximately 2250 ft N and 1350 ft E of the SW corner of Section 7, T38N, R11E. The land surface elevation at the well is 695.7 ft.

A sample study log of Well No. 6 furnished by the State Geological Survey follows:

Strata	Thickness (ft)	Depth (ft)
QUATERNARY SYSTEM		
Pleistocene Series		
"Drift, soil, gravelly hardpan, blue clay, cemented gravel"	67	67
SILURIAN SYSTEM		
Niagaran and Alexandrian Series		
Dolomites	178	245
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Shale	5	250

A 30-in. diameter hole was drilled to a depth of 67 ft and finished 24 in. in diameter from 67 to 250 ft. The well is cased with 30-in. pipe from about 4 ft above land surface to a depth of 67 ft.

Upon completion, the well reportedly produced 570 gpm for 10 hr with a drawdown of 25.3 ft from a nonpumping water level of 40.0 ft. One min after pumping was stopped, the water level had recovered to 45.3 ft.

On December 9, 1940, after 2 hr of pumping at a rate of 840 gpm, the drawdown was 16 ft from a nonpumping water level of 47 ft below the pump base.

In 1942, the well reportedly produced 700 gpm with a drawdown of 20 ft from a nonpumping water level of 38 ft below the pump base.

Nonpumping water levels were reported to be 46.2 ft below the pump base on March 7, 1947; 45 ft in June 1950; 38 ft in November 1961; 43 ft in November 1962; 45 ft in November 1964; 41 ft in November 1965; 45 ft in January 1967; 67 ft in November 1971; 58 ft in January 1977; and 60 ft on September 6, 1979.

In 1980, after pumping at a rate of 1100 gpm, the drawdown was 27 ft from a nonpumping water level of 47 ft.

In 1984, the well reportedly produced 1075 gpm with a drawdown of 22 ft from a nonpumping water level of 54 ft.

The pumping equipment presently installed consists of a 150-hp 1250 rpm U. S. electric motor (No. 985479), a 14-in., 12-stage Aurora turbine pump (No. 77976) set at 150 ft, rated at 1200 gpm at about 280 ft TDH, and has 150 ft of 10-in. column pipe. The well is equipped with 150 ft of airline.

A mineral analysis of a sample (Lab. No. 211867) collected September 6, 1979, after pumping for 20 min at 1100 gpm, showed the water to have a hardness of 496 mg/1, total dissolved minerals of 731 mg/1, and an iron content of 0.0 mg/1.

WELL NO. 7 (Park Ave. well), open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in December 1930 to a depth of 291 ft by the Layne-North Central Co., Milwaukee, Wis. The well is located at the southwest corner of Park and Summit Aves., approximately 900 ft N and 2450 ft W of the SE corner of Section 8, T38N, R11E. The land surface elevation at the well is approximately 742 ft.

A 30-in. diameter hole was drilled to a depth of 118 ft and finished 24 in. in diameter from 118 to 291 ft. The well is cased with 30-in. ID genuine wrought iron pipe from about 1.5 ft above land surface to a depth of 118 ft.

A sample study log of Well No. 7 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
"Soil"	5	5'
"Clay, yellow"	15	20
"Broken limestone and clay"	10	30
"Clay, blue"	15	45
"Broken limestone, hard"	5	50
"Broken limestone, hard and blue clay"	5	55
"Blue clay and gravel"	45	100
SILURIAN SYSTEM		
Niagaran and Alexandrian Series		
Dolomite, cherty, buff, medium, partly porous	20	120
Dolomite, very cherty, gray, fine to medium, compact	10	130
Dolomite, cherty, buff, fine to medium, compact	35	165
Dolomite, cherty, light gray, fine to medium, compact	10	175
Dolomite, white, fine to medium, compact	15	190
Dolomite, cherty, gray, fine to medium, compact	25	215
Dolomite, cherty, brownish gray, fine to medium, compact	15	230
Dolomite, light brownish gray, fine to medium, compact	5	235
Dolomite, white to light buff, fine, compact	20	255
Dolomite, buff, compact	15	270
Dolomite, slightly cherty, buff, fine, compact	20	290
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Brainard Shale		
"Limestone streaks and shale"	5	295

A production test was conducted on December 3, 1930, by representatives of the driller, the village, and the Wells Engineering Co. After 6.4 hr of pumping at an average rate of 10C8 gpm, the drawdown was 27 ft from a nonpumping water level of 93 ft below the pump base.

In April 1912, after pumping at a rate of 1020 gpm, the drawdown was 18 ft from a nonpumping water level of 86 ft below the pump base.

On December 5, 1944, the well reportedly produced 1000 gpm for 10 hr with a drawdown of 15.0 ft from a nonpumping water level of 96,5 ft below the pump base.

Nonpumping water levels were reported to be 94.2 ft below the pump base on March 7, 1947, after an idle period of 1 year; 93 ft in June 1950; 105 ft below the pump base on October 30, 1958; 99 ft in November 1959; 100 ft in November 1961; 99 ft in November 1962; 101 ft in November 1964; 101 ft in November 1965; 106 ft in January 1967; 106 ft in November 1971; 120 ft in November 1975; and 126 ft in January 1977.

In 1980, after pumping at a rate of 700 gpm, the drawdown was 10 ft from a nonpumping water level of 110 ft.

In 1984, the well reportedly produced 900 gpm with a drawdown of 14 ft from a nonpumping water level of 107 ft.

The pumping equipment presently installed consists of a 50-hp 1170 rpm General Electric motor (No. 5208047), a 12-in., 6-stage Layne turbine pump set at 180 ft, rated at 1040 gpm at about 170 ft TDH, and has 180 ft of 10-in. column pipe. A 30-ft section of 10-in. suction pipe is attached to the pump intake.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. C007574) of a sample collected April 1, 1975, after pumping for 2 hr at 1000 gpm, showed the water to have a hardness of 596 mg/1, total dissolved minerals of 746 mg/1, and an iron content of 0.8 mg/1.

Prior to the construction of Well No. 8, an 8-in. diameter test well was constructed on the village hall lot in 1950 to a depth of 260 ft. Upon completion, the test well reportedly produced 412 gpm with a drawdown of 5 ft from a nonpumping water level of 64 ft.

WELL NO. 8 (Burlington Ave. well) was completed in 1950 to a depth of 262 ft (reported to be 252 ft deep in 1982) by the Layne-Western Co., Aurora. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located south of Burlington Ave. between Main St. and Forest Ave., approximately 2550 ft S and 750 ft E of the NW corner of Section 8, T38N, R11E. The land surface elevation at the well is 715.5 ft.

A 30-in. diameter hole was drilled to a depth of 85 ft and finished 24 in. in diameter from 85 to 262 ft. The well is cased with 30-in. wrought iron pipe from about 0.7 ft above land surface to a depth of 85 ft.

A production test was conducted on March 25-26, 1953, by representatives of the village and the State Water Survey. After 10.1 hr of pumping at rates ranging from 2320 to 1500 gpm, the maximum drawdown was 28 ft from a nonpumping water level of 72 ft. Eighteen min after pumping was stopped, the water level had recovered to 76 ft.

A sample study log of Well No. 8 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
Glacial Drift		
Till, dark yellowish orange; gravel to 0.5 ft, sandy, clavey	65	65
SILURIAN SYSTEM		
Niagaran Series		
Dolomite, grayish yellow, fine to medium	145	210
Alexandrian Series		
Dolomite, silty, yellowish gray, medium	40	250
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Brainard Shale		
Shale, grayish green, weak; dolomite	10	260

On December 20-21, 1956, after 6 hr of pumping at a rate of 1450 gpm, the drawdown was 42 ft from a nonpumping water level of 78 ft below the pump base.

On October 31, 1958, the well reportedly produced 1425 gpm with a drawdown of 24 ft from a nonpumping water level of 74 ft below the pump base.

Nonpumping water levels were reported to be 94 ft in November 1959, and 96 ft in November 1960.

In June 1961, this well was acidized by M. P. Schneller & Associates, Aurora.

Nonpumping water levels were reported to be 74 ft in November 1962, 82 ft in November 1963, 79 ft in November 1964, 71 ft in November 1965, 76 ft in January 1967, 82 ft in November 1971, 77 ft in August 1976, and 79 ft on September 6, 1979.

In 1980, after pumping at a rate of 1000 gpm, the drawdown was 5 ft from a nonpumping water level of 74 ft.

A production test was conducted by the Layne-Western Co. on November 16, 1982. After 45 min of pumping at rates of 1216 to 1038 gpm, the drawdown was 1 ft from a nonpumping water level of 78 ft.

After the well was treated with 5000 gal of 15 percent acid with Rochelle Salts by the Layne-Western Co., a production test was conducted on November 17, 1982. After 5.9 hr of pumping at rates of 820 to

767 gpm, the drawdown was 2 ft from a nonpumping water level of 78 ft. This test was restricted because the storm drain could not handle the water from the well and it was necessary to reduce the capacity of the pump.

In 1984, the well reportedly produced 1200 gpm with a drawdown of 8 ft from a nonpumping water level of 73 ft.

The pumping equipment presently installed consists of a 100-hp 1800 rpm U. S. electric motor (No. 866294), a 12-in., 5-stage Layne turbine pump (No. 83421) set at 200 ft, rated at 1000 gpm at about 288 ft TDH, and has 200 ft of 10-in. column pipe. The well is equipped with 200 ft of airline.

A mineral analysis of a sample (Lab. No. 211869) collected September 6, 1979, after pumping for 10 min at about 1100 gpm, showed the water to have a hardness of 614 mg/1, total dissolved minerals of 832 mg/1, and an iron content of 0.1 mg/1.

WELL NO. 9 (Downers well) was completed in 1956 to a depth of 300 ft by L. Cliff Neely, Batavia. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located on the west side of Downers Drive south of Ogden Ave., approximately 1940 ft N and 2265 ft E of the SW corner of Section 6, T38N, R11E. The land surface elevation at the well is 756.7 ft.

A drillers log of Well No. 9 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Clay	20	20
Gray gumbo or mud	37	57
Gumbo and gravel	23	80
Gray gumbo or mud	41	121
Broken lime	4	125
Lime "hard and close"	37	162
Lime	123	285
Shale	15	300

A 30-in. diameter hole was drilled to a depth of 130 ft and finished 24 in. in diameter from 130 to 300 ft. The well is cased with 30-in. welded steel pipe from about 0.5 ft above land surface to a depth of 130 ft.

In November 1957, the nonpumping water level was reported to be 97 ft.

On October 31, 1958, the well reportedly produced 850 gpm for 5 hr with a drawdown of 76 ft from a nonpumping water level of 109 ft below the pump base.

In June 1959, this well was acidized by M. P. Schneller & Associates, Aurora.

In November 1959, after pumping at a rate of 1100 gpm, the drawdown was 65 ft from a nonpumping water level of 108 ft.

In November 1960, the nonpumping water level was reported to be 108 ft.

In November 1961, the well reportedly produced 950 gpm with a drawdown of 76 ft from a nonpumping water level of 105 ft.

In 1962, this well was acidized by M. P. Schneller & Associates, and the well capacity was reportedly increased from 800 to 1050 gpm.

Nonpumping water levels were reported to be 108 ft in November 1962, 107 ft in November 1963, and 109 ft in January 1967.

This well was acidized by the J. P. Miller Artesian Well Co., Brookfield, on April 20, 1970, with 2000 gal of 15 percent HC1, and on April 22, 1970, with three 2000-gal acid treatments. On April 23, 1970, the well reportedly produced 1260 gpm with a drawdown of 58 ft from a nonpumping water level of 109 ft.

Nonpumping water levels were reported to be 111 ft in November 1971, 123 ft in January 1977, and 111 ft on September 6, 1979.

In 1980, after pumping at a rate of 950 gpm, the drawdown was 10 ft from a nonpumping water level of 108 ft.

In 1984, the well reportedly produced 1200 gpm with a drawdown of 9 ft from a nonpumping water level of 105 ft.

The pumping equipment presently installed consists of a 125-hp 1200 rpm U. S. electric motor (No. 1011218), a 15-in., 6-stage Peerless turbine pump set at 200 ft, rated at 1200 gpm at about 300 ft TDH, and has 200 ft of 10-in. column pipe.

A mineral analysis of a sample (Lab. No. 211870) collected September 6, 1979, after pumping for 4 hr at 900 gpm, showed the water to have a hardness of 518 mg/1, total dissolved minerals of 663 mg/1, and an iron content of 1.4 mg/1. Hydrogen sulfide was apparent when a previous sample was collected.

WELL NO. 10 (Katrine Ave. well), open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in October 1960 to a depth of 280 ft by L. Cliff Neely, Batavia. The well is located on the east side of Katrine Ave. between Curtiss and Wisconsin Sts., approximately 1540 ft N and 1440 ft E

of the SW corner of Section 12, T38N, R10E. The land surface elevation at the well is approximately 715 ft.

A drillers log of Well No. 10 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift	57	57
Limestone	218	275
Shale	5	280

A 30-in. diameter hole was drilled to a depth of 87 ft and finished 25 in. in diameter from 87 to 280 ft. The well is cased with 30-in. wrought iron pipe from about 0.3 ft above land surface to a depth of 80 ft.

Upon completion, the well reportedly produced 2200 to 2500 gpm for 23 hr with a drawdown of 7 ft.

In November 1962, after pumping at a rate of 1000 gpm, the drawdown was 5 ft from a nonpumping water level of 64 ft.

Nonpumping water levels were reported to be 62 ft in November 1964, and 56 ft in November 1965.

In January 1967, the well reportedly produced 1200 gpm with a drawdown of 13 ft from a nonpumping water level of 57 ft.

Nonpumping water levels were reported to be 61 ft in November 1971, 64 ft in January 1977, and 55 ft on September 6, 1979.

In 1980, after pumping at a rate of 1100 gpm, the drawdown was 12 ft from a nonpumping water level of 59 ft.

In 1984, the well reportedly produced 1200 gpm with a drawdown of 4 ft from a nonpumping water level of 61 ft.

The pumping equipment presently installed is a Byron Jackson vertical turbine pump set at 150 ft, rated at 1000 gpm at about 208 ft TDH, and powered by a 150-hp 1200 rpm U. S. electric motor.

A mineral analysis of a sample (Lab. No. 211871) collected September 6, 1979, after pumping for 6 hr at 1000 gpm, showed the water to have a hardness of 542 mg/1, total dissolved minerals of 791 mg/1, and an iron content of 0.0 mg/1.

WELL NO. 11 (Baylor well) was completed in October 1968 to a depth of 332 ft by the J. P. Miller Artesian Well Co., Brookfield. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located on the north side of 63rd St. east of Stonewall Ave., approximately 100 ft N and 1180 ft E of the SW corner of Section 18, T38N, R11E. The land surface elevation at the well is approximately 742 ft.

A drillers log of Well No. 11 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift	117	117
Niagaran limestone	201	318
Shale	14	332

A 24-in. diameter hole was drilled to a depth of 102 ft, reduced to 17 in. between 102 and 117 ft, and finished 15.2 in. in diameter from 117 to 332 ft. The well is cased with 24-in. steel pipe from land surface to a depth of 89.3 ft, 20-in. OD steel pipe from land surface to a depth of 102 ft (cemented in), and 16-in. steel pipe from about 0.8 ft above land surface to a depth of 117 ft (cemented in).

Upon completion, the well reportedly produced 1280 gpm for 8 hr with a drawdown of 35 ft from a nonpumping water level of 93 ft.

Nonpumping water levels were reported to be 98 ft in November 1971, 103 ft in January 1977, and 98 ft on September 6, 1979.

The pumping equipment presently installed is a 10-in., 5-stage Peerless turbine pump set at 170 ft, rated at 1000 gpm, and powered by a 150-hp General Electric motor.

A mineral analysis of a sample (Lab. No. 211848) collected September 6, 1979, after pumping for 6 hr at about 1100 gpm, showed the water to have a hardness of 645 mg/1, total dissolved minerals of 938 mg/1, and an iron content of 0.0 mg/1.

WELL NO. 12 was completed in September 1971 to a depth of 330 ft (reported to be 320 ft deep in 1983) by the Milaeger Well & Pump Co., Brookfield, Wis. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located about 100 ft east of Finley Road and 0.5 mile south of Butterfield Road, approximately 1350 ft S and 2600 ft W of the NE corner of Section 31, T39N, R11E. The land surface elevation at the well is approximately 750 ft.

A 24-in. diameter hole was drilled to a depth of 134 ft and finished 19.2 in. in diameter from 134 to 330 ft. The well is cased with 24-in. pipe from land surface to a depth of 132 ft and 20-in. pipe from about 0.7 ft above land surface to a depth of 134 ft (cemented in).

A drillers log of Well No. 12 follows:

Strata	Thickness (ft)	Depth (ft)
Clay	30	30
Gravel	5	35
Clay	11	46
Gravel	4	50
Clay and gravel	10	60
Clay and stone	30	90
Gravel	34	124
Lime	196	320
Shale	10	330

A production test was conducted by the driller on September 29, 1971. After 8 hr of pumping at rates ranging from 483 to 1089 gpm, the final drawdown was 3 ft from a nonpumping water level of 80 ft below the top of the casing.

In November 1975, the nonpumping water level was reported to be 80 ft.

In 1980, the well reportedly produced 1300 gpm with a drawdown of 6 ft from a nonpumping water level of 84 ft.

A production test was conducted by the Layne-Western Co., Aurora, on July 1, 1983. After 2.8 hr of pumping at rates of 1329 to 1486 gpm, the final drawdown was 5 ft from a nonpumping water level of 83 ft.

In 1984, after pumping at a rate of 1200 gpm, the drawdown was 7 ft from a nonpumping water level of 83 ft.

The pumping equipment presently installed is a 12-in., 4-stage Layne & Bowler vertical turbine pump (Serial No. 72873) set at 180 ft, rated at 1100 gpm at about 260 ft TDH, and powered by a 125-hp U. S. electric motor. The well is equipped with 180 ft of airline.

A partial analysis of a sample (Lab. No. 186787) collected during the initial production test, after pumping for 8 hr at rates of 483 to 1089 gpm, showed the water to have a hardness of 472 mg/1, total dissolved minerals of 566 mg/1, and an iron content of 1.5 mg/1.

WELL NO. 13 (Wandschneider well) was completed in August 1969 to a depth of 320 ft by the Wehling Well Works, Beecher. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located on the north side of 67th St. about 600 ft east of Main St., approximately 2500 ft S and 1950 ft E of the NW corner of Section 20, T38N, R11E. The land surface elevation at the well is approximately 753 ft.

A drillers log of Well No. 13 follows:

Strata	*Thickness* ***(ft)***	*Depth* ***(ft)***
Clay	35	35
Gravel	122	157
Lime	153	310
Shale	10	320

A 24-in. diameter hole was drilled to a depth of 157 ft and finished 20 in. in diameter from 157 to 320 ft. The well is cased with 24-in. pipe from land surface to a depth of 147 ft and 20-in. pipe from about 0.8 ft above land surface to a depth of 157 ft (cemented in).

A production test was conducted by the driller on August 19, 1969. After 8 hr of pumping at rates ranging from 740 to 1340 gpm, the final drawdown was 58 ft from a nonpumping water level of 110 ft below land surface.

Nonpumping water levels were reported to be 116 ft in November 1971, and 120 ft in October 1975.

In 1980, the well reportedly produced 1150 gpm with a drawdown of 40 ft from a nonpumping water level of 114 ft.

In 1984, after pumping at a rate of 1025 gpm, the drawdown was 29 ft from a nonpumping water level of 113 ft.

The pumping equipment presently installed is a 10-in., 3-stage Johnston vertical turbine pump set at 208 ft, rated at 1000 gpm at about 333 ft TDH, and powered by a 125-hp U. S. electric motor.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. C007571) of a sample collected April 1, 1975, after pumping for 24 hr at 1000 gpm, showed the water to have a hardness of 526 mg/1, total dissolved minerals of 660 mg/1, and an iron content of 1.2 mg/1.

WELL NO. 14 was completed in October 1976 to a depth of 383 ft by the Wehling Well Works, Beecher. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located about 0.3 mile east of Woodward Ave. and 0.5 mile north of 75th St., approximately 30 ft N and 1450 ft E of the SW corner of Section 19, T38N, R11E. The land surface elevation at the well is approximately 790 ft.

A 24-in. diameter hole was drilled to a depth of 153 ft, reduced to 23.2 in. between 153 and 163 ft, and finished 19.2 in. in diameter from 163 to 383 ft. The well is cased with 24-in. pipe from land surface to a

A drillers log of Well No. 14 follows:

Strata	Thickness (ft)	Depth (ft)
Soil and clay	50	SO
Broken rock	5	55
Mud	85	HO
Broken rock	10	150
Rock	13	163
Lime	209	372
Shale	11	383

depth of 153 ft and 20-in. pipe from about 0.5 ft above land surface to a depth of 163 ft (cemented in).

A production test was conducted by the driller on October 25, 1976. After 8 hr of pumping at rates ranging from 1240 to 1080 gpm, the final drawdown was 10 ft from a nonpumping water level of 157 ft. One min after pumping was stopped, the water level had recovered to 159 ft.

On September 6, 1979, the nonpumping water level was reported to be 160 ft.

In 1980, the well reportedly produced 1000 gpm with a drawdown of 12 ft from a nonpumping water level of 149 ft.

In 1984, after pumping at a rate of 1000 gpm, the drawdown was 9 ft from a nonpumping water level of 141 ft.

The pumping equipment presently installed is a Peerless pump set at 260 ft, rated at 1000 gpm, and powered by a 100-hp General Electric motor.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B25921) is for a water sample from the well collected February 16, 1983, after 10 hr of pumping at 1000 gpm.

WELL NO. 14, LABORATORY NO. B25921

		mg/l	me/I		mg/l	me/l
Iron	Fe	0.21		Silica	SiO_2 11	
Manganese	Mn	0.009		Fluoride	F 0.13	0.01
Ammonium	NH_4	<0.1		Boron	B 0.10	
Sodium	Na	53	2.30	Cyanide	CN <0.005	
Potassium	K	4.6	0.12	Nitrate	NO_3 <0.4	
Calcium	Ca	115	5.74	Chloride	CI 110	3.10
Magnesium	Mg	58	4.77	Sulfate	SO_4 170	3.54
Strontium	Sr	0.310		Alkalinity (as $CaCO_3$)	304	6.08
Arsenic	As	<0.001		Hardness (as $CaCO_3$)	518	10.36
Barium	Ba	0.052				
Beryllium	Be	<0.0005		Total dissolved		
Cadmium	Cd	<0.003		minerals	732	
Chromium	Cr	<0.005				
Cobalt	Co	<0.005				
Copper	Cu	<0.003				
Lead	Pb	0.005				
Mercury	Hg	<0.00005				
Nickel	Ni	0.004				
Selenium	Se	<0.001				
Silver	Ag	<0.005				
Vanadium	V	<0 004				
Zinc	Zn	<0.002		pH (as rec'd)	7.8	

ELK GROVE VILLAGE

The village of Elk Grove Village (28,907) installed a public water supply in 1957. This village also extends into Cook County and thirteen of the wells are located there. Eleven wells (Nos. 2, 3, 4, 5, 6, 7, 8, 9, 11, 13, and 14) are in use and two wells (Nos. 10 and 13) are available for emergency use. This supply is also cross connected with the village of Bensenville. In 1984 there were 9435 services, all metered; the average pumpage was 6,435,000 gpd. The water is gas chlorinated and treated with polyphosphate.

WELL NO. 1, open to the Midwest Aquigroup (Cambrian-Ordovician aquifer), was completed in July 1957 to a depth of 1415 ft (reported to be 1386 ft deep in 1982) by the Layne-Western Co., Aurora. This well is not in use. The well is located on Woodcrest Lane north of Briarwood Lane, approximately 860 ft N and 660 ft W of the SE corner of Section 21, T41N, R11E, Cook County. The land surface elevation at the well is approximately 717 ft.

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

Strata	Thickness (ft)	Depth (ft)
QUATERNARY SYSTEM		
Pleistocene Series		
Soil	5	5
Till, slightly sandy and gravelly, yellowish buff	50	55
Till, slightly sandy and gravelly, brownish-buff	25	80
Gravel, silty, multicolored	40	120
SILURIAN SYSTEM		
Niagaran Series		
Joliet Dolomite		
Dolomite, white, finely crystalline	50	170
Dolomite, white, little green and red	15	185
Alexandrian Series		
Kankakee Dolomite		
Dolomite, brownish-buff, very finely crystalline	55	240

Strata	Thickness (ft)	Depth (ft)
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Dolomite, buff to white; shale, green	10	250
Dolomite, greenish-gray; shale, green	25	275
Dolomite, silty, light greenish-gray to gray; shale, greenish-gray to brown, weak to brittle	105	380
Dolomite, white to gray; shale, gray	20	400
Shale, brown, **weak** to tough; little dolomite	60	460
Champlainian Series		
Galena Group		
Kimmswick Subgroup		
Dolomite, slightly silty, buff to whitish-gray, fine to medium	60	520
Dolomite, buffish-brown to gray, fine to medium, slightly speckled	40	560
Dolomite, buff to white to light brown, fine to medium crystalline, slightly speckled	45	605
Decorah Subgroup		
Dolomite, buffish-gray, fine to medium speckled	25	630
Dolomite, buffish gray, speckled (red)	10	640
Platteville Group		
Dolomite, buff to gray, fine, mottled	35	675
Limestone, brown to gray, fine	25	700
Dolomite, argillaceous, buff to gray, fine, mottled	25	725
Limestone, brown to white, fine, speckled	25	750
Dolomite, buffish-gray, fine, mottled	35	785
Ancell Group		
Glenwood Formation		
Sandstone, white, fine to coarse; incoherent	35	820
Sandstone as above; little dolomite and shale	30	850
St. Peter Sandstone		
Sandstone, partly silty, white, very fine to medium, little coarse, incoherent	75	925
Sandstone, white, fine to medium, little coarse, incoherent	65	990
Chert, white to pink; little dolomite	15	1005
Canadian Series		
Oneota Dolomite		
Dolomite, cherty, sandy, white, fine to medium, little coarsely crystalline; little sandstone, fine to medium	55	1060
CAMBRIAN SYSTEM		
Croixan Series		
Potosi Dolomite		
Dolomite, slightly sandy, buffish-gray, fine	55	1115
Dolomite, buffish brown to light buff, fine	30	1145
Franconia Formation		
Dolomite, glauconitic, buffish brown, fine; shale, glauconitic, variegated, weak	25	1170
Shale, as above; sandstone, glauconitic, fine to medium; little dolomite	25	1195
Shale, sandy, glauconitic, variegated, weak; sandstone, as above	30	1225
Ironton-Galesville Sandstone		
Sandstone, partly dolomitic, white to buff, medium to very coarse, little fine, incoherent, compact	60	1285
Sandstone, fine to very coarse; dolomite, sandy, buff	20	1305
Sandstone, white, fine to medium, little coarse	so	1355
Sandstone, white, very fine to medium	45	1400
Sandstone, dolomitic, brown, very fine	15	1415

A 19.2-in. diameter hole was drilled to a depth of 485 ft and finished 15.2 in. in diameter from 485 to 1415 ft. The well is cased with 20-in. drive pipe from land surface to a depth of 119 ft and 16-in. pipe from land surface to a depth of 485 ft (cemented in).

A production test was conducted by the driller on July 19, 1957. After 20 hr of pumping at a rate of 1147 gpm, the drawdown was 98 ft from a nonpumping water level of 430 ft below the top of the casing.

On April 23, 1959, the well reportedly produced 1000 gpm for 1 hr with a drawdown of 60 ft from a nonpumping water level of 470 ft below the pump base.

On October 17, 1975, after pumping at a rate of 620 gpm, the drawdown was 53 ft from a nonpumping water level of 798 ft.

A production test was conducted by the driller on April 15, 1982. After 4.2 hr of pumping at rates of 419 to 537 gpm, the final drawdown was 59 ft from a nonpumping water level of 828 ft.

On April 10, 1984, the nonpumping water level was reported to be 824 ft.

The pumping equipment presently installed is an 11-in., 16-stage Byron Jackson submersible turbine pump (Serial No. 741-C-0330) rated at 500 gpm at about 1000 ft head, and powered by a 200-hp Byron Jackson electric motor. The well is equipped with 1070 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B16590) of a sample collected October 20, 1976, after pumping for 26.3 hr at 520 gpm, showed the water to have a hardness of 276 mg/1, total dissolved minerals of 373 mg/1, and an iron content of 0.1 mg/1.

WELL NO. 2 was completed in April 1958 to a depth of 1395 ft by the Layne-Western Co., Aurora.

The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer). The well also penetrates the upper part of the Eau Claire Formation. The well is located on the east side of Busse Road north of Touhy Ave. near the industrial park, approximately 100 ft N and 200 ft E of the SW corner of Section 26, T41N, R11E, Cook County. The land surface elevation at the well is approximately 682 ft.

A sample study summary log of Well No. 2 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
Soil	3	3
Till, yellowish-buff	11	14
Till, gravelly, brown	34	48
Sand, gravelly, very fine to fine	7	55
Gravel, very coarse, sand at base	15	70
Sand, very gravelly, fine to medium	10	80
Gravel, very coarse, sandy	19	99
SILURIAN SYSTEM		
Niagaran Series		
Dolomite, white to light gray, very fine to fine	76	175
Alexandrian Series		
Dolomite, light buff to buff, very fine to fine	40	215
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Shale, brown, light gray, weak; dolomite, buff to brown	224	439
Champlainian Series		
Galena Group		
Kimmswick Subgroup		
Dolomite, buff, gray, brown, fine to medium	171	610
Decorah Subgroup		
Dolomite, buff, gray; trace of shale	27	637
Platteville Group		
Dolomite, gray, buff, very fine to medium; limestone, buff, very fine	123	760
Ancell Group		
Glenwood Formation		
Sandstone, white, fine to medium incoherent; little shale, green, brittle at base	55	815
St. Peter Sandstone		
Sandstone, white to light gray incoherent	230	1045
CAMBRIAN SYSTEM		
Croixan Series		
Potosi Dolomite		
Dolomite, light buff, very fine to fine; shale, reddish brown at base	70	1115
Franconia Formation		
Dolomite, light gray; sandstone, light brown, incoherent; shale, gray, weak	90	1205
Ironton-Galesville Sandstone		
Sandstone, light gray, very coarse to medium, incoherent	166	1371
Eau Claire Formation		
Sandstone, pinkish-brown, very fine to medium; little shale at base	24	1395

A 19.2-in. diameter hole was drilled to a depth of 458 ft, reduced to 15.2 in. between 458 and 1211 ft, and finished 12 in. in diameter from 1211 to 1395 ft. The well is cased with 20-in. steel pipe from land surface to a depth of 101 ft, 16-in. steel pipe from land surface to a depth of 458 ft (cemented in), and a 12-in. steel liner from 1091 ft to a depth of 1211 ft.

Upon completion, after 24 hr of pumping at a rate of 1033 gpm, the drawdown was 135 ft from a nonpumping water level of 400 ft.

On October 29, 1975, the well reportedly produced 1000 gpm with a drawdown of 85 ft from a nonpumping water level of 760 ft.

On December 11, 1980, after 3 hr of pumping at a rate of 744 gpm, the drawdown was 51 ft from a nonpumping water level of 838 ft.

On April 9, 1984, the nonpumping water level was reported to be 834 ft.

The pumping equipment presently installed consists of a 250-hp 1750 rpm Byron Jackson electric motor, a 10-in., 22-stage Byron Jackson submersible pump (No. 741-C-0332) set at 984 ft, rated at 700 gpm, and has 984 ft of 8-in. column pipe.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B20296) of a sample collected October 20, 1980, after pumping for 7 hr at 713 gpm, showed the water to have a hardness of 297 mg/l, total dissolved minerals of 445 mg/l, and an iron content of 0.29 mg/1. Hydrogen sulfide was apparent when a previous sample was collected.

WELL NO. 3 was completed in July 1964 to a depth of 1408 ft by the Wehling Well Works, Beecher. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer). The well also penetrates the upper part of the Eau Claire Formation. The well is located at the northeast corner of Biesterfield Road and Wellington Ave., approximately 1200 ft S and 2550 ft E of the NW corner of Section 32, T41N, R11E, Cook County. The land surface elevation at the well is approximately 705 ft.

A 20-in. diameter hole was drilled to a depth of 480 ft, reduced to 15.2 in. between 480 and 1058 ft, and finished 12 in. in diameter from 1058 to 1408 ft. The well is cased with 20-in. pipe from land surface to a

A drillers log of Well No. 3 follows:

Strata	Thickness (ft)	Depth (ft)
Drift	25	25
Gray clay	20	45
Gravel and clay	58	103
Gravel and lime	2	105
Lime	103	208
Brown shale	7	215
Gray shale	73	288
Blue shale	33	321
Gray shale	64	385
Hard lime	11	396
Shale	34	430
Lime	304	734
White sand	190	924
Lime and shale	9	933
Shale	5	938
Lime and shale	10	948
Gray shale	2	950
Gyp	12	962
Lime	148	1110
Lime and red rock	53	1163
Lime	37	1200
Sandy lime	21	1221
Sand	153	1374
Gray shale	34	1408

depth of 112 ft, 16-in. pipe from land surface to a depth of 480 ft (cemented in), and a 12-in. liner from 931 ft to a depth of 1058 ft.

Upon completion, this well was shot twice with liquid nitroglycerin, the first time with 64 qt and the second time with 140 qt.

A production test was conducted by the driller on July 7, 1964. After 45 min of pumping at a rate of 580 gpm, the drawdown was 154 ft from a nonpumping water level of 520 ft.

A second production test was conducted by the driller on July 10, 1964. After 5 hr of pumping at rates of 580 to 620 gpm, the drawdown was 159 ft from a nonpumping water level of 520 ft.

A third production test was conducted by the driller on July 30-31, 1964. After 30.8 hr of pumping at rates of 635 to 1000 gpm, the drawdown was 178 ft from a nonpumping water level of 540 ft.

A production test was conducted by the driller on August 4-5, 1964. After 24 hr of pumping at a rate of 1000 gpm, the drawdown was 140 ft from a nonpumping water level of 569 ft below land surface.

On February 14, 1980, the well reportedly produced 850 gpm with a drawdown of 108 ft from a nonpumping water level of 784 ft.

On July 1, 1984, the nonpumping water level was reported to be 840 ft.

The pumping equipment presently installed is an 11-in., 21-stage Layne & Bowler turbine pump set at 1020 ft, rated at 900 gpm at about 1100 ft TDH, and powered by a 350-hp General Electric motor. The well is equipped with 1020 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B20734) of a sample collected October 22, 1980, after pumping for 2.5 hr at 787 gpm, showed the water to have a hardness of 417 mg/l, total dissolved minerals of 725 mg/l, and an iron content of 0.07 mg/1.

WELL NO. 4, open to the Midwest Aquigroup (Cambrian-Ordovician aquifer), was completed in September 1958 to a depth of 1416 ft (reported to be 1342 ft deep in 1964) by the Milaeger Well & Pump Co., Brookfield, Wis. This well, originally drilled for the Hotpoint Division of the General Electric Co. and purchased by the village in 1964, is available for emergency use. The well is located about 800 ft west of Lively Blvd. and 350 ft south of Chase Ave., approximately 500 ft N and 1700 ft E of the SW corner of Section 27, T41N, R11E, Cook County. The land surface elevation at the well is approximately 694 ft.

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

Strata	*Thickness* ***(ft)***	*Depth* ***(ft)***
QUATERNARY SYSTEM		
Pleistocene Series		
Till, sandy, gravelly, grayish-brown, calcareous	87	87
SILURIAN SYSTEM		
Niagaran Series		
Dolomite, white, fine, crystalline	63	150
Dolomite, silty, white to buff, fine crystalline	35	185
Alexandrian Series		
Dolomite, silty, buff, fine to coarse	30	215
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Shale, olive-brown, green, weak; little dolomite	30	245
Dolomite, gray, fine, speckled; little shale	55	300
Shale, greenish-gray, weak; little dolomite	45	345
Dolomite, silty, buff to brown, fine to coarse; little shale	38	383
Shale, brown, brittle	57	440
Champlainian Series		
Galena Group		
Kimmswick Subgroup		
Dolomite, buff, fine to medium	45	485
Dolomite, buff to brown, fine to medium	100	585
Dolomite, cherty, buff to light brown, fine to medium	41	' 626

Strata	Thickness (ft)	Depth (ft)
Decorah Subgroup		
Dolomite, buff, fine, speckled	16	642
Platteville Group		
Dolomite, buff to gray, fine, mottled	18	660
Limestone, gray to buff, very fine; little dolomite, buff, very fine	70	730
Dolomite, buff to grayish-brown, very fine, mottled	35	765
Ancell Group		
Glenwood Formation		
Sandstone, fine to coarse	15	780
Sandstone, slightly dolomitic, white	15	795
Sandstone, white, very fine to medium	30	825
Shale, sandy, green, weak	5	830
St. Peter Sandstone		
Sandstone, white, very fine to medium	45	875
Sandstone, silty, white, very fine to medium, little coarse	100	875
Sandstone, silty, white, fine to medium	70	1045
Sandstone, silty, white, fine to coarse	40	1085
Sandstone, cherty, silty, buff, very fine to coarse	40	1125
Sandstone, white, fine to coarse	15	1140
Shale, sandy, red, green	10	1150
CAMBRIAN SYSTEM		
Croixan Series		
Franconia Formation		
Dolomite, glauconitic, reddish-brown; little sandstone	25	1175
Sandstone, dolomitic, glauconitic, greenish-gray, fine	35	1210
Ironton-Galesville Sandstone		
Sandstone, dolomitic, white to pink, fine to coarse, incoherent to compact	50	1260
Sandstone, slightly dolomitic, white, fine to coarse, incoherent	80	1340
Sandstone, white, medium to fine	72	1412
Eau Claire Formation		
Shale, dark green, brittle	3	1415

A 24-in. diameter hole was drilled to a depth of 121 ft, reduced to 23.2 in. between 121 and 492 ft, and finished 19.2 in. in diameter from 492 to 1416 ft. The well is cased with 24-in. pipe from land surface to a depth of 121 ft and 20-in. pipe from land surface to a depth of 492 ft (cemented in).

A production test was conducted by the State Water Survey on September 17-18, 1958. After 24.5 hr of pumping at rates of 320 to 760 gpm, the drawdown was 110 ft from a nonpumping water level of 416 ft below the top of the casing. Thirty-two min after pumping was stopped, the water level had recovered to 452 ft.

After this well was shot with 1200 lb of dynamite at depths of 1300, 1330, 1350, 1370, 1390, and 1410 ft, a production test was conducted by the State Water Survey on November 3-5, 1958. After 48 hr of pumping at rates ranging from 400 to 1250 gpm, the drawdown was 159 ft from a nonpumping water level of 412 ft.

A production test was conducted by the Layne-Western Co., Aurora, on February 26, 1964. After 9.8 hr of pumping at rates ranging from 350 to 820 gpm, the final drawdown was 60 ft from a nonpumping water level of 570 ft below land surface.

On August 5, 1975, the nonpumping water level was reported to be 787 ft.

On April 28, 1980, the well reportedly produced 900 gpm for 3 hr with a drawdown of 74 ft from a nonpumping water level of 841 ft.

On April 2, 1984, the nonpumping water level was reported to be 862 ft.

The pumping equipment presently installed consists of a 400-hp Byron Jackson electric motor, a 12-in., 16-stage Byron Jackson submersible pump set at 1100 ft, rated at 1000 gpm, and has 1100 ft of 8-in. column pipe. The well is equipped with 1100 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B24844) of a sample collected February 10, 1983, after pumping for 24.2 hr at 935 gpm, showed the water to have a hardness of 358 mg/1, total dissolved minerals of 605 mg/1, and an iron content of 0.02 mg/1.

WELL NO. 5 was completed in July 1967 to a depth of 1403 ft (reported to be 1396 ft deep in 1980) by the Milaeger Well & Pump Co., Brookfield, Wis. This well is available for emergency use. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer). The well also penetrates the upper part of the Eau Claire Formation. The well is located at the west end of Walnut Lane west of Cypress Lane, approximately 700 ft N and 1100 ft E of the SW corner of Section 33, T41N, R11E, Cook County. The land surface elevation at the well is approximately 680 ft.

A 24-in. diameter hole was drilled to a depth of 85 ft, reduced to 23 in. between 85 and 435 ft, and finished 17 in. in diameter from 435 to 1403 ft. The well is cased with 24-in. pipe from about 3 ft above the wellhouse floor to a depth of 85 ft and 18-in. pipe from about 3 ft above the wellhouse floor to a depth of 435 ft (cemented in).

A production test was conducted by the driller on July 5-6, 1967. After 24 hr of pumping at rates ranging from 812 to 446 gpm, the maximum drawdown was 145 ft from a nonpumping water level of 593 ft

below land surface. Five min after pumping was stopped, the water level had recovered to 617 ft. The well was then shot with 8 charges (150 lb each) at depths of 1375, 1350, 1325, 1300, 1287, 1275, 1250, and 1225 ft.

A drillers log of Well No. 5 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Clay	60	60
Clay and gravel	19	79
Gravel	1	80
Lime	5	85
Niagara limestone	29	114
Lime	42	156
Shale - pink	3	159
Shale - red	1	160
Lime	45	205
Shale	76	281
Lime - gray	36	317
Shale	7	324
Lime	11	335
Shale	5	340
Lime	20	360
Shale	5	365
Lime	5	370
Shale	53	423
Lime - brown	10	433
Lime	317	750
St. Peter sandstone	25	775
Sand	146	921
Sandstone - white	30	951
Sand	16	967
Shale - gray	3	970
Lime	6	976
Dolomite-hard	17	993
Lime - pink from 1117 to 1120 ft	127	1120
Lime and shale	11	1131
Lime - red	14	1145
Sand - white	27	1172
Sand and lime - broken	23	1195
Lime - gray	5	1200
Sand - white - hard	24	1224
Sand - hard	40	1264
Sand - white	93	1357
Sand - little pinkish	13	1370
Sand	9	1379
Shale	2	1381
Lime	8	1389 .
Sandy lime and shale	14	1403

A second production test was conducted by the driller on September 21-23, 1967. After 31.8 hr of pumping at rates ranging from 940 to 1100 gpm, the final drawdown was 86 ft from a nonpumping water level of 628 ft below land surface.

On October 22, 1975, the well reportedly produced 850 gpm with a drawdown of 55 ft from a nonpumping water level of 775 ft.

A production test was conducted by the Layne-Western Co., Aurora, on May 28, 1980. After 1.2 hr of pumping at rates of 1084 to 1043 gpm, the drawdown was 67 ft from a nonpumping water level of 805 ft. After a 20-min idle period, pumping was continued for 1.1 hr at rates of 1074 to 1043 gpm with a final drawdown of 73 ft.

On January 3, 1984, the nonpumping water level was reported to be 824 ft.

The pumping equipment presently installed is a 14-in., 11-stage Johnston submersible pump rated at 1000 gpm at about 1000 ft TDH, and powered by a 400-hp Byron Jackson electric motor. The well is equipped with 1022 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. C000913) of a sample collected August 31, 1978, after pumping for 4.4 hr at 850 gpm, showed the water to have a hardness of 380 mg/1, total dissolved minerals of 622 mg/1, and an iron content of 0.0 mg/1. Hydrogen sulfide was apparent when a previous sample was collected.

WELL NO. 6 was completed in November 1968 to a depth of 1396 ft by the Layne-Western Co., Aurora. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer). The well also penetrates the upper part of the Eau Claire Formation. The well is located on the south side of Greenleaf Ave. east of Busse Road, approximately 1675 ft S and 325 ft E of the NW corner of Section 35, T41N, R11E, Cook County. The land surface elevation at the well is approximately 675 ft.

A 22-in. diameter hole was drilled to a depth of 100 ft, reduced to 21 in. between 100 and 455 ft, reduced to 17 in. between 455 and 1167.4 ft, and finished 13 in. in diameter from 1167.4 to 1396 ft. The well is cased with 22-in. steel pipe from land surface to a depth of 100 ft, 18-in. pipe from land surface to a depth of 455 ft (cemented in), and a 14-in. liner from 914 ft to a depth of 1167.4 ft.

Upon completion, this well was shot with 700 lb of nitroglycerin.

A production test was conducted by the driller on November 19-20, 1968. After 24 hr of pumping at rates ranging from 1401 to 1349 gpm, the final drawdown was 119 ft from a nonpumping water level of 645 ft below land surface.

On February 15, 1975, the well reportedly produced 660 gpm with a drawdown of 30 ft from a nonpumping water level of 790 ft.

On December 10, 1980, after 3 hr of pumping at a rate of 966 gpm, the drawdown was 45 ft from a nonpumping water level of 825 ft.

The pumping equipment presently installed consists of a 500-hp U. S. electric motor, a 12-in., 15-stage Layne turbine pump set at 1020 ft, rated at 1000 gpm at about 1090 ft TDH, and has 1020 ft of 10-in. column pipe.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. C009112) of a sample collected June 24, 1974, after pumping for 25.9 hr at 1000 gpm, showed the water to have a hardness of 310 mg/l, total dissolved minerals of 530 mg/l, and an iron content of 0.3 mg/1.

A drillers log of Well No. 6 follows:

Strata	*Thickness (jt)*	*Depth (ft)*
Drift	25	25
Blue clay	15	40
Gravel	10	50
Sand and clay	5	55
Gravel	45	100
White limestone	60	160
Brown limestone	60	220
Gray medium limestone and shale	150	370
Dark gray medium limestone with shale streaks	10	380
Gray medium shale	55	435
Gray medium limestone - dry hole	230	665
Gray hard limestone	105	770
White medium sandstone	25	795
White medium to soft sandstone	5	800
White soft sandstone	40	840
White medium sandstone	115	955
Gray hard limestone and shale	5	960
Gray hard sandy limestone	20	980
Gray hard limestone and shale - caving	70	1050
White hard sandstone	10	1060
White hard sandy limestone	15	1075
Gray hard limestone	60	1135
Gray hard limestone and shale	10	1145
Light brown hard sandy limestone	45	1190
Light brown sandy limestone with streaks of shale	25	1215
White hard sandstone	5	1220
Pink hard sandy limestone	20	1240
White hard sandstone	15	1255
Hard white sandstone with soft streaks	10	1265
Medium white sandstone with hard and soft streaks	10	1275
Hard white sandstone	15	1290
Hard white sandy limestone	5	1295
Medium white sandstone	10	1305
Medium to soft white sandstone	15	1320
Hard white sandstone	10	1330
Medium white sandstone	5	1335
Medium to soft white sandstone	5	1340
Hard white sandy limestone	10	1350
Hard white sandstone	10	1360
Medium white sandstone	30	1390
Medium gray sandy shale	6	1396

WELL NO. 7 was completed in January 1969 to a depth of 1365 ft by the Layne-Western Co., Aurora. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer). The well also penetrates the upper part of the Eau Claire Formation. The well is located on the west side of West Glenn Trail in Charles A. Lindberg Park, approximately 800 ft S and 2600 ft W of the NE corner of Section 36, T41N, R10E, Cook County. The land surface elevation at the well is approximately 720 ft.

A drillers log of Well No. 7 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Clay	15	15
Blue shale	5	20
Shale and rock	25	45
Gravel	5	50
Shale and gravel	30	80
Sand and limestone	14	94
Gray limestone	111	205
Lime and shale	10	215
Green shale	40	255
Limestone and shale	5	260
Gray limestone	90	350
Gray shale	58	408
Gray limestone	322	730
Sandstone	258	988
Sandstone and shale	17	1005
Shale	40	1045
Brown limestone	90	1135
Shale	50	1185
Brown, hard sandstone	15	1200
Gray, hard sandstone	35	1235
Gray sandstone with layers of shale	15	1250
Gray hard sandstone	70	1320
Gray medium sandstone	30	1350
Dark gray, hard limestone	15	1365

A 26-in. diameter hole was drilled to a depth of 95 ft, reduced to 25 in. between 95 and 418 ft, reduced to 19 in. between 418 and 1046 ft, and finished 15 in. in diameter from 1046 to 1365 ft. The well is cased with 26-in. steel pipe from land surface to a depth of 95 ft, 20-in. pipe from about 2 ft above land surface to a depth of 418 ft (cemented in), and a 16-in. liner from 904.3 ft to a depth of 1046 ft.

Upon completion, this well was shot with 480 lb of nitroglycerin.

A production test was conducted by the driller on January 10-11, 1969. After 24 hr of pumping at rates ranging from 1311 to 1012 gpm, the final drawdown was 203 ft from a nonpumping water level of 538 ft below land surface.

On October 16, 1975, the well reportedly produced 740 gpm with a drawdown of 88 ft from a nonpumping water level of 782 ft.

On December 11, 1980, after 3 hr of pumping at a rate of 872 gpm, the drawdown was 114 ft from a nonpumping water level of 791 ft.

On April 18, 1984, the nonpumping water level was reported to be 840 ft.

The pumping equipment presently installed consists of a 600-hp 1750 rpm U. S. electric motor, a 12-in., 14-stage Layne turbine pump set at 1020 ft, rated at 1000 gpm at about 1020 ft TDH, and has 1020 ft of 10-in. column pipe. A 20-ft section of 8-in. suction pipe is attached to the pump intake. The well is equipped with 1020 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B022341) of a sample collected January 26, 1983, after pumping for 4.1 hr at 784 gpm, showed the water to have a hardness of 255 mg/l, total dissolved minerals of 393 mg/l, and an iron content of 0.30 mg/1.

WELL NO. 8 was completed in January 1972 to a depth of 1445 ft by the Wehling Well Works, Beecher. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer). The well also penetrates the upper part of the Eau Claire Formation. The well is located about 300 ft west of Lively Blvd. and 350 ft south of Mark St., approximately 2115 ft S and 1985 ft E of the NW corner of Section 3, T40N, R11E, Du Page County. The land surface elevation at the well is approximately 700 ft.

A 26-in. diameter hole was drilled to a depth of 477 ft, reduced to 19 in. between 477 and 1150 ft, and finished 15 in. in diameter from 1150 to 1445 ft. The well is cased with 26-in. pipe from land surface to a depth of 120 ft and 20-in. pipe from land surface to a depth of 477 ft (cemented in).

A production test was conducted by the driller on January 31-February 1, 1972. After 24 hr of pumping at rates ranging from 280 to 1141 gpm, the maximum drawdown was 260 ft from a nonpumping water level of 537 ft.

This well was shot once with 367 lb of nitroglycerin and a second time with 768 lb of nitroglycerin. A production test was then conducted by the driller on February 21-22, 1972. After 24 hr of pumping at rates ranging from 660 to 1130 gpm, the final drawdown was 125 ft from a nonpumping water level of 665 ft below the top of the casing.

On October 25, 1975, the well reportedly produced 480 gpm with a drawdown of 32 ft from a nonpumping water level of 800 ft.

A drillers log of Well No. 8 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift	87	87
Lime	23	110
Mud	5	115
Lime	130	245
Brown shale	3	248
Blue shale	66	314
Lime	63	367
Shale	100	467
Lime	222	689
Brown lime	3	692
Blue lime	9	701
Lime	99	800
Sand	100	900
Brown lime	7	907
Sand	78	985
Lime	13	998
Shale and lime	25	1023
Sandy	6	1029
Lime	36	1065
Lime and shale	21	1086
Lime	82	1168
Red rock	2	1170
Lime	5	1175
Lime and red rock	17	1192
Red rock	6	1198
Lime	22	1220
Gray shale	7	1227
Shale and lime	16	1243
Sandy lime	30	1273
Sand	161	1434
Lime, sandy	2	1436
Lime, shale	9	1445

On January 3, 1984, the nonpumping water level was reported to be 852 ft.

The pumping equipment presently installed consists of a 400-hp 1800 rpm U. S. electric motor, a 12.4-in., 14-stage Layne turbine pump set at 1060 ft, rated at 1000 gpm at about 1025 ft TDH, and has 1060 ft of 10-in. column pipe. The well is equipped with 1060 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B022340) of a sample collected January 26, 1983, after pumping for 2.5 hr at 820 gpm, showed the water to have a hardness of 416 mg/1, total dissolved minerals of 729 mg/1, and an iron content of 0.06 mg/1.

WELL NO. 9 was completed in January 1971 to a depth of 1403 ft by the Layne-Western Co., Aurora. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer). The well also penetrates the upper part of the Eau Claire Formation. The well is located about 300 ft north of Brummel Ave. and 600 ft east of Crossen Ave., approximately 1479 ft S and 1380 ft W of the NE

corner of Section 27, T41N, R11E, Cook County. The land surface elevation at the well is approximately 682 ft.

A drillers log of Well No. 9 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Yellow clay	10	10
Gray hardpan	25	35
Gravel and blue clay	60	95
Gray hard lime	15	110
Gray medium lime	40	150
Gray hard lime	65	215
Lime with streaks of green shale	5	220
Green shale	10	230
Gray hard lime	5	235
Gray lime with streaks of shale - hard	120	355
Gray shale with lime - hard	45	400
Gray medium shale	35	435
Gray medium lime - dry hole	240	675
Brown hard lime	35	710
Gray hard lime	40	750
Brown hard lime	15	765
White hard sandstone	15	780
White medium sandstone	20	800
White medium to soft sandstone with shale breaks	10	810
Gray sandy lime with shale - hard	10	820
White medium to soft sandstone	5	825
White medium sandstone	125	950
Buff medium sandstone	40	990
Red hard sandy lime	5	995
Sandy lime, hard with red shale breaks at 1000 ft	5	1000
Red sandy lime	5	1005
Gray lime	20	1025
Gray sandy lime	15	1040
Buff lime - hard with shale seams 1065 to 1070 ft	55	1095
Gray hard lime	40	1135
Buff lime with shale breaks - hard	5	1140
Medium broken lime with red shale	25	1165
Buff lime with green shale	5	1170
Gray sandy lime with shale	35	1205
White hard sandy dolomite	25	1230
White hard sandstone with shale seams	5	1235
White hard sandstone	15	1250
White medium sandstone	25	1275
White hard sandstone	5	1280
White hard sandy dolomite	5	1285
White medium sandy dolomite	35	1320
White hard sandy dolomite	25	1345
White medium sandy dolomite	5	1350
White medium to soft sandstone	5	1355
White medium sandstone	5	1360
White hard sandstone	35	1395
Gray hard lime and shale	5	1400
Gray hard limestone	3	1403

A 26-in. diameter hole was drilled to a depth of 110 ft, reduced to 25.2 in. between 110 and 451.5 ft, and finished 19.2 in. in diameter from 451.5 to 1403 ft. The well is cased with 26-in. steel pipe from land surface to a depth of 110 ft and 20-in. steel pipe from land surface to a depth of 451.5 ft (cemented in).

A production test was conducted by the driller on January 20-21, 1971. After 24 hr of pumping at rates ranging from 483 to 1012 gpm, the maximum drawdown was 162 ft from a nonpumping water level of 618 ft below the top of the casing. Thirty min after pumping was stopped, the water level had recovered to 642 ft.

On June 26, 1974, the well reportedly produced 562 gpm with a drawdown of 30 ft from a nonpumping water level of 740 ft.

On October 20, 1980, after 3 hr of pumping at a rate of 772 gpm, the drawdown was 56 ft from a nonpumping water level of 835 ft.

On March 23, 1984, the nonpumping water level was reported to be 802 ft.

The pumping equipment presently installed is a 12-in., 15-stage Layne turbine pump set at 1040 ft, rated at 1000 gpm at about 1092 ft TDH, and powered by a 600-hp 1250 rpm Caterpillar natural gas engine.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B17679) is for a water sample from the well collected October 28, 1976, after 3 hr of pumping at 450 gpm.

WELL NO. 9, LABORATORY NO. **B17679**

		mg/l	*mt/l*			*rng/l*	*mt/l*
Iron	Fe	0.2		Silica	SiO_2	7.4	
Manganese	Mn	0.01		Fluoride	F	0.7	0.04
Ammonium	NH_4	0.7	0.04	Boron	B	0.6	
Sodium	Na	63	2.74	Cyanide	CN	0.00	
Potassium	K	11.8	0.30	Nitrate	NO_3	0.4	0.01
Calcium	Ca	73	3.64	Chloride	CI	28	0.79
Magnesium	Mg	34	2.80	Sulfate	SO_4	180	3.74
				Alkalinity (as $CaCO_3$)		262	5.24
Arsenic	As	0.00					
Barium	Ba	0.1		Hardness (as $CaCO_3$)		322	6.44
Cadmium	Cd	0.00					
Chromium	Cr	0.00		Total dissolved			
Copper	Cu	0.04		minerals		556	
Lead	Pb	0.00					
Mercury	Hg	0.0000					
Nickel	Ni	0.0					
Selenium	Se	0.00					
Silver	Ag	0.00					
Zinc	Zn	0.0		pH (as rec'd)		7.4	

WELL NO. 10, finished in sand and gravel of the Prairie Aquigroup, was completed in June 1976 to a depth of 97 ft by the Layne-Western Co., Aurora. This well is available for emergency use. The well is located southwest of the intersection of Nerge and Meacham Roads, approximately 1320 ft N and 70 ft E of the SW corner of Section 36, T41N, R10E, Cook County. The land surface elevation at the well is approximately 725 ft.

A drillers log of Well No. 10 follows:

Strata	Thickness (ft)	Depth (ft)
Black top soil	1	1
Brown sandy clay	9	10
Gray clay	3	13
Gray fine sand to coarse gravel	11	24
Gray fine to medium sand	8	32
Gray clay, gravel intermixed	2	34
Fine to coarse sand and gravel	3	37
Gray sand clay with gravel seams	11	48
Hard gray clay with gravel and boulders	13	61
Sand and gravel	2	63
Gray clay	2	65
Fine sand to coarse gravel, boulders	34	99
Limestone below		

A 48-in. diameter hole was drilled to a depth of 40 ft and finished 38 in. in diameter from 40 to 99 ft. The well is cased with 16-in. steel pipe from about 1.2 ft above land surface to a depth of 72 ft followed by 25 ft of 16-in. No. 5 (0.105 in.) Layne stainless steel shutter screen. The annulus between the bore hole and the casing-screen assembly is filled with cement from 0 to 40 ft, with clay from 40 to 50 ft, and with 50 tons of No. 3 Muscatine gravel from 50 to 97 ft.

A production test was conducted by the driller on June 17, 1976. After 8 hr of pumping at a rate of 473 gpm, the final drawdown was 42 ft from a nonpumping water level of 18 ft below land surface.

The pumping equipment presently installed is a Layne & Bowler vertical turbine pump set at 70 ft, rated at 500 gpm, and powered by a 40-hp U. S. electric motor.

A partial analysis of a sample (Lab. No. 203095) collected August 26, 1976, after pumping for 6.5 hr, showed the water to have a hardness of 1015 mg/1, total dissolved minerals of 1317 mg/1, and an iron content of 3.0 mg/1.

WELL NO. 11 was completed in November 1976 to a depth of 1367 ft by the Layne-Western Co., Aurora. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer). The well also penetrates the upper part of the Eau Claire Formation. The well is located about 0.2 mile west of Meacham Road and 0.3 mile south of Nerge Road about 125 ft east of Well No. 10, approximately 1310 ft N and 200 ft E of the SW corner of Section 36, T41N, R10E, Cook County. The land surface elevation at the well is approximately 725 ft.

A 26-in. diameter hole was drilled to a depth of 117 ft, reduced to 25.2 in. between 117 and 435 ft, reduced to 21.2 in. between 435 and 1105 ft, reduced to 17.2 in. between 1105 and 1211 ft, and finished 15.2 in. in diameter from 1211 to 1367 ft. The well is cased with 26-in. OD steel pipe from about 2 ft above land surface to a depth of 117 ft, 22-in. OD steel pipe from about 2 ft above land surface to a depth of 434.2 ft (cemented in), 18-in. OD slotted steel liner from 983 ft to a depth of 1103.8 ft, and a 16-in. OD slotted steel liner from 1086 ft to a depth of 1205 ft.

A drillers log of Well No. 11 follows:

Strata	Thickness (ft)	Depth (ft)
Yellow clay	10	10
Blue clay 15		25
Blue clay, coarse gravel	35	60
Fine gravel, some blue clay	15	75
Coarse and fine gravel, clean (some gray clay 90 to 95 ft)	20	95
Fine gravel, clean	15	110
Medium gray limestone	45	155
Hard brown limestone	5	160
Hard gray limestone	30	190
Shale, lime shells, dark gray, medium	35	225
Medium dark gray shale and lime	75	300
Hard gray limestone	10	310
Medium dark gray shale and lime	30	340
Medium dark gray limestone	20	360
Medium gray shale	54	414
Hard gray limestone	81	495
Medium dark gray limestone (hard 560 to 570 ft)	100	595
Hard gray limestone (dark gray 595 to 620 ft)	146	741
Medium sandstone	14	755
Hard sandstone (little green shale 795 to 830 ft)	75	830
Hard sandstone, little shale, sticky	10	840
Hard light gray sandstone	65	905
Hard sandstone, with light gray shale	30	935
Hard light brown sandstone, sharp	35	970
Hard light brown sandstone, some dolomite, sharp	35	1005
Hard sandstone - red rock, sharp	5	1010
Hard sandstone - red rock, some lime	5	1015
Hard red shale and lime shells	25	1040
Red sticky shale	7	1047
White and green shale	4	1051
Chert	4	1055
Hard gray limestone	40	1095
Medium lime and shale, green break at 1098 ft	5	1100
Medium gray lime and shale breaks	10	1110
Medium red and gray shale, lime shells	20	1130
Medium lime shells, red shale breaks	20	1150
Medium sandy shale	15	1165
Hard gray lime and shale	5	1170
Hard red sandy lime	35	1205
Hard sandy shale	5	1210
Hard buff sandstone	40	1250
Medium to hard white sandstone, some dolomite	15	1265
Medium to hard white sandstone	20	1285
Hard white sandstone	25	1310
Medium to hard white sandstone	15	1325
Medium white sandstone	18	1343
Hard gray lime and shale	12	1355
Hard sandy dolomite and shale	12	1367

A production test was conducted by the driller on December 13-14, 1976. After 24 hr of pumping at rates ranging from 1043 to 470 gpm, the maximum drawdown was 387 ft from a nonpumping water level of 554 ft below land surface.

On January 7, 1977, this well was shot with 1020 lb of 100 percent nitrogel as follows: 150 lb between 1345 and 1334 ft, 300 lb between 1334 and 1323 ft, 150 lb between 1323 and 1312 ft, 150 lb between 1312 and 1301 ft, 90 lb between 1289 and 1281 ft, 60 lb between 1281 and 1276 ft, 60 lb between 1276 and 1271 ft, and 60 lb between 1271 and 1266 ft. The well was then airlift surged.

A production test was conducted by the driller on May 25-26, 1977. After 22.7 hr of pumping at rates ranging from 838 to 1218 gpm, the maximum drawdown was 205 ft from a nonpumping water level of 733 ft below land surface. One hr after pumping was stopped, the water level had recovered to 798 ft.

Nonpumping water levels were reported to be 790 ft on December 9, 1980, and 791 ft on April 24, 1984.

The pumping equipment presently installed consists of a 400-hp Byron Jackson electric motor, a 15-stage Byron Jackson submersible turbine pump (No. 761-C-0337) set at 1040 ft, rated at 1000 gpm at about 1100 ft TDH, and has 1040 ft of 10-in. column pipe.

A partial analysis of a sample (Lab. No. 205092) collected May 26, 1977, after pumping for 22 hr at rates of 838 to 1218 gpm, showed the water to have a hardness of 294 mg/l, total dissolved minerals of 472 mg/1, and an iron content of 0.1 mg/1.

WELL NO. 12 was completed in April 1977 to a depth of 1352 ft by the Layne-Western Co., Aurora. This well is not in use. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer). The well also penetrates the upper part of the Eau Claire Formation. The well is located about 400 ft west of Meacham Road and 0.4 mile north of Nerge Road, approximately 550 ft S and 860 ft E of the NW corner of Section 36, T41N, R10E, Cook County. The land surface elevation at the well is approximately 740 ft.

A 26-in. diameter hole was drilled to a depth of 127 ft, reduced to 25.2 in. between 127 and 445 ft, reduced to 21.2 in. between 445 and 1167 ft, and finished 17.2 in. in diameter from 1167 to 1352 ft. The well is cased with 26-in. OD steel pipe from about 2 ft above land surface to a depth of 127 ft, 22-in. OD steel pipe from about 2 ft above land surface to a depth of 445 ft (cemented in), and an 18-in. OD slotted steel liner from 1015 ft to a depth of 1167 ft.

Upon completion, this well was shot with 720 lb of 100 percent nitrogel as follows: 90 lb between 1330 and 1321 ft, 90 lb between 1320 and 1311 ft, 90 lb between 1310 and 1301 ft, 90 lb between 1300 and 1291 ft, 90 lb between 1290 and 1281 ft, 90 lb between 1280 and 1271 ft, 60 lb between 1270 and 1266 ft, 60 lb between 1265 and 1261 ft, and 60 lb between 1260 and 1256 ft.

A drillers log of Well No. 12 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Yellow clay 10		10
Blue clay, boulders 25 to 40 ft	35	45
Gravel, some blue clay	30	75
Coarse gravel and blue clay	20	95
Fine gravel, compact	10	105
Fine gravel, clean -	5	110
Coarse gravel, clean	14	124
Hard gray limestone	61	185
Hard brown limestone	19	204
Hard brown lime and shale	16	220
Hard shale and lime shells	64	284
Hard gray lime, small shale cracks 320 to 345 ft	61	345
Lime and shale	4	349
Hard gray lime	29	378
Hard shale, lime shells 385 to 390 ft and 400 to 405 ft	47	425
Hard gray lime	10	435
Hard brown lime	267	702
Hard gray lime	33	735
Hard brown lime	15	750
Medium soft white sandstone, white shale layers 920 to 930 ft	180	930
Medium reddish brown sandstone	55	985
Hard pink sandstone	10	995
Hard gray sand and lime	5	1000
Medium brown sandstone	10	1010
Hard gray sandstone	10	1020
Hard red sandstone	15	1035
Hard sandy lime and red shale	33	1068
Hard red shale	2	1070
Hard gray lime with shale seams, 18-in. shale break at 1083 ft	40	1110
Hard gray sandy lime	15	1125
Hard sandy lime and brown shale	5	1130
Medium brown sandy shale	35	1165
Medium lime and layers of green shale	5	1170
Hard gray sandstone, layers of green shale	5	1175
Medium gray sandstone and green shale	5	1180
Hard gray sandstone	10	1190
Hard gray sandstone, green shale seams	10	1200
Hard gray sandstone, small shale seams 1225 to 1230 ft	55	1255
Medium white sandstone	5	1260
Hard white sandstone	25	1285
Extra hard white sandstone	35	1320
Hard white sandstone	12	1332
Hard gray sandy lime and shale	20	1352

A production test was conducted by the State Water Survey on May 19, 1977. After 3.8 hr of pumping at rates ranging from 600 to 910 gpm, the final drawdown was 270 ft from a nonpumping water level of 613 ft.

A second production test was conducted by the driller on June 7-8, 1977. After 21.5 hr of pumping at rates ranging from 600 to 863 gpm, the drawdown was 284 ft from a nonpumping water level of 654 ft.

A third production test was conducted by the driller on June 23-25, 1977. After 33.9 hr of pumping at rates ranging from 600 to 1001 gpm, the maximum drawdown was 299 ft from a nonpumping water level of 670 ft.

A fourth production test was conducted by the driller on June 27, 1977. After 9.4 hr of pumping at rates of 956 to 812 gpm, the maximum drawdown was 241 ft from a nonpumping water level of 704 ft.

A fifth production test was conducted by the driller on June 28, 1977. After 8.2 hr of pumping at rates ranging from 757 to 910 gpm, the final drawdown was 231 ft from a nonpumping water level of 713 ft.

A sixth production test was conducted by the driller on June 29, 1977. After 4.2 hr of pumping at a rate of 956 gpm, the final drawdown was 237 ft from a nonpumping water level of 708 ft.

A seventh production test was conducted by the driller on June 30, 1977. After 6 hr of pumping at rates of 1001 to 1104 gpm, the drawdown was 272 ft from a nonpumping water level of 712 ft. Pumping was continued for 2 hr at a rate of 812 gpm with a final drawdown of 229 ft.

An eighth production test was conducted by the driller on July 7, 1977. After 8 hr of pumping at rates of 812 to 899 gpm, the final drawdown was 242 ft from a nonpumping water level of 705 ft.

Production tests were conducted by the driller on July 26-29, 1977. On July 26, after 8 hr of pumping at rates ranging from 1200 to 956 gpm, the final drawdown was 305 ft from a nonpumping water level of 690 ft. On July 27, the well produced 851 to 956 gpm for 8.1 hr with a drawdown of 270 ft from a nonpumping water level of 690 ft. On July 28, the well produced 899 gpm for 8.1 hr with a drawdown of 199 ft from a nonpumping water level of 745 ft. On July 29, after 9.1 hr of pumping at rates of 799 to 851 gpm, the final drawdown was 202 ft from a nonpumping water level of 745 ft.

On April 23, 1984, the nonpumping water level was reported to be 764 ft.

The pumping equipment presently installed is a Byron Jackson submersible pump set at 1082 ft, rated at 1000 gpm, and powered by a 400-hp Byron Jackson electric motor.

A partial analysis of a sample (Lab. No. 205390) collected June 25, 1977, after pumping for 33.9 hr at rates of 600 to 1001 gpm, showed the water to have a hardness of 282 mg/l, total dissolved minerals of 432 mg/l, and an iron content of 0.0 mg/1.

A test well was constructed in April 1978 to a depth of 75 ft by the Layne-Western Co., Aurora. It was located approximately 63 ft S and 680 ft W of the NE corner of the SE quarter of Section 35, T41N, R10E, Cook County. A 15-in. diameter hole was drilled to a depth of 75 ft. The test well was cased with 8-in. diameter temporary pipe from about 1 ft above land surface to a depth of 55 ft followed by 20 ft of 8-in. No. 7 (0.055 in.) Layne shutter screen. Upon completion, the test well reportedly produced 402 gpm for 1176 hr with a drawdown of 19.80 ft from a nonpumping water level of 22.42 ft below land surface.

WELL NO. 13, finished in sand and gravel of the Prairie Aquigroup, was completed in March 1979 to a depth of 75 ft by the Layne-Western Co., Aurora. The well is located about 204 ft east of the east curb of Arkansas Drive and 63 ft south of the center line of Nerge Road, approximately 2583 ft N and 680 ft W of the SE corner of Section 35, T41N, R10E, Cook County. The land surface elevation at the well is approximately 725 ft.

A drillers log of Well No. 13 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Black top soil	1	1
Brown silty clay mottled with gray	4	5
Brown and gray clay with gravel seams	2.5	7.5
Gray sandy clay with gravel seams	4.5	12
Sand and gravel	2	14
Gray sandy silty clay	8.5	22.5
Sand and gravel	2.5	25
Gray sandy clay with gravel embedded	11	36
Gray sandy clay with sand and gravel seams	7	43
Fine sand to small gravel with clay seams	3	46
Fine sand to coarse gravel	9	55
Medium white and gray gravel, sharp, with some fine sand seams	20	75
Hard gray silty clay with boulders	5	80

A 48-in. diameter hole was drilled to a depth of 79 ft. The well is cased with 26-in. OD steel pipe from about 1.5 ft above land surface to a depth of 55 ft followed by 20 ft of 26-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 bank run sand from 20

to 35 ft, and with 44 tons of No. 3 Muscatine gravel from 35 to 75 ft.

A production test was conducted by the driller on March 19-20, 1979. After 24 hr of pumping at a rate of 602 gpm, the final drawdown was 25 ft from a nonpumping water level of 15 ft below the top of the casing. During this test, Well No. 10 was operating.

On April 1, 1984, the nonpumping water level was reported to be 10 ft.

The pumping equipment presently installed consists of a 30-hp 1760 rpm U. S. electric motor, a 10-in., 4-stage Layne vertical turbine pump set at 50 ft, rated at 540 gpm at about 174 ft TDH, and has 50 ft of 8-in. column pipe. A l0-rft section of 6-in. suction pipe is attached to the pump intake. The well is equipped with 50 ft of airline.

A partial analysis of a sample (Lab. No. 210473) collected during the initial production test, after pumping for 24 hr at 602 gpm, showed the water to have a hardness of 855 mg/l, total dissolved minerals of 1094 mg/l, and an iron content of 2.2 mg/1.

WELL NO. 14 was completed in 1981 to a depth of 1390 ft by the Layne-Western Co., Aurora. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer). The well also penetrates the upper part of the Eau Claire Formation. The well is located about 260 ft north of Devon Ave. and 200 ft east of Route 53, approximately 260 ft N and 1350 ft W of the SE corner of Section 31, T41N, R11E, Cook County. The land surface elevation at the well is approximately 700 ft.

A 26-in. diameter hole was drilled to a depth of 116.3 ft, reduced to 25.2 in. between 116.3 and 438 ft, reduced to 21.2 in. between 438 and 1160 ft, and finished 17.2 in. in diameter from 1160 to 1390 ft. The well is cased with 26-in. OD steel pipe from land surface to a depth of 116.3 ft and 22-in. OD steel pipe from about 2 ft above land surface to a depth of 438 ft (cemented in).

On May 27, 1981, this well was shot with 1000 lb of 100 percent nitroglycerin gelatin as follows: 57 qt from 1370 to 1351 ft, 43 qt from 1351 to 1336 ft, 60 qt from 1336 to 1312 ft, 60 qt from 1312 to 1288 ft, 60 qt from 1288 to 1264 ft, and 60 qt from 1264 to 1240 ft.

A production test was conducted by the driller on June 8-9, 1981. After 24 hr of pumping at rates ranging from 666 to 1218 gpm, the final drawdown was 192 ft from a nonpumping water level of 743 ft below land surface. Ten min after pumping was stopped, the water level had recovered to 888 ft.

A drillers log of Well No. 14 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Clay - muddy - gray and brown	46	46
Large gravel and clay - hardpan (hard)	7	53
Clay - yellow - very little gravel	13	66
Large gravel and clay - hardpan	17	83
Silty sand and clay and gravel	11	94
Sand and gravel	15	109
Broken - rotten limestone	7	116
Gray - brown lime - hard	75	191
Green - gray brown shale	14	205
Broken lime - little streaks shale	56	261
Limestone (hole caving a little)	88	349
Shale - blue, gray - brown - lime shells	64	413
Limestone - little shale at 422 ft - sandy brown lime	26	439
Brown lime - picked up some water from 580 to 600 ft	195	634
Brown limestone	99	733
St. Peter - white sandstone	173	906
Sandy lime - little red shale (very little)	46	952
Sandy lime - little red and gray shale	10	962
Sandy lime - little green shale	2	964
Sandy lime - little gray, green and red shale	8	972
Gray - brown limestone	27	999
Crevices - soft - chert - broken formation (hole "drank" water at 1000 to 1002 ft)	3	1002
Broken formation - crevices - lime	119	1121
Sandy - reddish brown lime (little red shale)	12	1133
Green - gray shale - dark sand - little lime and chert	69	1202
Hard reddish sandstone	20	1222
Hard white sandstone	8	1230
Soft white sandstone	20	1250
Medium soft white fine sandstone	38	1288
Medium soft white sandstone	44	1332
Soft white sandstone	38	1370
Mixed gray lime and shale	20	1390

A second production test was conducted by the driller on June 24, 1981. After 8 hr of pumping at rates ranging from 633 to 1235 gpm, the final drawdown was 144 ft from a nonpumping water level of 745 ft below land surface.

A third production test was conducted by the driller on July 9-10, 1981. After 15.3 hr of pumping at rates ranging from 979 to 1356 gpm, the final drawdown was 146 ft from a nonpumping water level of 776 ft below land surface.

A fourth production test was conducted by the driller on July 28-29, 1981. After 30.2 hr of pumping at rates ranging from 887 to 1334 gpm, the drawdown was 132 ft from a nonpumping water level of 800 ft below land surface. Pumping was continued for 1 hr at a rate of 979 gpm with a final drawdown of 125 ft.

A fifth production test was conducted by the driller on August 13-14, 1981. After 28.3 hr of pumping at

rates ranging from 962 to 1313 gpm, the drawdown was 140 ft from a nonpumping water level of 798 ft below land surface. Pumping was continued for 2.5 hr at a rate of 1025 gpm with a final drawdown of 125 ft. Four min after pumping was stopped, the water level had recovered to 874 ft.

On June 22, 1984, the nonpumping water level was reported to be 840 ft.

The pumping equipment presently installed is a 13-in., 16-stage Byron Jackson submersible pump set at 1150 ft, rated at 1000 gpm at about 1125 ft TDH, and powered by a 400-hp 1777 rpm Byron Jackson electric motor (Serial No. 16-451-4-2DD). The well is equipped with 1150 ft of airline.

A partial analysis of a sample (Lab. No. 216038) collected August 14, 1981, after pumping for 30 hr at rates of 962 to 1313 gpm, showed the water to have a hardness of 373 mg/1, total dissolved minerals of 690 mg/1, and an iron content of <0.05 mg/1.

ELMHURST

The city of Elmhurst (44,251) installed a public water supply in 1890. The water system was owned and operated by the Elmhurst Spring Water Co. from 1890 to 1920, when its franchise expired and the city developed its own supply. Eight wells (Nos. 1, 3, 4, 5, 6, 7, 9, and 10) are in use and another well (No. 8) is available for emergency use. This supply is also cross connected with the Bensenville, Berkeley, Citizens Country Club Highlands Subdivision, Oak Brook, and Villa Park water supplies. In 1950 there were about 5700 services, all metered; the average and maximum pumpages were 2,000,000 and 3,000,000 gpd, respectively. In 1984 there were 13,720 services, all metered; the average pumpage was 4,816,200 gpd. The water is chlorinated; in addition, the water from Well No. 8 is softened.

Initially, water was obtained from a spring, known as Mammoth Spring, located on the east side of Spring Road about 1 mile south of the city, approximately 3700 ft N and 3000 ft W of the SE corner of Section 23, T39N, R11E. This spring, owned and operated by the Elmhurst Spring Water Co., was abandoned in 1920 when it became insufficient to meet the growing public demand.

WELL NO. 1 was constructed in September 1915 to a depth of 958 ft by the Ohio Drilling Co., Massillon, Ohio, and deepened in February 1940 to a reported depth of 1480 ft (cleaned to 1483 ft in 1951 and measured at 1423 ft in 1955) by the J. P. Miller Artesian Well Co., Brookfield. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer). The well also penetrates the upper part of the Eau Claire Formation. The well is located near the main pumping station on Schiller St. one-half block east of York Road, approximately 2000 ft S and 200 ft E of the NW corner of Section 1, T39N, R11E. The land surface elevation at the well is approximately 685 ft.

Originally, an 18-in. diameter hole was drilled to a depth of 65 ft, reduced to 17 in. between 65 and 290 ft, and finished 13 in. in diameter from 290 to 958 ft. The well was originally cased with 18-in. pipe from the bottom of a 10-ft deep pit to a depth of 65 ft and a 10-in. ID liner from 528.7 ft to a depth of 621.7 ft. In 1936, the 10-in. liner was removed. After deepening, the hole was reported to be 17 in. in diameter from the bottom of a 10-ft deep pit to a depth of 297 ft, 15.2 in. between 297 and 466 ft, 13 in. between 466 and 1244 ft, and 10.5 in. from 1244 to 1480 ft. The well was then cased with 18-in. OD pipe from land surface to a depth of 65 ft, 13-in. OD steel pipe from about 2 ft above land surface to a depth of 466 ft, and a 10-in. steel liner from 883 ft to a depth of 1244 ft. In 1951, the 13-in. pipe was pulled, repaired, and reported to be replaced with the bottom set at 465 ft (cemented in).

On September 2, 1915, after pumping at a rate of 325 gpm, the drawdown was 8.6 ft from a nonpumping water level of 33.1 ft below land surface. The original 10-in. liner was then installed, and on September 20, 1915, after 8.7 hr of pumping at a rate of 410 gpm, the drawdown was 9.1 ft from a nonpumping water level of 25.1 ft.

Nonpumping water levels were reported to be 35 ft in 1918, and 62 ft below land surface on January 14, 1924.

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

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
Glacial Drift		
"Soil, sand, and gravel"	68	68
SILURIAN SYSTEM		
Niagaran and Alexandrian Series		
Dolomite, light gray, fine	192	260
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Shale, dolomitic, gray-green, pyritic	55	315
Dolomite, argillaceous, gray; shale	30	345
Shale, dolomitic, brown/gray	105	450
Champlainian Series		
Galena Group		
Kimmswick Subgroup		
Dolomite, white/buff, medium; calcite	230	680
Decorah Subgroup		
Limestone, buff/light gray; shale, gray	35	715.
Platteville Group		
Dolomite, buff/light gray, fine	75	790
Ancell Group		
Glenwood Formation		
Sandstone, clear; dolomite, buff; shale	30	820
St. Peter Sandstone		
Sandstone, yellow, very fine/coarse	65	885
Canadian Series		
Prairie du Chien Group		
Oneota Dolomite		
Dolomite, white/buff, fine; cherty	73	958
Dolomite, light gray/pink; sandstone	32	990
Dolomite, cherty, buff/brown	40	1030
CAMBRIAN SYSTEM		
Croixan Series		
Eminence Dolomite		
Dolomite, partly sandy, gray/buff, fine	60	1090
Potosi Dolomite		
Dolomite, gray, buff, fine	75	1165
Franconia Formation		
Sandstone; grading to dolomite	30	1195
Shale, sandy, green; sandstone at base	57	1252
Ironton-Galesville Sandstone		
Sandstone, partly dolomitic, incoherent	98	1350
Sandstone; dolomite, sandy at base	95	1445
Eau Claire Formation		
Shale, sandy, silty, gray, micaceous	35	1480

In 1936, this well was rehabilitated after the production rate had decreased to 250 gpm. The 10-in. liner was removed and the nonpumping water level immediately dropped from 80 to 265 ft. A new pump was then installed and the production rate was reported to be 600 gpm.

In 1940, this well was deepened to a depth of 1480 ft and reamed between the depths of 297 and 466 ft by the J. P. Miller Artesian Well Co.

In October 1942, the nonpumping water level was reported to be 286 ft below the pump base.

On November 21, 1944, after an 8.9-hr idle period, the well reportedly produced 625 gpm for 3 hr with a drawdown of 51 ft from a nonpumping water level of 364 ft below the pump base.

In April 1947, the depth of the well was sounded at 1480 ft.

Nonpumping water levels were reported to be 364.6 ft below the pump base (Well No. 2 idle) on May 9, 1947; 374 ft on May 13, 1947; and 368 ft in October 1950.

In March 1951, the nonpumping water level was reported to be 385.6 ft. This well was then rehabilitated by the J. P. Miller Artesian Well Co. Holes were found in the column pipe and casing. The 13-in. casing was pulled, repaired, and replaced to a reported depth of 465 ft (cemented in). The well was also cleaned to a depth of 1483 ft. After this work, in July 1951, the nonpumping water level was reported to be 379.5 ft.

From September to November 1955, the well was rehabilitated by the J. P. Miller Artesian Well Co. On September 15, 1955, the nonpumping water level was reported to be 503 ft and the well was measured at 1423 ft. The well was shot (200 lb each of nitrogel) between the depths of 1425 to 1435 ft and 1415 to 1425 ft and then cleaned out.

Nonpumping water levels were reported to be 456 ft in March 1956; 538 ft on July 26, 1957; 438 ft in May 1958; 685 ft on August 23, 1963; 665 ft on May 14, 1965; 670 ft in December 1966; 710 ft in November 1967; 740 ft in July 1969; 739 ft in February 1971; 771 ft in January 1972; and 815 ft in December 1973.

The pumping equipment presently installed is a Peerless turbine pump set at 1050 ft, rated at 1000 gpm, and powered by a 300-hp 1800 rpm U. S. electric motor.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. C004833) of a sample collected June 6, 1979, after pumping for 3 hr at 1025 gpm, showed the water to have a hardness of 338 mg/1, total dissolved minerals of 530 mg/1, and an iron content of 0.1 mg/1.

WELL NO. 2 was constructed in May 1919 to a depth of 1398 ft by F. M. Gray, Jr., Milwaukee, Wis.,

and deepened in 1927 to a reported depth of 2227 ft (reported to be 2194 ft in 1944, 1930 ft in 1955, and filled up to 1677 ft in 1961) by the S. B. Geiger & Co., Chicago. This well was abandoned in 1963. The water-yielding unit in this well after it was filled in to 1677 ft is the Midwest Aquigroup (Cambrian-Ordovician aquifer). The well also penetrates the upper part of the Eau Claire Formation. The well is located adjacent to the main pumping station about 100 ft east of Well No. 1, approximately 2000 ft S and 300 ft E of the NW corner of Section 1, T39N, R11E. The land surface elevation at the well is approximately 685 ft.

A sample study log of Well No. 2 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
Till, gray, limey (hardpan)	25	25
Gravel, coarse pebbles mainly limestone	36	61
SILURIAN SYSTEM		
Niagaran and Alexandrian Series		
Limestone, magnesian, gray, with flint, hard	10	71
Limestone, magnesian, gray, hard	89	160
Limestone, magnesian, pink	10	170
Limestone, magnesian, gray	80	250
Limestone, magnesian, gray and blue mixture	5	255
Limestone, magnesian, gray and shale blue, limey	23	278
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Shale, blue, limey	50	328
Shale, blue, limey and limestone, magnesian, gray	52	380
Shale, blue, limey	80	460
Champlainian Series		
Galena and Platteville Groups		
Limestone, magnesian, gray	80	540
Shale, blue, limey	2	542
Limestone, magnesian, shaly, blue and gray mixed	8	550
Limestone, magnesian, gray, with little blue at bottom	237	787
Ancell Group		
St. Peter Sandstone		
Sandstone, medium to fine, white	98	885
Shale, sandy, greenish gray	2	887
Conglomerate, pebbles of limestone in gray sand	5	892
Canadian Series		
Prairie du Chien Group		
Oneota Dolomite		
Limestone, magnesian, pinkish gray with bluish green and red shale seams	148	1040
CAMBRIAN SYSTEM		
Croixan Series		
Eminence-Potosi Dolomite		
Limestone, magnesian, pinkish gray to gray	40	1080
Limestone, magnesian, pink; chips of fine, green, limey sandstone	30	1110
Limestone, magnesian, light pink and gray	50	1160
Franconia Formation		
Sandstone, very fine, pink and green sand and seams of green shale, very limey except shale	30	1190
Sandstone, very fine, gray to green, green sand and seams of green and red shale; very limey except shale	50	1240
Ironton-Galesville Sandstone		
Sandstone, medium to fine, gray, very limey, breaks in chips	10	1250
Sandstone, very fine, gray; shale, gray	10	1260
Sandstone, very fine to medium gray to green, very limey; shale green	10	1270
Sandstone, medium to fine, gray to white, in part limey	60	1330
Sandstone, fine, pink, limey	10	1340
Sandstone, medium to fine, yellowish gray, limey at top	50	1390
Eau Claire Formation		
Marl, gray	8	1398
Eau Claire Formation and Mt. Simon Sandstone		
No record	829	2227

Originally, a 16-in. diameter hole was drilled to a depth of 278 ft, reduced to 12 in. between 278 and 600 ft, reduced to 10 in. between 600 and 1000 ft, and finished 8 in. in diameter from 1000 to 1398 ft. The original casing record is unknown. A geophysical log made in 1944 indicated the well to be cased with 16-in. OD pipe from within a pit to a depth of 61 ft and with liners from 258 to 463 ft and from 934 to 974 ft. In 1935, a 14-in. liner was reported to have been installed but the length and position were not recorded. After work in 1950, the well was reported to be cased with 16-in. pipe from land surface to a depth of 67 ft, 13-in. pipe from land surface to a depth of 465 ft, and a 10-in. liner from 932 ft to a depth of 1250 ft.

On January 14, 1924, the nonpumping water level was reported to be 62 ft below land surface.

After deepening in 1927, the nonpumping water level was reported to be 72 ft. The well was pumped for 10 days at an average discharge of 1000 gpm. The nonpumping water level was then reported to be about 135 ft.

In 1935, after the production rate had decreased to 550 gpm, the well was reconditioned. A bridge was found at about 1300 ft and removed. A 14-in. liner was installed and the well was shot. The production was then reported to be 1000 gpm.

On August 1, 1944, the nonpumping water level was reported to be 259 ft.

On November 21, 1944, after 3 hr of pumping at a rate of 700 gpm, the drawdown was 109 ft from a nonpumping water level of 315 ft.

In November 1952, the nonpumping water level was reported to be 323 ft.

In November 1955, this well was shot several times by the J. P. Miller Artesian Well Co., Brookfield. The nonpumping water level was then reported to be 495 ft and the well was cleaned to a depth of 1930 ft.

In March 1956, the nonpumping water level was reported to be 385 ft.

In 1961, this well was filled to 1677 ft by the J. P. Miller Artesian Well Co. to seal off high chloride water.

Nonpumping water levels were reported to be 548 ft in December 1961, and 510 ft in December 1962.

A partial analysis of a sample (Lab. No. 101926) collected November 21, 1944, after pumping for 1 hr, showed the water to have a hardness of 387 mg/l, total dissolved minerals of 1031 mg/1, and an iron content of 0.3 mg/l.

OLD WELL NO. 3 (originally known as Well No. 3) was constructed in 1925 to a depth of 2077 ft by the S. B. Geiger & Co., Chicago, and deepened in 1933 to a reported depth of 2221 ft by the W. L. Thome Co., Des Plaines. This well was abandoned in 1940 and sealed prior to 1950. The water-yielding units in this well were the Upper Bedrock Aquigroup (Silurian System), the Midwest Aquigroup (Cambrian-Ordovician aquifer), and the Basal Bedrock Aquigroup (Elmhurst-Mt. Simon aquifer). The well was located about 80 ft east of Larch Ave. and 350 ft north of the Chicago & Northwestern RR, approximately 2000 ft S and 750 ft W of the NE corner of Section 2, T39N, R11E. The land surface elevation at the well is approximately 690 ft.

Originally, an 18-in. diameter hole was drilled to a depth of 79 ft, reduced to 17 in. between 79 and 455 ft, reduced to 12 in. between 455 and 1110 ft, and finished 10 in. in diameter from 1110 to 2077 ft. The well was cased with 18-in. OD pipe from land surface to a depth of 79 ft, 16-in. OD liner from 226.8 ft to a depth of 455 ft, and a 10-in. ID liner from 947 ft to a depth of 1110 ft. Originally, a 6-in. perforated liner was placed in the lower part of the well but was removed in 1933 when the well was deepened to a depth of 2221 ft.

On April 27, 1926, after pumping at a rate of 800 gpm, the drawdown was 242 ft from a nonpumping water level of 138 ft.

In 1927, the production rate had decreased to 400 gpm, and by 1933, it was reported to be 150 gpm.

A sample study log of Old Well No. 3 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
Soil, black and clay	40	40
Sand and gravel	39	79
SILURIAN SYSTEM		
Niagaran and Alexandrian Series		
Limestone	146	225
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Shale, blue	90	315
Limestone	10	325
Shale, brown	125	450
Champlainian Series		
Galena and Platteville Groups		
Limestone, brown	150	600
Limestone, gray	200	800
Ancell Group		
Glenwood Formation		
St. Peter, brown	30	830
St. Peter Sandstone		
St. Peter, white	159	989
Limestone, white	4	993
Shale, blue	37	1030
Canadian Series		
Prairie du Chien Group		
Oneota Dolomite		
Limestone, brown	70	1100
CAMBRIAN SYSTEM		
Croixan Series		
Eminence-Potosi Dolomite		
Shale, blue	10	1110
Limestone, white	150	1260
Franconia Formation		
Sand, white	20	1280
Sand, white, hard	90	1370
Ironton-Galesville Sandstone		
Sand, white, soft	60	1430
Sand, white	70	1500
Eau Claire Formation		
Limestone, black	285	1785
Sand, white	5	1790
Lime, gray	10	1800
Sand	50	1850
Limestone	10	I860
Mt. Simon Sandstone		
Sand	180	2040
Sand, red	37	2077
No record	144	2221

In 1933, after the well was out of use for several years, it was rehabilitated and deepened by the W. L. Thome Co. A bridge and a 6-in. perforated liner were removed. The well was shot with 10 charges of nitrogelatin (about 125 lb each) at depths of 1300, 1400, 1440, 1460, 1840, 1920, 1975, and 2030 ft, and two charges at 2220 ft. The well was again placed in service with a production rate of 950 to 1000 gpm.

By 1940, the production rate had dropped off again and repairs were attempted. Because of many difficulties, the well was abandoned.

A mineral analysis of a sample (Lab. No. 78500) collected August 3, 1936, showed the water to have a hardness of 273 mg/l, total dissolved minerals of 635 mg/l, and an iron content of 0.2 mg/1.

WELL NO. 3 (originally known as Well No. 3A) was completed in April 1943 to a depth of 1502 ft by the J. P. Miller Artesian Well Co., Brookfield. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer) except for the Glenwood-St. Peter Sandstone. The well is located at 127 Larch Ave. on the east side of the street about 30 ft west of Old Well No. 3, approximately 2000 ft S and 780 ft W of the NE corner of Section 2, T39N, R11E. The land surface elevation at the well is approximately 690 ft.

A drillers log of Well No. 3 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Glacial drift	79	79
Niagaran limestone	147	226
Maquoketa shale	224	450
Galena-Platteville limestone	350	800
St. Peter sandstone	180	980
Prairie du Chien limestone	280	1260
Galesville sandstone	242	1502

A 23.2-in. diameter hole was drilled to a depth of 87 ft, reduced to 19.2 in. between 87 and 460 ft, reduced to 15.2 in. between 460 and 1258 ft, and finished 12.2 in. in diameter from 1258 to 1502 ft. The well is cased with 24-in. OD drive pipe from land surface to a depth of 78.5 ft, 20-in. OD steel pipe from land surface to a depth of 87 ft (cemented in), 16-in. OD pipe from land surface to a depth of 460 ft (backfilled with bentonite), and a 13-in. OD liner from 743 ft to a depth of 1258 ft.

Upon completion, this well was shot with nitrogelatin as follows: 300 lb at 1420 ft, 200 lb at 1400 ft, 200 lb at 1380 ft, 200 lb at 1370 ft, 350 lb at 1360 ft, 300 lb at 1355 ft, 200 lb at 1350 ft, and 300 lb at 1340 ft.

On June 22, 1943, the nonpumping water level was reported to be 346 ft.

Production tests were conducted by representatives of the city and the State Water Survey. On June 24, 1943, after 6.8 hr of pumping at rates ranging from 1170 to 903 gpm, the drawdown was 86.5 ft from a nonpumping water level of 356.5 ft. Pumping was continued for 3 hr at rates of 1095 to 1085 gpm with a final drawdown of 102.0 ft. Eight min after pumping was stopped, the water level had recovered to 389.5 ft. On June 25, after a 12.3-hr idle period, the well reportedly produced at rates of 1150 to 1098 gpm for 7.2 hr with a final drawdown of 95.5 ft from a nonpumping water level of 358.0 ft.

On October 29, 1943, after a 17.5-hr idle period, the well reportedly produced 950 gpm for 7 hr with a drawdown of 84 ft from a nonpumping water level of 380 ft below the pump base.

In March 1950, this well was cleaned out by the J. P. Miller Artesian Well Co.

Nonpumping water levels were reported to be 391 ft on April 21, 1950; 440 ft in June 1954; 500 ft in March 1956; 528 ft on August 20, 1957; 542 ft in May 1958; 590 ft in December 1961; 628 ft in December 1962; 660 ft on December 6, 1963; 680 ft on November 6, 1964; 691 ft on November 26, 1965; 700 ft in December 1966; and 860 ft in February 1976.

The pumping equipment presently installed is a 12-in., 21-stage Peerless turbine pump set at 1010 ft, rated at 1000 gpm, and powered by a 400-hp 1800 rpm U. S. electric motor.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. C002668) of a sample collected December 6, 1978, after pumping for 1 hr, showed the water to have a hardness of 257 mg/1, total dissolved minerals of 416 mg/1, and an iron content of 0.2 mg/1.

WELL NO. 4, open to the Midwest Aquigroup (Cambrian-Ordovician aquifer), was completed in 1927 to a depth of 2219 ft (cleaned to a depth of 1545 ft in February 1947, plugged in 1948 to a depth of 1400 ft, and reported to be 1370 ft in 1962) by the S. B. Geiger & Co., Chicago. The well is located on the west side of Scott St. south of St. Charles Road, approximately 100 ft S and 550 ft W of the NE corner of Section 10, T39N, R11E. The land surface elevation at the well is 669.48 ft.

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

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
Surface	55	55
SILURIAN SYSTEM		
Niagaran and Alexandrian Series		
Limestone	110	165
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Shale	225	390
Champlainian Series		
Galena and Platteville Groups		
Limestone	335	725
Ancell Group		
St. Peter Sandstone		
Sandstone *	240	965
Shale	60	1025
CAMBRIAN SYSTEM		
Croixan Series		
Eminence-Potosi Dolomite		
Limestone, sand, hard	50	1075
Break, red	25	1100
Cave	30	1130
Limestone, fairly hard, gray	45	1175
Franconia Formation		
Limestone, sandy	100	1275
Ironton-Galesville Sandstone		
Sand, white	130	1405
Eau Claire Formation		
Shale, blue, break	80	1485
Limestone, hard, brown	10	1495
Shale, soft, brown	25	1520
Limestone, very hard, brown	25	1545
Limestone, firm, gray	15	1560
Limestone, very hard, brown	20	1580
Shale; green	3	1583
Limestone, hard, brown	22	1605
Limestone, gray, sandy	45	1650
Sand, firm, gray	35	1685
Mt. Simon Sandstone		
Sand, firm, white	40	1725
Slate, break	3	1728
Sand, firm, white	142	1870
Sand, firm, red	170	2040
Sand, gray, firm	60	2100
Sand	80	2180
Sand, soft, white, water rose 5 ft	25	2205

The well was originally cased with 22-in. OD pipe from land surface to a depth of 65 ft, 18-in. OD pipe from land surface to a depth of 230 ft, and a 14-in. liner from 960 ft to a depth of 1130 ft. Below the casing, the hole was finished 12 in. in diameter to the bottom. After rehabilitation in 1948, the well was reported to be cased with 22-in. OD pipe from land surface to a depth of 65 ft, 12-in. ID Byers wrought iron pipe from land surface to a depth of 700 ft, and 10-in. Byers wrought iron pipe from 700 ft to a depth of 1226 ft. Below the casing, the hole was 13 in. in diameter to 1400 ft. After rehabilitation in 1962, the hole was reported to be 21 in. in diameter from land surface to a depth of 415.7 ft, 20.5 in. between 415.7 and 508 ft, 17.2 in. between 508 and 1137 ft, and 14 in. between 1137 and 1370 ft. The casing was reported to be 22-in. pipe from land surface to a depth of 65 ft, 16-in. OD pipe from land surface to a depth of 415.8 ft (cemented in), and a 14-in. liner from 1020 ft to a depth of 1137 ft.

Upon completion, this well was shot with nitroglycerin as follows: 800 lb at a depth of 2219 ft, 350 lb at 2100 ft, and 350 lb at an unrecorded higher elevation.

On May 1, 1928, the well reportedly produced 1310 gpm for 1.5 hr with a drawdown of 185 ft from a nonpumping water level of 135 ft below land surface.

In 1937 and 1938, in an attempt to improve the quality of the water, the 14-in. liner was removed and the well was shot at depths of 1810, 1360, and 1300 ft. The well filled with sand to 2130 ft. Concrete was placed in the well to a depth of 2100 ft. When no improvement was observed, the well was shot at depths of 900 and 800 ft. The well then became bridged at 900 ft and the nonpumping water level was then reported to be 85 ft below land surface. Upon breaking this bridge, another bridge was found at 1200 ft and the nonpumping water level was then reported to be 325 ft. Upon breaking this bridge, the nonpumping water level was reported to be 255 ft. The hole was then filled with Lumnite concrete between the depths of 2025 and 1985 ft and the pump was reinstalled. Tests showed that the salt content increased with continued pumping. A third plug was then placed between the depths of 1560 and 1500 ft. Pumping was resumed and after 3 days of intermittent pumping, the salt content had increased again.

In February 1947, this well was cleaned to a depth of 1545 ft.

On May 9, 1947, the nonpumping water level was reported to be 352 ft.

In June 1948, this well was rehabilitated and recased by the J. P. Miller Artesian Well Co., Brookfield. The well was plugged at a depth of 1400 ft and shot with 318 lb of 100 percent nitrogelatin between the depths of 1369 and 1382 ft. On June 9, 1948, after 2.2 hr of pumping at a rate of 620 gpm, the drawdown was 50 ft from a nonpumping water level of 365 ft below the pump base.

On March 6, 1953, after a 16.5-hr idle period, the well reportedly produced 1000 gpm for 2.1 hr with a

drawdown of 77.5 ft from a nonpumping water level of 410.0 ft below the pump base.

Nonpumping water levels were reported to be 486 ft in March 1956; 504 ft on July 26, 1957; 506 ft in May 1958; 540 ft on September 20, 1958; 564 ft on July 28, 1959; and 560 ft in December 1961.

In 1961 and 1962, this well was rehabilitated by the J. P. Miller Artesian Well Co. On January 16, 1962, this well was shot twice with each shot consisting of 6 lb of 100 percent dynamite and 250 lb of 80 percent nitro. The first shot was between the depths of 1370 to 1380 ft and the second shot was between 1325 to 1335 ft. The depth of the well was then reported to be 1370 ft. On April 27, 1962, the well reportedly produced 1110 gpm for 6 hr with a drawdown of 110 ft from a nonpumping water level of 598 ft below land surface.

Nonpumping water levels were reported to be 610 ft in December 1962; 606 ft on August 23, 1963; 622 ft on November 27, 1964; 638 ft on November 26, 1965; 648 ft in December 1966; 660 ft in November 1967; 715 ft in February 1971; 733 ft in January 1972; 738 ft in February 1973; 762 ft in October 1975; 763 ft in December 1975; 820 ft in December 1976; and 800 ft in May 1977.

The pumping equipment presently installed is a 14-in., 11-stage Peerless turbine pump set at 1080 ft, rated at 1200 gpm, and powered by a 400-hp 1760 rpm U. S. electric motor.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B23145) of a sample collected February 1, 1983, showed the water to have a hardness of 215 mg/1, total dissolved minerals of 437 mg/1, and an iron content of 0.09 mg/1.

WELL NO. 5 was completed in May 1940 to a depth of 1480 ft (cleaned in 1955 to 1474 ft) by the J. P. Miller Artesian Well Co., Brookfield. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer). The well also penetrates the upper part of the Eau Claire Formation. The well is located on the north side of the Vallette St. fire station just east of York Road, approximately 2500 ft S and 255 ft E of the NW corner of Section 12, T39N, R11E. The land surface elevation at the well is 676.88 ft.

A 30-in. diameter hole was drilled to a depth of 16 ft, reduced to 24 in. between 16 and 82.3 ft, reduced to 23 in. between 82.3 and 102 ft, reduced to 19.5 in. between 102 and 446.6 ft, reduced to 15 in. between 446.6 and 1205 ft, and finished 12.2 in. in diameter from 1205 to 1480 ft. The well is cased with 24-in. OD drive pipe from land surface to a depth of 82 ft, 20-in. OD pipe from land surface to a depth of 102 ft (cemented in from 82.3 to 102 ft), 16-in. pipe from land surface to a depth of 446 ft, and a 12-in. OD liner from 871 ft to a depth of 1235.2 ft.

Upon completion, this well was shot with 1200 lb of 100 percent gelatin with 3 sticks of 50 percent nitro primer as follows: 325 lb at 1410 ft, 245 lb at 1385 ft, 220 lb at 1355 ft, 210 lb at 1335 ft, and 200 lb at 1310 ft.

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

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
"Clay, yellow and blue, quicksand"	14	14
"Gravel"	2	16
"Glacial drift"	65	81
SILURIAN SYSTEM		
Niagaran and Alexandrian Series		
Dolomites	124	205
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Shale, some dolomite	227	432
Champlainian Series		
Galena and Platteville Groups		
Dolomite and limestone	320	752
Ancell Group		
Glenwood Formation		
Sandstone and dolomite	3	755
St. Peter Sandstone		
Sandstone	153	908
Sandstone, shale, and chert	42	950
Canadian Series		
Prairie du Chien Group		
Oneota Dolomite		
Dolomite	132	1082
CAMBRIAN SYSTEM		
Croixan Series		
Eminence-Potosi Dolomite		
Dolomite	-76	1158
Franconia Formation		
Sandstone, some dolomite	82	1240
Ironton-Galesville Sandstone		
Sandstone	198	1438
Eau Claire Formation		
Shale and sandstone	42	1480

In September 1940, after pumping at a rate of 750 gpm, the drawdown was 90 ft from a nonpumping water level of 280 ft.

On April 12, 1941, the well reportedly produced 980 to 1000 gpm with a drawdown of 102 ft from a nonpumping water level of 278 ft.

In October 1942, the nonpumping water level was reported to be 282 ft below the pump base.

On May 4, 1944, after a 20-hr idle period, the well reportedly produced 920 gpm for 2 hr with a drawdown of 101 ft from a nonpumping water level of 353 ft below the pump base.

Nonpumping water levels were reported to be 356 ft in 1947, 438 ft in April 1954, and 448 ft in May 1954.

From October to December 1955, this well was rehabilitated by the J. P. Miller Artesian Well Co. Three shots (256 lb each of nitrogel and 8 lb each of 60 percent dynamite primer) were exploded between the depths of 1425 to 1415 ft, 1415 to 1405, and 1425 to 1415 ft. The well was then cleaned out to a depth of 1474 ft and the nonpumping water level was reported to be 495 ft.

Nonpumping water levels were reported to be 490 ft in March 1956; 627 ft on May 28, 1962; 657 ft on April 30, 1963; 650 ft on August 6, 1964; 680 ft in December 1966; 697 ft in November 1967; 674 ft in July 1969; 674 ft in February 1971; 879 ft in January 1972; and 855 ft in February 1973.

The pumping equipment presently installed is an 11.5-in., 14-stage Peerless turbine pump (No. 11501) set at 950 ft, rated at 1000 gpm, and powered by a 500-hp 1775 rpm Ideal electric motor. A 22-ft section of 10-in. suction pipe is attached to the pump intake.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B21945) of a sample collected October 29, 1980, after pumping for 24 hr at 969 gpm, showed the water to have a hardness of 286 mg/l, total dissolved minerals of 435 mg/l, and an iron content of 0.18 mg/1.

WELL NO. 6 was completed in October 1953 to a depth of 1476 ft by the J. P. Miller Artesian Well Co., Brookfield. This well is equipped with a continuous water level recorder to study the drop in water levels. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer). The well also penetrates the upper part of the Eau Claire Formation. The well is located at the northwest corner of Armitage Ave. and Walnut St., approximately 2590 ft S and 2430 ft E of the NW corner of Section 35, T40N, R11E. The land surface elevation at the well is 703.3 ft.

A 28-in. diameter hole was drilled to a depth of 111 ft, reduced to 27 in. between 111 and 485 ft, reduced to 19.2 in. between 485 and 1185 ft, and finished 15.2 in. in diameter from 1185 to 1476 ft. The well is cased with 28-in. OD pipe from about 2 ft above land surface to a depth of 111 ft and 20-in. OD pipe from about 2 ft above land surface to a depth of 485 ft (cemented in).

A drillers log of Well No. 6 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Clay	15	15
Sand, gravel and mud	95	110
Lime	152	262
Shale	61	323
Lime	40	363
Shale	19	382
Lime	18	400
Shale	57	457
Lime, brown	323	780
St. Peter sand	210	990
Shale	8	998
Lime	141	1139
Red rock	3	1142
Lime crevices	33	1175
Lime	14	1189
Red rock	37	1226
Blue sandy shale	54	1280
Sand	160	1440
Lime, brown	11	1451
Lime, very hard	6	1457
Shale	16	1473
Shale, green	3	1476

Upon completion, this well was shot with 4 charges (342 lb of 100 percent nitrogel each and 7 lb of 60 percent dynamite primer each) between the depths of 1417 to 1407 ft, 1400 to 1390 ft, 1382 to 1372 ft, and 1370 to 1360 ft.

A production test was conducted on November 2-3, 1953, by representatives of the driller and the State Water Survey. After 2.2 hr of pumping at rates ranging from 505 to 570 gpm, the drawdown was 26 ft from a nonpumping water level of 464 ft below land surface. Pumping was continued for 2 hr at a rate of 705 gpm with a drawdown of 37 ft. Pumping was continued for 9.9 hr at rates ranging from 920 to 1000 gpm with a drawdown of 64 ft. Pumping was continued for 6.8 hr at a rate of 800 gpm with a drawdown of 56 ft. After an additional 4.3 hr of pumping at rates ranging from 1350 to 920 gpm, the final drawdown was 83 ft. Eighteen min after pumping was stopped, the water level had recovered to 498 ft.

Nonpumping water levels were reported to be 556 ft in March 1956; 527 ft on July 26, 1957; 542 ft in May 1958; 572 ft below land surface on January 4, 1960; 599 ft in December 1961; 626 ft in December 1962; 635 ft on August 23, 1963; 658 ft on July 2, 1964; 681 ft on November 12, 1965; 685 ft in December 1966; 710 ft below land surface on August 25, 1967; 690 ft in

November 1967; 730 ft in July 1969; 740 ft in February 1971; 760 ft in February 1973; 815 ft in October 1977; and 795 ft in November 1978.

Monthly measurements of the nonpumping water level during the period July 1957 to December 1978 ranged from about 522 to 865 ft below land surface.

The pumping equipment presently installed consists of a 500-hp 1778 rpm Ideal electric motor, a Peerless turbine pump set at 1040 ft, rated at 1350 gpm, and has 1040 ft of 10-in. column pipe. The well is equipped with 1040 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B004364) of a sample collected August 3, 1982, after pumping for 10 hr at 1140 gpm, showed the water to have a hardness of 277 mg/l, total dissolved minerals of 453 mg/l, and an iron content of 0.05 mg/1.

WELL NO. 7 (originally known as Well No. 7A), open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in July 1959 to a depth of 290 ft by the J. P. Miller Artesian Well Co., Brookfield. This well is used only during the summer months. The well is located about 50 ft southeast of the Butterfield Park elevated tank at the east end of Van Buren St., approximately 4075 ft N and 1825 ft W of the SE corner of Section 13, T39N, R11E. The land surface elevation at the well is approximately 705 ft.

A drillers log of Well No. 7 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift	84	84
Niagaran limestone	206	290

A 14-in. diameter hole was drilled to a depth of 95 ft and finished 10 in. in diameter from 95 to 290 ft. The well is cased with 14-in. OD drive pipe from about 1 ft above land surface to a depth of 85 ft and 10-in. OD pipe from about 1 ft above land surface to a depth of 95 ft (cemented in).

Upon completion, after treating with 3000 gal of acid, the well reportedly produced 335 gpm with a drawdown of 86 ft from a nonpumping water level of 74 ft.

Nonpumping water levels were reported to be 48 ft in December 1962; 50 ft in December 1963; 51 ft on November 26, 1964; and 50 ft on November 29, 1965.

On September 7, 1966, this well was acidized.

In February 1974, the nonpumping water level was reported to be 43 ft.

In September 1976, the well reportedly produced 165 gpm with a drawdown of 39 ft from a nonpumping water level of 52 ft.

Nonpumping water levels were reported to be 44 ft in December 1977; 48 ft on July 28, 1978; and 46 ft on September 20, 1979.

The pumping equipment presently installed is a Peerless turbine pump set at 200 ft, rated at 500 gpm, and powered by a 40-hp 1765 rpm General Electric motor.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B21767) is for a water sample from the well collected October 29, 1980, after 24 hr of pumping at 250 gpm.

WELL NO. 7, LABORATORY NO. B21787

		mg/l	*me/l*		*mg/l*	*me/l*
Iron	Fe	0.48		Silica	SiO_2	14	
Manganese	Mn	0.009		Fluoride	F	0.33	0.02
Ammonium	NH_4	0.6	0.03	Boron	B	0.34	
Sodium	Na	34	1 48	Cyanide	CN	0.02	
Potassium	K	3.8	0.10	Nitrate	NO_3	<0.4	
Calcium	Ca	130	6 49	Chloride	CI	36	1.02
Magnesium	Mg	74	6.09	Sulfate	SO_4	259	5.39
Strontium	Sr	2 55		Alkalinity (as $CaCO_3$)		370	7.40
Arsenic	As	<0.001		Hardness (as $CaCO_3$)		623	12.46
Barium '	Ba	0.03					
Beryllium	Be	<0.0005		Total dissolved			
Cadmium	Cd	<0.005		minerals		821	
Chromium	Cr	<0.005					
Cobalt	Co	<0.005					
Copper	Cu	<0.005					
Lead	Pb	<0.005					
Mercury	Hg	<0.00005					
Nickel	Ni	<0.005					
Selenium	Se	<0.001					
Silver	Ag	<0.005					
Vanadium	V	<0 005					
Zinc	Zn	<0.005		pH (as rec'd)		6.6	

Two test holes were constructed in January and March 1963 to depths of 206 and 215 ft, respectively, by the J. P. Miller Artesian Well Co., Brookfield. The first hole was located approximately 2400 ft S and 2600 ft W of the NE corner of Section 23, T39N, R11E. An 8-in. diameter hole was drilled and the hole was cased with 8-in. pipe from land surface to a depth of 55 ft. Production tests were conducted by the driller upon completion. On January 2, 1963, after 2.5 hr of pumping at rates of 350 to 550 gpm, the drawdown was 36 ft from a nonpumping water level of 3 ft below land surface. On January 3, the well reportedly produced 550 gpm for 3.5 hr with a drawdown of 30 ft from a nonpumping water level of 3 ft below land surface. The second hole was located

approximately 800 ft S and 1580 ft E of the NW corner of Section 24, T39N, R11E. An 8-in. diameter hole was drilled and the hole was cased with 8-in. pipe from land surface to a depth of 39 ft. Upon completion, the test hole reportedly produced 260 gpm for 4 hr with a drawdown of 36 ft from a nonpumping water level of 13 ft.

WELL NO. 8 was completed in December 1963 to a depth of 210 ft by the J. P. Miller Artesian Well Co., Brookfield. This well is available for emergency use. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located at the east end of 16th St. on the east side of Spring Road just north of the Oak Brook Shopping Center, approximately 2380 ft S and 2600 ft W of the NE corner of Section 23, T39N, R11E. The land surface elevation at the well is approximately 655 ft.

A drillers log of Well No. 8 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Glacial till	38	38
Limestone	166	204
Shale	6	210

A 20-in. diameter hole was drilled to a depth of 55 ft and finished 15.2 in. in diameter from 55 to 210 ft. The well is cased with 20-in. OD pipe from land surface to a depth of 47 ft and 16-in. OD pipe from land surface to a depth of 55 ft (cemented in).

Upon completion, after 6 hr of pumping at a rate of 700 gpm, the drawdown was 43 ft from a nonpumping water level of 5 ft below the top of the casing.

Nonpumping water levels were reported to be 2 ft in December 1966, 11 ft in November 1967, 2 ft in February 1971, 3 ft in January 1972, and 14 ft in February 1976.

The pumping equipment presently installed is a 5-stage Peerless turbine pump set at 92 ft, rated at 700 gpm at about 345 ft head, and powered by a 75-hp 1800 rpm General Electric motor. The well is equipped with 92 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. C001127) of a sample collected September 20, 1978, after pumping for 30 min at 650 gpm, showed the water to have a hardness of 574 mg/l, total dissolved minerals of 764 mg/l, and an iron content of 2.4 mg/1.

WELL NO. 9 was completed in September 1968 to a depth of 1479 ft by the J. P. Miller Artesian Well Co., Brookfield. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer) except for dolomites of the Galena and Platteville Groups. The well also penetrates the upper part of the Eau Claire Formation. The well is located on the east side of Addison Ave. south of Diversey Ave., approximately 2300 ft N and 400 ft W of the SE corner of Section 26, T40N, R11E. The land surface elevation at the well is approximately 675 ft.

A drillers log of Well No. 9 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift	83	83
Niagaran dolomite	187	270
Maquoketa shale	198	468
Galena-Platteville dolomite	335	803
St. Peter sandstone	229	1032
Prairie du Chien dolomite and shale	288	1320
Galesville sandstone	120	1440
Eau Claire dolomite	39	1479

The well is cased with 30-in. pipe from land surface to a depth of 84 ft, 24-in. pipe from land surface to a depth of 480 ft (cemented in), 20-in. pipe from 450 ft to a depth of 819 ft (cemented in), and a 16-in. liner from 1037 ft to a depth of 1290 ft.

Upon completion, this well was shot with 13 charges of nitrogel as follows: 306 lb from 1420 to 1430 ft, 306 lb from 1400 to 1410 ft, 306 lb from 1380 to 1390 ft, 306 lb from 1360 to 1370 ft, 306 lb from 1410 to 1420 ft, 306 lb from 1390 to 1400 ft, 306 lb from 1370 to 1380 ft, 354 lb from 1425 to 1435 ft, 354 lb from 1405 to 1415 ft, 356 lb from 1385 to 1395 ft, 306 lb from 1365 to 1375 ft, 300 lb from 1420 to 1430 ft, and 256 lb from 1410 to 1420 ft.

A production test was conducted by the driller on September 23-24, 1968. After 24 hr of pumping at rates ranging from 290 to 1100 gpm, the final drawdown was 194 ft from a nonpumping water level of 675 ft below land surface. Two hr after pumping was stopped, the water level had recovered to 710 ft.

Nonpumping water levels were reported to be 755 ft in July 1971, 788 ft in September 1974 and September 1975, 780 ft in December 1977, 820 ft in September 1978, and 805 ft on November 13, 1980.

The pumping equipment presently installed is a Peerless vertical turbine pump set at 1090 ft, rated at 1000 gpm, and powered by a 500-hp Ideal electric motor.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B23147) is for a water sample from the well collected February 1, 1983, after 9.5 hr of pumping.

WELL NO. 9, LABORATORY NO. B23147

		mg/l	*me/l*			*mg/l*	*me/l*
Iron	Fe	0.49		Silica.	SiO_2	7.2	
Manganese	Mn	0.015		Fluoride	F	1.07	0.06
Ammonium	NH_4	0.4	0.02	Boron	B	0.37	
Sodium	Na	30	1.30	Cyanide	CN	<0.005	
Potassium	K	13.0	0.33	Nitrate	NO_3	<0.4	
Calcium	Ca	72	3.59	Chloride	CI	9.1	0.26
Magnesium	Mg	22	1.81	Sulfate	SO_4	64	1.33
Strontium	Sr	3.71		Alkalinity (as CaCOj		283	5.66
Arsenic	As	0.001		Hardness (as CaCOj		270	5.40
Barium	Ba	0.049					
Beryllium	Be	<0.0005		Total dissolved			
Cadmium	Cd	<0.003		minerals		388	
Chromium	Cr	<0.006					
Cobalt	Co	<0.005					
Copper	Cu	0.016					
Lead	Pb	0.007					
Mercury	Hg	<0.00005					
Nickel	Ni	0.007					
Selenium	Se	<0.001					
Silver	Ag	<0.005					
Vanadium	V	<0.004					
Zinc	Zn	0.042		pH (as rec'd)		7.6	

WELL NO. 10 (originally known as Well No. 7B) was constructed in July 1966 to a depth of 303 ft and deepened in November 1968 to a reported depth of 1567 ft by the J. P. Miller Artesian Well Co., Brookfield. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer). The well also penetrates the upper part of the Eau Claire Formation. The well is located about 25 ft north of Well No. 7, approximately 4100 ft N and 1825 ft W of the SE corner of Section 13, T39N, R11E. The land surface elevation at the well is approximately 705 ft.

A drillers log of Well No. 10 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift	86	86
Niagaran dolomite	216	302
Maquoketa shale	243	545
Galena-Platteville dolomite	274	**819**
St. Peter sandstone	381	1200
Prairie du Chien dolomite and shale	130	1330
Galesville sandstone	140	1470
Eau Claire dolomite and shale	97	1567

Originally, a 19-in. diameter hole was drilled to a depth of 96 ft and finished 15.2 in. in diameter from 96 to 303 ft. The well was originally cased with 20-in. OD drive pipe from about 1 ft above land surface to a depth of 86 ft and 16-in. OD pipe from about 1 ft above land surface to a depth of 96 ft (cemented in). After deepening in 1968, the hole was reported to be 20 in. in diameter from land surface to a depth of 96 ft, 15.2 in. between 96 and 545 ft, 13.2 in. between 545 and 1308 ft, and 10 in. between 1308 and 1567 ft. The casing is reported to be 20 in. OD pipe from land surface to a depth of 86 ft, 16-in. OD pipe from land surface to a depth of 96 ft (cemented in), 14-in. OD pipe from land surface to a depth of 545 ft, and a 10-in. liner from 1199 ft to a depth of 1308 ft. In 1973, a new liner reportedly was installed but no information is available.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B23152) is for a water sample from the well collected February 1, 1983, after 2 hr of pumping at 800 gpm.

WELL NO. 10, LABORATORY NO. B23152

		mg/l	*me/l*			*mg/l*	*me/l*
Iron	Fe	0.19		Silica	SiO_2	7.5	
Manganese	Mn	0.013		Fluoride	F	0.83	0.04
Ammonium	NH_4	0.6	0.03	Boron	B	0.46	
Sodium	Na	58	2.52	Cyanide	CN	<0.005	
Potassium	K	15.0	0.38	Nitrate	NO_3	<0.4	
Calcium	Ca	75	3.74	Chloride	CI	29	0.82
Magnesium	Mg	35	2.88	Sulfate	SO_4	147	3.06
Strontium	Sr	2.48		Alkalinity (as CaCOj)		291	5.82
Arsenic	As	<0.001		Hardness (as $CaCO_3$)		321	6.42
Barium	Ba	0.028					
Beryllium	Be	<0.0005		Total dissolved			
Cadmium	Cd	<0.003		minerals		552	
Chromium	Cr	<0.006					
Cobalt	Co	<0.005					
Copper	Cu	0.004					
Lead	Pb	<0.005					
Mercury	Hg	0.00005					
Nickel	Ni	0.004					
Selenium	Se	<0.001					
Silver	Ag	<0.005					
Vanadium	V	<0.004					
Zinc	Zn	0.008		pH (as rec'd)		7.7	

Upon completion in 1966 to a depth of 303 ft, production tests were conducted by the driller. On September 7, 1966, after 2.8 hr of pumping at rates ranging from 650 to 375 gpm, the drawdown was 101 ft from a nonpumping water level of 92 ft below land surface. On September 8, after acidizing with 900 gal of concentrated HC1, the well reportedly produced 1000 to 425 gpm for 7 hr with a drawdown of 92 ft from a nonpumping water level of 92 ft below land surface. On September 9, after 15 hr of pumping at

rates ranging from 440 to 700 gpm, the final drawdown was 98 ft from a nonpumping water level of 92 ft below land surface.

After deepening in 1968, this well was shot with 9 charges of nitrogel as follows: 153 lb from 1455 to 1465 ft, 153 lb from 1435 to 1445 ft, 254 lb from 1415 to 1425 ft, 254 lb from 1395 to 1405 ft, 254 lb from 1375 to 1385 ft, 254 lb from 1445 to 1455 ft, 254 lb from 1425 to 1435 ft, 254 lb from 1405 to 1415 ft, and 206 lb from 1385 to 1395 ft. A production test was then conducted by the driller on November 8-9, 1968. After 19 hr of pumping at rates ranging from 458 to 636 gpm, the drawdown was 245 ft from a nonpumping water level of 630 ft below land surface. Pumping was continued for 5.5 hr at rates ranging from 806 to 842 gpm with a final drawdown of 295 ft.

Nonpumping water levels were reported to be 685 ft in February 1971, 720 ft in February 1973, 785 ft in February 1976, 815 ft in November 1976, and 820 ft in November 1978.

The pumping equipment presently installed is a Peerless vertical turbine pump set at 1050 ft, operated at 800 gpm, and powered by a 250-hp Ideal electric motor.

FARMINGDALE UTILITY CO.

Farmingdale Utility Co. (est. 1290), located about 1.2 miles southeast of Woodridge, installed a public water supply in 1975. The water system is owned by Gallagher and Henry and operated by the Du Page County Department of Public Works. Two wells are in use. This supply is also cross connected with the Lake in the Woods Subdivision. In 1977 there were 129 services, all metered; the average and maximum pumpages were 39,600 and 100,000 gpd, respectively. In 1984 there were 534 services, all metered; the average pumpage was 401,100 gpd. The water is softened, fluoridated, chlorinated, and treated with polyphosphate to keep iron in solution.

WELL NO. 1 was completed in March 1974 to a depth of 401 ft by the Wehling Well Works, Beecher. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located west of Lemont Road north of 87th St., approximately 516 ft N and 390 ft W of the SE corner of Section 31, T38N, R11E. The land surface elevation at the well is approximately 772 ft.

A drillers log of Well No. 1 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Yellow clay	15	15
Sand	10	25
band, clay, rocks	28	53
Gravel	45	98
Mud	37	135
Lime	240	375
Shale	26	401

A 22-in. diameter hole was drilled to a depth of 155 ft and finished 15.2 in. in diameter from 155 to 401 ft. The well is cased with 22-in. black steel pipe from land surface to a depth of 155 ft and 16-in. black steel pipe from about 1 ft above land surface to a depth of 155 ft (cemented in).

A production test was conducted by the driller on March 25, 1974. After 12 hr of pumping at rates of 633 to 1000 gpm, there was very little drawdown from a nonpumping water level of 145 ft.

The pumping equipment presently installed consists of a 150-hp electric motor, a 12-in., 6-stage Aurora submersible pump set at 240 ft, and has 240 ft of 10-in. column pipe.

The following mineral analysis (Lab. No. 211652) is for a water sample from the well collected August 8, 1979, after 15 min of pumping at about 1700 gpm.

WELL NO. 1, LABORATORY NO. 211652

		mg/l	*me/l*		*mg/l*	*me/l*
Iron(total)	Fe	0.9		Silica	SiO_2 15.4	
Manganese	Mn	0.02		Fluoride	F 0.2	
Ammonium	NH_4	0.5	0.03	Boron	B 0.2	
Sodium	Na	51.0	2.22	Nitrate	NO_3 0.3	0.00
Potassium	K	3.9	0.10	Chloride	CI 105	2.96
Calcium	Ca	128	6.39	Sulfate	SO 204	4.24
Magnesium	Mg	53.6	4.41	Alkalinity (as $CaCO_3$)	304	6.08
Strontium	Sr	0.83	0.02			
				Hardness (as $CaCO_3$)	540	10.80
Barium	Ba	<0.05				
Cadmium	Cd	0.00		Total dissolved		
Chromium	Cr	0.00		minerals	746	
Copper	Cu	0.01				
Lead	Pb	0.00				
Lithium	Li	0.02		Turbidity	7	
Nickel	Ni	0.00		Color	0	
Silver	Ag	0 00		Odor	0	
Zinc	Zn	0.06		Temp.(reported)	53.5F	

WELL NO. 2, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in April 1974 to a depth of 379 ft by the Wehling Well Works, Beecher. The well is located about 250 ft east of Well No. 1, approximately 536 ft N and 130 ft W of the SE corner of Section 31, T38N, R11E. The land surface elevation at the well is approximately 778 ft.

A drillers log of Well No. 2 follows:

Strata	*Thickness (ft)*	***Depth (ft)***
Mud	127	127
Lime	8	135
Gravel and mud	9	**144**
Lime	236	379

A 22-in. diameter hole was drilled to a depth of 167 ft and finished 15.2 in. in diameter from 167 to 379 ft. The well is cased with 22-in. pipe from land surface to a depth of 156 ft and 16-in. pipe from about 1.5 ft above land surface to a depth of 167 ft (cemented in).

A production test was conducted by the driller on April 18, 1974. After 15 hr of pumping at rates ranging from 2183 to 1043 gpm, the maximum drawdown was 75 ft from a nonpumping water level of 139 ft below land surface.

The pumping equipment presently installed is a KSB submersible pump set at 244 ft, rated at 1500 gpm, and powered by a 150-hp KSB electric motor.

A partial analysis of a sample (Lab. No. 196649) collected in August 1974, showed the water to have a hardness of 460 mg/1, total dissolved minerals of 663 mg/1, and an iron content of 1.1 mg/1.

FOUR LAKES VILLAGE SUBDIVISION

Four Lakes Village Subdivision (est. 3500), located on the southwest edge of Lisle, installed a public water supply in 1980. Water for this supply is obtained from Lisle (Oakview Subdivision). In 1980 there were 1750 services; the average and maximum pumpages were 240,000 and 310,000 gpd, respectively. Further treatment at this supply consists of softening, silica feed for corrosion control, and postchlorination when required.

GLENDALE HEIGHTS

The village of Glendale Heights (23,163) installed a public water supply in 1959. Six wells (Nos. 3, 4, 5, 8, 9, and 10) are in use and two wells (Nos. 2 and 7) are available for emergency use. This supply is also cross connected with the village of Carol Stream. In 1960 there were 125 services, all metered; the average pumpage was 50,000 gpd. In 1984 there were 6213 services, all metered; the average pumpage was 2,480,500 gpd. The water is chlorinated; in addition, the water from Well Nos. 3, 4, 8, and 9 is treated with polyphosphate to keep iron in solution.

WELL NO. 1 was completed in February 1959 to a depth of 353 ft (backfilled to 187 ft in 1971) by the Layne-Western Co., Aurora. This well was abandoned between 1975 and 1977. The water-yielding unit in this well after it was filled in to 187 ft was the Upper Bedrock Aquigroup (Silurian System). The well was located on the west side of Glen Ellyn Road about 0.5 mile north of North Ave., approximately 850 ft N and 2500 ft E of the SW corner of Section 26, T40N, R10E. The land surface elevation at the well is approximately 750 ft.

A drillers log of Well No. 1 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Black soil	5	5
Brown clay	5	10
Gray clay, sand and boulders	25	35
Gray sandy shale and boulders	20	55
Gray clay and boulders	15	70
Sand, gravel and boulders	51	121
Limestone	3	124
Sand, gravel and broken lime	4	128
Limestone	59	187
Shale and limestone	30	217
Shale	18	235
Gray limestone	77	312
Lime and shale	10	322
Limestone	6	328
Lime and shale streaks	7	335
Brown limestone	9	344
Lime and shale	3	347
Brown shale	6	353

A 15.2-in. diameter hole was drilled to a depth of 353 ft. The well was cased with 16-in. steel pipe from land surface to a depth of 126.8 ft. In 1967, a 12-in. slotted liner was placed between the depths of 126 and 353 ft. In July 1971, the Layne-Western Co. removed the 12-in. slotted liner and backfilled the well with gravel from 187 to 353 ft.

A production test was conducted by the driller on February 17, 1959. After 10 hr of pumping at rates ranging from 280 to 351 gpm, the maximum drawdown was 140 ft from a nonpumping water level of 50 ft below land surface.

In 1967, after the well had caved in, this well was rehabilitated by the Layne-Western Co. The pump was pulled, the well cleaned out, and a 12-in. slotted liner installed.

In January 1971, the nonpumping water level was reported to be 145 ft.

In July 1971, this well was rehabilitated again by the Layne-Western Co. The 12-in. slotted liner was removed and the well was backfilled with gravel. After acidizing with 2000 gal of HC1, a production test was conducted on July 21, 1971. After pumping at a rate of 167 gpm, the drawdown was 85 ft from a nonpumping water level of 70 ft.

In January 1972, the well reportedly produced 200 gpm with a drawdown of 45 ft from a nonpumping water level of 90 ft.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. C002759) of a sample collected October 15, 1973, after pumping for 45 min at 200 gpm, showed the water to have a hardness of 346 mg/1, total dissolved minerals of 486 mg/1, and an iron content of 1.4 mg/1.

WELL NO. 2 was completed in September 1960 to a depth of 335 ft (measured at 316 ft in May 1976) by the Layne-Western Co., Aurora. This well is available for emergency use. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located between 761 and 769 Easy St., approximately 1500 ft N and 500 ft W of the SE corner of Section 35, T40N, R10E. The land surface elevation at the well is approximately 730 ft.

A 12-in. diameter hole was drilled to a depth of 260 ft and finished 10 in. in diameter from 260 to 335 ft. The well is cased with 12-in. steel pipe from land surface to a depth of 151 ft and 10-in. steel pipe from 150 ft to a depth of 260.3 ft (top 10 ft and bottom 20 ft of 10-in. pipe perforated). The 12-in. pipe was gun perforated with forty 21/64-in. diameter holes from 125 to 148 ft.

Upon completion, the well reportedly produced 65 gpm with a drawdown of 119 ft from a nonpumping water level of 41 ft.

A drillers log of Well No. 2 follows:

Strata	Thickness (ft)	Depth (ft)
Top soil	2	2
Yellow clay	10	12
Blue clay	16	28
Gravel and boulders	46	74
Fine sand	21	95
Gravel	10	105
Gravel and blue clay	20	125
Broken limestone and coarse gravel	29	154
Gray shale	63	217
Lime	53	270
Lime with streaks of shale	18	288
Shale	23	311
Lime	3	314
Shale	11	325
Shale with lime streaks	5	330
Shale	5	335

The following mineral analysis (Lab. No. 211325) is for a water sample from the well collected July 3, 1979, after 24 hr of pumping at 250 gpm.

WELL NO. 2, LABORATORY NO. 211326

		mg/l	me/l		mg/l	me/l
Iron(total)	Fe	2.3		Silica	SiO_2 21.9	
Manganese	Mn	0.02		Fluoride	F 0.3	
Ammonium	NH_4	1.1	0.06	Boron	B 0.4	
Sodium	Na	84.0	3.65	Nitrate	NO_3 0.4	0.01
Potassium	K	3.8	0.10	Chloride	CI 110	3.10
Calcium	Ca	152	7.58	Sulfate	SO_4 324	6.74
Magnesium	Mg	66.4	5.46	Alkalinity (as $CaCO_3$)	346	6.92
Strontium	Sr	1.05	0.02			
				Hardness (as $CaCO_3$)	652	13.04
Barium	Ba	<0.05				
Cadmium	Cd	0.01		Total dissolved		
Chromium	Cr	0.00		minerals	1013	
Copper	Cu	0.01				
Lead	Pb	0.03				
Lithium	Li	0.02		Turbidity	20	
Nickel	Ni	0.04		Color	0	
Silver	Ag	0.00		Odor	0	
Zinc	Zn	0.03		Temp.(reported)	53F	

The well was treated with 1000 gal of 15 percent acid and a production test was conducted by the driller on September 30, 1960. After 8 hr of pumping at a rate of 302 gpm, the drawdown was 20 ft from a nonpumping water level of 41 ft below the top of the casing.

Nonpumping water levels were reported to be 48 ft in November 1967, and 50 ft in December 1968.

In January 1971, the well reportedly produced 300 gpm with a drawdown of 18 ft from a nonpumping water level of 50 ft.

In January 1972, the well reportedly produced 325 gpm with a drawdown of 15 ft from a nonpumping water level of 50 ft.

On May 12, 1976, after pumping at a rate of 402 gpm, the drawdown was 13 ft from a nonpumping water level of 48 ft.

Nonpumping water levels were reported to be 55 ft in April 1977; 56 ft on July 3, 1979; and 55 ft in December 1984.

The pumping equipment presently installed consists of a 30-hp 1800 rpm U. S. Holloshaft electric motor, an 8-in., 10-stage Layne turbine pump (No. 42522) set at 100 ft, rated at 300 gpm at about 305 ft TDH, and has 100 ft of 6-in. column pipe. The well is equipped with 100 ft of airline.

WELL NO. 3 was completed in October 1962 to a depth of 345 ft by the Layne-Western Co., Aurora. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located at the southeast corner of Bloomingdale Road and Marilyn Ave., approximately 600 ft S and 2525 ft W of the NE corner of Section 34, T40N, R10E. The land surface elevation at the well is approximately 795 ft.

A drillers log of Well No. 3 follows:

Strata	Thickness (ft)	Depth (ft)
Fill	8	8
Gray clay with some rock	22	30
Blue clay	SO	80
Silty sand and gravel	5	85
Blue clay	36	121
Broken limestone	19	140
Dark gray lime	35	175
Brown shale	15	190
Blue shale	57	247
Lime	95	342
Gray shale	3	345

A 12-in. diameter hole was drilled to a depth of 257 ft and finished 10 in. in diameter from 257 to 345 ft. The well is cased with 12-in. pipe from land surface to a depth of 141 ft and a 10-in. liner from 161.5 ft to a depth of 257 ft.

A production test was conducted by the driller on October 9, 1962. After 7.5 hr of pumping at rates of 393 to 503 gpm, the drawdown was 43 ft from a nonpumping water level of 86 ft below land surface. Pumping was continued for 20 min at a rate of 608 gpm with a drawdown of 56 ft.

Nonpumping water levels were reported to be 50 ft in December 1968, and 95 ft in January 1971.

In January 1972, the well reportedly produced 350 gpm with a drawdown of 15 ft from a nonpumping water level of 105 ft.

On September 13, 1974, after pumping at a rate of 460 gpm, the drawdown was 20 ft from a nonpumping water level of 114 ft.

Nonpumping water levels were reported to be 140 ft in April 1977, and 135 ft in August 1984.

The pumping equipment presently installed consists of a 50-hp 1800 rpm U. S. electric motor, an 8-in., 11-stage Layne turbine pump (No. 17622A) set at 180 ft, rated at 450 gpm at about 290 ft head, and has 180 ft of 6-in. column pipe. The well is equipped with 180 ft of airline.

WELL NO. 4, open to dolomite and shale of the Upper Bedrock Aquigroup (Maquoketa Group), was completed in August 1968 to a depth of 375 ft by the Layne-Western Co., Aurora. The well is located at 24W100 North Ave., approximately 1300 ft N and 1450 ft W of the SE corner of Section 33, T40N, R10E. The land surface elevation at the well is approximately 798 ft.

A drillers log of Well No. 4 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Black soil	2	2
Brown and gray silty clay	6	8
Soft gray clay	17	25
Boulder	1	26
Gray sandy clay, seams of gravel	54	80
Silty sand	6	86
Gray sand clay	26	112
Gray clayey silt	14	126
Gray sandy clay with sand and gravel seams	21	147
White limestone	36	183
Dark gray lime and shale	20	203
Brown shale	12	215
Gray shale	23	238
Lime	119	357
Gray shale	18	375

A 15-in. diameter hole was drilled to a depth of 157 ft and finished 12 in. in diameter from 157 to 375 ft. The well is cased with 12-in. pipe from about 4 ft above land surface to a depth of 157 ft and 10-in. pipe from about 1 ft above land surface to a depth of 246 ft (bottom 10 ft of 10-in. pipe slotted).

A production test was conducted by the driller on August 8, 1968. After 5 hr of pumping at rates of 430 to 448 gpm, the drawdown was 111 ft from a nonpumping water level of 112 ft below land surface.

Nonpumping water levels were reported to be 125 ft in January 1971, and 150 ft in January 1972.

On October 11, 1977, the well reportedly produced 455 gpm with a drawdown of 110 ft from a nonpumping water level of 148 ft.

In December 1984, the nonpumping water level was reported to be 178 ft.

The pumping equipment presently installed consists of a 50-hp 1800 rpm U. S. Holloshaft electric motor, an 11-stage Layne & Bowler vertical turbine pump (No. 60020) set at 260 ft, rated at 400 gpm, and has 260 ft of 6-in. column pipe. The well is equipped with 260 ft of airline.

A mineral analysis of a sample (Lab. No. 211852) collected July 3, 1979, after pumping for 3 hr at 375 gpm, showed the water to have a hardness of 396 mg/l, total dissolved minerals of 550 mg/l, and an iron content of 0.2 mg/1.

WELL NO. 5 was completed in June 1972 to a depth of 330 ft by the Layne-Western Co., Aurora. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located south of Fullerton Ave. in Harold A. Reskin Park, approximately 150 ft S and 1300 ft E of the NW corner of Section 35, T40N, R10E. The land surface elevation at the well is approximately 734 ft.

A drillers log of Well No. 5 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Clay	3	3
Brown clay	12	15
Gray clay, few sand streaks, some boulders	20	35
Sand and gravel	30	65
Lime ledge or boulder	3	68
Sand and clay (cemented)	14	82
Lime ledge or boulder	4	86
Sand and clay (cemented)	22	108
Lime	27	135
Shale, few lime lenses	65	200
Lime	70	270
Lime, few shale lenses	34	304
Shale	26	330

A 17-in. diameter hole was drilled to a depth of 25 ft, reduced to 15 in. between 25 and 113 ft, reduced to 12 in. between 113 and 212 ft, and finished 10 in. in diameter from 212 to 330 ft. The well is cased with 12-in. pipe from about 2 ft above land surface to a depth of 113 ft and a 10-in. liner from 128 ft to a depth of 212 ft.

A production test was conducted by the driller on June 5, 1972. After 5.8 hr of pumping at rates of 292 to 285 gpm, the drawdown was 104 ft from a nonpumping water level of 73 ft.

After treating the well with 1000 gal of 15 percent treating acid, a production test was conducted by the driller on June 9, 1972. After 5.5 hr of pumping at rates of 366 to 396 gpm, the drawdown was 106 ft from a nonpumping water level of 77 ft below land surface.

In April 1977, the nonpumping water level was reported to be 100 ft.

On September 28, 1977, the well reportedly produced 429 gpm with a drawdown of 75 ft from a nonpumping water level of 87 ft.

In June 1984, the nonpumping water level was reported to be 120 ft.

The pumping equipment presently installed consists of a 50-hp 1800 rpm U. S. Holloshaft electric motor, an 8-in., 13-stage Layne & Bowler vertical turbine pump (No. 72760) set at 220 ft, rated at 400 gpm at about 373 ft TDH, and has 220 ft of 6-in. column pipe. The well is equipped with 220 ft of airline.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B31491) is for a water sample from the well collected January 17, 1980, after 24 hr of pumping at 375 gpm.

WELL NO. 5, LABORATORY NO. **B81491**

		mg/l	*me/l*		mg/l	*me/l*
Iron	Fe	0.06	Silica	SiO_2	10	
Manganese	Mn	<0.005	Fluoride	F	1.28	0.07
Ammonium	NH_4	0.5	0.03 Boron	B	1.40	
Sodium	Na	200	8.70 Cyanide	CN	<0.005	
Potassium	K	6.4	0.16 Nitrate	NO_3	<0.4	
Calcium	Ca	11	0.55 Chloride	CI	17	0.48
Magnesium	Mg	6	0.49 Sulfate	SO_4	137	2.85
Strontium	Sr	0.210	Alkalinity (as $CaCO_3$)		325	6.50
Arsenic	As	<0.001	Hardness (as $CaCO_3$)		50	1.00
Barium	Ba	<0.01				
Beryllium	Be	<0.0005	Total dissolved			
Cadmium	Cd	0.001	minerals		583	
Chromium	Cr	<0.005				
Cobalt	Co	<0.005				
Copper	Cu	<0.005				
Lead	Pb	<0.005				
Lithium	Li	0.02				
Mercury	Hg	<0.00005				
Nickel	Ni	<0.005				
Selenium	Se	<0 001				
Silver	Ag	<0.00S				
Zinc	Zn	0.007	pH (as rec'd)		8.2	

WELL NO. 6 was completed in December 1973 to a depth of 347 ft by the Layne-Western Co., Aurora. This well is not in use because of low yield and high fluoride content. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located just south of 2037 Sandburg Court, approximately 396 ft N and 2450 ft E of the SW corner of Section 22, T40N, R10E. The land surface elevation at the well is approximately 783 ft.

A drillers log of Well No. 6 follows:

Strata	*Thickncss (ft)*	*Depth (ft)*
Brown clay	4	4
Gray clay	9	13
Gray clay and sand	2	15
Sand and gravel	7	22
Hard clay, few boulders	13	35
Clay and sand	19	54
Clay	16	70
Clay, boulders, some sand	22	92
Clay	8	100
Hard clay and boulders	19	119
Broken lime or boulders	11	130
Lime and shale	3	133
Shale	7	140
Lime	30	170
Hard brown lime	17	187
Green shale	8	195
Lime and shale	60	255
Lime	45	300
Lime, few shale lenses	35	335
Shale	12	347

A 17-in. diameter hole was drilled to a depth of 143 ft, reduced to 12 in. between 143 and 269 ft, and finished 10 in. in diameter from 269 to 347 ft. The well is cased with 12-in. pipe from about 2 ft above land surface to a depth of 143 ft (perforated between 120 and 130 ft and between 140 and 141.5 ft) and a 10-in. liner from 179.2 ft to a depth of 269 ft (perforated between 181 and 187 ft and slotted between 249 and 269 ft).

A production test was conducted by the driller on December 12, 1973. After 4 hr of pumping at a rate of 60 gpm, the drawdown was 107 ft from a nonpumping water level of 117 ft.

After acidizing with 1000 gal of 15 percent muriatic treating acid, a production test was conducted by the driller on December 15, 1973. After 3 hr of pumping at a rate of 104 gpm, the drawdown was 107 ft from a nonpumping water level of 117 ft.

The well was acidized again with 1000 gal of 15 percent muriatic treating acid and on December 20, 1973, the well produced 116 gpm for 8 hr with a drawdown of 93 ft from a nonpumping water level of 120 ft.

The well casing and liner were then perforated and a production test was conducted by the driller on December 28, 1973. After 8 hr of pumping at rates

ranging from 132 to 116 gpm, the maximum drawdown was 100 ft from a nonpumping water level of 124 ft below land surface.

On March 25, 1976, the well reportedly produced 104 gpm with a drawdown of 64 ft from a nonpumping water level of 116 ft.

On January 3, 1980, the nonpumping water level was reported to be 133.25 ft below land surface.

The pumping equipment presently installed consists of a 20-hp 1800 rpm U. S. Holloshaft electric motor, an 8-in., 12-stage Layne & Bowler vertical turbine pump (No. 76321) set at 250 ft, rated at 100 gpm at about 347 ft TDH, and has 250 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 250 ft of airline.

A mineral analysis of a sample (Lab. No. 211326) collected July 3, 1979, after pumping for 24 hr at 100 gpm, showed the water to have a hardness of 32 mg/l, total dissolved minerals of 843 mg/1, and an iron content of 0.3 mg/1.

WELL NO. 7 (Windy Point Farm) was completed in October 1975 to a depth of 360 ft by the Layne-Western Co., Aurora. This well is available for emergency use. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located about 750 ft south of the Illinois Central RR and 1000 ft east of Bloomingdale Road, approximately 2450 ft S and 1600 ft W of the NE corner of Section 27, T40N, R10E. The land surface elevation at the well is approximately 770 ft.

A drillers log of Well No. 7 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Black top soil	1	1
Brown clay	2	3
Gray clay and boulders	18	21
Gravelly gray clay, few sand streaks, boulders	79	100
Boulders or limestone ledge	6	106
Gravelly gray clay, few boulders	4	110
Broken lime with shale, boulders	9	119
White and gray limestone	5	124
Gray limestone	10	134
White and gray limestone	39	173
Blue and gray shale, few lime lenses	74	247
Gray and brown limestone	67	314
Brown limestone	7	321
Brown and gray limestone	25	346
Dark gray shale	14	360

A 20-in. diameter hole was drilled to a depth of 10 ft, reduced to 16 in. between 10 and 124 ft, reduced to 12 in. between 124 and 252.5 ft, and finished 10 in. in diameter from 252.5 to 360 ft. The well is cased with 12-in. steel pipe from about 2 ft above land surface to a depth of 124 ft (slotted between 112 and 124 ft) and a 10-in. steel liner from 168 ft to a depth of 252.5 ft (slotted between 168 to 173 ft and 249.5 to 252.5 ft). The annulus between the bore hole and casing is filled with cement from 0 to 20 ft, with cuttings from 20 to 112 ft, and with Muscatine gravel from 112 to 124 ft.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B047206) is for a water sample from the well collected March 30, 1981.

WELL NO. 7, LABORATORY NO. **B047206**

		mg/t	*mg/1*			*mg/l*	*me/l*
Iron	Fe	0.186		Silica	SiO_2	9.5	
Manganese	Mn	<0 005		Fluoride	F	1.69	0 09
Ammonium	NH_4	0.4	0.02	Boron	B	1.34	
Sodium	Na	165	7.18	Cyanide	CN	<0.005	
Potassium	K	6.1	0.16	Nitrate	NO_3	<0.4	
Calcium	Ca	37	1.85	Chloride	CI	22 '	0.62
Magnesium	Mg	19.8	1.63	Sulfate	SO_4	161	3.35
Strontium	Sr	0.544		Alkalinity (as $CaCO_3$)		348	6.96
Arsenic	As	<0.001		Hardness (as $CaCO_3$)		175	3.50
Barium	Ba	0.026					
Beryllium	Be	<0.0005		Total dissolved			
Cadmium	Cd	<0.003		minerals		629	
Chromium	Cr	<0.00S					
Cobalt	Co	<0.005					
Copper	Cu	<0.003					
Lead	Pb	<0.005					
Mercury	Hg	<0.00005					
Nickel	Ni	0.003					
Selenium	Se	<0.0005					
Silver	Ag	<0.005					
Vanadium	V	<0.004					
Zinc	Zn	<0.002		pH (as rec'd)		7.6	

A production test was conducted by the driller on October 17, 1975. After 8 hr of pumping at rates ranging from 412 to 305 gpm, the drawdown was 75 ft from a nonpumping water level of 72 ft below land surface.

After the well was acidized with 1000 gal of 15 percent HC1, a production test was conducted by the driller on October 22, 1975. After 5.7 hr of pumping at rates of 412 to 372 gpm, the drawdown was 50 ft from a nonpumping water level of 76 ft below land surface.

On June 23, 1976, the well reportedly produced 305 gpm with a drawdown of 43 ft from a nonpumping water level of 87 ft.

In August 1984, the nonpumping water level was reported to be 125 ft.

The pumping equipment presently installed consists of a 40-hp 1800 rpm General Electric motor, an 8-in., 10-stage Layne & Bowler vertical turbine pump (No. 80919) set at 150 ft, rated at 305 gpm, and has 150 ft of 6-in. column pipe. The well is equipped with 150 ft of airline.

WELL NO. 8 was completed in August 1976 to a depth of 356 ft by the Layne-Western Co., Aurora. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located on North Glen Ellyn Road south of Army Trail Road about 25 ft north of Well No. 1, approximately 875 ft N and 2500 ft E of the SW corner of Section 26, T40N, R10E. The land surface elevation at the well is approximately 750 ft.

A drillers log of Well No. 8 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Black top soil	5	5
Brown clay	5	10
Gray sandy clay, boulders	30	40
Shale, sandy, boulders	12	52
Gray clay and boulders	43	95
Sand, gravel, and boulders	30	125
Broken gray limestone	5	130
Hard gray limestone	37	167
Shale and limestone	8	175
Shale	10	185
Shale and limestone	10	195
Limestone	5	200
Shale and limestone	38	238
Hard to medium gray limestone, some shale at 265 to 270 ft	62	300
Sticky shale, some limestone at 310 to 315 ft	24	324
Hard gray limestone with shale streaks	16	340
Hard gray limestone	5	345
Tan limestone with some shale	9	354
Brown shale	2	356

An 18-in. diameter hole was drilled to a depth of 20 ft, reduced to 12 in. between 20 and 241 ft, and finished 10 in. in diameter from 241 to 356 ft. The well is cased with 12-in. pipe from about 2 ft above land surface to a depth of 130 ft and a 10-in. liner from 163 ft to a depth of 241 ft.

A production test using one observation well was conducted by the driller on August 6, 1976. After 4.5 hr of surging and pumping, the well was pumped continuously for 4 hr at a rate of 350 gpm with a drawdown of 64 ft from a nonpumping water level of 66 ft below land surface. Thirty min after pumping was stopped, the water level had recovered to 72 ft.

On June 3, 1977, the well reportedly produced 351 gpm with a drawdown of 35 ft from a nonpumping water level of 80 ft.

Nonpumping water levels were reported to be 90 ft on July 3, 1979, and 98 ft in September 1984.

The pumping equipment presently installed consists of a 30-hp 1800 rpm U. S. Holloshaft electric motor, an 8-in., 11-stage Layne & Bowler vertical turbine pump (No. 39974) set at 170 ft, rated at 350 gpm, and has 170 ft of 6-in. column pipe. The well is equipped with 170 ft of airline.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B039838) is for a water sample from the well collected April 19, 1984, after continuously pumping at 310 gpm.

WELL NO. 8, LABORATORY NO. B080838

		my/l	*me/l*			mg/l	*me/l*
Iron	Fe	1 1		Silica	SiO_2	19	
Manganese	Mn	0.007		Fluoride	F	0.45	
Ammonium	NH_4	0.6	0.03	Boron	B	0.32	
Sodium	Na	27	1.17	Cyanide	CN	<0.005	
Potassium	K	2 8	0.07	Nitrate	NO_3	<0.4	
Calcium	Ca	86	4.29	Chloride	CI	18	0.51
Magnesium	Mg	41.9	3.44	Sulfate	SO_4	146	3.04
Strontium	Sr	119	0.03	Alkalinity (as $CaCO_3$)		277	5.54
Aluminum	Al	<0.05		Hardness (as $CaCO_3$)		392	7.84
Arsenic	As	0.004					
Barium	Ba	0.031	0.00	Total dissolved			
Beryllium	Be	<0.0005		minerals		535	
Cadmium	Cd	<0.003					
Chromium	Cr	<0.005					
Cobalt	Co	0.007					
Copper	Cu	<0.005					
Lead	Pb	<0.005					
Mercury	Hg	<0.00010					
Nickel	Ni	0.020					
Selenium	Se	<0.001					
Silver	Ag	<0.005					
Vanadium	V	<0.005					
Zinc	Zn	0.007		pH (as rec'd)		7.8	

WELL NO. 9 was completed in August 1978 to a depth of 390 ft by the Wehling Well Works, Beecher. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located about 0.2 mile east of Schmale Road and 50 ft north of an unnamed road, approximately 300 ft S and 1650 ft W of the NE corner of Section 28, T40N, R10E. The land surface elevation at the well is approximately 765 ft.

A drillers log of Well No. 9 follows:

Strata	Thickness (ft)	Depth (ft)
Drift	128	128
Lime	59	187
Lime and shale	18	205
Lime	25	230
Lime and shale	HO	370
Shale	20	390

A 16-in. diameter hole was drilled to a depth of 131 ft, reduced to 12 in. between 131 and 230 ft, and finished 10 in. in diameter from 230 to 390 ft. The well is cased with 12-in. black steel pipe from about 1 ft above land surface to a depth of 131 ft (cemented in).

A production test was conducted by the driller on August 9, 1978. After 4.9 hr of pumping at rates ranging from 300 to 326 gpm, the final drawdown was 113 ft from a nonpumping water level of 108 ft below land surface.

After acidizing with 1000 gal of diluted HC1, a production test was conducted by the driller on August 10-11, 1978. After 22.5 hr of pumping at rates ranging from 413 to 530 gpm, the final drawdown was 100 ft from a nonpumping water level of 118 ft below land surface.

The pumping equipment presently installed is an 8-in., 17-stage turbine pump set at 260 ft, rated at 500 gpm at about 418 ft head, and powered by a 75-hp U. S. electric motor.

WELL NO. 10 was completed in June 1980 to a depth of 380 ft by the Layne-Western Co., Aurora. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located on the east side of Bloomingdale Road about 0.5 mile south of Illinois Route 64, approximately 2000 ft S and 2500 ft W of the NE corner of Section 3, T39N, R10E. The land surface elevation at the well is approximately 780 ft.

A drillers log of Well No. 10 follows:

Strata	Thickness (ft)	Depth (ft)
Brown very sandy silty clay	13	13
Gray very sandy silty clay	17	30
Gray very silty clay some silty sand and gravel layers and boulders	57	87
Gray silty sandy clay some gravel and boulders	13	100
Tight sand, gravel and boulders	8	108
Very tight limestone sand, gravel, and boulders and limestone ledges (cemented)	43	151
Dark gray limestone	3	154
Gray limestone with shale lenses	4	158
Brown and gray limestone with fractured seams	9	167
White limestone with fractured seams	32	199
Soft brown shale	10	209
Soft red, brown and gray shale	9	218
Gray shale with lime layers	5	223
Solid blue gray 3hale	34	257
Dark gray limestone with fractures and shale seams	47	304
Dark gray limestone with shale layers	45	349
Dark gray shale with limestone lenses	13	362
Hard gray lime with fractured lenses water bearing	5	367
Brownish gray shale	13	380

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B039334) is for a water sample from the well collected April 19, 1984, after several hours of pumping at 380 gpm.

WELL NO. 10, LABORATORY NO. B039SS4

		mg/l	me/l		my/l	me/l
Iron	Fe	1.4		Silica	SiO_2 18	
Manganese	Mn	0.012		Fluoride	F 0.30	
Ammonium	NH_4	0.6	0.04	Boron	B 0.26	
Sodium	Na	63	2.74	Cyanide	CN <0.005	
Potassium	K	3.6	0.09	Nitrate	NO_3 <0.4	
Calcium	Ca	123	6.14	Chloride	CI 118	3.33
Magnesium	Mg	57.5	4.73	Sulfate	SO_4 192	3.99
Strontium	Sr	1.13	0.03	Alkalinity (as $CaCO_3$)	330	6.60
Aluminum	Al	0.06		Hardness (as $CaCO_3$)	548	10.96
Arsenic	As	0.004				
Barium	Ba	0.059	0.00	Total dissolved		
Beryllium	Be	<0.0005		minerals	786	
Cadmium	Cd	<0.003				
Chromium	Cr	<0.005				
Cobalt	Co	0.007				
Copper	Cu	0.080				
Lead	Pb	0.008				
Mercury	Hg	<0.00010				
Nickel	Ni	0.195				
Selenium	Se	<0.001				
Silver	Ag	<0.005				
Vanadium	V	<0.005				
Zinc	Zn	0.098		pH (as rec'd)	7.5	

A 19.2-in. diameter hole was drilled to a depth of 154 ft, reduced to 15 in. between 154 and 240 ft, and finished 12 in. in diameter from 240 to 380 ft. The well is cased with 16-in. OD steel pipe from land surface to a depth of 154 ft (cemented in from 0 to 20 ft) and a 12-in. OD steel liner from 198 ft to a depth of 240 ft.

A production test was conducted by the driller on June 26, 1980. After 8.6 hr of pumping at rates ranging from 490 to 692 gpm, the drawdown was 41.5 ft from a nonpumping water level of 115.0 ft below land surface. Pumping was continued for 1.5 hr at rates of 525 to 550 gpm with a final drawdown of 37.5 ft. Thirty min after pumping was stopped, the water level had recovered to 119 ft.

On March 16, 1981, the well reportedly produced 590 gpm with a drawdown of 35 ft from a nonpumping water level of 115 ft.

On October 16, 1981, after pumping at a rate of 385 gpm, the drawdown was 11 ft from a nonpumping water level of 125 ft.

On January 28, 1982, the well reportedly produced 400 gpm with a drawdown of 24 ft from a nonpumping water level of 124 ft.

The pumping equipment presently installed consists of a 60-hp U. S. electric motor, a 9-in., 7-stage Layne turbine pump (No. 94095) set at 190 ft, and has 190 ft of 6-in. column pipe. The well is equipped with 190 ft of airline.

Test Well No. 1 was constructed in 1982 to a depth of 132 ft by the J. P. Miller Artesian Well Co., Brookfield. It was located approximately 1650 ft S and 1100 ft E of the NW corner of Section 22, T40N, R10E. A screen was placed in the hole from 122 ft to a depth of 132 ft. On May 4, 1982, the test well reportedly produced 100 gpm with a drawdown of 19 ft from a nonpumping water level of 84 ft.

GLEN ELLYN

The village of Glen Ellyn (23,649) installed a public water supply in 1907. Five wells (Nos. 2, 3, 4, 5, and 6) are in use. This supply is also cross connected with the village of Lombard and the city of Wheaton. In 1950 there were 2647 services, all metered; the average and maximum pumpages were 696,000 and 1,497,700 gpd, respectively. In 1984 there were 6774 services, all metered; the average pumpage was 3,006,000 gpd. The water is chlorinated, fluoridated, aerated (except Well Nos. 2 and 3), and treated with polyphosphate to keep iron in solution.

WELL NO. 1 was completed in 1907 to a depth of 310 ft. This well was abandoned in 1944 and sealed in 1957. The water-yielding units in this well were dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well was located at the east end of the pumping station on the north side of Pennsylvania Ave. west of Main St., approximately 1450 ft N and 1200 ft E of the SW corner of Section 11, T39N, R10E. The land surface elevation at the well is approximately 760 ft.

A drillers log of Well No. 1 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Yellow clay	95	95
Blue clay	20	115
Limerock	195	310

An 8-in. diameter hole was drilled to a depth of 310 ft. The well was cased with 8-in. pipe from about 1 ft above the floor of a 4-ft deep pit to a depth of 115 ft.

In 1916, the well reportedly produced 500 gpm for 6 to 7 hr with a drawdown of 93 ft from a nonpumping water level of 42 ft below land surface.

WELL NO. 2 was completed in June 1922 to a depth of 352 ft (measured at 348 ft in October 1976) by the W. L. Thorne Co., Des Plaines. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located about 50 ft north of Well No. 1, approximately 1497 ft N and 1200 ft E of the SW corner of Section 11, T39N, R10E. The land surface elevation at the well is 761.45 ft.

A drillers log of Well No. 2 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift	116	116
Limestone	119	235
Shale	SO	285
Limestone	25	310
Shale	7	317
Limestone	13	330
Shale	10	340
Limestone	10	350

A 12-in. diameter hole was drilled to a depth of 235 ft and finished 10 in. in diameter from 235 to 352 ft. The well is cased with 12-in. pipe from about 1.6 ft above the wellhouse floor to a depth of 116 ft and a 10-in. liner from 235 ft to a depth of 299 ft.

On April 28, 1926, after 30 min of pumping at a rate of 683 gpm, the drawdown was 26 ft from a nonpumping water level of 59 ft below the pump base.

From May 1943 to June 1947, the nonpumping water levels fluctuated between 66 and 76 ft. They were observed during idle periods ranging from 1 to 7 weeks and interference occurred when Well No. 3 was in operation.

Nonpumping water levels were reported to be 69 ft below the pump base on June 3, 1947; 72.1 ft in October 1956; 93 ft in June 1960; 77 ft in June 1961; 69 ft in June 1963; 78 ft on April 30, 1964; 80 ft on April 12, 1965; and 88 ft in May 1966.

On December 8, 1966, the well reportedly produced about 800 gpm for 15 min with a drawdown of 33 ft from a nonpumping water level of 79 ft below land surface.

Nonpumping water levels were reported to be 82 ft in August 1967, 86 ft in October 1968, 86 ft in June 1969, 90 ft in July 1971, and 105 ft in March 1972 and March 1977.

The pumping equipment presently installed is a 12-in., 6-stage Layne turbine pump (No. 5594) set at 180 ft, rated at 750 gpm at about 160 ft head, and powered by a 50-hp 1160 rpm Westinghouse electric motor.

A partial analysis of a sample (Lab. No. 170414) collected December 8, 1966, after pumping for 15 min at about 800 gpm, showed the water to have a hardness of 506 mg/l, total dissolved minerals of 682 mg/l, and an iron content of 1.3 mg/l.

Prior to the construction of Well No. 3, a test well, finished in dolomite, was completed in June 1941 to a depth of 510 ft by Ray Feuerborn, Batavia. The well was located on the same lot as the elevated water tank, approximately 1970 ft N and 550 ft E of the SW corner of Section 11, T39N, R10E. A 6-in. diameter hole was drilled to a depth of 510 ft. A production test was conducted by the State Water Survey on June 23-24, 1941. After 10.6 hr of intermittent pumping at rates ranging from 43.5 to 158 gpm, the final drawdown was 11.0 ft from a nonpumping water level of 95.0 ft below land surface. Well No. 2 was operating during the last 7.4 hr of this test.

WELL NO. 3 was completed in November 1941 to a depth of 422 ft (measured at 400 ft in September 1977 and reported to be 413 ft deep in 1978) by Ray Feuerborn, Batavia. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located south of Cottage Ave. between Western and Pleasant Aves., approximately 1970 ft N and 550 ft E of the SW corner of Section 11, T39N, R10E. The land surface elevation at the well is 788.7 ft.

A sample study log of Well No. 3 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
"Clay"	95	95
Gravel	37	132
SILURIAN SYSTEM		
Niagaran and Alexandrian Series		
Dolomites	127	259
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Shale and shaly dolomite	163	422

A 20-in. diameter hole was drilled to a depth of 136 ft and finished 16 in. in diameter from 136 to 422 ft. The well is cased with 18-in. OD pipe from about 0.8 ft above the wellhouse floor to a depth of 136 ft.

A production test was conducted by the State Water Survey on December 3, 1941. After 1.1 hr of pumping at rates of 870 to 850 gpm, the drawdown was 102.5 ft from a nonpumping water level of 94.5 ft below the top of the casing. After an additional 5.5 hr of pumping at rates ranging from 770 to 755 gpm, the drawdown was 87.5 ft. During this test, Well No. 2 was operated intermittently.

Nonpumping water levels were reported to be 95 ft below the pump base after a 40-day idle period on December 9, 1943; 124 ft in April 1956; 94 to 96 ft in August and September 1957; 123 ft in June 1959; 104 ft in June 1961; 134 ft on March 27, 1964; 119 ft on April 6, 1965; and 121 ft in May 1966.

On December 8, 1966, the well reportedly produced about 800 gpm for 15 min with a drawdown of 61 ft from a nonpumping water level of 112 ft below land surface.

Nonpumping water levels were reported to be 119 ft in August 1967, 119 ft in October 1968, 131 ft in June 1969, 126 ft in July 1971, and 170 ft in March 1972.

In September 1977, this well was acidized by the Layne-Western Co., Aurora. The depth of the well was measured at 400 ft. The well then reportedly produced 726 gpm with a drawdown of 81 ft from a nonpumping water level of 146 ft.

A production test was conducted by the Layne-Western Co. on March 29, 1978. After 4.7 hr of pumping at rates ranging from 538 to 842 gpm, the final drawdown was 127 ft from a nonpumping water level of 134 ft.

On July 6, 1979, the nonpumping water level was reported to be 136 ft.

The pumping equipment presently installed is a 12-in., 4-stage Layne submersible pump (Serial No. 61173) rated at 1000 gpm, and powered by a 100-hp General Electric motor. The well is equipped with 277 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B32048) of a sample collected January 21, 1980, after pumping for 1.5 hr at 500 gpm, showed the water to have a hardness of 574 mg/l, total dissolved minerals of 826 mg/l, and an iron content of 1.20 mg/1.

Prior to the construction of Well No. 4, a test well, finished in dolomite, was completed in December 1953 to a depth of 418 ft by Neely, Schimelpfenig and Neely, Batavia. This test well was abandoned and sealed in 1954. The well was located at the southeast corner of Newton Ave. and Du Page Blvd., approximately 1040 ft N and 625 ft W of the SE corner of Section 15, T39N, R10E. An 8-in. diameter hole was drilled to a depth of 418 ft. The test well was cased with 8-in. pipe from land surface to a depth of 138 ft. A production test was conducted on December 28, 1953, by representatives of the driller, the State Water Survey, and the Walter E. Deuchler Co., Consulting Engineers. After 4 hr of pumping at rates ranging from 145 to 230 gpm, the drawdown was 5 ft from a nonpumping water level of 71 ft below land surface.

WELL NO. 4 was completed in February 1954 to a depth of 422 ft by L. Cliff Neely, Batavia. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located north of Roosevelt Road and east of Newton Ave., approximately 860 ft N and 645 ft W of the SE corner of Section 15, T39N, R10E. The land surface elevation at the well is approximately 770 ft.

A drillers log of Well No. 4 follows:

Strata		*Thickness (ft)*	*Depth (ft)*
Mud and gravel		45	45
Gravel		10	55
Mud and gravel		10	65
Blue clay and hardpan		35	100
Gravel and soft mud		28	128
Gravel		21	149
Lime		168	317
Blue shale		3	320
Brown shale		10	330
Broken lime		25	355
Lime	11		366
Broken lime		24	390
Lime		19	409
Gray shale		13	422

A 26-in. diameter hole was drilled to a depth of 20 ft, reduced to 20 in. between 20 and 150 ft, and finished 16 in. in diameter from 150 to 422 ft. The well is cased with 26-in. pipe from land surface to a depth of 20 ft and 20-in. pipe from about 0.5 ft above land surface to a depth of 150 ft.

A production test was conducted on February 25-26, 1954, by representatives of the driller, the village, the State Water Survey, and the Walter E. Deuchler Co., Consulting Engineers. After 20.9 hr of pumping at rates ranging from 510 to 995 gpm, the drawdown was 27 ft from a nonpumping water level of 85 ft below the top of the casing.

Nonpumping water levels were reported to be 95 ft in April 1957; 90 ft in June 1959; 96 ft in June 1960; 101 ft in June 1961; 110 ft in June 1963; 124 ft on April 30, 1964; 80 ft on April 12, 1965; 110 ft in May 1966; 97 ft below land surface on December 8, 1966; 124 ft in August 1967; 130 ft in June 1969; 116 ft in July 1971; 137 ft in March 1972; and 101 ft in October 1972.

The pumping equipment presently installed is a 15-in., 6-stage Layne turbine pump (No. 27943) set at 227 ft, rated at 1500 gpm, and powered by a 100-hp 1160 rpm Westinghouse electric motor (No. 1-22V515). A 10-ft section of 10-in. suction pipe is attached to the pump intake.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. C001115) of a sample collected September 20, 1977, after pumping for 5 hr, showed the water to have a hardness of 399 mg/1, total dissolved minerals of 522 mg/1, and an iron content of 0.8 mg/l.

WELL NO. 5 was completed in December 1961 to a depth of 418 ft (measured at 411 ft in December 1972) by L. Cliff Neely, Batavia. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located about 50 ft southeast of the Newton Ave. elevated tank about 200 ft south of Well No. 4, approximately 660 ft N and 645 ft W of the SE corner of Section 15, T39N, R10E. The land surface elevation at the well is approximately 770 ft.

A drillers log of Well No. 5 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Clay	18	18
Sandy and shale	17	35
Gravel	7	42
Blue mud	10	52
Gravel	6	58
Mud	14	72
Gravel	11	83
Shale	13	96
Gravel	19	115
Shale	18	133
Gravel	17	150
Lime	153	303
Gray shale	5	308
Brown shale	2	310
Lime	14	324
Shale	3	327
Lime shells and shale	47	374
Lime	10	384
Shale	4	388
Lime shells and shale	30	418

A 26-in. diameter hole was drilled to a depth of 160 ft and finished 16 in. in diameter from 160 to 418 ft. The well is cased with 26-in. pipe from about 1 ft above land surface to a depth of 153 ft and 20-in. pipe from land surface to a depth of 160 ft (cemented in). The top of the casing is equipped with a Well King pitless adapter.

A production test using one observation well was conducted by the driller on December 12-13, 1961. After 24 hr of pumping at rates ranging from 1387 to 887 gpm, the final drawdown was 118 ft from a nonpumping water level of 74 ft below land surface.

Nonpumping water levels were reported to be 80 ft in 1963; 80 ft on April 12, 1965; 78 ft below land surface on December 8, 1966; 150 ft in August 1967; 160 ft in June 1969; 168 ft in July 1971; and 106 ft in December 1972.

The pumping equipment presently installed is a 12-in., 4-stage Byron Jackson submersible pump set at 247 ft, rated at 1200 gpm, and powered by a 100-hp 1750 rpm Byron Jackson electric motor.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B025828) of a sample collected January 3, 1984, after pumping for 2 hr at about 1360 gpm, showed the water to have a hardness of 406 mg/l, total dissolved minerals of 687 mg/l, and an iron content of 0.95 mg/1.

A test well was completed in December 1966 to a depth of 410 ft by the Milaeger Well & Pump Co., Brookfield, Wis. The well was located approximately 950 ft S and 1100 ft W of the NE corner of Section 22, T39N, R10E. An 8-in. diameter hole was drilled to a depth of 410 ft. The test well was cased with 8-in. pipe from land surface to a depth of 143 ft. Upon completion, the well reportedly produced 450 gpm for 1.5 hr with a drawdown of 9 ft from a nonpumping water level of 72 ft.

WELL NO. 6 was completed in March 1970 to a depth of 425 ft by the Layne-Western Co., Aurora. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located northwest of the intersection of Wilson Ave. and Lambert Road south of Roosevelt Road, approximately 900 ft S and 1250 ft W of the NE corner of Section 22, T39N, R10E. The land surface elevation at the well is approximately 760 ft.

A drillers log of Well No. 6 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Yellow clay	15	15
Blue clay with gravel and boulders	114	129
Medium gray limestone	11	140
Hard gray limestone	105	245
Medium dark gray limestone	45	290
Medium dark gray limestone with shale streaks	10	300
Medium gray broken limestone	5	305
Medium gray limestone	5	310
Medium gray limestone with shale streaks	35	345
Medium dark gray limestone, crevice	5	350
Medium dark gray limestone	25	375
Medium dark gray limestone with shale streaks	25	400
Medium dark gray limestone and shale	15	415
Medium gray shale	10	425

A 25.2-in. diameter hole was drilled to a depth of 136 ft and finished 19.2 in. in diameter from 136 to 425 ft. The well is cased with 26-in. pipe from about 2 ft above land surface to a depth of 132 ft and 20-in. pipe from about 2 ft above land surface to a depth of 136 ft (cemented in).

A production test was conducted by the driller on March 26, 1970. After 12 hr of pumping at rates of

907 to 1205 gpm, the drawdown was 15 ft from a nonpumping water level of 78 ft below land surface. Twenty-five min after pumping was stopped, the water level had recovered to 79 ft.

The pumping equipment presently installed is a 14-in., 3-stage Byron Jackson turbine pump set at 110 ft, rated at 1200 gpm, and powered by a 145-hp Caterpillar natural gas engine (No. G333).

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. C001114) is for a water sample from the well collected September 20, 1977, after 2.5 hr of pumping.

WELL NO. 8, LABORATORY NO. **C001114**

		mg/l	*me/l*			*mg/l*	*me/l*
Iron	Fe	0.8		Silica	SiO_2	16	
Manganese	Mn	0.01		Fluoride	F	0.5	0.03
Ammonium	NH_4	0.66	0.04	Boron	B	0.6	
Sodium	Na	32	1.39	Cyanide	CN	0.01	
Potassium	K	2.5	0.06	Nitrate	NO_3	0.04	0.00
Calcium	Ca	82	4.09	Chloride	CI	24	0.68
Magnesium	Mg	42	3.46	Sulfate	SO_4	137	2.85
				Alkalinity (as $CaCO_3$)		292	5.84
Arsenic	As	0.000					
Barium	Ba	0.1		Hardness (as $CaCO_3$)		379	7.58
Cadmium	Cd	0.00					
Chromium	Cr	0.00		Total dissolved			
Copper	Cu	0.00		minerals		510	
Lead	Pb	0.00					
Mercury	Hg	0.0000					
Nickel	Ni	0.0					
Selenium	Se	0.00					
Silver	Ag	0.00					
Zinc	Zn	0.00		pH (as rec'd)		8.4	

A test well was completed in June 1971 to a depth of 419 ft by the Layne-Western Co., Aurora. This well is used by the High School for sprinkling purposes. The test well is located northwest of the intersection of Butterfield Road and Park Blvd. on the east Lide of Glenbard High School property, approximately 1200 ft N and 1300 ft E of the SW corner of Section 26, T39N, R10E. A 12-in. diameter hole was drilled to a depth of 107 ft and finished 7.9 in. in diameter from 107 to 419 ft. The well is cased with 8-in. steel pipe from land surface to a depth of 107 ft. A production test was conducted by the driller on July 3, 1971. After 5.9 hr of pumping at a rate of 421 gpm, the drawdown was 21 ft from a nonpumping water level of 90 ft. The well is equipped with a submersible pump.

WELL NO. 7 was completed in July 1985 to a depth of 435 ft by the Wehling Well Works, Beecher. As of August 1985, this well was not in use yet. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located at 308 West Wilson Ave. about 200 ft west of Lambert Road, approximately 943 ft S and 1238 ft W of the NE corner of Section 22, T39N, R10E. The land surface elevation at the well is approximately 755 ft.

A drillers log of Well No. 7 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift	60	60
Blue clay and gravel	66	126
Shale and gravel	6	132
Lime	159	291
Shale	1	292
Lime	94	386
Broken lime	20	406
Lime with shale	16	422
Lime	8	430
Shale	5	435

A 26-in. diameter hole was drilled to a depth of 139 ft and finished 19 in. in diameter from 139 to 435 ft. The well is cased with 26-in. black steel pipe from land surface to a depth of 139 ft and 20-in. pipe from land surface to a depth of 139 ft (cemented in).

A production test was conducted by the driller on July 22, 1985. After 12 hr of pumping at rates ranging from 960 to 2203 gpm, the drawdown was 23 ft from a nonpumping water level of 102 ft. Pumping was continued for 3 min at a rate of 3100 gpm with a final drawdown of 56 ft. Seven min after pumping was stopped, the water level had recovered to 103 ft.

As of August 1985, the permanent pumping equipment had not been installed.

A partial analysis of a sample (Lab. No. 221207) collected during the initial production test, showed the water to have a hardness of 453 mg/l, total dissolved minerals of 614 mg/l, and an iron content of 1.00 mg/l.

GLEN ELLYN HEIGHTS SUBDIVISION

Glen Ellyn Heights Subdivision (est. 2350), located about 0.5 mile north of Glen Ellyn, installed a public water supply in 1946. The water system is owned and operated by the Du Page County Public Works Department. One well (No. l) is in use and another well (No. 2) is available for emergency use. In 1956 there were about 15 services, all metered. In 1984 there were 222 services (including large apartment complex), all metered; the average pumpage was 186,850 gpd. The water is chlorinated.

WELL NO. 1, open to dolomite and shale of the Upper Bedrock Aquigroup (Maquoketa Group), was completed in March 1946 to a depth of 350 ft (cleaned in 1972 to a depth of 312 ft) by the J. P. Miller Artesian Well Co., Brookfield. The well is located at the intersection of North Ave. and Main St., approximately 100 ft S and 2625 ft W of the NE corner of Section 2, T39N, R10E. The land surface elevation at the well is approximately 742 ft.

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

Strata	*Thickness (ft)*	*Depth (ft)*
No record	135	135
SILURIAN SYSTEM		
Alexandrian Series		
Kankakee Dolomite		
Dolomite, white, very fine, slightly glauconitic; dolomite, light brown, very fine	20	155
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Shale, dolomitic, greenish gray, weak; little dolomite, argillaceous, very fine; occasional limonite "oolites"	10	165
No samples	25	190
Shale, dolomitic, greenish gray, weak; little dolomite, argillaceous, very fine	20	210
Shale, dolomitic, gray, silty	10	220
Dolomite, light gray brown and light gray speckled, fine to coarse, fossiliferous	5	225
No samples	10	235
Dolomite, gray, speckled, coarse, pyritic gastropod	15	250
Dolomite, light brown, silty	15	265
Dolomite, gray, very fine	20	285
Dolomite, light gray, very fine; dolomite, brown, pyritic, shaly	20	305
Shale, dolomitic, brown and gray, weak, nodules dolomite	10	315
Dolomite, brown and light gray speckled, very fine to coarse; shale, dolomitic, brown	10	325
Shale, dolomitic, light and dark brown, light gray, weak, dolomite nodules	25	350

A 10-in. diameter hole was drilled to a depth of 136 ft and finished 8 in. in diameter from 136 to 350 ft. The well is cased with 10-in. wrought iron pipe from about 0.9 ft above the pumphouse floor to a depth of 136 ft and an 8-in. liner from 136 ft to a depth of 234 ft.

Nonpumping water levels were reported to be 45 ft upon completion, 60 ft in December 1956, 47.50 ft in September 1957, 54 ft in January 1958, and 66 ft on March 11, 1968.

In 1972, this well was treated with 500 gal of acid and cleaned out to a depth of 312 ft. In March 1972, after acidizing, the well reportedly produced 238 gpm for 4 hr with a drawdown of 40.5 ft from a nonpumping water level of 74.9 ft.

The pumping equipment presently installed is a Red Jacket submersible pump set at 252 ft, rated at 220 gpm at about 240 ft TDH, and powered by a 25-hp electric motor.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B038973) is for a water sample from the well collected March 17, 1982, after 3 hr of pumping at 150 gpm.

WELL NO. 1, LABORATORY NO. B038973

		mg/l	*me/l*		*rng/l*	*me/l*
Iron	Fe	0.042	Silica	SiO_2	8.9	
Manganese	Mn	<0.005	Fluoride	F	1.31	0.07
Ammonium	NH_4	0.8	0.04	Boron	B	1.53	
Sodium	Na	220	9.57	Cyanide	CN	<0.005	
Potassium	K	13.0	0.33	Nitrate	NO_3	0.2	0.00
Calcium	Ca	25	1.25	Chloride	CI	66	1.86
Magnesium	Mg	13.6	1.12	Sulfate	SO_4	185	3.85
Strontium	Sr	0.71		Alkalinity (as $CaCO_3$)		348	6.96
Arsenic	As	<0.001		Hardness (as $CaCO_3$)		127	2.54
Barium	Ba	0.028					
Beryllium	Be	<0.000S		Total dissolved			
Cadmium	Cd	<0.003		minerals		758	
Chromium	Cr	<0.005					
Cobalt	Co	<0.005					
Copper	Cu	0.003					
Lead	Pb	<0.005					
Mercury	Hg	<0.00005					
Nickel	Ni	<0.003					
Selenium	Se	<0.001					
Silver	Ag	<0.005					
Vanadium	V	<0.004					
Zinc	Zn	0.008		pH (as rec'd) 7.6			

WELL NO. 2 was completed in June 1971 to a depth of 300 ft by the Meadow Equipment Sales & Service, Lombard. This well is available for emergency use. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located east of the sewage treatment plant west of Swift Road on the north side of St. Charles Road, approximately 600 ft N and 600 ft E of the SW corner of Section 1, T39N, R10E. The land surface elevation at the well is approximately 685 ft.

A drillers log of Well No. 2 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Yellow sandy clay	10	10
Mud, sand, and gravel	20	30
Sand, gravel, and gray clay	20	50
Boulders, sand, and gravel	12	62
Dolomite lime	73	135
Red shale	15	150
Green shale	15	165
Gray shale with gravel	35	200
Gray sandy shale	100	300

A 10-in. diameter hole was drilled to a depth of 6 ft and finished 8 in. in diameter from 6 to 300 ft. The well is equipped with a 10-in. diameter Baker monitor pitless adapter from about 2.3 ft above land surface to a depth of 6 ft and cased with 8-in. black steel pipe from 6 ft to a depth of 63 ft.

Upon completion, the well reportedly produced 300 gpm for 2 hr with a drawdown of 35 ft from a nonpumping water level of 5 ft.

In March 1972, the nonpumping water level was reported to be 13 ft.

The pumping equipment presently installed is a Grundfos submersible pump rated at 300 gpm, and powered by a Hitachi electric motor. The well is equipped with 140 ft of airline.

The following mineral analysis (Lab. No. 207690) is for a water sample from the well collected March 16, 1978, after 20 min of pumping.

WELL NO. 2, LABORATORY NO. 207690

		mg/l	***me/I***			*mg/l*	***me/I***
Iron(total)	Fe	1.3		Silica	SiO_2	17.0	
Manganese	Mn	0.02		Fluoride	F	0.2	
Ammonium	NH_4	0.6	0.03	Boron	B	0.1	
Sodium	Na	46.5	2.02	Nitrate	NO_3	0.3	0.00
Potassium	K	2.8	0.07	Chloride	CI	110	3.10
Calcium	Ca	124.8	6.23	Sulfate	SO_4	188.8	3.93
Magnesium	Mg	57.5	4.73	Alkalinity (as $CaCO_3$)		302	6.04
Strontium	Sr	0.58	0.01				
				Hardness (as $CaCO_3$)		548	10.96
Barium	Ba	<0.1					
Cadmium	Cd	0.00		Total dissolved			
Chromium	Cr	0.00		minerals		753	
Copper '	Cu	0.00					
Lead	Pb	<0.05					
Lithium	Li	0.01		Turbidity	12		
Nickel	Ni	<0.05		Color	0		
Silver	Ag	0.00		Odor	0		
Zinc	Zn	0.02		Temp (reported)	52F		

GODAIR HOMES

Godair Homes (est. 44), located about 0.5 mile south of Hinsdale, obtains its water from the village of Hinsdale. In 1982 there were 31 services, none metered.

HANOVER PARK

The village of Hanover Park (28,850) installed a public water supply in 1960. This village also extends into Cook County and five of the wells are located there. Four wells (Nos. 2, 3, 4, and 5) are in use and two wells (Nos. 1 and 6) are available for emergency use. In 1964 there were about 1000 services, none metered; the average and maximum pumpages were 285,000 and 400,000 gpd, respectively. In 1984 there were 8712 services, all metered; the average pumpage was 2,547,915 gpd. The water is chlorinated.

WELL NO. 1, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in August 1960 to a depth of 202 ft by the J. P. Miller Artesian Well Co., Brookfield. This well is available for emergency use. The well is located on the south side of Evergreen St. about one-half block west of Church St., approximately 3750 ft N and 1600 ft W of the SE corner of Section 36, T41N, R9E, Cook County. The land surface elevation at the well is approximately 828 ft.

A drillers log of Well No. 1 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift	141	141
Limestone	61	202

A 6-in. diameter hole was drilled to a depth of 202 ft. The well is cased with 6-in. steel pipe from about 1.5 ft above the wellhouse floor to a depth of 144 ft.

Upon completion, the well reportedly produced 120 gpm for 1 hr with a drawdown of 5 ft from a nonpumping water level of 65 ft.

On September 10, 1979, the nonpumping water level was reported to be 82 ft.

The pumping equipment presently installed is a Peerless turbine pump set at 100 ft, rated at 200 gpm, and powered by a 15-hp U. S. electric motor.

The following mineral analysis (Lab. No. 211842) is for a water sample from the well collected September 10, 1979, after 10 min of pumping at 100 gpm.

WELL NO. 1, LABORATORY NO. 211842

		mg/l	*me/l*			*mg/l*	*me/l*
Iron(total)	Fe	1.0		Silica	SiO_2	25.0	
Manganese	Mn	0.01		Fluoride	F	0.3	
Ammonium	NH_4	0.3	0.02	Boron	B	0.2	
Sodium	Na	14.0	0.61	Nitrate	NO_3	0.2	0.00
Potassium	K	1.4	0.04	Chloride	CI	5	0.14
Calcium	Ca	70.4	3.51	Sulfate	SO_4	78.2	1.63
Magnesium	Mg	44.4	3.65	Alkalinity (as	$CaCO_3$)	296	5.92
Strontium	Sr	0.50	0.01				
				Hardness (as	$CaCO_3$)	358	7.16
Barium	Ba	<0.05					
Cadmium	Cd	0.00		Total dissolved			
Chromium	Cr	0.00		minerals		418	
Copper	Cu	0.01					
Lead	Pb	0.00					
Lithium	Li	0.01		Turbidity	5		
Nickel	Ni	0.00		Color	0		
Silver	Ag	0.00		Odor	0		
Zinc	Zn	0.01		Temp (reported)	52F		

WELL NO. 2 was completed in January 1961 to a depth of 1429 ft by the J. P. Miller Artesian Well Co., Brookfield. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer). The well also penetrates the upper part of the Eau Claire Formation. The well is located on Evergreen St. about one-half block west of Church St., approximately 3750 ft N and 1650 ft W of the SE corner of Section 36, T41N, R9E, Cook County. The land surface elevation at the well is approximately 828 ft.

A drillers log of Well No. 2 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift	142	142
Lime	108	250
Shale	210	460
Lime	112	572
Sand	418	990
Lime	260	1250
Sand	150	1400
Lime and shale	29	1429

A 16-in. diameter hole was drilled to a depth of 497 ft, reduced to 12 in. between 497 and 1135 ft, and finished 10 in. in diameter from 1135 to 1429 ft. The well is cased with 16-in. steel pipe from about 2 ft above the wellhouse floor to a depth of 159.8 ft, 12-in. pipe from land surface to a depth of 497 ft (cemented in), and a 10-in. liner from 974.4 ft to a depth of 1135 ft.

After the well was shot 6 times, a production test was conducted by the driller on January 28-29, 1961. After 15.3 hr of pumping at rates ranging from 500 to 810 gpm, the drawdown was 108 ft from a nonpumping water level of 450 ft below land surface. Pumping was continued for 4 hr at a rate of 700 gpm with a drawdown of 100 ft. After an additional 4.7 hr of pumping at rates of 600 to 585 gpm, the final drawdown was 89 ft. The water level recovered to 476 ft after pumping had been stopped for 1.2 hr.

In September 1976, the well reportedly produced 980 gpm with a drawdown of 108 ft from a nonpumping water level of 652 ft.

The pumping equipment presently installed consists of a 300-hp Ideal electric motor, a 16-stage Peerless turbine pump set at 940 ft, rated at 1000 gpm, and has 940 ft of 8-in. column pipe. The well is equipped with 940 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B32142) of a sample collected April 4, 1983, after pumping for 4 hr at 790 gpm, showed the water to have a hardness of 241 mg/l, total dissolved minerals of 356 mg/l, and an iron content of 0.10 mg/1.

WELL NO. 3 was completed in 1965 to a depth of 1952 ft by the Wehling Well Works, Beecher. The water-yielding units in this well are the Midwest Aquigroup (Cambrian-Ordovician aquifer) and the Basal Bedrock Aquigroup (Elmhurst-Mt. Simon aquifer). The well is located at the northwest corner of Longmeadow Lane and Walnut Ave., approximately 2800 ft N and 2500 ft E of the SW corner of Section 31, T41N, R10E, Cook County. The land surface elevation at the well is approximately 790 ft.

A drillers log of Well No. 3 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Fill	5	5
Clay	33	38
Clay and gravel	7	45
Shale and gravel	10	55
Clay	19	74
Clay gravel and sand	22	96
Mud gravel	26	122
Lime sand and gravel	9	131
Lime	24	155
Pink lime	21	176
Lime	27	203
Shale	7	210
Shale and lime shells	11	221
Lime and shale	9	230
Shale	36	266
Lime	3	269
Lime and shale	36	305
Shale and shells	17	322
Lime	6	328
Shale and lime	8	336
Shale and shells	22	358
Lime and shale	18	376
Shale	26	402
Shale muddy	10	412
Lime	171	583
Brown lime	10	593
Gray lime	4	597
Hard lime	12	609
Lime	88	697
Lime hard shells	13	710
Lime	30	740
Sand	255	995
Sand and lime and shale	4	999
Lime	11	1010
Lime and brown shale	8	1018
Lime and shale	26	1044
Lime	4	1048
Lime, gyp and red rock	13	1061
Lime, gyp and shale	14	1075
Lime and shale	3	1078
Lime and red rock	16	1094
Lime	5	1099
Lime and shale	2	1101
Lime, shale and shells	14	1115
Lime and red mud	9	1124
Lime shale, red rock and red mud	18	1142
Red mud and sandy lime	12	1154
Sandy lime	11	1165
Lime and green shale	2	1167
Lime and shale	30	1197
Lime	4	1201
Hard sandy lime	27	1228
Sandy lime	7	1235
Sandstone	114	1349
Clay and sand shells	7	1356
Sandstone	7	1363
Sand and shale	4	1367
Sandstone	15	1382
Soft sand	3	1385
Hard sand	3	1388
Sandstone	10	1398
Lime and shale (shale at 1402 ft)	118	1516
Lime shale - mud	7	1523
Lime and shale	13	1536
Shells	3	1539
Sandy lime	11	1550
Lime	9	1559
Sand and lime	26	1585
Sandy lime	6	1591
Lime	32	1623

Strata	Thickness (ft)	Depth (ft)
Sand and shale	8	1631
Lime shale and gyp	14	1645
Shale sand	5	1650
Shale and lime	8	1658
Lime and shale	10	1668
Sand	15	1683
Lime	12	1695
Blue shale	5	1700
Lime and shale	4	1704
Sand	12	1716
Sand and shale	8	1724
Shale and shells	3	1727
Shale and lime	6	1733
Shale and shells	40	1773
Sandstone	23	1796
Sand	154	1950
Shale	2	1952

A 25-in. diameter hole was drilled to a depth of 497 ft, reduced to 20 in. between 497 and 1160 ft, and finished 15 in. in diameter from 1160 to 1952 ft. The well is cased with 26-in. OD drive pipe from land surface to a depth of 141.7 ft, 20-in. pipe from land surface to a depth of 497 ft (cemented in), and a 16-in. liner from 979 ft to a depth of 1160 ft.

On January 19, 20, and 22, 1965, this well was shot with a total of 1440 qt of nitroglycerin. On March 2, 1965, this well was shot with 20 qt of nitroglycerin and 60 ft of prima cord at depths of 1295 to 1320 ft.

A production test was conducted by the driller on April 13-14, 1965. After 20 hr of pumping at rates ranging from 850 to 1190 gpm, the drawdown was 193 ft from a nonpumping water level of 443 ft below land surface. After a 30-min recovery period, pumping was continued at a rate of 1190 gpm for 3.4 hr with a drawdown of 192 ft. Thirty min after pumping was stopped, the water level had recovered to 541 ft.

A second production test was conducted by the driller on May 26-27, 1965. After 16.7 hr of pumping at rates ranging from 1000 to 1100 gpm, the drawdown was 125 ft from a nonpumping water level of 467 ft below land surface.

The pumping equipment presently installed is a Johnston vertical turbine pump set at 755 ft, rated at 1300 gpm, and powered by a 300-hp General Electric motor.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B021167) is for a water sample from the well collected January 18, 1983, after 31 hr of pumping at 1183 gpm.

WELL NO. 8, LABORATORY NO. B021167

		mg/l	me/I			mg/l	me/I
Iron	Fe	0.12		Silica	SiO_2	6.6	
Manganese	Mn	0.008		Fluoride	F	1 51	0.08
Ammonium	NH_4	0.6	0.03	Boron	B	0.49	
Sodium	Na	36	1.57	Cyanide	CN	<0.005	
Potassium	K	13.6	0.35	Nitrite	NO_3	<0.4	
Calcium	Ca	53	2.64	Chloride	CI	13	0.37
Magnesium	Mg	18	1.48	Sulfate	SO_4	20	0.42
Strontium	Sr	2.43		Alkalinity (as $CaCO_3$)		272	5.44
Arsenic	As	<0.001		Hardness (as $CaCO_3$)		197	3.94
Barium	Ba	0.277					
Beryllium	Be	<0.0005		Total dissolved			
Cadmium	Cd	<0.003		minerals		341	
Chromium	Cr	<0.005					
Cobalt	Co	<0.005					
Copper	Cu	<0.003					
Lead	Pb	<0.005					
Mercury	Hg	<0.00005					
Nickel	Ni	<0.003					
Selenium	Se	<0.001					
Silver	Ag	<0.005					
Vanadium	V	<0.004					
Zinc	Zn	0.003		pH (as rec'd)		7.8	

WELL NO. 4 was completed in January 1968 to a depth of 1434 ft (reported to be 1310 ft deep in 1977) by the J. P. Miller Artesian Well Co., Brookfield. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer). The well also penetrates the upper part of the Eau Claire Formation. The well is located near the village hall on Lake St., approximately 850 ft N and 1790 ft E of the SW corner of Section 36, T41N, R9E, Cook County. The land surface elevation at the well is approximately 820 ft.

A drillers log of Well No. 4 follows:

Strata	Thickness (ft)	Depth (ft)
Drift	155	155
Niagaran dolomite	65	220
Maquoketa shale	212	432
Galena-Platteville dolomite	320	752
St. Peter sandstone	230	982
Prairie du Chien lime and shale	218	1200
Galesville sandstone	195	1395
Shale	39	1434

A 25.2-in. diameter hole was drilled to a depth of 457 ft, reduced to 19.2 in. between 457 and 1091 ft, and finished 15.2 in. in diameter from 1091 to 1434 ft. The well is cased with 26-in. steel pipe from land surface to a depth of 155 ft, 20-in. pipe from land surface to a depth of 457 ft (cemented in), and a 16-in. liner from 961 ft to a depth of 1091 ft.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B011945) is for a water sample from the well collected September 19, 1983, after 1.5 hr of pumping at 1010 gpm.

WELL NO. 4, LABORATORY NO. B011945

		my/l	*me/l*			*mg/l*	*me/l*
Iron	Fe	0.01		Silica	SiO_2	6.5	
Manganese	Mn	<0.005		Fluoride	F	1.35	0.07
Ammonium	NH_4	0.2	0.01	Boron	B	0.47	
Sodium	Na	35	1.52	Cyanide	CN	<0.005	
Potassium	K	14	0.36	Nitrate	NO_3	<0.4	
Calcium	Ca	57	2.84	Chloride	CI	5	0.14
Magnesium	Mg	24.5	2.02	Sulfate	SO_4	20	0.42
Strontium	Sr	3.82		Alkalinity (as $CaCO_3$)		307	6.14
Arsenic	As	<0.001		Hardness (as $CaCO_3$)		248	4.96
Barium	Ba	0.904					
Beryllium	Be	<0.001		Total dissolved			
Cadmium	Cd	<0.003		minerals		339	
Chromium	Cr	<0.005					
Cobalt	Co	<0.005					
Copper	Cu	0.004					
Lead	Pb	<0.005					
Mercury	Hg	<0.00010					
Nickel	Ni	0.007					
Selenium	Se	<0.001					
Silver	Ag	<0.005					
Vanadium	V	<0.004					
Zinc	Zn	0.015		pH (as rec'd)		7.9	

A production test was conducted by the driller on January 4, 1968. After 1.5 hr of pumping at rates of 350 to 600 gpm, the drawdown was 95 ft from a nonpumping water level of 495 ft below the top of the casing.

This well was then shot with nine charges as follows: 306 lb between 1385 and 1375 ft, 306 lb between 1365 and 1355 ft, 306 lb between 1345 and 1335 ft, 306 lb between 1325 and 1315 ft, 306 lb between 1305 and 1295 ft, 306 lb between 1285 and 1275 ft, 485 lb between 1375 and 1361 ft, 356 lb between 1335 and 1325 ft, and 369 lb between 1315 and 1305 ft.

A second production test was conducted by the driller on March 5-6, 1968. After 13.6 hr of pumping at rates ranging from 780 to 1225 gpm, the drawdown was 162 ft from a nonpumping water level of 498 ft below the top of the casing. Twenty-one min after pumping was stopped, the water level had recovered to 540 ft. Pumping was continued for 13.2 hr at rates ranging from 1250 to 1200 gpm with a drawdown of 165 ft. The water level recovered to 527 ft after pumping had been stopped for 5.7 hr.

In June 1977, the well reportedly produced 1340 gpm with a drawdown of 162 ft from a nonpumping water level of 623 ft.

In July 1977, it was reported that sand was caving into the well at 1310 ft.

Nonpumping water levels were reported to be 630 ft in July 1978, and 685 ft in December 1978.

The pumping equipment presently installed consists of a 400-hp 1768 rpm Ideal electric motor, a 10-in., 19-stage Peerless turbine pump set at 950 ft, rated at 1100 gpm at about 1000 ft TDH, and has 950 ft of 10-in. column pipe. A 10-ft section of 10-in. suction pipe is attached to the pump intake. The well is equipped with 950 ft of airline.

WELL NO. 5 was completed in July 1973 to a depth of 1445 ft by the Wehling Well Works, Beecher. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer) except for dolomites of the Galena and Platteville Groups and the Glenwood-St. Peter Sandstone. The well also penetrates the upper part of the Eau Claire Formation. The well is located along the south side of Schick Road just east of the Illinois Central-Gulf RR, approximately 2544 ft N and 177 ft E of the SW corner of Section 13, T40N, R9E, Du Page County. The land surface elevation at the well is approximately 793 ft.

A drillers log of Well No. 5 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift	134	134
Drift gravel, lime shells	11	145
Lime	60	205
Shale	89	294
Sandy shale	54	348
Shale and sand	14	362
Shale with lime	8	370
Shale	22	392
Shale and lime	92	484
Lime - broken formation	116	600
Lime with shale	140	740
Sand	253	993
Sand and lime	33	1026
Sand lime shale	43	1069
Lime sand - shale	11	1080
Lime with red shale	47	1127
Lime	34	1161
Sand - red shale and lime	24	1185
Lime with sand	75	1260
Sand with lime	40	1300
Sand	120	1420
Shale and sandy shale	20	1440
Shale with sand	5	1445

A 20-in. diameter hole was drilled to a depth of 132 ft, reduced to 19 in. between 132 and 1080 ft, and finished 15 in. in diameter from 1080 to 1445 ft. The well is cased with 20-in. black steel pipe from land surface to a depth of 132 ft and 16-in. pipe from land surface to a depth of 1080 ft (cemented in).

On May 7, 1977, the nonpumping water level was reported to be 497.5 ft below land surface.

A production test was conducted by the driller on May 10, 1977. After 4.8 hr of pumping at rates ranging from 560 to 1160 gpm, the maximum drawdown was 330 ft from a nonpumping water level of 496 ft.

A step-drawdown production test was conducted on May 13, 1977, by representatives of the driller and Metcalf & Eddy, Inc. After pumping the well for four successive periods of 1 hr each at rates of 599, 805, 1001, and 1200 gpm, the drawdown at the end of each step was 106, 143, 182, and 219 ft from a nonpumping water level of 601.5 ft below land surface.

A production test was conducted on May 16-17, 1977, by representatives of the driller and Metcalf & Eddy, Inc. After 8 hr of pumping at a rate of 1001 gpm, the final drawdown was 228.0 ft from a nonpumping water level of 565.5 ft below land surface. The water level recovered to 605.5 ft after pumping had been stopped for 14.5 hr.

The pumping equipment presently installed is a 12-in., 13-stage turbine pump set at 950 ft, rated at 1000 gpm at about 938 ft head, and powered by a 400-hp General Electric motor.

A partial analysis of a sample (Lab. No. 205044) collected May 13, 1977, showed the water to have a hardness of 260 mg/l, total dissolved minerals of 375 mg/l, and an iron content of 0.1 mg/1.

Test Well No. 1-77 was completed in July 1977 to a depth of 151 ft by the J. P. Miller Artesian Well Co., Brookfield. It was located approximately 700 ft N and 1720 ft E of the SW corner of Section 36, T41N, R9E, Cook County. A 48-in. diameter hole was drilled to a depth of 10 ft and finished 42 in. in diameter from 10 to 151 ft. The test well was cased with 18-in. pipe from land surface to a depth of 131 ft followed by 20 ft of 18-in. stainless steel screen. The annulus between the bore hole and casing-screen assembly was filled with concrete from 0 to 20 ft, with impervious fill from 20 to 85 ft, and with gravel from 85 to 151 ft.

Test Well No. 2-77 was completed in July 1977 to a depth of 159 ft (145 ft effective depth) by the J. P. Miller Artesian Well Co., Brookfield. It was located approximately 2600 ft N and 1800 ft W of the SE corner of Section 31, T41N, R10E, Cook County. A 48-in. diameter hole was drilled to a depth of 10 ft and finished 42 in. in diameter from 10 to 145 ft. The test well was equipped with 16-in. pipe from land surface to a depth of 85 ft, 16-in. stainless steel screen from 85 ft to a depth of 105 ft, 16-in. pipe from 105 ft to a depth of 115 ft, and 16-in. stainless steel screen from 115 ft to a depth of 145 ft. The annulus between the bore hole and casing-screen assembly was filled with concrete from 0 to 20 ft, with impervious fill from 20 to 70 ft, and with gravel from 70 to 145 ft. Upon completion, the nonpumping water level was reported to be 65 ft.

Test Well No. 3-77 was completed in July 1977 to a depth of 135 ft (125 ft effective depth) by the J. P. Miller Artesian Well Co., Brookfield. It was located approximately 2550 ft N and 132 ft E of the SW corner of Section 13, T40N, R9E, Du Page County. A 48-in. diameter hole was drilled to a depth of 10 ft and finished 42 in. in diameter from 10 to 125 ft. The test well was cased with 16-in. pipe from land surface to a depth of 95 ft followed by 30 ft of 16-in. stainless steel screen. The annulus between the bore hole and casing-screen assembly was filled with concrete from 0 to 20 ft, with impervious fill from 20 to 65 ft, and with gravel from 65 to 125 ft. Upon completion, the nonpumping water level was reported to be 65 ft.

A supply well was drilled in February 1978 to a depth of 100 ft by the J. P. Miller Artesian Well Co., Brookfield. It was located approximately 140 ft N and 730 ft E of the SW corner of the NE quarter of Section 31, T41N, R10E, Cook County. The supply well was cased with 8-in. steel pipe from land surface to a depth of 85 ft followed by 15 ft of 8-in. No. 40 slot screen. Upon completion, it reportedly produced 150 gpm for 8 hr with a drawdown of 31 ft from a nonpumping water level of 53 ft below land surface.

WELL NO. 6, finished in sand and gravel of the Prairie Aquigroup, was completed in February 1978 to a depth of 128 ft by the J. P. Miller Artesian Well Co., Brookfield. This well is available for emergency use. The well is located about 150 ft west-southwest of Well No. 3, approximately 2750 ft N and 2350 ft E of the SW corner of Section 31, T41N, R10E, Cook County. The land surface elevation at the well is approximately 790 ft.

A drillers log of Well No. 6 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Clay and gravel	79	79
Sand and gravel with clay streaks	45	124
Broken limestone	5	129

A 42-in. diameter hole was drilled to a depth of 129 ft. The well is cased with 16-in. steel pipe from about 1 ft above land surface to a depth of 98 ft followed by 30 ft of 16-in. No. 25 slot stainless steel screen. The annulus between the bore hole and casing-screen assembly is filled with concrete from 0 to 26 ft, with sand and bentonite from 26 to 79 ft, and with No. 0 Northern sand from 79 to 129 ft. The top of the casing is equipped with a pitless adapter.

A production test was conducted by the driller on February 9-10, 1978. After 24 hr of pumping at a rate of 525 gpm, the final drawdown was 32.2 ft from a nonpumping water level of 52.3 ft below land surface. One hr after pumping was stopped, the water level had recovered to 53.3 ft.

On September 10, 1979, the nonpumping water level was reported to be 47 ft.

The pumping equipment presently installed is a Sumo submersible pump set at 95 ft, and powered by a 30-hp Sumo electric motor.

The following mineral analysis (Lab. No. 211843) is for a water sample from the well collected September 10, 1979, after 10 min of pumping at 540 gpm.

WELL NO. 6, LABORATORY NO. 211843

		mg/l	*me/l*			*mg/l*	*me/l*
Iron(total)	Fe	0.7		Silica	SiO_2	25.6	
Manganese	Mn	0.05		Fluoride	F	0.4	
Ammonium	NH_4	0.4	0.02	Boron	B	0.2	
Sodium	Na	14.5	0.63	Nitrate	NO_3	0.0	0.00
Potassium	K	1.5	0.04	Chloride	CI	3	0.08
Calcium	Ca	67.2	3.35	Sulfate	SO_4	76.9	**1.60**
Magnesium	Mg	41.5	3.41	Alkalinity (as $CaCO_3$)		284	5.68
Strontium	Sr	0.67	0.02				
				Hardness (as $CaCO_3$)		338	6.76
Barium	Ba	<0.05					
Cadmium	Cd	0.00		Total dissolved			
Chromium	Cr	0.00		minerals		409	
Copper	Cu	0.01					
Lead	Pb	0.00					
Lithium	Li	0.01		Turbidity	5		
Nickel	Ni	0.00		Color	0		
Silver	Ag	0.00		Odor	0		
Zinc	Zn	0.00		Temp.(reported)	52F		

Four test holes were constructed in March, April, and May 1978 to depths of 122, 125, 130, and 130 ft by the J. P. Miller Artesian Well Co., Brookfield. The holes were located in Section 13, T40N, R9E, Du Page County.

Test Well No. 1-80 was completed in August 1980 to a depth of 230 ft by the Layne-Western Co., Aurora. It was located near the north water tower, approximately 3000 ft S and 500 ft E of the NW corner of Section 29, T41N, R10E, Cook County. A 12-in. diameter hole was drilled to a depth of 151 ft and finished 7.9 in. in diameter from 151 to 230 ft. The test well was cased with 12-in. pipe from about 2 ft above land surface to a depth of 151 ft. A production test of the Silurian dolomite aquifer was conducted by the driller on August 5, 1980. After 3 hr of pumping at rates of 15 to 16 gpm, the final drawdown was 66 ft from a nonpumping water level of 75 ft. The hole from 153 to 230 ft was backfilled and the test well was equipped with 8-in. pipe from about 1 ft above land surface to a depth of 107 ft, 8-in. No. 7 (0.055 in.) Layne shutter screen from 107 ft to a depth of 117 ft, 8-in. pipe from 117 ft to a depth of 148 ft, and 6-in. No. 30 slot Johnson screen from 148 ft to a depth of 153 ft. The annulus between the 12-in. casing and the 8-in. casing-screen assembly was filled with 2700 lb of No. 3 Muscatine gravel from 105 to 153 ft, and the 12-in. casing was then removed from the hole. Production tests of the sand and gravel aquifer were conducted by the driller. On August 12, 1980, after 1 hr of pumping at a rate of 200 gpm, the drawdown was 21.5 ft from a nonpumping water level of 74 ft. On August 13, 1980, the test well reportedly produced at rates ranging from 204 to 200 gpm for 3 hr with a final drawdown of 23.5 ft from a nonpumping water level of 74 ft.

Test Well No. 2-80 was completed in August 1980 to a depth of 201 ft by the Layne-Western Co., Aurora. It was located about 130 ft south of the sewage lift station on Jefferson St., approximately 2500 ft S and 2000 ft W of the NE corner of Section 12, T40N, R9E, Du Page County. A 12-in. diameter hole was drilled to a depth of 107 ft and finished 7.9 in. in diameter from 107 to 201 ft. The test well was cased with 12-in. pipe from about 2 ft above land surface to a depth of 107 ft. A production test of the Silurian dolomite aquifer was conducted by the driller on August 25, 1980. After 3 hr of pumping at rates ranging from 40 to 50 gpm, the drawdown was 52 ft from a nonpumping water level of 37 ft. The hole from 69 to 201 ft was backfilled and the test well was cased with 8-in. pipe from about 2 ft above land surface to a depth of 64 ft followed by 5 ft of 8-in. No. 30 slot Johnson screen. The annulus between the 12-in. casing and the 8-in. casing-screen assembly was filled with 2000 lb of No. 3 Muscatine gravel from 55 to 69 ft, and the 12-in. casing was then removed from the hole. A production test of the sand and gravel aquifer was conducted by the driller on August 28, 1980.

After 4 hr of pumping at rates ranging from 142 to 102 gpm, the final drawdown was 22.5 ft from a nonpumping water level of 37.0 ft.

Test Well No. 3-80 was completed in September 1980 to a depth of 200 ft by the Layne-Western Co., Aurora. It was located at the outside entrance to the sewage treatment plant, approximately 300 ft S and 2000 ft E of the NW corner of Section 7, T40N, R10E, Du Page County. A 12-in. diameter hole was drilled to a depth of 107 ft and finished 7.9 in. in diameter from 107 to 200 ft. The test well was cased with 8-in. pipe from about 2 ft above land surface to a depth of 107 ft. A production test was conducted by the driller on September 9-10, 1980. After 24 hr of pumping at rates of 560 to 548 gpm, the final drawdown was 4 ft from a nonpumping water level of 44 ft below land surface. Fifty min after pumping was stopped, the water level had recovered to 45 ft.

HIGHLAND HILLS SANITARY DISTRICT

Highland Hills Sanitary District (est. 1100), located about 0.5 mile south of Lombard, installed a public water supply in 1954. The water system is owned by the Highland Hills Sanitary District and operated by the Hinsdale Sanitary District. Two wells are in use. In 1957 there were 155 services, all metered; the average pumpage was 28,500 gpd. In 1982 there were 370 services, all metered; the average pumpage in 1981 was 119,200 gpd. The water is chlorinated, fluoridated, and treated with silicate.

WELL NO. 1 was completed in September 1954 to a depth of 241 ft by the J. P. Miller Artesian Well Co., Brookfield. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located about 100 ft west of Highland Ave. on the north side of 13th St., approximately 730 ft S and 1520 ft E of the NW corner of Section 20, T39N, R11E. The land surface elevation at the well is approximately 720 ft.

A correlated drillers log of Well No. 1 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)* '
QUATERNARY SYSTEM		
Pleistocene Series		
Mud	60	60
Sand and gravel	20	80
Gravel and muddy sand	26	106
SILURIAN SYSTEM		
Niagaran and Alexandrian Series		
White limestone	124	230
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Shale and limestone	11	241

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. C005498) is for a water sample from the well collected February 5, 1974, after 30 min of pumping.

WELL NO. 1, LABORATORY NO. C006408

		mg/l	*me/l*			*mg/t*	*me/I*
Iron	Fe	2.7		Silica	SiO_2	20.0	
Manganese	Mn	0.05		Fluoride	F	0.3	0.02
Ammonium	NH_4	0.71	0.04	Boron	B	0.3	
Sodium	Na	16	0.70	Cyanide	CN	0.00	
Potassium	K	2.4	0.06	Nitrate	NO_3	0.4	0.01
Calcium	Ca	132	6.59	Chloride	CI	23	0.65
Magnesium	Mg	54	4.44	Sulfate	SO_4	207	4.31
				Alkalinity (as $CaCO_3$)		364	7.28
Arsenic	As	0.00					
Barium	Ba	0.0		Hardness (as $CaCO_3$)		556	11.12
Cadmium	Cd	0.00					
Chromium	Cr	0.00		Total dissolved			
Copper	Cu	0.01		minerals		688	
Lead	Pb	0.00		pH (as rec'd)		7.4	
Mercury	Hg	0.0000		Radioactivity			
Nickel	Ni	0.0		Alpha *pc/l*		3.4	
Selenium	Se	0.00		± deviation		2.5	
Silver	Ag	0.00		Beta *pc/l*		7.1	
Zinc	Zn	0.01		± deviation		2.3	

A 10-in. diameter hole was drilled to a depth of 241 ft. The well is cased with 10-in. galvanized wrought iron pipe from about 1.5 ft above land surface to a depth of 106 ft.

Upon completion, the well reportedly produced 485 gpm for 6 hr with a drawdown of 114 ft from a nonpumping water level of 29 ft below the top of the casing.

On August 15, 1957, after pumping at a rate of 250 gpm, the drawdown was 91 ft from a nonpumping water level of 29 ft.

Nonpumping water levels were reported to be 41 ft in April 1965, and 53 ft below land surface on July 23, 1979.

The pumping equipment presently installed is an 8-in., 8-stage Peerless turbine pump set at 120 ft, rated at 250 gpm at about 223 ft TDH, and powered by a 20-hp 1800 rpm U. S. electric motor. A 10-ft section of suction pipe is attached to the pump intake. The well is equipped with 120 ft of airline.

WELL NO. 2, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in April 1967 to a depth of 200 ft by the Stanley Bros., West Chicago. The well is located south of the pumphouse for Well No. 1, approximately 845 ft S and 1525 ft E of the NW corner of Section 20, T39N, R11E. The land surface elevation at the well is approximately 720 ft.

A drillers log of Well No. 2 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Glacial till	106	106
Limestone	94	200

An 8-in. diameter hole was drilled to a depth of 200 ft. The well is cased with 8-in. steel pipe from about 3 ft above land surface to a depth of 106 ft. The top of the well casing is equipped with a Williams pitless adapter.

The pumping equipment presently installed consists of a 20-hp U. S. electric motor, a Peerless submersible pump set at 120 ft, rated at 210 gpm at about 248 ft TDH, and has 120 ft of 3-in. column pipe.

A partial analysis of a sample (Lab. No. 174808) collected May 17, 1968, after pumping for 45 min at 100 gpm, showed the water to have a hardness of 526 mg/l, total dissolved minerals of 634 mg/l, and an iron content of 0.5 mg/1.

HINSDALE

The village of Hinsdale (16,726) installed a public water supply in 1890. Nine wells (Nos. 2-10) are in use. This supply is also cross connected with the villages of Oak Brook and Western Springs. Hinsdale also furnishes water to Godair Homes. In 1949 there were 2350 services, all metered; the average and maximum pumpages in 1950 were 1,350,000 and 1,912,000 gpd, respectively. In 1984 there were 5585 services, all metered; the average pumpage was 3,075,700 gpd. The water is aerated, softened by cold lime soda process, filtered, chlorinated, and fluoridated.

Initially, water was obtained from a well, finished in sandstone, and completed in December 1890 to a depth of 864 ft by the J. P. Miller Artesian Well Co., Brookfield. This well was abandoned in 1901 and sealed in 1921. The well was located in the basement of the generating station, approximately 75 ft N and 2200 ft W of the SE corner of Section 1, T38N, R11E. The well was cased with 8-in. pipe from land surface to a depth of 42 ft.

WELL NO. 1, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in 1900 to a depth of 209 ft (measured at 198 ft in February 1970). This well is not in use. The well is located in the southeast corner of the power house west of Park Ave. and north of the Burlington Northern RR tracks, approximately 50 ft N and 2150 ft W of the SE corner of Section 1, T38N, R11E. The land surface elevation at the well is approximately 683 ft.

A 12-in. diameter hole was drilled to a depth of about 100 ft and finished 8 in. in diameter from about 100 to 209 ft. The well is cased with 12-in. pipe from above the pumphouse floor to a depth of about 100 ft.

On February 15, 1924, the well reportedly produced 487 gpm for 4 hr with a drawdown of 3.0 ft from a nonpumping water level of 16.5 ft below the floor of an 18.5-ft deep pit.

Nonpumping water levels were reported to be 54 ft on July 14 and 21, 1957; 53 ft on July 28, 1957; 54 ft on August 4, 1957; 53 ft in March 1958; 71 ft in March 1961; 77 ft in February 1963; 80 ft in April 1964; 83 ft in April 1965; 84 ft in July 1968; 67 ft in February 1970; and 73 ft in December 1970.

In March 1971, after pumping at a rate of 680 gpm, the drawdown was 12 ft from a nonpumping water level of 73 ft.

Nonpumping water levels were reported to be 80 ft in July 1971 and January 1972, and 72 ft in March 1973.

The pumping equipment presently installed consists of a 40-hp 1800 rpm U. S. electric motor, a 10-in., 4-stage Layne turbine pump (No. 6524) set at 90 ft, rated at 750 gpm at about 148 ft TDH, and has 90 ft of 7-in. column pipe. A 30-ft section of 6-in. suction pipe is attached to the pump intake. The well is equipped with 90 ft of airline.

A partial analysis of a sample (Lab. No. 158189) collected July 19, 1962, showed the water to have a hardness of 569 mg/l, total dissolved minerals of 713 mg/l, and an iron content of 1.5 mg/1.

WELL NO. 2, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in August 1924 to a depth of 271 ft (cleaned in May 1945 to 272.8 ft and measured at 227 ft deep in May 1964) by M. T. Peterson, Madison, Wis. The well is located at the northeast corner of Park Ave. and N. M. Symonds Drive about 100 ft west of the water treatment plant, approximately 150 ft N and 1950 ft W of the SE corner of Section 1, T38N, R11E. The land surface elevation at the well is approximately 686 ft.

A summary sample study log of Well No. 2 furnished by the State Geological Survey follows:

Strata	*Thicknesi (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
Till, calcareous, light brownish orange at top, grading to grayish brown	26	26
Till, calcareous, tan	16	42
Gravel and boulders, dolomitic, silty	3	45
SILURIAN SYSTEM		
Niagaran and Alexandrian Series		
Dolomite, very cherty, light buff, 6nely crystalline, oxidized	16	61
Dolomite, very cherty, white, finely crystalline	67	128
Dolomite, white, fine	47	175
No record	31	206
Dolomite, as above	7	213
Dolomite, slightly argillaceous, light gray, very fine	29	242
Dolomite, light buff, some greenish, fine to medium	26	268

A 20-in. diameter hole was drilled to a depth of 56.5 ft and finished 19 in. in diameter from 56.5 to 271 ft. The well is cased with 20-in. genuine wrought iron pipe from about 0.5 ft above the floor of a 16-ft deep pit to a depth of 56.5 ft.

Upon completion, the well reportedly produced 1100 gpm for 50 hr with a drawdown of 23.5 ft from a nonpumping water level of 36.5 ft below land surface.

On June 19, 1934, after 20 min of pumping, the pump broke suction. In July 1934, the pump was pulled and the nonpumping water level was reported to be 49 ft below land surface. The column pipe was repaired and the production capacity was then reported to be about 1040 gpm.

On May 27, 1942, this well was acidized with 3000 gal of 15 percent HC1. About 100 cubic ft of gray mud was removed. After cleaning the well, the nonpumping water level was reported to be 48.1 ft below the pumphouse floor and the production rate was 1460 gpm.

In July 1944, the nonpumping water level was reported to be 51.5 ft below the pump base.

On May 1, 1945, the well reportedly produced 900 gpm with a drawdown of 50 ft from a nonpumping water level of 56 ft. The well was measured at 264.6 ft deep and was then cleaned out to 272.8 ft. After cleaning, the nonpumping water level was reported to be 53 ft.

On August 11, 1945, after 5 hr of pumping at a rate of 1006 gpm, the drawdown was 70 ft from a nonpumping water level of 53 ft below the pumphouse floor.

Nonpumping water levels were reported to be 58 ft after a 15-hr idle period on May 31, 1947; 73 ft in 1956; 68 ft in July 1957; 69 ft on August 4, 1957; 67 ft

in March 1958; 74 ft in March 1959; 67 ft in March 1960; and 70 ft in March 1961.

In February 1963, the well reportedly produced 665 gpm with a drawdown of 48 ft from a nonpumping water level of 80 ft.

Nonpumping water levels were reported to be 85 ft in April 1964, and measured at 69 ft in May 1964.

In June 1964, the well reportedly produced 732 gpm with a drawdown of 66 ft from a nonpumping water level of 86 ft.

In July 1968, the nonpumping water level was reported to be 84 ft.

In October 1969, after pumping at a rate of 800 gpm, the drawdown was 63 ft from a nonpumping water level of 88 ft.

In December 1970, the nonpumping water level was reported to be 100 ft.

On May 25, 1971, this well reportedly produced 536 gpm with a drawdown of 53 ft from a nonpumping water level of 98 ft. The well was then acidized with 2000 gal of 20 degree Baume treating acid by the Layne-Western Co., Aurora. A production test was conducted by the Layne-Western Co. on May 26, 1971. After 2 hr of pumping at rates ranging from 620 to 536 gpm, the maximum drawdown was 66 ft from a nonpumping water level of 97 ft. Thirty min after pumping was stopped, the water level had recovered to 95 ft. Pumping was then continued for 30 min at rates of 680 to 620 gpm with a final drawdown of 63 ft. Well No. 3 was operating during the first 1.5 hr of this test.

Nonpumping water levels were reported to be 95 ft in January 1972, 88 ft in March 1973, and 85 ft on September 11, 1979.

The pumping equipment presently installed consists of a 40-hp 1800 rpm Westinghouse electric motor, a 12-in., 3-stage Layne turbine pump (No. 49393) set at 150 ft, rated at 800 gpm at about 156 ft TDH, and has 150 ft of 8-in. column pipe. A 30-ft section of 8-in. suction pipe is attached to the pump intake. The well is equipped with 180 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B32571) of a sample collected January 23, 1980, after pumping for 4.5 hr at 475 gpm, showed the water to have a hardness of 769 mg/1, total dissolved minerals of 1100 mg/l, and an iron content of 1.89 mg/1.

WELL NO. 3, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in 1928 to a depth of 210 ft (reported to be 210.5 ft deep in 1953 and 207.2 ft in May 1971) by the Gray Well Drilling Co., Milwaukee, Wis. The well is located on the east side of Elm St. at the corner of N. M. Symonds Drive about 400 ft east of the water treatment plant, approximately 250 ft N and 1400 ft W of the SE corner of Section 1, T38N, R11E. The land surface elevation at the well is 686.7 ft.

A drillers log of Well No. 3 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Gravel coarse	20	20
Till, gray, stony	10	30
Niagara, dolomite, light gray	20	50
Dolomite, light gray; chert, white	50	100
Dolomite, light gray	50	150
Dolomite, very light gray	5	155
Same, rather fine grained, large pieces	55	210

The well is cased with 20-in. wrought iron pipe from the top of the floor of an 8-ft deep pit to an unknown depth.

Upon completion, the well reportedly produced 1120 gpm with a drawdown of 5 ft from a nonpumping water level of 45 ft below the top of the casing.

In November 1937, after pumping at a rate of 1120 gpm, the drawdown was 45 ft from a nonpumping water level of 50 ft.

In March 1943, this well was acidized by the Layne-Western Co., Aurora. The production of the well was reportedly increased from 1050 to 1400 gpm.

In June 1943, after 8 hr of pumping at a rate of 1560 gpm, the drawdown was 14.5 ft from a nonpumping water level of 48.0 ft below the pump base.

On May 31, 1947, the nonpumping water level was reported to be 61 ft below the pumphouse floor.

A production test was conducted by the Layne-Western Co. on January 28, 1953. After 4.2 hr of pumping at rates of 316 to 516 gpm, the drawdown was 60 ft from a nonpumping water level of 69 ft. During this test, Well Nos. 1 and 2 were not operating the last 45 min. Pumping was continued for 1.7 hr at rates of 475 to 465 gpm with a drawdown of 74 ft (Well Nos. 1 and 2 operating). After an additional 35 min of pumping at rates of 496 to 512 gpm, the final drawdown was 60 ft (Well Nos. 1 and 2 idle). The well was then acidized with about 3000 gal of 15 per-

cent HC1 by the Layne-Western Co. A production test was then conducted on February 9, 1953. After 8 hr of pumping at rates ranging from 580 to 831 gpm, the final drawdown was 72 ft from a nonpumping water level of 65 ft. During this test, Well Nos. 1 and 2 were operated intermittently.

Nonpumping water levels were reported to be 75 ft in 1956; 78 ft on July 14 and 21, 1957; 77 ft on July 28, 1957; 78 ft on August 4, 1957; 77 ft on August 11, 1957; 75 ft in March 1959; 67 ft in March 1960; and 79 ft in March 1961.

In February 1963, the well reportedly produced 420 gpm with a drawdown of 75 ft from a nonpumping water level of 77 ft.

In April 1964, the nonpumping water level was reported to be 88 ft.

In October 1969, after pumping at a rate of 500 gpm, the drawdown was 42 ft from a nonpumping water level of 95 ft.

Nonpumping water levels were reported to be 92 ft below land surface on April 13, 1970, and 100 ft in December 1970.

On May 26, 1971, this well was acidized with 2000 gal of 20 degree Baume treating acid by the Layne-Western Co. The depth was reported to be 207.2 ft. The well then reportedly produced 759 gpm with a drawdown of 63 ft from a nonpumping water level of 97 ft (Well No. 2 not operating).

On July 7, 1971, after pumping at a rate of 566 gpm, the drawdown was 67 ft from a nonpumping water level of 103 ft.

Nonpumping water levels were reported to be 103 ft in January 1972, and 93 ft in March 1973.

On May 10, 1976, and June 16, 1976, this well was acidized each day by the Layne-Western Co. After acidizing, the well reportedly produced 640 gpm with a drawdown of 80 ft from a nonpumping water level of 88 ft.

The pumping equipment presently installed consists of a 50-hp 1775 rpm Westinghouse electric motor, a 12-in., 3-stage Peerless turbine pump (No. 2622896) set at 180 ft, rated at 1000 gpm, and has 180 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 190 ft of airline.

A partial analysis of a sample (Lab. No. 181610) collected May 5, 1970, after pumping for several hours at 610 gpm, showed the water to have a hardness of 755 mg/l, total dissolved minerals of 1000 mg/l, and an iron content of 2.9 mg/1.

WELL NO. 4, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in March 1954 to a depth of 291 ft (reported to be 283.5 ft deep in August 1971) by the Layne-Western Co., Aurora. The well is located at the southeast corner of Clay and Hickory Sts., approximately 1400 ft N and 500 ft E of the SW corner of Section 1, T38N, R11E. The land surface elevation at the well is 705.7 ft.

A drillers log of Well No. 4 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Black soil	5	5
Blue clay, soft	30	35
Blue clay and gravel	30	65
Gravel and little clay	10	75
Gravel and blue clay	18	93
Lime	2	95
Lime, gray broken soft	10	105
Lime, gray medium	10	115
Lime, small crevice, medium	35	150
Lime, gray medium	35	185
Lime, gray medium, shale breaks	5	190
Lime, dark gray medium	10	200
Lime, dark gray hard	10	210
Lime, gray hard	15	225
Lime, gray medium	25	250
Lime, light brown medium	5	255
Lime, gray medium	20	275
Limestone crevices, no sample	5	280
Lime, gray hard	9	289
Shale	2	291

A 15-in. diameter hole was drilled to a depth of 291 ft. The well is cased with 16-in. pipe from about 0.5 ft above the wellhouse floor to a depth of 100.5 ft.

Upon completion, the well reportedly produced 388 gpm with a drawdown of 7 ft from a nonpumping water level of 75 ft.

Nonpumping water levels were reported to be 108 ft in 1956, 94 ft in March 1958, 80 ft in March 1959, 111 ft in March 1960, and 90 ft in March 1961.

In 1962, after pumping at a rate of 520 gpm, the drawdown was 56 ft from a nonpumping water level of 94 ft.

In February 1963, the well reportedly produced 520 gpm with a drawdown of 70 ft from a nonpumping water level of 90 ft.

Nonpumping water levels were reported to be 87 ft in April 1964, 88 ft in April 1965, and 83 ft in July 1968.

In October 1969, after pumping at a rate of 600 gpm, the drawdown was 71 ft from a nonpumping water level of 92 ft.

Nonpumping water levels were reported to be 93 ft in December 1970, and 102 ft on August 25, 1971.

On September 24, 1971, the well reportedly produced 300 gpm with a drawdown of 76 ft from a nonpumping water level of 104 ft.

Nonpumping water levels were reported to be 102 ft in January 1972, 101 ft in March 1973, and 98 ft on September 7, 1979.

The pumping equipment presently installed consists of a 30-hp 1760 rpm Westinghouse electric motor, a 12-in., 3-stage Layne turbine pump (No. 28959) set at 230 ft, rated at 600 gpm, and has 230 ft of 8-in. column pipe. A 30-ft section of 8-in. suction pipe is attached to the pump intake. The well is equipped with 250 ft of airline.

A mineral analysis of a sample (Lab. No. 158185) collected July 19, 1962, showed the water to have a hardness of 722 mg/l, total dissolved minerals of 918 mg/1, and an iron content of 3.8 mg/1.

WELL NO. 5 was completed in April 1954 to a depth of 319 ft by the Layne-Western Co., Aurora. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located on the east side of Clay St. between Chicago Ave. and Chestnut St., approximately 200 ft S and 500 ft E of the NW corner of Section 12, T38N, R11E. The land surface elevation at the well is approximately 690 ft.

A drillers log of Well No. 5 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Glacial drift	100.5	100.5
Limestone	188.5	289
Shale	29	318

A 15-in. diameter hole was drilled to a depth of 319 ft. The well is cased with 16-in. wrought iron pipe from about 0.5 ft above the wellhouse floor to a depth of 89 ft.

Upon completion, after pumping at a rate of 708 gpm, the drawdown was 10 ft from a nonpumping water level of 69 ft.

Nonpumping water levels were reported to be 70 ft in March 1958, 66 ft in March 1959, 76 ft in March 1960, and 75 ft in March 1961.

In February 1963, the well reportedly produced 700 gpm with a drawdown of 60 ft from a nonpumping water level of 78 ft.

Nonpumping water levels were reported to be 80 ft in April 1964, 84 ft in April 1965, 83 ft in July 1968, and 90 ft in December 1970.

In April 1971, after pumping at a rate of 250 gpm, the drawdown was 70 ft from a nonpumping water level of 90 ft.

In January 1972, the nonpumping water level was reported to be 97 ft.

On May 19, 1972, this well was acidized by the Layne-Western Co. The well then reportedly produced 340 gpm.

In March 1973, the nonpumping water level was reported to be 94 ft.

In 1984, this well was reported to be acidized.

The pumping equipment presently installed consists of a 40-hp 1760 rpm Westinghouse electric motor, a 12-in., 3-stage Layne turbine pump (No. 28960) set at 220 ft, rated at 700 gpm, and has 220 ft of 8-in. column pipe. A 30-ft section of 8-in. suction pipe is attached to the pump intake. The well is equipped with 220 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. C001542) of a sample collected October 18, 1977, showed the water to have a hardness of 604 mg/1, total dissolved minerals of 878 mg/1, and an iron content of 1.0 mg/1.

WELL NO. 6, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in August 1956 to a depth of 307 ft (reported to be 306 ft deep in 1971) by the Layne-Western Co., Aurora. The well is located on the north side of the Burlington Northern RR tracks and on the west side of the south end of Madison St. south of Chestnut St., approximately 800 ft S and 25 ft W of the NE corner of Section 11, T38N, R11E. The land surface elevation at the well is approximately 695 ft.

A summary sample study log of Well No. 6 furnished by the State Geological Survey follows:

Strata	Thickness (ft)	Depth (ft)
QUATERNARY SYSTEM		
Pleistocene Series		
Soil, black	5	S
Till, slightly gravelly, buff to yellowish buff	10	15
Till, slightly gravelly, brownish gray	20	35
Till, gravelly, very clayey, gray	5	40
Gravel, slightly silty, multicolored	5	45
Till, gravelly, buff	20	65
No samples	15	80
Gravel, multicolored	22	102
SILURIAN SYSTEM		
Niagaran Series		
Sugar Run Dolomite		
Dolomite, slightly cherty, slightly silty to silty, light grayish buff, very fine, crystalline	28	130
Joliet Dolomite		
Romeo and Markgraf Members		
Dolomite, buff, very fine to fine, crystalline, slightly silty, little grayish buff at base	65	195
Brandon Bridge Member		
Dolomite, slightly silty, grayish buff to buff, trace of pink, fine, crystalline	40	235
Alexandrian Series		
Kankakee and Elwood Dolomites		
Dolomite, glauconitic, slightly silty, buff, fine to very fine, crystalline	10	245
Dolomite, silty, slightly cherty, grayish brown to buff, slightly black speckled, very fine to fine, crystalline, trace of shale partings	62	307

A 15.2-in. diameter hole was drilled to a depth of 307 ft. The well is cased with 16-in. welded steel pipe from about 0.5 ft above the wellhouse floor to a depth of 105 ft.

A production test was conducted by the driller on August 6, 1956. After 8 hr of pumping at a rate of 645 gpm, the drawdown was 38 ft from a nonpumping water level of 77 ft.

Nonpumping water levels were reported to be 66 ft in March 1959, 92 ft in March 1960, and 83 ft in March 1961.

In July 1962, the well reportedly produced 293 gpm with a drawdown of 79 ft from a nonpumping water level of 84 ft. The well was then acidized with 3000 gal of 15 percent treating acid by the Layne-Western Co. After treatment, the well reportedly produced 663 gpm with a drawdown of 24 ft from a nonpumping water level of 84 ft.

In November 1962, after pumping at a rate of 663 gpm, the drawdown was 20 ft from a nonpumping water level of 88 ft.

Nonpumping water levels were reported to be 89 ft in April 1964, and 94 ft in July 1968.

In October 1969, the well reportedly produced 465 gpm with a drawdown of 13 ft from a nonpumping water level of 101 ft.

Nonpumping water levels were reported to be 98 ft below land surface on April 13, 1970, and 96 ft in December 1970.

In September 1971, the depth of the well was reported to be 306 ft and the nonpumping water level was 111 ft.

In January 1972, the nonpumping water level was reported to be 110 ft.

On May 5, 1972, this well was acidized by the Layne-Western Co. The well reportedly produced 392 gpm after acidizing.

In March 1973, the nonpumping water level was reported to be 98 ft.

The pumping equipment presently installed is a 12-in., 3-stage Layne turbine pump (No. 34816) set at 220 ft, rated at 600 gpm, and powered by a 40-hp 1765 rpm Westinghouse electric motor. A 30-ft section of 8-in. suction pipe is attached to the pump intake. The well is equipped with 240 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B32573) of a sample collected January 23, 1980, after pumping for 5.2 hr at 575 gpm, showed the water to have a hardness of 718 mg/l, total dissolved minerals of 900 mg/l, and an iron content of 0.92 mg/1.

WELL NO. 7, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in November 1965 to a depth of 353 ft (measured at 335 ft deep in 1971) by L. Cliff Neely, Batavia. The well is located at Town Place and Bruner St., approximately 1250 ft S and 1600 ft W of the NE corner of Section 11, T38N, R11E. The land surface elevation at the well is approximately 705 ft.

A drillers log of Well No. 7 follows:

Strata	Thickness (ft)	Depth (ft)
Black soil	3	3
Yellow clay	9	12
Blue clay	13	25
Blue mud	25	50

Strata	Thickness (ft)	Depth (ft)
Yellow clay with gravel stones	15	65
Sand and gravel	7	72
Gravel	4	76
Blue mud	18	94
Gravel	3	97
Lime	15	112
Gray lime	13	125
Dark gray lime	5	130
Light gray lime	15	145
Light gray hard lime	10	155
Lime	20	175
Gray lime	15	190
Dark gray lime	30	220
Hard and gray lime (some lighter)	5	225
Lime	5	230
Brown lime	10	240
Lime (crevices)	5	245
Lime	10	255
Lime (crevices or shelly)	5	260
Brown lime	15	275
Gray lime	25	300
Lime, dark gray	52	352
Shale	1	353

A 15.2-in. diameter hole was drilled to a depth of 353 ft. The well is cased with 16-in. pipe from land surface to a depth of 100.7 ft.

A production test was conducted by the driller on November 1-2, 1965. After 23.8 hr of pumping at rates ranging from 1128 to 412 gpm, the maximum drawdown was 5 ft from a nonpumping water level of 83 ft below land surface.

A second production test was conducted by the driller on November 11, 1965. After 6 hr of pumping at rates of 1767 to 1404 gpm, the maximum drawdown was 12 ft from a nonpumping water level of 83 ft below land surface.

In December 1969, the well reportedly produced 650 gpm with a drawdown of 19 ft from a nonpumping water level of 101 ft below land surface.

In May 1970, this well was acidized with 2000 gal of 20 degree Baume' treating acid by the Layne-Western Co., Aurora. The well then reportedly produced 1020 gpm with a drawdown of 7 ft from a nonpumping water level of 101 ft below land surface. Later in 1970, the production capacity was reported to be about 500 gpm.

In December 1970, the nonpumping water level was reported to be 103 ft.

In February 1971, after about 5 hr of pumping at a rate of 530 gpm, the drawdown was 47 ft from a nonpumping water level of 102 ft.

On September 27, 1971, the production capacity had reportedly decreased to 318 gpm.

Nonpumping water levels were reported to be 105 ft in January 1972; 95 ft in March 1973; and 109 ft on September 7, 1979.

After acidizing, a production test was conducted by the Layne-Western Co., on November 17, 1980. After 1.2 hr of pumping at rates of 700 to 693 gpm, the final drawdown was 4 ft from a nonpumping water level of 98 ft.

The pumping equipment presently installed is a 12-in., 3-stage Layne turbine pump (No. 72872A) set at 200 ft, rated at 900 gpm, and powered by a 50-hp 1770 rpm U. S. electric motor. A 30-ft section of 8-in. suction pipe is attached to the pump intake. The well is equipped with 200 ft of airline.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. C001538) is for a water sample from the well collected October 18, 1977, after 1.5 hr of pumping at 285 gpm.

WELL NO. 7, LABORATORY NO. C001638

		mg/l	me/l			mg/l	me/l
Iron	Fe	1.0		Silica	SiO_2	12	
Manganese	Mn	0.03		Fluoride	F	0.3	0.02
Ammonium	NH_4	0.84	0.05	Boron	B	0.5	
Sodium	Na	24	1.04	Cyanide	CN	0.00	
Potassium	K	3.7	0.10	Nitrate	NO_3	0.13	0.00
Calcium	Ca	164	8.18	Chloride	CI	27	0.76
Magnesium	Mg	50	4.12	Sulfate	SO_4	264	5.49
				Alkalinity (as $CaCO_3$)		352	7.04
Arsenic	As	0.000					
Barium	Ba	0.1		Hardness (as $CaCO_3$)		616	12.32
Cadmium	Cd	0.00					
Chromium	Cr	0.00		Total dissolved			
Copper	Cu	0.00		minerals		824	
Lead	Pb	0.00					
Mercury	Hg	0.0000					
Nickel	Ni	0.0					
Selenium	Se	0.00					
Silver	Ag	0.00					
Zinc	Zn	0.01		pH (as rec'd)		8.4	

WELL NO. 8 was completed in March 1965 to a depth of 347 ft by the J. P. Miller Artesian Well Co., Brookfield. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. This well was purchased from the Schwendenner Office Park of Hinsdale in 1972. The well is located at the north end

of Spinning Wheel Road, approximately 1500 ft N and 450 ft VV of the SE corner of Section 36, T39N, R11E. The land surface elevation at the well is approximately 640 ft.

A drillers log of Well No. 8 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift	50	SO
Niagaran lime	273	323
Maquoketa shale	24	347

A 17.8-in. diameter hole was drilled to a depth of 53 ft and finished 13.2 in. in diameter from 53 to 347 ft. The well is cased with 18-in. OD drive pipe from land surface to a depth of 50.6 ft and 14-in. OD pipe from land surface to a depth of 53.1 ft (cemented in).

Upon completion, the well reportedly produced 1000 gpm for 6 hr with a drawdown of 53 ft from a nonpumping water level of 14 ft below the top of the casing.

In March 1973, the nonpumping water level was reported to be 35 ft.

On April 11, 1974, after 10 min of pumping at rates ranging from 542 to 602 gpm, the drawdown was 15 ft from a nonpumping water level of 33 ft (airline reading). The well was acidized with 2000 gal of 20 degree Baume' treating acid by the Layne-Western Co., Aurora. A production test was then conducted by the Layne-Western Co. After 2.5 hr of pumping at rates of 614 to 584 gpm, the drawdown was 12 ft. On April 12, 1974, the nonpumping water level was measured to be 17 ft.

A production test was conducted by the Layne-Western Co. on June 14, 1974. After 1 hr of pumping at a rate of 800 gpm, the drawdown was 20 ft from a nonpumping water level of 20 ft.

In March 1979, this well was acidized by the J. P. Miller Artesian Well Co.

In 1984, this well was reported to be acidized.

The pumping equipment presently installed consists of a 75-hp General Electric motor, a 12-in., 4-stage Layne turbine pump (No. 76706) set at 100 ft, rated at 800 gpm at about 244 ft TDH, and has 100 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 100 ft of airline.

A partial analysis of a sample (Lab. No. 165497) made in April 1965, after pumping for 6 hr at 1000 gpm, showed the water to have a hardness of 830 mg/l, total dissolved minerals of 1084 mg/l, and an iron content of 1.6 mg/1.

WELL NO. 9, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in November 1970 to a depth of 320 ft by the J. P. Miller Artesian Well Co., Brookfield. This well was purchased from the Schwendenner Office Park of Hinsdale in 1972. The well is located at 12 Salt Creek Lane, approximately 560 ft N and 1020 ft W of the SE corner of Section 36, T39N, R1lE. The land surface elevation at the well is approximately 645 ft.

A drillers log of Well No. 9 follows:

Strata	*Thicknтss (ft)*	*Depth (ft)*
Drift	45	45
Limestone	270	315
Shale	5	320

A 16-in. diameter hole was drilled to a depth of 35 ft, reduced to 15.2 in. between 35 and 45 ft, and finished 12.2 in. in diameter from 45 to 320 ft. The well is cased with 16-in. drive pipe from about 2 ft above land surface to a depth of 35 ft and 13.3-in. pipe from about 2 ft above land surface to a depth of 45 ft (cemented in).

A production test was conducted by the driller on November 25, 1970. After 5.5 hr of pumping at rates of 980 to 1050 gpm, the drawdown was 33 ft from a nonpumping water level of 22 ft below land surface.

In March 1973, the nonpumping water level was reported to be 35 ft.

On April 28, 1977, this well was acidized by the J. P. Miller Artesian Well Co. The well then reportedly produced 1200 gpm for 4.5 hr with a drawdown of 20 ft from a nonpumping water level of 44 ft.

On September 7, 1979, the nonpumping water level was reported to be 38 ft.

In 1984, this well was reported to be acidized.

The pumping equipment presently installed is a Peerless vertical turbine pump set at 115 ft, rated at 1000 gpm, and powered by a 75-hp General Electric motor.

A partial analysis of a sample (Lab. No. 184302) collected during the initial production test, after pumping for 3.7 hr at rates of 980 to 1050 gpm, showed the water to have a hardness of 770 mg/l, total dissolved minerals of 1056 mg/1, and an iron content of 3.0 mg/1.

WELL NO. 10, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in January 1979 to a depth of 287 ft by the J. P. Miller Artesian Well Co., Brookfield. The well is located northeast of the intersection of York Road and Ogden Ave., approximately 10 ft N and 2000 ft W of the SE corner of Section 36, T39N, R11E. The land surface elevation at the well is approximately 672 ft.

A drillers log of Well No. 10 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift	30	30
Limestone	257	287

A 19.2-in. diameter hole was drilled to a depth of 44 ft and finished 15.2 in. in diameter from 44 to 287 ft. The well is cased with 19-in. steel pipe from land surface to a depth of 30 ft and 16-in. steel pipe from about 2 ft above land surface to a depth of 44 ft (cemented in).

Upon completion, the well reportedly produced 1000 gpm for 8 hr with a drawdown of 16 ft from a nonpumping water level of 34 ft below land surface.

On September 11, 1979, the nonpumping water level was reported to be 36 ft.

The pumping equipment presently installed consists of a 75-hp U. S. electric motor, a 12-in., 2-stage Peerless vertical turbine pump set at 100 ft, rated at 1000 gpm at about 225 ft TDH, and has 100 ft of 8-in. column pipe. The well is equipped with 100 ft of airline.

A partial analysis of a sample (Lab. No. 210189) collected January 18, 1979, after pumping for 24 hr at an average rate of 1000+ gpm, showed the water to have a hardness of 780 mg/l, total dissolved minerals cf 1197 mg/1, and an iron content of 3.2 mg/1.

HINSWOOD SUBDIVISION

Hinswood Subdivision (est. 3580), located about 1 mile southwest of Willowbrook, installed a public water supply in 1969. The water system is owned and operated by the Du Page County Public Works Department. One well (No. 1) is in use and two wells (Nos. 2 and 3) are available for emergency use. This supply is also cross connected with the Rosewood Trace Subdivision supply. In 1971 there were 117 services; the average pumpage was 100,000 gpd. In 1984 there were about 1064 services, all metered; the average pumpage was 619,800 gpd. The water from Well No. 1 is softened, chlorinated, and fluoridated, and the water from Well No. 2 is chlorinated.

WELL NO. 1, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in August 1969 to a depth of 299 ft by the Wehling Well Works, Beecher. The well is located south of Concord Ave. about 1200 ft east of Cass Ave., approximately 1100 ft S and 1170 ft E of the NW corner of Section 34, T38N, RUE. The land surface elevation at the well is approximately 710 ft.

A drillers log of Well No. 1 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift and gravel	85	85
Lime	185	270
Broken lime	29	299

A 16-in. diameter hole was drilled to a depth of 102 ft and finished 12 in. in diameter from 102 to 299 ft. The well is cased with 16-in. steel pipe from land surface to a depth of 87 ft and 12.8-in. steel pipe from about 1.5 ft above the wellhouse floor to a depth of 102 ft (cemented in).

A production test was conducted by the driller on August 18-19, 1969. After 24.1 hr of pumping at rates ranging from 450 to 556 gpm, the maximum drawdown was 30 ft from a nonpumping water level of 89 ft below land surface.

A second production test was conducted by the driller on August 26-27, 1969. After 24 hr of pumping at rates ranging from 630 to 825 gpm, the final drawdown was 60 ft from a nonpumping water level of 84 ft below land surface.

The pumping equipment presently installed consists of a 75-hp U. S. electric motor, a 10-in., 7-stage Aurora vertical turbine pump rated at 800 gpm at about 290 ft TDH, and has 199.8 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. C001431) is for a water sample from the well collected October 4, 1978, after 2 hr of pumping at 800 gpm.

WELL NO. 1, LABORATORY NO. C001481

		mg/l	me/I			mg/l	me/I
Iron	Fe	0.9		Silica	SiO_2	16	
Manganese	Mn	0.01		Fluoride	F	0.6	0.03
Ammonium	NH_4	0.74	0.04	Boron	B	0.3	
Sodium	Na	22	0.96	Cyanide	CN	0.00	
Potassium	K	3.1	0.08	Nitrate	NO_3	0.09	0.00
Calcium	Ca	136	6.79	Chloride	CI	43	1.21
Magnesium	Mg	48	3.95	Sulfate	SO_4	186	3.87
				Alkalinity (as $CaCO_3$)		332	6.64
Arsenic	As	0.000					
Barium	Ba	0.1		Hardness (as $CaCO_3$)		538	10.76
Cadmium	Cd	0.00					
Chromium	Cr	0.00		Total dissolved			
Copper	Cu	0.00		minerals		696	
Lead	Pb	0.00					
Nickel	Ni	0.0					
Selenium	Se	0.00					
Silver	Ag	0.00					
Zinc	Zn	0.02		pH (as rec'd) 8.1			

WELL NO. 2 was completed in May 1970 to a depth of 284 ft by the Wehling Well Works, Beecher. This well is available for emergency use. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located east of Nantucket Drive, south of the intersection with Waltham Place in Unit 2 of the subdivision, approximately 1750 ft S and 2600 ft E of the NW corner of Section 34, T38N, R11E. The land surface elevation at the well is approximately 695 ft.

A drillers log of Well No. 2 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Mud and gravel	50	50
Gravel	33	83
Mud and rock	10	S3
Lime	182	275
Shale	9	284

A 14-in. diameter hole was drilled to a depth of 96 ft and finished 9.9 in. in diameter from 96 to 284 ft. The well is cased with 14-in. pipe from land surface to a depth of 96 ft and 10-in. pipe from about 1.2 ft above the wellhouse floor to a depth of 111 ft (cemented in to 96 ft).

A production test was conducted by the driller on May 21-22, 1970. After 24 hr of pumping at rates ranging from 603 to 336 gpm, the maximum drawdown was 30 ft from a nonpumping water level of 65 ft below the top of the casing.

On August 8, 1979, the nonpumping water level was reported to be 132 ft.

The pumping equipment presently installed consists of a natural gas engine, a 10-in., 6-stage Aurora turbine pump rated at 425 gpm at about 270 ft TDH, and has 149.8 ft of 6-in. column pipe. A 10-ft section of 6-in. suction pipe is attached to the pump intake.

A mineral analysis of a sample (Lab. No. 211654) collected August 8, 1979, after pumping for 15 min at 400 gpm, showed the water to have a hardness of 536 mg/l, total dissolved minerals of 675 mg/l, and an iron content of 1.7 mg/l.

WELL NO. 3 was completed in August 1968 to a depth of 305 ft by the J. P. Miller Artesian Well Co., Brookfield. This well, owned by the Carriage Greens Country Club, is available for emergency use for the subdivision. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located at the Carriage Greens Country Club east of Carriage Greens Drive, approximately 175 ft S and 1076 ft E of the NW corner of Section 4, T37N, R11E. The land surface elevation at the well is approximately 725 ft.

A drillers log of Well No. 3 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift 110		110
Niagaran dolomite	185	295
Shale (Maquoketa)	10	305

A 12-in. diameter hole was drilled to a depth of 305 ft. The well is cased with 12-in. pipe from about 2 ft above land surface to a depth of 112 ft.

Upon completion, the well reportedly produced 720 gpm for 6 hr with a drawdown of 16 ft from a nonpumping water level of 85 ft below land surface.

The pumping equipment presently installed is a Peerless vertical turbine pump set at 130 ft, rated at 685 gpm at about 116 ft TDH, and powered by a 30-hp U. S. electric motor.

A partial analysis of a sample (Lab. No. 210863) collected May 3, 1979, after pumping for 6 hr at about 480 gpm, showed the water to have a hardness of 548 mg/l, total dissolved minerals of 705 mg/l, and an iron content of 1.4 mg/l.

ITASCA

The village of Itasca (7948) installed a public water supply in 1926. Four wells (Nos. 3, 5, 8, and 9) are in use. This supply is also cross connected with the city of Wood Dale. In 1949 there were 325 services, all metered; the estimated average and maximum pumpages were 48,000 and 52,000 gpd, respectively. In 1984 there were 1854 services, all metered; the average pumpage was 949,470 gpd. The water is chlorinated, fluoridated, and treated with polyphosphate to keep iron in solution.

WELL NO. 1 was completed in 1925 to a depth of 800 ft (plugged to 200 ft in 1936) by the W. L. Thorne Co., Des Plaines. This well was abandoned in 1936 and sealed in 1958. The water-yielding units penetrated when this well was drilled were the Midwest Aquigroup (Galena and Platteville Groups and the Glenwood-St. Peter Sandstone). The well was located at the southeast corner of Willow and Center Sts., approximately 2100 ft S and 90 ft E of the NW corner of Section 8, T40N, R11E. The land surface elevation at the well is approximately 700 ft.

A drillers log of Well No. 1 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Mostly clay	86	86
Shale and limestone, no water	258	**344**
Limestone and sand rock formation, hard and tight, very little water	456	800

The well was cased with 10-in. pipe from land surface to a depth of 86 ft and 8-in. pipe from 86 ft to a depth of 430 ft. Below the casing, the hole was finished 6 in. in diameter to the bottom.

Upon completion, it was reported that only 45 gpm was obtained and that the well was shot in the dolomite without increasing its yield.

In 1936, the production rate had dropped to 25 gpm and the pump frequently broke suction. The well was then plugged at a depth of 200 ft.

A mineral analysis of a sample (Lab. No. 57920) collected December 15. 1926, showed the water to have a hardness of 327 mg/l, total dissolved minerals of 491 mg/l, and an iron content of 0.2 mg/1.

WELL NO. 2, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in 1936 to a depth of 184 ft by Wayman & Wayman, Arlington Heights. This well was abandoned and sealed in 1958. The well was located about 20 ft west of Well No. 1, approximately 2100 ft S and 70 ft E of the NW corner of Section 8, T40N, RUE. The land surface elevation at the well is approximately 700 ft.

A drillers log of Well No. 2 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Soil and clay	83	83
Niagaran lime, very limey and medium hard	47	130
Same, shattered and broken	54	184

An 8-in. diameter hole was drilled to a depth of 184 ft. The well was cased with 8-in. pipe from within the pump base to a depth of 85 ft.

On November 17, 1937, the nonpumping water level was reported to be 50 ft.

On June 12, 1939, the well reportedly produced 80 gpm for several minutes with a pumping water level below 170 ft from a nonpumping water level of 62 ft.

Nonpumping water levels were reported to be 62 ft on October 18, 1957, and 68 ft in March 1958.

A mineral analysis of a sample (Lab. No. 110329) collected May 16, 1947, after pumping for 2 hr at 50 gpm, showed the water to have a hardness of 333 mg/1, total dissolved minerals of 593 mg/1, and an iron content of 0.2 mg/1.

WELL NO. 3, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in 1939 to a depth of 200 ft by Wayman & Wayman, Arlington Heights. The well is located on the south side of Orchard St. between Walnut and Elm Sts., approximately 2450 ft S and 1500 ft E of the NW corner of Section 8, T40N, R11E. The land surface elevation at the well is approximately 690 ft.

A 12-in. diameter hole was drilled to a depth of 200 ft. The well is cased with 12-in. wrought iron pipe from about 1 ft above land surface to a depth of 90 ft.

In 1940, the well reportedly produced 500 gpm with a drawdown of 15 ft from a nonpumping water level of 2 ft below the pump base.

On May 6, 1947, after 10 min of pumping at a rate of 350 gpm, the drawdown was 20 ft from a nonpumping water level of 2 ft below the pump base.

Nonpumping water levels were reported to be 10 ft in October 1950; 7 ft in March 1958; 13 ft in March 1961; 50 ft on April 13, 1964; 61 ft in December 1968; 60 ft in April 1970; 30 ft in 1972 and 1973; 29 ft in 1974; and 26 ft in 1975.

On May 2, 1975, this well was acidized by the Layne-Western Co., Aurora.

In 1976, the well reportedly produced 500 gpm with a drawdown of 20 ft from a nonpumping water level of 32 ft.

On July 9, 1979, the nonpumping water level was reported to be 54 ft.

In 1984, after pumping at a rate of 500 gpm, the drawdown was 25 ft from a nonpumping water level of 38 ft.

The pumping equipment presently installed is a 10-in. Layne turbine pump set at 90 ft, rated at 500 gpm, and powered by a 40-hp 1800 rpm U. S. electric motor.

A mineral analysis of a sample (Lab. No. 211320) collected July 9, 1979, after pumping for 1 hr at 500 gpm, showed the water to have a hardness of 452 mg/l, total dissolved minerals of 641 mg/l, and an iron content of 1.0 mg/1.

WELL NO. 4, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in January 1952 to a depth of 233 ft (later reported to be 216 ft deep) by the Milaeger Well & Pump Co., Brookfield, Wis. This well has been disconnected from the system. The well is located in an annex of the village hall at the northwest corner of Walnut and Line Sts., approximately 2750 ft S and 1200 ft E of the NW corner of Section 8, T40N, R11E. The land surface elevation at the well is approximately 685 ft.

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

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
Soil, brownish black; trice till, grayish-brown	10	10
Sand and gravel, light gray (gravel is shale and chert)	20	30
Sand and gravel, light gray, green, buff (gravel is shale, dolomite, and chert)	45	75
SILURIAN SYSTEM		
Niagaran Series		
Dolomite slightly clayey and silty, some chert, white, fine	15	90
Dolomite, slightly clayey and silty, white, light green (at base) fine	30	120
Alexandrian Series		
Kankakee Formation		
Dolomite, silty, light gray, some light pink and green, extra fine	30	150
Dolomite, silty to slightly silty, some glauconite, buff to yellowish-gray, extra fine to very fine, crystalline	80	. 230
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Dolomite, clayey, buff, greenish-gray; shale, greenish-gray, yellowish-gray, weak	3	233

A12-in. diameter hole was drilled to a depth of 233 ft. The well is cased with 12-in. steel pipe from about 0:3 in. above the wellhouse floor to a depth of 78 ft.

In 1952, the nonpumping water level was reported to be 63 ft.

In 1962, this well was acidized and the capacity was increased from 175 to 275 gpm.

In December 1968, the nonpumping water level was reported to be 78 ft.

The pumping equipment presently installed is an 8-in., 8-stage American Well Works turbine pump set at 150 ft, rated at 275 gpm at about 230 ft TDH, and powered by a 30-hp 1800 rpm U. S. electric motor (No. 2110031). The well is equipped with 150 ft of airline.

A partial analysis of a sample (Lab. No. 150667) collected September 15, 1959, after pumping for 12 hr, showed the water to have a hardness of 430 mg/1, total dissolved minerals of 570 mg/1, and an iron content of 0.9 mg/1.

WELL NO. 5 was completed in October 1958 to a depth of 190 ft by the Hoover Water Well Service, Zion. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located at the northwest corner of the park at Irving Park and East Bloomingdale Roads, approximately 1750 ft N and 1900 ft E of the SW corner of Section 8, T40N, RUE. The land surface elevation at the well is approximately 700 ft.

A correlated drillers log of Well No. 5 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
Drift	82	82

Strata	Thickness (ft)	Depth (ft)
SILURIAN SYSTEM		
Niagaran and Alexandrian Series		
Lime	98	180
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Shale	10	**190**

A 16-in. diameter hole was drilled to a depth of 102 ft and finished 12 in. in diameter from 102 to 190 ft. The well is cased with 16-in. drive pipe from within a concrete pedestal to a depth of 82 ft and 12-in. pipe from about 3 ft above land surface to a depth of 102 ft (cemented in).

Upon completion, after 5.5 hr of pumping at a rate of about 70 gpm, the drawdown was 122 ft from a nonpumping water level of 28 ft below the top of the casing. The well was then acidized and the yield was reported to be 134 gpm.

A production test was conducted by the driller on April 27, 1960. After 2.4 hr of pumping at rates ranging from 132 to 188 gpm, the drawdown was 135 ft from a nonpumping water level of 22 ft. The well was then acidized with 1000 gal of acid.

A production test was conducted by the driller on April 29, 1960. After 7.8 hr of pumping at rates ranging from 198 to 300 gpm, the maximum drawdown was more than 138 ft from a nonpumping water level of 22 ft.

On May 6, 1960, this well was treated with 2000 gal of acid. A production test was then conducted by the driller on May 9-10, 1960. After 24 hr of pumping at rates ranging from 298 to 500 gpm, the final drawdown was 64 ft from a nonpumping water level of 22 ft.

Nonpumping water levels were reported to be 55 ft on April 22, 1963, and 40 ft on April 13, 1964. .

On December 20, 1965, the well reportedly produced 425 gpm with a drawdown of 27 ft from a nonpumping water level of 40 ft.

Nonpumping water levels were reported to be 54 ft in December 1966; 45 ft in December 1968; 37 ft in April 1970; 40 ft in June 1971; 50 ft in 1972; 46 ft in 1973, 1974, and 1975; and 55 ft in 1976.

In 1984, after pumping at a rate of 500 gpm, the drawdown was 40 ft from a nonpumping water level of 55 ft.

The pumping equipment presently installed is an 8-in., 23-stage Johnston turbine pump set at 160 ft, rated at 400 gpm at about 300 ft head, and powered by a 40-hp 1800 rpm U. S. Holloshaft electric motor. The well is equipped with 160 ft of airline.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. C001881) is for a water sample from the well collected November 2, 1977, after 30 min of pumping at 390 gpm.

WELL NO. 5, LABORATORY NO. C001881

		mg/l	me/l			mg/l	me/l
Iron	Fe	2.8		Silica	SiO_2	23	
Manganese	Mn	0.03		Fluoride	F	0.4	0.02
Ammonium	NH_4	0.68	0.04	Boron	B	0.5	
Sodium	Na	30	1.30	Cyanide	CN	0.00	
Potassium	K	3.0	0.08	Nitrate	NO_3	0.0	0.00
Calcium	Ca	150	7.48	Chloride	CI	41	1.16
Magnesium	Mg	82	6.75	Sulfate	SO_4	375	7.80
				Alkalinity (as $CaCO_3$)		340	6.80
Arsenic	As	0.000					
Barium	B	0.0		Hardness (as $CaCO_3$)		716	14.32
Cadmium	Cd	0.00					
Chromium	Cr	0.00		Total dissolved			
Copper	Cu	0.01		minerals		990	
Lead	Pb	0.00					
Mercury	Hg	0.0000					
Nickel	Ni	0.0					
Selenium	Se	0.00					
Silver	Ag	0.00					
Zinc	Zn	0.00		pH (as rec'd) 8.2			

A 6-in. diameter test hole (No. 1-58) was constructed in December 1958 to a depth of 195 ft by the Hoover Water Well Service, Zion. The hole, abandoned after drilling, was located approximately 2650 ft N and 1100 ft E of the SW corner of Section 8, T40N, R11E. The hole was cased with 6-in. pipe from land surface to a depth of 72 ft.

Prior to the construction of Well No. 6, a test hole (No. 2-59) was constructed in March 1959 to a depth of 200 ft by the Hoover Water Well Service, Zion. The hole, capped after drilling, was located approximately 2050 ft S and 2450 ft E of the NW corner of Section 8, T40N, R11E. The hole was cased with 6-in. pipe from land surface to a depth of 71 ft. The test hole reportedly produced 115 gpm for 8 hr with a drawdown of 40 ft from a nonpumping water level of 7 ft.

WELL NO. 6 was completed in September 1959 to a depth of 181 ft by the Hoover Water Well Service, Zion. This well was capped upon completion and never used. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian

System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located on the south side of Spring Brook on the Itasca Country Club property about 10 ft west of Test Hole No. 2-59, approximately 2050 ft S and 2440 ft E of the NW corner of Section 8, T40N, R11E. The land surface elevation at the well is approximately 680 ft.

A drillers log of Well No. 6 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift	71	71
Limestone	104	175
Shale	6	181

A 24-in. diameter hole was drilled to a depth of 78 ft and finished 19.2 in. in diameter from 78 to 181 ft. The well is cased with 24-in. pipe from land surface to a depth of 78 ft and 20-in. pipe from land surface to a depth of 88 ft (cemented in to 78 ft).

Upon completion, the production of the well was reported to be 75 gpm. On March 9, 1960, after acidizing with 1000 gal of HC1, the well reportedly produced 50 gpm with a drawdown of 113 ft from a nonpumping water level of 7 ft.

WELL NO. 7, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in April 1965 to a depth of 219 ft by the Shaver Well Drilling Co., Lombard. This well was capped upon completion and never used. The well is located north of Ardmore Ave. at the end of Baker Drive in the industrial district, approximately 1206 ft N and 1624 ft W of the SE corner of Section 1, T40N, R10E. The land surface elevation at the well is approximately 745 ft.

A drillers log of Well No. 7 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Glacial till	115	115
Limestone	99	214
Shale	5	219

A 20-in. diameter hole was drilled to a depth of 120 ft and finished 15.3 in. in diameter from 120 to 219 ft. The well is cased with 20-in. ID pipe from land surface to a depth of 120 ft and 16-in. ID pipe from land surface to a depth of 120 ft (cemented in).

Upon completion, this well was acidized with 9000 gal of 15 percent HC1 by Halliburton, and the well reportedly produced 100 gpm after this work.

A 4-in. diameter test hole (No. 2-65) was constructed in May 1965 to a depth of 118 ft by the J. P. Miller Artesian Well Co., Brookfield. The hole was located approximately 500 ft S and 2140 ft W of the NE corner of Section 12, T40N, R10E.

WELL NO. 8, finished in sand and gravel of the Prairie Aquigroup, was completed in July 1965 to a depth of 115 ft by the J. P. Miller Artesian Well Co., Brookfield. The well is located at 1500 West Bryn Mawr Ave. southwest of Baker Drive in the industrial district at the site of Test Hole 2-65, approximately 500 ft S and 2140 ft W of the NE corner of Section 12, T40N, R10E. The land surface elevation at the well is 739.2 ft.

A drillers log of Well No. 8 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Top soil and yellow clay	5	5
Yellow clay	10	15
Blue clay	35	50
Gravel with clay at 52 ft	5	55
Gravel and clay, limestone stringer at 55 ft	5	60
Gravel with clay	5	65
Sandy gravel with clay	35	100
Gravel, clean (complete water loss at 101 ft)	5	105
Gravel, clean	10	115
Rock or boulders at 115 ft	3	118

A 42-in. diameter hole was drilled to a depth of 115 ft. The well is cased with 16-in. pipe from about 1.2 ft above land surface to a depth of 100 ft followed by 15 ft of 16-in. No. 125 slot stainless steel screen. The annulus between the bore hole and the casing-screen assembly is filled with concrete from 0 to 20 ft, with impervious fill from 20 to 40 ft, and with gravel from 40 to 115 ft.

A production test using three observation wells was conducted on July 12-13, 1965, by representatives of the driller, the State Water Survey, and Mr. J. Richard Koehler, Consulting Engineer. After 24 hr of pumping at rates ranging from 570 to 630 gpm, the final drawdown was 18.5 ft from a nonpumping water level of 47.5 ft below the top of the casing. Forty-five min after pumping was stopped, the water level had recovered to 56.0 ft.

On December 20, 1965, the well reportedly produced 900 gpm with a drawdown of 15 ft from a nonpumping water level of 47 ft below land surface.

Nonpumping water levels were reported to be 30 ft in December 1966, 36 ft in December 1968, and 52 ft in April 1970.

In June 1971, the well reportedly produced 900 gpm with a drawdown of 10 ft from a nonpumping water level of 52 ft.

Nonpumping water levels were reported to be 67 ft in 1972, 66 ft in 1973, 67 ft in 1974, 66 ft in 1975, and 73 ft in 1976.

In 1983, this well was reported to be acidized.

In 1984, after pumping at a rate of 700 gpm, the drawdown was 18 ft from a nonpumping water level of 60 ft.

The pumping equipment presently installed is a 7-stage Peerless turbine pump set at 95 ft, rated at 730 gpm at about 109 ft TDH, and powered by a 60-hp 1800 rpm U. S. electric motor. The well is equipped with 95 ft of airline. A 75-hp International natural gas engine is available for auxilliary power.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. C001563) is for a water sample from the well collected October 11, 1978, after 1 hr of pumping.

WELL NO. 8, LABORATORY NO. C001583

		mg/l	*me/l*		*mg/l*	*me/l*
Iron	Fe	2.6		Silica	SiO_2 18	
Manganese	Mn	0.06		Fluoride	F 0.7	0.04
Ammonium	NH_4	0.72	0.04	Boron	B 0.3	
Sodium	Na	40	1.74	Cyanide	CN 0.00	
Potassium	K	2.6	0.07	Nitrate	NO_3 0.04	0.00
Calcium	Ca	152	7.58	Chloride	CI 53	1.50
Magnesium	Mg	76	6.26	Sulfate	SO_4 400	8.32
				Alkalinity (as $CaCO_3$)	312	6.24
Arsenic	As	0.000				
Barium	Ba	0.0		Hardness (as $CaCO_3$)	696	13.92
Cadmium	Cd	0.00				
Chromium	Cr	0.00		Total dissolved minerals	970	
Copper	Cu	0.04				
Lead	Pb	0.00				
Mercury	Hg	0.0000				
Nickel	Ni	0.0				
Selenium	Se	0.00				
Silver	Ag	0.00				
Zinc	Zn	0.06		pH (as rec'd) 8.3		

A test well was constructed in July 1981 to a depth of 110 ft by the K & K Well Drilling Co., Mokena. It was located in the SW quarter of the SW quarter of the NE quarter of Section 1, T40N, R10E. A 6-in. diameter hole was drilled to a depth of 110 ft. The test well was cased with 6-in. black pipe from land surface to a depth of 110 ft. Upon completion, the test well reportedly produced 10 gpm for 4 hr with a drawdown of 20 ft from a nonpumping water level of 28 ft below land surface.

A test well was constructed in August 1981 to a depth of 122 ft by the K & K Well Drilling Co., Mokena. This well was used only as an observation well. It was located in the SW quarter of the NW quarter of the SE quarter of Section 1, T40N, R10E. A 5-in. diameter hole was drilled to a depth of 122 ft. The test well was cased with 5-in. black pipe from land surface to a depth of 122 ft. Upon completion, the test well reportedly produced 10 gpm for 4 hr with a drawdown of 20 ft from a nonpumping water level of 30 ft below land surface.

A well (originally known as Well No. 9), finished in sand and gravel of the Prairie Aquigroup, was completed in March 1982 to a depth of 143 ft by the Layne-Western Co., Aurora. This well was abandoned and sealed in 1982. The well was located about 25 ft southeast of Well No. 7, approximately 1200 ft N and 1600 ft W of the SE corner of Section 1, T40N, R10E. The land surface elevation at the well is approximately 745 ft.

A 20-in. diameter hole was drilled to a depth of 143 ft. No casing was installed in this well.

WELL NO. 9, finished in sand and gravel of the Prairie Aquigroup, was completed in April 1983 to a depth of 105 ft by the Layne-Western Co., Aurora. The well is located about 50 ft south of Bryn Mawr Ave. and 700 ft east of Rohlwing Road, approximately 750 ft S and 3000 ft W of the NE corner of Section 7, T40N, RUE. The land surface elevation at the well is approximately 725 ft.

A drillers log of Well No. 9 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Black clay	7	7
Brown clay	5	12
Gray silty clay	12	24
Sand and gravel	2	26
Gray silty clay, very sticky	33	59
White sand and gravel	4	63
Gray clay with sand and gravel layers	10	73
White fine to coarse sand with clay and silt layers	9	82
White fine sand to coarse gravel	10	92
White fine sand to small gravel with layers of finer sand and coarser gravel	8	100
White fine sand to coarse gravel and boulders, trace of silt pockets	5.5	105.5
Broken limestone	1.5	107

A 24-in. diameter hole was drilled to a depth of 105 ft. The well is cased with 16-in. steel pipe from about 4 ft above land surface to a depth of 81 ft followed by 24 ft of 16-in. No. 70 slot Johnson stainless steel screen. The annulus between the bore hole and casing-screen assembly is filled with neat cement from 0 to 20 ft and with 15 tons of No. 2 Northern gravel from 20 to 105 ft.

A production test using one observation well (No. 8) was conducted by the driller on April 14-15, 1983.

After 29.2 hr of pumping at rates ranging from 388 to 488 gpm, the maximum drawdown was 29.8 ft from a nonpumping water level of 43.5 ft below land surface. Two hr after pumping was stopped, the water level had recovered to 48.6 ft.

A production test was conducted by the driller on February 14, 1985. After 18 min of pumping at rates ranging from 457 to 403 gpm, the drawdown was 12.5 ft from a nonpumping water level of 58.0 ft. Seven min after pumping was stopped, the water level had recovered to 63.0 ft.

The pumping equipment presently installed is a 10-in., 7-stage Byron Jackson submersible pump (Serial No. 841-C-0404) set at 83 ft, and powered by a 40-hp General Electric motor. The well is equipped with 83 ft of airline.

A partial analysis of a sample (Lab. No. 218498) collected April 15, 1983, showed the water to have a hardness of 465 mg/l, total dissolved minerals of 703 mg/l, and an iron content of 0.58 mg/1.

LAKE IN THE WOODS SUBDIVISION

Lake in the Woods Subdivision (est. 2000), located on the west side of Darien, installed a public water supply in 1969. The water system is owned and operated by the Du Page County Public Works Department. Two wells are in use. This supply is also cross connected with the city of Darien, the Farmingdale Utility Co., and the village of Willowbrook. In 1984 there were 217 services, all metered; the average pumpage was 217,500 gpd. The water is softened, chlorinated, and fluoridated.

WELL NO. 1 was completed in 1969 to a depth of 350 ft. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located about 500 ft west of the intersection of Manning and Plainfield Roads, approximately 100 ft S and 1000 ft E of the NW corner of Section 33, T38N, R11E. The land surface elevation at the well is approximately 755 ft.

An 8-in. diameter hole was drilled to a depth of 350 ft. The well is cased with 8-in. pipe from about 1.2 ft above land surface to an unknown depth. The top of the well casing is equipped with a pitless adapter.

In August 1973, the well reportedly produced 300 gpm with a drawdown of 80 ft from a nonpumping water level of 80 ft.

The pumping equipment presently installed is a Reda submersible pump set at 212 ft, rated at 400 gpm, and powered by a 30-hp Reda electric motor.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B22643) is for a water sample from the well collected December 1, 1975, after 0.5 hr of pumping at 275 gpm.

WELL NO. 1, LABORATORY NO. B22843

		mg/l	*me/l*		*mg/l*	*me/l*
Iron	Fe	1.2		Silica	SiO_2 13	
Manganese	Mn	0.01		Fluoride	F 0.4	0.02
Ammonium	NH_4	0.55	0.03	Boron	B 0.3	
Sodium	Na	22	0.96	Cyanide	CN 0.00	
Potassium	K	2.9	0.07	Nitrate	NO_3 0.22	0.00
Calcium	Ca	135	6.74	Chloride	CI 43	1.21
Magnesium	Mg	48	3.95	Sulfate	SO_4 200	4.16
				Alkalinity (as $CaCO_3$)	304	6.08
Arsenic	As	0.00				
Barium	Ba	0.1		Hardness (as $CaCO_3$)	534	10.68
Cadmium	Cd	0.00				
Chromium	Cr	0.00		Total dissolved		
Copper	Cu	0.01		minerals	704	
Lead	Pb	0.00		pH (as rec'd)	8.0	
Mercury	Hg	0.0014		Radioactivity		
Nickel	Ni	0.0		Alpha *pc/l*	3.0	
Selenium	Se	0.00		± deviation	2.8	
Silver	Ag	0.00		Beta *pc/l*	3.8	
Zinc	Zn	0.2		± deviation	2.4	

WELL NO. 2 was completed in 1969 to a depth of 350 ft. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located about 150 ft south of Well No. 1, approximately 250 ft S and 1000 ft E of the NW corner of Section 33, T38N, R11E. The land surface elevation at the well is approximately 755 ft.

An 8-in. diameter hole was drilled to a depth of 350 ft. The well is cased with 8-in. pipe from about 1.5 ft above land surface to an unknown depth.

The pumping equipment presently installed is a 3-in. Goulds submersible pump set at 210 ft, rated at 285 gpm at about 210 ft TDH, and powered by a 25-hp electric motor.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B22841) of a sample collected December 1, 1975, after pumping for 30 min at 275 gpm, showed the water to have a hardness of 551 mg/l, total dissolved minerals of 701 mg/l, and an iron content of 0.2 mg/1.

LIBERTY PARK HOMEOWNERS ASSOCIATION

Liberty Park Homeowners Association (est. 1200), located just east of Downers Grove and north of Westmont, installed a public water supply in 1942. Two wells (Nos. 2 and 3) are in use. This supply is also reported to be interconnected to the village of Downers Grove. In 1956 there were 169 services, none metered; the average pumpage was 35,000 gpd. In 1982 there were 343 services, 2 percent metered; the average pumpage in 1981 was 88,600 gpd. The water is chlorinated, fluoridated, and treated with polyphosphate to keep iron in solution.

WELL NO. 1, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in 1927 to a depth of 120 ft. This well was abandoned and sealed prior to 1973. The well was located at the southwest corner of Washington and 41st Sts., approximately 1900 ft S and 1500 ft W of the NE corner of Section 4, T38N, R11E. The land surface elevation at the well is approximately 745 ft.

The well was cased from above the floor of a 5-ft deep pit to an unknown depth.

In April 1956, the nonpumping water level was reported to be 20 ft.

WELL NO. 2 was completed in July 1956 to a depth of 278 ft by the Layne-Western Co., Aurora. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located about 25 ft northeast of Well No. 1, approximately 1875 ft S and 1475 ft W of the NE corner of Section 4, T38N, R11E. The land surface elevation at the well is approximately 745 ft.

A sample study summary log of Well No. 2 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
Till, silty, gravelly, dark gray	25	25
Gravel, fine to medium, dark gray; fill, sandy, silty, dark gray	5	30
Till, gravelly, sandy, brown, gray	20	50
Gravel, gray, buff, granular, clean, little dirty, some till as above	15	65
Till, very sandy, gravelly, dark gray	10	75
SILURIAN SYSTEM		
Niagaran Series		
Dolomite, white to buff, very fine to fine, compact	155	230
Alexandrian Series		
Dolomite, white, fine to very fine, compact	35	265
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Shale, light green, weak; dolomite, white, fine to very fine, compact	10	275

An 8-in. diameter hole was drilled to a depth of 278 ft. The well is cased with 8-in. steel pipe from about 1.5 ft above the wellhouse floor to a depth of 142.2 ft.

A production test was conducted by the driller on July 31, 1956. After 9 hr of pumping at rates of 156 to 96 gpm, the maximum drawdown was 53 ft from a nonpumping water level of 102 ft below land surface.

Nonpumping water levels were reported to be 100 ft in June 1958, 111 ft in August 1958, 104 ft in September 1959, and 126 ft in November 1962.

On February 24, 1976, this well was treated with 600 gal of 15 percent treating acid by the Layne-

Western Co. The well then reportedly produced at rates ranging from 219 to 185 gpm for 1 hr with a drawdown of 42 ft from a nonpumping water level of 166 ft.

The pumping equipment presently installed consists of a 30-hp U. S. electric motor, an 8-in., 9-stage Layne turbine pump (No. 50922) set at 240 ft, rated at 300 gpm at about 263 ft head, and has 240 ft of 5-in. column pipe. A 10-ft section of 6-in. suction pipe is attached to the pump intake. The well is equipped with 240 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. C003312) of a sample collected November 7, 1973, after pumping for 8 hr, showed the water to have a hardness of 496 mg/l, total dissolved minerals of 594 mg/l, and an iron content of 1.3 mg/1.

WELL NO. 3, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in November 1964 to a depth of 278 ft by the Layne-Western Co., Aurora. The well is located at the southeast corner of Washington and 41st Sts., approximately 1875 ft S and 1400 ft W of the NE corner of Section 4, T38N, R11E. The land surface elevation at the well is approximately 743 ft.

A drillers log of Well No. 3 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Top soil	2	2
Brown clay	16	18
Gray clay	11	29
Gray sand	6	35
Gravel with clay streaks	45	80
Sand and gravel	40	120
Gravel	15	135
Broken limestone	5	140
Medium gray limestone	30	170
Medium gray limestone, crevices	5	175
Medium gray limestone	35	210
Medium gray limestone, crevice at 212 ft	5	215
Medium gray limestone	58	273
Limestone and gray shale	2	275
Limestone and brown shale	2	277
Brown shale	1	278

A 10.8-in. diameter hole was drilled to a depth of 140.5 ft and finished 10 in. in diameter from 140.5 to 278 ft. The well is cased with 10-in. steel pipe from about 1.5 ft above the wellhouse floor to a depth of 140.5 ft.

A production test was conducted by the driller on November 5, 1964. After 8 hr of pumping and surging at rates ranging from 200 to 99 gpm, the final drawdown was 83 it from a nonpumping water level of 104 ft below land surface.

A production test was conducted by the J. P. Miller Artesian Well Co., Brookfield, on June 1, 1977, after the pump was repaired. After 1.3 hr of pumping at rates ranging from 135 to 140 gpm, the drawdown was 14 ft from a nonpumping water level of 134 ft.

On August 3, 1979, the nonpumping water level was reported to be 129 ft below land surface.

The pumping equipment presently installed consists of a 15-hp U. S. electric motor, an 8-in., 10-stage Layne turbine pump (No. 34815) set at 240 ft, rated at 100 gpm at about 275 ft head, and has 240 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 240 ft of airline.

The following mineral analysis (Lab. No. 211679) is for a water sample from the well collected August 3, 1979, after 15 min of pumping.

WELL NO. 8, LABORATORY NO. 211670

		mg/1	*me/l*			*mg/1*	*me/l*
Iron(total)	Fe	1.6		Silica	SiO_2	17.8	
Manganese	Mn	0.02		Fluoride	F	0.2	
Ammonium	NH_4	0.5	0.03	Boron	B	0.1	
Sodium	Na	13.4	0.58	Nitrate	NO_3	0.3	0.00
Potassium	K	2.8	0.07	Chloride	CI	35	0.99
Calcium	Ca	118	5.89	Sulfate	SO_4	218	4.53
Magnesium	Mg	62.1	5.11	Alkalinity (as $CaCO_3$)		306	6.12
Strontium	Sr	0.61	0.01				
				Hardness (as $CaCO_3$)		550	11.00
Barium	Ba	<0.05					
Cadmium	Cd	0.00		Total dissolved			
Chromium	Cr	0.00		minerals		653	
Copper	Cu	0.01					
Lead	Pb	0.00					
Lithium	Li	0.02		Turbidity	17		
Nickel	Ni	0.00		Color	0		
Silver	Ag	0.00		Odor	0		
Zinc	Zn	0.00		Temp.(reported)	53.0F		

LISLE

The village of Lisle (13,625) installed a public water supply in 1968. Five wells (Nos. 2, 4, 5, 6, and 21) are in use and two wells (Nos. 3 and 22) are available for emergency use. Part of this village is served by the Du Page Utility Co. (see Lisle - Oakview Subdivision). This system is also cross connected to Lisle (Oakview Subdivision) and the Steeple Run Subdivision supplies. In 1971 there were 162 services, all metered; the estimated average and maximum pumpages were 170,000 and 275,000 gpd, respectively. In 1982 there were 2473 services, all metered; the average pumpage in 1984 was 2,118,100 gpd. The water is chlorinated; in addition, the water from Well Nos. 2, 3, 4, 5, 6, and 22 is fluoridated; and the water from Well Nos. 3, 4, 5, and 22 is treated with polyphosphate to keep iron in solution.

WELL NO. 1 (Beau Bein well) was completed in July 1967 to a depth of 327 ft by the Wehling Well Works, Beecher. This well is not in use. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located north of Old Tavern Road east of Beau Bein Blvd., approximately 350 ft N and 1800 ft E of the SW corner of Section 4, T38N, R10E. The land surface elevation at the well is approximately 730 ft.

A drillers log of Well No. 1 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Mud and rocks	70	70
Quicksand and rocks	8	78
Sand and gravel	8	86
Lime	219	305
Shale	4	309
Broken lime and shale	18	327

A 12.8-in. diameter hole was drilled to a depth of 88.6 ft and finished 10 in. in diameter from 88.6 to 327 ft. The well is cased with 12.8-in. pipe from about 0.4 ft above land surface to a depth of 88.6 ft.

A production test was conducted by the driller on July 17-18, 1967. After 19.4 hr of pumping at rates of 318 to 500 gpm, the drawdown was 70 ft from a non-pumping water level of 24 ft below land surface. Pumping was continued for 30 min at a rate of 375 gpm with a final drawdown of 40 ft. Six min after pumping was stopped, the water level had recovered to 27 ft.

A production test was conducted by the Layne-Western Co., Aurora, on October 29, 1975. After 29 min of pumping at rates ranging from 328 to 524 gpm, the drawdown was 101 ft from a nonpumping water level of 36 ft. Pumping was continued for 1.5 hr at rates ranging from 339 to 430 gpm with a final drawdown of 64 ft. The well was then acidized with 2000 gal of treating acid.

After acidizing, a production test was conducted by the Layne-Western Co. on October 31, 1975. After 9 hr of pumping at rates ranging from 503 to 596 gpm, the drawdown was 44 ft from a nonpumping water level of 36 ft.

A production test was conducted by the Layne-Western Co. on March 24, 1976. After 55 min of pumping at rates ranging from 340 to 520 gpm, the maximum drawdown was 29 ft from a nonpumping water level of 37 ft.

The pumping equipment presently installed consists of a 40-hp 1800 rpm U. S. electric motor, an 8-in., 10-stage Layne turbine pump (Serial No. 80552) set at 150 ft, rated at 500 gpm at about 230 ft TDH, and has 150 ft of 6-in. column pipe. The well is equipped with 150 ft of airline.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. 04526) is for a water sample from the well collected in March 1972, after 45 min of pumping at 225 gpm.

WELL NO. 1, LABORATORY NO. 04626

		mg/l	*me/l*			*mg/l*	*me/I*
Iron	Fe	1.8	0.06	Silica	SiO_2	13	
Manganese	Mn	0.0	0.00	Fluoride	F	0.2	0.01
Ammonium	NH_4	0.4	0.02	Boron	B	0.25	
Sodium	Na	73	3.18	Nitrate	NO_3	0.0	0.00
Potassium	K	4.5	0.12	Chloride	CI	175	4.94
Calcium	Ca	102	5.09	Sulfate	SO_4	117	2.43
Magnesium	Mg	48.5	3.99	Alkalinity (as $CaCO_3$)		248	4.96
				Hardness (as $CaCO_3$)		444	
Barium	Ba	0.0					
Cadmium	Cd	0.0		Total dissolved minerals		689	
Chromium	Cr	0.0					
Copper	Cu	0.0		pH (as rec'd)	7.3		
Lead	Pb	0.0		Radioactivity			
Mercury	Hg	<0.0005		Alpha *pe/l*	2		
Nickel	Ni	0.0		± deviation	2		
Silver	Ag	0.0		Beta *pc/l*	0		
Zinc	Zn	0.0		± deviation	2		

WELL NO. 2 (Walnut Creek well) was completed in September 1969 to a depth of 330 ft by the Milaeger Well & Pump Co., Brookfield, Wis. The water-yielding units in this well are dolomite and shale of

the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located at the Walnut Creek apartment project at 455 Walnut Creek Lane about 0.3 mile south of Ogden Ave., approximately 750 ft S and 650 ft W of the NE corner of Section 11, T38N, R10E. The land surface elevation at the well is approximately 700 ft.

A drillers log of Well No. 2 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Clay	20	20
Clay and gravel	40	60
Gravel	21	81
Lime	172	253
Lime and shale breaks	20	273
Lime	SO	323
Lime and shale streaks	7	330

An 18-in. diameter hole was drilled to a depth of 83 ft and finished 12 in. in diameter from 83 to 330 ft. The well is cased with 18-in. pipe from land surface to a depth of 71 ft and 12-in. pipe from land surface to a depth of 83 ft (cemented in).

A production test was conducted by the driller on September 18-19, 1969. After 6.9 hr of pumping at rates of 508 to 609 gpm, the drawdown was 5 ft from a nonpumping water level of 42 ft below land surface. Pumping was continued for 10.5 hr at a rate of 1001 gpm with a drawdown of 10 ft. After an additional 5.6 hr of pumping at 609 gpm, the drawdown was 5 ft.

A production test was conducted by the Layne-Western Co., Aurora, on April 8, 1975. After 1 hr of pumping at rates of 1350 to 1100 gpm, the drawdown was 4 ft from a nonpumping water level of 41 ft. At this time, the well was measured at 381 ft deep.

In 1977, the well reportedly produced 1000 gpm with a drawdown of 2 ft from a nonpumping water level of 46 ft.

Nonpumping water levels were reported to be 58 ft in June 1977, and 57 ft on August 21, 1979.

The pumping equipment presently installed consists of a 100-hp 1770 rpm General Electric motor, an 11-in., 5-stage Byron Jackson turbine pump (Serial No. 691-C-0269) set at 100 ft, rated at 1000 gpm at about 280 ft TDH, and has 100 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 100 ft of air-line.

A mineral analysis of a sample (Lab. No. 211849) collected August 21, 1979, after pumping for 10 min at 1000 gpm, showed the water to have a hardness of 592 mg/l, total dissolved minerals of 924 mg/l, and an iron content of <0.04 mg/1.

WELL NO. 3 (Maple Ridge well), open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in December 1973 to a depth of 193 ft by the J. P. Miller Artesian Well Co., Brookfield. This well is available for emergency use. The well is located east of Yackley Ave. south of the Burlington-Northern RR, approximately 2210 ft S and 340 ft E of the NW corner of Section 10, T38N, R10E. The land surface elevation at the well is approximately 680 ft.

A drillers log of Well No. 3 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift	40	40
Niagaran dolomite	148	188
Shale	5	193

A 20-in. diameter hole was drilled to a depth of 50 ft and finished 13.2 in. in diameter from 50 to 193 ft. The well is cased with 20-in. steel pipe from land surface to a depth of 40 ft and 14-in. steel pipe from land surface to a depth of 50 ft (cemented in).

A production test was conducted by the driller on December 10, 1973. After 7.8 hr of pumping at rates of 900 to 1000 gpm, the drawdown was 74.5 ft from a nonpumping water level of 7.0 ft below land surface.

After acidizing the well with 850 gal of HC1, a production test was conducted by the driller on December 18, 1973. After 4 hr of pumping at rates of 1450 to 1420 gpm, the drawdown was 55 ft from a nonpumping water level of 8 ft below land surface. Thirty min after pumping was stopped, the water level had recovered to 13 ft.

On July 5, 1974, the well reportedly produced 1200 gpm with a drawdown of 46 ft from a nonpumping water level of 9 ft.

The pumping equipment presently installed is a 5-stage Layne & Bowler turbine pump set at 105 ft, rated at 1200 gpm, and powered by a 150-hp 1770 rpm electric motor.

A partial analysis of a sample (Lab. No. 196201) collected July 5, 1974, showed the water to have a hardness of 432 mg/1, total dissolved minerals of 551 mg/1, and an iron content of 0.8 mg/1. Hydrogen sulfide was present in a previous sample.

WELL NO. 4 (Corporate West well) was completed in May 1976 to a depth of 350 ft by the J. P. Miller Artesian Well Co., Brookfield. The major water-

yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located at 2600 Warrenville Road, approximately 1160 ft S and 2300 ft E of the NW corner of Section 4, T38N, R10E. The land surface elevation at the well is approximately 750 ft.

A drillers log of Well No. 4 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift	86	86
Niagaran lime	234	320
Maquoketa shale	30	350

A 20-in. diameter hole was drilled to a depth of 100 ft and finished 15.2 in. in diameter from 100 to 350 ft. The well is cased with 20-in. OD steel pipe from land surface to a depth of 95 ft and 16-in. OD pipe from land surface to a depth of 100 ft (cemented in).

A production test was conducted by the driller on May 24, 1976. After 7.5 hr of pumping at rates of 395 to 370 gpm, the drawdown was 135 ft from a nonpumping water level of 45 ft. Three min after pumping was stopped, full recovery was observed.

After acidizing, a production test was conducted by the driller on May 26, 1976. After 5.7 hr of pumping at rates ranging from 740 to 690 gpm, the drawdown was 106 ft from a nonpumping water level of 41 ft. One hr after pumping was stopped, full recovery was observed.

On August 21, 1979, the nonpumping water level was reported to be 44 ft.

The pumping equipment presently installed consists of a 100-hp Westinghouse electric motor, a 12-in., 5-stage Peerless vertical turbine pump (No. 234612) set at 225 ft, rated at 750 gpm at about 310 ft TDH, and has 225 ft of 8-in. column pipe. The well is equipped with 225 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B043552) of a sample collected April 30, 1982, after pumping for 30 min at 625 gpm, showed the water to have a hardness of 400 mg/l, total dissolved minerals of 493 mg/l, and an iron content of 0.64 mg/1.

WELL NO. 5 (Green Trails well) was completed in September 1978 to a depth of 290 ft by the J. P. Miller Artesian Well Co., Brookfield. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located on the south side of Abbeywood Drive about 800 ft east of College Ave., approximately 724 ft N and 865 ft W of the SE corner of Section 16, T38N, R10E. The land surface elevation at the well is approximately 732 ft.

A drillers log of Well No. 5 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift	94	94
Limestone	151	245
Green shale	13	258
Limestone	14	272
Lime and shale	18	290

A 19.2-in. diameter hole was drilled to a depth of 104 ft and finished 15.2 in. in diameter from 104 to 290 ft. The well is cased with 20-in. steel pipe from about 1 ft above land surface to a depth of 99 ft and 16-in. steel pipe from about 1.5 ft above land surface to a depth of 104 ft (cemented in).

A production test was conducted by the driller on September 14, 1978. After 2.2 hr of pumping at rates ranging from 980 to 780 gpm, the maximum drawdown was 98 ft from a nonpumping water level of 88 ft below land surface. Fifteen min after pumping was stopped, the water level had recovered to 89 ft.

After acidizing with 2000 gal of HCl, a production test was conducted by the driller on September 15, 1978. After 5 hr of pumping at rates ranging from 800 to 1000 gpm, the final drawdown was 33 ft from a nonpumping water level of 88 ft below land surface.

A production test was conducted by the driller on September 18-19, 1978. After 24.1 hr of pumping at rates ranging from 700 to 1000 gpm, the maximum drawdown was 40 ft from a nonpumping water level of 88 ft below land surface. Eight min after pumping was stopped, the water level had recovered to 92 ft.

The pumping equipment presently installed is a Peerless turbine pump set at 205 ft, operated at 825 gpm, and powered by a 100-hp U. S. Holloshaft electric motor. The well is equipped with 205 ft of airline.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B043555) is for a water sample from the well collected April 30, 1982, after 45 min of pumping at 825 gpm.

WELL NO. 5, LABORATORY NO. B043565

		mg/l	me/I			mg/l	me/I
Iron	Fe	0.67		Silica	SiO_2	15	
Manganese	Mn	0.014		Fluoride	F	0.18	0.01
Ammonium	NH_4	0.2	0.01	Boron	B	0.05	
Sodium	Na	8	0.35	Cyanide	CN	<0.005	
Potassium	K	2.4	0.06	Nitrate	NO_3	<0.4	
Calcium	Ca	96	4.79	Chloride	Cl	15	0.42
Magnesium	Mg	50.3	4.14	Sulfate	SO_4	101	2.10
Strontium	Sr	0.156		Alkalinity (as $CaCO_3$)		336	6.72
Arsenic	As	<0.001		Hardness (as CaCOj		445	8.90
Barium	Ba	0.049					
Beryllium	Be	<0.0005		Total dissolved			
Cadmium	Cd	<0.003		minerals		481	
Chromium	Cr	<0.005					
Cobalt	Co	<0.005					
Copper	Cu	<0.003					
Lead	Pb	<0.005					
Mercury	Hg	<0.00005					
Nickel	Ni	<0.003					
Selenium	Se	<0.001					
Silver	Ag	<0.005					
Vanadium	V	<0.004					
Zinc	Zn	0.002		pH (as rec'd) 7.3			

WELL NO. 6 (Centex well) was completed in June 1980 to a depth of 255 ft by the Layne-Western Co., Aurora. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located about 750 ft north of Ogden Ave. and 75 ft east of Arbor View Drive, approximately 1500 ft N and 2000 ft E of the SW corner of Section 2, T38N, R10E. The land surface elevation at the well is approximately 718 ft.

A drillers log of Well No. 6 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Brown clay	10	10
Gray clay with small gravel	25	35
Brown medium fine sand	15	50
Gray sandy clay with small gravel	5	55
Clay with boulders	3	58
Coarse gravel and little clay	7	65
Medium fine gravel	3	68
Medium hard brown limestone	14	82
Hard brown limestone	13	95
Hard gray limestone with green shale	15	110
Hard gray chert limestone	62	172
Medium hard brown and gray limestone	18	190
Brown and gray limestone	5	195
Medium hard brown limestone	40	235
Soft gray shale	9	244
Soft brown shale	11	255

A 20-in. diameter hole was drilled to a depth of 74 ft and finished 16 in. in diameter from 74 to 255 ft. The well is cased with 20-in. steel pipe from land surface to a depth of 74 ft and 16-in. steel pipe from about 2 ft above land surface to a depth of 76 ft (cemented in).

A production test was conducted by the driller on June 13, 1980. After 5.8 hr of pumping at rates of 1893 to 1865 gpm, the final drawdown was 4 ft from a nonpumping water level of 63 ft below land surface.

The pumping equipment presently installed consists of a 150-hp electric motor, a Peerless turbine pump set at 150 ft, operated at 1400 gpm, and has 150 ft of 10-in. column pipe. The well is equipped with 150 ft of airline.

A partial analysis of a sample (Lab. No. 213863) collected during the initial production test, after pumping for 5.8 hr at rates of 1893 to 1865 gpm, showed the water to have a hardness of 532 mg/l, total dissolved minerals of 828 mg/l, and an iron content of 0.1 mg/l.

WELL NO. 21 (former Illinois Municpal Water Co. Well No. 1), open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in November 1926 to a depth of 231 ft by R. E. Millis & Son, Byron. This well was purchased from the Illinois Municipal Water Co. in February 1981. The well is located at 1113 Burlington Ave., approximately 950 ft S and 1100 ft W of the NE corner of Section 10, T38N, R10E. The land surface elevation at the well is 670.57 ft.

A drillers log of Well No. 21 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift	44	44
Niagaran limestone	187	231

A 12-in. diameter hole was drilled to a depth of 231 ft. The well is cased with 12-in. wrought iron pipe from about 1.5 ft above the bottom of a 4-ft deep pit to a depth of 44 ft and a 10-in. wrought iron liner from 187.4 ft to a depth of 231 ft.

Upon completion, the well reportedly produced 500 gpm with a drawdown of 5 ft from a nonpumping water level of 14 ft.

Nonpumping water levels were reported to be 39 ft in May 1957; 44 ft on September 9, 1958; 55 ft on February 4, 1960; 59 ft on August 18, 1960; and 50 ft in December 1962.

On December 11, 1970, the well reportedly produced 650 gpm for 1 hr with a drawdown of 12 ft from a nonpumping water level of 26 ft.

In January 1972, the nonpumping water level was reported to be 32 ft.

In 1974, after pumping at a rate of 500 gpm, the drawdown was 12 ft from a nonpumping water level of 32 ft.

The pumping equipment presently installed is a 10-in. Layne vertical turbine pump set at 70 ft, rated at 500 gpm at about 216 ft TDH, and powered by a 40-hp U. S. electric motor.

A partial analysis of a sample (Lab. No. 184467) collected December 11, 1970, after pumping for 1 hr at 650 gpm, showed the water to have a hardness of 594 mg/l, total dissolved minerals of 943 mg/l, and an iron content of 1.9 mg/1.

WELL NO. 22 (former Illinois Municipal Water Co. Well No. 2), open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in December 1959 to a depth of 233 ft by the Layne-Western Co., Aurora. This well, purchased from the Illinois Municipal Water Co. in February 1981, is available for emergency use. The well is located at 4624 Winchester St., approximately 300 ft N and 370 ft E of the SW corner of Section 3, T38N, R10E. The land surface elevation at the well is approximately 723 ft.

A drillers log of Well No. 22 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Top soil	2	2
Yellow clay	8	10
Brown clay	10	20
Gray clay	43	63
Sand and gravel	22	85
Gray limestone	85	170
Brown limestone	62	232
Shale	1	233

A 16-in. diameter hole was drilled to a depth of 20 ft and finished 12 in. in diameter from 20 to 233 ft. The well is cased with 12-in. pipe from about 0.6 ft above the pumphouse floor to a depth of 85 ft (cemented in from 0 to 20 ft).

A production test was conducted by the driller on December 16, 1959. After 2.5 hr of pumping at rates of 748 to 726 gpm, the drawdown was 10 ft from a nonpumping water level of 68 ft.

In December 1962, the nonpumping water level was reported to be 68 ft.

On July 31, 1967, the well reportedly produced 500 gpm for 1 hr with a drawdown of 7 ft from a nonpumping water level of 73 ft below the top of the casing.

On December 10, 1970, the well reportedly produced 525 gpm for 1.5 hr with a drawdown of 9 ft from a nonpumping water level of 73 ft.

Nonpumping water levels were reported to be 72 ft in January 1971, and 76 ft in January 1972.

In 1975, after pumping at a rate of 350 gpm, the drawdown was 4 ft from a nonpumping water level of 71 ft.

Nonpumping water levels were reported to be 70 ft in July 1976; 73 ft on November 15, 1976; 76 ft in December 1976; and 71 ft on July 24, 1979.

The pumping equipment presently installed consists of a 50-hp 1800 rpm U. S. electric motor, a 5-stage Layne vertical turbine pump (No. 41089A) set at 90 ft, rated at 600 gpm at about 235 ft TDH, and has 110.5 ft of 2-in. column pipe. A 10-ft section of 6-in. suction pipe is attached to the pump intake.

The following mineral analysis (Lab. No. 211425) is for a water sample from the well collected July 24, 1979, after 10 min of pumping at 500 gpm.

WELL NO. 22, LABORATORY NO. 211425

		mg/l	*me/l*			*mg/l*	*me/l*
Iron(total)	Fe	1.2		Silica	SiO_2	19.8	
Manganese	Mn	0.04		Fluoride	F	0.2	
Ammonium	NH_4	0.2	0.01	Boron	B	0.1	
Sodium	Na	45.0	1.96	Nitrate	NO_3	0.4	0.01
Potassium	K	3.6	0.09	Chloride	CI	93	2.61
Calcium	Ca	124	6.19	Sulfate	SO_4	186	3.87
Magnesium	Mg	59.9	4.93	Alkalinity (as $CaCO_3$)		328	6 56
Strontium	Sr	0.31	0.01				
				Hardness (as $CaCO_3$)		556	11.12
Barium	Ba	<0 05					
Cadmium	Cd	0.01		Total dissolved			
Chromium	Cr	0.00		minerals		729	
Copper	Cu	0.02					
Lead	Pb	0.01					
Lithium	Li	0.02					
Nickel	Ni	0.00		Turbidity	8		
Silver	Ag	0.00		Color	5		
Zinc	Zn	0.01		Odor	0		

LISLE (OAKVIEW SUBDIVISION)

Lisle (Oakview Subdivision) (est. 3412), located within the village of Lisle, installed a public water supply in 1957. The water system is owned and operated by the Du Page Utility Co. Three wells are in use. This supply is also interconnected with the village of Lisle. Part of this village is served by a municipal owned water system (see Lisle). This supply also furnishes water to the Four Lakes Village Subdivision. In 1959 there were 230 services, all metered. In 1984 there were 999 services, all metered; the average pumpage was 573,600 gpd. The water is chlorinated and fluoridated.

WELL NO. 1, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in May 1957 to a depth of 200 ft (reported to be 192 ft deep in 1983) by the Layne-Western Co., Aurora. The well is located on the west side of Kingston Ave. between Gamble Drive and Ohio St., approximately 1765 ft N and 915 ft E of the SW corner of Section 11, T38N, R10E. The land surface elevation at the well is approximately 745 ft.

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

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
Till, slightly gravelly, partly slightly sandy, buff to grayish buff	15	15
Gravel, sand (dolomite and chert fragments), and till, gray, buff	60	75
Gravel (dolomite and chert fragments) white, gray, buff, very clean	25	100
Sand (quartz, dolomite, and chert), fine, medium to coarse, multicolored, with little gravel (dolomite and chert), multicolored, clean	15	115
SILURIAN SYSTEM		
Niagaran and Alexandrian Series		
Dolomite, slightly cherty, white, very fine, crystalline	20	135
Dolomite, white, light buff, fine to very fine, with some visible porosity (vugular)	25	160
Dolomite, white, little yellow, fine to very fine, crystalline	15	175
Dolomite, cherty to slightly cherty, white to light buff, very fine to fine, crystalline	15	190
Dolomite, silty, slightly glanconitic, yellow, light green, light pinkish-yellow, very fine, crystalline; siltstone, very dolomitic, slightly sandy, slightly glauconitic, purple red, tough	10	200

A 12-in. diameter hole was drilled to a depth of 119 ft and finished 8 in. in diameter from 119 to 200 ft. The well is cased with 12-in. steel welded pipe from about 3 ft above the pumphouse floor to a depth of 112 ft and 8-in. steel welded pipe from about 3 ft above the pumphouse floor to a depth of 118 ft (cemented in).

A production test was conducted by the driller on May 7, 1957. After 7 hr of pumping at rates ranging from 304 to 350 gpm, the final drawdown was 12 ft from a nonpumping water level of 94 ft below land surface. One min after pumping was stopped, full recovery was observed.

Nonpumping water levels were reported to be 115 ft in October 1957; 94 ft on April 4, 1958; 102 ft in October 1959; 96 ft in October 1962 and October 1964; and 93 ft in October 1965.

On March 13, 1967, the well reportedly produced 375 gpm for 45 min with a drawdown of 21 ft from a nonpumping water level of 93 ft.

Nonpumping water levels were reported to be 93 ft in May 1969, 97 ft in November 1971, and 93.5 ft on February 6, 1975.

In 1977, after pumping at a rate of 400 gpm, the drawdown was 22 ft from a nonpumping water level of 90 ft.

A production test was conducted by the driller on August 3, 1978. After 45 min of pumping at rates of 383 to 548 gpm, the drawdown was 40 ft from a nonpumping water level of 95 ft. The well was then treated with 1000 gal of 15 percent acid. After acidizing, a production test was conducted by the driller on August 4, 1978. After 2.5 hr of pumping at rates of 596 to 350 gpm, the maximum drawdown was 18 ft from a nonpumping water level of 95 ft.

On September 6, 1979, the nonpumping water level was reported to be 99 ft.

A production test was conducted by the driller on March 25, 1983. After 30 min of pumping at a rate of 431 gpm, the drawdown was 8 ft from a nonpumping water level of 100 ft. Pumping was continued for 2 hr at a rate of 482 gpm with a drawdown of 10 ft. After an additional 30 min of pumping at a rate of 513 gpm, the final drawdown was 11 ft.

On January 1, 1984, the well reportedly produced 400 gpm for 30 min with a drawdown of 19 ft from a nonpumping water level of 96 ft.

The pumping equipment presently installed is an 8-in., 10-stage Layne vertical turbine pump (No. 36701) set at 150 ft, rated at 450 gpm at about 257 ft TDH, and powered by a 40-hp 1800 rpm U. S. electric motor. The well is equipped with 150 ft of airline.

A mineral analysis of a sample (Lab. No. 211845) collected September 6, 1979, after pumping for 10 min at 400 gpm, showed the water to have a hardness of 660 mg/l, total dissolved minerals of 1036 mg/l, and an iron content of 0.4 mg/1.

WELL NO. 2 was completed in February 1962 to a depth of 285 ft (reported to be 284 ft deep in 1979) by the Layne-Western Co., Aurora. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located on the southwest corner of Primrose Ave. and Smith Road in the Meadows Subdivision, approximately 1275 ft S and 1850 ft E of the NW corner of Section 14, T38N, R10E. The land surface elevation at the well is approximately 750 ft.

A drillers log of Well No. 2 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Yellow clay with rocks	16	15
Gray sticky clay	5	20
Gray drift	45	65
Shale	33	98
Limestone	7	105
Limestone - hard	10	115
Lime and dolomite - extra hard	44	159
Dark gray limestone - hard	8	167
Gray limestone - crevice large enough to stick tools	13	. 180
Limestone and dolomite - extra hard	15	195
Dark gray limestone, hard with crevices	36	231
Limestone, crevices, hard streaks	17	248
Dark gray limestone	31	279
Blue shale	6	285

* A 12-in. diameter hole was drilled to a depth of 285 ft. The well is cased with 12-in. steel pipe from about 1.5 ft above the pumphouse floor to a depth of 105.3 ft.

A production test was conducted by the driller on February 20, 1962. After 6 hr of pumping at rates ranging from 350 to 566 gpm, the drawdown was 1 ft from a nonpumping water level of 103 ft below land surface.

Nonpumping water levels were reported to be 105 ft in October 1962, 106 ft in October 1964, and 101 ft in October 1965.

On March 13, 1967, the well reportedly produced 792 gpm for 1 hr with a drawdown of 2 ft from a nonpumping water level of 103 ft.

Nonpumping water levels were reported to be 103 ft in May 1969, and 116 ft in November 1971.

In 1977, after pumping at a rate of 750 gpm, the drawdown was 9 ft from a nonpumping water level of 106 ft.

A production test was conducted by the driller on May 14, 1979. After 30 min of pumping at a rate of 1387 gpm, the drawdown was 3.0 ft from a nonpumping water level of 100.0 ft. Pumping was continued for 30 min at a rate of 1302 gpm with a drawdown of 2.5 ft. Pumping was continued for 30 min at a rate of 1139 gpm with a drawdown of 1.5 ft. After an additional 15 min of pumping at a rate of 1500 gpm, the final drawdown was 3.1 ft.

On September 6, 1979, the nonpumping water level was reported to be 93 ft.

On January 1, 1984, the well reportedly produced 600 gpm for 15 min with a drawdown of 12 ft from a nonpumping water level of 96 ft.

The pumping equipment presently installed is a 10-in., 10-stage Layne vertical turbine pump (No. 44887) set at 150 ft, rated at 1400 gpm at about 282 ft head, and powered by a 145-hp 1800 rpm Caterpillar G333C Natural gas engine. The well is equipped with 150 ft of airline.

A mineral analysis of sample (Lab. No. 211846) collected September 6, 1979, after pumping for 10 min at 800 gpm, showed the water to have a hardness of 680 mg/1, total dissolved minerals of 1081 mg/1, and an iron content of 0.0 mg/1.

WELL NO. 3 was completed in August 1969 to a depth of 180 ft (reported to be 175.3 ft deep in 1978 and 173.5 ft deep in 1983) by the Layne-Western Co., Aurora. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located near the Four Lakes Apartment Complex, approximately 1990 ft S and 2190 ft E of the NW corner of Section 15, T38N, 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	5	5
Gravel and boulders	14	19
Broken limestone	6	25
Medium gray limestone	5	30
Hard gray limestone	35	65
Medium gray limestone	105	170
Red and blue shale	10	180

An 18-in. diameter hole was drilled to a depth of 23 ft, reduced to 17.2 in. between 23 and 40 ft, and finished 12 in. in diameter from 40 to 180 ft. The well is cased with 18-in. steel pipe from about 1 ft above land surface to a depth of 23 ft and 12-in. steel pipe from about 1 ft above land surface to a depth of 39 ft (cemented in).

A production test was conducted by the driller on August 28, 1969. After 8 hr of pumping at rates ranging from 305 to 250 gpm, the drawdown was 130 ft from a nonpumping water level of 8 ft below land surface.

After acidizing with 1000 gal of 15 percent HC1, a production test was conducted by the driller on September 2, 1969. After 5.5 hr of pumping at rates ranging from 385 to 480 gpm, the drawdown was 76 ft from a nonpumping water level of 8 ft below land surface.

A production test was conducted by the driller in November 1978. After 5 min of pumping at rates of 476 to 434 gpm, the pumping water level was below the 100-ft airline from a nonpumping water level of 18 ft. After treating with acid, a production test was conducted by the driller on November 6, 1978. After 1.5 hr of pumping at rates ranging from 350 to 439 gpm, the final drawdown was 78 ft from a nonpumping water level of 18 ft.

On September 6, 1979, the nonpumping water level was reported to be 8 ft.

A production test was conducted by the driller on October 19-20, 1983. After 18.6 hr of pumping at rates of 403 to 363 gpm, the final drawdown was 107 ft from a nonpumping water level of 13 ft.

On January 1, 1984, the well reportedly produced 300 gpm for 15 min with a drawdown of 44 ft from a nonpumping water level of 20 ft.

The pumping equipment presently installed is a 10-in., 9-stage Layne & Bowler vertical turbine pump (No. 64766) set at 160 ft, rated at 400 gpm, and powered by a 145-hp Caterpillar engine. The well is equipped with 160 ft of airline.

The following mineral analysis (Lab. No. 211844) is for a water sample from the well collected September 6, 1979, after 10 min of pumping at 400 gpm.

WELL NO. 8, LABORATORY NO. 211844

		mg/l	*me/l*			*mg/l*	*me/l*
Iron(total)	Fe	0.2		Silica	SiO_2	13.5	
Manganese	Mn	0.01		Fluoride	F	0.2	
Ammonium	NH_4	0.4	0.02	Boron	B	0.1	
Sodium	Na	37.8	1.64	Nitrate	NO_3	0.0	0.00
Potassium	K	3.2	0.08	Chloride	CI	78	2.20
Calcium	Ca	104	5.19	Sulfate	SO_4	124	2.58
Magnesium	Mg	53.6	4.41	Alkalinity (as	$CaCO_3$)	326	6.52
Strontium	Sr	0.14	0.00				
				Hardness (as	$CaCO_3$)	480	9.60
Barium	Ba	<0.05					
Cadmium	Cd	0.00		Total dissolved			
Chromium	Cr	0.00		minerals		625	
Copper	Cu	0.00					
Lead	Pb	0.03					
Lithium	Li	0.01		Turbidity	3		
Nickel	Ni	0.00		Color	0		
Silver	Ag	0.00		Odor	0		
Zinc	Zn	0.00		Temp.(reported)	53F		

LOMBARD

The village of Lombard (37,295) installed a public water supply in 1910. Seven wells (Nos. 4, 5, 7, 8, 9, 10, and 11) are in use and another well (No. 6) is available for emergency use. This supply is also cross connected with the villages of Glen Ellyn, Oak Brook, and Villa Park. In 1956 there were 5000 services, all metered; the average and maximum pumpages were 1,200,000 and 1,700,000 gpd, respectively. In 1984 there were 12,000 services, all metered; the average pumpage was 4,309,700 gpd. The water is chlorinated; in addition, the water from Well Nos. 4, 5, and 6 is aerated.

WELL NO. 1, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in 1907 to a depth of 84 ft by Mr. Bell, Aurora. This well was abandoned and sealed in 1982. The well was located in the basement of the old pumping station about 0.5 block east of Main St., approximately 300 ft S and 300 ft E of the NW corner of Section 8, T39N, R11E. The land surface elevation at the well is approximately 700 ft.

A drillers log of Well No. 1 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift	70	70 '
Limestone	14	84

An 8-in. diameter hole was drilled to a depth of 84 ft. The well was cased with 8-in. pipe from about 0.8 ft above the floor of a 6-ft deep basement to a depth of 70 ft.

Upon completion, the well reportedly produced 800 gpm with a drawdown of 2 ft from a nonpumping water level of 9 ft below land surface.

Nonpumping water levels were reported to be 12 ft in 1918, and 16 ft in 1924.

On May 24, 1939, after pumping at a rate of 465 gpm, the drawdown was 21 ft from a nonpumping water level of 10 ft.

Nonpumping water levels were reported to be 9 ft in 1942; 10 ft below the pump base after a 5-day idle period on November 4, 1943; 10 ft in 1948; 15 ft in 1949; 10 ft in 1950; 10 ft in January 1961; 16 ft in May 1962; 17 ft in May 1963; 10 ft in March 1966; 12 ft in June 1969; and 18 ft in February 1975.

A production test was conducted by the Layne-Western Co., Aurora, on February 13, 1978. After 2 hr of pumping at a rate of 430 gpm, the drawdown was 10 ft from a nonpumping water level of 25 ft.

A partial analysis of a sample (Lab. No. 133261) collected October 29, 1953, showed the water to have a hardness of 584 mg/l, total dissolved minerals of 728 mg/l, and an iron content of 3.5 mg/1.

WELL NO. 2 was completed in October 1926 to a depth of 2028 ft (measured in 1949 at 1594 ft deep and cleaned in 1955 to 1553 ft deep) by the Gray Well Drilling Co., Milwaukee, Wis. This well was abandoned about 1959 and sealed in 1962. The water-yielding units in this well were originally the Midwest Aquigroup (Cambrian-Ordovician aquifer) and the Basal Bedrock Aquigroup (Elmhurst-Mt. Simon aquifer). The well was located at the south end of the old pumping station at Main St. and St. Charles Road about 75 ft north of Well No. 1, approximately 225 ft S and 300 ft E of the NW corner of Section 8, T39N, RUE. The land surface elevation at the well is approximately 700 ft.

A sample study log of Well No. 2 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
Glacial drift	50	50
Gravel and broken bedrock	10	60
SILURIAN SYSTEM		
Niagaran and Alexandrian Series		
Dolomites	120	180
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Shale and dolomite	200	380
Champlainian Series		
Galena and Platteville Groups		
Dolomites	345	725
Ancell Group		
St. Peter Sandstone		
Sandstone	345	1070
Conglomerate of sandstone, chert, and shale	100	1170
CAMBRIAN SYSTEM		
Croixan Series		
Franconia Formation		
Dolomitic Sandstone	80	1250
Ironton-Galesville Sandstone		
Sandstone	160	1410
Eau Claire Formation		
Sandstone, dolomite, and shale	390	1800
Mt. Simon Sandstone		
Sandstone	238	2038

An 18-in. diameter hole was drilled to a depth of 67 ft, reduced to 17 in. between 67 and 264 ft, reduced to

14 in. between 264 and 1100 ft, reduced to 12 in. between 1100 and 1175 ft, reduced to 10 in. between 1175 and 2000 ft, and finished 8 in. in diameter from 2000 to 2028 ft. The well was cased with 18-in. OD steel drive pipe from about 0.1 ft above the wellhouse floor to a depth of 67 ft, 15-in. OD pipe from about 0.2 ft above the wellhouse floor to a depth of 264 ft, 12-in. ID pipe from 245 ft to a depth of 500 ft, 12-in. liner from 1059 ft to a depth of 1100 ft, and a 10-in. liner from 1077 ft to a depth of 1175 ft.

Upon completion, after pumping at rates of 82 to 95 gpm, the drawdown was 52 ft from a nonpumping water level of 136 ft below land surface.

Nonpumping water levels were reported to be 240 ft in 1939; 287.7 to 290 ft below the top of the casing in July 1944; and 298 ft below land surface after a 5-day idle period on September 21, 1946.

A production test was conducted on March 3, 1948, by representatives of the village and the State Water Survey. After 6.6 hr of pumping at rates ranging from 93 to 337 gpm, the drawdown was 44.5 ft from a nonpumping water level of 323.0 ft below the pump base. Pumping was continued for 25 min at rates of 404 to 402 gpm and the water level dropped below the bottom of the airline. Fifty-two min after pumping was stopped, the water level had recovered to 327.0 ft.

On March 17, 1949, the nonpumping water level was reported to be 324 ft after the pump had been out of the well for several days. The depth of the well was measured at 1594 ft.

Nonpumping water levels were reported to be 323 ft in September 1950, and 363.1 ft in March 1953.

On April 7, 1955, the well reportedly produced 410 gpm for 20 hr with a drawdown of 78 ft from a nonpumping water level of 396 ft.

In May 1955, after 22 hr of pumping at a rate of 474 gpm, the drawdown was 78 ft from a nonpumping water level of 386 ft.

In June 1955, this well was shot with 300 qt of nitroglycerin between 1285 and 1355 ft and cleaned out to 1553 ft by the J. P. Miller Artesian Well Co., Brookfield. The nonpumping water level was reported to be 410 ft.

On April 7-8, 1956, the well reportedly produced 410 gpm for 20 hr with a drawdown of 78 ft from a nonpumping water level of 396 ft.

On August 13, 1957, the nonpumping water level was reported to be 471 ft.

A partial analysis of a sample (Lab. No. 133262) collected October 29, 1953, showed the water to have a hardness of 212 mg/l, total dissolved minerals of 435 mg/l, and an iron content of 0.2 mg/1.

Prior to the construction of Well No. 3, a test well was constructed in April 1948 to a depth of 175 ft by the Layne-Western Co., Aurora, at the southwest corner of the village hall. A 6-in. diameter hole was drilled to a depth of 175 ft and cased with 58 ft of 6-in. pipe. On April 17, 1948, when the test well was at a depth of 150 ft, it reportedly produced 80 to 150 gpm for 5 hr with a drawdown of 3.5 ft from a nonpumping water level of 7.0 ft below land surface.

WELL NO. 3, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in June 1948 to a depth of 175 ft by the Layne-Western Co., Aurora. This well was abandoned and sealed in 1982. The well was located directly west of the village hall at 48 North Park Ave., approximately 350 ft S and 650 ft W of the NE corner of Section 7, T39N, R11E. The land surface elevation at the well is approximately 693 ft.

A drillers log of Well No. 3 follows:

Strata	***Thickness*** *(ft)*	***Depth*** *(Jt)*
Black loam	5	5
Clay - little gravel	25	30
Clay and gravel	10	40
Sand, gray	10	50
Sand and gravel	5	55
Limestone, gray, hard	20	75
Limestone, gray, medium	10	85
Limestone, gray, soft	5	90
Limestone, gray, medium	15	105
Limestone, dark gray, medium, crevice	5	110
Limestone, dark gray, medium	35	145
Limestone, dark gray, soft	25	170
Shale, red, soft	5	175

A 20-in. diameter hole was drilled to a depth of 77 ft and finished 17 in. in diameter from 77 to 175 ft. The well was cased with 20-in. pipe from about 2 ft above the pumphouse floor to a depth of 64 ft and 18-in. OD pipe from 58 ft to a depth of 73 ft. In 1972, a new 12-in. casing was installed from land surface to a depth of 77 ft.

A production test was conducted on June 7-8, 1948, by representatives of the driller, the State Water Survey, and the consulting engineer. After 15.9 hr of pumping at rates ranging from 340 to 750 gpm, the maximum drawdown was 106.0 ft from a nonpumping water level of 7.0 ft below land surface. The water level recovered to 7.9 ft after pumping had been stopped for 7.2 hr.

Nonpumping water levels were reported to be 15 ft below the pump base on March 17, 1949; 9 ft in 1950; 17.5 ft on November 9, 1954; 18 ft in February 1956; 17 ft in June 1969; and 21.3 ft in July 1972.

In December 1974, the well reportedly produced 465 gpm with a drawdown of 40 ft from a nonpumping water level of 15 ft.

In February 1975, the nonpumping water level was reported to be 12 ft.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B29599) of a sample collected January 26, 1976, after pumping for 1 hr at 525 gpm, showed the water to have a hardness of 902 mg/l, total dissolved minerals of 1262 mg/l, and an iron content of 5.3 mg/l.

WELL NO. 4 was completed in March 1954 to a depth of 2062 ft (reported to be 1753 ft deep in 1980 and 1750 ft deep in 1984) by the Layne-Western Co., Aurora. The water-yielding units in this well are the Midwest Aquigroup (Cambrian-Ordovician aquifer) except for dolomites of the Galena and Platteville Groups, and the Basal Bedrock Aquigroup (Elmhurst-Mt. Simon aquifer). The well is located on the west side of Elizabeth St. about 150 ft south of Windsor Ave., approximately 335 ft N and 2100 ft E of the SW corner of Section 6, T39N, R11E. The land surface elevation at the well is approximately 698 ft.

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

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
Soil, dark brown to black	10	10
Till, calcareous, brown	30	40
SILURIAN SYSTEM		
Niagaran Series		
Dolomite, pale yellowish brown, very fine	40	80
Dolomite, light gray to white, very fine	22	102
Dolomite, silty, gray, very fine	8	110
Dolomite, pale gray, very fine	30	140
Alexandrian Series		
Dolomite, brownish gray, very fine	25	165
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Clay, silty, dolomitic, brown, weak	7	172
Shale, dolomitic, brownish gray, weak	9	181
Shale, dolomitic, weak; dolomite, silty	24	205
Shale, dolomitic, silty, weak to firm	30	235
Dolomite, gray, silty, very fine to fine	85	320
Dolomite, gray, fine to coarse; shale	20	340
Shale, dolomitic, silty, weak	40	380
Champlainian Series		
Galena Group		
Kimmswick Subgroup		
Dolomite, yellowish brown, fine to medium	178	558
Decorah Subgroup		
Dolomite, light gray	8	566
Platteville Group		
Dolomite, cherty, gray, very fine to fine	29	595
Limestone, dolomitic, gray, very fine	20	615
Dolomite, brown, very fine to fine	15	630
Limestone, dolomitic, gray, very fine	40	670
Dolomite, brown, very fine to fine	30	700
Limestone, dolomitic, brown, very fine	5	705
Ancell Group		
Glenwood Formation		
Sandstone, dolomitic, very fine to coarse	35	740
Sandstone, silty, dolomitic, incoherent	10	750
St. Peter Sandstone		
Sandstone, fine to coarse, incoherent	10	760
Sandstone, silty, very fine to medium	10	770
Sandstone, fine to coarse, incoherent	25	795
Sandstone, silty, very fine to medium	15	810
Sandstone, silty, very fine to coarse	100	910
Canadian Series		
Prairie du Chien Group		
Oneota Dolomite		
Chert, light gray	10	920
Dolomite, cherty, very fine to medium	35	955
Dolomite, brownish gray, fine to medium	24	979
Dolomite, cherty, sandy, very fine to fine	19	998
Sandstone, fine to coarse, incoherent	5	1003
Dolomite, sandy, brownish gray, very fine	12	1015
CAMBRIAN SYSTEM		
Croixan Series		
Potosi Dolomite		
Dolomite, brownish gray, very fine to fine	35	1050
Dolomite, brown, very fine to fine	87	1137
Franconia Formation		
Sandstone, dolomitic, very fine to fine	74	1211
Ironton-Galesville Sandstone		
Sandstone dolomitic, fine to very coarse	59	1270
Sandstone, fine to very coarse	20	1290
Sandstone, silty, fine to coarse	50	1340
Sandstone, fine to medium	5	1345
Dolomite, sandy, gray, very fine	15	1360
Sandstone, fine to medium, incoherent	13	1373
Dolomite, sandy, gray, fine to medium	7	1380

Strata	Thickness (ft)	Depth (ft)
Sandstone, dolomitic, fine to coarse	13	1393
Eau Claire Formation		
Dolomite, sandy, silty, very fine to fine	12	1405
Shale, green, weak; dolomite, very fine	8	1413
Shale, silty, green, firm to weak	4	1417
Sandstone, dolomitic, silty; shale, weak	28	1445
Sandstone, dolomitic, silty, very fine	40	1485
Sandstone, dolomitic, coarse	15	1500
Sandstone, dolomitic, silty, extra fine	35	1535
Shale, silty, dolomitic, weak; sandstone	10	1545
Dolomite, sandy, silty, fine to medium	35	1580
Dolomite, sandy, fine to medium; sandstone	20	1600
Dolomite, sandy, fine to medium; shale	65	1665
Sandstone, dolomitic, very fine to medium	18	1683
Sandstone, dolomitic, silty, extra fine	7	1690
Sandstone, fine, incoherent	40	1730
Sandstone, dolomitic, silty, very fine	8	1738
Sandstone, fine, incoherent	22	1760
Sandstone, fine to coarse	35	1795
Mt. Simon Sandstone		
Sandstone, fine to very coarse, incoherent	130	1925
Sandstone, fine to very coarse	70	1995
Sandstone, fine to very coarse, incoherent	67	2062

A 25.2-in. diameter hole was drilled to a depth of 58 ft, reduced to 24 in. between 58 and 707 ft, reduced to 19 in. between 707 and 1351 ft, and finished 15 in. in diameter from 1351 to 2062 ft. The well is cased with 26-in. OD drive pipe from about 0.7 ft above land surface to a depth of 58 ft and 20-in. OD pipe from about 0.7 ft above land surface to a depth of 707 ft (cemented in).

A production test was conducted on March 31-April 1, 1954, by representatives of the driller, the State Water Survey, and the Walter E. Deuchler Co., Consulting Engineers. After 24 hr of pumping at rates ranging from 824 to 604 gpm, the final drawdown was 132.0 ft from a nonpumping water level of 345.0 ft below the pump base. The water level recovered to 374.5 ft after pumping had been stopped for 1.8 hr. The well was then shot with solidified gelatin (150 lb each) at depths of 1250, 1285, 1325, 1365, 1800, 1830, 1965, and 2020 ft. The well was cleaned out and shot again with solidified gelatin (200 lb each) at depths of 1300, 1370, 1825, and 1930 ft. The well was cleaned again.

A second production test was conducted on April 20-21, 1954, by representatives of the driller, the village, the State Water Survey, and the Walter E. Deuchler Co. After 24.1 hr of pumping at rates ranging from 934 to 1200 gpm, the drawdown was 88 ft from a nonpumping water level of 358 ft below the pump base. The water level recovered to 384 ft after pumping had been stopped for 3.2 hr.

Nonpumping water levels were reported to be 368 ft in February 1956; 455 ft on May 10, 1957; 500 ft on June 5, 1957; 505 ft on July 29, 1957; and 500 ft on August 13, 1957.

In January 1958, the well reportedly produced 1150 gpm with a drawdown of 30 ft from a nonpumping water level of 465 ft.

Nonpumping water levels were reported to be 471 ft in January 1959; 490 ft in January 1960; 595 ft in February 1965; 590 ft in March 1966; 622 ft on November 9, 1967; 618 ft in July 1972; and 664 ft in February 1975.

A production test was conducted by the driller on September 2, 1980. After 4 hr of pumping at rates ranging from 1108 to 1007 gpm, the maximum drawdown was 84 ft from a nonpumping water level of 690 ft.

A production test was conducted by the driller on June 12, 1984. After 2.8 hr of pumping at rates of 1015 to 1151 gpm, the drawdown was 72 ft from a nonpumping water level of 710 ft.

In December 1984, the well reportedly produced 1100 gpm for 16 hr with a drawdown of 78 ft from a nonpumping water level of 718 ft.

The pumping equipment presently installed is a 13-stage Byron Jackson submersible pump (Serial No. 79G-M-0222) set at 900 ft, rated at 1000 gpm at about 890 ft TDH, and powered by a 350-hp 1800 rpm Byron Jackson electric motor. The well is equipped with 900 ft of airline.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B041057) is for a water sample from the well collected April 7, 1982, after 45 min of pumping. Hydrogen sulfide was apparent when a previous sample was collected.

WELL NO. 4, LABORATORY NO. B041057

		mg/l	me/l			mg/l	me/l
Iron	Fe	0.132		Silica	SiO_2	7.0	
Manganese	Mn	0 009		Fluoride	F	2.16	0.11
Ammonium	NH_4	0.6	0.03	Boron	B	0.75	
Sodium	Na	107	4.65	Cyanide	CN	<0 005	
Potassium	K	13	0.33	Nitrate	NO_3	<0.4	
Calcium	Ca	50	2.50	Chloride	CI	38	1.07
Magnesium	Mg	20.5	1.69	Sulfate	SO_4	101	2.10
Strontium	Sr	1.59		Alkalinity (as $CaCO_3$)		296	5.92
Arsenic	As	<0.001		Hardness (as $CaCO_3$)		205	4.10
Barium	Ba	0.051					
Beryllium	Be	<0.0005		Total dissolved			
Cadmium	Cd	<0.003		minerals		545	
Chromium	Cr	<0.005					
Cobalt	Co	<0.005					
Copper	Cu	<0.003					
Lead	Pb	<0.005					
Mercury	Hg	<0.00005					
Nickel	Ni	<0.003					
Selenium	Se	<0.001					
Silver	Ag	<0.005					
Vanadium	V	<0.004					
Zinc	Zn	0.034		pH (as rec'd)		7.3	

WELL NO. 5 was completed in April 1956 to a depth of 1793 ft (measured in 1975 at 1723 ft deep and reported to be 1703 ft deep in 1984) by the S. B. Geiger & Co., Chicago. The water-yielding units in this well are the Midwest Aquigroup (Cambrian-Ordovician aquifer) and the Basal Bedrock Aquigroup (Elmhurst-Mt. Simon aquifer). The well is located about 1 block north of North Ave. and 2 blocks east of Illinois Route 53, approximately 626 ft N and 1000 ft E of the SW corner of Section 31, T40N, R11E. The land surface elevation at the well is approximately 738 ft.

A drillers log of Well No. 5 follows:

Strata	Thickness (ft)	Depth (ft)
Yellow clay	20	20
Blue clay	17	37
Gravel and rock	38	75
Sand and gravel	65	140
White limestone	56	196
Red shale	69	265
Limestone, hard	60	325
Lime broken	5	330
Shale, gray	20	350
Lime, brown hard	2	352
Green mud	58	410
Brown lime, hard	30	440
White lime medium hard	160	600
Gray lime	140	740
St.. Peter sand	203	943
Gray shale	1	944
Limestone	48	992
Gray shale	3	995
Sandy lime	100	1095
Brown lime	77	1172
Shale, sand and shells	74	1246
Sand, hard	82	1328
Medium soft sand	20	1348
Sand, hard	22	1370
Medium soft sand	60	1430
Hard sand	16	1446
Shale	171	1617
Lime black and shale	88	1705
Hard sand	17	1722
Sandy black lime	13	1735
Soft sand	21	1756
Broken lime and shale	11	1767
Soft sand	26	1793

A 26-in. diameter hole was drilled to a depth of 511.7 ft, reduced to 15.2 in. between 511.7 and 1257 ft, and finished 12 in. in diameter from 1257 to 1793 ft. The well is cased with 26-in. pipe from about 0.5 ft above land surface to a depth of 145.5 ft and 20-in. OD pipe from about 0.5 ft above land surface to a depth of 511.7 ft (cemented in). A caliper log made by M. P. Schneller & Associates in 1967 showed the well to be cased with 20-in. pipe from land surface to a depth of 508 ft, and the hole to be 19.2 in. in diameter from 508 to 1257 ft, 15.2 in. from 1257 to 1630 ft (large cavity from 1370 to 1420 ft), and 12.2 in. from 1630 to 1793 ft.

Upon completion, this well was shot with nitrogel as follows: 200 lb at 1420 ft, 200 lb at 1405 ft, 200 lb at 1390 ft, 200 lb at 1310 ft, 200 lb at 1275 ft, 600 lb at 1405 ft, and 500 lb at 1345 ft.

A production test was conducted on April 20-21, 1956, by representatives of the driller, the State Water Survey, and Consoer, Townsend and Associates, Consulting Engineers. After 24.1 hr of pumping at rates ranging from 1255 to 705 gpm, the final drawdown was 105 ft from a nonpumping water level of 450 ft below land surface. The water level recovered to 472 ft after pumping had been stopped for 1.5 hr.

Nonpumping water levels were reported to be 500 ft in January 1960, 560 ft in May 1963, 645 ft in March 1966, 616 ft in January 1971, and 718 ft in February 1975.

In 1975, the Layne-Western Co., Aurora, measured the well at 1723 ft deep. On March 26, 1975, the well reportedly produced 876 gpm with a drawdown of 88 ft from a nonpumping water level of 685 ft.

A production test was conducted by the Layne-Western Co. on December 6, 1984. After 1.5 hr of pumping at rates ranging from 1025 to 1046 gpm, the drawdown was 125 ft from a nonpumping water level of 797 ft.

The pumping equipment presently installed is a 15-stage Byron Jackson submersible pump (Serial No.

796-M-0204) set at 1032 ft, rated at 1000 gpm at about 970 ft TDH, and powered by a 350-hp 1800 rpm Byron Jackson electric motor. The well is equipped with 1032 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B04286) of a sample collected July 25, 1979, after pumping for 2 hr, showed the water to have a hardness of 316 mg/l, total dissolved minerals of 561 mg/1, and an iron content of 0.0 mg/1.

WELL NO. 6, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in December 1961 to a depth of 210 ft by the Milaeger Well & Pump Co., Brookfield, Wis. This well is available for emergency use. The well is located at the south end of the main pumping station about 0.5 block north and east of Main St. and St. Charles Road, approximately 225 ft S and 290 ft E of the NW corner of Section 8, T39N, RUE. The land surface elevation at the well is approximately 700 ft.

A drillers log of Well No. 6 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift	65	65
Limestone	145	210
Shale at 210 ft		

An 18-in. diameter hole was drilled to a depth of 65 ft and finished 12 in. in diameter from 65 to 210 ft. The well is cased with 18-in. pipe from about 1 ft above land surface to a depth of 20 ft and 12-in. pipe from about 1.5 ft above the wellhouse floor to a depth of 65 ft (cemented in).

A production test was conducted by the driller on December 22, 1961. After 4.2 hr of pumping at rates of 489 to 510 gpm, the drawdown was 9 ft from a nonpumping water level of 17 ft below land surface.

In May 1962, the nonpumping water level was reported to be 22 ft.

In May 1963, the well reportedly produced 600 gpm with a drawdown of 4 ft from a nonpumping water level of 18 ft.

Nonpumping water levels were reported to be 17 ft in February 1965, and 22 ft in March 1966.

In August 1976, the well reportedly produced 919 gpm with a drawdown of 20 ft from a nonpumping water level of 22 ft.

On July 6, 1979, the nonpumping water level was reported to be 22 ft.

In December 1984, after 2 hr of pumping at a rate of 800 gpm, the drawdown was 23 ft from a nonpumping water level of 16 ft.

The pumping equipment presently installed consists of a 30-hp 1800 rpm electric motor, a Byron Jackson submersible pump set at 100 ft, rated at 800 gpm at about 100 ft TDH, and has 100 ft of 8-in. column pipe.

The following mineral analysis (Lab. No. 211321) is for a water sample from the well collected July 6, 1979, after 1 hr of pumping.

WELL NO. 6, LABORATORY NO. 211321

		mg/l	*me/l*		*mg/l*	*me/l*
Iron(total)	Fe	5.2		Silica	SiO_2 21.5	
Manganese	Mn	0.19		Fluoride	F * 0.2	
Ammonium	NH_4	0.4	0.02	Boron	B 0.2	
Sodium	Na	39.2	1.71	Nitrate	NO_3 0.0	0.00
Potassium	K	3.9	0.10	Chloride	CI 90	2.54
Calcium	Ca	226	11.28	Sulfate	SO_4 472	9.82
Magnesium	Mg	92.7	7.62	Alkalinity (as $CaCO_3$)	422	**8.44**
Strontium	Sr	0.44	0.01			
				Hardness (as $CaCO_3$)	945	18.90
Barium	Ba	0.07				
Cadmium	Cd	0.01		Total dissolved		
Chromium	Cr	0.00		minerals	1252	
Copper	Cu	0.01				
Lead	Pb	0.03				
Lithium	Li	0.02		Turbidity	31	
Nickel	Ni	0.06		Color	0	
Silver	Ag	0.00		Odor	0	
Zinc	Zn	0.04		Temp.(reported)	52F	

WELL NO. 7 was completed in April 1965 to a depth of 1520 ft (reported to be 1514 ft deep in 1985) by the Egerer-Galloway Well Corp., Milwaukee, Wis. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer). The well also penetrates the upper part of the Eau Claire Formation. The well is located on the east side of Main St. directly across from Glenbard East High School, approximately 2050 ft N and 153 ft E of the SW corner of Section 17, T39N, R11E. The land surface elevation at the well is approximately 730 ft.

A drillers log of Well No. 7 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Gray clay	82	82
Gray sand	2	84
Broken limestone	34	118
Limestone	127	245
Shale	220	465
Limestone	324	789
Sandstone	136	925
Dolomite	377	1302
Sandstone	203	1505
Shale	15	1520

A 26-in. diameter hole was drilled to a depth of 118 ft, reduced to 25.2 in. between 118 and 475 ft, and finished 19.2 in. in diameter from 475 to 1520 ft. The well is cased with 26-in. steel pipe from land surface to a depth of 118 ft and 20-in. steel pipe from land surface to a depth of 475 ft (cemented in).

Upon completion, this well was shot with 900 lb of nitrogel as follows: 200 lb at 1455 ft, 200 lb at 1410 ft, 250 lb at 1375 ft, and 250 lb at 1350 ft. After shooting, the well reportedly produced 1000 gpm for 12 hr with a drawdown of 121 ft from a nonpumping water level of 569 ft below land surface.

Nonpumping water levels were reported to be 593 ft in March 1966, 588 ft in November 1967, 595 ft in January 1971, and 715 ft in February 1975.

In May 1977, the well reportedly produced 770 gpm with a drawdown of 55 ft from a nonpumping water level of 738 ft.

A production test was conducted by the Layne-Western Co., Aurora, on January 29, 1985. After 5 hr of pumping at rates of 917 to 1036 gpm, the drawdown was 49 ft from a nonpumping water level of 801 ft.

The pumping equipment presently installed is a 12-in., 16-stage Byron Jackson submersible pump (Serial No. 713774) set at 969 ft, rated at 1000 gpm at about 850 ft TDH, and powered by a 350-hp 1750 rpm Byron Jackson electric motor. The well is equipped with 969 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B29595) of a sample collected January 26, 1976, after pumping for 4 hr at 860 gpm, showed the water to have a hardness of 232 mg/l, total dissolved minerals of 383 mg/l, and an iron content of 0.0 mg/1.

WELL NO. 8 was completed in February 1968 to a depth of 1630 ft (cleaned to 1590 ft in 1978 and reported to be 1568 ft deep in 1984) by L. Cliff Neely, Batavia. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer) except for dolomites of the Galena and Platteville Groups. The well also penetrates the upper part of the Eau Claire Formation. The well is located southwest of the corner of Highland Ave. and 20th St., approximately 500 ft N and 1000 ft E of the SW corner of Section 20, T39N, R11E. The land surface elevation at the well is approximately 775 ft.

A drillers log of Well No. 8 follows:

Strata	*Thicknets (ft)*	*Depth (ft)*
Clay and gravel	39	39
Gravel and clay	37	76
Gravel	1 4	. 9 0
Blue clay	5	95
Gravel	45	140
Niagara lime	155	295
Lime and shale	18	313
Lime	7	320
Dolomite and some shale	34	354
Dolomite	16	370
Dolomite and shale	4	374
Lime	22	. 396
Dolomite	3	399
Lime	67	466
Shale	14	480
Shale and lime shells	27	507
Lime	117	624
Gray squeeze rock	4	628
Sandy limestone	4	632
Brown lime	8	640
Lime	144	784
Lime and gyp shells	4	788
Lime	53	841
Sand (St. Peter)	160	1001
Lime shells and shale	8	1009
Lime	48	1057
Shale	5	1062
Lime	35	1097
Lime and shale	15	1112
Lime	45	1157
Dolomite	HO	1297
Lime and dolomite	25	1322
Chert	15	1337
Dolomite and shale	8	1345
Lime shale and some sand	5	1350
Shale	3	1353
Dolomite shell and shale	35	1388
Dolomite	3	1391
Sand	4	1395
Sand and dolomite	16	1411
Sand and lime	10	1421.
Sand	161	1582
Lime and shale	33	1615
Shale	15	1630

A 30-in. diameter hole was drilled to a depth of 152 ft, reduced to 25 in. between 152 and 843 ft, reduced to 19 in. between 843 and 1403 ft, and finished 15 in. in diameter from 1403 to 1630 ft. The well is cased with 30-in. pipe from land surface to a depth of 152 ft, 22-in. pipe from land surface to a depth of 843 ft (cemented in), and an 18-in. liner from 1200 ft to a depth of 1403 ft.

In February and March 1968, this well was shot with 2200 lb of nitrogel as follows: 150 lb from 1470 to 1475 ft, 200 lb from 1455 to 1465 ft, 400 lb from 1549 to 1569 ft, 200 lb from 1529 to 1539 ft, 200 lb from 1529 to 1539 ft, 200 lb from 1515 to 1530 ft, 250 lb from 1500 to 1515 ft, 250 lb from 1480 to 1490 ft, and 350 lb from 1550 to 1560 ft.

A production test was conducted on July 3, 1968, by representatives of the driller and Warren & Van Praag, Consulting Engineers. After 1.8 hr of pumping at rates ranging from 882 to 508 gpm, the drawdown was 90 ft from a nonpumping water level of 675 ft below land surface. Thirty min after pumping was stopped, the water level had recovered to 680 ft.

A production test was conducted on September 10, 1968, by representatives of the driller and Warren & Van Praag. After 6 hr of pumping at rates of 895 to 931 gpm, the final drawdown was 40 ft from a nonpumping water level of 695 ft below land surface. Two min after pumping was stopped, the water level had recovered to 705 ft.

Nonpumping water levels were reported to be 743 ft in January 1971, and 774 ft in February 1975.

A production test was conducted by the Layne-Western Co., Aurora, on October 17, 1977. After 2.1 hr of pumping at rates ranging from 1001 to 1033 gpm, the drawdown was 100 ft from a nonpumping water level of 770 ft below the top of the casing.

From October 1977 to January 1978, this well was rehabilitated by the Layne-Western Co. The pump was pulled, repaired, and the well was cleaned out from 1505 to 1590 ft. After the pump was reset at 1000 ft, a production test was conducted on January 6, 1978. After 5.7 hr of pumping at rates ranging from 1281 to 1356 gpm, the drawdown was 50 ft from a nonpumping water level of 771 ft below the top of the casing.

A production test was conducted by the Layne-Western Co. on September 9, 1984. After 2.2 hr of pumping at rates ranging from 1205 to 1226 gpm, the final drawdown was 43 ft from a nonpumping water level of 876 ft.

In December 1984, the well reportedly produced 1300 gpm for 8 hr with a drawdown of 32 ft from a nonpumping water level of 854 ft.

The pumping equipment presently installed consists of a 400-hp 1750 rpm Byron Jackson electric motor, a 12-in., 16-stage Byron Jackson submersible turbine pump (Serial No. 681-C-0221/721-C-0238/841-C-4032) set at 994 ft, rated at 1000 gpm at about 1180 ft TDH, and has 994 ft of 8-in. column pipe. The well is equipped with 994 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B31438) of a sample collected January 31, 1979, after pumping for 1 hr, showed the water to have a hardness of 319 mg/l, total dissolved minerals of 587 mg/l, and an iron content of 0.35 mg/1.

WELL NO. 9, open to the Midwest Aquigroup (Cambrian-Ordovician aquifer), was completed in September 1972 to a depth of 1431 ft (reported to be 1343 ft deep in 1985) by the Milaeger Well & Pump Co., Brookfield, Wis. The well is located at the south end of Vista Ave. about 0.5 block south of View St., approximately 1600 ft N and 4350 ft E of the SW corner of Section 5, T39N, R11E. The land surface elevation at the well is approximately 710 ft.

A drillers log of Well No. 9 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Clay	73	73
Gravel	10	83
Lime	77	160
Shale	95	255
Lime and shale	148	403
Lime	317	720
Sand	187	907
Shale and lime	16	923
Limestone	47	970
Limestone - dolomites	195	1165
Sand with shale streaks	80	1245
Sandstone	186	1431

A 25.2-in. diameter hole was drilled to a depth of 415 ft, reduced to 21 in. between 415 and 963 ft, and finished 17.2 in. in diameter from 963 to 1431 ft. The well is cased with 26-in. pipe from land surface to a depth of 75 ft, 22-in. pipe from land surface to a depth of 415 ft (cemented in), and an 18-in. slotted liner from 695 ft to a depth of 963 ft.

Upon completion, this well was shot with 1000 lb of nitrogel as follows: 150 lb at 1380 ft, 150 lb at 1360 ft, 150 lb at 1340 ft, 150 lb at 1325 ft, 200 lb at 1350 ft, and 200 lb at 1370 ft.

A production test was conducted by the driller on September 19-20, 1972. After 19.5 hr of pumping at rates ranging from 1012 to 421 gpm, the final drawdown was 170 ft from a nonpumping water level of 628 ft below land surface.

A second production test was conducted by the driller on March 7, 1973. After 4.5 hr of pumping at rates ranging from 599 to 672 gpm, the final drawdown was 200 ft from a nonpumping water level of 623 ft below land surface.

A third production test was conducted by the driller on March 13, 1973. After 4 hr of pumping at rates of 990 to 726 gpm, the final drawdown was 205 ft from a nonpumping water level of 623 ft below land surface.

On April 15, 1974, the well reportedly produced 805 gpm for 12 hr with a drawdown of 165 ft from a nonpumping water level of 635 ft.

In July 1976, after pumping at a rate of 875 gpm, the drawdown was 120 ft from a nonpumping water level of 712 ft.

On June 15, 1984, the nonpumping water level was reported to be 853 ft.

A production test was conducted by the Layne-Western Co., Aurora, on May 15, 1985. After 2.8 hr of pumping at rates of 695 to 781 gpm, the drawdown was 68 ft from a nonpumping water level of 847 ft.

The pumping equipment presently installed is a 12-stage Byron Jackson submersible pump set at 1033 ft, rated at 1000 gpm, and powered by a 400-hp Byron Jackson electric motor.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B01009) is for a water sample from the well collected July 7, 1976, after 24 hr of pumping at 900 gpm.

WELL NO. 0, LABORATORY NO. B01009

		mg/l	*me/l*			*rng/l*	*me/l*
Iron	Fe	0.1		Silica	SiO_2	8	
Manganese	Mn	0.0		Fluoride	F	1.2	0.06
Ammonium	NH_4	0.69	0.04	Boron	B	0.S	
Sodium	Na	45	1.96	Cyanide	CN	0.00	
Potassium	K	13	0.33	Nitrate	NO_3	0.2	0.00
Calcium	Ca	66	3.29	Chloride	CI	14	0.40
Magnesium	Mg	21	1.73	Sulfate	SO_4	78	1.62
				Alkalinity (as $CaCO_3$)		260	5.20
Arsenic	As	0.00					
Barium	Ba	0.1		Hardness (as CaCOg)		251	5.02
Cadmium	Cd	0.00					
Chromium	Cr	0.00		Total dissolved			
Copper	Cu	0.00		minerals		415	
Lead	Pb	0.00					
Mercury	Hg	0.0001					
Nickel	Ni	0.0					
Selenium	Se	0.00					
Silver	Ag	0.00					
Zinc	Zn	0.0		pH (as rec'd)		7.3	

WELL NO. 10, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in October 1978 to a depth of 255 ft by the J. P. Miller Artesian Well Co., Brookfield. The well is located south of the elevated tank about 100 ft west of South Stewart Ave. and 350 ft south of East Wilson Ave., approximately 2333 ft N and 1916 ft E of the SW corner of Section 17, T39N, R11E. The land surface elevation at the well is approximately 745 ft.

A drillers log of Well No. 10 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Red clay	20	20
Gray mud and gravel	68	88
Broken lime	14	102
Gray lime	**148**	250
Green shale	5	255

The well is cased with 18-in. steel pipe from land surface to a depth of 20 ft, 16-in. steel pipe from land surface to a depth of 103 ft, and 12-in. steel pipe from about 2 ft above land surface to a depth of 106 ft (cemented in). Below the casing, the hole was finished 12 in. in diameter to a depth of 255 ft.

Upon completion, the well reportedly produced 620 gpm for 24 hr with a drawdown of 81 ft from a nonpumping water level of 64 ft below land surface.

On November 16, 1978, after acidizing, the well reportedly produced 675 gpm for 12 hr with a drawdown of 53 ft from a nonpumping water level of 66 ft below land surface.

In December 1984, after pumping at a rate of 700 gpm, the drawdown was 51 ft from a nonpumping water level of 73 ft.

The pumping equipment presently installed is a 10-in., 4-stage Byron Jackson submersible pump set at 210 ft, rated at 700 gpm at about 170 ft TDH, and powered by a 40-hp 1800 rpm Byron Jackson electric motor. The well is equipped with 210 ft of airline.

WELL NO. 11 was completed in May 1981 to a depth of 356 ft by the Wehling Well Works, Beecher. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located about 100 ft north of 22nd St. and 1100 ft west of Finley Road, approximately 830 ft N and 850 ft E of the SW corner of Section 19, T39N, R11E. The land surface elevation at the well is approximately 705 ft.

A drillers log of Well No. 11 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Clay and rocks	84	84
Limestone	25	109
Broken lime	3	112
Lime	118	230
Lime and shale	40	270
Rocks	5	275
Lime and shale	75	350
Shale	6	356

An 18-in. diameter hole was drilled to a depth of 85 ft, reduced to 17.2 in. between 85 and 95 ft, and finished 12 in. in diameter from 95 to 356 ft. The well is cased with 18-in. black pipe from land surface to a depth of 85 ft and 12-in. black pipe from land surface to a depth of 95 ft (cemented in).

A production test was conducted by the driller on June 1-2, 1981. After 24 hr of pumping at rates ranging from 895 to 972 gpm, the final drawdown was 10 ft from a nonpumping water level of 33 ft below land surface. Ten min after pumping was stopped, full recovery was observed.

A production test was conducted by the Layne-Western Co., Aurora, on June 10, 1985. After 2 hr of pumping at rates of 1073 to 936 gpm, the drawdown was 10 ft from a nonpumping water level of 33 ft.

The pumping equipment presently installed is an 11-in., 2-stage Byron Jackson submersible pump (Serial No. 841-C-0414) set at 91 ft, and powered by a 40-hp Byron Jackson electric motor.

A partial analysis of a sample (Lab. No. 215713) collected in June 1981, showed the water to have a hardness of 623 mg/l, total dissolved minerals of 827 mg/l, and an iron content of 1.3 mg/l.

MAPLE HILL IMPROVEMENT ASSOCIATION

Maple Hill Improvement Association (est. 228), located about 0.2 mile southwest of Downers Grove, installed a public water supply in 1939. Two wells are in use. In 1957 there were 48 services; the average and maximum pumpages were 8000 and 20,000 gpd, respectively. In 1984 there were 66 services, all metered; the average pumpage was 11,170 gpd. The water is chlorinated and fluoridated.

WELL NO. 1 (North Well), open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in 1939 to a depth of 117 ft by Strong Well Drillers, Downers Grove. The well is located in a pumphouse at 5502 Pershing Road about 1 block north of Maple Ave., approximately 5 ft S and 650 ft W of the NE corner of Section 13, T38N, R10E. The land surface elevation at the well is approximately 748 ft.

A 6-in. diameter hole was drilled to a depth of 117 ft. The well is cased with 6-in. pipe from about 2 ft above the pumphouse floor to a depth of 80 ft.

On July 3, 1958, the nonpumping water level was reported to be 91 ft.

The pumping equipment presently installed is a Red Jacket submersible pump set at 107 ft, operated at 35 gpm, and powered by a 3-hp Red Jacket electric motor.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B34496) of a sample collected February 6, 1980, after pumping at 35 gpm, showed the water to have a hardness of 563 mg/1, total dissolved minerals of 782 mg/1, and an iron content of <0.005 mg/1.

WELL NO. 2 (South Well), open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in 1954 to a depth of 158 ft by the Du Page Pump Co., Lemont. The well is located about 10 ft south of Well No. 1, approximately 15 ft S and 650 ft W of the NE corner of Section 13, T38N, R10E. The land surface elevation at the well is approximately 748 ft.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. 16003) is for a water sample from the well collected April 24, 1972, after 4 hr of pumping.

WELL NO. 2, LABORATORY NO. 18003

		mg/l	*me/l*			*mg/l*	*me/l*
Iron	Fe	0.0		Silica	SiO_2	12.0	
Manganese	Mn	0.0		Fluoride	F	0.2	0.01
Ammonium	NH_4	0.06	0.00	Boron	B	0.31	
Sodium	Na	35	1.52	Nitrate	NO_3	5.3	0.08
Potassium	K	4.7	0.12	Chloride	CI	86.0	2.42
Calcium	Ca	112	5.59	Sulfate	SO_4	205	4.26
Magnesium	Mg	65	5.34	Alkalinity (as $CaCO_3$)		260	5.20
				Hardness (as $CaCO_3$)		530	
Barium	Ba	0.0					
Cadmium	Cd	0.00		Total dissolved			
Chromium	Cr	0.0		minerals		666	
Copper	Cu	0.0		pH (as rec'd)		5.9	
Lead	Pb	0.00		Radioactivity			
Mercury	Hg	<0.0005		Alpha *pc/l*		0.0	
Nickel	Ni.	0.0		± deviation		1.7	
Silver	Ag	0.0		Beta *pc/l*		0.0	
Zinc	Zn	0.1		± deviation		2.3	

A 6-in. diameter hole was drilled to a depth of 158 ft. The well is cased with 6-in. pipe from about 1.5 ft above the wellhouse floor to a depth of 100 ft.

On July 3, 1958, the well reportedly produced 150 gpm for 30 min with a drawdown of 8 ft from a non-pumping water level of 94 ft.

The pumping equipment presently installed is a Red Jacket submersible pump set at 147 ft, rated at 75 gpm, and powered by a 5-hp Red Jacket electric motor.

METRO UTILITY LIBERTY RIDGE DIVISION

Metro Utility Liberty Ridge Division (formerly known as Liberty Ridge Estates Water Co.) (est. 1050), located on the northwest edge of Wheaton, installed a public water supply in 1962. The water system is owned and operated by the Metro Utility Co. One well is in use. This supply is also cross connected with the village of Winfield. In 1963 there were 10 services; the estimated average pumpage was 1000 gpd. In 1984 there were 340 services, all metered; the average pumpage was 102,710 gpd. The water is chlorinated, fluoridated, and treated with polyphosphate to keep iron in solution.

WELL NO. 1, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in September 1962 to a depth of 261 ft by the Neely Well Drilling Co., Elgin. The well is located at the northeast corner of Elmwood and Harrison Sts., approximately 50 ft N and 1550 ft W of the SE corner of Section 7, T39N, R10E. The land surface elevation at the well is approximately 770 ft.

A drillers log of Well No. 1 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Soil	3	3
Yellow clay	11	14
Blue clay	26	40
Sand and gravel	77	117
White sand and gravel	10	127
Limestone	134	261
Shale		

An 8-in. diameter hole was drilled to a depth of 261 ft. The well is cased with 8-in. steel pipe from about 1 ft above land surface to a depth of 127 ft. The top of the well casing is equipped with a Tubbs pitless adapter.

A production test was conducted by the driller on September 13, 1962. After 8 hr of pumping at a rate of 415 gpm, there was very little drawdown from a nonpumping water level of 69 ft below land surface.

The pumping equipment presently installed is a Red Jacket submersible pump set at 127 ft, rated at 330 gpm, and powered by a 30-hp Red Jacket electric motor.

The following mineral analysis made.by the Illinois Environmental Protection Agency (Lab. No. B0018167) is for a water sample from the well collected in May 1972, after 15 min of pumping at about 350 gpm.

WELL NO. 1, LABORATORY NO. B0018167

		mg/l	*me/l*			*mg/l*	*me/l*
Iron	Fe	0.1	0.00	Silica	SiO_2	21	
Manganese	Mn	0.04	0.00	Fluoride	F	0.3	0.02
Ammonium	NH_4	0.06	0.00	Boron	B	0.3	
Sodium	Na	10	0.44	Nitrate	NO_3	0.0	
Potassium	K	2.6	0.07	Chloride	CI	19.5	0.55
Calcium	Ca	110	5.49	Sulfate	SO_4	290	6.03
Magnesium	Mg	74	6.08	Alkalinity (as $CaCO_3$)		252	5.04
				Hardness (as $CaCO_3$)		580	
Barium	Ba	0.1					
Cadmium	Cd	0.00		Total dissolved			
Chromium	Cr	0.0		minerals		730	
Copper	Cu	0.0		pH (as rec'd)	7.3		
Lead	Pb	0.00		Radioactivity			
Mercury	Hg	<0.0005		Alpha *pe/l*	0.0		
Nickel	Ni	0.0		± deviation	1.5		
Silver	Ag	0.0		Beta *pc/l*	0.0		
Zinc	Zn	0.0		± deviation	2.4		

NAPERVILLE

The city of Naperville (42,330) installed a public water supply in 1905. This city is in Du Page County but one of the wells (No. 21) is located in Will County. Thirteen wells (Nos. 4, 5, 7, 10, 11, 13, 14, 16, 18, 19, 20, 21, and 22) are in use and three wells (Nos. 6, 8, and 15) are available for emergency use. In 1950 there were 1740 services, all metered; the average and maximum pumpages were 640,000 and 725,000 gpd, respectively. In 1984 there were 17,209 services, all metered; the average pumpage was 7,683,100 gpd. The water is chlorinated, fluoridated (except for Well Nos. 7, 16, and 20), and treated with polyphosphate to keep iron in solution; in addition, Well No. 4 passes through an iron removal unit.

Initially, water was obtained from a well open to the Midwest Aquigroup (Cambrian-Ordovician aquifer). It was completed in 1905 to a depth of 1425 ft by the L. Wilson Well Co. This well was abandoned and sealed in 1924. The well was located about 75 ft north of Jackson Ave. and 75 ft east of Webster St., approximately 850 ft N and 900 ft W of the SE corner of Section 13, T38N, R9E, Du Page County. The land surface elevation at the well is approximately 675 ft.

A correlated drillers log of the initial well furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
Loam and loose rock	20	20
SILURIAN SYSTEM		
Niagaran and Alexandrian Series		
Limestone	95	115
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Limestone streaked with shale	190	305
Champlainian Series		
Galena and Platteville Groups		
Limestone	341	646
Ancell Group		
St. Peter Sandstone		
Sandstone	129	775
Limestone streaked with shale	61	836
Canadian Series		
Prairie du Chien Group		
Oneota Dolomite		
Limestone	100	936
Shale and limestone	9	945
Gunter Sandstone		
Sandstone	5	950
CAMBRIAN SYSTEM		
Eminence, Potoai, and Franconia Formations		
Limestone	315	1265
Ironton-Galesville Sandstone		
Sandstone	160	1425

A hole of unknown diameter was drilled to a depth of 118 ft, reduced to 8.1 in. between 118 and 939 ft, and finished 6.1 in. in diameter from 939 to 1425 ft. The well was cased with 12-in. pipe from about 0.8 ft above the pump station floor to a depth of 10.5 ft, 10-in. pipe from 10.5 ft to a depth of 118 ft, and a 6.2-in. liner from 773 ft to a depth of 939 ft.

Upon completion, after pumping at a rate of 79 gpm, the drawdown was 20 ft from a nonpumping water level of 45 ft below the pump station floor. Pumping was continued at a rate of 108 gpm with a drawdown of 28 ft.

In 1915, the nonpumping water level was reported to be 85 ft.

WELL NO. 1 was completed in 1913 to a depth of 1375 ft. This well was abandoned prior to July 1954 and sealed prior to February 1960. The water-yielding units in this well were dolomite of the Upper Bedrock Aquigroup (Silurian System) and the Midwest Aquigroup (Cambrian-Ordovician aquifer). The well was located northeast of Jackson Ave. and Webster St., approximately 825 ft N and 850 ft W of the SE corner of Section 13, T38N, R9E, Du Page County. The land surface elevation at the well is approximately 673 ft.

A 12-in. diameter hole was drilled to a depth of 500 ft, where it was reduced to 10 in., and finished 8 in. in diameter to 1375 ft. The well was cased with 12-in. pipe to the bedrock surface at an unknown depth.

Nonpumping water levels were reported to be 14 ft in 1915; 21.5 ft in 1922; and 11 ft on June 8, 1944, after a 28-hr idle period.

A mineral analysis of a sample (Lab. No. 30619) collected June 4, 1915, showed the water to have a hardness of 393 mg/l, total dissolved minerals of 494 mg/l, and an iron content of 0.1 mg/1.

WELL NO. 2, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in 1923 to a depth of 101 ft by Albert J. Dieter,

Naperville. This well was abandoned in 1931 and sealed in 1936. The well was located north of Jackson Ave. about 65 ft north and 40 ft east of Well No. 1, approximately 890 ft N and 810 ft W of the SE corner of Section 13, T38N, R9E, Du Page County. The land surface elevation at the well is approximately 675 ft.

A drillers log of Well No. 2 follows:

Strata	***Thickness (ft)***	***Depth (ft)***
Black ground	12	**12**
Gravel	5	17
Rock, yellowish, quite soft	12	29
Rock, blue with some green streaks	36	65
Red rock, very hard, slow drilling	6	71
Rock, blue without green streaks but not very hard	30	**101**

The well was reported to be 12 in. in diameter at the top. The hole and casing records are unknown.

A mineral analysis of a sample (Lab. No. 52716) collected October 24, 1924, showed the water to have a hardness of 397 mg/l, total dissolved minerals of 469 mg/l, and an iron content of 0.2 mg/1.

WELL NO. 3, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in 1923 to a depth of 130 ft by Albert J. Dieter, Naperville. This well was abandoned prior to July 1954 and sealed in 1958. The well was located about 180 ft northeast of Well No. 1, approximately 995 ft N and 805 ft W of the SE corner of Section 13, T38N, R9E, Du Page County. The land surface elevation at the well is approximately 675 ft.

A summary sample study log of Well No. 3 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
No sample	17	17
SILURIAN SYSTEM		
Niagaran Series		
Joliet Formation		
Markgraf Member		
Dolomite, cherty, light gray to light buff, fine	8	25
Brandon Bridge Member		
Dolomite, light gray, pink, green and yellow, fine, micro fissils (Paleoturretella Ammodiscus)	35	60
Alexandrian Series		
Kankakee Dolomite		
Dolomite, light gray, fine, sugary	25	85
Elwood Dolomite		
Limestone, sandy, light buff to light brown, fine to medium	45	130

The well was reported to be 12 in. in diameter at the top. The hole and casing records are unknown.

Prior to the construction of Well No. 4, a test well was constructed in 1928 to a depth of 190 ft by the American Water Corporation, Aurora. It was located in the NW quarter of the NE quarter of the NE quarter of Section 13, T38N, R9E, Du Page County.

WELL NO. 4, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in 1928 to a depth of 178 ft by the American Water Corporation, Aurora. The well is located on the east side of Eagle St. directly opposite 649 Eagle St., approximately 400 ft S and 1000 ft W of the NE corner of Section 13, T38N, R9E, Du Page County. The land surface elevation at the well is 697.2 ft.

A drillers log of Well No. 4 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Glacial drift	40	40
Dolomite	128	168
Limestone	9	177

A 30-in. diameter hole was drilled to a depth of 44 ft and finished 24 in. in diameter from 44 to 178 ft. The well is cased with 30-in. pipe from about 0.6 ft above land surface to a depth of 44 ft. The casing was originally perforated between 6 and 16 ft. In October 1931, the perforations in the casing were sealed with cement.

Upon completion, after pumping at a rate of 570 gpm, the drawdown was 8.0 ft from a nonpumping water level of 8.5 ft.

In October 1931, after the production rate had gradually decreased to 270 gpm, the perforations in the casing were sealed with cement. The well then reportedly produced 250 gpm with a drawdown of 48 ft from a nonpumping water level of 14 ft.

In 1936, after pumping at a rate of 250 gpm, the drawdown was 60 ft from a nonpumping water level of 10 ft.

On November 5, 1942, the well reportedly produced 250 gpm with a drawdown of 60 ft from a nonpumping water level of 10 ft.

In December 1943, this well was acidized with HC1 by the Layne-Western Co., Aurora. A production test was then conducted on December 15, 1943. After pumping at a rate of 1000 gpm, the drawdown was 23.0 ft from a nonpumping water level of 11.0 ft below the pumphouse floor. Pumping was continued at

rates of 840, 700, and 620 gpm with drawdowns of 18.0, 14.0, and 11.5 ft, respectively.

Nonpumping water levels were reported to be 10 ft in March 1956, 15 ft in 1963, and 18 ft in February 1965.

In 1975, this well was acidized by the Layne-Western Co., and results indicated production in excess of 1000 gpm was possible.

On September 20, 1979, the nonpumping water level was reported to be 22 ft.

The pumping equipment presently installed is a 12-in., 5-stage Layne turbine pump set at 150 ft, rated at 1000 gpm at about 300 ft head, and powered by a 100-hp U. S. electric motor. A 10-ft section of 8-in. suction pipe is attached to the pump intake.

A partial analysis of a sample (Lab. No. 212158) collected September 20, 1979, after pumping for 20 hr at 1000 gpm, showed the water to have a hardness of 532 mg/l, total dissolved minerals of 619 mg/l, and an iron content of 1.4 mg/1.

WELL NO. 5, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in 1930 to a depth of 189.5 ft by the Layne-North Central Co., Milwaukee, Wis. The well is located at East School Ave. about 300 ft east of North Hoffman St., approximately 2550 ft N and 1400 ft W of the SE corner of Section 18, T38N, R10E, Du Page County. The land surface elevation at the well is 695.1 ft.

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

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
Glacial Drift		
"Soil; sand, small gravel and clay; blue clay"	31	31
SILURIAN SYSTEM		
Niagaran and Alexandrian Series		
"Broken limestone"	4	35
Dolomite, light gray-buff, finely crystalline, compact	20	55
Dolomite, cherty, gray-buff, finely crystalline, compact	35	90
Dolomite, partly argillaceous, gray, pink, fine	5	95
Dolomite, gray, very fine, compact	5	100
Dolomite, cherty, light gray-buff, partly tinged pinkish, finely crystalline, compact	20	120
Dolomite, light gray-buff to light brown, finely crystalline, compact, secondary silica	35	155
Dolomite, very cherty, light gray-brown, fine	5	160
Dolomite, slightly cherty, gray-buff, finely crystalline, compact	15	175
Dolomite, very siliceous, light gray-buff, fine	5	180
Dolomite, partly argillaceous, gray-buff, greenish, fine	10	190
Dolomite, very siliceous, gray-buff, fine	5	195
Dolomite, light gray-buff, fine, compact	5	200
Dolomite, argillaceous, buff; shale, green, weak	5	205

A 30-in. diameter hole was drilled to a depth of 31.5 ft and finished 24 in. in diameter from 31.5 to 189.5 ft. The well is cased with 30-in. wrought iron pipe from about 0.2 ft above land surface to a depth of 31.5 ft.

On January 7, 1931, the well reportedly produced 630 gpm for 5.6 hr with a drawdown of 43 ft from a nonpumping water level of 7 ft below land surface.

In 1937, the production had decreased to 460 gpm with a drawdown of 96.5 ft from a nonpumping water level of 10.0 ft.

On April 1, 1942, when pumping at a rate of more than 390 gpm, the pumping water level was below the suction screen from a nonpumping water level of 7.2 ft below the pumphouse floor. The Layne-Western Co., Aurora, removed the pump and cleaned it by immersing in HC1. On April 6, 1942, this well was acidized with 3000 gal of 15 percent HC1 by the Dowell Corporation. A production test was conducted by the Layne-Western Co. on April 7, 1942. After pumping at a rate of 650 gpm, the drawdown was 23.0 ft from a nonpumping water level of 3.8 ft below the pumphouse floor. Pumping was continued at a rate of 700 gpm with a drawdown of 26.0 ft. Well No. 6 was turned on and pumping was continued at a rate of 700 gpm with a drawdown of 29.0 ft. After additional pumping at rates of 750 to 825 gpm, the final drawdown was 41.0 ft.

Nonpumping water levels were reported to be 11.5 ft below the pump base (Well No. 6 idle) in 1944, and 14.5 ft on September 7, 1951.

On October 10, 1951, this well was treated with 3000 gal of 15 percent HC1 by the Holland Co., Brookfield. Gas forced a passage through the upper part of the casing. The nonpumping water level was then reported to be 8.8 ft.

In March 1956, the nonpumping water level was reported to be 27 ft.

On December 8, 1956, this well was acidized.

On January 28, 1957, the well reportedly produced 590 gpm for 30 min with a drawdown of 34.0 ft from a nonpumping water level of 15.3 ft below the pump base.

In 1958, after pumping at a rate of 685 gpm, the drawdown was 58 ft from a nonpumping water level of about 11 ft.

A production test using one observation well (No. 6) was conducted by the Layne-Western Co. on April 12, 1962. After 4.2 hr of pumping at rates ranging from 680 to 663 gpm, the final drawdown was 74 ft from a nonpumping water level of 12 ft below land surface.

A production test was conducted by the State Water Survey on July 8, 1963. After 52 min of pumping at rates of 595 to 575 gpm, the drawdown was 51.35 ft from a nonpumping water level of 11.85 ft below land surface.

In 1964, this well was acidized by the Layne-Western Co. Results are not available.

Nonpumping water levels were reported to be 13 ft in February 1965, and 15 ft in May 1966.

In 1967, the well reportedly produced 780 gpm with a drawdown of 38 ft from a nonpumping water level of 18 ft.

Nonpumping water levels were reported to be 22 ft in May 1972, and 15 ft in August 1973.

In March 1977, this well was acidized by the Wehling Well Works, Beecher. The acid had no effect on the production.

On September 20, 1979, the nonpumping water level was reported to be 18 ft.

The pumping equipment presently installed is a Layne turbine pump set at 115 ft, rated at 700 gpm, and powered by a 75-hp U. S. electric motor.

A partial analysis of a sample (Lab. No. 212159) collected September 20, 1979, after pumping for 24 hr at about 725 gpm, showed the water to have a hardness of 444 mg/l, total dissolved minerals of 501 mg/l, and an iron content of 0.2 mg/1.

WELL NO. 6, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in August 1937 to a depth of 202 ft by the Layne-Western Co., Aurora. This well is available for emergency use. The well is located about 100 ft southwest of Well No. 5, approximately 2450 ft N and 1450 ft W of the SE corner of Section 18, T38N, R10E, Du Page County. The land surface elevation at the well is approximately 695 ft.

A drillers log of Well No. 6 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Top soil	6	6
Gravel	23	29
Limestone	168	197
Limestone and shale	2	199
Shale, green	3	202

A 27-in. diameter hole was drilled to a depth of 31 ft and finished 24 in. in diameter from 31 to 202 ft. The well is cased with 27-in. pipe from about 0.5 ft above land surface to a depth of 31 ft.

Upon completion, after 24 hr of pumping at a rate of 400 gpm, the drawdown was 143 ft from a nonpumping water level of 10 ft below the top of the casing (Well No. 5 operated intermittently).

On February 17, 1947, the nonpumping water level was reported to be 13 ft below the pump base. After 30 min of pumping at a rate of 450 gpm, the pump broke suction. The pumping rate was decreased to a final rate of 285 gpm and the pumping water level was reported to be 179 ft below the pump base. The well was then acidized with 1000 gal of 28 percent HC1 diluted to about 15 percent by Dowell, Inc. The production was reported to be the same as before acidizing.

On March 6, 1948, this well was treated with 2000 gal of 15 percent HCI by the Holland Co., Brookfield. After acidizing, a production test was conducted by the Layne-Western Co. on March 10, 1948. After 7.5 hr of pumping at rates ranging from 400 to 572 gpm, the drawdown was 45.5 ft from a nonpumping water level of 10.0 ft.

A production test was conducted by the Layne-Western Co. on March 9, 1962. After 1.5 hr of pumping at a rate of about 500 gpm, the drawdown was 48 ft from a nonpumping water level of 10 ft below land surface. After a 10-min idle period, pumping was continued for 55 min at rates of 570 to 560 gpm with a final drawdown of 66 ft.

On December 30, 1962, the nonpumping water level was reported to be 16 ft.

A production test was conducted by the State Water Survey on July 8, 1963. After 1 hr of pumping at rates of 290 to 340 gpm, the drawdown was 23.59 ft from a nonpumping water level of 11.41 ft below land surface.

Nonpumping water levels were reported to be 23 ft in February 1965, and 17 ft in May 1966.

In 1967, the well reportedly produced 260 gpm with a drawdown of 36 ft from a nonpumping water level of 24 ft.

In May 1972, the nonpumping water level was reported to be 28 ft.

In March 1977, this well was acidized by the Wehling Well Works, Beecher. The acid had no effect on the production. The nonpumping water level was reported to be 27 ft.

The pumping equipment presently installed consists of a 25-hp 1760 rpm General Electric motor (No. 5407386), a 10-in., 5-stage Layne turbine pump (No. 8594) set at 180 ft, rated at 500 gpm at about 215 ft TDH, and has 180 ft of 7-in. column pipe. A 15-ft section of 8-in. suction pipe is attached to the pump intake. The well is equipped with 180 ft of airline.

A partial analysis of a sample (Lab. No. 182076) collected June 8, 1970, showed the water to have a hardness of 428 mg/l, total dissolved minerals of 518 mg/l, and an iron content of 0.1 mg/1.

WELL NO. 7 was completed in January 1958 to a depth of 1445 ft (cleaned to 1412 ft in 1958, reported to be 1336 ft deep in 1964 and 1968, and measured at 1325 ft in 1974) by the Egerer-Galloway Well Corporation, Milwaukee, Wis. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer) except for dolomites of the Galena and Platteville Groups. The well also penetrates the upper part of the Eau Claire Formation. The well is located north of the city hall at Jackson Ave. and Webster St. about 235 ft northwest of Well No. 1, approximately 1050 ft N and 925 ft W of the SE corner of Section 13, T38N, R9E, Du Page County. The land surface elevation at the well is approximately 680 ft.

A sample study log of Well No. 7 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
No sample	22	22
SILURIAN SYSTEM		
Niagaran Series		
Dolomite, light gray to light buff, very fine	63	85
Alexandrian Series		
Dolomite, calcareous, light buff, very fine	45	130
Dolomite, buff, very fine to fine	15	145
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Limestone, cherty, green, red, gray, very fine; little shale, light gray, weak	50	195
Dolomite, brown, fine; shale, grayish-brown, brittle	55	250
Shale, slightly dolomitic, brown, weak to brittle	55	305
Champlainian Series		
Galena Group		
Kimmswick Subgroup		
Dolomite, buff to grayish-buff, very fine to fine	55	360
Limestone, dolomitic, light buff, very fine	15	375
Dolomite, calcareous, buff to light brown, very fine to fine	50	425
Decorah Subgroup		
Dolomite, light buff, fine, speckled	15	440
Limestone, buff to brown, fine, speckled	10	450
Platteville Group		
Dolomite, calcareous, light buff to gray, very fine	70	520
Limestone, dolomitic, buff to gray, very fine, mottled	75	595
Dolomite, calcareous, buff, little gray, very fine	45	640
Ancell Group		
Glenwood Formation		
Sandstone, slightly dolomitic, white, fine to medium, incoherent to friable	65	705
St. Peter Sandstone		
Sandstone, white, very fine to fine, incoherent	65	770
Sandstone, white, fine to medium, incoherent	30	800
Shale, white, weak	5	805
Canadian Series		
Oneota Dolomite		
Dolomite, cherty (oolc), buff, very fine	15	820
Sandstone, white, very fine to medium	5	825
Dolomite, slightly cherty, light gray, very fine to medium	30	855
Dolomite, white, fine to medium	75	930
Dolomite, cherty, light buff; sandstone	15	945
Gunter Sandstone		
Sandstone, light gray, very fine to medium	20	965
CAMBRIAN SYSTEM		
Croixan Series		
Eminence and Potosi Dolomites		
Dolomite, light buff, very fine	35	1000
Dolomite, light buff to light gray, very fine	75	1075
Dolomite, buff, very fine	80	1155
Franconia Formation		
Dolomite, glauconitic, buff; sandstone	10	1165
Sandstone, glauconitic, light gray,		

Strata	Thickness (ft)	Depth (ft)
fine incoherent; sandstone, dolomitic, glauconitic, fine, compact	65	1230
Sandstone, dolomitic, glauconitic	15	1245
Dolomite, glauconitic, gray, very fine	15	1260
Shale, light greenish-gray, weak	5	1265
Ironton-Galesville Sandstone		
Sandstone, white, fine to coarse, incoherent; dolomite, sandy, light buff	90	1355
Sandstone, light gray, medium to fine, incoherent; little dolomitic, sandstone	25	1380
Sandtone, white, very fine to medium, incoherent; little dolomitic, sandstone	35	1415
Eau Claire Formation		
Sandstone, light brown, fine; dolomite	20	1435
Dolomite, brown, very fine	10	1445

A 30-in. diameter hole was drilled to a depth of 25 ft, reduced to 25 in. between 25 and 685 ft, reduced to 19 in. between 685 and 1425 ft, and finished 16 in. in diameter from 1425 to 1445 ft. The well is cased with 30-in. pipe from about 1.8 ft above land surface to a depth of 25 ft and 20-in. pipe from about 1.8 ft above land surface to a depth of 685 ft (cemented in).

Upon completion, after 23.5 hr of pumping at a rate of 1070 gpm, the drawdown was 152 ft from a nonpumping water level of 367 ft below land surface. The well was then cleaned out to a depth of 1412 ft.

On September 12, 1960, the well reportedly produced 1080 gpm for 8 hr with a drawdown of 120 ft from a nonpumping water level of 427 ft below land surface.

Nonpumping water levels were reported to be 479 ft on December 30, 1962; 461 ft in October 1963; 485 ft in February 1965; and 477 ft in May 1966.

In 1967, after pumping at a rate of 920 gpm, the drawdown was 112 ft from a nonpumping water level of 473 ft.

A production test was conducted by the Layne-Western Co., Aurora, on August 29-30, 1974. After 24.8 hr of pumping at rates of 1266 to 1001 gpm, the final drawdown was 194 ft from a nonpumping water level of 545 ft.

In May 1977, the nonpumping water level was reported to be 590 ft.

The pumping equipment presently installed consists of a 400-hp Byron Jackson electric motor, a 12-in., 13-stage Byron Jackson submersible pump (No. 4756003) set at 880 ft, rated at 1000 gpm at about 900 ft TDH, and has 880 ft of 8-in. column pipe. The well is equipped with 880 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B44342) of a sample collected April 8, 1980, after pumping for 24 hr at 925 gpm, showed the water to have a hardness of 256 mg/l, total dissolved minerals of 432 mg/l, and an iron content of 0.078 mg/1.

WELL NO. 8 was completed in March 1962 to a depth of 247 ft by the Layne-Western Co., Aurora. This well is available for emergency use. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located at the southwest corner of 75th St. and Clyde Drive, approximately 2500 ft N and 2100 ft W of the SE corner of Section 30, T38N, R10E, Du Page County. The land surface elevation at the well is approximately 687 ft.

A drillers log of Well No. 8 follows:

Strata	Thickness (ft)	Depth (ft)
Top soil	2	2
Brown clay	3	5
Yellow clay	10	15
Gravel and boulders	13	28
Sand and gravel	6	34
Limestone	106	140
Shale	5	145
Limestone	90	235
Limestone and shale	5	240
Shale	7	247

A 16-in. diameter hole was drilled to a depth of 34 ft and finished 15.2 in. in diameter from 34 to 247 ft. The well is cased with 16-in. pipe from about 2.6 ft above land surface to a depth of 34 ft.

A production test was conducted by the driller on March 6, 1962. After 8 hr of pumping at rates ranging from 409 to 252 gpm, the maximum drawdown was 105 ft from a nonpumping water level of 27 ft below land surface.

After acidizing with 3000 gal of 15 percent HC1, a production test was conducted by the driller on April 30, 1962. After 9 hr of pumping at rates ranging from 250 to 620 gpm, the maximum drawdown was 77 ft from a nonpumping water level of 27 ft below land surface.

A production test was conducted by the driller on July 10, 1963. After 3.4 hr of pumping at rates of 492 to 215 gpm, the maximum drawdown was 64 ft from a nonpumping water level of 33 ft.

In 1964, this well was acidized by the Layne-Western Co., Aurora, and the results were not satisfactory. In February 1964, the production capacity was reported to be 150 gpm.

In February 1965, the nonpumping water level was reported to be 31 ft.

On April 16, 1965, the well reportedly produced 640 gpm for 6 hr with a drawdown of 58 ft from a nonpumping water level of 30 ft below the pump base.

In 1966, the well reportedly produced 200 gpm with a drawdown of 43 ft from a nonpumping water level of 33 ft.

Nonpumping water levels were reported to be 30 ft in May 1972, and 36 ft on September 20, 1979.

The pumping equipment presently installed consists of a 25-hp U. S. Holloshaft electric motor, an 8-in., 7-stage Layne vertical turbine pump set at 100 ft, rated at 200 gpm at about 222 ft TDH, and has 100 ft of 5-in. column pipe. A 10-ft section of 6-in. suction pipe is attached to the pump intake. The well is equipped with 100 ft of airline.

A partial analysis of a sample (Lab. No. 212160) collected September 20, 1979, after pumping for 2 hr at 200 gpm, showed the water to have a hardness of 451 mg/l, total dissolved minerals of 542 mg/l, and an iron content of 0.2 mg/1.

WELL NO. 9 was constructed in April 1962 to a depth of 247 ft and deepened in August 1973 to a reported depth of 302 ft by the Layne-Western Co., Aurora. This well was abandoned in 1973. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located at the southwest corner of the intersection of River Road and the Burlington Northern RR tracks, approximately 1950 ft S and 2100 ft E of the NW corner of Section 14, T38N, R9E, Du Page County. The land surface elevation at the well is approximately 703 ft.

A drillers log of Well No. 9 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Top soil	2	2
Clay	13	15
Gravel and boulders	6	21
Gravel	19	40
Gray clay	8	48
Gravel	2	50
Hard gray limestone	20	70
Hard brown limestone	25	95
Medium gray limestone	15	110
Medium brown limestone	35	145
Medium gray limestone	14	159
Gray shale	5	164
Limestone	6	170
Medium limestone with green shale streaks	25	195
Hard gray limestone	30	225
Medium gray limestone	5	230
Medium gray limestone with shale streaks	5	235
Medium gray limestone	7	242
Shale	41	283
Medium gray lime	1	284
Shale	18	302

Originally, a 15.2-in. diameter hole was drilled to a depth of 247 ft. In 1973, when the well was deepened, the hole was reported to be 15.2 in. in diameter to a depth of 302 ft. The well is cased with 16-in. pipe from land surface to a depth of 53.3 ft.

Before deepening, a production test was conducted by the driller on April 6, 1962. After 7.9 hr of pumping at rates ranging from 172 to 160 gpm, the final drawdown was 127 ft from a nonpumping water level of 25 ft below land surface.

After acidizing with 3000 gal of 15 percent treating acid, a production test was conducted by the driller on April 11, 1962. After 3 hr of pumping at rates ranging from 210 to 200 gpm, the drawdown was 127 ft from a nonpumping water level of 25 ft below land surface. After surging for 30 min, pumping was continued for 1.5 hr at rates of 215 to 200 gpm with a final drawdown of 124 ft.

In 1973, this well was deepened to a depth of 302 ft by the Layne-Western Co. A production test was then conducted by the driller on August 31, 1973. After 5.2 hr of pumping at rates ranging from 195 to 271 gpm, the drawdown was 171 ft from a nonpumping water level of 30 ft. Twenty min after pumping was stopped, the water level had recovered to 68 ft. The well was then acidized with 7500 gal of 15 percent acid and a production test was conducted by the driller on September 6, 1973. After 6.5 hr of intermittent pumping at rates of 280 to 234 gpm, the final drawdown was 175 ft from a nonpumping water level of 30 ft. Five min after pumping was stopped, the water level had recovered to 98 ft.

A partial analysis of a sample (Lab. No. 157141) collected during the initial production test on April 6, 1962, after pumping for 6 hr at rates of 172 to 160 gpm, showed the water to have a hardness of 327 mg/1, total dissolved minerals of 412 mg/1, and an iron content of 1.2 mg/1.

WELL NO. 10 was completed in August 1962 to a depth of 223 ft (reported to be 220 ft in 1973) by the

Layne-Western Co., Aurora. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located on the west side of West St. north of Bauer Road, approximately 175 ft N and 2350 ft E of the SW corner of Section 1, T38N, R9E, Du Page County. The land surface elevation at the well is approximately 726 ft.

A drillers log of Well No. 10 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Top soil	2	2
Clay and stones	8	10
Gravel and boulders	33	43
Blue clay	21	64
Limestone	11	75
Brown medium limestone	45	120
Gray medium limestone 15		135
Medium limestone with trace of red shale	5	140
Medium reddish brown limestone	15	155
Medium brown limestone	10	165
Medium gray limestone	48	213
Limestone with traces of shale	2	215
Shale	8	223

A 15.2-in. diameter hole was drilled to a depth of 223 ft. The well is cased with 16-in. pipe from about 1.3 ft above land surface to a depth of 63.9 ft.

A production test was conducted by the driller on August 1, 1962. After 8 hr of pumping at rates ranging from 500 to 1150 gpm, the drawdown was 35 ft from a nonpumping water level of 39 ft below land surface.

A second production test was conducted by the driller on August 2, 1962. After 7.5 hr of pumping at rates ranging from 1180 to 1236 gpm, the drawdown was 36 ft from a nonpumping water level of 39 ft below land surface.

A third production test was conducted by the driller on August 3, 1962. After 8 hr of pumping at rates of 1280 to 1268 gpm, the drawdown was 39 ft from a nonpumping water level of 39 ft below land surface.

In February 1965, the nonpumping water level was reported to be 46 ft.

On March 30, 1965, the well reportedly produced 1350 gpm for 1 hr with a drawdown of 32 ft from a nonpumping water level of 44 ft below land surface.

In 1967, after pumping at a rate of 1320 gpm, the drawdown was 34 ft from a nonpumping water level of 45 ft.

Nonpumping water levels were reported to be 50 ft in May 1972, and 45 ft in August 1973.

A production test was conducted by the driller on August 22, 1973. After 2.2 hr of pumping at rates of 556 to 1078 gpm, the final drawdown was 57 ft from a nonpumping water level of 49 ft.

After the pump was repaired, a production test was conducted by the driller on September 6, 1973. After 4.5 hr of pumping at rates of 1304 to 1281 gpm, the final drawdown was 77 ft from a nonpumping water level of 49 ft.

In November 1977, the nonpumping water level was reported to be 55 ft.

The pumping equipment presently installed is a 12-in., 5-stage Layne turbine pump (No. 46259) set at 190 ft, rated at 1400 gpm at about 242 ft TDH, and powered by a 125-hp 1750 rpm U. S. electric motor.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B29581) of a sample collected January 11, 1978, after pumping for 1 hr at 850 gpm, showed the water to have a hardness of 441 mg/l, total dissolved minerals of 541 mg/l, and an iron content of 0.1 mg/1.

WELL NO. 11 was completed in July 1956 to a depth of 210 ft by the J. P. Miller Artesian Well Co., Brookfield. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. This well was purchased from the Lawnmeadow Water Co. in 1965. The well is located on the south side of Aurora Ave. between Clover and Barry Courts, approximately 970 ft S and 1340 ft W of the NE corner of Section 23, T38N, R9E, Du Page County. The land surface elevation at the well is approximately 695 ft.

A sample study log of Well No. 11 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
Soil	5	5
Till	10	15
SILURIAN SYSTEM		
Niagaran Series		
Joliet Formation	85	100
Brandon Bridge Member	20	120
Alexandrian Series		
Kankakee Dolomite	35	155
Elwood Dolomite	35	190
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group	20	210

A 10-in. diameter hole was drilled to a depth of 210 ft. The well is cased with 10-in. galvanized wrought iron pipe from about 1.6 ft above land surface to a depth of 22 ft.

Upon completion, the nonpumping water level was reported to be 11 ft below the top of the casing.

On June 14, 1958, the well reportedly produced 200 gpm for 20 min with a drawdown of 19 ft from a nonpumping water level of 5 ft below the pump base.

In December 1962, the nonpumping water level was reported to be 10 ft.

On March 30, 1965, after 15 min of pumping at a rate of about 140 gpm, the drawdown was 17 ft from a nonpumping water level of 7 ft below land surface.

In May 1966, the nonpumping water level was reported to be 9 ft.

In 1967, the well reportedly produced 65 gpm with a drawdown of 2 ft from a nonpumping water level of 22 ft.

Nonpnmping water levels were reported to be 35 ft in May 1972, and 30 ft in August 1973.

A production test was conducted by the Layne-Western Co., Aurora, on January 16, 1974. After 1 hr of pumping at rates of 247 to 292 gpm, the final drawdown was 79 ft from a nonpumping water level of 40 ft. The well was then treated with 1314 gal of acid.

After acidizing, a production test was conducted by the Layne-Western Co. on January 21-22, 1974. After 24 hr of pumping at rates of 250 to 323 gpm, the final drawdown was 110 ft from a nonpumping water level of 35 ft.

On August 8, 1974, after a 3-week idle period, the nonpumping water level was reported to be 24 ft.

A production test was conducted by the Layne-Western Co. on January 20, 1975. After 1.3 hr of pumping at rates of 448 to 401 gpm, the final drawdown was 111 ft from a nonpumping water level of 23 ft.

A production test was conducted by the Layne-Western Co. on January 21, 1975. After 8 hr of pumping at rates ranging from 375 to 461 gpm, the final drawdown was 143 ft from a nonpumping water level of 23 ft.

A production test was conducted by the Layne-Western Co. on August 22, 1975. After 1 hr of pumping at rates ranging from 340 to 369 gpm, the final drawdown was 87 ft from a nonpumping water level of 30 ft.

Nonpumping water levels were reported to be 30 to 35 ft in December 1977, and 41 ft on September 20, 1979.

The pumping equipment presently installed consists of a 40-hp General Electric motor, an 8-in., 12-stage Layne turbine pump (Serial No. 60003) set at 150 ft, rated at 330 gpm at about 300 ft TDH, and has 150 ft of 6-in. column pipe. The well is equipped with 150 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B045361) of a sample collected May 13, 1982, after pumping for 1 hr at about 350 gpm, showed the water to have a hardness of 544 mg/l, total dissolved minerals of 690 mg/l, and an iron content of 2.0 mg/1.

WELL NO. 12 was completed in September 1965 to a depth of 265 ft by L. Cliff Neely, Batavia. This well was abandoned and sealed in May 1973. The water-yielding units in this well were dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well was located on South West St. near Emerald Drive, approximately 950 ft N and 2750 ft W of the SE corner of Section 24, T38N, R9E, Du Page County. The land surface elevation at the well is approximately 702 ft.

A drillers log of Well No. 12 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Black soil	2	2
Clay	18	20
Gravel	5	25
Blue mud with large gravel stones	13	38
Gravel	7	45
Lime	35	80
Shale	10	90
Lime	5	95
Lime and shale	5	100
Lime	65	165
Gray lime	5	170
Lime	5	175
Blue shale	3	178
Brown shale	4	182
Lime	3	185
Lime some shale	32	217
Shale	8	225
Lime and shale	5	230
Shale	5	235
Lime some shale	10	245
Shale some lime	5	250
Dolomite (hard)	5	255
Lime	10	265

A 17.2-in. diameter hole was drilled to a depth of 100 ft and finished 15.2 in. in diameter from 100 to 265 ft. The well was cased with 18-in. pipe from land surface to a depth of 48.5 ft and 16-in. pipe from 70 ft to a depth of 100 ft.

A production test was conducted by the driller on September 9, 1965. After 1.8 hr of surging, the well was pumped for 4.3 hr at rates ranging from 145 to 179 gpm with a drawdown of 120 ft from a nonpumping water level of 15 ft below land surface.

A partial analysis of a sample (Lab. No. 173350) collected in November 1967, showed the water to have a hardness of 326 mg/l, total dissolved minerals of 362 mg/l, and an iron content of 1.0 mg/1.

WELL NO. 13 was constructed in October 1965 to a depth of 264 ft and deepened in November 1965 to a reported depth of 351 ft by the Layne-Western Co., Aurora. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located on the west side of the Naperville-Wheaton Road about 0.2 mile north of Ogden Ave., approximately 50 ft S and 2800 ft W of the NE corner of Section 8, T38N, R10E, Du Page County. The land surface elevation at the well is approximately 775 ft.

A drillers log of Well No. 13 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Black top soil	2	2
Yellow clay	18	20
Blue clay	5	25
Blue sandy clay	10	35
Gray sandy clay	5	40
Sand	10	50'
Sand and gravel	20	70
Broken limestone	15	85
Clay	35	120
Hard, gray limestone	25	145
Medium, gray limestone	115	260
Shale	4	264
Gray limestone and shale breaks	81	345
Gray shale	6	351

A 15.2-in. diameter hole was drilled to a depth of 351 ft. The well is cased with 16-in. welded steel pipe from about 1.4 ft above land surface to a depth of 124 ft.

Before deepening, a production test was conducted by the driller on October 15, 1965. After 7.2 hr of pumping at rates ranging from 225 to 115 gpm, the drawdown was 69 ft from a nonpumping water level of 75 ft below land surface.

After deepening, a production test was conducted by the driller on November 18, 1965. After 10 hr of pumping at rates ranging from 350 to 292 gpm, the final drawdown was 104 ft from a nonpumping water level of 74 ft below the top of the casing.

A production test was conducted by the driller on August 6, 1973. After 1 hr of pumping at rates ranging from 239 to 215 gpm, the drawdown was 128 ft from a nonpumping water level of 86 ft. The well was then treated with acid.

After acidizing, a production test was conducted by the driller on August 8, 1973. After 24.7 hr of pumping at rates ranging from 354 to 480 gpm, the final drawdown was 109 ft from a nonpumping water level of 87 ft.

In November 1976, this well was treated 2 times with acid by the driller. After the first treatment consisting of 15 percent muriatic acid, production had reportedly increased from 260 to 548 gpm. After the second treatment of the same acid, a production test was conducted by the driller on November 16-17, 1976. After 24 hr of pumping at rates ranging from 339 to 765 gpm, the final drawdown was 110 ft from a nonpumping water level of 115 ft. Thirty min after pumping was stopped, full recovery was observed.

On September 20, 1979, the nonpumping water level was reported to be 96 ft.

The pumping equipment presently installed consists of a 75-hp U. S. electric motor, a 12-in., 5-stage Layne turbine pump set at 300 ft, rated at 700 gpm at about 300 ft TDH, and has 300 ft of 8-in. column pipe. The well is equipped with 300 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B26883) of a sample collected January 7, 1976, after pumping for 8 hr at 350 gpm, showed the water to have a hardness of 516 mg/1, total dissolved minerals of 635 mg/1, and an iron content of 1.4 mg/1.

WELL NO. 14 was completed in January 1966 to a depth of 248 ft by the Layne-Western Co., Aurora. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located on the south side of Jefferson Ave. about 750 ft west of Route 34, approximately 150 ft S and 750 ft W of the NE corner of Section 22, T38N, R9E, Du Page County. The land surface elevation at the well is approximately 701 ft.

A drillers log of Well No. 14 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Clay	20	20
Blue clay	15	35
Broken limestone	10	45
Hard gray limestone	30	75
Medium gray limestone	5	80
Very hard gray limestone	5	85
Hard gray limestone	50	135
Medium gray limestone	37	172

Strata	Thickness (ft)	Depth (ft)
Medium gray limestone and shale	3	175
Medium gray limestone	5	180
Medium gray limestone with shale streaks	30	210
Blue shale with limestone streaks	15	225
Medium gray limestone	13	238
Shale	10	248

A 15.2-in. diameter hole was drilled to a depth of 248 ft. The well is cased with 16-in. steel pipe from about 2.3 ft above land surface to a depth of 47 ft.

A production test was conducted by the driller on February 7, 1966. After 11 hr of pumping at rates ranging from 533 to 394 gpm, the final drawdown was 102 ft from a nonpumping water level of 23 ft below land surface.

In May 1972, the well reportedly produced 375 gpm with a drawdown of 50 ft from a nonpumping water level of 50 ft.

In January 1974, this well was acidized by the Layne-Western Go. The production was reportedly increased from 293 to 600 gpm.

A production test was conducted by the driller on July 2, 1976. After 2.2 hr of pumping at rates of 510 to 578 gpm, the final drawdown was 48 ft from a nonpumping water level of 55 ft.

Nonpumping water levels were reported to be 45 ft in November 1977, and 42 ft on September 20, 1979.

The pumping equipment presently installed consists of a 50-hp U. S. Holloshaft electric motor, a 10-in., 7-stage Layne turbine pump (Serial No. 54754-A) set at 180 ft, rated at 450 gpm at about 320 ft TDH, and has 180 ft of 8-in. column pipe. The well is equipped with 180 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B44359) of a sample collected April 9, 1980, after pumping for 1.4 hr, showed the water to have a hardness of 399 mg/l, total dissolved minerals of 510 mg/1, and an iron content of 1.05 mg/1.

WELL NO. 15 was completed in February 1966 to a depth of 233 ft by the Layne-Western Co., Aurora. This well is available for emergency use. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located adjacent to the Naperville Animal Retention Facility on the south side of Ogden Ave. east of the West Branch of the Du Page River, approximately 600 ft S and 1700 ft W of the NE corner of Section 14, T38N, R9E, Du Page County. The land surface elevation at the well is approximately 683 ft.

A drillers log of Well No. 15 follows:

Strata	Thickness (ft)	Depth (ft)
Clay	10	10
Sand and gravel	10	20
Broken limestone	10	30
Medium gray limestone	15	45
Hard gray limestone	5	50
Medium gray limestone	10	60
Hard gray limestone	5	65
Medium gray limestone	10	75
Medium brownish gray limestone	5	80
Soft brownish gray limestone	5	85
Hard brownish gray limestone	5	90
Medium brown limestone	10	100
Medium gray limestone	40	140
Medium gray limestone with shale streaks	10	150
Medium hard limestone with green and gray shale streaks	25	175
Medium limestone with shale streaks	50	225
Gray shale with streaks of limestone	3	228
Green shale	5	233

A 15.2-in. diameter hole was drilled to a depth of 233 ft. The well is cased with 16-in. steel pipe from about 1.7 ft above land surface to a depth of 30 ft.

A production test was conducted by the driller on February 17, 1966. After 6.6 hr of pumping at rates ranging from 654 to 760 gpm, the drawdown was 110 ft from a nonpumping water level of 6 ft below land surface. Pumping was continued for 1.1 hr at rates of 200 to 784 gpm with a final drawdown of 124 ft. Two min after pumping was stopped, the water level had recovered to 30 ft.

A production test was conducted by the driller on July 25, 1973. After 1.4 hr of pumping, the pumping water level was more than 208 ft when the pump broke suction and a pumping rate of 350 to 400 gpm could not be maintained. The well was then treated with 500 gal of acid and cleaned out. A production test was conducted by the driller on July 30-31, 1973. After 23.2 hr of pumping at rates ranging from 692 to 500 gpm, the drawdown was 75 ft from a nonpumping water level of 8 ft below land surface. Pumping was continued for 1.4 hr at a rate of 734 gpm with a drawdown of 102 ft. After an additional 30 min of pumping at a rate of 577 gpm, the final drawdown was 52 ft.

On September 20, 1979, the nonpumping water level was reported to be 11 ft.

The pumping equipment presently installed is a KSB submersible pump set at 106 ft, rated at 500 gpm, and powered by a 40-hp KSB electric motor.

WELL NO. 16 was constructed in June 1967 to a depth of 245 ft by the Layne-Western Co., Aurora, and deepened in June 1970 to a reported depth of 1478 ft by L. Cliff Neely, Batavia. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer). The well also penetrates the upper part of the Eau Claire Formation. The well is located at 75th St. and Clyde Drive about 150 ft southwest of Well No. 8, approximately 2400 ft N and 2200 ft W of the SE corner of Section 30, T38N, R10E, Du Page County. The land surface elevation at the well is approximately 690 ft.

A drillers log of Well No. 16 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Surface	2	2
Clay and boulders	4	6
Gravel	25	31
Hard, brown limestone	2	33
Hard, gray limestone	37	70
Hard, brown limestone	5	75
Hard, gray limestone	35	110
Hard, brown and gray limestone	30	HO
Medium gray and brown lime shells and shale	10	150
Hard, gray limestone	15	165
Hard, gray and brown lime shells and shale	15	180
Medium hard gray limestone	10	190
Medium lime shells and shale	10	200
Hard lime shells and shale	25	225
Medium lime shells **and** shale	15	240
Medium gray 3hale	5	245
Shale (Maquoketa)	84	329
Lime (Niagara)	339	668
Lime (St. Peter sand)	218	886
Shale	14	900
Sandy shale and lime	5	905
Lime (hard) some shale and sand	5	910
Shale	15	925
Lime, dolomite chert and some shale	15	940
Shale and chert pink	5	945
Chert, very sharp, shale caving	5	950
Shale	2	952
Shale, conglomerate of chert and dolomite	3	955
Shale, chert and lime	5	960
Lime	5	965
Shale, chert and lime	10	975
Lime and shale streaks	15	990
Lime	10	1000
Shale and lime	5	1005
Lime and sand	15	1020
Lime and shale	5	1025
Shale some lime	5	1030
Shale, dolomite and lime	5	1035
Lime and dolomite	5	1040
Dolomite very hard	20	1060
Dolomite	5	1065
Lime	10	1075
Dolomite	10	1085
Dolomite and red shale	5	1090
Lime reddish with white	5	1095
Lime brown	5	1100
Dolomite brown	S	1105
Lime and dolomite	5	1110
Lime and dolomite red	5	1115
Dolomite brown	15	1130
Dolomite gray	25	1155
Dolomite dark gray	10	1165
Dolomite gray	5	1170
Dolomite brown	5	1175
Dolomite pink	5	.1180
Dolomite gray	10	1190
Shale, dolomite and sand	5	1195
Sand shale and dolomite	5	1200
Sand	5	1205
Sand and some green shale	5	1210
Sandy, dolomite with shale streaks	20	1230
Sand and sharp dolomite	10	1240
Shale and dolomite	10	1250
Dolomite gray	27	1277
Sand (top of Galesville at 1277 ft)	18	1295
Sand very hard, some dolomite	7	1302
Sand (some dolomite)	33	1335
Sand	105	1440
Dolomite and sand	5	1445
Dolomite	15	1460
Shale	21	1481

Originally, a 30-in. diameter hole was drilled to a depth of 31.8 ft and finished 19.2 in. in diameter from 31.8 to 245 ft. The well was originally cased with 30-in. pipe from land surface to a depth of 31.8 ft. In 1970, after deepening, the hole was reported to be 30 in. in diameter to a depth of 31.8 ft, 29-in. from 31.8 to 352 ft, 19.2 in. from 352 to 860 ft, reamed from 19.2 to 21 in. from 860 to 925 ft, 17.2 in. from 925 to 965 ft, and 15 in. from 965 to 1478 ft. The well is cased with 30-in. steel pipe from land surface to a depth of 32 ft, 22-in. pipe from land surface to a depth of 351 ft (cemented in), 18-in. liner from 860 ft to a depth of 924 ft, and a 16-in. liner from 914 ft to a depth of 978 ft.

Before deepening, a production test was conducted by the Layne-Western Co. on June 30, 1967. After 8 hr of pumping at rates ranging from 205 to 82 gpm, the drawdown was 135 ft from a nonpumping water level of 23 ft below land surface.

In June 1970, this well was deepened to a depth of 1478 ft and shot with 10 charges (102 lb each) of nitrogel between the depths of 1430 and 1440 ft, 1415 and 1425 ft, 1400 and 1410 ft, 1395 and 1405 ft, 1380 and 1390 ft, 1375 and 1385 ft, 1360 and 1370 ft, 1345 and 1355 ft, 1330 and 1335 ft, and 1315 and 1325 ft.

A production test was conducted by L. Cliff Neely on June 19, 1970. After 7.5 hr of pumping at rates ranging from 1190 to 1089 gpm, the drawdown was 130 ft from a nonpumping water level of 537 ft below land surface. Twelve min after pumping was stopped, the water level had recovered to 575 ft.

A production test was conducted by L. Cliff Neely on June 22, 1970. After 1.8 hr of pumping at rates ranging from 1288 to 1105 gpm, the drawdown was 118 ft from a nonpumping water level of 537 ft below land surface.

Production tests were conducted by L. Cliff Neely in July 1970. On July 16, after 14.5 hr of pumping at rates ranging from 578 to 1140 gpm, the drawdown was 115 ft from a nonpumping water level of 542 ft below land surface. Pumping was continued for 1.5 hr at a rate of 636 gpm with a final drawdown of 82 ft. On July 17, the well reportedly produced 1150 to 1130 gpm for 14.5 hr with a drawdown of 117 ft from a nonpumping water level of 552 ft below land surface. Pumping was continued for 1.5 hr at a rate of 672 gpm with a final drawdown of 65 ft.

A production test was conducted by L. Cliff Neely on September 30-October 1-2, 1970. After 58.5 hr of pumping at rates ranging from 1025 to 1000 gpm, the final drawdown was 120 ft from a nonpumping water level of 532 ft below land surface.

A production test was conducted by the Layne-Western Co. on September 12, 1975. After 2.6 hr of pumping at rates ranging from 1251 to 1326 gpm, the final drawdown was 111 ft from a nonpumping water level of 594 ft below the top of the casing.

The pumping equipment presently installed is a 12-in., 14-stage Layne vertical turbine pump (No. 70358) set at 800 ft, rated at 1000 gpm at about 950 ft TDH, and powered by a 400-hp U. S. electric motor. The well is equipped with 800 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B44358) of a sample collected April 9, 1980, after pumping for 19.5 hr, showed the water to have a hardness of 245 mg/l, total dissolved minerals of 424 mg/1, and an iron content of 0.17 mg/1.

WELL NO. 17 was completed in September 1960 to a depth of 205 ft by the Layne-Western Co., Aurora. This well, purchased from the Westview Utilities Co. in 1977, is not in use. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located in the Longwood Manor Subdivision between Bruce and Allister Lanes, approximately 2523 ft S and 1285 ft W of the NE corner of Section 9, T38N, R9E, Du Page County. The land surface elevation at the well is 706.8 ft.

A drillers log of Well No. 17 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Yellow clay	15	15
Blue clay and gravel	5	20
Blue clay and boulders, gravel	10	30
Gray clay and gravel	20	50
Streak of lime and yellow gravel	15	65
Gray lime	5	70
Gray lime (medium hard)	25	95
Gray lime, medium hard, water	15	110
Gray lime, hard, water	10	120
Gray lime, medium hard, water	30	150
Gray lime, medium hard	10	160
Gray lime and green shale	5	165
Green shale (soft)	5	170
Gray lime, medium hard	15	185
Gray shale and lime, soft	10	195
Gray shale, soft	10	205

An 18-in. diameter hole was drilled to a depth of 79.5 ft and finished 12 in. in diameter from 79.5 to 205 ft. The well is cased with 18-in. pipe from about 2.6 ft above land surface to a depth of 69.5 ft and 12.8-in. pipe from about 2.6 ft above land surface to a depth of 79.5 ft (cemented in).

A production test was conducted by the driller on September 28-29, 1960. After 25.8 hr of pumping at rates ranging from 781 to 554 gpm, the final drawdown was 18.5 ft from a nonpumping water level of 23.0 ft below land surface.

In January 1963, after pumping at a rate of 640 gpm, the drawdown was 7 ft from a nonpumping water level of 42 ft.

On June 11, 1964, the well reportedly produced about 175 gpm for 2 hr with a drawdown of 6 ft from a nonpumping water level of 34 ft below land surface.

In January 1965, after pumping at a rate of 175 gpm, the drawdown was 12 ft from a nonpumping water level of 30 ft.

In April 1969, the well reportedly produced 200 gpm with a drawdown of 8 ft from a nonpumping water level of 36 ft.

On September 20, 1979, the nonpumping water level was reported to be 45 ft.

A production test was conducted by the driller on May 2, 1984. After 5 hr of pumping at rates of 457 to 616 gpm, the drawdown was 13 ft from a nonpumping water level of 42 ft.

A production test was conducted by the driller on June 15, 1984. After 2.5 hr of pumping at rates of 557 to 720 gpm, the drawdown was 12 ft from a nonpumping water level of 50 ft.

A production test was conducted by the driller on January 29, 1985. After 4.3 hr of pumping at rates ranging from 600 to 575 gpm, the drawdown was 14 ft from a nonpumping water level of 58 ft. Fifteen min after pumping was stopped, the water level had recovered to 60 ft. During this test, Well No. 18 was operating.

The pumping equipment presently installed is a 10-in., 6-stage Layne turbine pump set at 100 ft, rated at 500 gpm at about 256 ft TDH, and powered by a 50-hp 1800 rpm U. S. electric motor. A 10-ft section of 6-in. suction pipe is attached to the pump intake. The well is equipped with 100 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B44495) of a sample collected April 9, 1980, after pumping for 1 hr, showed the water to have a hardness of 393 mg/1, total dissolved minerals of 526 mg/1, and an iron content of 1.2 mg/1.

WELL NO. 18 was completed in April 1972 to a depth 290 ft (reported to be 287 ft deep in 1985) by the K & K Well Drilling Co., Mokena. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). This well was purchased from the Westview Utilities Co. in 1977. The well is located in the Longwood Manor Subdivision about 120 ft southwest of Well No. 17, approximately 2550 ft S and 1400 ft W of the NE corner of Section 9, T38N, R9E, Du Page County. The land surface elevation at the well is approximately 705 ft.

A drillers log of Well No. 18 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Overburden	74	74
Rock formation	216	290

A 10-in. diameter hole was drilled to a depth of 290 ft. The well is cased with 10-in. galvanized pipe from about 0.5 ft above land surface to a depth of 74 ft. The top of the casing is equipped with a Tubbs pitless adapter.

Upon completion, after 8 hr of pumping at a rate of 600 gpm, the drawdown was 10 ft from a nonpumping water level of 34 ft below land surface.

A production test was conducted by the Layne-Western Co., Aurora, on January 29, 1985. After 5.9 hr of pumping at rates ranging from 528 to 915 gpm, the final drawdown was 16 ft from a nonpumping water level of 46 ft. Eight min after pumping was stopped, full recovery was observed. Well No. 17 was operating during the last part of this test.

A production test was conducted by the Layne-Western Co. on May 14, 1985. After 2.1 hr of pumping at rates of 577 to 742 gpm, the drawdown was 7 ft from a nonpumping water level of 45.6 ft.

The pumping equipment presently installed consists of a 50-hp 3500 rpm Franklin electric motor, a 7.8-in., 3-stage Layne submersible pump (Serial No. 103368L) set at 155 ft, rated at 500 gpm at about 210 ft TDH, and has 150 ft of 6-in. column pipe.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B38789) of a sample collected March 27, 1979, after pumping for 1 hr, showed the water to have a hardness of 379 mg/l, total dissolved minerals of 447 mg/1, and an iron content of 1.02 mg/1.

WELL NO. 19 was completed in September 1973 to a depth of 310 ft (reported to be 309 ft deep in 1983) by the K & K Well Drilling Co., Mokena. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). This well was purchased from the city of Warrenville in 1977. The well is located about 1300 ft north of North Aurora Road and 500 ft east of Frontenac Road, approximately 600 ft N and 100 ft W of the SE corner of Section 8, T38N, R9E, Du Page County. The land surface elevation at the well is approximately 710 ft.

A drillers log of Well No. 19 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Overburden	141	141
Rock formation	169	310

A 12-in. diameter hole was drilled to a depth of 310 ft. The well is cased with 12-in. pipe from about 1.3 ft above land surface to a depth of 141 ft.

Upon completion, after 8 hr of pumping at a rate of 600 gpm, the drawdown was 88 ft from a nonpumping water level of 41 ft below land surface.

On September 20, 1979, the nonpumping water level was reported to be 35 ft.

A production test was conducted by the Layne-Western Co., Aurora, on October 31, 1983. After 1.3 hr of pumping at rates ranging from 895 to 936 gpm, the drawdown was 50 ft from a nonpumping water level of 45 ft.

The pumping equipment presently installed consists of a 100-hp 1800 rpm Allis Chalmers electric motor, a 7-stage Layne turbine pump set at 150 ft, rated at 1000 gpm at about 238 ft TDH, and has 150 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 150 ft of airline.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B35552) is for a water sample from the well collected March 2, 1977, after 15 min of pumping.

WELL NO. 19, LABORATORY NO. B35552

		mg/l	*me/I*			*mg/l*	*me/I*
Iron	Fe	0.4		Silica	SiO_2	9.0	
Manganese	Mn	0.03		Fluoride	F	0.8	0.04
Ammonium	NH_4	0.63	0.04	Boron	B	0.8	
Sodium	Na	37	1.61	Cyanide	CN	0.00	
Potassium	K	8.2	0.21	Nitrate	NO_3	0.0	0.00
Calcium	Ca	59	2.94	Chloride	CI	5.0	0.14
Magnesium	Mg	32	2.63	Sulfate	SO_4	56	1.16
				Alkalinity (as $CaCO_3$)		293	5.86
Arsenic	As	0.00					
Barium	Ba	0.0		Hardness (as CaCOg)		282	5.64
Cadmium	Cd	0.00					
Chromium	Cr	0.00		Total dissolved			
Copper	Cu	0.00		minerals		371	
Lead	Pb	0.00					
Mercury	Hg	0.0000					
Nickel	Ni	0.0					
Selenium	Se	0.00					
Silver	Ag	0.00					
Zinc	Zn	0.0		pH (as rec'd)		7.5	

WELL NO. 20, open to the Midwest Aquigroup (Cambrian-Ordovician aquifer), was completed in August 1978 to a depth of 1572 ft by the Layne-Western Co., Aurora. The well is located about 300 ft south of 79th St. and 0.3 mile east of Wehrli Road, approximately 300 ft S and 2300 ft W of the NE corner of Section 33, T38N, R10E, Du Page County. The land surface elevation at the well is approximately 748 ft.

A drillers log of Well No. 20 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Clay	10	10
Clay and gravel	15	25
Gravel	5	30
Clay, rock and gravel	45	75
Gravel	5	80
Lime with sand	15	95
Sandy lime	10	105
Lime and white shale	15	120
Light gray lime with trace of brown lime	70	190
Lime and little shale	35	225
Lime and shale	5	230
Pale green shale	30	260
Green shale with black and white lime	5	265
Black and white lime with some shale	15	280
Shale with little lime	25	305
Gray shale (hard)	10	315
Gray shale with broken lime	20	335
Gray shale and lime	25	360
Gray shale	10	370
Shale and little lime	25	395
Shale	35	430
Shale and lime	5	435
Brown lime	155	590
Brown lime and shale	5	595
Lime	30	625
Lime and little shale	44	669
Blue shale	4	673
Brown lime	27	700
Dolomite and brown lime	10	710
Gray lime	25	735
Brown lime	30	765
Sandy lime	10	775
White sandstone	105	880
Sandtone with trace of dolomite	35	915
White sandstone	260	1175
Sandy limestone	35	1210
Limestone	30	1240
Brown limestone	35	1275
Green sandstone	65	1340
Green sandstone, some shale	5	1345
Green sandstone	25	1370
Sandstone and some limestone	5	1375
Limestone	5	1380
Sandstone and limestone	80	1460
White sandstone	111	1571
Green shale	l	1572

A 30-in. diameter hole was drilled to a depth of 90 ft, reduced to 25.2 in. between 90 and 461 ft, and finished 21.2 in. in diameter from 461 to 1572 ft. The well is cased with 26-in. steel pipe from about 0.2 ft above land surface to a depth of 90 ft (cemented in) and 22-in. OD pipe from about 0.2 ft above land surface to a depth of 461 ft (cemented in). The top of the casing is equipped with a 22-in. diameter Baker pitless adapter.

A production test was conducted by the driller on August 29-30, 1978. After 16.7 hr of pumping at rates ranging from 633 to 1600 gpm, the final drawdown was 185 ft. Three hr after pumping was stopped, the water level had recovered to 693 ft. The nonpumping water level was measured on September 1, 1978, at 679 ft below land surface, and the drawdowns on the above test were computed from this figure.

The pumping equipment presently installed is a 13-in., 15-stage Byron Jackson submersible pump set at 1000 ft, rated at 1300 gpm at about 950 ft TDH, and powered by a 450-hp 1775 rpm Byron Jackson electric motor. The well is equipped with 1000 ft of airline.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B07580) is for a water sample from the well collected August 31, 1982, after 1.5 hr of pumping at 1300 gpm.

WELL NO. 20, LABORATORY NO. B07580

		mg/l	*me/l*			*mg/l*	*me/l*
Iron	Fe	0.18		Silica.	SiO_2	7.0	
Manganese	Mn	<0.00S		Fluoride	F	1.09	0.06
Ammonium	NH_4	0.0	0.05	Boron	B	0.55	
Sodium	Na	30	1.30	Cyanide	CN	<0.005	
Potassium	K	16	0.41	Nitrate	NO_3	<0.4	
Calcium	Ca	61	3.04	Chloride	CI	8.1	0.23
Magnesium	Mg	17.5	1.44	Sulfate	SO_4	37	0.77
Strontium	Sr	3.40		Alkalinity (as $CaCO_3$)		271	5.42
Arsenic	As	<0.001		Hardness (as $CaCO_3$)		222	4.44
Barium	Ba	0.131					
Beryllium	Be	<0.001		Total dissolved			
Cadmium	Cd	<0.003		minerals		340	
Chromium	Cr	<0.005					
Cobalt	Co	<0.005					
Copper	Cu	0.005					
Lead	Pb	0.006					
Mercury	Hg	<0.00005					
Nickel	Ni	<0.003					
Selenium	Se	<0.001					
Silver	Ag	<0.005					
Vanadium	V	<0.004					
Zinc	Zn	0.007		pH (as rec'd) 7.5			

Test Well No. 1-84 was completed in August 1984 to a depth of 228 ft by the Layne-Western Co., Aurora. This test well was abandoned and sealed in 1984. It was located about 29 ft southwest of Well No. 20, approximately 311 ft S and 2327 ft W of the NE corner of Section 33, T38N, R10E, Du Page County. A 16-in. diameter hole was drilled to a depth of 122 ft and finished 10 in. in diameter from 122 to 228 ft. The test well was cased with 10-in. steel pipe from about 2 ft above land surface to a depth of 122 ft. A production test was conducted by the driller on August 14, 1984. After 5.2 hr of intermittent pumping and surging at rates ranging from 125 to 102 gpm, the maximum drawdown was 98 ft from a nonpumping water level of 89 ft below land surface. One min after pumping was stopped, the water level had recovered to 95 ft.

Test Well No. 2-84 was completed in August 1984 to a depth of 205 ft by the Layne-Western Co., Aurora. It was located at the South Operations Center on Washington St., approximately 2240 ft S and 200 ft W of the NE corner of Section 31, T38N, R10E, Du Page County. A 16-in. diameter hole was drilled to a depth of 48 ft and finished 10 in. in diameter from 48 to 205 ft. The test well was cased with 10-in. steel pipe from about 2 ft above land surface to a depth of 48 ft. A production test was conducted by the driller on August 28, 1984. After 4.3 hr of pumping at rates ranging from 284 to 146 gpm, the final drawdown was 34 ft from a nonpumping water level of 11 ft below land surface. A second production test was conducted by the driller on August 29-30, 1984. After 24 hr of pumping at rates of 195 to 201 gpm, the final drawdown was 32 ft from a nonpumping water level of 11 ft below land surface. The water level recovered to 12.5 ft after pumping had been stopped for 2.4 hr.

WELL NO. 21 (former Springbrook Wastewater Treatment Plant well) was completed in August 1975 to a depth of 1441 ft (measured in 1985 to be 1422 ft deep) by the Layne-Western Co., Aurora. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer). The well also penetrates the upper part of the Eau Claire Formation. The well is located about 400 ft north-northwest of the Springbrook Wastewater Treatment Plant, approximately 1800 ft N and 450 ft E of the SW corner of Section 12, T37N, R9E, Will County. The land surface elevation at the well is approximately 645 ft.

A drillers log of Well No. 21 follows:

Strata	*Thickness (ft)*	*Depth (jt)*
Clay with gravel seams	25	25
Gray hard limestone	205	230
Gray shale	60	290
Gray hard dolomite	70	360
Brown hard dolomite	10	370
Gray hard dolomite	20	390
Brown hard dolomite	105	495
Gray hard dolomite	140	635
Pink sandstone	15	650
White medium sandstone	98	748
Green shale with lime shells	17	765
Gray medium dolomite	10	775
Sticky, rotten shale	10	785
Sandy dolomite	5	790
Gray hard dolomite (shale streaks 946 to 950 ft)	265	1055
Red hard dolomite	25	1080
Gray hard dolomite	45	1125
Green hard dolomite	25	1150
Green sandy shaly dolomite	20	1170
Shaly sandstone	25	1195
Dolomite and sandy shale mixed	45	1240
Gray hard sandstone	100	1340
Gray medium sandstone	15	1355
Gray soft sandstone	45	1400
Gray medium sandstone	30	1430
Shale	11	1441

A 25.2-in. diameter hole was drilled to a depth of 320 ft, reduced to 21.2 in. between 320 and 817 ft, and finished 17.2 in. in diameter from 817 to 1441 ft. The well is cased with 26-in. steel pipe from land sur-

face to a depth of 30 ft, 22-in. steel pipe from about 1 ft above land surface to a depth of 320 ft (cemented in), and an 18-in. slotted steel liner from 723.5 ft to a depth of 817 ft. The top of the casing is equipped with a Baker monitor pitless adapter.

A production test was conducted by the driller on September 9-10, 1975. After 24.3 hr of pumping at rates of 633 to 1043 gpm, the final drawdown was 195 ft from a nonpumping water level of 560 ft below the top of the casing.

A production test was conducted by the driller on May 3, 1985. After 3.1 hr of pumping at rates ranging from 1300 to 1231 gpm, the drawdown was 230 ft from a nonpumping water level of 583 ft.

The pumping equipment presently installed consists of a 450-hp 1775 rpm Byron Jackson electric motor, a 13-in., 14-stage Byron Jackson submersible turbine pump (Serial No. 841-C-0418) set at 950 ft, rated at 1200 gpm at about 1075 ft TDH, and has 943 ft of 10-in. column pipe. The well is equipped with 950 ft of airline.

A partial analysis of a sample (Lab. No. 199725) collected August 25, 1975, after pumping for 6 hr at 156 gpm, showed the water to have a hardness of 204 mg/l, total dissolved minerals of 518 mg/l, and a trace of iron.

WELL NO. 22 was completed in November 1984 to a depth of 200 ft by the Layne-Western Co., Aurora. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located at the South Operations Center on the east side of South Washington St, approximately 2240 ft S and 200 ft W of the NE corner of Section 31, T38N, R10E, Du Page County. The land surface elevation at the well is approximately 650 ft.

A drillers log of Well No. 22 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Black top soil	1	1
Coarse gravel and boulders (fill)	2	3
Light brown soft silty clay	2	5
Dark gray organic soft silty clay	2	7
Coarse sand and gravel with boulders	11	18
Buff colored sandy silty clay	11	29
Whitish gray soft shaly lime	6	35
Hard white limestone	2	37
Buff colored broken weathered limestone with soft seams	9.5	46.5
Whitish gray hard broken limestone with soft spots	1	47.5
Soft brownish gray shale	1.5	49
Hard white lime	1	50
Light gray limestone **with** occasional shale lense	11	61
White and brown limestone with more water at 61 ft	2	63
Gray limestone, brown seam 63 to 64 ft	3	66
Green, brown and gray soft shale with limestone lenses	25	91
Bluish pale green shale	20	111
Hard gray limestone solid and fractured	10	121
Dark gray limestone with shale lenses and crevicing	44	165
Firm blue-gray shaly lime	20	185
Firm dark gray shale with occasional lime lenses	15	200

A 19.2-in. diameter hole was drilled to a depth of 49 ft, reduced to 15.2 in. between 49 and 111 ft, and finished 12 in. in diameter from 111 to 200 ft. The well is cased with 16-in. steel pipe from land surface to a depth of 49 ft (cemented in from 8 to 40 ft) and 12-in. steel pipe from 66 ft to a depth of 111 ft. The top of the casing is equipped with a Baker monitor pitless adapter.

Before acidizing, a production test was conducted by the driller on November 28, 1984. After 1.5 hr of pumping at rates ranging from 312 to 184 gpm, the final drawdown was 38 ft from a nonpumping water level of 8.5 ft below land surface.

A production test was conducted by the driller on November 30, 1984, after treating with 1500 gal of acid. After 2.3 hr of pumping and surging at rates ranging from 391 to 465 gpm, the drawdown was 54 ft from a nonpumping water level of 11 ft below the top of the casing. Pumping was then continued for 6 hr at rates of 351 to 348 gpm with a final drawdown of 43 ft. Twenty min after pumping was stopped, the water level had recovered to 16 ft.

A production test was conducted by the driller on May 30, 1985. After 2 hr of pumping at rates ranging from 172 to 332 gpm, the drawdown was 37 ft from a nonpumping water level of 13 ft.

The pumping equipment presently installed consists of a 15-hp 1775 rpm Byron Jackson electric motor, a 7.8-in., 3-stage Byron Jackson submersible turbine pump (Serial No. 841-C-0420) set at 107 ft, rated at 350 gpm at about 85 ft TDH, and has 100 ft of 5-in. column pipe. The well is equipped with 107 ft of airline.

NORDIC PARK WATER AND SEWER CO., INC.

Nordic Park Water and Sewer Co., Inc. (est. 700), located about 1 mile southwest of Itasca, installed a public water supply in 1954. The water system is owned and operated by William F. Smeja. One well (No. 2) is in use and two wells (Nos. 1 and 3) are available for emergency use. In 1958 there were 14 services, all metered; the average pumpage was 2000 gpd. In 1984 there were 218 services, all metered; the average pumpage was 63,300 gpd. The water is chlorinated.

WELL NO. 1, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in July 1954 to a depth of 200 ft by the Suburban Well Drilling Co., Elmhurst. This well is available for emergency use. The well is located at the southwest corner of the subdivision south of Tee Lane, approximately 1675 ft N and 1600 ft W of the SE corner of Section 13, T40N, R10E. The land surface elevation at the well is approximately 748 ft.

A drillers log of Well No. 1 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Glacial till	112	112
Limestone	88	200

A 6-in. diameter hole was drilled to a depth of 200 ft. The well is cased with 6-in. pipe from about 1.2 ft above the well pit roof to a depth of 112 ft.

In December 1958, the nonpumping water level was reported to be 52 ft.

The pumping equipment presently installed is a Reda submersible pump set at 84 ft, rated at 20 gpm, and powered by a 1-1/2-hp 3600 rpm Century electric motor.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. C002180) of a sample collected December 12, 1977, after pumping for 30 min at 20 gpm, showed the water to have a hardness of 353 mg/l, total dissolved minerals of 466 mg/l, and an iron content of 0.8 mg/1.

WELL NO. 2 was completed in January 1955 to a depth of 340 ft by the Suburban Well Drilling Co., Elmhurst. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located south of Tee Lane at the intersection of Lloyd Ave. directly underneath the elevated tank, approximately 1700 ft N and 450 ft W of the SE corner of Section 13, T40N, R10E. The land surface elevation at the well is approximately 733 ft.

A drillers log of Well No. 2 follows:

Strata	***Thickness (ft)***	***Depth (ft)***
Glacial till	105	105
Limestone	107	212
Shale	128	340

An 8-in. diameter hole was drilled to a depth of 340 ft. The well is cased with 8-in. pipe from about 1.5 ft above land surface to a depth of 105 ft.

In 1957, the well reportedly produced 50 gpm with very little drawdown from a nonpumping water level of 45 ft.

In January 1971, the nonpumping water level was reported to be 57 ft.

On December 30, 1984, after 3 hr of pumping at a rate of 100 gpm, the drawdown was 20 ft from a nonpumping water level of 90 ft.

The pumping equipment presently installed is a Reda submersible pump (No. 7G70E) rated at 100 gpm at about 180 ft head, and powered by a 7-1/2-hp Century electric motor. The well is equipped with 126 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B26663) of a sample collected November 25, 1980, after pumping at 100 gpm, showed the water to have a hardness of 457 mg/1, total dissolved minerals of 561 mg/l, and an iron content of 1.12 mg/1.

WELL NO. 3, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in July 1957 to a depth of 180 ft by the Suburban Well Drilling Co., Elmhurst. This well is available for emergency use. The well is located on the east side of Lloyd Ave. north of Tee Lane, approximately 1950 ft N and 250 ft W of the SE corner of Section 13, T40N, R10E. The land surface elevation at the well is approximately 728 ft.

A drillers log of Well No. 3 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Glacial till	HO	110
Limestone	70	180

A 5-in. diameter hole was drilled to a depth of 180 ft. The well is cased with 5-in. pipe from about 1.5 ft above the roof of a 5-ft deep pit to a depth of 110 ft.

On December 30, 1984, the nonpumping water level was reported to be 90 ft.

The pumping equipment presently installed is a Reda submersible pump set at 105 ft, rated at 57 gpm, and powered by a 3-hp Century electric motor.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. C000580) is for a water sample from the well collected August 9, 1977, after 30 min of pumping at 50 gpm.

WELL NO. 3, LABORATORY NO. C000580

		mg/l	*me/I*			*mg/l*	*me/I*
Iron	Fe	1.4		Silica	SiO_2	20	
Manganese	Mn	0.04		Fluoride	F	0.4	0.02
Ammonium	NH_4	0.51	0.03	Boron	B	0.5	
Sodium	Na	20	0.87	Cyanide	CN	0.00	
Potassium	K	1.9	0.05	Nitrate	NO_3	0.0	0.00
Calcium	Ca	80	3.99	Chloride	CI	4	0.11
Magnesium	Mg	42	3.46	Sulfate	SO_4	104	2.16
				Alkalinity (as $CaCO_3$)		308	6.16
Arsenic	As	0.005					
Barium	Ba	0.0		Hardness (as $CaCO_3$)		375	7.50
Cadmium	Cd	0.00					
Chromium	Cr	0.00		Total dissolved			
Copper	Cu	0.00		minerals		482	
Lead	Pb	0.00					
Mercury	Hg	0.0000					
Nickel	Ni	0.0					
Selenium	Se	0.00					
Silver	Ag	0.00					
Zinc	Zn	0.02		pH (as rec'd)		8.2	

NORTHWEST BELMONT IMPROVEMENT ASSOCIATION

Northwest Belmont Improvement Association (est. 115), located about 0.5 mile west of Downers Grove, installed a public water supply in 1956. One well (No. 2) is in use. In 1956 there were 29 services, none metered. In 1984 there were 30 services, none metered; the estimated average pumpage was 10,900 gpd. The water is chlorinated and fluoridated.

WELL NO. 1 (East Well), open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed to a depth of 150 ft. This well was abandoned and capped in 1957. The well is located at 4816 Francisco Ave., approximately 690 ft S and 1720 ft E of the NW corner of Section 12, T38N, R10E. The land surface elevation at the well is approximately 730 ft.

The well is cased with 4-in. pipe from about 1.5 ft above the wellhouse floor to an unknown depth.

In April 1956, the nonpumping water level was reported to be about 80 ft.

WELL NO. 2 (West Well), open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in 1944 to a depth of 167 ft by Wenz Bros., Lyons. The well is located about 10 ft west and 10 ft north of Well No. 1, approximately 680 ft S and 1710 ft E of the NW corner of Section 12, T38N, R10E. The land surface elevation at the well is approximately 730 ft.

The well is cased with 6-in. pipe from about 0.8 ft above the wellhouse floor to a depth of 120 ft.

Nonpumping water levels were reported to be 80 ft in April 1956; 83.25 ft on August 29, 1957; 81 ft in November 1973; and 88 ft in October 1984.

The pumping equipment presently installed is a Reda submersible pump set at 126 ft, rated at 53 gpm at about 200 ft TDH, and powered by a 3-hp electric motor.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B0018169) is for a water sample from the well collected April 29, 1972, after 30 min of pumping. The iron content in a previous sample was 0.5 mg/l.

WELL NO. 2, LABORATORY NO. B0018169

		mg/l	*me/l*			*mg/l*	*me/l*
Iron	Fe	0.0		Silica	SiO_2	**13.4**	
Manganese	Mn	0.0		Fluoride	F	0.2	0.01
Ammonium	NH_4	0 0		Boron	B	0.3	
Sodium	Na	21.1	0.92	Nitrate	NO_3	0.0	
Potassium	K	3.0	0.08	Chloride	CI	45.0	1.27
Calcium	Ca	82.1	4.10	Sulfate	SO_4	165	3.43
Magnesium	Mg	56	4.60	Alkalinity (as $CaCO_3$)		234	4.68
				Hardness (as $CaCO_3$)		432	
Barium	Ba	0.1					
Cadmium	Cd	0.00		Total dissolved			
Chromium	Cr	0.0		minerals		542	
Copper	Cu	0.0		pH (as rec'd)		7.7	
Lead	Pb	0.00		Radioactivity			
Mercury	Hg	<0.0005		Alpha pc/l		1.3	
Nickel	Ni	0.0		± deviation		1.7	
Silver	Ag	0.0		Beta *pc/l*		1.3	
Zinc	Zn	0.0		± deviation		1.9	

OAK BROOK

The village of Oak Brook (6641) installed a public water supply in 1961. The water system is owned and operated by the Oakbrook Utility Co. Five wells (Nos. 1, 2, 5, 6, and 7) are in use and another well (No. 3) is available for emergency use. This supply is also cross connected with the city of Elmhurst and the villages of Hinsdale and Lombard. In 1962 there were 110 services, all metered; the average and maximum pumpages were 800,000 and 900,000 gpd, respectively. In 1984 there were 4400 services, all metered; the average pumpage was 3,381,900 gpd. The water is chlorinated; in addition, the water from Well No. 3 is fluoridated and treated with polyphosphate to keep iron in solution.

Two 5-in. diameter test wells were drilled in 1960, each to a depth of 170 ft, by the J. P. Miller Artesian Well Co., Brookfield. These test wells were located in Sections 26 and 28, T39N, R11E. The first test well reportedly produced 50 gpm for 6 hr with a drawdown of 2 ft from a nonpumping water level of 37 ft. The second test well reportedly produced 50 gpm for 18 hr with a drawdown of 3 ft from a nonpumping water level of 57 ft below land surface.

WELL NO. 1 (Village Well No. 2) was completed in December 1960 to a depth of 1540 ft (cleaned to 1458 ft in 1973) by the J. P. Miller Artesian Well Co., Brookfield. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer). The well also penetrates the upper part of the Eau Claire Formation. The well is located south of 22nd St. and east of Route 83, approximately 500 ft S and 400 ft E of the NW corner of Section 26, T39N, R11E. The land surface elevation at the well is approximately 690 ft.

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

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
Till, brown	15	15
Soil	5	20
Till, gravelly, gray	31	51
Gravel	15	66
SILURIAN SYSTEM		
Niagaran Series		
Sugar Run and Joliet Dolomites		
Dolomite, slightly silty, buffish-gray, finely crystalline	69	135
Dolomite, slightly silty, light buff to light gray, finely crystalline	55	190
Alexandrian Series		
Kankakee Dolomite		
Dolomite, slightly silty, light buff	44	234
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Shale, greenish-gray, weak to brittle; little dolomite, greenish-gray, fine to very finely crystalline	101	335
Dolomite, gray, fine to medium crystalline	10	345
Shale, gray, brown, brittle to weak; little dolomite	96	441
Champlainian Series		
Galena Group		
Kimmswick Subgroup		
Dolomite, silty, grayish-buff, fine to medium crystalline	119	560
Dolomite, slightly silty, buff, medium crystalline	65	625
Decorah Subgroup		
Dolomite, grayish-buff, medium to finely crystalline, speckled	35	660
Platteville Group		
Limestone, gray to grayish-buff, finely crystalline, mottled; little dolomite	40	700
Limestone, slightly silty, buff, little grayish-buff, very finely crystalline, mottled	97	797
Ancell Group		
Glenwood Formation		
Sandstone, white, fine to coarse, incoherent	33	830
St. Peter Sandstone		
Sandstone, white, fine to medium, incoherent	95	925
Canadian Series		
Prairie du Chien Group		
Oneota Dolomite		
Dolomite, slightly sandy, partly cherty, pink, medium crystalline	45	970
Dolomite, cherty, white to gray, medium crystalline	70	1040
Shale, red, tough	1	1041
Dolomite, sandy, cherty, white, finely crystalline	24	1065
CAMBRIAN SYSTEM		
Croixan Series		
Eminence-Potosi Dolomite		
Dolomite, sandy, light buff, very finely crystalline	37	1102
Dolomite, light gray, very finely crystalline	38	1140
Dolomite, pink, little buff	70	1210
Dolomite, slightly sandy, pink	10	1220
Franconia Formation		
Dolomite, sandy, glauconitic, little shale	15	1235

Strata	Thickness (ft)	Depth (ft)
Shale, sandy, glauconitic, green, weak	20	1255
Dolomite, very sandy, glauconitic, greenish-gray	40	1295
Ironton-Galesville Sandstone		
Dolomite, pinkish-buff; sandstone, white, medium to coarse	35	1330
Sandstone, white, fine to coarse; little dolomite	35	1365
Sandstone, slightly silty, fine to coarse; dolomite, as above	35	1400
Sandstone, white, fine to medium, incoherent	80	1480
Dolomite, slightly sandy, brown; sandstone	20	1500
Eau Claire Formation		
Shale, sandy, gray; little siltstone; little dolomite	40	1540

A 19.2-in. diameter hole was drilled to a depth of 505 ft, reduced to 15.2 in. between 505 and 920 ft, and finished 12 in. in diameter from 920 to 1540 ft. The well is cased with 20-in. pipe from land surface to a depth of 72 ft, 16-in. OD pipe from land surface to a depth of 505 ft (cemented in), and a 12-in. liner from 920 ft to a depth of 1289 ft. In 1983, the Layne-Western Co., Aurora, pulled the upper 188.6 ft of the 12-in. liner and then reamed out the well to 15 in. in diameter from 505 ft to a depth of 1103 ft.

Upon completion. this well was shot with 7 charges as follows: 200 lb from 1459 to 1447 ft, 200 lb from 1437 to 1427 ft, 200 lb from 1416 to 1403 ft, 200 lb from 1397 to 1387 ft. 300 lb from 1447 to 1434 ft, 300 lb from 1427 to 1414 ft, and 300 lb from 1465 to 1453 ft.

A production test was conducted by the driller on January 6-7. 1961. After 3.2 hr of pumping at rates of 660 to 675 gpm. the drawdown was 78 ft from a nonpumping water level of 520 ft. Pumping was continued for 2.9 hr at rates of 840 to 820 gpm with a drawdown of 92 ft. After an additional 16.9 hr of pumping at rates ranging from 1010 to 940 gpm, the drawdown was 111 ft.

On January 9, 1961. the well reportedly produced 1000 gpm for 24 hr with a drawdown of 124 ft from a nonpumping water level of 526 ft below the top of the casing.

Nonpumping water levels were reported to be 566 ft on October 6, 1961; 571 ft in May 1963; 650 ft in May 1965; and 653 ft in November 1971.

A production test was conducted by the Layne-Western Co., Aurora, on September 20, 1973, after cleaning to a depth of 1458 ft with air. After 2.3 hr of pumping at rates of 933 to 1074 gpm, the drawdown was 52 ft from a nonpumping water level of 708 ft below the top of the casing.

The pumping equipment presently installed is a 12-in., 13-stage Layne vertical turbine pump (Serial No. 73290) set at 1040 ft, rated at 1000 gpm at about 949 ft TDH, and powered by a 300-hp Ideal Holloshaft electric motor. The well is equipped with 1040 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. C009789) of a sample collected June 11, 1975, after pumping for 24 hr at 920 gpm, showed the water to have a hardness of 269 mg/l, total dissolved minerals of 420 mg/l, and an iron content of 0.1 mg/1. Hydrogen sulfide was apparent when a previous sample was collected.

WELL NO. 2 (Village Well No. 1) was completed in April 1961 to a depth of 1521 ft by the J. P. Miller Artesian Well Co., Brookfield. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer). The well also penetrates the upper part of the Eau Claire Formation. The well is located south of 22nd St. and west of Spring Road, approximately 550 ft S and 2540 ft E of the NW corner of Section 26, T39N, R11E. The land surface elevation at the well is approximately 685 ft.

A sample study log of Well No. 2 furnished by the State Geological Survey follows:

Strata	Thickness (ft/	Depth (ft)
QUATERNARY SYSTEM		
Pleistocene Series		
Till, yellowish-buff	10	10
Till, gravelly, grayish-brown; little gravel	41	51
Gravel and sand, multicolored	39	90
SILURIAN SYSTEM		
Niagaran Series		
Sugar Run and Joliet Dolomites		
Dolomite, slightly cherty, light buff	15	105
Dolomite, light gray, finely crystalline	40	145
Dolomite, slightly cherty, light buff	25	170'
Dolomite, light buff, little pink	15	185
Alexandrian Series		
Kankakee Dolomite		
Dolomite, buff, finely crystalline	49	234
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Shale, red, purple, weak	6	240
Shale, gray to greenish-gray, weak; little dolomite, silty, greenish gray	85	325

Strata	Thickness (ft)	Depth (ft)
Shale, grayish-brown, weak; dolomite, silty, brown	40	365
Dolomite and shale, as above	10	375
Shale, grayish-brown to brown, weak grading to dolomite, silty brown	72	447
Champlainian Series		
Galena Group		
Kimmswick Subgroup		
Dolomite, buff to grayish-buff, fine to medium crystalline	183	630
Decorah Subgroup		
Dolomite, slightly silty, buff to grayish-buff, speckled (red, black)	25	655
Platteville Group		
Dolomite, buff, little gray	15	670
Limestone, buff to gray, very finely crystalline	30	700
Dolomite, buff, little gray	15	715
Limestone, buff to buffish-gray, mottled	40	755
Dolomite, buff; limestone, buff	10	765
No sample	25	790
Ancell Group		
Glenwood Formation		
Sandstone, silty, medium to fine, little coarse	20	810
No sample	5	815
Dolomite, light buff; sandstone	10	825
St. Peter Sandstone		
Sandstone, slightly silty, light buff, fine, little medium, incoherent	50	875
Sandstone, silty, fine, little very fine	53	928
Shale, light gray; chert	5	933
Canadian Series		
Prairie du Chien Group		
Oneota Dolomite		
Dolomite, slightly cherty (oolitic), light buff, medium crystalline	32	965
Dolomite, light gray to light pinkish-buff, medium crystalline	75	1040
No sample	6	1046
CAMBRIAN SYSTEM		
Croixan Series		
Eminence-Potosi Dolomite		
Shale, red, weak; little dolomite	4	1050
Dolomite, light buff to light brown, finely crystalline	85	1135
Dolomite, buff, huffish-pink, very finely crystalline; little sandstone	77	1212
Franconia Formation		
Shale, glauconitic, greenish gray; little sandstone and dolomite	23	1235
Sandstone, glauconitic, dolomitic, gray, fine; little shale	35	1270
Shale, slightly glauconitic, gray, tough; dolomite, sandy, glauconitic	30	1300
Ironton Sandstone		
Sandstone, white, medium, little coarse and fine; dolomite, sandy, light buff	55	1355
Sandstone, silty, light buff, medium to fine	20	1375
Sandstone, light gray, medium to coarse, dolomite, light buff	20	1395
Galesville Sandstone		
Sandstone, light gray, medium, little coarse and fine	20	1415
Sandstone, slightly silty, light gray, fine to medium	60	1465
Sandstone, silty, light gray, fine, little medium; little dolomite and shale	32	1497
Eau Claire Formation		
Shale, light brown to brown; dolomite, brown; little sandstone	24	1521

A 20-in. diameter hole was drilled to a depth of 497 ft, reduced to 16 in. between 497 and 910 ft, and finished 12 in. in diameter from 910 to 1521 ft. The well is cased with 20-in. pipe from land surface to a depth of 82 ft, 16-in. pipe from about 0.5 ft above land surface to a depth of 497 ft (cemented in), and a 12-in. liner from 910 ft to a depth of 1280 ft.

A production test was conducted by the driller on April 12-13, 1961. After 2.4 hr of pumping at a rate of 400 gpm, the drawdown was 45 ft from a nonpumping water level of 533 ft below the top of the casing. Pumping was continued for 3.4 hr at a rate of 600 gpm with a drawdown of 73 ft. After an additional 21.8 hr of pumping at a rate of 800 gpm, the drawdown was 108 ft. Twenty min after pumping was stopped, the water level had recovered to 558 ft.

On October 6, 1961, the well reportedly produced 1050 gpm for 4.8 hr with a drawdown of 135 ft from a nonpumping water level of 535 ft.

Nonpumping water levels were reported to be 582 ft in May 1963, 600 ft in May 1965, 635 ft in April 1969, and 655 ft in November 1971.

In 1984, after pumping at a rate of 920 gpm, the drawdown was 106 ft from a nonpumping water level of 789 ft.

The pumping equipment presently installed is a Layne & Bowler vertical turbine pump set at 960 ft, rated at 1000 gpm at about 1110 ft TDH, and powered by a 400-hp Ideal Holloshaft electric motor.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B25880) of a sample collected December 30, 1975, after pumping for 2 hr at 780 gpm, showed the water to have a hardness of 367 mg/l, total dissolved minerals of 688 mg/l, and an iron content of 0.3 mg/1. Hydrogen sulfide was apparent when a previous sample was collected.

WELL NO. 3 was completed in May 1969 to a depth of 351 ft by the J. P. Miller Artesian Well Co., Brookfield. This well is available for emergency use.

The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located south of 22nd St. on Tower Road adjacent to the west elevated tank, approximately 500 ft S and 100 ft W of the NE corner of Section 28, T39N, R11E. The land surface elevation at the well is approximately 715 ft.

A drillers log of Well No. 3 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift	108	108
Dolomite	242	350
Shale	1	351

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B18521) is for a water sample from the well collected November 3, 1976, after 1.5 hr of pumping.

WELL NO. 3, LABORATORY NO. B18521

		mg/l	*me/l*			*mg/l*	*me/l*
Iron	Fe	2.2		Silica	SiO_2	15.7	
Manganese	Mn	0.05		Fluoride	F	0.2	0.01
Ammonium	NH_4	0.7	0.04	Boron	B	0.2	
Sodium	Na	18	0.78	Cyanide	CN	0.00	
Potassium	K	2.6	0.07	Nitrate	NO_3	0.0	
Calcium	Ca	122	6.09	Chloride	CI	35	0.99
Magnesium	Mg	53	4.36	Sulfate	SO_4	170	3.54
				Alkalinity (as CaCOg)		325	6.50
Arsenic	As	0.00					
Barium	Ba	0.1		Hardness (as $CaCO_3$)		526	10.52
Cadmium	Cd	0.00					
Chromium	Cr	0.00		Total dissolved			
Copper	Cu	0.00		minerals		634	
Lead	Pb	0.00					
Mercury	Hg	0.0000					
Nickel	Ni	0.0					
Selenium	Se	0.00					
Silver	Ag	0.00					
Zinc	Zn	0.0		pH (as rec'd)		7.3	

A 19.2-in. diameter hole was drilled to a depth of 109.5 ft and finished 15.2 in. in diameter from 109.5 to 351 ft. The well is cased with 20-in. OD pipe from about 0.2 ft above land surface to a depth of 109.5 ft.

A production test was conducted by the driller on May 26, 1969. After 5.5 hr of pumping at rates of 440 to 1200 gpm, the drawdown was 13 ft from a nonpumping water level of 45 ft below land surface.

A second production test was conducted by the driller on May 27, 1969. After 7.5 hr of pumping at a rate of 1200 gpm, the drawdown was 14 ft from a nonpumping water level of 45 ft below land surface.

Nonpumping water levels were reported to be 47 ft in November 1971, and 43 ft in 1984.

The pumping equipment presently installed is a 4-stage Peerless vertical turbine pump set at 95 ft, rated at 1000 gpm at about 250 ft TDH, and powered by a 100-hp U. S. electric motor.

WELL NO. 4 was completed in April 1972 to a depth of 252 ft by the Layne-Western Co., Aurora. This well was abandoned and sealed in 1976. The water-yielding units in this well were dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well was located on Windsor Drive near the elevated tank, approximately 1100 ft N and 1600 ft W of the SE corner of Section 24, T39N, R11E. The land surface elevation at the well is approximately 680 ft.

A drillers log of Well No. 4 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Clay fill	2	2
Black soil	2	4
Brown clay	3	7
Brown and gray sticky clay	8	15
Gray sticky clay	21.5	36.5
Limestone	207.5	244
Shale	8	252

A 23-in. diameter hole was drilled to a depth of 40 ft, reduced to 19 in. between 40 and 51 ft, and finished 15 in. in diameter from 51 to 252 ft. The well was cased with 20-in. pipe from about 3 ft above land surface to a depth of 40 ft and 16-in. pipe from land surface to a depth of 51 ft (cemented in).

Upon completion, the well produced 508 gpm with a drawdown of 98 ft.

After acidizing with 3000 gal of 15 percent inhibited and stabilized acid, a production test was then conducted by the driller on April 10, 1972. After 8 hr of pumping at rates of 868 to 818 gpm, the drawdown was 51 ft from a nonpumping water level of 35 ft below land surface.

A second production test was conducted by the driller on April 11, 1972. After 7 hr of pumping at rates ranging from 805 to 508 gpm, the drawdown was 36 ft from a nonpumping water level of 35 ft below land surface. Twenty min after pumping was stopped, full recovery was observed.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B26644) is for a water sample from the well collected January 6, 1976, after 30 min of pumping at 250 gpm. Hydrogen sulfide was apparent when a previous sample was collected.

WELL NO. 4, LABORATORY NO. B26644

		mg/l	me/I			mg/l	me/l
Iron	Fe	4.0		Silica	SiO_2	15	
Manganese	Mn	0.11		Fluoride	F	0.3	0.02
Ammonium	NH_4	0.6	0.03	Boron	B	0.2	
Sodium	Na	87	3.78	Cyanide	CN	0.00	
Potassium	K	4.9	0.12	Nitrate	NO_3	1.0	0.02
Calcium	Ca	141	7.04	Chloride	CI	230	6.49
Magnesium	Mg	88	7.24	Sulfate	SO_4	210	4.37
				Alkalinity (as	$CaCO_3$)	374	7.48
Arsenic	As	0.00					
Barium	Ba	0.1		Hardness (as	$CaCO_3$)	713	14.26
Cadmium	Cd	0.00					
Chromium	Cr	0.00		Total dissolved			
Copper	Cu	0.00		minerals		1063	
Lead	Pb	0.00		pH (as rec'd)		7.2	
Mercury	Hg	0.0000		Radioactivity			
Nickel	Ni	0.0		Alpha *pc/l*		4.2	
Selenium	Se	0.00		± deviation		4.0	
Silver	Ag	0.00		Beta *pc/l*		10.6	
Zinc	Zn	0.0		± deviation		3.8	

WELL NO. 5 was completed in July 1976 to a depth of 1503 ft by the Wehling Well Works, Beecher. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer) except for dolomites of the Galena and Platteville Groups and the Glenwood-St. Peter Sandstone. The well also penetrates the upper part of the Eau Claire Formation. The well is located at Windsor Drive south of the Toll Road near the elevated tank, approximately 1080 ft N and 1600 ft W of the SE corner of Section 24, T39N, R11E. The land surface elevation at the well is approximately 680 ft.

A drillers log of Well No. 5 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Clay	37	37
Lime	10	47
White lime	31	78
Lime	85	163
Gray lime	45	208
Lime	40	248
Shale	220	468
Tan dolomite	329	797
Sand	31	828
St. Peter	210	1038
Lime	185	1223
Sand	15	1238
Lime and shale	40	1278
Lime and sand	30	1308
Galesville sand with lime and shale	50	1358
Galesville sand	35	1393
Sand	90	1483
Shale	20	1503

A 28-in. diameter hole was drilled to a depth of 53 ft, reduced to 22 in. between 53 and 1065 ft, reduced to 17 in. between 1065 and 1290 ft, and finished 15 in. in diameter from 1290 to 1503 ft. The well is cased with 24-in. OD pipe from land surface to a depth of 47 ft and 18-in. OD pipe from about 2 ft above land surface to a depth of 1065 ft (cemented in).

A production test was conducted by the driller on July 22-23, 1976. After 26.2 hr of pumping at rates ranging from 600 to 1100 gpm, the final drawdown was 222 ft from a nonpumping water level of 698 ft. The water level recovered to 780 ft after pumping had been stopped for 1.2 hr.

The well was then shot with nitrogel as follows: 240 lb from 1356 to 1376 ft, 200 lb from 1372 to 1392 ft, 200 lb from 1381 to 1401 ft, 100 lb from 1396 to 1406 ft, 100 lb from 1404 to 1414 ft, 100 lb from 1412 to 1422 ft, 100 lb from 1421 to 1431 ft, and 170 lb from 1440 to 1450 ft.

A second production test was conducted by the driller on August 23-24, 1976. After 22.3 hr of pumping at rates ranging from 1536 to 1163 gpm, the maximum drawdown was 144 ft from a nonpumping water level of 770 ft. One hr after pumping was stopped, the water level had recovered to 795 ft.

In 1984, the well reportedly produced 1310 gpm with a drawdown of 90 ft from a nonpumping water level of 804 ft.

The pumping equipment presently installed consists of a 500-hp 1775 rpm Byron Jackson electric motor, a 13-in., 15-stage Byron Jackson submersible pump (No. 761-C-0333) set at 1000 ft, rated at 1200 gpm at about 1050 ft TDH, and has 1000 ft of 8-in. column pipe.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B039990) of a sample collected March 29, 1982, after pumping for 30 min, showed the water to have a hardness of 274 mg/l, total dissolved minerals of 442 mg/l, and an iron content of 0.200 mg/l.

WELL NO. 6 was completed in December 1976 to a depth of 1522 ft by the Wehling Well Works, Beecher. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer) except for dolomites of the Galena and Platteville Groups and the Glenwood-St. Peter Sandstone. The well also penetrates the upper part of the Eau Claire Formation. The well is located southeast of the intersection of 31st St. and Meyers Road, approximately 164 ft S and 1593 ft E of the NW corner of Section 33, T39N, R11E. The land surface elevation at the well is approximately 695 ft.

A drillers log of Well No. 6 follows:

Strata	Thickness (ft)	Depth (ft)
Gravel and drift	90	90
Lime	227	317
Shale and lime	65	382
Shale	45	427
Lime	360	787
Sand	200	987
Sand and lime	35	1022
Lime	162	1184
Lime with sand	178	1362
Sand	110	1472
Sand and lime	35	1507
Shale	15	1522

A 26-in. diameter hole was drilled to a depth of 90 ft, reduced to 22 in. between 90 and 1032 ft, and finished 17 in. in diameter from 1032 to 1522 ft. The well is cased with 24-in. OD black steel pipe from land surface to a depth of 90 ft and 18-in. OD black steel pipe from about 1.5 ft above land surface to a depth of 1030 ft (cemented in).

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B40575) is for a water sample from the well collected March 17, 1980, after 3 hr of pumping.

WELL NO. 8, LABORATORY NO. B40575

		mg/l	me/l		mg/l	me	/l
Iron	Fe	0 13		Silica	SiO_2	7.3	
Manganese	Mn	0.006		Fluoride	F	1.29	0.07
Ammonium	NH_4	0.8	0.04	Boron	B	0.53	
Sodium	Na	47	2.04	Cyanide	CN	0 07	
Potassium	K	13	0.33	Nitrate	NO_3	<0.4	
Calcium	Ca	72	3.59	Chloride	CI	17	0.48
Magnesium	Mg	21	1.73	Sulfate	SO_4	83	1.73
Strontium	Sr	3.79		Alkalinity (as $CaCO_3$)		281	5.62
Arsenic	As	<0.001		Hardness (as $CaCO_3$)		260	5.20
Barium	Ba	0.05					
Beryllium	Be	<0 0005		Total dissolved			
Cadmium	Cd	<0 0005		minerals		424	
Chromium	Cr	<0 005					
Cobalt	Co	<0.005					
Copper	Cu	<0.00S					
Lead	Pb	0.01					
Lithium	Li	0.08					
Mercury	Hg	<0.00005					
Nickel	Ni	<0.005					
Selenium	Se	<0 001					
Silver	Ag	<0 005					
Zinc	Zn	<0.005		pH (as rec'd)		7.3	

Upon completion, the well was shot with 1210 lb of 100 percent nitrogel from 1385 to 1472 ft.

A production test was conducted by the driller on February 9-10, 1977. After 19.2 hr of pumping at rates ranging from 1583 to 1280 gpm, the final drawdown was 94 ft from a nonpumping water level of 685 ft.

In 1984, the well reportedly produced 1280 gpm with a drawdown of 50 ft from a nonpumping water level of 803 ft.

The pumping equipment presently installed consists of a 500-hp 1780 rpm Byron Jackson electric motor, a 13-in., 15-stage Byron Jackson submersible pump (No. 761-C-0345) set at 1020 ft, rated at 1200 gpm at about 1080 ft TDH, and has 1020 ft of 8-in. column pipe.

WELL NO. 7 was completed in June 1977 to a depth of 1513 ft by the Wehling Well Works, Beecher. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer) except for dolomites of the Galena and Platteville Groups and the Glenwood-St. Peter Sandstone. The well also penetrates the upper part of the Eau Claire Formation. The well is located at the south cloverleaf of the exit ramp of the East-West Tollway (Illinois Route 5) and Summit Ave., approximately 1000 ft S and 1500 ft E of the NW corner of Section 27, T39N, R11E. The land surface elevation at the well is approximately 715 ft.

A drillers log of Well No. 7 follows:

Strata	Thickness (ft)	Depth (ft)
Clay and sand	122	122
Lime	111	233
Shale	220	453
Dolomite	335	788
St. Peter	35	823
St. Peter and sand	340	1163
Lime	50	1213
Red and green shale	15	1228
Shale	5	1233
Hard sandy red shale	5	1238
Gray sand with lime trace of shale	15	1253
Gray sand with lime	100	1353
Sand with lime stringers	55	1408
Sand and shale	105	1513

A 28-in. diameter hole was drilled to a depth of 123 ft, reduced to 22 in. between 123 and 1252 ft, and finished 17 in. in diameter from 1252 to 1513 ft. The well is cased with 24-in. black steel pipe from about 1 ft above land surface to a depth of 123 ft (cemented in) and 18-in. black steel pipe from about 1.5 ft above land surface to a depth of 1252 ft (cemented in).

Upon completion, this well was shot with 900 lb of nitrogel between 1440 and 1377 ft.

A production test was conducted by the driller on October 5-6, 1977. After 22 hr of pumping at rates

ranging from 850 to 1693 gpm, the drawdown was 132 ft from a nonpumping water level of 754 ft below land surface. Pumping was continued for 2 hr at rates ranging from 1290 to 1050 gpm with a final drawdown of 110 ft.

A second production test was conducted by the driller on November 10-11, 1977. After 20 hr of pumping at rates ranging from 580 to 1540 gpm, the drawdown was 105 ft from a nonpumping water level of 749 ft below land surface. Pumping was continued for 4 hr at rates ranging from 1423 to 1166 gpm with a final drawdown of 90 ft.

In 1984, the well reportedly produced 1132 gpm with a drawdown of 70 ft from a nonpumping water level of 833 ft.

The pumping equipment presently installed consists of a 500-hp 1780 rpm Byron Jackson electric motor, a 13-in., 15-stage Byron Jackson submersible pump (No. 771-C-0334) set at 1050 ft, rated at 1200 gpm at about 1050 ft TDH, and has 1050 ft of 8-in. column pipe.

A partial analysis of a sample (Lab. No. 206917) collected November 11, 1977, after pumping for 24 hr at rates of 580 to 1540 gpm, showed the water to have a hardness of 282 mg/l, total dissolved minerals of 446 mg/l, and an iron content of 0.1 mg/l.

PLEASANT HILL COMMUNITY ASSOCIATION

Pleasant Hill Community Association (est. 180), located just north of Winfield, installed a public water supply in 1953. One well is in use. In 1956 there were 50 services, none metered. In 1982 there were 57 services, all metered; the estimated average and maximum pumpages in 1978 were 14,500 and 16,000 gpd, respectively. The water is chlorinated, fluoridated, and treated with polyphosphate to keep iron in solution.

WELL NO. 1, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in September 1953 to a depth of 238 ft by N. L. Pitz, Geneva. The well is located in a pumphouse on the south side of Grand Ave. west of Pleasant Hill Road, approximately 1625 ft S and 2000 ft W of the NE corner of Section 7. T39N, R10E. The land surface elevation at the well is approximately 768 ft.

A drillers log of Well No. 1 follows:

Strata	*Tkickness (ft)*	*Depth (ft)*
Drift	138	138
Limestone	100	238

An 8-in. diameter hole was drilled to a depth of 238 ft. The well is cased with 8-in. pipe from about 1.5 ft above land surface to a depth of 140 ft.

Nonpumping water levels were reported to be 80 ft in 1956, and 60 ft in 1976.

The pumping equipment presently installed is a Red Jacket submersible pump set at 105 ft, rated at 85 gpm at about 160 ft head, and powered by a 7-l/2-hp Franklin electric motor.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. C006413) is for a water sample from the well collected on February 22, 1976.

WELL NO. 1, LABORATORY NO. C006413

		mg/l	*me/l*		*mg/l*	*me/l*
Iron	Fe	2.6	Silica	SiO_2	18.5	
Manganese	Mn	0.04	Fluoride	F	0.3	0.02
Ammonium	NH_4	0.60	0.03	Boron	B	0.1	
Sodium	Na	20	0.87	Cyanide	CN	0.00	
Potassium	K	2.1	0.05	Nitrate	NO_3	0.3	0.00
Calcium	Ca	135	6.74	Chloride	CI	44	1.24
Magnesium	Mg	69	5.68	Sulfate	SO_4	291	6.05
				Alkalinity (as $CaCO_3$)		318	6.36
Arsenic	As	0.000					
Barium	Ba	0.1		Hardness (as $CaCO_3$)		625	12.50
Cadmium	Cd	0.00					
Chromium	Cr	0.00		Total dissolved			
Copper	Cu	0.01		minerals		812	
Lead	Pb	0.00		pH (as rec'd)	7.5		
Mercury	Hg	0.0000		Radioactivity			
Nickel	Ni	0.0		Alpha *pc/l*	5.4		
Selenium	Se	0.00		± deviation	3.6		
Silver	Ag	0.00		Beta *pc/l*	6.1		
Zinc	Zn	0.02		± deviation	£9		

POLO DRIVE AND SADDLE ROAD SUBDIVISION

Polo Drive and Saddle Road Subdivision (est. 95), located just west of Wheaton, installed a public water supply in 1950. The water system is owned and operated by the Polo Drive and Saddle Road Water Co. One well (No. 2) is in use. In 1965 there were 29 services. In 1984 there were 31 services, none metered; the average pumpage was 13,970 gpd. The water is fluoridated, chlorinated, and treated with polyphosphate to keep iron in solution.

WELL NO. 1, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in 1950 to a depth of 175 ft by Neely and Schimelpfenig, Batavia. This well was abandoned prior to 1982. The well is located between Polo Drive and Saddle Road about 350 ft north of Roosevelt Road, approximately 375 ft N and 100 ft E of the SW corner of Section 17, T39N, R10E. The land surface elevation at the well is approximately 740 ft.

The following mineral analysis (Lab. No. 207145) is for a water sample from the well collected December 19, 1977, after 4 min of pumping at about 150 gpm.

WELL NO. 1, LABORATORY NO. 207145

		mg/l	*me/I*			*mg/l*	*me/I*
Iron(total)	Fe	1.9		Silica	SiO_2	19.9	
Manganese	Mn	0.03		Fluoride	F	0.4	
Ammonium	NH_4	0.6	0.03	Boron	B	0.2	
Sodium	Na	55.7	2.42	Nitrate	NO_3	0.2	0.00
Potassium	K	3.6	0.09	Chloride	CI	125	3.53
Calcium	Ca	158.4	7 90	Sulfate	SO_4	336.9	7.01
Magnesium	Mg	82.7	6.80	Alkalinity (as $CaCO_3$)		330	6.60
Strontium	Sr	0.96	0.02				
				Hardness (as CaCO)		735	14.70
Barium	Ba	<0.1					
Cadmium	Cd	0.00		Total dissolved			
Chromium	Cr	0.00		minerals		979	
Copper	Cu	0.00					
Lead	Pb	<0.05					
Lithium	Li	0.02		Turbidity	14		
Nickel	Ni	<0.05		Color	0		
Silver	Ag	0.00		Odor	0		
Zinc	Zn	0.02		Temp.(reported)	52F		

The well is cased with 8-in. pipe from about 0.5 ft above the pumphouse floor to an unknown depth.

Nonpumping water levels were reported to be 39 ft in January 1958; 30 ft on July 2, 1964; 35 ft in December 1971; and 51.5 ft on July 20, 1979.

The pumping equipment presently installed is a Red Jacket submersible pump (Model No. 3HB6) set at 80 ft, rated at 165 gpm, and powered by a 7-1/2-hp Red Jacket electric motor.

WELL NO. 2, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in August 1979 to a depth of 200 ft by the Meadow Equipment Sales & Service, Lombard. The well is located north of Roosevelt Road between Polo Drive and Saddle Road about 10 ft northeast of Well No. 1, approximately 380 ft N and 110 ft E of the SW corner of Section 17, T39N, R10E. The land surface elevation at the well is approximately 740 ft.

A drillers log of Well No. 2 follows

Strata	*Thickness (ft)*	*Depth (ft)*
Yellow clay	15	15
Rock shelf	5	20
Gray clay	25	45
Hard gray clay	10	55
Gray till	5	60
Gravel and gray clay	5	65
Gravel	15	80
Fine gravel	15	95
Gravel	1	96
Gray limestone	19	115
White limestone	15	130
White and blue limestone	5	135
Gray limestone	25	160
White limestone	40	200

An 8-in. diameter hole was drilled to a depth of 99 ft and finished 5 in. in diameter from 99 to 200 ft. The well is cased with 8-in. black pipe from about 1.3 ft above the wellhouse floor to a depth of 99 ft.

On August 14, 1979, the nonpumping water level was reported to be 45 ft.

On October 27, 1984, the well reportedly produced about 150 gpm for 2 min with a drawdown of 3 ft from a nonpumping water level of 44 ft.

The pumping equipment presently installed is a Red Jacket submersible pump (No. 1006R4-8MB6) set at 100 ft, rated at 110 gpm, and powered by a 10-hp Red Jacket electric motor.

ROSELLE

The village of Roselle (16,948) installed a public water supply in 1924. Six wells are in use. In 1949 there were 245 services, all metered; the estimated average and maximum pumpages were 50,000 and 75,000 gpd, respectively. In 1984 there were 5875 services, all metered; the average pumpage was 1,740,400 gpd. The water is chlorinated and treated with polyphosphate to keep iron in solution; in addition, the water from Well Nos. 1, 2, 3, 4, and 6 is fluoridated.

WELL NO. 1, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in 1924 to a depth of 182 ft (sounded at 181.5 ft in 1947) by the W. L. Thome Co., Des Plaines. The well is located inside the fire department garage at the northeast corner of Roselle Road and Irving Park Blvd., approximately 1950 ft S and 2450 ft W of the NE corner of Section 3, T40N, R10E. The land surface elevation at the well is approximately 770 ft.

A 10-in. diameter hole was drilled to a depth of 182 ft. The well is cased with 10-in. pipe from about 2 ft above the pumphouse floor to a depth of 139.4 ft.

On January 30, 1926, the well reportedly produced 110 gpm for 1.6 hr with a drawdown of 14.0 ft from a nonpumping water level of 37.3 ft.

On May 18, 1947, after 6.5 hr of pumping at rates of 170 to 180 gpm, the drawdown was 58 ft from a nonpumping water level of 42 ft below the pump base.

In October 1950, the nonpumping water level was reported to be 40 ft.

A production test was conducted by the J. P. Miller Artesian Well Co., Brookfield, on March 1, 1955. During pumping at a rate of 140 gpm, the drawdown was 60 ft from a nonpumping water level of 47 ft. On March 9, this well was acidized with about 1000 gal of HC1, and on March 11, the well reportedly produced 97 gpm for 1.3 hr with a drawdown of 78 ft from a nonpumping water level of 42 ft.

Nonpumping water levels were reported to be 56 ft in March 1956; 46 ft below the pump base on April 9, 1958; 35 ft in January 1961; 44 ft in January 1962; 70 ft in November 1967; 68 ft in June 1969; 69 ft in November 1970; and 50 ft in December 1971.

The pumping equipment presently installed is a 7-in. Peerless turbine pump (Serial No. 34545) set at about 160 ft, rated at about 175 gpm at about 235 ft TDH, and powered by a 15-hp 1800 rpm U. S. electric motor. A 10-ft section of 5-in. suction pipe is attached to the pump intake.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. C007667) of a sample collected May 1, 1974, after pumping for 30 min at 175 gpm, showed the water to have a hardness of 322 mg/l, total dissolved minerals of 462 mg/l, and an iron content of 1.0 mg/1.

WELL NO. 2, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in December 1953 to a depth of 183 ft by the Layne-Western Co., Aurora. The well is located in a room at the north end of the village hall about 100 ft southeast of Well No. 1, approximately 2060 ft S and 2400 ft W of the NE corner of Section 3, T40N, R10E. The land surface elevation at the well is 770.2 ft.

A drillers log of Well No. 2 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift	55	55
Gravel, muddy (no water)	50	105
Limestone	75	180
Red rock shale	3	183

A 10-in. diameter hole was drilled to a depth of 183 ft. The well is cased with 10-in. wrought iron pipe from about 1.5 ft above the wellhouse floor to a depth of 145 ft.

A production test was conducted on December 10, 1953, by representatives of the driller, the State Water Survey, and Baxter & Woodman, Consulting Engineers. After 2.9 hr of pumping at rates ranging from 333 to 345 gpm, the drawdown was 68 ft from a nonpumping water level of 45 ft below land surface. During this period, Well No. 1 was pumping for the first 1.9 hr. Pumping was continued for 54 min at rates of 270 to 267 gpm with a drawdown of 42 ft. After a 5-min idle period, pumping was continued for 1 hr at rates of 145 to 142 gpm with a drawdown of 10 ft. After an additional 3 hr of pumping at rates ranging from 318 to 372 gpm, the final drawdown was 60 ft. Five min after pumping was stopped, the water level had recovered to 48 ft.

Nonpumping water levels were reported to be 42 ft in March 1956, and 48 ft in July 1956.

On March 19, 1959, the well reportedly produced 400 gpm for 20 min with a drawdown of 36 ft from a nonpumping water level of 54 ft below the pump base.

Nonpumping water levels were reported to be 53 ft in January 1961; 69 ft in November 1967; 66 ft in June 1969; and 64 ft in December 1971.

The pumping equipment presently installed is a Peerless turbine pump set at 160 ft, rated at 350 gpm at about 237 ft head, and powered by a 25-hp 1760 rpm U. S. electric motor.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. C001355) is for a water sample from the well collected October 2, 1978. after 2 hr of pumping at 320 gpm.

WELL NO. 2. LABORATORY NO. C001355

		mg/l	*me/l*			*mg/l*	*mt/l*
Iron	Fe	0 9		Silica	SiO_2	20	
Manganese	Mn	0.00		Fluoride	F	0.7	0.04
Ammonium	NH_4	0.66	0 04	Boron	B	0.4	
Sodium	Na	30	1 30	Nitrate	NO_3	0.00	0 00
Potassium	K	1.8	0 05	Chloride	CI	3	0.08
Calcium	Ca	66	3 29	Sulfate	SO_4	131	2.72
Magnesium	Mg	38	3 13	Alkalinity (as $CaCO_3$)		240	4.80
Arsenic	As	0.000		Hardness (as $CaCO_3$)		322	6.44
Barium	Ba	0.0					
Cadmium	Cd	0.00		Total dissolved			
Chromium	Cr	0.00		minerals		464	
Copper	Cu	0.00					
Lead	Pb	0.00					
Mercury	Hg	0.0000					
Nickel	Ni	0.0					
Selenium	Se	0.00					
Silver	Ag	0.00					
Zinc	Zn	0.01		pH (as rec'd)		**8.1**	

WELL NO. 3 was completed in December 1959 to a depth of 260 ft by the Shaver Well Drilling Co., Lombard. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located about 50 ft north of Irving Park Road south of the Milwaukee RR tracks, and 600 ft east of the junction of Ardmore Ave., approximately 1600 ft N and 1300 ft E of the SW corner of Section 2, T40N, R10E. The land surface elevation at the well is approximately 760 ft.

A drillers log of Well No. 3 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Glacial till	140	140
Niagaran limestone	90	230
Shale	30	260

A 12-in. diameter hole was drilled to a depth of 260 ft. The well is cased with 12-in. wrought iron pipe from about 1.5 ft above the wellhouse floor to a depth of 140 ft.

A production test was conducted by J. Richard Koehler, Consulting Engineer, on January 3-4, 1960. After 24 hr of pumping at rates of 380 to 900 gpm, the final drawdown was 58 ft from a nonpumping water level of 45 ft. Thirty min after pumping was stopped. the water level had recovered to 60 ft.

Nonpumping water levels were reported to be 66 ft in December 1963; 52 ft in January 1966; 54 ft in January 1967; 70 ft in November 1967; 68 ft in June 1969; and 70 ft in December 1970.

The pumping equipment presently installed is a 10-stage Peerless turbine pump set at 150 ft, rated at 800 gpm, and powered by a 60-hp 1800 rpm U. S. electric motor. The well is equipped with 150 ft of airline.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B27786) is for a water sample from the well collected January 15, 1976, after 1 hr of pumping at 750 gpm. Hydrogen sulfide was apparent when a previous sample was collected.

WELL NO. 3, LABORATORY NO. B27786

		mg/l	*me/I*			*mg/l*	*me/I*
Iron	Fe	1.2		Silica	SiO_2	21	
Manganese	Mn	0.02		Fluoride	F	0.4	0.02
Ammonium	NH_4	0.8	0.04	Boron	B	0.4	
Sodium	Na	33	1.44	Cyanide	CN	0.00	
Potassium	K	2.3	0.06	Nitrate	NO_3	0.0	0.00
Calcium	Ca	106	5.29	Chloride	Cl	22	0.62
Magnesium	Mg	58	4.77	Sulfate	SO_4	230	4.78
				Alkalinity (as $CaCO_3$)		296	5.92
Arsenic	As	0.00					
Barium	Ba	0.0		Hardness (as $CaCO_3$)		503	10.06
Cadmium	Cd	0.00					
Chromium	Cr	0.00		Total dissolved			
Copper	Cu	0.00		minerals		666	
Lead	Pb	0.00		pH (as rec'd)	7.9		
Mercury	Hg	0.0000		Radioactivity			
Nickel	Ni	0.0		Alpha *pc/l*	3.9		
Selenium	Se	0.00		± deviation	2.5		
Silver	Ag	0.00		Beta *pc/l*	4.4		
Zinc	Zn	0.0		± deviation	2.3		

Prior to the construction of Well No. 4, a test well, located in the northwest corner of the southwest quarter of Section 10, T40N, R10E, was constructed in June 1971 to a depth of 137 ft by the J. P. Miller Artesian Well Co., Brookfield.

WELL NO. 4 was completed in April 1972 to a depth of 195 ft by the J. P. Miller Artesian Well Co., Brookfield. The water-yielding units in this well are sand and gravel of the Prairie Aquigroup and dolo-

mite of the Upper Bedrock Aquigroup (Silurian System). The well is located at 371 Summerfield Drive about 200 ft southwest of Mensching Road, approximately 2480 ft N and 215 ft E of the SW corner of Section 10, T40N, R10E. The land surface elevation at the well is approximately 790 ft.

A drillers log of Well No. 4 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Brown clay	12	12
Blue clay	75	87
Gravel	29	116
Gravel with clay	11	127
Limestone	68	195

A 36-in. diameter hole was drilled to a depth of 116 ft, reduced to 30 in. between 116 and 130 ft, and finished 18 in. in diameter from 130 to 195 ft. The well is cased with 36-in. steel pipe from land surface to a depth of 25 ft, 20-in. OD steel pipe from about 2 ft above land surface to a depth of 109 ft, and 20-in. steel pipe from 119 ft to a depth of 130 ft. A 10-ft length of 20-in. No. 125 slot Cater stainless steel screen was installed from 109 ft to a depth of 119 ft. The annulus between the 36- and 20-in. casings and between the bore hole and the 20-in. casing-screen assembly is filled with concrete from 0 to 20 ft, with impervious fill from 20 to 70 ft, and with No. 3 Muscatine gravel from 70 to 119 ft. A concrete seal is placed outside the 20-in. pipe from 119 to 130 ft.

After acidizing with 2000 gal of HC1, the well reportedly produced 900 gpm for 24 hr on April 5-6, 1972, with a drawdown of 69 ft from a nonpumping water level of 88 ft below land surface. During this test, three private residence wells and a test well were observed.

The pumping equipment presently installed is a 12-in., 3-stage Johnston turbine pump set at 180 ft, rated at 800 gpm at about 172 ft TDH, and powered by a 50-hp U. S. electric motor. A 5-ft section of 8-in. suction pipe is attached to the pump intake. The well is equipped with 180 ft of airline.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B31500) is for a water sample from the well collected January 24, 1978, after 2.5 hr of pumping at 600 gpm.

WELL NO. 4, LABORATORY NO. B31500

		mg/l	*me/I*			*mg/l*	*me/l*
Iron	Fe	0.5		Silica	SiO_2	21	
Manganese	Mn	0.00		Fluoride	F	0.5	0.03
Ammonium	NH	0.8	0.04	Boron	B	0.5	
Sodium	Na	30	1.30	Cyanide	CN	0.00	
Potassium	K	2.6	0.07	Nitrate	NO_3	0.0	0.00
Calcium	Ca	65	3.24	Chloride	Cl	4.6	0.13
Magnesium	Mg	34	2.80	Sulfate	SO_4	130	2.70
				Alkalinity (as $CaCO_3$)		232	**4.64**
Arsenic	As	0.00					
Barium	Ba	0.1		Hardness (as $CaCO_3$)		304	6.08
Cadmium	Cd	0.00					
Chromium	Cr	0.00		Total dissolved			
Copper	Cu	0.00		minerals		416	
Lead	Pb	0.00					
Mercury	Hg	0.0001					
Nickel	Ni	0.0					
Selenium	Se	0.00					
Silver	Ag	0.00					
Zinc	Zn	0.0		pH (as rec'd)		7.8	

WELL NO. 5 was completed in March 1978 to a depth of 1423 ft by the Wehling Well Works, Beecher. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer). The well also penetrates the upper part of the Eau Claire Formation. The well is located at the southeast corner of Bryn Mawr Ave. and Mensching Road, approximately 96 ft S and 1913 ft W of the NE corner of Section 9, T40N, R10E. The land surface elevation at the well is approximately 790 ft.

A drillers log of Well No. 5 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift	133	133
Broken lime	37	170
Lime	38	208
Shale	85	293
Shale and lime	102	395
Lime with some shale	5	400
Galena-Platteville dolomite	358	758
Sand	255	1013
Red shale	12	1025
Sand with red shale	10	1035
Lime and sand with shale	23	1058
Lime	80	1138
Lime sand and shale	90	1228
Sandstone	180	1408
Shale	15	1423

A 30-in. diameter hole was drilled to a depth of 174 ft, reduced to 25.2 in. between 174 and 434 ft, reduced to 21.5 in. between 434 and 1068 ft, and finished 17.2 in. in diameter from 1068 to 1423 ft. The well is cased with 30-in. black steel pipe from about 1 ft above land surface to a depth of 50 ft, 26-in. black steel pipe from about 1 ft above land surface

to a depth of 174 ft (cemented in), 22-in. black steel pipe from about 1 ft above land surface to a depth of 434 ft (cemented in), and an 18-in. black steel liner from 968 ft to a depth of 1068 ft.

A production test was conducted by the driller on June 22, 1978. After 6.4 hr of pumping at rates ranging from 1300 to 1020 gpm, the final drawdown was 408 ft from a nonpumping water level of 545 ft below land surface. The water level recovered to 703 ft after pumping had been stopped for 2.6 hr.

A second production test was conducted by the driller on June 26, 1978. After 13.5 hr of pumping at rates ranging from 1288 to 823 gpm, the final drawdown was 229 ft from a nonpumping water level of 681 ft below land surface.

The pumping equipment presently installed is a 13-in., 15-stage Byron Jackson submersible pump set at 1060 ft, rated at 1000 gpm at about 1260 ft head, and powered by a 450-hp Byron Jackson electric motor.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B040154) is for a water sample from the well collected March 31, 1982, after 1 hr of pumping at 850 gpm.

WELL NO. 6, LABORATORY NO. B040154

		mg/l	*me/l*			*mg/l*	*me/l*
Iron	Fe	0.098		Silica.	SiO_2	6.6	
Manganese	Mn	0.014		Fluoride	F	**1.46**	0.08
Ammonium	NH_4	0.7	0.04	Boron	B	0.62	
Sodium	Na	47	2.04	Cyanide	CN	<0.005	
Potassium	K	15.0	0.38	Nitrate	NO_3	0.4	0.01
Calcium	Ca	65	3.24	Chloride	CI	9.1	0.26
Magnesium	Mg	27.1	2.23	Sulfate	SO_4	65	1.35
Strontium	Sr	0.59		Alkalinity (as $CaCO_3$)		316	6.32
Arsenic	As	<0.001		Hardness (as $CaCO_3$)		266	5.32
Barium	Ba	0.055					
Beryllium	Be	<0.0020		Total dissolved			
Cadmium	Cd	<0 004		minerals		446	
Chromium	Cr	<0.006					
Cobalt	Co	0.017					
Copper	Cu	0.006					
Lead	Pb	<0.005					
Mercury	Hg	<0.00005					
Nickel	Ni	0.013					
Selenium	Se	<0 001					
Silver	Ag	<0 005					
Vanadium	V	<0.004					
Zinc	Zn	0.011		pH (as rec'd)		7.3	

WELL NO. 6, finished in sand and gravel of the Prairie Aquigroup, was completed in April 1977 to a depth of 127 ft by the Layne-Western Co., Aurora. The well is located at the southeast corner of Rodenburg Road and Bryn Mawr Ave., approximately 1400 ft S and 250 ft W of the NE corner of Section 8, T40N, R10E. The land surface elevation at the well is approximately 790 ft.

A drillers log of Well No. 6 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Brown clay	11	11
Sand and gravel	1	12
Gray silty clay with gravel mixed in	33	45
Gray silty clay - occasional sand and gravel layers	30	75
Gray sandy silty clay - occasional sand and gravel	37	112
Coarse sand to coarse gravel	5	117
Fine sand to coarse gravel with boulders	10	127
Gray silty clay	2	129

A 38-in. diameter hole was drilled to a depth of 129 ft. The well is cased with 16-in. steel pipe from about 1.5 ft above the wellhouse floor to a depth of 112 ft followed by 15 ft of 16-in. No. 60 slot Layne stainless steel screen. The annulus between the bore hole and the casing-screen assembly is filled with cement from 0 to 20 ft, with clay and cuttings from 20 to 97 ft, and with 15 tons of Nos. 1 and 2 Muscatine gravel from 97 to 129 ft.

A production test was conducted by the driller on April 8-9, 1977. After 24 hr of pumping at rates ranging from 289 to 302 gpm, the final drawdown was 40 ft from a nonpumping water level of 64 ft below land surface. The water level recovered to 66 ft after pumping had been stopped for 2.5 hr.

On May 7, 1980, the well reportedly produced 300 gpm with a drawdown of 31 ft from a nonpumping water level of 64 ft.

The pumping equipment presently installed consists of a 30-hp U. S. electric motor, an 8-in., 10-stage Layne & Bowler turbine pump (No. 87254) set at 110 ft, rated at 295 gpm at about 296 ft TDH, and has 110 ft of 5-in. column pipe. The well is equipped with 112 ft of airline.

A partial analysis of a sample (Lab. No. 204885) collected during the initial production test, after pumping for 24 hr at rates of 289 to 302 gpm, showed the water to have a hardness of 292 mg/l, total dissolved minerals of 396 mg/l, and an iron content of 0.0 mg/l.

ROSEWOOD TRACE SUBDIVISION

Rosewood Trace Subdivision (est. 5425), also known as Ramblin Rose South Subdivision, located about 1.5 miles south of Willowbrook, installed a public water supply in 1967. The water system is owned and operated by the Du Page County Public Works Department. One well (No. 1) is in use and another well (No. 3) is available for emergency use. This supply is also cross connected with the Hinswood Subdivision supply. In 1981 there were 1550 services, all metered; the average pumpage in 1984 was 503,400 gpd. The water is chlorinated.

WELL NO. 1 was completed in July 1967 to a depth of 1610 ft by the Wehling Well Works, Beecher. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer). The well also penetrates the upper part of the Eau Claire Formation. The well is located at the north end of Ivy Lane north of Rosewood Drive in the Rose Trace Apartment Complex, approximately 2000 ft N and 800 ft E of the SW corner of Section 2, T37N, R11E. The land surface elevation at the well is approximately 710 ft.

A drillers log of Well No. 1 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Mud and grave!	100	100
Limestone	181	281
Shale	101	382
Limestone	28	410
Shale	80	490
Limestone	330	820
Sandstone	155	976
Shale-limestone, and sandstone	25	1000
Limestone	415	1415
Limestone and sandstone	165	1580
Shale	30	1610

A 24-in. diameter hole was drilled to a depth of 110 ft, reduced to 23 in. between 110 and 520 ft, reduced to 19 in. between 520 and 1112 ft, and finished 15 in. in diameter from 1112 to 1610 ft. The well is cased with 24-in. pipe from land surface to a depth of 110 ft and 20-in. pipe from land surface to a depth of 512 ft (cemented in).

After the well was shot with 230 qt of nitrogel at 1539 ft, a production test was conducted by the driller on July 18, 1967. After 2.4 hr of pumping at a rate of 300 gpm, the final drawdown was 156 ft from a nonpumping water level of 591 ft below land surface.

This well was shot again on July 28, 1967, with 380 qt of nitrogel at 1525 ft. A second production test was conducted by the driller on December 14-15, 1967. After 4 hr of pumping at rates of 380 to 695 gpm, the drawdown was 70 ft from a nonpumping water level of 592 ft below land surface. Pumping was continued for 20 hr at a rate of 1000 gpm with a drawdown of 100 ft. After an additional 3 hr of pumping at rates of 1150 to 1160 gpm, the final drawdown was 112 ft.

A production test was conducted by the Garland Smith Engineering Co. in 1979. After 7 hr of pumping at a rate of 1160 gpm, the final drawdown was reported to be 69 ft from a nonpumping water level of 688 ft.

The pumping equipment presently installed is a Johnston vertical turbine pump set at 810 ft, and powered by an electric motor.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B28051) is for a water sample from the well collected March 2, 1983, after pumping at 1000 gpm.

WELL NO. 1, LABORATORY NO. B28051

		mg/l	*me/l*			*mg/l*	*me/l*
Iron	Fe	0.47		Silica	SiO_2	7.4	
Manganese	Mn	0.011		Fluoride	F	1.26	0.07
Ammonium	NH_4	0.6	0.03	Boron	B	0.56	
Sodium	Na	64	2.78	Cyanide	CN	<0.005	
Potassium	K	14.4	0.37	Nitrate	NO_3	<0.4	
Calcium	Ca	72	3.59	Chloride	CI	22	0.62
Magnesium	Mg	22	1.81	Sulfate	SO_4	106	2.20
Strontium	Sr	3.65		Alkalinity (as $CaCO_3$)		269	5.38
Arsenic	As	<0.001		Hardness (as $CaCO_3$)		263	5.26
Barium	Ba	0041					
Beryllium	Be	<0.0005		Total dissolved			
Cadmium	Cd	<0.003		minerals		470	
Chromium	Cr	<0.005					
Cobalt	Co	<0 005					
Copper	Cu	0.027					
Lead	Pb	0.005					
Mercury	Hg	<0.00005					
Nickel	Ni	<0.003					
Selenium	Se	<0.001					
Silver	Ag	<0 005					
Vanadium	V	<0.004					
Zinc	Zn	0.009		pH (as rec'd)		7.5	

WELL NO. 2 (local No. 3), open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in 1967 to a depth of 249 ft by the Wehling Well Works, Beecher. This well is not in use. The well is located about 50 ft northeast of Well No. 1, approximately 2050 ft N and 810 ft E of the SW corner of Section 2, T37N, R11E. The land surface elevation at the well is approximately 710 ft.

A drillers log of Well No. 2 follows:

Strata	Thickness (ft)	Depth (ft)
Mud and gravel	101	101
Lime	148	249

A 5-in. diameter hole was drilled to a depth of 249 ft. The well is cased with 5-in. pipe from land surface to a depth of 108.5 ft.

Upon completion, the well reportedly produced 20 gpm for 3 hr with a drawdown of 2 ft from a nonpumping water level of 78 ft.

The pumping equipment presently installed is a Red Jacket submersible pump set at 113 ft, rated at 50 gpm, and powered by a 5-hp electric motor.

WELL NO. 3 (local No. 2) was completed in October 1970 to a depth of 300 ft by the Wehling Well Works, Beecher. This well is available for emergency use. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located about 50 ft south of 91st St. and 0.5 mile west of Illinois Route 83, approximately 2500 ft N and 100 ft E of the SW corner of Section 2, T37N, R11E. The land surface elevation at the well is approximately 700 ft.

A drillers log of Well No. 3 follows:

Strata	Thickness (ft)	Depth (ft)
Drift	108	108
Lime	187	295
Shale	5	300

A 7.9-in. diameter hole was drilled to a depth of 300 ft. The well is cased with 8-in. galvanized seamless pipe from land surface to a depth of 120 ft.

Production tests were conducted by the driller on October 6 and 7, 1970. After 2.1 hr of pumping on October 6 at rates ranging from 195 to 388 gpm, the drawdown was 13 ft from a nonpumping water level of 77 ft below the top of the casing. On October 7, after 4 hr of pumping at rates ranging from 195 to 388 gpm, the drawdown was 12 ft from a nonpumping water level of 79 ft below the top of the casing.

The pumping equipment presently installed is a Red Jacket submersible pump set at 126 ft, rated at about 380 gpm, and powered by a 30-hp electric motor.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. C001392) is for a water sample from the well collected October 3, 1978, after 30 min of pumping at about 300 gpm.

WELL NO. 3, LABORATORY NO. C001392

		mg/l	me/l		mg/l	me/l
Iron	Fe	1.1	Silica	SiO_2	18	
Manganese	Mn	0.01	Fluoride	F	0.6	0.03
Ammonium	NH_4	0.92	0.05	Boron	B	0.3	
Sodium	Na	20	0.87	Cyanide	CN	0.02	
Potassium	K	2.7	0.07	Nitrate	NO_3	0.09	0.00
Calcium	Ca	114	5.69	Chloride	CI	20	0.56
Magnesium	Mg	48	3.95	Sulfate	SO_4	146	3.04
				Alkalinity (as $CaCO_3$)		372	7.44
Arsenic	As	0.000					
Barium	Ba	0.1		Hardness (as $CaCO_3$)		484	9.68
Cadmium	Cd	0.00					
Chromium	Cr	0.00		Total dissolved			
Copper	Cu	0.00		minerals		600	
Lead	Pb	0.00					
Mercury	Hg	0.0000					
Nickel	Ni	0.0					
Selenium	Se	0.00					
Silver	Ag	0.00					
Zinc	Zn	0.02		pH (as rec'd)		8.0	

ST. CHARLES COMMUNITY WELL FUND 3

St. Charles Community Well Fund 3 (est. 34) is located just southwest of Carol Stream. One well is in use. In 1982 there were 10 services; the average pumpage in 1981 was 3000 gpd. In 1983 there were 9 services, none metered. The water is not treated.

WELL NO. 1, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), is located in the front yard at 26W303 Peterson Ave., approximately 750 ft N and 2050 ft W of the SE corner of Section 31, T40N, R10E. The land surface elevation at the

well is approximately 765 ft.

Information on the construction details and submersible pump is not available.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B039991) is for a water sample from the well collected March 30, 1982.

WELL NO. 1, LABORATORY NO. B039991

		mg/l	*me/l*			*mg/l*	*me/l*
Iron	Fe	0.91		Silica	SiO_2	18	
Manganese	Mn	0.014		Fluoride	F	0.44	
Ammonium	NH_4	0.4	0.02	Boron	B	0.22	
Sodium	Na	23	1 00	Cyanide	CN	<0.005	
Potassium	K	2.5	0.06	Nitrate	NO_3	0.7	0.01
Calcium	Ca	91	4.54	Chloride	CI	19	0.54
Magnesium	Mg	52 0	4.28	Sulfate	SO_4	149	3.10
Strontium	Sr	0.91		Alkalinity (as $CaCO_3$)		298	5.96
Arsenic	As	<0 001		Hardness (as $CaCO_3$)		429	8.58
Barium	Ba	0.068					
Beryllium	Be	<0.0005		Total dissolved			
Cadmium	Cd	<0.003		minerals		572	
Chromium	Cr	<0.005					
Cobalt	Co	<0 005					
Copper	Cu	<0.003					
Lead	Pb	<0 005					
Mercury	Hg	<0.00005					
Nickel	Ni	<0.003					
Selenium	Se	<0.001					
Silver	Ag	<0.005					
Vanadium	V	<0 004					
Zinc	Zn	0.182		pH (as rec'd)		7.5	

SOUTH BURDETTE WATER CO.

South Burdette Water Co. (est. 35) is located just southwest of Carol Stream. One well is in use. In 1982 there were 10 services, none metered. The water is not treated.

WELL NO. 1, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), is located outside the residence at 26W319 Burdette Ave., approximately 1250 ft N and 2150 ft W of the SE corner of Section 31, T40N, R10E. The land surface elevation at the well is approximately 765 ft.

No further information on this well is available.

SOUTH GROVE SUBDIVISION

South Grove Subdivision (est. 43), located about 0.5 mile south of Downers Grove, installed a public water supply in 1956. The water system is owned and operated by the Homeowners Association. One well is in use. In 1958 there were 6 services. In 1984 there were 14 services, none metered; the average pumpage was 3680 gpd. The water is chlorinated and fluoridated.

WELL NO. 1, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in September 1955 to a depth of 201 ft by N. L. Arnt, Westmont. The well is located on the north side of 67th Court about 400 ft west of Fairview Ave., approximately 2800 ft S and 400 ft W of the NE corner of Section 20, T38N, R11E. The land surface elevation at the well is approximately 775 ft.

A 6-in. diameter hole was drilled to a depth of 201 ft. The well is cased with 6-in. galvanized pipe from about 1.5 ft above land surface to a depth of 120 ft.

In 1958, the nonpumping water level was reported to be 150 ft.

The pumping equipment presently installed is a Red Jacket submersible pump set at 189 ft, rated at 55 gpm, and powered by a 5-hp electric motor.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B13758) is for a water sample from the well collected September 30, 1976.

WELL NO. 1, LABORATORY NO. B13758

		mg/l	*mc/l*		*mg/l*	*me/l*
Iron	Fe	0.3	Silica	SiO_2	13	
Manganese	Mn	0.02	Fluoride	F	0.4	0.02
Ammonium	NH_4	0.26	0.01 Boron	B	0.2	
Sodium	Na	22	0.96 Cyanide	CN	0.00	
Potassium	K	3.0	0 08 Nitrate	NO_3	2.7	0.04
Calcium	Ca	135	6 74 Chloride	CI	36	1.02
Magnesium	Mg	48	3 96 Sulfate	SO_4	180	3.74
			Alkalinity (as $CaCO_3$)		344	6.88
Arsenic	As	0.00				
Barium	Ba	0.1	Hardness (as $CaCO_3$)		534	10.68
Cadmium	Cd	0.00				
Chromium	Cr	0.00	Total dissolved			
Copper	Cu	0.05	minerals		649	
Lead	Pb	0.00				
Mercury	Hg	0.0002				
Nickel	Ni	0.0				
Selenium	Se	0.00				
Silver	Ag	0.00				
Zinc	Zn	0.9	pH (as rec'd)		7.4	

STEEPLE RUN SUBDIVISION

Steeple Run Subdivision (est. 1700), located about 1 mile southwest of Lisle, installed a public water supply in 1972. The water system is owned and operated by the Du Page County Public Works Department. One well (No. 2) is in use and another well (No. l) is available for emergency use. This supply is also cross connected with the village of Lisle. In 1984 there were 446 services, all metered; the average pumpage was 168,080 gpd. The water is chlorinated, fluoridated, and softened.

WELL NO. 1, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in June 1972 to a depth of 250 ft by the Wehling Well Works, Beecher. This well is available for emergency use. The well is located west of Steeple Run Drive, approximately 160 ft S and 1250 ft E of the NW corner of Section 16, T38N, R10E. The land surface elevation at the well is approximately 725 ft.

A drillers log of Well No. 1 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift and clay	17	17
Gravel	57	74
Lime	106	180
Lime and shale	70	250

An 18-in. diameter hole was drilled to a depth of 10 ft, reduced to 17.5 in. between 10 and 74 ft, and finished 11.9 in. in diameter from 74 to 250 ft. The well is cased with 18-in. black pipe from land surface to a depth of 10 ft and 12.8-in. black pipe from land surface to a depth of 74 ft (cemented in).

A production test was conducted by the driller on July 6, 1972. After 16 hr of pumping at rates ranging from 360 to 220 gpm, the final drawdown was 52 ft from a nonpumping water level of 45 ft below the top

of the casing. Six min after pumping was stopped, full recovery was observed.

After acidizing with 1000 gal of 23 percent acid, a production test was conducted by the driller on August 17, 1972. After 7.8 hr of pumping at rates ranging from 500 to 640 gpm, the final drawdown was 52 ft from a nonpumping water level of 45 ft below the top of the casing. Five min after pumping was stopped, the water level had recovered to 47 ft.

After acidizing again with 1000 gal of 23 percent acid, a production test was conducted by the driller on August 22, 1972. After 7.8 hr of pumping at rates ranging from 620 to 800 gpm, the final drawdown was 48 ft from a nonpumping water level of 45 ft below the top of the casing. Two min after pumping was stopped, the water level had recovered to 47 ft.

In 1977, the nonpumping water level was reported to be 48 ft.

The pumping equipment presently installed consists of a 2-speed 6-cylinder Ford gasoline engine, a 10-in., 6-stage Johnston vertical turbine pump (Serial No. 21697) set at 140 ft, and has 140 ft of 8-in. column pipe. The engine develops 60 hp at 1760 rpm and pumps 600 gpm and develops 75 hp at 1940 rpm and pumps 750 gpm. The well is equipped with 140 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B16603) of a sample collected October 19, 1976, after pumping for 30 min at 500 gpm, showed the water to have a hardness of 406 mg/l, total dissolved minerals of 444 mg/l, and an iron content of 1.0 mg/1.

WELL NO. 2, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in June 1972 to a depth of 116 ft by the Wehling Well Works, Beecher. The well is located on Hyacinth Court, approximately 370 ft S and 2650 ft E of the NW corner of Section 16, T38N, R10E. The land surface elevation at the well is approximately 730 ft.

A drillers log of Well No. 2 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift and clay	17	17
Clay	21	38
Gravel	41	79
Lime	37	116

An 18-in. diameter hole was drilled to a depth of 10 ft, reduced to 17.5 in. between 10 and 87 ft, and finished 11.9 in. in diameter from 87 to 116 ft. The wellis cased with 18-in. black pipe from land surface to a depth of 10 ft and 12.8-in. black pipe from land surface to a depth of 87 ft (cemented in).

A production test was conducted by the driller on July 3, 1972. After 15.8 hr of pumping at rates ranging from 300 to 500 gpm, the maximum drawdown was 52 ft from a nonpumping water level of 48 ft below the top of the casing. Four min after pumping was stopped, the water level had recovered to 57 ft.

After acidizing with 1000 gal of acid, a production test was conducted by the driller on March 12, 1974. After 15.8 hr of pumping at rates ranging from 946.6 to 690 gpm, the maximum drawdown was 22 ft from a nonpumping water level of 50 ft. Two min after pumping was stopped, full recovery was observed.

In 1977, the nonpumping water level was reported to be 60 ft.

In 1981, the well reportedly produced 800 gpm with a drawdown of 14 ft from a nonpumping water level of 63 ft.

In 1982, after pumping at a rate of 800 gpm, the drawdown was 11 ft from a nonpumping water level of 65 ft.

The pumping equipment presently installed consists of a 75-hp General Electric motor (Model No. SK6258XHIA), a 10-in., 5-stage Johnston vertical turbine pump set at 100 ft, rated at 850 gpm at about 236 ft TDH, and has 100 ft of 8-in. column pipe.

The following mineral analysis (Lab. No. 211659) is for a water sample from the well collected August 8, 1979, after 10 min of pumping.

WELL NO. 2, LABORATORY NO. 211659

		mg/l	*me/l*			*mg/l*	*me/l*
Iron(total)	Fe	0.9		Silica	SiO_2	15.8	
Manganese	Mn	0.04		Fluoride	F	0.2	
Ammonium	NH_4	0.1	0.01	Boron	B	0.1	
Sod{am	Na	19.0	0.83	Nitrate	NO_3	0.5	0.01
Potassium	K	1.7	0.04	Chloride	CI	44	1.24
Calcium	Ca	84.0	4.19	Sulfate	SO_4	102	2.12
Magnesium	Mg	45.4	3.73	Alkalinity (as	$CaCO_3$)	272	5.44
Strontium	Sr	0.16	0.00				
				Hardness (as	$CaCO_3$)	396	7.92
Barium	Ba	<0.05					
Cadmium	Cd	0.00		Total dissolved			
Chromium	Cr	0.00		minerals		494	
Copper	Cu	0.05					
Lead	Pb	0.00					
Lithium	Li	0.01		Turbidity	2		
Nickel	Ni	0.00		Color	0		
Silver	Ag	0.00		Odor	0		
Zinc	Zn	0.01		Temp.(reported)	53.5F		

TEE & GREEN SUBDIVISION

Tee & Green Subdivision (est. 65), located at the south edge of Wheaton, installed a public water supply in 1960. The water system is owned and operated by the Tee & Green Homeowners Association. One well is in use. In 1965 there were 17 services; the average pumpage was 5000 gpd. In 1984 there were 17 services, none metered; the average pumpage was 4550 gpd. The water is chlorinated and fluoridated.

WELL NO. 1, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in April 1960 to a depth of 198 ft by the Meadow Equipment Sales & Service, Lombard. The well is located behind the house at 1S515 Bayberry Lane, approximately 1750 ft N and 150 ft W of the SE corner of Section 20, T39N, R10E. The land surface elevation at the well is approximately 735 ft.

A drillers log of Well No. 1 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Glacial till	104	104
Limestone	94	198

An 8-in. diameter hole was drilled to a depth of 198 ft. The well is cased with 8-in. pipe from about 1.5 ft above land surface to a depth of 104 ft. The top of the well casing is equipped with a Martinson pitless adapter.

Upon completion, the well reportedly produced 60 gpm with a drawdown of 1 ft from a nonpumping water level of 35 ft.

On January 13, 1985, the nonpumping water level was reported to be 55 ft.

The pumping equipment presently installed is a Red Jacket submersible pump (Model No. 500T1-10FC) set at 89 ft, rated at about 55 gpm, and powered by a 5-hp Red Jacket electric motor.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B28744) is for **a** water sample from the well collected January 20, 1976, after 30 min of pumping at about 60 gpm.

WELL NO. 1, LABORATORY NO. B28744

		mg/l	*me/l*			*mg/l*	*me/l*
Iron	Fe	1.3		Silica	SiO_2	20	
Manganese	Mn	0.02		Fluoride	F	0.9	0.05
Ammonium	NH_4	0.4	0.02	Boron	B	0.1	
Sodium	Na	16	0.70	Cyanide	CN	0.00	
Potassium	K	1.9	0.05	Nitrate	NO_3	0.1	0.00
Calcium	Ca	85	4.24	Chloride	CI	28	0.79
Magnesium	Mg	69	5.68	Sulfate	SO_4	160	3.33
				Alkalinity (as $CaCO_3$)		332	6.64
Arsenic	As	0.00					
Barium	Ba	0.1		Hardness (as $CaCO_3$)		495	9.90
Cadmium	Cd	0.00					
Chromium	Cr	0.00		Total dissolved			
Copper	Cu	0.00		minerals	587		
Lead	Pb	0.00		pH (as rec'd)	8.1		
Mercury	Hg	0.0000		Radioactivity			
Nickel	Ni	0.0		Alpha *pc/l*	1.6		
Selenium	Se	0.00		± deviation	1.5		
Silver	Ag	0.00		Beta *pc/l*	4.4		
Zinc	Zn	0.1		± deviation	2.1		

TRI-STATE VILLAGE

Tri-State Village (est. 540), located about 4 miles south of Hinsdale, installed a public water supply in 1940. The water system is owned and operated by the Tri-State Village Improvement Association. Two wells (Nos. 1 and 3) are in use. In 1956 there were 80 services, none metered. In 1983 there were 180 services, none metered; the average pumpage in 1984 was 60,200 gpd. The water is chlorinated and fluoridated.

WELL NO. 1, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was constructed in 1940 to a depth of 200 ft by William J. Wenz, Lyons, and decpened in June 1964 to a reported depth of 306 ft by Gene F. Vineyard, Hinsdale. The well is located immediately south of the fire station on the west side of Sunrise Ave. about one-half block north of Central St., approximately 1850 ft N and 1925 ft E of the SW corner of Section 35, T38N, R11E. The land surface elevation at the well is approximately 730 ft.

A drillers log of Well No. 1 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Black soil	1.5	1.5
Clay, yellow	60	61.5
Clay, blue	20	81.5
Sand, fine	18	99.5
Sand and gravel, mixed	12	111.5
Shale, bard, dry, gray or hardpan with a lot of pebbles mixed in	18.5	130
Bedrock	70	200
No record	106	306

Originally, a 6-in. diameter hole was drilled to a depth of 200 ft. The well was originally cased with 6-in. galvanized pipe from about 1.5 ft above the pump-house floor to a depth of 110 ft. No details on the hole and casing records after deepening are available.

Nonpumping water levels before deepening were reported to be 59 ft on May 5, 1958, and 95 ft in October 19G2.

The pumping equipment presently installed is a Jacuzzi turbine pump set at 150 ft, rated at 150 gpm, and powered by a 15-hp electric motor. The well is equipped with 150 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B29851) of a sample collected January 7, 1979, after pumping for 2 hr at 125 gpm, showed the water to have a hardness of 500 mg/l, total dissolved minerals of 630 mg/l, and an iron content of 0.71 mg/1.

WELL NO. 2, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in 1941 to a depth of 206 ft by William J. Wenz, Lyons. This well was abandoned and sealed in 1964. The well was located at the northeast corner of Highland Road and Sunrise Ave. about 1200 ft southwest of Well No. 1, approximately 750 ft N and 1600 ft E of the SW corner of Section 35, T38N, R11E. The land surface elevation at the well is approximately 727 ft.

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

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
Glacial Drift		
Black soil	1	1
Clay, yellow	60	61
Clay, blue	20	81
Sand, fine	18	99
Sand and gravel, mixed	12	111
Hardpan, pebbly	25	136
SILURIAN SYSTEM		
Niagaran Series		
Dolomite	70	206

A 6-in. diameter hole was drilled to a depth of 206 ft. The well was cased with 6-in. galvanized pipe from about 1.5 ft above land surface to an unknown depth.

In October 1962, the nonpumping water level was reported to be 95 ft.

A partial analysis of a sample (Lab. No. 138558) collected in September 1955, showed the water to have a hardness of 384 mg/1, total dissolved minerals of 447 mg/1, and an iron content of 1.7 mg/1.

WELL NO. 3, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in 1966 to a depth of 330 ft by Gene F. Vineyard, Hinsdale. The well is located at the northeast corner of Sunrise Ave. and Highland Road, approximately 700 ft N and 1550 ft E of the SW corner of Section 35, T38N, R11E. The land surface elevation at the well is approximately 727 ft.

A drillers log of Well No. 3 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Top soil	3	3
Yellow clay	32	35
Gravel and sand	10	45

Strata	Thickness (Jt)	Depth (ft)
Sandy blue clay	85	130
Gravel and broken limestone	11	141
Limestone	184	325
Shale	5	330

An 8-in. diameter hole was drilled to a depth of 330 ft. The well is cased with 8-in. ID steel pipe from about 1.2 ft above the wellhouse floor to a depth of 136 ft.

Upon completion, the well reportedly produced 150 gpm with a drawdown of 8 ft from a nonpumping water level of 110 ft.

In October 1971, the nonpumping water level was reported to be 110 ft.

The pumping equipment presently installed is a Jacuzzi turbine pump set at 150 ft, rated at 150 gpm at about 300 ft TDH, and powered by a 15-hp 1760 rpm General Electric motor.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B040125) is for a water sample from the well collected March 30, 1982.

WELL NO. 3, LABORATORY NO. B040125

		mg/l	me/l		mg/l	me/l
Iron	Fe	098	Silica	SiO_2	17	
Manganese	Mn	<0.005	Fluoride	F	0.50	0.03
Ammonium	NH_4	0.9	0 05 Boron	B	0.25	
Sodium	Na	25	1 09 Cyanide	CN	<0 005	
Potassium	K	3.9	0 10 Nitrate	NO_3	<0 4	
Calcium	Ca	121	6 04 Chloride	CI	19	0.54
Magnesium	Mg	48 6	4 00 Sulfate	SO_4	145	3 02
Strontium	Sr	1.20	Alkalinity (as $CaCO_3$)		387	7.74
Arsenic	As	0.004	Hardness (as $CaCO_3$)		502	10.04
Barium	Ba	0.029				
Ben-Ilium	Be	<0.0005	Total dissolved			
Cadmium	Cd	<0.003	minerals		644	
Chromium	Cr	<0 005				
Cobalt	Co	<0 005				
Copper	Cu	<0 003				
Lead	Pb	<0 005				
Mercury	Hg	<0 00005				
Nickel '	Ni	<0 003				
Selenium	Se	<0 001				
Silver	Ag	<0 005				
Vanadium	V	<0 004				
Zinc	Zn	0.005	pH (as rec'd)		7.3	

VILLA PARK

The village of Villa Park (23,185) installed a public water supply in 1913. Originally, the village obtained its water supply from private companies. Five wells (Nos. 1, 2, 7, 8, and 10) are in use and two wells (Nos. 3 and 4) are available for emergency use. This supply is also cross connected with the city of Elmhurst and the village of Lombard. In 1950 there were 2100 services; the estimated average and maximum pumpages were 630,000 and 830,000 gpd, respectively. In 1984 there were 6760 services, all metered; the average pumpage was 2,121,400 gpd. The water is chlorinated; in addition, the water from Well Nos. 3 and 4 is fluoridated, and the water from Well Nos. 2, 3, 4, and 7 is treated with polyphosphate to keep iron in solution.

A well, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed to a depth of 150 ft. Water from this well was purchased from the Du Page County Water Works Co. until the village acquired the well on December 1, 1938. This well was abandoned in 1924 and sealed after December 1938. The well was located about 100 ft south of East Park Blvd. and 162 ft east of Ardmore Ave., approximately 2320 ft S and 162 ft E of the NW corner of Section 10, T39N, R11E. The well was cased to a depth of 58 ft.

A well, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed to a depth of 125 ft. Water from this well was purchased from John R. Robertson until 1921 when the Du Page County Water Works Co. acquired it. Water was purchased from the Water Works Co. until 1924 when it was abandoned. This well was sealed after December 1938. The well was located about 185 ft south of Maple St. and 42 ft west of North Summit Ave., approximately 1900 ft N and 1350 ft E of the SW corner of Section 3, T39N, R11E. The well was cased with 4-in. pipe to an unknown depth.

A well was completed for the village in 1924 to a depth of 401 ft by the J. P. Miller Artesian Well Co.,

Brookfield. This well was abandoned in 1932 and sealed after July 1949. The water-yielding units in this well were dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well was located about 100 ft north of Home Ave. and 135 ft west of Ardmore Ave., approximately 250 ft S and 135 ft W of the NE corner of Section 9, T39N, R11E. The well was cased with 12-in. wrought iron pipe to a depth of 76 ft and had a liner from 256 ft to a depth of about 316 ft. Upon completion, the well reportedly produced 200 gpm for 18 hr with a drawdown of 46 ft from a nonpumping water level of 30 ft.

A well, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed for the village in 1924 to a depth of 200 ft by the J. P. Miller Artesian Well Co.. Brookfield. This well was abandoned in 1932 and sealed after July 1949. The well was located about 65 ft southwest of the 401-ft deep well, approximately 300 ft S and 190 ft W of the NE corner of Section 9, T39N, R11E. The well was cased with 12-in. wrought iron pipe to an unknown depth.

WELL NO. 1 was completed in November 1928 to a depth of 1912 ft (plugged back to 1441 ft in 1956) by the S. B. Geiger & Co., Chicago. The water-yielding unit in this well after it was plugged back to 1441 ft is the Midwest Aquigroup (Cambrian-Ordovician aquifer). The well also penetrates the upper part of the Eau Claire Formation. Water from this well was purchased from the S. B. Geiger & Co. until the village acquired the well on December 1, 1938. The well is located on the north side of West Home Ave. west of Ardmore Ave., approximately 250 ft S and 415 ft W of the NE corner of Section 9, T39N, R11E. The land surface elevation at the well is approximately 694 ft.

A correlated drillers log of Well No. 1 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
Glacial drift	71	71
SILURIAN SYSTEM		
Niagaran and Alexandrian Series		
"Niagaran" limestone, water	139	210
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Shale and limestone	210	420
Champlainian Series		
Galena and Platteville Groups		
Limestone	330	750
Ancell Group		
St. Peter Sandstone		
Sandstone, water	305	1055
Shale	15	1070
CAMBRIAN SYSTEM		
Croixan Series		
Potosi Dolomite		
"Limestone"	25	1095
Franconia Formation		
Red shale	160	1255
Ironton-Galesville Sandstone		
Sandstone, water	170	1425
Eau Claire Formation		
Limestone	15	1440
Shale	170	1610
Limestone	70	1680
Shale	10	1690
Limestone	25	1715
Shale	20	1735
Sandstone (probably tight)	80	1815
Mt. Simon Sandstone		
Sandstone, water	85	1900
Sandstone, red, water	12	1912

A 22-in. diameter hole was drilled to a depth of 76 ft, reduced to 20 in. between 76 and 445 ft, reduced to 15 in. between 445 and 1095 ft, reduced to 12 in. between 1095 and 1165, and finished 10 in. in diameter from 1165 to 1912 ft. The well is cased with 22-in. pipe from land surface to a depth of 76 ft and 20-in. pipe from about 1.5 ft above land surface to a depth of 445 ft. In 1968, a new 10-in. liner was installed from 965 ft to a depth of 1250 ft. The top of the casing is equipped with a Baker pitless adapter.

Upon completion, the nonpumping water level was reported to be 42 ft below land surface.

In 1948, this well was rehabilitated and cleaned to a depth of 1400 ft by the Layne-Western Co., Aurora. On July 23, 1948, the nonpumping water level was reported to be 214 ft.

In 1951, this well was cleaned to a depth of 1441 ft by the Layne-Western Co. On September 21, 1951, the nonpumping water level was reported to be 402 ft.

In 1955, this well was rehabilitated and cleaned out to 1400 ft by the Layne-Western Co. In September 1955, after 1 hr of pumping at a rate of 602 gpm, the drawdown was 72 ft from a nonpumping water level of 490 ft.

In 1956, this well was plugged at a depth of 1441 ft by the Layne-Western Co.

In May 1959, the nonpumping water level was reported to be 534 ft.

In May 19G0, the well reportedly produced 675 gpm with a drawdown of 68 ft from a nonpumping water level of 558 ft.

On February 8, 1963, the nonpumping water level was reported to be 597 ft.

On June 19, 1964, after pumping at a rate of 500 gpm, the drawdown was 95 ft from a nonpumping water level of 610 ft.

In July 1966 and November 1967, the nonpumping water level was reported to be 640 ft.

In 1968, the Layne-Western Co. installed a new 10-in. liner.

In April 1969, the nonpumping water level was reported to be 670 ft.

A production test was conducted by the Layne-Western Co. on April 26, 1979. After 2.8 hr of pumping at rates ranging from 572 to 596 gpm, the final drawdown was 88 ft from a nonpumping water level of 795 ft. During this test, Well No. 2 was operating.

In 1981, the nonpumping water level was reported to be 830 ft.

On January 30, 1985, the well reportedly produced 540 gpm for 5 hr with a drawdown of 63 ft from a nonpumping water level of 865 ft.

A production test was conducted by the Layne-Western Co. on April 24, 1985. After 2.3 hr of pumping at rates of 580 to 652 gpm, the drawdown was 48 ft from a nonpumping water level of 887 ft. During this test, Well No. 2 was pumping intermittently.

The pumping equipment presently installed consists of a 200-hp 1800 rpm Byron Jackson electric motor, a 10-in., 21-stage Byron Jackson submersible turbine pump (Serial No. 731-C-0059) set at 1017 ft, rated at 600 gpm at about 1035 ft TDH, and has 1008 ft of 6-in. column pipe. The well is equipped with 1017 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B39956) of a sample collected March 12, 1980, after pumping for 2 hr, showed the water to have a hardness of 335 mg/l, total dissolved minerals of 593 mg/1, and an iron content of 0.26 mg/1.

WELL NO. 2 was completed in August 1931 to a depth of 2125 ft (reported to be 2100 ft deep in February 1954 and 1605 ft in 1973) by the S. B. Geiger & Co., Chicago. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer). The well also penetrates the upper part of the Eau Claire Formation. Water from this well was purchased from the S. B. Geiger & Co. until the village acquired the well on December 1, 1938. The well is located on the north side of West Home Ave. west of Yale Ave., approximately 250 ft S and 800 ft W of the NE corner of Section 9, T39N, R11E. The land surface elevation at the well is 699.4 ft.

Reliable information on the hole and casing records is not available. It is possible that the hole record is as follows: 20 in. in diameter from land surface to a depth of 108 ft, 19-in. from 108 to 434 ft, 15 in. from 434 to 1116 ft, 12 in. from 1116 to 1262 ft, and 10 in. from 1262 to 1463 ft. No information is available below 1463 ft. The casing record may be as follows: 20-in. pipe from land surface to a depth of 97 ft, 16-in. pipe from land surface to a depth of 108 ft (cemented in), 16-in. liner from 188 ft to a depth of 434 ft, 12-in. liner from 1050 ft to a depth of 1116 ft, and 10-in. liner from 1170 ft to a depth of 1262 ft.

Nonpumping water levels were reported to be 64 ft in 1931; 330 ft in September 1942; 343 ft in 1945; and 363 ft on May 21, 1947.

In 1952, the nonpumping water level was reported to be 347 ft. After 2.5 hr of pumping at a rate of 350 gpm, the well broke suction at a pumping water level of 467 ft. The well was then cleaned to a depth of 2104 ft by the Layne-Western Co., Aurora, and then electric logged by Schlumberger. The nonpumping water level was then reported to be 339 ft. The well was shot with 766 lb of 100 percent nitrogel and 15 lb of 60 percent gelatin dynamite at depths of 2080, 2060, 2025, 2000, 1980, 1940, 1910, 1880, 1380, and 1350 ft. On September 2, 1952, the well reportedly produced 421 gpm for 6 hr with a drawdown of 146 ft from a nonpumping water level of 320 ft.

Nonpumping water levels were reported to be 420 ft in February 1954, 480 ft in 1956, 496 ft in 1957, 514 ft in May 1958, 528 ft in May 1959, and 552 ft in May 1960.

In May 1961, after pumping at a rate of 844 gpm, the drawdown was 107 ft from a nonpumping water levei of 558 ft.

Nonpumping water levels were reported to be 585 ft in May 1962; 592 ft on February 8, 1963; 620 ft on June 11, 1965; 640 ft in July 1966; and 624 ft in November 1967.

In April 1969, the well reportedly produced 600 gpm with a drawdown of 56 ft from a nonpumping water level of 640 ft.

In March 1973, the hole was reported to be open to 1605 ft. The Layne-Western Co. installed a 10-in. slotted liner and shot the well with directional charges (2 per ft) between 1300 and 1400 ft.

Nonpumping water levels were reported to be 665 ft on March 26, 1973; 726.4 ft on December 9, 1976; 770 ft on June 23, 1977; 780 ft in 1981; and 799 ft in 1982.

On January 16, 1985, the well reportedly produced 837 gpm for 6 hr with a drawdown of 130 ft from a nonpumping water level of 830 ft.

The pumping equipment presently installed consists of a 450-hp U. S. electric motor, a 10-in., 21-stage Peerless turbine pump set at 1050 ft, rated at 800 gpm at about 800 ft TDH, and has 1050 ft of 8-in. column pipe. The well is equipped with 1050 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B0011323) of a sample collected March 27, 1972, after pumping for 2 hr at 550 gpm, showed the water to have a hardness of 188 mg/l, total dissolved minerals of 630 mg/l, and an iron content of 0.25 mg/1.

WELL NO. 3 was completed in 1919 to a depth of 285 ft (reported to be 214 ft deep in March 1946 and 202 ft deep in 1955) by Mr. Eckert, Elmhurst. Water from this well was purchased from the Du Page County Water Works Co. until the village acquired the well on December 1, 1938. This well is available for emergency use. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located about 250 ft east of Ardmore Ave. and 300 ft north of Highland Ave., approximately 2411 ft S and 250 ft E of the NW corner of Section 10, T39N, R11E. The land surface elevation at the well is approximately 702 ft.

The well is cased with 8-in. pipe from about 0.7 ft above land surface to an unknown depth.

In March 1946, the nonpumping water level was reported to be 55.5 ft below the pump base.

On May 22, 1947, the well reportedly produced about 150 gpm for 5 hr with a drawdown of 59 ft from a nonpumping water level of 55 ft below the pump base.

In April 1948, this well was acidized with 1500 gal of 15 percent HCl by the Layne-Western Co., Aurora. After the treatment, the production rate was 257 gpm when Well No. 4 was in operation. The production rate was 369 gpm when Well No. 4 was not operating. The nonpumping water level in Well No. 3 was reported to be 55 ft.

On March 10, 1955, after pumping at a rate of 500 gpm, the drawdown was 69.5 ft from a nonpumping water level of 57.5 ft.

Nonpumping water levels were reported to be 44 ft in May 1958, 55 ft in 1960, and 65 ft in 1961.

In 1962, after pumping at a rate of 450 gpm, the drawdown was 73 ft from a nonpumping water level of 62 ft.

In June 1964, this well was acidized with 500 gal of HC1 by the Layne-Western Co. The well was then pumped at a rate of 450 gpm and the pumping water level was 135 ft.

Nonpumping water levels were reported to be 62 ft in July 1965, 59 ft in July 1966, and 55 ft in November 1967.

In July 1968, after pumping at a rate of 190 gpm, the drawdown was 13 ft from a nonpumping water level of 48 ft. This well was then acidized with 1000 gal of 15 percent HC1 by the Layne-Western Co. The well then reportedly produced 440 gpm with a drawdown of 19 ft from a nonpumping water level of 48 ft.

Nonpumping water levels were reported to be 45 ft in 1969, and 54 ft in 1970.

In 1971, after pumping at a rate of 400 gpm, the drawdown was 60 ft from a nonpumping water level of 55 ft.

In March 1978, this well was acidized with 200 gal of concentrated HC1 and 4000 gal of treating acid.

On April 5, 1978, the well reportedly produced 500 gpm for 5.5 hr with a drawdown of 17 ft from a nonpumping water level of 53 ft.

A production test was conducted by the Layne-Western Co. on May 1, 1979. After 30 min of pumping at rates of 503 to 495 gpm, the final drawdown was 13 ft from a nonpumping water level of 65 ft (Well No. 4 idle).

In 1981, the nonpumping water level was reported to be 105 ft.

The pumping equipment presently installed consists of a 50-hp 1800 rpm U. S. electric motor, an 8-in., 11-stage Peerless turbine pump set at 160 ft, rated at 460 gpm, and has 160 ft of 6-in. column pipe. The well is equipped with 160 ft of airline.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B039750)

is for a water sample from the well collected March 25, 1982.

WELL NO. 8, LABORATORY NO. B030750

		mg/l	*me/l*			*mg/l*	*me/l*
Iron	Fe	1 20		Silica.	SiO_2	17	
Manganese	Mn	0 032		Fluoride	F	0 26	0.01
Ammonium	NH_4	0.4	0 02	Boron	B	**0.14**	
Sodium	Na	17	0.74	Cyanide	CN	<0.005	
Potassium	K	3 3	0 08	Nitrate	NO_3	<0.4	
Calcium	Ca	141	7.04	Chloride	CI	28	0.79
Magnesium	Mg	60.6	4.99	Sulfate	SO_4	212	**4.41**
Strontium	Sr	0.66		Alkalinity (as $CaCO_3$)		400	8 00
Arsenic	As	0.001		Hardness (as $CaCO_3$)		596	11.92
Barium	Ba	0.079					
Beryllium	Be	<0.0005		Total dissolved			
Cadmium	Cd	<0.003		minerals		750	
Chromium	Cr	<0.005					
Cobalt	Co	0.006					
Copper	Cu	<0.003					
Lead	Pb	<0 005					
Mercury	Hg	<0 00005					
Nickel	Ni	<0.003					
Selenium	Se	<0 001					
Silver	Ag	<0.005					
Vanadium	V	<0.004					
Zinc	Zn	0.017		pH (as reed) 7 1			

WELL NO. 4 was completed in September 1923 to a depth of 251 ft (cleaned to a depth of 212 ft in 1955) by J. D. Palmer. Chicago. Water from this well was purchased from the Du Page County Water Works Co. until the village acquired the well on December 1. 1938. This well is available for emergency use. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located about 40 ft southeast of Well No. 3. approximately 2450 ft S and 262 ft E of the NW corner of Section 10. T39N. RUE. The land surface elevation at the well is approximately 702 ft.

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

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
Soil, silty. dark brown	1.5	1.5
Till, calcareous, gravelly, yellow to brownish gray	36.5	38
SILURIAN SYSTEM		
Niagaran and Alexandrian Series		
Dolomite, white, fine, slightly cherty at base	82	120
Dolomite, very light brownish gray, faint green and pink tint, fine little shale, light green weak at base	35	155
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Shale, dolomitic, pink to light green, weak; little dolomite, light gray, pink, green and yellow	20	175
Shale, dolomitic, gray, dark specks weak; little dolomite, argillaceous, gray to dark brownish gray, fine	45	220
No record	31	251

The well is cased with 12-in. pipe from about 1.2 ft above land surface to a depth of 58 ft. In February 1955, the well was reamed 8 in. in diameter from about 58 to 180 ft and 6 in. from 180 to 212 ft.

Upon completion, the nonpumping water level was reported to be 40 ft below land surface.

In 1925. the well reportedly produced 185 gpm with a drawdown of 1.5 ft from a nonpumping water level of 40.0 ft below the pump base.

On April 6, 1948, this well was acidized with 1500 gal of 15 percent HC1 by the Layne-Western Co., Aurora. After the treatment, the production rate was 176 gpm and the pumping water level was 96 ft when Well No. 3 was in operation. One hr after pumping was stopped. the water level had recovered to 60 ft (No. 3 still in operation).

In February 1955. this well was reamed out by the Layne-Western Co. and cleaned to a depth of 212 ft. The well was then acidized with 750 gal of 15 percent HCl. The well then reportedly produced 500 gpm with a drawdown of 4.0 ft from a nonpumping water level of 57.5 ft.

In May 1958. the nonpumping water level was reported to be 54 ft.

In August 1958. the well reportedly produced 425 gpm for 1 hr with a drawdown of 25.0 ft from a nonpumping water level of 42.6 ft.

A production test was conducted by the State Water Survey on May 14. 1959. After 3.5 hr of pumping at a rate of 425 gpm, the drawdown was 23 ft from a nonpumping water level of 53 ft below the pump base. One hr after pumping was stopped, the water level had recovered to 54 ft.

In 1960, the well reportedly produced 350 gpm with a drawdown of 33 ft from a nonpumping water level of 55 ft.

Nonpumping water levels were reported to be 75 ft in 1961, 54 ft in 1962, and 65 ft in 1963.

In 1964, this well was acidized with 500 gal of HC1 by the Layne-Western Co. On June 15, 1964, the well reportedly produced 120 gpm with a drawdown of 8 ft from a nonpumping water level of 58 ft.

Nonpumping water levels were reported to be 65 ft in July 1965, 59 ft in July 1966, and 59 ft in November 1967.

In June 1968, this well was acidized with 1000 gal of 15 percent HC1. The well then reportedly produced 434 gpm with a drawdown of 10 ft from a nonpumping water level of 60 ft.

Nonpumping water levels were reported to be 48 ft in 1969, 52 ft in 1970, and 53 ft in 1971.

In March 1978, this well was acidized with 200 gal of concentrated HC1 and 4000 gal of treating acid.

Nonpumping water levels were reported to be 109 ft on August 14, 1979, and 105 ft in 1981.

The pumping equipment presently installed consists of a 50-hp 1800 rpm U. S. electric motor, an 8-in., 14-stage Layne turbine pump (No. 29787) set at 160 ft, rated at 400 gpm at about 300 ft TDH, and has 160 ft of 5-in. column pipe. A 10-ft section of 6-in. suction pipe is attached to the pump intake.

The following mineral analysis (Lab. No. 211681) is for a water sample from the well collected August 14, 1979, after 15 min of pumping.

WELL NO. 4, LABORATORY NO. 211681

		mg/l	*me/l*			*mg/l*	*me/l*
Iron(total)	Fe	2.2		Silica	SiO_2	17.2	
Manganese	Mn	0.01		Fluoride	F	0.3	
Ammonium	NH_4	0.3	0.02	Boron	B	0.2	
Sodium	Na	19.5	0.85	Nitrate	NO_3	1.6	0.03
Potassium	K	2.9	0.07	Chloride	CI	27	0.76
Calcium	Ca	108	5.39	Sulfate	SO_4	197	4.10
Magnesium	Mg	57.0	4.69	Alkalinity (as $CaCO_3$)		302	6.04
Strontium	Sr	0.68	0 02				
				Hardness (as $CaCO_3$)		504	10.08
Barium	Ba	<0.05					
Cadmium	Cd	0.00		Total dissolved			
Chromium	Cr	0.00		minerals		607	
Copper	Cu	0.01					
Lead	Pb	0.00					
Lithium	Li	0.02		Turbidity	7		
Nickel	Ni	0.00		Color	0		
Silver	Ag	0.00		Odor	0		
Zinc	Zn	0.00		Temp.(reported)	54.5F		

WELL NO. 5 was completed in 1930 (reported to be 235 ft deep in January 1944 and cleaned to 232 ft in November 1954). Water from this well was purchased from the Du Page County Water Works Co. until the village acquired the well on December 1, 1938. This well was abandoned and sealed in 1957. The water-yielding units in this well were dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well was located near the northwest corner of Princeton Ave. and Plymouth St., approximately 2050 ft S and 650 ft W of the NE corner of Section 4, T39N, R11E. The land surface elevation at the well is approximately 703 ft.

The well was cased with 12-in. pipe to an unknown depth. In 1955, 90 ft of 10-in. casing was installed.

In January 1944, the well reportedly produced 220 gpm with a drawdown of 3 ft from a nonpumping water level of 33 ft below the pump base.

In November 1954, after pumping at a rate of 175 gpm, the drawdown was 101.0 ft from a nonpumping water level of 30.5 ft. The well was then cleaned to a depth of 232 ft by the Layne-Western Co., Aurora, and acidized with 1500 gal of 15 percent HC1 by the Dowell Co., Chicago Heights. The acid built up 55 lb pressure and after 5 min forced its way out of the well at the land surface. The production was reported to be only 200 gpm after this work with a nonpumping water level of 30.4 ft. A new casing was then installed. The well was acidized again with 750 gal of acid. The well then reportedly produced 195 gpm with a drawdown of 30 ft from a nonpumping water level of 38 ft.

A partial analysis of a sample (Lab. No. 110372) collected May 21, 1947, after pumping for 20 min at 200 gpm, showed the water to have a hardness of 366 mg/l, total dissolved minerals of 396 mg/l, and an iron content of 0.5 mg/l.

WELL NO. 6 is a booster pump and does not exist as a water well.

WELL NO. 7 was completed in August 1956 to a depth of 1420 ft (reported to be 1380 ft deep in 1985) by the Layne-Western Co., Aurora. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer). The well also penetrates the upper part of the Eau Claire Formation. The well is located on the west side of North Princeton Ave. north of Plymouth St., approximately 2050 ft S and 550 ft W of the NE corner of Section 4, T39N, R1lE. The land surface elevation at the well is 702.8 ft.

A summary sample study log of Well No. 7 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		

Strata	Thickness (ft)	Depth (ft)
Pleistocene Series		
Till, gravelly, sandy, grayish-buff	64	64
SILURIAN SYSTEM		
Niagaran Series		
Dolomite, partly cherty, white, buff, pink, fine to very fine, crystalline, some vuggy porosity in upper 16 ft, little shale	76	140
Alexandrian Series		
Kankakee Dolomite		
Dolomite, slightly glauconitic, white, buff, fine to very fine, crystalline	35	175
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Shale, silty to very silty, partly dolomitic, grayish green, little firm, brittle, weak, little tough; dolomite, partly very silty, gray, brown, fine, medium, crystalline	215	390
Champlainian Series		
Galena Group		
Dolomite, buff, white, fine to medium, crystalline, slightly cherty (595 to 605 ft)	230	620
Platteville Group		
Dolomite, buff, gray, fine to very fine, crystalline to granular, slightly sandy at base; limestone (663 to 695 ft)	100	720
Ancell Group		
Glenwood Formation		
Sandstone, dolomitic to slightly dolomitic, gray, white, fine, medium to coarse, incoherent, little compact, little slightly clayey	110	830
St. Peter Sandstone		
Sandstone, partly slightly silty, little slightly argillaceous, white, gray, buff, fine to medium, little coarse, incoherent, very cherty at base	170	1000
Canadian Series		
Prairie du Chien Group		
Oneota Dolomite		
Dolomite, cherty, argillaceous, buff, white; little shale; little sandstone	40	1040
CAMBRIAN SYSTEM		
Croixan Series		
Potosi Dolomite		
Dolomite, cherty, slightly sandy, slightly glauconitic, buff, white, fine to very fine, crystalline; shale, green, incoherent to brittle; sandstone, buff, white, medium to coarse, firm, compact, incoherent	93	1133
Franconia Formation		
Sandstone, glauconitic to very glauconitic, dolomitic, brownish to buff, gray, fine, medium, very fine, compact; little shale; little dolomite	82	1215
Ironton-Galesville Sandstone		
Sandstone, partly silty, dolomitic, white, coarse to very coarse, fine to medium, incoherent, compact	175	1390
Eau Claire Formation		
Sandstone, glauconitic to very glauconitic, dolomitic, buff, fine to very fine, compact; little shale	30	1420

A 26-in. diameter hole was drilled to a depth of 67 ft, reduced to 24 in. between 67 and 401 ft, reduced to 19 in. between 401 and 1136 ft, and finished 15.2 in. in diameter from 1136 to 1420 ft. The well is cased with 26-in. drive pipe from about 1 ft above land surface to a depth of 67 ft, 20-in. OD pipe from about 1 ft above land surface to a depth of 401 ft (cemented in), and a 16-in. liner from 972.5 ft to a depth of 1136 ft.

Upon completion, this well was shot with 250 lb ol nitrogel. The shot caused the liner to collapse with its top settled down to about 1040 ft. The liner was then repaired and 4 shots (250 lb each) were exploded between 1350 and 1240 ft.

A production test was conducted by the driller on October 25-26, 1956. After 24 hr of pumping at rates ranging from 934 to 812 gpm, the final drawdown was 124 ft from a nonpumping water level of 476 ft below the top of the casing. After this test, about 75 ft of sand was removed.

A second production test was conducted by the driller on November 5-6, 1956. After 24 hr of pumping at rates ranging from 982 to 824 gpm, the final drawdown was 106 ft from a nonpumping water level of 490 ft below the top of the casing. Six ft of sand was found in the well following this test.

Nonpumping water levels were reported to be 512 ft on August 13, 1957; 587 ft in May 1962; and 604 ft on February 8, 1963.

On June 15, 1964, the well reportedly produced 1000 gpm with a drawdown of 63 ft from a nonpumping water level of 670 ft.

Nonpumping water levels were reported to be 624 ft on June 11, 1965; 670 ft in July 1966; and 760 ft in November 1967.

In April 1969, after pumping at a rate of 1000 gpm, the drawdown was 72 ft from a nonpumping water level of 708 ft.

In 1981, the nonpumping water level was reported to be 828 ft.

On February 5, 1985, the well reportedly produced 759 gpm for 20 hr with a drawdown of 105 ft from a nonpumping water level of 843 ft.

A production test was conducted by the driller on July 17, 1985. After 4.2 hr of pumping at rates ranging from 742 to 699 gpm, the drawdown was 115 ft from a nonpumping water level of 890 ft.

The pumping equipment presently installed is an 11-in., 20-stage Layne turbine pump (Serial No. 103298) set at 1125 ft, rated at 750 gpm at about 1100 ft TDH, and powered by a 400-hp U. S. electric motor. The well is equipped with 1125 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B32254) of a sample collected January 30, 1978, after pumping for 6 hr at about 1050 gpm, showed the water to have a hardness of 267 mg/l, total dissolved minerals of 408 mg/l, and an iron content of 0.1 mg/1.

WELL NO. 8 was completed in February 1964 to a depth of 1485 ft (reported to be 1426 ft deep in 1985) by the Layne-Western Co., Aurora. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer). The well also penetrates the upper part of the Eau Claire Formation. The well is located on the west side of Ardmore Ave. about 760 ft north of Roosevelt Road, approximately 760 ft N and 150 ft W of the SE corner of Section 16, T39N, RUE. The land surface elevation at the well is approximately 705 ft.

A drillers log of Well No. 8 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Clay mixed with some gravel	82	82
Sand and gravel	19	101
Limestone	115	216
Limestone with streaks of shale	10	226
Limestone - very hard	29	255
Shale	61	316
Limestone - very hard	45	361
Limestone with streak of shale	14	375
Shale	65	440
Limestone with streak of shale	7	447
Limestone	333	780
Sandstone	292	1072
Shale	30	1102
Shale with streak of limestone (caves)	10	1112
Limestone	42	1154
Lime with streaks of shale	9	1163
Limestone	7	1170
Real shale and limestone	26	1196
Limestone with green shale	84	1280
Sandy limestone	5	1285
Sandstone	188	1473
Limestone	12	1485

A 25-in. diameter hole was drilled to a depth of 457 ft, reduced to 19.2 in. between 457 and 1112 ft, reduced to 17.2 in. between 1112 and 1191 ft, and finished 15.2 in. in diameter from 1191 to 1485 ft. The well is cased with 26-in. pipe from about 1.5 ft above land surface to a depth of 101 ft, 20-in. pipe from about 1.5 ft above land surface to a depth of 457 ft (cemented in), 18-in. liner from 1057.6 ft to a depth of 1112 ft, and a 16-in. liner from 1079 ft to a depth of 1217 ft.

Upon completion, this well was shot with 100 percent SNG as follows: 150 lb at 1470 ft, 150 lb at 1440 ft, 150 lb at 1410 ft, 200 lb at 1380 ft, 150 lb at 1350 ft, and 100 lb at 1320 ft.

A production test was conducted by the driller on February 5-6, 1964. After 24 hr of pumping at rates ranging from 508 to 1200 gpm, the maximum drawdown was 98 ft from a nonpumping water level of 585 ft below land surface. The water level recovered to 605 ft after pumping had been stopped for 1.2 hr.

Nonpumping water levels were reported to be 620 ft in July 1966, 696 ft in November 1967, and 640 ft in April 1969.

On March 17, 1976, the well reportedly produced 1000 gpm with a drawdown of 63 ft from a nonpumping water level of 733 ft.

On March 2, 1977, the nonpumping water level was reported to be 760 ft.

On February 5, 1985, after 7 hr of pumping at a rate of 814 gpm, the drawdown was 45 ft from a nonpumping water level of 865 ft.

A production test was conducted by the driller on April 2, 1985. After 3 hr of pumping at rates ranging from 1066 to 1142 gpm, the drawdown was 72 ft from a nonpumping water level of 858 ft. During this test, Well No. 10 was operating.

The pumping equipment presently installed is a 13-in., 14-stage Byron Jackson submersible pump (Serial No. 731-C-0089) set at 1053 ft, rated at 1000 gpm at about 998 ft TDH, and powered by a 350-hp 1800 rpm Byron Jackson electric motor. The well is equipped with 1053 ft of airline.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B039303) is for a water sample from the well collected March 23, 1982.

WELL NO. 8, LABORATORY NO. B039303

		mg/l	*me/I*			*mg/l*	***me/I***
Iron	Fe	0 089		Silica	SiO_2	7.1	
Manganese	Mn	0011		Fluoride	F	1.08	0.06
Ammonium	NH_4	0.6	0 03	Boron	B	0.41	
Sodium	Na	40	1.74	Cyanide	CN	<0.00S	
Potassium	K	15.0	0.38	Nitrate	NO_3	<0.4	
Calcium	Ca	69	3.44	Chloride	CI	13	0.37
Magnesium	Mg	19.4	1.60	Sulfate	SO_4	63	1.31
Strontium	Sr	2.92		Alkalinity (as $CaCO_3$)		285	5.70
Arsenic	As	<0.001		Hardness (as $CaC0_3$)		262	5.24
Barium	Ba	0 065					
Beryllium	Be	<0 0005		Total dissolved			
Cadmium	Cd	<0.003		minerals		391	
Chromium	Cr	<0.00S					
Cobalt	Co	<0.005					
Copper	Cu	<0.003					
Lead	Pb	<0.005					
Mercury	Hg	<0.00005					
Nickel	Ni	<0.003					
Selenium	Se	<0 001					
Silver	Ag	<0.005					
Vanadium	V	<0.004					
Zinc	Zn	0.003		pH (as rec'd) 7.3			

WELL NO. 9 was completed in September 1967 to a depth of 190 ft by the Layne-Western Co., Aurora. This well was abandoned and sealed in September 1977. The water-yielding units in this well were sand and gravel of the Prairie Aquigroup and dolomite of the Upper Bedrock Aquigroup (Silurian System). The well was located at the southwest corner of North Westmore Ave. and West Terrace St. in North Terrace Park, approximately 1650 ft N and 1300 ft E of the SW corner of Section 4, T39N, R11E. The land surface elevation at the well is approximately 710 ft.

A drillers log of Well No. 9 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Top soil	1.5	1.5
Gray silty clay	26.5	28
Fine sand	13	41
Clay with sand seams	14	55
Silty fine sand	9	64
Fine sand and lime chips with coarse gravel	11	75
Clay with sand seams	6	81
Coarse sand and gravel with lime chips	4	85
Creviced limestone	2	87
Limestone	4	91
Creviced limestone	99	190

A 38-in. diameter hole was drilled to a depth of 87 ft and finished 12 in. in diameter from 87 to 190 ft. The well was cased with 12-in. pipe from land surface to a depth of 67 ft followed by 23 ft of 12-in. No. 30 slot stainless steel screen. Below the screen, the well was open to the dolomite. The annulus between the bore hole and the casing-screen assembly was filled with cement from 0 to 17 ft and with 22 tons of No. 1 Muscatine gravel from 17 to 87 ft.

Upon completion, this well was acidized twice with 2000 gal of acid each time.

A production test was conducted by the driller on September 27, 1967. After 13 hr of pumping at rates ranging from 393 to 620 gpm, the final drawdown was 62 ft from a nonpumping water level of 37 ft below the top of the casing.

In 1970, the well reportedly produced 550 gpm with a drawdown of 11 ft from a nonpumping water level of 44 ft.

In 1971, after pumping at a rate of 525 gpm, the drawdown was 28 ft from a nonpumping water level of 40 ft.

In 1974, this well was rehabilitated by the Layne-Western Co. and a new screen installed.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B28166) is for a water sample from the well collected January 14, 1976, after 2 hr of pumping at 180 gpm.

WELL NO. 0, LABORATORY NO. B28166

		mg/l	***me/l***			***mg/l***	***me/l***
Iron	Fe	2.5		Silica	SiO_2	19	
Manganese	Mn	0.08		Fluoride	F	0.4	0.02
Ammonium	NH_4	0.7	0.04	Boron	B	0.2	
Sodium	Na	18	0.78	Cyanide	CN	0.00	
Potassium	K	2.8	0.07	Nitrate	NO_3	0.2	0.00
Calcium	Ca	140	6.99	Chloride	CI	61	1.72
Magnesium	Mg	60	4.94	Sulfate	SO_4	180	3.74
				Alkalinity (as $CaCO_3$)		368	7.36
Arsenic	As	0.01					
Barium	Ba	0.1		Hardness (as $CaCO_3$)		596	11.92
Cadmium	Cd	0.00					
Chromium	Cr	0.00		Total dissolved			
Copper	Cu	0.00		minerals		690	
Lead	Pb	0.00		pH (as rec'd)	8.1		
Mercury	Hg	0.0001		Radioactivity			
Nickel	Ni	0.0		Alpha *pc/l*	3.0		
Selenium	Se	0.00		± deviation	2.3		
Silver	Ag	0.00		Beta *pc/l*	3.2		
Zinc	Zn	0.0		± deviation	2.3		

A test well (No. 1-77) was constructed in 1977 to a depth of 210 ft by the J. P. Miller Artesian Well Co., Brookfield. It was located about 150 ft east of Ardmore Ave. and 75 ft south of East Hill St., approximately 500 ft S and 150 ft E of the NW corner of Section 3, T39N, R11E. A 42-in. diameter hole was drilled to a depth of 84 ft and finished 15 in. in diameter from 84 to 210 ft. The test well was cased with 20-in. steel pipe from land surface to a depth of 70 ft followed by 6 ft of 20-in. No. 75 slot screen and 8 ft of 16-in. No. 75 slot screen. Upon completion, the test well reportedly produced 150 gpm for 12 hr with a

drawdown of 47 ft from a nonpumping water level of 39 ft below the top of the casing.

A test well (No. 1-78) was constructed in March 1978 to a depth of 62 ft by the J. P. Miller Artesian Well Co., Brookfield. It was located on the east side of Villa Ave. east of Julia Drive, approximately 1200 ft S and 2400 ft W of the NE corner of Section 15, T39N, R11E. The test well was cased with 10-in. pipe from land surface to a depth of 52 ft followed by 10 ft of 10-in. No. 40 slot screen. Upon completion, the nonpumping water level was reported to be 7 ft. A production test using two observation wells was conducted by the driller on May 4-5, 1978. After 26 hr of pumping at a rate of 410 gpm, the final drawdown was 11.5 ft from a nonpumping water level of 10.0 ft.

A 6-in. diameter test hole (No. 2-78) was constructed in 1978 by the J. P. Miller Artesian Well Co., Brookfield. It was located approximately 2200 ft N and 550 ft E of the SW corner of Section 15, T39N, R11E.

WELL NO. 10 was completed in December 1980 to a depth of 1458 ft by the Wehling Well Works, Beecher. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer). The well also penetrates the upper part of the Eau Claire Formation. The well is located about 75 ft west of Cornell Ave. and 800 ft north of Riordan Road, approximately 2200 ft N and 600 ft E of the SW corner of Section 15, T39N, R11E. The land surface elevation at the well is approximately 685 ft.

A drillers log of Well No. 10 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Clay	21	21
Sand gravel and mud	14	35
Sand	15	50
Sand and gravel	10	60
Lime	124	184
Shale red and green	8	192
Shale and lime	78	270
Lime and shale	79	349
Lime	1	350
Shale - gray	55	405
Lime	336	741
Lime with sand	4	745
Sand	258	1003
Sand with pyrite	13	1016
Sand	129	1145
Sand and shale	20	1165
Sand	4	1169
Sand and shale	4	1173
Red shale and sand	4	1177
Gray shale	6	1183
Lime	5	1188
Shale	7	1195
Lime	3	1198
Shale	4	1202
Lime	10	1212
Lime and shale	26	1238
Lime	13	1251
Sand	9	1260
Lime	16	1276
Lime and sand	10	1286
Sand	48	1334
Lime and sand	5	1339
Hard sand	97	1436
Sand and shale	2	1438
Lime	4	1442
Lime and shale	16	1458

A 30-in. diameter hole was drilled to a depth of 68 ft, reduced to 25 in. between 68 and 438 ft, reduced to 21.9 in. between 438 and 1205 ft, and finished 17.2 in. in diameter from 1205 to 1458 ft. The well is cased with 26-in. black steel pipe from about 1 ft above land surface to a depth of 68 ft and 22-in. black steel pipe from about 2 ft above land surface to a depth of 437 ft (cemented in). The top of the casing is equipped with a Baker monitor pitless adapter.

On December 12, 1980, this well was shot with 6 charges (150 lb each) of nitrogel between the depths of 1400 and 1275 ft.

A production test was conducted by the driller on January 5-6, 1981. After 20.5 hr of pumping at rates ranging from 400 to 160 gpm, the final drawdown was 325 ft from a nonpumping water level of 671 ft below land surface. Two hr after pumping was stopped, the water level had recovered to 923 ft.

A second production test was conducted by the driller on February 19-20, 1981. After 27.9 hr of pumping at rates ranging from 242 to 809 gpm, the maximum drawdown was 151 ft from a nonpumping water level of 737 ft. Thirty min after pumping was stopped, the water level had recovered to 772 ft.

A third production test was conducted by the driller on February 23, 1981. After 6.6 hr of intermittent pumping at rates ranging from 520 to 711 gpm, the final drawdown was 110 ft from a nonpumping water level of 760 ft. Thirty min after pumping was stopped, the water level had recovered to 780 ft.

On September 21, 1984, the nonpumping water level was reported to be 832 ft.

On January 31, 1985, the well reportedly produced 754 gpm for 24 hr with a drawdown of 85 ft from a nonpumping water level of 812 ft.

The pumping equipment presently installed is a 13-stage Byron Jackson submersible pump set at 1052 ft,

rated at 800 gpm at about 900 ft TDH, and powered by a 300-hp Byron Jackson electric motor. The well is equipped with 1052 ft of airline.

A partial analysis of a sample (Lab. No. 215194) collected February 23, 1981, showed the water to have a hardness of 312 mg/l, total dissolved minerals of 549 mg/l, and an iron content of 0.21 mg/1.

WARRENVILLE

The city of Warrenville (7519) purchased the Westview Utility Co. in 1974 which had installed a public water supply in 1971. Five wells (Nos. 2, 4, 6, 8, and 9) are in use. Part of this city is served by Albright St. Homeowners Association (see Warrenville - Albright St. Homeowners) and the Ray St. Homeowners Association (see Warrenville - Ray St. Homeowners) also described in this bulletin. In 1984 there were 2470 services, all metered; the average pumpage was 622,800 gpd. The water is chlorinated; in addition, the water from Well Nos. 1, 2, and 6 is fluoridated.

ORIGINAL WELL NO. 1 - Purchased by Naperville

WELL NO. 1 (former Illinois Municipal Water Co. Well No. 1 - Manning Ave.), open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in February 1949 to a depth of 125 ft by C. C. Diebold, West Chicago. This well, purchased by the city of Warrenville in 1982, is not in use. The well is located at the west end of Railroad Ave., approximately 1600 ft S and 950 ft E of the NW corner of Section 35, T39N, R9E. The land surface elevation at the well is approximately 710 ft.

A drillers log of Well No. 1 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Yellow clay	5	5
Gravel	23	28
Blue clay	37	65
Limestone	60	125

An 8-in. diameter hole was drilled to a depth of 125 ft. The well is cased with 8-in. wrought iron pipe from about 2.3 ft above land surface to a depth of 65 ft.

Upon completion, the well reportedly produced 50 gpm for 2 hr with a drawdown of 2 ft from a nonpumping water level of 18 ft below land surface.

On September 9, 1958, after 10 min of pumping at pump capacity, the drawdown was 42 ft from a nonpumping water level of 20 ft below the pump base.

Nonpumping water levels were reported to be 25 ft in January 1964, and 22 ft in February 1965.

On October 20, 1966, the well reportedly produced 118 gpm for 30 min with a drawdown of 32 ft from a nonpumping water level of 21 ft below land surface.

On October 12, 1970, after 1 hr of pumping at a rate of 120 gpm, the drawdown was 28 ft from a nonpumping water level of 24 ft.

Nonpumping water levels were reported to be 22 ft in January 1971, and 29 ft in May 1977.

A production test was conducted by the Layne-Western Co., Aurora, on September 11, 1979. After 1 hr of pumping at rates of 112 to 116 gpm, the final drawdown was 24 ft from a nonpumping water level of 22 ft.

In November 1984, the well reportedly produced 114 gpm for 1 hr with a drawdown of 10 ft from a nonpumping water level of 14 ft.

The pumping equipment presently installed is a 4-stage Layne submersible pump (Serial No. 91263L) rated at 120 gpm, and powered by a 7-1/2-hp Franklin electric motor. The well is equipped with 85 ft of airline.

A partial analysis of a sample (Lab. No. 184473) collected December 10, 1970, after pumping for 1 hr at 120 gpm, showed the water to have a hardness of 458 mg/1, total dissolved minerals of 578 mg/1, and an iron content of 0.6 mg/1.

WELL NO. 2 (Bauer Jr. High School well) was completed in October 1971 to a depth of 300 ft by the K & K Well Drilling Co., Mokena. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located on the east side of River Road near Bauer Jr. High School, approximately 1900 ft S and 2300 ft E of the NW corner of Section 2, T38N, R9E. The land surface elevation at the well is approximately 690 ft.

A drillers log of Well No. 2 follows:

Strata	Thickness (ft)	Depth (ft)
Overburden	80	80
Rock formation	220	300

A 12-in. diameter hole was drilled to a depth of 300 ft. The well is cased with 12-in. black pipe from about 0.7 ft above land surface to a depth of 80 ft. The top of the well casing is equipped with a pitless adapter.

A production test was conducted by the driller on October 20, 1971. After 9.5 hr of pumping at rates ranging from 750 to 425 gpm, the maximum drawdown was 182 ft from a nonpumping water level of 20 ft below the top of the casing.

In 1981, the well reportedly produced 550 gpm with a drawdown of 107 ft from a nonpumping water level of 11 ft.

In 1982, after pumping at a rate of 550 gpm, the drawdown was 108 ft from a nonpumping water level of 20 ft.

In November 1984, the well reportedly produced 575 gpm for 2 hr with a drawdown of 142 ft from a nonpumping water level of 27 ft.

The pumping equipment presently installed is a Barnes submersible pump set at 250 ft, rated at 450 gpm, and powered by a 50-hp Barnes electric motor.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B022641) of a sample collected December 4, 1983, after pumping for 2 hr, showed the water to have a hardness of 457 mg/l, total dissolved minerals of 625 mg/l, and an iron content of 1.1 mg/1.

ORIGINAL WELL NO. 3 - Purchased by Naperville

WELL NO. 3 (former Illinois Municipal Water Co. Well No. 2 - Rogers Ave. - originally called Illinois Municipal Water Co. No. 4) was completed in 1955 to a depth of 256 ft (reported to be 252 ft d eep in 1979) by Ray Feuerborn, Batavia. This well, purchased by the city of Warrenville in 1982, is not in use. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located about 250 ft north of Rogers Ave. and 300 ft east of Warren Ave., approximately 725 ft N and 2990 ft W of the SE corner of Section 35, T39N, R9E. The land surface elevation at the well is approximately 693 ft.

The well is cased with 10-in. pipe from about 3.8 ft above land surface to an unknown depth.

Nonpumping water levels were reported to be 28 ft in January 1964, and 12 ft on January 20, 1965.

On October 20, 1966, the well reportedly produced 290 gpm for 30 min with a drawdown of 8.0 ft from a nonpumping water level of 12.4 ft below land surface.

On December 10, 1970, after 30 min of pumping at a rate of 285 gpm, the drawdown was 8 ft from a nonpumping water level of 16 ft.

Nonpumping water levels were reported to be 20 ft in January 1972, and 23 ft in May 1977.

A production test was conducted by the Layne-Western Co., Aurora, on August 29, 1979. After 40 min of pumping at a rate of 292 gpm, the final drawdown was 7 ft from a nonpumping water level of 18 ft.

In November 1984, the well reportedly produced 300 gpm for 30 min with a drawdown of 6 ft from a nonpumping water level of 20 ft.

The pumping equipment presently installed is an 8-in., 5-stage Layne & Bowler turbine pump (Serial No. 52819) rated at 200 gpm, and powered by a 20-hp electric motor. The well is equipped with 80 ft of airline.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. C000240) is for a water sample from the well collected July 20, 1977, after 30 min of pumping at 220 gpm.

WELL NO. 3, LABORATORY NO. C000240

		mg/l	me/l			mg/l	me/l
Iron	Fe	0.7		Silica	SiO_2	12	
Manganese	Mn	0.01		Fluoride	F	0.7	0.04
Ammonium	NH_4	0.85	0.05	Boron	B	0.7	
Sodium	Na	34	1.48	Cyanide	CN	0.00	
Potassium	K	5.9	0.15	Nitrate	NO_3	0.04	0.00
Calcium	Ca	70	3.49	Chloride	CI	29	0.82
Magnesium	Mg	40	3.29	Sulfate	SO_4	97	2.02
				Alkalinity (as $CaCO_3$)		296	5.92
Arsenic	As	0.000					
Barium	Ba	0.0		Hardness (as $CaCO_3$)		340	6.80
Cadmium	Cd	0.00					
Chromium	Cr	0.00		Total dissolved			
Copper	Cu	0.02		minerals		498	
Lead	Pb	0.00					
Mercury	Hg	0.0000					
Nickel	Ni	0.0					
Selenium	Se	0.00					
Silver	Ag	0.00					
Zinc	Zn	0.00		pH (as rec'd)		8.4	

WELL NO. 4 (Winchester Subdivision well) was completed in January 1973 to a depth of 365 ft by the K & K Well Drilling Co., Mokena. The water-yielding units in this well are dolomite and shale of the Upper

Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located in the Winchester Subdivision about 1500 ft east of Route 59 and 1300 ft south of Batavia Road, approximately 200 ft S and 2250 ft E of the NW corner of Section 34, T39N, R9E. The land surface elevation at the well is approximately 710 ft.

A drillers log of Well No. 4 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Overburden	60	60
Rock	40	100
White lime	170	270
Shale	40	310
Rock	55	365

A 12-in. diameter hole was drilled to a depth of 60 ft and finished 8 in. in diameter from 60 to 365 ft. The well is cased with 8-in. pipe from about 0.7 ft above land surface to a depth of 60 ft. The top of the well casing is equipped with a pitless adapter.

A production test was conducted by the driller on January 17, 1973. After 7.5 hr of pumping at a rate of 644 gpm, the drawdown was 43 ft from a nonpumping water level of 30 ft below the top of the casing.

In 1981, the well reportedly produced 335 gpm with a drawdown of 18 ft from a nonpumping water level of 16 ft.

In 1982, after pumping at a rate of 335 gpm, the drawdown was 19 ft from a nonpumping water level of 17 ft.

In November 1984, the well reportedly produced 310 gpm for 3 hr with a drawdown of 14 ft from a nonpumping water level of 27 ft.

The pumping equipment presently installed is a Barnes submersible pump set at 105 ft, rated at 230 gpm, and powered by a 30-hp Barnes electric motor. The well is equipped with 105 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B022825) of a sample collected December 4, 1983, after pumping for 2 hr, showed the water to have a hardness of 323 mg/l, total dissolved minerals of 435 mg/l, and an iron content of 0.33 mg/1.

WELL NO. 5 (Illinois Youth Center well), open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in May 1973 to a depth of 200 ft by the K & K Well Drilling Co., Mokena. This well is not in use. The well is located about 1000 ft north of Ferry Road and 1500 ft west of Route 59, approximately 100 ft N and 1300 ft W of the SE corner of Section 33, T39N, R9E. The land surface elevation at the well is approximately 721 ft.

A drillers log of Well No. 5 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Overburden	56	66
Rock formation	144	200

An 8-in. diameter hole was drilled to a depth of 200 ft. The well is cased with 8-in. black pipe from about 1.3 ft above land surface to a depth of 56 ft.

Upon completion, the well reportedly produced 200 gpm for 4 hr with a drawdown of 44.0 ft from a nonpumping water level of 38.5 ft below land surface.

In 1981, after pumping at a rate of 90 gpm, the drawdown was 2 ft from a nonpumping water level of 37 ft.

In 1982, the well reportedly produced 90 gpm with a drawdown of 4 ft from a nonpumping water level of 42 ft.

In November 1984, after 15 min of pumping at a rate of 110 gpm, the drawdown was 3 ft from a nonpumping water level of 38 ft.

The pumping equipment presently installed is a Peabody Barnes submersible pump set at 105 ft, rated at 200 gpm, and powered by a 15-hp Peabody Barnes electric motor. The well is equipped with 105 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B022819) of a sample collected December 5, 1983, after pumping for 30 min at 200 gpm, showed the water to have a hardness of 356 mg/1, total dissolved minerals of 435 mg/l, and an iron content of 0.76 mg/1.

ORIGINAL WELL NO. 6 - Purchased by Naperville

WELL NO. 6 (former Illinois Municipal Water Co. Well No. 3 - Central Ave.), open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in October 1936 to a depth of 178 ft (reported to be 166 ft deep in 1976) by C. C. Diebold, West Chicago. This well was purchased by the city of Warrenville in 1982. The well is located on the north side of Central Ave. east of Elizabeth Ave., approximately 1500 ft N and 850 ft E of the SW corner of Section 36, T39N, R9E. The land surface elevation at the well is approximately 745 ft.

A 6-in. diameter hole was drilled to a depth of 178 ft. The well is cased with 6-in. pipe from about 1.2 ft above land surface to a depth of 115 ft.

In January 1964, the nonpumping water level was reported to be 65 ft.

On October 20, 1966, the well reportedly produced 68 gpm for 30 min with a drawdown of 2 ft from a nonpumping water level of 58 ft below land surface.

On November 8, 1968, the nonpumping water level was reported to be 60 ft.

On December 10, 1970, after 30 min of pumping at a rate of 70 gpm, the drawdown was 4 ft from a nonpumping water level of 57 ft.

Nonpumping water levels were reported to be 57 ft in January 1971; 59 ft in January 1972; 56 ft on April 19, 1972; 56.5 ft on February 27, 1976; and 63 ft in May 1977.

In November 1984, the well reportedly produced 60 gpm for 15 min with a drawdown of 3 ft from a nonpumping water level of 56 ft.

The pumping equipment presently installed is a Red Jacket submersible pump (No. 500T1-10EC) set at 126 ft, rated at 50 gpm, and powered by a 5-hp Red Jacket electric motor. The well is equipped with 126 ft of airline.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. C000238) is for a water sample from the well collected July 20, 1977, after 30 min of pumping at 60 gpm.

WELL NO. 8, LABORATORY NO. C000238

		mg/l	*me/I*			*mg/l*	*me/I*
Iron	Fe	1.1		Silica	SiO_2	14	
Manganese	Mn	0.01		Fluoride	F	0.4	0.02
Ammonium	NH_4	0.45	0.02	Boron	B	0.3	
Sodium	Na	10	0.44	Cyanide	CN	0.00	
Potassium	K	1.8	0.05	Nitrate	NO_3	0.0	0.00
Calcium	Ca	66	3.29	Chloride	CI	5	0.14
Magnesium	Mg	36	2.96	Sulfate	SO_4	57	1.19
				Alkalinity (as $CaCO_3$)		288	5.76
Arsenic	As	0.000					
Barium	Ba	0.0		Hardness (as $CaCO_3$)		315	6.30
Cadmium	Cd	0.00					
Chromium	Cr	0.00		Total dissolved			
Copper	Cu	0.11		minerals		382	
Lead	Pb	0.00					
Mercury	Hg	0.0000					
Nickel	Ni	0.0					
Selenium	Se	0.00					
Silver	Ag	0.00					
Zinc	Zn	0.02		pH (as rec'd)		8.5	

WELL NO. 7 (Oakwood Castle Restaurant well) was completed in October 1974 to a depth of 300 ft by the K & K Well Drilling Co., Mokena. This well is not in use. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located behind the Oakwood Castle Restaurant west of Route 59 north of Ferry Road, approximately 400 ft S and 50 ft E of the NW corner of Section 3, T38N, R9E. The land surface elevation at the well is approximately 715 ft.

A drillers log of Well No. 7 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Overburden	57	57
Limestone	183	240
Broken shale	40	280
Shale	20	300

A 12-in. diameter hole was drilled to a depth of 57 ft and finished 8 in. in diameter from 57 to 300 ft. The well is cased with 8-in. pipe from about 1.8 ft above land surface to a depth of 57 ft.

In 1981, the well reportedly produced 180 gpm with a drawdown of 1 ft from a nonpumping water level of 28 ft.

In 1982, the nonpumping water level was reported to be 37 ft.

In November 1984, after 30 min of pumping at a rate of 180 gpm, the drawdown was 7 ft from a nonpumping water level of 59 ft.

The pumping equipment presently installed is a Barnes submersible turbine pump set at 126 ft, rated at 200 gpm, and powered by a 15-hp Barnes electric motor. The well is equipped with 126 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B043409) of a sample collected May 14, 1984, after pumping for 30 min at 200 gpm, showed the water to have a hardness of 423 mg/l, total dissolved minerals of 500 mg/l, and an iron content of 1.9 mg/l.

WELL NO. 8 was completed in December 1981 to a depth of 335 ft by the Layne-Western Co., Aurora. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located north of the elevated tank on the east side of Country Ridge Drive and north of Batavia Road, approximately 1650 ft N and 1900 ft E of the SW corner of Section 27, T39N, R9E. The land surface elevation at the well is approximately 730 ft.

A drillers log of Well No. 8 follows:

Strata	Thickness (ft)	Depth (ft)
Black top soil	1	1
Yellow gravelly clay	16	17
Hard gray clay with embedded gravel	54	71
Medium hard gray limestone with shale streaks	59	130
Medium creviced buff colored limestone	35	165
Gray and green sandy fractured limestone with occasional layers of green shale (picked up water at about 180 ft)	20	185
Medium hard limey green shale with limestone layers	36	221
Dark gray shaly limestone with shale and lime layers	54	275
Dark gray limey shale with lime layers	50	325
Gray limestone with fractures and shale lenses	6	331
Gray limestone layered with soft green shale	4	335

A 19.2-in. diameter hole was drilled to a depth of 76 ft and finished 15 in. in diameter from 76 to 335 ft. The well is cased with 16-in. steel pipe from about 1.3 ft above land surface to a depth of 76 ft (cemented in from 0 to 20 ft). The top of the casing is equipped with a Baker monitor pitless adapter.

A production test was conducted by the driller on December 17-18, 1981. After 3.2 hr of pumping at rates ranging from 659 to 720 gpm, the drawdown was 111.0 ft from a nonpumping water level of 49.8 ft below land surface. Pumping was continued for 20.9 hr at rates of 543 to 528 gpm with a final drawdown of 75.0 ft. The water level recovered to 54.8 ft after pumping had been stopped for 1.4 hr.

In 1982, the well reportedly produced 450 gpm with a drawdown of 75 ft from a nonpumping water level of 50 ft.

In November 1984, after 2 hr of pumping at a rate of 450 gpm, the drawdown was 58 ft from a nonpumping water level of 56 ft.

The pumping equipment presently installed consists of a 40-hp electric motor, an 8-in., 11-stage Byron Jackson submersible pump set at 200 ft, rated at 400 gpm at about 300 ft TDH, and has 200 ft of 5-in. column pipe. The well is equipped with 200 ft of airline.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B043415) is for a water sample from the well collected May 14, 1984, after 1.5 hr of pumping.

WELL NO. 8, LABORATORY NO. B043415

		mg/l	me/l			rng/l	me/l
Iron	Fe	0 25		Silica	SiO_2	8.4	
Manganese	Mn	0.005		Fluoride	F	0 62	
Ammonium	NH_4	0.6	0 01	Boron	B	0 67	
Sodium	Na	21	0 91	Cyanide	CN	<0.005	
Potassium	K	7.8	0 20	Nitrate	NO_3	<0.4	
Calcium	Ca	67	3 34	Chloride	CI	9	0.25
Magnesium	Mg	37	3.04	Sulfate	SO_4	61	1.27
Strontium	Sr	1.06	0 02	Alkalinity (as $CaCO_3$)		306	6.12
Aluminum	Al	0 05		Hardness (as $CaCO_3$)		331	6.62
Arsenic	As	<0.001					
Barium	Ba	0.071	0.00	Total dissolved			
Beryllium	Be	<0.0005		minerals		400	
Cadmium	Cd	<0.003					
Chromium	Cr	<0.005					
Cobalt	Co	<0.005					
Copper	Cu	0.005					
Lead	Pb	<0.00S					
Mercury	Hg	<0 00010					
Nickel	Ni	<0.005					
Selenium	Se	<0.001					
Silver	Ag	<0.005					
Vanadium	V	<0.005					
Zinc	Zn	0.007		pH (as rec'd)		7.7	

WELL NO. 9 was completed in June 1985 to a depth of 354 ft by the Layne-Western Co., Aurora. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located at the southwest corner of Aurora (Warrenville) Road and Lorraine Ave., approximately 650 ft N and 1250 ft E of the SW corner of Section 36, T39N, R9E. The land surface elevation at the well is approximately 730 ft.

A drillers log of Well No. 9 follows:

Strata	Thickness (jl)	Depth (ft)
Silty clayey gravel and boulders	3	3
Brown silty clay some gravel and boulders	10	13
Silty gravel and boulders	11	24
Silty sand and gravel and boulders	11	35
Sand and gravel	23	58
Gray very sandy silty clay with gravel and boulders	8	66
Silty sand	13	79
Boulders	2	81
Gray clayey sand and silt	2	83
Hard brown clayey sand and silt with limestone fragments	10.5	93.5
Brown limestone	2.5	96
Gray limestone with brown, lenses - fractured water at 101 ft	6	102
Gray limestone with fractures	19	121
Light blue gray and white limestone - hard	13	134
Gray limestone with fractured areas - more water at 155 ft	40	174
White hard limestone - no fractures	15	189
White limestone with fractured layers	7	196
Gray limestone and shale layered	4	200

Strata	Thickness (ft)	Depth (ft)
Brown and dark gray shale with limestone layers - firm	7	207
White limestone with some fractures and soft shale layers	46	253
Gray limestone with very rough fractured layers and an occasional shale seam	56	309
Gray shaly lime with fractures and shale seams	13	322
Hard gray limestone	3	325
Gray shaly limestone, getting softer	20	345
Gray shale with occasional limestone seam	9	354

A 19.2-in. diameter hole was drilled to a depth of 97 ft and finished 15.2 in. in diameter from 97 to 354 ft. The well is cased with 16-in. steel pipe from about 1 ft above land surface to a depth of 97 ft (cemented in).

A production test was conducted by the driller on June 24-25, 1985. After 14.5 hr of pumping at rates of 751 to 1007 gpm, the drawdown was 22.5 ft from a nonpumping water level of 49.0 ft below land surface. Pumping was continued for 2 hr at rates of 783 to 603 gpm with a drawdown of 15.0 ft. After a 1.5-hr recovery period, pumping was continued for 6 hr at rates ranging from 592 to 613 gpm with a drawdown of 11.6 ft. Six hr after pumping was stopped, the water level had recovered to 54.0 ft.

The pumping equipment presently installed is a 10-in. submersible pump set at 207 ft, rated at 600 gpm, and powered by a 50-hp electric motor.

A partial analysis of a sample (Lab. No. 221116) collected June 25, 1985, showed the water to have a hardness of 374 mg/l, total dissolved minerals of 424 mg/l, and an iron content of 0.68 mg/1.

WARRENVILLE (ALBRIGHT ST. HOMEOWNERS)

Warrenville (Albright St. Homeowners) (est. 63), located within the city limits of Warrenville, installed a public water supply in 1927. The water system is owned and operated by the Albright St. Homeowners Association. One well is in use. Part of this city is served by a municipal owned water system (see Warrenville) and the Ray St. Homeowners Association (see Warrenville - Ray St. Homeowners) also described iu this bulletin. In 1956 there were 21 services, none metered. In 1984 there were 17 services, none metered; the estimated average pumpage was 4300 gpd. The water is chlorinated and fluoridated.

WELL NO. 1, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in 1927 to a depth of 135 ft. The well is located at the northwest corner of Albright and Curtis Sts., approximately 1500 ft N and 1050 ft E of the SW corner of Section 35, T39N, R9E. The land surface elevation at the well is approximately 700 ft.

A 5-in. diameter hole was drilled to a depth of 135 ft. The well is cased with 5-in. pipe from about 1.5 ft above the pumphouse floor to a depth of about 67 ft.

In January 1958, the nonpumping water level was reported to be 12 ft.

The pumping equipment presently installed is a Reda submersible pump set at 50 ft, rated at 25 gpm, and powered by a 1-1/2-hp Reda electric motor.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. 04540) is for a water sample from the well collected March 19, 1972, after 15 min of pumping at 18 gpm.

WELL NO. 1, LABORATORY NO. 04640

		mg/l	me/l			mg/l	me/l
Iron	Fe	0.5	0.02	Silica	SiO_2	16	
Manganese	Mn	0.0		Fluoride	F	0.8	0.04
Ammonium	NH_4	0.8	0.04	Boron	B	0.6	
Sodium	Na	29	1.26	Nitrate	NO_3	0.0	
Potassium	K	4.3	0.11	Chloride	CI	33	0.93
Calcium	Ca	80	3.99	Sulfate	SO_4	102	2.12
Magnesium	Mg	50	4.11	Alkalinity (as $CaCO_3$)		300	6.00
				Hardness (as $CaCO_3$)		404	
Barium	Ba	0.0					
Cadmium	Cd	0.00		Total dissolved minerals		511	
Chromium	Cr	0.0					
Copper	Cu	0.05		pH (as rec'd)		7.4	
Lead	Pb	0.00		Radioactivity			
Mercury	Hg	<0.0005		Alpha *pc/l*		1	
Nickel	Ni	0.0		± deviation		1	
Silver	Ag	0.0		Beta *pc/l*		1	
Zinc	Zn	0.1		± deviation		2	

WARRENVILLE (RAY ST. HOMEOWNERS)

Warrenville (Ray St. Homeowners) (est. 100), located within the city limits of Warrenville, installed a public water supply in 1956. The water system is owned and operated by the Ray St. Homeowners Association. One well (No. 2) is in use. Part of this city is served by a municipal owned water system (see Warrenville) and the Albright St. Homeowners (see Warrenville - Albright St. Homeowners) also described in this bulletin. In 1964 there were 27 services, none metered. In 1984 there were 28 services, none metered; the average pumpage was 6490 gpd. The water is chlorinated and fluoridated.

WELL NO. 1, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed about 1927 to a depth of 200 ft. This well was abandoned and capped about 1964. The well is located on the west side of Manning Ave. south of Ray St., approximately 2425 ft S and 850 ft E of the NW corner of Section 35, T39N, R9E. The land surface elevation at the well is approximately 698 ft.

A 4-in. diameter hole was drilled to a depth of 200 ft and cased from about 1.5 ft above land surface to an unknown depth.

WELL NO. 2, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in September 1964 to a depth of 125 ft by the Triple A Drilling Co., Downers Grove. The well is located at the southeast corner of Ray and Rockwell Sts., approximately 2240 ft S and 175 ft E of the NW corner of Section 35, T39N, R9E. The land surface elevation at the well is approximately 700 ft.

A drillers log of Well No. 2 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Glacial drift	75	75
Limestone	50	125

A 5-in. diameter hole was drilled to a depth of 125 ft. The well is cased with 5-in. pipe from about 1.5 ft above land surface to an unknown depth.

Nonpumping water levels were reported to be 14 ft on December 30, 1964, 18 ft in November 1971, and 16 ft in January 1977.

The pumping equipment presently installed is a Sears submersible pump set at 65 ft, rated at 35 gpm, and powered by a 1-1/2-hp electric motor.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. 04884) is for a water sample from the well collected April 15, 1972, after 30 min of pumping.

WELL NO. 2, LABORATORY NO. 04884

		mg/l	*me/l*		*mg/l*	*me/l*
Iron	Fe	0.5	0.02	Silica	SiO_2	14	
Manganese	Mn	0.0		Fluoride	F	0.6	0.03
Ammonium	NH_4	0.5	0.03	Boron	B	0.4	
Sodium	Na	27	1.18	Nitrate	NO_3	0.0	0.00
Potassium	K	3.3	0.08	Chloride	CI	56	1.58
Calcium	Ca	96	4.79	Sulfate	SO_4	125	2.60
Magnesium	Mg	52	4.27	Alkalinity (as | $CaCO_3$)	296	5.92
				Hardness (as | $CaCO_3$)	456	
Barium	Ba	0.0					
Cadmium	Cd	0.00		Total dissolved			
Chromium	Cr	0.0		minerals		524	
Copper	Cu	0.0		pH (as rec'd)		7.5	
Lead	Pb	0.00		Radioactivity			
Mercury	Hg	<0.0005		Alpha *pc/l*		1	
Nickel	Ni	0.0		± deviation		2	
Silver	Ag	0.0		Beta *pc/l*		3	
Zinc	Zn	0.0		± deviation		2	

WEST CHICAGO

The city of West Chicago (12,550) installed a public water supply in 1896. Five wells (Nos. 3, 4, 5, 6, and 7) are in use. In 1957 there were 1600 services, all metered; the average and maximum pumpages were 500,000 and 790,000 gpd, respectively. In 1984 there were 3138 services, all metered; the average pumpage was 2,090,500 gpd. The water is chlorinated.

WELL NO. 1 was completed in 1896 to a depth of 875 ft (reported to be 780 ft deep in 1961) by the J. P. Miller Artesian Well Co., Brookfield. This well is not in use. The water-yielding units in this well are dolomites and sandstones of the Upper Bedrock Aquigroup (Silurian System) and the Midwest Aquigroup (Galena and Platteville Groups and the Glenwood-St.

Peter Sandstone). The well is located inside the water treatment plant on the south side of McConnell St. west of Fremont St., approximately 30 ft N and 600 ft W of the SE corner of Section 4, T39N, R9E. The land surface elevation at the well is 774.0 ft.

A drillers log of Well No. 1 follows:

Strata	Thickness (ft)	Depth (ft)
Drift	98	98
Limestone	261	359
Shale	366	725
Limestone	10	735
Sandstone	HO	875

A 12-in. diameter hole was drilled to a depth of 98 ft and finished 8 in. in diameter from 98 to 875 ft. The well is cased with 12-in. pipe from about 2 ft above the water treatment plant floor to a depth of 98 ft.

Nonpumping water levels below the pump base were reported to be 44 ft in 1897, 47 ft in 1904, 50 ft in 1915, 70 ft in 1920, 76 ft in 1925, 90 ft in 1930, and 80 ft in November 1937.

In 1941, the well reportedly produced 500 gpm with a drawdown of 18+ ft from a nonpumping water level of 96 ft below the pump base.

Nonpumping water levels were reported to be 89 ft on October 26, 1944, and 79 ft on December 5, 1944.

In May 1947, after 2 hr of pumping at a rate of 500 gpm, the drawdown was 3 ft from a nonpumping water level of 115 ft below the pump base.

Nonpumping water levels were reported to be 118 ft on February 28, 1948; 119 ft on May 29, 1951; 121 ft on June 29, 1951; 117 ft on July 29, 1951; 84 ft in 1955; 88 ft in 1956; 94 ft in October 1957; 91 ft below the pump base on April 24, 1958; 88 ft in 1959; and 90 ft in November 1961.

In 1962, after pumping at a rate of 420 gpm, the drawdown was 5 ft from a nonpumping water level of 87 ft.

Nonpumping water levels were reported to be 88 ft in November 1963, and 86 ft in November 1964.

On June 10, 1966, the well reportedly produced 400 gpm for 15 min with a drawdown of 36 ft from a nonpumping water level of 88 ft below land surface.

Nonpumping water levels were reported to be 92 ft in October 1967, and 88 ft in 1969.

The pumping equipment presently installed consists of a 25-hp 1800 rpm U. S. electric motor (No. 2114186), an 8-in., 9-stage Aurora turbine pump (No. 67073) set at 180 ft, rated at 450 gpm at about 130 ft TDH, and has 180 ft of 5-in. column pipe. A 10-ft section of 5-in. suction pipe is attached to the pump intake. The well is equipped with 180 ft of airline.

A partial analysis of a sample (Lab. No. 169099) collected June 10, 1966, after pumping for 15 min at 400 gpm, showed the water to have a hardness of 420 mg/l, total dissolved minerals of 523 mg/l, and an iron content of 0.8 mg/1.

WELL NO. 2, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in 1908 to a depth of 322 ft by John Diebold, West Chicago. This well was abandoned in 1970 and sealed in 1973. The well was located inside the water treatment plant about 37 ft southeast of Well No. 1, approximately 0 ft N and 580 ft W of the SE corner of Section 4, T39N, R9E. The land surface elevation at the well is 773.8 ft.

A drillers log of Well No. 2 follows:

Strata	Thickness (ft)	Depth (ft)
Loam and clay	15	15
Sand, water bearing	1	16
Drift and clay	74	90
Dolomite, gray, fine	50	140
Dolomite, gray light and subcrystalline	10	150
Dolomite	172	322

A 12-in. diameter hole was drilled to a depth of 89 ft and finished 8 in. in diameter from 89 to 322 ft. The well was cased with 12-in. wrought iron pipe from about 1.2 ft above the water treatment plant floor to a depth of 89 ft.

Nonpumping water levels were reported to be 50 ft in 1915; 70 ft in 1920; 76 ft in 1925; 90 ft in 1930; 96 ft in 1941; 90.8 ft on October 26, 1944; and 80.4 ft on December 5, 1944.

In May 1947, after pumping at a rate of 500 gpm, the drawdown was 18 ft from a nonpumping water level of 82 ft below the pump base.

Nonpumping water levels were reported to be 80 ft in November 1947; 84 ft on February 28, 1948; 86 ft on May 29, 1951; 88 ft on June 29, 1951; and 84 ft on July 29, 1951.

On October 16, 1952, this well was treated with 2750 gal of 15 percent HC1. After acidizing, the well reportedly produced 430 gpm with a drawdown of 82 ft from a nonpumping water level of 86 ft.

Nonpumping water levels were reported to be 92 ft in 1955, and 110 ft in 1956.

On January 8, 1957, this well was treated with 1500 gal of acid.

In 1960, the nonpumping water level was reported to be 87 ft.

A mineral analysis of a sample (Lab. No. 164524) collected in October 1964, showed the water to have a hardness of 489 mg/l, total dissolved minerals of 620 mg/l, and an iron content of 1.1 mg/1.

WELL NO. 3, open to the Midwest Aquigroup (Cambrian-Ordovician aquifer), was constructed in January 1950 to a depth of 310 ft by the Layne-Western Co., Aurora, and deepened in March 1975 to a depth of 1378 ft by the Milaeger Well & Pump Co., Brookfield, Wis. The well is located on the west side of Fremont St. north of York Ave., approximately 850 ft N and 500 ft W of the SE corner of Section 4, T39N, R9E. The land surface elevation at the well is 762.1 ft.

A drillers log of Well No. 3 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Gravel	5	5
Gravel and shale	55	60
Shale	15	75
Gravel and shale	7	82
Limestone	128	210
Shale, green	3	213
Limestone	92	305
Shale, brown	4	309
Blue shale	6	315
Gray shale	48	363
Gray lime	3	366
Brown lime	97	463
Lime	132	595
Gray - blue lime	5	600
Brown lime	37	637
Brown to gray lime	29	666
Brown lime	29	695
Sand (soft)	120	815
Sand (hard)	11	826
Light brown sand (soft)	19	845
Light brown sand (firm)	20	865
Blue - gray sand (firm)	20	885
Sand	41	926
Coarse sand - fine gravel	8	934
Red rock	11	945
Lime (hard)	20	965
Not recorded	6	971
Lime, some shale (reddish)	5	976
Red shale and sand	9	985
Not recorded	5	990
Green shale and lime	10	1000
Shale and lime	10	1010
Lime	7	1017
Pink lime	73	1090
Lime	35	1125
Lime and shale	10	1135
Red rock	10	1145
Red silty sand	20	1165
Green - gray shale	5	1170
Green shale and lime	15	1185
Green shale	5	1190
Green shale and lime	5	1195
Lime (hard)	15	1210
Not recorded	2	1212
Blue sand (hard)	14	1226
Sand	56	1282
Sand (some shale)	8	1290
Sand	50	1340
Sand (hard)	38	1378

Originally, a 28-in. diameter hole was drilled to a depth of 86 ft, and finished 24 in. in diameter from 86 to 310 ft. The well was originally cased with 28-in. OD pipe from land surface to a depth of 83 ft and 24-in. OD pipe from land surface to a depth of 86 ft (cemented in). After deepening in 1975, the hole was reported to be 28 in. in diameter from land surface to a depth of 86 ft, 23 in. from 86 to 310 ft, 19 in. from 310 to 460 ft, 15 in. from 460 to 1202 ft, and 12 in. from 1202 to 1378 ft. The well is now cased with 28-in. pipe from land surface to a depth of 83 ft, 24-in. pipe from land surface to a depth of 86 ft, 16-in. pipe from land surface to a depth of 460 ft (cemented in), and a 12-in. liner from 940 ft to a depth of 1202 ft.

A production test was conducted on January 24-25, 1950, by representatives of the Layne-Western Co., the city, the State Water Survey, and the Wells Engineering Co. After 21.9 hr of pumping at rates ranging from 668 to 402 gpm, the maximum drawdown was 79.0 ft from a nonpumping water level of 69.5 ft below the top of the casing. After an additional 1.2 hr of pumping at rates ranging from 305 to 703 gpm, the final drawdown was 89.5 ft. Thirty min after pumping was stopped, the water level had recovered to 73.0 ft. During the last part of this test, Well Nos. 1 and 2 were pumping intermittently.

On August 19, 1953, the well capacity had receded from 750 to 375 gpm with a drawdown of 112 ft from a nonpumping water level of 88 ft. The well was then acidized with 3000 gal of HC1. On August 29, 1953, the well reportedly produced 800 gpm with a drawdown of 80 ft from a nonpumping water level of 88 ft below land surface.

In 1955, the nonpumping water level was reported to be 86 ft.

In April and May 1956, this well was treated with 5000 gal of acid by M. P. Schneller & Associates, Aurora. The production of this well was reported to be 580 gpm after this work.

In 1956 and 1957, the nonpumping water level was reported to be 90 ft.

On April 24, 1958, the well reportedly produced 395 gpm for 12 hr with a drawdown of 160 ft from a nonpumping water level of 90 ft below the pump base.

Nonpumping water levels were reported to be 88 ft in 1959, 90 ft in 1960, and 84 ft in November 1961.

In 1961, this well was treated with HC1 acid by M. P. Schneller & Associates. The production of this well was reported to be 500 gpm after this work.

On December 11, 1962, this well was treated with 3000 gal of acid by M. P. Schneller & Associates. The production was then reported to be 420 gpm.

In 1962, the well reportedly produced 440 gpm with a drawdown of 118 ft from a nonpumping water level of 98 ft.

On June 18, 1963, this well was acidized by M. P. Schneller & Associates.

In November 1963, the nonpumping water level was reported to be 92 ft.

On April 20, 1964, after the well had been acidized, the nonpumping water level was reported to be 90 ft below land surface.

On June 18, 1965, this well was acidized. The production capacity was reportedly increased to 400 gpm.

In 1965, after pumping at a rate of 480 gpm, the drawdown was 117 ft from a nonpumping water level of 90 ft.

On June 10, 1966, the well reportedly produced 320 gpm for 15 min with a drawdown of 125 ft from a nonpumping water level of 85 ft below land surface.

Nonpumping water levels were reported to be 89 ft in November 1966, 86 ft in October 1967, 85 ft in 1968, and 86 ft in 1969.

In 1970, after pumping at a rate of 200 gpm, the drawdown was 166 ft from a nonpumping water level of 76 ft.

In March 1972, the nonpumping water level was reported to be 75 ft.

After deepening, a production test was conducted by the Milaeger Well & Pump Co. on March 20, 1975. After 2.2 hr of pumping at rates ranging from 900 to 380 gpm, the drawdown was 135 ft from a nonpumping water level of 425 ft below the top of the casing.

The pumping equipment presently installed consists of a 200-hp Byron Jackson electric motor, an 11-in., 15-stage Byron Jackson submersible pump set at 700 ft, rated at 680 gpm at about 840 ft TDH, and has 700 ft of column pipe. The well is equipped with 700 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B31422) of a sample collected January 23, 1978, after pumping for 24 hr at about 650 gpm, showed the water to have a hardness of 334 mg/l, total dissolved minerals of 452 mg/l, and an iron content of 0.2 mg/1.

WELL NO. 4 was completed in March 1960 to a depth of 1465 ft (cleaned in 1974 to 1362 ft) by the Wehling Well Works, Beecher. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer) except for dolomites of the Galena and Platteville Groups. The well also penetrates the upper part of the Eau Claire Formation. The well is located at the southwest corner of Bishop St. and Forest Ave., approximately 150 ft S and 1250 ft E of the NW corner of Section 15, T39N, R9E. The land surface elevation at the well is 745.6 ft.

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

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
Soil, black, clayey	5	5
Till, yellow buff, brown, clayey, sandy	S	10
Clay, buff to yellow buff, pebbly	5	15
Sand, clayey, very fine to medium	5	20
Till, gray, buff to brown, very pebbly	75	95
Gravel, clayey	5	100
SILURIAN SYSTEM		
Niagaran Series		
Dolomite, buff, gray to white, very fine to fine, lower 15 ft slightly argillaceous, red speckled	75	175
Alexandrian Series		
Dolomite, silty, gray, white and buff, very fine to medium, lower 40 ft cherty	100	275
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Dolomite, very silty, white to grayish buff; little shale	20	295
Shale, slightly dolomitic, buff to gray, weak, pyritic	80	375
Champlainian Series		
Galena Group		
Kimmswick Subgroup		
Dolomite, slightly silty, grayish white to buff, fine to medium, little porous at base; little shale at base	125	500
Decorah Subgroup		
Dolomite, white, buff to brown, medium to coarse, slightly porous, little black and red speckled, few shale partings	40	540

Strata	Thickness (ft)	Depth (ft)
Platteville Group		
Dolomite, calcareous, white, buff to grayish white, fine to coarse, porous to compact, shaly partings; limestone, dolomitic, fine to medium, shaly partings	145	685
Ancell Group		
Glenwood Formation		
Sandstone, slightly calcareous, silty, very fine to coarse, incoherent	40	725
St. Peter Sandstone		
Sandstone, slightly silty, white, fine to medium, little coarse, incoherent; dolomite, shale and shale in lower 95 ft	360	1085
CAMBRIAN SYSTEM		
Croixan Series		
Potosi Dolomite		
Dolomite, calcareous, buff to pinkish buff, little white, fine to medium, little shale and siltstone	70	1155
Franconia Formation		
Sandstone, silty, glauconitic, white to greenish white, fine to coarse, incoherent; shale, sandy, greenish gray to buff, tough to brittle	65	1220
Ironton-Galesville Sandstone		
Sandstone, little slightly dolomitic, slightly silty, fine to medium, little coarse, incoherent; dolomite sandy, silty, buff, white, brown, fine to medium	205	1425
Eau Claire Formation		
Shale, slightly sandy, slightly glauconitic, green, buff to gray, weak to tough	40	1465

A 26-in. diameter hole was drilled to a depth of 108 ft, reduced to 25 in. between 108 and 585 ft, reduced to 23 in. between 585 and 672 ft, reduced to 19.2 in. between 672 and 998 ft, reduced to 15 in. between 998 and 1067 ft, and finished 12.2 in. in diameter from 1067 to 1465 ft. The well is cased with 26-in. pipe from about 0.5 ft above land surface to a depth of 109.3 ft, 24-in. liner from 541 ft to a depth of 585 ft, 20-in. OD pipe from about 0.5 ft above land surface to a depth of 672 ft (cemented in), and a 14-in. liner from 962 ft to a depth of 1067 ft.

After the well was shot between 1267 and 1410 ft, a production test was conducted on March 18-19, 1960, by representatives of the driller and Consoer, Townsend & Associates, Consulting Engineers. After 4.2 hr of pumping at a rate of 600 gpm, the drawdown was 102 ft from a nonpumping water level of 360 ft. After an additional 10.2 hr of pumping at rates ranging from 950 to 650 gpm, the final drawdown was 121 ft. One hr after pumping was stopped, the water level had recovered to 403 ft.

On August 4, 1960, the well reportedly produced 530 gpm for 3 hr with a drawdown of 38.0 ft from a nonpumping water level of 398.9 ft below land surface.

Nonpumping water levels were reported to be 425 ft in 1961, 436 ft in November 1962, and 445 ft in November 1963.

In 1964, after pumping at a rate of 1000 gpm, the drawdown was 79 ft from a nonpumping water level of 450 ft.

Nonpumping water levels were reported to be 465 ft in November 1965; 468.4 ft below land surface on April 13, 1966; 480 ft in November 1966 and October 1967; and 488 ft in 1968.

In 1969, after pumping at a rate of 1000 gpm, the drawdown was 69 ft from a nonpumping water level of 515 ft.

Nonpumping water levels were reported to be 510 ft in November 1970; 528 ft in 1971; 550 ft in May 1973; and 543.75 ft below the top of the casing on June 3, 1974.

In 1974, it was found that sand had filled the well to a depth of 1323 ft. The well was then cleaned out to a depth of 1362 ft.

A production test was conducted by the Layne-Western Co., Aurora, on June 5, 1979. After 5.5 hr of pumping at rates ranging from 737 to 896 gpm, the final drawdown was 51 ft from a nonpumping water level of 607 ft.

The pumping equipment presently installed is a 12-in., 11-stage Byron Jackson submersible pump (No. 363204) set at 720 ft, rated at 1000 gpm at about 640 ft TDH, and powered by a 300-hp 1800 rpm Byron Jackson electric motor.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B30065) of a sample collected January 28, 1976, after pumping for 4.5 hr at 1000 gpm, showed the water to have a hardness of 245 mg/l, total dissolved minerals of 370 mg/l, and an iron content of 0.2 mg/1.

WELL NO. 5, open to the Midwest Aquigroup (Cambrian-Ordovician aquifer), was completed in May 1967 to a depth of 1376 ft by the Milaeger Well & Pump Co., Brookfield, Wis. The well is located on the east side of Industrial Drive, approximately 2560 ft N and 2597 ft W of the SE corner of Section 5, T39N, R9E. The land surface elevation at the well is approximately 751 ft.

A drillers log of Well No. 5 follows:

Strata	Thickness (ft)	Depth (ft)
Black soil	2	2
Yellow clay	8	10
Blue clay and gravel	52	62
Gravel	2	64
Gray lime	27	91
White lime (hard)	15	106
Gray - white lime	56	162
Brown lime	7	169
Gray - white lime	38	207
Gray - green lime	8	215
Dark gray lime	46	261
Shale and shells	8	269
White lime	7	276
Shale and shells	4	280
Gray lime	3	283
Shale and shells	8	291
Lime	3	294
Shale and shells	11	305
Lime and shale	10	315
Shale and shells	8	323
Gray lime	342	665
Sand	315	980
Shale	5	985
Sand	57	1042
Red shale and chert	3	1045
Shale and shells	59	1104
Sand	16	1120
Lime	21	1141
Sand	39	1180
Lime	10	1190
Sand (hard)	27	1217
Sand	158	1375
Shale	1	1376

A 26-in. diameter hole was drilled to a depth of 70 ft, reduced to 25 in. between 70 and 340 ft, reduced to 19 in. between 340 and 1141 ft, and finished 15 in. in diameter from 1141 to 1376 ft. The well is cased with 26-in. pipe from land surface to a depth of 70 ft, 20-in. pipe from land surface to a depth of 340 ft (cemented in), and a 16-in. liner from 1029 ft to a depth of 1141 ft.

The well was shot with 7 charges (150 lb each) at the following depths: 1225, 1250, 1275, 1300, 1325, 1350, and 1375 ft. A production test was then conducted on May 26-27, 1967, by representatives of the driller and Consoer, Townsend & Associates, Consulting Engineers. After 19.2 hr of pumping at rates of 752 to 1120 gpm, the final drawdown was 180 ft from a nonpumping water level of 362 ft below land surface. The water level recovered to 514 ft after pumping had been stopped for 1.8 hr.

A second production test was conducted on May 29, 1967, by the driller and Consoer, Townsend & Associates. After 10.2 hr of pumping at rates ranging from 1001 to 1110 gpm, the final drawdown was 125 ft from a nonpumping water level of 407 ft below land surface.

This well was shot with 6 charges (150 lb each) at the following depths: 1235, 1260, 1285, 1310, 1335, and 1360 ft. A production test was then conducted on October 10-11, 1967, by the driller and Consoer, Townsend & Associates. After 20.8 hr of pumping at rates ranging from 1034 to 1110 gpm, the final drawdown was 175 ft from a nonpumping water level of 382 ft below land surface. The water level recovered to 396 ft after pumping had been stopped for 1.5 hr.

In 1969, the nonpumping water level was reported to be 390 ft.

In 1970, after pumping at a rate of 940 gpm, the drawdown was 170 ft from a nonpumping water level of 408 ft.

Nonpumping water levels were reported to be 408 ft in 1971, and 420 ft in May 1973.

In May 1978, accumulated sand was cleaned from the well by airlift.

The pumping equipment presently installed is a 12-in., 11-stage Byron Jackson vertical turbine pump set at 705 ft, rated at 1000 gpm at about 640 ft TDH, and powered by a 250-hp Ideal electric motor. A 30-ft section of suction pipe is attached to the pump intake. The well is equipped with 707 ft of airline.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B40569) is for a water sample from the well collected March 17, 1980, after 2 hr of pumping at 920 gpm. Hydrogen sulfide was apparent when a previous sample was collected.

WELL NO. 6, LABORATORY NO. B40569

		mg/l	*me/l*			*mg/l*	*me/l*
Iron	Fe	<0.005		Silica	SiO_2	7.3	
Manganese	Mn	<0.005		Fluoride	F	1.23	0.06
Ammonium	NH_4	0.8	0.04	Boron	B	0.48	
Sodium	Na	39	1.70	Cyanide	CN	<0.005	
Potassium	K	11	0.28	Nitrate	NO_3	<0.4	
Calcium	Ca	67	3.34	Chloride	CI	13	0.37
Magnesium	Mg	29	2.39	Sulfate	SO_4	64	1.33
Strontium	Sr	0.13		Alkalinity (as $CaCO_3$)		299	5.98
Arsenic	As	<0.001		Hardness (as $CaCO_3$)		284	5.68
Barium	Ba	0.13					
Beryllium	Be	<0.0005		Total dissolved			
Cadmium	Cd	<0.0005		minerals		403	
Chromium	Cr	<0.005					
Cobalt	Co	<0.005					
Copper	Cu	<0.005					
Lead	Pb	<0 p l					
Lithium	Li	0 06					
Mercury	Hg	<0.00005					
Nickel	Ni	<0.005					
Selenium	Se	<0.001					
Silver	Ag	<0.005					
Zinc	Zn	<0.005		pH (as rec'd)		7.3	

WELL NO. 6, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in November 1980 to a depth of 325 ft by the Hoover Water Well Service, Zion. The well is located about 85 ft east of the center line of Industrial Drive and about 50 ft north of Well No. 5, approximately 2610 ft N and 2600 ft W of the SE corner of Section 5, T39N, R9E. The land surface elevation at the well is approximately 751 ft.

A drillers log of Well No. 6 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Sandy till	68	68
Silurian limestone	252	320
Shale	5	325

A 16-in. diameter hole was drilled to a depth of 70 ft and finished 12 in. in diameter from 70 to 325 ft. The well is cased with 16-in. OD steel pipe from land surface to a depth of 20 ft and 12-in. ID steel pipe from about 2 ft above land surface to a depth of 71 ft (cemented in from 0 to 70 ft). The top of the casing is equipped with a pitless adapter.

A production test was conducted by the driller on November 19-20, 1980. After 24 hr of pumping at a rate of 614 gpm, the final drawdown was 13 ft from a nonpumping water level of 91 ft below land surface. Five min after pumping was stopped, the water level had recovered to 100 ft.

The pumping equipment presently installed consists of a 75-hp Byron Jackson electric motor, an 11-in., 6-stage Byron Jackson submersible turbine pump rated at 700 gpm, and has 180 ft of 6-in. column pipe. The well is equipped with 180 ft of airline.

WELL NO. 7 was completed in November 1980 to a depth of 350 ft by the Hoover Water Well Service, Zion. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located about 250 ft north of Hawthorne Lane and 115 ft southwest of the elevated tank, approximately 250 ft N and 2100 ft E of the SW corner of Section 33, T40N, R9E. The land surface elevation at the well is approximately 770 ft.

A drillers log of Well No. 7 follows:

Strata	*Thickness* ***(ft)***	*Depth* ***(ft)***
Sandy till	101	101
Silurian limestone	239	340
Shale	10	350

A 16-in. diameter hole was drilled to a depth of 100 ft and finished 12 in. in diameter from 100 to 350 ft. The well is cased with 16-in. OD steel pipe from land surface to a depth of 20 ft and 12-in. ID steel pipe from about 2 ft above land surface to a depth of 107 ft (cemented in from 0 to 100 ft). The top of the casing is equipped with a pitless adapter.

A production test was conducted by the driller on November 25-26, 1980. After 24 hr of pumping at a rate of 402 gpm, the final drawdown was 96 ft from a nonpumping water level of 102 ft below land surface. Fifteen min after pumping was stopped, the water level had recovered to 108 ft.

After treating the well with 2000 gal of acid, a production test was conducted by the driller on December 11-12, 1980. After 24 hr of pumping at a rate of 608 gpm, the final drawdown was 56 ft from a nonpumping water level of 108 ft below land surface. Ten min after pumping was stopped, the water level had recovered to 115 ft.

The pumping equipment presently installed consists of a 75-hp Byron Jackson electric motor, a 10-in., 7-stage Byron Jackson submersible turbine pump rated at 650 gpm, and has 215 ft of 6-in. column pipe. The well is equipped with 215 ft of airline.

WESTMONT

The village of Westmont (16,718) installed a public water supply in 1921. Six wells (Nos. 2, 6, 7, 9, 11, and 13) are in use and another well (No. 12) is available for emergency use. This supply is also cross connected with the villages of Clarendon Hills and Downers Grove. In 1950 there were 1004 services, all metered; the average and maximum pumpages were 300,000 and 350,000 gpd, respectively. In 1984 there were 4654 services, all metered; the average pumpage was 2,442,600 gpd. The water is aerated, chlorinated, and treated with polyphosphate to keep iron in solution.

WELL NO. 1, open to dolomites of the Midwest Aquigroup (Galena and Platteville Groups), was completed in 1921 to a depth of 840 ft by Goodfellow & Co., Chicago. This well was abandoned in 1926 and sealed prior to 1947. The well was located about 35 ft south of East Burlington Ave. and 35 ft east of North Linden St., approximately 2400 ft S and 450 ft E of the NW corner of Section 10, T38N, RUE. The land surface elevation at the well is approximately 755 ft.

An 8-in. diameter hole was drilled to a depth of 512 ft and finished 6 in. in diameter from 512 to 840 ft. The well was cased with 8-in. steel pipe to a depth of 152 ft and 6-in. steel pipe from 152 ft to a depth of 512 ft.

In February 1924, the well reportedly produced about 55 gpm with a drawdown of about 50 ft from a nonpumping water level below 225 ft.

A mineral analysis of a sample (Lab. No. 53074) collected January 13, 1925, showed the water to have a hardness of 454 mg/l, total dissolved minerals of 627 mg/l, and an iron content of 1.6 mg/1.

WELL NO. 2, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in August 1926 to a depth of 313 ft (measured at 300 ft deep in 1970) by the Layne & Bowler Co., Chicago. This well was originally owned by the driller and water was purchased from it by the village until 1934 when the well was acquired by the village. The well is located just south of 236 North Cass Ave., approximately 500 ft S and 100 ft W of the NE corner of Section 9, T38N, R11E. The land surface elevation at the well is approximately 752 ft.

A drillers log of Well No. 2 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Surface	120	120
Lime seams	20	140
Lime	20	160
Lime seams	5	165
Lime	40	205
Lime, gray	10	215
Lime, dark, gray	15	230
Lime, gray	10	240
Lime, dark	40	280
Lime, brown	30	310
Shale	3	313

A 15-in. diameter hole was drilled to a depth of 313 ft. The well is cased with 16-in. OD pipe from about 0.3 ft above the floor of an 8-ft deep pit to a depth of 120 ft.

In 1927, the nonpumping water level was reported to be 100 ft below land surface.

On November 12, 1938, the well reportedly produced 600 gpm for 3 hr with a drawdown of 1.2 ft from a nonpumping water level of 101.0 ft.

Nonpumping water levels were reported to be 101 ft in June 1960, and 110 ft in December 1963.

In December 1965, the well reportedly produced 630 gpm with a drawdown of 7 ft from a nonpumping water level of 128 ft.

Nonpumping water levels were reported to be 130 ft on January 14, 1970, and 126 ft in November 1971.

In May 1974, the well would pump 480 gpm but was breaking suction. It was then acidized with 4000 gal of treating acid and a production test was conducted by the J. P. Miller Artesian Well Co., Brookfield, on May 16, 1974. After 55 min of pumping at rates of 410 to 530 gpm, the drawdown was 2 ft from a nonpumping water level of 134 ft.

Nonpumping water levels were reported to be 144 ft in August 1976 and on July 17, 1979; 135.60 ft in December 1980; and 129.3 ft in June 1982.

The pumping equipment presently installed consists of a 125-hp U. S. electric motor, a 12-in., 4-stage Layne vertical turbine pump set at 206 ft, rated at 1000 gpm at about 296 ft TDH, and has 206 ft of 8-in. column pipe. The well is equipped with 206 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B31468) of a sample collected January 24, 1978, after pumping for 5 hr at 250 gpm, showed the water to have a hardness of 584 mg/1, total dissolved minerals of 731 mg/1. and an iron content of 0.8 mg/1.

WELL NO. 3, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in 1935 to a depth of 302 ft by the Milaeger Well & Pump Co., Brookfield, Wis. This well was abandoned in 1971 and sealed in 1972. The well was located at the northwest corner of 55th St. and South Wilmette Ave., approximately 70 ft N and 1275 ft E of the SW corner of Section 10, T38N, R11E. The land surface elevation at the well is approximately 760 ft.

A sample study log of Well No. 3 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
Silt and glacial till	85	85
Gravel, clean	30	115
Glacial till	20	135
SILURIAN SYSTEM		
Niagaran and Alexandrian Series		
Dolomite	167	302

A 17-in. diameter hole was drilled to a depth of 162.5 ft and finished 16 in. in diameter from 162.5 to 302 ft. The well was cased with 17-in. OD pipe from about 1 ft above the pumphouse floor to a depth of 162.5 ft (slotted with 38 slots ranging in length from 3 to 6 in. between 145 and 159 ft).

A production test was conducted by the State Water Survey on July 24, 1935. Pumping was started at a rate of about 400 gpm but rapidly decreased to the extent that after 10 min of pumping, the rate was about 35 gpm. During this time, the drawdown was 119.0 ft from a nonpumping water level of 119.5 ft below land surface. After this test, the well casing was slotted to admit water from the upper dolomite formation.

A production test was conducted by the State Water Survey on July 14-15, 1936. After 24 hr of pumping at a rate of 320 gpm, the drawdown was 28.0 ft from a nonpumping water level of 121.5 ft below the pump base.

On May 26, 1947, the nonpumping water level was reported to be 119.5 ft below the pump base.

On June 6, 1947, the well reportedly produced 250 gpm for 30 min with a pumping water level of 143.0 ft. Twenty-five min after pumping was stopped, the water level had recovered to 122.5 ft below the pump base.

On January 11, 1955, the well reportedly produced 375 gpm for 15 min with a drawdown of 12 ft from a nonpumping water level of 130 ft below the pump base.

Nonpumping water levels were reported to be 135 ft on December 16, 1957; 133 ft in May 1958; 122.5 ft in June 1960; 150 ft in December 1961; 140 ft in December 1963; and 144 ft in December 1965.

A partial analysis of a sample (Lab. No. 136708) collected January 11, 1955, after pumping for 15 min at 375 gpm, showed the water to have a hardness of 512 mg/1, total dissolved minerals of 600 mg/1, and an iron content of 1.9 mg/1.

WELL NO. 4 was completed in January 1958 to a depth of 313 ft by the Layne-Western Co., Aurora. This well is not in use and has been capped. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located south of East Burlington Ave. in the water treatment plant at the southeast corner of the building, approximately 2425 ft S and 465 ft E of the NW corner of Section 10, T38N, R11E. The land surface elevation at the well is approximately 755 ft.

A drillers log of Well No. 4 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Brown clay	10	10
Gray clay	25	35
Gray clay and gravel	80	115
Gravel	5	120
Limestone	4	124
Gray, sandy, clay	21	145
Medium limestone	10	155
Hard gray limestone	15	170
Medium gray limestone	20	190
Medium light gray limestone	50	240
Medium gray limestone	20	260
Medium brown, pink, and green limestone	20	280
Medium brown, gray, and white limestone	20	300
Green shale	13	313

A 20-in. diameter hole was drilled to a depth of 15 ft, reduced to 12.8 in. between 15 and 151 ft, and finished 12 in. in diameter from 151 to 313 ft. The well is cased with 12-in. steel pipe from about 2.5 ft above the water treatment plant floor to a depth of 151 ft (cemented in from 0 to 15 ft).

A production test was conducted by the driller on January 25, 1958. After 11.2 hr of pumping at rates ranging from 150 to 297 gpm, the drawdown was 27 ft from a nonpumping water level of 128 ft.

Nonpumping water levels were reported to be 142 ft in May 1959, and 128 ft in June 1960 and December 1961.

In 1964, this well was acidized.

Nonpumping water levels were reported to be 152 ft in December 1964, 141 ft in December 1965, and 147 ft in November 1971.

The pumping equipment presently installed is a 5-stage Layne turbine pump set at 200 ft, rated at 270 gpm at about 200 ft head, and powered by a 20-hp 1765 rpm Westinghouse electric motor.

A partial analysis of a sample (Lab. No. 181661) collected May 12, 1970, after pumping for several hours at about 300 gpm, showed the water to have a hardness of 478 mg/l, total dissolved minerals of 608 mg/l, and an iron content of 1.0 mg/1.

WELL NO. 5 was completed in December 1969 to a depth of 316 ft by the Layne-Western Co., Aurora. This well was not productive and was capped upon completion and sealed in 1972. The major water-yielding unit in this well was dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrated shale in the upper part of the Maquoketa Group. The well was located at the northwest corner of 55th St. and South Wilmette Ave. under the driveway at the Public Works Department, approximately 304 ft N and 1237 ft E of the SW corner of Section 10, T38N, R11E. The land surface elevation at the well is approximately 750 ft.

A drillers log of Well No. 5 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift	120	120
Limestone	186	306
Shale	10	316

A 20-in. diameter hole was drilled to a depth of 143.5 ft and finished 13.2 in. in diameter from 143.5 to 316 ft. The well was cased with 20-in. steel pipe from land surface to a depth of 133.5 ft, 16-in. steel pipe from land surface to a depth of 143.5 ft (cemented in), and 14-in. steel pipe from 117 ft to a depth of 157 ft.

WELL NO. 6 was completed in February 1970 to a depth of 319 ft by the Layne-Western Co., Aurora. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located about 100 ft south of Richmond St. and 300 ft west of Wilmette Ave. in Memorial Park, approximately 1920 ft N and 1087 ft E of the SW corner of Section 10, T38N, R11E. The land surface elevation at the well is approximately 757 ft.

A drillers log of Well No. 6 follows:

Strata	***Thickness (ft)***	***Depth (ft)***
Top soil and clay	5	5
Clay	15	20
Clay and layers of gravel	20	40
Clay and boulders	10	50
Clay and layers of gravel	70	120
Clay and sand	10	130
Clay, sand, lime, and boulders	10	140
Sand	5	145
Sand, clay, and lime	5	150
Lime, gray and broken	10	160
Hard, gray limestone - crevice at 164 ft	125	285
Medium hard lime, hard shells	15	300
Medium hard lime	5	305
Medium hard lime and shale	5	310
Shale	9	319

A 20-in. diameter hole was drilled to a depth of 158.3 ft, reduced to 19.2 in. between 158.3 and 178 ft, and finished 15.2 in. in diameter from 178 to 319 ft. The well is cased with 20-in. pipe from about 1.3 ft above the wellhouse floor to a depth of 158.3 ft.

A production test was conducted by the driller on February 10, 1970. After 8.1 hr of pumping at rates ranging from 513 to 525 gpm, the drawdown was 2 ft from a nonpumping water level of 141 ft below land surface.

A second production test was conducted by the driller on February 13, 1970. After 6 hr of pumping at rates of 508 to 1001 gpm, the drawdown was 20 ft from a nonpumping water level of 141 ft below land surface.

A third production test was conducted by the driller on February 16, 1970. The well produced at rates ranging from 955 to 851 gpm for 7 hr with a maximum drawdown of 12 ft from a nonpumping water level of 141 ft below land surface.

In November 1971, the well reportedly produced 750 gpm with a drawdown of 8 ft from a nonpumping water level of 146 ft.

Nonpumping water levels were reported to be 159 ft on July 17, 1979; 156.71 ft in December 1980; and 153.3 ft in June 1982.

The pumping equipment presently installed is an 8-stage Layne turbine pump set at 229 ft, rated at 700

gpm, and powered by a 100-hp U. S. electric motor. The well is equipped with 229 ft of airline.

A mineral analysis of a sample (Lab. No. 211505) collected July 17, 1979, after pumping for several hours at 400 gpm, showed the water to have a hardness of 514 mg/l, total dissolved minerals of 672 mg/l, and an iron content of 1.1 mg/1.

WELL NO. 7 was completed in October 1970 to a depth of 294 ft by the Wehling Well Works, Beecher. The major water-yielding unit in this well is dolomite of the L'pper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located in the Oakwood Shopping Center about 500 ft north of Ogden Ave. and 0.2 mile east of Cass Ave., approximately 2160 ft S and 1200 ft E of the NW corner of Section 3, T38N, RUE. The land surface elevation at the well is approximately 741 ft.

A drillers log of Well No. 7 follows:

Strata	*Thickness (ft)*	*Depth (Jt)*
Clay	22	22
Mud and rocks	103	125
Gravel	3	128
Lime	137	265
Red rock and green shale	5	270
Shale	24	294

An 11.9-in. diameter hole was drilled to a depth of 294 ft. The well is cased with 12-in. pipe from about 1.8 ft above the wellhouse floor.

A production test was conducted by the driller on October 2, 1970. After 8 hr of pumping at rates of 550 to 575 gpm, the drawdown was 45 ft from a nonpumping water level of 120 ft below the top of the casing.

In November 1971, the well reportedly produced 575 gpm with a drawdown of 37 ft from a nonpumping water level of 99 ft.

Nonpumping water levels were reported to be 142.92 ft in December 1980, and 136.9 ft in June 1982.

The pumping equipment presently installed is a 9.8-in., 7-stage Peerless vertical turbine pump set at 260 ft, rated at 525 gpm at about 309 ft TDH, and powered by a 60-hp 1760 rpm U. S. electric motor. The well is equipped with 260 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B31466) of a sample collected January 24, 1978, after pumping for 45 min, showed the water to have a hardness of 652 mg/1, total dissolved minerals of 763 mg/1, and an iron content of 1.4 mg/1.

WELL NO. 8 was completed in September 1971 to a depth of 324 ft by the J. P. Miller Artesian Well Co., Brookfield. This well is not in use. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located 300 ft east of Oak Ave. and 50 ft north of Richmond St., approximately 2050 ft N and 2350 ft E of the SW corner of Section 10, T38N, R11E. The land surface elevation at the well is approximately 735 ft.

A drillers log of Well No. 8 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift.	152	152
Niagaran lime	158	310
Shale	14	324

A 20-in. diameter hole was drilled to a depth of 50 ft and finished 15.2 in. in diameter from 50 to 324 ft. The well is cased with 20-in. steel pipe from about 1 ft above land surface to a depth of 50 ft and 16-in. steel pipe from about 2 ft above land surface to a depth of 153 ft.

A production test was conducted by the driller on September 20, 1971. After 4.5 hr of pumping at a rate of 50 gpm, the drawdown was 104 ft from a nonpumping water level of 131 ft. After this test, the well was acidized with 3000 gal of treating acid on September 30, 1971.

A production test was conducted by the driller on January 21, 1972. After 2 hr of pumping at rates of 186 to 180 gpm, the drawdown was 99 ft from a nonpumping water level of 136 ft. On January 24, 1972, the well was treated with 5000 gal of acid. On January 25, 1972, the well reportedly produced at rates ranging from 264 to 190 gpm for 5 hr with a drawdown of 88 ft from a nonpumping water level of 145 ft.

WELL NO. 9 was completed in May 1974 to a depth of 309 ft by the J. P. Miller Artesian Well Co., Brookfield. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located about 100 ft west of Warwick Ave. and 600 ft south of Traube St., approximately 1640 ft N and 600 ft E of the SW corner of Section 3, T38N, R11E. The land surface elevation at the well is approximately 747 ft.

A drillers log of Well No. 9 follows:

Strata	Thickntsa (ft)	Depth (ft)
Glacial drift	110	110
Niagaran dolomite	8	118
Blue clay with gravel	6	124
Dolomite	152	276
Red shale (Maquoketa)	13	289
Gray shale (Maquoketa)	20	309

A 15.2-in. diameter hole was drilled to a depth of 309 ft. The well is cased with 16-in. pipe from about 1.5 ft above the wellhouse floor to a depth of 141 ft.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B23247) is for a water sample from the well collected February 1, 1983, after 1.5 hr of pumping at 500 gpm.

WELL NO. 9, LABORATORY NO. B23247

		mg/l	me/l		mg/l	me/l
Iron	Fe	1.4	Silica	SiO_2	17	
Manganese	Mn	0.035	Fluoride	F	0.29	0.02
Ammonium	NH_4	0.4	0 02 Boron	B	0.20	
Sodium	Na	19	0.83 Cyanide	CN	<0.005	
Potassium	K	3.3	0.08 Nitrate	NO_3	0.9	0.01
Calcium	Ca	146	7.28 Chloride	CI	21	0.59
Magnesium	Mg	54	4.44 Sulfate	SO_4	226	4.70
Strontium	Sr	0.94	Alkalinity (as $CaCO_3$)		363	7.26
Arsenic	As	0.001	Hardness (as $CaCO_3$)		593	11.86
Barium	Ba	0.023				
Beryllium	Be	<0.0005	Total dissolved			
Cadmium	Cd	<0.003	minerals		**742**	
Chromium	Cr	<0.005				
Cobalt	Co	<0.005				
Copper	Cu	<0.003				
Lead	Pb	<0.005				
Mercury	Hg	<0.00005				
Nickel	Ni	<0.003				
Selenium	Se	<0 001				
Silver	Ag	<0.005				
Vanadium	V	<0.004				
Zinc	Zn	<0.002	pH (as rec'd) 7.4			

A production test was conducted by the driller on May 31, 1974. After 3 hr of pumping at rates of 620 to 1190 gpm, the drawdown was 8 ft from a nonpumping water level of 123 ft.

A second production test was conducted by the driller on June 3, 1974. After 4 hr of pumping at rates of 1100 to 1200 gpm, the drawdown was 8 ft from a nonpumping water level of 123 ft. Pumping was continued at a decreased rate of 1000 gpm for 2 hr with a drawdown of 6 ft. After an additional 2 hr of pumping at a decreased rate of 750 gpm, the final drawdown was 4 ft.

Nonpumping water levels were reported to be 139 ft on July 17, 1979; 131.97 ft in December 1980; and 125 ft in June 1982.

The pumping equipment presently installed consists of a 100-hp 1760 rpm U. S. Holloshaft electric motor, an 11.5-in., 6-stage Peerless turbine pump set at 180 ft, rated at 1500 gpm at about 182 ft TDH, and has 180 ft of 10-in. column pipe. A 10-ft section of 10-in. suction pipe is attached to the pump intake.

WELL NO. 10, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in July 1974 to a depth of 281 ft by the J. P. Miller Artesian Well Co., Brookfield. This well has never been used and is presently capped. The well is located at 39th St. and Cass Ave., approximately 15 ft S and 85 ft E of the NW corner of Section 3, T38N, R11E. The land surface elevation at the well is approximately 747 ft.

A drillers log of Well No. 10 follows:

Strata	Thickness (ft)	Depth (ft)
Glacial drift	99	99
Niagaran dolomite	16	115
Gray clay	5	120
Dolomite	158	278
Maquoketa shale	3	281

A 15.2-in. diameter hole was drilled to a depth of 281 ft. The well is cased with 16-in. OD pipe from about 2 ft above land surface to a depth of 143 ft.

A production test was conducted by the driller on July 11, 1974. After 4 hr of pumping at rates of 450 to 555 gpm, the drawdown was 38 ft from a nonpumping water level of 103 ft below land surface.

After acidizing with 4000 gal of 15 percent treating acid, production tests were conducted by the driller on July 23 and 24, 1974. After 8 hr of pumping on July 23 at rates ranging from 515 to 875 gpm, the maximum drawdown was 45 ft from a nonpumping water level of 103 ft below land surface. On July 24, the well produced at rates of 900 to 790 gpm for 2.3 hr with a final drawdown of 41 ft from a nonpumping water level of 100 ft below land surface.

WELL NO. 11 was completed in June 1977 to a depth of 1604 ft by the Layne-Western Co., Aurora. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer). The well also penetrates the upper part of the Eau Claire Formation. The well is located on the south side of East Burlington Ave. behind the water treatment plant, approximately 2485 ft S and 790 ft E of the NW corner of Section 10, T38N, R11E. The land surface elevation at the well is approximately 751 ft.

A drillers log of Well No. 11 follows:

Strata	Thickness (ft)	Depth (ft)
Clay, sand and gravel	140	HO
Limestone, gray and hard	158	298
Shale	97	395
Shale and limestone	80	475
Shale	35	510
Gray limestone - hard	120	630
Sandy limestone, brown, medium	120	750
Gray limestone - hard	92	842
Sandstone white and brown - medium	203	1045
Sandstone with lime and shale layers	13	1058
Shale - gray and pink	7	1065
Lime and shale layers	40	1105
Gray limestone - hard	200	1305
Dark gray sandstone - medium	70	1375
Sandstone, lime and chert - hard	105	1480
Sandstone - white - medium	105	1585
Sandstone - lime and shale - mixed	5	1590
Shale	14	1604

A 25.2-in. diameter hole was drilled to a depth of 530 ft, reduced to 21.2 in. between 530 and 1120 ft, and finished 17.2 in. in diameter from 1120 to 1604 ft. The well is cased with 26-in. steel drive pipe from land surface to a depth of 151 ft, 22-in. steel pipe from about 0.7 ft above the wellhouse floor to a depth of 530 ft (cemented in), and an 18-in. steel liner from 1039 ft to a depth of 1120 ft.

A production test was conducted by the driller on June 15-16, 1977. After 3 hr of pumping at rates of 556 to 1001 gpm, the maximum drawdown was 133 ft from a nonpumping water level of 633 ft below land surface. Pumping was continued for 21 hr at a rate of 1029 gpm with a final drawdown of 143 ft. Thirty min after pumping was stopped, the water level had recovered to 687 ft.

In December 1980, the well reportedly produced 759 gpm for 8.1 hr with a drawdown of 186.12 ft from a nonpumping water level of 666.61 ft.

In June 1982, after 8.9 hr of pumping at a rate of 675 gpm, the drawdown was 200.1 ft from a nonpumping water level of 686.0 ft.

The pumping equipment presently installed is a 12-in., 12-stage Byron Jackson submersible pump (No. 761-C-0341) set at 1000 ft, rated at 1000 gpm at about 860 ft TDH, and powered by a 350-hp Byron Jackson electric motor. The well is equipped with 1000 ft of airline.

The following mineral analysis (Lab. No. 208353) is for a water sample from the well collected June 7, 1978, after several hours of pumping at 1000 gpm.

WELL NO. 11, LABORATORY NO. 208353

		mg/l	me/l			mg/l	me/l
Iron(total)	Fe	0.1		Silica	SiO_2	8.2	
Manganese	Mn	0.01		Fluoride	F	1.0	
Ammonium	NH_4	0.0	0.00	Boron	B	0.6	
Sodium	Na	51.1	2.22	Nitrate	NO_3	2.8	0.05
Potassium	K	13.6	0.35	Chloride	CI	16	0.45
Calcium	Ca	77.9	3.89	Sulfate	SO_4	116.4	2.42
Magnesium	Mg	25.5	2.10	Alkalinity (as $CaCO_3$)		274	5.48
Strontium	Sr	3.16	0.07				
				Hardness (as $CaCO_3$)		303	6.06
Barium	Ba	<0.1					
Cadmium	Cd	0.00		Total dissolved			
Chromium	Cr	0.00		minerals		486	
Copper	Cu	0.00					
Lead	Pb	<0.05					
Lithium	Li	0.03		Turbidity	2		
Nickel	Ni	<0.05		Color	0		
Silver	Ag	0.00		Odor	0		
Zinc	Zn	0.02		Temp.(reported)	57.5F		

WELL NO. 12 was completed in January 1977 to a depth of 300 ft by the Wehling Well Works, Beecher. This well is available for emergency use. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located on the east side of Oakwood Drive north of Arlington Ave., approximately 80 ft N and 1840 ft W of the SE corner of Section 34, T39N, R11E. The land surface elevation at the well is approximately 740 ft.

A drillers log of Well No. 12 follows:

Strata	Thickness (ft)	Depth (ft)
Clay	75	75
Sandy	35	110
Broken lime	13	123
Lime	157	280
Shale	20	300

A 20-in. diameter hole was drilled to a depth of 127 ft and finished 15.2 in. in diameter from 127 to 300 ft. The well is cased with 16-in. black steel pipe from about 1.6 ft above the wellhouse floor to a depth of 127 ft (cemented in).

A production test was conducted by the driller on January 21, 1977. After 8.5 hr of pumping at rates ranging from 1193 to 686 gpm, the maximum drawdown was 63 ft from a nonpumping water level of 100 ft.

Nonpumping water levels were reported to be 103 ft on July 17, 1979; 101.32 ft in October 1980; and 100.5 ft in June 1982.

The pumping equipment presently installed is set at 204.5 ft, operated at 825 gpm, and powered by a 100-

hp Westinghouse electric motor. The well is equipped with 204 ft of airline.

A partial analysis of a sample (Lab. No. 205043) collected May 16, 1977, after pumping for 9 hr, showed the water to have a hardness of 665 mg/l, total dissolved minerals of 826 mg/1, and an iron content of 1.5 mg/1.

WELL NO. 13 was completed in November 1978 to a depth of 1578 ft by the Wehling Well Works, Beecher. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer). The well also penetrates the upper part of the Eau Claire Formation. The well is located east of Cass Ave. behind North American Federal Savings & Loan in the Oakwood Shopping Plaza, approximately 2175 ft S and 1250 ft E of the NW corner of Section 3, T38N, R11E. The land surface elevation at the well is approximately 740 ft.

A drillers log of Well No. 13 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift	125	125
Lime	143	268
Shale	220	488
Dolomite	325	813
Sand	215	1028
Sand and shale	5	1033
Shale	5	1038
Shale with lime	20	1058
Lime	125	1183
Dolomite	50	1233
Lime	60	1293
Dolomite	90	1383
Sand and lime	30	1413
Sand	152	1565
Shale	13	1578

A 30-in. diameter hole was drilled to a depth of 142 ft, reduced to 25.2 in. between 142 and 513 ft, reduced to 21.2 in. between 513 and 1113 ft, and finished 17.2 in. in diameter from 1113 to 1578 ft. The well is cased with 26-in. black steel pipe from about 1 ft above land surface to a depth of 142 ft, 22-in. black steel pipe from land surface to a depth of 513 ft (cemented in), and an 18-in. black steel liner from 993 ft to a depth of 1113 ft.

Upon completion, the well reportedly produced at an average rate of 967 gpm for 36 hr with a drawdown of 26 ft from a nonpumping water level of 750 ft.

In December 1980, after 7.4 hr of pumping at a rate of 916 gpm, the drawdown was 28.09 ft from a nonpumping water level of 766.29 ft.

In June 1982, the nonpumping water level was reported to be 815.7 ft.

The pumping equipment presently installed consists of a 400-hp Byron Jackson electric motor, a 13-stage Byron Jackson submersible pump set at 1000 ft, rated at 1300 gpm at about 866 ft TDH, and has 1000 ft of 8-in. column pipe.

A partial analysis of a sample (Lab. No. 210092) collected October 18, 1978, showed the water to have a hardness of 328 mg/1, total dissolved minerals of 565 mg/1, and an iron content of 0.4 mg/1.

WHEATON

The city of Wheaton (43,043) installed a public water supply in 1890. Nine wells (Nos. 2-10) are in use. This supply is also cross connected with the villages of Glen Ellyn and Winfield. In 1949 there were about 3000 services, all metered; the average and maximum pumpages were 900.000 and 1,600,000 gpd, respectively. In 1984 there were 13,444 services, all metered; the average pumpage was 4,983,000 gpd. The water is chlorinated, fluoridated, and treated with polyphosphate to keep iron in solution.

A 10-in. diameter well, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed before 1890 to a depth of 175 ft. This well was abandoned in 1930 and sealed prior to 1956. The well was located at the southwest corner of Liberty Drive and Reber St., approximately 1890 ft N and 1875 ft E of the SW corner of Section 16, T39N, R10E. In August 1917, the nonpumping water level was reported to be about 26 ft below land surface.

WELL NO. 1, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in 1890 to a depth of 175 ft. This well was abandoned and sealed in July 1974. The well was located about 20 ft south of the old well, approximately 1870 ft N and 1875 ft E of the SW corner of Section 16, T39N, R10E. The land surface elevation at the well is approximately 740 ft.

A 10-in. diameter hole was drilled to a depth of 175 ft. The well was cased with 10-in. pipe from about 3 ft above the water plant basement floor to a depth of about 110 ft.

Nonpumping water levels were reported to be 47 ft below the pump base on October 31, 1946; 52 ft on May 28, 1947; 49 ft in April 1956; 66 and 74 ft in 1956; 52 ft in July 1957; 53 ft in August 1957; 47 ft in April 1958; and 66 ft in September 1959.

A production test using three observation wells was conducted by the State Water Survey on May 2-3, 1960. After 24 hr of pumping at rates ranging from 825 to 880 gpm, the final drawdown was 34.03 ft from a nonpumping water level of 48.72 ft below the pump base.

A partial analysis of a sample (Lab. No. 163166) collected June 11, 1964, after pumping for 5 hr at 750 gpm, showed the water to have a hardness of 440 mg/I, total dissolved minerals of 558 mg/l, and an iron content of 1.0 mg/1.

WELL NO. 2 was completed in February 1930 to a depth of 184 ft (reported to be 183 ft deep in 1974) by the Thorpe Bros. Well Co., Des Moines, Iowa. The water-yielding units in this well are sand and gravel of the Prairie Aquigroup and dolomite of the Upper Bedrock Aquigroup (Silurian System). The well is located near the northwest corner of Reber St. and Willow Ave., approximately 1700 ft N and 1900 ft E of the SW corner of Section 16, T39N, R10E. The land surface elevation at the well is 738.4 ft.

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

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
Black loam	3	3
Yellow clay with coarse gravel and boulders	7	10
Coarse gravel and boulders	8	18
Blue clay and boulders	33	51
Fine white sand	2	53
Blue clay, sand and boulders	3	56
Boulders	4	60
Coarse lime sand and boulders	15	75
Quicksand	3	78
Coarse lime sand and boulders	4	82
Large boulders and lime sand	10	92
Coarse lime sand	5	97
Boulders	4	101
Coarse lime sand	10	111
Quicksand	2	113
SILURIAN SYSTEM		
Niagaran and/or Alexandrian Series		
Niagara limestone	67	180
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Maquoketa shale	4	184

A 38-in. diameter hole was drilled to a depth of 55 ft, reduced to 24 in. between 55 and 113.5 ft, reduced to 16 in. between 113.5 and 167 ft, and finished 12 in. in diameter from 167 to 184 ft. The well is equipped with 38-in. casing from about 1 ft above land surface to a depth of 55 ft, 24-in. casing from 47 ft to a depth of 57 ft, 24-in. metal screen (gravel packed) from 57 ft to a depth of 81 ft, 24-in. blank casing from 81 ft to a depth of 89 ft, and 20-in. casing from 84 ft to a depth of 113.5 ft (cemented in from 84 to 89 ft).

Upon completion, the well reportedly produced 1040 gpm with a drawdown of 85.5 ft from a nonpumping water level of 32.0 ft below land surface.

Nonpumping water levels were reported to be 37 ft below the pump base when all wells were idle on October 3, 1946; 49 ft in April 1956; 53 and 59 ft in 1956; 76 ft in July 1957; 83 ft in August 1957; 54 ft in April 1958; 54 ft in September 1959; and 58 ft below land surface in January 1964.

In February 1964, this well was acidized.

Nonpumping water levels were reported to be 58 ft in October 1964, and 60 ft in November 1965.

A production test was conducted by the Layne-Western Co., Aurora, on June 7, 1974. After 55 min of pumping at rates of 328 to 503 gpm, the drawdown was 70+ ft from a nonpumping water level of 70 ft.

After acidizing with 3000 gal of 15 percent HCl, a production test was conducted by the Layne-Western Co. on June 12, 1974. After 3 hr of pumping at rates of 508 to 1001 gpm, the drawdown was 67 ft from a nonpumping water level of 63 ft.

In 1979, the well reportedly produced 800 gpm with a drawdown of 57 ft from a nonpumping water level of 79 ft.

On January 30, 1981, after pumping at a rate of 1000 gpm, the drawdown was 33 ft from a nonpumping water level of 75 ft.

On February 1, 1982, the well reportedly produced 1000 gpm with a drawdown of 35 ft from a nonpumping water level of 85 ft.

On January 31, 1983, after pumping at a rate of 1000 gpm, the drawdown was 25 ft from a nonpumping water level of 93 ft.

On March 26, 1983, the well reportedly produced 1000 gpm with a drawdown of 30 ft from a nonpumping water level of 97 ft.

On August 31, 1984, after pumping at a rate of 1000 gpm, the drawdown was 26 ft from a nonpumping water level of 101 ft.

The pumping equipment presently installed consists of a 50-hp 1200 rpm U. S. electric motor, a 12-in., 2-stage Layne turbine pump (No. 49249) set at 150 ft, rated at 1000 gpm, and has 150 ft of 10-in. column pipe. A 10-ft section of 8-in. suction pipe is attached to the pump intake. The well is equipped with 150 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. C002529) of a sample collected January 10, 1978, after pumping for 1.5 hr at 800 gpm, showed the water to have a hardness of 533 mg/l, total dissolved minerals of 724 mg/l, and an iron content of 0.9 mg/1.

WELL NO. 3 was completed in October 1946 to a depth of 350 ft (measured in 1979 at 343 ft deep) by the Layne-Western Co., Aurora. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located southeast of the intersection of Liberty Drive and Cross St., approximately 1900 ft N and 1775 ft E of the SW corner of Section 16, T39N, R10E. The land surface elevation at the well is approximately 745 ft.

A correlated drillers log of Well No. 3 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
Soil and clay	114	114
Sand, fine	2	116
SILURIAN SYSTEM		
Niagaran and Alexandrian Series		
Limestone	64	180
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Limestone	90	270
Limestone, shale breaks	20	290
Limestone	46	336
No record	14	350

An 18-in. diameter hole was drilled to a depth of 118 ft and finished 15 in. in diameter from 118 to 350 ft. The well is cased with 18.6-in. OD drive pipe from about 1.5 ft above land surface to a depth of 118 ft.

A production test was conducted on October 31, 1946, by representatives of the driller, the city, and the State Water Survey. After 7.8 hr of intermittent pumping at rates ranging from 615 to 985 gpm, the maximum drawdown was 36.5 ft from a nonpumping water level of 46.7 ft below the pump base. The water level recovered to 44.0 ft after pumping had been stopped for 1.1 hr. During this test, Well Nos. 1 and 2 were pumped intermittently.

Nonpumping water levels were reported to be 44 ft below land surface in March 1954; 50 ft in April 1956; 54 and 56 ft in 1956; 58 ft in January 1957; 50 ft in July 1957; 97 ft in August 1957; 55 ft in April 1958; 60 ft in September 1959; and 45.8 ft in May 1960.

In March 1964, this well was acidized.

Nonpumping water levels were reported to be 55 ft in October 1964, and 65 ft in November 1965.

In December 1974, the well reportedly produced 1600 gpm with a drawdown of 16 ft from a nonpumping water level of 71 ft.

In December 1976, the nonpumping water level was reported to be 78 ft.

On December 30, 1977, after pumping at a rate of 1700 gpm, the drawdown was 25 ft from a nonpumping water level of 81 ft.

In 1979, the well reportedly produced 1700 gpm with a drawdown of 23 ft from a nonpumping water level of 85 ft.

On January 30, 1981, after pumping at a rate of 1800 gpm, the drawdown was 27 ft from a nonpumping water level of 81 ft.

On February 1, 1982, the well reportedly produced 1700 gpm with a drawdown of 23 ft from a nonpumping water level of 85 ft.

On January 31, 1983, after pumping at a rate of 1700 gpm, the drawdown was 21 ft from a nonpumping water level of 88 ft.

On March 26, 1983, the well reportedly produced 1700 gpm with a drawdown of 26 ft from a nonpumping water level of 92 ft.

On August 31, 1984, after pumping at a rate of 1600 gpm, the drawdown was 15 ft from a nonpumping water level of 103 ft.

The pumping equipment presently installed consists of a 75-hp 1765 rpm General Electric motor, a 12-in., 4-stage Layne turbine pump set at 150 ft, rated at 1500 gpm at about 150 ft head, and has 150 ft of 10-in. column pipe. A 10-ft section of 10-in. suction pipe is attached to the pump intake. The well is equipped with 150 ft of airline.

A partial analysis of a sample (Lab. No. 173339) collected October 26, 1967, showed the water to have a hardness of 534 mg/l, total dissolved minerals of 704 mg/l, and an iron content of 0.9 mg/1.

WELL NO. 4 was completed in October 1954 to a depth of 341 ft by the Layne-Western Co., Aurora. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located on the north side of Countryside Drive and east of Driving Park Road, approximately 1775 ft S and 1150 ft W of the NE corner of Section 9, T39N, R10E. The land surface elevation at the well is approximately 750 ft.

A drillers log of Well No. 4 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Black top soil	2	2
Yellow clay	8	10
Gray clay, sandy	15	25
Gravel and sand	5	30
Gravel, coarse	10	40
Gravel, coarse, boulders	5	45
Gravel and clay	10	55
Gravel and sand	40	95
Brown lime	10	105
White lime	30	135
Gray lime hard	30	165
White lime, hard	60	225
Gray lime	13	238
Shale	12	250
Gray lime, hard	35	285
Gray lime, medium	25	310
Gray lime, hard	23	333
Shale	8	341

A 19.2-in. diameter hole was drilled to a depth of 341 ft. The well is cased with 20-in. OD pipe from about 0.7 ft above land surface to a depth of 105 ft.

A production test was conducted on October 27-28, 1954, by representatives of the driller, the city, and the State Water Survey. After 13.5 hr of pumping at rates ranging from 1012 to 757 gpm, the maximum drawdown was 83 ft from a nonpumping water level of 45 ft below the top of the casing.

On November 2, 1954, the well reportedly produced at rates of 1000 to 875 gpm for 12 hr with a drawdown of 146 ft from a nonpumping water level of 50 ft below the top of the casing.

In April 1958, the nonpumping water level was reported to be 47 ft.

On September 16, 1959, after 30 min of pumping at a rate of 1250 gpm, the drawdown was 120 ft from a nonpumping water level of 56 ft below land surface.

Nonpumping water levels were reported to be 57 ft in September 1960, 61 ft in September 1961, and 98 ft in November 1965.

In 1971, this well was acidized by M. P. Schneller & Associates, Aurora. It was reported that no improvement in yield was noted. The well was then shot with directional shots (1 shot per ft for a total of 60 ft) with good initial results.

In 1979, the nonpumping water level was reported to be 100 ft.

On January 30, 1981, the well reportedly produced 750 gpm with a drawdown of 129 ft from a nonpumping water level of 93 ft.

On February 1, 1982, after pumping at a rate of 750 gpm, the drawdown was 141 ft from a nonpumping water level of 95 ft.

On January 31, 1983, the well reportedly produced 750 gpm with a drawdown of 148 ft from a nonpumping water level of 93 ft.

On March 26, 1983, after pumping at a rate of 700 gpm, the drawdown was 146 ft from a nonpumping water level of 95 ft.

On August 31, 1984, the well reportedly produced 550 gpm with a drawdown of 146.5 ft from a nonpumping water level of 100 ft.

The pumping equipment presently installed consists of a 100-hp 1770 rpm Westinghouse electric motor (No. 16N6543), a 12-in., 4-stage Layne turbine pump (No. 34613) set at 250 ft, rated at 1000 gpm at about 200 ft head, and has 250 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 250 ft of airline.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. C004034)

is for a water sample from the well collected in May 1978, after 20 hr of pumping at 535 gpm.

WELL NO. *4*, LABORATORY NO. C004034

		mg/l	*me/l*			*mg/l*	*me/l*
Iron	Fe	0.9		Silica	SiO_2	18	
Manganese	Mn	0.00		Fluoride	F	0.5	0.03
Ammonium	NH_4	0.57	0.03	Boron	B	0.5	
Sodium	Na	24	1.04	Cyanide	CN	0.00	
Potassium	K	2.3	0.06	Nitrate	NO_3	0.00	0.00
Calcium	Ca	106	5.29	Chloride	CI	37	1.04
Magnesium	Mg	52	4.28	Sulfate	SO_4	165	3.43
				Alkalinity (as $CaCO_3$)		316	6.32
Arsenic	As	0.000					
Barium	Ba	0.1		Hardness (as $CaCO_3$)		480	9.60
Cadmium	Cd	0.00					
Chromium	Cr	0.00		Total dissolved			
Copper	Cu	0.05		minerals		600	
Lead	Pb	0.00					
Mercury	Hg	0.0000					
Nickel	Ni	0.0					
Selenium	Se	0.00					
Silver	Ag	0.00					
Zinc	Zn	0.02		pH (as rec'd)		7.6	

Prior to the construction of Well No. 5, a test well (No. 1-61) was drilled in August 1961 to a depth of 365 ft by L. Cliff Neely, Batavia. It was located approximately 1096 ft S and 1024 ft W of the NE corner of Section 9, T39N, R10E. A 16-in. diameter hole was drilled to a depth of 6 ft and finished 8 in. in diameter from 6 to 365 ft. The test well was cased with 16-in. pipe from land surface to a depth of 6 ft and 8-in. pipe from land surface to a depth of 119 ft. Upon completion, the test well reportedly produced 300 gpm for 12 hr with very little drawdown from a nonpumping water level of 60 ft.

WELL NO. 5 was completed in October 1961 to a depth of 368 ft by L. Cliff Neely, Batavia. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located at 1945 Howard St. north of Bridle Lane at the site of Test Well No. 1-61, approximately 1096 ft S and 1024 ft W of the NE corner of Section 9, T39N, R10E. The land surface elevation at the well is approximately 757 ft.

A drillers log of Well No. 5 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Silt and clay	20	20
Gravel and small boulders	11	31
Mud and gravel	82	113
Sand	6	119
Limestone	103	222
Shale and limestone streaks	48	270
Limestone (gray and hard)	55	325
Shale	43	368

A 26-in. diameter hole was drilled to a depth of 134 ft and finished 20 in. in diameter from 134 to 368 ft. The well is cased with 26-in. OD pipe from land surface to a depth of 117 ft and 20-in. OD pipe from land surface to a depth of 134 ft (cemented in).

Upon completion, the well reportedly produced 1125 gpm for 20.2 hr with a drawdown of 73.2 ft from a nonpumping water level of 64.0 ft below land surface.

Nonpumping water levels were reported to be 73 ft below land surface on January 10, 1964, 82 ft in November 1965, and 100 ft in June 1976 and on July 6, 1979.

In 1979, after pumping at a rate of 700 gpm, the drawdown was 23 ft from a nonpumping water level of 93 ft.

On January 30, 1981, the well reportedly produced 850 gpm with a drawdown of 16 ft from a nonpumping water level of 109 ft.

On February 1, 1982, after pumping at a rate of 750 gpm, the drawdown was 17 ft from a nonpumping water level of 111 ft.

On January 31, 1983, the well reportedly produced 500 gpm with a drawdown of 8 ft from a nonpumping water level of 110 ft.

On March 26, 1983, after pumping at a rate of 750 gpm, the drawdown was 22 ft from a nonpumping water level of 114 ft.

On August 31, 1984, the well reportedly produced 450 gpm with a drawdown of 28 ft from a nonpumping water level of 123 ft.

The pumping equipment presently installed consists of a 40-hp 1750 rpm U. S. electric motor, a 12-in., 3-stage Byron Jackson turbine pump set at 220 ft, rated at 800 gpm, and has 220 ft of 8-in. column pipe. The well is equipped with 220 ft of airline.

A mineral analysis of a sample (Lab. No. 211315) collected July 6, 1979, after pumping for 30 min at 500 gpm, showed the water to have a hardness of 534 mg/l, total dissolved minerals of 673 mg/l, and an iron content of 3.2 mg/l.

WELL NO. 6 was completed in May 1966 to a depth of 368 ft by L. Cliff Neely, Batavia. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located on the south side of Willow Ave. south of the end of Hillside Court, approximately 1445 ft N and 2129 ft W of the SE corner of Section 16, T39N, R10E. The land surface elevation at the well is approximately 763 ft.

A drillers log of Well No. 6 follows:

Strata	Thickness (ft)	Depth (ft)
Gravel	35	35
Blue shale	22	57
Blue mud	36	93
Gravel	2	95
Gray shale	30	125
Gravel	19	144
Lime	109	253
Lime (some white chalk)	15	268
Lime (light gray)	5	273
Lime (dark gray)	16	289
Lime	61	350
Lime with very little shale	12	362
Lime	6	368

A 16-in. diameter hole was drilled to a depth of 144.5 ft and finished 15.2 in. in diameter from 144.5 to 368 ft. The well is cased with 16-in. OD pipe from about 1.2 ft above the wellhouse floor to a depth of 144.5 ft.

A production test was conducted by the driller on May 23, 1966. After 8 hr of pumping at rates of 1074 to 1521 gpm, the final drawdown was 11 ft from a nonpumping water level of 60 ft below the top of the casing. On the basis of the production test data, it was estimated that this well should yield 2500 gpm (3,600,000 gpd) on a long-term basis.

On July 6, 1979, the nonpumping water level was reported to be 97 ft.

In 1979, the well reportedly produced 2200 gpm with a drawdown of 18 ft from a nonpumping water level of 95 ft.

On January 30, 1981, after pumping at a rate of 2200 gpm, the drawdown was 21 ft from a nonpumping water level of 99 ft.

On February 1, 1982, the well reportedly produced 2000 gpm with a drawdown of 16 ft from a nonpumping water level of 104 ft.

On March 26, 1983, after pumping at a rate of 2000 gpm, the drawdown was 16 ft from a nonpumping water level of 111 ft.

On August 31, 1984, the well reportedly produced 1900 gpm with a drawdown of 14 ft from a nonpumping water level of 115 ft.

The pumping equipment presently installed is a 3-stage Byron Jackson turbine pump set at 150 ft, rated at 2500 gpm at about 150 ft head, and powered by a 125-hp U. S. electric motor. The well is equipped with 150 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B039812) of a sample collected March 24, 1982, after pumping for 1 hr at 2000 gpm, showed the water to have a hardness of 592 mg/l, total dissolved minerals of 801 mg/l, and an iron content of 0.82 mg/1.

A test well (No. 5-74) was constructed in January 1974 to a depth of 300 ft by the Layne-Western Co., Aurora. This test well is presently in use as an observation well. It was located near the intersection of Blanchard St. and President St. extended, approximately 500 ft N and 300 ft W of the SE corner of Section 21, T39N, R10E. An 11-in. diameter hole was drilled to a depth of 116 ft and finished 8 in. in diameter from 116 to 300 ft. The test well was cased with 8-in. steel pipe from about 1 ft above land surface to a depth of 116 ft. A production test was conducted by the driller on January 24, 1974. After 3.6 hr of pumping at rates of 271 to 234 gpm, the final drawdown was 35 ft from a nonpumping water level of 75 ft. Seventeen min after pumping was stopped, full recovery was observed. On November 29, 1979, the nonpumping water level was reported to be 88 ft. Periodic measurements of the nonpumping water level during the period October 1978 through September 1980 ranged from about 83.5 to 93.5 ft below land surface.

A test well (No. 2-74) was constructed in February 1974 to a depth of 350 ft by the Layne-Western Co., Aurora. It is located near the city water reservoir on Country Side Drive east of Driving Park Road, approximately 1650 ft S and 1200 ft W of the NE corner of Section 9, T39N, R10E. A 12-in. diameter hole was drilled to a depth of 106 ft and finished 8 in. in diameter from 106 to 350 ft. The test well was cased with 8-in. steel pipe from land surface to a depth of 106 ft. A production test was conducted by the driller on February 5, 1974. After 8 hr of pumping at rates ranging from 174 to 104 gpm, the drawdown was 24 ft from a nonpumping water level of 78 ft below land surface.

A test well (No. 4-74) was constructed in February 1974 to a depth of 320 ft by the Layne-Western Co., Aurora. It was located near the intersection of Blanchard St. and President St. extended, approximately 900 ft N and 300 ft W of the SE corner of Section 21, T39N, R10E. A 12-in. diameter hole was drilled to a depth of 121 ft and finished 8 in. in diameter from 121 to 320 ft. The test well was cased with 8-in. steel pipe from land surface to a depth of 121 ft. Production tests were conducted by the driller on February 20 and 21, 1974. After 4.5 hr of pumping on February 20, at rates of 346 to 396 gpm, the drawdown was 20 ft from a nonpumping water level of 85 ft below land

surface. On February 21, after 7.5 hr of intermittent pumping at rates of 406 to 396 gpm, the final drawdown was 19 ft from a nonpumping water level of 83 ft below land surface.

A test well (No. 7-74) was constructed in March 1974 to a depth of 322 ft by the Layne-Western Co., Aurora. This test well was abandoned and filled with drill cuttings from 0 to 105 ft, with cement from 105 to 125 ft, and with pea gravel from 125 to 322 ft. It was located near the intersection of Blanchard St. and President St. extended, approximately 670 ft N and 45 ft W of the SE corner of Section 21, T39N, R10E. A 12-in. diameter hole was drilled to a depth of 116 ft and finished 8 in. in diameter from 116 to 322 ft. The test well was cased with 8-in. steel pipe from land surface to a depth of 116 ft. A production test using two observation wells was conducted by the driller on March 12, 1974. After 8 hr of intermittent pumping and surging at rates ranging from 128 to 104 gpm, the maximum drawdown was 87 ft from a nonpumping water level of 75 ft below land surface.

A test well (No. 6-75) was constructed in February 1975 to a depth of 302 ft by the Layne-Western Co., Aurora. This test well was abandoned and filled with drill cuttings from 0 to 95 ft, with cement from 95 to 126 ft, and with pea gravel from 126 to 302 ft. It was located west of the intersection of Blanchard St. and President St. extended, approximately 500 ft N and 700 ft W of the SE corner of Section 21, T39N, R10E. A 12-in. diameter hole was drilled to a depth of 113 ft and finished 8 in. in diameter from 113 to 302 ft. The test well was cased with 8-in. steel pipe from land surface to a depth of 113 ft. A production test using two observation wells was conducted by the driller on February 14, 1975. After 7.5 hr of pumping at rates of 361 to 350 gpm, the final drawdown was 68 ft from a nonpumping water level of 80 ft below land surface.

A test well (No. 8-75) was constructed in March 1975 to a depth of 340 ft by the Layne-Western Co., Aurora. It is located about 250 ft west and 30 ft south of the present deadend of South President St., approximately 2600 ft N and 250 ft W of the SE corner of Section 21, T39N, R10E. A 12-in. diameter hole was drilled to a depth of 134 ft and finished 8 in. in diameter from 134 to 340 ft. The test well was cased with 8-in. steel pipe from land surface to a depth of 134 ft. A production test using one observation well was conducted by the driller on March 6, 1975. After 7 hr of pumping at rates ranging from 480 to 412 gpm, the final drawdown was 30 ft from a nonpumping water level of 97 ft below land surface. Five min after pumping was stopped, full recovery was observed.

WELL NO. 7 was completed in August 1975 to a depth of 335 ft by the Wehling Well Works, Beecher. This well is also used as an observation well by the State Water Survey. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located west of South President St. behind the Southside Pumping Station (Fire Station No. 2) at the site of Test Well No. 4-74, approximately 900 ft N and 300 ft W of the SE corner of Section 21, T39N, R10E. The land surface elevation at the well is approximately 755 ft.

A drillers log of Well No. 7 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Drift	122	122
Lime	168	290
Shale	45	335

A 19-in. diameter hole was drilled to a depth of 124 ft and finished 15 in. in diameter from 124 to 335 ft. The well is cased with 16-in. pipe from land surface to a depth of 124 ft (cemented in).

A production test was conducted by the driller on September 2-3, 1975. After 24 hr of pumping at rates ranging from 596.6 to 700 gpm, the final drawdown was 123 ft from a nonpumping water level of 56 ft.

After acidizing with 3000 gal of 15 percent HCl, a production test was conducted by the driller on December 30-31, 1975. After 15.8 hr of pumping at rates ranging from 400 to 1120 gpm, the final drawdown was 43 ft from a nonpumping water level of 78 ft. Six min after pumping was stopped, the water level had recovered to 81 ft.

In 1979, the well reportedly produced 1000 gpm with a drawdown of 30 ft from a nonpumping water level of 88 ft.

On January 30, 1981, after pumping at a rate of 1100 gpm, the drawdown was 23 ft from a nonpumping water level of 95 ft.

On February 1, 1982, the well reportedly produced 1100 gpm with a drawdown of 37 ft from a nonpumping water level of 90 ft.

On January 31, 1983, after pumping at a rate of 1100 gpm, the drawdown was 33 ft from a nonpumping water level of 90 ft.

On March 26, 1983, the well reportedly produced 1100 gpm with a drawdown of 33 ft from a nonpumping water level of 95 ft.

On August 31, 1984, after pumping at a rate of 1100 gpm, the drawdown was 32 ft from a nonpumping water level of 97 ft.

Periodic measurements of the nonpumping water level during the period January 1981 through October 1981 ranged from about 85 to 95 ft below land surface.

The pumping equipment presently installed consists of a 60-hp 1800 rpm Byron Jackson electric motor, a 3-stage Byron Jackson submersible turbine pump set at 140 ft, rated at 1050 gpm at about 147 ft TDH, and has 145.7 ft of 8-in. column pipe.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B039806) of a sample collected March 24, 1982, after pumping for 3 hr at about 1100 gpm, showed the water to have a hardness of 441 mg/l, total dissolved minerals of 663 mg/l, and an iron content of 0.53 mg/1.

A test well (No. 1-76) was constructed in May 1976 to a depth of 332 ft by the Layne-Western Co., Aurora. It was located at the north end of Reber St. immediately south of the Chicago and Northwestern RR, approximately 2100 ft N and 1950 ft E of the SW corner of Section 16, T39N, R10E. A 12-in. diameter hole was drilled to a depth of 120 ft and finished 8 in. in diameter from 120 to 332 ft. The test well was cased with 8-in. steel pipe from about 1.5 ft above land surface to a depth of 120 ft. A production test was conducted by the driller on May 28, 1976. After 8 hr of pumping at rates ranging from 366 to 415 gpm, the final drawdown was 15 ft from a nonpumping water level of 85 ft below land surface. During this test, Well Nos. 2 and 3 were pumping intermittently.

A test well (No. 3-76) was constructed in August 1976 to a depth of 349 ft by the Layne-Western Co., Aurora. It is located about 50 ft east of Cherry St. right-of-way and 15 ft north of lot 4 (present deadend of Cherry St.), approximately 1050 ft S and 750 ft W of the NE corner of Section 9, T39N, R10E. A 12-in. diameter hole was drilled to a depth of 105 ft and finished 8 in. in diameter from 105 to 349 ft. The test well was cased with 8-in. steel pipe from about 1 ft above land surface to a depth of 111 ft. A production test was conducted by the driller on August 10, 1976. After 2.7 hr of pumping at rates of 250 to 500 gpm, the drawdown was 11.5 ft from a nonpumping water level of 91.0 ft below land surface.

A test well (No. 9-76) was constructed in August 1976 to a depth of 349 ft by the Layne-Western Co., Aurora. It is located about 65 ft east and 260 ft south of the present deadend of South President St., approximately 2400 ft N and 65 ft E of the SW corner of Section 22, T39N, R10E. A 12-in. diameter hole was drilled to a depth of 131.5 ft and finished 8 in. in diameter from 131.5 to 349 ft. The test well was cased with 8-in. steel pipe from about 1 ft above land surface to a depth of 1-31.5 ft. A production test using one observation well was conducted by the driller on August 27, 1976. After 5.5 hr of pumping at rates ranging from 560 to 566 gpm, the drawdown was 19.0 ft from a nonpumping water level of 99.5 ft below land surface.

WELL NO. 8 was completed in December 1976 to a depth of 332 ft by the Layne-Western Co., Aurora. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located at the north end of Reber St. just south of the Chicago & Northwestern RR at the site of Test Well No. 1-76, approximately 2100 ft N and 1950 ft E of the SW corner of Section 16, T39N, R10E. The land surface elevation at the well is approximately 750 ft.

A drillers log of Well No. 8 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Sand and gravel, few cinders	5	5
Brown clay	5	10
Gray clay	15	25
Clay with boulders	5	30
Clay with cobbles and gravel	50	80
Cobbles, with gravel and clay	5	85
Clay, with gravel	5	90
Gravel and cobbles	10	100
Clay, with cobbles	5	105
Gravel, with clay	10	115
Fractured limestone with clay seams	5	120
Limestone	25	145
Limestone, some chert	10	155
Limestone	20	175
Limestone, some gray shale	10	185
Limestone	17	202
Gray shale	1	203
Limestone	37	240
Limestone, with some gray shale and fractured	5	245
Limestone	10	255
Dark gray limestone	12	267
Shale, light gray	1	268
Limestone, gray and white	2	270
Limestone and shale layers	5	275
Shale and limestone	5	280
Limestone and shale	46	326
Shale	1	327
Shale and very little limestone	5	332

A 20-in. diameter hole was drilled to a depth of 120 ft, reduced to 15 in. between 120 and 275 ft, and finished 8 in. in diameter from 275 to 332 ft. The well is cased with 16-in. pipe from about 0.7 ft above land surface to a depth of 120 ft (cemented in). In June 1977, a 13.4-in. pipe was placed from about 1.7 ft above land surface to a depth of 128.5 ft (cemented in). The top of the casing is equipped with a pitless adapter.

A production test was conducted by the driller on December 16-17, 1976. After 24.8 hr of pumping at rates ranging from 617 to 1200 gpm, the final drawdown was 102 ft from a nonpumping water level of 80 ft below land surface.

After installing the 13.4-in. casing, a production test was conducted by the driller on June 28, 1977. After 3.5 hr of pumping at rates of 200 to 1235 gpm, the drawdown was 52 ft from a nonpumping water level of 85 ft below land surface.

A production test was conducted by the driller on June 29, 1977. After 1.2 hr of pumping at rates of 1022 to 1001 gpm, the drawdown was 40 ft from a nonpumping water level of 89 ft below land surface. Eight min after pumping was stopped, the water level had recovered to 87 ft.

A production test was conducted by the driller on July 7, 1977. After 7.5 hr of intermittent pumping at rates ranging from 600 to 1311 gpm, the final drawdown was 49 ft from a nonpumping water level of 83 ft.

In 1979, the well reportedly produced 1000 gpm with a drawdown of 28 ft from a nonpumping water level of 79 ft.

On January 30, 1981, after pumping at a rate of 1000 gpm, the drawdown was 15 ft from a nonpumping water level of 84 ft.

On February 1, 1982, the well reportedly produced 1000 gpm with a drawdown of 22 ft from a nonpumping water level of 87 ft.

On January 31, 1983, after pumping at a rate of 1000 gpm, the drawdown was 21 ft from a nonpumping water level of 89 ft.

On March 26, 1983, the well reportedly produced 1000 gpm with a drawdown of 18 ft from a nonpumping water level of 93 ft.

On August 31, 1984, after pumping at a rate of 1000 gpm, the drawdown was 19 ft from a nonpumping water level of 101 ft.

The pumping equipment presently installed is a Hayward Tyler submersible pump set at 130 ft, rated at 1000 gpm, and powered by a 50-hp Hayward Tyler electric motor. The well is equipped with 130 ft of airline.

A partial analysis of a sample (Lab. No. 203953) collected during the initial production test, after pumping for 24 hr at rates of 617 to 1200 gpm, showed the water to have a hardness of 610 mg/l, total dissolved minerals of 835 mg/1, and an iron content of 0.4 mg/1.

A test well (No. 10-76) was constructed in January 1977 to a depth of 354 ft by the Layne-Western Co., Aurora. The test well was located about 65 ft east and 760 ft south of the present deadend of South President St., approximately 1900 ft N and 65 ft E of the SW corner of Section 22, T39N, R10E. A 12-in. diameter hole was drilled to a depth of 131 ft and finished 8 in. in diameter from 131 to 354 ft. The test well was cased with 8-in. steel pipe from about 1 ft above land surface to a depth of 131 ft. A production test was conducted by the driller on January 20, 1977. After 6 hr of pumping at rates of 455 to 509 gpm, the drawdown was 5 ft from a nonpumping water level of 94 ft. A production test using two observation wells was conducted by the driller on January 24, 1977. After 4.5 hr of pumping at a rate of 644 gpm, the drawdown was 5 ft from a nonpumping water level of 94 ft.

A test well (No. 11-77) was constructed in March 1977 to a depth of 347 ft by the Layne-Western Co., Aurora. The test well was located at the southwest corner of the Washington School property on Bridle Lane, approximately 1400 ft S and 500 ft W of the NE corner of Section 9, T39N, R10E. A 12-in. diameter hole was drilled to a depth of 111 ft and finished 8 in. in diameter from 111 to 347 ft. The test well was cased with 8-in. steel pipe from about 1 ft above land surface to a depth of 111 ft. A production test using one observation well was conducted by the driller on March 24, 1977. After 4 hr of pumping at rates ranging from 316 to 350 gpm, the final drawdown was 8.5 ft from a nonpumping water level of 99 ft.

WELL NO. 9 was completed in October 1977 to a depth of 320 ft by the Layne-Western Co., Aurora. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located at the site of Test Well No. 11-77 on the north side of Bridle Lane between President and Cherry Sts.,

approximately 1400 ft S and 500 ft W of the NE corner of Section 9, T39N, R10E. The land surface elevation at the well is approximately 765 ft.

A drillers log of Well No. 9 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Fill	5	S
Clay	10	15
Clay and boulders	55	70
Gray clay and gravel	5	75
Clay and gravel	10	85
Gravel	5	90
Clay and gravel	5	95
Lime shells and gravel	5	100
Broken lime	10	110
Firm white lime	5	115
Hard, white lime	5	120
Medium lime	20	HO
Hard lime	10	150
Medium lime	5	155
Soft lime	5	160
Medium hard lime	10	170
Brown, soft, sandy lime	30	200
Brown, sandy lime	20	220
Gray hard lime	5	225
Blue shale and lime	5	230
Medium gray lime, blue shale	50	280
Brown lime and shale	25	305
Brown lime, shale medium	5	310
Harder brown lime	8	318
Shale	2	320

A 20-in. diameter hole was drilled to a depth of 50 ft and finished 15.2 in. in diameter from 50 to 320 ft. The well is cased with 16-in. pipe from about 1 ft above land surface to a depth of 117 ft (cemented in from 0 to 50 ft). The top of the casing is equipped with a Baker pitless adapter.

A production test was conducted by the driller on October 10-11, 1977. After 23 hr of pumping at rates ranging from 633 to 956 gpm, the final drawdown was 20 ft from a nonpumping water level of 94 ft below land surface.

In 1979, the well reportedly produced 600 gpm with a drawdown of 7 ft from a nonpumping water level of 97 ft.

On January 30, 1981, after pumping at a rate of 650 gpm, the drawdown was 12 ft from a nonpumping water level of 97 ft.

On February 1, 1982, the well reportedly produced 650 gpm with a drawdown of 11 ft from a nonpumping water level of 102 ft.

On January 31, 1983, after pumping at a rate of 650 gpm, the drawdown was 13 ft from a nonpumping water level of 101 ft.

On March 26, 1983, the well reportedly produced 650 gpm with a drawdown of 10 ft from a nonpumping water level of 105 ft.

On August 31, 1984, after pumping at a rate of 600 gpm, the drawdown was 12 ft from a nonpumping water level of 110 ft.

The pumping equipment presently installed is a 3-stage Byron Jackson submersible pump set at 125 ft, rated at 600 gpm at about 120 ft TDH, and powered by a 30-hp 1800 rpm Byron Jackson electric motor. The well is equipped with 125 ft of airline.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B039809) is for a water sample from the well collected March 24, 1982, after 1 hr of pumping at about 650 gpm.

WELL NO. 0, LABORATORY NO. B039809

		mg/l	*me/l*		*mg/l*	*me/l*
Iron	Fe	1.18	Silica	SiO_2	18	
Manganese	Mn	0 014	Fluoride	F	0.35	0.02
Ammonium	NH_4	0.5	0.03 Boron	B	0.23	
Sodium	Na	34	1.48 Cyanide	CN	<0.005	
Potassium	K	3 1	0.08 Nitrate	NO_3	<0.4	
Calcium	Ca	103	5.14 Chloride	CI	52	1.47
Magnesium	Mg	49.6	4.08 Sulfate	SO_4	143	2.97
Strontium	Sr	0.83	Alkalinity (as $CaCO_3$)		315	6.30
Arsenic	As	0.004	Hardness (as $CaCO_3$)		464	9.28
Barium	Ba	0.098				
Beryllium	Be	<0.0005	Total dissolved			
Cadmium	Cd	<0.003	minerals		632	
Chromium	Cr	<0.005				
Cobalt	Co	<0.005				
Copper	Cu	<0.003				
Lead	Pb	<0.005				
Mercury	Hg	<0.00005				
Nickel	Ni	<0.003				
Selenium	Se	<0.001				
Silver	Ag	<0.005				
Vanadium	V	<0.004				
Zinc	Zn	<0.002	pH (as rec'd) 7.3			

WELL NO. 10 was completed in 1977 to a depth of 311 ft by the Layne-Western Co., Aurora. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located at the site of Test Well No. 10-76 on the east side of President St. between Whitechurch and Liskeard Courts, approximately 1900 ft N and 65 ft E of the SW corner of Section 22, T39N, R10E. The land surface elevation at the well is approximately 765 ft.

A drillers log of Well No. 10 follows:

Strata	Thickness (ft)	Depth (ft)
Top soil and clay fill	5	5
Gray clay, with sand and gravel	5	10
Gray clay	10	20
Gray clay, some small gravel embedded	5	25
Gray clay, with cobbles	30	SS
Clay, with boulders	24	79
Gray clay, with gravel and boulders, some silt	19	98
Sand and gravel	33	131
Brown limestone, with shale seams	2	133
Brown - gray limestone, fractured	7	140
Light gray limestone	7	147
Brown limestone	12	159
Light brown - white limestone	12	171
Fractured weathered brown - gray limestone	17	188
Light brown limestone	52	240
Brown limestone with seams of gray shale	43	283
White - brown limestone with green shale seams	7	290
Green weathered limestone and shale	21	311

A 24-in. diameter hole was drilled to a depth of 12 ft, reduced to 20 in. between 12 and 136.8 ft, and finished 15 in. in diameter from 136.8 to 311 ft. The well is cased with 24-in. steel pipe from land surface to a depth of 12 ft and 16-in. steel pipe from about 1 ft above land surface to a depth of 136.8 ft (cemented in). The top of the casing is equipped with a Baker pitless adapter.

A production test was conducted by the driller on October 28, 1977. After 2.8 hr of intermittent pumping at rates ranging from 650 to 945 gpm, the maximum drawdown was 60 ft from a nonpumping water level of 99 ft below land surface.

On October 31, 1977, this well was treated with 2000 gal of 15 percent muriatic acid (inhibited) by the driller.

A production test was conducted by the driller on November 1, 1977. After 3.2 hr of pumping at rates ranging from 777 to 1416 gpm, the final drawdown was 46 ft from a nonpumping water level of 99 ft below land surface.

A production test was conducted by the driller on November 2, 1977. After 7.1 hr of intermittent pumping and surging at rates ranging from 1266 to 1598 gpm, the final drawdown was 56 ft from a nonpumping water level of 103 ft below land surface.

On November 3, 1977, this well was treated with 1000 gal of 15 percent muriatic acid (inhibited) by the driller.

A production test using two observation wells was conducted by the driller on November 4, 1977. After 3.5 hr of pumping at rates of 1172 to 1266 gpm, the final drawdown was 25 ft from a nonpumping water level of 107 ft below land surface. Eight min after pumping was stopped, full recovery was observed.

A production test using one observation well was conducted by the driller on November 8, 1977. After 11.5 hr of pumping at rates ranging from 1143 to 1243 gpm, the final drawdown was 28 ft from a nonpumping water level of 107 ft below land surface. Ten min after pumping was stopped, full recovery was observed.

In 1979, the nonpumping water level was reported to be 83 ft.

On January 30, 1981, the well reportedly produced 1000 gpm with a drawdown of 21 ft from a nonpumping water level of 108 ft.

On February 1, 1982, after pumping at a rate of 1000 gpm, the drawdown was 21 ft from a nonpumping water level of 115 ft.

On January 31, 1983, the well reportedly produced 1000 gpm with a drawdown of 23 ft from a nonpumping water level of 104 ft.

On March 26, 1983, after pumping at a rate of 1000 gpm, the drawdown was 26 ft from a nonpumping water level of 102 ft.

On August 31, 1984, the well reportedly produced 1000 gpm with a drawdown of 28 ft from a nonpumping water level of 111 ft.

The pumping equipment presently installed is a 2-stage Byron Jackson submersible pump set at 145 ft, rated at 1250 gpm at about 130 ft TDH, and powered by a 60-hp 1800 rpm Byron Jackson electric motor. The well is equipped with 145 ft of airline.

A partial analysis of a sample (Lab. No. 206782) collected November 8, 1977, after pumping for 11 hr at rates of 1143 to 1243 gpm, showed the water to have a hardness of 544 mg/l, total dissolved minerals of 763 mg/l, and an iron content of 0.4 mg/1.

WHEATON FARMS SUBDIVISION

Wheaton Farms Subdivision (est. 238), located on the northeast edge of Wheaton, installed a public water supply in 1924. The water system is owned and operated by the Illinois Municipal Water Co. One well is in use. In 1954 there were 94 services, 82 metered. In 1981 there were 68 services, all metered; the average pumpage was 15,960 gpd. The water is chlorinated and fluoridated.

WELL NO. 1 was completed in 1924 to a depth of 321 ft. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located about 300 ft west of Stoddard Ave. between Daly and Geneva Roads, approximately 350 ft S and 350 ft E of the NW corner of Section 10, T39N, R10E. The land surface elevation at the well is approximately 780 ft.

A 6-in. diameter hole was drilled to a depth of 321 ft. The well is cased with 6-in. pipe from about 1.2 ft above the wellhouse floor to an unknown depth.

In May 1950, the nonpumping water level was reported to be 65 ft.

About 1956, this well was acidized.

Nonpumping water levels were reported to be 75 ft on October 30, 1956, and 90 ft on June 29, 1960.

On July 5, 1962, the well reportedly produced 50 gpm with a drawdown of 4 ft from a nonpumping water level of 90 ft.

Nonpumping water levels were reported to be 100 ft on December 4, 1962, and 98 ft on January 20, 1965.

On October 26, 1966, after 30 min of pumping at a rate of 73 gpm, the drawdown was 4 ft from a nonpumping water level of 99 ft.

On December 17, 1969, the nonpumping water level was reported to be 104 ft.

On December 11, 1970, the well reportedly produced 65 gpm with a drawdown of 5 ft from a nonpumping water level of 109 ft.

Nonpumping water levels were reported to be 104 ft in January 1971, and 110 ft in January 1972.

The pumping equipment presently installed is a Red Jacket submersible pump set at 168 ft, operated at 55 gpm, and powered by a 5-hp electric motor.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. C000544) is for a water sample from the well collected August 8, 1977, after 30 min of pumping at 55 gpm.

WELL NO. 1, LABORATORY NO. C000544

		mg/l	*me/l*			*mg/l*	*me/l*
Iron	Fe	0.7		Silica	SiO_2	16	
Manganese	Mn	0.05		Fluoride	F	0.4	0.02
Ammonium	NH_4	0.37	0.02	Boron	B	0.S	
Sodium	Na	24	1.04	Cyanide	CN	0.01	
Potassium	K	2.3	0.06	Nitrate	NO_3	0.0	0.00
Calcium	Ca	92	4.59	Chloride	CI	20	0.56
Magnesium	Mg	43	3.54	Sulfate	SO_4	125	2.60
				Alkalinity (as $CaCO_3$)		312	6.24
Arsenic	As	0.000					
Barium	Ba	0.1		Hardness (as $CaCO_3$)		408	8.16
Cadmium	Cd	0.00					
Chromium	Cr	0.00		Total dissolved			
Copper	Cu	0.00		minerals		524	
Lead	Pb	0.00					
Mercury	Hg	0.0005					
Nickel	Ni	0.0					
Selenium	Se	0.00					
Silver	Ag	0.00					
Zinc	Zn	0.10		pH (as rec'd)		8.3	

WILLOWBROOK

The village of Willowbrook (4953) annexed the Ridgemoor Subdivision which had installed a public water supply in 1964. One well (No. 3) is in use and three wells (Nos. 1, 2, and 4) are available for emergency use. This supply is also cross connected with the city of Darien and the Lake in the Woods Subdivision. In 1965 there were 28 services; the average pumpage was 7000 gpd. In 1984 there were 1001 services; the average pumpage was 664,400 gpd. The water from Well No. 3 is chlorinated.

WELL NO. 1 (Lake Hinsdale Apartments) was completed in September 1969 to a depth of 320 ft by the Layne-Western Co., Aurora. This well supplements Well No. 3 during peak periods in the summer. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located near the northwest corner of 67th St. and Route 83 along the northwest side of Lake Hinsdale Drive, approximately 2400 ft S and 2350 ft E of the NW corner of Section 23, T38N, R11E. The land surface elevation at the well is approximately 733 ft.

A drillers log of Well No. 1 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Blue clay, small boulders	25	25
Gray hardpan	30	55
Gray hardpan with some gravel	5	60
Gray hardpan and compact gravel	30	90
Clean fine gravel	36	126
Limestone, gray, medium hard	164	290
Limestone, gray with some shale streaks	15	305
Shale with limestone shells	15	320

A 19.2-in. diameter hole was drilled to a depth of 146.5 ft and finished 15.2 in. in diameter from 146.5 to 320 ft. The well is cased with 20-in. pipe from land surface to a depth of 134 ft and 16-in. wrought steel pipe from about 0.5 ft above land surface to a depth of 146.5 ft (cemented in).

A production test was conducted by the driller on September 19, 1969. After 1.4 hr of pumping at rates of 104 to 150 gpm, the drawdown was 53 ft from a nonpumping water level of 113 ft below land surface. Pumping was continued for 20 min at rates of 165 to 167 gpm with a drawdown of 79 ft when the pump broke suction.

After acidizing with 2000 gal of 15 percent HC1, production tests were conducted by the driller. On September 25, 1969, after 8 hr of pumping at rates ranging from 104 to 250 gpm, the drawdown was 135 ft from a nonpumping water level of 113 ft below land surface. On September 26, the well reportedly produced at rates of 235 to 257 gpm for 2.2 hr with a drawdown of 132 ft from a nonpumping water level of 113 ft below land surface. Pumping was continued for 5.5 hr at a rate of 176 gpm with a final drawdown of 36 ft.

A production test was conducted by the driller on December 19, 1969. After 8 hr of pumping at rates of 214 to 187 gpm, the final drawdown was 38 ft from a nonpumping water level of 119 ft below land surface.

On June 13, 1979, the nonpumping water level was reported to be 134 ft.

In 1982, the well reportedly produced 200 gpm with a drawdown of 30 ft from a nonpumping water level of 132 ft.

The pumping equipment presently installed is an 8-in., 10-stage Layne submersible pump set at 284 ft, rated at 200 gpm, and powered by a 40-hp Pleuger electric motor.

A mineral analysis of a sample (Lab. No. 211287) collected June 13, 1979, after pumping for 10 min at 160 gpm, showed the water to have a hardness of 534 mg/l, total dissolved minerals of 722 mg/l, and an iron content of 2.6 mg/1.

WELL NO. 2 (Lake Hinsdale Apartments) was completed in June 1970 to a depth of 320 ft by the Wehling Well Works, Beecher. This well is available for emergency use. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located at the east end of Clubside Drive west of the clubhouse, approximately 1300 ft S and 1600 ft E of the NW corner of Section 23, T38N, R11E. The land surface elevation at the well is approximately 730 ft.

A drillers log of Well No. 2 follows:

Strata	*Thickness* ***(ft)***	*Depth* ***(ft)***
Drift	90	90
Broken rock	25	115
Lime	190	305
Shale	15	320

A 19.2-in. diameter hole was drilled to a depth of 127 ft and finished 15 in. in diameter from 127 to 320 ft. The well is cased with 20-in. drive pipe from land surface to a depth of 123 ft and 16-in. pipe from

about 0.7 ft above land surface to a depth of 127 ft (cemented in).

A production test was conducted by the driller on June 23, 1970. After 8 hr of pumping at rates ranging from 170 to 240 gpm, the final drawdown was 160 ft from a nonpumping water level of 108 ft below land surface.

After acidizing with 1000 gal of 15 percent HC1, a production test was conducted by the driller on June 24, 1970. After 8.5 hr of pumping at rates ranging from 225 to 233 gpm, the final drawdown was 140 ft from a nonpumping water level of 108 ft below land surface.

A third production test was conducted by the driller on June 25, 1970. After 6.7 hr of pumping at rates ranging from 223 to 260 gpm, the final drawdown was 190 ft from a nonpumping water level of 108 ft below land surface.

In 1982, the nonpumping water level was reported to be 131 ft.

The pumping equipment presently installed is a 6-in., 10-stage Red Jacket submersible pump set at 168.5 ft, rated at 215 gpm, and powered by a 25-hp Red Jacket electric motor.

A partial analysis of a sample (Lab. No. 183178) collected June 25, 1970, showed the water to have a hardness of 580 mg/l, total dissolved minerals of 771 mg/l, and an iron content of 1.9 mg/1.

WELL NO. 3 was completed in February 1974 to a depth of 1620 ft by the Layne-Western Co., Aurora. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer). The well also penetrates the upper part of the Eau Claire Formation. The well is located about 150 ft south of Well No. 1, approximately 2550 ft S and 2350 ft E of the NW corner of Section 23, T38N, R11E. The land surface elevation at the well is approximately 734 ft.

A drillers log of Well No. 3 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Black top soil	1	1
Hard brown clay	19	20
Hard gray clay	10	30
Hard gray clay with small gravel	40	70
Clay and gravel	15	85
Gravel and broken limestone	20	105
Gravel and clay	15	120
Broken limestone	10	130
Hard gray limestone	180	310
Hard gray limestone with shale streaks	25	335
Hard gray shale	30	365
Hard limestone and shale	15	380
Hard shale	25	405
Hard dark gray limestone	35	440
Hard dark gray limestone with shale streaks	20	460
Shale	45	505
Hard limestone	15	520
Hard gray limestone	55	575
Medium brown limestone	105	680
Hard gray limestone	145	825
Hard brown limestone	5	830
Hard dark gray limestone	16	846
Medium gray sandstone	84	930
Medium to hard sandstone	45	975
Hard gray sandstone	10	985
Gray shale and limestone	10	995
Medium gray limestone	10	1005
Hard gray limestone	110	1115
Hard gray limestone with crevices	75	1190
Crevices - no cuttings	10	1200
Hard gray limestone	35	1235
Crevices	15	1250
Hard gray limestone	25	1275
Hard sandy limestone	55	1330
Hard sandy limestone with streaks of green shale	15	1345
Gray sandstone	5	1350
Sandy limestone and shale	80	1430
Medium gray sandstone	40	1470
Hard gray sandstone	20	1490
Medium gray sandstone	25	1515
Hard gray sandstone	25	1540
Hard pink sandstone	15	1555
Medium pink sandstone	20	1575
Medium gray sandstone	5	1580
Hard sandstone and limestone	10	1590
Dark gray sandstone, limestone and shale	30	1620

A 26-in. diameter hole was drilled to a depth of 136 ft, reduced to 25.2 in. between 136 and 528 ft, reduced to 21.2 in. between 528 and 1074 ft, and finished 17.2 in. in diameter from 1074 to 1620 ft. The well is cased with 26-in. pipe from land surface to a depth of 136 ft, 22-in. pipe from about 1.5 ft above land surface to a depth of 528 ft (cemented in), and an 18-in. slotted liner from 954 ft to a depth of 1074 ft.

A production test was conducted by the driller on February 12-13, 1974. After 14.8 hr of pumping at rates ranging from 757 to 1162 gpm, the final drawdown was 50.0 ft from a nonpumping water level of 673.5 ft below land surface. Twenty-five min after pumping was stopped, the water level had recovered to 684.5 ft.

In 1983, the well reportedly produced 1000 gpm with a drawdown of 25 ft from a nonpumping water level of 776 ft.

The pumping equipment presently installed is a 12-in., 12-stage Byron Jackson submersible pump (No. 731C0333) set at 956 ft, rated at 1000 gpm at about

940 ft TDH, and powered by a 350-hp Byron Jackson electric motor.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B21765) is for a water sample from the well collected October 28, 1980, after 4 hr of pumping at about 1100 gpm.

WELL NO. 3, LABORATORY NO. B21765

		mg/l	*me/l*			*mg/l*	*me/l*
Iron	Fe	0 045		Silica	SiO_2	7.6	
Manganese	Mn	<0.005		Fluoride	F	1.09	0.06
Ammonium	NH_4	1.03	0.06	Boron	B	0.67	
Sodium	Na	81	3.52	Cyanide	CN	<0.005	
Potassium	K	15	0.38	Nitrate	NO_3	<0.4	
Calcium	Ca	67	3 34	Chloride	CI	30	0.85
Magnesium	Mg	27	2.22	Sulfate	SO_4	159	3.31
Strontium	Sr	2 58		Alkalinity (as $CaCO_3$)		278	5.56
Arsenic	As	<0.001		Hardness (as $CaCO_3$)		278	5.56
Barium	Ba	0.02					
Beryllium	Be	<0.0005		Total dissolved			
Cadmium	Cd	<0 005		minerals		549	
Chromium	Cr	<0.005					
Cobalt	Co	<0.00S					
Copper	Cu	<0.005					
Lead	Pb	<0.005					
Mercury	Hg	<0 00005					
Nickel	Ni	<0.005					
Selenium	Se	<0.001					
Silver	Ag	<0.005					
Vanadium	V	<0.005					
Zinc	Zn	0 005		pH (as rec'd)		6 9	

WELL NO. 4 (Ridgemoor well), open to dolomite ol the Upper Bedrock Aquigroup (Silurian System), was completed in April 1964 to a depth of 315 ft by the Shaver Well Drilling Co., Lombard. This well is available for emergency use. The well is located about 200 ft west of the north end of Quincy Drive, approximately 1000 ft S and 2000 ft W of the NE corner of Section 23, T38N, R11E. The land surface elevation at the well is approximately 715 ft.

A drillers log of Well No. 4 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Glacial drift	64	64
Limestone	251	315

An 8-in. diameter hole was drilled to a depth of 315 ft. The well is cased with 8-in. steel pipe from about 1 ft above land surface to a depth of 64 ft.

In 1964, the nonpumping water level was reported to be 33.5 ft below land surface.

The pumping equipment presently installed consists of a 40-hp 1770 rpm General Electric motor, a 7.5-in., 14-stage Layne & Bowler vertical turbine pump set at 160 ft, rated at 400 gpm at about 300 ft TDH, and has 160 ft of 6-in. column pipe. A 10-ft section of 6-in. suction pipe is attached to the pump intake.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B16684) is for a water sample from the well collected October 22, 1976, after 30 min of pumping at 355 gpm.

WELL NO. 4, LABORATORY NO. B18684

		mg/l	*me/l*			*mg/l*	*me/l*
Iron	Fe	1.9		Silica	SiO_2	17	
Manganese	Mn	0.02		Fluoride	F	0.3	0.02
Ammonium	NH_4	0.9	0.05	Boron	B	0.5	
Sodium	Na	27	1.17	Cyanide	CN	0.00	
Potassium	K	3.2	0.08	Nitrate	NO_3	0.0	0.00
Calcium	Ca	138	6.89	Chloride	CI	16	0.45
Magnesium	Mg	41	3.37	Sulfate	SO_4	180	3.74
				Alkalinity (as $CaCO_3$)		376	7.52
Arsenic	As	0.01					
Barium	Ba	0.2		Hardness (as $CaCO_3$)		514	10.28
Cadmium	Cd	0.00					
Chromium	Cr	0.00		Total dissolved			
Copper	Cu	0.00		minerals		669	
Lead	Pb	0.00					
Mercury	Hg	0.0000					
Nickel	Ni	0.0					
SeleDium	Se	0.00					
Silver	Ag	0.00					
Zinc	Zn	0.0		pH (as rec'd)		7.3	

WELL NO. 5 (originally known as Palatial Hills Well No. 1), open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in March 1966 to a depth of 296 ft by the Layne-Western Co., Aurora. As of August 1985, this well, acquired from the Palatial Builders in 1978, is not in use. The well is located about 400 ft south of 75th St. and 600 ft west of Clarendon Hills Road, approximately 3050 ft S and 600 ft W of the NE corner of Section 27, T38N, R11E. The land surface elevation at the well is approximately 735 ft.

A drillers log of Well No. 5 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Clay	40	40
Gravel and boulders	40	80
Clay and boulders	19	99
Medium hard broken limestone	11	110
Medium hard gray limestone	85	195
Hard gray limestone	35	230
Medium hard gray limestone	15	245
Hard gray limestone	15	260
Medium hard gray limestone	32	292
Blue shale	4	296

The well is cased with 16-in. steel pipe from about 1 ft above land surface to a depth of 110 ft. Below the casing, the hole diameter is 15.2 in. in diameter to the bottom.

A production test was conducted by the driller on March 9, 1966. After 5 hr of pumping at rates ranging from 224 to 291 gpm, the maximum drawdown was 113 ft from a nonpumping water level of 107 ft. Pumping was continued for 4 hr at rates of 100 to 252 gpm with a final drawdown of 59 ft.

After treating the well with 2000 gal of 15 percent muriatic acid, a production test was conducted by the driller on March 11-12, 1966. After 26.5 hr of pumping at rates ranging from 273 to 401 gpm, the final drawdown was 108 ft from a nonpumping water level of 107 ft.

A production test was conducted by the driller on March 14-15, 1966. After 14 hr of pumping at rates ranging from 100 to 417 gpm, the final drawdown was 111 ft from a nonpumping water level of 107 ft.

After the village acquired this well, a production test was conducted by the driller on February 2-3, 1978. After 24.5 hr of pumping at rates ranging from 393 to 280 gpm, the final drawdown was 122 ft from a nonpumping water level of 118 ft.

As of August 1985, the permanent pumping equipment had not been installed.

WINFIELD

The village of Winfield (4422) installed a public water supply in 1926. Two wells (Nos. 2 and 4) are in use. This supply is interconnected to the city of Wheaton. In 1949 there were 144 services, all metered; the average and maximum pumpages were 25,000 and 26,000 gpd, respectively. In 1984 there were 1576 services, all metered; the average and maximum pumpages were 609,550 and 985,000 gpd, respectively. The water is treated with polyphosphate to keep iron in solution; in addition, the water from Well No. 2 is chlorinated and fluoridated.

WELL NO. 1, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in November 1926 to a depth of 200 ft by John Diebold, West Chicago. This well was abandoned and sealed in 1978. The well was located on the south side of Highlake Road about 250 ft east of the Du Page River, approximately 180 ft S and 1350 ft E of the NW corner of Section 13, T39N, R9E. The land surface elevation at the well is approximately 720 ft.

A drillers log of Well No. 1 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Gravel	42	42
Clay and sand	28	70
Niagaran	130	200

An 8-in. diameter hole was drilled to a depth of 200 ft. The well was cased with 8-in. pipe from about 2 ft above the pumphouse floor to a depth of 78 ft.

On June 12, 1939, the nonpumping water level was reported to be 6 ft below land surface.

In October 1945, the well reportedly produced 75 gpm for 15 min with very little drawdown from a nonpumping water level of 8 ft below the pump base.

Nonpumping water levels were reported to be 6 ft in September 1950, and 60 ft in October 1966 and April 1972.

A mineral analysis of a sample (Lab. No. 110476) collected May 29, 1947, after pumping for 15 min at 75 gpm, showed the water to have a hardness of 610 mg/l, total dissolved minerals of 755 mg/l, and an iron content of 1.2 mg/1.

WELL NO. 2 was completed in March 1957 to a depth of 335 ft (measured in 1978 at 318 ft and in 1984 at 317 ft) by the Layne-Western Co., Aurora. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located at the southeast corner of Cleveland St. and Lincoln Ave., approximately 1250 ft N and 1750 ft E of the

SW corner of Section 13, T39N, R9E. The land surface elevation at the well is approximately 778 ft.

A sample study summary log of Well No. 2 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
"Black dirt"	1	l
"Brown clay"	14	15
"Gray clay"	15	30
"Coarse gravel"	30	60
"Coarse sand" 15		75
"Till, gray, silty, sandy, gravelly"	25	100
Gravel, fine to coarse, granular, clean	10	110
Till, brownish gray, sandy, gravelly	20	130
SILURIAN SYSTEM		
Niagaran and Alexandrian Series		
Dolomite, buff, light pink, greenish gray, fine to medium compact	113	243
ORDOVICIAN SYSTEM		
Cincinnatian Series		
Maquoketa Group		
Dolomite, buff, pale pink, compact; little shale, light green, gray to dark gray, streaks	82	325
Shale, dark gray, brown, tough to brittle	**10**	335

A 12-in. diameter hole was drilled to a depth of 335 ft. The well is cased with 12-in. wrought iron pipe from about 1 ft above land surface to a depth of 133 ft.

A production test was conducted by the driller on March 16, 1957. After 8.1 hr of pumping at rates ranging from 335 to 525 gpm, the final drawdown was 1.0 ft from a nonpumping water level of 83.5 ft below land surface.

On October 17, 1958, the well reportedly produced 400 gpm for 3 hr with a drawdown of 5 ft from a nonpumping water level of 85 ft below the pump base.

Nonpumping water levels were reported to be 100 ft in October 1960, 85 ft in November 1961, and 95 ft in October 1962.

On October 28, 1963, the well reportedly produced 800 gpm with a drawdown of 6 ft from a nonpumping water level of 95 ft.

In April 1965, the well reportedly produced 600 gpm with a drawdown of 11 ft from a nonpumping water level of 87 ft.

In October 1965, the nonpumping water level was reported to be 90 ft.

On February 9, 1966, the well reportedly produced 720 gpm with a drawdown of 11 ft from a nonpumping water level of 90 ft.

Nonpumping water levels were reported to be 95 ft on September 1, 1966; 90 ft on February 15, 1967; 94 ft in April 1972 and April 1975; and 95 ft in March 1977.

A production test was conducted by the driller on October 18, 1978. After 2.5 hr of pumping at rates of 542 to 832 gpm, the final drawdown was 17 ft from a nonpumping water level of 95 ft.

Nonpumping water levels were reported to be 99 ft on July 3, 1979, and 91 ft in 1984.

On November 26, 1984, the well reportedly produced 725 gpm with a drawdown of 52 ft from a nonpumping water level of 106 ft. The well was treated with 1500 gal of 15 percent HCl by the Layne-Western Co. A production test was then conducted by the Layne-Western Co. on November 27, 1984. After 1 hr of pumping at rates of 860 to 845 gpm, the drawdown was 28 ft from a nonpumping water level of 105 ft.

The pumping equipment presently installed is a 3-stage Byron Jackson turbine pump (No. 771-C-0335) set at 180 ft, and powered by a 50-hp U. S. electric motor. The well is equipped with 180 ft of airline.

A mineral analysis of a sample (Lab. No. 211348) collected July 3, 1979, after pumping for 10 min at 750 gpm, showed the water to have a hardness of 728 mg/l, total dissolved minerals of 961 mg/l, and an iron content of 1.6 mg/1. Hydrogen sulfide was apparent when a previous sample was collected.

WELL NO. 3 (former Wheaton Park Manor Well No. 2) was completed in August 1955 to a depth of 263 ft by N. H. Geltz, Aurora. This well was capped in 1979. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located on the north side of Williams Ave. between Madison and Jefferson Sts., approximately 1000 ft N and 1875 ft W of the SE corner of Section 13, T39N, R9E. The land surface elevation at the well is approximately 768 ft.

A drillers log of Well No. 3 follows:

Strata	***Thickness (ft)***	***Depth (ft)***
Yellow clay	16	16
Blue clay	36	52
Clay and gravel	30	82
Blue clay	24	106
Sand	19	125

Strata	Thickness (ft)	Depth (ft)
Lime-white	124	249
Shale-light green	14	263

An 8-in. diamcter hole was drilled to a depth of 263 ft. The well is cased with 8-in. pipe from about 1.5 ft above land surface to a depth of 131 ft.

Upon completion, the well reportedly produced 130 gpm for 8 hr with very little drawdown from a nonpumping water level of 58 ft.

Nonpumping water levels were reported to be 58 ft in May 1956; 51.5 ft below the top of the casing on September 22, 1958; 53.5 ft in August 1959; 59.7 ft in June 1960; 64.5 ft in September 1966; and 74 ft in April 1972.

The pumping equipment presently installed consists of a 10-hp General Electric motor, a 6-in., 6-stage Byron Jackson submersible pump set at 80 ft, rated at 130 gpm at about 180 ft TDH, and has 80 ft of 3-in. column pipe. The well is equipped with 80 ft of air-line.

WELL NO. 4 was completed in December 1965 to a depth of 348 ft (measured at 346 ft in 1975) by the Milaeger Well & Pump Co., Brookfield, Wis. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located east of Cleveland St. about 300 ft north of Roosevelt Road, approximately 300 ft N and 1800 ft E of the SW corner of Section 13, T39N, R9E. The land surface elevation at the well is 765.6 ft.

A drillers log of Well No. 4 follows:

Strata	Thickness (ft)	Depth (ft)
Clay till	13	13
Granular (gravel seams)	33	46
Sand medium to coarse	9	55
Till	28	83
Gravel	12	95
Till	20	115
Niagaran dolomite	62	177
Shale	47	224
Maquoketa dolomite	122	346
Shale	2	348

A 16-in. diameter hole was drilled to a depth of 116 ft and finished 12 in. in diameter from 116 to 348 ft. The well is cased with 16-in. pipe from about 1.5 ft above land surface to a depth of 116 ft. The top of the casing is equipped with a Baker pitless adapter.

A production test was conducted on December 9, 1965, by representatives of the driller and Wells Engineering Co. After 8.1 hr of pumping at rates ranging from 495 to 828 gpm, the maximum drawdown was 3.0 ft from a nonpumping water level of 72.6 ft below land surface.

In May 1968, the nonpumping water level was reported to be 83 ft.

After pump rehabilitation in October 1975, a production test was conducted by the Layne-Western Co., Aurora, on October 29, 1975. After 1.4 hr of pumping at rates of 393 to 781 gpm, the drawdown was 9.5 ft from a nonpumping water level of 83.0 ft.

On July 28, 1976, the well reportedly produced 810 gpm with a drawdown of 8 ft from a nonpumping water level of 85 ft.

In March 1977, the nonpumping water level was reported to be 88 ft.

A production test was conducted by the Layne-Western Co. on February 8, 1979. After 1.4 hr of pumping at rates of 328 to 726 gpm, the final drawdown was 7 ft from a nonpumping water level of 90 ft.

The pumping equipment presently installed consists of a 50-hp U. S. electric motor, an 11-in., 3-stage Byron Jackson turbine pump set at 115 ft, rated at 890 gpm at about 117 ft TDH, and has 115 ft of 8-in. column pipe.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B31186) is for a water sample from the well collected in January 1978, after 30 min of pumping at 750 gpm.

WELL NO. 4, LABORATORY NO. B31186

		mg/l	me/l			mg/l	me/l
Iron	Fe	3.9		Silica	SiO_2	9.8	
Manganese	Mn	0.01		Fluoride	F	0.5	0.03
Ammonium	NH_4	0.4	0.02	Boron	B	0.3	
Sodium	Na	21	0.91	Cyanide	CN	0.00	
Potassium	K	3.2	0.08	Nitrate	NO_3	0.0	0.00
Calcium	Ca	100	4.99	Chloride	CI	37	1.04
Magnesium	Mg	67	5.51	Sulfate	SO_4	163	3.39
				Alkalinity (as $CaCO_3$)		360	7.20
Arsenic	As	0.00					
Barium	Ba	0.1		Hardness (as $CaCO_3$)		532	**10.64**
Cadmium	Cd	0.00					
Chromium	Cr	0.00		Total dissolved			
Copper	Cu	0.01		minerals		607	
Lead	Pb	0.00					
Mercury	Hg	0.0001					
Nickel	Ni	0.0					
Selenium	Se	0.00					
Silver	Ag	0.00					
Zinc	Zn	0.0		pH (as rec'd)		7.3	

WOOD DALE

The city of Wood Dale (11,251) installed a public water supply in 1960. Six wells (Nos. 1, 2, 3, 5, 6, and 7) are in use. This supply is also cross connected with the villages of Bensenville and Itasca. In 1963 there were 140 services; the estimated average and maximum pumpages were 19,000 and 32,000 gpd, respectively. In 1984 there were 2682 services, all metered; the average pumpage was 1,096,900 gpd. The water is chlorinated; in addition, the water from Well Nos. 1, 2, 3, and 6 is fluoridated and treated with polyphosphate to keep iron in solution.

WELL NO. 1 was completed in September 1960 to a depth of 260 ft (measured at 206.5 ft in October 1976) by the Shaver Well Drilling Co., Lombard. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located near Carter St. on Forest View Ave., approximately 2350 ft S and 1500 ft W of the NE corner of Section 16, T40N, R11E. The land surface elevation at the well is approximately 670 ft.

The well is cased with 16-in. pipe from about 1.2 ft above the wellhouse floor to an unknown depth.

In 1969, this well was acidized.

After pump rehabilitation, a production test was conducted by . the Layne-Western Co., Aurora, on October 7, 1976. After 3.2 hr of pumping at rates of 345 to 275 gpm, the final drawdown was 137 ft from a nonpumping water level of 43 ft below land surface.

On July 9, 1979, the nonpumping water level was reported to be 45 ft.

The pumping equipment presently installed consists of a 40-hp General Electric motor, a 10-in., 9-stage Layne & Bowler verti-line turbine pump (Model No. 10EXLM) set at 190 ft, rated at 250 gpm at about 330 ft TDH, and has 190 ft of 5-in. column pipe. The well is equipped with 190 ft of airline.

A mineral analysis of a sample (Lab. No. 211334) collected July 9, 1979, after pumping for 6 hr at about 275 gpm, showed the water to have a hardness of 514 mg/l, total dissolved minerals of 757 mg/l, and an iron content of 0.7 mg/1.

WELL NO. 2 was completed in April 1963 to a depth of 245 ft by L. Cliff Neely, Batavia. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located on the north side of Irving Park Road opposite Forest View Ave., approximately 250 ft N and 1750 ft W of the SE corner of Section 9, T40N, R11E. The land surface elevation at the well is approximately 678 ft.

A drillers log of Well No. 2 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Clay	11	11
Blue mud and gravel	3	14
Sand and blue mud	6	20
Sand	6	26
Sand and some gravel	14	40
Blue mud	4	44
Sand and gravel	15	59
Gravel and broken shale	3	62
Shale	3	65
Gravel	14	79
Niagara lime	101	180
Shale	10	190
Broken lime	21	211
Green shale	9	220
Gray shale	25	245

A 26-in. diameter hole was drilled to a depth of 94.8 ft and finished 20 in. in diameter from 94.8 to 245 ft. The well is cased with 26-in. pipe from about 1 ft above the pumphouse floor to a depth of 79.8 ft and 20-in. pipe from about 1 ft above the pumphouse floor to a depth of 94.8 ft (cemented in).

A production test was conducted by the driller on April 30, 1963. After pumping at a rate of 30 gpm, the drawdown was about 185 ft from a nonpumping water level of 20 ft.

On May 1, 1963, this well was acidized with 4000 gal of HC1. A production test was conducted by the driller on May 4-5, 1963. After 15 hr of pumping at rates ranging from 179 to 120 gpm, the final drawdown was 103 ft from a nonpumping water level of 24 ft below land surface. Thirty-five min after pumping was stopped, the water level had recovered to 37 ft.

On March 16, 1964, the well reportedly produced 100 gpm with a drawdown of 20 ft from a nonpumping water level of 27 ft.

Nonpumping water levels were reported to be 85 ft in May 1969, 60 ft in May 1970, 82 ft in June 1971, and 68 ft in August 1973.

A production test was conducted by the Layne-Western Co., Aurora, on August 18, 1976. After 25 min of pumping at rates ranging from 199 to 78 gpm, the final drawdown was 6 ft from a nonpumping water level of 100 ft below the pump base.

The pumping equipment presently installed consists of a 15-hp electric motor, an 8-in., 6-stage Layne & Bowler verti-line turbine pump set at 170 ft, rated at 160 gpm at about 153 ft TDH, and has 170 ft of 5-in. column pipe. The well is equipped with 170 ft of air-line.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B41232) of a sample collected March 21, 1980, after pumping for 1 hr at 100 gpm, showed the water to have a hardness of 432 mg/l, total dissolved minerals of 585 mg/l, and an iron content of 2.01 mg/1.

WELL NO. 3 was completed in October 1963 to a depth of 240 ft (measured at 197 ft in 1976) by the Shaver Well Drilling Co., Lombard. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located at the southwest corner of Station Drive and Potter St., approximately 1500 ft S and 1000 ft E of the NW corner of Section 16, T40N, R11E. The land surface elevation at the well is approximately 692 ft.

A drillers log of Well No. 3 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Top soil	5	5
Clay	55	60
Clay, some sand and gravel	10	70
Gravel	22.5	92.5
Limestone	107.5	200
Limestone and shale	20	220
Shale	20	240

A 12-in. diameter hole was drilled to a depth of 240 ft. The well is cased with 12-in. wrought iron pipe from about 1 ft above the wellhouse floor to a depth of 92.5 ft.

A production test was conducted by the driller on October 23-24, 1963. After 24 hr of pumping at rates ranging from 548 to 305 gpm, the maximum drawdown was 68 ft from a nonpumping water level of 36 ft below land surface.

Nonpumping water levels were reported to be 76 ft in August 1967, 74 ft in May 1969, 68 ft in June 1971, and 70 ft in August 1973.

In 1975, this well was acidized.

A production test was conducted by the Layne-Western Co., Aurora, on August 17, 1976. After 1.2 hr of pumping at rates ranging from 709 to 737 gpm, the final drawdown was 11 ft from a nonpumping water level of 74 ft below land surface.

The pumping equipment presently installed consists of a 50-hp U. S. electric motor, a 10-in., 6-stage Layne & Bowler vertical turbine pump (Model 10R) set at 180 ft, rated at 500 gpm at about 164 ft TDH, and has 180 ft of 8-in. column pipe. The well is equipped with 180 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. C00996) of a sample collected February 4, 1976, after pumping for 0.6 hr, showed the water to have a hardness of 452 mg/l, total dissolved minerals of 599 mg/1, and an iron content of 0.6 mg/1.

WELL NO. 4 is a pumping station with a reservoir and booster pump and does not exist as a water well.

WELL NO. 5, open to the Midwest Aquigroup (Cambrian-Ordovician aquifer), was completed in. December 1972 to a depth of 1400 ft by the Milaeger Well & Pump Co., Brookfield, Wis. The well is located in Klefstad Industrial Park south of Richter Road, approximately 500 ft S and 2500 ft W of the NE corner of Section 10, T40N, R11E. The land surface elevation at the well is approximately 695 ft.

A drillers log of Well No. 5 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Sandy clay	50	50
Sand and gravel	40	90
Gravelly clay	15	105
Niagara limestone	260	365
Gray shale	100	465
Brown sand (probably dolomite)	338	803
White sand	132	935
Limestone and some shale	71	1006
Sandy limestone	130	1136
Red shale	69	1205
Brown sandstone	195	1400

A 25-in. diameter hole was drilled to a depth of 481 ft, reduced to 19.2 in. between 481 and 1240 ft, and finished 15.2 in. in diameter from 1240 to 1400 ft. The well is cased with 26-in. pipe from land surface to a depth of 111 ft, 20-in. pipe from land surface to a depth of 481 ft (cemented in), and a 16-in. liner from 1114 ft to a depth of 1240 ft.

A production test was conducted by the driller on December 19, 1972. After 12.5 hr of pumping at rates ranging from 458 to 599 gpm, the drawdown was 232 ft from a nonpumping water level of 525 ft below the top of the casing. On December 20, 1972, after 6.5 hr of pumping at rates ranging from 458 to 681 gpm, the drawdown was about 235 ft. Pumping was continued for 3 hr at 408 gpm with a final drawdown of 135 ft. Thirty min after pumping was stopped, the water level had recovered to 620 ft.

On August 23, 1974, the well reportedly produced 300 gpm with a drawdown of 200 ft from a nonpumping water level of 600 ft.

This well was shot with a total of 1250 lb of nitrogel as follows: 50 lb between 1350 and 1400 ft and 100 lb between 1300 and 1350 ft on September 23, 1974; 150 lb between 1300 and 1350 ft and 200 lb between 1270 and 1305 ft on September 24; 175 lb between 1350 and 1400 ft and 175 lb between 1300 and 1350 ft on October 7, 1974; and 200 lb between 1250 and 1300 ft and 200 lb between 1350 and 1400 ft on November 13, 1974.

In February 1975, the pump was pulled and the driller bailed sand out of the well from February to May. On June 16, 1975, the pump sand-locked and was out of service until July 8. Lots of sand was pumped until a sand separator was installed on January 30, 1976.

In April 1976, the Layne-Western Co., Aurora, started cleaning sand out of the well by bailing and airlifting. The pump was repaired and then reinstalled in July 1976.

On August 12, 1976, the well reportedly produced 750 gpm with a drawdown of 62 ft from a nonpumping water level of 795 ft.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B34411) is for a water sample from the well collected February 5, 1980, after 2 hr of pumping at 600 gpm. Hydrogen sulfide was apparent when a previous sample was collected.

WELL NO. 5, LABORATORY NO. B34411

		mg/l	*me/l*			*mg/l*	*me /l*
Iron	Fe	0 18	Silica	SiO_2	7 9		
Manganese	Mn	<0 005	Fluoride	F	0 91	0.05	
Ammonium	NH_4	0 5	0.03 Boron	B	0 40		
Sodium	Na	42	1 83 Cyanide	CN	<0 005		
Potassium	K	15	0.38 Nitrate	NO_3	<0.4		
Calcium	Ca	74	3.69 Chloride	CI	15	0.42	
Magnesium	Mg	25	2 06 Sulfate	SO_4	98	2.04	
Strontium	Sr	3 78	Alkalinity (as CaCO)		268	5.36	
Arsenic	As	<0.001	Hardness (as $CaCO_3$)		279	5.58	
Barium	Ba	0.05					
Beryllium	Be	<0 0005	Total dissolved				
Cadmium	Cd	<0.0005	minerals		442		
Chromium	Cr	<0 005					
Cobalt	Co	<0.005					
Copper	Cu	0.003					
Lead	Pb	<0.01					
Lithium	Li	0.07					
Mercury	Hg	<0.00005					
Nickel	Ni	<0.05					
Selenium	Se	<0 001					
Silver	Ag	<0.005					
Zinc	Zn	0.002	pH (as rec'd)		7.3		

The pumping equipment presently installed is an 18-stage Byron Jackson submersible turbine pump set at 1060 ft, rated at 750 gpm at about 890 ft TDH, and powered by a 200-hp 1800 rpm Byron Jackson electric motor.

A test well was constructed in May 1977 to a depth of 202 ft by the Layne-Western Co., Aurora. This well was plugged and abandoned in May 1977. The test well was located about 1000 ft north of Foster Ave. and 2200 ft west of Wood Dale Road, approximately 1680 ft S and 2430 ft W of the NE corner of Section 9, T40N, R11E. A 12-in. diameter hole was drilled to a depth of 80 ft and finished 7.8 in. in diameter from 80 to 202 ft. The test well was cased with 8-in. steel pipe from land surface to a depth of 80 ft. A production test was conducted by the driller on May 10, 1977. After 6 hr of pumping at rates ranging from 115 to 159 gpm, the drawdown was 114 ft from a nonpumping water level of 34 ft. Pumping was continued for 2 hr at a rate of 133 gpm with a final drawdown of 96 ft.

A test well was constructed in May 1977 to a depth of 242 ft by the Layne-Western Co., Aurora. This well was plugged and abandoned in May 1977. The test well was located about 720 ft east of Ash St. and 200 ft south of the railroad tracks, approximately 1750 ft S and 860 ft W of the NE corner of Section 15, T40N, R11E. A 12-in. diameter hole was drilled to a depth of 120 ft and finished 7.8 in. in diameter from 120 to 242 ft. The test well was cased with 8-in. steel pipe from land surface to a depth of 120 ft. Upon completion, the nonpumping water level was reported to be 60 ft.

WELL NO. 6 was completed in August 1977 to a depth of 190 ft by the Layne-Western Co., Aurora. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located on the north side of West Sara Drive about 150 ft east of North Mill Road, approximately 1980 ft S and 1200 ft W of the NE corner of Section 17, T40N, RUE. The land surface elevation at the well is approximately 700 ft.

A drillers log of Well No. 6 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Top soil and fill	10	10
Clay	10	20
Sand	5	25
Clay and boulders	30	55
Sand and gravel	**20**	75
Broken limestone	10	85

Strata	Thickness (ft)	Depth (ft)
Gray limestone - hard	45	130
Gray limestone - medium	40	170
Gray limestone - hard	10	180
Limestone with blue shale streaks	3	183
Blue shale	7	190

A 17-in. diameter hole was drilled to a depth of 20 ft and finished 12 in. in diameter from 20 to 190 ft. The well is cased with 12-in. steel pipe from about 1.5 ft above the wellhouse floor to a depth of 91 ft (cemented in from 0 to 20 ft). The top of the casing is equipped with a Baker pitless adapter.

A production test was conducted by the driller on August 4-5, 1977. After 29.8 hr of pumping at rates ranging from 340 to 1002 gpm, the final drawdown was 29 ft from a nonpumping water level of 50 ft below the top of the casing. Two min after pumping was stopped, the water level had recovered to 61 ft.

On July 9, 1979, the nonpumping water level was reported to be 63 ft.

A production test was conducted by the driller on January 9, 1980. After 1.2 hr of pumping at rates of 800 to 1075 gpm, the final drawdown was 16 ft from a nonpumping water level of 54 ft.

The pumping equipment presently installed is an 11-in., 5-stage Byron Jackson submersible pump (Serial No. 771-C-0346) set at 100 ft, rated at 800 gpm at about 250 ft TDH, and powered by a 75-hp 1760 rpm Byron Jackson motor. The well is equipped with 100 ft of airline.

The following mineral analysis (Lab. No. 211333) is for a water sample from the well collected July 9, 1979, after 6 hr of pumping at about 875 gpm.

WELL NO. 6, LABORATORY NO. 211333

		mg/l	me/l			mg/l	me/l
Iron(total)	Fe	1.0		Silica	SiO_2	23.3	
Manganese	Mn	0.02		Fluoride	F	0.4	
Ammonium	NH_4	0.7	0.04	Boron	B	0.4	
Sodium	Na	32.8	1.43	Nitrate	NO_3	0.1	0.00
Potassium	K	3.2	0.08	Chloride	CI	22	0.62
Calcium	Ca	114	5.69	Sulfate	SO_4	226	4.71
Magnesium	Mg	54.4	4.47	Alkalinity (as $CaCO_3$)		310	6.20
Strontium	Sr	1.99	0.04				
				Hardness (as $CaCO_3$)		508	10.16
Barium	Ba	<0.05					
Cadmium	Cd	0.00		Total dissolved			
Chromium	Cr	0.00		minerals		687	
Copper	Cu	0.01					
Lead	Pb	0.00					
Lithium	Li	0.02		Turbidity	8		
Nickel	Ni	0.04		Color	0		
Silver	Ag	0.00		Odor	0		
Zinc	Zn	0.01		Temp.(reported)	52.5F		

WELL NO. 7 was completed in April 1978 to a depth of 1356 ft by the Layne-Western Co., Aurora. The water-yielding unit in this well is the Midwest Aquigroup (Cambrian-Ordovician aquifer). The well also penetrates the upper part of the Eau Claire Formation. The well is located south of the city fire station on the south side of Park Lane and east of Station Drive, approximately 875 ft S and 1480 ft E of the NW corner of Section 16, T40N, R11E. The land surface elevation at the well is approximately 693 ft.

A drillers log of Well No. 7 follows:

Strata	Thickness (ft)	Depth (ft)
Top soil and fill	3	3
Brown clay	7	10
Gray clay	10	20
Gray clay with sand and gravel	35	55
Small to medium sand and gravel	35	90
Hard broken lime	5	95
Hard gray lime	50	145
Hard gray and brown lime and shale breaks	5	150
Hard gray lime	40	190
Medium gray shale	10	200
Medium gray lime and shale	15	215
Medium gray shale and lime	30	245
Medium gray shale and lime shells	15	260
Medium gray lime and shale	20	280
Hard gray lime	35	315
Medium gray shale and lime shells	20	335
Hard gray lime	20	355
Medium gray shale and lime shells	25	380
Medium gray shale	20	400
Hard gray shale	20	420
Hard gray lime, gray shale streaks 620 to C50 ft	300	720
Hard white sand	60	780
Hard gray sand	50	830
Hard white sand	40	870
Medium to hard white sand	30	900
Hard white sand	10	910
Hard white sand, streaks of white shale	30	940
Hard brown sandy lime	5	945
Hard gray lime	15	960
Hard light brown sandy lime	35	995
Hard brown lime	40	1035
Hard brown lime and red shale	10	1045
Hard brown lime	85	1130
Hard gray lime with red shale	25	1155
Hard gray sand with red shale	5	1160
Hard brown sand with green shale	10	1170
Hard gray sand	10	1180
Medium hard gray sand, some gray shale	16	1196
Hard gray sandy lime	4	1200
Hard gray coarse sand, lime and shale shells	10	1210
Hard gray sandy lime	15	1225
Hard brown sandy lime	10	1235
Hard brown and gray sand	5	1240
Hard white sand	60	1300
Very hard white sand	20	1320
Hard white sand	10	1330
Very hard white sand	10	1340
Hard white sand	10	1350
Hard red and green lime and shale	6	1356

A 29-in. diameter hole was drilled to a depth of 15 ft, reduced to 25.2 in. between 15 and 430 ft, and finished 21 in. in diameter from 430 to 1356 ft. The well is cased with 2G-in. OD steel pipe from about 2 ft above land surface to a depth of 100 ft and 22-in. OD steel pipe from about 2 ft above land surface to a depth of 430 ft (cemented in). The top of the casing is equipped with a Baker pitless adapter.

A production test was conducted by the driller on February 2, 1978. After 8 hr of pumping at rates of 700 to 757 gpm, the final drawdown was 375 ft from a nonpumping water level of 533 ft below land surface.

On February 10, 1978, this well was shot with 1000 lb of 100 percent solidified nitroglycerin as follows: 210 lb from 1347 to 1329 ft, 210 lb from 1324 to 1306 ft, 210 lb from 1300 to 1282 ft, 185 lb from 1277 to 1261.5 ft, and 185 lb from 1255 to 1239.5 ft.

A second production test was conducted by the driller on February 20-21, 1978. After 24 hr of pumping at rates ranging from 1001 to 713 gpm, the final drawdown was 359 ft from a nonpumping water level of 550 ft below land surface.

A third production test was conducted by the driller on March 15-16, 1978. After 24 hr of pumping at rates of 600 to 1001 gpm, the drawdown was 397 ft from a nonpumping water level of 536 ft below land surface.

A fourth production test was conducted by the driller on April 4-5, 1978. After 11 hr of pumping at rates of 633 to 1153 gpm, the drawdown was 212 ft from a nonpumping water level of 728 ft below land surface. After a 4-hr idle period, pumping was continued for 13 hr at rates ranging from 933 to 1153 gpm with a maximum drawdown of 220 ft.

A production test was conducted by the driller on June 12, 1980. After 5.9 hr of pumping at rates of 1170 to 1023 gpm, the maximum drawdown was 172 ft from a nonpumping water level of 804 ft. After a 14-min idle period, pumping was continued for 1.1 hr at rates ranging from 1045 to 1023 gpm with a final drawdown of 168 ft.

The pumping equipment presently installed is a 13-in., 15-stage Byron Jackson submersible pump (Serial No. 771-C-0347) set at 1050 ft, rated at 1000 gpm at about 1100 ft TDH, and powered by a 450-hp 1775 rpm Byron Jackson electric motor. The well is equipped with 1045 ft of airline.

A partial analysis of a sample (Lab. No. 207794) collected April 5, 1978, after pumping for 11 hr at rates of 633 to 1153 gpm, showed the water to have a hardness of 350 mg/l, total dissolved minerals of 586 mg/l, and an iron content of 0.1 mg/1.

WOODRIDGE

The village of Woodridge (22,322) installed a public water supply in 1959. Six wells are in use. This supply is also cross connected with the village of Bolingbrook. In 1960 there were 289 services, all metered; the average pumpage was 75,000 gpd. In 1984 there were 6041 services, all metered; the average pumpage was 2,607,900 gpd. The water is chlorinated and fluoridated.

Prior to the construction of the public water supply, three test holes were constructed in June and July 1958 by the J. P. Miller Artesian Well Co., Brookfield, to depths of 61, 75, and 70 ft. Two of these holes were located in the southeast quarter of Section 26, T38N, R10E, and the other hole was located in the southwest quarter of Section 25, T38N, R10E.

WELL NO. 1 (also known as Surety No. 1), open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in April 1959 to a depth of 334 ft by the J. P. Miller Artesian Well Co., Brookfield. The well is located west of Woodridge Drive between Crabtree Ave. and Butternut Court, approximately 1100 ft N and 352 ft W of the SE corner of Section 26, T38N, R10E. The land surface elevation at the well is approximately 735 ft.

A drillers log of Well No. 1 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Clay	25	25
Gravel	5	30
Blue clay	33	63
Gravel rock	33	96
Gray lime	37	133
Crevice	4	137
Gray lime	19	156
White lime, hard	45	201
Crevice	3	204
Gray lime	24	228
Brown lime	19	247
White lime	4	251
Crevice	7	258
Brown lime	17	275
Dark brown lime	21	296
Crevice	2	298
Gray lime, sandy	24	322
Gray lime	8	330
Shale	4	334

A 15.2-in. diameter hole was drilled to a depth of 334 ft. The well is cased with 16-in. OD pipe from about 1 ft above land surface to a depth of 97 ft.

A production test was conducted by the driller on April 29-30, 1959. After 24.2 hr of pumping at rates of 530 to 1000 gpm, the maximum drawdown was 3 ft from a nonpumping water level of 89 ft below the top of the casing.

In December 1970 and in 1984, the nonpumping water level was reported to be 87 ft.

The pumping equipment presently installed consists of a 100-hp Westinghouse electric motor, a 12-in., 4-stage Johnston vertical turbine pump set at 140 ft, rated at 1100 gpm, and has 140 ft of 10-in. column pipe.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B28523) of a sample collected January 19, 1976, showed the water to have a hardness of 545 mg/l, total dissolved minerals of 768 mg/1, and an iron content of 0.0 mg/1.

WELL NO. 2 (also known as Surety No. 2) was completed in October 1961 to a depth of 353 ft by the Layne-Western Co., Aurora. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located about 250 ft northeast of Well No. 1, approximately 1200 ft N and 150 ft W of the SE corner of Section 26, T38N, R10E. The land surface elevation at the well is approximately 735 ft.

A drillers log of Well No. 2 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Top soil	4	4
Yellow clay and boulders	16	20
Light blue clay	5	25
Blue drift	6	31
Blue sticky mud	21	52
Blue clay	18	70
Heavy gravel and broken lime	22	92
Broken lime	9	101
Gray limestone	96	197
Dark gray limestone, crevices	33	230
Brown lime crevices	5	235
Dark gray limestone	15	250
Light brown lime - sandy	12	262
Dark brown limestone - hard	63	325
Dark blue limestone, medium hard	10	335
Gray limestone and shale	18	353

A 15.2-in. diameter hole was drilled to a depth of 353 ft. The well is cased with 16-in. steel drive pipe from about 1 ft above land surface to a depth of 105.5 ft.

A production test was conducted by the driller on October 16-17, 1961. After 22 hr of pumping at rates ranging from 503 to 759 gpm, the maximum drawdown was 7 ft from a nonpumping water level of 86 ft below land surface.

In 1984, the nonpumping water level was reported to be 87 ft.

The pumping equipment presently installed consists of a 40-hp Allis-Chalmers electric motor, a 10-in., 6-stage Layne vertical turbine pump (No. 46137) set at 125 ft, rated at 500 gpm at about 240 ft TDH, and has 125 ft of 6-in. column pipe. The well is equipped with 125 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B41817) of a sample collected March 25, 1980, after pumping for 0.5 hr at about 500 gpm, showed the water to have a hardness of 506 mg/1, total dissolved minerals of 793 mg/1, and an iron content of 0.076 mg/1.

WELL NO. 3 (also known as Winston No. 1) was completed in July 1963 to a depth of 360 ft by the Layne-Western Co., Aurora. The water-yielding units in this well are dolomite and shale of the Upper Bedrock Aquigroup (Silurian System and Maquoketa Group). The well is located on the south side of

Woodridge Drive at the end of MacArthur Drive, approximately 2150 ft S and 2200 ft W of the NE corner of Section 23, T38N, R10E. The land surface elevation at the well is approximately 740 ft.

A drillers log of Well No. 3 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Black top soil	2	2
Brown clay	3	5
Brown sandy clay	5	10
Gray sandy clay	25	35
Sand and gravel	6	41
Gray sandy clay	15	56
Gravel, streaks of clay	14	70
Gravel	26.6	96.6
Limestone	3.4	100
Limestone, light gray, medium, crevice at 120 ft	20	120
Limestone, gray, medium	2	122
Broken sandy limestone	3	125
Limestone, gray, very hard	65	190
Limestone, white, very hard	25	215
Limestone, gray, medium	5	220
Limestone, light gray, hard	40	260
Limestone, medium	70	330
Limestone, with shale streaks	5	335
Shale, little limestone	5	340
Limestone, shale streaks	20	360

A 22-in. diameter hole was drilled to a depth of 108 ft and finished 15.2 in. in diameter from 108 to 360 ft. The well is cased with 22-in. steel casing from about 2 ft above land surface to a depth of 98 ft and 16-in. steel pipe from about 2 ft above land surface to a depth of 108 ft (cemented in).

A production test was conducted by the driller on July 8-9, 1963. After 23.7 hr of pumping at rates of 1181 to 1259 gpm, the drawdown was 3 ft from a nonpumping water level of 90 ft below land surface.

In 1984, the nonpumping water level was reported to be 98 ft.

The pumping equipment presently installed consists of a 100-hp General Electric motor, a 10-in., 8-stage Layne submersible turbine pump (No. 47939) set at 156 ft, rated at 1100 gpm, and has 156 ft of 8-in. column pipe. The well is equipped with 156 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B41899) of a sample collected March 26, 1980, after pumping for 30 min at 1100 gpm, showed the water to have a hardness of 594 mg/l, total dissolved minerals of 869 mg/l, and an iron content of <0.005 mg/1.

WELL NO. 4 (also known as Winston No. 2), open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in June 1970 to a depth of 223.5 ft by the Layne-Western Co., Aurora. The well is located about 100 ft southwest of Well No. 3, approximately 2200 ft S and 2350 ft W of the NE corner of Section 23, T38N, R10E. The land surface elevation at the well is approximately 740 ft.

A drillers log of Well No. 4 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Black soil	1	1
Brown clay, few boulders	13	14
Gray sticky clay	23	37
Sand and gravel, few boulders	8	45
Gray clay	15	60
Sand and gravel, limestone boulders	35	95
Limestone with crevices	90	185
Light gray limestone with small streaks of brown lime	7	192
Hard white limestone with crevices	31.5	223.5

A 22-in. diameter hole was drilled to a depth of 20 ft, reduced to 19 in. between 20 and 103.5 ft, and finished 15 in. in diameter from 103.5 to 223.5 ft. The well is equipped with an 18-in. diameter pitless adapter and cased with 16-in. pipe to a depth of 103.5 ft (cemented in).

A production test was conducted by the driller on June 15, 1970. After 12 hr of pumping at a rate of 1311 gpm, the drawdown was 6.0 ft from a nonpumping water level of 97.5 ft below land surface.

In 1984, the well reportedly produced 1100 gpm with a drawdown of 1 ft from a nonpumping water level of 88 ft.

The pumping equipment presently installed consists of a 100-hp General Electric motor, a 10-in., 8-stage Layne submersible turbine pump (No. 89111) set at 150 ft, rated at 1100 gpm, and has 150 ft of 8-in. column pipe. The well is equipped with 150 ft of airline.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B28525) of a sample collected January 19, 1976, after pumping for 1 hr at 1100 gprn, showed the water to have a hardness of 548 mg/1, total dissolved minerals of 730 mg/1, and an iron content of 0.0 mg/1.

WELL NO. 5 (also known as Maplecrest No. 1), open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in September 1970 to a depth of 364 ft by the Layne-Western Co., Aurora. The well is located about 0.4 mile north of 75th St. east of Woodward Ave., approximately 750 ft S and 100 ft E of the NW corner of Section 30, T38N, R11E. The land surface elevation at the well is approximately 760 ft.

A drillers log of Well No. 5 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Yellow clay fill	2	2
Black top soil	4	6
Gray gravelly clay, thin seams of fine sand and gravel	103	109
Broken yellow lime	3	112
Hard white lime	8	120
Gray lime with crevices	150	270
Brown lime	SO	320
White lime	19	339
Brown lime	20	359
Shale	5	364

A 19.2-in. diameter hole was drilled to a depth of 122 ft and finished 15.2 in. in diameter from 122 to 364 ft. The well is cased with 16-in. steel pipe from about 2 ft above land surface to a depth of 122 ft (cemented in).

A production test was conducted by the driller on September 25-26, 1970. After 24 hr of pumping at rates ranging from 408 to 1209 gpm, the maximum drawdown was 24.0 ft from a nonpumping water level of 117.5 ft below land surface. Ten min after pumping was stopped, full recovery was observed.

In 1984, the nonpumping water level was reported to be 122 ft.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B41231) is for a water sample from the well collected March 20, 1980, after 24 hr of pumping at 560 gpm.

WELL NO. 5, LABORATORY NO. B41231

		mg/l	*me/l*			*mg/l*	*me/l*
Iron	Fe	0.168		Silica	SiO_2	11	
Manganese	Mn	<0.005		Fluoride	F	0.17	0.01
Ammonium	NH_4	<0 1		Boron	B	0.09	
Sodium	Na	42	1.83	Cyanide	CN	0.04	
Potassium	K	4.4	0.11	Nitrate	NO_3	<0.4	
Calcium	Ca	121	6.04	Chloride	CI	96	2.71
Magnesium	Mg	61	5 02	Sulfate	SO_4	211	4 39
Strontium	Sr	0.389		Alkalinity (as $CaCO_3$)		316	6.32
Arsenic	As	<0.001		Hardness (as $CaCO_3$)		543	10.86
Barium	Ba	0.06					
Beryllium	Be	<0.0005		Total dissolved			
Cadmium	Cd	<0.0005		minerals		777	
Chromium	Cr	<0.005					
Cobalt	Co	<0.005					
Copper	Cu	<0.005					
Lead	Pb	<0.005					
Lithium	Li	0.10					
Mercury	Hg	<0 00005					
Nickel	Ni	<0.005					
Selenium	Se	<0.001					
Silver	Ag	<0.005					
Vanadium	V	<0.005					
Zinc	Zn	<0.005		pH (as rec'd)		7.2	

The pumping equipment presently installed consists of a 75-hp General Electric motor, a 12-in., 4-stage Layne vertical turbine pump (No. 64919) set at 150 ft, rated at 1000 gpm at about 240 ft TDH, and has 150 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 150 ft of airline.

WELL NO. 6 was completed in March 1983 to a depth of 396.ft by the Wehling Well Works, Beecher. The major water-yielding unit in this well is dolomite of the Upper Bedrock Aquigroup (Silurian System). The well also penetrates shale in the upper part of the Maquoketa Group. The well is located south of 75th St. at the Country Club, approximately 2440 ft N and 1500 ft E of the SW corner of Section 30, T38N, R11E. The land surface elevation at the well is approximately 780 ft.

A drillers log of Well No. 6 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Clay	40	40
Clay and rocks	109	149
Limestone	241	390
Shale	6	396

A 20-in. diameter hole was drilled to a depth of 151 ft and finished 15.2 in. in diameter from 151 to 396 ft. The well is cased with 20-in. black steel pipe from land surface to a depth of 149 ft and 16-in. black steel pipe from about 1 ft above land surface to a depth of 151 ft (cemented in).

A production test was conducted by the driller on April 25, 1983. After 7 hr of pumping at rates ranging from 1846 to 1740 gpm, the final drawdown was 6 ft from a nonpumping water level of 135 ft below land surface.

A production test was conducted by the Layne-Western Co., Aurora, on December 18, 1984. After 45 min of pumping at rates of 717 to 1050 gpm, the drawdown was 2 ft from a nonpumping water level of 143 ft.

The pumping equipment presently installed consists of a 100-hp 1800 rpm General Electric motor, a 4-stage Layne turbine pump (Serial No. 101884) set at 165 ft, rated at 1100 gpm at about 290 ft TDH, and has 165 ft of 10-in. column pipe. A 10-ft section of 10-in. suction pipe is attached to the pump intake.

A partial analysis of a sample (Lab. No. 218502) collected during the initial production test, showed the water to have a hardness of 541 mg/l, total dissolved minerals of 765 mg/1, and an iron content of 0.19 mg/1.

YORK CENTER CO-OP

York Center Co-op (est. 300), located about 0.2 mile south of Lombard, installed a public water supply in 1947. The water system is owned and operated by the York Center Community Cooperative Association. One well (No. 1) is in use and another well (No. 2) is available for emergency use. In 1953 there were 32 services; the average pumpage was 8000 gpd. In 1984 there were 81 services, none metered; the average pumpage was 17,120 gpd. The water is chlorinated, fluoridated, and softened by ion exchange.

WELL NO. 1, open to dolomite of the Upper Bedrock Aquigroup (Silurian System), was completed in October 1947 to a depth of 235 ft by the J. P. Miller Artesian Well Co., Brookfield. The well is located at 800 Community Drive about 1 block south of Roosevelt Road, approximately 700 ft S and 350 ft W of the NE corner of Section 20, T39N, R11E. The land surface elevation at the well is approximately 715 ft.

A correlated drillers log of Well No. 1 furnished by the State Geological Survey follows:

Strata	*Thickness (ft)*	*Depth (ft)*
QUATERNARY SYSTEM		
Pleistocene Series		
Drift	95	95
SILURIAN SYSTEM		
Niagaran Series		
Limestone	40	235

A 10-in. diameter hole was drilled to a depth of 235 ft. The well is cased with 10-in. ID pipe from about 2.5 ft above the pumphouse floor to a depth of 96.5 ft.

A production test was conducted by the driller on October 16, 1947. After 5.1 hr of pumping at rates of 123 to 195 gpm, the drawdown was 57 ft from a nonpumping water level of 44 ft below the top of the casing. Three min after pumping was stopped, full recovery was observed.

On April 26, 1958, the well reportedly produced 185 gpm for 2 hr with a drawdown of 20 ft from a nonpumping water level of 40 ft below the pump base.

On December 10, 1965, after pumping at a rate of 215 gpm, the drawdown was 50 ft from a nonpumping water level of 48 ft.

Nonpumping water levels were reported to be 40 ft in May 1971, and 67 ft on January 13, 1985.

The pumping equipment presently installed consists of a 15-hp 1800 rpm U. S. electric motor, a 6.5-in., 12-stage Peerless turbine pump set at 120 ft, rated at 180 gpm at about 220 ft head, and has 120 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 120 ft of airline.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. 4855) is for a water sample from the well collected in April 1972, after 0.2 hr of pumping at 150 gpm.

WELL NO. 1, LABORATORY NO. 4855

		mg/l	*me/l*			*mg/l*	*me/l*
Iron	Fe	1.2	0.04	Silica	SiO_2	18	
Manganese	Mn	0.0		Fluoride	F	0.3	0.02
Ammonium	NH_4	0.4	0.02	Boron	B	0.35	
Sodium	Na	20	0.87	Nitrate	NO_3	0.0	
Potassium	K	1.7	0.04	Chloride	CI	22	0.62
Calcium	Ca	125	6.24	Sulfate	SO_4	169	3.52
Magnesium	Mg	53	4.36	Alkalinity (as $CaCO_3$)		364	7.28
				Hardness (as $CaCO_3$)		528	
Barium	Ba	0.0					
Cadmium	Cd	0.00		Total dissolved			
Chromium	Cr	0.0		minerals		600	
Copper	Cu	0.0		pH (as rec'd)		7.1	
Lead	Pb	0.00		Radioactivity			
Mercury	Hg	<0.0005		Alpha *pc/l*		1	
Nickel	Ni	0.0		± deviation		2	
Silver	Ag	0.0		Beta *pc/l*		0	
Zinc	Zn	0.0		± deviation		2	

WELL NO. 2, finished in sand and gravel of the Prairie Aquigroup, was completed in February 1960 to a depth of 81 ft by the J. P. Miller Artesian Well Co., Brookfield. This well is available for emergency use. The well is located about 15 ft east of Well No. 1, approximately 700 ft S and 335 ft W of the NE corner of Section 20, T39N, R11E. The land surface elevation at the well is approximately 710 ft.

A drillers log of Well No. 2 follows:

Strata	*Thickness (ft)*	*Depth (ft)*
Clay	20	20
Sand	20	40
Gravel	41	81

An 11-in. diameter hole was drilled to a depth of 81 ft. The well is cased with 6-in. steel pipe from about 1.5 ft above the wellhouse floor to a depth of 71 ft followed by 10 ft of 6-in. Houston stainless steel screen.

The annulus between the bore hole and casing-screen assembly is filled with cement from 0 to 10 ft, with sand and aquagel from 10 to 60 ft, and with 1/8 by l/4-in. silica gravel from 60 to 81 ft.

Upon completion, the well reportedly produced 150 gpm for 4 hr with a drawdown of 7 ft from a non-pumping water level of 37 ft.

The pumping equipment presently installed is a Peerless turbine pump set at 60 ft, operated at 20 gpm, and powered by a 3-hp U. S. electric motor.

A partial analysis of a sample (Lab. No. 151616) collected February 8, 1960, after pumping for 2 hr at 150 gpm, showed the water to have a hardness of 480 mg/l, total dissolved minerals of 576 mg/l, and an iron content of 1.8 mg/1.