UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
Ground Water Branch

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DATA ON WATER WELLS, NAVAL AIR MISSILE TEST CENTER AREA, POINT MUGU, CALIFORNIA

Prepared at the request of
the Department of the Navy

Not reviewed for conformance with
editorial standards and stratigraphic
nomenclature of the Geological Survey

Long Beach, California
1960

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PURPOSE AND SCOPE OF THE WORK AND REPORT

The entire water supply for the U. S. Naval Air Missile Test Center at Point Mugu, Calif., is pumped from wells located within 2 miles of the Pacific Ocean. A large irrigation development inland from the Test Center has created a landward hydraulic gradient beneath the Test Center, causing sea-water encroachment into the water-yielding deposits. The encroaching sea water has not yet reached the Test Center well field; however, the encroachment poses a serious threat to the Test Center supply. To evaluate the adequacy of the water supply for the Naval Air Missile Test Center under these conditions and to suggest additional sources for future development, the U. S. Geological Survey has canvassed all wells and collected all available hydrologic data at the Test Center and in the immediate vicinity. The data tabulated in this report include measurements of water levels in wells, well logs, and chemical analyses for all wells south of Hueneme Road collected through February 1959.

This study was made by the Geological Survey, U. S. Department of the Interior, under the general supervision of H. D. Wilson, Jr., district engineer for California, and under the immediate supervision of Fred Kunkel, geologist in charge of the Long Beach subdistrict office.

PREVIOUS INVESTIGATIONS

Several earlier reports contain data pertinent to the water supply and geology of the Test Center area. Some of these reports consider the water-supply problem of the whole of Ventura County or the Oxnard Plain, whereas other reports consider the water-supply problem of only the Test Center.

Eldridge and Arnold (1907) described the structure of the oil fields in the Santa Clara Valley, Puente Hills, and Los Angeles oil districts, and the lithology and areal extent of the Modelo formation.

Kew (1924) described some of the lithology, stratigraphy, and structure in several oil fields in Los Angeles and Ventura Counties, and included a description of the lithology and areal extent of the Modelo formation in the vicinity of Point Mugu. Bailey (1935) described additional geologic formations that occur beneath the Test Center area.

About the earliest report concerning the water supply of the area was by the California Division of Water Resources (1933a). It described the geology and hydrology of the Oxnard Plain and vicinity. Several tables and plates contained in that report show data on rainfall percolation and ground-water storage of the area. An appendix of basic data was published separately (California Div. Water Resources, 1933b).

Conkling (written communication, 1947) described the geology and hydrology of the Oxnard Plain and vicinity, the problems of possible salt-water encroachment along the coast, and the demand for water in the area. His report contains a water-level contour map and numerous plates and tables showing the fluctuation of the water table, recharge, discharge, precipitation and runoff, and quality and use of and demand for water in the area.

A report by Poland, Garrett, and Mann (1948) dealt with the problem of an adequate and future water supply at the Test Center. It summarized the data collected, indluded a brief statement of geologic and hydrologic conditions beneath the Oxnard Plain, and summarized the ground-water conditions with respect to possible sea-water encroachment near the Test Center and Port Hueneme. It also discussed future sources of water supply for the Test Center area and included a water-level contour map.

A report by Hinds (1953) described the necessity of constructing spreading grounds and diversion works to supplement the water supply of the Oxnard Plain and vicinity. It contains maps showing ground-water contours, locations of ground-water basins, and geologic cross sections.

A report by the United Water Conservation District (1953) describes the present and future demands for water within the district and proposes dams, reservoirs, and spreading grounds to meet these demands. The report also lists cost estimates for completing these various projects.

A comprehensive report by the California State Water Resources Board (1956a), which describes the hydrology and geology of Ventura County, includes discussions of ground-water basins, reservoir sites for storing water, projects for importing water, and the problem of possible sea-water encroachment in the Oxnard Plain and vicinity. The report includes also tables of precipitation, runoff, water requirements and uses, and tabulations of mineral analyses of water from wells in the area.

An appendix to the report described above by the California State Water Resources Board (1956b) contains maps showing geology, ground-water contours, and locations of ground-water basins, geologic cross sections, and illustrations showing fluctuations of water levels, mineral character of ground water, depletion of ground-water storage, use of land, dam sites, and the proposed systems for carrying and distributing water to the Oxnard Plain and vicinity.

Price and Associates (1958) in a report on Pleasant Valley presented a section on the possible rate of sea-water encroachment in the Test Center area.

LOCATION AND GENERAL GEOLOGIC FEATURES OF THE AREA

The U. S. Naval Air Missile Test Center area at Point Mugu, Calif., occupies an area of about 4 square miles at the south edge of the Oxnard Plain (fig. 1). The Oxnard Plain is the nearly flat coastal

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Figure 1.--Map of the Point Mugu area, California, showing reconnaissance geology and locations of water wells.

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plain of Ventura County. Its average width is about 10 miles and it extends northwestward from Point Mugu about 15 miles. The total thickness of the water-yielding deposits beneath the alluvial plain has been determined only in a few wells. At the Test Center the thickness of these deposits is about 1,545 feet.

The outcropping and subsurface geologic units of the Test Center area are described from oldest to youngest.

The ~~Modelo formation of late~~ sedimentary rocks of Miocene age, which consists of sandstone, conglomerate, and shale, crops out locally in the Santa Monica Mountains where there are also nearly contemporaneous volcanic rocks consisting of intrusive and extrusive basalt, andesite, and rhyolite, associated with agglomerate and mudflows. These rocks are usually poorly permeable, and where penetrated by deep wells they generally contain brackish or saline water.

The Pico formation of Pliocene age is found only in the subsurface of the mapped area. It is about 75 feet thick beneath the Test Center. The formation, consisting of marine clay, shale, and carbonaceous sandstone, was not differentiated from the Santa Barbara formation of Bailey (1935). At well 1N/21-31L1, according to Bailey (written communication), the ~~formation~~ Pico was penetrated at a depth interval from about 1,470 to 1,545 feet below land surface. Although the Pico formation is poorly permeable, it is water bearing; however, it contains saline water.

The Santa Barbara formation of Bailey (1935) of Pleistocene age is found only in the subsurface of the mapped area, and it is present at the depth interval from about 690 to 1,470 feet below land surface at the Test Center. It consists of about 780 feet of marine clay, silt, sand, and gravel, as shown by the log of well 1N/21-31L1. The formation, although its water-bearing character has not been determined adequately, is a source of ground water at the Test Center. The upper 310 feet of the Santa Barbara formation of Bailey (1935) contains fresh water, but the lower 470 feet of the formation contains either brackish or saline water.

The San Pedro formation of early Pleistocene age, consisting of gravel, sand, silt, and clay, and containing marine fossils, is buried by unnamed younger Pleistocene deposits of gravel, sand, and silt. Both of these deposits, however, crop out locally as low hills above the Oxnard Plain and, in addition, the unnamed deposits also crop out in La Jolla Valley. These unnamed deposits and the San Pedro formation together are about 490 feet thick and are present at a depth interval from about 200 to 690 feet below land surface at the Test Center. Where saturated these deposits yield fresh water freely to wells.

The alluvial and coastal deposits of Recent age consist of gravel, sand, silt, and clay and have a maximum thickness extending from land surface to about 200 feet near the coast but probably are less than 30 feet thick beneath much of the Oxnard Plain. These deposits, where saturated, yield water freely to wells; however, near the coast they yield water of poor quality to wells.

The deposits containing fresh water form a wedge which thickens greatly from southeast to northwest. Beneath the Test Center the thickness of the fresh-water wedge, according to Poland, Garrett, and Mann (1948), is on the order of 1,000 to 1,200 feet. An electric log of well 1N/21-31L1 (NAMTC 3), drilled in 1949, shows the base of the fresh water to be about 1,000 feet below land surface and in the middle part of the Santa Barbara formation as described by Bailey (written communication, 1949).

The area canvassed for wells is bordered on the east by the Santa Monica Mountains, on the north by Hueneme Road, and on the south and southwest by the Pacific Ocean.

WELL-NUMBERING SYSTEM

The well-numbering system used in this investigation is that used by the U. S. Geological Survey in California since 1940. It has been adopted by the California Department of Water Resources and the California Water Pollution Control Board for use throughout the State.

Wells are assigned numbers according to their locations in the rectangular system for the subdivision of public land. For example, in the number 1N/21-25G2, assigned to a domestic well owned by the Sierra Vista Ranch, the part of the number preceding the slash indicates the township (T. 1 N.), the part between the slash and the hyphen indicates the range (R. 21 W.), the number between the hyphen and the letter indicates the section (sec. 25), and the letter indicates the 40-acre subdivision of the section as shown in the accompanying diagram.

D	C	B	A
E	F	G	H
M	L	K	J
N	P	Q	R

Within the 40-acre tract the wells are numbered serially as indicated by the final digit. Thus, well 1N/21-25G2 is the second well to be listed in the $SW\frac{1}{4}NE\frac{1}{4}$ sec. 25. Because the area is traversed by the San Bernardino base line, the letters N and S are used to indicate whether the well lies north or south of the line. However, because the entire area is west of the San Bernardino meridian line, no further designation is needed.

In well numbers where the letter Z follows the section number, the Z indicates that the well is plotted from unverified location descriptions. Where no well or evidence of a well could be found where reported, it was presumed to have been destroyed.

The Geological Survey numbers are cross referenced in table 2 with numbers of wells described in publications by the California Division of Water Resources and the California Department of Water Resources.

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Poland, J. F., Garrett, A. A., and Mann, J. F., 1948, Progress report on water supply for the Point Mugu Naval Base, Ventura County, Calif.: U. S. Geol. Survey open-file rept., 45 p.

Price, W. M., Jr., and associates, 1958, Report on proposed Pleasant Valley pipeline distribution system: 79 p.

United Water Conservation District of Ventura County, California, 1953, Report of investigation and recommendations for acquisition and construction of a water conservation system: 23 p.

Table 1.--Data on water wells, Naval Air Missile Test Center area, Point Mugu, California

USGS number: These are numbers assigned to wells by the Geological Survey according to the system described under "Well-Numbering System."

Other numbers: Numbers assigned by the Ventura County Flood Control District, the United Water Conservation District; also, unpublished numbers assigned by the California Department of Water Resources (DWR).

Date of observation: Data are presented in reverse chronological order, the most recent information summarized on the top line opposite the Geological Survey number.

Year completed: The date obtained from the driller's log or reported by the owner or others.

Depth: Depths given in feet and tenths were measured below land-surface datum by the Geological Survey; depths given in whole feet were reported by owners, drillers, or others and were the depths of the wells when drilled.

Pump type and power: J, jet; L, lift; N, none; S, submersible; T, turbine. Number is horsepower of pump motor.

Use: Dm domestic, Dp duck pond, Ds destroyed, In industrial, Ir irrigation, Ob observation, Ps public supply, Un unused.

Measuring point: The point from which water-level measurements are made is described as follows:

AG, air-line gage	Hpb, hole in pump base	Tc, top of casing
Bpb, bottom of pump base	Hwc, hole in top of wooden clamps	Tcf, top of concrete floor
Ftc, flange at top of casing	Na, no access	Tcr, top of concrete curb
Hc, hole in casing	Ncr, notch in concrete	Tn, top of nipple
Hcc, hole in casing cover	Tap, top of access pipe	Tpc, top of pump collar
Hp, hole in pump		

The suffix letters N, S, E, or W indicate the side (north, south, east, or west) from which the measurement is made. The distance of the measuring point above or below(-) land-surface datum is given in feet and tenths, and sometimes hundredths.

Altitude: The altitude is that of land-surface datum, the plane of reference at the well. Altitudes given in whole feet were interpolated from Geological Survey topographic maps having a contour interval of 5, 10, and 20 feet. Those given to tenths or hundredths of a foot were determined by spirit leveling by Ventura County, the United Water Conservation District, or the U. S. Navy. The datum plane is mean sea level.

Depth to water: Measured depths to water level are given in feet, tenths, and hundredths, or feet and tenths below land-surface datum; reported or approximate depths to water level are given in whole feet. The difference in altitudes between the land-surface datum and the measuring point has been subtracted from the measured water level below the measuring point.

Other data: C, chemical analyses of water are given in tables 5, 6, and 7; H, hydrographs of water-level measurements available in files of U. S. Navy; W, unpublished records of water level are given in table 3; Wp, published (DWR, 1933) and unpublished records of water levels are given in table 3.

USGS number	Other numbers	Date of observation	Owner or user	Well data: Year completed	Well data: Depth (ft.)	Well data: Diameter (in.)	Well data: Pump type and power	Well data: Use	Measuring point (feet)	Altitude of lsd (feet)	Depth to water below lsd (feet)	Other data
			T. 1 N., R. 21 W.									
1N/21-25E1		1-12-59 11-21-57	Sierra Vista Ranch			10	T 40	Ir	Tap 1.0	55	48.26 68.27	
25G1	13-W-5	1-12-59 11-20-57	Sierra Vista Ranch			14	N	Un	TcN 1.9	165	32.64 41.27	
25G2		1-12-59 11-21-57	Sierra Vista Ranch			6	L 3	Dm	TcE .5	125	27.06 37.78	
26E1		1-12-59	Broome Ranch		1400	12	N	Un	Hcc 2.2	15	51.26	
26G1		1-12-59 11-21-57	Sierra Vista Ranch		298.9	12	N	Un	TcW 1.5	25	22.32 42.47	
26J1	13-W-3	1-12-59 11-21-57	Sierra Vista Ranch		480.0	14	N	Un	Hcc .5	50	37.93 51.42	
26K1	13-W-1	1-12-59 11-21-57	Sierra Vista Ranch	1924	307		T 60	Ir	Tap 2.0	20	26.78 47.78	L
26K2	13-W-2	1-12-59 11-21-57	Sierra Vista Ranch			12	T 30	Ir	TapS 1.5	25	33.88 51.76	

27F1	12-W-2	2-2-59	Broome Ranch	1926	840	18	T	Un	Hp	2.1	13.7	62.0	C,L,Wp
27H1	12-W-9	5-28-58	Broome Ranch	1926	212	18	T 30	Ir			15		C,L
28C1	12-W-12	5-28-58	Davis Ranch	1940	809	16	T 50	Ir			15		C,L
28E1		1-13-59 5-20-58	Davis Ranch	1957	600	14	T 40	Ir	Tap	1.0	15	52.96 44.55	L
28F1	12-W-8	5-20-58 4-14-52 11-27-51	Davis Ranch	1924	208	16	S	Ir	Tc	1.0	15	 25.2 35.0	L
28F2	12-W-1	5-20-58	American Crystal Sugar Co.					Ds			13.2		Wp
28G1	12-W-14	5-20-58	Broome Ranch	1939	378	26	T 40	Ir			15	(a)	C,L
28G2	12-W-6	1-12-59 5-20-58	Broome Ranch	1933	370	26	N	Un	Tcr	2.0	15	39.18 34.75	C,L
28G3		5-20-58	Broome Ranch	1957	700	12	T 40	Ir	Na		15		L
28H1	12-W-13	5-20-58	Broome Ranch	1925	494	4	N	Un	Na		15		L
28N1	12-W-15	1-12-59 4-20-51	Broome Ranch	1934	275	24	T 60	Ir	Tcf	0	10	22.61 22.0	C,L
29A1	11-W-31S	1-8-58 1-27-51	A. DuBuessehere		50	14		Un	HcN Tap	0 .5	15	21.8 40.1	
29B1		1-8-58 1951					T 30	Ds	Tc	1.0		44.3	
29B3	11-W-38	1-8-58	A. DuBuessehere	1951	450	14	T 5	Ir			15		L

a. Well being pumped.

USGS number	Other numbers	Date of observation	Owner or user	Well data: Year completed	Well data: Depth (ft.)	Well data: Diameter (in.)	Well data: Pump type and power	Well data: Use	Measuring point (feet)	Altitude of lsd (feet)	Depth to water below lsd (feet)	Other data
			T. 1 N., R. 21 W.--Continued									
1N/21-29B4	11-W-32	1-12-59 1-8-58	H. DuBuessehere	1954	400		T 30	Ir	HpbN 0.5	15	38.55 36.98	
29B5		1-12-59 1- 8-58	A. DuBuessehere	1956	590		T 50	Ir	TapS 1.5	15	52.95 55.46	L
29C1		1-13-59 1-10-58	Raytheon Co.	1955	350	10	T 10	In	HpbN 1.0	15	35.99 34.81	L
29C2		1-10-58	Raytheon Co.		120	5	T $7\frac{1}{2}$	In	Na	15		
29C3		1-12-59 1-8-58	T. Gill	1957		10	N	Un	TcS .5	15	42.22 36.37	
29D1	11-W-8	1-13-59	R. L. Brooks		570		T 30	Ir	NcrS 1.0	18.86	55.20	C,W
29D2	11-W-10	1-13-59	R. L. Brooks	1945	602	12	S	Dm	Hwc .70	18.96	b54.0	C,L,W
29G1	11-W-24	1-13-59 1-8-58 11-26-51 4-19-51	Camela Wells	1947	288	10	T 3	Dm	TcE 1.0 Tc 1.0	15	29.94 27.17 33.1 49.5	L
29R1	11-W-9A	1-10-58	State of California		205	14	S	Dm		10	(b)	C,L

29R2	11-W-15	1-13-59 1-10-58	State of California	1947	134	10	N	Un	Ftc	1.0	10	29.24 22.79	C,L
29R3	11-W-9	1-8-58	State of California		300			Ds					C
30A1	11-W-17	1-10-58	E. Maulhart	1931	591	14	T 30	Ir	Na		15		L
30C2	11-W-25	1-8-58	A. and J. Callen	1924	191	8	T 20	Ir	Na		10		
30D1	11-W-29	1-8-58					T 30	Ir	Na		18		
30F1	11-W-1	1-12-59	Marie Callen Estate		135.2	12	N	Un	TcE	1.1	14.9	29.05	Wp
30F2	11-W-7	1-8-58	Marie Callen Estate			12	T 15	Ir	Na		16.0		W
30K1		1-12-59 1-8-58	Levy Co.	1956	746	12	T 30	Ir	TcN	1.0	10	27.83 31.65	L
31A1	11-W-27	1-12-59 1-10-58	Pt. Mugu Game Preserve	1951	234	12	T 15	Dp	TcW	1.5	10	28.15 28.04	L
31J1	11-W-2 11-W-21A	1-14-59 10-29-57	NAMTC, well 4		600	14	T 20	Ps	HpbW	.35	10.11	49.97 58.90	C,H,W
31L1	11-W-21	1-14-59 10-29-57	NAMTC, well 3	1949	750	16	T 20	Ps	Tap	.15	8.89	46.75 57.52	C,H,L

b. Tape smears.

USGS number	Other numbers	Date of observation	Owner or user	Well data: Year completed	Well data: Depth (ft.)	Well data: Diameter (in.)	Well data: Pump type and power	Well data: Use	Measuring point	Measuring point (feet)	Altitude of lsd (feet)	Depth to water below lsd (feet)	Other data
			T. 1 N., R. 21 W.--Continued										
1N/21-32A1		1-14-59 7-14-58	NAMTC, well 5	1958	750	16	T	Ps	TapN	2.0	10	45.83 47.83	C,L
32C1		1-10-58	A. DuBuessehere	1956	721	12	T 50	Ir			10	(a)	L
32E1	11-W-16	3-4-47	NAMTC, well T2	1947	150		N	Ds		0	9	3.8	L
32G1	11-W-35	1-14-59 5-22-58 10-29-57	NAMTC, well 1	1943	434	12	T 15	Ps	Tap	.25	10.00	29.28 20.30 34.37	C,H,L
32G2	11-W-18	1-4-47	NAMTC, well T4	1947	150		N	Ds		0	5	4.2	L
32K1	11-W-36	1-14-59 7-14-58 5-20-58 10-29-57	NAMTC, well 2	1943	622	12	T 15	Ps	Tap	1.0	9.46	47.34 48.77 33.27 58.39	C,H,L
32M1		1-14-47	NAMTC, well T3	1947	150		N	Ds		0	7	6.1	L
33E1	12-W-4		Broome Ranch		325			Ds			10		L
33E2	11-W-19	2-26-47	NAMTC, Well T5	1947	150		N	Ds		0	8	4.0	L
33L1	12-W-3		Broome Ranch		330			Ds			10		L

33P1	12-W-5		Broome Ranch		208			Ds			10		L
			T. 1 N., R. 22 W.										
1N/22-25A1	11-W-30	1-8-58	Levy Co.		155		L	1	Dm	Na		15	22	
25B1	10-W-30A	1-8-58	Herbert Nauman				T	15	Ir	Na		15		
25B3	10-W-4	1-8-58 1951	Herbert Nauman J. B. Pedelfaw				T	5	Dm	Na		17.1		Wp
25C1	10-W-20	1-8-58	Eirsha		689	16			Ds			11.92		L,W
25C2	10-W-6	1-13-59	H. A. Arrouga	1930	270	14	T	20	Ir	Hpb	1.6	18.3	34.17	L,Wp
25J1	10-W-31	1-12-59 1-8-58 1951	B. D. Laubacher				T	25	Ir	TapE	4.0	15	47.00 69.45 39.2	
25K1	10-W-16	1-8-58	H. W. Mitchler	1923	285	12	T	20	Ir	Na		15		L
26A1	10-W-10	1-13-58 1-7-58 1951	S. R. Pidduck	1924	236	12	T	25	Ir	BpbS	.4	20	28.72 37.95 35.9	C,L
26B1	10-W-33	1-13-59 1-7-58 1951	Otto Kohler		201.5	12	L	5	Dm	TcE TcS	.1 .1	18	26.73 37.00 33.8	
26B2	10-W-1	1-29-59	Otto Kohler	1913	210	12	T	15	Ir	TapN	1.2	17.2	d27.3	Wp

a. Well being pumped.

d. Measurement by Ventura County.

USGS number	Other numbers	Date of observation	Owner or user	Well data: Year completed	Well data: Depth (ft.)	Well data: Diameter (in.)	Well data: Pump type and power	Well data: Use	Measuring point	(feet)	Altitude of lsd (feet)	Depth to water below lsd (feet)	Other data
			T. 1 N., R. 22 W.--Continued										
1N/22-26B3	10-W-32	1-7-58 1951				3		Un	Tn	1.0	20	c 3.10 10.0	
26C1		1-13-59 1-7-58	Friedrich Estate			12	T 25	Ir	HpbE	1.0	15	25.16 34.74	
26D1	10-W-22		Marie Callen Estate	1944	600	12		Ds			15		L
26D2	10-W-29	1-7-58 1925	Marie Callen Estate	1925	254	14	T 25	Ir	Na		15	55 Flowing	
26D3	10-W-7	1-7-58	J. Levy				T 20	Ir	HpbW	1.1	14.7	25.67	Wp
26D4		1-7-58	Marie Callen Estate	1915	170	2	J	Dm	Na		15	50	
26J1	10-W-26	1-7-58	J. R. Petit		205		T 25	Ir	Na		9.52		W
26J2	10-W-25	1-7-58	J. R. Petit		205	6	T 3	Dm	Na		15.22		W
26K1	10-W-2	1-15-59	J. Friedrich Estate		312		T 25	Ir	Hpb	1.3	13.9	d23.4	Wp
26K2	10-W-2A	1-7-58	J. Friedrich Estate			14	J 1½	Dm	Na		15.22		C,W
26M1	10-W-27	1-13-59 1-7-58	L. Oliver				T 20	Ir	Tap	3.0	10	19.12 27.60	
26R1	10-W-5	1-7-58	A. A. Wilfong		370		T 30	Ir	Hp	.9	10.6	30.08	C,Wp

27A1	9-W-11	9-23-58	City of Oxnard					Ds			10		
		1951				4		Dm	Tc	0.3		28.3	
27A2		9-23-58	A. and H. Levy Co.	1956	423	16	T 25	Ir			15	(b)	L
27A3	9-23-58					4	N	Un			15		
27B1	9-W-9	9-22-58	Elmer Johnson				T 20	Ir			15		
27B2	9-W-5	9-22-58	Elmer Johnson		200	4	T	Dm			11.94	(b)	W
		1951							HpbS	.8		25.8	
27C1	9-W-10	9-24-58	Arthur Eastwood				L	Dm			10	(b)	
27D1	9-W-3	9-23-58	John Eastwood		335			Ds			10		L
27F1	9-W-12	9-23-58				12	T 20	Ir			10	(e)	
27F2	9-W-A	9-23-58	Louie Produce Co.	1951	240	12	T 20	Ir			10	32	L
		11-28-51							Ag	1.4		56.6	
27G1	9-W-8	9-23-58			210			Ds			10.4		W
		1951	Paul Pecht			2			Tc	1.4		27.1	
27G2		9-22-58					T 15	Ir	Na		10		
27H1	9-W-7	9-23-58	Paul Pecht				T 20	Ir	Na		12.0		W

b. Tape smears.
c. May not reflect true water level.
d. Measurement by Ventura County.
e. Obstruction in well above water table.

USGS number	Other numbers	Date of observation	Owner or user	Well data: Year completed	Well data: Depth (ft.)	Well data: Diameter (in.)	Well data: Pump type and power	Well data: Use	Measuring point (feet)		Altitude of lsd (feet)	Depth to water below lsd (feet)	Other data
			T. 1 N., R. 22 W.--Continued										
1N/22-27J1	10-W-28	9-22-58	F. Oliver			2		Un			10	(e)	C
27J2	10-W-28A	9-22-58 11-28-51	Bonnet			4	J2	Dm	Tpc TcS	.7 .7	10	b25.7 21.3	
28A1	9-W-6	1-15-59	R. Lown					Ob	Tc	.3	13.0	d14.5	C,W
28A2	9-V-41	1-13-59 9-23-58 11-16-51	Pfieler			14	T 25	Ir	TapW	.6	10	14.72 29.59 29.2	
28B1		1-13-59 9-23-58	A. M. Bernard	1958	230	14	T 20	Ir	Hc	.5	10	11.39 25.50	C,L
28C1	9-W-15	9-23-58						Un			10		
28D1	9-W-2	9-23-58			150			Ds			7.03		Wp
28H1	9-W-4	9-23-58			140		T 10	Ds			9.8		W
28H2		9-23-58	Kalof Pulp and Paper Co.				T	In	Na		5	(a)	
28H3	9-W-14	9-23-58	Kalof Pulp and Paper Co.			14	T 15	In	Na		5.7		

29A1	8-W-2	9-23-58	City of Hueneme					Ds			5		
29A2	8-W-1 8-W-3	9-23-58	City of Hueneme	1926	225			Ds			5		C,L
29C1			U. S. Coast Guard					Ds			5		
34J1	9-W-1	9-23-58	A. M. Bernard					Ds			5.8		Wp
34J2	9-W-1A	9-23-58	Gun Club			12	N	Un			5.8	(b)	W
35A1	10-W-3	1-8-58 1-15-51	Chase Brothers		160	3		Ds			8.1		Wp
35C1	10-W-24	1-7-58	Friedrich Estate		220		T 20	Ir	Tap	1.0	10.92	27.63	W
35Q1		3-6-47	NAMTC, well T13	1947	150			Ds		0	2	4.0	L
36B1	10-W-35	1-30-59	Point Mugu Game Preserve				T 75	Dp			10		
36B2	10-W-9	1-12-59	Smith		700		T 50	Ir	HpbS	.5	10.8	34.22	Wp
36D1	10-W-34 DWR-25N1	1-8-58	Griggs		175	4	L	Un	Na		10		
36J1	10-W-14	1922	Ventura County Game Preserve	1922	250			Ds			5.5	Flowing	L,W
36J2		10-29-58	Ventura County Game Preserve	1951			T 20	Ir			5	a75	

a. Well being pumped.
b. Tape smears.
d. Measurement by Ventura County.
e. Obstruction in well above water table.

USGS number	Other numbers	Date of observation	Owner or user	Well data: Year completed	Well data: Depth (ft.)	Well data: Diameter (in.)	Well data: Pump type and power	Well data: Use	Measuring point (feet)		Altitude of lsd (feet)	Depth to water below lsd (feet)	Other data
			T. 1 N., R. 22 W.--Continued										
1N/22-36K1	10-W-21	1-13-59 10-29-57	Ventura County Game Preserve, well 4	1946	186	12	T 20	Dp	Tap	3.3	5	24.51 38.44	C,L
36K2	10-W-15							Ds					
36K3	10-W-23	1-8-58	Ventura County Game Preserve	1945	335	14	T 20	Dp	Na		5		L
36L1	10-W-19	10-29-57	Ventura County Game Preserve	1940	284	14	T 20	Ir	Bpb	2.3	6.9	39.0	L,W
36N1	10-W-17	1-8-58	Ventura County Game Preserve				T 15	Ir	Na		5.	(a)	
36P1	10-W-8		Ventura County Game Preserve					Ds			5.2		Wp
			T. 1 S., R. 21 W.										
1S/21-4E1		1-14-59	NAMTC, observation well 2	1949	350	12	N	Ob	Tap	3.45	2.05	f40.63	C,H,L,W
		1-14-59							Tap	4.8		(b)	
		9-24-58							Tap	3.45		f47.13	
		9-24-58							Tap	4.8		g54.40	

4K1	12-X-3	4-4-47	NAMTC, well T18	1947	150		N	Ds		0	4	5.5	L
4L1	12-X-4	3-25-47	NAMTC, well T12	1947	150		N	Ds		0	3	4.0	L
4M1	12-X-2	3-19-47	NAMTC, well T17	1947	150		N	Ds		0	3	5.1	L
5H1	11-X-9	1-18-47	NAMTC, well T16	1947	150		N	Ds		0	4	4.8	L
5J1	11-X-6	2-24-47	NAMTC, well T11	1947	150		N	Ds			2		L
5K1	11-X-8	1-9-47	NAMTC, well T15	1947	150		N	Ds		0	4	4.3	L
5P1	11-X-4	2-4-47	NAMTC, well T9	1947	150		N	Ds		0	2	+.5	L
5R1	11-X-5	2-19-47	NAMTC, well T10	1947	150		N	Ds			2		L
6F1		1-14-59 1-14-59	NAMTC, observation well 1	1949	350	12	N	Ob	Tap Tap	6.75 8.39	-1.54	f13.01 g14.03	C,H,L,W
6J1	11-X-7	1-29-47	NAMTC, well T14	1947	150		N	Ds		0	2	1.1	L
7F1	11-X-1A	2-11-47	NAMTC, well T6	1947	150		N	Ds		0	5	4.0	L
7H1	11-X-2	2-5-47	NAMTC, well T7	1947	150		N	Ds		0	5	5.0	L
8E1	11-X-3	2-18-47	NAMTC, well T8	1947	150		N	Ds		0	2	3.2	L
8H1	11-X-1	1-2-47	NAMTC, well T1	1947	150		N	Ds		0	5		L
			T. 1 S., R. 22 W.										
1S/22-1Z1	10-X-1	9- 6-32	Ventura County Game Preserve			12		Ds	Tc	-1.7	2.7	19.2	Wp

a. Well being pumped.
b. Tape smears.
f. Measurement of water level above packer.
g. Measurement of water level below packer.

Table 2.--Cross index of well numbers

The first column shows the number assigned to the well by the agency indicated. The second column shows the Geological Survey number assigned to the same well. The numbers of the other agencies are listed consecutively. Numbers missing in the consecutive listings are wells outside the canvassed area, of wells for which no data are available, or of wells for which the other numbers and Geological Survey numbers are the same.

Part 1.--Ventura County Department of Public Works and Geological Survey (USGS) numbers

County number	USGS number	County number	USGS number	County number	USGS number
8-W-1	a1N/22-29A2	10-W-19	1N/22-36L1	11-W-27	1N/21-31A1
8-W-3	a1N/22-29A2	10-W-20	1N/22-25C1	11-W-29	1N/21-30D1
8-W-2	1N/22-29A1	10-W-21	1N/22-36K1	11-W-30	1N/22-25A1
9-V-41	1N/22-28A2	10-W-22	1N/22-26D1	11-W-31S	1N/21-29A1
9-W-A	1N/22-27F2	10-W-23	1N/22-36K3	11-W-32	1N/21-29B4
9-W-1	1N/22-34J1	10-W-24	1N/22-35C1	11-W-35	1N/21-32G1
9-W-1A	1N/22-34J2	10-W-25	1N/22-26J2	11-W-36	1N/21-32K1
9-W-2	1N/22-28D1	10-W-26	1N/22-26J1	11-W-37	1N/21-30Z1
9-W-3	1N/22-27D1	10-W-27	1N/22-26M1	11-W-38	1N/21-29B3
9-W-4	1N/22-28H1	10-W-28	1N/22-27J1	11-X-1	1S/21-8H1
9-W-5	1N/22-27B2	10-W-28A	1N/22-27J2	11-X-1A	1S/21-7F1
9-W-6	1N/22-28A1	10-W-29	1N/22-26D2	11-X-2	1S/21-7H1
9-W-7	1N/22-27H1	10-W-30A	1N/22-25B1	11-X-3	1S/21-8E1
9-W-8	1N/22-27G1	10-W-31	1N/22-25J1	11-X-4	1S/21-5P1
9-W-9	1N/22-27B1	10-W-32	1N/22-26B3	11-X-5	1S/21-5R1
9-W-10	1N/22-27C1	10-W-33	1N/22-26B1	11-X-6	1S/21-5J1
9-W-11	1N/22-27A1	10-W-34	1N/22-36D1	11-X-7	1S/21-6J1
9-W-12	1N/22-27F1	10-W-35	1N/22-36B1	11-X-8	1S/21-5K1
9-W-14	1N/22-28H3	10-X-1	1S/22-1Z1	11-X-9	1S/21-5H1
9-W-15	1N/22-28C1	11-W-1	1N/21-30F1	12-W-1	1N/21-28F2
10-W-1	1N/22-26B2	11-W-2	a1N/21-31J1	12-W-2	1N/21-27F1
10-W-2	1N/22-26K1	11-W-7	1N/21-30F2	12-W-3	1N/21-33L1
10-W-2A	1N/22-26K2	11-W-8	1N/21-29D1	12-W-4	1N/21-33E1
10-W-3	1N/22-35A1	11-W-9	1N/21-29R3	12-W-5	1N/21-33P1
10-W-4	1N/22-25B3	11-W-9A	1N/21-29R1	12-W-6	1N/21-28G2
10-W-5	1N/22-26R1	11-W-10	1N/21-29D2	12-W-8	1N/21-28F1
10-W-6	1N/22-25C2	11-W-15	1N/21-29R2	12-W-9	1N/21-27H1
10-W-7	1N/22-26D3	11-W-16	1N/21-32E1	12-W-12	1N/21-28C1
10-W-8	1N/22-36P1	11-W-17	1N/21-30A1	12-W-13	1N/21-28H1
10-W-9	1N/22-36B2	11-W-18	1N/21-32G2	12-W-14	1N/21-28G1
				12-W-15	1N/21-28N1
10-W-10	1N/22-26A1	11-W-19	1N/21-33E2	12-X-2	1S/21-4M1
10-W-14	1N/22-36J1	11-W-21	1N/21-31L1	12-X-3	1S/21-4K1
10-W-15	1N/22-36K2	11-W-21A	a1N/21-31J1	12-X-4	1S/21-4L1
10-W-16	1N/22-25K1	11-W-24	1N/21-29G1	13-W-1	1N/21-26K1
10-W-17	1N/22-36N1	11-W-25	1N/21-30C2	13-W-2	1N/21-26K2
				13-W-3	1N/21-26J1
				13-W-5	1N/21-25G1

a. Two county numbers assigned to one well.

Part 2. Navy, Geological Survey, and Ventura County numbers

U. S. Navy number	USGS number	County number	U. S. Navy number	USGS number	County number
Supply 1	1N/21-32G1	11-W-35	T7	1S/21-7H1	11-X-2
Supply 2	32K1	11-W-36	T8	8E1	11-X-3
Supply 3	31L1	11-W-21	T9	5P1	11-X-4
Supply 4	31J1	(all-W-2 (all-W-21A	T10	5R1	11-X-5
Supply 5	32A1	-	T11	5J1	11-X-6
Observation 1	1S/21-6F1	-	T12	4L1	12-X-4
Observation 2	4E1	-	T13	1N/22-35Q1	-
T1	8H1	11-X-1	T14	1S/21-6J1	11-X-7
T2	1N/21-32E1	11-W-16	T15	5K1	11-X-8
T3	32M1	-	T16	5H1	11-X-9
T4	32G2	11-W-18	T17	4M1	12-X-2
T5	33E1	11-W-19	T18	4K1	12-X-3
T6	1S/21-7F1	11-X-1a			

a. Two county numbers assigned to one well.

Table 3.--Records of water levels in wells

Table 3 includes all published[1] and unpublished records of water levels through February 2, 1959, for wells having five or more measurements; wells having less than five measurements are shown in table 1.

Altitudes given are of the land-surface datum at the well, in feet above or below (-) mean sea level. Land-surface datum is a plane of reference which approximates land surface. Altitudes given in whole feet are interpolated from topographic maps. Altitudes given to tenths or hundredths of a foot are determined by spirit leveling (Ventura County Dept. Public Works, United Water Conservation District, or U. S. Navy).

Measurements. Virtually all water-level measurements were made by the Ventura County Department of Public Works, the Santa Clara Water Conservation District, or its successor, the United Water Conservation District. As indicated, the Geological Survey made some measurements in 1957-59. All measurements of water level have been adjusted to depths above (+) or below land-surface datum; that is, the altitudes of the measuring points as reported above or below land-surface datum have been subtracted from or added to the water-level measurements.

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1. Published records for some wells for 1927-32 are in California Division of Water Resources Bull. 46a, 1933. These records are duplicated in the following table.

1N/21-27F1 (12-W-2). Broome Ranch. Depth about 840 feet.
Altitude 13.7 ft. Records available: 1930-32, 1934-59.

Date	Water level	Date	Water level	Date	Water level
Jan. 29, 1930	Flowing	Apr. 16, 1947	35.8	Oct. 8, 1953	47.5
Apr. 16	+.3	Aug. 26	27.8	Nov. 10	43.4
Jan. 24, 1931	Flowing	Jan. 12, 1948	6.9	Dec. 9	39.4
May 15	19.3	Apr. 12	50.3	Jan. 15, 1954	39.4
Aug. 26	19.3	Aug. 11	47.0	Feb. 9	34.9
Jan. 26, 1932	+1.0	Dec. 10	30.5	Mar. 10	30.7
Mar. 10	+5.8	Apr. 27, 1949	59.9	Apr. 7	25.6
May 20	48.2	Aug. 23	49.9	May 6	23.9
Sept. 6	13.5	Jan. 3, 1950	25.4	July 14	59.1
Apr. 14, 1934	4.9	Mar. 14	20.7	Aug. 9	69.2
May 13, 1935	5.4	Apr. 25	42.8	Sept.13	51.3
Sept.12	15.8	May 31	41.6	Nov. 8	45.2
Dec. 19	11.2	June 27	56.8	Dec. 22	32.3
Apr. 27, 1936	5.0	Sept.29	44.3	Jan. 24, 1955	27.6
Aug. 11	22.4	Nov. --	41.5	June 15	38.1
Feb. 11, 1937	+1.5	Dec. 7	35.3	July 28	71.3
May 19	.8	Jan. 15, 1951	41.5	Sept.12	68.1
Aug. 17	16.4	Feb. 8	41.5	Nov. 8	47.9
Jan. 14, 1938	+1.1	Mar. 8	55.2	Feb. 29, 1956	27.9
May 19	+.1	Apr. 6	64.7	Apr. 19	38.9
Sept. 15	10.4	July 5	59.9	June 14	53.9
Feb. 13, 1939	Flowing	Aug. 3	70.1	Sept.19	75.1
May 5	14.5	24	62.6	Nov. 2	59.0
Aug. 22	18.8	Sept.21	52.5	Jan. 30, 1957	40.6
Dec. 21	11.8	Oct. 24	44.8	Mar. 13	34.4
May 15, 1940	14.9	Nov. 15	45.6	Apr. 25	60.9
Aug. 26	18.9	Dec. 26	36.2	June 12	51.6
Feb. 3, 1941	+5.0	Feb. 13, 1952	24.1	Aug. 20	80.9
May 10	+10.2	Mar. 13	22.7	Sept.30	81.6
Dec. 16	+6.4	Apr. 18	17.4	Nov. 20	62.9
May 5, 1942	4.4	May 13	21.0	Jan. 9, 1958	59.8
Nov. 29	4.1	Aug. 14	51.6	Apr. 23	28.4
May 15, 1943	+7.0	Oct. 28	32.3	June 9	50.6
Jan. 12, 1944	+4.5	Jan. 12, 1953	19.3	July 9	64.1
May 2	+4.5	Feb. 16	4.1	Sept. 4	79.9
Dec. 20	+5.0	Mar. 12	39.4	Oct. 24	70.3
Apr. 20, 1945	.9	May 12	53.9	Nov. 20	67.7
Jan. 9, 1946	+1.0	June 11	55.7	Dec. 19	70.8
Apr. 16	19.3	July 10	59.5	Feb. 2, 1959	62.0
Aug. 20	23.8	Aug. 21	60.9		
Dec. 11	4.5	Sept.11	54.9		

1N/21-28~~Z1~~ F2 (28~~F2~~, 12-W-1). American Crystal Sugar Co. Depth unknown. Altitude 13.2 ft. Records available: 1927-28.

Date	Water level	Date	Water level	Date	Water level
Nov. 22, 1927	Flowing	Feb. 24, 1928	Flowing	Nov. 19, 1928	Flowing
Jan. 6, 1928	Flowing	July 24	Flowing		

1N/21-29D1 (11-W-8). R. L. Brooks. Depth about 570 ft. Altitude 18.86 ft. Records available: 1948-59.

June 21, 1948	38.1	June 12, 1950	56.3	Oct. 2, 1953	63.7
July 5	43.1	26	61.1	Nov. 2	53.7
12	53.0	July 11	51.5	Dec. 1	47.9
19	49.9	Aug. 22	65.5	29	57.5
26	52.7	Sept. 20	49.0	Feb. 2, 1954	37.2
Aug. 30	36.0	Oct. 9	48.5	27	34.0
Sept. 27	41.5	Nov. 14	53.0	Apr. 3	26.8
Oct. 12	42.6	30	45.8	30	37.0
Nov. 8	38.5	Dec. 13	43.7	June 1	39.2
26	33.8	Jan. 1, 1951	44.1	30	50.9
Dec. 21	44.5	20	41.9	July 31	69.7
Feb. 1, 1949	20.0	Feb. 15	41.3	Aug. 28	74.9
15	19.8	Mar. 4	45.5	Oct. 1	59.8
Mar. 8	37.7	May 9	58.3	Nov. 27	46.0
22	52.6	June 11	52.2	Dec. 31	50.0
May 5	62.4	July 16	67.5	Feb. 1, 1955	30.7
25	48.2	Aug. 28	62.7	Mar. 1	30.0
June 7	44.5	Sept. 27	59.0	May 31	44.1
23	53.5	Oct. 24	60.2	Aug. 30	82.0
July 4	54.0	Nov. 27	44.3	Oct. 31	57.5
21	66.0	Jan. 21, 1952	32.1	Nov. 30	45.7
28	68.2	Feb. 25	28.1	Dec. 31	41.9
Aug. 3	68.5	Mar. 24	23.5	Jan. 31, 1956	35.4
Sept. 23	48.3	Apr. 22	26.0	Mar. 31	49.5
Oct. 24	50.7	May 21	36.8	Apr. 30	40.5
Nov. 8	47.5	July 2	46.8	June 2	55.9
21	42.5	Aug. 7	51.8	Sept. 29	72.5
Dec. 7	39.9	23	57.7	Oct. 31	71.7
27	34.7	Nov. 5	46.3	Nov. 29	74.4
Jan. 18, 1950	27.1	Jan. 13, 1953	22.4	Dec. 13	72.5
Feb. 3	28.2	Feb. 10	26.8	20	73.7
27	27.1	Mar. 4	40.7	Jan. 10, 1957	57.3
Mar. 14	32.0	Apr. 1	66.7	17	52.4
May 15	47.6	May 7	60.0	24	48.3
29	41.2	June 10	52.8	31	44.9

Continued

1N/21-29D1.--Continued.

Date	Water level	Date	Water level	Date	Water level
Feb. 7, 1957	45.0	Dec. 26, 1957	54.0	June 5, 1958	60.6
14	42.2	Jan. 2, 1958	53.7	Aug. 28	92.7
21	42.8	9	59.5	Sept. 18	73.8
28	39.6	10	a b81.03	Oct. 9	78.4
Mar. 28	37.2	23	65.0	16	78.0
Apr. 4	42.2	30	51.8	23	68.8
25	52.3	Feb. 6	47.4	30	70.2
May 9	54.4	13	44.0	Nov. 6	71.3
16	63.3	20	46.9	13	71.5
July 4	67.3	27	39.9	20	66.8
Oct. 10	86.2	Mar. 6	38.1	27	67.8
17	80.0	13	36.5	Dec. 4	73.7
24	80.0	20	35.0	18	73.1
31	82.9	27	33.3	23	72.6
Nov. 7	77.0	Apr. 3	32.0	30	62.4
14	66.2	10	30.7	Jan. 6, 1959	62.6
21	68.6	17	30.6	13	b55.20
Dec. 5	67.0	24	31.0	15	52.7
12	59.1	May 1	37.2	22	49.8
19	55.3	29	64.1	29	53.3

1N/21-29D2 (11-W-10). R. L. Brooks, Depth about 602 ft. Altitude 18.96 ft. Records available: 1948-59.

Jan. 12, 1948	17.6	Aug. 30, 1948	35.9	Aug. 16, 1949	46.9
19	19.5	Sept. 13	37.5	30	47.3
26	21.3	27	34.8	Sept. 9	43.3
Feb. 2	23.9	Oct. 12	35.5	23	42.6
9	22.9	Nov. 8	29.5	Oct. 24	41.1
24	36.5	26	29.6	Nov. 8	39.0
Mar. 8	44.4	Dec. 21	28.2	21	34.5
21	50.0	Feb. 1, 1949	16.1	Dec. 7	33.4
Apr. 6	40.2	Mar. 8	14.1	27	28.9
26	38.9	22	24.3	Jan. 18, 1950	22.4
May 10	32.0	Apr. 4	54.6	Feb. 3	22.2
24	30.4	13	58.7	27	24.6
June 7	33.8	28	49.5	Mar. 14	29.8
July 5	31.8	May 5	46.4	27	38.2
12	38.5	13	44.9	Apr. 18	44.4
19	41.3	25	38.2	May 15	43.9
26	40.4	June 7	34.4	29	37.4
Aug. 2	41.5	July 4	38.7	June 26	44.9
9	40.4	13	45.5	July 11	44.1
16	37.9	28	49.5	25	46.3
24	37.1	Aug. 3	46.0	Aug. 8	49.8

Continued

a. Pumping.
b. Measurement by Geological Survey.

1N/21-29D2.--Continued.

Date	Water level	Date	Water level	Date	Water level
Aug. 22, 1950	56.7	Apr. 1, 1955	48.4	May 30, 1957	45.4
Sept. 20	43.4	May 3	44.6	June 6	45.6
Oct. 9	43.4	July 5	43.7	13	45.7
Dec. 13	38.3	30	52.1	20	50.0
Jan. 1, 1951	35.4	Aug. 30	61.5	27	51.8
				July 4	51.0
20	30.9	Sept. 30	60.3	11	53.6
Feb. 15	35.9	Oct. 31	49.4	18	55.7
Mar. 4	37.5	Nov. 30	38.0	25	60.0
Apr. 10	56.5	Dec. 31	31.0	Aug. 1	62.1
May 9	48.9	Jan. 31, 1956	25.9	8	63.2
June 11	45.5	Feb. 29	23.8	15	60.3
July 16	49.8	Mar. 31	32.2	22	64.0
Oct. 24	47.8	Apr. 30	30.1	29	63.0
Nov. 27	38.7	June 2	43.1	Sept. 5	62.5
Jan. 21, 1952	26.3	July 3	46.4	12	62.6
				19	62.2
Feb. 25	26.2	31	51.9	26	60.7
Mar. 24	20.4	Sept. 1	56.8	Oct. 2	61.8
Apr. 22	24.6	29	57.8	10	59.0
May 21	32.4	Oct. 31	54.0	17	52.2
Aug. 7	47.8	Nov. 25	53.6	24	51.6
22	48.7	29	53.4	31	55.0
Sept. 30	43.8	Dec. 6	51.8	Nov. 7	48.2
Nov. 5	40.7	13	48.6	14	48.1
Jan. 13, 1953	20.4	20	48.5	21	47.4
Feb. 10	22.8	27	50.9	29	48.4
Apr. 1	54.9	Jan. 3, 1957	51.1	Dec. 5	48.8
May 7	44.9	10	43.1	12	46.3
June 10	45.8	17	39.3	19	39.7
July 1	45.9	24	34.4	26	37.7
Nov. 2	46.5	31	31.8	Jan. 16, 1958	38.0
Dec. 7	35.4	Feb. 7	31.1	23	37.2
Feb. 2, 1954	29.6	14	29.7	30	35.4
21	25.4	21	30.1	Feb. 6	32.3
Apr. 3	20.5	28	27.7	13	30.5
30	23.8	Mar. 7	26.5	20	30.1
June 1	37.6	14	25.8	27	28.1
30	39.4	21	25.5	Mar. 6	27.0
July 31	51.9	28	28.7	13	26.4
Aug. 28	56.4	Apr. 4	35.0	20	5.4
Oct. 1	53.0	11	40.2	27	3.1
30	44.5	25	38.6	Apr. 3	3.1
Nov. 27	35.7	May 2	37.4	10	2.3
Dec. 31	33.1	9	42.5	17	2.1
Feb. 1, 1955	26.7	16	45.2	24	3.7
Mar. 1	26.9	23	47.4		

Continued

1N/21-29D2--Continued.

Date	Water level	Date	Water level	Date	Water level
May 1, 1958	7.6	Aug. 14, 1958	52.9	Nov. 13, 1958	45.4
8	6.9	21	53.5	20	46.7
15	31.2	28	58.3	27	48.4
22	34.8	Sept. 4	57.1	Dec. 4	48.6
29	42.3	11	57.4	11	49.7
June 5	43.2	18	59.2	18	46.7
12	41.4	23	b58.60	23	46.4
19	43.1	25	58.7	30	43.3
26	43.1	Oct. 2	56.4	Jan. 6, 1959	42.5
July 10	44.5	9	57.2	13	b c54.0
17	46.8	16	54.9	15	36.0
24	50.0	23	52.4	22	34.7
31	50.5	30	52.6	29	30.2
Aug. 7	50.4	Nov. 6	52.3		

1N/21-30F1 (11-W-1). Marie Callens estate. Depth 135.2 ft. Altitude 14.9 ft. Records available 1927-44, 1946-59.

Nov. 19, 1927	+1.4	Feb. 11, 1937	6.0	Aug. 11, 1948	35.8
Nov. 19, 1928	3.9	Aug. 17	25.0	Dec. 10	26.6
Feb. 27, 1929	1.0	Jan. 14, 1938	8.0	Mar. 27, 1949	43.9
June 25	22.4	May 19	7.0	Aug. 23	37.0
Jan. 25, 1930	8.0	Sept. 15	16.0	Jan. 3, 1950	20.4
July 11	32.0	Feb. 13, 1939	3.0	Mar. 14	20.9
Sept. 20	32.0	May 9	13.0	Apr. 24	34.0
Nov. 6	29.0	Aug. 12	27.0	May 31	32.5
Jan. 19, 1931	11.0	Dec. 21	16.0	June 27	37.1
May 11	27.0	May 15, 1940	8.0	Aug. 23	43.9
Aug. 21	35.0	Aug. 26	26.0	Sept. 23	40.0
Jan. 26, 1932	10.0	Feb. 3, 1941	4.0	Nov. 1	35.5
Mar. 10	8.0	Dec. 16	+1.5	Dec. 7	30.4
May 20	22.0	May 5, 1942	+2.5	Jan. 15, 1951	24.1
Sept. 6	27.0	Nov. 24	5.0	Feb. 8	19.7
Jan. 27, 1933	9.0	May 14, 1943	0	Mar. 7	28.8
Sept. 22	27.0	Jan. 12, 1944	+2.0	Apr. 6	48.5
Jan. 16, 1934	10.0	May 4	+2.8	May 9	36.9
Apr. 14	52.0	Apr. 16, 1946	16.6	June 8	38.5
Dec. 6	14.0	Aug. 19	26.7	July 5	40.9
May 23, 1935	23.0	Dec. 10	6.8	Aug. 3	52.3
Sept. 12	25.0	Apr. 16, 1947	29.8	24	48.1
Dec. 19	48.0	Aug. 26	26.4	Sept. 20	47.5
Apr. 27, 1936	21.0	Jan. 12, 1948	12.1	Oct. 24	43.3
Aug. 11	28.0	Apr. 14	29.8	Nov. 15	43.3

Continued

b. Measurement by Geological Survey.
c. Tape smears.

1N/21-30F1--Continued

Date	Water level	Date	Water level	Date	Water level
Dec. 26, 1951	27.0	Jan. 15, 1954	35.9	Sept. 19, 1956	53.4
Feb. 8, 1952	18.1	Feb. 9	22.9	Nov. 2	45.1
Mar. 13	16.5	Mar. 10	18.1	30	46.1
Apr. 18	16.4	Apr. 7	14.2	Jan. 30, 1957	25.2
May 13	25.1	May 6	20.3	Mar. 14	19.6
June 16	29.9	July 14	40.6	Apr. 25	32.5
July 15	35.8	Aug. 6	51.3	June 11	38.6
Aug. 14	39.8	Sept.13	46.5	July 24	52.3
Oct. 28	36.1	Nov. 5	37.5	Aug. 16	55.3
Dec. 1	22.2	Dec. 22	28.5	Sept.30	53.7
Jan. 12, 1953	13.5	Jan. 24, 1955	18.2	Nov. 20	42.1
Feb. 16	19.7	Mar. 8	17.7	Jan. 8, 1958	b33.58
Mar. 12	32.9	Apr. 26	43.0	9	33.6
Apr. 8	48.3	June 14	35.4	Apr. 21	16.5
May 12	34.1	July 28	44.9	June 9	34.0
June 11	37.8	Sept. 12	52.2	July 9	35.9
July 10	38.9	Nov. 8	41.7	Sept. 4	51.5
Aug. 21	44.1	Feb. 29, 1956	16.9	Oct. 24	46.2
Sept.11	44.2	Apr. 19	26.1	Nov. 20	38.9
Oct. 7	43.5	June 13	39.3	Dec. 19	40.1
Nov. 10	37.6	July 18	41.3	Jan. 12, 1959	b29.05
Dec. 9	28.5	Aug. 14	46.9	30	29.5

1N/21-30F2 (11-W-7). Marie Callens estate. Depth unknown. Altitude 16.0 ft. Records available 1945-46, 1949-58.

Apr. 19, 1945	6.6	Aug. 3, 1951	51.4	Jan. 24, 1955	23.2
Jan. 9, 1946	3.6	24	46.1	July 28	39.6
Apr. 16	12.0	Sept.20	50.7	Apr. 18, 1956	25.0
Aug. 19	18.4	Nov. 15	47.9	June 13	36.3
Dec. 10	6.8	Dec. 26	33.0	Sept.19	58.1
		Feb. 8, 1952	22.7	Nov. 2	53.2
Aug. 23, 1949	36.4	Mar. 13	20.3	Jan. 30, 1957	33.6
Jan. 3, 1950	23.9	Apr. 18	18.0	Mar. 14	27.3
Mar. 14	23.0	May 13	25.0	Apr. 25	35.1
Apr. 24	32.4	June 16	28.1	June 11	40.4
June 23	34.7	Aug. 14	38.1	Aug. 16	61.8
Aug. 23	40.9	Oct. 28	37.4	Nov. 20	53.3
Sept.29	43.6	Jan. 12, 1953	16.9	Jan. 9, 1958	46.4
Nov. 1	57.7	Feb. 16	17.5	Apr. 21	20.9
Dec. 7	37.3	Mar. 12	29.5	June 9	37.5
Jan. 15, 1951	29.1	May 12	37.9	July 9	39.3
		Jan. 15, 1954	36.7	Sept. 4	55.9
Feb. 8	24.4	Feb. 9	26.6	Oct. 24, 1958	53.4
Mar. 7	30.9	Mar. 10	21.3	Nov. 20	50.2
Apr. 6	47.9	Apr. 7	18.2	Dec. 19	51.9
May 9	57.4	May 6	18.7		
June 8	37.1				
July 5	44.0				

b. Measurement by Geological Survey.

1N/21-31J1 (11-W-2 and 11-W-21A). U. S. Naval Air Missile Test Center, supply well 4. Depth about 600 ft. Altitude 10.11 ft. Records available: 1931-45, 1957, 1959; also hydrograph for 1948-58 in files of U. S. Navy.

Date	Water level	Date	Water level	Date	Water level
Jan. 20, 1931	3.3	Dec. 6, 1934	4.3	May 8, 1939	2.3
May 11	8.8	May 23, 1935	+1.7	Dec. 21	8.3
Aug. 21	a59.3	Sept. 12	6.3	May 5, 1940	.3
Dec. 10	39.3	Dec. 19	8.9	Feb. 3, 1941	+5.4
Jan. 26, 1932	+.7	Apr. 27, 1936	+1.0	May 4, 1942	+3.2
Mar. 10	5.4	Aug. 11	15.8	May 15, 1943	+10.3
May 20	.3	Feb. 11, 1937	+1.7	Jan. 12, 1944	+9.7
Sept. 6	6.3	May 18	+2.7	May 1	+9.7
Apr. 18, 1933	+4.7	Aug. 17	10.0	Apr. 14, 1945	+7.7
Sept. 22	5.3	Jan. 14, 1938	.3	Oct. 29, 1957	b58.90
Jan. 16, 1934	.3	May 19	8.9	Jan. 14, 1959	b49.97
Apr. 14	+.7	Feb. 13, 1939	6.5		

1N/22-25B2 (~~1N/22-25B3~~, 10-W-4). Herbert Nauman. Depth unknown. Altitude 17.1 ft. Records available: 1927-33.

Nov. 19, 1927	Flowing	Nov. 6, 1930	Not flowing	Jan. 26, 1933	Not flowing
Nov. 19, 1928	Not flowing	Dec. 10, 1931	Not flowing		
Nov. 7, 1929	Not flowing	Sept. 6, 1932	Not flowing		

1N/22-25C1 (10-W-20). Eirsha, formerly American Crystal Sugar Co. and Friedrich estate. Depth about 689 ft. Altitude 11.92 ft. Records available: 1948-56.

Jan. 12, 1948	7.9	Sept. 27, 1948	25.0	Sept. 9, 1949	31.1
19	10.3	Oct. 12	24.3	23	30.6
26	12.5	Nov. 8	19.0	Oct. 5	32.3
Feb. 2	14.1	26	19.7	24	26.9
9	11.5	Dec. 21	16.0	Nov. 8	28.0
Apr. 26	21.5	Feb. 1, 1949	7.9	21	22.3
May 10	20.0	15	7.7	Dec. 7	25.2
15	20.7	Apr. 4	36.4	27	16.5
24	20.5	20	34.8	Jan. 18, 1950	11.8
June 7	20.1	28	36.5	Feb. 3	10.1
21	19.5	May 5	32.5	27	9.1
July 5	23.6	12	33.2	Mar. 14	13.6
12	27.9	25	22.4	27	23.8
26	27.2	June 7	25.0	Apr. 18	25.1
Aug. 2	28.0	16	25.2	May 2	27.4
9	28.5	23	26.7	15	29.7
16	27.8	July 4	24.7	29	24.8
24	27.9	13	30.8	June 12	28.6
30	25.5	Aug. 16	30.0	26	31.0
Sept. 13	26.0	30	32.6	July 25	37.5

a. Pumping.
b. Measurement by Geological Survey.

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1N/22-25C1--Continued

Date	Water level	Date	Water level	Date	Water level
Aug. 22, 1950	33.8	Aug. 23, 1952	32.9	Aug. 28, 1954	42.4
Sept.20	34.4	Sept.30	33.3	Oct. 1	37.7
Oct. 9	34.1	Nov. 5	33.0	30	34.4
Nov. 14	26.2	Jan. 13, 1953	9.9	Nov. 27	23.2
30	22.5	Feb. 10	14.1	Dec. 31	26.8
Dec. 13	24.1	Apr. 1	42.2	Feb. 1, 1955	13.7
Jan. 1, 1951	21.7	May 7	31.7	Mar. 1	14.5
20	16.1	June 10	29.5	Apr. 1	38.0
Feb. 15	23.5	July 1	32.6	May 3	28.2
Apr. 10	41.6	Aug. 3	36.9	31	28.2
May 9	31.1	31	35.5	July 5	32.2
June 11	31.9	Oct. 2	37.0	Sept.30	43.6
Sept.27	41.3	Nov. 2	36.0	Oct. 31	36.0
Oct. 24	40.1	Dec. 7	23.5	Nov. 30	27.6
Nov. 27	28.1	29	28.0	Dec. 31	20.7
Jan. 21, 1952	16.0	Feb. 2, 1954	16.7	Jan. 31, 1956	15.8
Feb. 25	17.3	27	15.6	Feb. 29	13.6
Mar. 24	12.5	Apr. 3	11.5	Mar. 31	24.6
Apr. 22	17.8	30	15.5	Apr. 30	21.4
May 21	25.0	June 1	26.1		
July 2	27.8	30	28.0		

1N/22-25C2 (10-W-6). H. A. Arrouga, formerly J. R. Williams. Depth about 270 ft. Altitude 18.3 ft. Records available: 1929-48, 1950-55, 1957-59.

Nov. 7, 1929	20.1	Jan. 16, 1934	9.7	Nov. 4, 1936	17.1
Jan. 25, 1930	5.4	Apr. 14	27.6	Feb. 11, 1937	5.8
July 11	31.8	Dec. 6	12.8	Mar. 11	5.6
Sept.20	31.3	May 23, 1935	18.2	May 14	5.5
Nov. 6	28.0	Sept.12	21.7		
Jan. 19, 193'	10.0	Dec. 10	14.6	June 15	13.2
May 11	23.6	Jan. 8, 1936	9.4	Aug. 17	20.0
Aug. 21	30.2	Feb. 20	6.3	Oct. 19	20.6
Dec. 10	14.3	Mar. 10	5.7	Jan. 14, 1938	6.4
Jan. 26, 1932	9.8	Apr. 27	13.6	May 19	7.2
Mar. 10	7.8	May 5	15.8	Sept.15	17.4
May 20	21.6	June 8	24.2	Feb. 13, 1939	.1
Sept. 6	25.1	July 20	30.6	May 9	10.5
Jan. 26, 1933	8.6	Aug. 21	28.3	Aug. 22	22.8
Apr. 18	20.7	Sept.22	28.9	Dec. 21	9.7

Continued

1N/22-25C2--Continued

Date	Water level	Date	Water level	Date	Water level
May 15, 1940	8.5	Dec. 7, 1950	30.9	Apr. 7, 1954	17.4
Aug. 26	23.8	Jan. 15, 1951	25.4	May 6	27.2
Feb. 23, 1941	.8	Feb. 8	23.3	July 14	50.7
May 19	+.6	Mar. 7	33.6	Sept.13	52.7
Dec. 16	+.3	Apr. 6	a68.4	Nov. 8	42.9
May 5, 1942	+.9	May 9	e52.4	Dec. 22	33.9
May 14, 1943	+.9	June 8	41.9	Jan. 24, 1955	19.6
Jan. 12, 1944	1.0	July 5	47.5	Mar. 8	22.1
May 1	1.2	Aug. 3	59.1	Nov. 30	53.6
Dec. 20	4.3	Oct. 24	51.5	Jan. 30, 1957	27.8
Apr. 19, 1945	10.9	Nov. 15	50.1	Mar. 14	24.1
Jan. 9, 1946	8.4	Dec. 26	29.4	Apr. 28	34.3
Apr. 16	19.5	Feb. 8, 1952	23.8	June 11	45.2
Aug. 20	33.8	Apr. 17	21.9	Sept.30	59.7
Dec. 11	6.6	May 13	28.4	Jan. 8, 1958	b36.89
Aug. 25, 1947	41.1	July 15	40.5	9	39.6
Jan. 12, 1948	14.6	Aug. 14	44.9	Apr. 21	21.3
Apr. 14	30.2	Oct. 28	43.8	June 9	37.9
Aug. 11	41.1	Dec. 1	23.5	July 9	43.5
Jan. 3, 1950	23.1	Jan. 17, 1953	15.9	Sept. 4	54.9
Apr. 24	38.7	Feb. 16	28.0	Oct. 23	49.7
May 31	37.6	Apr. 8	57.4	Dec. 19	46.4
June 27	38.4	May 12	31.4	Jan. 13, 1959	b34.17
Aug. 23	49.4	June 11	42.1	30	31.4
Sept.29	55.0	Jan. 15, 1954	33.0		
Nov. 1	e48.2	Mar. 10	21.0		

1N/22-26B2 (10-W-1). Otto Kohler. Depth about 210 ft. Altitude 17.2 ft. Records available: 1927-55, 1957-59.

Nov. 19, 1927	Flowing	Jan. 23, 1932	7.6	Mar. 10, 1938	Flowing
Jan. 6, 1928	Flowing	Mar. 9	5.8	May 1	Not flowing
Feb. 22	Flowing	Jan. 13, 1933	8.6	18	2.7
Mar. 30	Flowing	Apr. 14	19.1	Sept.14	13.3
Nov. 19	Not flowing	Sept.19	21.1	Dec. 18	Flowing
July 9, 1929	22.9	Jan. 15, 1934	8.3	Jan. 27, 1939	Flowing
Aug. 7	25.2	Dec. 4	10.5	May 11	7.6
Nov. 7	16.2	May 20, 1935	10.0	Aug. 21	15.9
Jan. 25, 1930	3.4	Sept. 5	19.5	Dec. 20	7.2
Apr. 10	10.0	Dec. 16	9.1	Mar. 9, 1940	4.6
July 10	26.9	Apr. 29, 1936	13.1	Aug. 22	18.8
Sept.19	25.3	Feb. 9, 1937	3.7	Jan. 30, 1941	Flowing
Nov. 6	21.7	Mar. 14	2.0	May 15	Flowing
Jan. 16, 1931	7.6	Aug. 16	13.8	Dec. 17	Flowing
Nov. 23	20.5	Jan. 12, 1938	3.5	Apr. 30, 1942	Flowing

Continued

a. Pumping.
b. Measurement by Geological Survey.
e. Measurement of water level above packer.

1N/22-26B2--Continued

Date	Water level	Date	Water level	Date	Water level
May 17, 1943	+0.4	Mar. 6, 1951	28.8	Mar. 9, 1954	19.4
Jan. 11, 1944	Flowing	Apr. 3	54.2	Apr. 6	17.2
May 3	Flowing	June 6	40.6	May 5	40.8
Dec. 19	+.3	Aug. 1	54.7	Sept.10	47.5
Apr. 25, 1945	5.2	Sept.19	52.0	Nov. 5	40.4
Jan. 8, 1946	.1	Oct. 23	42.8	Dec. 20	28.2
Apr. 15	14.2	Dec. 21	26.9	June 20, 1955	18.1
Dec. 6	4.7	Mar. 11, 1952	18.0	Mar. 7	19.8
Aug. 14, 1947	31.3	Apr. 16	19.0	Oct. 30	44.8
Jan. 7, 1948	9.0	May 9	27.4	Jan. 17, 1957	29.4
Aug. 9	35.9	June 13	32.8	Mar. 7	22.8
Dec. 6	23.5	July 11	37.4	Apr. 23	32.0
Nov. 7, 1949	33.8	Sept.17	45.5	June 6	42.3
Mar. 13, 1950	20.1	Nov. 23	21.8	Sept.25	53.8
Apr. 21	37.1	Jan. 7, 1953	16.8?	Nov. 13	50.3
May 24	35.5	Feb. 11	19.9	Jan. 7, 1958	38.0
June 21	40.6	Mar. 10	33.9	Mar. 12	25.5
Aug. 21	41.0	Apr. 6	48.8	Apr. 30	26.7
Sept.24	39.3	May 6	37.8	July 3	43.7
Oct. 27	35.4	June 9	35.1	Aug. 27	44.8
Dec. 5, 1950	24.8	July 8	43.2	Nov. 18	40.7
Jan. 10, 1951	26.6	Jan. 13, 1954	29.4	Dec. 12	39.0
Feb. 6	20.6	Feb. 8	22.8	Jan. 29, 1959	27.3

1N/22-26D3 (10-W-7). J. Levy. Depth unknown. Altitude 14.7 ft.
Records available: 1931-55, 1957-59

Jan. 20, 1931	5.3	Sept. 5, 1935	15.8	Aug. 22, 1940	13.3
May 11	15.3	Dec. 16	6.3	Jan. 30, 1941	Flowing
Aug. 21	21.3	Apr. 28, 1936	10.3	May 15	Flowing
Nov. 23	15.3	Aug. 7	21.3	Dec. 17	Flowing
Jan. 23, 1932	5.8	Feb. 9, 1937	2.8	Apr. 30, 1942	Flowing
Mar. 9	3.3	Mar. 14	1.3	Nov. 30	.3
May 13	13.3	Aug. 16	10.3	May 17, 1943	Flowing
Aug. 31	16.8	Jan. 12, 1938	1.8	Jan. 11, 1944	Flowing
Jan. 13, 1933	6.3	May 18	+.8	May 3	Flowing
Apr. 14	15.3	Sept.13	9.3	Dec. 19	Flowing
Sept.19	16.8	Jan. 27, 1939	Flowing	Apr. 23, 1945	2.3
Jan. 15, 1934	4.3	May 11	5.3	Jan. 8, 1946	5.3
Apr. 13	16.3	Aug. 21	10.3	Apr. 15	10.7
Dec. 4	8.3	Dec. 20	3.3	Dec. 6	2.1
May 20, 1935	7.3	May 9, 1940	.8	Apr. 14, 1947	27.3

Continued

1N/22-26D3--Continued

Date	Water level	Date	Water level	Date	Water level
Aug. 20, 1947	23.8	Aug. 14, 1951	40.6	Oct. 30, 1955	33.4
Jan. 7, 1948	7.1	Sept.19	40.8	Nov. 29	35.6
Aug. 9	29.5	Oct. 22	35.8	Jan. 17, 1957	20.6
Dec. 6	19.7	Dec. 21	20.8	Mar. 7	12.2
Apr. 26, 1949	37.2	Feb. 7, 1952	16.5	Apr. 23	22.7
Aug. 19	32.3	Mar. 11	13.3	June 6	30.1
Nov. 7	33.7	May 9	30.5	Nov. 13	39.2
Mar. 7, 1950	10.9	June 13	24.8	Jan. 7, 1958	25.7
Apr. 21	39.7	July 11	29.4	7	b25.67
May 24	26.6	Oct. 27	29.6	Mar. 12	15.5
June 21	43.9	Nov. 24	15.7	Apr. 30	16.3
July 25	38.1	Jan. 9, 1953	8.3	June 4	26.1
Aug. 21	34.8	May 6	30.5	Aug. 27	41.7
Sept.21	42.9	June 9	25.9	Nov. 18	39.4
Oct. 27	28.9	Jan. 14, 1954	18.9	Dec. 12	29.2
Dec. 5	20.5	Feb. 5	12.3	Jan. 29, 1959	27.5
Jan. 10, 1951	21.7	Mar. 9	11.1		
Feb. 6	27.8	Apr. 6	8.7		
Mar. 6	35.7	May 5	16.2		
Apr. 3	46.1	Sept.10	35.3		
May 8	28.0	Nov. 1	28.6		
June 6	33.2	Dec. 20	18.1		
July 3	34.3	June 20, 1955	10.8		

1N/22-26J1 (10-W-26). J. R. Petit. Depth about 205 ft. Altitude 9.52 ft. Records available: 1948.

Jan. 12, 1948	6.8	Mar. 3, 1948	31.9	May 10, 1948	22.2
19	8.5	8	35.4	24	22.5
26	13.7	13	37.7	June 7	19.3
Feb. 2	16.0	21	34.5	21	20.2
9	10.3	Apr. 6	25.5		
24	26.1	26	21.3		

1N/22-26J2 (10-W-25). J. R. Petit, formerly J. Friedrich. Depth about 205 ft. Altitude 15.22 ft. Records available: 1948.

Jan. 12, 1948	10.3	Mar. 13, 1948	46.3	May 15, 1948	25.4
19	15.4	Apr. 6	32.5	24	26.6
26	16.1	26	26.6	June 21	23.7
Feb. 2	19.6	May 10	25.6		

1N/22-26K1 (10-W-2). J. Friedrich estate. Depth about 312 ft. Altitude 13.9 feet. Records available: 1927-35, 1937-59.

Date	Water level
Nov. 19, 1927	Flowing
Jan. 6, 1928	Flowing
Feb. 23	Flowing
Mar. 30	Flowing
July 24	18.1
Nov. 19	.6
Feb. 27, 1929	Flowing
June 25	19.6
Nov. 7	13.6
Jan. 25, 1930	2.7
Apr. 10	9.1
July 10	22.6
Sept. 20	21.4
Nov. 6	21.5
Jan. 17, 1931	5.4
May 11	15.8
Jan. 23, 1932	5.8
Mar. 9	3.3
May 13	13.6
Aug. 31	18.1
Jan. 13, 1933	6.3
Sept.19	18.8
Jan. 5, 1934	5.0
Apr. 13	17.5
July 5	21.2
Oct. 1	23.6
Dec. 4	8.4
May 28, 1935	7.2
Sept. 5	18.6
Dec. 16	8.0
Feb. 9, 1937	2.1
May 14	.9
Aug. 16	11.3
Jan. 12, 1938	2.0
Mar. 10	Flowing
May 18	6.4
Sept.13	11.7
Jan. 27, 1939	Flowing
May 9	5.1
Aug. 21	17.3
Dec. 20	5.8
May 9, 1940	3.4
Aug. 22	17.2
Jan. 30, 1941	Flowing
May 15	Flowing
Dec. 17, 1941	Flowing
Apr. 30, 1942	Flowing
Nov. 30	4.1
May 17, 1943	Flowing
Jan. 11, 1944	Flowing
May 3	Flowing
Dec. 19	1.4
Apr. 23, 1945	3.2
Jan. 8, 1946	.5
Apr. 15	12.2
Aug. 14	23.8
Dec. 6	5.3
Apr. 14, 1947	31.8
Aug. 20	34.8
Jan. 7, 1948	9.6
Mar. 20	52.7
Apr. 12	25.7
Aug. 9	34.2
Dec. 6	21.1
Apr. 26, 1949	39.9
Aug. 19	36.6
Nov. 7	31.6
Mar. 13, 1950	15.7
Apr. 21	31.7
May 24	32.7
July 25	57.0
Aug. 21	39.8
Oct. 27	34.9
Dec. 5	23.2
Jan. 18?, 1951	25.3
Feb. 6	17.6
Mar. 6	22.5
May 8	31.5
July 3	37.9
Nov. 14	43.9
Dec. 21	24.7
Feb. 7, 1952	18.1
Mar. 11	15.5
Apr. 16	14.9
June 13	30.9
Sept.17	43.3
Nov. 24	21.2
Jan. 7, 1953	12.1
May 6	38.1
June 9	31.8
July 8, 1953	37.2
Aug. 18	43.2
Sept. 9	40.2
Oct. 2	40.7
Dec. 7	24.7
Feb. 2, 1954	18.3
Apr. 3	13.1
30	18.4
June 30	32.7
July 31	49.3
Oct. 1	39.4
Nov. 27	25.8
Dec. 31	26.4
Feb. 1, 1955	15.4
Mar. 1	16.2
May 3	31.9
31	33.1
July 5	36.2
Oct. 31	40.4
Nov. 30	30.3
Dec. 31	25.5
Jan. 31, 1956	17.4
Feb. 29	14.7
Apr. 30	25.2
June 2	35.5
July 3	41.7
31	45.2
Nov. 15	47.0
29	45.9
Dec. 6	44.0
13	41.6
20	44.2
Jan. 10, 1957	29.0
17	26.8
24	24.5
31	22.6
Feb. 7	22.8
14	22.1
21	21.7
28	19.6
Mar. 7	19.3
14	18.6
21	19.3
28	26.2
Apr. 25	29.6
May 2	33.3

Continued

1N/22-26K1--Continued

Date	Water level	Date	Water level	Date	Water level
May 9, 1957	36.8	Dec. 26, 1957	28.7	June 12, 1958	34.1
23	39.2	Jan. 2, 1958	28.3	19	35.6
30	38.3	9	32.6	26	36.8
June 6	38.6	16	31.7	July 3	39.7
13	38.5	30	26.5	Aug. 7	44.4
July 4	45.3	Mar. 6	19.9	14	42.7
11	48.8	13	20.4	Oct. 23	44.0
Aug. 22	57.9	20	18.7	Nov. 27	35.4
Sept.12	55.5	27	16.4	Dec. 4	37.1
Oct. 17	43.9	Apr. 3	15.5	18	37.1
24	43.3	10	15.0	23	37.7
Nov. 7	41.8	17	14.9	30	31.1
14	40.4	24	16.7	Jan. 6, 1959	29.9
21	38.9	May 8	24.5	15	23.4
Dec. 5	42.3	15	27.7	22	23.5
12	38.6	29	33.9	29	25.1
19	30.3	June 5	33.7		

1N/22-26K2 (10-W-2A). J. Friedrich estate. Depth unknown. Altitude 15.22 ft. Records available: 1948-56.

Jan. 12, 1948	10.3	Apr. 13, 1949	47.0	Jan. 20, 1951	19.8
19	15.4	20	43.4	Mar. 4	28.5
26	16.1	May 25	27.3	Apr. 10	50.1
Feb. 2	19.6	June 16	30.7	May 9	38.5
Mar. 13	46.3	July 4	29.9	Nov. 27	31.5
Apr. 6	32.5	21	46.3	Jan. 21, 1952	18.8
26	26.6	Sept. 9	37.9	Feb. 25	21.6
May 10	25.6	23	36.1	Mar. 24	15.8
15	25.4	Oct. 5	37.6	Apr. 22	21.7
24	26.6	24	31.0	July 2	33.8
June 21	23.7	Nov. 8	32.4	Aug. 7	39.6
July 26	35.0	21	26.8	Sept.30	38.6
Aug. 2	34.0	Dec. 7	27.7	Nov. 5	36.9
9	35.5	27	21.5	Jan. 13, 1953	12.6
24	34.7	Feb. 3, 1950	12.7	Mar. 4	26.1
30	31.8	27	11.7	May 7	36.7
Sept.13	30.9	Mar. 14	17.7	July 1	39.0
27	30.3	Apr. 18	29.7	Aug. 31	40.5
Oct. 12	28.0	May 29	30.6	Oct. 2	42.0
Nov. 8	23.2	July 11	45.1	Dec. 7	26.0
26	24.6	Aug. 22	39.7	Feb. 2, 1954	9.6
Dec. 21	18.0	Nov. 14	30.2	Apr. 3	14.4
Feb. 1, 1949	11.3	30	25.2	30	19.7
15	11.9	Dec. 13	27.9	June 30	34.0
Mar. 22	32.8	Jan. 1, 1951	24.2	July 31	50.6

Continued

1N/22-26K2--Continued

Date	Water level	Date	Water level	Date	Water level
Oct. 1, 1954	40.7	May 3, 1955	33.2	Dec. 31, 1955	26.8
Nov. 27	27.1	31	34.4	Jan. 31, 1956	18.7
Dec. 31	27.7	July 5	37.5	Feb. 29	16.0
Feb. 1, 1955	16.7	Oct. 31	41.7	Apr. 30	26.5
Mar. 1	17.5	Nov. 30	31.6		

1N/22-26R1 (10-W-5). A. A. Wilfong. Depth about 370 feet. Altitude 10.6 ft. Records available: 1929-46, 1948, 1950-55, 1957-58.

July 10, 1929	15.6	Feb. 15, 1939	+3.7	Jan. 15, 1951	18.1
Aug. 7	10.3	May 9	3.3	Feb. 7	16.0
Nov. 7	11.8	Aug. 22	10.3	Mar. 7	26.9
Jan. 25, 1930	+.9	Dec. 21	4.8	June 8	31.9
Apr. 10	4.3	Feb. 1940	Flowing	July 5	35.9
July 11	21.8	Mar.	Flowing	Dec. 26	22.7
Sept. 20	21.8	May 15	1.4	Feb. 13, 1952	14.6
Nov. 6	18.8	Aug. 26	15.3	Mar. 13	13.2
Jan. 19, 1931	3.8	Feb. 3, 1941	+2.7	Apr. 17	18.6
May 11	13.8	May 19	+4.6	May 12	19.8
Aug. 21	42.3	Dec. 16	+3.9	Nov. 28	17.9
Dec. 10	9.8	May 4, 1942	+4.9	Jan. 12, 1953	9.3
Jan. 26, 1932	3.8	Nov. 24	7.2	May 12	29.0
May 20	32.8	May 15, 1943	+5.5	June 11	30.6
Sept. 6	15.8	Jan. 12, 1944	+5.2	Jan. 15, 1954	24.5
Jan. 13, 1933	4.2	May 1	+5.4	Mar. 10	15.7
Sept. 22	20.6	Dec. 20	4.9	Apr. 7	10.3
Jan. 16, 1934	3.1	Apr. 14, 1945	+.3	May 6	20.0
Apr. 14	14.8	Jan. 7, 1946	+.3	Dec. 22	26.2
Dec. 6	7.0	Dec. 11	+.3	Jan. 24, 1955	13.5
				Mar. 8	14.5
May 23, 1935	7.1				
Sept. 12	14.2	Apr. 14, 1948	22.6	Jan. 30, 1957	19.8
Dec. 19	7.0	Dec. 10	24.2	Mar. 14	15.7
Apr. 27, 1936	19.6			Nov. 19	39.9
Feb. 11, 1937	.9	Jan. 3, 1950	13.4	Jan. 7, 1958	b30.08
				9	30.9
Apr. 1	+.9	Mar. 24	26.2	Apr. 21	13.0
May 19	.1	May 31	26.0		
Aug. 17	12.2	June 29	34.3	July 9	33.3
Jan. 14, 1938	.9	Sept. 28	36.7	Nov. 20	36.8
May 19	1.8	Nov. 1	31.9		
Sept. 15	11.3	Dec. 7	24.1		

b. Measurement by Geological Survey.

1N/22-27B2.(9-W-5). Elmer Johnson. Depth about 200 ft. Altitude 11.94 ft. Records available: 1948-51.

Date	Water level	Date	Water level	Date	Water level
Jan. 12, 1948	3.7	Oct. 24, 1948	22.2	July 28, 1949	32.7
19	7.4	30	21.4	Oct. 3	33.9
26	7.0	Sept.13	19.7	16	31.5
Feb. 2	7.3	27	18.2	30	28.5
9	9.2	Oct. 12	18.1	Sept. 9	28.2
24	13.1	Nov. 1	15.7	23	26.3
27	26.1	8	14.8	Oct. 5	26.6
Mar. 3	26.2	26	16.9	24	19.9
8	28.8	Dec. 21	11.6	Nov. 8	30.6
13	32.9	Feb. 1, 1949	6.6	21	22.7
21	30.8	14	5.8	Dec. 7	20.0
Apr. 6	21.9	Mar. 8	15.8	27	10.3
12	20.2	22	26.4	Jan. 18, 1950	8.0
26	17.4	Apr. 4	35.4	Feb. 3	8.4
May 10	15.2	13	36.6	27	9.5
16	14.9	20	34.0	Mar. 14	12.6
24	17.4	28	33.0	27	22.8
June 7	16.2	May 5	31.3	Apr. 18	32.4
21	16.0	12	29.0	May 2	32.3
July 5	17.9	25	19.5	15	28.1
12	24.8	June 7	20.1	29	19.4
19	27.6	16	21.7	June 12	d 12.5
26	25.6	23	25.5	26	d 12.8
Oct. 2	24.8	July 4	26.5	July 7	d 7.5
9	24.4	13	29.1	1951	d25.8
16	23.6	21	34.3		

1N/22-27H1 (9-W-7). Paul Pecht. Depth unknown. Altitude 12.0 ft. Records available: 1949-58.

Dec. 6, 1949	20.5	May 8, 1951	24.7	Dec. 21, 1951	19.2
Mar. 7, 1950	8.5	June 6	29.6	Feb. 2, 1952	16.1
Apr. 21	25.0	July 3	31.3	Mar. 11	12.8
May 23	23.5	16	37.6	Apr. 16	14.0
July 25	33.4	Aug. 1	39.8	May 9	18.4
Sept. 21	28.3	14	35.9	June 13	23.2
Oct. 27	25.6	23	39.3	Aug. 12	25.9
Dec. 5	18.7	Sept.19	36.5	Sept. 12	32.2
Feb. 6, 1951	15.4	Oct. 22	32.8	Oct. 27	27.4
Mar. 6	21.5	Nov. 14	30.3	Nov. 24	15.7

Continued

d. Well has failed.

1N/22-27H1--Continued.

Date	Water level	Date	Water level	Date	Water level
Jan. 9, 1953	9.1	Sept. 10, 1954	34.9	Apr. 23, 1957	24.3
Feb. 11	18.0	Nov. 1	28.3	30	17.2
Mar. 10	28.4	Dec. 20	20.4	June 7	25.2
June 9	26.2	Jan. 20, 1955	12.6	Dec. 19	17.7
July 8	28.5	Mar. 8	12.9	26	14.2
Aug. 18	33.0	June 9	29.1	Mar. 12, 1958	16.6
Sept. 9	31.0	July 26	35.6	Apr. 30	17.2
Oct. 6	32.5	Sept. 2	42.2	June 4	25.2
Dec. 8	19.8	Nov. 2	34.9	July 3	30.1
Jan. 14, 1954	21.0	Feb. 21, 1956	15.3	Aug. 27	33.9
Feb. 5	15.0	Apr. 17	18.9	Oct. 21	35.9
Mar. 9	13.9	Oct. 30	33.3	Nov. 18	a42.0
May 5	19.1	Mar. 7, 1957	16.8		
Aug. 3	42.4?	12	16.6		

1N/22-27~~Z3~~ G1 (~~1/22-27G1~~, 9-W-8). Depth about 210 ft. Altitude 10.4 ft. Records available: 1949-54.

Dec. 6, 1949	18.0	July 16, 1951	33.6	Sept. 17, 1952	27.7
Mar. 7, 1950	6.3	Aug. 1	35.6	Oct. 27	23.4
Apr. 21	21.2	14	32.0	Nov. 14	13.3
May 23	20.4	23	36.3	Jan. 7, 1953	7.0
June 21	26.0	Sept. 19	33.1	Feb. 11	16.0
July 25	28.9				
Sept. 21	24.0	Oct. 22	29.8	Apr. 6, 1954	8.7
Oct. 27	22.1	Nov. 14	26.3	May 5	Dry
Dec. 5	16.8	Dec. 21	16.8		
Jan. 9, 1951	17.8	Feb. 7, 1952	13.1		
Feb. 6	12.9	Mar. 11	10.5		
Mar. 6	17.8	Apr. 16	11.1		
Apr. 3	34.0	May 9	14.8		
May 8	20.4	June 13	20.6		
June 6	26.6	Aug. 12	25.3		
July 3	27.8				

1N/22-28A1 (9-W-6). R. Lown. Depth unknown. Altitude 13.0 ft. Records available: 1949-59.

Apr. 15, 1949	30.5	Sept. 15, 1949	21.7	Jan. 15, 1950	9.9
May 15	19.9	Oct. 15	18.8	Feb. 15	8.4
June 15	17.8	Nov. 15	18.7	Mar. 15	12.9
July 15	28.2	Dec. 15	13.4	Apr. 15	20.6
Aug. 15	26.9	Jan. 1, 1950	11.3	May 15	21.8

Continued

a. Pumping.

1N/22-28A1--Continued.

Date	Water level	Date	Water level	Date	Water level
June 15, 1950	22.7	June 4, 1953	27.7	Apr. 22, 1954	14.0
July 15	28.9	11	25.4	29	16.0
Aug. 15	32.0	18	27.9	May 6	17.7
Jan. 1, 1951	16.2	25	28.1	13	18.2
15	14.8	July 2	27.8	20	21.8
Feb. 15	18.0	9	26.8	27	22.5
Mar. 15	23.0	16	32.7	June 3	24.1
Apr. 15	31.8	23	32.5	10	23.1
May 15	24.2	30	32.6	17	24.3
June 15	28.4	Aug. 6	33.5	24	25.0
July 15	32.8	13	31.9	July 1	25.4
22	38.0	20	29.4	3	26.8
Aug. -	32.0	27	29.8	15	30.3
Sept.	31.0	Sept. 3	30.7	22	32.5
Oct.	31.3	Oct. 2	29.6	29	34.3
Nov.	27.7	8	29.5	Aug. 5	36.7
Dec.	18.6	15	27.8	12	35.3
Jan. 1, 1952	16.7	22	28.4	19	33.9
15	15.0	29	30.3	26	36.1
Feb. 15	14.9	Nov. 5	28.6	Sept. 2	34.0
Mar. 15	13.1	12	26.8	9	31.7
Apr. 15	13.2	19	20.4	16	32.6
May 15	13.5	26	18.0	23	31.0
June 15	23.8	Dec. 3	18.4	30	30.0
July 15	26.1	10	19.7	Oct. 7	31.0
16	28.2	17	22.6	14	30.1
Aug. 15	23.2	24	24.4	21	26.5
Sept.15	23.3	31	22.6	28	26.4
Oct. 15	21.5	Jan. 7, 1954	23.3	Nov. 4	25.1
Nov. 15	17.2	14	19.7	11	25.3
Dec. 15	14.7	24	26.2	18	20.1
31	16.2	28	14.6	25	19.6
Mar. 20, 1953	26.0	Feb. 4	14.6	Dec. 2	18.7
27	32.1	11	16.0	9	17.2
Apr. 3	35.2	18	13.5	16	16.4
10	35.8	25	13.6	23	21.0
17	34.3	Mar. 4	14.9	30	20.4
24	31.0	11	14.2	Jan. 6, 1955	15.6
May 1	27.2	18	14.6	13	14.2
8	27.1	25	11.9	20	12.6
15	26.4	Apr. 1	10.7	27	11.6
21	28.3	8	11.1	Feb. 3	11.2
28	28.0	15	11.8		

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1N/22-28A1--Continued.

Date	Water level	Date	Water level	Date	Water level
Feb. 10, 1955	13.7	Dec. 1, 1955	21.0	Sept. 20, 1956	35.2
27	13.7	8	18.4	27	35.5
24	13.1	15	18.4	Oct. 4,	34.5
Mar. 3	12.1	22	19.4	11	33.4
10	15.3	29	16.6	18	32.4
17	16.3	Jan. 5, 1956	16.1	25	30.6
24	24.5	12	15.8	Nov. 1	30.5
31	30.0	19	18.0	8	30.3
Apr. 7	36.5	26	15.4	15	31.3
14	36.2	Feb. 2	13.9	22	29.4
21	34.7	9	13.1	29	31.0
28	27.9	16	13.4	Dec. 6	30.3
May 5	22.1	23	14.8	13	30.3
12	18.8	Mar. 1	12.7	20	30.4
19	19.6	8	12.5	27	31.0
26	21.0	15	15.9	Jan. 3, 1957	30.6
June 2	23.0	22	18.6	10	24.3
9	29.5	29	20.0	17	21.0
16	25.8	Apr. 5	22.7	24	19.7
23	25.8	12	23.1	31	18.0
30	25.9	19	17.4	Feb. 7	19.4
July 7	28.7	26	17.7	14	17.3
14	29.8	May 3	18.3	21	17.5
21	31.2	10	18.5	28	16.6
28	32.4	17	23.6	Mar. 7	15.8
				14	15.5
Aug. 4	32.0	24	29.4	21	16.4
11	33.2	31	28.2	28	20.4
18	33.4	June 7	28.3	Apr. 4	24.4
25	34.3	14	29.2	11	27.8
Sept. 1	37.8	21	27.9	18	28.7
				25	22.9
8	35.6	28	29.1	May 2	24.3
15	37.6	July 5	27.7	9	27.8
22	32.9	12	28.5	16	28.3
29	32.9	19	30.1	23	29.5
Oct. 6	34.4	26	29.9		
				30	27.5
13	33.5	Aug. 2	31.3	June 6	29.4
20	33.0	9	34.5	13	29.0
27	31.0	16	31.7	20	32.3
Nov. 3	29.9	23	34.6	27	33.1
10	30.8	30	34.5		
				July 4	34.2
17	25.0	Sept. 6	35.8	11	36.6
24	21.9	13	38.6		

Continued

1N/22-28A1--Continued.

Date	Water level	Date	Water level	Date	Water level
July 18, 1957	36.0	Feb. 6, 1958	21.9	Aug. 14, 1958	28.6
25	36.5	13	20.4	21	31.7
Aug. 1	38.4	20	19.5	28	28.3
8	37.9	27	18.6	Sept. 9	28.1
15	39.4	Mar. 6	18.4	11	27.9
22	40.0	13	18.1	18	28.1
29	37.2	20	16.6	25	29.4
Sept. 5	38.2	27	15.7	Oct. 2	31.8
12	39.0	Apr. 3	13.6	9	30.5
19	38.6	10	13.0	16	29.3
26	40.0	17	14.0	23	30.4
Oct. 3	38.9	24	14.8	30	27.4
10	39.2	May 1	17.3	Nov. 6	26.6
17	33.1	8	19.6	13	26.0
24	32.0	15	25.0	20	24.5
31	34.7	22	25.1	27	24.0
Nov. 7	32.2	29	23.8	Dec. 4	24.8
14	31.6	June 5	23.8	11	23.5
21	32.1	12	24.6	18	23.8
29	32.6	19	24.3	23	22.0
Dec. 5	32.6	26	26.5	30	20.0
12	28.5	July 3	24.7	Jan. 6, 1959	19.5
19	25.7	10	24.9	15	14.5
26	23.3	17	25.7	22	15.5
Jan. 16, 1958	27.7	24	25.9	29	16.0
23	27.6	31	26.7		
30	23.5	Aug. 7	27.1		

1N/22-28D1 (9-W-2). Depth about 150 ft. Altitude is 7.03 ft. Records available: 1931-39.

May 2, 1931	6.6?	Sept. 19, 1933	7.7	Feb. 4, 1937	+2.2
Aug. 20	10.0	Jan. 15, 1934	.5	May 13	+3.3
Nov. 22	5.2	Apr. 13	5.8	Aug. 10	1.1
Jan. 4, 1932	+1.5	Dec. 4	1.7	Jan. 12, 1938	+3.5
Mar. 9	+2.0	May 20, 1935	+.7	May 17	+5.7
May 13	6.0	Sept. 5	4.7	Sept. 13	.3
Aug. 30	7.5	Dec. 16	+.5	Jan. 26, 1939	+6.8
Jan. 12, 1933	+.3	Apr. 29, 1936	1.3	May 9	+4.5
Apr. 4	4.6	Aug. 2	8.1	Aug. 21	1.5

1N/22-28Z1 (~~1/22-28H1~~, 9-W-4). Depth about 140 ft. Altitude 9.8 ft. Records available: 1948-51.

Date	Water level	Date	Water level	Date	Water level
Jan. 16, 1948	3.2	Oct. 12, 1948	13.4	Oct. 24, 1949	16.6
19	4.5	Nov. 1	9.8	Nov. 8	19.0
26	3.4	8	9.9	21	13.6
Feb. 2	3.8	26	11.8	Dec. 7	14.1
9	5.6	Dec. 21	7.1	27	8.4
24	15.3	Feb. 1, 1949	3.3	Jan. 18, 1950	5.6
27	18.7	14	3.1	Feb. 3	4.9
Mar. 3	23.8	Mar. 8	10.4	27	5.2
13	27.3	22	19.8	Mar. 14	8.1
21	23.8	Apr. 4	24.9	27	14.4
Apr. 6	16.4	13	27.2	Apr. 18	16.8
12	16.3	20	26.9	May 2	18.4
26	12.1	28	25.4	12	19.3
May 10	11.9	May 5	22.0	19	17.3
16	10.3	12	20.7	June 12	17.0
24	12.1	25	14.1	26	21.1
June 7	12.1	June 7	13.8	July 25	25.9
21	11.0	16	14.9	Aug. 8	27.3
July 5	13.3	23	16.8	22	24.7
12	18.0	July 4	19.0	Sept. 20	20.1
19	20.3	13	21.3	Oct. 9	21.1
26	19.8	21	25.1	Nov. 14	17.7
Aug. 2	18.5	28	24.0	30	14.2
9	17.9	Aug. 3	24.1	Dec. 13	14.3
16	18.5	16	22.5	Jan. 1, 1951	13.3
24	15.8	30	20.2	20	10.9
30	15.4	Sept. 9	20.3	Feb. 15	15.6
Sept. 13	14.3	23	18.4	Mar. 4	15.3
27	13.0	Oct. 5	18.4	19 Well destroyed	

1N/22-34J1 (9-W-1). A. M. Bernard. Depth unknown. Altitude 5.8 ft. Records available: 1931-37, 1940.

Aug. 21, 1931	11.3	Sept. 19, 1933	9.1	Apr. 23, 1936	0.9
Nov. 25	4.8	Jan. 5, 1934	+.8	Aug. 7	9.7
Jan. 23, 1932	Flowing	Apr. 15	4.7	Feb. 9, 1937	Flowing
Mar. 9	Flowing	Dec. 4	1.9	May 14	Flowing
May 16?	3.7	May 20, 1935	Flowing	Dec. 6, 1940	Destroyed
Jan. 13, 1933	+1.9	Sept. 5	6.1		
Apr. 14	3.9	Dec. 16	.2		

1N/22-34J2 (9-W-1A). Gun Club. Depth unknown. Altitude 5.8 ft.
Records available: 1947-58.

Date	Water level	Date	Water level	Date	Water level
Apr. 14, 1947	11.5	Oct. 27, 1952	16.2	Sept.30, 1955	22.0
Aug. 20	7.2	Nov. 5	14.4	Oct. 31	18.9
Jan. 7, 1948	1.1	24	8.6	Nov. 2	18.3
Apr. 12	10.2	Jan. 13, 1953	4.5	30	11.3
Aug. 8	12.1	Feb. 11	9.0	Dec. 31	5.8
Dec. 6	6.9	Mar. 10	15.0	Jan. 31, 1956	.4
Apr. 26, 1949	16.8	Apr. 6	24.3	Feb. 29	5.3
Aug. 19	14.7	May 6	18.8	Mar. 31	11.6
Mar. 13, 1950	4.6	June 9	17.7	Apr. 30	10.0
Apr. 21	12.7	July 8	18.2	June 2	18.1
May 24	13.3	Aug. 18	20.1	July 3	20.2
June 21	15.0	Sept. 9	18.9	31	24.1
July 25	17.7	Oct. 2	19.1	Sept. 1	25.5
Aug. 21	19.0	6	18.8	29	26.5
Sept.21	14.6	Nov. 2	17.0	Oct. 31	21.9
Dec. 5	9.5	6	18.2	Nov. 15	22.8
Jan. 9, 1951	11.8	Dec. 7	9.8	29	21.3
Feb. 6	5.7	29	14.3	Dec. 6	20.8
Mar. 6	9.2	Feb. 2, 1954	7.5	13	20.0
Apr. 3	22.3	27	6.9	20	20.0
May 8	13.1	Mar. 9	7.9	27	20.3
June 6	16.8	Apr. 3	3.8	Jan. 3, 1957	19.9
July 3	17.9	30	3.8	10	15.1
Aug. 1	22.5	May 5	9.3	17	12.5
Sept.19	19.9	June 1	12.7	24	12.5
Oct. 22	17.9	30	16.3	31	10.2
Nov. 14	16.3	July 31	25.1	Feb. 7	11.5
Dec. 21	10.3	Aug. 3	24.5	14	8.9
Feb. 7, 1952	8.8	28	24.0	21	10.4
25	7.5	Sept. 8	21.8	Mar. 7	9.0
Mar. 24	5.3	Oct. 1	17.5	14	7.8
Apr. 16	6.3	30	16.1	21	9.9
22	6.5	Nov. 4	16.5	28	10.0
May 9	8.1	27	9.8	Apr. 4	12.7
21	10.3	Feb. 1, 1955	6.0	11	16.6
July 2	13.2	Mar. 1	7.3	25	13.2
11	14.7	Apr. 20	22.5	May 2	12.9
Aug. 12	18.6	May 3	17.4	9	15.8
23	16.7	31	16.3	16	15.5
Sept.17	19.1	July 5	16.9	23	17.5
30	19.1	30	22.4	30	15.7

Continued

1N/22-34J2--Continued.

Date	Water level	Date	Water level	Date	Water level
June 6, 1957	15.3	Sept. 5, 1957	25.2	Dec. 5, 1957	20.6
13	15.8	12	24.3	12	15.1
20	17.9	19	25.8	19	15.3
27	18.0	26	23.5	26	11.6
July 4	20.0	Oct. 3	24.9	Mar. 27, 1958	+.9
				Apr. 10	+1.8
11	20.5	10	23.9	17	+1.4
18	20.9	17	20.3	24	+2.0
25	21.2	24	19.5		
Aug. 1	24.3	31	21.2	Sept. 11	20.7
8	27.5	Nov. 7	19.4	18	20.4
				25	20.9
15	26.7	14	18.0		
22	27.0	21	21.1		
23	23.6	29	19.7		

1N/22-35C1 (10-W-24). Friedrich estate. Depth about 220 ft. Altitude 10.92 ft. Records available: 1948, 1953-58.

Jan. 12, 1948	6.9	Dec. 24, 1954	25.8	Mar. 7, 1957	16.2
19	9.3	Feb. 1, 1955	12.7	14	15.7
26	11.5	Mar. 1	13.5	21	16.6
Feb. 2	13.1	May 3	27.2	25	21.3
9	10.5	31	27.2	Apr. 4	26.9
Apr. 26	20.5	July 5	31.2	11	31.7
May 10	19.0	Sept. 30	42.6	25	25.1
15	19.7	Oct. 31	35.0	May 9	30.7
24	19.5	Nov. 30	26.6	23	33.1
June 7	19.1	Dec. 31	19.7	30	32.6
21	18.5	Jan. 31, 1956	14.8	June 6	32.5
Apr. 1, 1953	41.2	Feb. 29	12.6	13	32.7
May 7	30.7	Mar. 31	23.6	Aug. 15	47.5
June 10	28.5	Apr. 30	20.4	29	45.4
July 1	31.6	July 31	36.7	Sept. 5	47.6
Aug. 3	35.9	Sept. 29	44.1	Oct. 17	38.9
31	34.5	Oct. 31	40.3	24	39.2
Oct. 2	36.0	Nov. 15	40.6	Nov. 7	37.6
Nov. 2	35.0	Dec. 6	38.7	14	36.0
Dec. 29	25.8	13	36.4	21	39.2
Feb. 2, 1954	15.7	27	38.6	Jan. 7, 1958	b27.63
27	14.6	Jan. 3, 1957	38.2	Mar. 12	17.0
Apr. 3	10.5	10	29.7	26	13.3
30	14.5	17	24.0	Apr. 3	12.9
June 1	25.1	24	21.8	10	12.2
30	14.5	31	19.5	17	12.2
Aug. 28	41.4	Feb. 7	19.6	24	14.1
Oct. 1	34.7	14	18.4	May 8	20.3
30	33.4	21	18.2	June 5	28.5
Nov. 27	22.2	28	16.7	19	29.1

b. Measurement by Geological Survey.

A1

1N/22-35~~Z1~~ (~~1/22-35A1~~, 10-W-3). Chase Brothers. Depth about 160 feet. Altitude 8.1 ft. Records available: 1948-54.

Date	Water level	Date	Water level	Date	Water level
Jan. 12, 1948	6.5	May 5, 1949	31.4	Nov. 30, 1950	21.5
19	8.2	12	34.2	Dec. 13	24.0
26	13.4	25	21.6	Jan. 1, 1951	20.0
Feb. 2	16.7	June 7	26.0	20	14.4
9	10.0	16	26.5	Feb. 15	21.6
24	25.8	23	29.6	Mar. 4	23.6
Mar. 3	31.6	July 4	22.9	19	28.7
8	35.1	13	30.8	Apr. 10	42.9
13	37.4	21	37.7	May 9	32.4
21	34.2	28	41.3	Aug. 15	42.0
Apr. 6	25.2	Aug. 3	40.4	Oct. 24	41.3
26	21.0	16	37.8	Nov. 15	39.9
May 10	21.9	30	34.3	Dec. 26	20.2
24	22.2	Sept. 9	31.8	Feb. 13, 1952	12.5
June 7	19.0	23	31.2	Mar. 13	11.2
21	19.9	Oct. 5	35.6	Apr. 17	11.3
July 5	24.9	24	26.8	May 12	17.3
12	30.5	Nov. 8	27.7	June 16	27.5
19	32.6	21	20.6	July 15	26.7
26	28.2	Dec. 7	25.2	Aug. 13	26.7
Aug. 2	29.2	27	14.8	Oct. 28	26.7
9	30.5	Jan. 18, 1950	9.2	Nov. 28	16.2
16	31.2	Feb. 3	7.7	Jan. 12, 1953	7.5
24	30.1	27	6.5	Feb. 16	20.5
30	27.4	Mar. 14	14.6	Mar. 10	Dry
				June 11	Dry
Sept. 13	28.6	27	24.0	Jan. 15, 1954	12.5
27	28.2	Apr. 18	23.5	Feb. 9	19.4
Oct. 12	25.8	May 3	29.3		
Nov. 8	17.9	15	29.4	Mar. 10	17.9
26	18.7	29	23.4	Apr. 7	8.0
				May 6	16.4
Dec. 21	15.6	June 12	30.3	July 14	Dry
Feb. 1, 1949	5.6	26	31.1	Sept. 13	Dry
15	5.7	July 11	38.2		
Mar. 8	19.2	25	38.0		
22	32.0	Aug. 8	42.8		
Apr. 4	38.0	22	32.6		
12	39.5	Sept. 20	36.7		
20	34.6	Oct. 9	38.7		
28	37.5	Nov. 14	24.2		

1N/22-36B2 (10-W-9). Smith, formerly J. H. Griggs. Depth about 700 ft. Altitude 10.8 ft. Records available 1931-59.

Date	Water level	Date	Water level	Date	Water level
Jan. 20, 1931	0.3	Apr. 14, 1948	22.6	Apr. 7, 1954	12.8
May 11	8.1	Aug. 11	21.0	May 6	13.8
Aug. 26	21.9	Aug. 23, 1949	28.6	July 14	24.8
Jan. 26, 1932	+.2	Jan. 3, 1950	22.8	Aug. 5	32.7
Mar. 10	+3.7	Mar. 14	14.6	Sept.13	43.2
May 20	1.1	Apr. 24	23.5	Nov. 8	38.3
Sept. 6	16.8	May 31	21.8	Jan. 24, 1955	18.1
Jan. 26, 1933	+1.5	June 27	24.8	Mar. 8	16.6
Apr. 18	Flowing	Aug. 23	30.7	Apr. 26	35.0
Sept.22	18.0	Sept.29	37.0	June 14	28.9
Jan. 16, 1934	1.8	Nov. 1	32.7	July 28	31.3
Dec. 6	7.6	Jan. 15, 1951	22.3	Sept.12	47.8
Dec. 19, 1935	13.0	Feb. 7	17.5	Nov. 8	39.4
Apr. 27, 1936	+ .2	Mar. 7	23.3	Feb. 28, 1956	16.8
Aug. 17, 1937	4.8	May 9	31.6	Apr. 25	19.2
May 19, 1938	+9.0	June 8	29.5	June 13	28.2
		July 17	34.4	July 18	31.0
		Aug. 15	38.5	Aug. 14	44.8
		Sept.20	43.4	Sept.19	49.4
Feb. 13, 1939	+2.5	Oct. 24	41.0	Nov. 30	46.8
Aug. 22	5.2	Nov. 15	41.1	Jan. 30, 1957	29.0
Dec. 21	10.7	Feb. 13, 1952	17.0	Mar. 14	22.2
May 15, 1940	+7.1	Mar. 13	14.7	Apr. 25	29.3
Aug. 26	3.2	Apr. 17	11.9	June 11	33.4
Feb. 3, 1941	+2.9	May 12	16.8	Aug. 16	53.6
May 19	+12.0	June 16	20.1	Sept.26	55.5
Dec. 16	+10.2	Aug. 13	34.8?	Nov. 19	47.7
May 4, 1942	14.1	Oct. 28	34.7	Jan. 8, 1958	b40.09
Nov. 24	+.5	Nov. 28	33.9	9	b41.8
May 15, 1943	+14.7	Jan. 12, 1953	11.3	Apr. 21	18.4
Jan. 12, 1944	+12.7	Feb. 16	11.2	June 9	32.0
May 1	+14.6	Apr. 8	33.9	Nov. 20	44.3
Dec. 20	+2.3	May 12	30.0	Dec. 19	44.9
Apr. 19, 1945	+14.0	June 11	29.7	Jan. 12, 1959	b34.22
Jan. 7, 1946	+6.7	July 9	28.2	30	27.8
Apr. 16	1.0	Sept.11	41.7		
Aug. 20	7.9	Oct. 8	39.3		
Dec. 11	+.9	Jan. 15, 1954	30.0		
Apr. 16, 1947	7.9	Feb. 9	20.1		
Aug. 25	18.7	Mar. 10	15.8		

b. Measurement by Geological Survey.

1N/22-36L1 (10-W-19). Ventura County Game Preserve. Depth about 284 ft. Altitude 6.9 ft. Records available: 1941-59.

Date	Water level	Date	Water level	Date	Water level
May 19, 1941	Flowing	Apr. 6, 1951	34.3	Apr. 7, 1954	7.0
Dec. 16	Flowing	May 9	25.3	May 6	12.1
May 4, 1942	+5.9	June 8	25.0	Jan. 24, 1955	10.5
May 15, 1943	+7.7	July 5	27.3	Mar. 8	9.5
Nov. 12	Flowing	Aug. 24	36.8	Apr. 26	32.1
May 1, 1944	Flowing	Dec. 26	17.9	June 14	25.2
Apr. 19, 1945	+2.7	Feb. 13, 1952	10.1	July 28	30.5
Jan. 7, 1946	7.4	Mar. 13	8.8	Feb. 28, 1956	9.5
Apr. 16	7.8	Apr. 17	8.2	Apr. 25	15.9
Aug. 20	13.9	May 12	13.1	June 13	28.3
Dec. 11	1.1	June 16	22.0	July 18	27.8
Apr. 16, 1947	19.5	July 15	23.3	Aug. 14	32.5
July 30	14.3	Aug. 13	26.5	Jan. 30, 1957	16.6
Jan. 12, 1948	5.3	Oct. 28	29.8	Mar. 14	11.9
Apr. 14	18.1	Nov. 28	17.0	Apr. 25	20.7
Aug. 11	23.1	Jan. 12, 1953	6.3	June 11	26.6
Apr. 27, 1949	28.6	Feb. 16	13.0	July 24	36.3
Aug. 23	25.1	Mar. 12	23.4	Aug. 16	40.1
Mar. 14, 1950	10.3	Apr. 8	33.3	Oct. 29	b39.0
Apr. 24	20.1	May 12	22.7	Jan. 9, 1958	27.2
May 31	20.5	June 11	23.9	Apr. 21	9.0
June 27	24.1	July 9	26.0	June 9	24.1
Aug. 23	28.3	Aug. 20	31.1	July 9	25.0
Jan. 15, 1951	14.9	Jan. 15, 1954	21.1	Nov. 20	29.2
Feb. 7	11.3	Feb. 9	14.3	Jan. 30, 1959	19.2
Mar. 7	20.0	Mar. 10	10.8		

1N/22-36~~Z1~~J1 (~~1/22-36J1~~, 10-W-14). Ventura County Game Preserve. Depth about 250 ft. Altitude 5.5 ft. Records available: 1948.

Jan. 12, 1948	2.0	Apr. 6, 1948	5.3	July 19, 1948	7.4
19	3.0	24	5.8	26	7.5
26	3.4	May 10	6.0	Aug. 2	7.7
Feb. 2	4.1	24	6.8	9	7.9
9	3.7	June 7	4.8	16	7.9
24	4.9	21	6.2	30	7.7
Mar. 8	5.9	July 5	6.8	Sept. 13	7.1
21	5.8	12	7.3	25	6.3

b. Measurement by Geological Survey.

1N/22-36Z3 (~~1N/22-36P1~~, 10-W-8). Ventura County Game Preserve. Depth unknown. Altitude 5.2 ft. Records available: 1931-41.

Date	Water level	Date	Water level	Date	Water level
Jan. 20, 1931	1.3	Jan. 16, 1934	1.9	Jan. 14, 1938	1.5
May 11	5.9	Apr. 14	4.9	May 19	1.9
Aug. 21	41.7	Dec. 6	1.4	Feb. 13, 1939	1.3
Jan. 28, 1932	1.3	May 23, 1935	2.3	May 9	2.6
Mar. 10	2.9	Dec. 19	.7	Dec. 21	.7
May 20	5.6	Apr. 27, 1936	2.3	May 15, 1940	.4
Sept. 6	42.8	Feb. 11, 1937	Flowing	Feb. 3, 1941	+.1
Jan. 26, 1933	.9	May 19	.1		
Apr. 18	+1.0	Aug. 17	4.9		

1S/21-4E1 (Observation well 2). NAMTC. Depth about 350 ft. Altitude 2.05 ft. Records available: 1957-59; also hydrograph for 1949-51 available in files of U. S. Navy.

Oct. 29, 1957	e29.05	May 19, 1958	e35.49	Jan. 14, 1959	e40.63
29	f29.97	19	f31.02	14	(c f)
Nov. 22	e46.08	July 14	e42.28		
22	f45.85	14	f44.35		
Jan. 10, 1958	e40.44	Sept. 24	e47.13		
10	f38.40	24	f54.40		

1S/21-6F1 (Observation well 1). NAMTC. Depth about 350 ft. Altitude -1.54 ft. Records available: 1957-59; also hydrograph for 1949-51 available in files of U. S. Navy.

Oct. 29, 1957	e22.07	May 19, 1958	e7.53	Sept. 24, 1958	e43.83
29	f22.14	19	f7.52	24	f50.81
Jan. 10, 1958	e17.21	July 14	e13.74	Jan. 14, 1959	e13.01
10	f18.82	14	f13.72	14	f14.03

1S/22-1Z1 (10-X-1). Ventura County Game Preserve. Altitude 2.7 ft. Records available: 1931-32.

Aug. 21, 1931	23.7	Mar. 10, 1932	3.7	Sept. 6, 1932	19.2
Jan. 26, 1932	4.3	May 20	8.8		

c. Tape smears.
e. Measurement of water level above packer.
f. Measurement of water level below packer.

Table 4.--Drillers' logs of water wells

1N/21-4D1. George Hayes, formerly Springville School. Altitude about 55 ft. Drilled by Roscoe Moss Co. in 1932. 10-inch casing, perforated 96-99 and 279-294 ft. Well is north of Hueneme Road and therefore is not shown in table 1.

Material	Thickness (feet)	Depth (feet)
Soil	5	5
Yellow clay	47	52
Blue clay	44	96
Small gravel	1	97
Yellow sandy clay	141	238
Blue clay	36	274
Yellow sand and small gravel	20	294
Yellow sandy clay	8	302

1N/21-9M1. J. Maring. Altitude about 35 ft. Drilled by Roscoe Moss Co. in 1946. 16-inch casing, perforated 264-1,345 ft. Well is north of Hueneme Road and therefore is not shown in table 1.

Soil	10	10
Blue sandy clay	160	170
Sand	35	205
Blue clay and sand streaks	60	265
Sand	35	300
Blue clay	30	330
Blue sandy clay and clay streaks	26	356
Sand and blue clay streaks	44	400
Blue clay	30	430
Sand	20	450
Blue clay	10	460
Blue sandy clay	30	490
Blue clay	30	520
Sand	20	540
Blue sandy clay	30	570
Blue clay	50	620
Blue sandy clay	10	630
Hard blue clay	15	645
Blue clay	65	710
Blue clay, sand and shell streaks	75	785
Blue clay	40	825
Blue clay, sand and shell streaks	40	865
Hard sticky blue clay	25	890
Blue sandy clay and shells	136	1,026
Cemented sand	5	1,031
Blue sandy clay and hard sand streak	21	1,052
Blue sandy clay	108	1,160
Blue sand	60	1,220
Blue sand and pea gravel	40	1,260
Blue clay	85	1,345
(Reported to pump 3,425 gpm with 90 ft of drawdown)		

1N/21-16E2. Arthur Young. Altitude about 25 ft. Drilled by George Chamberlain in 1956. 16-inch casing, perforated 299-599 ft. Well is north of Hueneme Road and therefore is not shown in table 1.

Material	Thickness (feet)	Depth (feet)
Surface soil	38	38
Sandy blue-gray clay	62	100
Gravel	20	120
Brown and blue clay	38	158
Gravel and gray clay streaks	24	182
Brown and blue clay, small gravel streaks	20	202
Brown and blue clay	34	236
Blue clay	31	267
Blue clay, gravel streaks	40	307
Gravel and small blue clay streaks	47	354
Gravel	9	363
Blue clay	23	386
Sand, gravel, blue clay	8	394
Sand and gravel	16	410
Brown and blue clay; some yellow clay	15	425
Gravel, some brown clay streaks	31	456
Blue clay	8	464
Gravel and blue clay	6	470
Sand, some brown clay streaks	54	524
Gravel, brown clay	23	547
Gravel, blue clay	66	613
(Reported to pump 1,800 gpm with 30 ft of drawdown)		

1N/21-21N1. H. Nauman. Altitude 15.2 ft. Drilled by L. A. Anderson in 1951. 14-inch casing perforated 320-340 ft and 362-398 ft. Well is north of Hueneme Road and therefore is not shown in table 1.

Topsoil	8	8
Yellow clay	38	46
Blue clay	66	112
Yellow clay	26	138
Blue clay	24	162
Gravel and sand	4	166
Yellow clay	28	194
Blue clay	116	310
Fine blue sand	8	318
Blue sand and gravel	22	340
Blue clay	20	360
Gravel and sand	38	398
Blue clay	52	450

1N/21-26K1. Sierra Vista Ranch. Altitude about 20 ft. Drilled about 1924.

Material	Thickness (feet)	Depth (feet)
Black adobe soil	14	14
Hard brown shale	103	117
Red clay	20	137
Hard sandstone	5	142
Yellow clay	95	237
Blue clay and sand	61	298
Hard sandstone	9	307
(Reported to pump 240 gpm)		

1N/21-27F1. Broome ranch. Altitude 13.7 ft. Drilled by Henry Hatherly in 1926. 18-inch casing, perforated 425-426, 457-460, 584-588, 611-616, 687-692, 705-710, 749-757, and 824-836 ft.

Clay	134	134
Clay with a little gravel	1	135
Blue clay and hardpan	250	385
Red clay	36	421
Blue clay	4	425
Gravel, water-bearing	1	426
Red sandy clay	24	450
Blue clay	5	455
Gravel	2	457
Sand, blue clay	13	470
Blue sand	13	483
Blue clay	7	490
Red clay	30	520
Red clay and gravel, water	10	530
Blue clay with a little sand	50	580
Cemented gravel	4	584
Blue clay	24	608
Cemented formation	3	611
Blue sand	66	677
Blue clay	3	680
Sand, gravel, and shells	3	683
Cemented formation with shells	4	687
Blue sand	14	701
Layers of cement formation and shells	4	705
Blue clay and silt	38	743
Gravel, not much water	6	749
Sand	63	812
Gravel	12	824
Solid rock	16	840

1N/21-27H1. Broome ranch No. 1. Altitude about 15 ft. Drilled by Sam Beard in 1926. 18-inch casing perforated 116-134 ft.

Material	Thickness (feet)	Depth (feet)
Soil	4	4
Clay and silt	112	116
Gravel with clay	18	134
Clay and silt	63	197
Clay and gravel	15	212

1N/21-28C1. Davis ranch. Altitude about 15 ft. Drilled by Roscoe Moss Co. in 1940. 16-inch casing perforated 126-750 ft.

Black clay	4	4
Sand	2	6
Blue clay	45	51
Hard sand	146	197
Blue clay	105	302
Loose muddy sand	15	317
Sand	18	335
Clay with coarse sand	110	445
Clay	45	490
Sand and shells	260	750
Soft sandy clay	59	809

1N/21-28E1. Davis ranch. Altitude about 15 ft. Drilled by Midway Drilling Co. in 1957. 14-inch casing perforated 309-345 and 492-600 ft.

Shale and clay	309	309
Gravel	36	345
Clay, shale, fine sand	147	492
Sand and gravel	108	600

1N/21-28F1. Davis ranch. Altitude about 15 ft. Drilled by Pitts in about 1924. 16-inch casing.

Soil	15	15
Clay and sand	72	87
Gravel	2	89
Clay	39	128
Gravel	18	146
Sand and clay	14	160
Gravel	40	200
Clay	8	208

1N/21-28G1. Broome ranch. Altitude about 15 ft. Drilled in 1939. 26-inch casing.

Material	Thickness (feet)	Depth (feet)
Soft blue clay	78	78
Coarse sand and gravel	5	83
Heavy blue clay	9	92
Hard sandy formation	4	96
Sharp sand and gravel	19	115
Heavy blue clay	11	126
Sandy clay	13	139
Gravelly clay	7	146
Coarse gravel	26	172
Sandy gravelly clay	17	189
Sandy clay	10	199
Blue sticky clay	20	219
Sandy clay	4	223
Blue sticky clay	41	264
Sandy clay	13	277
Gravel	4	281
Clay	7	288
Sandy clay	4	292
Sticky clay	5	297
Sandy clay	6	303
Sticky clay	8	311
Sandy clay	3	314
Sand and gravel	20	334
Sandy clay	9	343
Heavy clay	6	349
Sandy clay	3	352
Gravel	5	357
Clay	2	359
Fine sand	12	371
Heavy sticky clay	7	378

1N/21-28G2. Broome ranch. Altitude about 15 ft. Drilled by Gordon Sanders in 1933. 26-inch casing perforated 138-318 ft.

Soil	6	6
Sandy clay	7	13
Silty clay	65	78
Fine sand	11	89
Sticky clay	6	95
Sand	12	107
Sticky clay	39	146
Gravel	29	175
Sticky blue clay	93	268
Fine gravel	6	274
Sticky blue clay	21	295
Hard sandy clay	23	318
Gravel	16	334
Hard clay	36	370

1N/21-28G3. Broome ranch. Altitude about 15 ft. Drilled by Midway Drilling Co. in 1957. 12-inch casing perforated 464-536 and 572-680 ft.

Material	Thickness (feet)	Depth (feet)
Topsoil	10	10
Silt	10	20
Clay	30	50
Silt	20	70
Sandy clay	80	150
Sand	30	180
Clay	80	260
Sand and gravel	30	290
Clay	30	320
Sand and clay streaks	60	380
Clay	30	410
Sea shells and sand	150	560
Clay	20	580
Sea shell and sand	70	650
Clay	10	660
Sand	40	700

(Reported to pump 3,500 gpm with a drawdown of 65 ft)

1N/21-28H1. Broome ranch. Altitude about 15 ft. Drilled in 1925. 4-inch casing.

Yellow sandy soil	16	16
Clay	19	35
Quicksand and clay	60	95
Gravel and rocks	5	100
Sand and gravel	23	123
Gravel and rocks	16	139
Sand	11	150
Gravel and rock	13	163
Clay	3	166
Hard sand formation	34	200
Clay and sand	106	306
Sandstone and sea shells	54	360
Clay	35	395
Hard sand formation	99	494

1N/21-28N1. Broome ranch. Altitude about 10 ft. Drilled by Saunders Bros. in 1934. 24-inch casing.

Material	Thickness (feet)	Depth (feet)
Soil	25	25
Sticky blue clay	2	27
Soft sandy clay	6	33
Tough clay	4	37
Sandy blue clay	14	51
Tough blue clay	8	59
Soft mud	6	65
Tough blue clay	14	79
Sand and some gravel	8	87
Clay and sandy clay	28	115
Black sticky clay	8	123
Tough sticky clay	16	139
Fine sand	14	153
Gravel	30	183
Very tough clay	12	195
Sticky clay	58	253
Hard sand and sandstone	4	257
Sticky clay	18	275
(Reported to pump 1,600 gpm from 90 ft)		

B5

1N/21-29~~A2~~. A. DuBuessehere. Altitude about 15 ft. Drilled by Midway Drilling Co. in 1956. Perforated 331-409 and 449-590 ft.

Topsoil	7	7
Clay	40	47
Sand	13	60
Sandy clay	20	80
Clay	20	100
Sandy clay	30	130
Clay	50	180
Gravel	40	220
Clay	40	260
Sandy clay	20	280
Clay	10	290
Gravel	120	410
Clay	40	450
Gravel and streaks of sea shells	85	535
Gravel and sea shells	55	590

B3

1N/21-29~~B1~~. A. DuBuessehere. Altitude about 15 ft. Drilled by L. Anderson in 1951. 14-inch casing perforated 190-210 and 378-415 ft.

Soil	10	10
Blue clay	116	126
Sand and gravel	24	150
Brown clay	28	178
Sand and gravel	30	208
Blue clay	52	260
Blue cemented sand	20	280
Blue clay	10	290
Cemented blue sand	83	373
Sand and gravel	39	412
Blue clay	38	450

1N/21-29C1. Raytheon Co. Altitude about 15 ft. Drilled by L. Anderson in 1955. 10- and 14-inch casing perforated 128-138 ft and 324-343 ft.

Material	Thickness (feet)	Depth (feet)
Topsoil	3	3
Yellow clay	4	7
Blue clay	65	72
Cemented sand	24	96
Blue clay	22	118
Fine sand, 2-inch gravel	20	138
Fine, some small gravel	20	158
Yellow clay	20	178
Fine sand, some 1-inch gravel	4	182
Blue clay	7	189
Fine blue sand, small gravel	11	200
Blue clay	56	256
Fine cemented sand	28	284
Blue clay	13	297
Fine cemented sand	14	311
Blue clay	5	316
Cemented sand, hard gravel	12	328
Cemented sand	15	343
Fine cemented sand	7	350
(Reported to pump 100 gpm)		

1N/21-29D2. R. L. Brooks. Altitude 18.96 ft. Drilled in 1945. 12-inch casing perforated 460-470, 544-550, and 575-593 ft.

Soil	3	3
Yellow clay	17	20
Blue clay	15	35
Fine blue sand	39	74
Blue clay	20	94
Fine blue sand	4	98
Blue clay	26	124
Yellow clay	14	138
Fine yellow sand	12	150
Blue clay	10	160
Yellow sand	26	186
Yellow clay	16	202
Fine blue sand	26	228
Blue clay	62	290
Fine blue sand	6	296
Blue shale	10	306
Cemented sand	14	320
Fine blue sand	12	332
Blue sand	28	360
Fine blue sand	30	390
Blue sand	70	460
Sand and gravel	10	470
Blue sand	38	508
Blue sand, some shells	12	520
Fine blue sand	24	544
Sand and gravel	6	550
Blue sand	22	572
Sand and gravel	18	590
Blue sandy clay	12	602

1N/21-29G1. Camela Wells. Altitude about 15 ft. Drilled by L. A. Anderson in 1947. 10-inch casing perforated 93-99, 118-190, and 215-280 ft.

Material	Thickness (feet)	Depth (feet)
Sandy clay soil	10	10
Blue and yellow clay	57	67
Soupy sand	30	97
Blue clay	21	118
Sand clay, some gravel	13	131
Yellow clay	14	145
Sand and clay	45	190
Blue sticky clay	25	215
Sand and yellow clay	37	252
Blue clay	6	258
Sand and clay	25	283
Blue clay	5	288

1N/21-29R1. State of California. Altitude about 10 ft. Drilled by L. A. Anderson. 14-inch casing perforated 160-180 and 192-205 ft.

Soil	4	4
Clay, yellow, sticky	14	18
Clay, blue	32	50
Clay, blue, sandy, shells	22	72
Sand, blue,fine	6	78
Clay, blue	13	91
Sand, cemented	6	97
Clay, blue	19	116
Sand and 2-inch gravel	8	124
Clay, yellow	54	178
Clay, blue	27	205

1N/21-29R2. State of California. Altitude about 10 ft. Drilled by L. A. Anderson in 1947. 10-inch casing perforated 88-120 ft.

Soil	3	3
Clay	44	47
Clay and sandy layers	14	61
Blue clay	27	88
Fine sand and clay	6	94
Blue clay	11	105
Sand, $\frac{1}{2}$-inch gravel	4	109
Yellow clay	25	134

1N/21-30A1. E. Maulhart. Altitude about 15 ft. Drilled by Sam Beard in 1931. 14-inch casing perforated 383-407, 421-434, 498-512, and 532-587 ft.

Material	Thickness (feet)	Depth (feet)
Soil	6	6
Clay	108	114
Clay and sand	6	120
Clay	100	220
Fine gravel	6	226
Sticky clay	54	280
Sand	20	300
Clay	81	381
Gravel and sand	53	434
Clay	64	498
Medium gravel and sand	14	512
Fine gravel and sand	20	532
Medium gravel, some sand	30	562
Gravel and sand	25	587
Clay	4	591

K1

1N/21-30F3. Levy Co. Altitude about 10 ft. Drilled by L. A. Anderson in 1956. 12-inch casing.

Soil	5	5
Sand, fine	13	18
Clay, blue, sandy	12	30
Clay, blue, sticky	100	130
Clay and rock	5	135
Gravel to 6 inches	15	150
Clay and rock, blue	10	160
Gravel to 6 inches	35	195
Clay, blue	11	206
Sand, fine	19	225
Sand, coarse, gravel, 1/4-inch	10	235
Sand, fine	35	270
Clay, blue	8	278
Sand, fine	24	302
Clay, blue	62	364
Sand, fine	48	412
Gravel to 4 inches	28	440
Sand, rock and clay	15	455
Gravel to 4 inches	4	459
Cement sand, blue	41	500
Silt, blue, sea bottom	246	746

1N/21-31A1. Point Mugu Game Preserve. Altitude about 10 ft. Drilled by L. A. Anderson in 1951. 12-inch casing perforated 190-230 ft.

Material	Thickness (feet)	Depth (feet)
Soil	10	10
Clay, brown, sandy	10	20
Clay, blue	24	44
Sea mud, blue	26	70
Clay and shell, blue	20	90
Sand, cemented	12	102
Clay, blue	22	124
Sand, cemented	24	148
Clay, hard, brown	22	170
Sand, cemented, blue	16	186
Sand and gravel $\frac{1}{4}$ to 3 inches	44	230
Hard cemented sand	4	234

1N/21-31L1 (supply well 3). NAMTC. Altitude 8.89 ft. Drilled by Van Noy in 1949. 26-inch casing to 310 ft, 16-inch casing to 350 ft, 12-inch casing to 1,000 ft; originally perforated 350-420, 476-530, 620-700, and 810-972 ft. Cemented plug reportedly set in well at 750 ft after 1950. Log by Paul Bailey, consulting geologist.

Sand, mostly fine	95	95
Sand, coarse, and gravel and streaks of blue clay	39	134
Sand, light gray, fine, and blue clay	78	212
Gravel, light gray, clean	59	271
Clay, blue, and thin silty sand and gravel streaks	79	350
Sand, gravelly and pebbly	70	420
Clay, blue-gray	20	440
Sand, fine, silty	12	452
Clay, dark gray	15	467
Gravel and coarse sand	71	538
Sand, medium to fine, silty	64	602
Sand, dark gray, silt and silty	18	620
Sand, coarse, and gravel	70	690
Clay, blue, fine to medium, and sandy silt	42	732
Sand, medium to fine, and gravelly streaks	50	782
Silt, blue and fine sand	28	810
Sand and gravel, medium to coarse	80	890
Sand, medium to coarse, and fine silty sand streak	68	958
Sand, medium to coarse (fair water)	42	1,000
Sand, medium to coarse (brackish water)	50	1,050
Silt, blue-gray, sandy and fine silty sand	60	1,110
Clay, blue-gray, shaly	50	1,160
Sand, dark gray, medium to fine, carbonaceous	40	1,200
Clay, dark gray, carbonaceous, shale and sandy shale	18	1,218
Shale, gray, clayey, and shaly clay	128	1,346
Shale, light gray, silty, thinner beds of friable sandstone	124	1,470
Shale, soft, carbonaceous	12	1,482
Sandstone, dark, friable, interbedded with brownish-black soft laminated clay-shale	61	1,543
Sandstone, dark gray, hard	30	1,573
Basalt, dark green, altered	10	1,583

1N/21-32A1 (supply well 5). NAMTC. Altitude about 10 ft. Drilled by Midway Drilling Co. in 1958. 16-inch casing perforated from 645-745 ft. Log by Geological Survey.

Material	Thickness (feet)	Depth (feet)
Silts, greenish-brown, fine sand lenses	75	75
Sand, coarse, pebble size, well-rounded, some marine shells	20	95
Clay, silty, fine sand	20	115
Sand, coarse, pebble size, well-rounded, some fine sand, marine shells	21	136
Clay, silty, bluish-gray, some coarse sand	14	150
Sand, coarse, pebble size, subrounded to rounded, some marine shells	20	170
Clay, bluish-gray, fine sand	9	179
Sand, fine to coarse, subrounded to rounded	10	189
Clay, bluish-gray, fine sand	10	199
Sand, fine, silty, well-rounded	9	208
Clay, bluish-gray, fine sand	7	215
Sand, fine to coarse, well-rounded, silts	14	229
Clay, fine sand	10	239
Sand, fine to coarse, some silt	12	251
Clay, brown, silt and fine sand	18	269
Silt to coarse sand, little clay, shell fragments	113	382
Clay, silt, fine sand	13	395
Sand, fine to medium, some silt, clay, and shell fragments	65	460
Clay, silt, some fine sand	16	476
Sand, fine to medium, blue-gray, well-rounded, some silts and clays	134	610
Clay, blue-gray, fine sand and silt	26	636
Sand, fine to medium, well-rounded, blue-gray, some silts and clays	116	752
Sand, fine to medium, well-rounded, blue-gray, some silts and clays	51	803

1N/21-32C1. A. DuBuessehere. Altitude about 10 ft. Drilled by Midway Drilling Co. in 1956. 12- and 14-inch casing perforated 469-649 and 685-721 ft.

Yellow clay, streaks of sand	100	100
Blue shale	43	143
Yellow clay and blue shale	25	168
Yellow clay, sand and gravel	30	198
Blue shale	32	230
Blue shale and sea shells	235	465
Sea shell and sand	184	649
Blue clay	46	695
Blue sand	26	721
(Reported to pump 2,500 gpm with 85-foot drawdown)		

1N/21-32E1. NAMTC, test well 2. Altitude about 9 ft. Drilled by Raymond Concrete Pile Co. in 1947.

Material	Thickness (feet)	Depth (feet)
Soft blue clay	16.3	16.3
Blue clay	11.7	28
Medium to coarse gray sand	19	47
Fine gray clean sand	13	60
Medium gray sand	11	71
Blue clay	3	74
Sandy clay	1	75
Blue clay	3	78
Blue, gray soft clay	6	84
Hard sandy clay	2	86
Silty clay	5	91
Soft clay	6	97
Light gray fine sand	11	108
Soft clay	1	109
Black fine sand	11	120
Light gray fine sand	4	124
Soft clay	3	127
Light gray fine sand	13	140
Blue, gray fine sand	10	150

1N/21-32G1. NAMTC, supply well 1. Altitude 10.00 ft. Drilled in 1943. 12-inch casing perforated 121-137 ft. Log from Navy, presumably by driller.

Soil	3	3
Clay, yellow	19	22
Clay, blue	12	34
Sand, fine	18	52
Clay, sandy	14	66
Clay, blue	12	78
Sand, fine	20	98
Clay, blue	24	122
Sand	14	136
Sand and 1-inch gravel	16	152
Clay, yellow	4	156
Sand, fine	12	168
Clay, yellow	12	180
Sand, fine, and gravel	12	192
Clay, blue	13	205
Sand, blue, fine	35	240
Clay, blue	4	244
Sand, blue	12	256
Clay, blue	23	279
Sand, blue	3	282
Clay, blue, sandy	10	292
Sand, fine	6	298
Clay, blue	14	312
Gravel, 2-inch	12	324
Clay, blue	6	330

Continued

1N/21-32G1--Continued.

Material	Thickness (feet)	Depth (feet)
Sand, blue	36	366
Sand and gravel, cemented	12	378
Gravel	6	384
Sand, blue, coarse	14	398
Sand, blue, fine	8	406
Clay, blue	2	408
Sand, blue, fine	26	434

1N/21-32G2. NAMTC, test well 4. Altitude about 5 ft. Drilled by Raymond Concrete Pile Co. in 1947.

Brown clay	10	10
Blue clay	10	20
Blue, fine to medium, sand	10	30
Dark gray fine sand	20	50
Dark gray fine sand and silt	20	70
Dark gray medium sand, sharp	10	80
Gray medium sand, some gravel	10	90
Gray medium clay sand	10	100
Dark gray clay	30	130
Coarse gray sand, sharp	10	140
Dark gray fine to medium sand	10	150

1N/21-32K1. NAMTC, supply well 2. Altitude 9.46 ft. Drilled in 1943. 12-inch casing perforated 460-470, 544-550, and 575-593 ft. Log from Navy, presumably by driller.

Soil	3	3
Clay, yellow	17	20
Clay, blue	15	35
Sand, blue, fine	39	74
Clay, blue	20	94
Sand, blue, fine	4	98
Clay, blue	26	124
Clay, yellow	14	138
Sand, yellow, fine	12	150
Clay, blue	10	160
Sand, yellow	26	186
Clay, yellow	16	202
Sand, blue, fine	26	228
Clay, blue	62	290
Sand, blue, fine	6	296
Shale, blue	10	306
Sand, cemented	14	320
Sand, blue, fine	12	332
Sand, blue	28	360
Sand, blue, fine	30	390
Sand, blue	70	460

Continued

1N/21-32K1--Continued.

Material	Thickness (feet)	Depth (feet)
Sand and gravel	10	470
Sand, blue	38	508
Sand, blue, and some shells	12	520
Sand, blue, fine	24	544
Sand and gravel	6	550
Sand, blue	22	572
Sand and gravel	18	590
Clay, blue, sandy	32	622

1N/21-32M1. NAMTC, test well 3. Altitude about 7 ft. Drilled by Raymond Concrete Pile Co. in 1947.

Blue silty clay	10	10
Blue sandy clay	10	20
Gray medium sand	10	30
Blue medium sand	20	50
Fine blue sand	10	60
Medium gray sand	20	80
Gray sand clay	10	90
Sand and blue clay	10	100
Medium blue sand	10	110
Coarse gray sand	10	120
Medium gravel	10	130
Core lost, no record	10	140
Fine gray sand	10	150

1N/21-33E1. NAMTC,,test well 5. Altitude is about 8 ft. Drilled by Raymond Concrete Pile Co. in 1947.

Fine brown silty clay	7	7
Blue plastic clay	7	14
Soft blue clay	7	21
Medium to fine blue sand	4	25
Soft blue clay	8	33
Medium to fine blue sand	7	40
Fine blue sand and shells	16	56
Fine blue-gray sandy clay	4	60
Hard gray sandy clay	16	76
Sand and shells	1	77
Blue silty clay	7	84
Blue, gray soft clay	10	94
Sandy clay	1	95
Blue, gray soft clay	9	104
Sandy clay	4	108
White coarse sharp sand	4	112
Hard packed sand	2	114
Soft blue clay	14	128
Silty clay	2	130
Soft blue clay,	7	137
Clean white sharp sand	2	139
Black medium sand, some clay	11	150

1N/21-33Z1. Broome Ranch. Altitude about 10 ft.

Material	Thickness (feet)	Depth (feet)
Soil	15	15
Clay and shells	111	126
Gravel: good strata	6	132
Hard sand walls and clay	38	170
Gravel and rocks	33	203
Clay and sandstone	97	300
Gravel	2	302
Clay and sandstone	28	330

1N/21-33Z2. Broome Ranch. Altitude about 10 ft.

Soil	15	15
Clay and sand	72	87
Gravel	2	89
Clay	39	128
Gravel	18	146
Sandstone and clay	14	160
Gravel	40	200
Clay	8	208

1N/21-33Z3. Broome Ranch. Altitude about 10 ft.

Soil	22	22
Quicksand	12	34
Quicksand and clay	68	102
Gravel	3	105
Clay	18	123
Gravel and rocks	14	137
Clay	34	171
Gravel and rocks	37	208
Clay and sand	115	323
Hard bedrock	2	325

2N/21-28L2. Pete Vacca. Altitude 140 ft. Drilled by L. A. Anderson in 1945. 12- and 14-inch casing perforated 650-680, 730-750, 795-800, 831-836, and 855-875 ft. Well is north of Hueneme Road and therefore is not shown in table 1.

Material	Thickness (feet)	Depth (feet)
Yellow clay	20	20
Yellow sandy clay	198	218
Brown fine sand	22	240
Yellow sandy clay	60	300
Fine packed sand	12	312
Blue clay	196	508
Sandy muck	10	518
Fine blue sand and some gravel	29	547
Blue sand	33	580
Fine blue sand	12	592
Cemented sand and gravel	13	605
Cemented sand	75	680
Blue clay	48	728
Sand and gravel	22	750
Fine sand	45	795
Coarse sand and some gravel	5	800
Fine sand	31	831
Coarse sand and some gravel	5	836
Blue clay	17	853
Sand and pea gravel	22	875
Cemented sand	15	890
Blue clay	10	900

2N/21-33C1. E. W. Daly. Altitude about 75 ft. Drilled by Roscoe Moss Co. in 1925. Well is north of Hueneme Road and therefore is not shown in table 1.

Soil	5	5
Sand and clay	5	10
Sandy muck	12	22
Sand	2	24
Muck	16	40
Sandy clay	36	76
Yellow clay	96	172
Gravel	3	175
Yellow clay	102	277
Gravel and clay	5	282
Yellow clay	58	340
Blue clay	73	413
Brown sandy clay	17	430
Sandy clay and shells	19	449
Blue clay	81	530
Brown clay	7	537
Sandy blue clay	68	605
Sand	2	607
Sand and small gravel	2	609
Sand	11	620
Sand and small gravel	55	675

Continued

2N/21-33C1--Continued.

Material	Thickness (feet)	Depth (feet)
Muck	11	686
Sand, gravel and shells	10	696
Muck	19	715
Sand	50	765
Sand and gravel	6	771
Sandy muck	9	780
Sand and small gravel	20	800
Sand	12	812
Cemented sand shell	3	815

1N/22-25C1. Eirsha, formerly American Crystal Sugar Co. Altitude 11.92 ft. Drilled by Hatherly. 16-inch casing perforated 593-680 ft.

Soil, sand, and clay	30	30
Silt and sand	40	70
Silt and clay	118	188
Gravel	12	200
Silt and clay	235	435
Gravel	12	447
Clay	2	449
Sand	18	467
Clay	24	491
Gravel	12	503
Clay and silt	90	593
Gravel	96	689

1N/22-25C2. H. A. Arrouga. Altitude 18.3 ft. Drilled by Sam Beard in 1930. 14-inch casing perforated 182-216 and 245-257 ft.

Clay	6	6
Fine sand	24	30
Sandy clay	45	75
Clay	92	167
Sand	2	169
Clay	13	182
Gravel	34	216
Clay	29	245
Gravel	15	260
Clay	10	270

1N/22-25K1. H. W. Mitchler. Altitude about 15 ft. Drilled by Sam Beard in 1923. 12-inch casing.

Material	Thickness (feet)	Depth (feet)	Material	Thickness (feet)	Depth (feet)
Soil	15	15	Clay	32	232
Clay	124	139	Fine gravel	38	270
Medium gravel	19	158	Fine sand	10	280
Clay	28	186	Clay	5	285
Coarse gravel	14	200			

1N/22-26A1. S. R. Pidduck. Altitude about 20 ft. Drilled by Sam Beard in 1924. 12-inch casing perforated 188-229 ft.

Soil	10	10	Clay	10	188
Sand and silt	110	120	Gravel	41	229
Clay	10	130	Clay	7	236
Sand	48	178			

1N/22-26Z1. Marie Callens estate. Altitude about 15 ft. Drilled by L. A. Anderson in 1944. 12-inch casing perforated 170-180, 225-230, 295-317, 365-385, 432-468, and 472-478 ft.

Soil	2	2	Blue shale	48	365
Sand	7	9	Hard sand	20	385
Black shale	26	35	Blue shale	13	398
Sand	10	45	Hard shell	2	400
Blue shale	85	130	Blue shale	4	404
Sandy shale	20	150	Sand, gravel and some clay	20	424
Blue shale	20	170	Blue clay	8	432
Sand and gravel	10	180	Sand, gravel and some clay	30	462
Sand	35	215	Blue clay	10	472
Blue shale	10	225	Sand, gravel and clay	4	476
Gravel	5	230	Sandy blue clay	86	562
Blue shale	10	240	Blue clay and shells	38	600
Cement sand	40	280			
Blue shale	8	288			
Hard shell	7	295			
Sand	22	317			

1N/22-27A2. A. and H. Levy Co. Altitude about 15 ft. Drilled by L. A. Anderson in 1956. 16- and 27-inch casing perforated 160-220 and 371-400 ft.

Soil	3	3	Blue clay	111	360
Silt	15	18	Cemented	11	371
Blue clay	142	160	Sand and gravel	39	410
Sand and gravel	69	229	Medium-grain sand	7	417
Blue clay	2	231	Blue clay	6	423
Sand and gravel	18	249	(Reported to pump 1,500 gpm)		

1N/22-27F2. Altitude about 10 ft. Drilled by L. A. Anderson in 1951. 12-inch casing perforated 130-230 ft.

Material	Thickness (feet)	Depth (feet)	Material	Thickness (feet)	Depth (feet)
Soil	9	9	Blue clay	10	170
Blue clay	21	30	Hard blue rock	10	180
Fine blue sand	50	80	Cemented gravel	10	190
Blue clay	64	144	Gravel	42	232
Fine sand and gravel	16	160	Blue clay	8	240

D/

1N/22-27Z1. John Eastwood. Altitude about 10 ft. Drilled by Sam Beard.

Soil	9	9	Clay	27	167
Soft blue clay	41	50	Gravel, coarse	45	212
Sand	27	77	Gravel, fine	21	233
Blue clay	54	131	Sand and silt	50	283
Sand	9	140	Clay	52	335

1N/22-28B1. A. M. Bernard. Altitude about 10 ft. Drilled in 1958. 14-inch casing perforated 174-220 ft.

Topsoil	3	3	2-inch gravel and sand	34	156
Sand and gravel	29	32	Blue clay	16	172
Blue clay	6	38	4-inch gravel and sand	46	218
Fine blue sand	36	74	Blue clay	12	230
Blue clay	48	122			

1N/22-29A2. City of Hueneme. Altitude about 5 ft. Drilled by Newton Palm in 1926. Perforated 180-222 ft.

Sand and mud	25	25	Blue clay	22	142
Blue clay	60	85	Sand	38	180
Fine sand	15	100	Gravel and rock	42	222
Fine sand mixed with clay	20	120	Blue clay	3	225

1N/22-35Q1. NAMTC, test well 13. Altitude about 2 ft. Drilled by Raymond Concrete Pipe Co. in 1947.

Brown clay	4	4	Blue, gray silty clay	14	68
Blue clay	4	8	Hard packed sand	5	73
Fine blue sand	4	12	Blue silty clay	21	94
Medium blue sand, some gravel	18	30	Soft blue, gray clay	21	115
Fine blue sand, some clay	17	47	Soft blue-gray silty clay	23	138
Silty blue clay	6	53	Fine light-gray sand	5	143
Hard gravel	1	54	Soft blue clay	7	150

1N/22-36K1. Ventura County Game Preserve. Altitude about 5 ft. Drilled by L. A. Anderson in 1946. 12-inch casing perforated 150-168 ft.

Material	Thickness (feet)	Depth (feet)	Material	Thickness (feet)	Depth (feet)
Sand gravel	30	30	Clay and sandy clay	39	148
Sandy blue clay	70	100	Sand and gravel	17	165
Fine sand	9	109	Clay and sandy clay	21	186

1N/22-36K2. Ventura County Game Preserve. Altitude about 5 ft. Drilled by L. A. Anderson in 1945. 14-inch casing perforated 155-170 and 188-210 ft.

Topsoil	8	8	Sand	2	187
Fine blue sand	52	60	Sand and boulders	17	204
Fine sand and clay	50	110	Blue clay	3	207
Blue clay	17	127	Dirty sand	71	278
Dirty sand and gravel	27	154	Blue clay	23	301
Clean sand and gravel	12	166	Dirty sand	30	331
Blue clay	14	180	Blue clay	4	335
Sandy blue clay	5	185			

1N/22-36L1. Ventura County Game Preserve. Altitude 6.9 ft. Drilled by L. A. Anderson in 1940. 14-inch casing.

Adobe	2	2	Fine blue sand	8	98
Yellow clay	4	6	Blue clay	28	126
Blue clay	3	9	Fine sand and gravel	11	137
Sand and shells	19	28	Blue sandy clay	9	146
Fine sand and shells	19	47	Blue clay	43	189
Fine sand, some clay	7	54	Sand and gravel	19	208
Soft blue clay	3	57	Blue clay	42	250
Fine blue sand	30	87	Sand and mud	31	281
Blue clay	3	90	Blue clay	3	284

1N/22-36Z1. Ventura County Game Preserve. Altitude 5.5 ft. Drilled by Sam Beard in 1922.

Soil	15	15	Coarse gravel	27	208
Silt	60	75	Medium gravel	4	212
Clay	67	142	Fine gravel	8	220
Medium gravel	20	162	Fine sand	30	250
Clay	19	181			

1S/21W-4E1. NAMTC, observation well 2. Altitude 2.05 ft. Drilled by Parsons-Aerojet Co. in 1949. 6- and 12-inch casing perforated 180-190 and 330-340 ft.

No data	62	62	Sand	11	153
Clay	4	66	Clay, silt, and fine sand	19	172
Sand, coarse to fine, and marine shells interbedded with thinner clays, some boulder beds	49	115	Sand and gravel	20	192
Sand	16	131	Clay	12	204
Clay	11	142	Sand and gravel, clay streaks	28	232

Continued

1S/21W-4E1 - Continued.

Material	Thickness (feet)	Depth (feet)
Clay	28	260
Sand	20	280
Clay	28	308
Sand	10	318
Clay	4	322
Sand	18	340
Clay	10	350

1S/21-4K1. NAMTC, test well 18. Altitude about 4 ft. Drilled by Raymond Concrete Pile Co. in 1947.

Material	Thickness (feet)	Depth (feet)
Brown sandy clay	3	3
Blue-gray clay	12	15
Sand	2	17
Clay	3	20
Fine sand and blue clay	10	30
Medium clean sand	3	33
Sand, gravel, and shells	6	39
Medium clean sand, some gravel	13	52
Blue clay	2	54
Medium clean sand	30	84
Gray clay	3	87
Fine sand and gray clay	10	97
Fine gray sand and blue clay	4	101
Medium gray sand	7	108
Blue clay	5	113
Medium gray sand	9	122
Coarse sand and gravel	8	130
Fine gray sand	10	140
Blue-black clay	5	145
Fine gray sand	5	150

1S/21-4L1. NAMTC, test well 12. Altitude about 3 ft. Drilled by Raymond Concrete Pile Co. in 1947.

Material	Thickness (feet)	Depth (feet)
Brown to blue clay	7	7
Medium gray sand	8	15
Coarse gray sand with gravel and shells	7	22
Gravel and shells	7	29
Medium gray sand	3	32
Sand and some gravel	7	39
Medium clean sand, some gravel	16	55
Fine gray sand	13	68
Coarse to fine sand	3	71
Medium clean sand	13	84
Sandy blue clay	3	87
Sand	2	89
Blue clay, medium sand	2	91
Medium sand, some gravel	5	96
Blue clay	6	102
Medium sand	6	108
Sand with some gravel	4	112
Medium clean sand	12	124
Fine blue sand	12	136
Blue clay	11	147
Blue silty clay	3	150

1S/21-4M1. NAMTC, test well 17. Altitude about 3 ft. Drilled by Raymond Concrete Pile Co. in 1947.

Material	Thickness (feet)	Depth (feet)
Fine gray sand	8	8
Soft blue clay	5	13
Fine gray sand	11	24
Coarse sand and gravel	6	30
Medium to coarse gray sand	26	56
Gravel	1	57
Fine gray-blue sand	13	70
Fine sand to silty clay	3	73
Fine to medium clean sand	12	85
Clay	2	87
Medium clean sand	5	92
Clay	2	94
Blue, gray clay	14	108
Medium blue-gray sand	4	112
Coarse sand	4	116
Blue clay and coarse sand	8	124
Fine gray sand	19	143
Clay	1	144
Fine gray sand	6	150

1S/21-5H2. NAMTC, test well 16. Altitude about 4 ft. Drilled by Raymond Concrete Pile Co. in 1947.

Material	Thickness (feet)	Depth (feet)
Medium blue sand	20	20
Medium gray sand	8	28
Sand and shell	1	29
Medium gray sand	11	40
Medium blue sand	10	50
Fine blue sand	10	60
Medium blue sand	10	70
Medium gray sand	10	80
Fine blue sand	5	85
Blue clay	2	87
Fine blue sand	18	105
Blue clay	2	107
Blue sand	7	114
Clay	2	116
Medium blue sand	9	125
Clay	.5	125.5
Medium blue sand	6.5	132
Blue clay	18	150

1S/21-5J1. NAMTC, test well 11. Altitude about 2 ft. Drilled by Raymond Concrete Pile Co. in 1947.

Material	Thickness (feet)	Depth (feet)
Brown clay	8	8
Fine gray sand	2	10
Medium gray sand	9	19
Gravel	2	21
Fine gray sand, some small gravel	15	36
Medium gray-blue sand	4	40
Fine blue sand	20	60
Medium blue sand	20	80
Silty fine sand	5	85
Clay	.5	85.5
Silty fine sand	10.5	96
Clay	2	98
Blue clay	7	105
Sand	2	107
Medium blue sand	15	122
Plastic clay	1	123
Blue-gray medium sand	7	130
Coarse blue sand	17	147
Coarse blue sand, some gravel	3	150

1S/21-5K1. NAMTC, test well 15. Altitude about 4 ft. Drilled by Raymond Concrete Pile Co. in 1947.

Material	Thickness (feet)	Depth (feet)	Material	Thickness (feet)	Depth (feet)
Brown clay	10	10	Blue clay to medium blue sand	10	100
Medium blue sand, some gravel	10	20	Fine blue sand, some clay	10	110
Medium blue sand	10	30	Fine blue sandy clay	10	120
Fine blue sand	10	40	Medium gray sand	10	130
Medium blue sand	10	50	Light brown sandy clay	10	140
Fine gray sand	30	80	Fine light brown sandy clay	10	150
Fine blue-gray sand	10	90			

1S/21-5P1. NAMTC, test well 9. Altitude about 2 ft. Drilled by Raymond Concrete Pile Co. in 1947.

Medium gray sand	10	10	Clay	3	98
Fine, sand and shells	10	20	Dark blue sand, shells	2	100
Gravel	3	23	Blue clay	13	113
Fine blue sand	25	48	Sand	3	116
Clay	.5	48.5	Blue clay	4	120
Fine blue sand	43.5	92	Coarse gray sand and gravel, some shells	30	150
Clay	2	94			
Sand	1	95			

1S/21-5R1. NAMTC, test well 10. Altitude about 2 ft. Drilled by Raymond Concrete Pile Co. in 1947.

Material	Thickness (feet)	Depth (feet)
Clean beach sand	15	15
Gravel and shells	4	19
Coarse sand	4	23
Gravel	3	26
Medium gray sand	3	29
Fine gray sand, some gravel	11	40
Dark gray fine sand, some clay	22	62
Dark gray fine sand, some clay and gravel	6	68
Dark blue-gray silty clay	24	92
Clay and small rock	2	94
Soft silty clay	4	98
Plastic clay	3	101
Fine blue sand, some gravel	4	105
Plastic clay	2	107
Fine blue sand	7	114
Plastic clay	5	119
Fine blue sand	11	130
Coarse blue sand	6	136
"Refusal rock or boulder"	--	136

A second boring was made 10 ft from original hole to check impenetrable material found at 136 ft below surface.

No record	130	130
Coarse blue sand and gravel	8	138

Continued

1S/21-5R1--Continued.

Material	Thickness (feet)	Depth (feet)
Medium gray clean sand	4	142
Sandy gravel and rock	4	146
Soft blue-black clay	4	150

1S/21-6F1. NAMTC, observation well 1. Altitude -1.54 ft. Drilled by Parsons-Aerojet Co. in 1949. 6- and 12-inch casing perforated 190-200 ft and 295-305 ft.

Sand, coarse to fine, and marine shells; thin clay and silt interbeds	104	104
Clay	10	114
Silt, clay, and sand, alternating	35	149
Clay	9	158
Sand	10	168
Clay	11	179
Gravel	29	208
Silt, sandy	24	232
Clay, silty, and silt	30	262
Gravel and coarse sand and clay streaks	46	308
Clay	16	324
Sand, fine, silty	26	350

1S/21-6J1. NAMTC, test well 14. Altitude about 2 ft. Drilled by Raymond Concrete Pile Co. in 1947.

Medium gray sand	14	14
Gravel	1	15
Medium blue sand	11	26
Gravel	1	27
Fine blue sand and shell	13	40
Fine blue sand	10	50
Fine blue sand and clay	7	57
Gravel	1	58
Fine blue sand silt	12	70
Fine blue sand	16	86
Gravel	.5	86.5
Fine blue sand	7.5	94
Blue clay	6	100
Blue sandy clay	20	120
Black sandy clay	10	130
Greenish blue sand	10	140
Coarse gray sand	10	150

1S/21-7F1. NAMTC, test well 6. Altitude about 5 ft. Drilled by Raymond Concrete Pile Co. in 1947.

Material	Thickness (feet)	Depth (feet)	Material	Thickness (feet)	Depth (feet)
Medium gray beach sand	10	10	Small gravel	1	83
Coarse sand	9	19	Blue silty sandy clay	17	100
Gravel	1.5	20.5	Fine blue sand, some clay	9	109
Medium blue sandy clay and shells	9.5	30	Gravel	1	110
Medium to fine blue sandy clay	10	40	Medium blue sandy clay	10	120
Fine blue sandy clay with shells	30	70	Fine blue sand	10	130
Fine sandy clay to silt	12	82	Soft plastic blue clay	10	140
			Fine sandy blue clay	10	150

1S/21-7H1. NAMTC, test well 7. Altitude about 5 ft. Drilled by Raymond Concrete Pile Co. in 1947.

Fine gray sand	10	10	Clay	1	126
Coarse sand and shells	11	21	Sand	1	127
Fine blue sand	14	35	Clay	4	131
Coarse sand	3	38	Fine blue sand	4	135
Fine blue sand and shells	12	50	Blue clay	1	136
Fine blue sand, some gravel	10	60	Fine blue sand, some gravel	12	148
Fine blue sand	65	125	Coarse sand and gravel	2	150

1S/21-8E1. NAMTC, test well 8. Altitude about 2 ft. Drilled by Raymond Concrete Pile Co. in 1947.

Rockfill and brown clay	9	9	Fine gray sand	2	102
Fine white sand	6	15	Fine gray sand, some gravel	6	108
Coarse gravel	5	20	Medium to coarse sand, some gravel	12	120
Medium gray sand	16	36	Blue-gray silty clay	8	128
Medium blue sand	4	40	Coarse sand	1	129
Blue silty clay with shells	42	82	Blue plastic clay	11	140
Plastic clay	1	83	Blue plastic to fine gray sand	10	150
Blue silty clay	7	90			
Blue silty clay to medium sand, some gravel	10	100			

1S/21-8H1. NAMTC, test well 1. Altitude about 5 ft. Drilled by Raymond Concrete Pile Co. in 1947.

Material	Thickness (feet)	Depth (feet)	Material	Thickness (feet)	Depth (feet)
Brown clay	10	10	Blue medium sand and clay	5	40
Gray silty clay	2.5	12.5	Dark gray medium sand	5	45
Blue clay	2.5	15	Gray fine sand	5	50
Blue silty clay	2.5	17.5	Dark gray fine silty sand	10	60
Blue clay	2.5	20	Gray medium sand	18	78
Blue silty clay	5	25	Soft dark gray clay	61	139
Blue fine sand	5	30	Coarse white sand and small gravel	11	150
Gray medium sand	5	35			

Table 5.--Chemical analyses of waters from wells

Constituents: The sum of determined constituents is the sum of the tabulated constituents minus approximately half (50.8 percent) of the bicarbonate. Because all of the commonly occurring major constituents (except silica in many of the analyses) were analytically determined the values for dissolved solids and sum of determined constituents should be approximately the same. All values have been rounded where necessary to conform to the standards of the Geological Survey. Numbers in parentheses are values calculated by the Geological Survey, Ground Water Branch.

Analyzing laboratory: DA U. S. Department of Agriculture, DWR State of California Department of Water Resources, F Fruit Growers Association, GS Geological Survey, N U. S. Navy, U United Water Conservation District.

Well number	1N/21-27F1		
Constituents in parts per million			
Silica (SiO_2)			
Iron (Fe)			
Calcium (Ca)	72	140	111
Magnesium (Mg)	58	86	50
Sodium (Na)	a295	a203	a106
Potassium (K)			
Bicarbonate (HCO_3)	431	364	334
Carbonate (CO_3)			
Sulfate (SO_4)	292	564	346
Chloride (Cl)	283	185	55
Fluoride (F)			
Nitrate (NO_3)			
Boron (B)		.42	.55
Dissolved solids (Dis. S)	1,430	1,540	1,000
Sum of determined constituents	(1,210)	(1,360)	(836)
Hardness as $CaCO_3$	(418)	(704)	(483)
Percent sodium (% Na)	(60)	(39)	(32)
Specific conductance (micromhos at 77°F)			
pH			
Temperature (°F)			
Date collected (Date)	11-25-32?	5-2-33	12-14-33
Depth of well in feet (Depth)	840		
Analyzing laboratory and number (Lab., No.)	F-2128	F-1752	F-2293

a. Potassium included.

Well number	1N/21-27F1--Continued					
Constituents in parts per million						
Ca	110	109	110	71	108	72
Mg	49	46	47	24	44	29
Na	a99	a109	a105	228	94	a278
K				1	14	
HCO_3	332	332	322	52	329	404
CO_3				12		41
SO_4	325	329	319	492	310	74
Cl	57	59	67	135	61	302
NO_3				5	Trace	
B	.49	.50	.47	.47	.26	
Dis. S	972	984	970	1,020		
Sum	(807)	(818)	(809)	(994)	(796)	(998)
Hardness	(476)	(462)	(468)	(276)	(451)	(299)
%Na	(31)	(34)	(33)	(64)	(30)	(67)
Date	1-6-34	8-22-34	11-1-35	3-18-38	5-14-47	7-27-49
Depth						
Lab., No.	F-2345	F-2769	F-3343	F-4315	F-7891	F

Well number	1N/21-27H1				
Ca	147	144	139	134	131
Mg	65	63	65	64	65
Na	a153	a158	a159	a156	155
K					2
HCO_3	348	346	348	331	335
CO_3					
SO_4	417	414	410	407	388
Cl	174	170	175	170	180
NO_3				2	Trace
B	.44	.46	.47	.37	
Dis. S	1,300	1,290	1,300	1,260	1,260
Sum	(1,130)	(1,120)	(1,120)	(1,100)	(1,090)
Hardness	(635)	(619)	(615)	(598)	(595)
%Na	(34)	(36)	(36)	(36)	(36)
Date	5-4-32	9-22-34	11-1-35	2-18-38	5-14-47
Depth	212				
Lab., No.	F-1523	F-2767	F-3341	F-4326	F-7889

a. Potassium included.

Well number	1N/21-28C1		
Constituents in parts per million			
Ca	64	52	62
Mg	36	24	33
Na	a115	a116	a122
HCO_3	316	314	308
SO_4	169	138	202
Cl	75	64	67
B	.29	.42	.42
Sum	(617)	(551)	(640)
Hardness	(308)	(229)	(291)
%Na	(45)	(52)	(48)
Date	5-15-47	8-31-54	10-24-57
Depth	809		
Lab., No.	F-7909	F-2094A	F-4040A

Well number	1N/21-28G1					
Ca	154	147	101	99	80	136
Mg	49	51	40	37	29	51
Na	191	156	98	95	a109	a118
K	80	23	7	9		
HCO_3	383	361	277	279	270	310
CO_3				Trace	7	
SO_4	538	439	294	273	215	372
Cl	163	136	78	74	65	117
NO_3					Trace	
B	.34	.44	.15	.18	.33	.38
Dis. S	1,560	1,310	902	866	744	1,100
Sum	(1,370)	(1,130)	(756)	(726)	(640)	(949)
Hardness	(586)	(577)	(417)	(400)	(319)	(550)
%Na	(38)	(36)	(33)	(34)	(38)	(32)
Date	12-8-39	12-12-39	12-26-39	12-28-39	2-9-40	3-6-40
Depth	378					
Lab., No.	F-5410-1	F-5412	F-5421	F-5425	F-5457	F-5470

a. Potassium included.

Well number	1N/21-28G2				
Constituents in parts per million					
Ca	138	141	108	110	112
Mg	59	48	33	35	35
Na	a93	a151	a111	a109	a99
HCO_3	401	330	286	289	287
SO_4	163	418	293	290	
Cl	206	120	75	77	75
B		.46	.36	.32	
Dis. S	1,060				
Sum	(859)	(1,040)	(763)	(765)	(464)
Hardness	(587)	(550)	(406)	(419)	(424)
%Na	(26)	(37)	(37)	(36)	(34)
Date	2-9-27	11-30-32	1-27-33	2-10-33	8-26-33
Depth	370				
Lab., No.	F	F-1777	F-1858	F-1870	F-2221

Well number	1N/21-28G2--Continued			
Ca	110	106	118	135
Mg	34	32	38	43
Na	a107	a97	106	a115
K			1	
HCO_3	286	280	288	305
CO_3			(7)	
SO_4	294	269	303	351
Cl	74	68	87	106
F			(2)	
NO_3			2	
B	.36	.33	.30	.33
Dis. S	906	852	942	1,060
Sum	(762)	(712)	(801)	(902)
Hardness	(415)	(396)	(451)	(514)
%Na	(36)	(35)	(34)	(33)
Date	8-22-34	11-1-35	2-2-38	5-14-47
Lab., No.	F-2768	F-3342	F-4314	F-7890

a. Potassium included.

Well number	1N/21-28N1					
Constituents in parts per million						
Ca	122	122	114	112	111	110
Mg	49	49	49	46	50	49
Na	a110	a110	a104	a123	a106	a99
HCO_3	368	368	337	332	334	332
SO_4	337	337	344	363	346	346
Cl	65	65	53	60	55	57
B	.53	.56	.49	.46	.55	.50
Dis. S	1,050	1,050	1,000	1,070	972	984
Sum	(868)	(868)	(832)	(870)	(835)	(827)
Hardness	(506)	(506)	(486)	(469)	(483)	(476)
%Na	(32)	(32)	(32)	(36)	(32)	(31)
Date	9-9-33	9-12-33	9-13-33	10-18-33	12-24-33	1-6-34
Depth	275					
Lab., No.	F-3343	F	F-2233	F-2255	2293	F-2345

Well number	1N/21-28N1--Continued					
Ca	109	110	114	71	100	108
Mg	46	47	49	24	41	44
Na	a109	a105	a104	a228	193	94
K					5	18
HCO_3	332	322	337	52	163	329
CO_3				12	9	
SO_4	329	319	344	492	480	310
Cl	59	67	53	135	436	61
NO_3						Trace
B	.50	.47	.50	.47	.45	.26
Dis. S	984	970		1,020	1,130	964
Sum	(818)	(809)	(832)	(988)	(1,350)	(800)
Hardness	(462)	(468)	(486)	(276)	(418)	(451)
%Na	(34)	(33)	(32)	(64)	(50)	(30)
Date	8-22-34	11-5-35	9-16-37	2-2-38	2-18-38	5-14-47
Lab., No.	F-2769	F-3343	F	F-4315	F-4328	7891

a. Potassium included.

Well number	1N/21-29D1			
Constituents in parts per million				
Ca	112	118	121	114
Mg	30	33	34	32
Na	94	91	a89	a103
K	12	3		
HCO_3	267	269	270	278
CO_3	0			
SO_4	317	336	323	337
Cl	49	43	43	42
B	.39		.47	.53
Dis. S	881	893	880	906
Sum	(748)	(758)	(746)	(768)
Hardness	(403)	(430)	(442)	(416)
%Na	(33)	(31)	(30)	(35)
Date	4-22-47	3-19-51	9-30-52	11-15-56
Depth	570			
Lab., No.	F-7865	F-319A	F-1157A	F-3487A

Well number	1N/21-29D2					
Ca	133	123	124	121	124	120
Mg	33	38	37	38	33	37
Na	a89	a90	a91	a94	a95	a97
HCO_3	271	260	273	276	278	284
SO_4	358	352	352	357	349	358
Cl	41	42	42	43	41	42
B	.51	.67	.59	.58	.34	.66
Dis. S	925		919	929	920	938
Sum	(791)	(776)	(783)	(792)	(781)	(797)
Hardness	(468)	(464)	(462)	(458)	(445)	
%Na	(29)	(30)	(30)	(31)	(32)	(32)
Date	9-30-52	10-5-53	8-31-54	9-21-55	10-16-56	10-24-57
Depth	602					
Lab., No.	F-1169A	F-1543A	F-2079A	F-2690A	F-3427A	4031A

a. Potassium included.

Well number	1N/21-29R1					
Constituents in parts per million						
Ca	160	119	110	110	115	115
Mg	67	45	41	41	41	39
Na	333	99	a91	a96	a99	a99
K	17					
HCO_3	307	296	255	285	301	300
SO_4	535	338	330	332	336	328
Cl	430	56	54	55	55	54
B		.67	.64	.54	.60	.47
Dis. S	1,850	853	881	919	947	935
Sum	(1,700)	(806)	(755)	(782)	(797)	(786)
Hardness	(675)	(482)	(443)	(443)	(456)	(448)
%Na	(51)	(31)	(31)	(32)	(32)	(32)
Date	12-6-50	9-30-52	10-5-53	8-31-54	9-21-55	10-16-56
Depth	205					
Lab., No.	F-182A	F-1165A	F-1543A	F-2089A	F-2690A	F-3432A

Well number	1N/21-29Z2 R3					
Ca	111	109	105	131	121	113
Mg	45	52	57	53	87	63
Na	152	a186	a302	a414	a528	a290
K	21					
HCO_3	304	298	286	298	346	315
SO_4	371	392	462	560	641	475
Cl	131	162	305	439	600	292
NO		Trace	1			
B	.44					
Dis. S	1,140	1,200	1,520	1,900	2,320	1,550
Sum	(983)	(1,050)	(1,380)	(1,750)	(2,150)	(1,390)
Hardness	(462)	(486)	(497)	(545)	(660)	(541)
%Na	(40)	(45)	(57)	(62)	(64)	(54)
Date	4-22-47	5-14-48	5-5-49	10-25-49	11-3-49	11-18-49
Depth	300					
Lab., No.	F-7866	F-8500	F-671	F-9549-6	F-9559	F-9575

a. Potassium included.

Well number	1N/21-31J1	1N/21-31L1				
Constituents in parts per million						
SiO_2	43					
Fe	0					
Ca	86	74	95	88	87	96
Mg	39	36	35	32	35	34
Na	96	136	90	116	138	92
K	5.7	4	8	11	2	5
HCO_3	266	332	284	308	327	281
CO_3	0					
SO_4	250	198	287	249	226	286
Cl	68	110	39	75	113	41
F	.3					
NO_3	1.0		Trace			
B	.40		.49			
Dis. S	747	890	838	879	928	835
Sum	(722)	(674)	(697)	(725)	(764)	(694)
Hardness	375	(333)	(381)	(351)	(361)	(380)
%Na	35	(47)	(33)	(41)	(44)	(34)
Micromhos	1,070					
pH	7.4					
°F	75					
Date	1-7-58	2-15-49	12-27-49	11-17-50	12-16-50	3-24-51
Depth	600	750				
Lab., No.	GS-25033	F-8996	F-9623	F-156A	F-198A	F-332A-9

Well number	1N/21-31L1		1N/21-32A1	1N/21-32G1	
SiO_2		44	46		
Ca	93	84	98	118	
Mg	35	37	42	37	
Na	a92	96	182	a92	
K		5.7	6.6		
HCO_3	271	290	316	281	
CO_3		0	0	2	
SO_4	276	240	261	333	
Cl	41	52	192	47	
F		.3			
NO_3		1.3	.6		
B	.64	.49	.6	.37	
Dis. S	808	736		908	
Sum	(674)	(706)	985	(767)	
Hardness	(376)	360	416	(447)	
% Na	(35)	36	48	(31)	
Micromhos		1,000	1,590		
pH		7.2	7.5		
Date	10-5-53	1-7-58	10-23-58	2-9-48	
Depth			750		
Lab., No.	F-1543	GS-25032	GS-28199	F-8316	

a. Potassium included.

Well number	1N/21-32G1		1N/21-32K1		1N/22-26A1	
Constituents in parts per million						
SiO_2	39		39			
Fe	0		0			
Ca	162	90	108	122	126	125
Mg	42	43	38	38	34	34
Na	99	117	96	a84	86	a90
K	4.9		5.6		21	
HCO_3	274	254	276	253	251	255
CO_3	0		0			
SO_4	355	333	293	362	383	361
Cl	140	68	75	41	45	44
F	.3		.3			
NO_3	.6		2.2			
B	.63	.30	.57	.54	.59	
Dis. S	1,010	905	819		946	909
Sum	(980)	(778)	(796)	(774)	(822)	(782)
Hardness	575	(402)	425	(461)	(454)	(452)
%Na	27	(39)	33	(28)	(28)	(30)
Micromhos	1,410		1,160	1,140		
pH	7.3		7.1			
°F	69					
Date	1-7-58	2-9-48	1-7-58	4-15-31	4-22-47	5-5-49
Depth		622		236		
Lab., No.	GS-25030	F-8317	GS-25031	DA-4031	F-7864	F-9196

Well number	1N/22-26A1				
Ca	127	128	124	116	128
Mg	42	36	37	40	32
Na	a84	a84	a86	93	100
HCO_3	254	255	253	258	263
SO_4	375	381	362	370	365
Cl	42	42	43	44	42
B	.65	.59	.73	.78	.49
Dis. S	924	926	905	921	930
Sum	(798)	(800)	(779)	(793)	(799)
Hardness	(490)	(468)	(462)	(454)	(451)
%Na	(27)	(28)	(29)	(31)	(32)
Date	9-30-52	10-5-53	8-31-54	9-21-55	10-16-56
Lab., No.	F-1162A	F-1543A	F-2080A	F-2690A	F-3431A

a. Potassium included.

Well number	1N/22-26K2				
Constituents in parts per million					
Ca	125	120	128	123	126
Mg	34	35	36	40	34
Na	86	a83	a86	a87	a91
K	6				
HCO_3	264	257	263	266	273
SO_4	362	340	357	350	337
Cl	44	42	45	50	53
B		.64	.65	.66	.58
Dis. S	921	881	915	916	914
Sum	(789)	(749)	(785)	(784)	(778)
Hardness	(452)	(444)	(468)	(472)	(455)
%Na	(29)	(27)	(29)	(29)	(30)
Date	6-13-50	10-5-53	8-28-54	9-29-55	11-1-56
Lab., No.	F-9917	F-1543A	F-2078A	F-2704A	F-3464A

Well number	1N/22-26R1					
Ca	119	113	111	104	96	90
Mg	36	37	32	29	25	31
Na	a89	a78	a74	a79	a79	a84
HCO_3	270	283	286	300	326	332
SO_4	353	296	273	239	187	191
Cl	39	39	39	40	39	40
NO_3		.54				
B	.63		.62	.71	.65	.62
Dis. S	913	846	815	791	752	768
Sum	(772)	(706)	(673)	(642)	(590)	(553)
Hardness	(445)	(434)	(409)	(379)	(343)	(352)
%Na	(30)	(28)	(28)	(31)	(33)	(34)
Date	5-31-50	9-30-52	10-5-53	8-31-54	11-1-56	10-24-57
Depth	370					
Lab., No.	F-9893	F-1164A	F-1543A	F-2092A	F-3463A	F-4039A

a. Potassium included.

Well number	1N/22-27J1	1N/22-28A1				
Constituents in parts per million						
Ca	126	147	125	120	128	119
Mg	38	44	35	40	34	38
Na	a85	a121	a87	a93	a89	a94
HCO_3	275	255	257	245	261	263
SO_4	354	490	377	371	359	374
Cl	41	56	41	42	42	42
B	.46	.64	.59	.67	.75	.80
Dis. S	919	1,113	922	911	913	930
Sum	(782)	(987)	(794)	(789)	(783)	(800)
Hardness	(471)	(548)	(456)	(464)	(460)	(454)
%Na	(28)	(32)	(29)	(30)	(30)	(31)
Date	7-15-47	5-5-49	9-30-52	10-1-53	8-31-54	9-21-55
Lab., No.	U-8015	F-9193	F-1168A	F-1543A	F-2081A	F-2690

Well number	1N/22-28A1		1N/22-28B1	1N/22-29A2		
Ca	102	119	370	126	121	125
Mg	33	39	137	43	43	43
Na	a97	a94	a182	a81	a86	a91
HCO_3	213	280	241	249	241	255
SO_4	354	358	463	392	389	398
Cl	42	40	850	40	44	44
B	.61	.66			.64	
Dis. S	841	930		931	925	956
Sum	(735)	(791)	(2,120)	(806)	(804)	(829)
Hardness	(391)	(458)	(924)	(492)	(479)	(489)
%Na	(35)	(31)	(21)	(26)	(28)	(29)
Micromhos				1,210	1,210	
Date	10-16-56	10-24-57	5-8?-58	2-27-28	4-3-31	9-4-31
Depth			230	225		
Lab., No.	F-3428A	F-4033A		DWR	DWR-3941	DWR-1201

a. Potassium included.

Well number	1N/22-29A2					
Constituents in parts per million						
Ca	128	126	121	129	119	124
Mg	43	41	42	42	40	41
Na	a85	a98	94	90	a86	89
K			17	5		7
HCO_3	250	245	250	224	223	253
CO_3				0	14	0
SO_4	394	404	417	408	359	395
Cl	47	52	43	55	42	42
NO_3			1	3	2	3
B	.71	.62		.53	.62	.52
Dis. S	947	966	58	956	885	954
Sum	(823)	(844)	(860)	(845)	(775)	(828)
Hardness	(497)	(483)	(475)	(495)	(462)	(478)
%Na	(27)	(31)	(29)	(28)	(29)	(28)
Date	6-3-32	3-3-33	7-21-37	12-20-39	9-27-45	3-31-47
Lab., No.	DWR-1546	DWR-1900	U-3606	U-5416	U-7239	U-7808

Well number	1N/22-36K1					
Ca	119	121	126	119	123	123
Mg	36	36	38	32	38	35
Na	95	90	a85	a94	a87	87
K		25				
HCO_3	275	272	275	265	276	265
CO_3	0	0				
SO_4	353	379	354	335	319	323
Cl	40	42	41	45	58	67
NO_3				1		3
B	.60		.46		.56	.52
Dis. S	918	965	919	891	901	903
Sum	(782)	(829)	(782)	(758)	(764)	(771)
Hardness	(445)	(450)	(471)	(429)	(464)	(451)
%Na	(29)	(29)	(28)	(30)	(29)	(30)
Date	4-3-33	7-21-36	7-15-47	5-5-49	9-30-52	10-5-53
Depth	186					
Lab., No.	U-1960	U-3605	F-8015	F-9195	F-1163A	F-1543A

a. Potassium included.

Well number	1N/22-36K1			
Constituents in parts per million				
Ca	121	113	139	154
Mg	43	49	35	39
Na	a93	a99	a100	a112
HCO_3	266	273	274	265
SO_4	308	319	308	331
Cl	84	106	113	162
NO_3	1			
B	.57	.68	.50	.60
Dis. S	916	959	969	1,063
Sum	(784)	(823)	(832)	(931)
Hardness	(479)	(484)	(491)	(545)
%Na	(30)	(31)	(31)	(31)
Date	8-31-54	9-21-55	10-16-56	10-28-57
Lab., No.	F-2088A	F-2690A	F-3430A	F-4048A

Well number	1S/21-4E1				1S/21-6F1	
	Below packer	Above packer	Below packer	(b)	Above packer	Below packer
SiO_2			8.2			16
Fe			.13			.01
Ca	125		1,720			89
Mg	51		75			28
Na	a229		4,380			110
K			65			5.6
CO_2			66			2.1
HCO_3	279	100	105		254	252
CO_3	49	0	0		4	4
SO_4	385		1,110			246
Cl	307	11,800	11,600	11,200	90	85
F			.2			.4
NO_3	Trace		9.6			.1
B			1.0			.49
Dis. S	1,425		20,300			714
Sum	(1,290)		(19,900)			(927)
Hardness	(522)	6,820	7,360	6,920	376	336
%Na	(49)		56			41
Micromhos		30,300	30,400	29,300	1,130	1,090
pH		6.6	6.4		8.3	8.3
Date	7-7-49	1-10-58	1-10-58	5-19-58	1-10-58	1-10-58
Depth	350				350	
Lab., No.	N	GS-24810	GS-24811	GS-25938	GS-24808	GS-24809

a. Potassium included.

b. Packer in well apparently has failed, therefore only one sample was taken.

Table 6.--Periodic measurements of chloride, in parts per million, of well waters

1N/21-27F1, 840 ft deep

Date	Chloride	Date	Chloride	Date	Chloride
11-25-32	283	8-22-34	59	8-13-48	176
5-2-33	185	11-1-35	67	7-27-49	302
12-14-33	55	3-18-38	135		
1-6-34	57	5-14-47	61		

1N/21-27H1, 212 ft deep

5-4-32	174	11-1-35	175	5-14-47	180
9-22-34	170	2-18-38	170		

1N/21-28C1, 809 ft deep

5-15-47	75	7-25-51	69	8-31-54	64
5-31-50	79	7-24-52	64	8-23-56	73
9-25-50	75	6-12-53	65	10-24-57	67

1N/21-28G1, 378 ft deep

12-8-39	163	12-26-39	78	2-9-40	65
12-12-39	136	12-28-39	74	3-6-40	117

1N/21-28G2, 370 ft deep

2-9-27	206	2-10-33	77	11-1-35	68
11-30-32	120	8-26-33	75	2-2-38	87
1-27-33	75	8-22-34	74	5-14-47	106

1N/21-28N1, 275 ft deep

9-9-33	65	12-24-33	55	9-16-37	53
9-12-33	65	1-6-34	57	2-2-38	135
9-13-33	53	8-22-34	59	2-18-38	436
10-18-33	60	11-5-35	67	5-14-47	61

1N/21-29D1, 570 ft deep

4-22-47	49	7-26-50	44	8-3-54	43
11-17-47	46	3-19-51	43	4-2-55	42
3-15-48	45	7-25-51	43	11-15-56	42
8-2-48	46	9-30-52	43	9-19-57	44
8-29-49	44	8-31-53	41		

1N/21-29D2, 602 ft deep

Date	Chloride	Date	Chloride	Date	Chloride
6-29-48	67	7-24-52	41	9-21-55	43
5-31-50	44	9-30-52	41	10-16-56	41
12-30-50	43	3-24-53	43	9-19-57	42
3-12-51	44	10-5-53	42	10-24-57	42
10-24-51	41	8-31-54	42		

1N/21-29R1, 205 ft deep

12-6-50	430	3-24-53	60	7-23-55	56
3-12-51	330	9-1-53	52	9-21-55	55
7-24-52	61	10-5-53	54	10-16-56	54
9-30-52	56	8-31-54	55		

1N/21-29R2, 134 ft deep. 5-8-48, 150.

1N/21-29Z2, 300 ft deep

4-22-47	131	7-16-48	91	10-25-49	439
11-17-47	58	7-30-48	578	11-3-49	600
3-19-48	215	8-6-48	98	11-18-49	292
4-9-48	98	8-20-48	339	5-17-50	434
4-30-48	236	10-1-48	78	7-3-50	128
5-7-48	466	10-8-48	568	8-23-50	190
5-14-48	162	10-22-48	802	9-25-50	55
5-21-48	61	5-5-49	305	11-6-50	82
5-29-48	278	8-29-49	167		

1N/21-31J1, 600 ft deep

7-7-55	68	2-7-56	62	8-2-56	68
8-4-55	72	4-5-56	64	9-21-56	60
9-8-55	62	5-3-56	66	1-7-58	68
9-29-55	72	7-5-56	70	5-20-58	63

1N/21-31L1, 750 ft deep

8-2-48	41	12-26-50	81	6-12-53	57
2-15-49	110	1-8-51	84	7-3-53	41
12-27-49	39	1-9-51	85	7-31-53	40
4-18-50	40	3-12-51	42	9-1-53	39
5-29-50	41	3-22-51	41	10-5-53	41
7-3-50	42	3-23-51	41	11-3-53	41
7-26-50	42	3-24-51	41	7-7-55	52
8-23-50	41	7-25-51	41	8-4-55	60
11-6-50	92	7-24-52	40	9-8-55	140
11-17-50	75	11-6-52	57	1-7-58	52
12-6-50	61	4-9-53	47	5-20-58	59
12-16-50	113	4-30-53	42		

1N/21-32A1, 750 ft deep. 10-23-58, 192.

1N/21-32G1, 434 ft deep

Date	Chloride	Date	Chloride	Date	Chloride
2-9-48	47	2-15-49	44	4-5-56	48
3-19-48	43	4-9-53	65	7-5-56	58
4-15-48	45	7-7-55	44	8-2-56	64
5-21-48	44	8-4-55	44	9-24-56	40
6-29-48	45	9-8-55	40	1-7-58	140
8-2-48	45	9-29-55	60	5-20-58	66
11-1-48	45	2-7-56	42		

1N/21-32K1, 622 ft deep

2-9-48	68	7-7-55	64	5-3-56	70
3-19-48	66	8-4-55	88	7-5-56	68
6-29-48	67	9-8-55	62	8-2-56	68
8-2-48	67	9-29-55	60	9-21-56	60
11-1-48	65	2-7-56	60	10-4-56	61
4-9-53	66	4-5-56	48	1-7-58	75

1N/22-26A1, 236 ft deep

4-15-31	41	3-12-51	45	10-29-54	42
7-3-31	39	8-28-51	41	4-2-55	41
10-5-31	42	9-30-52	42	9-21-55	44
4-22-47	45	11-6-52	41	7-14-56	41
11-17-47	42	6-12-53	41	10-16-56	42
6-29-48	43	10-5-53	42	9-9-57	42
5-5-49	44	5-3-54	39		
8-23-50	44	8-31-54	43		

1N/22-26K2

6-13-50	44	8-3-53	41	7-23-55	51
9-25-50	42	10-5-53	42	9-29-55	50
8-28-51	40	6-2-54	40	11-1-56	53
6-12-53	103	8-28-54	45	7-25-57	62
6-16-53	129	4-1-55	38	9-19-57	71

1N/22-26R1, 370 ft deep

5-31-50	39	7-8-54	38	11-1-56	39
9-25-50	39	8-31-54	40	5-16-57	39
7-25-51	38	4-2-55	40	9-19-57	40
9-30-52	39	8-20-55	41	10-24-57	40
6-16-53	37	7-14-56	38		
10-5-53	39	8-14-56	40		

1N/22-27J1

Date	Chloride	Date	Chloride	Date	Chloride
7-15-47	41	3-15-48	54	8-2-48	41
11-17-47	43				

1N/22-28A1

5-5-49	56	11-6-52	42	7-23-55	41
5-31-50	44	3-24-53	41	9-21-55	42
12-30-50	42	7-31-53	40	6-13-56	41
3-12-51	43	10-1-53	42	10-16-56	42
10-24-51	41	5-3-54	40	5-16-57	42
7-24-52	40	8-31-54	42	10-24-57	40
9-30-52	41	4-2-55	41		

1N/22-28B1, 230 ft deep. 5-8-58, 850.

1N/22-29A2, 225 ft deep

2-27-28	40	4-3-33	51	8-23-40	41
4-3-31	44	8-30-33	43	9-27-45	42
5-6-31	43	7-5-34	44	8-2-46	42
7-2-31	41	9-8-34	42	3-31-47	42
7-25-31	43	9-10-35	42	9-15-47	43
9-4-31	44	7-21-36	43	11-17-47	39
6-3-32	47	8-22-36	42	2-9-48	40
8-5-32	45	9-7-37	42	4-15-48	42
3-3-33	52	12-20-39	55	8-2-48	41

1N/22-36K1, 186 ft deep

4-3-33	40	10-25-49	50	11-3-53	116
10-3-33	116	3-24-50	54	5-3-54	84
11-1-33	60	5-17-50	47	8-3-54	88
7-5-34	40	7-3-50	53	8-31-54	84
9-8-34	42	12-30-50	47	10-29-54	75
9-10-35	39	3-12-51	53	4-2-55	157
7-21-36	42	4-11-51	57	4-23-55	179
8-22-36	40	8-28-51	67	5-28-55	81
9-7-37	46	10-24-51	51	9-21-55	106
7-15-47	41	8-25-52	67	8-17-56	73
11-17-47	43	9-30-52	58	9-18-56	134
3-15-48	54	11-6-52	57	10-16-56	113
8-2-48	41	4-30-53	67	6-27-57	93
5-5-49	45	10-5-53	67	10-28-57	162

Table 7.--Periodic measurements of chloride and sulfate, in parts per million, in selected wells

1N/21-31J1, 600 ft deep

Date	Chloride	Sulfate	Date	Chloride	Sulfate
7-7-55	68	280	4-5-56	64	260
8-4-55	72	205	5-3-56	66	250
9-8-55	62	290	7-5-56	70	250
9-29-55	72	250	8-2-56	68	210
2-7-56	62	250	9-21-56	60	230

1N/21-31L1, 750 ft deep

7-7-55	52	325	9-8-55	140	196
8-4-55	60	245			

1N/21-32G1, 434 ft deep

7-7-55	44	425	4-5-56	48	395
8-4-55	44	250	7-5-56	58	350
9-8-55	40	360	8-2-56	64	340
9-29-55	60	365	9-24-56	40	360
2-7-56	42	345			

1N/21-32K1, 622 ft deep

7-7-55	64	363	5-3-56	70	340
8-4-55	88	400	7-5-56	68	315
9-8-55	62	380	8-2-56	68	320
9-29-55	60	365	9-21-56	60	320
2-7-56	60	310	10-4-56	61	322
4-5-56	48	395			

1S/21-4E1, observation well 2, 350 ft deep, packer set at 210 ft.

Date	Above packer		Below packer	
	Chloride	Sulfate	Chloride	Sulfate
8-30-49	308		308	
9-8-49	320		320	
10-6-49	344		336	
6-29-49	410		300	
7-7-49	-		307	
8-2-49	274		272	
8-12-49	278		278	
8-17-49	48		272	
8-24-49	284		292	
11-10-49	416		420	
2-9-53	3,800	760	5,100	890
3-6-53	5,400	882	5,200	820
4-3-53	6,100	984	6,100	974
5-7-53	5,500	1,014	5,100	834
6-9-53	5,900	870	5,500	740
7-17-53	5,900	850	6,300	990
11-9-53	424	355	7,100	975
1-11-54	8,250	1,014	8,250	1,075
2-11-54	7,300	1,075	7,200	1,075
3-5-54	7,500	995	8,700	1,110
4-5-54	7,400	1,000	8,900	1,140
8-10-54	720	314	9,000	1,075
11-8-54	540	290	10,200	1,130
12-6-54	9,000	1,100	8,400	1,150
1-18-55	1,000	270	9,800	1,300
3-8-55	3,320	520	11,400	923
4-12-55	1,900	397	13,200	1,820
6-17-55	8,160	1,085	11,400	1,700
7-11-55	1,460	363	11,400	1,250
8-8-55	940	320	11,600	1,500
9-9-55	11,200	1,400	11,600	1,260
2-13-56	11,800	1,260	436	145
3-29-56	6,000	840	10,800	1,070
4-9-56	9,600	1,460	11,200	1,040
1-10-58	11,800	-	11,600	1,110

1S/21-6F1, observation well 1, 350 ft deep, packer set at 218 ft.

Date	Above packer		Below packer	
	Chloride	Sulfate	Chloride	Sulfate
6-29-49	218		350	
8-2-49	58		-	
8-12-49	54		54	
8-17-49	52		284	
8-24-49	54		106	
8-30-49	54		54	
9-9-49	60		60	
10-6-49	52		44	
11-10-49	72		72	
10-6-52	a40			
11-6-52	a42	a283		
2-9-53	a49	a272		
3-6-53	a49	a272		
4-3-53	a49	a274		
5-7-53	a49	a264		
6-9-53	a47	a250		
7-17-53	a45	a270		
11-9-53	a56	a264		
2-11-54	a50	a236		
3-5-54	a54	a235		
4-5-54	a52	a235		
8-10-54	a46	a191		
11-8-54	a71	a264		
12-6-54	a56	a240		
1-18-55	a140	a216		
2-14-55	a60	a250		
3-8-55	a56	a241		
4-12-55	a56	a265		
6-17-55	a64	a285		
7-11-55	a52	a300		
8-8-55	a48	a285		
9-9-55	a56	a235		
2-13-56	a56	a240		
3-29-56	a56	a260		
4-9-56	a56	a275		
1-10-58	90	-	85	a246

a. It is unknown if these analyses were taken from above or below the packer.

Pocket contains 1 item.


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