

TEXAS WATER DEVELOPMENT BOARD

REPORT 156

DEVELOPMENT OF GROUND-WATER RESOURCES
IN THE ORANGE COUNTY AREA, TEXAS
AND LOUISIANA, 1963-71

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By

R. K. Gabrysch and Gene D. McAdoo
United States Geological Survey

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IN THE ORANGE COUNTY AREA, TEXAS
AND LOUISIANA, 1963-71

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ABSTRACT

The principal water-bearing units in the Orange County area are the Chicot and Evangeline aquifers. The lower unit of the Chicot, which yields about 21 mgd (million gallons per day), is the principal source of ground water. The upper unit of the Chicot yields about 2 mgd. The Evangeline aquifer, which contains fresh water in southern Jasper and Newton Counties and northern Orange County, Texas is undeveloped in the report area.

Although pumpage of ground water increased by only about 12 percent (2.4 mgd) from 1962-63 to 1970,

water levels have continued to decline. During this period, the decline in water levels ranged from 10 to 20 feet, and the maximum rate of decline was about 2.8 feet per year.

Subsidence of the land surface due to lowering of artesian pressure has been generally less than 0.5 foot since 1918. Analyses of consolidation tests of clay in the Houston area in conjunction with studies of hydrologic conditions in Orange County indicate that water levels could probably be lowered an additional 75 feet before significant subsidence would occur.

DEVELOPMENT OF GROUND-WATER RESOURCES IN THE ORANGE COUNTY AREA, TEXAS AND LOUISIANA, 1963-71

INTRODUCTION

Location and Extent of the Area

The Orange County area, as described in this report, includes Orange County, southern Jasper and Newton Counties, eastern Jefferson County, and southeastern Hardin County, Texas, and western Calcasieu and Cameron Parishes, Louisiana. The location of the area is shown on Figure 1.

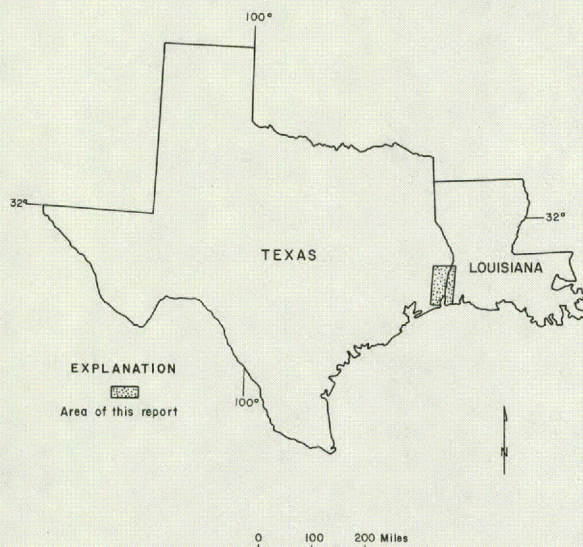


Figure 1.—Location and Extent of the Orange County Area

Purpose and Scope of the Study

A program of continuing ground-water studies in Orange County, Texas, and adjacent areas in Texas and Louisiana in cooperation with the Texas Water Development Board and the Sabine River Authority of Texas began in March 1967 because of the need for systematic monitoring and appraisal of the changing ground-water conditions. The continuing program includes the following items of work:

1. An inventory of all new large-capacity wells and the collection of drillers' logs (Tables 3 and 4).
2. The establishment and maintenance of a network of observation wells for monitoring changes in water levels and changes in chemical quality, especially chlorides (Tables 5 and 7).
3. An annual inventory of municipal and industrial pumpage (Table 2).
4. Determination of the extent of land-surface subsidence in Orange County (Table 6).
5. The correlation of current data with previously collected data.

This report presents the data collected since 1963 and an analysis of the data. The locations of wells for which data are included are shown on Figure 10.

Previous Investigations

The results of previous investigations of the geology and ground-water resources of Orange County and adjacent areas are given in reports by Baker (1964), on the ground-water resources of Hardin County, Texas; Harder (1960), on the geology and ground-water resources of Calcasieu Parish, Louisiana; Jones and others (1954, 1956), on the geology and ground-water resources of southwestern Louisiana; McAdoo (1968, 1969, and 1970), on ground-water data for Orange County and vicinity; and Wesselman (1965, 1967, and 1971), on ground-water resources of Orange County, Jasper and Newton Counties, and Chambers and Jefferson Counties, Texas.

Acknowledgments

The authors express their appreciation to the many landowners and industrial and city officials who furnished data and granted access to water wells. The assistance of Mr. John Simmons, Sabine River Authority of Texas is gratefully acknowledged. Mr. Hugh Fidler and Mr. Bodie Pryor, Gulf Chemical Company; Mr. R. A.

Ogden, Firestone Tire and Rubber Co.; Mr. L. B. Ramke and Mr. E. Swearingen, E. I. Dupont, Inc.; and Mr. Clark Shupp, B. F. Goodrich Co., provided valuable assistance during the course of this investigation.

Well-Numbering System

The well-numbering system in Texas was developed by the Texas Water Commission for use throughout the State. Under this system, each 1-degree quadrangle is given a number consisting of two digits. These are the first two digits in the well number. Each 1-degree quadrangle is divided into 7½-minute quadrangles which are given 2-digit numbers from 01 to 64. These are the third and fourth digits of the well number. Each 7½-minute quadrangle is divided into 2½-minute quadrangles which are given a single-digit number from 1 to 9. This is the fifth digit of the well number. Finally, each well within a 2½-minute quadrangle is given a 2-digit number in the order in which it was inventoried, starting with 01. These are the last two digits of the well number.

Only the last three digits of the well number are shown at each well location (Figure 10); the second two digits are shown in the northwest corner of each 7½-minute quadrangle; and the first two digits are shown by the large block numerals in each 1-degree quadrangle.

In addition to the 7-digit well number, a 2-letter prefix is used to identify the county. The prefixes for Orange County and adjacent counties are as follows: Orange, UJ; Jasper, PR; Jefferson, PT; Hardin, LH; and Newton, TZ.

Wells inventoried in Louisiana by the U.S. Geological Survey are assigned an identifier consisting of two parts—an abbreviation of the name of the parish in which the well is located and a serial number that designates the well. The number assigned does not indicate a specific location because the number is generally assigned in the order in which the well was inventoried. The abbreviation for Calcasieu Parish is Cu; the abbreviation for Cameron Parish is Cn.

DESCRIPTION OF THE HYDROLOGIC UNITS

A correlation of some of the hydrologic units with stratigraphic units in Texas and Louisiana was prepared by Turcan and others (1966). This correlation is given in Table 1. Wesselman (1965, p. 19) described the aquifers in Orange County as follows:

“*Lower aquifer.*—The ‘Lower’ aquifer, as used in this report, consists of the Goliad Sand, Willis Sand, and that part [Lower] of the Lissie Formation that underlies the Alta Loma Sand of Rose (1943). [The lower part of the Alta Loma Sand of Rose (1943) was not correctly defined in this area as including the upper part of the

Lissie Formation.] The aquifer yields fresh water only in the northern part of the county; it is capable of yielding moderate to large quantities of slightly to moderately saline water to wells in the rest of the county.”

“*‘Middle’ aquifer.*—The ‘Middle’ aquifer consists principally of beds of generally massive sand, the Alta Loma Sand of Rose (1943)... The aquifer is the principal source of ground water in Orange County and yields large quantities of fresh to slightly saline water. Most of the water in the aquifer is fresh—less than 1,000 mg/l (milligrams per liter) dissolved solids—and the sands are more permeable than those in the ‘Lower’ aquifer. The Alta Loma probably is correlated with the ‘500-’ and ‘700-foot’ sand of the Chicot aquifer in Calcasieu Parish, Louisiana, which adjoins Orange County on the east.”

“*‘Upper’ aquifer.*—The ‘Upper’ aquifer includes the Beaumont Clay and the Recent alluvium. The aquifer... underlies the entire county and extends into Louisiana where it probably is correlative with the ‘200-foot’ and ‘shallow sands’ of the Chicot aquifer and the Recent alluvium as described by Harder (1960, p. 26-27). In contrast to the ‘Middle’ aquifer, the sand beds in the ‘Upper’ aquifer are not as massive.”

Wesselman (oral commun., 1971) stated that the preceding description (Wesselman, 1965) erroneously put the Willis Sand and the lower part of the Lissie Formation in the “Lower” aquifer. According to the interstate correlation, the Chicot aquifer includes the Willis Sand and younger formations. Thus, the Chicot aquifer is equivalent to the “Middle” and “Upper” aquifers and the Evangeline aquifer is equivalent to the “Lower” aquifer. In this report, reference will be made to the upper and lower units of the Chicot aquifer and to the Evangeline aquifer.

The lower unit of the Chicot aquifer is the most important fresh water-bearing unit in most of the Orange County area. The altitude of the base of the aquifer (Wesselman, 1965, Figure 5) ranges from about 400 to about 1,000 feet below sea level (Figure 2).

GROUND-WATER DEVELOPMENT

Pumpage

The development of ground water in the Orange County area has been slow. The first deep well in the county was drilled in 1902, about 7 miles northwest of Vidor. Additional deep wells were drilled after 1902, chiefly in the southern part of the county. However, total ground-water use was only 2.6 mgd (million gallons per day) by 1941. Withdrawals of ground water have since increased more rapidly to meet the increasing demand of the growing population and industry. In 1955, ground water use was 7 mgd; in 1958 it was 10 mgd; and in 1962 it was 20.6 mgd.

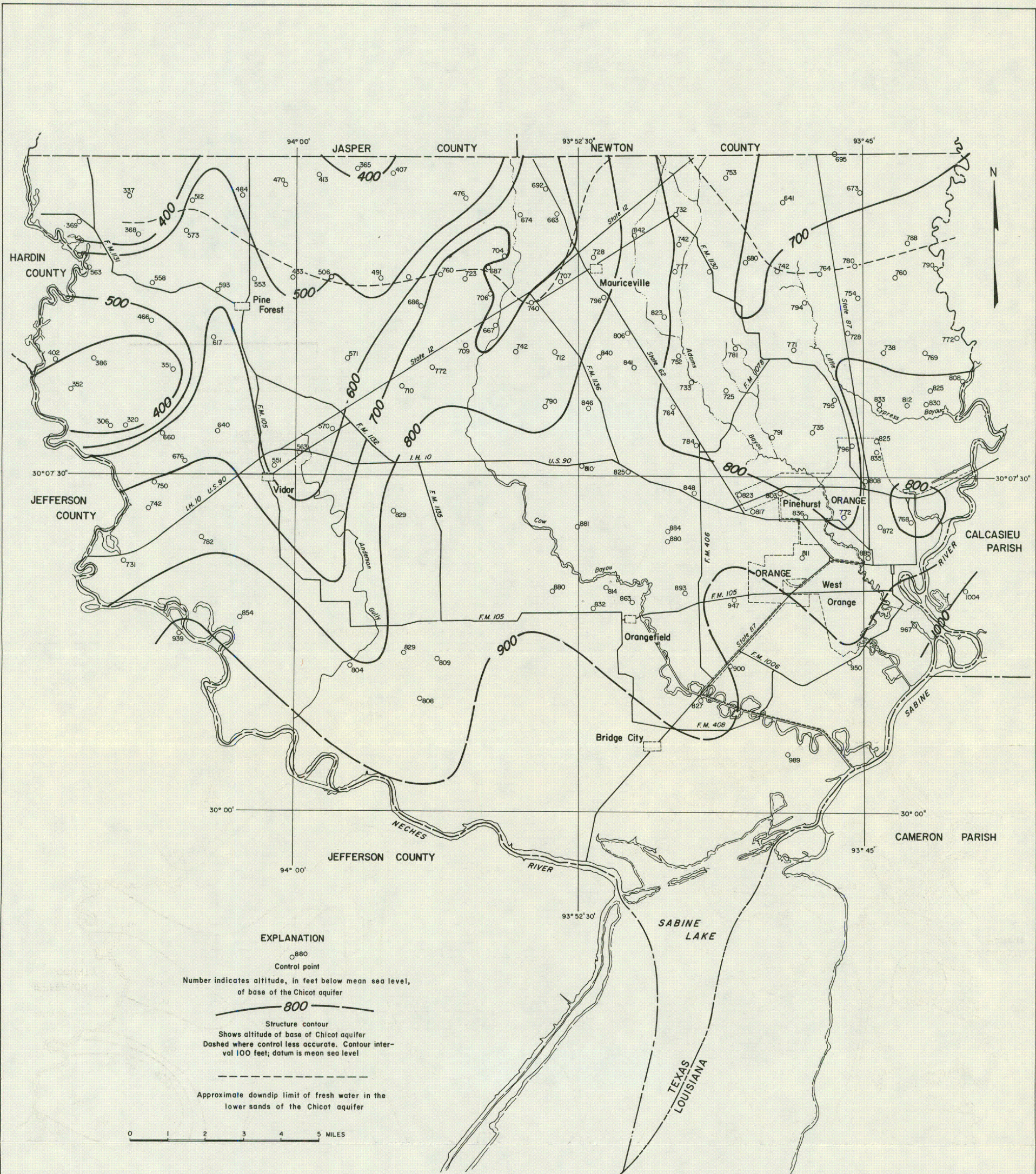


Figure 2
Approximate Altitude of the Base of the Chicot Aquifer

Table 1.—Correlation of Geologic and Hydrologic Units in Southeastern Texas and Southwestern Louisiana

<u>AQUIFER OR AQUICLUDE</u>	<u>LOUISIANA</u>	<u>TEXAS</u>
Chicot aquifer	Prairie, Montgomery, Bentley, and Williana Formations of Pleistocene age (Jones and others, 1956).	Beaumont Clay, Alta Loma Sand of Rose (1943), and Lissie Formation of Pleistocene age and Willis Sand of Pliocene (?) age in eastern Texas.
Evangeline aquifer	Foley Formation of Pliocene age (Jones and others, 1956) or Blounts Creek Member of Fisk (1940) of the Fleming Formation of Miocene age. ¹	Goliad Sand of Pliocene age in eastern Texas. "Heavily pumped layer" in the Houston district (Wood and Gabrysch, 1965).

¹ The stratigraphic nomenclature for members of the Fleming Formation as designated by Fisk (1940) have been accepted by the Louisiana Geological Survey, but not by the U.S. Geological Survey.

Estimates of ground-water withdrawals from the lower unit of the Chicot aquifer since 1962 are shown in Table 2. The estimates are based on questionnaires returned by major users and do not include pumpage from the upper unit of the Chicot aquifer. Wesselman (1965, p. 27), in the 1962 estimate of pumpage, included about 1.8 mgd withdrawals for dewatering sand pits and about 0.165 mgd for domestic and industrial use. Probably about the same amount of water was being pumped from the upper unit during the 1963-70 period. Total ground-water pumpage in Orange County during 1970 was about 23.0 mgd, or about a 12 percent increase from the 20.6 mgd pumped during 1962. Most of the increase occurred in 1964.

unit of the Chicot aquifer would cause water to flow as much as 20 feet above land surface. By 1962, the altitude of water levels in wells tapping the lower unit of the aquifer ranged from about sea level in the northwestern part of Orange County to more than 30 feet below sea level at Orange.

Table 2.—Pumpage of Ground Water From the Lower Unit of the Chicot Aquifer in Orange County, 1963-70 (Million Gallons Per Day)

<u>YEAR</u>	<u>MUNICIPAL SUPPLY</u>	<u>INDUSTRIAL USE</u>	<u>TOTAL</u>
1963	3.8	14.7	18.5
1964	4.1	16.2	20.3
1965	4.5	16.3	20.8
1966	4.7	16.3	21.0
1967	5.8	14.7	20.5
1968	4.6	16.6	21.2
1969	4.8	16.0	20.8
1970	5.1	15.9	21.0

The measurements of static water levels in observation wells are given in Table 5. The approximate altitude of water levels in wells in the lower unit of Chicot aquifer in 1962-63 is shown on Figure 3; the approximate altitude in 1971 is shown on Figure 4. Water levels in 1971 ranged from more than 30 feet above sea level in the southern parts of Jasper and Newton Counties to about 50 feet below sea level in a small area at Orange.

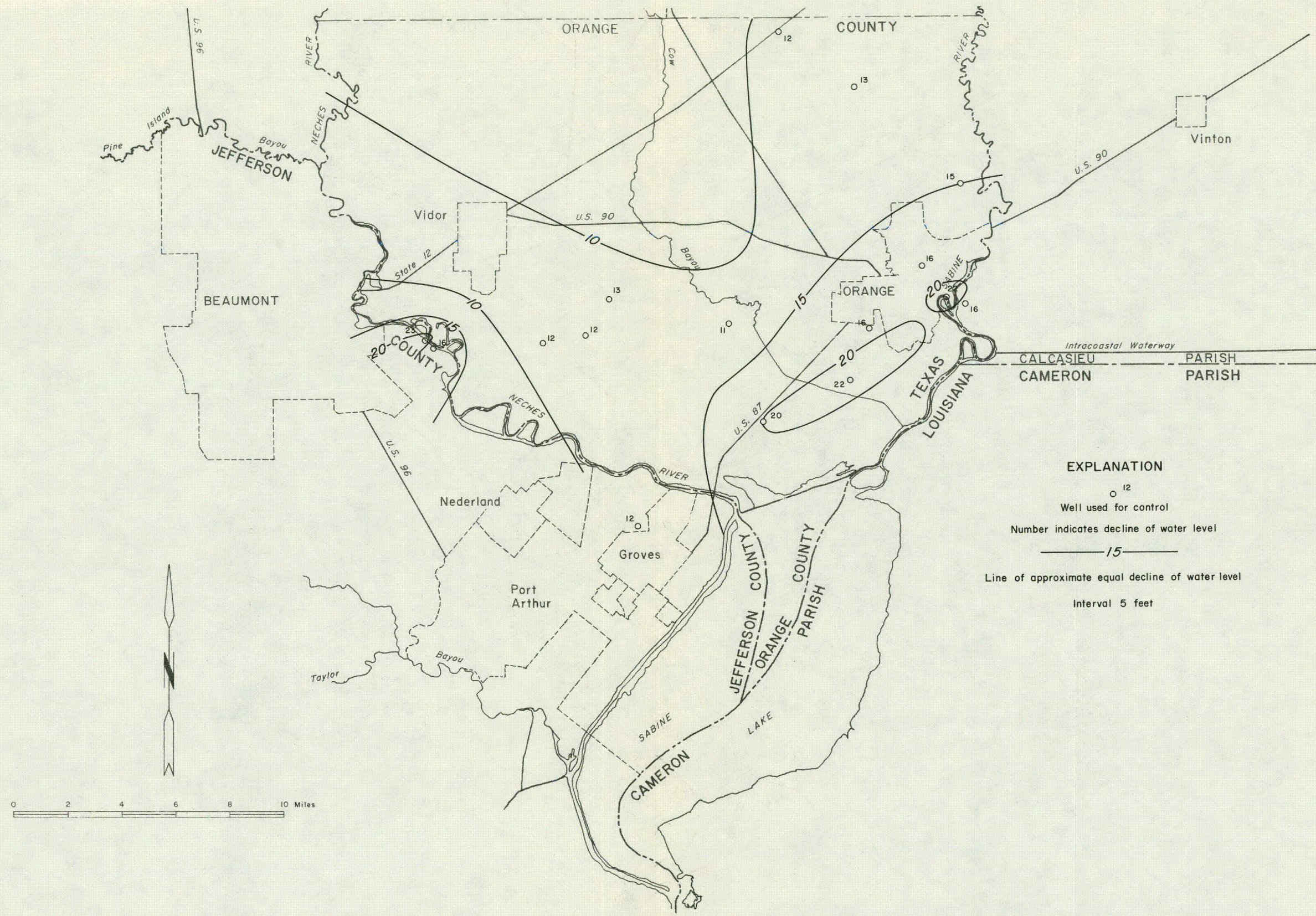
The approximate decline in water levels in wells from 1962-63 to 1971 is shown on Figure 5. Generally, withdrawals caused water-level declines of 10 to 20 feet in Orange County during that period. The decline from original (predevelopment) conditions is about 60 feet in the area of greatest pumpage at Orange. Figure 6 shows the depth to water in well UJ-62-59-105 in eastern Orange County and in well CU-530 in western Calcasieu Parish, Louisiana. Both wells are located in an area where declines exceeded 15 feet during the period 1962-63 to 1971. The decline in well UJ-62-59-105 was nearly the maximum recorded decline in the Orange County area; the rate of decline was about 2.8 feet per year. The rate of decline in well CU-530 was about 2.0 feet per year.

Relation of Water-Level Declines to Land-Surface Subsidence

Changes in Water Levels

Withdrawals of ground water, particularly in Orange County and Calcasieu Parish, have caused substantial declines in water levels in wells. Before large-scale development, artesian pressure in the lower

The withdrawal of ground water has caused land-surface subsidence in a large part of the Gulf Coast region. An area of about 5,000 square miles centered along the Houston Ship Channel, about 90 miles west southwest of Orange, subsided a maximum of about 5 feet during the period 1943-64. A small amount of subsidence occurred before 1943.



EXPLANATION

○¹²
Well used for control

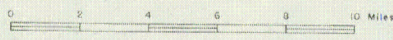
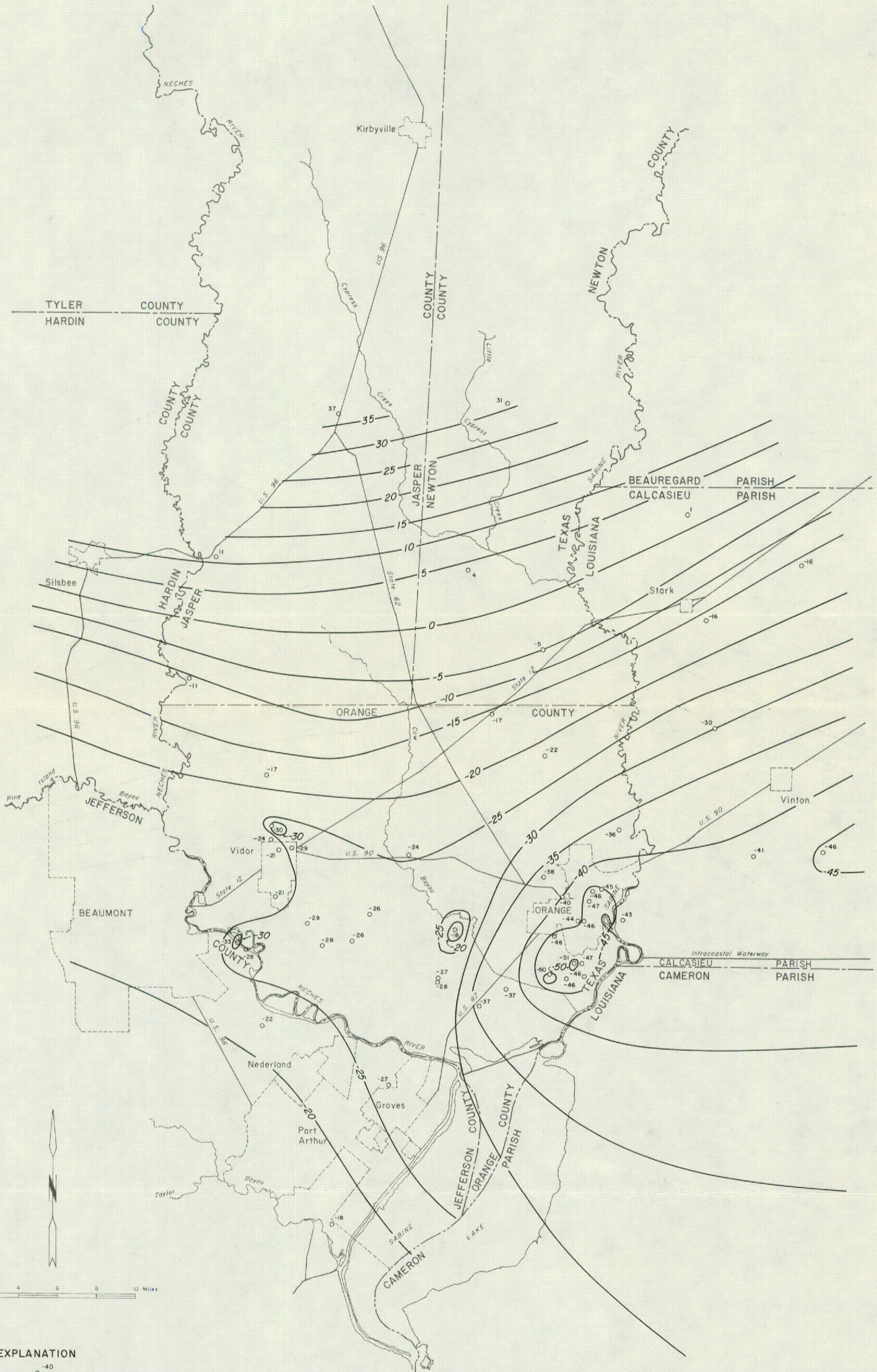
Number indicates decline of water level

—15—
Line of approximate equal decline of water level

Interval 5 feet

Figure 5
Decline of Water Levels in Wells Screened in the Lower Unit of the Chicot Aquifer, 1962-63 to 1971

Base from U.S. Geological Survey topographic quadrangles



EXPLANATION

○ -40
Well used for control

Number indicates altitude of water level

-40
Water-level contour
Shows approximate altitude of water level

Contour interval 5 feet
Datum is mean sea level

Figure 4

Approximate Altitude of Water Levels in Wells Screened in the Lower Unit of the Chicot Aquifer, 1971

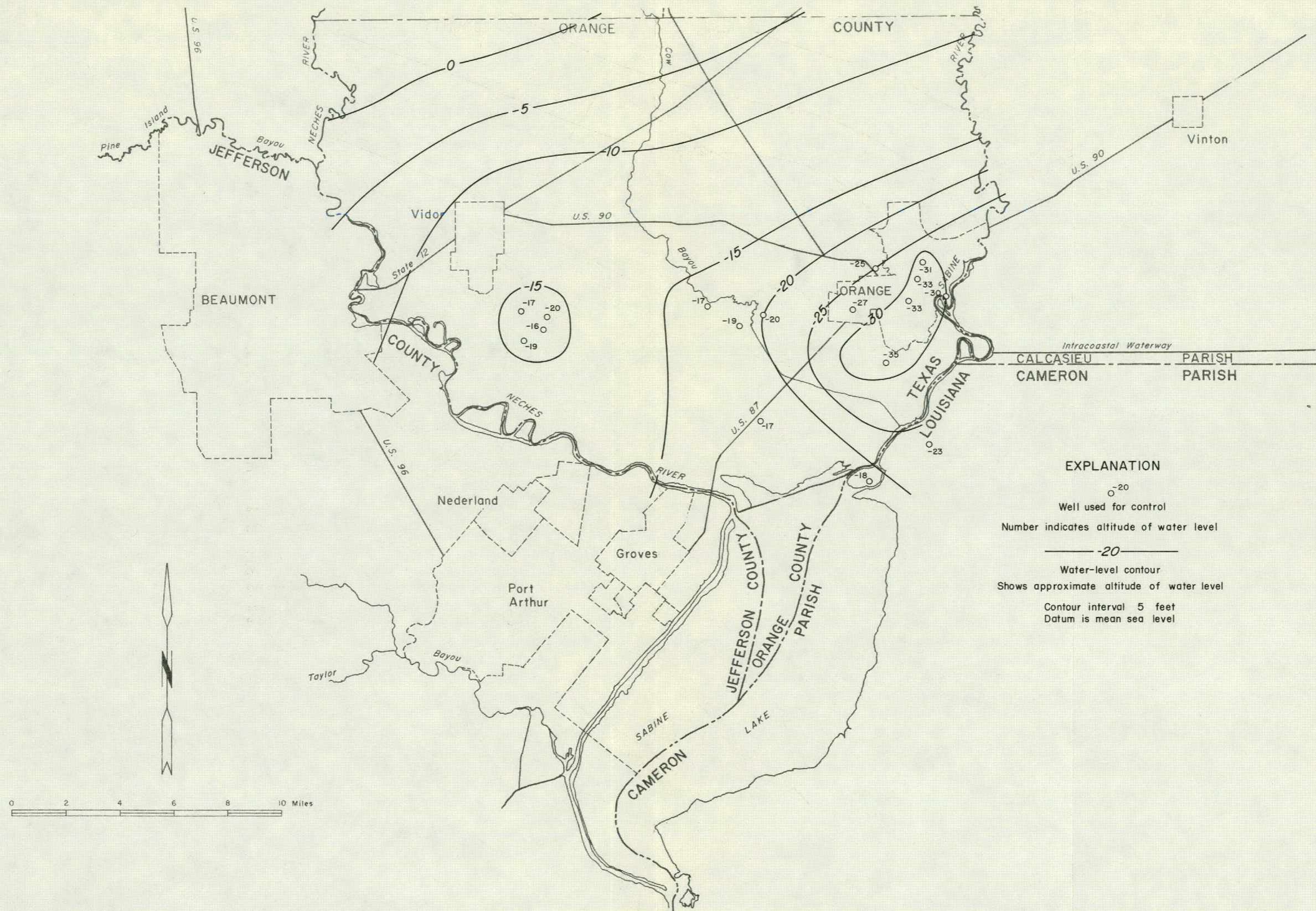


Figure 3
 Approximate Altitude of Water Levels in Wells Screened in the Lower Unit of the Chicot Aquifer, 1962-63

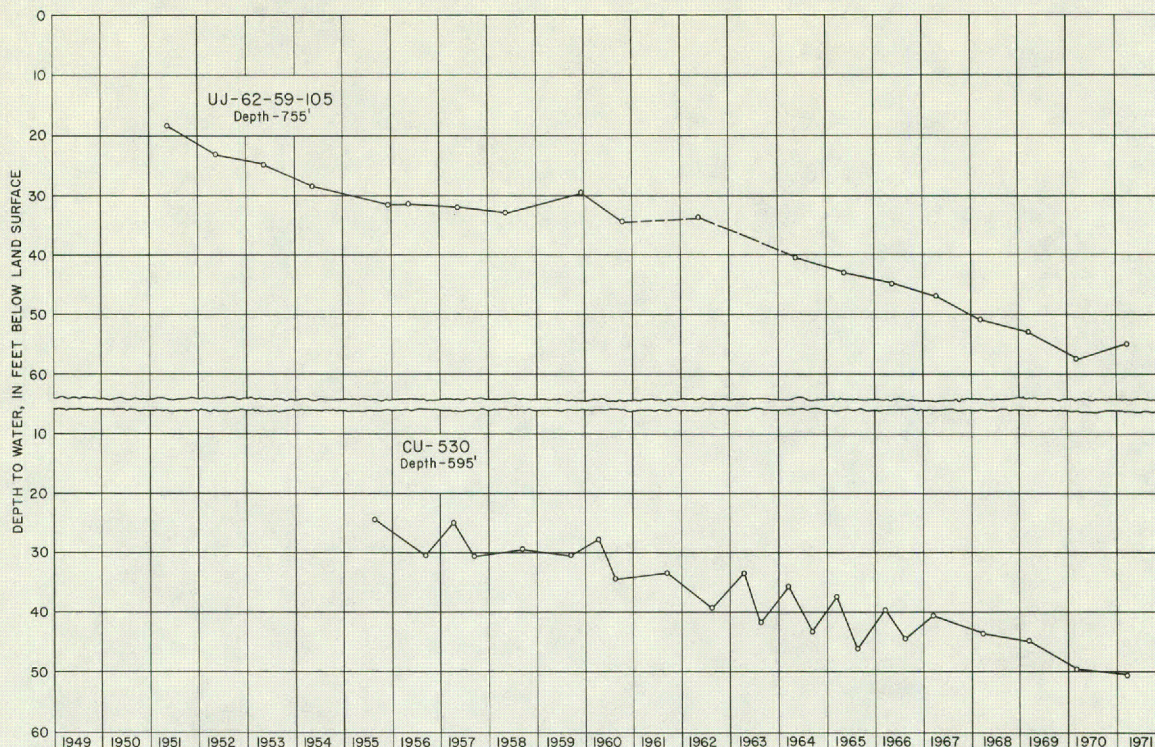


Figure 6.—Hydrographs of Water Wells Screened in the Lower Unit of the Chicot Aquifer

The maximum water-level decline for the period 1943-64 was about 200 feet, but declines of about 200 feet also occurred before 1943. Subsidence in smaller areas, such as at Baytown about 80 miles west southwest of Orange, resulted from the production of water and oil and gas. At Spindletop Salt Dome in Beaumont, subsidence resulted from the production of oil and gas.

Laboratory tests of clays in the Houston area indicate that the subsurface material had been subjected to substantial loads before ground-water withdrawal began. Thus, some preconsolidation of the clay has occurred. Considerable compaction (and subsidence) occurs if loads greater than the "preconsolidation" load are applied. Because the geologic history in the Orange County area is similar to that in the Houston area, the clay in Orange County has probably been precompacted in a similar manner.

Large-scale subsidence may not be expected before the load due to the decrease in artesian pressure plus the overburden exceeds the preconsolidation loads. Analyses of consolidation tests of clay in the Houston area in conjunction with studies of the hydrologic conditions in Orange County suggest that water levels could be lowered an additional 75 feet before significant subsidence would begin.

According to Winslow and Wood (1959, Figure 3, p. 1032), the land surface in the southern part of Orange

County subsided at least 0.25 foot during the period 1918 to 1955. Although subsidence is not an apparent problem in Orange County, the extent of any additional subsidence since 1955 was not known. Therefore, during March 1969, nine new bench marks were established, and several lines of bench marks were resurveyed by the Topographic Division of the U.S. Geological Survey. The locations of the bench marks are shown on Figure 7; altitudes are given in Table 6.

The differences in elevation of the bench marks between the 1969 survey and previous surveys dating back to 1918 were generally less than 0.5 foot. Most of the land-surface subsidence apparently occurred between 1932 and 1955. Part of the differences in elevations may be due to ground-water withdrawals and part may be due to changes in soil conditions such as moisture content, but regardless of cause, land-surface subsidence in the Orange County area has been minor, and no additional subsidence studies are planned.

Changes in Water Quality

A widely used general classification of water quality based on dissolved-solids content in milligrams per liter, is as follows (Winslow and Kister, 1956, p. 5):

DESCRIPTION	DISSOLVED-SOLIDS CONTENT (MG/L)
Fresh	Less than 1,000
Slightly saline	1,000 to 3,000
Moderately saline	3,000 to 10,000
Very saline	10,000 to 35,000
Brine	More than 35,000

Another often used classification was established by the U.S. Public Health Service (1962, p. 7) for the chemical quality of water to be used by common carriers engaged in interstate commerce. The following are the limits of concentration for some of the constituents:

SUBSTANCE	CONCENTRATION (MG/L)
Chloride (Cl)	150
Fluoride (F)	.8*
Iron (Fe)	.3
Manganese (Mn)	.05
Nitrate (NO ₃)	45
Sulfate (SO ₄)	250
Dissolved solids	500

* Based on the annual average of maximum daily air temperature of 26.2°C (79.2°F) at Beaumont, Texas.

The quality of water in the aquifers of Orange County was described by Wesselman (1965). Referring to the Evangeline aquifer, he stated that water of good chemical quality could be obtained only from the upper part of the aquifer and only in the northern part of the county. Elsewhere in the county, the aquifer contains saline water.

The water from the upper unit of the Chicot aquifer ranges widely in quality. In the southeastern part of Orange County, the water in the aquifer is saline. However, in parts of the county where the sands are thick, the quality is good and is very similar to the water from the lower unit of the Chicot aquifer.

In general, water in the lower unit of the Chicot aquifer is soft to moderately hard and low in dissolved solids, sulfate, nitrate, and fluoride. In some areas, the water contains an excessive concentration of iron; and in other areas, the water contains objectionable amounts of chloride.

Wells completed in the lower unit of the Chicot aquifer are subject to encroachment of saline water by either lateral or vertical movement. Encroachment is more likely to occur in the southeastern part of the county. Encroachment by "coning upward" is a potential hazard everywhere that saline water is contained in the lower part of the unit. However, in much of the county, thin layers of clay separate the sands bearing fresh water from the sands bearing saline water. The clay acts to stop or at least to retard the upward movement of the saline water.

Chemical analyses of water samples collected since 1967 are given in Table 7. The locations of the wells are shown on Figure 10. The analyses show large increases in chloride in water from several wells. The apparent increase and fluctuation in chloride concentration at some locations may be due to time of sampling. Wesselman (1965, Figure 13) plotted the increase in chloride concentration versus time since pumping started for well UJ-62-58-305. The figure shows an increase in concentration from about 200 mg/l after about 15 minutes of pumping to about 240 mg/l after about 30 minutes of pumping.

Figure 8 shows the increase in chloride concentration in water from several wells in southeastern Orange County. The time lapse (1962-69) before the large increase in chloride in water from well UJ-62-58-605 suggests lateral movement from a source farther away from the well than the lower part of the aquifer. The rapid increase in chloride concentration in water from well UJ-62-58-631 indicates a nearby source of saline water. The relatively constant concentration of chloride in water from well UJ-62-58-629 indicates no encroachment at that site.

The anomalous point on the hydrograph showing chloride concentration in water from well UJ-62-58-615 is most likely the result of sampling procedure. The sample was probably taken shortly after pumping began; therefore the chloride concentration is much lower than it would have been if the sample had been taken at a later time.

A pattern of salt-water encroachment in the lower unit of the Chicot aquifer in southeastern Orange County is shown on Figure 9. The concentrations of chloride in water from the wells in grid UJ-62-58 ranged from 67 to 240 mg/l in June 1963 (Wesselman, 1965). By 1970, the maximum concentration had reached 860 mg/l, which indicates encroachment of saline water in a northeasterly direction, updip toward the center of pumpage.

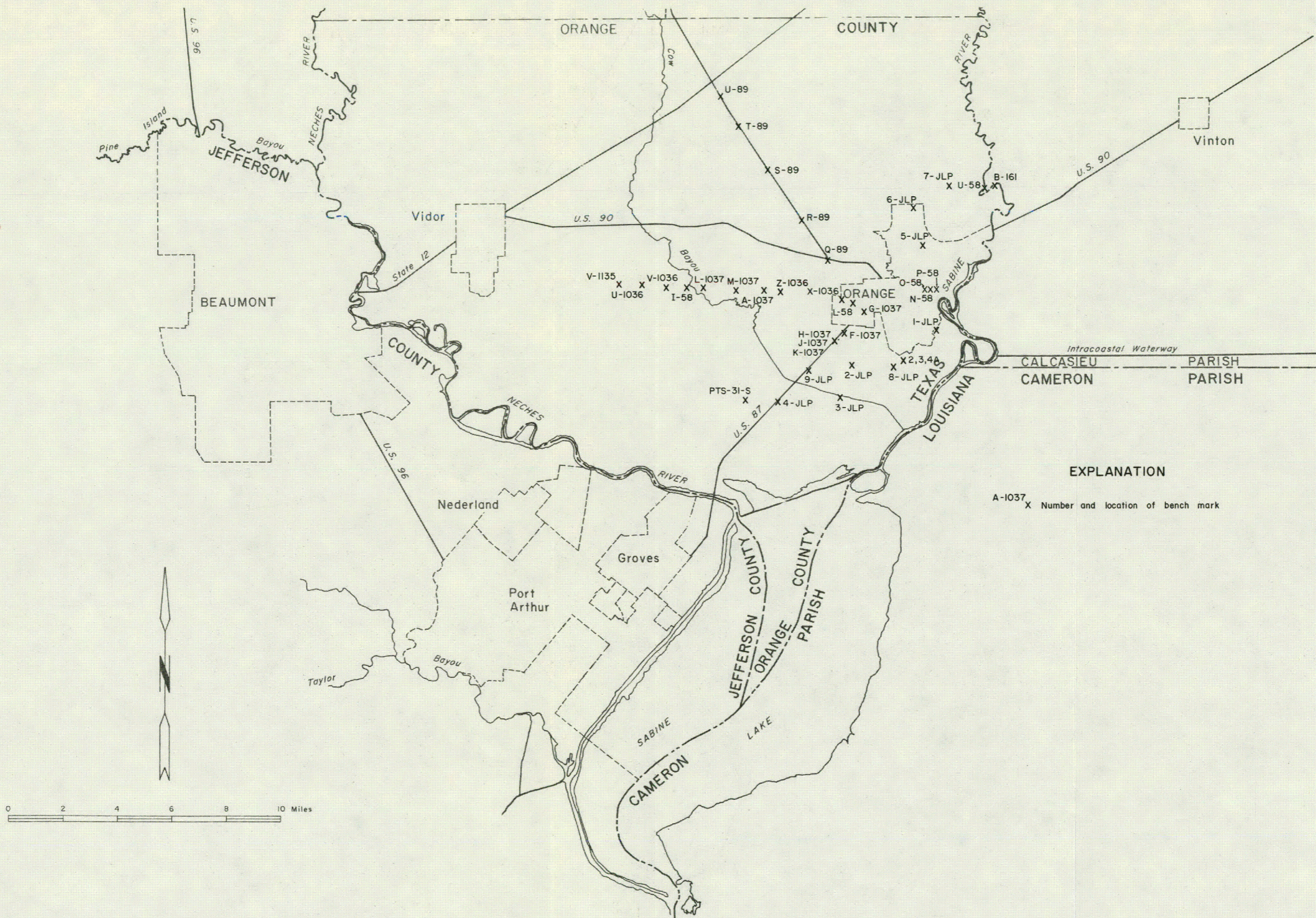
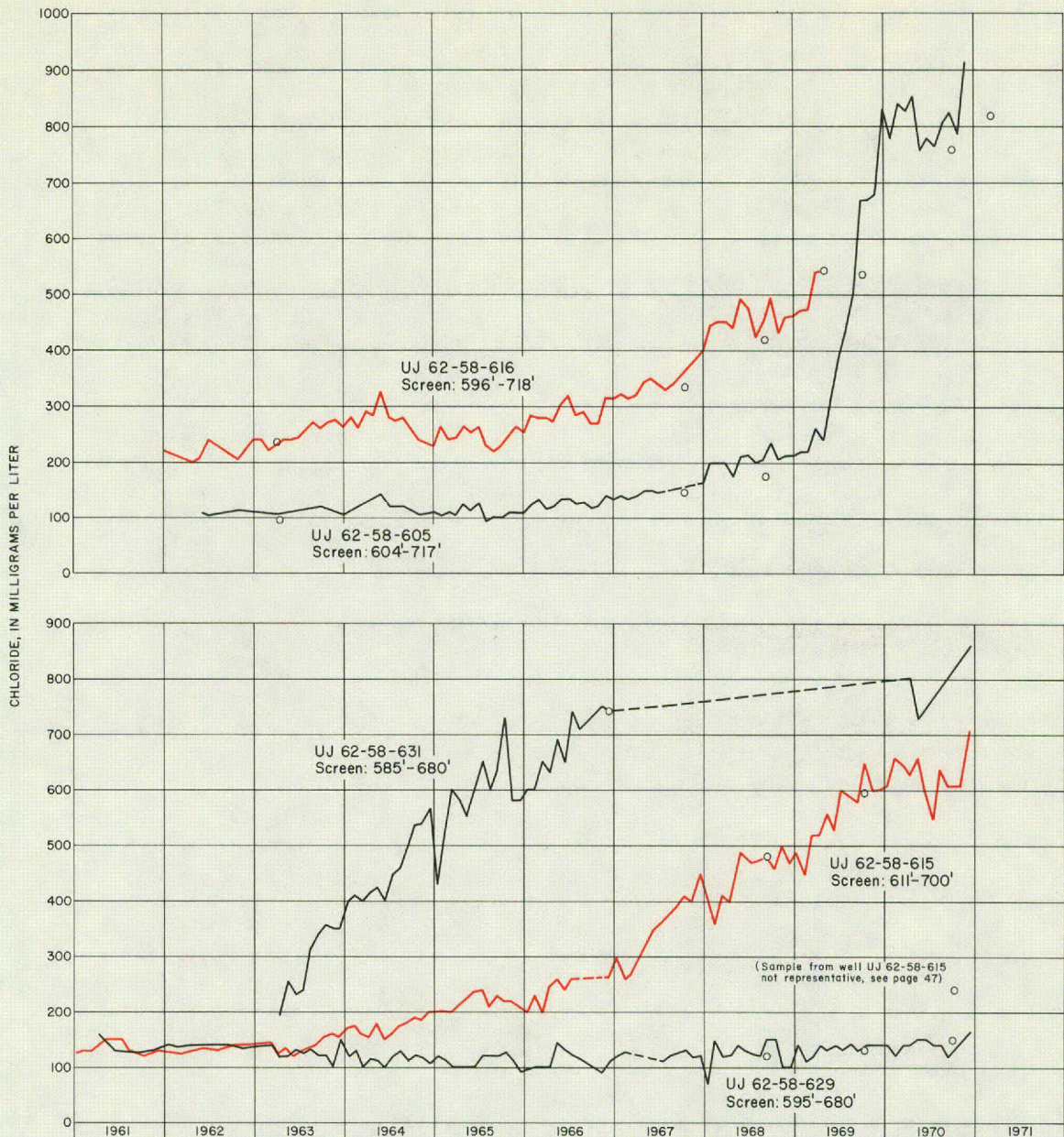


Figure 7
 Locations of Bench Marks Surveyed in 1969 in Orange County

Base from U.S. Geological Survey topographic quadrangles



NOTE: The graphs for wells UJ-62-58-616 and UJ-62-58-605 were provided in graphical form by the Gulf Chemical Company. The graphs for wells UJ-62-58-631, UJ-62-58-615, and UJ-62-58-629 were provided in graphical form by the Firestone Tire and Rubber Company. The circles (O) indicate the results of U.S. Geological Survey Analyses given in table 7.

Figure 8.—Chloride Content of Water From Wells in Orange County

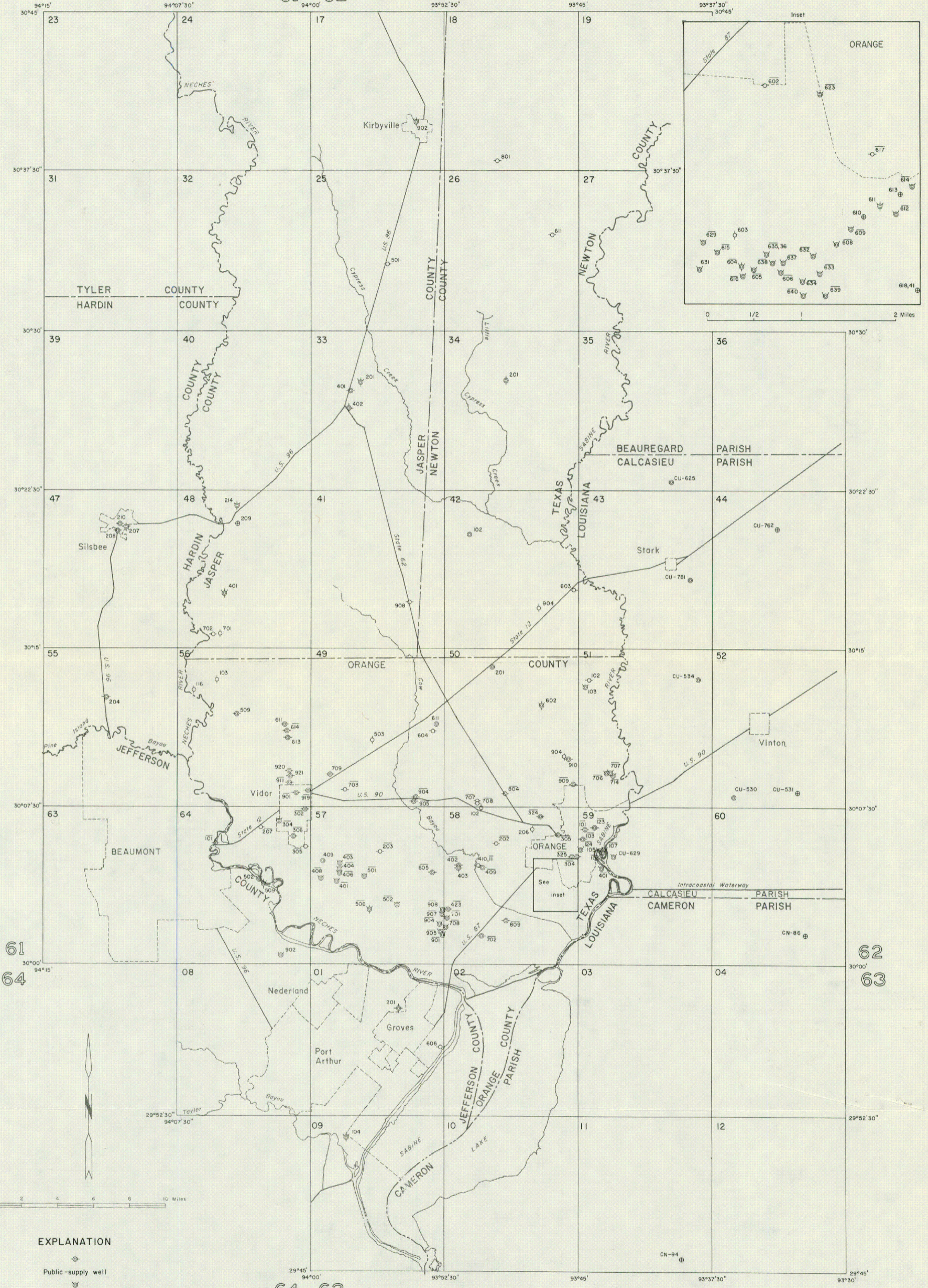
Potential for Additional Development

Little is known about the hydraulic properties of the upper unit of the Chicot aquifer. Wesselman (1965) stated that the unit is capable of sustaining considerably larger withdrawals than the current 2 mgd of water.

Additional supplies of ground water of good quality may be developed from the lower unit of the Chicot aquifer anywhere north of the dashed line shown on Figure 2. Development near the line could cause encroachment of salt water, but the likelihood of encroachment would decrease with distance north of the

line. South of the dashed line, wells carefully constructed at sites where the thin layers of clay separate the sands bearing fresh water from the sands bearing saline water could produce water of good quality at rates exceeding 500 gpm (gallons per minute).

A small amount of water of good quality could be developed from the Evangeline aquifer in the extreme northern part of Orange County. Progressively more of the Evangeline aquifer contains fresh water north of the Jasper-Newton-Orange County line. In the southern parts of Jasper and Newton Counties, wells yielding in excess of 1,000 gpm could be constructed.



EXPLANATION

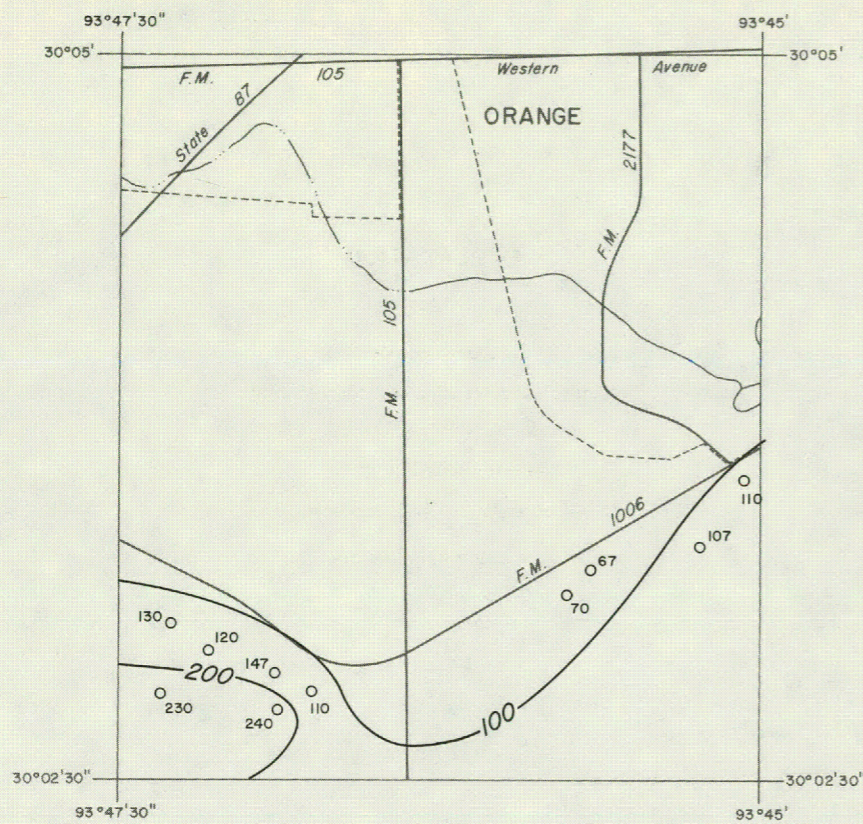
- ⊙ Public-supply well
- ⊙ Industrial well
- ⊙ Irrigation well
- ⊙ Livestock or domestic well
- ⊙ Observation well or test hole
- ⊙ Unused or destroyed well

702

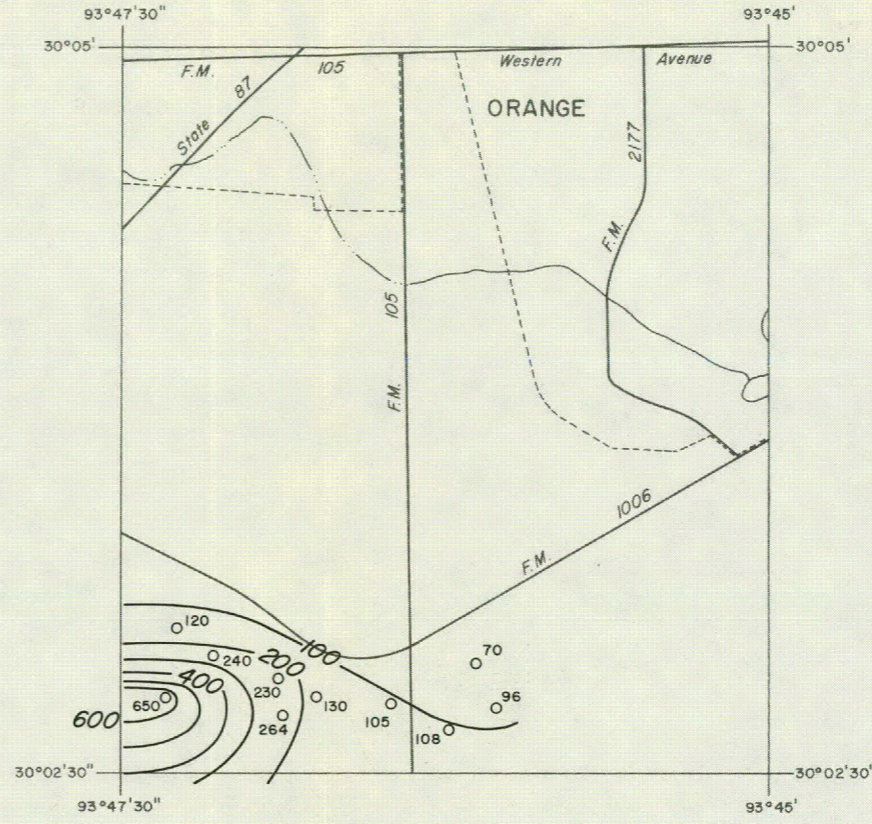
Line above last three digits of well number indicates chemical analysis shown in Table 7

Figure 10

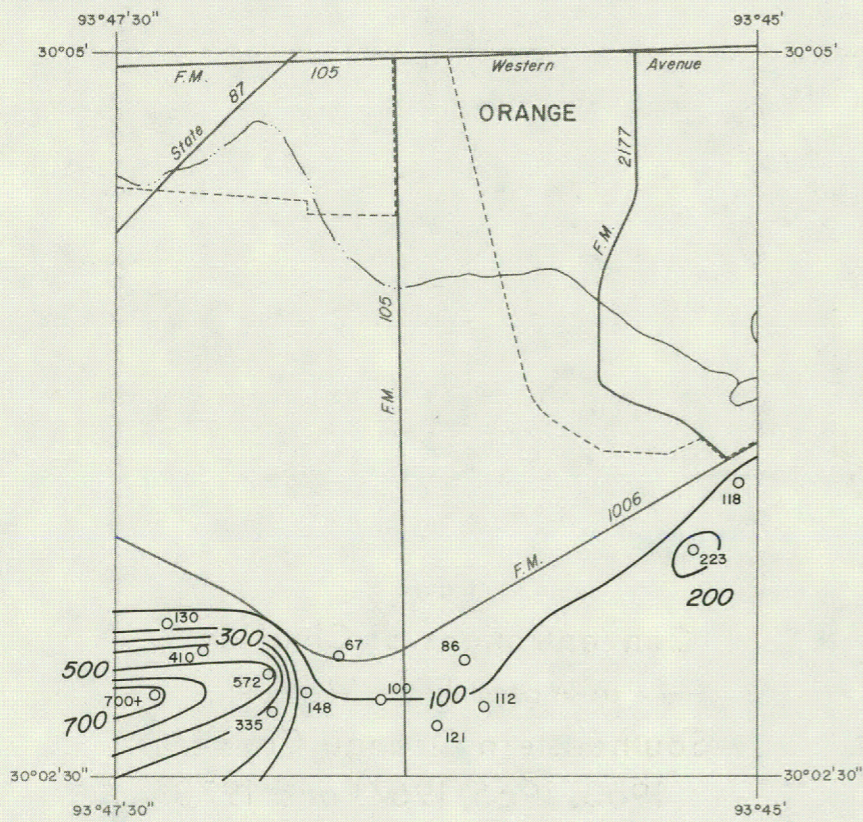
Locations of Selected Wells in the Orange County Area



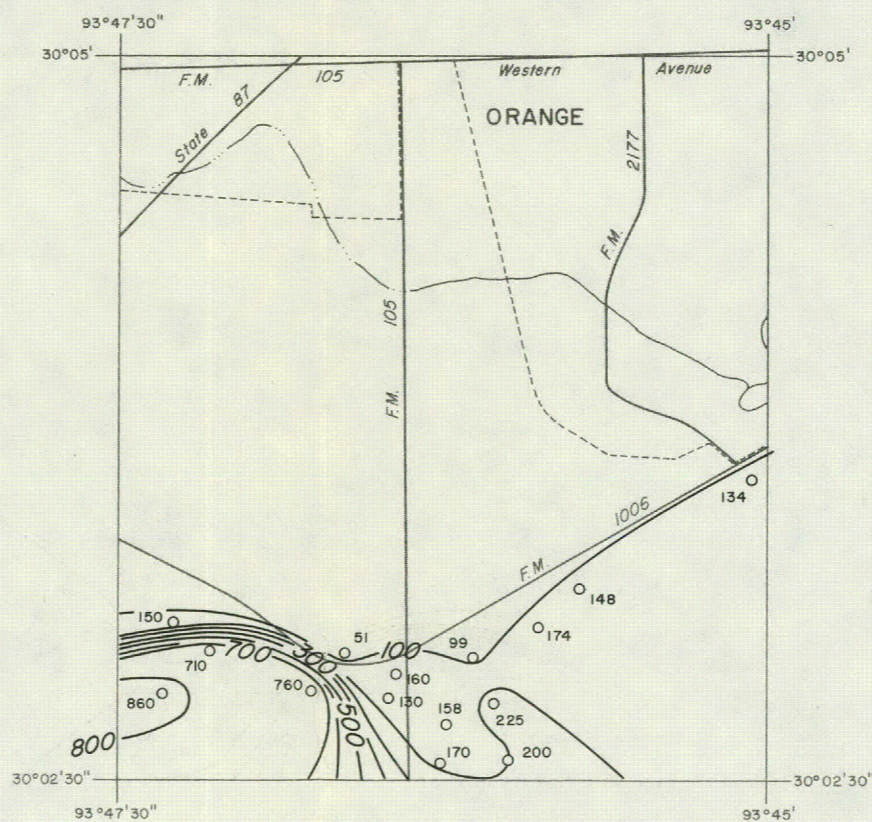
June 1963



June-August 1965



July-October 1967



September-December 1970

EXPLANATION

200

○ Observation well

Number indicates chloride concentration, in milligrams per liter

— 200 —

Line of equal chloride concentration

Interval 100 milligrams per liter



Figure 9
Concentrations of Chloride
in Water From Wells in
Southeastern Orange County in
1963, 1965, 1967, and 1970

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Table 3.--Records of Wells Drilled in Orange County, 1963-70

All wells are drilled unless otherwise noted in remarks column.
 Water level : Reported water levels given in feet; measured water levels given in feet and tenths.
 Method of lift and type of power: E, electric; G, gasoline, oil, butane, or diesel engine; J, jet; N, none; Sub, submersible;
 T, turbine. Number indicates horsepower.
 Use of water : D, domestic; Ind, industrial; Irr, irrigation; N, none; P, public supply.
 Water bearing unit : CU, upper unit of the Chicot aquifer; CL, lower unit of the Chicot aquifer.

WELL	OWNER	DRILLER	DATE COM- PLET- ED	DEPTH OF WELL (FT)	DIAMETER OF CASING (IN)	WATER BEARING UNIT	ALTI- TUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
								ABOVE (+) OR BELOW LAND SUR- FACE DATUM (FT)	DATE OF MEASUREMENT			
UJ-61-56-509	H.J. & W. Water Co.	Jones Water Well Service	1963	200	4 2	CU	19	17 19.9 18.0	June 1, 1963 Mar. 28, 1968 Mar. 4, 1969	Sub,E	P	Screen: 2-in. from 182 to 200 ft. <u>1/</u>
611	do.	do.	1963	457	4 2	CL	22	31	Aug. 5, 1963	Sub,E	P	Screen: 2-in. from 441 to 457 ft. <u>1/ 2/</u>
613	do.	do.	1963	464	4 2	CL	21	30	July 18, 1963	Sub,E	P	Screen: 2-in. from 450 to 464 ft. <u>1/</u>
<u>3/</u> 614	Pine Forest Elementary School	Reel & Elder Water Well Service	1969	483	4 2	CL	20	42	Jan. 1, 1969	5 Sub,E	P	Casing: 4-in. to 442 ft. 2-in. from 442 to 483 ft. Screen: 2-in. from 453 to 483 ft. Drilled to 489 ft; plugged back to 483 ft. <u>1/</u>
<u>3/</u> 919	Orange County W.C. & I.D. No. 1 Well 3	Texas Water Wells, Inc.	1965	432	14 8	CL	21	45.0	May 23, 1967	40 T,E	P	Screen: 8-in. from 385 to 420 ft. <u>2/</u>
920	H.J. & W. Water Co.	Jones Water Well Service	1967	380	4 2	CL	11	38.1	Mar. 28, 1968	Sub,E	P	<u>2/</u>
921	do.	do.	1964	379	4 2	CL	16	27	Feb. 27, 1964	Sub,E	P	Screen: 2-in. from 361 to 379 ft. <u>1/</u>
62-49-611	D.E. Cohenour Well 2	Southern Water Wells	1965	669	12	CL	25	35	Apr. 8, 1965	T,G	Irr	Casing slotted from 570 to 650 ft. <u>1/</u>
709	H.J. & W. Water Co.	Jones Water Well Service	1963	440	4 2	CL	20	33	May 22, 1963	Sub,E	P	Screen: 2-in. from 420 to 440 ft. <u>1/</u>
<u>3/</u> 904	Texas Highway Department	Mosier Water Well Drilling	1966	415	4	CL	16	37.4	Oct. 25, 1967	Sub,E	P	Screen: 4-in. from 399 to 415 ft. <u>1/ 2/</u> Supplies water for roadside rest park.
<u>3/</u> 905	do.	do.	1966	394	4	CL	16	--	--	Sub,E	P	Screen: 4-in. from 378 to 394 ft. <u>1/</u> Supplies water for roadside rest park.

See footnotes at end of table.

Table 3.--Records of Wells Drilled in Orange County, 1963-70--Continued

WELL	OWNER	DRILLER	DATE COM- PLET- ED	DEPTH OF WELL (FT)	DIAMETER OF CASING (IN)	WATER BEARING UNIT	ALTI- TUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
								ABOVE (+) OR BELOW LAND SUR- FACE DATUM (FT)	DATE OF MEASUREMENT			
3/ UJ-62-50-707	Dr. F.H. Broussard	Mosier Water Well Drilling	old	480	2	CL	16	--	--	J,E	D	
3/ 708	G.F. McClellan	do.	1952	388	2	CL	16	30	1952	J,E	D	Screen: 2-in. from 376 to 388 ft.
3/ 909	H.H. Force	Fred Paskell	1967	535	4	CL	12	--	--	Sub,E	P	
910	Little Cypress- Mauriceville Consolidated School District	Layne Texas Co.	1969	512	10 6	CL	16	45.4	Mar. 12, 1971	T,E	P	Casing: 10-in. to 440 ft. 6-in. from 340 to 512 ft. Screen: 6-in. from 450 to 500 ft. <u>1</u>
51-103	Owens-Illinois, Inc.	do.	1966	530	14 8	CL	25	40	May 26, 1966	T,E	Ind	Casing: 14-in. to 435 ft. 8-in. from 344 to 530 ft. Screen: 8-in. from 445 to 515 ft. <u>1</u> Drilled to 550 ft; plugged back to 530 ft.
3/ 714	Alpa Portland Cement Co.	do.	1965	675	14 8	CL	15	36	Feb. 22, 1965	75 T,E	Ind	Casing: 14-in. to 530 ft. 8-in. from 430 to 675 ft. Screen: 8-in. from 540 to 560 ft. and 584 to 665 ft. Drilled to 874 ft; plugged back to 675 ft. <u>1</u>
3/ 57-907	Gulf States Utility Co. Sabine Station Well 7	do.	1965	664	16 10	CL	10	35	Sept. 29, 1965	100 Sub,E	Ind	Casing: 16-in. to 594 ft. 10-in. from 489 to 664 ft. Screen: 10-in. from 604 to 654 ft. Drilled to 697 ft; plugged back to 664 ft. <u>1</u> <u>2</u>
3/ 908	Gulf States Utility Co. Sabine Station Well 8	do.	1965	634	16 10	CL	10	35	Nov. 2, 1965	100 Sub,E	Ind	Casing: 16-in. to 564 ft. 10-in. from 460 to 634 ft. Screen: 10-in. from 573 to 623 ft. Drilled to 696 ft; plugged back to 634 ft. <u>1</u> <u>2</u>
58-206	John McDonald	Deep Water Red Drilling Co.	1964	630	4 2	CL	15	32	Mar. 25, 1964	N	N	Casing: 4-in. to 105 ft. 2-in. from 105 to 630 ft. <u>1</u>

See footnotes at end of table.

Table 3.--Records of Wells Drilled in Orange County, 1963-70--Continued

WELL	OWNER	DRILLER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF CASING (IN)	WATER BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
								ABOVE (+) OR BELOW LAND SURFACE DATUM (FT)	DATE OF MEASUREMENT			
3/ UJ-62-58-324	City of Pinehurst Well 1	Layne Texas Co.	1964	460	14 8	CL	14	40	June 11, 1964	25 T,E	P	Casing: 14-in. to 355 ft. 8-in. from 255 to 460 ft. Screen: 8-in. from 365 to 425; 435 to 445 ft. <u>1/ 2/</u>
3/ 325	Orange County W.C. & I.D. No. 2 Well 2	do.	1967	682	14 8	CL	12	59	Aug. 28, 1967	T,E	P	Casing: 14-in. to 610 ft. 8-in. from 510 to 682 ft. Screen: 8-in. from 620 to 670 ft. <u>1/ 2/</u>
3/ 423	Jones Water Well Service	Jones Water Well Service	1963	218	4 2	CU	10	12	June 28, 1963	Sub,E	P	Screen: 2-in. from 208 to 218 ft. <u>1/</u>
618	E.I. DuPont Co. Well 103-6	Texas Water Well, Inc.	1961	717	4	CL	5	38	Mar. 5, 1963	N	N	Screen: 4-in. from 637 to 642 ft; 657 to 662; 677 to 682 ft. Packer set at 692 ft. See UJ-62-58-641. <u>2/</u>
3/ 632	B.F. Goodrich Co. Well 1	Layne Texas Co.	1965	730	16 10	CL	8	52	June 9, 1965	75 T,E	Ind	Casing: 16-in. to 621 ft. 10-in. from 520 to 730 ft. Screen: 10-in. from 640 to 710 ft. Drilled to 745 ft; plugged back to 730 ft. <u>1/ 2/</u>
3/ 633	B.F. Goodrich Co. Well 2	do.	1965	740	16 10	CL	5	52	Aug. 5, 1965	75 T,E	Ind	Casing: 16-in. to 615 ft. 10-in. from 515 to 740 ft. Screen: 10-in. from 625 to 725 ft. Drilled to 788 ft; plugged back to 740 ft. <u>1/ 2/</u>
3/ 634	B.F. Goodrich Co. Well 3	do.	1965	730	16 10	CL	5	51	July 7, 1965	75 T,E	Ind	Casing: 16-in. to 605 ft. 10-in. from 504 to 730 ft. Screen: 10-in. from 615 to 715 ft. Drilled to 747 ft; plugged back to 730 ft. <u>1/ 2/</u>
3/ 635	Big Three Welding Co. Well 1	do.	1960	711	6 4	CL	6	34	Sept. 13, 1960	5 T,E	Ind	Screen: 4-in. from 639 to 689 ft.
636	Big Three Welding Co. Well 2	do.	1963	710	6 4	CL	6	--	--	5 T,E	Ind	Casing: 6-in. to 643 ft. 4-in. from 624 to 710 ft. Screen: 4-in. from 653 to 703 ft. <u>1/</u>

See footnotes at end of table.

Table 3.--Records of Wells Drilled in Orange County, 1963-70--Continued

WELL	OWNER	DRILLER	DATE COM- PLET- ED	DEPTH OF WELL (FT)	DIAMETER OF CASING (IN)	WATER BEARING UNIT	ALTI- TUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
								ABOVE (+) OR BELOW LAND SUR- FACE DATUM (FT)	DATE OF MEASUREMENT			
<u>3/</u> UJ-62-58-637	Gulf Chemical Co.	Layne Texas Co.	1967	685	8 4	CL	6	35	Nov. 22, 1967	T,E	Ind	Casing: 8-in. to 615 ft. 4-in. from 515 to 685 ft. Screen: 4-in. from 630 to 670 ft. Drilled to 815 ft; plugged back to 685 ft. Used as sanitary well. <u>1/</u>
<u>3/</u> 638	Gulf Chemical Co. Well 6	do.	1969	750	16 10	CL	5	60	Feb. 18, 1969	T,E	Ind	Casing: 16-in. to 625 ft. 10-in. from 519 to 750 ft. Screen: 10-in. from 634 to 735 ft. Drilled to 774 ft; plugged back to 750 ft. <u>1/</u>
<u>3/</u> 639	B.F. Goodrich Co. Well 4	do.	1968	740	16 10	CL	5	58	July 6, 1968	T,E	Ind	Casing: 16-in. to 610 ft. 10-in. from 510 to 740 ft. Screen: 10-in. from 620 to 710; 715 to 725 ft. Drilled to 798 ft; plugged back to 740 ft. <u>1/ 2/</u>
<u>3/</u> 640	B.F. Goodrich Co. Well 5	Texas Water Wells, Inc.	1970	723	16 10	CL	5	60	July 23, 1970	T,E	Ind	Casing: 16-in. to 605 ft. 10-in. from 505 to 723 ft. Screen: 10-in. from 612 to 622; 628 to 718 ft. Drilled to 795 ft; plugged back to 723 ft. <u>1/</u>
641	E.I. DuPont Co.	do.	1961	717	4	CL	5	52.6	Sept. 11, 1968	N	N	Screen: 4-in. from 697 to 702 ft. This well published as UJ-62-58-618 in Texas Water Commission Bulletin 6516. <u>2/</u>
<u>3/</u> 708	Gulf States Utility Co. Sabine Station Well 6	--	--	465	--	CL	10	--	--	T,E	Ind	
<u>3/</u> 809	Orange County W.C. & I.D. No. 3 Well 3	Texas Water Wells, Inc.	1965	652	14 8	CL	7	38	Mar. 19, 1965	50 T,E	P	Casing: 14-in. to 568 ft. 8-in. from 468 to 652 ft. Screen: 8-in. from 570 to 650 ft. <u>2/</u>

See footnotes at end of table.

Table 3.--Records of Wells Drilled in Orange County, 1963-70--Continued

WELL	OWNER	DRILLER	DATE COM- PLET- ED	DEPTH OF WELL (FT)	DIAMETER OF CASING (IN)	WATER BEARING UNIT	ALTI- TUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
								ABOVE (+) OR BELOW LAND SUR- FACE DATUM (FT)	DATE OF MEASUREMENT			
<u>3/</u> UJ-62-59-123	City of Orange Well 9	Stamm-Scheele	1966	650	20 14	CL	10	45	Apr. 1, 1966	150 T,E	P	Casing: 20-in. to 520 ft. 14-in. from 375 to 650 ft. Screen: 14-in. from 529 to 643 ft. Drilled to 690 ft; plugged back to 650 ft. <u>1/ 2/</u>
<u>3/</u> 124	Orange Pulp & Paper Co. Well 3	Layne Louisiana Co.	1965	640	18 12	CL	5	46 53.3 55.5	May 7, 1965 Mar. 29, 1968 Mar. 4, 1969	100 T,E	Ind	Casing: 18-in. to 580 ft. 12-in. from 530 to 640 ft. Screen: 14-in. from 590 to 640 ft.

1/ For drillers logs of wells, see Table 4.

2/ For water levels in wells, see Table 5.

3/ For chemical analyses of water from wells, see Table 7.

Table 4.—Drillers' Logs of Selected Wells Drilled in Orange County, 1963-70

		THICKNESS (FEET)	DEPTH (FEET)			THICKNESS (FEET)	DEPTH (FEET)	
Well No. UJ-61-56-509				Well No. UJ-61-56-614—Continued				
Owner: H. J. & W. Water Co. Driller: Jones Water Well Service				Clay, blue				
Clay	19	19	Sand	14	182	196		
Sand, coarse	21	40	Sandstone	14	210			
Clay, blue	85	125	Clay	65	275			
Sand, coarse	15	140	Sand	10	285			
Clay, blue	28	168	Clay, blue	5	290			
Sand, coarse	32	200	Sand, fine	32	322			
Well No. UJ-61-56-611				Clay, blue				
Owner: H. J. & W. Water Co. Driller: Jones Water Well Service				Sand and clay mixed				
Clay	60	60	Sand, coarse	40	449	489		
Sand, coarse	89	149	Well No. UJ-61-56-921					
Clay, blue	147	296	Owner: H. J. & W. Water Co. Driller: Jones Water Well Service					
Sand, fine	19	315	Sand	22	22			
Clay, blue	84	399	Clay	8	30			
Sand, fine	42	441	Sand, coarse	110	140			
Sand, coarse	16	457	Clay, blue	220	360			
Well No. UJ-61-56-613				Sand, coarse				
Owner: H. J. & W. Water Co. Driller: Jones Water Well Service				19				
Clay	60	60	Well No. UJ-62-49-611					
Sand, coarse	87	147	Owner: D. E. Cohenour Well 2 Driller: Southern Water Wells					
Clay, blue	139	286	Soil, top	1	1			
Sand, medium	6	292	Clay	49	50			
Clay, blue	23	315	Sand, fine	10	60			
Sand, fine	37	352	Shale	5	65			
Clay, blue	99	451	Sand, medium and small gravel	65	130			
Sand, coarse	13	464	Shale, sandy	36	166			
Well No. UJ-61-56-614				Shale, hard				
Owner: Pine Forest Elementary School Driller: Reel & Elder Water Well Service				29				
Loam, sandy	5	5	Sand, fine	93	288			
Sand, coarse, white	60	65	Gumbo	22	310			
Clay, red and blue	21	86	Sand, fine and sandrock	255	565			
Clay, blue	6	92	Sand, coarse and gravel and limerock	104	669			
Sand	36	128						

Table 4.—Drillers' Logs of Selected Wells Drilled in Orange County, 1963-70—Continued

	THICKNESS (FEET)	DEPTH (FEET)		THICKNESS (FEET)	DEPTH (FEET)
Well No. UJ-62-49-709			Well No. UJ-62-49-905—Continued		
Owner: H. J. and W. Water Co. Driller: Jones Water Well Service			Sand	31	94
Clay	46	46	Mud	32	126
Sand, coarse	101	147	Sand	21	147
Clay, blue	3	150	Sand, broken	42	189
Sand, fine	60	210	Sand, fine	37	226
Clay, blue	120	330	Mud and sand	5	231
Sand, medium	90	420	Mud	94	325
Sand, coarse	20	440	Mud and sand	22	347
Well No. UJ-62-49-904			Sand	10	357
Owner: Texas Highway Department Driller: Mosier Water Well Drilling			Mud	6	363
Soil, top and clay	10	10	Sand	31	394
Sand, surface	4	14	Well No. UJ-62-50-910		
Clay	7	21	Owner: Little Cypress-Mauriceville Consolidated School District Driller: Layne Texas Co.		
Clay, sandy	14	35	Soil, top	4	4
Sand	7	42	Clay	31	35
Sand and mud	21	63	Sand and clay	32	67
Sand	31	94	Clay	13	80
Mud	32	126	Clay, sandy	25	105
Sand	21	147	Shale	10	115
Sand, broken	42	189	Sand-shale	7	122
Sand, salt and pepper	37	226	Sand	23	145
Mud and sand	5	231	Shale	35	180
Mud	84	315	Shale and sand breaks	23	203
Sand	21	336	Shale	6	209
Mud and sand	42	378	Shale, sandy	11	220
Sand	37	415	Shale and sand streaks	88	308
Well No. UJ-62-49-905			Sand and small shale breaks	32	340
Owner: Texas Highway Department Driller: Mosier Water Well Drilling			Sand	35	375
Soil, top and clay	10	10	Shale and sand streaks	15	390
Sand, surface	4	14	Sand and sandy shale	33	423
Clay	7	21	Shale	17	440
Clay, sandy	14	35	Sand and shale breaks	10	450
Sand	7	42	Sand	50	500
Sand and mud	21	63	Shale	10	510
			No record	2	512

Table 4.—Drillers' Logs of Selected Wells Drilled in Orange County, 1963-70—Continued

	THICKNESS (FEET)	DEPTH (FEET)		THICKNESS (FEET)	DEPTH (FEET)
Well No. UJ-62-51-103			Well No. UJ-62-51-714—Continued		
Owner: Owens-Illinois, Inc. Driller: Layne Texas Co.			Sand and shale breaks		
Clay and sand	40	40		36	614
Sand	70	110	Shale and sand	16	630
Shale and sand	30	140	Sand and shale breaks	35	665
Shale	22	162	Shale	19	684
Sand	36	198	Shale, sandy and sand	39	723
Shale, sandy	16	214	Sand and shale streaks	151	874
Sand	26	240	Well No. UJ-62-57-907		
Shale and sand, broken	49	289	Owner: Gulf States Utility Co. Sabine Station Well 7 Driller: Layne Texas Co.		
Sand and shale	71	360	Soil, top and clay	30	30
Shale	32	392	Sand, white	14	44
Sand (cut good)	141	533	Clay and sand streaks	38	82
Shale and sand, broken	17	550	Sand (cut good)	35	117
Well No. UJ-62-51-714			Shale, blue	8	125
Owner: Alpa Portland Cement Co. Driller: Layne Texas Co.			Sand and shale streaks	11	136
Clay	11	11	Shale, blue	19	155
Sand	8	19	Sand and shale streaks	10	165
Sand and clay	16	35	Shale, blue	15	180
Clay and sand streaks	45	80	Sand and shale streaks	84	264
Clay and sand breaks	5	85	Sand and shale streaks	9	273
Clay	2	87	Shale and sandy shale	16	289
Sand	36	123	Shale	12	301
Clay	7	130	Shale, broken, sandy	23	324
Sand and clay streaks	27	157	Shale and sand streaks	46	370
Clay	24	181	Sand and shale streaks	25	395
Clay, sandy and clay sand streaks	14	195	Sand, fine and shale streaks	15	410
Sand	19	214	Shale and sand streaks	40	450
Clay and sand streaks	8	222	Sand (cut good)	4	454
Sand	14	236	Shale and sand streaks	44	498
Sand	28	264	Sand	2	500
Clay	17	281	Shale and sand streaks	11	511
Sand	119	400	Sand, fine	4	515
Sand and few shale breaks	118	518	Shale	19	534
Shale	16	534	Shale and fine sand streaks	13	547
Sand and sandy shale	44	578	Sand, fine and shale streaks	88	635
			Sand	62	697

Table 4.—Drillers' Logs of Selected Wells Drilled in Orange County, 1963-70—Continued

	THICKNESS (FEET)	DEPTH (FEET)		THICKNESS (FEET)	DEPTH (FEET)
Well No. UJ-62-57-908			Well No. UJ-62-58-324—Continued		
Owner: Gulf States Utility Co. Sabine Station Well 8 Driller: Layne Texas Co.			Sand	25	175
Soil, surface	30	30	Shale	175	350
Shale, blue	72	102	Sand	95	445
Sand	21	123	Shale	15	460
Shale	22	145	Well No. UJ-62-58-325		
Shale and sand streaks	67	212	Owner: Orange County W.C. & I.D. No. 2 Well 2 Driller: Layne Texas Co.		
Shale	33	245	Sand and sandy clay	21	21
Sand	10	255	Clay and sandy clay	34	55
Shale	34	289	Sand, white	100	155
Shale, streaks sand and shale	56	345	Shale and sandy shale	120	275
Sand	32	377	Shale	131	406
Shale and broken sand streaks	97	474	Sand	44	450
Shale, broken, sandy	12	486	Shale	17	467
Shale and sand streaks	59	545	Shale, sandy	14	481
Sand, fine and shale streaks	33	578	Shale	51	532
Sand, fine (cut good)	32	610	Shale, sandy	21	553
Sand, coarse, medium	86	696	Sand and shale	26	579
Well No. UJ-62-58-206			Sand, broken and shale	44	623
Owner: John McDonald Driller: Deep Water Red Drilling Co.			Sand and gravel	54	677
Clay	17	17	Shale, sandy and gravel	3	680
Sand, quick	9	26	No record	2	682
Clay	54	80	Well No. UJ-62-58-423		
Sand, white	20	100	Owner: Jones Water Well Service Driller: Jones Water Well Service		
Clay, blue	500	600	Clay	69	69
Sand, lignite	30	630	Sand, coarse	13	82
Well No. UJ-62-58-324			Clay, blue	23	105
Owner: City of Pinehurst Well 1 Driller: Layne Texas Co.			Sand, coarse	9	114
Soil, top	3	3	Clay, blue	5	119
Shale	31	34	Sand, coarse	5	124
Shale, sandy	10	44	Clay, blue	61	185
Shale	26	70	Sand, coarse	33	218
Sand and shale streaks	68	138			
Shale	12	150			

Table 4.—Drillers' Logs of Selected Wells Drilled in Orange County, 1963-70—Continued

	THICKNESS (FEET)	DEPTH (FEET)		THICKNESS (FEET)	DEPTH (FEET)
Well No. UJ-62-58-632			Well No. UJ-62-58-633—Continued		
Owner: B. F. Goodrich Co. Well 1 Driller: Layne Texas Co.			Sand	15	22
Clay	98	98	Clay, blue	61	83
Sand	50	148	Sand and clay streaks	55	138
Clay	32	180	Shale and sand streaks	155	293
Shale	18	198	Shale and sand streaks	12	305
Sand	4	202	Sand and sandy shale	13	318
Shale	4	206	Shale, sandy	5	323
Sand, streaks and sandy shale	59	265	Shale	5	328
Shale	3	268	Shale and sandy shale	73	401
Sand	16	284	Shale	17	418
Shale	8	292	Shale and streaks of sandy shale	58	476
Sand, broken and shale	16	308	Shale	29	505
Shale and streaks of sandy shale	55	363	Shale and sand	109	614
Sand	9	372	Sand and shale streaks	16	630
Shale	74	446	Sand (cut good)	37	667
Sand	11	457	Sand and gravel	59	726
Shale	5	462	Shale	1	727
Shale, sandy	12	474	Sand and gravel (broken)	22	749
Shale	16	490	Shale and sandy shale streaks	39	788
Sand and shale	18	508	Well No. UJ-62-58-634		
Shale	12	520	Owner: B. F. Goodrich Co. Well 3 Driller: Layne Texas Co.		
Sand	9	529	Soil, surface	5	5
Shale	30	559	Sand	15	20
Shale and sand breaks	34	593	Clay	10	30
Sand and shale breaks	13	606	Clay, blue	172	202
Sand (cut fair)	11	617	Clay	20	222
Sand (cut good)	18	635	Sand (broken)	49	271
Sand and gravel	39	674	Clay and sand breaks	85	356
Shale	1	675	Sand (broken)	13	369
Sand, gravel and streaks of sandy shale	35	710	Clay	17	386
Shale	35	745	Shale, hard	20	406
Well No. UJ-62-58-633			Shale and sandy shale	53	459
Owner: B. F. Goodrich Co. Well 2 Driller: Layne Texas Co.			Sand (broken)	10	469
Soil, surface	3	3	Shale and sandy shale	35	504
Clay	4	7	Shale and sand streaks	38	542
			Sand	14	556

Table 4.—Drillers' Logs of Selected Wells Drilled in Orange County, 1963-70—Continued

	THICKNESS (FEET)	DEPTH (FEET)		THICKNESS (FEET)	DEPTH (FEET)
Well No. UJ-62-58-639—Continued			Well No. UJ-62-58-640—Continued		
Clay with sand streaks	14	160	Shale	48	422
Sand	70	230	Shale, sandy	52	474
Clay with sand streaks	265	495	Sand	22	496
Shale	70	565	Shale	37	533
Shale with fine sand streaks	15	580	Shale, sandy	76	609
Sand, fine with shale streaks	50	630	Sand	35	644
Sand, coarse, medium with shale streaks	100	730	Sand-gravel	70	714
Shale	15	745	Shale	81	795
Shale, sandy with shale streaks	23	768	Well No. UJ-62-59-123		
Shale, streaks, sandy shale	30	798	Owner: City of Orange Well 9 Driller: Stamm-Scheele		
Well No. UJ-62-58-640			Clay	12	12
Owner: B. F. Goodrich Co. Well 5 Driller: Texas Water Wells, Inc.			Sand, fine	28	40
Surface	1	1	Quicksand	20	60
Clay	7	8	Sand, medium	20	80
Sand	8	16	Sand, coarse	20	100
Clay	95	111	Shale, sandy	40	140
Sand	36	147	Sand, fine	20	160
Sand-clay streaks	37	184	Sand and gravel	60	220
Shale	22	206	Shale, sandy	20	240
Sand	18	224	Shale, sandy	180	420
Shale, sandy	68	292	Shale	18	438
Sand	12	304	Shale, sandy	62	500
Shale	50	354	Shale	15	515
Sand	20	374	Sand, medium	80	595
			Sand, coarse and gravel	33	628
			Sand, coarse	52	680
			Shale	10	690

**Table 5.—Water Levels in Observation Wells in the Orange County Area, 1963-71
(In Feet Below Land-Surface Datum)**

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
Orange County, Texas		Well UJ-61-56-919		Well UJ-62-49-904—Continued	
Well UJ-61-56-103		Owner: Orange County W. C. & I. D. No. 1 Well 3 Screen: 385-420 ft.		Mar. 4, 1969 37.64	
Owner: B. H. Thibodeau Depth: 76 ft.		May 23, 1967 45.02		Mar. 10, 1970 40.10	
July 20, 1967	13.67	Mar. 20, 1968 45.52		Mar. 10, 1971 40.43	
Mar. 20, 1968	14.83	Mar. 5, 1969 47.10		Well UJ-62-50-201	
Mar. 7, 1969	9.51	Mar. 10, 1970 49.23		Owner: J. A. Heard & Son Screen: 476-586 ft.	
Mar. 12, 1970	15.39	Mar. 10, 1971 49.90		Mar. 4, 1969 40.58	
Mar. 10, 1971	14.57	Well UJ-61-56-920		Mar. 11, 1970 42.64	
Well UJ-61-56-116		Owner: H. J. & W. Water Co. Depth: 380 ft.		Mar. 19, 1971 43.08	
Owner: H. H. Houseman Depth: 800 ft.		Mar. 28, 1968 38.06		Well UJ-62-50-602	
May 23, 1967	32.33	Mar. 4, 1969 38.63		Owner: Huber Oil Co. Screen: 380-400 ft.	
Mar. 20, 1968	34.24	Mar. 10, 1971 40.9		Mar. 19, 1968 39.8	
Mar. 4, 1969	34.52	Well UJ-61-64-306		Mar. 6, 1969 40.86	
Mar. 12, 1970	36.69	Owner: H. J. & W. Water Co. Screen: 525-545 ft.		Mar. 11, 1970 43.34	
Mar. 10, 1971	37.14	Mar. 28, 1968 36.79		Mar. 9, 1971 43.83	
Well UJ-61-56-611		Mar. 4, 1969 35.75		Well UJ-62-50-904	
Owner: H. J. & W. Water Co. Screen: 441-457 ft.		Well UJ-62-49-503		Owner: George Glidden Depth: 566 ft.	
Aug. 5, 1963	31	Owner: G. L. Linscomb Depth: 117 ft.		Oct. 10, 1967 13.62	
Mar. 28, 1968	35.63	Oct. 12, 1967 16.17		Mar. 19, 1968 12.30	
Mar. 4, 1969	36.48	Mar. 20, 1968 13.69		Mar. 5, 1969 10.28	
Mar. 10, 1971	38.7	Mar. 4, 1969 9.26		Mar. 11, 1970 10.77	
Well UJ-61-56-901		Mar. 17, 1970 13.40		Mar. 9, 1971 10.66	
Owner: Orange County W. C. & I. D. No. 1 Well 2 Screen: 350-400 ft.		Mar. 19, 1971 10.85		Well UJ-62-51-102	
May 23, 1967	41.25	Well UJ-62-49-604		Owner: Sabine River Authority of Texas Screen: 165-175 ft.	
Mar. 20, 1968	40.50	Owner: D. E. Cohenour Screen: 429-435 ft.		Aug. 15, 1967 31.60	
Mar. 5, 1969	39.71	Mar. 20, 1968 41.58		Mar. 19, 1968 21.60	
Mar. 10, 1970	36.74	Sept. 12, 1968 43.97		Measurements discontinued	
Mar. 10, 1971	42.30	Mar. 11, 1970 44.99		Well UJ-62-51-707	
Well UJ-61-56-911		Measurements discontinued		Owner: Phillips Chemical Co. Depth: 502 ft.	
Owner: H. J. & W. Water Co. Screen: 468-486 ft.		Well UJ-62-49-904		May 9, 1967 41.52	
Mar. 4, 1969	33.01	Owner: Texas Highway Department Screen: 399-415 ft.		Mar. 19, 1968 43.16	
Mar. 10, 1971	36.07	Oct. 25, 1967 37.38		Sept. 10, 1968 49.80	
		Mar. 28, 1968 36.22		Mar. 5, 1969 45.61	

**Table 5.—Water Levels in Observation Wells in the Orange County Area, 1963-71
(In Feet Below Land-Surface Datum)—Continued**

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
Well UJ-62-51-707—Continued		Well UJ-62-57-409—Continued		Well UJ-62-57-908—Continued	
Mar. 11, 1970	48.02	Mar. 12, 1970	40.20	Feb. 27, 1970	41
Mar. 12, 1971	48.36	Mar. 19, 1971	42.36	Mar. 9, 1971	37
Well UJ-62-57-203		Well UJ-62-57-501		Well UJ-62-58-102	
Owner: K. Kishi Depth: 740 ft.		Owner: Florida Gas Co. Screen: 405-435 ft.		Owner: R. J. Rhodes Depth: 630 ft.	
Mar. 27, 1968	40.42	Aug. 15, 1967	39.25	May 8, 1964	10.35*
Mar. 5, 1969	41.58	Mar. 27, 1968	38.38	May 7, 1965	13.36*
Mar. 12, 1970	44.40	Mar. 4, 1969	39.64	May 11, 1966	12.36*
Mar. 19, 1971	44.47	Mar. 12, 1970	42.32	Apr. 27, 1967	10.58*
Well UJ-62-57-401		Mar. 19, 1971	42.35	Mar. 20, 1968	12.88
Owner: Texas Eastern Trans. Co. Screen: 448-468 ft.		Well UJ-62-57-904		Mar. 5, 1969	10.02
Mar. 22, 1968	40.30	Owner: Gulf States Utility Co. Sabine Station Well 4 Screen: 432-455 ft.		Measurement discontinued *TWDB water level measurements	
Mar. 4, 1969	41.02	Mar. 8, 1968	78	Well UJ-62-58-304	
Mar. 12, 1970	44.80	Feb. 20, 1969	100	Owner: Orange County W. C. & I. D. No. 2 Screen: 626-706 ft.	
Mar. 19, 1971	44.36	Feb. 27, 1970	84	Mar. 20, 1968	54.62
Well UJ-62-57-404		Mar. 9, 1971	84	Mar. 4, 1969	55.65
Owner: Gulf States Utility Co. Screen: 430-481 ft.		Well UJ-62-57-905		Mar. 10, 1970	59.34
Nov. 30, 1964	44	Owner: Gulf States Utility Co. Sabine Station Well 5 Screen: 422-461 ft.		Mar. 18, 1971	55.93
Mar. 31, 1965	46	Feb. 27, 1970	84	Well UJ-62-58-305	
Mar. 30, 1966	48	Mar. 17, 1971	76	Owner: City of Orange Screen: 520-610 ft.	
Mar. 26, 1967	49	Well UJ-62-57-907		Mar. 20, 1968	46.34
Mar. 19, 1971	38.26	Owner: Gulf States Utility Co. Sabine Station Well 7 Screen: 604-654 ft.		Sept. 11, 1968	51.98
Well UJ-62-57-406		Sept. 29, 1965	35	Mar. 3, 1969	48.55
Owner: Gulf States Utility Co. Screen: 430-480 ft.		Mar. 8, 1968	34	Mar. 10, 1970	51.72
Nov. 30, 1964	45	Feb. 28, 1969	38	Mar. 10, 1971	51.11
Mar. 31, 1965	48	Feb. 27, 1970	38	Well UJ-62-58-324	
Mar. 30, 1966	49	Mar. 9, 1971	38	Owner: City of Pinehurst Well 1 Screen: 365-445 ft.	
Apr. 28, 1967	50	Well UJ-62-57-908		June 11, 1964	40
Mar. 19, 1971	44.26	Owner: Gulf States Utility Co. Sabine Station Well 8 Screen: 573-623 ft.		Mar. 20, 1968	45.58
Well UJ-62-57-409		Nov. 2, 1965	35	Mar. 3, 1969	50.17
Owner: H. A. Cutler Screen: 550-640 ft.		Mar. 8, 1968	34	Mar. 9, 1970	55.13
Mar. 22, 1968	38.64	Feb. 1969	40	Mar. 10, 1971	51.68
Mar. 6, 1969	39.40				

**Table 5.—Water Levels in Observation Wells in the Orange County Area, 1963-71
(In Feet Below Land-Surface Datum)—Continued**

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
Well UJ-62-58-325		Well UJ-62-58-603		Well UJ-62-58-616	
Owner: Orange County W. C. & I. D. No. 2 Well 2 Screen: 620-670 ft.		Owner: W. H. Stark Estate Depth: 204 ft.		Owner: Gulf Chemical Co. Well 2 Depth: 718 ft.	
Aug. 28, 1967	59	Mar. 21, 1968	8.52	Mar. 11, 1970	59.40
Mar. 20, 1968	52.46	Mar. 4, 1969	8.28	Mar. 17, 1971	56.63
Mar. 4, 1969	54.35	Mar. 11, 1970	8.68		
Mar. 10, 1970	57.5	Mar. 16, 1971	8.81	Well UJ-62-58-618	
Mar. 19, 1971	56.20			Owner: E. I. DuPont Co. Well 103-6 Screen: 637-682 ft.	
Well UJ-62-58-403		Well UJ-62-58-609		Mar. 5, 1963	38
Owner: Orangefield Ind. School Dist. Screen: 460-480 ft.		Owner: E. I. DuPont Co. Well 103-3 Screen: 634-723 ft.		Oct. 7, 1969	56.60
May 24, 1967	27.28	Sept. 11, 1968	60.59	Mar. 11, 1970	53.45
Mar. 22, 1968	28.09	Mar. 11, 1970	61.19	Mar. 17, 1971	50.69
Mar. 5, 1969	29.08	Well UJ-62-58-610		Well UJ-62-58-631	
Mar. 12, 1970	31.23	Owner: E. I. DuPont Co. Well 103-3.1 Depth: 715 ft.		Owner: Firestone Chemical Co. P-826 Screen: 585-680 ft.	
Mar. 10, 1971	33.68	Feb. 1968	68	Mar. 5, 1969	54.50
Well UJ-62-58-410		Mar. 5, 1969	58.85	Mar. 11, 1970	57.20
Owner: Orangefield Rec. Park Screen: 110-120 ft.		Oct. 7, 1969	67.60	Mar. 17, 1971	55.12
Mar. 27, 1968	5.79	Mar. 11, 1970	60.59		
Mar. 5, 1969	4.83	Mar. 17, 1971	57.98	Well UJ-62-58-632	
Mar. 12, 1970	6.33	Well UJ-62-58-611		Owner: B. F. Goodrich Co. Well 1 Screen: 640-710 ft.	
Mar. 10, 1971	5.77	Owner: E. I. DuPont Co. Well 103-2 Depth: 715 ft.		June 9, 1965	52
Well UJ-62-58-411		Mar. 5, 1969	57.80	Mar. 14, 1968	50.6
Owner: Orangefield Rec. Park Screen: 440-450 ft.		Mar. 17, 1971	57.07	Mar. 11, 1970	58.47
Mar. 27, 1968	34.49	Well UJ-62-58-613		Mar. 18, 1971	51.75
Measurements discontinued		Owner: E. I. DuPont Co. Well 103-1.1 Depth: 723 ft.		Well UJ-62-58-633	
Well UJ-62-58-602		Sept. 11, 1968	62.25	Owner: B. F. Goodrich Co. Well 2 Screen: 625-725 ft.	
Owner: E. W. Brown Estate Depth: 711 ft.		Mar. 5, 1969	56.84	Aug. 5, 1965	52
May 12, 1966	49.40*	Oct. 7, 1969	64.76	Oct. 1967	53.34
Apr. 27, 1967	50.41*	Mar. 11, 1970	61.15	Mar. 13, 1968	50
Sept. 12, 1968	58.59	Sept. 29, 1970	63.95	Mar. 12, 1970	57.87
Mar. 6, 1969	56.13				
Mar. 13, 1970	59.66				
Mar. 2, 1971	58.92*				

*Measured by TWDB

Table 5.—Water Levels in Observation Wells in the Orange County Area, 1963-71
(In Feet Below Land-Surface Datum)—Continued

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
Well UJ-62-58-634		Well UJ-62-59-101		Well LH-61-47-208	
Owner: B. F. Goodrich Co. Well 3 Screen: 615-715 ft.		Owner: City of Orange Well 7 Screen: 555-666 ft.		Owner: City of Silsbee Screen: 442-842 ft.	
July 7, 1965	51	Sept. 11, 1968	62.5	Mar. 28, 1968	89.87
Dec. 1968	57	Mar. 3, 1969	62.5	Mar. 7, 1969	88.45
Mar. 13, 1970	60.20	Mar. 10, 1970	60.78	Mar. 18, 1970	90.90
		Mar. 10, 1971	56.30	Mar. 11, 1971	97.44
Well UJ-62-58-639		Well UJ-62-59-103		Well LH-61-47-210	
Owner: B. F. Goodrich Co. Well 4 Screen: 620-725 ft.		Owner: City of Orange Well 2 Screen: 565-685 ft.		Owner: City of Silsbee Depth: 900 ft.	
July 6, 1968	58	Sept. 11, 1968	58.52	Mar. 28, 1968	107.45
Mar. 5, 1969	53.26	Mar. 3, 1969	55.34	Mar. 18, 1970	113.10
Mar. 16, 1970	56.73	Mar. 10, 1970	56.78	Mar. 11, 1971	116.92
Mar. 18, 1971	51.42	Mar. 11, 1971	55.89		
Well UJ-62-58-641		Well UJ-62-59-105		Well LH-61-55-204	
Owner: E. I. DuPont Co. Screen: 697-702 ft.		Owner: Livingston Ship Yard Depth: 755 ft.		Owner: City of Beaumont Screen: 311-780 ft.	
Sept. 11, 1968	52.61	July 26, 1967	50.81	Mar. 26, 1968	44.08
Mar. 11, 1970	53.87	Mar. 5, 1968	50.75	Mar. 7, 1969	44.60
Mar. 17, 1971	50.95	Mar. 3, 1969	52.60	Mar. 18, 1970	49.15
		Mar. 9, 1970	57.20	Mar. 16, 1971	46.60
Well UJ-62-58-702		Well UJ-62-59-123		Jasper County, Texas	
Owner: Orange County W. C. & I. D. No. 3 Well 2 Screen: 600-672 ft.		Owner: City of Orange Well 9 Screen: 529-643 ft.		*Well PR-61-48-209	
Mar. 21, 1968	39.8	Apr. 1, 1966	45	Owner: East Texas Pulp & Paper Co. Screen: 213-594 ft.	
Mar. 3, 1969	38.5	Mar. 3, 1969	50.08	Mar. 26, 1968	37.17
Mar. 10, 1970	43.10	Mar. 10, 1970	52.50	Mar. 6, 1969	34.38
Sept. 30, 1970	43.5	Mar. 10, 1971	54.61	Mar. 17, 1970	35.32
Mar. 17, 1971	47.0			Mar. 11, 1971	34.30
Well UJ-62-58-809		Hardin County, Texas		*Well PR-61-48-209	
Owner: Orange County W. C. & I. D. No. 3 Well 3 Screen: 570-650 ft.		Well LH-61-47-207		Owner: East Texas Pulp & Paper Co. Screen: 723-1,264 ft.	
Mar. 19, 1965	38	Owner: City of Silsbee Screen: 296-356 ft.		Mar. 26, 1968	176.79
Mar. 21, 1968	39.0	Mar. 28, 1968	44.83	Mar. 6, 1969	179.70
Mar. 4, 1969	41.0	Mar. 7, 1969	36.44	Mar. 17, 1970	179.98
Mar. 10, 1970	44.0	Mar. 18, 1970	53.91	Mar. 11, 1971	178.33
Mar. 17, 1971	44.0				

*Dual completed well.

**Table 5.--Water Levels in Observation Wells in the Orange County Area, 1963-71
(In Feet Below Land-Surface Datum)--Continued**

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
Well PR-61-48-214		Well PR-62-33-201		Well PT-61-64-509	
Owner: Southern Pine Co. Depth: 226 ft.		Owner: Kirby Lumber Co. Depth: 1,100 ft.		Owner: Gulf States Utility Co. Depth: 630 ft.	
Mar. 26, 1968	36.15	Mar. 26, 1968	95.69	Mar. 22, 1968	28.85
Mar. 6, 1969	33.33	Mar. 6, 1969	96.49	Mar. 7, 1969	28.67
Mar. 17, 1970	34.78	Mar. 17, 1970	96.85	Mar. 13, 1970	32.10
Measurements discontinued		Mar. 11, 1971	99.85	Mar. 12, 1971	32.51
Well PR-61-48-401		Well PR-62-33-401		Well PT-61-64-902	
Owner: Champion Paper Co. Depth: 1,211 ft.		Owner: City of Buna Depth: 375 ft.		Owner: Air Reduction Co. Screen: 497-550 ft.	
Aug. 1967	114.0	Mar. 26, 1968	34.39	Oct. 26, 1967	38.95
Mar. 26, 1968	113.4	Mar. 6, 1969	34.42	Mar. 22, 1968	38.95
Mar. 6, 1969	112.05	Mar. 17, 1970	35.58	Mar. 3, 1969	39.79
Mar. 17, 1970	89.8	Mar. 11, 1971	34.69	Mar. 13, 1970	42.43
Measurements discontinued		Well PR-62-33-402		Mar. 12, 1971	42.42
Well PR-61-48-701		Owner: City of Buna Screen: 370-408 ft.		Well PT-63-01-201	
Owner: J. C. Chance Screen: 1,210-1,250 ft.		Mar. 26, 1968	30.90	Owner: City of Groves Screen: 520-540 ft.	
Mar. 7, 1969	91.42	Mar. 6, 1969	30.40	Mar. 22, 1968	33.59
Mar. 17, 1970	89.85	Mar. 17, 1970	31.51	Mar. 3, 1969	34.74
Mar. 11, 1971	92.52	Measurements discontinued		Mar. 13, 1970	37.1
Well PR-61-48-702		Well PR-62-41-908		Mar. 12, 1971	37.25
Owner: J. C. Chance Screen: 448-468 ft.		Owner: Anthony's Gro. Depth: 70 ft.		Well PT-63-01-606	
Mar. 7, 1969	38.58	Oct. 11, 1967	25.78	Owner: City of Port Arthur Depth: 814 ft.	
Mar. 17, 1970	39.95	Mar. 26, 1968	25.86	Oct. 26, 1967	27.62
Mar. 11, 1971	40.54	Mar. 7, 1969	25.30	Mar. 28, 1968	27.84
Well PR-62-17-902		Mar. 18, 1970	26.41	Mar. 4, 1969	29.36
Owner: Mrs. W. S. Gillespie Depth: 325 ft.		Jefferson County, Texas			
Mar. 25, 1968	32.37	Well PT-61-64-502		Well PT-63-09-104	
Mar. 6, 1969	30.42	Owner: Gulf States Utility Co. Depth: 542 ft.		Owner: Gulf Oil Corp. Depth: Unknown	
Mar. 17, 1970	32.51	Mar. 22, 1968	33.10	Oct. 26, 1967	15.84
Mar. 11, 1971	31.92	Mar. 7, 1969	30.64	Mar. 27, 1968	16.50
Well PR-62-25-501		Mar. 13, 1970	36.29	Mar. 4, 1969	18.52
Owner: L. G. Denby Depth: 212 ft.		Mar. 12, 1971	38.25	Mar. 13, 1970	20.71
Mar. 26, 1968	54.67	Measurements discontinued			
Mar. 6, 1969	52.00				
Measurements discontinued					

**Table 5.—Water Levels in Observation Wells in the Orange County Area, 1963-71
(In Feet Below Land-Surface Datum)—Continued**

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
Newton County, Texas		Well TZ-62-42-904		Well Cu-625—Continued	
Well TZ-62-18-801		Owner: L. A. Whiddon Depth: 270 ft.		Mar. 23, 1966	40.70
Owner: Texas Forest Service Screen: 186-210 ft.		Mar. 25, 1968	36.56	Mar. 21, 1967	41.67
1967	44.18	Mar. 4, 1969	36.64	Mar. 6, 1968	44.21
Mar. 25, 1968	44.44	Mar. 17, 1970	38.65	Mar. 7, 1969	45.02
Mar. 7, 1969	42.54	Mar. 9, 1971	39.03	Feb. 27, 1970	48.37
Mar. 17, 1970	45.0	Calcasieu Parish, Louisiana		Feb. 20, 1971	47.52
Mar. 11, 1971	43.93	Well Cu-530		Well Cu-629	
Well TZ-62-26-611		Owner: M. Gray Depth: 595 ft.		Owner: Ohio Petro. Co. Depth: 778 ft.	
Owner: Cecil Lazanbee Screen: 637-647 ft.		Mar. 27, 1964	35.77	Mar. 27, 1964	32.85
Oct. 10, 1967	1.81	Mar. 23, 1965	37.19	Mar. 23, 1965	34.33
Mar. 25, 1968	2.10	Mar. 22, 1968	39.79	Mar. 22, 1966	37.62
Mar. 6, 1969	1.95	Mar. 27, 1967	40.60	Mar. 21, 1967	38.57
Mar. 17, 1970	3.20	Mar. 5, 1968	43.50	Mar. 5, 1968	42.48
Mar. 11, 1971	3.82	Mar. 6, 1969	44.93	Mar. 5, 1969	42.51
Well TZ-62-34-201		Feb. 25, 1970	49.33	Feb. 27, 1970	48.07
Owner: Adolph Ebner Screen: 252-332 ft.		Feb. 18, 1971	50.67	Feb. 18, 1971	47.10
Oct. 10, 1967	14.96	Well Cu-531		Well Cu-762	
Mar. 25, 1968	15.91	Owner: Unknown		Owner: Unknown	
Mar. 6, 1969	14.36	Mar. 5, 1968	47.25	Mar. 6, 1968	51.50
Mar. 17, 1970	16.53	Mar. 6, 1969	48.87	Mar. 7, 1969	54.39
Mar. 11, 1971	16.10	Feb. 25, 1970	53.32	Feb. 27, 1970	57.81
Well TZ-62-42-102		Feb. 18, 1971	53.93	Feb. 20, 1971	58.60
Owner: Adolph Ebner Screen: 179-429 ft.		Well Cu-534		Well Cu-781	
Mar. 25, 1968	30.80	Owner: Wilton Corbello Screen: 489-549 ft.		Owner: Edgerly Rice Dryer Depth: 460 ft.	
Mar. 6, 1969	30.83	Mar. 26, 1964	39.13	Apr. 2, 1964	38.81
Mar. 17, 1970	32.48	Mar. 24, 1965	40.98	Mar. 24, 1965	40.71
Mar. 11, 1971	32.93	Mar. 23, 1966	43.13	Mar. 30, 1966	43.18
Well TZ-62-42-603		Mar. 6, 1968	47.40	Mar. 21, 1967	43.04
Owner: L. S. Arrendell Screen: 184-190 ft.		Mar. 3, 1969	48.77	Mar. 6, 1968	46.62
Oct. 10, 1967	8.35	Feb. 27, 1970	52.60	Mar. 7, 1969	47.45
Mar. 25, 1968	8.45	Feb. 20, 1971	53.02	Feb. 27, 1970	51.01
Mar. 4, 1969	5.64	Well Cu-625		Feb. 20, 1971	50.84
Mar. 17, 1970	9.41	Owner: Stine & Kinney Depth: 460 ft.			
Mar. 9, 1971	6.95	Apr. 2, 1964	37.59		
		Mar. 24, 1965	39.33		

**Table 5.—Water Levels in Observation Wells in the Orange County Area, 1963-71
(In Feet Below Land-Surface Datum)—Continued**

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
Cameron Parish, Louisiana		Well CN-86 L		Well CN-94	
Well CN-86 U		Owner: U.S. Geological Survey Screen: 631-641 ft.		Owner: U.S. Geological Survey Screen: 1,112-1,118 ft.	
Owner: U.S. Geological Survey Screen: 525-535 ft.		Aug. 12, 1964	35.91	June 17, 1965	30.12
Aug. 12, 1964	35.80	Mar. 23, 1965	32.57	Mar. 22, 1966	31.08
Mar. 23, 1965	32.37	Mar. 22, 1966	34.72	Mar. 22, 1967	31.16
Mar. 22, 1966	34.57	Mar. 22, 1967	35.59	Mar. 5, 1968	32.48
Mar. 22, 1967	35.44	Feb. 26, 1968	35.71	Mar. 3, 1969	33.63
Feb. 26, 1968	35.56	Mar. 3, 1969	37.43	Feb. 25, 1970	35.50
Mar. 10, 1970	44.11	Mar. 10, 1970	44.23	Feb. 17, 1971	36.50
		Feb. 18, 1971	45.11		

**Table 6.—Elevations of Bench Marks in the Orange County Area
(In Feet Above Mean Sea Level)**

<u>BM NO.</u>	<u>1918</u>	<u>1932</u>	<u>1955</u>	<u>1959</u>	<u>1969</u>	<u>REMARKS</u>
U-89	—	26.923	—	—	26.923	
T-89	—	23.612	—	—	23.705	Reset 1969
S-89	—	17.641	—	—	17.562	Reset 1969
R-89	—	21.184	—	—	20.656	Reset 1969
O-89	—	16.329	—	—	15.805	
L-58	17.447	17.480	17.247	—	17.283	
O-58	11.283	11.253	10.988	—	10.938	
N-58	14.452	14.452	14.229	—	14.229	
P-58	12.234	—	11.972	—	11.972	
5 JLP	—	—	—	—	9.118	Established 1969
6 JLP	—	—	—	—	12.470	Do.
7 JLP	—	—	—	—	17.454	Do.
U-58	14.442	—	14.196	—	14.196	
B-161	—	—	—	10.945	10.945	
G-1037	—	—	14.921	—	14.921	
F-1037	—	—	17.011	—	17.010	
J-1037	—	—	11.204	—	11.201	
H-1037	—	—	10.236	—	10.249	
K-1037	—	—	10.564	—	10.560	
9 JLP	—	—	—	—	11.142	Established 1969
4 JLP	—	—	—	—	9.953	Do.
1 JLP	—	—	—	—	6.754	Do.
Du Pont No. 2	—	—	—	—	8.256	
Du Pont No. 4A	—	—	—	—	9.052	
Du Pont No. 3	—	—	—	—	9.061	
8 JLP	—	—	—	—	8.225	Established 1969
2 JLP	—	—	—	—	7.572	Do.
3 JLP	—	—	—	—	9.898	Do.
PTS-31-S	—	—	—	—	11.399	Reset 1960
X-1036	—	—	17.559	—	17.363	
Z-1036	—	—	9.206	—	9.122	
A-1037	—	—	10.866	—	10.716	
M-1037	—	—	12.920	—	12.874	
L-1037	—	—	14.501	—	14.527	
I-58	12.562	—	12.425	12.385	12.399	BM PTS 25 (USGS)
V-1036	—	—	13.894	13.894	13.905	
U-1036	—	—	13.714	13.671	13.653	
V-1135	—	—	—	16.322	16.322	

Table 7.--Selected Chemical Analyses of Water From Wells in Orange County

(Analyses given are in milligrams per liter except specific conductance, pH, SAR, RSC, temperature and percent sodium.)
 Water bearing unit: CU, Upper unit of the Chicot Aquifer; CL, Lower unit of the Chicot Aquifer

WELL	DEPTH OR PRODUCING INTERVAL (FT)	DATE OF COLLECTION	WATER BEARING UNIT	SILICA (SiO ₂)	IRON (Fe)	CALCIUM (Ca)	MAGNESIUM (Mg)	SODIUM AND POTASSIUM		BICARBONATE (HCO ₃)	SULFATE (SO ₄)	CHLORIDE (Cl)	FLUORIDE (F)	NITRATE (NO ₃)	BORON (B)	DISSOLVED SOLIDS	HARDNESS AS CaCO ₃	PERCENT SODIUM	SODIUM ADSORPTION RATIO (SAR)	RESIDUAL SODIUM CARBONATE (RSC)	SPECIFIC CONDUCTANCE (MICROMHOS AT 25° C)	pH	TEMPERATURE °C
								Na	K														
UJ-61-56-614	453-483	Oct. 2, 1970	CL	19	0.06	8.2	1.2	130	0.9	292	0.0	51	1.0	0.0	0.14	357	26	91	11	4.28	603	7.6	--
901	350-400	May 23, 1967	CL	--	--	--	--	--	--	264	--	260	--	--	--	--	50	--	--	3.33	1,250	7.2	22.0
901	do.	Sept. 5, 1968	CL	--	--	--	--	--	--	272	--	275	--	--	--	--	55	--	--	3.36	1,260	7.7	22.0
901	do.	Oct. 9, 1969	CL	--	--	--	--	--	--	274	--	278	--	--	--	--	28	--	--	3.93	1,210	7.7	24.0
901	do.	Sept. 30, 1970	CL	--	--	--	--	--	--	220	--	290	--	--	--	--	58	--	--	2.45	1,330	7.6	23.0
911	468-486	Oct. 23, 1967	CL	--	--	--	--	--	--	264	--	86	--	--	--	--	17	--	--	3.99	625	7.8	--
911	do.	Sept. 3, 1968	CL	--	--	--	--	--	--	268	--	86	--	--	--	--	28	--	--	3.83	661	7.7	--
911	do.	Oct. 6, 1969	CL	--	--	--	--	--	--	268	--	82	--	--	--	--	17	--	--	4.05	650	7.8	--
911	do.	Oct. 2, 1970	CL	--	--	--	--	--	--	260	--	83	--	--	--	--	18	--	--	3.90	685	7.9	--
919	385-420	May 23, 1967	CL	29	.03	6.5	1.5	136	.9	200	.4	107	.6	.2	.17	381	22	93	13	2.84	661	7.3	22.0
919	do.	Sept. 5, 1968	CL	--	--	--	--	--	--	210	--	128	--	--	--	--	31	--	--	2.82	715	7.5	23.0
919	do.	Oct. 9, 1969	CL	--	--	--	--	--	--	208	--	131	--	--	--	--	28	--	--	2.85	709	7.6	23.0
919	do.	Sept. 30, 1970	CL	--	--	--	--	--	--	214	--	136	--	--	--	--	37	--	--	2.77	779	7.4	22.0
64-101	130	Sept. 1, 1967	CU	--	--	--	--	--	--	446	--	420	--	--	--	--	352	--	--	.27	1,990	7.8	--
101	130	Sept. 3, 1968	CU	--	--	--	--	--	--	444	--	425	--	--	--	--	354	--	--	.20	2,000	7.3	--
101	130	Oct. 6, 1969	CU	--	--	--	--	--	--	442	--	415	--	--	--	--	390	--	--	.00	1,820	7.1	--
101	130	Oct. 2, 1970	CU	--	--	--	--	--	--	436	--	440	--	--	--	--	370	--	--	.00	2,020	7.4	--
207	420-430	Sept. 1, 1967	CL	--	--	--	--	--	--	314	--	572	--	--	--	--	63	--	--	3.89	2,250	7.8	--
207	do.	Sept. 3, 1968	CL	--	--	--	--	--	--	314	--	590	--	--	--	--	69	--	--	3.77	2,270	7.4	--
302	521	Aug. 31, 1967	CL	--	--	--	--	--	--	286	--	385	--	--	--	--	64	--	--	3.40	1,620	7.5	--
302	521	Sept. 3, 1968	CL	--	--	--	--	--	--	284	--	425	--	--	--	--	67	--	--	3.31	1,730	7.4	--
302	521	Oct. 10, 1969	CL	--	--	--	--	--	--	294	--	432	--	--	--	--	66	--	--	3.50	1,640	7.6	--
302	521	Sept. 30, 1970	CL	--	--	--	--	--	--	304	--	465	--	--	--	--	74	--	--	3.50	1,920	7.8	--
304	385-400	Aug. 31, 1967	CL	--	--	--	--	--	--	296	--	288	--	--	--	--	32	--	--	4.21	1,350	7.8	--
304	do.	Sept. 4, 1968	CL	--	--	--	--	--	--	292	--	300	--	--	--	--	32	--	--	4.15	1,350	7.5	--

See footnotes at end of table.

Table 7.--Selected Chemical Analyses of Water From Wells in Orange County--Continued

WELL	DEPTH OR PRODUCING INTERVAL (FT)	DATE OF COLLECTION	WATER BEARING UNIT	SILICA (SiO ₂)	IRON (Fe)	CALCIUM (Ca)	MAGNESIUM (Mg)	SODIUM AND POTASSIUM		BICARBONATE (HCO ₃)	SULFATE (SO ₄)	CHLORIDE (Cl)	FLUORIDE (F)	NITRATE (NO ₃)	BORON (B)	DISSOLVED SOLIDS	HARDNESS AS CaCO ₃	PERCENT SODIUM	SODIUM ADSORPTION RATIO (SAR)	RESIDUAL SODIUM CARBONATE (RSC)	SPECIFIC CONDUCTANCE (MICROMHOS AT 25° C)	pH	TEMPERATURE °C
								Na	K														
UJ-61-64-304	385-400	Oct. 6, 1969	CL	--	--	--	--	--	--	298	--	290	--	--	--	--	34	--	--	4.20	1,280	7.5	25.0
304	do.	Oct. 2, 1970	CL	--	--	--	--	--	--	284	--	300	--	--	--	--	33	--	--	3.99	1,370	7.7	--
305	462-472	Aug. 31, 1967	CL	--	--	--	--	--	--	232	--	114	--	--	--	--	12	--	--	3.56	714	7.8	--
305	do.	Sept. 4, 1968	CL	--	--	--	--	--	--	228	--	118	--	--	--	--	19	--	--	3.36	714	7.8	--
305	do.	Oct. 6, 1969	CL	--	--	--	--	--	--	232	--	116	--	--	--	--	12	--	--	3.56	709	7.6	--
305	do.	Oct. 2, 1970	CL	--	--	--	--	--	--	225	--	120	--	--	--	--	12	--	--	3.45	740	7.5	--
306	525-545	Aug. 31, 1967	CL	--	--	--	--	--	--	270	--	300	--	--	--	--	26	--	--	3.91	1,350	7.7	--
306	do.	Sept. 3, 1968	CL	--	--	--	--	--	--	242	--	202	--	--	--	--	19	--	--	3.59	994	7.4	--
306	do.	Oct. 10, 1969	CL	--	--	--	--	--	--	280	--	360	--	--	--	--	30	--	--	3.99	1,420	7.6	--
306	do.	Oct. 2, 1970	CL	--	--	--	--	--	--	240	--	210	--	--	--	--	27	--	--	3.39	1,020	7.5	--
62-49-703	693-703	Oct. 23, 1967	CL	--	--	--	--	--	--	293	--	698	--	--	--	--	53	--	--	3.74	2,460	7.8	--
703	do.	Sept. 4, 1968	CL	--	--	--	--	--	--	294	--	695	--	--	--	--	53	--	--	3.76	2,550	7.5	--
703	do.	Oct. 10, 1969	CL	--	--	--	--	--	--	300	--	690	--	--	--	--	56	--	--	3.80	2,340	7.8	--
703	do.	Oct. 2, 1970	CL	--	--	--	--	--	--	290	--	680	--	--	--	--	52	--	--	3.71	2,530	7.7	--
904	399-415	Oct. 25, 1967	CL	--	--	--	--	--	--	125	--	13	--	--	--	--	15	--	--	1.75	226	7.8	--
904	do.	Sept. 4, 1968	CL	--	--	--	--	--	--	126	--	13	--	--	--	--	16	--	--	1.74	234	7.4	--
904	do.	Oct. 10, 1969	CL	--	--	--	--	--	--	126	--	12	--	--	--	--	15	--	--	1.76	236	7.5	--
904	do.	Sept. 28, 1970	CL	--	--	--	--	--	--	122	--	14	--	--	--	--	17	--	--	1.66	242	7.4	--
905	378-394	Oct. 25, 1967	CL	--	--	--	--	--	--	131	--	12	--	--	--	--	9	--	--	1.97	236	8.0	--
905	do.	Sept. 10, 1968	CL	--	--	--	--	--	--	131	--	12	--	--	--	--	10	--	--	1.95	239	7.2	--
905	do.	Sept. 28, 1970	CL	--	--	--	--	--	--	128	--	13	--	--	--	--	14	--	--	1.82	247	7.4	--
50-707	480	July 20, 1967	CL	59	0.10	12	2.8	36	2.6	110	3.2	22	0.3	0.0	0.04	192	41	64	2.4	.97	241	7.3	22.0
708	376-388	do.	CL	58	.07	10	2.7	38	2.4	117	1.6	18	.3	.0	.04	189	36	68	2.8	1.20	242	7.4	22.0
708	do.	Sept. 10, 1968	CL	--	--	--	--	--	--	116	--	18	--	--	--	--	38	--	--	1.14	257	6.4	--
804	800 ±	Oct. 23, 1967	CL	--	--	--	--	--	--	191	--	242	--	--	--	--	20	--	--	2.73	1,020	7.5	--
804	800 ±	Sept. 4, 1968	CL	--	--	--	--	--	--	192	--	238	--	--	--	--	18	--	--	2.79	1,030	7.4	--

See footnotes at end of table.

Table 7.--Selected Chemical Analyses of Water From Wells in Orange County--Continued

WELL	DEPTH OR PRODUCING INTERVAL (FT)	DATE OF COLLECTION	WATER BEARING UNIT	SILICA (SiO ₂)	IRON (Fe)	CALCIUM (Ca)	MAGNESIUM (Mg)	SODIUM AND POTASSIUM		BICARBONATE (HCO ₃)	SULFATE (SO ₄)	CHLORIDE (Cl)	FLUORIDE (F)	NITRATE (NO ₃)	BORON (B)	DISSOLVED SOLIDS	HARDNESS AS CaCO ₃	PERCENT SODIUM	SODIUM ADSORPTION RATIO (SAR)	RESIDUAL SODIUM CARBONATE (RSC)	SPECIFIC CONDUCTANCE (MICROMHOS AT 25° C)	pH	TEMPERATURE °C
								Na	K														
UJ-62-50-804	800 ±	Oct. 10, 1969	CL	--	--	--	--	--	--	192	--	242	--	--	--	--	21	--	--	2.73	1,000	7.5	--
	804	800 ±	Oct. 1, 1970	CL	--	--	--	--	--	184	--	250	--	--	--	--	20	--	--	2.62	1,060	7.1	--
	909	535	Mar. 21, 1968	CL	49	0.03	8.5	2.5	48 2.3	139	0.6	16	0.5	0.2	0.07	196	32	75	3.7	1.65	274	6.9	--
	909	535	Sept. 10, 1968	CL	--	--	--	--	--	139	--	16	--	--	--	--	35	--	--	1.58	271	7.2	--
	51-706	505	May 9, 1967	CL	47	.06	10	2.7	61 2.0	168	.4	22	.5	.0	.12	229	36	77	4.4	2.03	340	7.0	23.0
	706	505	Sept. 10, 1968	CL	--	--	--	--	--	171	--	23	--	--	--	--	39	--	--	2.02	340	7.3	23.0
	706	505	Oct. 9, 1969	CL	--	--	--	--	--	175	--	23	--	--	--	--	43	--	--	2.01	342	7.5	23.0
	706	505	Oct. 2, 1970	CL	--	--	--	--	--	172	--	24	--	--	--	--	38	--	--	2.06	348	7.2	22.0
	707	502	do.	CL	48	.61	12	2.8	62 1.7	172	.0	24	.5	.1	.08	237	41	76	4.2	1.99	342	7.1	22.0
	714	540-665	Oct. 24, 1967	CL	--	--	--	--	--	179	--	24	--	--	--	--	30	--	--	2.33	345	7.8	--
	57-203	740	do.	CL	--	--	--	--	--	186	--	61	--	--	--	--	6	--	--	2.93	468	7.9	--
	203	740	Sept. 4, 1968	CL	--	--	--	--	--	186	--	57	--	--	--	--	13	--	--	2.79	459	7.6	--
	203	740	Oct. 9, 1969	CL	--	--	--	--	--	188	--	61	--	--	--	--	8	--	--	2.92	471	7.8	--
	203	740	Sept. 30, 1970	CL	--	--	--	--	--	186	--	60	--	--	--	--	15	--	--	2.75	490	7.6	--
	401	448-468	Aug. 31, 1967	CL	--	--	--	--	--	186	--	67	--	--	--	--	10	--	--	2.85	488	7.7	--
	401	do.	Sept. 4, 1968	CL	--	--	--	--	--	184	--	66	--	--	--	--	16	--	--	2.70	488	8.2	--
	401	do.	Oct. 9, 1969	CL	--	--	--	--	--	184	--	67	--	--	--	--	10	--	--	2.82	486	8.0	--
	401	do.	Oct. 1, 1970	CL	--	--	--	--	--	180	--	66	--	--	--	--	11	--	--	2.73	502	8.0	--
	403	433-483	Oct. 7, 1970	CL	--	--	--	--	--	200	--	260	--	--	--	--	43	--	--	2.42	1,110	7.3	23.5
	403	do.	Mar. 19, 1971	CL	--	--	--	--	--	204	--	240	--	--	--	--	40	--	--	2.54	1,080	7.6	--
	404	430-481	Oct. 7, 1970	CL	--	--	--	--	--	208	--	300	--	--	--	--	54	--	--	2.33	1,280	7.8	23.5
	406	430-480	do.	CL	--	--	--	--	--	204	--	320	--	--	--	--	55	--	--	2.24	1,320	7.7	23.5
	408	343-383	Mar. 19, 1971	CL	--	--	--	--	--	256	--	50	--	--	--	--	12	--	--	3.96	555	7.9	22.0
	501	405-435	Sept. 1, 1967	CL	--	--	--	--	--	182	--	28	--	--	--	--	8	--	--	2.82	364	7.8	--
	501	do.	Sept. 9, 1968	CL	--	--	--	--	--	177	--	28	--	--	--	--	8	--	--	2.74	358	7.6	--
	501	do.	Oct. 9, 1969	CL	--	--	--	--	--	178	--	27	--	--	--	--	10	--	--	2.72	358	7.9	--

See footnotes at end of table.

Table 7.--Selected Chemical Analyses of Water From Wells in Orange County--Continued

WELL	DEPTH OR PRODUCING INTERVAL (FT)	DATE OF COLLECTION	WATER BEARING UNIT	SILICA (SiO ₂)	IRON (Fe)	CALCIUM (Ca)	MAGNESIUM (Mg)	SODIUM AND POTASSIUM		BICARBONATE (HCO ₃)	SULFATE (SO ₄)	CHLORIDE (Cl)	FLUORIDE (F)	NITRATE (NO ₃)	BORON (B)	DISSOLVED SOLIDS	HARDNESS AS CaCO ₃	PERCENT SODIUM	SODIUM ADSORPTION RATIO (SAR)	RESIDUAL SODIUM CARBONATE (RSC)	SPECIFIC CONDUCTANCE (MICROMHOS AT 25° C)	pH	TEMPERATURE °C
								Na	K														
UJ-62-57-501	405-435	Sept. 30, 1970	CL	--	--	--	--	--	--	178	--	29	--	--	--	--	8	--	--	2.76	370	7.7	--
502	478-528	Oct. 25, 1967	CL	--	--	--	--	--	--	195	--	38	--	--	--	--	10	--	--	3.00	410	7.7	--
502	do.	Sept. 4, 1968	CL	--	--	--	--	--	--	196	--	35	--	--	--	--	13	--	--	2.95	404	7.7	--
502	do.	Oct. 9, 1969	CL	--	--	--	--	--	--	193	--	31	--	--	--	--	10	--	--	2.96	394	7.9	--
502	do.	Oct. 1, 1970	CL	--	--	--	--	--	--	188	--	30	--	--	--	--	14	--	--	2.80	394	7.9	--
506	505	Sept. 1, 1967	CL	--	--	--	--	--	--	356	--	115	--	--	--	--	50	--	--	4.83	882	7.7	--
506	505	Sept. 11, 1968	CL	--	--	--	--	--	--	362	--	106	--	--	--	--	50	--	--	4.93	860	7.5	--
605	469-489	Oct. 23, 1967	CL	--	--	--	--	--	--	150	--	25	--	--	--	--	10	--	--	2.26	304	8.1	--
605	do.	Sept. 4, 1968	CL	--	--	--	--	--	--	152	--	25	--	--	--	--	9	--	--	2.31	308	7.5	--
605	do.	Oct. 8, 1969	CL	--	--	--	--	--	--	149	--	26	--	--	--	--	10	--	--	2.24	310	7.7	24.0
605	do.	Sept. 30, 1970	CL	--	--	--	--	--	--	150	--	25	--	--	--	--	8	--	--	2.30	318	7.5	--
901	575-625	Aug. 17, 1967	CL	--	--	--	--	--	--	224	--	930	--	--	--	--	148	--	--	.71	3,170	7.9	--
901	do.	Oct. 8, 1969	CL	--	--	--	--	--	--	226	--	950	--	--	--	--	146	--	--	.78	2,910	7.3	25.0
904	432-455	Aug. 17, 1967	CL	--	--	--	--	--	--	226	--	43	--	--	--	--	13	--	--	3.44	469	7.9	--
904	do.	Sept. 5, 1968	CL	--	--	--	--	--	--	224	--	42	--	--	--	--	19	--	--	3.29	476	8.0	--
904	do.	Oct. 8, 1969	CL	--	--	--	--	--	--	228	--	42	--	--	--	--	12	--	--	3.50	470	7.9	24.0
904	do.	Sept. 30, 1970	CL	--	--	--	--	--	--	247	--	83	--	--	--	--	22	--	--	3.61	545	7.9	--
905	422-461	Sept. 5, 1968	CL	--	--	--	--	--	--	248	--	46	--	--	--	--	17	--	--	3.72	520	7.8	23.0
905	do.	Oct. 8, 1969	CL	--	--	--	--	--	--	252	--	46	--	--	--	--	14	--	--	3.85	514	7.8	24.0
905	do.	Sept. 30, 1970	CL	--	--	--	--	--	--	223	--	42	--	--	--	--	11	--	--	3.44	487	7.9	--
907	604-654	Oct. 8, 1969	CL	--	--	--	--	--	--	182	--	152	--	--	--	--	26	--	--	2.46	733	7.2	25.0
908	573-623	do.	CL	--	--	--	--	--	--	182	--	53	--	--	--	--	14	--	--	2.70	444	7.8	25.0
58-202	432	Sept. 4, 1968	CL	--	--	--	--	--	--	252	--	17	--	--	--	--	27	--	--	3.59	427	7.7	--
304	626-706	Aug. 18, 1967	CL	--	--	--	--	--	--	196	--	192	--	--	--	--	64	--	--	1.93	905	7.4	--
304	do.	Sept. 11, 1968	CL	--	--	--	--	--	--	196	--	188	--	--	--	--	62	--	--	1.97	889	7.3	--
304	do.	Oct. 9, 1969	CL	--	--	--	--	--	--	196	--	192	--	--	--	--	65	--	--	1.91	861	7.5	--

See footnotes at end of table.

Table 7.--Selected Chemical Analyses of Water From Wells in Orange County--Continued

WELL	DEPTH OR PRODUCING INTERVAL (FT)	DATE OF COLLECTION	WATER BEARING UNIT	SILICA (SiO ₂)	IRON (Fe)	CALCIUM (Ca)	MAGNESIUM (Mg)	SODIUM AND POTASSIUM		BICARBONATE (HCO ₃)	SULFATE (SO ₄)	CHLORIDE (Cl)	FLUORIDE (F)	NI-TRATE (NO ₃)	BORON (B)	DIS-SOLVED SOLIDS	HARD-NESS AS CaCO ₃	PER-CENT SO-DIUM	SODIUM ADSORP-TION RATIO (SAR)	RESI-DUAL SODIUM CAR-BONATE (RSC)	SPECIFIC CONDUCTANCE (MICROMHOS AT 25° C)	pH	TEM-PE-RATURE °C									
								Na	K																							
UJ-62-58-304	626-706	Oct. 1, 1970	CL	--	--	--	--	--	--	190	--	200	--	--	--	--	66	--	--	1.79	927	7.1	--									
305	520-610	Sept. 11, 1968	CL	--	--	--	--	--	--	168	--	81	--	--	--	60	--	--	--	1.55	517	7.1	24.0									
305	do.	Sept. 30, 1970	CL	--	--	--	--	--	--	166	--	86	--	--	--	69	--	--	--	1.34	544	7.0	23.0									
324	365-445	Sept. 1, 1967	CL	50	0.35	10	2.9	50	1.7	154	0.4	15	0.5	0.2	0.07	198	37	74	1.79	279	7.4	23.0										
324	do.	Sept. 5, 1968	CL	--	--	--	--	--	--	151	--	14	--	--	--	42	--	--	1.64	275	7.3	22.0										
324	do.	Oct. 6, 1969	CL	--	--	--	--	--	--	150	--	15	--	--	--	36	--	--	1.74	281	7.5	23.0										
324	do.	Sept. 28, 1970	CL	--	--	--	--	--	--	148	--	15	--	--	--	41	--	--	1.61	287	7.5	23.0										
325	620-670	Sept. 11, 1968	CL	46	.55	13	4.0	160	2.1	196	.0	168	.5	.1	.14	490	49	87	2.23	831	7.6	24.0										
325	do.	Oct. 9, 1969	CL	--	--	--	--	--	--	200	--	183	--	--	--	52	--	--	2.24	844	7.5	25.0										
325	do.	Oct. 1, 1970	CL	--	--	--	--	--	--	190	--	170	--	--	--	56	--	--	1.99	906	7.3	24.0										
402	515-535	Oct. 23, 1967	CL	--	--	--	--	--	--	169	--	34	--	--	--	16	--	--	2.45	347	8.0	--										
402	do.	Sept. 5, 1968	CL	--	--	--	--	--	--	152	--	33	--	--	--	11	--	--	2.27	336	7.6	--										
402	do.	Oct. 7, 1969	CL	--	--	--	--	--	--	150	--	41	--	--	--	8	--	--	2.30	352	7.5	--										
402	do.	Sept. 30, 1970	CL	--	--	--	--	--	--	150	--	33	--	--	--	13	--	--	2.20	332	7.6	--										
409	564-651	Sept. 1, 1967	CL	--	--	--	--	--	--	198	--	185	--	--	--	23	--	--	2.79	903	7.7	26.0										
409	do.	Sept. 5, 1968	CL	--	--	--	--	--	--	200	--	194	--	--	--	38	--	--	2.52	917	7.8	26.0										
409	do.	Oct. 6, 1969	CL	--	--	--	--	--	--	196	--	189	--	--	--	24	--	--	2.73	892	7.6	26.0										
409	do.	Sept. 30, 1970	CL	--	--	--	--	--	--	185	--	198	--	--	--	27	--	--	2.49	935	7.6	26.0										
411	450	Sept. 4, 1968	CL	--	--	--	--	--	--	236	--	19	--	--	--	14	--	--	3.59	413	7.7	23.0										
411	450	Oct. 9, 1969	CL	--	--	--	--	--	--	240	--	20	--	--	--	11	--	--	3.71	416	7.8	23.0										
411	450	Sept. 30, 1970	CL	--	--	--	--	--	--	237	--	21	--	--	--	14	--	--	3.60	431	7.8	--										
423	208-218	Sept. 5, 1968	CU	--	--	--	--	--	--	392	--	68	--	--	--	69	--	--	5.04	770	7.6	--										
423	do.	Oct. 8, 1969	CU	--	--	--	--	--	--	396	--	70	--	--	--	62	--	--	5.25	750	7.5	--										
423	do.	Sept. 30, 1970	CU	--	--	--	--	--	--	386	--	70	--	--	--	72	--	--	4.89	791	7.5	--										
602	700	Sept. 12, 1968	CL	--	--	--	--	--	--	184	--	125	--	--	--	38	--	--	2.26	678	7.1	--										
602	700	Oct. 8, 1969	CL	--	--	--	--	--	--	184	--	134	--	--	--	40	--	--	2.22	683	7.4	--										

See footnotes at end of table.

Table 7.--Selected Chemical Analyses of Water From Wells in Orange County--Continued

WELL	DEPTH OR PRODUCING INTERVAL (FT)	DATE OF COLLECTION	WATER BEARING UNIT	SILICA (SiO ₂)	IRON (Fe)	CALCIUM (Ca)	MAGNESIUM (Mg)	SODIUM AND POTASSIUM		BICARBONATE (HCO ₃)	SULFATE (SO ₄)	CHLORIDE (Cl)	FLUORIDE (F)	NITRATE (NO ₃)	BORON (B)	DISSOLVED SOLIDS	HARDNESS AS CaCO ₃	PERCENT SODIUM	SODIUM ADSORPTION RATIO (SAR)	RESIDUAL SODIUM CARBONATE (RSC)	SPECIFIC CONDUCTANCE (MICROMHOS AT 25° C)	pH	TEMPERATURE °C
								Na	K														
UJ-62-58-602	700	Sept. 28, 1970	CL	--	--	--	--	--	--	180	--	130	--	--	--	--	53	--	--	1.89	738	7.2	--
<u>1/</u> 604	633-707	June 1963	CL	--	--	--	--	--	--	--	--	147	--	--	--	--	--	--	--	--	--	---	--
604	do.	July 1965	CL	--	--	--	--	--	--	--	--	230	--	--	--	--	--	--	--	--	--	--	--
604	do.	Oct. 26, 1967	CL	--	--	--	--	--	--	182	--	572	--	--	--	--	129	--	--	.40	1,960	7.8	--
<u>1/</u> 605	604-717	June 1963	CL	--	--	--	--	--	--	--	--	110	--	--	--	--	--	--	--	--	--	--	--
605	do.	July 1965	CL	--	--	--	--	--	--	--	--	130	--	--	--	--	--	--	--	--	--	--	--
605	do.	Oct. 26, 1967	CL	--	--	--	--	--	--	189	--	148	--	--	--	--	26	--	--	2.58	729	8.0	--
605	do.	Sept. 6, 1968	CL	--	--	--	--	--	--	192	--	178	--	--	--	--	43	--	--	2.29	845	7.7	24.0
605	do.	Oct. 8, 1969	CL	--	--	--	--	--	--	194	--	538	--	--	--	--	126	--	--	.66	1,780	7.2	25.0
605	do.	Oct. 1, 1970	CL	--	--	--	--	--	--	193	--	760	--	--	--	--	160	--	--	.00	2,640	7.5	24.0
605	do.	Mar. 17, 1971	CL	--	--	--	--	--	--	196	--	820	--	--	--	--	160	--	--	.00	2,770	7.0	24.0
<u>1/</u> 606	630-710	July 1965	CL	--	--	--	--	--	--	--	--	105	--	--	--	--	--	--	--	--	--	--	--
606	do.	Aug. 1967	CL	--	--	--	--	--	--	--	--	100	--	--	--	--	--	--	--	--	--	--	--
606	do.	Sept. 6, 1968	CL	--	--	--	--	--	--	192	--	98	--	--	--	--	22	--	--	2.71	591	7.8	24.0
606	do.	Oct. 8, 1969	CL	--	--	--	--	--	--	194	--	122	--	--	--	--	23	--	--	2.72	656	7.5	26.0
606	do.	Oct. 1, 1970	CL	--	--	--	--	--	--	194	--	130	--	--	--	--	32	--	--	2.54	727	7.4	26.0
606	do.	Mar. 17, 1971	CL	--	--	--	--	--	--	196	--	140	--	--	--	--	28	--	--	2.65	781	7.5	25.0
608	620-735	Sept. 12, 1968	CL	--	--	--	--	--	--	204	--	134	--	--	--	--	28	--	--	2.78	729	7.5	24.0
608	do.	Oct. 8, 1969	CL	--	--	--	--	--	--	208	--	162	--	--	--	--	34	--	--	2.73	798	7.6	25.0
608	do.	Sept. 29, 1970	CL	--	--	--	--	--	--	206	--	174	--	--	--	--	43	--	--	2.52	871	7.4	25.0
608	do.	Mar. 18, 1971	CL	--	--	--	--	--	--	208	--	170	--	--	--	--	35	--	--	2.71	888	7.5	25.0
609	634-723	Oct. 7, 1969	CL	--	--	--	--	--	--	204	--	86	--	--	--	--	26	--	--	2.82	602	7.6	25.0
609	do.	Sept. 29, 1970	CL	--	--	--	--	--	--	196	--	148	--	--	--	--	41	--	--	2.39	784	7.6	25.0
609	do.	Mar. 17, 1971	CL	--	--	--	--	--	--	200	--	160	--	--	--	--	44	--	--	2.40	841	7.4	--
612	630-720	Oct. 5, 1967	CL	--	--	--	--	--	--	205	--	223	--	--	--	--	55	--	--	2.26	949	8.1	25.0
612	do.	Sept. 11, 1968	CL	--	--	--	--	--	--	202	--	230	--	--	--	--	57	--	--	2.17	1,040	7.8	26.0

See footnotes at end of table.

Table 7.--Selected Chemical Analyses of Water From Wells in Orange County--Continued

WELL	DEPTH OR PRODUCING INTERVAL (FT)	DATE OF COLLECTION	WATER BEARING UNIT	SILICA (SiO ₂)	IRON (Fe)	CALCIUM (Ca)	MAGNESIUM (Mg)	SODIUM AND POTASSIUM		BICARBONATE (HCO ₃)	SULFATE (SO ₄)	CHLORIDE (Cl)	FLUORIDE (F)	NITRATE (NO ₃)	BORON (B)	DISSOLVED SOLIDS	HARDNESS AS CaCO ₃	PERCENT SODIUM	SODIUM ADSORPTION RATIO (SAR)	RESIDUAL SODIUM CARBONATE (RSC)	SPECIFIC CONDUCTANCE (MICROMHOS AT 25° C)	pH	TEMPERATURE °C
								Na	K														
UJ-62-58-612	630-720	Oct. 7, 1969	CL	--	--	--	--	--	--	210	--	252	--	--	--	--	65	--	--	2.14	1,070	7.5	25.0
612	do.	Sept. 29, 1970	CL	--	--	--	--	--	--	198	--	77	--	--	--	--	33	--	--	2.59	569	7.5	25.5
2/ 614	726	June 1963	CL	--	--	--	--	--	--	--	--	110	--	--	--	--	--	--	--	--	--	--	--
614	do.	Oct. 5, 1967	CL	--	--	--	--	--	--	199	--	118	--	--	--	--	34	--	--	2.58	639	8.1	25.0
614	do.	Sept. 11, 1968	CL	--	--	--	--	--	--	198	--	117	--	--	--	--	34	--	--	2.57	679	7.4	25.0
614	do.	Sept. 29, 1970	CL	--	--	--	--	--	--	193	--	134	--	--	--	--	41	--	--	2.34	746	7.3	25.0
614	do.	Mar. 17, 1971	CL	--	--	--	--	--	--	200	--	150	--	--	--	--	39	--	--	2.50	787	7.4	--
3/ 615	611-700	June 1963	CL	--	--	--	--	--	--	--	--	120	--	--	--	--	--	--	--	--	--	--	--
615	do.	July 1965	CL	--	--	--	--	--	--	--	--	240	--	--	--	--	--	--	--	--	--	--	--
615	do.	Oct. 1967	CL	--	--	--	--	--	--	--	--	410	--	--	--	--	--	--	--	--	--	--	--
615	do.	Sept. 6, 1968	CL	--	--	--	--	--	--	192	--	480	--	--	--	--	109	--	--	.97	1,770	7.0	24.0
615	do.	Oct. 7, 1969	CL	--	--	--	--	--	--	202	--	595	--	--	--	--	134	--	--	.63	1,970	7.2	25.0
615	do.	Oct. 1, 1970	CL	--	--	--	--	--	--	190	--	240	--	--	--	--	45	--	--	2.21	1,040	7.2	24.0
615	do.	Dec. 1970	CL	--	--	--	--	--	--	--	--	710	--	--	--	--	--	--	--	--	--	--	--
615	do.	Mar. 17, 1971	CL	--	--	--	--	--	--	208	--	700	--	--	--	--	180	--	--	.00	2,450	7.0	24.0
1/ 616	596-718	June 1963	CL	--	--	--	--	--	--	--	--	240	--	--	--	--	--	--	--	--	--	--	--
616	do.	July 1965	CL	--	--	--	--	--	--	--	--	264	--	--	--	--	--	--	--	--	--	--	--
616	do.	Oct. 26, 1967	CL	--	--	--	--	--	--	193	--	335	--	--	--	--	61	--	--	1.94	1,300	7.6	--
616	do.	Sept. 6, 1968	CL	--	--	--	--	--	--	198	--	420	--	--	--	--	80	--	--	1.65	1,610	7.5	26.0
616	do.	Apr. 1969	CL	--	--	--	--	--	--	--	--	540	--	--	--	--	--	--	--	--	--	--	--
617	629	Oct. 5, 1967	CL	--	--	--	--	--	--	181	--	46	--	--	--	--	34	--	--	2.29	397	7.7	--
617	629	Sept. 11, 1968	CL	--	--	--	--	--	--	180	--	45	--	--	--	--	32	--	--	2.31	416	7.5	--
617	629	Oct. 7, 1969	CL	--	--	--	--	--	--	180	--	45	--	--	--	--	32	--	--	2.31	412	7.5	--
617	629	Sept. 29, 1970	CL	--	--	--	--	--	--	180	--	46	--	--	--	--	39	--	--	2.17	432	7.5	24.0
623	440-460	Sept. 1, 1967	CL	--	--	--	--	--	--	228	--	18	--	--	--	--	19	--	--	3.36	394	7.8	--
623	do.	Sept. 11, 1968	CL	--	--	--	--	--	--	219	--	17	--	--	--	--	18	--	--	3.23	384	7.5	--

See footnotes at end of table.

Table 7.--Selected Chemical Analyses of Water From Wells in Orange County--Continued

WELL	DEPTH OR PRODUCING INTERVAL (FT)	DATE OF COLLECTION	WATER BEARING UNIT	SILICA (SiO ₂)	IRON (Fe)	CALCIUM (Ca)	MAGNESIUM (Mg)	SODIUM AND POTASSIUM		BICARBONATE (HCO ₃)	SULFATE (SO ₄)	CHLORIDE (Cl)	FLUORIDE (F)	NITRATE (NO ₃)	BORON (B)	DISSOLVED SOLIDS	HARDNESS AS CaCO ₃	PERCENT SULFATE	SODIUM ADSORPTION RATIO (SAR)	RESIDUAL SODIUM CARBONATE (RSC)	SPECIFIC CONDUCTANCE (MICROMHOS AT 25° C)	pH	TEMPERATURE °C									
								Na	K																							
UJ-62-58-623	440-460	Oct. 8, 1969	CL	--	--	--	--	--	--	220	--	17	--	--	--	18	--	18	--	--	3.25	386	8.0	--								
623	do.	Sept. 28, 1970	CL	--	--	--	--	--	--	220	--	19	--	--	23	--	23	--	--	3.15	394	7.8	--	--								
629	595-680	June 1963	CL	--	--	--	--	--	--	--	--	130	--	--	--	--	--	--	--	--	--	--	--	--	--							
629	do.	July 1965	CL	--	--	--	--	--	--	--	--	120	--	--	--	--	--	--	--	--	--	--	--	--	--							
629	do.	Oct. 1967	CL	--	--	--	--	--	--	--	--	130	--	--	--	--	--	--	--	--	--	--	--	--	--							
629	do.	Sept. 6, 1968	CL	--	--	--	--	--	--	190	--	120	--	--	29	--	29	--	--	2.53	661	7.4	24.0	--								
629	do.	Oct. 7, 1969	CL	--	--	--	--	--	--	194	--	131	--	--	24	--	24	--	--	2.70	702	7.3	25.5	--								
629	do.	Oct. 1, 1970	CL	--	--	--	--	--	--	189	--	150	--	--	30	--	30	--	--	2.50	786	7.1	24.0	--								
629	do.	Mar. 17, 1971	CL	--	--	--	--	--	--	188	--	160	--	--	28	--	28	--	--	2.52	828	7.2	24.0	--								
631	708	June 1963	CL	--	--	--	--	--	--	--	--	230	--	--	--	--	--	--	--	--	--	--	--	--	--							
631	708	July 1965	CL	--	--	--	--	--	--	--	--	650	--	--	--	--	--	--	--	--	--	--	--	--	--							
631	708	Dec. 1966	CL	--	--	--	--	--	--	--	--	740	--	--	--	--	--	--	--	--	--	--	--	--	--							
631	708	Dec. 1970	CL	--	--	--	--	--	--	--	--	860	--	--	--	--	--	--	--	--	--	--	--	--	--							
632	640-710	June 1965	CL	--	--	--	--	--	--	--	--	70	--	--	--	--	--	--	--	--	--	--	--	--	--							
632	do.	Oct. 27, 1967	CL	--	--	--	--	--	--	191	--	93	--	--	16	--	16	--	--	2.81	562	8.0	--	--								
632	do.	Sept. 6, 1968	CL	--	--	--	--	--	--	192	--	95	--	--	23	--	23	--	--	2.69	588	7.6	24.0	--								
632	do.	Oct. 8, 1969	CL	--	--	--	--	--	--	196	--	98	--	--	16	--	16	--	--	2.89	596	7.8	25.0	--								
632	do.	Sept. 29, 1970	CL	--	--	--	--	--	--	193	--	99	--	--	22	--	22	--	--	2.72	631	7.4	25.0	--								
633	625-725	Aug. 1965	CL	--	--	--	--	--	--	--	--	96	--	--	--	--	--	--	--	--	--	--	--	--	--							
633	do.	July 1967	CL	--	--	--	--	--	--	--	--	112	--	--	--	--	--	--	--	--	--	--	--	--	--							
633	do.	Sept. 6, 1968	CL	--	--	--	--	--	--	204	--	112	--	--	30	--	30	--	--	2.74	656	7.6	24.0	--								
633	do.	Oct. 8, 1969	CL	--	--	--	--	--	--	204	--	114	--	--	19	--	19	--	--	2.96	645	7.7	25.0	--								
633	do.	Sept. 29, 1970	CL	--	--	--	--	--	--	200	--	225	--	--	48	--	48	--	--	2.32	1,050	7.6	25.0	--								
633	do.	Mar. 18, 1971	CL	--	--	--	--	--	--	208	--	280	--	--	52	--	52	--	--	2.37	1,220	7.5	24.0	--								
634	615-715	July 1965	CL	--	--	--	--	--	--	--	--	108	--	--	--	--	--	--	--	--	--	--	--	--	--							
634	do.	Oct. 27, 1967	CL	--	--	--	--	--	--	190	--	121	--	--	18	--	18	--	--	2.75	652	7.9	24.0	--								

See footnotes at end of table.

Table 7.--Selected Chemical Analyses of Water From Wells in Orange County--Continued

WELL	DEPTH OR PRODUCING INTERVAL (FT)	DATE OF COLLECTION	WATER BEARING UNIT	SILICA (SiO ₂)	IRON (Fe)	CALCIUM (Ca)	MAGNESIUM (Mg)	SODIUM AND POTASSIUM		BICARBONATE (HCO ₃)	SULFATE (SO ₄)	CHLORIDE (Cl)	FLUORIDE (F)	NITRATE (NO ₃)	BORON (B)	DISSOLVED SOLIDS	HARDNESS AS CaCO ₃	PERCENT SODIUM	SODIUM ADSORPTION RATIO (SAR)	RESIDUAL SODIUM CARBONATE (RSC)	SPECIFIC CONDUCTANCE (MICROMHOS AT 25° C)	pH	TEMPERATURE °C
UJ-62-58-634	615-715	Sept. 6, 1968	CL	--	--	--	--	--	--	192	--	136	--	--	--	--	30	--	--	2.55	716	7.5	24.0
634	do.	Oct. 8, 1969	CL	--	--	--	--	--	--	200	--	135	--	--	--	--	20	--	--	2.88	705	7.8	--
634	do.	Sept. 29, 1970	CL	--	--	--	--	--	--	198	--	158	--	--	--	--	24	--	--	2.77	813	7.4	25.0
634	do.	Mar. 18, 1971	CL	--	--	--	--	--	--	200	--	160	--	--	--	--	22	--	--	2.84	831	7.4	24.0
4/ 635	639-689	Aug. 1967	CL	--	--	--	--	--	--	--	--	67	--	--	--	--	--	--	--	--	--	--	--
635	do.	Aug. 29, 1967	CL	--	--	--	--	--	--	194	--	67	--	--	--	--	13	--	--	2.92	498	7.7	--
635	do.	Sept. 6, 1968	CL	--	--	--	--	--	--	188	--	65	--	--	--	--	17	--	--	2.74	491	7.7	--
635	do.	Oct. 8, 1969	CL	--	--	--	--	--	--	188	--	58	--	--	--	--	12	--	--	2.84	467	7.8	--
635	do.	Sept. 29, 1970	CL	--	--	--	--	--	--	185	--	51	--	--	--	--	18	--	--	2.67	456	7.7	--
637	630-670	Sept. 6, 1968	CL	41	0.31	5.8	1.7	121	1.3	188	0.6	96	0.4	0.2	0.09	360	22	92	11	2.65	599	7.8	24.0
637	do.	Oct. 8, 1969	CL	--	--	--	--	--	--	194	--	121	--	--	--	--	22	--	--	2.74	656	7.9	25.0
637	do.	Oct. 1, 1970	CL	--	--	--	--	--	--	191	--	160	--	--	--	--	28	--	--	2.57	806	7.7	24.0
637	do.	Mar. 17, 1971	CL	--	--	--	--	--	--	196	--	160	--	--	--	--	26	--	--	2.69	839	7.6	24.0
638	634-735	Oct. 8, 1969	CL	--	--	--	--	--	--	196	--	145	--	--	--	--	22	--	--	2.77	728	7.4	25.0
638	do.	Oct. 7, 1970	CL	51	.37	10	2.2	160	1.2	192	.0	160	.3	.0	.10	479	34	91	12	2.47	774	7.2	24.5
638	do.	Mar. 17, 1971	CL	--	--	--	--	--	--	188	--	180	--	--	--	--	33	--	--	2.42	904	7.4	24.5
639	620-725	Oct. 7, 1970	CL	43	.38	9.5	2.7	190	1.3	204	.0	200	.4	.0	.09	547	34	92	14	2.65	971	7.2	24.5
640	612-718	Mar. 18, 1971	CL	43	.34	6.5	2.2	170	1.4	200	.0	170	.4	.4	.12	496	25	93	15	2.78	859	7.3	24.0
701	614-670	Oct. 25, 1967	CL	--	--	--	--	--	--	197	--	183	--	--	--	--	16	--	--	2.91	853	7.9	--
701	do.	Sept. 5, 1968	CL	--	--	--	--	--	--	200	--	184	--	--	--	--	32	--	--	2.64	878	7.8	24.0
701	do.	Oct. 8, 1969	CL	--	--	--	--	--	--	200	--	187	--	--	--	--	19	--	--	2.90	857	7.8	26.0
701	do.	Sept. 30, 1970	CL	--	--	--	--	--	--	194	--	192	--	--	--	--	20	--	--	2.78	919	7.4	24.0
702	600-672	Aug. 18, 1967	CL	--	--	--	--	--	--	228	--	115	--	--	--	--	16	--	--	3.42	712	7.8	24.0
702	do.	Sept. 5, 1968	CL	--	--	--	--	--	--	228	--	122	--	--	--	--	10	--	--	3.36	726	7.6	24.0
702	do.	Oct. 8, 1969	CL	--	--	--	--	--	--	226	--	136	--	--	--	--	16	--	--	3.38	744	7.5	25.0
702	do.	Sept. 30, 1970	CL	--	--	--	--	--	--	224	--	142	--	--	--	--	18	--	--	3.31	800	7.3	24.0

See footnotes at end of table.

Table 7.--Selected Chemical Analyses of Water From Wells in Orange County--Continued

WELL	DEPTH OR PRODUCING INTERVAL (FT)	DATE OF COLLECTION	WATER BEARING UNIT	SILICA (SiO ₂)	IRON (Fe)	CALCIUM (Ca)	MAGNESIUM (Mg)	SODIUM AND POTASSIUM		BICARBONATE (HCO ₃)	SULFATE (SO ₄)	CHLORIDE (Cl)	FLUORIDE (F)	NITRATE (NO ₃)	BORON (B)	DISSOLVED SOLIDS	HARDNESS AS CaCO ₃	PERCENT SODIUM	SODIUM ADSORPTION RATIO (SAR)	RESIDUAL SODIUM CARBONATE (RSC)	SPECIFIC CONDUCTANCE (MICROMHOS AT 25° C)	pH	TEMPERATURE °C
								Na	K														
UJ-62-58-708	465	Aug. 17, 1967	CL	--	--	--	--	--	--	252	--	32	--	--	--	--	16	--	--	3.81	478	8.1	--
	809	470-650	May 23, 1967	CL	34	1.5	6.0	1.7	243 1.0	230	0.2	255	0.5	0.5	0.18	656	22	96	23	3.33	1,190	7.0	24.0
	809	do.	Sept. 5, 1968	CL	--	--	--	--	--	238	--	261	--	--	--	--	23	--	--	3.44	1,170	7.3	24.0
	809	do.	Oct. 8, 1969	CL	--	--	--	--	--	242	--	260	--	--	--	--	22	--	--	3.53	1,110	7.5	25.0
	809	do.	Sept. 30, 1970	CL	--	--	--	--	--	238	--	260	--	--	--	--	23	--	--	3.44	1,170	7.1	24.0
59-101	555-666	Sept. 1, 1967	CL	--	--	--	--	--	--	198	--	132	--	--	--	--	48	--	--	2.29	723	7.6	24.0
	101	do.	Sept. 11, 1968	CL	--	--	--	--	--	194	--	130	--	--	--	--	46	--	--	2.26	711	7.4	24.0
	101	do.	Oct. 7, 1969	CL	--	--	--	--	--	196	--	128	--	--	--	--	46	--	--	2.29	688	7.5	24.5
	101	do.	Sept. 30, 1970	CL	--	--	--	--	--	192	--	110	--	--	--	--	55	--	--	2.05	732	7.3	24.0
	103	565-685	Aug. 18, 1967	CL	--	--	--	--	--	176	--	65	--	--	--	--	39	--	--	2.10	475	7.6	24.0
	103	do.	Sept. 11, 1968	CL	--	--	--	--	--	164	--	48	--	--	--	--	28	--	--	2.13	410	7.4	23.0
	103	do.	Oct. 7, 1969	CL	--	--	--	--	--	170	--	55	--	--	--	--	32	--	--	2.15	424	7.4	24.0
	103	do.	Sept. 30, 1970	CL	--	--	--	--	--	170	--	56	--	--	--	--	45	--	--	1.89	456	7.3	24.0
	106	630-750	Sept. 11, 1968	CL	--	--	--	--	--	212	--	86	--	--	--	--	30	--	--	2.87	591	7.4	--
	106	do.	Oct. 8, 1969	CL	--	--	--	--	--	214	--	87	--	--	--	--	30	--	--	2.91	577	8.0	26.0
	106	do.	Sept. 30, 1970	CL	--	--	--	--	--	210	--	84	--	--	--	--	35	--	--	2.74	602	7.6	26.0
	107	745	Aug. 17, 1967	CL	--	--	--	--	--	218	--	97	--	--	--	--	28	--	--	3.01	639	7.8	24.0
	123	529-643	Oct. 23, 1967	CL	--	--	--	--	--	202	--	95	--	--	--	--	30	--	--	2.71	569	7.7	24.0
	123	do.	Sept. 11, 1968	CL	--	--	--	--	--	204	--	97	--	--	--	--	32	--	--	2.70	623	7.3	24.0
	123	do.	Oct. 7, 1969	CL	--	--	--	--	--	210	--	100	--	--	--	--	32	--	--	2.80	627	7.6	24.0
	123	do.	Sept. 30, 1970	CL	--	--	--	--	--	204	--	104	--	--	--	--	38	--	--	2.58	667	7.4	24.0
	124	590-640	Sept. 1, 1967	CL	50	0.60	15	4.3	135 2.5	186	4.0	141	.7	.2	.12	444	55	83	7.9	1.95	737	7.4	24.0
	124	do.	Sept. 11, 1968	CL	--	--	--	--	--	184	--	136	--	--	--	--	55	--	--	1.92	710	7.1	24.0
	124	do.	Oct. 9, 1969	CL	--	--	--	--	--	184	--	140	--	--	--	--	55	--	--	1.92	700	7.4	25.0
	124	do.	Oct. 1, 1970	CL	--	--	--	--	--	180	--	140	--	--	--	--	60	--	--	1.75	751	7.1	24.0
	401	555-575	Oct. 24, 1967	CL	--	--	--	--	--	183	--	43	--	--	--	--	35	--	--	2.30	408	8.1	--

See footnotes at end of table.

Table 7.--Selected Chemical Analyses of Water From Wells in Orange County--Continued

WELL	DEPTH OR PRODUCING INTERVAL (FT)	DATE OF COLLECTION	WATER BEARING UNIT	SILICA (SiO ₂)	IRON (Fe)	CALCIUM (Ca)	MAGNESIUM (Mg)	SODIUM AND POTASSIUM		BICARBONATE (HCO ₃)	SULFATE (SO ₄)	CHLORIDE (Cl)	FLUORIDE (F)	NITRATE (NO ₃)	BORON (B)	DISSOLVED SOLIDS	HARDNESS AS CaCO ₃	PERCENT SODIUM ADSORPTION RATIO (SAR)	RESIDUAL SODIUM CARBONATE (RSC)	SPECIFIC CONDUCTANCE (MICROMHOS AT 25° C)	pH	TEMPERATURE °C	
								Na	K														
UJ-62-59-401	555-575	Sept. 10, 1968	CL	--	--	--	--	--	--	166	--	42	--	--	--	--	34	--	--	2.04	411	7.4	24.0
401	do.	Oct. 8, 1969	CL	--	--	--	--	--	--	188	--	41	--	--	--	--	33	--	--	2.42	407	7.7	24.5
401	do.	Sept. 29, 1970	CL	--	--	--	--	--	--	186	--	41	--	--	--	--	35	--	--	2.35	427	7.7	23.0

1/ Analyses from Gulf Chemical Co.

2/ Analyses from E. I. DuPont Co.

3/ Analyses from Firestone Tire & Rubber Co.

4/ Analyses from B. F. Goodrich Co.