Circular 94

STATE OF ILLINOIS
DEPARTMENT OF REGISTRATION AND EDUCATION

Water-Level Decline and Pumpage in Deep Wells in Northeastern Illinois, 1962-1966

by R. T. SASMAN, C. K. McDONALD, and W. R. RANDALL

ILLINOIS STATE WATER SURVEY
URBANA
1967

CONTENTS

ILLUSTRATIONS

TABLES

Printed by authority of the State of Illinois - - IRS, Ch. 127, Par. 58.29

WATER-LEVEL DECLINE AND PUMPAGE IN DEEP WELLS IN NORTHEASTERN ILLINOIS, 1962-1966

by R. T. Sasman, C. K. McDonald, and W. R. Randall

SUMMARY

The water-level decline from 1962 through 1966 in deep wells penetrating the Cambrian-Ordovician aquifer, the most highly developed aquifer for large groundwater supplies in northeastern Illinois, is considered in this report. The Cambrian-Ordovician aquifer is encountered at an average depth of about 500 feet below the land surface at Chicago; it has an average thickness of 1000 feet and is composed chiefly of sandstones and dolomites.

Pumpage from deep wells in northeastern Illinois increased from 200,000 gallons per day (gpd) in 1864 to 110.6 million gallons per day (mgd) in 1961. As a result, artesian pressure in the Cambrian-Ordovician aquifer in the city of Chicago has declined about 680 feet. Pumpage from deep wells in the Chicago region is concentrated in six centers: the Chicago, Joliet, Elmhurst, Des Plaines, Aurora, and Elgin areas. Pumpage from deep wells in the outlying region, including Belvidere, De Kalb, Morris, Waukegan, and Woodstock centers, diverts some water that formerly flowed into the Chicago region.

During the period 1962 through 1966, pumpage from deep wells increased to 145.8 mgd, an increase of 35.2 mgd or 32 percent more than the 1961 pumpage. This increase in pumpage has resulted in excessive water-level declines in some deep wells. For the Chicago region, average annual water-level declines during the 6-year period ranged from 9 feet in the Aurora and Elgin areas to 22 feet in the Des Plaines area and averaged about 13 feet. Water-level declines in the five pumping centers located in the northern and western parts of northeastern Illinois declined an average of 2 feet per year during the same period.

Withdrawals since 1961 exceeded the practical sustained yield of the Cambrian-Ordovician aquifer, as they have each year since 1958, with the result that groundwater users in the Chicago region continue to mine water and to borrow water from future generations. By 1966, the upper units of the aquifer were already being dewatered in many areas. If the distribution of pumpage remains the same and pumpage continues to increase as indicated by recent trends, the principal water-yielding units of the aquifer will be partially dewatered in many areas much sooner than previously anticipated. Pumping levels exceeding 1000 feet below the surface will be common in less than 10 years.

INTRODUCTION

In May 1959 the State Water Survey and State Geological Survey issued Cooperative Groundwater Report[1] which discussed the geology and hydrology of the groundwater resources of the Chicago region, the yields of aquifers, and the possible consequences of future groundwater development. Special emphasis was placed on the deep water-yielding aquifers which have been most widely used for large groundwater supplies. Cooperative Report 1 indicated that pumpage from deep wells during 1958 approached the amount that could be continuously withdrawn without eventually dewatering the lowermost and most productive formation of the deep aquifer. Future (1958-1980) water-level declines, ranging from 190 feet at Elgin to 300 feet at Chicago and Des Plaines, were predicted. It was recognized that actual water-level declines would vary from the predicted declines if future distribution and rates of pumpage deviated from extrapolations of past groundwater use. As a result of the findings of Cooperative Report 1, the program of collecting and reporting water-level and pumpage data, which is one of the functions of the State Water Survey, was accelerated for deep wells in the Chicago region in 1959.

The objectives of this program are 1) to provide a continuous evaluation of trends in water levels and pumpage, 2) to delineate problem areas, 3) to provide long-term continuous records of fluctuations of water levels and pumpage, and 4) to collect and report all hydrologic information which will facilitate the planning and development of the water resources of the deep aquifer in the Chicago region. The program is particularly urgent at this time because of the progressively increasing demands for water supplies and the continuing decline of water levels.

Three reports on water levels and pumpage have been issued by the State Water Survey subsequent to Cooperative Report 1. These were Circulars 79, 83, and 85[2,3,4] which summarized the trends in water levels and pumpage from deep wells during 1959, 1960, and 1961. In addition, Reports of Investigation 50 and 52[5,6] summarized trends in groundwater pumpage in 17 counties in northern Illinois through 1962 and 1963, respectively, with specific sections describing pumpage from deep wells.

Because of increasing expansion of urban development and the outward migration of deepening water levels in the Chicago region, this report covers a larger area of northeastern Illinois than the previous reports. It includes additional areas in Lake, McHenry, and Grundy Counties and all of Boone and De Kalb Counties. The six pumping centers in the Chicago region are as identified in previous reports. The outlying region includes five additional pumping centers, identified by a principal city in each area. They are the Belvidere, De Kalb, Morris, Waukegan, and Woodstock centers.

Pumpage from deep wells in northeastern Illinois increased from 91.0 mgd in 1958 to 110.6 mgd in 1961 , an average rate of increase during the three years of more than 6.5 mgd per year. The increase during 1959 (11.0 mgd) was record high, and resulted in excessive declines in water levels in deep wells. Pumpage in the Chicago region has exceeded the sustained yield (46 mgd) of the Cambrian-Ordovician aquifer every year since 1958. Average annual water-level declines

for the period October 1958 to October 1961 ranged from 11 feet in the Joliet area to 23 feet in the Elmhurst area, and averaged about 15 feet in the Chicago region. The 1958-1961 average decline was considerably greater than the average annual decline (10 feet) for the period 1945-1958. Water-level declines prior to 1961 in the outlying region varied from less than 0.5 feet to about 6.0 feet per year.

This report summarizes trends in water levels and pumpage from deep wells from 1962 through 1966. A summary of the essential findings of previous publications regarding the deep aquifers is presented to serve as a background for interpretation of the records.

GEOLOGY AND HYDROLOGY

Groundwater resources in the Chicago region are developed from four aquifer systems: 1) sand and gravel deposits of the glacial drift, 2) shallow dolomite formations mainly of Silurian age, 3) the Cambrian-Ordovician aquifer, and 4) the Mt. Simon aquifer. This report is concerned with the Cambrian-Ordovician aquifer.

The Cambrian-Ordovician aquifer consists in descending order of the Galena-Platteville dolomite, Glenwood-St. Peter sandstone, and Prairie du Chien Series of Ordovician age; and the Trempealeau dolomite, Franconia Formation, and Ironton-Galesvi1le sandstone of Cambrian age. The sequence, structure, and general characteristics of these rocks are shown in figure 1. The Cambrian-Ordovician aquifer is separated from the Mt. Simon aquifer by shale beds of the Eau Claire Formation. The Maquoketa Formation above the Galena-Platteville dolomite acts as a barrier between the shallow dolomite and deeper aquifers and confines the water in the deeper aquifers under artesian pressure. Available data indicate that on a regional basis the entire sequence of strata, from the top of the Galena-Platteville to the top of the shale beds of the Eau Claire Formation, behaves hydraulically as one aquifer.

The Ironton-Galesville sandstone is the most productive formation of the Cambrian-Ordovician aquifer. The Galena-Platteville dolomite and Prairie du Chien Series generally are not well creviced; the Trempealeau dolomite is locally well creviced. The Glenwood-St. Peter sandstone and Franconia Formation yield small to moderate amounts of water.

The Cambrian-Ordovician aquifer receives water from overlying glacial deposits mostly in areas of Kane, McHenry, Kendall, Boone, and De Kalb Counties where the Galena-Platteville dolomite is the uppermost bedrock formation below the glacial deposits. This is west of the border of the Maquoketa Formation. Recharge of the glacial deposits occurs from precipitation that falls locally. Vertical leakage of water through the Maquoketa Formation into the Cambrian-Ordovician aquifer is appreciable under the influence of large differentials in head between shallow deposits and the Cambrian-Ordovician aquifer.

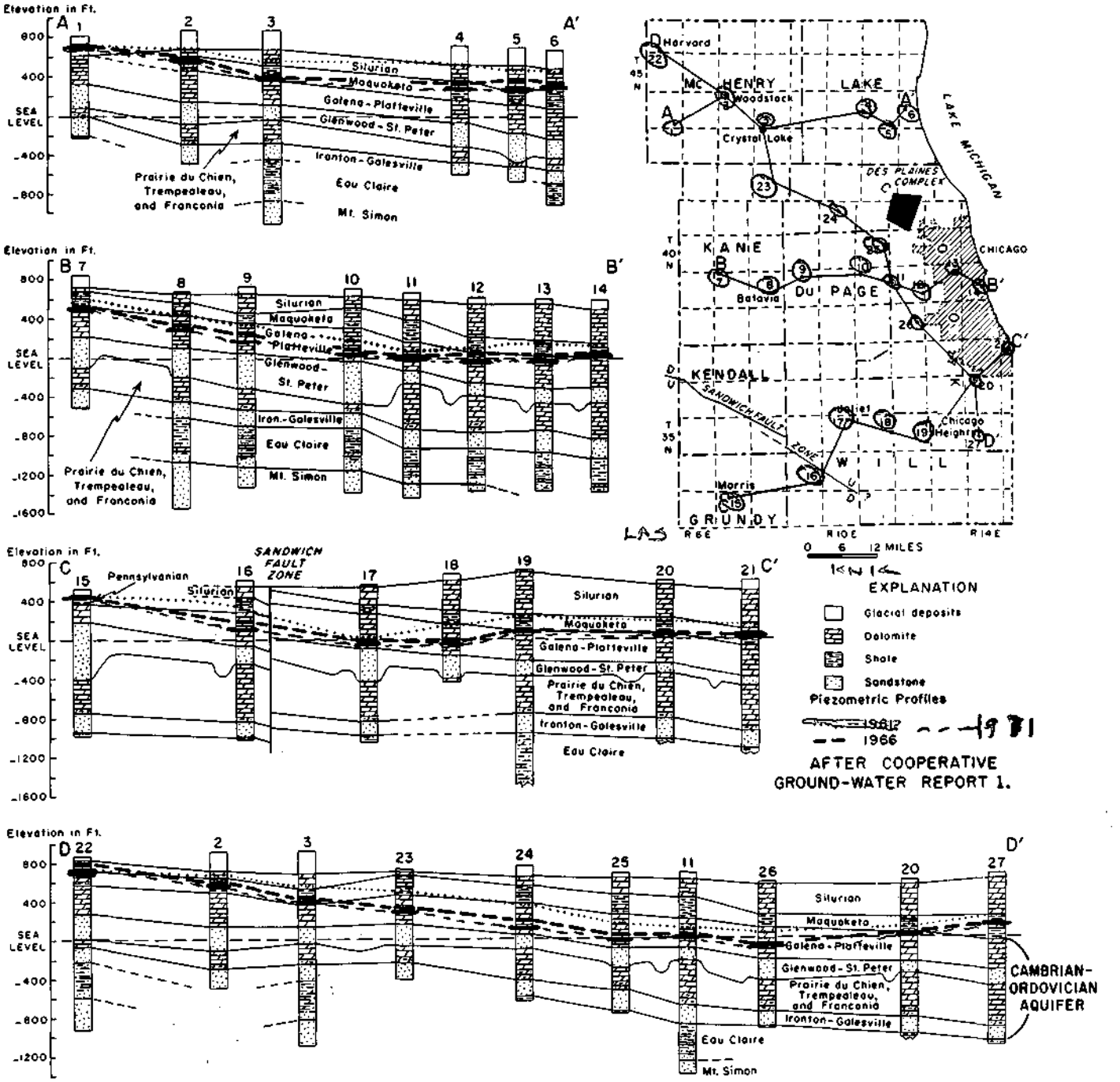


Figure 1. Cross sections of the structure and stratigraphy of the bedrock and piezometric profiles of the Cambrian-Ordovician aquifer in the Chicago region

PUMPAGE FROM DEEP WELLS

The first deep well in Chicago, drilled at the corner of Chicago and Western Avenues in 1864, had an artesian flow estimated at about 150 gallons per minute (gpm) or about 200,000 gpd. In the Chicago region, pumpage from deep wells increased gradually from 200,000 gpd in 1864 to 98.9 mgd in 1961. A domestic pumpage of 2.3 mgd has been added in this total but was not included in previous reports. As shown in figure 2 total pumpage from deep wells in 1961 in all of northeastern Illinois covered by this report was 110.6 mgd.

Many deep wells in the Chicago region are either uncased or faultily cased in the Silurian age dolomite and allow leakage. The Mt. Simon aquifer also is penetrated by a large number of deep wells, particularly along the Fox River in Kane County. The artesian pressure of the Cambrian-Ordovician aquifer is lower than that in the Silurian age dolomite and Mt. Simon aquifer. Groundwater, therefore, moves downward from the dolomite and upward from the Mt. Simon into the Cambrian-Ordovician aquifer through wells that are open in all three aquifers. Thus, water pumped from deep wells does not come from the Cambrian-Ordovician aquifer alone. It is estimated that of the 110.6 mgd pumped from deep wells in 1961, 63 mgd came from the Cambrian-Ordovician aquifer, 29.9 mgd from the Silurian age dolomite, and 17.7 mgd from the Mt. Simon aquifer.

Pumpage, 1962 through 1966

During the 5-year period 1962 through 1966, pumpage from deep wells in northeastern Illinois increased from 110.6 mgd to 145.8 mgd, an average increase of 7.0 mgd per year. Pumpage increases were greatest in 1965 and 1966, 10 mgd, and least in 1962, 3.2 mgd. Pumpage increases in 1965 and 1966 were second only to the pumpage increase in 1959 (11.0 mgd). Total pumpage in 1966 was 32 percent greater than total pumpage in 1961. It is estimated that of the 145.8 mgd pumped from deep wells during 1966, 83 mgd came from the Cambrian-Ordovician aquifer and 62.8 mgd from the Silurian age dolomite and Mt. Simon aquifer.

Distribution of total pumpage from deep wells from 1961 through 1966 is shown in table 1 and figure 3.

Pumpage continues to be concentrated in the six centers in the Chicago region: the Aurora, Chicago, Des Plaines, Elgin, Elmhurst, and Joliet areas. The greatest quantities of water, 40 percent of the total pumpage in northeastern Illinois during 1966, were withdrawn from deep wells in the Chicago and Joliet areas. Total pumpage in the Belvidere, De Kalb, Morris, Waukegan, and Woodstock areas accounted for only 13 percent of the total pumpage in northeastern Illinois.

The greatest increase in pumpage from 1961 through 1966, 6.7 mgd, occurred in the Des Plaines area. This pumpage was 48 percent greater than the 1961 pumpage. Pumpage in the Belvidere and Waukegan areas in 1966 was 92 and 164 percent greater, respectively, than the 1961 pumpage. Pumpage in the Belvidere and Waukegan areas in 1966 was only 4.6 and 2.9 mgd, respectively. Pumpage in the De Kalb, Woodstock, Elmhurst, and Elgin areas increased from 34 to

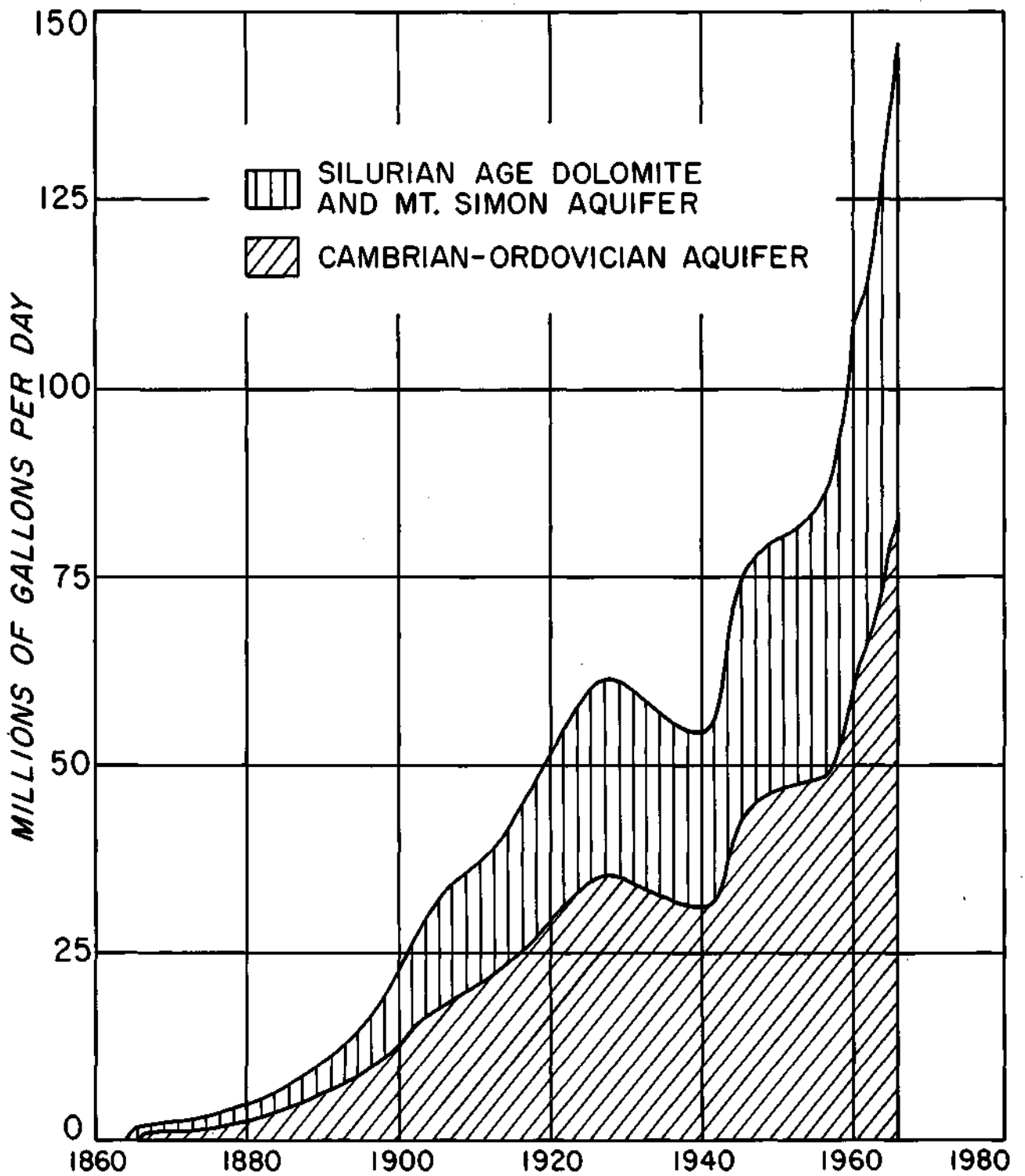


Figure 2. Pumpage from deep wells, 1864 through 1966, subdivided by source

Table 1. Distribution of Total Pumpage from Deep Wells, 1961-1966

Pumping center	Total pumpage (mgd) 1961	1962	1963	1964	1965	1966
Aurora	17.1	17.9	17.8	18.8	20.4	20.8
Chicago	24.9	24.3	26.0	27.9	29.6	29.8
Des Plaines	13.8	16.2	18.9	18.0	18.3	20.5
Elgin	8.6	8.6	8.4	9.0	10.4	11.5
Elmhurst	11.6	11.6	12.4	14.1	14.1	15.7
Joliet	22.9	21.9	22.7	23.2	25.3	28.1
Subtotal, Chicago region	98.9	100.5	106.2	111.0	118.1	126.4
Belvidere	2.4	2.8	2.6	2.9	4.3	4.6
De Kalb	4.8	5.7	6.1	6.5	6.8	7.5
Morris	2.4	2.6	2.6	2.6	3.0	3.0
Waukegan	1.1	1.3	1.3	1.4	2.2	2.9
Woodstock	1.0	0.9	1.3	1.3	1.3	1.4
Subtotal, Outlying region	11.7	13.3	13.9	14.7	17.6	19.4
Total	110.6	113.8	120.1	125.7	135.7	145.8

56 percent during the period 1962 through 1966. Pumpage in the Aurora, Chicago, Joliet, and Morris areas averaged more than 22 percent above the 1961 pumpage. The 1962 through 1966 average rate of pumpage increase for northeastern Illinois is 6.4 times the average annual rate of increase for 1864-1961.

The distribution of pumpage, 1961-1966, subdivided by use, is shown in tables 2 and 3; the distribution of pumpage by pumping center, 1961-1966, is shown in figure 3. Public use includes municipal, subdivision, and institutional pumpage. No attempt has been made to determine the final use of water within these categories. Any water pumped by a municipality is called a public supply, regardless of the use of the water.

In 1966, withdrawals for public water-supply systems amounted to 63 percent of the total pumpage, industrial pumpage amounted to 34 percent, and domestic pumpage 3 percent of the total.

During the 5-year period since 1961, 82 new deep wells have been placed in operation in northeastern Illinois. Of these wells, 49 were drilled to augment or to develop new municipal or subdivision water-supply systems; 26 were drilled for industrial and commercial purposes. A large number of deep wells and

Table 2. Distribution of Pumpage from Deep Wells, 1961-1966, Subdivided by Use

Pumping center	Public pumpage (mgd) 1961	1962	1963	1964	1965	1966
Aurora	14.1	14.4	14.5	15.3	16.9	17.3
Chicago	5.7	7.1	7.3	6.7	7.0	7.2
Des Plaines	12.8	15.1	17.8	17.0	17.2	19.2
Elgin	6.9	7.2	7.0	7.5	9.1	10.2
Elmhurst	10.1	9.8	10.8	12.1	12.4	13.9
Joliet	9.0	10.1	11.4	11.3	11.7	11.6
Subtotal, Chicago region	58.6	63.7	68.8	69.9	74.3	79.4
Belvidere	1.5	1.9	1.7	2.0	2.8	3.5
De Kalb	3.7	4.8	5.3	5.7	6.0	6.7
Morris	0.9	1.0	1.0	1.0	1.1	1.1
Waukegan	0.2	0.3	0.3	0.3	0.8	1.7
Woodstock	0.2	0.1	0.1	0.1	0.0	0.0
Subtotal, Outlying region	6.5	8.1	8.4	9.1	10.7	13.0
Total	65.1	71.8	77.2	79.0	85.0	92.4

Pumping center	Industrial pumpage (mgd) 1961	1962	1963	1964	1965	1966
Aurora	2.2	2.7	2.5	2.7	2.7	2.7
Chicago	19.0	17.0	18.5	21.0	22.4	22.4
Des Plaines	0.6	0.7	0.7	0.6	0.7	0.9
Elgin	1.1	0.8	0.8	0.9	0.7	0.7
Elmhurst	1.4	1.7	1.5	1.9	1.6	1.7
Joliet	13.6	11.5	11.0	11.6	13.3	16.2
Subtotal, Chicago region	37.9	34.4	35.0	38.7	41.4	44.6
Belvidere	0.7	0.7	0.7	0.7	1.3	0.9
De Kalb	0.6	0.4	0.3	0.3	0.3	0.3
Morris	1.2	1.3	1.3	1.3	1.6	1.6
Waukegan	0.5	0.6	0.6	0.7	1.0	0.8
Woodstock	0.5	0.5	0.9	0.9	1.0	1.1
Subtotal, Outlying region	3.5	3.5	3.8	3.9	5.2	4.7
Total	41.4	37.9	38.8	42.6	46.6	49.3

Table 3. Estimated Average Annual Domestic Pumpage, 1961-1966

Pumping center	Domestic pumpage (mgd)
Aurora	0.8
Chicago	0.2
Des Plaines	0.4
Elgin	0.6
Elmhurst	0.1
Joliet	0.3
Subtotal, Chicago region	2.4
Belvidere	0.2
De Kalb	0.5
Morris	0.3
Waukegan	0.4
Woodstock	0.3
Subtotal, Outlying region	1.7
Total	4.1

deep-well pumps were rehabilitated to meet increased demands. Three public supply systems and 10 industries discontinued use of deep wells during the 5-year period.

Public pumpage in 1966 was 92.4 mgd, an increase of 42 percent over the 1961 pumpage. The increase averaged more than 5.4 mgd per year. Public pumpage increases for 1961-1966 were greatest in the Des Plaines and Elmhurst areas, with average annual increases of 1.3 and 0.8 mgd, respectively. Increases in public pumpage averaged 0.6 mgd in the Aurora, De Kalb, and Elgin areas, 0.5 mgd in the Joliet area, 0.4 mgd in the Belvidere area, and 0.3 mgd in the Chicago and Waukegan areas. Public pumpage in the Morris area increased only a very small amount, and public pumpage from deep wells in the Woodstock area was discontinued during the period. Average annual increases in public pumpage for the period 1961—1966 were greater than for the period 1959-1961 in the Belvidere, De Kalb, Elgin, and Waukegan areas. Much of the increase in public pumpage was recorded for deep wells owned by large municipalities.

In 1966 municipal pumpage was 85.3 mgd or about 92 percent of the total public pumpage. Municipal pumpage is 75 percent of the total pumpage in the Elmhurst, Elgin, Aurora, and Des Plaines areas. A major portion of the total pumpage in the Belvidere and De Kalb areas is also for municipal use. Pumpage in these two areas is considerably less, however, than in the Chicago region.

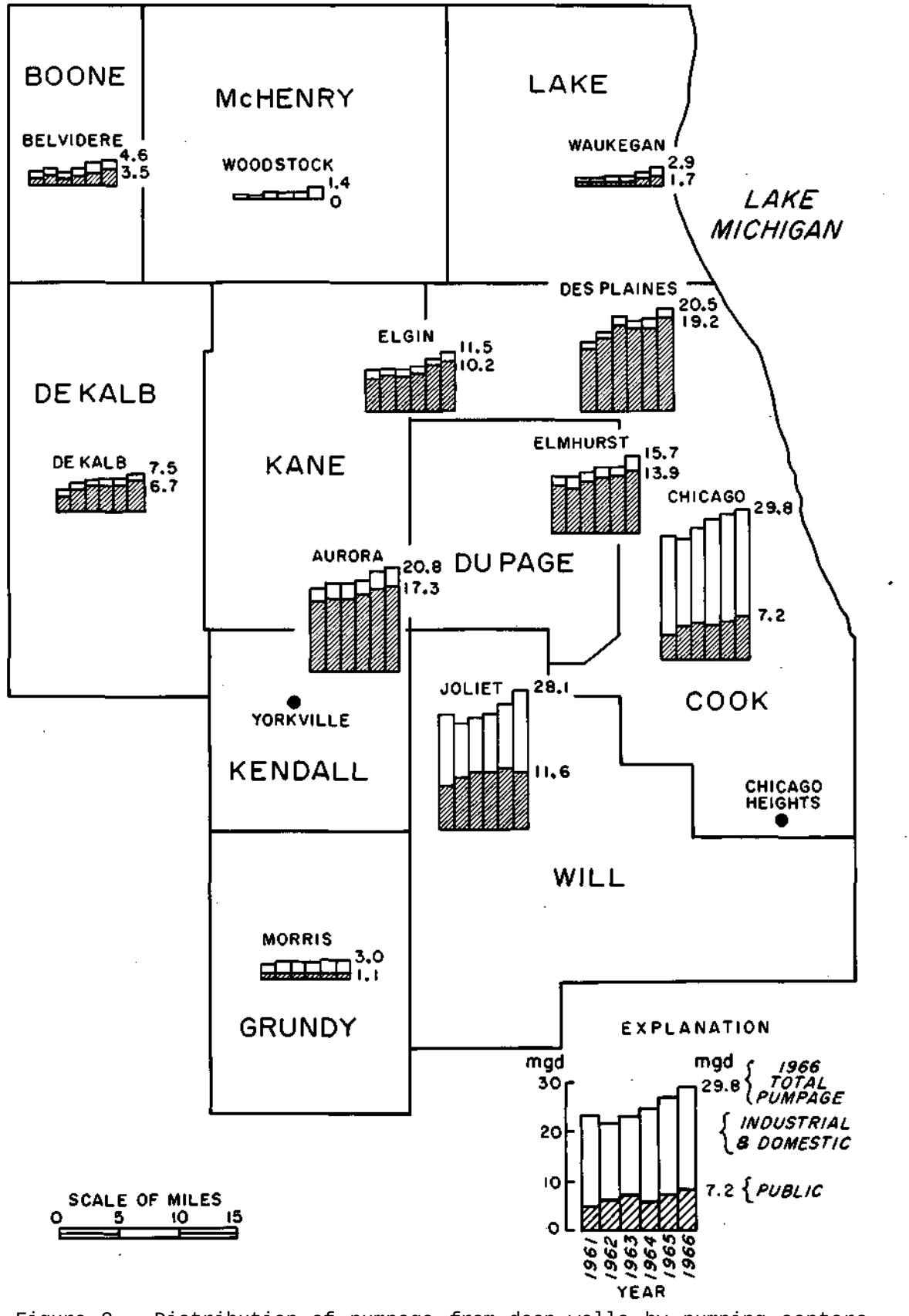


Figure 3. Distribution of pumpage from deep wells by pumping centers, 1961-1966

Twenty-three municipalities pumped more than 1.0 mgd during 1966; their combined pumpage was 68.3 mgd. Sixteen of these 23 municipalities are located in the Elmhurst, Aurora, and Des Plaines areas. Five of the municipalities, Aurora, Joliet, Elgin, Des Plaines, and Arlington Heights, pumped more than 4.0 mgd from deep wells during 1966; Aurora and Joliet pumped more than 7.0 mgd. Joliet and Elgin obtained additional water from sand and gravel aquifers. Elmhurst obtained additional water from the shallow dolomite aquifer and Des Plaines obtained additional water from the city of Chicago. Nine of the 23 municipalities recorded an increase of more than 1.0 mgd since 1961; 13 recorded an average increase of 0.5 mgd. The cities of Belvidere and Joliet reported the largest increase in pumpage, 2.0 and 1.9 mgd, respectively. Only Elmhurst reported a decline (0.2 mgd). Eight municipalities increased their pumpage from less than 1.0 mgd in 1961 to more than 1.0 mgd in 1966. Pumpage for the Oak Brook Utility Company serving the village of Oak Brook increased from 0.03 mgd in 1961 to 1.2 mgd in 1966. A number of subdivisions also reported a considerable increase in pumpage.

Industrial pumpage in 1966 was 49.3 mgd, an increase of 19 percent over the 1961 industrial pumpage. The decrease in industrial pumpage that started in 1961 continued for one year to a low of 37.9 mgd in 1962. Since 1962, the rate of industrial pumpage growth has increased at an average annual rate of 2.8 mgd, ranging from 0.9 mgd in 1963 to 4.0 mgd in 1965. None of the 11 pumping centers have experienced either a continuous increase or decrease in industrial pumpage. Industrial pumpage in 9 centers was greater in 1966 than in 1961. Increases ranged from a high of 3.4 mgd in the Chicago area to a low of 0.2 mgd in the Belvidere area and averaged nearly 1.0 mgd. Industrial pumpage in the Joliet area increased 2.6 mgd during the period. In the 7 centers other than Chicago and Joliet that showed an increase in pumpage, increases ranged from 0.2 to 0.6 mgd and averaged less than 0.4 mgd. Industrial pumpage in the De Kalb and Elgin areas declined 0.3 and 0.4 mgd, respectively.

The number of industries in northeastern Illinois reporting pumpage greater than 1.0 mgd increased from 10 in 1961 to 13 in 1966. Their combined pumpage was 52 percent of the total industrial pumpage in 1966. Ten of the 13 industries reported an increase in pumpage and 3 reported a decrease. The average annual increase for the five years since 1961 was 0.4 mgd.

Domestic pumpage from deep wells was 4.1 mgd in 1966, less than 3 percent of the total pumpage in northeastern Illinois. Most of this pumpage is for farms and individual residences remote from public water supply systems. Pumpage was estimated from the 1960 rural population as reported by the U. S. Bureau of Census and the relative importance of sandstone aquifers to other aquifers in various areas of the region. Lack of detail on annual population growth and type of construction for domestic wells prevents calculations concerning the recent trend in domestic pumpage from deep wells.

Pumpage Related to Practical Sustained Yield, 1966

In Cooperative Report 1 it was estimated that the practical sustained yield of the Cambrian-Ordovician aquifer in the Chicago region (46 mgd) would be

developed when the total pumpage from deep wells was about 81 mgd. The practical sustained yield of the aquifer is the maximum amount of water that can be withdrawn without eventually dewatering the most productive water-yielding formation, the Ironton-Galesvi1le sandstone. The practical sustained yield is largely limited by the rate at which water can move from recharge areas eastward through the aquifer to pumping centers.

Estimates in Cooperative Report 1, based on past records of pumpage and water levels, indicated that the practical sustained yield would be exceeded by 1965. However, total pumpage from deep wells in every year since 1958 actually exceeded the withdrawal rate anticipated for 1965. Thus, the practical sustained yield of the aquifer has been exceeded in each year since 1958. Sustained pumping at these excessive rates has already resulted in dewatering the St. Peter sandstone in some parts of the Chicago region and will result in dewatering the Ironton-Galesvi1le sandstone in many areas much sooner than anticipated in Cooperative Report 1, with a great and continual reduction in yield of wells.

WATER LEVELS IN DEEP WELLS

In 1864 the artesian pressure in the Cambrian-Ordovician aquifer was sufficient to cause wells to flow in many parts of the Chicago region. The average elevation of water levels in deep wells at Chicago and at Joliet was about 700 feet above mean sea level (msl). As a result of continued heavy pumping, the nonpumping water levels in deep wells had declined by 1961 to elevations of 36 feet above msl at Summit southwest of Chicago and 64 feet below msl at Joliet. From 1864-1961 the artesian pressure at Chicago declined about 680 feet; the average rate of decline of artesian pressure was about 7 feet per year. The greatest water-level decline in the Chicago region, amounting to more than 750 feet, has occurred in an area of heavy pumpage at Joliet. Water-level declines prior to 1961 in the 5 pumping centers in the outlying region ranged from less than 0.5 feet to about 6.0 feet per year.

Examples of fluctuations in water levels in the Chicago region from 1962-1966 are shown in figures 4-8. Hydrographs of observation wells in the Cambrian-Ordovician aquifer show a steady decline of water levels. The locations of observation wells for which hydrographs are available are shown in figure *S.*

The average annual rates of decline for the period 1945 through 1961 in pumping centers are given in table 4.

From 1945 through 1961, the average annual decline in water levels in the Chicago region ranged from 14 feet in wells in the Elmhurst area to 8 feet in wells near the center of Joliet and in southwest Chicago. The average annual decline exceeded 10 feet in the Elmhurst, Des Plaines, and Elgin areas.

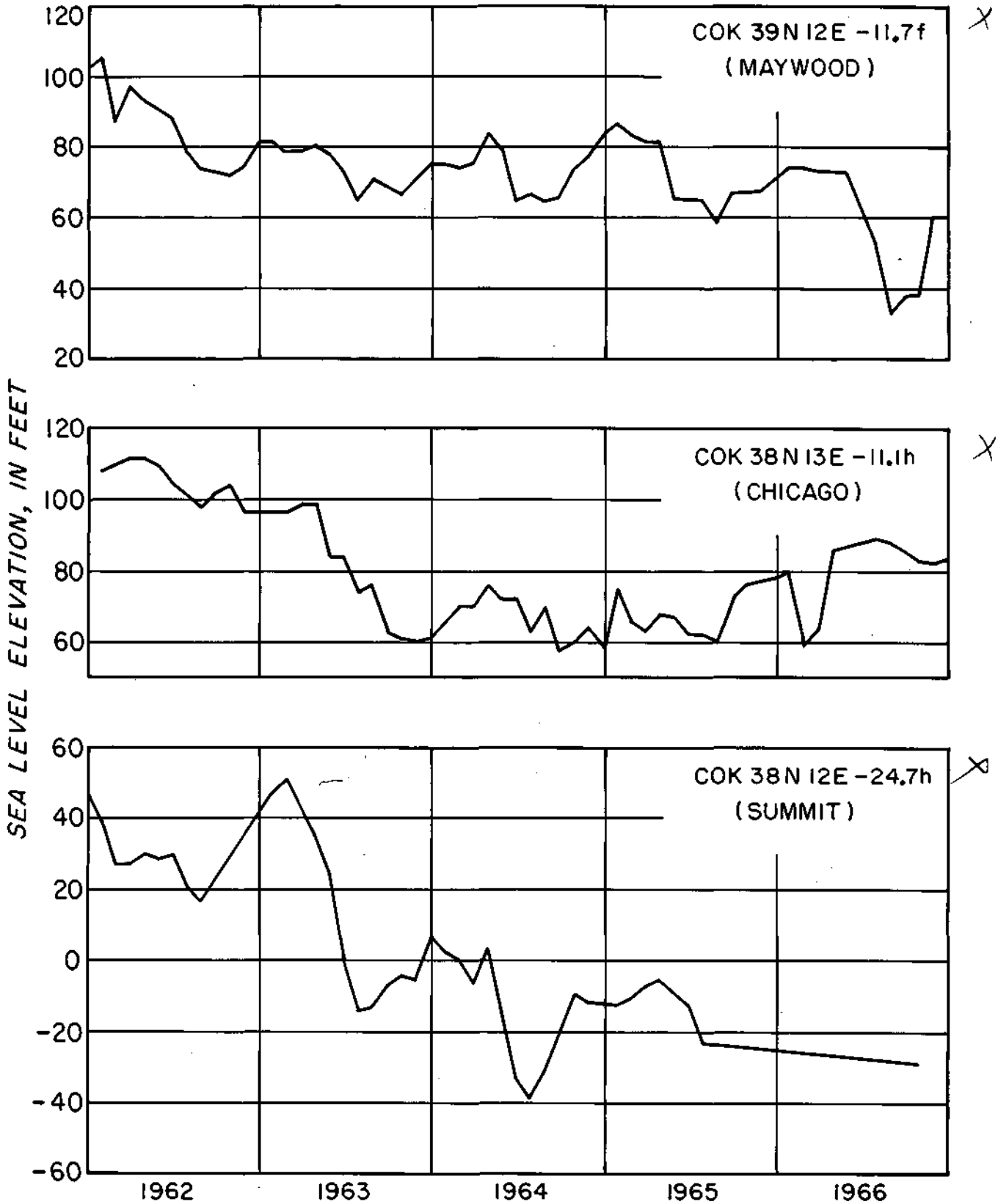


Figure 4. Water levels in deep wells in the Chicago pumping center, 1962-1966

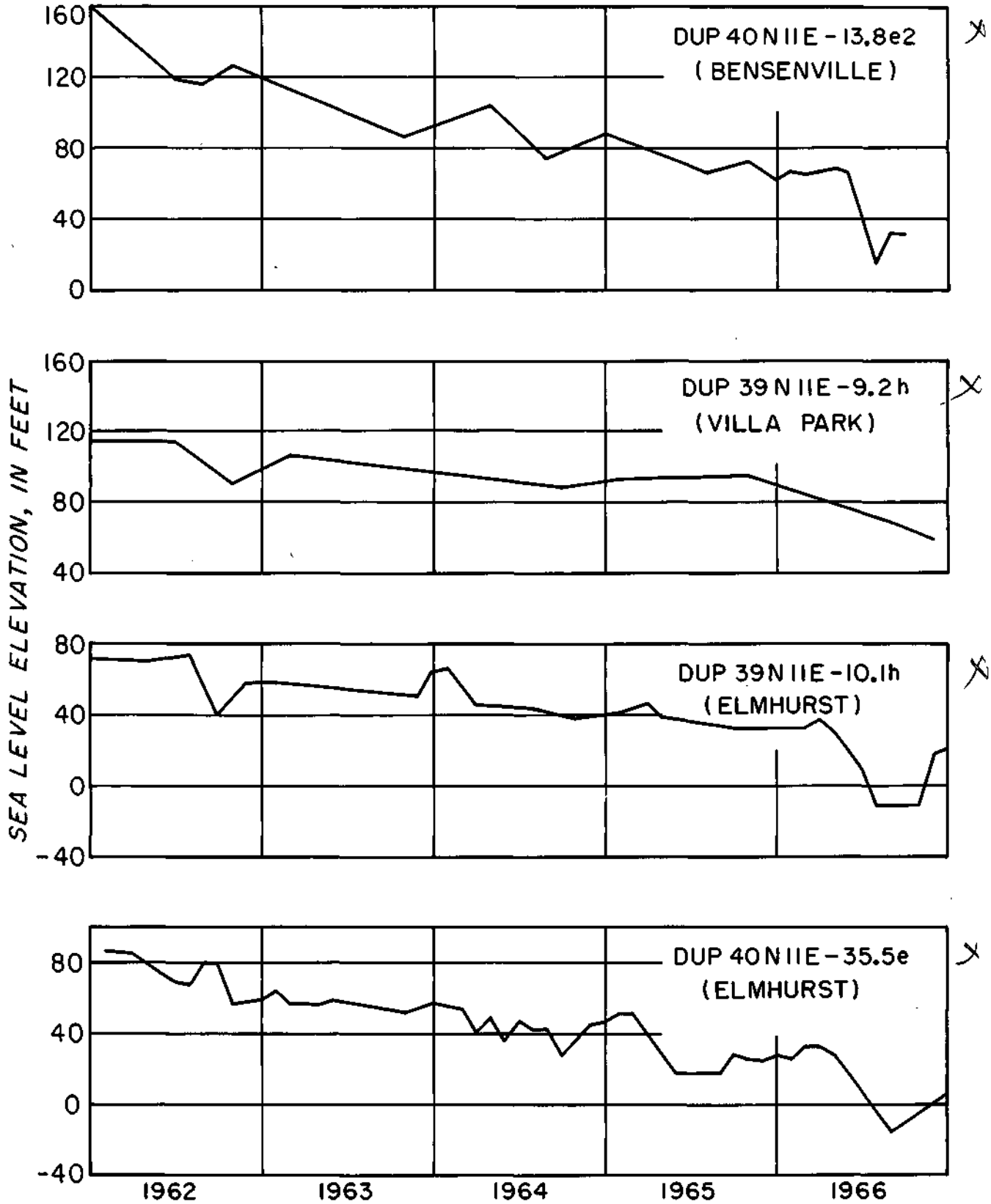


Figure 5. Water levels in deep wells in the Elmhurst pumping center, 1962-1966'

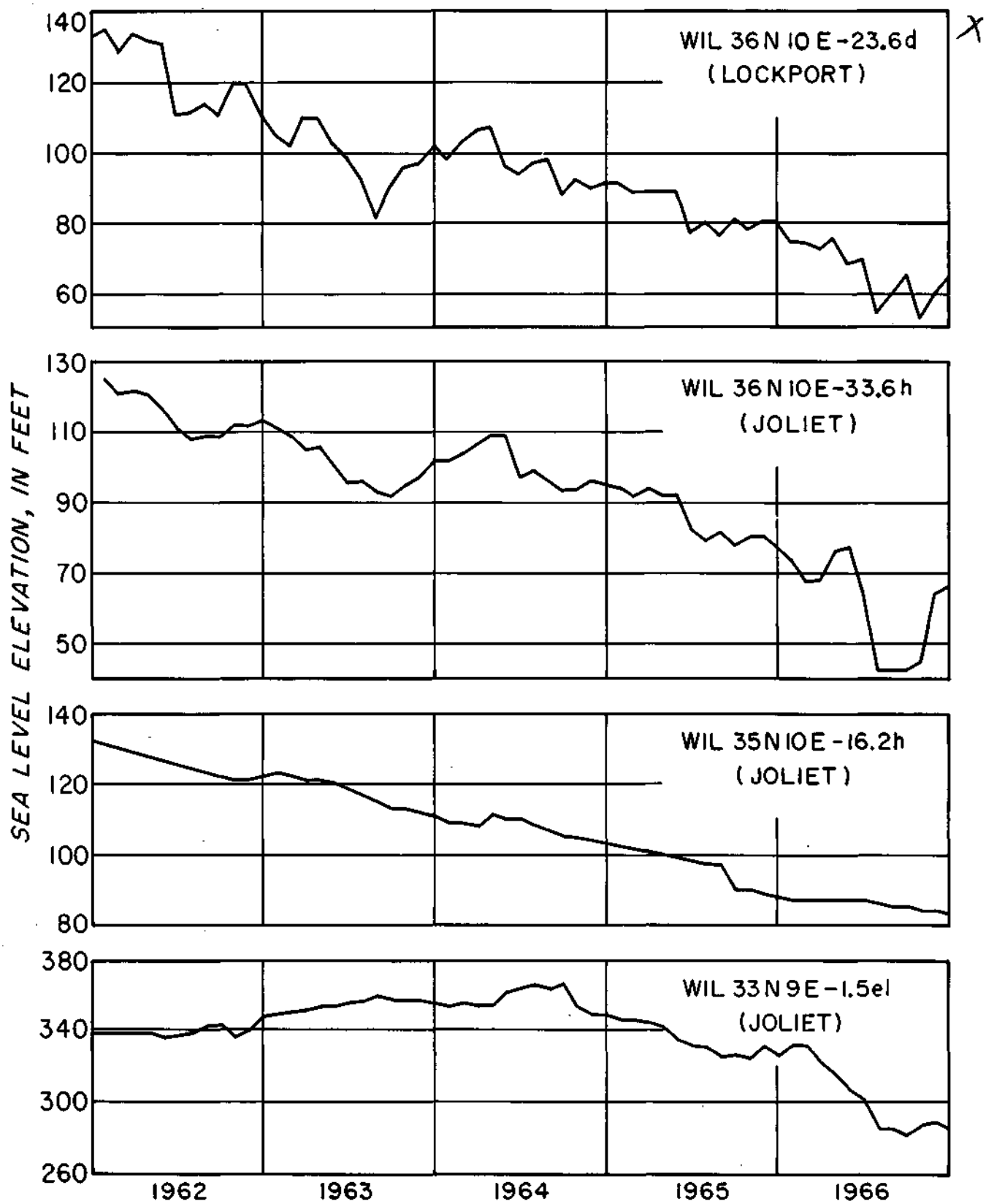


Figure 6. Water levels in deep wells in the Joliet pumping center, 1962-1966

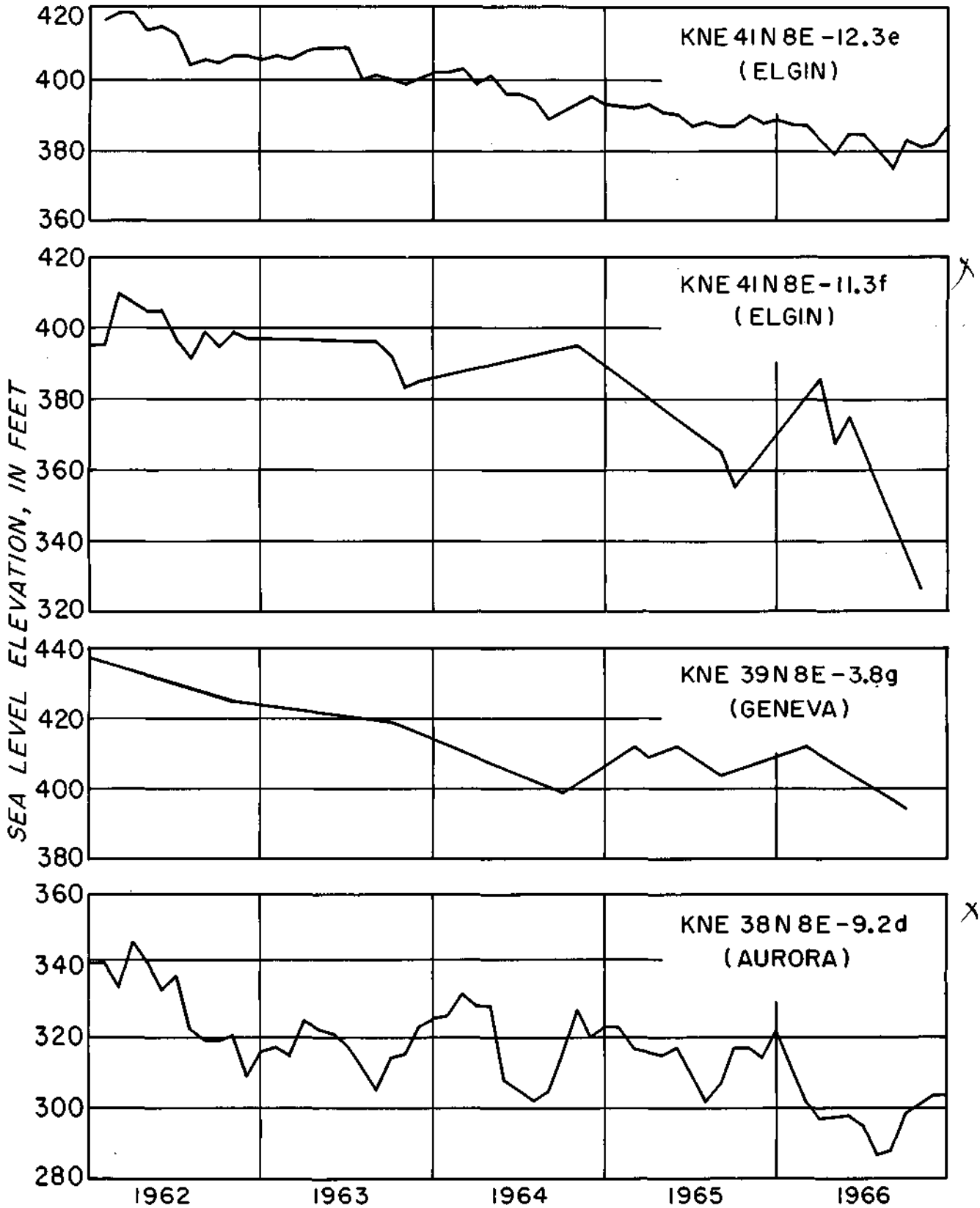


Figure 7. Water levels in deep wells in the Elgin and Aurora pumping centers, 1962-1966

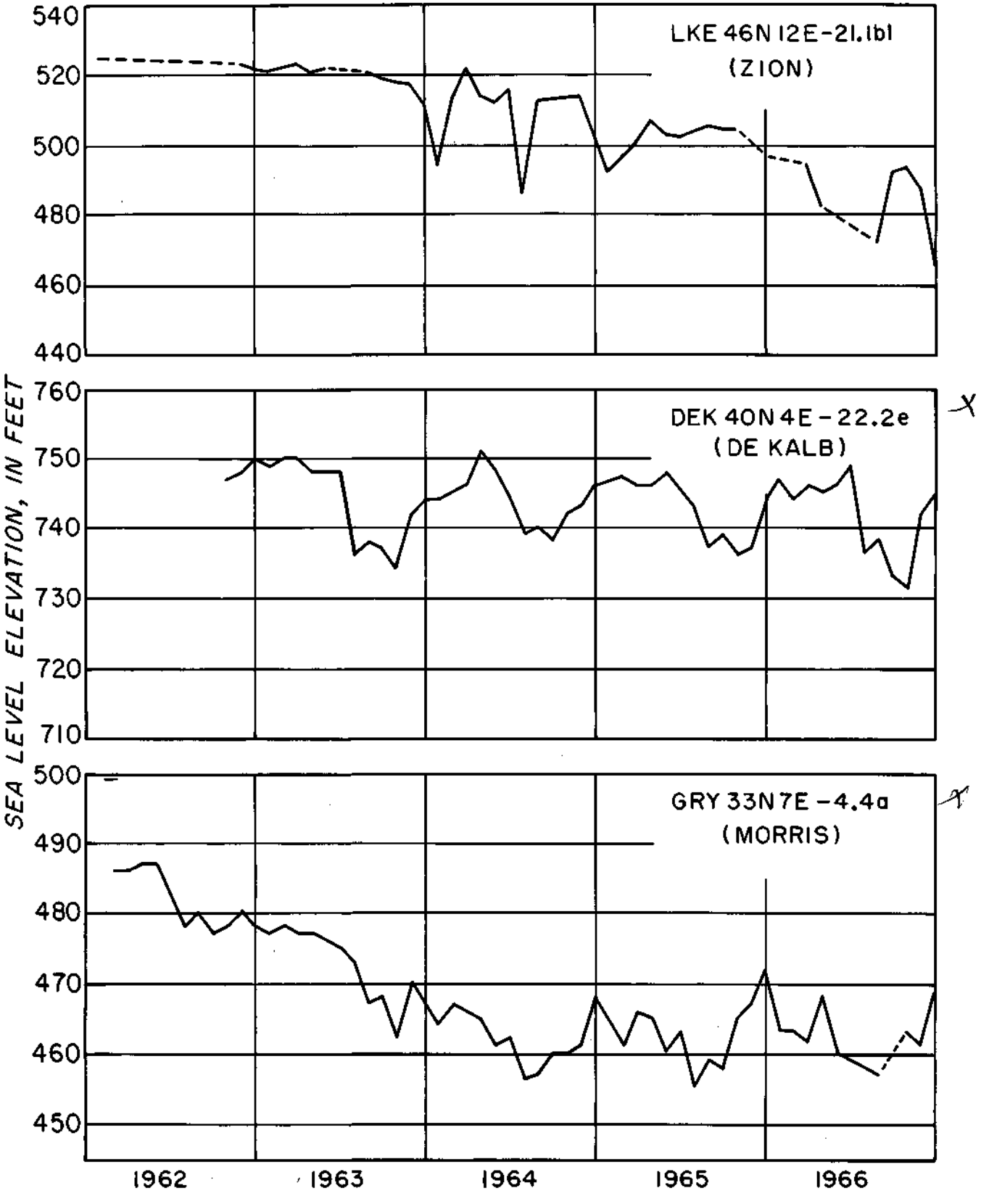


Figure 8. Water levels in deep wells in the Waukegan, De Kalb, and Morris pumping centers, 1962-1966

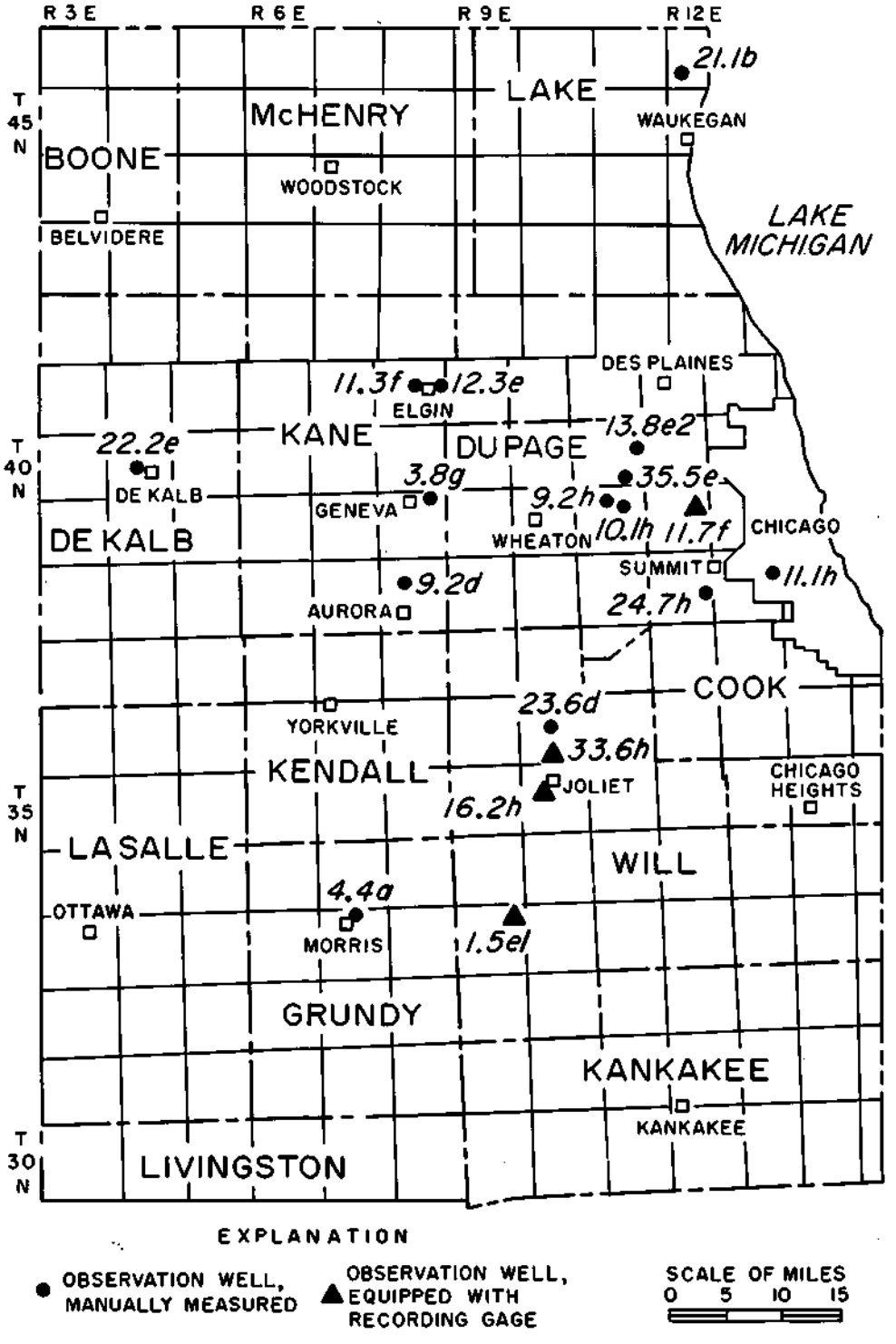


Figure 9. Map showing location of selected observation wells

Table 4. Decline in Nonpumping Water Levels

Pumping center	Average decline (feet per year) 1945-1961	Oct. 1961-Oct. 1966
Aurora	9	9
Chicago	8	11
Des Plaines	13	22
Elgin	11	9
Elmhurst	14	17
Joliet	8	12
Average, Chicago region	11	13
Belvidere	1	1
De Kalb	1	1
Morris	2	4
Waukegan	3	4
Woodstock	2	1
Average, Outlying region	2	2

Water-Level Decline, October 1961 to October 1966

The water levels in 390 deep wells in northeastern Illinois were measured during the latter part of October and the early part of November 1966. Data for the wells are given in the appendix. Water levels for 195 of these wells had been measured during the same period in 1961, and these data were compared with that for 1966. Computed declines and rises are given in the appendix. Computed changes and the piezometric surface maps for 1961 and 1966 were used to construct figure 10. The average declines in nonpumping water levels, October 1961 to October 1966, for each pumping center are given in table 4.

As shown in figure 10, the water-level change varies considerably from place to place within pumping centers; however, on an average water levels declined about 11 feet. The greatest average decline occurred in the Des Plaines and Elmhurst pumping centers; the least average decline in the Chicago region was recorded in the Aurora and Elgin pumping centers. Average declines exceeding 10 feet were computed for all pumping centers in the Chicago region except Aurora and Elgin. As shown in table 4, water-level declines since 1961 in the outlying regions averaged 2 feet. Average water-level declines in northeastern Illinois since 1961 exceeded the average declines prior to 1961 for all pumping centers except the Aurora, Elgin, and Woodstock areas. Of the 195 wells measured in both 1961 and 1966, only 21 had water-level rises.

Water levels declined more than 50 feet between 1961 and 1966 in nearly the entire area of Cook and Du Page Counties, a large part of Lake County,

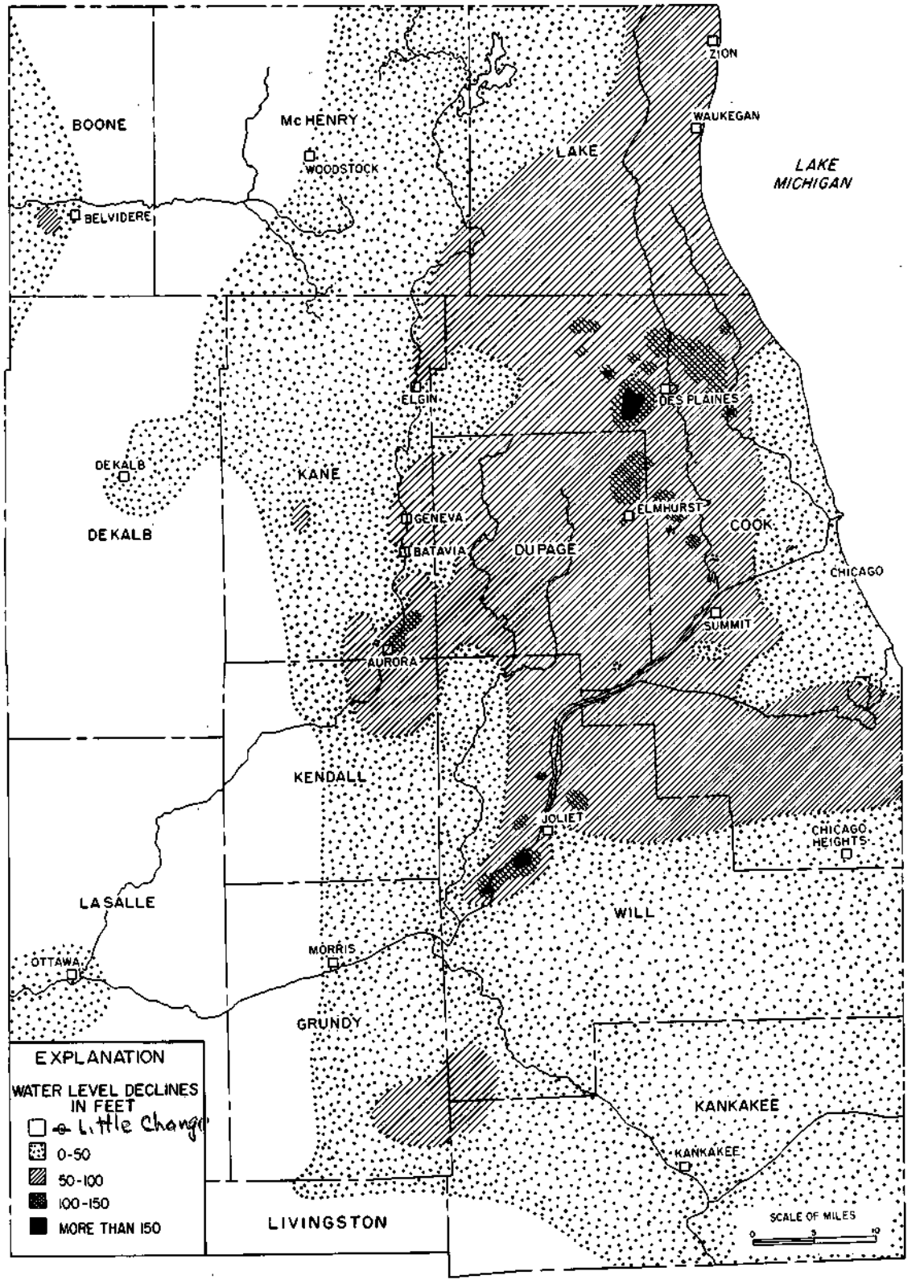


Figure 10. Map showing changes in water levels in deep wells, 1961-1966

eastern Kane and Kendall Counties, and northern Will County. In a large area of northern Cook County, northeastern Du Page County, west-central Will County, and southeastern Kane County, water levels declined more than 100 feet. In other smaller areas of Lake, Du Page, Kane, De Kalb, Kendall, and Will Counties, water-level declines in excess of 50 feet were recorded for the 5-year period. A water-level decline in excess of 200 feet was measured in a well in southeastern Lake County.

Superimposed on the long-term trend of water-level fluctuations in deep wells are seasonal fluctuations caused chiefly by changes in the rates of pumping from nearby wells. Water levels in deep wells in many parts of the Chicago region generally recede during the summer and early fall months when pumpage is greatest. Water levels may start to recover during the late fall when pumpage is reduced. Minimum annual water levels are usually recorded during September and October; maximum annual water levels occur during the late winter and spring months. Short-term fluctuations reflect intermittent pumping, day-to-day variations in nearby pumping, or changes in atmospheric pressure.

Piezometric Surface of Aquifer, 1966

The piezometric surface is an imaginary surface to which water will rise in artesian wells. Figure 11 shows the piezometric surface of the Cambrian-Ordovician aquifer in October 1966. Data on water levels in the appendix were used to prepare the map. The general features of the piezometric surface map for 1966 differ very little from those of the piezometric surface map for 1961 in Circular 85.[4]

During 1962 through 1966 the extent of lowest water levels in the Chicago region advanced in all directions, although primarily to the northwest from Summit toward the Elmhurst and Des Plaines areas. The 100-foot piezometric surface contour migrated in a northwesterly direction nearly 10 miles from its position in 1961, to surround the Des Plaines cone of depression. The 50-foot contour migrated more than 12 miles to the northwest and surrounded the Elmhurst cone of depression. In 1961 the deepest cone of depression was in the vicinity of Summit. In 1966 it was in the vicinity of Bellwood and was 98 feet below msl. This was 134 feet below the lowest elevation in Cook County in 1961.

The pronounced cone of depression at Joliet deepened and enlarged considerably since 1961. The 100-foot piezometric surface contour migrated about 5 miles to the southwest and more than 15 miles to the northeast. Nearly all deep wells within the city of Joliet had water-level elevations less than 50 feet above msl in 1966, and several were below mean sea level. The deepest cone of depression was in southwest Joliet where water levels have declined to more than 50 feet below msl. This was more than 30 feet below the lowest elevation in 1961.

Pronounced cones of depression are also apparent at Elmhurst, Des Plaines, Aurora, and De Kalb. At Elmhurst and Des Plaines the piezometric surface was

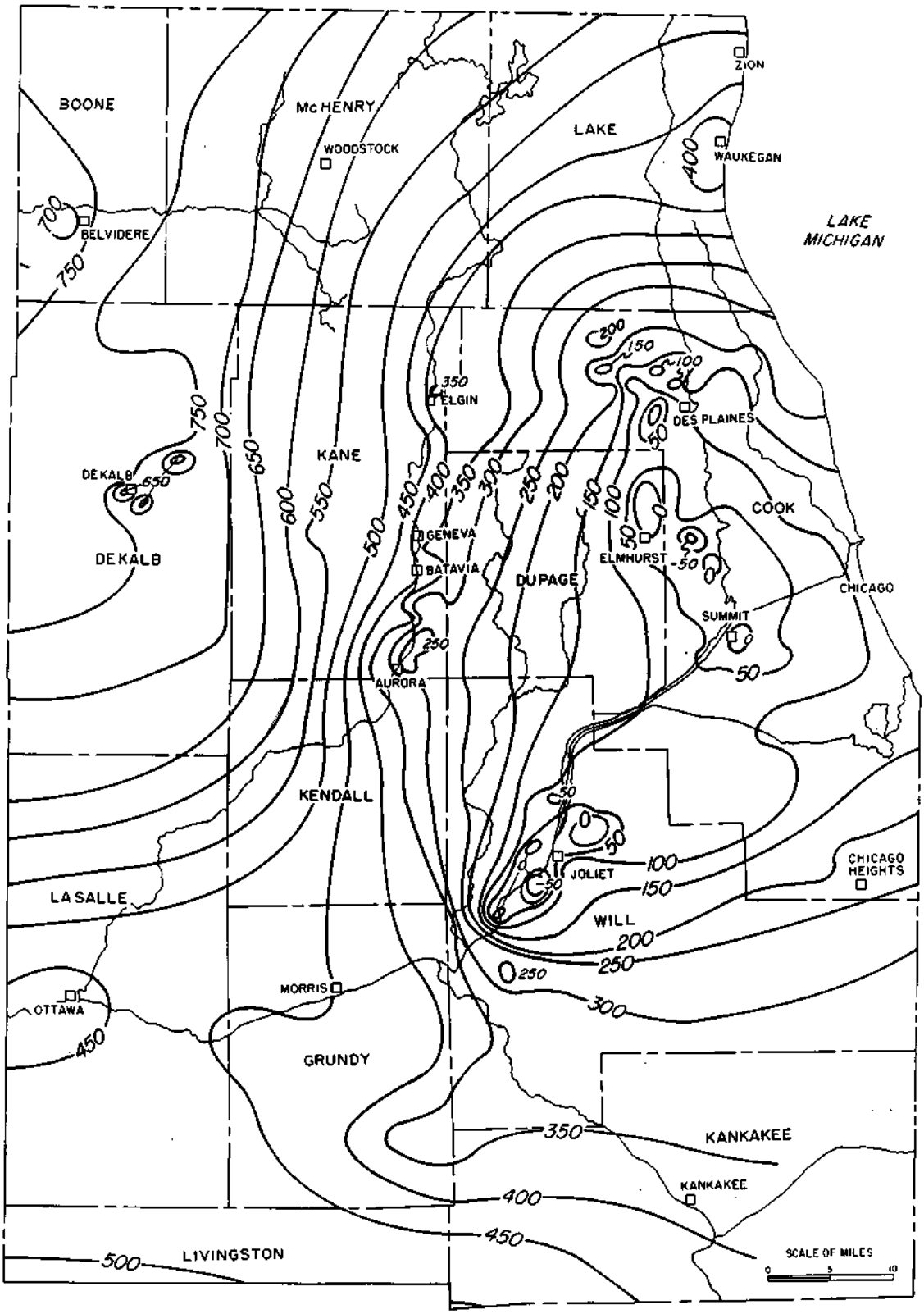


Figure 11. Elevation of piezometric surface of Cambrian-Ordovician aquifer in October 1966

below mean sea level in 1966. Depressions in the piezometric surface are also apparent at Chicago Heights, Elgin, Geneva, Batavia, and Belvidere. The piezometric surface was below the top of the Galena-Platteville dolomite in the deepest parts of the cones of depression at Chicago, Elmhurst, Des Plaines, Elgin, and Aurora, and below the top of the St. Peter sandstone at Joliet.

The general pattern of flow of water in the Cambrian-Ordovician aquifer in 1966 was from all directions toward the deep cones of depression centered west and south of Chicago at Summit, Elmhurst, and Joliet. Some of the water flowing toward these pumping centers is intercepted by cones of depression at Des Plaines, Elgin, and Aurora. In addition, water in the recharge area to the west of the Chicago region is being diverted into enlarging cones of depression at De Kalb, Belvidere, and Rochelle.

The lowering of the water levels accompanying the withdrawals of ground-water has established steep hydraulic gradients north, west, and southwest of Chicago and Joliet, so that large quantities of water from recharge areas in northern Illinois, and minor quantities from southern Wisconsin, are at present being transmitted toward centers of pumping. Large amounts of water derived from storage within the Cambrian-Ordovician aquifer and from vertical leakage of water through the Maquoketa Formation move toward the cones of depression from the east in Indiana, from the south and west in Illinois, and from the northeast beneath Lake Michigan.

The Sandwich Fault Zone, previously described in Cooperative Report 1, extends southeast-northwest from Sandwich, De Kalb County, into Will County south of Joliet. Sufficient water level and other hydrologic data in the vicinity of the fault zone are not currently available to permit a detailed interpretation of its effect on water levels.

FUTURE TRENDS IN PUMPAGE AND WATER LEVELS

Pumpage increases vary from year to year in an erratic and unpredictable manner. Pumpage during the past 10 years has increased at an unprecedented rapid rate. Pumpage in 1966 for the Chicago region was 37 percent greater than the predicted 1980 pumpage as reported in Cooperative Report 1. Based on the trend for the past 10 years, pumpage by 1980 could reach 175 mgd in the Chicago region and 200 mgd in northeastern Illinois.

Estimates of future water-level declines (1958-1980) based on reasonable extrapolation of past pumpage data were given in Cooperative Report 1. Average predicted declines in the Chicago region varied from about 14 feet per year in the Chicago and Des Plaines areas to about 9 feet per year in the Elgin area. The measured declines since 1958 have exceeded the predicted declines because of the continuing high rate of increase in pumpage. During 1959, 1965, and 1966 rates of increase in pumpage were record high at more than 10 mgd. As a result, rates of water-level declines since 1961 exceeded previous decline rates in nearly all areas of northeastern Illinois. If the recent trends continue, water-level declines in several areas of the Chicago region will be near or below the bottom of the St. Peter sandstone by 1980.

REFERENCES

1 Suter, Max, R. E. Bergstrom, H. F. Smith, G. H. Emrich, W. C. Walton, and T. E. Larson. 1959. Preliminary report on ground-water resources of the Chicago region, Illinois. Illinois State Water Survey and Geological Survey Cooperative Ground-Water Report 1.

2 Walton, W. C, R. T. Sasman, and R. R. Russell. 1960. Water-level decline and pumpage during 1959 in deep wells in the Chicago region, Illinois. Illinois State Water Survey Circular 79.

3 Sasman, R. T., T. A. Prickett, and R. R. Russell. 1961. Water-level decline and pumpage during 1960 in deep wells in the Chicago region, Illinois. Illinois State Water Survey Circular 83.

4 Sasman, R. T., W. H. Baker, Jr., and W. P. Patzer. 1962. Water-level decline and pumpage during 1961 in deep wells in the Chicago region. Illinois State Water Survey Circular 85.

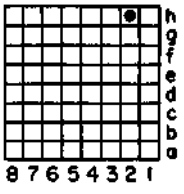
5 Sasman, R. T. 1965. Ground-water pumpage in northeastern Illinois through 1962. Illinois State Water Survey Report of Investigation 50.

6 Sasman, R. T., and W. H. Baker, Jr. 1966. Ground-water pumpage in northwestern Illinois through 1963. Illinois State Water Survey Report of Investigation 52.

APPENDIX

The well-numbering system used in this report is based on the location of the well, and uses the township, range, and section for identification. The well number consists of five parts: county abbreviation, township, range, section, and coordinate within the section. Sections are divided into rows of 1/8-mile squares. Each 1/8-mile square contains 10 acres and corresponds to a quarter of a quarter of a quarter section. A normal section of 1 square mile contains eight rows of 1/8-mile squares; an odd-sized section contains more or fewer rows. Rows are numbered from east to west and lettered from south to north as shown below.

The number of the well shown in sec. 25 at the right is as follows:
COK 41N11E-25.2h



Cook County
T41N, R11E
sec. 25

Where there is more than one well in a 10-acre square they are identified by arabic numbers after the lower case letter in the well number.

Any number assigned to the well by the owner is shown in parentheses after the location well number. Fox example, the first well listed in the table on the next page is owned by the city of Belvidere and is known as City Well No. 6, which is indicated by (6) in the well number BNE 44N3E-24.8a (6).

The abbreviations used for counties are:

Boone	BNE	Kankakee	KNK	Livingston	LIV
Cook	COK	Kendall	KEN	McHenry	MCH
De Kalb	DEK	Lake	LKE	Ogle	OGL
Du Page	DUP	La Salle	LAS	Will	WIL
Grundy	GRY	Lee	LEE	Winnebago	WIN
Kane	KNE				

Other abbreviations used in tables are:

(V)	Village owned	CCb.	Country Club
(C)	City owned	Pres.	Preserve
Sbd.	Subdivision		

Water Levels in Deep Wells in Northeastern Illinois, 1962-1966

(Elevations in feet above mean sea level)

Well number	Owner	Depth of well (ft)	Surface elevation	Water-level elevations						Water level change, 1961-66 (ft)	
				1961	1962	1963	1964	1965	1966		
BNE--											
44N3E-											
24.8a (6)	Belvidere (C)	870	784	732	704	734	734	721	709	-23	
25.8b2 (3)	Belvidere (C)	1803	765	748	746	745	750	748	750	+2	
26.1e (4)	Belvidere (C)	1800	778	720		710		724	724	+4	
34.3a (8)	Belvidere (C)	1393	780					685	670		
35.1e (5)	Belvidere (C)	610	800	737	738	735	738	735	725	-12	
45N4E-											
11.7h (1)	Capron (V)	680	912		884	879	879	874	877		
19.8f (1)	McLay Grain Co.	570	892		839	836	842				
COK--											
35N14E-											
3.3b (3)	Glenwood (V)	1776	618				213	206	200		
8.5e (32)	Chicago Hts. (C)	1777	648						200		
21.2b2 (2)	Stauffer Chemical Co.	1800	640		165		217	168	157		
21.3h (2)	Calumet Steel Div.	1805	640		187			200			
23.6e2 (3)	E. Chicago Hts. Utility Co.	1858	667					241	217		
36N13E-											
1.2c (1)	Miller Pre-Pared Potato Co.	1651	600	177	148	146	133	120	110		
1.2g (1)	Libby, McNeil, & Libby	1618	597	177	162	149	132	146	107	-70	
9.8b2 (1)	Oak Forest (V)	1701	672	177	162	150	56	137	46	-131	
36N14E-											
2.8e (1)	Kaiser-Aluminum & Chemical Corp.	1730	584		182		154	144	132		
3.1g (1)	Metro Class Co.	1704	592	194		168	161	149	137	-57	
5.4e (2)	City Products Corp.	1657	603				156	138	133		
32.3h (1)	Washington Pk. Race Track	1686	624		224						
34.5d2 (4)	Thornton (V)	1785	617				206				
34.5g (5)	Thornton (V)	1724	612	256	241				181	-75	
37N11E-											
14.8c (3)	N. Amer. Car Corp.	1501	585	157					85	-72	
20.4d (1)	Lemont (V)	1665	596	178	176	167	157	146	136	-42	
28.3b (3)	St. Vincent DePaul Seminary	1690	740		193		124	121	77		
29.4b (3)	Lemont (V)	1723	746			140	105		88		
37N12E-											
2.8h2 (2)	Hickory Hills (V)	1608	685		107		57		61		
37N13E-											
12.7d (1)	Evergreen Park Comm. H. S.	1637	622	149	126	114	95	87	83	-66	
26.1g (3)	Oak Hill Cemetery	1637	617	175	170	149	144	139	125	-50	
32.5h2 (2)	Ridgeland Wtr. Service Co.	1580	617	159	148	126	123	105	107	-52	
37N14E-											
22.1b (2)	Sherwin-Williams Co.	1648	586		173		154				
37N15E-											
8.1b2 (3)	Falstaff Brewing Corp.	1683	589	119	154	154		154	139	+20	
8.1c2 (2)	Falstaff Brewing Corp.	1680	593	110	147		143		128	+18	
38N12E-											
1.8g2 (2)	Lyons (V)	1750	621		-17	-29	9		51		
5.8d2 (3)	Western Springs (V)	1256	678		108		70	60	26		
6.6b (4)	Western Springs (V)	1913	642						58		
18.8f3 (3)	Suburban Cook Co. TB Sanitar.	1540	689	131	118	106	101	99	94	-37	
21.3d (2)	Joanna Western Mills Co.	1503	615						60		
24.7h (14)	Corn Products Co.	1481	597	36	17	-4	-31	-23	-29	-65	
28.7d (2)	Fisher Body Co.	1542	605	120		85		60	45	-75	
29.1d (1)	Fisher Body Co.	1517	605	115		75		60	60	-55	
38N13E-											
11.1h (1)	Bradshaw-Praeger & Co.	1224	597	96	103	62	60	76	83	-13	
12.8e (1)	International Gorden Steel Co.	1608	600		96	70	54				
19.4e2 (3)	Union Carbide Corp.	1601	621	36			96	6			
21.1f (2)	Cracker Jack Co.	1585	620	120	90	67	60	67	58	-62	
27.5g (1)	Tootsie Roll Industries	1565	617					50	42		
38N14E-											
5.2h (1)	Produce Terminal Corp.	1523	590				80	61			
7.6c (1)	Fleischmann Malting Co.	1925	594		76	46	67				
7.6d (2)	Fleischmann Malting Co.	1964	594		100	68	70	69	61		
7.7g1 (1)	Standard Brands, Inc.	1543	602			88	73				

Water Levels (Continued)

Well number	Owner	Depth of well (ft)	Surface elevation	Water-level elevations						Water level change, 1961-66 (ft)
				1961	1962	1963	1964	1965	1966	
COK--										
39N12E-										
4.2b2 (2)	Richardson Co.	1557	638	46	22	14				
8.5g (4)	Bellwood (C)	1960	645				125		-98	
9.5a (3)	Bellwood (C)	1951	624					-49	-14	
9.5f (2)	Bellwood (C)	1954	632						-30	
11.7f (4)	Maywood (V)	1640	630	96	71	68	74	67	61	-35
11.8f (1)	Amer. Can Co.	1806	630	80						
12.3e (1)	Bowman Dairy Co.	2072	631		73	55	95	32	25	
13.7g (2)	Altenheim-German Home	1661	626	94	80	64	39		38	-56
17.2h (1)	Aluminum Co. of Amer.	1476	654		89	74	80	74	57	
22.7b (1)	Amphenol-Borg Elect.	1550	628	70	26	20	-4	42	-25	-95
25.5d (4)	Riverside (V)	1980	620	83	59	47	48	54	58	-25
35.3h (2)	Chicago Zoological Pk.	2081	615		78	57	58	54	41	
36.8d (3)	Riverside (V)	2047	618	87	69	65	67		26	-61
39N13E-										
13.3c (1)	Superior Sleeprite Corp.	1607	590	102	94	82	69	66		
21.5f (1)	National Casting Co.	1975	607		74	59	45	49	53	
21.6g (1)	Kropp Forge Co.	1340	608	96	53	27	52	26	45	-51
21.8f3 (3)	Chicago Vitreous Enamel Co.	1515	608				48			
24.1a (1)	Van Merritt Brewery	1600	593	116		69	66	58	56	-60
25.2g (1)	Ideal Roller & Mfg. Co.	1127	598	70			68	61	68	-2
33.4a (1)	Incinerator, Inc.	1650	589		77	31	30	28	23	
35.1h (1)	Liquid Carbonic Corp.	1512	594	129	120	86	85	89		
39N14E-										
21.7b1 (1)	Joanna Western Mills Co.	1610	593	101			81	72		
21.7b2 (2)	Joanna Western Mills Co.	1603	593	113						
40N12E-										
18.6c (1)	J. B. Clow & Sons, Inc.	1457	663	137	118	91	77	63	23	-114
31.4c (2)	Automatic Electric Co.	1468	655	62		57	80	24	7	-55
31.4d (1)	Automatic Electric Co.	1410	655	106	96	92	73	69	55	-51
35.2f2 (3)	Oak Park CCb.	1497	627				138	40	40	
40N13E-										
31.4e1 (1)	Mars, Inc.	1975	651			77	41	61		
34.7d4 (4)	Northwestern Malt & Grain Co.	1548	612	157	127	143	135	129	107	-50
41N9E-										
23.6g3 (3)	Streamwood (V)	1410	820				408		363	
36.3f (2)	Hanover Park (V)	1429	828				252		264	
41N10E-										
15.1f2 (2)	Hoffman Estates (V)	1391	750	280	274	272	263	242	225	-55
15.4h1 (4)	Hoffman Estates (V)	1382	774						240	
31.3e (3)	Hanover Park (V)	1952	798					331	270	
41N11E-										
7.1c (4)	Rolling Meadows (C)	1603	710						214	
9.1f	Arlington Hts. (V)	837	705		172					
9.1h (8)	Arlington Hts. (V)	1455	706	199		139	107	59	7	-192
10.3f (8)	Mt. Prospect (V)	1765	680			110		65	90	
12.8h2 (3)	Mt. Prospect (V)	1934	670	140	105	130	127	110	110	-30
13.4a (5)	DesPlaines (C)	1800	655	135	75		37	37	-8	-143
14.5b (3)	Citizens Utilities Co.	1382	672	177	121				2	-175
21.3b (1)	Elk Grove (V)	1415	717	157	72	134	104	97	108	-49
24.1g2 (2)	Citizens Utilities Co.	1652	660	186	154				23	-163
25.2h (7)	DesPlaines (C)	1815	655		233		106	75	63	
25.6b3 (3)	Touhy Mobil Homes	1515	657		147		117	129		
26.8a (2)	Elk Grove (V)	1395	682	162	47	124	92	72	32	-130
27.6a (4)	Elk Grove (V)	1416	698				92		58	
32.5g (3)	Elk Grove (V)	1408	705				136			
36.8d (2)	Material Service Corp.	1440	668	159	141	133				
41N12E-										
12.7d (2)	Domestic Utility Co.	1390	658		243	194	181	158	123	
12.8b (1)	Domestic Utility Co.	1414	666	231	234	204	184	166	136	-95
18.1h (1)	Benjamin Electric Co.	1221	644		94	76	79			
18.5d (6)	DesPlaines (C)	1840	644					47		
18.6a (1)	DesPlaines (C)	1735	652	192	112		109			
18.7a (2)	DesPlaines (C)	1750	652		72	38	33	15		
19.5g (4)	DesPlaines (C)	1811	650			56				
26.6e (1)	Park Ridge CCb.	1355	643					168	129	

Water Levels (Continued)

Well number	Owner	Depth of well (ft)	Surface elevation	Water-level elevations 1961	1962	1963	1964	1965	1966	Water level change, 1961-66 (ft)
COK--										
41N13E-										
8.6d (2)	Glen View Club	1546	643	241	223	202	187	184	159	-82
18.5g (1)	Avon Prod., Inc.	1525	644	241	222	194	169	174	144	-97
20.7e (1)	Baxter Lab.	1414	627	211	199	171	197	197	182	-29
21.2b (1)	G. D. Searle & Co.	1470	614	244	235	221	212	206	189	-55
22.4g (2)	Evanston CCb.	1465	608				232	225	203	
29.8d (1)	Croname, Inc.	1465	624	189	144		114	84	14	-175
42N10E-										
14.2b (2)	Palatine (V)	1290	738			343	173			
14.2c (1)	Palatine (V)	1380	738					218	183	
24.3h (7)	Palatine (V)	1350	732			312	304	267	222	
24.8a1 (1)	Arlington Pk. Jockey Club	1825	730	285	273	278	266		232	-53
25.1b (1)	Rolling Meadows (C)	1530	720	255			208	199	168	-87
25.6b (2)	Rolling Meadows (C)	1537	714	286	268		193	194	170	-116
26.1e (3)	Arlington Pk. Jockey Club	1825	728						123	
36.4a (3)	Rolling Meadows (C)	1650	717		235	215	201	210	193	
42N11E-										
3.3b (5)	Wheeling (V)	1355	650						263	
5.1g (1)	Buffalo Grove Utility Co.	1322	686		279	256		232		
11.6e (3)	Wheeling (V)	1370	645	265	247	225	225	198	195	-70
11.8b2 (2)	EKCO Container Co.	1320	650	270	167	230	189	188	170	-100
16.7a	Arlington Hts. (V)	900	687	228	221	207	202	177	179	-49
17.7e (9)	Arlington Hts. (V)	1532	692					215	162	
25.2h	Citizens Utilities Co.	955	640						130	
26.7d (2)	Citizens Utilities Co.	1468	661	211	196				115	-96
27.3a (6)	Mt. Prospect (V)	1382	670	211	181	130	95	105	95	-116
29.4h (7)	Arlington Hts. (V)	1525	687				218	192	182	
29.5a (5)	Arlington Hts. (V)	1525	689					111	141	
30.1g (2)	Arlington Hts. (V)	1345	724	239		184	174	123	94	-145
30.3b (6)	Arlington Hts. (V)	1490	707			91	152	141	122	
30.5b (4)	Arlington Hts. (V)	1292	709			85	111	69	79	
33.3b (4)	Mt. Prospect (V)	1370	693	173	104	113	118	95	69	-104
33.4d (7)	Mt. Prospect (V)	1950	677				140	125	~~112~~ 115	
34.4g (5)	Mt. Prospect (V)	1822	673	235	181	148	155	143	133	-102
35.2a (1)	Fairview Gardens Sbd.	1337	655		177		151		~~88~~ 99	
35.3d (2)	Fairview Gardens Sbd.	1328	652	228	192		164			
36.3b1 (1)	Maryville Academy	1604	651	250				185	165	-85
36.3b2 (2)	Maryville Academy	1529	651	230	156	187		181	161	-69
42N12E-										
2.5b (1)	Green Acres CCb.	1376	655				261			
14.2a (4)	Sunset Ridge CCb.	1410	655					210	175	
14.2c1 (1)	Sunset Ridge CCb.	1385	655	277	269	249		227	167	-110
14.7f (2)	St. Mary's Mission House	1686	668	308	280	282	230	103		
14.8e (1)	St. Anne's Home	1190	665				249		~~219~~ 209	
19.1c (1)	All State Insurance Co.	1400	663						155	
19.1d (2)	All State Insurance Co.	1404	663						~~175~~ 177	
23.5f3 (3)	Convent of the Holy Spirit	1451	648	276	263	241	140	218	191	-85
28.7e (1)	Signode Steel Strapping Co.	1452	670	268	244	227	205	195	150	-118
28.8c (5)	Ill. Municipal Wtr. Co.	1405	672						~~112~~ 115	
29.1a (4)	Ill. Municipal Wtr. Co.	1405	677	279	247		207	207	156	-123
30.1b (2)	Northfield Woods Wtr. & Utility	1233	652					214		
30.1d (1)	Northfield Woods Wtr. & Utility	1286	650					220		
33.2c (3)	Ill. Municipal Wtr. Co.	917	670	281		242	133			
36.7e2 (2)	North Shore CCb.	2017	645					279	251	
DEK--										
37N5E-										
32.1c1 (1)	Somonauk (V)	190	685	668	666	664	665			
32.1c2 (2)	Somonauk (V)	502	685	670	668	669	667	675	671	+1
36.7h1 (1)	Sandwich (V)	600	667	643	644	639	639	645		
36.7h2 (2)	Sandwich (V)	600	667	647	647	634	641	655	653	+6
38N5E-										
14.4d (3)	Hinckley (V)	605	740					716	709	
15.2d (2)	Hinckley (V)	708	740	727	716	718	720	722	721	-6
39N4E-										
3.6g (1)	Notre Dame Sch. for Girls	1270	865						807	
40N3E-										
23.6e (2)	Malta (V)	1254	915	758	755	751	759	743	752	-6
23.7e (1)	Malta (V)	853	915	778	784	750		780	767	-11
23.8e1 (1)	C. & NW. Railroad	1007	910	785	787	782	781	780	784	-1

Water Levels (Continued)

Well number	Owner	Depth of well (ft)	Surface elevation	Water-level elevations 1961	1962	1963	1964	1965	1966	Water level change, 1961-66 (ft)
DEK--										
40N4E-										
15.7a (6)	DeKalb (C)	1291	855	674	661	654	664	646	650	-24
16.1g (1)	Ambo I Inc. Apart.	803	880						782	
16.2g (2)	DeKalb Univ. Develop. Corp.	701	883						782	
21.5f (10)	DeKalb (C)	1310	880						675	
22.2d (1)	DeKalb (C)	1331	870	687	693					
22.2e (2)	DeKalb Retread & Vulcan. Co.	775	870			744	742	737	731	
22.3e1 (2)	DeKalb (C)	1306	860	682	682	652	671	668	662	-20
23.1g (9)	DeKalb (C)	1330	885				699	726	719	
23.2e (5)	DeKalb (C)	1330	890	707	692	678	685	678	646	-61
23.4d (4)	DeKalb (C)	1178	885	688	694	672	672	665	702	+14
23.8e (8)	DeKalb (C)	949	875	676	680	659	674	662	653	-23
26.3g1 (1)	Cal. Packing Co.	1324	890					722		
26.3g2 (2)	Cal. Packing Co.	1345	890			733	742	722		
26.7d (7)	DeKalb (C)	1328	885	662	657	669	691	665	689	+27
40N5E-										
5.5e (5)	Sycamore (C)	1227	872					626	623	
41N5E-										
32.1g (3)	Sycamore (C)	931	840				809	812	754	
32.3e2 (2)	Sycamore (C)	907	870	782						
32.6c (4)	Sycamore (C)	1290	855			789			717	
42N3E-										
26.3h2 (2)	Kirkland (V)	636	775	741	756	753	751	751	760	+19
42N4E-										
22.7a2 (2)	Kingston (V)	311	825					742	750	
22.7a3 (3)	Kingston (V)	717	827		704	728	740	702	727	
42N5E-									722	
19.4b (3)	Genoa (V)	732	830	739	739	697	730	726	~~755~~	~~+16~~
19.6b2 (2)	Genoa (V)	730	820		739	673			728	
DUP--										
37N11E-									145	
3.8a1 (1A)	Argonne Nat'l. Lab.	1595	670	175	169	163	155	149	~~142~~	-33
38N9E-									190	
13.2b3 (7)	Naperville (C)	1445	680	259	228	219	210	197	~~180~~	~~-79~~ -69
39N9E-										
15.7h (4)	West Chicago (C)	1465	746	321	310	301	296	281	274	-47
39N10E-										
1.4d (1)	Commonwealth Edison Co.	1464	740	221				153	130	-91
39N11E-										
1.8f1 (1)	Elmhurst (C)	1475	678					-7	8	
2.2f (3)	Elmhurst (C)	1502	690		64	2	6	-1	-42	
4.1f (7)	Villa Park (V)	1395	702	116				55	41	-75
6.3a (4)	Lombard (V)	2062	700	167	118	187	139	145	115	-52
9.1h (1)	Villa Park (V)	1475	695	110	63	49	85	73	39	-71
9.2h (2)	Villa Park (V)	2125	699	115	90		87	153	49	-66
10.1h (4)	Elmhurst (C)	1390	669	73	59	51	39	63	0	-73
10.3g3 (11)	Ovaltine Food Prod.	1920	675	104		55	90	72	40	-64
10.4g6 (7)	Ovaltine Food Prod.	1999	675	103		62	83	60	-6	-109
10.4g8 (9)	Ovaltine Food Prod.	2002	670	106		34	65	30	20	-86
12.8d (5)	Elmhurst (C)	1480	677				27	0	25	
16.1b (8)	Villa Park (V)	1485	705					81	69	
17.8d (7)	Lombard (V)	1520	730					149	102	
26.5h (2)	Oakbrook Utility Co.	1521	685	150		94	57		51	-99
26.8h (1)	Oakbrook Utility Co.	1540	690	124	130	115		10		
40N10E-										
14.8d2 (2)	Bloomingdale (C)	1395	750					256	196	
40N11E-										
11.2b (4)	Bensenville (V)	1490	675		93					
13.4b (6)	C. M. St. P. & P. R.R.	1440	671			79	163	156		
13.8e1 (1)	Bensenville (V)	1445	677	169						
13.8e2 (2)	Bensenville (V)	1442	676	166	122	86		71	31	-135
14.4e (3)	Bensenville (V)	1445	670	144	103	96	112	55	2	-142
31.5b (5)	Lombard (V)	1793	738	178	182			132	120	-58
35.5e (6)	Elmhurst (C)	1475	703	82	57	52	44	23	-4	-86 -103
GRY--										
31N6E-										
6.2e3 (3)	Kinsman (V)	710	658	416	416	428	446	417		

1970

Water Levels (Continued)

1970

Well number	Owner	Depth of well (ft)	Surface elevation	Water-level elevations 1961	1962	1963	1964	1965	1966	Water level change, 1961-66 (ft)
GRY--										
31N8E-										
4.2b (3)	Gardner (V)	976	586					286	306	
11.6b3 (3)	South Wilmington (V)	996	586		412	357	364	352	326	
32N8E-										
26.1f (1)	Braceville (V)	868	585			453	480		350	
33N6E-										
29.4e (3)	E. I. DuPont	1545	606			438		428		
33N7E-										
4.2a3 (3)	Morris (C)	865	523	478	480	472		454	449	-29
4.4a (1)	Brown Milling Co.	613	522	468	480	461	460	467	463	-5
4.4c (5)	Morris (C)	1442	506	443		435	439	446	434	-9
6.3g (1)	Heather Field Sbd.	520	549						478	
9.3h (4)	Morris (C)	1501	519	452	447	445	447	444	419	-33
33N8E-										
11.5g (2)	Ill. Clay Prod. Co.	598	510				463			
34.6f3 (3)	Carbon Hill (V)	800	560						400	
35.3f (1)	Mid-Amer. Chemical Co.	805	560						405	
35.4b (1)	Eileen (V)	700	563		431					
36.5a (1)	Diamond (V)	723	565	424	425	420	422	418	400	-24
34N8E-										
1.3c (3)	Minooka (V)	1508	610					334	365	
1.5e (2)	Minooka (V)	620	613		445	435	357	409		
28.1d1 (1)	DesPlaines Chemical Co.	595	490		416	423		394	356	
35.1e (2)	Dresden Nuclear Power Sta.	1500	515	402	409	409	409	402	372	-30
35.1g (1)	Dresden Nuclear Power Sta.	788	519	365	388	397	392	387	374	+9
KNE--										
38N8E-										
4.1f (2)	North Aurora (V)	1272	635		318		398	383	300	
4.3g (3)	North Aurora (V)	1305	675	375	357	352	358	345	335	-40
4.4b (3)	Aurora Downs Racetrack	689	705	413						
9.2d (1)	Mercyville Sanitar.	1411	697	334	320	315	320	314	317	-17 257
10.8d (3)	Springbrook Sanitar.	728	670		375	368	380	364	352	
13.7b1 (3)	Aurora Paperboard Co.	800	695			365	339	323		
13.8b (1)	Aurora Paperboard Co.	1391	696	335	312	306	312	298	281	-54
15.3h (12A)	Aurora (C)	2251	669				389	364		
15.4g1 (5)	Aurora (C)	2250	646	328						
15.4g2 (12)	Aurora (C)	2253	644				318	324	226	
15.4h (11)	Aurora (C)	2250	635				305	300		
15.5e (1)	Aurora Bleaching Co.	1276	648				276	240	240	
15.6f (1)	Oberweiss Dairy	740	660	308		306	300	293		
15.6h (1)	Alba Mfg. Co.	1543	645	326	308	295	298	293	~~291~~281	~~-36~~ -45
16.4d (17)	Aurora (C)	2152	685				295	295	275	
19.5a (19)	Aurora (C)	2150	685				297	292	315	
21.5h (10)	Aurora (C)	2299	673	318			333	288		
22.7c (8)	Aurora (C)	1500	628	350			308	273	204	-146
24.7c (18)	Aurora (C)	2150	715				330	327	268	
27.5a (6)	Aurora (C)	2185	662				329	312	312	
28.4e (7)	Aurora (C)	2262	619				374	369		
29.2h (15)	Aurora (C)	2150	665				332	332	259	
32.4f (4)	Montgomery (V)	1353	640	316	302	324	292	308	264	-52
33.8c (3)	Montgomery (V)	1336	633	333	328	340		283	292	-41
34.8g (16)	Aurora (C)	2150	660						240	
39N7E-										
5.8f (1)	Elburn (V)	1350	850	605	549	549			540	-65
11.2b (1)	Nat'l. Electronics	1060	780					491		
39N8E-										
2.4c (5)	Geneva (C)	2292	753	463	448	428	418	423		
3.1b2 (2)	Geneva (C)	2172	678	451	438	428	418	413		
3.2b (4)	Geneva (C)	2267	719				414		404	
3.5e (1)	Burgess Norton Co.	1340	760	420		360	310	285	323	-97
3.8g (3)	Geneva (C)	1578	759	439	424	409	399	404	394	-45
11.7e4 (4)	Ill. St. Training Sch.	2001	730			338	354	369	340	361
15.6g (2)	Campana Co.	1352	706		406	414	398	391	392	
22.3e1 (2)	Batavia (C)	2201	667		394	374	384	374	374	
22.3e2 (3)	Batavia (C)	2002	667	457	452	447	387	382	422	-35
23.8f (4)	Batavia (C)	1357	721	431	421	391	416	386	376	-55
33.4g (1)	Mooseheart	2200	694	440			452	444	441	+1
33.5g (2)	Mooseheart	1503	704	379	377		388		388	+9

Water Levels (Continued)

1970

Well number	Owner	Depth of well (ft)	Surface elevation	Water-level elevations 1961	1962	1963	1964	1965	1966	Water level change, 1961-66 (ft)
KNE--										
40N8E-										
27.6b	St. Charles (C)	2200	692	471		437	423			
31.6h (3)	Ill. St. Training Sch.	1322	790	523	519	508	530	513	509	-14
34.5g2 (2)	Howell Co.	1268	688	438	428	408	403	393	391	-47
34.6e1 (5)	St. Charles (C)	1856	764		420		400	414	394	
34.6e2 (6)	St. Charles (C)	2249	755	475		437	437		448	-27
41N6E-										
9.1g2 (2)	Burlington (V)	1105	920	644	638	632	630	625	622	-22
41N8E-										
11.3f1 (1)	Elgin (C)	1945	741			377	346		332	
11.3f2 (2)	Elgin (C)	1935	743	408	382	365	323	438	348	-60
11.3f3 (3)	Elgin (C)	1793	745	400	397	385	395	355	327	-73
11.3f4 (4)	Elgin (C)	1880	740	415	408	400	334	370	360	-55
11.3f5 (5)	Elgin (C)	1255	740	415	412	350	357	370	335	-80
11.3f6 (6)	Elgin (C)	1300	740		400	391	345	355	350	
12.3e (1)	Simpson Co.	998	805	415	407	399	393	388	382	-33
16.4c (1A)	Elgin (C)	1268	840			466		460	450	
16.4d (2A)	Elgin (C)	1353	860					421	470	
23.6b (2)	Elgin St. Hospital	2000	760				447	415	430	
24.1a	Elgin (C)	1978	733			375	321	363	377	
24.3b3 (3)	Elgin (C)	1255	728	415	413	376	403	348	365	-50
24.6h1 (1)	Elgin Nat'l. Watch Co.	1240	735	442	439	419	435	421		
24.6h2 (2)	Elgin Nat'l. Watch Co.	1240	734	437	437	417	474			
24.6h3 (3)	Elgin Nat'l. Watch Co.	570	734				474			
35.8g (1)	South Elgin (V)	1400	761	476	464	459	515	502	479	+3
42N6E-										
3.1e	Ill. Toll Highway Comm.	962	910	655	646					
42N8E-										
22.4g (1)	Carpentersville (V)	1140	728	470	470	452				
22.5a (1)	St. Catherines Sch.	750	750	516						
22.7f (1)	D. Hill Nursery Co.	1227	790	468	445	445	440	440	430	-38
27.1e (1)	W. Dundee (V)	1200	725	448		405	395	395	381	-67
KNK--										
30N9E-										
6.8a (1)	Reddick (V)	1188	612	454	455	439	432	404	439	-15
30N10E-										
28.8h (6)	Herscher (V)	773	645						470	
29.2h (5)	Herscher (V)	789	650						463	
KEN--										
35N6E-										
6.3e (1)	Newark (V)	288	650				573	570	530	
36N7E-										
6.1g (1)	Fox Lawn Development Corp.	715	665						532	
37N7E-										
31.5b (1)	Boy Scouts of Amer.	850	640		538	538	543	540	538	
32.1e1 (1)	Yorkville (V)	590	584	508	508	505		502	496	-12
32.1e2 (3)	Yorkville (V)	1335	584	482	489	484	478	474	476	-6
37N8E-										
5.5i (1)	Western Electric Co.	1332	640		328	288	310	253	317	
5.9f (1)	Caterpillar Tractor Co.	1384	661	361	353	354	333	333	299	-62
6.2d (3)	Caterpillar Tractor Co.	1352	661	407	377	355	348	340	320	-87
6.2f (2)	Caterpillar Tractor Co.	1346	660	362	360	350	334	318	306	-56
17.2e (4)	Oswego (V)	1396	658						291	
20.8h (3)	Oswego (V)	1378	640	409	405	380	325	368	365	-44
LKE--										
43N10E-										
18.4h (5)	Lake Zurich (V)	1345	822			399	387	387	307	
43N11E-										
21.3g (1)	Powernail Co.	1258	685		348	342	325	311	275	
23.5g (1)	Lincolnshire (V)	1305	645	450			406	299	240	-210
43N12E-										
30.7e (1)	Riverwoods Sewer & Wtr. Co.	1367	677		342	338	317	30	267	
31.5f	Ill. Toll Hwy. Comm.	1055	680	388	369	356	332	375		
31.8f (1)	Thorngate CCb.	1443	665		364	357	297	294		
33.5c (1)	Kitchens of Sara Lee	1350	690					284	210	

368

Water Levels (Continued)

Well number	Owner	Depth of well (ft)	Surface elevation	Water-level elevations 1961	1962	1963	1964	1965	1966	Water level change, 1961-66 (ft)
LKE--										
44N11E-										
19.8f1 (1)	St. Mary's of the Lake Seminary	1318	729			428	426	404	385	
24.3a (2)	Knollwood CCb.	1566	680						412	
24.5e (1)	C. M. St. P. & P. RR	1144	655					360		
27.2e (1)	B. Sullivan	1000	663			409				
31.4h (8)	Mundelein (V)	1383	730				400	320	~~280~~ 330	
44N12E-										
18.3f1 (1)	Goodyear Tire & Rubber Co.	1631	680					420	394	
18.3f2 (2)	Goodyear Tire & Rubber Co.	1600	680	450	466		418	416		
21.6g (3)	Methodist Children's Home	900	660	440	430	422	422	345		
21.8f2 (2)	Lake Bluff (V)	1804	680		450	442	435	433	423	
32.2c (1)	Onwentsia Golf Club	1023	660						280	
45N10E-										
26.7b (2)	Grays Lake (V)	1323	785	549	515	503				
45N11E-										
14.4d (1)	Midwest Molding & Mfg.	1481	665		540	471	527			
14.5a (1)	Gurnee (V)	1517	665		502	509	468	475	471	
15.8f	Ill. Toll Hwy. Comm.	1045	~~730~~ ~~740~~	~~509~~ ~~519~~	~~509~~	~~500~~		524	~~534~~	+15
29.8a	Wildwood Sbd.	1845	785		~~499~~	~~490~~			453	
45N12E-										
15.8e1 (1)	Griess-Pfleger Tanning Co.	1670	588			490				
30.8c (1)	Colonial Pk. Estates	996	695						369	
46N11E-										
27.3a (1)	Rathbun Feed Co.	1230	672	532	526	520	512	504	477	-55
46N12E-										
21.1b1 (1)	Zion (C)	1100	633		525	517	513	504	494	
21.1b2 (1)	Dottie's Restaurant	1050	635		521	535	520	500	490	
21.3d (1)	Zion, Shiloh Park (C)	1575	642	543						
26.8b (1)	Ill. Beach St. Park	1002	585			428				
LAS--										
32N1E-										
4.7b	Cedar Point (V)	1750	655			490				
33N1E-										
15.1h	M. & H Zinc Co.	1619	577			462				
16.2b	Ill. Zinc Co.	1250	465			465				
16.8a2	Peru (C)	1505	460			472	455	460	462	
16.8a3 (6)	Peru (C)	2665	540			440			454	
20.2h2 (5)	Peru (C)	2601	465						391	
20.3g (1)	Star Union Prod.	2600	470			435			435	
20.8h	American Nickeloid Co.	1632	600			493				
21.8h (7)	Peru (C)	2591	460			464			460	
36.2e	Marquette Cement Mfg. Co.	1565	480			480				
36.6h1 (1)	Oglesby (C)	1645	630			483				
33N2E-										
9.5e	Belrose Silica Co.	80	550			500				
9.~~7~~8 (1)	Philadelphia Quartz Co.	200	~~460~~ 480			~~468~~ 480				
9.8b	Utica (V)	618	480			480				
17.3f	Amer. Silica Co.		460			460				
17.4g	Amer. Silica Co.		460			460				
21.2g (2)	Starved Rock St. Pk.	475	470	445	443	443	442	443	444	-1
21.3g (3)	Starved Rock St. Pk.	401	470	443	444	444	444	443	442	-1
24.1a (1)	Starved Rock St. Pk.		462			462				
33N3E-										
1.6b (7)	Ottawa (C)	1180	489				441	439	439	
1.8a (8)	Ottawa (C)	1180	489				471			
2.4b	Ottawa (C)	1220	495			458		461		
3.2b (1)	Union Carbide Corp.	1225	490			401	441	422		
3.5a (2)	Union Carbide Corp.	1255	490			445		420		
10.5c	LaSalle Ready Mix Co.	100	481			413				
12.2g	Chicago Retort & Firebrick Co.	450	480			438				
16.2b	Libby-Owens-Ford Glass Co.	401	448			350				
17.6c2	Buffalo Rock St. Pk.	480	542			456				
33N4E-										
13.3c (4)	Marseilles (C)	850	498	470	400	487		486	483	+13
15.7e (2)	Marbon Chemical Co.	1292	480						467	
15.7f (1)	Marbon Chemical Co.	1253	480						472	
16.2g (1)	Material Service Co.	440	485					482		

Water Levels (Continued)

Well number	Owner	Depth of well (ft)	Surface elevation	Water-level elevations						Water level change, 1961-66 (ft)
				1961	1962	1963	1964	1965	1966	
LAS--										
33N5E-										
21.3e	Spicer Sand & Gravel Co.		520			490				
21.5c (1)	National Phosphate Corp.	583	490					442		
24.8c1 (1)	Seneca (V)	700	510			443	443			
25.4e (3)	Civil Defence Admin.	654	505	462				440	438	-24
25.4g1 (1)	Civil Defence Admin.	451	505	465	449	442		436	434	-31
25.4g2 (2)	Civil Defence Admin.	1447	505		449	442	440			
34N4E-										
9.4g (1)	Wedron Silica Corp.	261	545		498	495		494	493	
34N5E-										
2.2i (1)	Amer. Tel. & Telegraph Co.	1348	770			465		440	475	
2.3h (2)	Amer. Tel. & Telegraph Co.	1353	770			480				
35N4E-										
23.2b	Serena Sch.	270	632			549				
35N5E-										
8.6b (1)	Ill. State Ind. Sch.	885	591	579	578	575	573	575	569	-10
17.7h (3)	Ill. State Ind. Sch.	900	592					571		
36N1E-										
27.4a1 (1)	California Packing Co.	1384	730			632	649	640	637	
27.5b (2)	California Packing Co.	1385	740			632	635	629		
32.1a (4)	Mendota (C)	1450	740	652	645		645	650	648	-4
36N3E-										
18.4d2 (2)	Earlville (C)	150	700		670			680	676	
18.4d3 (3)	Earlville (C)	625	703	677	678		670	667	668	-9
18.10a1 (1)	Marathon Electric Mfg. Corp.	150	700	665	665	670	646	614		
18.10a2 (2)	Marathon Electric Mfg. Corp.	257	700				668	682		
36N4E-										
8.5h1 (1)	Leland (V)	230	701	648				671		
8.5h2 (2)	Leland (V)	220	700	682	684	682	682	684		
36N5E-										
4.2f (2)	Lake Holiday	708	673					632	634	
8.5g (1)	Lake Holiday	663	670					643	632	
LEE--										
37N1E-										
8.8e3 (3)	West Brooklyn (V)	650	945		713	712	711	713		
37N2E-										
10.2b (1)	Paw Paw (V)	1018	928	733	733					
LIV--										
29N6E-										
10.8e (3)	Odell (V)	1935	720			500	502		500	
30N6E-										
1.1a (2)	Ill. St. Reformatory	1201	648	484	483	480	492		479	-5
1.2a (1)	Ill. St. Reformatory	1203	645	479	470	478		492	471	-8
30N8E-										
26.8h (1)	Cardiff	1785	633	513	505	507	500	501		
MCH--										
43N8E-										
5.4g (2)	Crystal Lake (C)	1218	917	529						
6.4a (6)	Crystal Lake (C)	1295	892			577	535	465	465	
12.3d (4)	Cary (V)	1350	855					520		
34.1f (2)	Algonquin (V)	1265	860				530	517	564	
44N5E-										
35.3g (3)	Marengo (C)	1028	817	711	709	706	702		713	+2
35.5h (1)	Arnold Engineering Co.	846	818	712	721	717	721	721	721	+9
44N8E-										
33.5a2 (7)	Crystal Lake (C)	1400	930				553	530	508	
44N9E-										
20.1b (4)	Island Lake Wtr. Co.	1223	775		534	530	528			
45N8E-										
10.8a (2)	Modine Mfg. Co.	1200	843			536			583	
10.8d (7)	Morton Chemical Co.	1161	850	585	582	565	559	555	555	-30
46N5E-										
33.8a (2)	Dean Milk Co.	1610	880		718					

Water Levels (Continued)

1970

Well number	Owner	Depth of well (ft)	Surface elevation	Water-level elevations 1961	1962	1963	1964	1965	1966	Water level change, 1961-66 (ft)
OGL--										
40N1E-										
12.6b (1)	Hillcrest Sbd.	387	825				751			
23.2a2 (2)	Cal. Packing Co.	465	790			740	726	732		
23.4c2 (3)	Cal. Packing Co.	494	793			695	745	725		
24.5h (7)	Rochelle (C)	925	795			700	705			
24.7a1 (3)	Rochelle (C)	1484	793	738	723	733	733		720	-18
24.7a2 (4)	Rochelle (C)	1450	793		698	713	735		693	
25.2i (9)	Rochelle (C)	888	785			727	687		608	
25.3f (6)	Rochelle (C)	867	800	730	715	718		717	697	-33
26.5h (3)	Cal. Packing Co.	420	778				686	720		
36.2h (10)	Rochelle (C)	920	785						744	
40N2E-										
23.1f (2)	Creston (V)	737	905	777	776	771	770	775	777	0
42N1E-										
16.1b	A. G. Stadler	220	810				715			
23.6f	G. C. Vanpel	260	795				755			
23.7e	C. M. St. P. & P. RR	511	790				739			
31.8h	G. Glendenning	200	780				722			
42N2E-										
14.8d	R. Braolle	275	775				676			
26.1d	M. D. Lantz	202	830				806			
33.4a	J. Ehman	342	785				751			
WIL--										
32N9E-										
8.5c (1)	Braidwood (V)	1050	575	367	347	363	359	365	315	-52
32N10E-										
36.2d (2)	Kankakee St. Boys Camp	751	610			418				
33N9E-										
1.5e1	Joliet Army Ammunition Plant	935	570	335	336	357	348	331	286	-49
12.1g (11)	Joliet Army Ammunition Plant	1644	578						328	
22.1f (1)	Ill. St. Game Farm	813	550	372	372	371	369	364	337	-35
32.8a (1)	Sun Oil Co.	675	555			432				
36.7h (3)	Wilmington (C)	1578	530						330	
33N10E-										
9.1f (2)	Joliet Army Ammunition Plant	1672	646	345	340	342	352	304	336	-9
9.4h (1)	Joliet Army Ammunition Plant	1614	641	340	333	337	344	337	331	-9
34N9E-										
10.1h (2)	Amer. Oil Co.	1405	568	143	121	103		106	-35	-178
11.2d (2)	Stepan Chemical Co.	1402	520	117	120			72		
11.2e (1)	Stepan Chemical Co.	1407	525	127		50	127	47	94	-33
11.7g (1)	AMOCO Chemical Co.	1422	564	170		129	127		39	-131
21.2d (1)	Rexall Chemical Co.	1573	545					385	291	
25.5a (8)	Joliet Army Ammunition Plant	1639	606						266	
25.5d (9)	Joliet Army Ammunition Plant	1602	590						275	
25.5h (10)	Joliet Army Ammunition Plant	1569	591						266	
35.5a (1)	Joliet Army Ammunition Plant	1597	539						222	
36.5e (7)	Joliet Army Ammunition Plant	1649	601						260	
34N10E-										
31.6a (12)	Joliet Army Ammunition Plant	1670	625						266	
35N9E-										
10.3a1 (1)	Holiday Inn Motel	1458	570			258	244	239	192	
10.3a2 (2)	Holiday Inn Motel	1556	570						222	
15.2h (1)	Howard Johnson Motel	1460	570						187	
25.1e (3)	Caterpillar Tractor Co.	1556	547				98	70	3	

Water Levels (Continued)

Well number	Owner	Depth of well (ft)	Surface elevation	Water-level elevations						Water level change, 1961-66 (ft)
				1961	1962	1963	1964	1965	1966	
WIL--										
35N10E-										
2.8b (4O)	Joliet (C)	1608	558		85		85	22	-40	
3.4e (3)	Ill. St. Penitentiary	1518	560	48	12	18	8	1	10	-38
3.5e (2)	Ill. St. Penitentiary	1550	549	85	77	67	67	57		
3.6b	Amer. Steel & Wire Co.	1602	544					39	16	
4.1g (2)	Joliet Ind. Dist.	1598	551						23	
4.2h (1)	Phoenix Mfg. Co.	1595	553	94	79	46	51	54	29	-65
7.4b (9D)	Joliet (C)	1671	647				146	95	-3	
9.1d (1D)	Joliet (C)	1621	536	93	78	68		56	26	-67
10.1a (1)	Klasing Co.	1505	551	46					41	-5
10.6a (1)	Joliet Twp. H. S.	881	535	87						
11.6g (1)	E. J. & E. RR	1589	560	70	50	32	2	28	6	-64
14.5d (3)	Prairie St. Paper Co.	1639	593			136	-17	11		
14.6h1 (5D)	Joliet (C)	1608	564					-6		
15.8e (2D)	Joliet (C)	1805	529					47		
16.2h	Joliet (C)	1575	531	134	121	112	104	90	84	-50
16.5c1 (3D)	Joliet (C)	1568	537	99	92			59	47	-52
19.1f2 (2)	Universal Glass Co.	1583	553					-26	1	
19.2b (4)	Commonwealth Edison Co.	1525	523				64	6	-49	
20.6a (2)	Commonwealth Edison Co.	1487	536	90		51	58	39	-49	-139
20.7g (2)	Rockdale (V)	1586	556	93	80	61	68	44	2	-91
21.4b (2)	Amer. Cyanamid Co.	1612	583	116	104	93	90		53	-63
22.3f	Will Co. Sanitar.	864	622	155		150	150			
22.7g (1)	Amer. Inst. of Laundry	1608	569	167		145	139	129	125	-42
29.8c (5)	Blockson Chemical Co.	1535	~~557~~ 567		13					
29.8g (1)	Commonwealth Edison Co.	1608	518		55	46		35		
30.1c (4)	Blockson Chemical Co.	1555	583			119				
30.1e1 (1)	Blockson Chemical Co.	1520	548	-59	-101	-130				
30.2h (3)	Commonwealth Edison Co.	1525	510						-88	
30.3c (6)	Blockson Chemical Co.	1500	543	-64					-98	-34
30.6e (2)	Caterpillar Tractor Co.	1543	546	118	89	87	94	45		
30.7f (1)	Caterpillar Tractor Co.	1560	544	96	89	66	93	33	-46	-142
35N11E-										
5.7h1 (8D)	Joliet (C)	1660	648	93	66			-7	46	-47
8.8h1 (7D)	Joliet (C)	1701	674	138	71		45	44		
36N9E-										
4.4a (4)	Plainfield (V)	1443	620				282		218	
10.8d (3)	Plainfield (V)	1481	612	252	254	248	247	230	216	-36
36N10E-										
2.7f (1)	Commonwealth Edison Co.	1500	587		150	126	117	112	93	
2.8f (3)	Commonwealth Edison Co.	1507	590	167	160	134	127	110	103	-64
2.8h (2)	Commonwealth Edison Co.	1536	590		157	134	126	115	106	
4.7g (4)	Romeoville (V)	1524	672				165	133	119	
16.4d (3)	Lewis College	1523	666	166	208	189	186		108	-58
21.4a (6)	Ill. St. Penitentiary	1611	642						84	
23.2f (4)	Lockport (C)	1572	650	125	76	83	94	72	68	-57
23.5a (3)	Lockport (C)	1571	662	163	94	77	72	62	11	-152
23.6d (2)	Lockport (C)	1446	589	130	120	96	90	80	52	-78
27.6b (1)	U. S. Army Lockport Locks	815	581	136		120	115			
28.6f1 (2)	Ill. St. Penitentiary	1596	643					151		
28.6f2 (4)	Ill. St. Penitentiary	2007	642	107	97	67	67	57	62	-45
28.6h (3)	Ill. St. Penitentiary	1532	645					70	47	
29.2g (5)	Ill. St. Penitentiary	1665	646	132	117	96	92	76	62	-70
32.1a (3)	Lidice Sbd.	1652	659	113	100	76				
33.5c (1)	Chaney Sch.	952	630	137	128	122	118			
33.6h	Commonwealth Edison Co.	1558	593	124	112	97	96	80	64	
34.8a (1)	Ruberoid Co.	776	551	69	73	59	68	54	41	-28
36N11E-										
31.8a (6D)	Joliet (C)	1652	642				31	-23	0	
37N10E-										
25.3f2 (2)	Lemont Mfg. Co.	1500	580					126	106	
25.7c (2)	Pure Oil Co.	1456	590		155	147		120	102	
26.1a (1)	Pure Oil Co.	1466	589		142	131		114	103	
33.1h2 (2)	Romeoville (V)	1520	640	190			145	142	133	-57
WIN--										
43N1E-										
3.2f2 (2)	Central Ill. Gas & Electric	825	710				662		652	
43N2E-										
28.4h (1)	Camp Rotary	511	750				701		706	

Water Levels (Continued)

Well number	Owner	Depth of well (ft)	Surface elevation	Water-level elevations						Water level change, 1961-66 (ft)
				1961	1962	1963	1964	1965	1966	
WIN--										
44N1E-										
9.1f (1)	Winnebago County Home	435	780			722			730	
9.8c (20)	Rockford (C)	1200	735				710			
11.1d (1)	Essex Wire Corp.	1150	740			690			690	
12.7b (2)	Ingersoll Milling Machine Co.	1204	745			685			681	
13.6e1 (8)	Rockford (C)	1500	724	673	659	659		663	644	-29
15.3c (1)	Dean Milk Co.	1125	725			685			~~681~~ 682	
17.3d (22)	Rockford (C)	1380	760		716		696			
20.7f (21)	Rockford (C)	1205	820				690		680	
21.3b4 (4)	~~J. I. Case Co.~~ Rockford (C)	1200	725	686		667			653	-33
21.8e (15)	Rockford (C)	1355	810	680		669		677	670	-10
22.5c2 (3)	Rockford (C)	1600	730					637	630	
22.6d (6)	Rockford (C)	1608	728		660	658				
23.6d2 (6)	Rockford (C)	1300	708		691	688	687	688	~~684~~ 685	
23.7e1 (1)	Rockford (C)	1530	711	684	686	684			691	+7
25.7h	St. Clara Continuing Care Center	810	790			681			683	
28.5c (18)	Rockford (C)	1380	820	641		667		675	673	+32
32.4a1 (16)	Rockford (C)	1310	840	643					668	+25
35.6f	W.K.L. Foundry, Inc.	1089	735			674				
35.7b	Gunite Foundries Corp.	1200	735			634			632	
36.7f1 (7)	Rockford (C)	1503	732	641				652		
36.8d	Rockford Drop Forge Co.	752	733			654			634	
44N2E-										
7.8e1 (2)	Woodward Governor Co.	1227	725			648			664	
17.6g3 (17)	Rockford (C)	1195	785					685		
18.6a (5)	Rockford (C)	1312	792	666	664	659	662	662	651	-15
19.6b1 (9)	Rockford (C)	1600	809			681			689	
20.3e (13)	Rockford (C)	1457	835					662		
21.5g (1)	Guilford's Utility Co.	557	860		707	680			674	
29.3a (10)	Rockford (C)	1426	865			657	658	657		
31.7f (6)	Rockford (C)	1372	790	703		696	698	694		
34.4a (1)	Wildwood Utility Co.	531	817			703			697	
45N1E-										
34.4e	Elmwood Sch.	370	809				748		742	
45N2E-										
32.5a	Skelly Oil Co.	400	748				723		726	
46N2E-										
15.5b (1)	Yates Amer. Co.	301	820	779		766			764	-15