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Public Groundwater Supplies
in Edwards County

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Introduction

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

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

This report includes separate descriptions for 3 groundwater supply systems furnishing water to 4 municipalities in Edwards County. These are preceded by brief summaries of the groundwater geology of the county and the development of groundwater sources for public use. An explanation of the format used in the descriptions is also given.

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Groundwater Geology

The geology of Edwards County is described generally in Illinois State Geological Survey Circular 212, *Groundwater Geology in Southern Illinois*. The following brief discussion of geologic conditions in the county is taken largely from that publication. For a more detailed definition of the geology in this portion of the state, the reader is referred to the State Geological Survey which is located on the University of Illinois campus, Urbana.

The unconsolidated materials forming the present-day land surface in Edwards County are mostly glacial deposits and vary in thickness and water-yielding character. At the southeast corner of the county, the bottomlands of the Wabash River in the adjacent counties of White and Wabash are underlain by fairly extensive deposits of water-bearing sand and gravel deposits capable of yielding large quantities of water to individual wells. Locally, sand and gravel depos-

its suitable for developing moderate quantities of water (25 to 100 gpm) may be associated with preglacial bedrock valleys and the present-day Little Wabash River and Bonpas Creek valleys along the western and eastern boundaries of the county. In the uplands between these valleys, the unconsolidated deposits are thin (25 ft or less) with poor possibilities for successful drilled wells completed in sand and gravel.

Beneath the unconsolidated deposits are the bedrock units of the upper part of the Pennsylvanian system. Exposures of the bedrock (outcrops) are common in the upland areas. The Pennsylvanian rocks consist principally of shale with only thin beds of water-yielding sandstone or creviced limestone. The sandstone and limestone beds are generally found in the shallow bedrock in the east central part of T1N, R10E, and the central part of T1N, R11E; in a narrow arc-like band

from east of Bone Gap to Browns west toward Albion and northwest into T1S, R10E; and southeast of a line from Browns to the southwest corner of the county. They are capable of producing only limited quantities of water. Below a depth of 130 to 250 ft, water contained in these rocks generally is too highly mineralized for most uses. In remaining areas of the county the water-yielding rocks are absent or poorly developed. Several faults of small to moderate displacement and generally trending northeast-southwest have been noted in the southeast portion of the county.

Groundwater Development for Public Use

Groundwater is used as a source for 3 public water supply systems furnishing water to Albion, Bone Gap, Browns, and Grayville. The locations of these supplies are shown in figure 1.

Sand and gravel deposits in the unconsolidated materials above bedrock in Edwards and Wabash Counties are tapped as the source for each water supply system. There are presently 8 public supply production wells (2 in Edwards and 6 in Wabash), ranging in depth from 42.8 to 91.6 ft, finished in the sand and gravel deposits. Their reported yields range from 29.8 to 502 gpm depending primarily upon the type of well and the permeability, thickness, and areal extent of the sand and gravel deposits tapped by each well. Production in 1977 from the 2 wells in Edwards County was estimated to be about 31,000 gpd and about 785,000 gpd from the 6 supply wells located in Wabash County. Past and present analyses of water from the 3 public water supply systems indicate that the iron content ranges from 0.1 to 6:6 mg/l, and the hardness from 277 to 430 mg/l. Water for Albion and Browns is prechlorinated, treated with polyphosphate, fluoridated, zeolite softened, and postchlorinated. Water at Bone Gap is aerated, settled, filtered, zeolite softened, chlorinated, and fluoridated. Water at Grayville is fluoridated.

Format

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

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

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

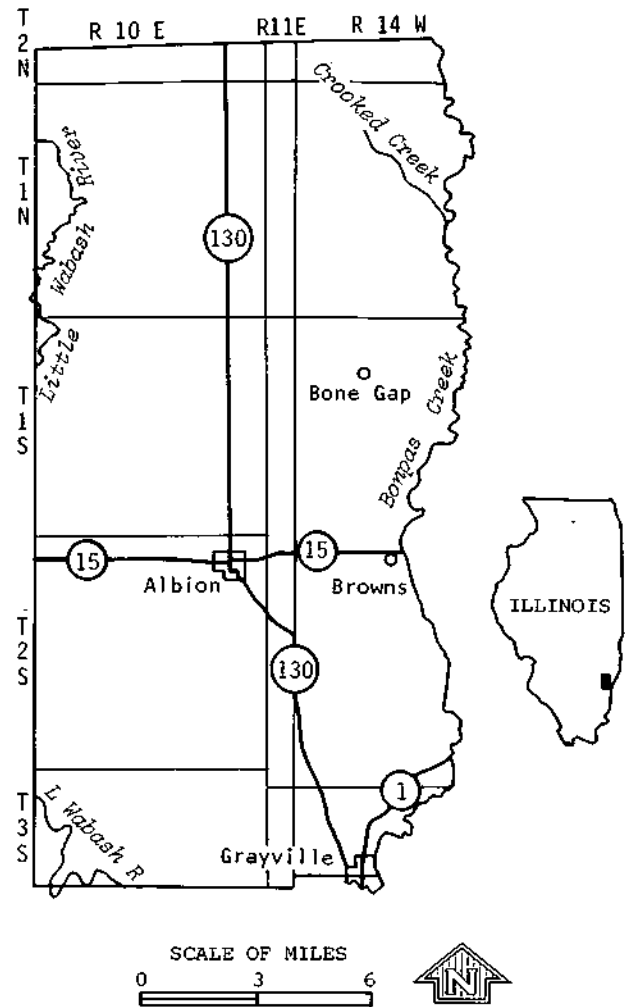


Figure 1. Location of public groundwater supplies in Edwards County

well includes the *aquifer tapped, date drilled, depth, driller, legal location, elevation in feet above mean sea level, log, construction features, yield, pumping equipment, and chemical analyses.*

When available, sample study logs 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.

The screen sizes given in this publication are for continuous slot type screens. 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.

Abbreviations Used

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

ALBION

The city of Albion (1791) installed a public water supply in 1926. Water for Albion is obtained from wells located 0.6 mile northeast of Grayville in the Wabash River bottoms in Wabash County. Two wells (Nos. 2 and 3) are in use and another well (No. 1) is available for emergency use. Water from this supply is also furnished to the village of Browns. In 1954, the estimated average and maximum daily pumpages were 128,000 and 160,000 gpd, respectively. In 1975 there were 1110 services, all metered (including the village of Browns); the average and maximum daily pumpages were 400,000 and 480,000 gpd, respectively. The water is pre-chlorinated, treated with polyphosphate, fluoridated, zeolite softened, and postchlorinated.

Prior to the installation of the groundwater supply, water was obtained from Bonpas Creek at Browns until October 1963.

WELL NO. 1, finished in sand and gravel, was completed in November 1962 to a depth of 81.3 ft by the Heldt-Monroe Co., Evansville, Ind. This well is available for emergency use. The well is located about 0.6 mile northeast of Grayville in the Wabash River bottoms, approximately 2280 ft N and 2600 ft W of the SE corner of Section 16, T3S, R14W, Wabash County. The land surface elevation at the well is 372.6 ft.

A drillers log of Well No. 1 follows:

<i>Strata</i>	<i>Thickness (ft)</i>	<i>Depth (ft)</i>
Top soil	3	3
Muddy sand	9	12
Sand and gravel	69.3	81.3

A 10-in. diameter hole was drilled to a depth of 81.3 ft. The well is cased with 10-in. pipe from about 20 ft above original land surface to a depth of 61.2 ft and equipped with 21.2 ft (overall length) of 10-in. Johnson red brass screen. The screened section from top to bottom consists of 8 ft of No. 14 slot, 6.1 ft of No. 20 slot, and 6.1 ft of No. 40 slot.

A production test was conducted on November 6, 1962, by representatives of the driller, the city, the State Water Survey, and Hardman Engineers. After 4 hr of pumping at a rate of 250 gpm, the drawdown was 1.79 ft from a non-pumping water level of 11.50 ft below land surface. Fifty min after pumping was stopped, the water level had recovered to 12.02 ft.

A second production test using one observation well was conducted on January 17, 1963, by representatives of the city, the State Water Survey, and Hardman Engineers. After 2.5 hr of pumping at a rate of 180 gpm, the final drawdown was 0.9 ft from a nonpumping water level of 11.9 ft below land surface. On the basis of the production test data, it was estimated that this well should yield 250 gpm (360,000 gpd) on a long-term basis.

The pumping equipment presently installed is a 7-in. Johnston vertical turbine pump set at 47 ft, rated at 260 gpm, and powered by a 32-hp 1730 rpm Ford gasoline motor.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. A19180) of a sample collected May 3, 1976, after pumping for 24 hr at 200 gpm, showed the water to have a hardness of 333 mg/l, total dissolved minerals of 420 mg/l, and an iron content of 0.6 mg/l.

WELL NO. 2, finished in sand and gravel, was completed in April 1963 to a depth of 42.8 ft by the Heldt-Monroe Co., Evansville, Ind. The well is located about 300 ft north of Well No. 1, approximately 2580 ft N and 2600 ft W of the SE corner of Section 16, T3S, R14W, Wabash County. The land surface elevation at the well is 370.7 ft.

A drillers log of Well No. 2 follows:

<i>Strata</i>	<i>Thickness (ft)</i>	<i>Depth (ft)</i>
Clay	9.5	9.5
Muddy sand	1	10.5
Sand	68.5	79
Shale below		

A 30-in. diameter hole was drilled to a depth of 16 ft and finished 26 in. in diameter from 16 to 42.8 ft. The well is cased with 30-in. pipe from 17 ft above original land surface (4 ft above the wellhouse floor) to a depth of 16 ft and 10-in. pipe from 22 ft above original land surface to a depth of 27.3 ft followed by 15.5 ft of 10-in. No. 40 slot Johnson screen. The annulus between the bore hole and casing-screen assembly is filled with sand and concrete from 0 to 8 ft and with fine gravel (less than 1/3 in.) from 8 to 42.8 ft.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. A19181) is for a water sample from the well collected May 3, 1976, after 9 hr of pumping at 200 gpm.

WELL NO. 2, LABORATORY NO. A19181					
		<i>mg/l</i>	<i>me/l</i>	<i>mg/l</i>	<i>me/l</i>
Iron	Fe	0.4	Silica	SiO ₂	13
Manganese	Mn	0.15	Fluoride	F	0.1 0.00
Ammonium	NH ₄	0.1 0.01	Boron	B	0.2
Sodium	Na	6.5 0.28	Nitrate	NO ₃	7.5 0.12
Potassium	K	1.2 0.03	Chloride	Cl	15 0.42
Calcium	Ca	98 4.89	Sulfate	SO ₄	50 1.04
Magnesium	Mg	24 1.98	Alkalinity (as CaCO ₃)		276 5.52
			Hardness (as CaCO ₃)		341 6.82
Arsenic	As	0.000	Total dissolved minerals		400
Barium	Ba	0.0			
Copper	Cu	0.05	pH (as rec'd)		7.5
Cadmium	Cd	0.00	Radioactivity		
Chromium	Cr	0.00	Alpha <i>pc/l</i>		0.8
Lead	Pb	0.00	±deviation		1.1
Mercury	Hg	0.0008	Beta <i>pc/l</i>		2.2
Nickel	Ni	0.00	±deviation		1.4
Selenium	Se	0.00			
Silver	Ag	0.00			
Cyanide	CN	0.01			
Zinc	Zn	0.0			

A production test using two observation wells was conducted on May 2-3, 1963, by representatives of the driller, the State Water Survey, and Hardman Engineers. After 22.5 hr of pumping at a rate of 197 gpm, the final drawdown was 3.06 ft from a nonpumping water level of 3.06 ft below land surface.

The pumping equipment presently installed is a 6-in. Myers submersible pump rated at 200 gpm, and powered by a 20-hp Myers electric motor.

WELL NO. 3, finished in sand and gravel, was completed in July 1964 to a depth of 44 ft by the Heldt-Monroe Co., Evansville, Ind. The well is located about 7 ft west of Well No. 1, approximately 2280 ft N and 2607 ft W of the SE corner of Section 16, T3S, R14W, Wabash County. The land surface elevation at the well is approximately 372 ft.

A drillers log of Well No. 3 follows:

<i>Strata</i>	<i>Thickness (ft)</i>	<i>Depth (ft)</i>
Clay	2	2
Sand and gravel	42	44

A 30-in. diameter hole was drilled to a depth of 44 ft. The well is cased with 10-in. pipe from 20.5 ft above original

land surface (1 ft above built-up land surface) to a depth of 29 ft followed by 15 ft of 10-in. No. 40 slot Johnson Everdur screen. The annulus between the bore hole and casing-screen assembly is filled with sand and concrete from 15 ft above original land surface to a depth of 11.5 ft and with gravel from 11.5 to 44 ft.

A production test was conducted on July 8, 1964, by representatives of the driller, the State Water Survey, and Hardman Engineers. After 1.7 hr of pumping at a rate of 245 gpm, the drawdown was 3.57 ft from a nonpumping water level of 8.11 ft below land surface. Twenty min after pumping was stopped, the water level had recovered to 8.24 ft. On the basis of the production test data, it was estimated that this well would yield 400 gpm (576,000 gpd) on a long-term basis.

The pumping equipment presently installed is a 6-in. Myers submersible pump rated at 200 gpm at about 290 ft head, and powered by a 20-hp Myers electric motor.

A partial analysis of a sample (Lab. No. 163426) collected during the initial production test, after pumping for 1.5 hr at 245 gpm, showed the water to have a hardness of 338 mg/l, total dissolved minerals of 401 mg/l, and an iron content of 0.3 mg/l.

BONE GAP

The village of Bone Gap (308) installed a public water supply in 1966. Two wells are in use. In 1972 there were 110 services, all metered; the average and maximum daily pumpages were 28,000 and 42,000 gpd, respectively. The water is aerated, settled, filtered, zeolite softened, chlorinated, and fluoridated.

Sixteen test holes were drilled in 1963 and 1964 by E. C. Baker & Sons, Sigel, in the vicinity of Bone Gap prior to the installation of a public water supply for the village. These test holes, ranging in depth from 27 to 287 ft, were located in Sections 3, 5, 9, 10, 11, 18, 19, and 20, T1S, R14W.

WELL NO. 1, finished in sand and gravel, was completed in February 1964 to a depth of 47 ft by E. C. Baker & Sons, Sigel. The well is located about 2.5 miles east of the village about 100 ft west of Bonpas Creek, approximately 1370 ft S and 320 ft E of the NW corner of Section 11, T1S, R14W. The land surface elevation at the well is approximately 390 ft.

A drillers log of Well No. 1 follows:

<i>Strata</i>	<i>Thickness (ft)</i>	<i>Depth (ft)</i>
Yellow clay	15	15
Blue clay	23	38
Blue sand	9	47
Blue sandy clay	7	54

A 6-in. diameter hole was drilled to a depth of 54 ft. The well is cased with 6-in. ID pipe from land surface to a depth of 38 ft and equipped with 10 ft (9 ft exposed) of 6-in. No. 16 slot Cook red brass screen. The top of the 6-in. casing is equipped with a pitless adapter. To provide flood protection, an 8-in. diameter steel pipe extends from 14 ft above land surface to the top of the pitless adapter and is surrounded by poured concrete, 24 in. in diameter, from 12 ft above land surface to a depth of 10 ft.

A production test using one observation well was conducted on February 14, 1964, by representatives of the driller, the village, the State Water Survey, and Marbry and Johnson, Consulting Engineers. After 4 hr of pumping at rates of 30.4 to 29.8 gpm, the final drawdown was 15.46 ft from a nonpumping water level of 6.83 ft below land surface. Thirty min after pumping was stopped, the water level had recovered to 7.55 ft. On the basis of the production test data, it was estimated that this well would yield 25 gpm (36,000 gpd) on a long-term basis.

The pumping equipment presently installed is a Rapidayton submersible pump set at 38 ft, rated at 25 gpm at about 91 ft TDH, and powered by a 1-hp electric motor.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. B1 39095) of a sample collected

May 12, 1975, after pumping for 1 hr at 26 gpm, showed the water to have a hardness of 409 mg/l, total dissolved minerals of 524 mg/l, and an iron content of 4.7 mg/l.

WELL NO. 2, finished in sand and gravel, was completed in March 1968 to a depth of 91.6 ft by E. C. Baker & Sons, Sigel. The well is located about 50 ft southeast of Well No. 1, approximately 1400 ft S and 350 ft E of the NW corner of Section 11, T1S, R14W. The land surface elevation at the well is approximately 390 ft.

A drillers log of Well No. 2 follows:

<i>Strata</i>	<i>Thickness (ft)</i>	<i>Depth (ft)</i>
Soil	1	1
Yellow clay	15	16
Blue clay	9	25
Mud sand	5	30
Sand	8	38
Blue clay	27	65
Blue mud, sand	10	75
Sand	15	90
Sand and clay	2	92
Packed sand	1	93
Hardpan below		

A 6-in. diameter hole was drilled to a depth of 93 ft. The well is cased with 6-in. ID black steel pipe from land surface to a depth of 76.6 ft and equipped with 17 ft (15 ft exposed) of 6-in. Cook screen. The exposed screened section consists of 4 ft of No. 10 slot followed by 11 ft of No. 12 slot. The top of the 6-in. casing is equipped with a pitless adapter. To provide flood protection, an 8-in. diameter steel pipe extends from 15 ft above land surface to the top of the pitless adapter and is surrounded by poured concrete, 18 in. in diameter, from 14 ft above land surface to a depth of 10 ft.

A production test using one observation well was conducted on March 29, 1968, by representatives of the driller,

the village, the State Water Survey, and Marbry and Connor, Consulting Engineers. After 2.5 hr of pumping at a rate of 76 gpm, the final drawdown was 43.20 ft from a nonpumping water level of 0.26 ft below land surface. Thirty min after pumping was stopped, the water level had recovered to 1.75 ft. On the basis of the production test data, it was estimated that this well would yield 30 gpm (43,200 gpd) on a long-term basis.

The pumping equipment presently installed is a Rapidayton submersible pump set at 73 ft, rated at 30 gpm at about 112 ft TDH, and powered by a 1-hp electric motor.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. A11064) is for a water sample from the well collected November 17, 1976, after 1 hr of pumping at 26 gpm.

WELL NO. 2, LABORATORY NO. A11064							
		<i>mg/l</i>	<i>me/l</i>		<i>mg/l</i>		<i>me/l</i>
Iron	Fe	6.0		Silica	SiO ₂	23	
Manganese	Mn	0.05		Fluoride	F	0.2	0.01
Ammonium	NH ₄	5.0	0.28	Boron	B	0.2	
Sodium	Na	40.0	1.74	Nitrate	NO ₃	0.0	0.00
Potassium	K	1.5	0.04	Chloride	Cl	8	0.23
Calcium	Ca	95.0	4.74	Sulfate	SO ₄	0	0.00
Magnesium	Mg	44.4	3.65	Alkalinity(as CaCO ₃)		510	10.20
Arsenic	As	0.010					
Barium	Ba	0.2		Hardness (as CaCO ₃)		430	8.60
Copper	Cu	0.00					
Cadmium	Cd	0.00		Total dissolved			
Chromium	Cr	0.00		minerals		540	
Lead	Pb	0.00					
Mercury	Hg	0.0000					
Nickel	Ni	0.0					
Selenium	Se	0.00					
Silver	Ag	0.00					
Cyanide	CN	0.010					
Zinc	Zn	0.03		pH (as rec'd)		7.5	

BROWNS

The village of Browns (198) installed a public water supply in 1955. Finished water for this supply is obtained from the city of Albion which owns, operates, and maintains the entire system.

GRAYVILLE

The city of Grayville (2035) installed a public water supply in 1895. A portion of this village extends into White County but the wells are located in Wabash County. Two wells (Nos. 1 and 3) are in use and another well (No. 2) is available for emergency use. In 1974 there were 943 services, 95 percent metered; the estimated average daily pumpage was 350,000 gpd. The water is fluoridated.

Prior to the installation of the groundwater supply, water was obtained from the Wabash River until 1928.

WELL NO. 1, finished in sand and gravel, was completed in 1927 to a depth of 67.9 ft below original land surface by the Thorpe Concrete Well Co., Alton. The well is located about 0.2 mile east of the city in the Wabash River bottoms, approximately 834 ft N and 2140 ft E of the SW corner of Section 16, T3S, R14W, Wabash County. The land surface elevation at the well is approximately 375 ft.

A correlated drillers log of Well No. 1 furnished by the State Geological Survey follows:

<i>Strata</i>	<i>Thickness (ft)</i>	<i>Depth (ft)</i>
PLEISTOCENE SYSTEM		
Soil and silt	14	14
Sand	55	69
Gravel and sand	3.5	72.5

The well is cased with 26-in. ID by 36-in. OD concrete pipe from 2 ft above original land surface (12 ft below the pumphouse floor) to a depth of 13 ft. A porous concrete screen of the same size extends from 13 to 67.9 ft. A 6-in. protective steel casing was placed from 14 ft above original land surface to a depth of 2 ft above original land surface.

A production test was conducted by the Caldwell Engineering Co. in 1927. After pumping for 15 hr at a rate of 377 gpm, the drawdown was 3.6 ft from a nonpumping water level of 9.2 ft below the top of the casing.

In 1942, it was reported that the pump had not been operated in over a year, and that the pump broke suction a short time after starting. The porous concrete screen was reported to be badly clogged.

A production test was conducted by Warren & Van Praag, Consulting Engineers, on December 12, 1944. After 2.9 hr of pumping at a rate of 300 gpm, the drawdown was greater than 46.5 ft from a nonpumping water level of 17.0 ft below land surface.

On December 21, 1944, after the well broke suction within 10 min, Dowell, Inc., treated this well with 500 gal of HCl. After treatment the production was estimated to be about 265 gpm with a drawdown of 3.5 ft.

In March 1969, this well was cleaned and acidized by the D. L. Little Drilling Co., Evansville, Ind., and the well was reported to produce 312 gpm after treatment.

In 1974, this well was cleaned by the D. L. Little Drilling Co. After cleaning, the well was reported to produce 350 to 380 gpm.

The pumping equipment presently installed is a Reda pump set at 60 ft, rated at 450 gpm, and powered by a 30-hp electric motor.

A mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. A11954) of a sample collected December 2, 1976, after pumping for 1 hr at 350 gpm, showed the water to have a hardness of 321 mg/l, total dissolved minerals of 385 mg/l, and an iron content of 1.0 mg/l.

WELL NO. 2, finished in sand and gravel, was completed in 1927 to a depth of 71.8 ft below original land surface by the Thorpe Concrete Well Co., Alton. This well is available for emergency use. The well is located about 80 ft E of Well No. 1, approximately 834 ft N and 2200 ft E of the SW corner of Section 16, T3S, R14W, Wabash County. The land surface elevation at the well is approximately 375 ft.

The well is cased with 26-in. ID by 36-in. OD concrete pipe from 14 ft above original land surface (pumphouse floor level) to a depth of 16.8 ft. A porous concrete screen of the same size extends from 16.8 to 71.8 ft.

A production test was conducted by the Caldwell Engineering Co. on October 19, 1927. After 12 hr of pumping at an average rate of 502 gpm, the drawdown was 5.8 ft from a nonpumping water level of 9.3 ft below the top of the casing.

A production test was conducted by Warren & Van Praag, Consulting Engineers, on December 13, 1944. The well reportedly produced 320 gpm for 0.9 hr with a drawdown of 24 ft from a nonpumping water level of 17 ft below land surface.

The pumping equipment presently installed consists of a 30-hp U.S. electric motor, an 8-in., 10-stage American Well Works turbine pump (No. 72804) rated at 300 gpm at about 270 ft head, and has 60 ft of 6-in. column pipe. A 10-ft section of 5-in. suction pipe is attached to the pump intake. The well is equipped with 70 ft of airline.

A mineral analysis of a sample (Lab. No. 118846) collected in July 1949 showed the water to have a hardness of 322 mg/l, total dissolved minerals of 354 mg/l, and an iron content of 0.5 mg/l.

WELL NO. 3, finished in sand and gravel, was completed in 1941 to a depth of 73 ft below original land surface by the Thorpe Concrete Well Co., Alton. The well is located about 80 ft south of Well No. 2, approximately 754 ft N and 2220 ft E of the SW corner of Section 16, T3S, R14W, Wabash County. The land surface elevation at the well is approximately 375 ft.

A drillers log of Well No. 3 follows:

<i>Strata</i>	<i>Thickness (ft)</i>	<i>Depth (ft)</i>
Clay	5	5
Sand, fine, yellow	10	15
Sand, fine	10	25
Building sand	5	30
Sand, fine, yellow	5	35
Sand, fine gray	29	64
Sand, coarse	6	70
Sand, coarse and gravel, fine with lignite	4	74

The well is cased with 26-in. ID by 36-in. OD concrete pipe from about 12 ft above original land surface (2 ft below the pump base) to a depth of 18 ft. A porous concrete screen of the same size extends from 18 to 73 ft. The well is enclosed in concrete to a height of about 15 ft above land surface.

A production test was conducted by Warren & Van Praag, Consulting Engineers, on December 12, 1944. After 1.2 hr of pumping at a rate of 264 gpm, the drawdown was 2.5 ft from a nonpumping water level of 31.0 ft below the pump-house floor.

In March 1969, this well was cleaned and acidized by the D. L. Little Drilling Co., Evansville, Ind. Results of this acidizing are not available.

In 1974, this well was cleaned by the D. L. Little Drilling

Co., and the well was reported to produce 350 gpm after the cleaning.

The pumping equipment presently installed is a Sumo pump set at 68 ft., rated at 350 gpm at about 270 ft TDH, and powered by a 30-hp electric motor.

The following mineral analysis made by the Illinois Environmental Protection Agency (Lab. No. A108019) is for a water sample from the well collected November 4, 1974, after 30 min of pumping at 400 gpm.

WELL NO. 3, LABORATORY NO. A108019

		<i>mg/l</i>	<i>me/l</i>			<i>mg/l</i>	<i>me/l</i>
Iron	Fe	0.6		Silica	SiO ₂	10	
Manganese	Mn	0.2		Fluoride	F	0.1	0.00
Ammonium	NH ₄	0.0	0.00	Boron	B	0.1	
Sodium	Na	7	0.30	Nitrate	NO ₃	7.0	0.11
Potassium	K	2.0	0.05	Chloride	Cl	13	0.37
Calcium	Ca	90	4.49	Sulfate	SO ₄	75	1.56
Magnesium	Mg	25	2.06	Alkalinity(as CaCO ₃)		240	4.80
Arsenic	As	0.00		Hardness (as CaCO ₃)		290	5.80
Barium	Ba	0.0		Total dissolved			
Copper	Cu	0.43		minerals		390	
Cadmium	Cd	0.00					
Chromium	Cr	0.00					
Lead	Pb	0.03					
Mercury	Hg	0.0000		pH (as rec'd)		7.7	
Nickel	Ni	0.0		Radioactivity			
Selenium	Se	0.00		Alpha	pc/l	0.4	
Silver	Ag	0.00		± deviation		1.2	
Cyanide	CN	0.000		Beta	pc/l	1.6	
Zinc	Zn	0.1		± deviation		1.7	