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BULLETIN 5615

GROUND-WATER RESOURCES OF THE HUECO BOLSON,  
NORTHEAST OF EL PASO, TEXAS

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ABSTRACT

The Hueco bolson is in the extreme western part of Texas and south-central New Mexico, covering parts of El Paso County, Texas, and Doña Ana and Otero Counties, N. Mex. Wells tapping the bolson deposits furnish the major part of the water supply for the city of El Paso, Ciudad Juárez, Fort Bliss, Biggs Air Force Base, and private industries in the area. The progressively increasing demand for water made it obvious that a comprehensive investigation of the quantity and quality of water in storage in the entire Hueco bolson would be essential for the proper planning of future water supplies. A test-drilling program was started in 1953, jointly sponsored by the city of El Paso, the United States Army, the United States Air Force, and the Texas Board of Water Engineers. The drilling was supervised by the U. S. Geological Survey.

Thirty-three deep test wells were drilled, comprising a total footage of 32,456 feet. Water samples for chemical analysis were obtained by means of drill-stem tests at most of the wells, an electric log was made after each test well was completed, water-level measurements were made in each well, and pumping tests were made at several selected wells. In addition to the test-drilling program, all available information was collected for existing wells in the area and chemical analyses were made of water samples collected from many of the wells.

The Hueco bolson is an intermontane lowland sparsely covered with low vegetation. The bolson is traversed by the Rio Grande valley, the portion of which south of El Paso, known locally as the Lower Valley, is reached by an abrupt drop of 200 to 300 feet from the bolson surface, which is known locally as the Mesa. There are no well-developed drainage channels on the Mesa, and the precipitation on it either infiltrates or is lost by evapotranspiration. The average annual evaporation from a U. S. Weather Bureau class A evaporation pan based on a 4-year period, is 108.15 inches, whereas the average annual precipitation, based on a 75-year record, is 8.65 inches.

The bedrock that underlies the bolson deposits and makes up the surrounding mountains is relatively impermeable and will not supply large quantities of water to wells. The Franklin and Organ Mountains, which form part of the western boundary of the Hueco bolson, consist largely of granitic and porphyritic

rocks that were the source beds for much of the bolson deposits. The latter consist of lenticular layers of clay, sand, and gravel, which cannot be correlated for long distances. The sands and gravels are thickest and coarsest near the Franklin and Organ Mountains and become progressively thinner and finer grained toward the east. The maximum known thickness of the bolson deposits is 4,920 feet. Caliche lying nearly everywhere beneath the surface of the bolson affords more or less an effective barrier to recharge from above. The caliche beds are partly or completely missing beneath depressions in the bolson, however, and recharge takes place when water collects in the depressions during periods of heavy rainfall.

Contours of water levels in the Hueco bolson show that the principal area of recharge is along the eastern edge of the Franklin and Organ Mountains, where the runoff from the mountains infiltrates into the coarse gravel of alluvial fans. The water in the bolson deposits on the Mesa is unconfined and almost everywhere is of good quality. The bolson deposits in El Paso Valley contain fresh water, but are overlain and underlain by alluvial deposits containing mineralized water. The lowering of the artesian head in the bolson deposits in places has permitted the infiltration of salt water into the fresh water-bearing beds. Two large cones of depression, one in El Paso Valley and one on the Mesa, have been formed by large withdrawals of ground water.

Pumpage from deep wells in the El Paso area has increased steadily since 1906. The average withdrawal in 1953 was 27,900,000 gallons a day, of which 13,200,000 gallons a day was pumped from wells on the Mesa and 14,700,000 gallons a day was pumped from wells in the El Paso Valley.

The fresh water defined as that containing less than 250 parts per million of chloride in the Hueco bolson is in a trough of irregular width and depth roughly parallel to the Franklin and Organ Mountains. Salt water defined as that containing more than 750 parts per million of chloride is in the bolson sediments that lie beneath and east of the fresh water-bearing beds and in the alluvium in El Paso Valley. The zone of diffusion between the fresh and salt water is of varying thickness at different localities.

Pumping tests at wells in the Hueco bolson showed that the coefficient of transmissibility ranged from 38,000 to 164,000 gallons a day per foot. Because of the shortness of the tests, the coefficient of storage of the bolson deposits could not be determined accurately.

The volume of the saturated bolson deposits in Texas is at least 31,600,000 acre-feet and in New Mexico at least 24,800,000 acre-feet. Of this, about 7.4 million acre-feet in Texas and 6.2 million acre-feet in New Mexico is available for recovery by wells. On the basis of 50 percent recovery of the available water, 30 million gallons a day could be withdrawn from storage for a period of 110 years. Artificial recharge would extend this period. Suggested methods of artificial recharge are by means of wells on the Mesa and a system of ditches and detention dams in the arroyos along the mountain fronts.

Although a large quantity of water is available in the bolson deposits, detailed planning and proper development will be necessary to secure maximum recovery from the reservoir without serious salt-water encroachment.

## INTRODUCTION

## Location and Extent of the Area

The Hueco bolson is in the extreme western part of Texas and south-central New Mexico, covering parts of El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico (fig. 1). It is bounded on the east by the Quitman, Malone, Hueco, and Finlay Mountains, on the north by the Tularosa Basin, on the west by the Organ and Franklin Mountains, and on the south by the "rimrock," or scarp at the edge of the Rio Grande flood plain.

El Paso, the county seat of El Paso County, lies like a great horseshoe around the southern edge of the Franklin Mountains, and is the largest city in west Texas. According to the bureau of the Census, in 1950 the population of the city proper was 130,485, and the population of the metropolitan area (not including Ciudad Juárez) was 194,968. Ciudad Juárez lies across the Rio Grande from El Paso, and in 1954, according to the Rand McNally Commercial Atlas and Marketing Guide, had a population of 121,913. Below El Paso and Ciudad Juárez the the river valley is heavily populated.



Figure 1.- Map of Texas showing location of the Hueco bolson northeast of El Paso.

The Rio Grande flows south-southeast along the west side of the Organ and Franklin Mountains through a broad, flat-bottomed valley known as the Mesilla Valley, locally referred to as the Upper Valley. At the south end of the Franklin Mountains, the Rio Grande turns abruptly southeastward and flows across the Hueco bolson through the El Paso Valley, known locally as the Lower Valley. The El Paso Valley, which is about 6 to 8 miles wide and 225 to 350 feet deep, is cut diagonally across the bolson. The land surface rises abruptly from the floor of the valley to the bolson floor on the northeast, giving the appearance of a broad, elevated tableland, and for this reason this part of the bolson is locally referred to as the Mesa. This report deals primarily with the part of the Mesa that is northeast of El Paso. The area investigated extends about 18 miles into New Mexico, and it covers a total of about 1,000 square miles.

### Economic Development

Irrigation farming is the principal occupation in the Mesilla and El Paso Valleys. It is estimated that about 70,000 acres in the two valleys is irrigated with water impounded by Elephant Butte Dam on the Rio Grande in New Mexico. Cotton is the principal crop, and an annual average of 85,352 bales was harvested in the period 1949-52. Other important products are alfalfa and vegetables, and cattle which are raised in the upland areas.

Industries in the El Paso area include oil refineries, smelters, a cement mill, food processing plants, railroad shops, and a copper refinery. El Paso is a port of entry that handles a large volume of international trade. Fort Bliss, William Beaumont Army Hospital, and Biggs Air Force Base are at or near El Paso, and the military establishments contribute substantially to the economy of the area.

### Purpose and Scope of Investigation

The water supply for the city of El Paso, the military establishments, the industries, and other communities in the area is obtained from wells or from the Rio Grande. The city uses a maximum of about 10 million gallons a day from the Rio Grande, and in 1953 approximately 28 million gallons a day was pumped from wells in the area. Slightly less than half the pumpage was from wells on the Mesa. The purpose of this investigation was to determine the thickness and areal extent of the bolson deposits underlying the Mesa that contain fresh water; to determine the capacity of the bolson deposits to absorb, store, and transmit water; and to determine the chemical character of the ground water.

The investigation of Sayre and Livingston (1945) covered in detail the ground-water resources of the El Paso Valley near El Paso and the Hueco bolson for a short distance east and north of El Paso near the Franklin Mountains. The investigation in the greater part of the area north of the El Paso Valley margin (the "rimrock") was of a reconnaissance nature. In 1939-40 the city of El Paso had a number of test wells drilled northeast of the city to ascertain the thickness and areal extent of the water-bearing beds and gravels of the Hueco bolson adjacent to the city's present well field. However, as the well field



expanded from year to year, it became apparent that a comprehensive investigation of the quantity and quality of water in storage in the entire Hueco bolson would be essential for orderly planning of future water supplies, not only for the city of El Paso but also for the military establishments and industries of the area. Except in the relatively small area developed by the City, the military establishments, and industries, most of the information needed was not available because the existing wells penetrated only a short distance into the water-bearing sands and gravels. Test drilling throughout the Hueco bolson area, therefore, was necessary for a full evaluation of the ground-water resources. In 1953 the city of El Paso, the U. S. Army, and the U. S. Air Force appropriated funds for a test-drilling program in an area in the Hueco bolson that extended about 18 miles north of the Texas-New Mexico boundary (pl. 1). The city, through its Public Service Board, appropriated additional funds to the Texas Board of Water Engineers for cooperation between that agency and the U. S. Geological Survey for the supervision of the drilling and the interpretation of the data and preparation of this report. The test-drilling program was begun in February 1953 and was actively continued along with other phases of the investigation until April 1954.

The investigation was made under the direction of R. W. Sundstrom, district engineer of the Geological Survey in charge of cooperative ground-water investigations in Texas.

## Methods of Investigation

### Inventory of wells

All available data concerning existing wells on the Mesa were collected and studied during the course of the investigation. The data included drillers' logs and data on well casings and screens, yield and drawdown, and depth to water. The drillers' logs are given in table 7 and the remainder of the well data in table 5. The data collected indicated that the large-capacity wells were concentrated in the western part of the Mesa in an area north and northeast of El Paso. Most of the domestic and stock wells on the remainder of the Mesa area were drilled only a short distance below the water table, thus giving little information on the total thickness and character of the bolson deposits containing fresh water.

### Test drilling

A large part of the investigation was devoted to drilling and analyzing the information from 33 deep test wells, comprising a total footage of 32,456 feet. The test wells ranged in depth from about 500 to 1,680 feet, drilling generally being stopped when sands were encountered containing water with a chloride concentration of 1,000 parts per million or more. Samples of the materials encountered were collected at close depth intervals so that the physical properties of the bolson deposits could be studied. The logs compiled from the examination of the samples are given in table 6. The depth to was in each test well was determined by means of either an electrical measuring

device or a steel tape. Nine of the test wells were cased for permanent use for observation of the fluctuations in the water table. Pumping tests were made at several of the wells to determine the hydraulic characteristics of the water-bearing material.

The test wells were drilled by contract with portable hydraulic-rotary drilling rigs (fig. 2). It was originally planned to drill the test wells in east-west lines 6 miles apart, with the test wells spaced 2 miles apart along the lines in Texas and 4 miles apart in New Mexico. As the drilling progressed, the plan was altered somewhat as the needs of the investigation required.



FIGURE 2.- Rotary drilling rig being assembled at site of well R-28.

An electric log, consisting of a spontaneous-potential curve and two resistivity curves, was made after each test well was completed. The electric logs were used to determine the thickness of the formations penetrated and the depth to which fresh water extended in the sands.

#### Water sampling

Chemical analyses were made of water samples collected from many of the existing water wells on the Mesa. Chemical analyses were made also of 105 samples collected from the 33 test wells, these samples being collected from several depth intervals at most of the wells. The results of the chemical analyses made for this investigation, together with many analyses collected during earlier studies, are given in table 8.

The collection of water samples from individual strata in the test wells necessitated the use of a device that would prevent the mixing of the different waters in the various sand strata penetrated. For this purpose a modified drill-stem testing tool was used, consisting of a hollow cylindrical rubber packer mounted on a sliding mandrel. The drill pipe was attached to the top of the packer and a length of perforated pipe was attached to the bottom. When a sand stratum was penetrated from which a water sample was desired, sufficient perforated pipe was attached to the packer so that when the perforated pipe rested on the bottom of the well the packer was just above the sand. The weight of drill pipe caused the rubber packer to expand against the walls of the well, isolating the sand stratum to be tested from the formations above. The well was then pumped by compressed air forced down a small-diameter pipe installed inside the drill pipe. After the drilling fluid was pumped from the drill pipe and annular space below the packer, water entered the well from the stratum being tested. At first, the water entering the well was contaminated by the drilling fluid that had penetrated into the formation, so the water sample was not collected until after the well had been pumped long enough for the water to become relatively clear and free of sediment. The testing equipment was then removed from the well, the well was deepened until another sand bed was penetrated from which a water sample was desired, and the process of setting the packer and pumping the well by air lift was repeated.

#### Personnel and Acknowledgments

The writers wish to thank the many persons who have contributed information and assistance during the field investigation and during the preparation of this report. In particular, thanks are expressed to Harlan H. Hugg, General Manager, City of El Paso Public Service Board, E. J. Umbenhauer, Superintendent, Water Department of the Public Service Board, and Colonel William J. Prichard, Post Engineer, Fort Bliss. William Obenour of the Water Department determined the altitude of the land surface at some of the test wells, and C. R. Jensen of the Water Department supplied information about the El Paso water supply and gave other assistance during the investigation. N. E. Wolfe, Drilling Superintendent for the B. and W. Drilling Co. of Texas which drilled the test wells, supplied valuable assistance during the test-drilling phase of this investigation.

The writers were assisted during the field investigation by James G. Cronin, Oscar C. Dale, William W. Doyel, Edward R. Leggat, Archie T. Long, Ben M. Petitt, Ralph E. Smith, Gordon W. Willis, and Leonard A. Wood of the U. S. Geological Survey and W. L. Naftel and George H. Shafer of the Texas Board of Water Engineers. Chemical analyses necessary for the investigation were made in the laboratory of the Geological Survey at Austin, Tex. The office of the Geological Survey at Albuquerque, N. Mex., furnished information on the New Mexico portion of the area investigated, collected as a part of the program in cooperation with the New Mexico State Engineer and the New Mexico Bureau of Mines and Mineral Resources.

## PHYSICAL FEATURES

## Topography

Hill (1900, p. 9) included under the name Hueco bolson all that part of the broad intermontane lowland lying between the Franklin-Organ-San Andreas and Quitman-Malone-Finlay-Hueco-Sacramento chains of mountains. However, the Hueco bolson is part of a larger intermontane lowland divided into two distinct parts (Richardson, 1909, p. 2) by a low, indefinite transverse divide a few miles north of the Texas-New Mexico boundary. The northern part, known as the Tularosa Basin, has no external drainage, and is characterized by salt marshes and dunes of gypsiferous white sands. The southern part, the Hueco bolson proper, contains no salt or gypsum deposits at the surface and is partly drained by the Rio Grande. According to Meinzer and Hare (1915, p. 11) the divide separating the Tularosa Basin from the Hueco bolson approaches on the west to within a few miles of the Texas-New Mexico boundary, but swings northward in the vicinity of the Jarilla Mountains. The Hueco bolson extends southward into Mexico where it is bounded by a part of the Sierra Madre Oriental.

Although the surface of the bolson has the appearance of a nearly level plain, actually it rises from an altitude of about 3,900 feet above sea level on the west side near Fort Bliss to about 4,200 feet on the east side near the Hueco Mountains--a rise of 300 feet in about 17 miles. King (1935, p. 254) has suggested that the rise of the bolson surface to the east may have been caused by gentle tilting resulting from movement along a fault plane near the base of the Franklin Mountains. Going north from Fort Bliss to the Texas-New Mexico boundary, there is a rise of about 100 feet in a distance of 14 miles. South of El Paso there is an abrupt drop of about 200 to 300 feet from the bolson surface to the floor of El Paso Valley.

The bolson is sparsely covered with vegetation consisting mainly of mesquite, with some creosote bush, sagebrush, and grasses. The mesquite catches and holds the drifting sand, forming numerous small mesquite-covered dunes 4 to 5 feet high.

At least six long, narrow, asymmetrical north-trending depressions break the even surface of the bolson. They are not drainage channels, however, but are definite structural features probably resulting from faulting (Sayre and Livingston, 1945, p. 12). There is almost no runoff from the bolson, as most of the precipitation either is lost by evapotranspiration or infiltrates into the ground-water reservoir. No well-developed drainage channels have been formed. Numerous arroyos, such as that shown in figure 3, cross the alluvial fans near the mountains, and most of the runoff from the mountains infiltrates into the coarse gravels of the fans. During periods of heavy rainfall, however, some of the runoff collects in depressions, forming temporary lakes. Many arroyos draining into the Rio Grande have cut reentrants into the "rimrock" along the El Paso Valley, but with a few exceptions the reentrants extend only a short distance into the Mesa.



FIGURE 3.- Arroyo crossing western edge of alluvial fan in Fillmore Pass at south end of Organ Mountains.

#### Climate

The climate of the Hueco bolson is typical of the arid to semiarid regions of the southwestern United States. The days are warm and the nights are cool. In the late winter and spring, high winds and blowing sand are common. The humidity is low and, consequently, evaporation is high.

Records of the evaporation from a U. S. Weather Bureau class A evaporation pan at Ysleta in the El Paso Valley near El Paso, for part of the period 1948-53, are given in table 1 and are shown graphically in figure 4. The average annual evaporation for 4 years of complete record during the period 1948-53 is 108.15 inches.

Table 1.- Evaporation, in inches, from Class A evaporation at Ysleta, Tex., 1948-53  
(From records of U. S. Weather Bureau)

YEAR	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	ANNUAL
1948	3.12	4.47	8.15	12.20	13.45	14.17	12.91	12.12	9.42	6.67	4.87	4.57	106.12
1949	-	-	9.27	9.35	13.07	14.61	12.34	10.15	8.87	6.91	4.43	2.53	-
1950	4.73	4.93	10.86	12.52	13.47	15.40	10.84	11.71	7.93	6.95	4.88	4.33	108.55
1951	3.88	5.55	7.62	11.01	14.37	15.70	14.93	12.84	10.26	8.52	4.68	3.40	112.76
1952	3.89	4.70	7.83	10.00	12.58	13.58	-	11.77	9.52	6.91	3.31	2.51	-
1953	4.79	5.15	9.21	12.82	12.95	14.51	12.32	11.26	9.67	6.14	3.89	2.46	105.17
Average	4.08	4.96	8.82	11.32	13.32	14.66	12.67	11.64	9.28	7.02	4.34	3.30	108.15

TEXAS BOARD OF WATER ENGINEERS IN COOPERATION WITH U. S. GEOLOGICAL SURVEY,  
CITY OF EL PASO, U. S. ARMY, AND U. S. AIR FORCE.

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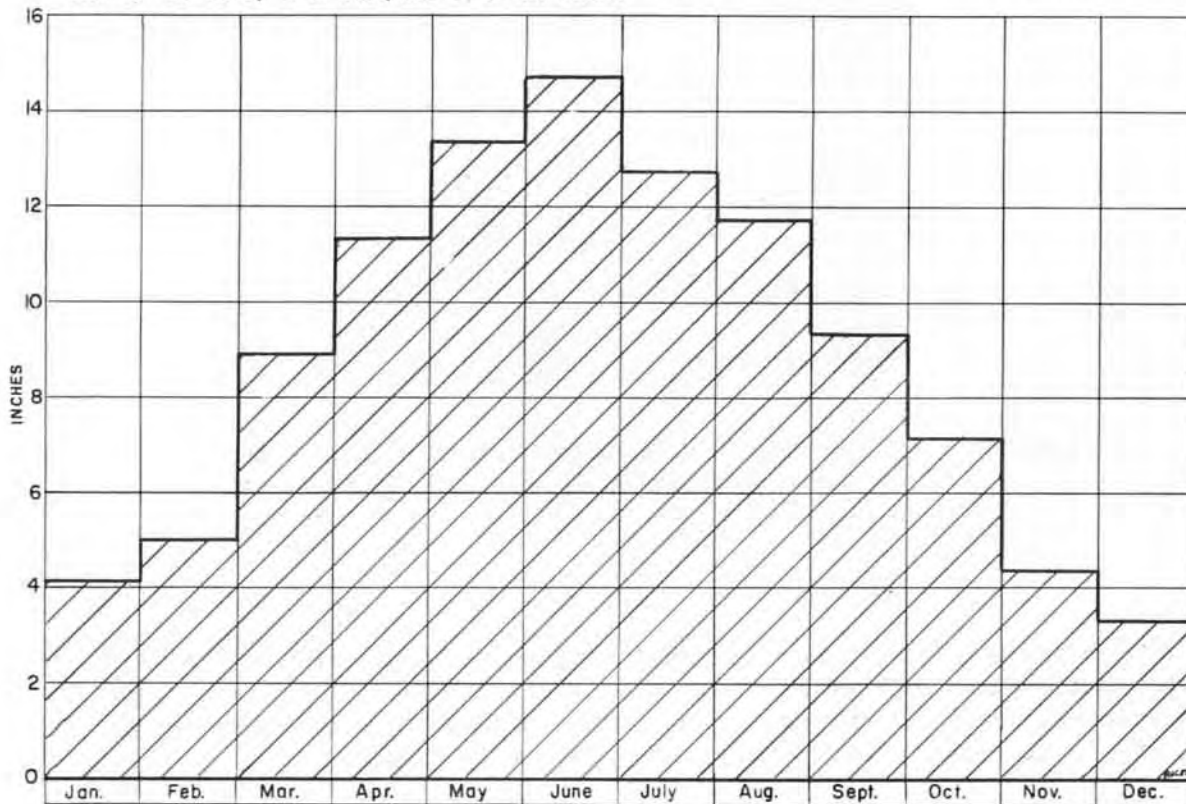


FIGURE 4.- Average monthly evaporation from class A evaporation pan at Ysleta, Tex., 1948-53.  
(From records of U. S. Weather Bureau)

Table 2.- Precipitation, in inches, at El Paso, Tex., 1878-1953  
(From records of U. S. Weather Bureau)

YEAR	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	ANNUAL
1878	-	-	-	-	-	-	1.25	2.55	0.66	1.02	0.66	0.11	-
1879	1.57	0.83	0.18	0.07	T	0.08	2.47	.35	.04	.95	T	.26	6.80
1880	1.01	T	.30	.10	0	T	7.54	3.60	.80	.47	.02	1.53	15.37
1881	.35	.24	.01	.22	1.83	.02	8.18	3.15	1.44	1.45	.50	.78	18.17
1882	.64	.78	.38	0	.10	.43	1.26	2.82	.40	0	1.46	0	8.27
1883	.10	.40	2.09	.10	.02	.04	2.84	1.34	2.51	2.03	.61	.84	12.92
1884	.55	.84	.33	.91	T	.11	.46	3.98	3.68	5.15	.21	2.07	18.29
1885	.12	.03	.34	.04	1.27	2.63	1.06	.46	.22	.46	.31	.37	7.31
1886	.31	.44	.28	T	.01	1.03	1.62	1.85	1.16	.80	.52	.04	8.06
1887	.03	.15	.32	.09	.13	.34	.73	1.68	.94	.78	.56	1.01	6.76
1888	.32	1.51	.95	.74	.15	.42	1.39	1.32	.49	1.13	1.32	.05	9.79
1889	.76	.18	.67	.04	0	.28	1.59	.04	2.64	.35	.55	0	7.10
1890	.72	.02	.01	.06	T	.63	.95	3.25	1.81	.41	.35	.28	8.49
1891	.27	.09	.16	0	.38	.40	.06	.13	.23	T	T	.50	2.22
1892	1.25	.57	.30	.11	T	T	1.14	.07	.12	.22	.93	.61	5.32
1893	.02	.52	.31	0	2.28	T	2.08	3.15	2.08	T	.02	.42	10.88
1894	.33	.29	.13	.01	.01	.01	1.40	.64	.40	.39	0	.63	4.24
1895	.65	.17	.05	T	2.11	.21	2.48	2.01	.28	.88	1.05	.31	10.20
1896	1.63	.14	T	T	T	.60	2.73	1.09	1.48	2.02	.04	.06	9.79
1897	.54	0	.05	.14	.46	2.17	2.89	2.57	2.73	.77	T	.09	12.41
1898	.25	.04	.43	.81	.01	.46	1.46	1.00	.50	T	.16	1.04	6.16
1899	.06	.03	.23	.88	T	.61	3.08	.91	.64	.01	.64	.21	7.30
1900	.11	.43	.26	.02	.41	.27	2.38	.43	2.18	1.23	.23	T	7.95
1901	.35	.68	.47	.47	.05	.39	1.05	.34	.82	2.98	1.05	.03	8.68
1902	.57	.01	0	0	T	.01	3.27	2.85	1.86	.31	.49	.78	10.15
1903	.61	1.09	.15	.54	.29	2.50	1.19	1.73	3.52	0	0	.01	11.63
1904	T	.01	0	0	.06	.54	.59	2.24	3.50	3.51	.01	.84	11.30
1905	.86	1.88	1.46	1.38	.03	2.12	2.55	.53	2.29	1.28	2.40	1.02	17.80
1906	.87	1.37	.01	.40	.90	T	2.02	4.10	1.18	.44	2.50	1.20	14.99
1907	.42	T	T	.07	.10	.76	.35	2.50	.96	2.52	.73	T	8.41
1908	.10	.26	.35	.88	.01	0	2.07	2.55	T	.12	.45	.15	6.94
1909	.04	.16	.77	0	T	.25	1.62	.51	.60	.02	T	.56	4.33
1910	.21	.10	T	T	T	1.35	.60	1.18	.24	.02	.03	.30	4.03
1911	.36	.96	.43	.47	.39	2.36	3.43	.45	1.00	.43	.35	.25	10.88
1912	0	.15	.27	.96	T	1.27	1.11	2.83	1.77	.50	.80	.48	10.14
1913	.49	1.26	.29	.14	T	.91	1.13	.54	.60	T	.97	.76	7.09
1914	.03	.53	.10	.47	1.23	1.47	4.91	.85	.56	.80	1.13	3.94	16.02
1915	1.01	.59	1.34	.20	T	T	2.45	1.37	2.68	.18	.01	.43	10.26
1916	.66	.02	.34	.20	.43	0	.59	3.07	.55	1.07	.52	.32	7.77
1917	.32	T	.07	T	.14	.36	.41	4.39	.76	T	.04	0	6.49
1918	1.20	.01	.08	0	.05	.83	1.52	1.66	.01	1.03	1.04	.78	8.21
1919	.08	.20	.62	.65	.14	.27	1.87	.72	3.30	.97	.93	.12	9.87
1920	1.06	.83	.22	.03	.03	.99	.84	1.33	.31	.57	T	T	6.21

(Continued on next page)

Table 2.- Precipitation, in inches, at El Paso, Tex., 1878-1953-- Continued

YEAR	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	ANNUAL
1921	0.06	0.26	0.04	0.01	0.31	0.79	2.13	0.35	2.49	0.11	0.22	0.15	6.92
1922	.30	T	.16	.28	.36	.05	1.08	.27	1.07	.35	.29	.09	4.30
1923	.64	1.41	.33	.04	.01	.09	.20	2.96	.41	.58	.53	.93	8.13
1924	.40	.13	.41	.32	T	T	3.00	2.58	.14	.24	.01	.05	7.28
1925	.03	.05	T	T	.59	.17	1.40	2.16	1.03	.79	.02	.27	6.51
1926	.54	.17	1.49	1.11	.70	.11	3.31	.27	2.24	.89	.15	.75	11.73
1927	.05	.18	.28	T	0	.10	2.52	1.34	1.04	-.02	T	.72	6.25
1928	T	.71	.05	.22	.96	T	1.15	2.69	.04	1.47	.79	.13	8.21
1929	T	.29	.21	T	1.51	.54	3.01	1.18	.12	1.60	.33	.50	9.29
1930	.17	.16	.03	T	.62	.53	1.33	1.29	-.04	.75	.74	.43	6.09
1931	.83	.89	.38	2.24	.06	1.34	.73	2.14	1.10	.14	.64	.30	10.79
1932	.17	.68	.03	T	1.46	.15	2.28	2.14	2.85	.53	0	.65	10.94
1933	.19	.23	T	.09	.04	2.14	1.34	.27	.99	.60	.04	0	5.93
1934	.01	.12	.24	.05	.37	.01	.19	.60	-.17	.44	.21	.32	2.73
1935	.24	.47	.14	.02	.17	.09	.16	1.72	1.24	.14	.92	.34	5.65
1936	.57	.06	T	.11	.56	.34	.68	1.94	3.52	-.32	1.32	.51	9.93
1937	.12	.32	.48	T	.19	1.05	.39	.36	.48	1.71	.22	.91	6.23
1938	1.22	.17	.49	T	.02	2.82	.60	.20	2.31	.19	T	.28	8.30
1939	.65	.08	.44	.45	.01	T	.60	.91	.90	.93	.75	.19	5.91
1940	.54	.41	.02	.02	.43	1.87	1.06	.78	.25	.82	1.25	.31	7.76
1941	.46	.46	1.63	1.49	1.23	.18	1.40	2.13	4.19	1.65	.48	.35	15.65
1942	.14	.72	.02	1.04	T	.52	.68	3.82	1.03	1.53	0	1.26	10.76
1943	.25	0	.07	T	T	1.63	.92	.44	1.36	T	1.53	.82	7.02
1944	.45	1.42	.15	T	.39	1.67	1.52	1.04	.25	1.30	.41	.48	9.08
1945	.11	.17	.64	T	T	.03	.47	.84	.12	4.31	.00	.05	6.74
1946	1.23	T	.04	.36	1.23	.20	.71	1.19	1.51	.41	.03	1.31	8.22
1947	.87	T	.66	.06	.68	.53	.97	1.63	.02	.35	.53	.82	7.12
1948	.25	.63	.04	.11	T	.96	.82	1.82	-.03	-.18	T	.86	5.70
1949	1.84	.22	.04	.05	.39	.51	1.18	.43	1.74	1.50	.00	.86	8.76
1950	.29	.26	T	T	.10	.11	3.57	.16	1.32	.94	.00	.00	6.75
1951	.33	.63	.59	.45	T	T	2.48	.72	.04	.43	.12	.68	6.47
1952	.02	.96	.92	1.08	.46	1.14	1.88	1.06	.07	0	.23	.15	7.97
1953	0	.34	.12	.71	.27	.53	.99	.42	T	.65	T	.39	4.42
Years of record	75	75	75	75	75	75	76	76	76	76	76	76	75
Average	.45	.41	.33	.29	.35	.63	1.70	1.53	1.16	.83	.46	.51	8.65



Most of the rain falls in thundershowers during the summer months, and about 50 percent of the average annual precipitation falls from July through September. The precipitation at El Paso Airport, compiled from records of the U. S. Weather Bureau for the period 1878-1953, is given in table 2 and shown graphically in figure 5. The average annual precipitation for the 75 year period was 8.65 inches, and the maximum was 18.29 inches in 1884 and the minimum 2.22 inches in 1891. According to Sayre and Livingston (1945, p. 9), the rainfall at El Paso is somewhat greater than it is in the Hueco bolson, and the rainfall in the Franklin Mountains is greater than it is at El Paso.

## GEOLOGY

The description by Sayre and Livingston (1945) of the geology of the Hueco bolson area and its relation to the occurrence of ground water has served as the chief source of material in the following discussion. Descriptions of the geology of the area by Richardson (1909), Dunham (1935), King (1935), and Nelson (1940) also have been helpful.

The rocks of the Hueco bolson area may be separated into two general groups; the unconsolidated bolson deposits and the consolidated igneous and sedimentary rocks of the mountains and upland areas. The bolson deposits are the most important in relation to the water supply because they contain large thicknesses of water-bearing sand and gravel. The consolidated rocks, in general, are too firmly consolidated to supply large quantities of water to wells, and the water that they do contain is too highly mineralized for most uses (Sayre and Livingston, 1945, p. 21). The character and distribution of these rocks have a direct bearing on the occurrence of ground water in the Hueco bolson because the bolson deposits were derived from them through the processes of weathering and erosion and they form the bedrock underlying the bolson deposits.




### Consolidated Rocks

#### Igneous rocks

Granitic rocks.- Granitic rocks are exposed in relatively large areas in the Franklin Mountains, in most of the Organ Mountains, and in isolated areas in the southern part of the Hueco Mountains. The largest outcrop of granite in the Franklin Mountains is near the middle of the range, but relatively narrow outcrops occur, in general, near the base along most of the eastern flank of the mountains. The granite is predominately red and consists chiefly of coarse grains of quartz and feldspar. In the Organ Mountains, coarse-grained red granite with phenocrysts of feldspar crops out in small areas near the middle and south end of the east side of the range. The same type of granite occurs in a large area at the south end of the San Andreas Mountains just north of San Augustine Pass, which separates the Organ and San Andreas ranges. A complex mass of granitic rocks, mostly quartz monzonite, comprises a considerable part of the bedrock in the central part of the Organ Mountains. Part of the granitic rocks are believed to be Precambrian, and part which have intruded all of the Paleozoic strata are post-Carboniferous, probably Tertiary in age.

Texas Board of Water Engineers in cooperation with U. S. Geological Survey,  
city of El Paso, U. S. Army, and U. S. Air Force.

Bulletin 5615

-  Maximum monthly precipitation  
(Date indicates year of maximum)
-  Mean monthly precipitation
-  Minimum monthly precipitation  
(Date indicates year of minimum, dates  
omitted where minimum was zero in more  
than one year)

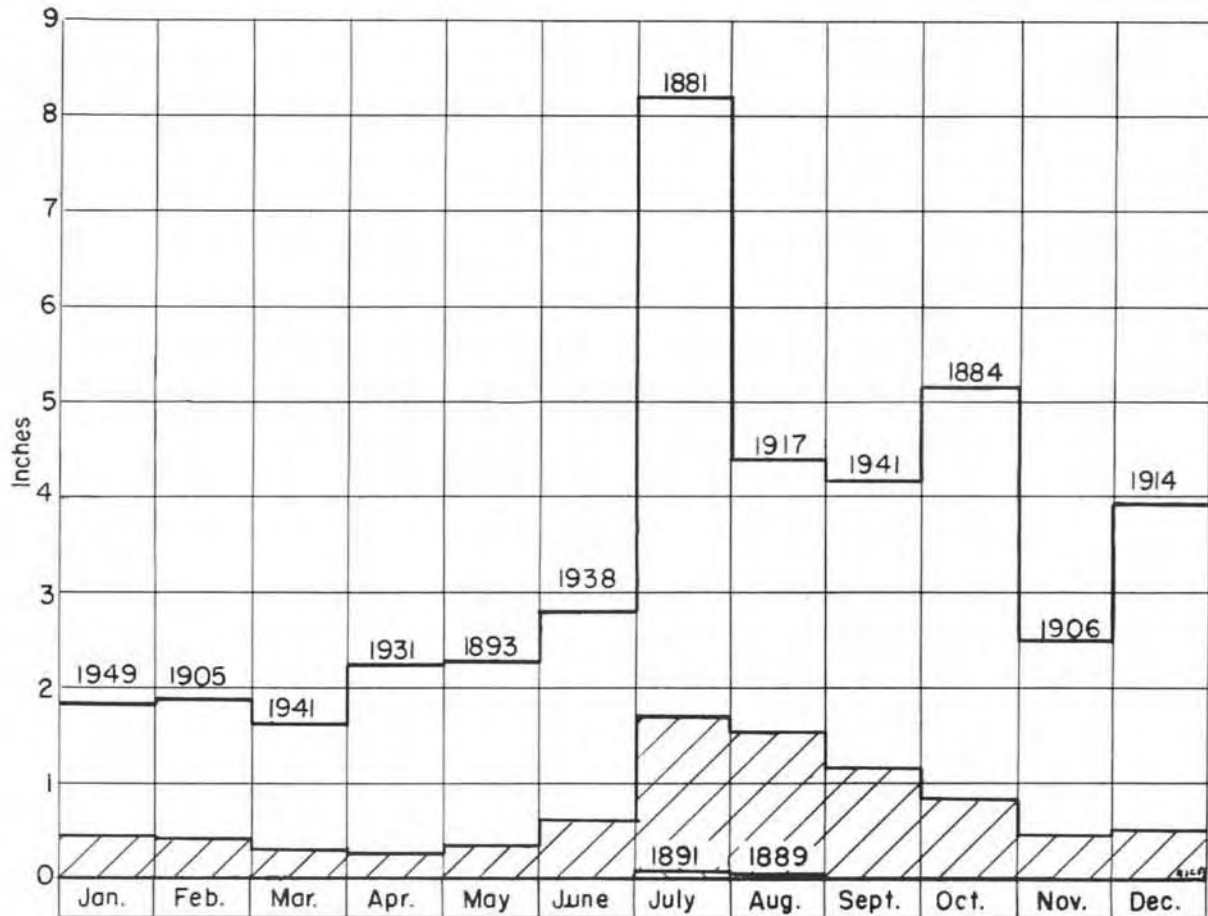


FIGURE 5.-Precipitation at El Paso, Tex., 1878-1953.  
(From records of U. S. Weather Bureau)

The granitic rocks weather readily into clay and quartz and are good source materials for bolson deposits. Because of rapid erosion, however, weathering is not complete and arkosic sands and gravels are formed. Arkosic material was observed in the cuttings from many of the test wells.

Porphyritic rocks.- Two types of porphyritic rocks, in addition to the porphyritic granite in the Organ Mountains, are found in the Hueco bolson area. Rhyolite porphyry underlies a large area in the central part of the Franklin Mountains and crops out in the lower part of the east flank of the range. The rock is pink to maroon, in places black, and the phenocrysts consist predominately of feldspar and quartz. An agglomerate containing pebbles of quartzite and rhyolite occurs near the base of the porphyry. The rhyolite porphyry was extruded during Precambrian time as lava flows and has a total thickness of about 1,500 feet. It does not weather readily but breaks down into angular pebbles and boulders suitable for transportation by storm waters. It is one of the chief source materials for the coarse sands and gravels of the bolson deposits.

Syenite porphyry which underlies several hills near the base of the Hueco Mountains, is probably post-Cretaceous in age (Sayre, 1945, p. 23). The rock consists principally of white to light-colored feldspar with smaller amounts of biotite and augite. It weathers readily and breaks down so completely into clay that even at the base of the syenite masses there are only small areas of rock fragments.

#### Sedimentary rocks

The Lanoria quartzite of Precambrian age crops out along the east flank of the Franklin Mountains near the center of the range. It is a dense, thoroughly indurated fine-grained generally grayish quartzite occurring in alternately thick-bedded and thin-bedded layers and is about 1,800 feet thick. It weathers into pebbles and boulders, furnishing source materials for the sands and gravels of the bolson deposits.

The Bliss sandstone of Cambrian or Ordovician age extends along the east side of the Franklin and Organ Mountains where it generally lies above the granite, but in some places is found overlying the rhyolite porphyry. It crops out also in small areas in the southern part of the Hueco Mountains. It ranges in thickness from a knife edge to 300 feet and generally is conglomeratic near the base and very fine-grained near the top. The Bliss sandstone weathers into fine-grained sand.

A thick sequence of limestones ranging in age from Ordovician to Cretaceous overlies the Bliss sandstone. The limestones, which have been described in detail by Sayre and Livingston (1945, p. 25-27) and others, are light to dark in color, are generally hard, dense, and massive, and in places are interbedded with shale, sandstone, and chert. Impure limestones and shales generally weather to clay rather easily. Limestone boulders sometimes are formed by rapid weathering, but they usually are reduced to small fragments during transportation from the site of formation to the site of deposition. Limestone pebbles, therefore, are found only occasionally in the bolson deposits, but pebbles of chert are fairly common, as the chert is resistant to both weathering and erosion.

## Unconsolidated Deposits

The bolson deposits consist of layers of clay, sand, and gravel of Tertiary age. The individual layers range in thickness from a knife edge to about 100 feet. A study of more than 100 logs of wells drilled in the Hueco bolson indicates that individual layers cannot be correlated except for very short distances. Prior to 1920 the city of El Paso had about 45 wells drilled in the vicinity of well V-3 (pl. 1) at intervals of 300 feet along two lines about 300 feet apart. Individual beds were found to be lenticular and could not be correlated between more than two or three adjacent wells. Furthermore, the entire section may change within short distances.

Caliche lies nearly everywhere beneath the surface of the Hueco bolson. The "rimrock," or the margin of El Paso Valley, owes much of its prominence to the erosion-resistant caliche caprock along its edge. The caliche is a nearly continuous layer of hard white calcium carbonate, generally found 2 to 4 feet beneath the bolson surface. It ranges from a knife edge to 8 feet in thickness but generally is 2 to 4 feet thick. Beds of caliche are also found intercalated with other materials in the bolson deposits to a depth of several hundred feet. Caliche beds found beneath the depressions of the bolson surface commonly are disturbed or fractured, and in some places, as near the mountains, the caliche is absent. Because the caliche beds act as barriers to the downward percolation of water, recharge occurs principally near the mountains and in the surface depressions where water collects during periods of heavy rainfall and where caliche is absent or fractured.

The clays in the Hueco bolson generally are reddish brown to brown but in places are buff to gray. The clay beds range from pure clay to clay mixed with varying amounts of sand, pebbles, and boulders. Sand is the most common admixture.

The sands and gravels of the Hueco bolson are thickest and coarsest near the Franklin and Organ Mountains. Many of the test wells near the mountains encountered more sand than clay. The sands become finer grained and thinner to the east, and very little water-bearing sand is found near the Hueco Mountains. No water-bearing sands were encountered during the drilling of test well N-1, about 6 miles west of the Hueco Mountains, and only small thicknesses of rather fine-grained sand were encountered in test well S-9, also a few miles from the Hueco Mountains. The gradation from thick, coarse deposits near the Franklin and Organ Mountains to thin, fine-grained deposits near the Hueco Mountains indicates that the igneous rocks of the Franklin and Organ Mountains were the main source of the bolson deposits.

The sands and gravels of the bolson are generally gray to salt-and-pepper colored except where they contain enough clay to give them a reddish hue. The beds of gravel generally are thin and lenticular. The sands and gravels consist mostly of quartz with fragments of porphyry, quartzite, chert, and minor amounts of granite and limestone similar to the rocks of the Franklin and Organ Mountains. The particles are angular to sub-angular, indicating that they have not been transported far from their points of origin.

The maximum thickness of the bolson deposits is not known. Many wells have been drilled to depths of more than 1,000 feet without encountering bedrock. At two test wells drilled near the Hueco Mountains, wells N-1 and S-8, bedrock was encountered at depths of 895 and 1,013 feet, respectively. Test well R-28, which is near the Franklin Mountains, was still in the unconsolidated deposits at a depth of 1,635 feet. An oil test drilled about 2 miles south of Newman, New Mexico, was reported by King (1935) to have penetrated unconsolidated deposits to a depth of 4,920 feet.

## HYDROLOGY

### Ground-Water Reservoirs

A contour map of water level in the Hueco bolson in January 1954 is shown in figure 6. On the Mesa the contours show the position of the water table, whereas in El Paso Valley the contours show the position of the artesian head or piezometric surface in feet above mean sea level. Ground water moves in the direction of the hydraulic gradient, which is at right angles to the contours.

The principal intake, or recharge, area is relatively narrow and extends along the foot of the Franklin and Organ Mountains. In this area the hydraulic gradient is steep and averages about 35 feet per mile in an eastward direction. The general slope of the water surface in the unpumped areas of the bolson away from the intake area is in a south to southeastward direction and averages only about 3 to 4 feet per mile. In the heavily pumped areas two cones of depression have been formed by large withdrawals of ground water. One cone of depression is in the El Paso Valley where the sands are heavily pumped for municipal and industrial purposes. The other cone of depression is on the Mesa near the well fields of Fort Bliss and the Mesa field of the city of El Paso. A north-south trough exists in the water table on the western side of the bolson north of the Texas-New Mexico boundary. Water moves into this trough from the west, north, and east and passes out of the trough at the south end.

### Mesa area

The yields that can be obtained from wells in the Mesa vary widely from place to place depending on the thickness of fresh water-bearing sands that are encountered. Water of good quality can be found in the sands of the Mesa almost everywhere except in the northeastern part. The thickness and areal extent of the sands containing fresh water is described in considerable detail elsewhere in this report. The surface of the bolson rises to the east and the water table dips to the southeast, causing the depth to water to increase progressively from about 200 to 400 feet toward the east. The ground water on the Mesa is under water-table conditions.

## El Paso Valley area

The bolson deposits extend under El Paso Valley where they are covered by younger alluvial deposits of clay, sand, and gravel that were deposited by the Rio Grande after it had cut its valley into the Hueco bolson. The alluvial deposits contain moderately to highly mineralized water and in most places are separated from the bolson deposits by extensive beds of clay. The bolson deposits under the valley are saturated, and the water contained in them is under artesian head maintained by the higher altitude of the water table underlying the Mesa.

The bolson deposits in El Paso Valley contain fresh water but are overlain and underlain, by alluvial deposits containing moderately to highly mineralized water. The lowering of the artesian head in the fresh-water beds by pumping establishes a differential in pressure between the salt water-bearing beds and the fresh water-bearing beds, causing the salt water to move toward or into the fresh water. The danger of salt-water contamination of the fresh-water beds is imminent also because of improper well construction or of the movement of salt water through corroded openings in well casings. The chloride content of water from some wells in the El Paso Valley has been increasing steadily at least since 1935.

## Ground-Water Development

## History

The first well to supply water to the city of El Paso, known as the Watts well, was dug in about 1892 a few hundred feet from the Rio Grande (Sayre and Livingston, 1945, p. 5-6). The well supplied a large quantity of water that was of unsatisfactory quality for human consumption, and until 1904 drinking water was shipped into the City from Deming, New Mexico. In 1904, the International Water Co. bought the waterworks and began drilling wells on the Mesa north of Fort Bliss. The City acquired the property of the water company in 1910 and continued to drill wells on the Mesa. The Watts well was used during the summer months until 1918 to augment the supply from the Mesa well field. The Mesa wells were pumped by air lift from a central plant, but the cost of operating this plant was high owing to the low efficiency of this type of equipment. It was decided, therefore, to explore the deep sands and gravels nearer the city in the El Paso Valley where the pumping lift would be much less than on the Mesa. In December 1917, construction was begun on City well 1 (well V-47) in what is now known as the Montana well field. This well yielded water of good quality at a rate of about 2,000,000 gallons a day. As new wells were developed in the Montana well field pumping was gradually decreased in the Mesa field, and operation of the Mesa field was discontinued in 1926. An increase in the chloride content of the water from the Montana field became noticeable in 1935, and part of the city pumpage again was obtained from the Mesa field where new deep wells had been drilled and equipped with deep-well turbine pumps.

## Use of water

With few exceptions there has been a steady increase in pumping from deep wells in the El Paso area since 1906. The use of ground water declined slightly after the city of El Paso placed its 10 mgd surface-water treatment plant in operation in 1943. Figure 7 shows the estimated average daily pumpage from all deep wells in the El Paso area, with the exception of pumpage for irrigation, from 1906 to 1953. The average withdrawal in 1953 was 27,900,000 gallons a day, of which 13,200,000 gallons a day was pumped from wells on the Mesa and 14,700,000 gallons a day was pumped from wells in the El Paso Valley.

The city of El Paso is the principal user of water in the area, but many deep wells have been drilled by industries, the military establishments, and Ciudad Juárez, Mexico. In 1953, El Paso used about 38 percent of the water pumped; Ciudad Juárez used about 29 percent; industries in the area used about 12 percent; the military establishments at Fort Bliss and Biggs Air Force Base used about 14 percent; and the El Paso County Water Control and Improvement District No. 1, which supplies water for domestic use to a residential area in the El Paso Valley outside the El Paso city limits, used about 7 percent.

The average daily pumpage from deep wells ("deep" wells are those in the bolson deposits and exclude the relatively shallow irrigation wells in alluvium of the Rio Grande in El Paso Valley) in the El Paso area and the division of pumpage between the wells on the Mesa and in the El Paso Valley from 1936 to 1953 is given in table 3 and shown graphically in figure 8. Ciudad Juárez is the principal user of ground water in the El Paso Valley, using about 56 percent of the water pumped in 1953. In recent years the city of El Paso gradually has been pumping a larger part of its water supply from the Mesa area. In 1953, it obtained about 86 percent of its ground-water supply from the bolson deposits beneath the Mesa as compared to 65 percent in 1951. Ground-water withdrawals from El Paso Valley, however, have shown an overall increase from year to year.

A relatively small amount of ground water is pumped for irrigation in the Mesa area a short distance north of El Paso. This pumpage, which is estimated to have averaged about 3 to 5 million gallons a day in 1953, is not included in table 3.



FIGURE 7. - Estimated average daily pumpage from all deep wells (except irrigation wells) in the El Paso area, Tex., 1906-53, inclusive



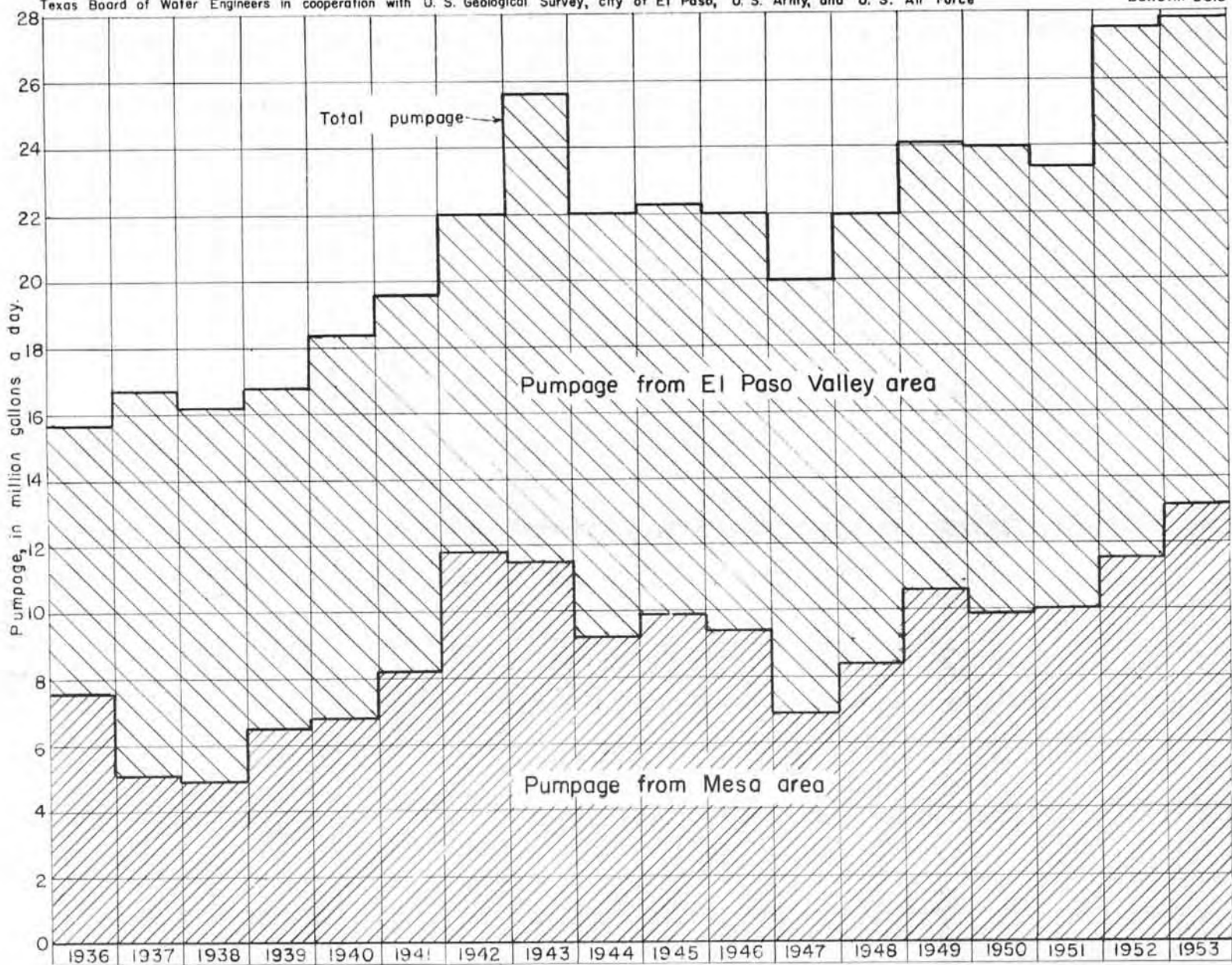


FIGURE 8.- Breakdown of estimated pumpage from deep wells in the El Paso area, 1936- 53.

Table 3.- Breakdown of estimated daily pumpage from deep wells in the El Paso area, 1936-53, in millions of gallons

Year	Mesa area	El Paso Valley area including Ciudad Juárez	Total
1936	7.5	8.2	15.7
1937	5.1	11.6	16.7
1938	4.9	11.3	16.2
1939	6.5	10.3	16.8
1940	6.8	11.6	18.4
1941	8.2	11.4	19.6
1942	11.8	10.2	22.0
1943	11.5	14.1	25.6
1944	9.2	12.8	22.0
1945	9.9	12.4	22.3
1946	9.4	12.6	22.0
1947	6.9	13.1	20.0
1948	8.4	13.6	22.0
1949	10.6	13.5	24.1
1950	9.9	14.1	24.0
1951	10.0	13.4	23.4
1952	11.6	16.0	27.6
1953	13.2	14.7	27.9

#### Occurrence of Ground Water

##### Method used to define fresh water - salt water boundary

The terms "fresh water" and "salt water" are somewhat generalized and do not have an exact definition. The U. S. Public Health Service (1946) stated that water for domestic use on carriers engaged in interstate commerce preferably should not contain more than 250 parts per million of chloride. However, water having a chloride content considerably in excess of this amount is used in many parts of the country for municipal supplies. For example, the water from some of the wells supplying the city of Galveston, Texas, contains more than 800 parts per million of chloride. Because of mixing with water of better quality from other wells, however, the resultant supply does not greatly exceed the standard recommended by the U. S. Public Health Service (Winslow and Doyel, 1954, p. 21). In this report, water containing less than 250 parts per million of chloride is considered "fresh water"; water containing chloride ranging from 250 to 750 parts per million is considered as "inferior water", but usable for municipal supplies by mixing with water of better quality; and water containing chloride in excess of 750 parts per million is considered "salt water" and not usable for municipal purposes.

The approximate altitude of the base of the fresh water-bearing sands is shown by a contour map in figure 9. The control used in the preparation of the

map was based on (1) the analyses of water samples obtained from more than 100 drill-stem tests made in test wells, (2) the interpretation of electric logs of 33 test wells, and (3) a study of water wells in the area. The results of the chloride determinations obtained from the drill-stem tests are given in table 9 on the electric logs of the appropriate wells; thus illustrating the relation between the quality of the water in the sands and the curves recorded on the electric logs.

Three curves are recorded on most electric logs: the spontaneous-potential curve and two resistivity curves. The spontaneous-potential curve measures the differences in electric potential across formational boundaries. The resistivity curves record the apparent resistance of the beds penetrated by measuring the potential drop of an induced current between known constant electrode spacings. The first resistivity curve, or short normal curve, is a shallow-penetration curve based on an electrode spacing of 10 to 20 inches. It records the apparent resistivity of the formation and its contained fluid for only a short distance from the wall of the hole and, therefore, is strongly influenced by the drilling fluid that has invaded the formation during the drilling of the hole. The second resistivity curve, or lateral curve, is a deep-penetration curve based usually on a spacing of 19 feet. It records the apparent resistivity of the formation and its native fluid and is only slightly influenced by invasion by the drilling fluid.

Several factors are responsible for the variations in the spontaneous-potential curve, the most important of which is believed to be the electrochemical effect of the drilling fluid (Barnes and Livingston, 1947). The resistivity as recorded on the electric log depends largely on the conductivity of the formation fluid and the size, arrangement, cementation, and distribution of the rock particles. These physical characteristics of the rock particles are often referred together as the "formation factor" (Archie, 1942). From the apparent resistivity, the true resistivity of the contained fluid can be determined by the use of the formation factor. A comparison of the resistivity curves, taking into consideration the formation factor and drilling-fluid resistivity, gives an indication of the quality of the water in the formation. As the mineralization of the formation water increases, the resistivity value decreases, and the magnitude of this decrease makes possible an approximation of the degree of mineralization. It is not possible to estimate the change in concentration of each of the mineral constituents in the formation water because of their different electrochemical characteristics. However, in an area where the principal change in mineralization is confined to one or two constituents, the resistivity and self-potential curves can be used to estimate this change reasonably successfully. For a detailed explanation of the interpretation of electric logs, see Archie (1942), Barnes and Livingston (1947), Jones and Buford (1951), or Guyod (1952).

The data in table 9 show that, in general, all the mineral constituents in the water increase in concentration with depth, but the increase in the chloride content is more rapid than the increase in the other anions. Good correlation was obtained between the chloride content as determined from the drill-stem tests and the true resistivity as computed from the short normal curve of the electric logs. This relation was used to estimate the quality of water in wells for which chemical analyses of water were not available.

### Fresh water

The fresh water in the Hueco bolson occurs in a trough of irregular width and depth more or less parallel to the Franklin and Organ Mountains (fig. 9). The trough is relatively narrow in New Mexico but widens south of the Texas-New Mexico boundary. The slope of the base of the fresh water is steep near the mountains but becomes rather gentle to the east. Three east-west cross sections are shown in figures 10 and 11 to illustrate in a general way the depth and nature of the occurrence of fresh water in the bolson. Figure 12 is a cross section approximately parallel to the Franklin and Organ Mountains along the western side of the trough where the fresh water extends the deepest. The base of the fresh water shown on the contour map and on the cross sections is the bottom of the deepest sand containing water with a chloride concentration of 250 parts per million or less. However, in some places the base of the fresh water probably is in beds of clay and in other places it is in sand, and this may explain some of the minor anomalies shown in figure 9.

A "nose" or ridge in the otherwise fairly even surface of the base of the fresh water extends parallel to the Franklin Mountains southward from about the Texas-New Mexico boundary to the vicinity of well R-31. Fresh-water sands are at a lower altitude both east and west of this rather narrow ridge. Insufficient data are available to explain fully the presence of the ridge, but a probable explanation is that the deposits underlying it are less permeable than those in adjacent areas and thus have not been flushed out by fresh water to as great a depth.

### Inferior water

The water in the bolson deposits becomes increasingly mineralized with depth. Fresh water occurs in the upper part of the bolson deposits overlying the salt water in the lower part. The contact between the fresh water and salt water is not sharp, but consists of a zone of diffusion in which the water is neither fresh nor salty. The zone of diffusion is of varying thickness and consists in large part of inferior water which contains between 250 and 750 parts per million (ppm) of chloride. The mineral content of the water in the zone of diffusion increases gradually with depth until some higher value is reached, after which the increase in the mineralization is very rapid. A rigid value cannot be fixed for this higher value, but the available data indicate that it is in the order of magnitude of 1,000 ppm of chloride.

The zone of diffusion was found to be of different thickness at test wells drilled at widely different locations. In well F-1, the chloride content of the water obtained from five drill-stem tests taken between 404 and 865 feet below the land surface ranged from 17 to 26 ppm. The chloride content of the water increased to 54 ppm in the zone tested from 962 to 1,012 feet and to 1,550 ppm in the zone tested from 1,162 to 1,216 feet below the land surface. The electric log indicates that the mineral content of the water increased rapidly below 1,012 feet. In well L-6, the chloride content of the water obtained from a drill-stem test from 419 to 451 feet below the land surface was 200 ppm, from 493 to 535 feet was 510 ppm, from 548 to 590 was 1,050 ppm, and from 625 to 667 feet was

5,770 ppm. In well S-8, the chloride content of the water obtained from a drill-stem test from 479 to 515 feet below the land surface was 355 ppm, from 772 to 808 feet was 405 ppm, and from 980 to 1,020 feet was 5,490 ppm.

#### Salt water

The salt water (chloride content exceeds 750 ppm) in the Hueco bolson area occurs in the bolson sediments that lie beneath and east of the fresh water-bearing sands and gravels, and in the alluvium in El Paso Valley. The salt water is a source of contamination of the fresh-water supplies. The possibility of upward movement of salt water into the fresh-water body appears to be more probable than the possibility of lateral encroachment from adjacent beds. The water in the bolson deposits is under water-table conditions, and at a given location there is no appreciable difference in head between the water in the deep sands and in sands near the water table. Under natural conditions, therefore, little, if any, water moves between the various sands of the Hueco bolson. However, when the natural conditions are disturbed by pumping and the head is lowered in the fresh-water sands, there is an upward movement of water from the salt-water deposits into the fresh-water beds.

Another possible source of contamination of the fresh-water beds is from the salt water in the alluvium in El Paso Valley and in the bolson sediments that lie east of the fresh-water beds. The salt water from these sources can move laterally or vertically into the fresh-water beds as the latter are dewatered by pumping.

#### Water Levels and Their Significance

A change in water level in a well indicates that a change in storage has taken place in the ground-water reservoir penetrated by the well. The extent of the change in storage depends on the degree of confinement of the water and the nature of the force causing the fluctuation. Some forces that affect water levels, such as atmospheric pressure, seismic waves, earth tides, and changes in surface loading, normally have only a temporary effect and indicate only a slight change in the actual quantity of water stored in the aquifer. Water levels in artesian wells are many times more sensitive to changes in storage than are water levels in water-table wells, owing to the large difference in storage coefficients. A change in water level of many feet in an artesian well may represent the same change in storage as a change in water level of a fraction of a foot in a water-table well.

In the ground water reservoir of the Hueco bolson, as in many ground-water reservoirs, water is continually moving from areas of recharge to areas of discharge. When recharge exceeds discharge, water levels in wells rise, and when discharge exceeds recharge, water levels decline. Water levels are affected by climatic trends that occur over a period of years. The long term downward trend of water levels shown in the hydrographs on figure 13, however, is attributed primarily to withdrawals from wells and the short-term fluctuations of water levels indicate changes in rates of pumping. The closer the observation well is to the center of pumping, the greater is the response of water level to changes in pumping rates.

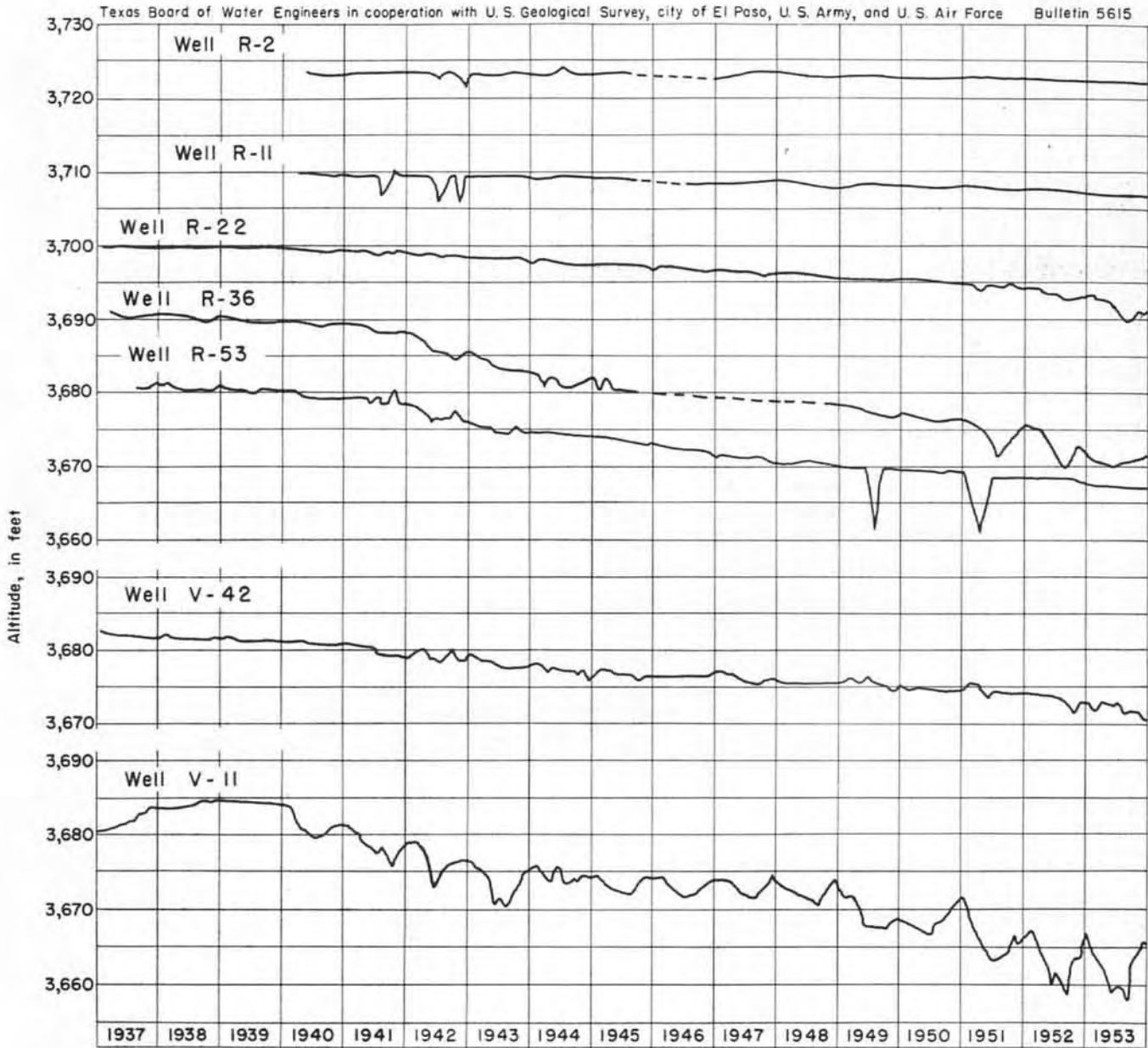


FIGURE 13. - Hydrographs for representative wells in the Hueco bolson, El Paso County, Tex.

## Pumping Tests

## Results

Pumping tests are made to determine the hydraulic characteristics of aquifers. These characteristics, called the coefficients of transmissibility and storage, govern the ability of an aquifer to transmit water and to release water from storage. The coefficient of transmissibility may be expressed as the number of gallons of water a day that will flow through a strip of the aquifer 1 foot wide under a hydraulic gradient of 1 foot per foot or through a strip of the aquifer 1 mile wide under a hydraulic gradient of 1 foot per mile. The volume of water that will flow each day through each mile-wide section of the aquifer, therefore, is the product of the hydraulic gradient, in feet per mile, and the coefficient of transmissibility. The coefficient of storage is defined as the volume of water the aquifer releases from or takes into storage per unit surface area of the aquifer per unit change in the component of head normal to that surface. The coefficient may be expressed as the fraction of a cubic foot of water that is discharged from each vertical column of the aquifer having a base 1 foot square as the water level is lowered 1 foot. Under water-table conditions, the coefficient of storage is approximately equal to the specific yield, which is the ratio of the volume of water a saturated material will yield by gravity to its own volume.

Five pumping tests were made in February and March 1954 at wells owned by the city of El Paso. Water-level measurements were made periodically for several hours prior to each test. The wells were then pumped for about 24 hours at a constant rate of discharge. Water-level measurements were made frequently during the pumping period and for about 24 hours after pumping ceased. During the pumping test on wells R-29 and R-34 water-level measurements were made also in nearby irrigation wells. Hydrographs for the 24-hour tests at wells R-29, R-34, R-56, and V-7 are shown in figures 14, 15, 16, and 17. The test at well V-41 was limited to 4 hours because the well had to be returned to service.

The drawdown curves for the observation wells and the recovery curves for all the wells were analyzed by means of the Theis (1935) nonequilibrium formula to determine the coefficients of transmissibility and storage. The formula assumes that the aquifer is infinite in areal extent, that it is homogeneous and isotropic, that its transmissibility is the same at all places and at all times, that it is bounded above and below by impermeable beds, and that the discharge well penetrates the entire thickness of the aquifer. It assumes also that the coefficient of storage is constant, and that water is removed from storage instantaneously with decline in head. In spite of the restricting assumptions on which it is based, the non-equilibrium formula has been widely and successfully used in predicting aquifer performance.

The coefficients of transmissibility obtained from the pumping tests are given in table 4. The coefficient of transmissibility varies over rather wide limits, ranging from 38,000 at well R-56 to 164,000 gallons a day per foot at well R-29. This range was to be expected, as the bolson deposits are a heterogeneous mass of sand, gravel, and clay. In fact, the actual range may be somewhat greater because the sands are thicker and coarser near the Franklin Mountains west of well R-29.

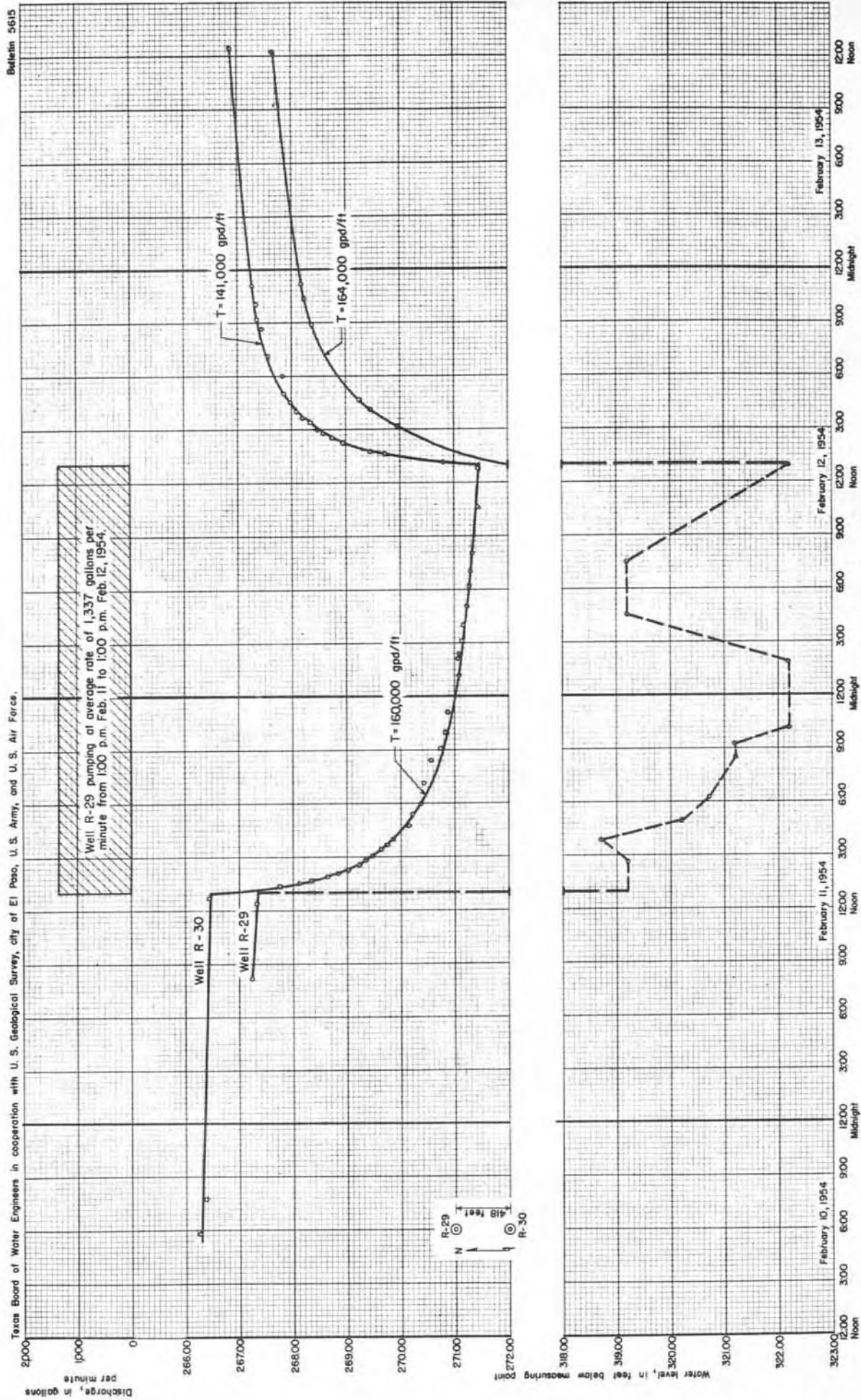


FIGURE 14.- Pumping test at well R-29, Hueco bolson.



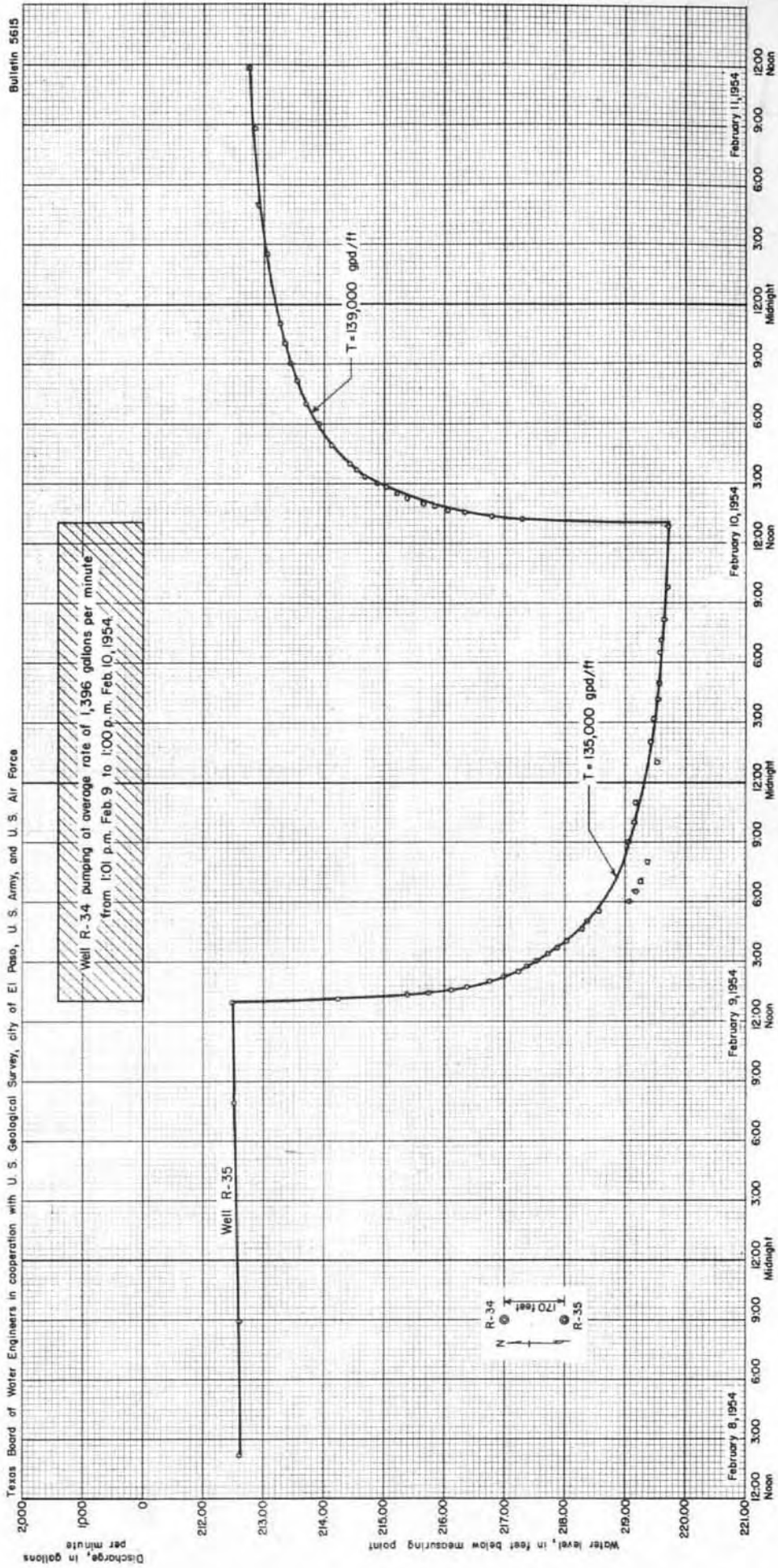


FIGURE 15.- Pumping test of well R-34, Hueco bolson.

Texas Board of Water Engineers in cooperation with U. S. Geological Survey, city of El Paso, U. S. Army, and U. S. Air Force.

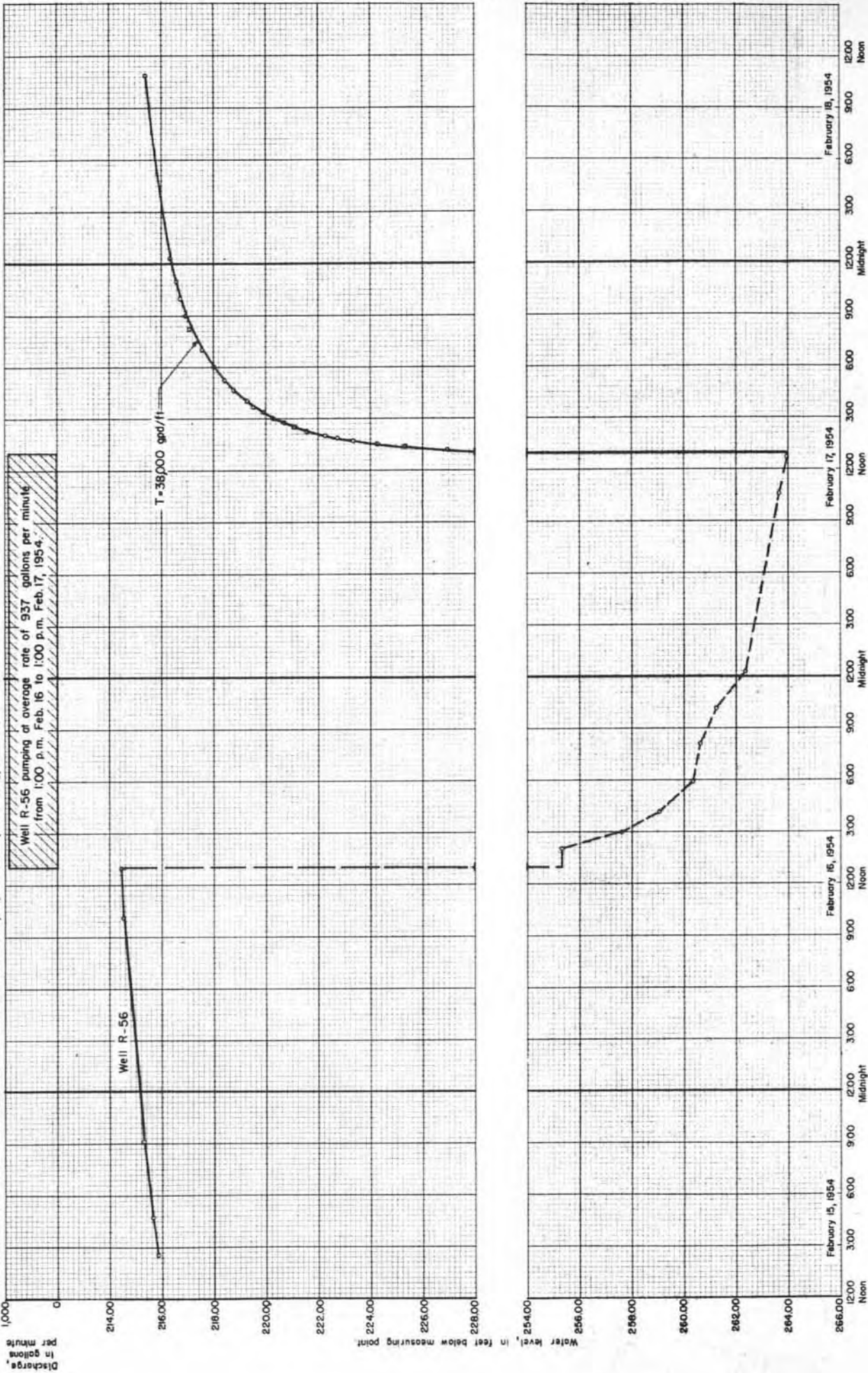


FIGURE 16.-Pumping test at well R-56, Hueco bolson.

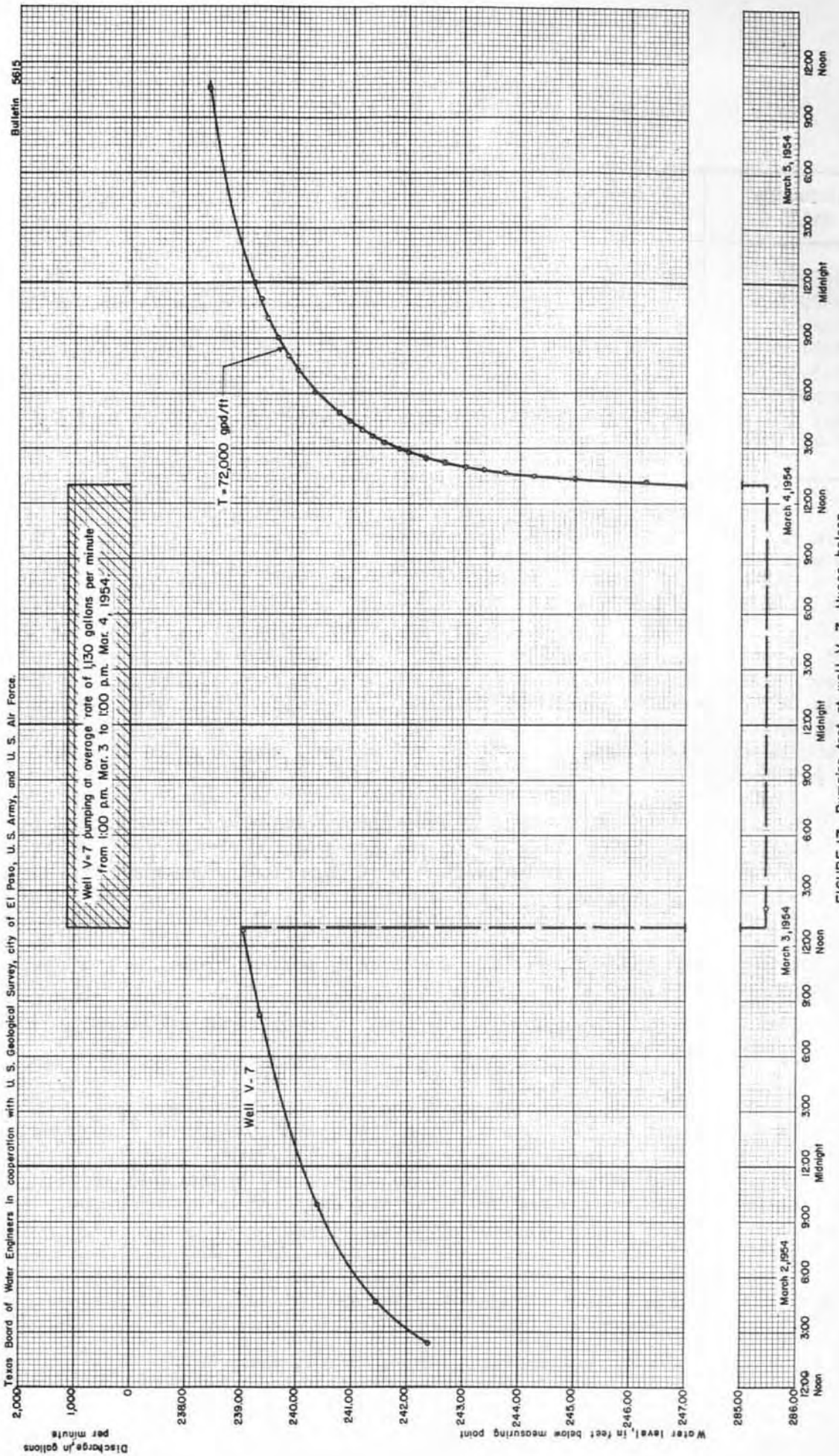


FIGURE 17.- Pumping test at well V-7, Hueco bolson.

Table 4.- Results of pumping tests in the Hueco bolson.

Discharge well	Observation well	Limb of hydrograph analyzed	Transmissibility (gpd/ft.)
R-29	R-29	Recovery	164,000
R-29	R-30	Drawdown	160,000
R-29	R-30	Recovery	141,000
R-34	R-35	Drawdown	135,000
R-34	R-35	Recovery	138,000
R-56	R-56	Recovery	38,000
V-7	V-7	Recovery	72,000
V-41	V-41	Recovery	91,000

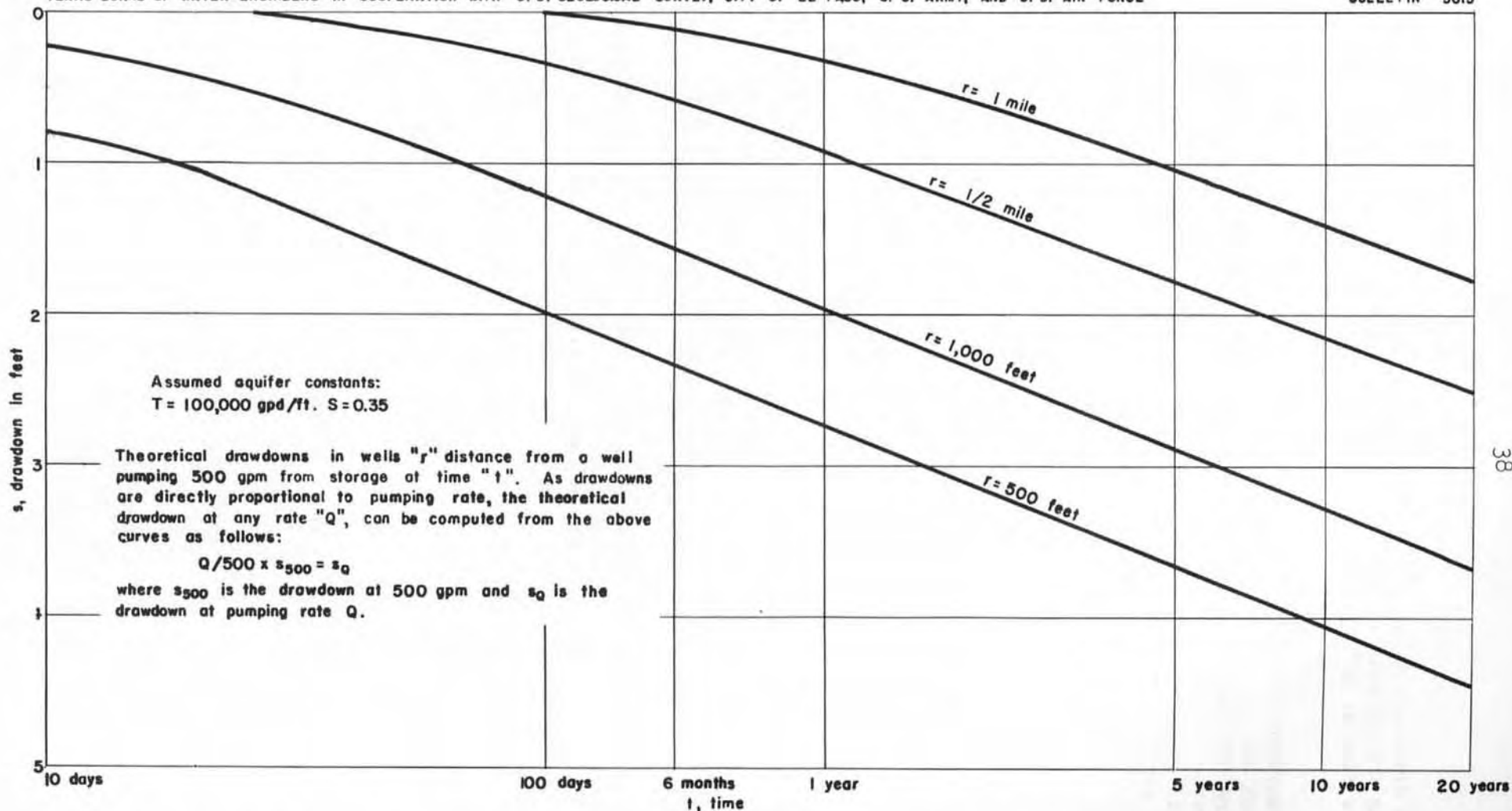
Sundstrom (1945) made a pumping test at Fort Bliss on wells V-27 and V-29 where he obtained coefficients of transmissibility of 52,000 and 56,000 gallons a day per foot, respectively. He also used the nonequilibrium formula to analyze the data from a pumping test made by Sayre and Livingston (1945) in the southern part of the Mesa well field. The coefficients of transmissibility ranged from 60,000 in an unused airlift well (not included in this report) to 108,000 gpd per foot in wells V-2 and V-5. Additional tests in the artesian area of the Hueco bolson underlying the El Paso Valley are described by Scalapino (1949). On the basis of the many pumping tests that have been made, it is reasonable to assume that the average coefficient of transmissibility for the fresh-water sediments of the Hueco bolson as a whole is in the general magnitude of 100,000 gallons a day per foot.

The coefficient of storage of beds under water-table conditions cannot be determined accurately by means of short-term pumping tests. The water drains slowly from the saturated material and a long period of pumping is required to obtain accurate results. The fluctuations in water levels in observation wells on the Mesa show that the water is under water-table conditions; thus the storage coefficient is approximately equal to the specific yield. The specific yield of sand samples from three test wells was determined by Sayre and Livingston (1945, p. 29) to average about 35 percent.

#### Application of results

The theoretical effects of extensive artificial recharging in the Montana well field were determined by Scalapino (1949) and Sundstrom (1952) using transmissibility and storage coefficients determined by pumping tests in the well field. Predictions of future water levels that are summarized in this report are based on estimated average transmissibility and storage coefficients, and should be considered to be of a much more general nature.

The theoretical drawdown, under assumed conditions, at various distances from a well pumping continuously for given periods of time is shown in figure 18. Estimates of increased pumping lift for any well can be made by adding



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FIGURE 18.- Theoretical drawdown at various distances from a pumped well for given periods of time.

together the drawdown effects of surrounding wells. The same curves may be used in estimating the effects of recharge wells; in figure 18 the abscissa would then represent the rise in water levels caused by a well recharging at 500 gallons per minute.

If the assumed coefficients of transmissibility and storage, 100,000 gallons a day per foot and 0.35, respectively, are in the correct order of magnitude, wells yielding 500 gallons per minute could be spaced  $\frac{1}{2}$  mile apart without any serious increase in pumping lifts due to mutual interference. More detailed planning would require additional pumping tests in the immediate areas concerned. For example, areas having smaller coefficients of transmissibility and storage would require larger spacing of wells or smaller yields for a given result.

### Recharge to the Hueco Bolson

#### Natural recharge

The principal areas of recharge in the Hueco bolson in the order of their importance are (1) the alluvial fans at the base of the Franklin and Organ Mountains, and (2) the depressions on the bolson surface in which runoff collects. On the broad flat areas of the bolson the downward percolation of precipitation is retarded by the caliche layers close to the land surface. Evapotranspiration consumes nearly all the precipitation, leaving only a negligible quantity of water to reach the water table. The conditions necessary for effective recharge are (1) a concentration, by drainageways of storm runoff in an area where the water may percolate into the ground rapidly enough to get below the root zone of plants, and (2) the absence or fracturing of the caliche. In the Hueco bolson such areas of recharge are limited to the alluvial fans near the mountains and to the depressions on the bolson where the caliche beds are absent or discontinuous.

The rate of recharge to the Hueco bolson has been estimated in previous reports by assuming that the volume of recharge was approximately equal to the difference between the volume of water pumped and the computed volume removed from storage on the Mesa. Recharge rates computed for periods between 1936 and 1944 ranged from 15,000,000 to 16,600,000 gallons per day. Data collected since 1944 are insufficient to refine these estimates. A fact not mentioned in previous reports is that a part of the apparent recharge is salvaged natural discharge to the Rio Grande River; that is, the water withdrawn from wells includes in part water that would otherwise be discharged to the river.

#### Artificial recharge

The principal conclusions presented by Sundstrom (1952, p. 2-3) as the result of recharge tests in the Lower Valley are as follows:

1. In the Montana well field, treated surface water could be injected into four wells spaced 1,500 feet apart at a total rate of about 6 million gallons a day for an indefinite period.

2. In the Mesa well field, where water occurs under water-table conditions and the loss in storage due to pumping is estimated at 29 billion gallons of water since 1946, treated surface water could be injected at many times the rate possible in the Montana well field.
3. Experimental artificial recharge in the Montana well field since 1949 resulted in a reduction in the chloride content of the ground water in the vicinity of the well (city well 4) used for the experiments. Continued large-scale recharge over a long period would be required to determine the effect on the encroachment of salty water into the ground-water reservoir as a whole, but it is reasonable to assume that the present encroachment would be retarded and, in some places at least, halted altogether."

Because of the larger storage capacity and available rates of recharge of aquifers beneath the Mesa, a recharging program on the Mesa would be far more effective than one in the Lower Valley. Extensive recharging in the Lower Valley would cause wells in downtown El Paso to flow, which would be a problem of considerable concern. Extensive recharging also would require higher heads at the injection wells in the Lower Valley than would be required for similar injection rates in wells on the Mesa. A disadvantage of a recharging program for wells on the Mesa, however, is that water must be lifted about 200 feet above the Lower Valley floor.

Excluding the use of wells, few methods of artificial recharge would be practicable in the Hueco bolson. Spreading of Rio Grande water does not appear feasible because of the combination of arid climate and tight subsoils in the areas accessible for spreading water from that stream. Spreading of runoff from the arroyos along the mountain front, however, does appear to be worthy or consideration. A system of ditches and/or detention dams that would accelerate the natural rate of recharge and prevent storm flow from going beyond the natural-recharge areas should serve to retard erosion and increase recharge to the bolson deposits.

#### Ground Water in Storage

##### Quantity

The saturated thickness of the deposits in the Hueco bolson that contain fresh water is shown by 100-foot contours on the isopachous map in figure 19. Computations indicate that the volume of saturated material west of the 100-foot contour in that part of the area in Texas is at least 31,600,000 acre-feet and in the past in New Mexico is at least 24,800,000 acre-feet.

Sands and gravels compose the permeable sediments that will yield water to wells. The thickness and areal distribution of the sands and gravels saturated with fresh water in the Hueco bolson is shown by 100-foot contours in figure 20. Computations based on figure 20 indicate that sand and gravel constitute about 70 percent of the total fresh-water-bearing sediments. This percentage

probably is too large because the base of the fresh water could not be determined where it occurred in clay. Using the data from figure 20 as the best that are available, however, the volumes of saturated sand and gravel containing fresh water west of the 100-foot contour in that part of the area in Texas is at least 21,200,000 acre-feet and in the part in New Mexico at least 17,600,000 acre-feet.

Assuming an average specific yield of 35 percent for the bolson deposits, it is estimated that west of the 100-foot contour line on figure 20 the Hueco bolson in Texas contains about 7.4 million acre-feet of theoretically recoverable water having a chloride content of less than 250 parts per million. West of the 100-foot contour line in New Mexico the Hueco bolson contains about 6.2 million acre-feet of water that is theoretically recoverable. These estimates are conservative to some extent because some of the test wells did not reach salt water, the area of deepest fresh water near the mountains was not thoroughly explored, the quantity in storage where the thickness of water-bearing material is less than 100 feet was not considered, and no consideration was given to water that might drain the fine-grained deposits such as clay and silt. On the other hand, the estimate may be liberal because 35 percent is a rather high value for specific yield.

By proper-well field planning at least 50 percent of the fresh water in storage probably could be recovered before it became so contaminated as to be usable for public supply. On the basis of 50-percent recovery, 30 million gallons per day could be withdrawn from storage for a period of 110 years. If half the amount pumped were replaced by recharge (see p. 68) 30 million gallons per day should be pumped for 220 years. Any further increase from artificial recharge, of course, would extend this period proportionately.

Sufficient data are not available to determine the volume of water of inferior quality (250 to 750 parts per million chloride) in storage in the New Mexico part of the area and only a rough estimate can be made of the volume in storage in Texas. The data indicate that at least 3 to 4 million acre-feet of inferior water is stored in the Hueco bolson in Texas, and that it is about evenly divided between water containing 250 to 500 parts per million and water containing 500 to 750 parts per million of chloride.

The computations for the amount of fresh water in storage are more accurate for the Texas than the New Mexico part of the bolson, where only a small number of widely spaced test wells were drilled. Additional test drilling, especially near the Organ Mountains where the fresh-water-bearing materials appear to be thickest, will be necessary to determine accurately the volume of fresh water in storage in the Hueco bolson in New Mexico.

A small amount of additional test drilling in the Texas portion of the bolson is needed to establish more accurately the volume of fresh water in storage. Test wells are needed particularly in the area between the Military Highway and the faulted east edge of the Franklin Mountains (pl. 1). Almost 600 feet of fresh water-bearing sands and gravels were encountered in well R-28, and it is believed that similar thicknesses may occur in much of the area west of the Military Highway. Conceivably as much as 1 to 2 million acre-feet of fresh water may be in storage in this area, but this can be determined only by test drilling.



## Recovery

Only a small part of the total quantity of water in storage is available to the present well system. Unless additional wells are developed throughout the area of fresh water, over pumping may result in the contamination of the existing wells. The amount and rate of movement of salt water toward the wells will depend on the rate and distribution of the withdrawals of the fresh water. If a well is pumped at a high rate, a cone of salt water may move into the fresh-water sands (fig. 21). The same quantity of water could be removed by a group of wells pumped at low rates with less danger of salt-water contamination.

As fresh ground water is removed from storage, it will be replaced in part also by salt water moving in laterally from the east. If wells are pumped at excessive rates, the salt-water contamination will occur more rapidly. On the other hand, the salt water-fresh water interface will move in more slowly on a broader front if the withdrawals are made from a large number of wells pumped at low rates.

It is suggested that a flexible long range plan of development be formulated which will include the following:

1. A continuing type of investigation should be established. This would include observations of water levels, collection of pumpage records and well logs, collection of water samples for chemical analysis, and collection of other pertinent well records. The data should be analyzed at intervals frequent enough to enable prompt adjustment of the program development, as necessary.
2. Planning tentative gridwork of well locations ahead of time would facilitate orderly development.
3. In accordance with the principles of salt-water encroachment outlined in this report, all wells should be located and pumped in such a manner as to minimize the danger of contamination.
4. Before a new production well is constructed, it will be necessary to drill a pilot hole to locate accurately the depths of beds to be screened and the depth to salt water.
5. Pumping tests should be made at all new wells to add to the available information on hydraulic characteristics of the aquifer and to aid in planning pumping schedules that will enable maximum recovery of the fresh water.

## SUMMARY AND CONCLUSIONS

The principal water-bearing formation in the Hueco bolson consists of the bolson deposits. The deposits consist of alternating layers of clay and sand or gravel that are laterally discontinuous. A layer of caliche, which lies a few feet below the surface in most of the bolson, greatly retards the downward percolation of water. The even surface of the bolson slopes very gently toward the west, and is broken only by a few asymmetrical depressions that are unrelated to drainage. Because of the low rainfall, the high rate of evapotranspiration, and the tight layer of caliche near the surface of the bolson, there is

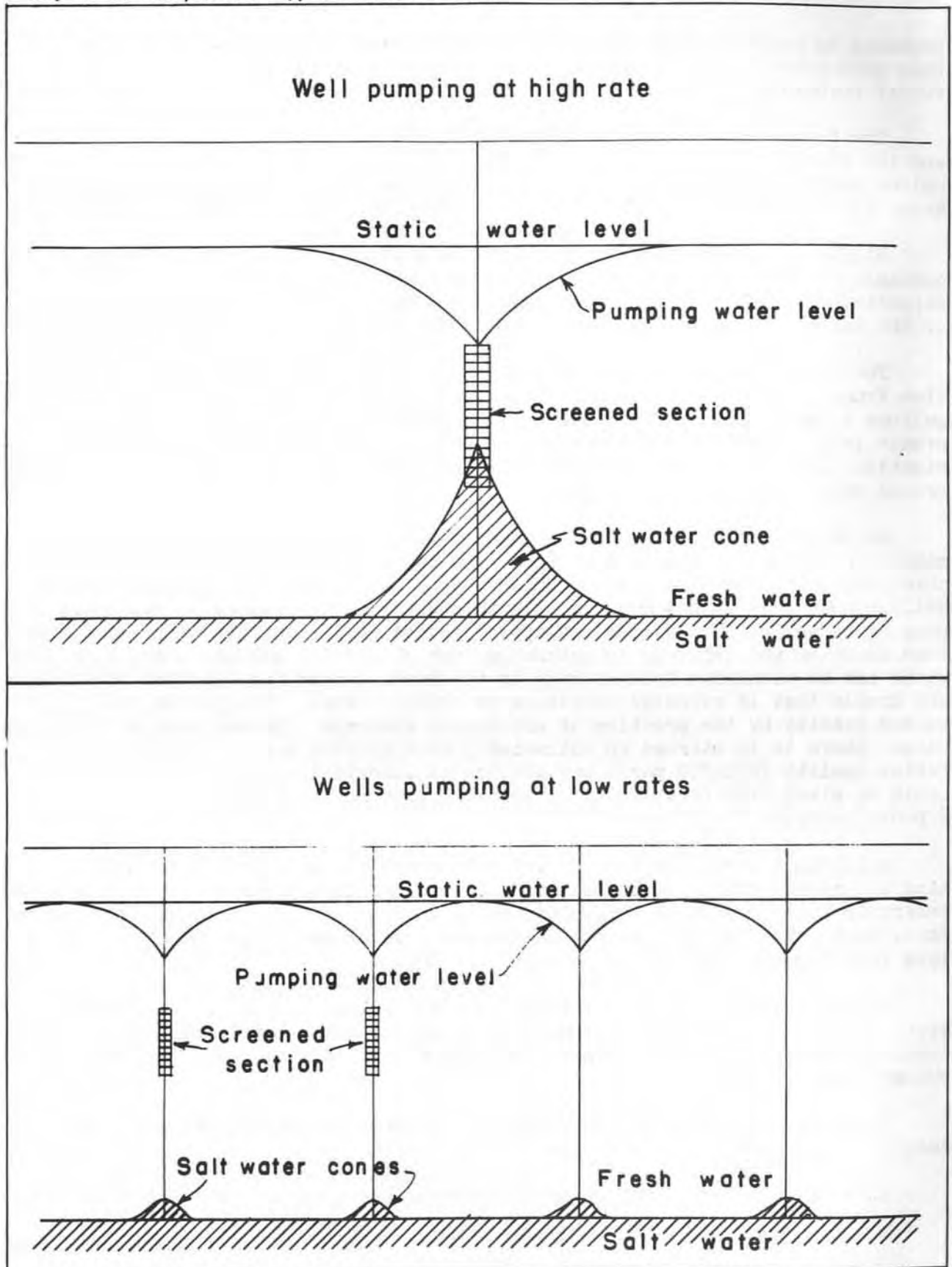


FIGURE 21.-Effects of salt-water contamination of a single heavily pumped well and of several wells pumping at a low rate.

probably no appreciable recharge to the bolson deposits except in the depressions that pond water where the caliche bed is discontinuous, and in the areas of heavy runoff bordering the mountains where highly permeable materials are present.

The Hueco bolson is divisible into two general areas: The El Paso Valley and the Mesa. Fresh water occurs under artesian head in El Paso valley where the bolson deposits underlie more recent alluvial deposits. Water-table conditions exist in the Mesa, the surface of which lies about 200 feet above the valley.

Highly mineralized water, known as "salt water," is a potential source of contamination to the fresh-water body. Salt water exists in the valley alluvial deposits, beneath the fresh water throughout the bolson, and in the eastern part of the bolson deposits.

The average annual use of ground water in the El Paso area (excluding irrigation from shallow wells in the El Paso valley) increased from less than 2 million gallons a day in 1906 to about 28 million gallons a day in 1954. The rapid increase in population of the area in recent years, the increasing interest in irrigation, and the limited supply of surface water indicates that the demand for ground water will continue to grow.

An estimate based on data included in this report indicates that at least 7.4 million acre-feet of fresh water (water having less than 250 parts per million of chloride) is stored in the Hueco bolson deposits in Texas and an additional 6.2 million acre-feet in New Mexico. All this water theoretically is available for pumping by wells, but it does not appear economically feasible to recover more than about 50 percent. It is estimated that 30 million gallons a day of ground water can be withdrawn from storage in the Hueco bolson for a period of 110 years, and double that if recharge continues at current rates. The period could be extended readily by the practice of artificial recharge. In addition to the fresh water, there is in storage an estimated 3 to 4 million acre-feet of water of inferior quality (250-750 parts per million of chloride). Some of this doubtless could be mixed with fresh water in suitable proportions to render it usable for a public supply.

Although a large quantity of water is available to the area, detailed planning and proper development will be necessary to get maximum recovery from the reservoir without serious contamination of the supply. It is suggested, therefore, that a long-range plan for ground-water development include a continuing-type investigation that would comprise the following:

1. Continue collection of basic data to include records of well construction, well performance, well production, periodic water-level measurements, chemical analyses of water samples, and quantities of water injected into recharge wells.

2. Locate, construct, and pump wells in such a manner as to minimize the danger of salt-water contamination.

3. Construct spreading works to increase the quantity of recharge in the

permeable areas bordering the mountains. Construction should be preceded by an investigation to determine the areas and methods best suited for artificial recharge.

4. Make further studies to determine feasibility of recharging through wells, especially in the Mesa area.

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Table 5.- Records of wells in Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico

Method of lift: B, butane, C, cylinder; Cf, centrifugal; E, electric; G, gasoline; H, hand; J, jet; N, none; O, oil or Diesel; T, turbine; W, windmill. Number indicates horsepower.

Use of water: D, domestic; Ind, industrial; Irr, irrigation; N, none; P, public supply; S, stock.

Well	Owner	Driller	Date completed	Altitude of land surface (ft.)	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift	Use of water	Remarks
							Below land surface datum (ft.)	Date of measurement			
*F-1	U. S. Geological Survey	B. & W. Drilling Co. of Texas	1953	3937.4	1,200	--	165.1	Apr. 4, 1953	N	N	Test well. Electric log and drill-stem tests indicate fresh-water sands extend to 1,010 ft. See sample and electric logs.
*F-2	U. S. Army	--	Old	a/3946	181	5	152.8	Apr. 23, 1936	C, W	N	Well filled.
*F-3	U. S. Geological Survey	B. & W. Drilling Co. of Texas	1953	4135.7	1,205	--	381.0	June 27, 1953	N	N	Test well. Electric log and drill-stem tests indicate fresh-water sands extend to bottom of well. See sample and electric logs.
F-4	U. S. Army	--	Old	a/4032	--	8	267.7 267.6	Apr. 17, 1936 July 9, 1940	C, W	N	Well filled to about 249 ft below land surface.
*F-5	U. S. Geological Survey	B. & W. Drilling Co. of Texas	1953	4015.2	580	--	256.7	Apr. 4, 1953	N	N	Test well. Electric log and drill-stem tests indicate fresh-water sands extend to 360 ft. See sample and electric logs.
*G-1	do.	do.	1953	4080.7	650	--	287.5	Mar. 29, 1953	N	N	Test well. Electric log and drill-stem tests indicate no fresh-water sands. See sample and electric logs.
*G-2	do	do	1953	4070.5	1,209	--	312.7	July 14, 1953	N	N	Test well. Electric log and drill-stem tests indicate fresh-water sands extend to 500 ft. See sample and electric logs.
H-1	--	--	--	--	--	--	--	--	C, W	N	
H-2	--	--	--	--	--	--	--	--	C, W	N	
*K-13	U. S. Geological Survey	B. & W. Drilling Co. of Texas	1953	4200.1	977	3	381.4	May 31, 1954	N	N	Test well. Electric log and drill-stem tests indicate no fresh-water sands. Bedrock encountered at 960 ft. Three-inch casing to 768 ft, slotted from 678 to 708 ft, and from 738 to 768 ft. See sample and electric logs.

a/ Altitude determined by aneroid barometer. Other altitudes determined by instrumental leveling.

b/ Water level reported by owner or driller.

\* For chemical analyses see table 8.

Table 5.- Records of wells in Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico-- Continued

Well	Owner	Driller	Date completed	Altitude of land surface (ft.)	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift	Use of water	Remarks
							Below land surface (ft.)	Date of measurement			
*K-14	U. S. Geological Survey	B. & W. Drilling Co. of Texas	1954	4167.7	902	3, 4	349.3 349.3	Jan. 23, 1954 Apr. 16, 1954	N	N	Test well. Electric log and drill-stem tests indicate fresh-water sands extend to bottom of well. Bedrock encountered at 890 ft. Three-inch casing to 520 ft. 4-in. from 520 to 610 ft. slotted from 570 to 610 ft. See sample and electric logs.
*K-15	U. S. Army	--	1923	4077.4	798	8	330.6 330.5	Apr. 17, 1936 May 13, 1953	T.G, 95	D	Casing: 8-in. from surface to 794 ft. slotted from 474 to 794 ft. See driller's log.
*K-16	U. S. Geological Survey	B. & W. Drilling Co. of Texas	1953	4102.3	1,085	3	356.7	Jan. 7, 1954	N	N	Test well. Electric log and drill-stem tests indicate fresh-water sands extend to 870 ft. Three-inch casing to 544 ft. slotted from 526 to 544 ft. See sample and electric logs.
*L-1	do	do	1953	4051.6	1,208	--	300.3	Mar. 31, 1953	N	N	Test well. Electric log and drill-stem tests indicate no fresh-water sands. See sample and electric logs.
*L-2	do	do	1953	4090.4	1,686	--	352.4	May 31, 1953	N	N	Test well. Electric log and drill-stem tests indicate fresh-water sands extend to 1,250 ft. See sample and electric logs.
*L-3	U. S. Army	--	Old	4074.7	462	6	336.0 335.9	Apr. 16, 1936 Mar. 8, 1954	N	N	Test well. Electric log and drill-stem tests indicate fresh-water sands. See sample and electric logs.
*L-4	U. S. Geological Survey	B. & W. Drilling Co. of Texas	1953	4086.4	950	--	361.3	Apr. 27, 1953	N	N	Test well. Electric log and drill-stem tests indicate fresh-water sands. See sample and electric logs.
*L-5	U. S. Army	--	Old	4059.8	350	--	325.6 323.4	June 23, 1937 Mar. 9, 1954	C,W	N	Test well. Electric log and drill-stem tests indicate fresh-water sands. See sample and electric logs.
*L-6	U. S. Geological Survey	B. & W. Drilling Co. of Texas	1953	4068.0	690	--	334.4	Apr. 11, 1953	N	N	Test well. Electric log and drill-stem tests indicate fresh-water sands. See sample and electric logs.
L-7	U. S. Army	Layne-Texas Co. Ltd.	1943	--	439	10%, 4%	b/300	1943	T,G, 65	D	Casing: 10½-in. from surface to 331 ft. 8 5/8-in. screen from 331 to 354 ft. 4½-in. screen from 354 to 424 ft. 4½-in. from 424 to 434 ft. See driller's log.
*L-8	do	do	1944	4029.4	440	10, 12	293.0	Mar. 10, 1954	T,G, 58	D	Casing: 10-in. from surface to 320 ft. 12-in. from 320 to 402 ft. 12-in. screen from 402 to 440 ft. Gravel-walled. See driller's log.
L-9	W. W. Threadgill	--	--	4094.7	400	6	325.6	June 23, 1937	C,G	D,S	
L-10	W. F. Blythe	--	Old	4185.0	520	6	381.9	Mar. 9, 1954	C,G	S	Casing: 6-in. from surface to 90 ft. Limestone reported from 90-ft to bottom of well.



Table 5.- Records of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--Continued

Well	Owner	Driller	Date completed	Altitude of land surface (ft.)	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift	Use of water	Remarks
							Below land surface datum (ft.)	Date of measurement			
*L-11	James Blythe	--	1933	4032.2	340	6	319.7	Mar. 9, 1954	C, W	S	Test well. Electric log and drill-stem tests indicate fresh-water sands extend to 680 ft. Three-inch casing to 525 ft. slotted from 480 to 495 ft. and from 510 to 525 ft. See sample and electric logs.
*L-12	U. S. Geological Survey	B. & W. Drilling Co. of Texas	1953	4045.8	1,209	3	323.6	Jan. 15, 1954	N	N	
*L-13	Prescott Colquitt	--	--	4043.9	400	6	327.5	June 16, 1954	C, W	S	Test well. Electric log and drill-stem tests indicate no fresh-water sands. See sample and electric logs.
M-1	--	--	--	4101.4	--	8	355.3	Mar. 23, 1954	C, W	N	
*M-2	U. S. Geological Survey	B. & W. Drilling Co. of Texas	1953	3998.7	735	--	270.0	Apr. 17, 1953	N	N	
M-3	--	--	--	3970.5	--	--	--	--	C, W	S	
M-4	U. S. Army	R. F. Casteel	1930	a/4072	450	--	b/350	1930	C, W	N	
*M-5	U. S. Geological Survey	B. & W. Drilling Co. of Texas	1953	4061.2	880	3	347.9	Jan. 6, 1954	N	N	Test well. Electric log and drill-stem tests indicate no fresh-water sands occur. Three-inch casing to 435 ft. slotted from 425 to 435 ft. See sample and electric logs.
M-6	Southern Pacific Railroad	Layne & Bowler Co.	1917	3999.8	400	18, 13	283.6 283.4	June 1, 1936 Jan. 7, 1954	C, --	N	
*M-7	do	--	1902	--	332	6	--	--	--	--	Casing: 6-in. from surface to 320 ft., 6-in. screen from 320 to 332 ft.
M-8	F. M. Reeves	--	Old	4016.2	320	6	292.6 290.1	Feb. 8, 1937 July 11, 1938	C, W	N	
N-1	U. S. Geological Survey	B. & W. Drilling Co. of Texas	1953	--	945	--	--	--	N	N	Test well. No water-bearing sands encountered. Bedrock encountered at 895 ft. See sample and electric logs.
N-2	--	--	--	--	500 <sup>+</sup>	--	500 <sup>+</sup>	--	C, --	N	
N-3	--	A1 Parker	--	--	1,000	--	--	--	N	N	Limestone reported at 480 ft. and very porous zone at 610 ft. Reported no water-bearing sands to depth of 650 ft. where igneous rock was encountered. Well filled.
N-4	--	do	--	--	700	--	--	--	N	N	
N-5	--	--	--	--	--	--	--	--	N	N	

Table 5.- Records of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico.--Continued

Well	Owner	Driller	Date completed	Altitude of land surface (ft.)	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift	Use of water	Remarks
							Below land surface datum (ft.)	Date of measurement			
*N-6	U. S. Geological Survey	B. & W. Drilling Co. of Texas	1953	4094.6	820	--	447.3	June 21, 1953	N	N	Test well. Electric log and drill-stem tests indicate no fresh-water sands. See sample and electric logs.
*N-7	Navar Brothers	--	--	4095.3	300	--	176.0 162.0	Aug. 9, 1935 Apr. 9, 1954	C, W	N	Water reported hot and highly mineralized.
N-8	Adelberto Navar	--	Old	a/4097	--	--	452.9 411.7	July 19, 1938 June 26, 1941	N	N	Test well. Electric log and drill-stem tests indicate fresh-water sands extend to 700 ft. See sample and electric logs.
*R-1	U. S. Geological Survey	B. & W. Drilling Co. of Texas	1953	4125.4	1,200	--	379.0	July 22, 1953	N	N	Casing: 4-in. to 520 ft, slotted from 419 to 520 ft. See driller's log.
*R-2	City of El Paso	C. R. Jensen	1940	4041.2	1,018	4	317.7 318.4	May 27, 1940 Jan. 7, 1954	N	N	Test well. Electric log and drill-stem tests indicate fresh-water sands extend to 380 ft. See sample and electric logs.
*R-3	U. S. Geological Survey	B. & W. Drilling Co. of Texas	1953	4060.8	950	--	347.2	May 26, 1953	N	N	Test well. Electric log and drill-stem tests indicate fresh-water sands extend to 520 ft. See sample and electric logs.
*R-4	do	do	1953	4046.0	825	3	331.1	Jan. 7, 1954	N	N	Test well. Electric log and drill-stem tests indicate fresh-water sands extend to 520 ft. See sample and electric logs.
R-5	Price's Dairy	--	--	4059.3	--	--	--	---	C, W	S	Pump set at 540 ft.
R-6	El Paso Natural Gas Co.	George McKenzie	1951	4030.3	750	--	b/340	Oct. 1951	T, E, 25	Ind	See driller's log.
R-7	do	--	--	4031.2	630	--	340.2	June 12, 1953	T, E, 25	Ind	Test well. Drill-stem tests indicate fresh-water sands extend to 510 ft. Casing: 4-in. from surface to 446 ft, 4-in. screen from 446 to 466 ft. See driller's log.
R-8	do	Folk & Bassett	1947	--	771	10	--	--	N	Ind	Test well. Casing: 4-in. from surface to 567 ft; slotted from 342 to 381, from 440 to 461, from 474 to 492, and from 501 to 524 ft. See driller's log.
R-9	Price's Dairy	--	Old	4007.5	360	5	291.6 298.1	Aug. 9, 1935 Jan. 7, 1954	C, W	S	Test well. Drill-stem tests indicate fresh-water sands extend to 510 ft. Casing: 4-in. from surface to 446 ft, 4-in. screen from 446 to 466 ft. See driller's log.
*R-10	City of El Paso	C. R. Jensen	1940	4048.1	788	4	338.7	June 21, 1940	N	N	Test well. Casing: 4-in. from surface to 567 ft; slotted from 342 to 381, from 440 to 461, from 474 to 492, and from 501 to 524 ft. See driller's log.
*R-11	do	do	1940	4046.2	1,202	4	335.6 339.5	Apr. 23, 1940 Jan. 7, 1954	N	N	Test well. Casing: 4-in. from surface to 567 ft; slotted from 342 to 381, from 440 to 461, from 474 to 492, and from 501 to 524 ft. See driller's log.

Table 5.- Records of wells in the Hueco bolson area, El Paso County, Texas,  
and Doña Ana and Otero Counties, New Mexico--Continued

Well	Owner	Driller	Date completed	Altitude of land surface (ft.)	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift	Use of water	Remarks
							Below land surface datum (ft.)	Date of measurement			
R-12	Wholesome Dairy	--	--	4247.3	700	10	b/508	June 1954	C,W	S	
*R-13	U. S. Geological Survey	B. & W. Drilling Co. of Texas	1953	3973.7	1,200	--	271.2	May 25, 1953	N	N	Test well. Electric log and drill-stem tests indicate fresh-water sands extend to 900 ft. See sample and electric logs.
R-14	J. K. Shearman	Layne-Texas Co. Ltd.	1942	3991.1	515	8, 6	286.3 288.5	Jan. 23, 1942 Apr. 7, 1953	T,E, 25	D,S, Irr	Casing: 8 5/8-in. from surface to 342 ft; 6 5/8-in. from 342 to 515 ft, 6 5/8-in. screen from 342 to 386 ft, and from 453 to 515 ft. Pump set at 320 ft. Yield reported 150 gpm. See driller's log.
*R-15	U. S. Army	do	1952	3972.5	450	6-5/8	274.0 274.6	Feb. 29, 1952 Jan. 6, 1954	N	N	Casing: 6 5/8-in. from surface to 450 ft, slotted from 320 to 360 ft. See electric and driller's logs.
*R-16	do	do	1952	3972.3	550	6-5/8	273.4 274.1	Feb. 29, 1952 Jan. 6, 1954	N	N	Casing: 6 5/8-in. from surface to 550 ft, slotted from 510 to 550 ft. See electric and driller's logs.
*R-17	City of El Paso	C. R. Jensen	1940	3976.5	990	--	274.5	Sept. 27, 1940	N	N	Test well. Drill-stem tests indicate fresh-water sands extend to 445 ft. See driller's log.
*R-18	do	do	1940	3962.0	957	--	265.9	Nov. 4, 1940	N	N	Test well. Drill-stem tests indicate fresh-water sands extend to 700 ft. See driller's log.
R-19	Likins, Foster & Associates	--	1950	--	322	14	b/216	--	T,D	Irr	Casing: 14-in. from surface to 322 ft, slotted from 222 to 322 ft. Pump set at 290 ft. Yield reported 1,300 gpm.
*R-20	City of El Paso	C. R. Jensen	1940	3911.6	1,007	--	210.8	Dec. 12, 1940	N	N	Test well. Drill-stem tests indicate fresh-water sands extend at least to 820 ft. See driller's log.
R-21	Alfredo Avila	--	1953	--	409	8	b/220	1953	T,B	Irr	Casing: 8-in. from surface to 409 ft, slotted from 220 to 409 ft. Pump set at 260 ft. Reported drawdown 10 ft after 60 hours pumping 300 gpm.
*R-22	City of El Paso	H. M. Stanley	1936	3944.0	500	2	244.4 255.0	July 24, 1936 Apr. 19, 1954	N	N	Casing: 2-in. to 400 ft. See driller's log.

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Table 5.- Records of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--Continued

Well	Owner	Driller	Date completed	Altitude of land surface (ft.)	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift	Use of water	Remarks
							Below land surface datum (ft.)	Date of measurement			
*R-23	City of El Paso	Layne-Texas Co. Ltd.	1953	3972.0	1,177	--	288.0	Mar. 25, 1953	T, E	P	Casing: 24-in. to 350 ft, cemented to surface; 18-in. from surface to 467, 12½-in. from 467 to 830, mill slotted from 360 to 820 ft. Pump set at 380 ft. Drawdown 56 ft after 24-hours pumping 1,500 gpm on Mar. 24, 1953. Gravel-walled. Electric log of test well drilled at this location in 1939 to 1,177 ft indicates fresh-water sands extend to 855 ft. See electric and driller's logs of test well.
R-24	Joe Crump	Jim Folk	1948	--	480	--	b/295	--	--	Irr	Pumping equipment not installed. Reported yield 500 gpm.
R-25	do	Wheeler Cass	1953	--	515	12	281.9	Mar. 17, 1954	T, E, S	D	Casing: 12-in. from surface to 515 ft, slotted from 315 to 515 ft. Pump set at 310 ft. Gravel-walled.
R-26	do	do	1950	--	500	14	284.7	Mar. 18, 1954	T, B	Irr	Casing: 14-in. from surface to 500 ft, slotted from 320 to 500 ft. Pump set at 324 ft.
R-27	-- Boyd	do	1951	--	544	16	314.8	Mar. 17, 1954	T, Ng, 160	Irr	Casing: 16-in. from surface to 544 ft. Yield reported 1,000 gpm.
*R-28	U. S. Geological Survey	B. & W. Drilling Co. of Texas	1953	4120.1	1,635	3	423.1	Jan. 7, 1954	N	N	Test well. Electric log and drill-stem tests indicate fresh-water sands extend to 1,260 ft. Three-inch casing to 630 ft, slotted from 610 to 630 ft. See sample and electric logs.
*R-29	City of El Paso	Layne-Texas Co. Ltd.	1952	3942.3	832	24, 18, 12½	258.5 266.3	Jan. 15, 1953 Feb. 11, 1954	T, E	P	Casing: 24-in. from surface to 293 ft, cemented to surface; 18-in. from surface to 431 ft, 12½-in. from 431 to 832 ft, mill slotted from 318 to 830 ft. Electric log of test well drilled at this location in 1939 to 1,206 ft indicates fresh-water sands extend to 922 ft. Pump set at 380 ft. Drawdown 55 ft after 24-hours pumping 1,337 gpm Feb. 12, 1954. See electric and driller's logs of test wells.
R-30	H. A. Geschwind	--	--	--	--	--	259.6 264.3	Jan. 15, 1953 Feb. 10, 1954	T, G	Irr	

Table 5.- Records of wells in the Hueco bolson area, El Paso County, Texas, and Dona Ana and Otero Counties, New Mexico--Continued

Well	Owner	Driller	Date completed	Altitude of land surface (ft.)	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift	Use of water	Remarks
							Below land surface datum (ft.)	Date of measurement			
*R-31	City of El Paso	Layne-Texas Co. Ltd.	1952	3907.9	790	24, 18, 12½	223.6	Jan. 15, 1953	T,E	P	Casing: 24-in. from surface to 240 ft, cemented to surface; 18-in. from surface to 411 ft, 12½-in. from 411 to 790 ft, mill slotted from 301 to 788 ft. Pump set at 380 ft. Drawdown 47 ft after 24-hours pumping 1,515 gpm on Nov. 9, 1952. Gravel-walled. Electric log of test well drilled at this location in 1939 to 1,357 ft indicates fresh-water sands extend to 1,165 ft. See electric and driller's logs of test well.
R-32	L. G. Rogers	-- Prince	1949	--	440	10	228.2	Mar. 17, 1954	T,B	Irr	Casing: 10-in. from surface to 440 ft. Yield reported 450 to 500 gpm.
R-33	City of El Paso	C. R. Jensen	1939	3889.9	1,217	--	--	--	N	N	Test well. Electric log indicates fresh-water sands extend to bottom of well. See electric and driller's logs.
*R-34	do	Layne-Texas Co. Ltd.	1952	3884.9	814	24, 18, 12½	208.4 211.0	Jan. 15, 1953 Feb. 9, 1954	T,E	P	Casing: 24-in. from surface to 262 ft, cemented to surface; 18-in. from surface to 387 ft, 12½-in. from 387 to 814 ft, mill slotted from 300 to 812 ft. Pump set at 360 ft. Drawdown 71 ft after 24-hours pumping 1,396 gpm on Feb. 10, 1954. Gravel-walled. Electric log of test well drilled at this location in 1939 to 1,217 ft indicates fresh-water sands extend to bottom of test well. See electric and driller's logs.
R-35	Jerome Martin	--	1950	--	440	16	211.6	Feb. 8, 1954	T,Ng	Irr	Casing: 16-in. from surface to 440 ft, slotted from 200 to 279 ft, and from 295 to 400 ft. Yield reported 1,400 gpm.
R-36	G. L. Cook	W. L. Cass	--	3936.2	300	6	245.0 264.5	Apr. 14, 1956 Jan. 7, 1954	N	N	Casing: 6-in. from surface to 300 ft.
*R-37	U. S. Geological Survey	B. & W. Drilling Co. of Texas	1954	4094.0	1,220	--	416.6	Sept. 4, 1953	N	N	Test well. Electric log and drill-stem tests indicate fresh-water sands extend to bottom of well, but only 70 ft of water-bearing sand encountered. See sample and electric logs.

Table 5.-- Records of wells in the Hueco bolson area, El Paso County, Texas, and Dona Ana and Otero Counties, New Mexico--Continued

Well	Owner	Driller	Date completed	Altitude of land surface (ft.)	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift	Use of water	Remarks
							Below land surface datum (ft.)	Date of measurement			
*R-38	Restlawn Cemetery	--	1910	--	640	--	213.3 211.7	Aug. 29, 1937 Nov. 8, 1938	--	--	Test well. Electric log indicates fresh-water sands extend to bottom of well. See electric and driller's logs.
*R-39	City of El Paso	C. R. Jensen	1939	3875.4	1,137	--	198.3	Apr. 8, 1939	N	N	Drawdown 51 ft after 24-hours pumping 1,585 gpm in 1941. Gravel-walled. Electric log of test well drilled at this location in 1939 to 1,237 ft indicates fresh-water sands extend to 1,085 ft. See electric and driller's logs of test hole.
*R-40	do	Layne-Texas Co. Ltd.	1941	3879.1	806	24, 16, 13	197.4 210.0	June 25, 1941 Jan. 7, 1954	T, E, 250	P	Casing: 12-in. from surface to 205 ft, 14-in. from 205 to 295 ft, 12-in. from 295 to 500 ft, slotted from 220 to 500 ft. Pump set at 300 ft. Yield measured 660 gpm on Oct. 23, 1951.
R-41	-- Anderson	Al Parker	1951	--	500	14, 12	212.1	Oct. 23, 1951	T, D	Irr	Test well. Casing: 4-in. to 385 ft. Electric log indicates fresh-water sands extend to 1,160 ft. See electric and driller's logs.
R-42	City of El Paso	C. R. Jensen	1939	3882.3	1,257	4	192.7 209.8	June 20, 1939 Jan. 7, 1954	N	N	Yield reported 220 gpm in 1953. See electric log.
R-43	El Paso Natural Gas Co.	Mountain Drilling Co.	1953	--	722	--	--	--	--	Ind	Pump set at 280 ft. Yield reported 100 gpm.
R-44	do	do	1948	--	398	10- 3/8	b/205	Jan. 1948	T, E, 15	Ind	Casing: 20-in. from surface to 400 ft, 16-in. from 400 to 640 ft. Not equipped with pumping plant.
R-45	Jerome Martin	--	1952	--	640	20, 16	--	--	--	Irr	Casing: 24-in. from surface to 249 ft, cemented to surface; 16-in. from surface to 810 ft, 14-in. screen from 312 to 392 ft, 404 to 424 ft, 432 to 482 ft, 514 to 564 ft, 582 to 602 ft, 652 to 692 ft, and 728 to 798 ft. Pump set at 289 ft. Drawdown reported 14 ft pumping 1,200 gpm in 1953. Gravel-walled. See electric and sample logs.
*R-46	U. S. Army	Bassett Drilling Co.	1953	--	820	24, 16	220.4	Mar. 22, 1954	T, E, 100	P	

Table 5.- Records of wells in the Hueco bolson area, El Paso County, Texas,  
and Doña Ana and Otero Counties, New Mexico--Continued

Well	Owner	Driller	Date completed	Altitude of land surface (ft.)	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift	Use of water	Remarks
							Below land surface datum (ft.)	Date of measurement			
R-47	U. S. Army	--	Old	3902.2	400	10	210.4 226.1	Aug. 7, 1935 Jan. 7, 1954	C,W	N	
R-48	do	Bassett Drilling Co.	1953	--	810	24, 16	229.0	Mar. 22, 1954	T,E, 125	P	Casing: 24-in. from surface to 230 ft, cemented to surface; 16-in. from surface to 816 ft, 14-in. screen from 260 to 280 ft, 290 to 400 ft, 452 to 562 ft, 590 to 620 ft, and 660 to 690 ft. Pump set at 300 ft. Drawdown reported 40 ft pumping 1,200 gpm in 1953. Gravel-walled. See electric and sample logs.
*R-49	do	Layne-Texas Co. Ltd.	1952	--	404	3	253.6 254.2	Feb. 27, 1952 Jan. 6, 1954	N	N	Test well. Casing: 3-in. to 400 ft, screen from 390 to 400 ft. See electric and driller's logs.
*R-50	City of El Paso	C. R. Jensen	1941	3932.6	950	4	242.3 243.7	Dec. 13, 1940 Oct. 26, 1942	N	N	Test well. Casing: 4-in. from surface to 603 ft, slotted from 379 to 401, 422 to 442, 479 to 501, 522 to 543, and 582 to 603 ft. Drill-stem tests indicate fresh-water sands extend to at least 770 ft. See driller's log.
R-51	U. S. Army	Bassett Drilling Co.	1953	--	820	24, 16	229.8	Mar. 22, 1954	T,E, 125	P	Casing 24-in. from surface to 230 ft, cemented to surface; 16-in. from surface to 814 ft, 14-in. screens from 270 to 350 ft, 440 to 470 ft, 530 to 550 ft, 580 to 710 ft, and 750 to 790 ft. Pump set at 300 ft. Drawdown reported 33 ft pumping 1,200 gpm in 1953. Gravel-walled. See electric and driller's logs.
*R-52	do	do	1953	--	812	24, 16	220.0	do	T,E, 100	P	Casing: 24-in. from surface to 219 ft, cemented to surface; 16-in. from surface to 810 ft, 14-in. screens from 306 to 506, ft, 552 to 572 ft, 617 to 637 ft, and 696 to 756 ft. Pump set at 289 ft. Drawdown reported 47 ft, pumping 1,200 gpm in 1953. Gravel-walled. See sample and electric logs.

Table 5.- Records of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--Continued

Well	Owner	Driller	Date completed	Altitude of land surface (ft.)	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift	Use of water	Remarks
							Below land surface datum (ft.)	Date of measurement			
*R-53	City of El Paso	Layne-Texas Co. Ltd.	1937	3874.1	800	6	188.4 202.3	Aug. 24, 1937 Jan. 7, 1954	N	N	Test well. Casing: 6-in. from surface to 800 ft, slotted from 195 to 216 ft, 321 to 343 ft, 636 to 679 ft, and 737 to 800 ft. Only 74 ft of water-bearing sand encountered. See driller's log.
R-54	do	do	1937	3869.9	698	--	--	---	N	N	Test well. Estimated only 37 ft of water-bearing sand encountered. See driller's log.
*R-55	do	do	1937	3869.0	830	--	204.0	July --, 1937	N	N	Test well. Drill-stem tests indicate fresh-water sands extend to at least 505 ft. See driller's log.
*R-56	do	do	1941	3873.6	909	24, 16, 13	207.1 211.0	June 21, 1941 Jan. 7, 1954	T, E	P	Electric log of test well drilled at this location in 1939 to 1,867 ft indicates fresh-water sands extend to 1,005 ft. See electric and driller's logs of test hole.
R-57	U. S. Army	--	Old	a/3942	--	8	253.4 269.4	Oct. 4, 1950 Jan. 6, 1954	N	N	Test well. Electric log and drill-stem tests indicate fresh-water sands extend to 285 ft. See electric and sample logs.
*S-1	U. S. Geological Survey	B. & W. Drilling Co. of Texas	1953	3994.7	800	--	270.0	Mar. 21, 1953	N	N	Filled.
*S-2	Navar Brothers	--	Old	4075.2	400	5	363.6 363.6	Aug. 10, 1935 May 5, 1939	C, W	N	Test well. Electric log and drill-stem tests indicate fresh-water sands extend to 530 ft. Three-inch casing from surface to 450 ft. Slotted from 430 to 450 ft. See electric and sample logs.
S-3	do	--	--	4073.4	--	--	366.0	Apr. 14, 1954	N	N	
S-4	U. S. Army	--	--	4043.3	--	--	337.5	do	N	N	
*S-5	U. S. Geological Survey	B. & W. Drilling Co. of Texas	1953	3973.1	1,005	3	266.8	Jan. 6, 1954	N	N	Test well. Electric log and drill-stem tests indicate fresh-water sands extend to 530 ft. Three-inch casing from surface to 450 ft. Slotted from 430 to 450 ft. See electric and sample logs.
*S-6	U. S. Army	--	--	3975.1	--	6	267.2 268.9	Apr. 3, 1936 Jan. 6, 1954	C, W	N	Drilled as an oil test.
*S-7	City of El Paso	C. R. Jensen	1940	3965.5	795	--	265.7	Oct. 15, 1940	N	N	Test well. Drill-stem tests indicate fresh-water sands extend to 396 ft. See driller's log.



Table 5.- Records of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--Continued

Well	Owner	Driller	Date completed	Altitude of land surface (ft.)	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift	Use of water	Remarks
							Below land surface datum (ft.)	Date of measurement			
*S-8	U. S. Geological Survey	B. & W. Drilling Co. of Texas	1953	4012.4	1,020	3	308.8 308.4	Jan. 6, 1954 Apr. 9, 1954	N	N	Test well. Electric log and drill-stem tests indicate fresh-water sands extend to 415 ft. Three-inch casing from surface to 502 ft, slotted from 482 to 502 ft. See electric and sample logs.
*S-9	do	do	1953	4052.7	1,000	--	357.6	July 29, 1953	N	N	Test well. Electric log and drill-stem tests indicate fresh-water sands extend to 455 ft. See electric and sample logs.
S-10	U. S. Army	Layne-Texas Co. Ltd.	1943	4060.9	611	10 1/2, 12 1/2	362.8	Mar. 4, 1954	N	N	Casing: 10 1/2-in. from surface to 448 ft, 12 1/2-in. screen from 448 to 469 ft. Drawdown 54 ft, pumping 125 gpm in Nov. 1943. Gravel-walled. See driller's log.
*S-11	Adelberto Navar	--	--	a/4059	410	--	360.0	Mar. 30, 1936	C, W	N	Filled.
S-12	U. S. Army	--	--	3996.5	--	7	301.6 301.2	Apr. 25, 1952 Mar. 5, 1954	C, W	N	
*S-13	do	Layne-Texas Co. Ltd.	1952	--	501	3	315.9 316.4	Mar. 24, 1952 Jan. --, 1954	N	N	Test well. Casing: 3-in. from surface to 500 ft, screen from 490 to 500 ft. See electric and driller's logs.
*S-14	U. S. Geological Survey	B. & W. Drilling Co. of Texas	1953	4004.8	1,200	3	314.2	Jan. 6, 1954	N	N	Test well. Electric log and drill-stem tests indicate fresh-water sands extend to 480 ft. Three-inch casing to 420 ft, slotted from 410 to 420 ft. See electric and sample logs.
T-1	Farmer's Dairy	Al Parker	1952	--	--	8, 5	497	Apr. 25, 1952	N	N	Oil Test, Driller reports clay and red beds from surface to 348 ft where siliceous limestone was encountered.
T-2	J. L. Davis	--	--	--	2,100	--	b/675	Mar. 1954	N	N	Oil test. Pink granite reported at bottom of well.
V-1	City of El Paso	V. Chesney	1935	--	640	--	b/199	July 1936	N	N	Insufficient water for public supply. See log.
V-2	do	City of El Paso	--	3869.8	606	8	199.2 216.1	Aug. 6, 1935 Jan. 7, 1953	N	N	See log.
*V-3	do	L. Jensen	1928	3870.9	715	20, 15, 12	189.2 214.5	Feb. 25, 1931 Jan. 7, 1954	T, E	P	Casing: 20-in. from surface to 302 ft, 15-in. from 302 to 625 ft, 12-in. from 625 to 715 ft, slotted from 242 to 715 ft. See driller's log.

Table 5.- Records of wells in the Hueco bolson area, El Paso County, Texas, and Dona Ana and Otero Counties, New Mexico--Continued

Well	Owner	Driller	Date completed	Altitude of land surface (ft.)	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift	Use of water	Remarks
							Below land surface (ft.)	Date of measurement			
*V-4	City of El Paso	V. Chesney	1930	--	758	20, 15½, 12½	195, 228.0	Oct. 1, 1931 June 6, 1952	T, E	P	Casing: 20-in. from surface to 306 ft, 15½-in. from 306 to 576 ft, and 12½-in. from 576 to 735 ft, slotted from 224 to 735 ft. See driller's log.
*V-5	do	do	1935	3879.8	780	20, 12	201.0, 223.5	June 5, 1935 Jan. 6, 1954	T, E	P	Casing: 20-in. from surface to 300 ft, 12-in. from 278 to 774 ft, slotted from 288 to 774 ft. See driller's log.
*V-6	do	C. R. Jensen	1937	3900.5	902	--	--	--	N	N	Test well. See log.
*V-7	do	Layne-Texas Co. Ltd.	1938	3899.8	1,078	24, 16, 13	221.8, 238.5	May 4, 1938 Mar. 2, 1954	T, E	P	Casing: 24-in. from surface to 280 ft, cemented to surface; 16-in. from 262 to 368 ft, 13-in. from 368 to 1,055 ft, screens from 287 to 366 ft, and from 375 to 1,040 ft. Drawdown 46 ft after 1-hour pumping 1,130 gpm on Mar. 3, 1954. Gravel-walled. Electric log and drill-stem tests indicate fresh-water sands extend to bottom of well. See electric and driller's logs.
*V-8	U. S. Air Force	do	1951	--	780	24, 16	--	--	T, E, 150	P	Drawdown reported 14 ft, pumping 540 gpm in Mar. 1954.
*V-9	City of El Paso	do	1938	3913.2	905	24, 16, 12½	232.0, 227.6	Oct. 14, 1938 Apr. 3, 1939	T, E	P	Casing: 24-in. from surface to 246 ft, cemented to surface; 16-in. from surface to 351 ft, 12½-in. from 351 to 905 ft, screen from 247 to 905 ft. Drawdown 30 ft after 13-hours pumping 1,720 gpm when drilled. Gravel-walled. Electric log of test well drilled to 1,211 ft indicates fresh-water sands extend to 905 ft. See electric and driller's logs of test well.
*V-10	U. S. Air Force	do	1951	--	780	24, 16	256.2	Mar. 23, 1954	T, E	P	Drawdown reported 33 ft pumping 1,000 gpm in 1951. See electric log.
*V-11	City of El Paso	H. M. Stanley	1936	3919.4	600	2	244.1, 257.9	July 16, 1936 Apr. 19, 1954	N	N	Test well. Casing: 2-in. from surface to 400 ft. See driller's log.
V-12	do	C. R. Jensen	1939	3928.3	1,117	--	--	--	N	N	Test well. Electric log indicates fresh-water sands extend to 815 ft. See electric log and driller's logs.

Table 5.- Records of wells in the Hueco bolson area, El Paso County, Texas,  
and Doña Ana and Otero Counties, New Mexico--Continued

Well	Owner	Driller	Date completed	Altitude of land surface (ft.)	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift	Use of water	Remarks
							Below land surface datum (ft.)	Date of measurement			
V-13	City of El Paso	C. R. Jensen	1938	3940.6	1,131	--	--	--	N	N	Test well. Electric log indicates fresh-water sands extend to 780 ft. See electric and driller's logs.
*V-14	U. S. Air Force	Layne-Texas Co. Ltd.	1951	--	550	6-5/8	268.1 270.0	Jan. 9, 1952 Jan. 6, 1954	N	N	Test well. Casing: 6 5/8-in. from surface to 496 ft, slotted from 410 to 430 ft, 473 to 494 ft. See electric and driller's logs.
*V-15	do	do	1952	--	750	6-5/8	266.7 267.2	Jan. 18, 1952 Jan. 6, 1954	N	N	Test well. Casing: 6 5/8-in. from surface to 750 ft, slotted from 710 to 750 ft. See electric and driller's logs.
V-16	City of El Paso	C. R. Jensen	1939	3947.5	1,072	--	--	--	N	N	Test well. Electric log indicates fresh-water sands extend to 840 ft. See electric and driller's logs.
*V-17	do	do	1939	3925.9	1,097	--	--	--	N	N	Test well. Electric log indicates fresh-water sands extend to 875 ft. See electric and driller's logs.
*V-18	do	do	1939	3963.7	957	--	--	--	N	N	Test well. Electric log and drill-stem tests indicate fresh-water sands extend to 565 ft. See electric and driller's logs.
*V-19	do	do	--	3907.7	950	--	232.4 249.4	Dec. 18, 1940 Jan. 6, 1954	T, E	P	Electric log of test well drilled in 1938 to 1,187 ft indicates fresh-water sands extend to 975 ft. See electric and driller's logs of test well.
V-20	do	do	1938	3887.6	1,292	--	--	--	N	N	Test well. See driller's log.
*V-21	U. S. Army	Layne-Texas Co. Ltd.	1941	--	800	20, 12	h/225	1941	T, E	P	Casing: 20-in. from surface to 345 ft, 12-in. from 345 to 778 ft, screens from 304 to 314, 317 to 327, 345 to 366, 405 to 426, 456 to 497, 516 to 547, 590 to 601, 654 to 696, 712 to 732, and 742 to 773 ft. Pump set at 295 ft. Drawdown 49 ft pumping 1,250 gpm on Sept. 15, 1941. Gravel-walled. See driller's log.
V-22	City of El Paso	C. R. Jensen	1938	3879.2	1,117	8	208.8 223.7	Aug. 24, 1938 Apr. 19, 1954	N	N	Test well. Casing: 8-in. from surface to 587 ft. See driller's log.
*V-23	U. S. Army	Layne-Texas Co. Ltd.	1937	--	800	24, 12	205.4 205.0	Oct. 15, 1937 Feb. 26, 1940	T, E, 125	P	Casing: 24-in. from surface to 347 ft, 12-in. from 312 to 784 ft. Screens from 317 to 337, 314 to 334, 347 to 368, 450 to 492, 515 to 526, 556 to 598, 610 to 631, 638 to 649, 655 to 696, and 760 to 781 ft. See driller's log.

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Table 5.- Records of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--Continued

Well	Owner	Driller	Date completed	Altitude of land surface (ft.)	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift	Use of water	Remarks
							Below land surface datum (ft.)	Date of measurement			
*V-24	U. S. Army	Layne-Texas Co. Ltd.	1931	3877.2	785	24, 12	b/204 217.1	Mar. 1932 May 22, 1939	T.E. 100	P	Casing: 24-in. from surface to 351 ft, 12-in. from 285 to 776 ft, screens from 290 to 322, 436 to 468, 502 to 523, 533 to 565, 571 to 598, 621 to 663, and from 705 to 768 ft. Gravel-walled. See driller's log.
*V-25	do	do	1942	--	916	24, 12	b/230.8	1942	T.E. 150	P	Casing: 24-in. from surface to 235 ft, 18 5/8-in. from 205 to 321 ft, 12 1/2-in. from 332 to 570 ft, screens from 272 to 302, 332 to 343, 350 to 376, 423 to 434, 476 to 487, 500 to 554, and from 570 to 591 ft. Pump set at 295 ft. Drawdown 65 ft pumping 870 gpm on Aug. 27, 1942. Gravel-walled. See driller's log.
*V-26	do	--	1917	--	600	12	b/226	1917	T.E. 60	N	Casing: 12-in. from surface to 600 ft. Drawdown 76 ft pumping 250 gpm on Apr. 22, 1944.
*V-27	do	T. F. Hawkins	1913	3884.1	652	10	b/198.3 238.6	1913 Jan. 5, 1954	N	N	Casing: 10-in. from surface to 652 ft, slotted from 200 to 652 ft. See driller's log.
*V-28	do	do	1913	--	657	12, 10	200.8	July 27, 1913	N	N	Casing: 12-in. from surface to 200 ft, 10-in. from surface to 657 ft. See driller's log.
*V-29	do	--	1917	--	600	12	b/227	1917	N	N	Casing: 12-in. from surface to 600 ft, slotted from 200 to 600 ft. See driller's log.
V-30	City of El Paso	--	Old	3995.8	500	5	303.7 306.9	Nov. 20, 1935 Jan. 5, 1954	N	N	Casing: 18-in. from surface to 214 ft, 12-in. from 214 to 918 ft, slotted from 475 to 918 ft. See driller's log.
V-31	do	P. D. Wynne	1919	3776.7	954	18, 12	b/85 107.3	May 1919 Jan. 11, 1941	N	N	Drilled for public water supply, but never used because of poor quality of water. See log.
V-32	do	V. C. Chesney	1930	--	660	--	--	--	N	N	Test well. Four-inch casing to 746 ft, slotted from 716 to 736 ft. Electric log and drill-stem tests indicate fresh-water sands extend to bottom of well. See sample and electric logs.
*V-33	U. S. Geological Survey	B. & W. Drilling Co. of Texas	1953	3886.2	905	4	230.3	Jan. 5, 1954	N	N	

Table 5.- Records of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--Continued

Well	Owner	Driller	Date completed	Altitude of land surface (ft.)	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift	Use of water	Remarks
							Below land surface datum (ft.)	Date of measurement			
*V-34	Texas & New Orleans Railway Co.	P. D. Wynne	1922	--	869	12	217.5 220.8	Nov. 20, 1935 Mar. 21, 1941	N	N	Casing: 12-in. from surface to 869 ft, slotted from 269 to 869 ft. See driller's log.
*V-35	do	Layne-Texas Co. Ltd.	1937	--	860	12	219.3 231.9	Jan. 25, 1939 June 21, 1941	N	N	Casing: 12-in. from surface to 860 ft.
V-36	do	do	1937	--	860	12, 10	226 218.9	Aug. 12, 1938 Jan. 14, 1947	N	N	Casing: 12-in. from surface to 740 ft, 10-in. from 740 to 860 ft.
*V-37	do	Seiple & Wynne	1921	--	864	12	b/213	Aug. 1921	N	N	Casing: 12-in. from surface to 864 ft, slotted from 274 to 864 ft. See driller's log.
*V-38	do	Layne-Texas Co. Ltd.	1941	--	852	16, 13	b/218	Apr. 1941	T,E	D	Casing: 16-in. from surface to 345 ft, 13-in. from surface to 849 ft, screen from 337 to 849 ft. Drawdown 35 ft pumping 530 gpm on Apr. 22, 1941. See driller's log.
*V-39	City of El Paso	C. R. Jensen	1938	--	520	8, 6	233.1 249.0	Apr. 27, 1938 Jan. 28, 1954	N	N	Casing: 8-in. from surface to 415 ft, 6-in. from 415 to 520 ft, slotted from 243 to 273, 283 to 308, 314 to 359, 378 to 388, and 405 to 520 ft. See driller's log.
*V-40	do	do	1944	3922.4	698	10	b/250.0 264.8	Jan. 1944 Mar. 6, 1954	T,E, 30	P	Casing: 10-in. from surface to 680 ft, screens from 264 to 285, 307 to 365, 379 to 395, 429 to 451, 477 to 496, 513 to 531, 547 to 565, 586 to 622, and 639 to 671 ft. Yield reported 200 gpm. Used as standby well only. See driller's log.
*V-41	do	Layne-Texas Co. Ltd.	1951	--	766	24, 18, 12½	253.9 266.3	Jan. 22, 1952 Mar. 6, 1954	T,E	P	Casing: 24-in. from surface to 300 ft, cemented to surface, 18-in. from surface to 380 ft, 12½-in. from 380 to 754 ft, slotted from 289 to 754 ft. Drawdown 51 ft, after 4-hours pumping 1,534 gpm on Mar. 6, 1954. Gravel-walled. See electric and driller's logs.
*V-42	do	H. M. Stanley	1936	3942.7	623	6, 2	260.6 272.1	July 17, 1936 Apr. 19, 1954	N	N	Test well. Casing: 2-in. to 441 ft. See driller's log.
V-43	do	Holland Page, Jr.	1951	--	340	8, 4	b/308	July 1951	C,E	D	Casing: 8-in. from surface to 304 ft, 4-in. from 304 to 340 ft.

Table 5.- Records of wells in the Hueco bolson area, El Paso County, Texas, and Dona Ana and Otero Counties, New Mexico--Continued

Well	Owner	Driller	Date completed	Altitude of land surface (ft.)	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift	Use of water	Remarks
							Below land surface datum (ft.)	Date of measurement			
V-44	-- Ashley's	Layne-Texas Co. Ltd.	1952	--	536	10, 8	b/297	1952	T, E	D, Ind	Casing: 10-in. from surface to 382 ft, 8-in. from 382 to 536 ft, screen from 313 to 343 ft, 392 to 412 ft, 476 to 496 ft, and 506 to 526 ft. Drawdown reported 20 ft pumping 250 gpm. See driller's log.
*V-45	City of El Paso	P. D. Wynne	1922	3783.2	862	26, 12	112.0 112.8	Oct. 19, 1934 Jan. 5, 1954	T, E	P	Casing: 26-in. from surface to 243 ft, 12-in. from 227 to 862 ft, slotted from 443 to 862 ft. See driller's log.
V-46	Loretto College	--	--	3807.1	--	7	145.8 137.4	Nov. 11, 1935 Jan. 28, 1954	N	N	Casing: 24-in. from surface to 224 ft, 13½-in. from 205 to 885 ft, screen from 485 to 605, 695 to 715, and 755 to 815 ft. Well filled with cement from 860 to 1,023 ft. See driller's log.
*V-47	City of El Paso	Layne & Bawler	1918	3764.0	1,023	24, 13½	b/109 87.5	May 1931 Jan. 28, 1954	N	N	Casing: 20-in. from surface to 200 ft, 15½-in. from 200 to 482 ft, 12-in. from 482 to 840 ft, slotted from 500 to 840 ft. See driller's log.
V-48	do	City of El Paso	1922	3771.4	856	20, 15½, 12	113 99.2	Apr. 1, 1926 Mar. 24, 1947	T, E	N	Casing: 24-in. from surface to 200 ft, 13-in. from 186 to 882 ft, slotted from 465 to 882 ft. See driller's log.
*V-49	do	P. D. Wynne	1924	3743.8	882	24, 13	80.8 74.7	Nov. 19, 1934 Jan. 5, 1954	T, E	P	Drawdown 59.5 ft pumping 2,200 gpm in 1940. See electric and driller's logs of test well drilled in 1938 to 902 ft.
*V-50	do	Layne-Texas Co. Ltd.	1940	3702.9	643	24, 13	32.2 29.8	Feb. 28, 1940 Jan. 5, 1954	T, E, 150	P	Casing: 12-in. from surface to 205 ft, 10-in. from 205 to 325 ft, screen from 325 to 358 ft. See driller's log.
*V-51	Harry Mitchell Brewing Co.	do	1934	3701.2	396	12, 10	25.2 37.7	Dec. 13, 1935 Jan.-22, 1945	T, E	N	Casing: 12½-in. from surface to 326 ft, cemented to surface, 6 5/8-in. from 289 to 354 ft, mill slotted from 317 to 352 ft. Pump set at 120 ft. Drawdown 49 ft, pumping 120 gpm on Mar. 17, 1944. Gravel-walled. See driller's log.
*V-52	do	do	1944	--	354	12½, 6-5/8	b/40.0	Mar. 1944	T, E	Ind	Casing: 24-in. from surface to 118 ft, 15-in. from 118 to 446, 12½-in. from 446 to 802 ft, slotted from 190 to 802 ft. See driller's log.
*V-53	City of El Paso	V. Chesney	1928	3700.3	830	24, 15, 12½	21.1 28.8	Dec. 22, 1934 Jan. 5, 1954	T, E	P	

Table 5.- Records of wells in the Hueco bolson area, El Paso County, Texas,  
and Doña Ana and Otero Counties, New Mexico--Continued

Well	Owner	Driller	Date completed	Altitude of land surface (ft.)	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift	Use of water	Remarks
							Below land surface datum (ft.)	Date of measurement			
*V-54	City of El Paso	Layne-Texas Co. Ltd.	1937	3701.9	905	24, 13	30.1 28.2	July 7, 1937 Jan. 5, 1954	T,E, 100	P	Casing: 24-in. from surface to 237 ft, cemented to surface, 13-in. from 207 to 703 ft, screen from 254 to 694 ft. Well filled with cement from 703 to 905 ft. Gravel-walled. See electric and driller's logs.
*V-55	do	A. Stout	1927	3704.6	425	22, 12	8.8 8.8	Jan. 28, 1939 Jan. 10, 1941	N	N	Casing: 22-in. from surface to 86 ft, 12-in. from 86 to 155 ft, 13-in. from 155 to 425 ft.
V-56	Southern Pacific Railroad Co.	Layne-Texas Co. Ltd.	1941	--	798	16, 10 $\frac{1}{2}$	b/44	1941	T,E	Ind	Casing: 16-in. from surface to 406 ft, cemented to surface, 10 $\frac{1}{2}$ -in. from 340 to 798 ft, screen from 403 to 425 ft, 470 to 502, 512 to 607, 622 to 644, 692 to 724, and 752 to 794 ft. Pump set at 100 ft. Drawdown 30 ft, pumping 950 gpm on Dec. 15, 1941. Gravel-walled. See driller's log.
V-57	do	do	1942	--	760	--	--	--	T,E	Ind	
V-58	do	do	1944	--	624	12 $\frac{1}{2}$ , 6-5/8	b/40	1944	T,E	Ind	Casing: 12 $\frac{1}{2}$ -in. from surface to 450 ft, cemented to surface, 6 5/8-in. from 350 to 624 ft, screens from 459 to 480 ft, 502 to 524 ft, 545 to 566 ft, and 586 to 623 ft. Pump set at 115 ft. Drawdown 20 ft after 8 hours pumping 20 gpm on Nov. 3, 1944. Gravel-walled. See driller's log.
*V-59	City of El Paso	do	1938	3705.1	851	24, 13	36.7 31.1	Feb. 2, 1939 Jan. 5, 1954	T,E	P	Casing: 24-in. from surface to 295 ft, cemented to surface, 13-in. from 255 to 720 ft, screen from 294 to 717 ft. Gravel-walled. Well filled with cement from 720 to 851 ft. See electric and driller's logs.
*V-60	do	A. Stout	1925	3704.5	646	24, 15	14.8 16.8	Dec. 22, 1934 Dec. 11, 1940	N	N	Casing: 24-in. from surface to 89 ft, 15-in. from 89 to 480 ft, slotted from 169 to 480 ft. See driller's log.
*V-61	El Paso Milling Co.	--	1912	3707.1	398	10	12.6 32.1	Aug. 23, 1935 Jan. 5, 1954	N	N	Casing: 10-in. from surface to 398 ft.

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Table 5.- Records of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico.-Continued

Well	Owner	Driller	Date completed	Altitude of land surface (ft.)	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift	Use of water	Remarks
							Below land surface datum (ft.)	Date of measurement			
*V-62	City of El Paso	V. Chesney	1930	3706.0	807	20, 12½	16.6 27.0	Dec. 22, 1934 Jan. 5, 1954	N	N	Casing: 20-in. from surface to 210 ft., 16-in. from 210 to 358 ft., 16-in. screen from 358 to 579 ft., 12½-in. screen from 579 to 650 ft. See driller's log.
*V-63	do	P. D. Wynne	1933	3707.8	52	20	9.6 18.2	Apr. 16, 1938 Jan. 5, 1954	Cf, E	--	Casing: 20-in. screen from surface to 30 ft., 20-in. casing from 30 to 52 ft. Well used to lower water table below house basement levels in downtown El Paso.
V-64	El Paso Electric Co.	Layne-Texas Co. Ltd.	1924	3709.3	252	18, 16	7.3 20.5	Aug. 20, 1935 Jan. 5, 1954	T, E, 125	Ind	See driller's log.
V-65	do	do	1925	3709.6	229	--	7.8 20.9	Aug. 20, 1935 Jan. 5, 1954	T, E	Ind	Do
*V-66	do	J. F. Hawkins	1914	3708.3	394	10	12.3 31.9	Aug. 20, 1935 Jan. 5, 1954	T, E	Ind	Casing: 15-in. from surface to 254 ft., 10-in. from 294 to 394 ft., slotted from 254 to 294 ft., and from 334 to 394 ft. See driller's log.
*V-67	do	Layne-Texas Co. Ltd.	1924	3709.9	304	10	9.6 17.0	Aug. 2, 1935 Jan. 6, 1953	T, E	Ind	See driller's log.
*V-68	Payton Packing Co.	Layne-Bowler Co.	1917	--	775	8	b/60	1954	T, E	Ind	
*V-69	City of El Paso	C. R. Jensen	1940	3696.6	1,007	4	22.9 32.0	Nov. 18, 1940 Apr. 19, 1954	N	N	Test well. Casing: 4-in. from surface to 623 ft. See driller's log.
*V-70	El Paso County Water Control & Improvement District No. 1	Layne-Texas Co. Ltd.	1946	--	704	14, 8, 5/8	b/106	Oct. 1953	T, E, 30	P	Casing: 14-in. from surface to 541 ft., cemented to surface, 8 5/8-in. from 446 to 704 ft., screens from 544 to 574 ft., and 595 to 702 ft. Pump set at 210 ft. Drawdown 62 ft., pumping 380 gpm on Dec. 18, 1946. Gravel-walled. See driller's log.
V-71	The Texas Co.	do	1954	--	673	--	--	--	T, E	Ind	See electric log.
*V-72	do	P. D. Wynne	1929	3715.9	694	--	45.8 52.7	Mar. 20, 1929 Jan. 5, 1954	T, E	Ind	Drawdown reported 28 ft after 1½ hours pumping 1,000 gpm on Oct. 22, 1951. See driller's log.
V-73	do	Layne-Texas Co. Ltd.	1954	--	665	--	--	--	--	Ind	
V-74	Standard Oil Co. of Texas	do	1928	--	590	10, 8	81.5	Aug. 28, 1935	T, E	Ind	Casing: 10-in. from surface to 455 ft., 8-in. from 444 to 590 ft., screens from 477 to 514 ft., and 546 to 588 ft. See driller's log.



Table 5.- Records of wells in the Hueco bolson area, El Paso County, Texas, and Dona Ana and Otero Counties, New Mexico--Continued

Well	Owner	Driller	Date completed	Altitude of land surface (ft.)	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift	Use of water	Remarks
							Below land surface datum (ft.)	Date of measurement			
*V-75	Standard Oil Co.	Layne-Texas Co. Ltd.	1930	--	607	12, 10	66.6 60.8	June 6, 1930 Feb. 24, 1944	--	--	Casing: 12-in. from surface to 438 ft, 10-in. from 416 to 600 ft, screens from 437 to 483 ft, 503 to 547 ft, and 557 to 598 ft. See driller's log.
*V-76	do	do	1950	--	644	--	b/109	1950	T,E, 75	Ind	Drawdown reported 31 ft, pumping 945 gpm. See electric log.
V-77	do	do	1952	--	652	--	b/113	1952	T,E, 75	Ind	Drawdown reported 52 ft, pumping 1,230 gpm.
*V-78	do	--	1928	--	299	24, 13	59.5	Aug. 28, 1935	N	N	See driller's log.
*V-79	Phelps-Dodge Refining Corp.	--	1929	3739.8	706	20, 12	64.0 75.2	Jan. 2, 1931 Jan. 15, 1947	T,E	Ind	Do
V-80	do	Layne-Texas Co. Ltd.	1947	--	671	20, 12 $\frac{1}{2}$	b/75.0	Oct. 1947	T,E	Ind	Casing: 20-in. from surface to 473 ft, 12 $\frac{1}{2}$ -in. from 390 ft to 647 ft, screens from 478 to 561 ft, 581 to 591 ft, and 614 to 646 ft. Pump set at 160 ft. Drawdown 70 ft after 36 hours pumping 748 gpm on Oct. 31, 1947. Gravel-walled. See driller's log.
V-81	do	do	1940	3735.2	683	20, 12	67.2 68.6	June 4, 1940 June 26, 1945	T,E	Ind	Casing: 20-in. from surface to 485 ft, 12 $\frac{1}{2}$ -in. from 482 to 683 ft. Screens from 482 to 514 ft, 524 to 546 ft, 574 to 616 ft, and 649 to 682 ft. Gravel-walled. See driller's log.
*V-82	El Paso County Water Control & Improvement District No.1	do	1947	--	689	14, 8-5/8	b/27.4	Oct. 1953	T,E, 25	P	Casing: 14-in. from surface to 252 ft, 8 5/8-in. from 208 to 477 ft, screens from 265 to 308, 351 to 372, and 394 to 477 ft. Pump set at 120 ft. Drawdown reported, 35 ft pumping 610 gpm. Gravel-walled. See electric and driller's logs.
V-83	do	El Paso Drilling Co.	1954	--	--	--	--	--	T,E	P	
V-84	do	Layne-Texas Co. Ltd.	1953	--	555	--	--	--	T,E	P	
*V-85	do	do	1952	--	490	--	b/87	Oct. 1953	T,E	P	Drawdown reported 30 ft pumping 600 gpm. See electric log.

Table 5.- Records of wells in the Hueco bolson area, El Paso County, Texas, and Dona Ana and Otero Counties, New Mexico--Continued

Well	Owner	Driller	Date completed	Altitude of land surface (ft.)	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift	Use of water	Remarks
							Below land surface datum (ft.)	Date of measurement			
*V-86	El Paso County Water Control & Improvement District No.1	Layne-Texas Co. Ltd.	1947	--	786	14.8-5/8	b/52	Oct. 1953	T,E, 25	P	Casing: 14-in. from surface to 230 ft, 8 5/8-in. from 136 to 386 ft, screens from 242 to 310 ft, and 339 to 383 ft. Pump set at 130 ft. Drawdown reported 51 ft pumping 580 gpm. Gravel-walled. See electric and driller's logs.
*W-1	U. S. Geological Survey	B. & W. Drilling Co. of Texas	1953	3977.0	950	--	319.3	Apr. 13, 1936	N	N	Test well. Electric logs and drill-stem tests indicate fresh-water sands to 555 ft. See sample and electric logs.
*W-2	U. S. Army	--	1933	4009.8	378	6	322.0 322.4	June 13, 1936 June 20, 1942	N	N	Casing: 6-in. to 378 ft.
*W-3	Hillcrest Country Club	El Paso Drilling Co.	1953	4017.7	600	10%	332.0	Apr. 6, 1954	T,B	D	Casing: 10 1/2-in. to 591 ft, slotted from 345 to 376, 380 to 435, 439 to 454, 470 to 495, 510 to 514, and 543 to 591 ft. See electric and sample logs.
*W-4	El Paso Natural Gas Co.	Mountain Drilling Co.	1953	4023.0	596	10%	336.6	June 4, 1953	T,E	Ind	Casing: 10 1/2-in. to 600 ft. Pump set at 470 ft.
W-5	do	do	1953	4023.6	500	10%	340.8	do	T,E	Ind	Casing: 10 1/2-in. to 500 ft, slotted from 320 to 445 ft, and 465 to 485 ft. See electric and sample logs.
*W-6	Lane Dairy	--	--	--	350	--	--	--	C,W	D,S	
W-7	R. C. Sparks	J. T. Hatch	1945	4036.5	415	6	359.4	Mar. 6, 1954	C,W	S	
*W-8	do	J. R. Hatch	1944	4029.5	440	6	356.9 357.3	Apr. 29, 1952 Mar. 6, 1954	C,W	S	
*W-9	El Paso County Water Control & Improvement District No.1	Layne-Texas Co. Ltd.	1947	--	600	14.8-5/8	b/52	Oct. 1953	T,E, 25	P	Casing: 14-in. from surface to 81 ft, 8 5/8-in. from surface to 219 ft, screen from 86 to 210 ft. Pump set at 150 ft. Drawdown 26 ft pumping 243 gpm on June 5, 1947. Gravel-walled. See electric and driller's logs.
*W-10	R. C. Sparks	J. T. Hatch	1944	4020.7	500	6	370.6	Feb. 6, 1954	C,W	S	
*X-1	U. S. Geological Survey	B. & W. Drilling Co. of Texas	1953	4072.9	1,013	--	394.4	July 19, 1953	N	N	Test well. Electric log and drill-stem test indicate fresh-water sands extend to 510 ft. See electric and sample logs.

Table 5.- Records of wells in the Hueco bolson area, El Paso County, Texas,  
and Doña Ana and Otero Counties, New Mexico--Continued

Well	Owner	Driller	Date completed	Altitude of land surface (ft.)	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift	Use of water	Remarks
							Below land surface datum (ft.)	Date of measurement			
X-2	-- Davis	Hughs Drilling Co.	1952	--	1,557	--	b/600	Mar. 1954	--	N	
X-3	Davis & McMillian	Tillery & Parks	1954	--	813	--	--	--	N	N	No water-bearing material encountered. See sample log.
*X-4	-- Davis	--	1903	--	750	8	b/725	--	C,G	D,S	
X-5	-- Hays	--	1952	--	--	7½	332.0	Apr. 30, 1952	C,W	S	Well draws from limestone.
*X-6	R. C. Sparks	--	1902	4056.6	1,150	6	383.4 379.4	Apr. 10, 1936 Feb. 6, 1954	C,W	D,S	Casing: 6-in. from surface to 440 ft.
X-7	do	J. R. Hatch	1943	4061.7	460	6	376.8	Feb. 6, 1954	C,W	S	
*X-8	El Paso Natural Gas Co.	Tillery & Parks	1953	--	526	26	488.6	Feb. 20, 1953	N	N	Well draws from limestone.
X-9	do	do	1953	--	276	--	--	--	N	N	No water-bearing material encountered. See sample log.
*X-10	U. S. Geological Survey	B. & W. Drilling Co. of Texas	1953	4047.6	1,100	--	397.2	Aug. 1, 1953	N	N	Test well. Electric log and drill-stem tests indicate no fresh-water sands. See electric and sample logs.
*X-11	R. C. Sparks	--	Old	4014.5	460	5	b/362	--	C,W	D	Casing: 5-in. from surface to 400 ft.
*Y-1	do	J. R. Hatch	1942 <sup>a</sup>	4004	500	6	365.6 373.8	Apr. 10, 1936 Feb. 3, 1954	C,W	S	Casing: 6-in. from surface to 500 ft.
Y-2	Paul Thomas	-- Cass	1943	--	162	6	113.6	Feb. 3, 1954	C,W	S	
*Z-1	R. C. Sparks	J. T. Hatch	1946 <sup>a</sup>	4082	500	6	b/470	Apr. 1936	C,W	S	
*Z-2	S. O. Roberts	--	1946	--	497	6	b/465	--	C,W	D,S	
Z-3	do	--	1937	--	450	7	384.5	Feb. 3, 1954	C,W	S	
Z-4	-- Orr	-- Anderson	--	--	450	10	372.0	do	C,W	S	
*Z-5	S. O. Roberts	--	1915 <sup>a</sup>	4028	638	8, 6	400.0 401.7	Apr. 2, 1936 Feb. 8, 1954	C,W	S	Casing: 8-in. from surface to 500 ft, 6-in. from 500 to 638 ft.
*Z-6	do	--	1946	--	521	8	b/450	--	C,W	S	
Z-7	--	--	Old	3789.5	241	5½	162.5	July 11, 1936	N	N	
Z-8	Wyatt C. Hedrick	--	--	--	420	7	329.1	May 7, 1952	C,W	D,S	

<sup>a</sup> a/ Altitude determined by aneroid barometer. Other altitudes determined by instrumental leveling.

b/ Water level reported by owner or driller.

<sup>c</sup> For chemical analyses see table 8.

Table 6--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico

	Thickness (feet)	Depth (feet)
Well F-1		
Owner: U. S. Geological Survey. Driller: B & W Drilling Co. of Texas.		
Sand, gravel, and caliche -----	20	20
Sand and gravel -----	10	30
Sand, fine to coarse, and gravel, fine -----	20	50
Gravel, fine, and sand, fine to very coarse -----	20	70
Sand, very coarse to fine, and gravel, fine -----	10	80
Sand, very coarse, and gravel, fine -----	10	90
Sand, very coarse to medium -----	10	100
Sand, very coarse -----	10	110
Sand, fine to coarse -----	20	130
Sand, fine to very coarse, and gravel, fine -----	10	140
Sand, very coarse to fine -----	10	150
Sand, fine to very coarse -----	20	170
Sand, fine to coarse -----	10	180
Sand, fine to very coarse -----	10	190
Sand, fine to coarse -----	20	210
Sand, fine to very coarse -----	10	220
Gravel, fine, and sand, very coarse -----	10	230
Sand, fine to very coarse, and gravel, fine -----	10	240
Sand, fine to medium, and gravel, fine -----	10	250
Sand, fine to coarse, and gravel -----	10	260
Clay, some sand, and gravel -----	10	270
Clay, sand, and gravel -----	30	300
Sand, gravel, and some clay -----	10	310
Sand, very fine to fine, and some gravel -----	20	330
Sand, fine, some gravel, and clay -----	40	370
Sand, fine, and some gravel -----	10	380
Sand, fine to very coarse, and gravel, fine -----	10	390
Sand, fine to coarse, and clay -----	10	400
Clay, sand, and gravel -----	4	404
Clay and sand -----	25	429
Sand, fine to coarse, and some clay -----	10	439
Sand, fine to coarse -----	10	449
Missing -----	3	452
Clay, brown, and sand, fine to coarse -----	8	460
Clay, brown, and some sand, fine to coarse -----	10	470
Sand, fine to coarse -----	10	480
Sand, very coarse to fine -----	10	490
Sand, fine to very coarse, and some shale -----	10	500
Clay and some sand -----	3	503
Clay and some sand, fine to coarse -----	7	510
Sand, fine, and some clay -----	10	520

(continued on next page)

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well F-1--continued		
Clay and some sand, fine -----	10	530
Clay and some sand, very fine -----	40	570
Clay and sand, fine to coarse -----	10	580
Clay and some sand -----	8	588
Clay -----	10	598
Missing -----	10	608
Clay and some sand -----	10	618
Clay -----	10	628
Clay and sand, very fine -----	20	648
Sand, very fine to coarse, and some gravel -----	12	660
Sand and gravel -----	10	670
Gravel, sand, and clay, brown -----	40	710
Gravel and sand -----	10	720
Sand, fine to very fine, and some pebbles -----	10	730
Sand, very fine to fine, and gravel -----	10	740
Sand, very fine to medium -----	4	744
Clay, brown, sand, fine, and some pebbles -----	10	754
Clay and gravel -----	10	764
Clay, sandy, and some pebbles -----	10	774
Sand, very fine to fine, and some sand, medium -----	20	794
Sand, very fine to fine, some sand, medium, and some pebbles -----	10	804
Sand, fine to coarse, and gravel -----	10	814
Sand -----	7	821
Sand and gravel -----	9	830
Sand, fine to very coarse, and gravel, coarse -----	20	850
Missing -----	10	860
Sand, fine to coarse, and gravel, fine -----	5	865
Missing -----	5	870
Sand, fine to coarse, and gravel, fine -----	14	884
Sand, medium to coarse, granules, and pebbles -----	10	894
Sand, medium to coarse, granules, pebbles, and clay -----	10	904
Sand, medium to coarse, and granules -----	10	914
Clay, buff, and granules -----	10	924
Sand, very fine to medium and granules -----	10	934
Clay, sandy, granules, and caliche -----	10	944
Sand, very fine to medium, granules, and clay -----	10	954
Sand, very fine to medium, granules, clay, and caliche --	8	962
Granules and sand, fine -----	10	972

(continued on next page)

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well F-1--continued		
Clay, granules, and sand -----	40	1,012
Sand, very fine to coarse, granules, and silt, black ----	10	1,022
Clay, buff, sandy -----	20	1,042
Clay, buff, and pebbles -----	10	1,052
Sand, fine to coarse, granules, and some clay -----	10	1,062
Clay, very sandy, and granules -----	10	1,072
Sand, very fine to very coarse, granules and clay -----	10	1,082
Sand, fine to coarse, granules, and clay -----	10	1,092
Sand, fine to coarse, and granules -----	10	1,102
Clay, buff, sandy -----	10	1,112
Sand, fine to coarse, and granules -----	10	1,122
Sand, fine to coarse, granules and clay -----	20	1,142
Sand, fine to coarse, granules, pebbles and clay -----	10	1,152
Sand, very fine to medium, granules, and clay -----	10	1,162
Sand, medium to very coarse, granules, and clay -----	10	1,172
Sand, very fine to coarse, granules, and pebbles -----	10	1,192
Sand, very fine to coarse, granules, and clay -----	8	1,200
Well F-3		
Owner: U. S. Geological Survey. Driller: B & W Drilling Co. of Texas.		
Sand, granules, and caliche -----	10	10
Sand, fine to coarse, granules, and caliche -----	10	20
Sand, fine to coarse, granules, clay, brown -----	20	40
Sand, very fine to medium, granules, and clay -----	10	50
Sand, very fine to medium, and granules -----	10	60
Sand, very fine to coarse, and granules -----	10	70
Granules, and sand, medium -----	10	80
Granules, and sand, fine to coarse-----	10	90
Sand, fine to coarse, granules -----	30	120
Sand, very fine to medium, and some granules -----	10	130
Sand, very fine to fine -----	10	140
Sand, very fine to medium -----	10	150
Sand, very fine to coarse -----	20	170
Sand, very fine to coarse, and some granules -----	20	190
Sand, very fine to coarse -----	10	200
(continued on next page)		

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well F-3--continued		
Sand, very fine to medium -----	10	210
Sand, very fine to coarse -----	20	230
Sand, very fine to very coarse -----	40	270
Sand, very fine to coarse -----	30	300
Sand, very fine to very coarse -----	110	410
Sand, very fine to medium -----	20	430
Sand, very fine to coarse -----	70	500
Sand, medium -----	10	510
Sand, very fine to medium -----	10	520
Sand, very fine to coarse -----	30	550
Sand, very fine to very coarse and some granules -----	10	560
Clay, buff, sandy, and granules -----	10	570
Sand, very fine to coarse, granules, caliche, pebbles, and clay -----	30	600
Clay, buff, sandy, caliche pebbles, and granules -----	30	630
Sand, very fine to very coarse, granules, and clay -----	20	650
Sand, very fine to very coarse, granules, caliche, and clay -----	10	660
Sand, very fine to very coarse, granules, caliche, clay and pebbles-----	10	670
Clay, buff, very sandy and granules -----	30	700
Sand, very fine to very coarse, and granules -----	16	716
Sand, very fine to very coarse, granules, and clay -----	24	740
Sand, very fine to very coarse, granules, pebbles -----	20	760
Granules, and sand, very fine -----	30	790
Sand, very fine, sandstone, and granules -----	10	800
Granules, sand, very fine -----	10	810
Sand, very fine to coarse, granules, pebbles, and clay --	10	820
Sand, very fine to fine, and granules -----	6	826
Sand, very fine to coarse, and granules -----	54	880
Granules, arkose, and some chert -----	10	890
Granules, pebbles, and some sand -----	20	910
Granules, pebbles, arkose, and some sand -----	10	920
Missing -----	10	930
Granules, pebbles, arkose, and some sand -----	50	980
Sand, medium to coarse, granules, and pebbles -----	10	990
Granules, pebbles, arkose, and some sand -----	20	1,010
Granules, pebbles, and arkose -----	10	1,020
Granules, pebbles, arkose, and sand, fine -----	10	1,030
Granules, pebbles, arkose -----	10	1,040
(continued on next page)		

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well F-3--continued		
Granules, pebbles, arkose, and sand, fine -----	10	1,050
Granules, pebbles, and arkose -----	40	1,090
Granules, pebbles, arkose, and sand, medium -----	10	1,100
Sand, medium to very coarse, granules, and pebbles -----	10	1,110
Granules, pebbles, arkose, and some sand -----	10	1,120
Granules, pebbles, and arkose -----	50	1,170
Granules and arkose -----	20	1,190
Granules, pebbles, and arkose -----	10	1,200
No record -----	5	1,205
Well F-5		
Owner: U. S. Geological Survey. Driller: B & W Drilling Co. of Texas.		
Sand, red, medium -----	10	10
Sand, white, medium -----	10	20
Sand, medium to very fine -----	10	30
Sand, very fine to coarse, and gravel -----	10	40
Sand, very fine to very coarse -----	10	50
Sand, very fine to fine -----	10	60
Sand, fine to very coarse -----	10	70
Sand, fine to medium -----	20	90
Sand, fine to coarse -----	10	100
Sand, medium to very coarse -----	10	110
Gravel, subangular, and some sand -----	10	120
Sand, medium to very coarse -----	40	160
Gravel, subangular, and sand, medium -----	20	180
Gravel, subangular, and sand, coarse -----	10	190
Gravel, subangular, and clay -----	10	200
Sand, medium to very coarse, and gravel -----	10	210
Gravel, very coarse, subangular, and pebbles -----	8	218
Limestone and pebbles -----	2	220
Sand, medium to very coarse, and gravel -----	20	240
Gravel, subangular, and sand medium, and clay-----	9	249
Sand, fine to medium, and some gravel -----	11	260
Sand, very fine to medium, and some gravel -----	20	280
Sand, medium to very coarse, and gravel -----	10	290
Sand, fine to medium, and gravel -----	20	310
(continued on next page)		



Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well F-5--continued		
Sand, fine to very coarse -----	7	317
Sand, medium to very coarse, and gravel, fine -----	3	320
Sand, medium to very coarse, and gravel, medium -----	9	329
Sand, very fine to medium, and gravel, medium -----	21	350
Sand, medium to very coarse -----	20	370
Sand, reddish, medium to very coarse, and gravel -----	10	380
Gravel, very-coarse, subangular -----	10	390
Clay, pink, and sand -----	10	400
Clay, pink, sand, and gravel, coarse -----	10	410
Sand, very fine to fine -----	10	420
Sand, fine to very coarse, and gravel, coarse -----	10	430
Sand, medium to coarse, and some gravel -----	10	440
Sand, medium to coarse -----	10	450
Sand, medium to coarse, and clay, pink -----	10	460
Sand, medium to coarse -----	10	470
Sand, medium to very coarse -----	10	480
Sand, medium, and gravel -----	10	490
Sand, medium to very coarse -----	10	500
Clay, sandy, pink, and gravel -----	5	505
Shale, pink, sandy, and gravel, rounded -----	5	510
Sand, medium to very coarse -----	10	520
Sand, medium to very coarse, and gravel, angular -----	20	540
Clay, buff, sandy -----	10	550
Clay, brown, sandy -----	10	560
Clay, brown, and pebbles, caliche -----	20	580
Well G-1		
Owner: U. S. Geological Survey. Driller: B & W Drilling Co. of Texas.		
Sand and caliche -----	10	10
Sand, red, medium -----	10	20
Sand, red, fine to coarse -----	10	30
Sand, red, fine to medium -----	10	40
Sand, red, fine, and some caliche -----	20	60
Sand, red, very fine, and some caliche -----	10	70
Sand and gravel -----	10	80
(continued on next page)		

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well G-1--continued		
Clay and some sand -----	10	90
Clay and gravel -----	10	100
Sand and gravel -----	40	140
Sand, fine and clay -----	10	150
Sand, fine -----	10	160
Sand, fine, and gravel -----	20	180
Sand, fine to coarse -----	13	193
Sand, fine, and clay -----	16	209
Sand, fine to coarse -----	38	247
Missing -----	3	250
Sand, fine -----	10	260
Sand, fine, and clay -----	10	270
Sand, fine, gravel, and clay -----	19	289
Sand, medium -----	7	296
Sand, fine to medium, and clay -----	4	300
Sand, fine to medium, clay, and gravel -----	20	320
Sand, fine to medium -----	26	346
Sand and gravel -----	34	380
Sand, gravel, and clay -----	10	390
Sand, and gravel, fine -----	5	395
Sand, fine to very fine -----	19	414
Sand, gravel, and clay -----	6	420
Sand, fine to medium -----	15	435
Sand, fine to coarse -----	15	450
Sand, fine to medium -----	18	468
Clay and sand, fine -----	12	480
Sand, fine, and some gravel -----	10	490
Sand, fine and some gravel, and clay -----	11	501
Sand, fine and clay -----	9	510
Clay, sandy -----	10	520
Clay -----	10	530
Clay and some gravel -----	8	538
Sand, some gravel, and clay -----	3	540
Clay and some sand -----	20	560
Sand, fine to medium -----	12	572
Sand, medium, and clay -----	8	580
Clay -----	5	585
Sand, medium, and some clay -----	15	600
Sand, fine to coarse -----	10	610
Sand and clay -----	20	630
Sand, medium to coarse -----	10	640
Clay and sand -----	10	650

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well G-2		
Owner: U. S. Geological Survey. Driller: B & W Drilling Co. of Texas.		
Sand, some granules, and caliche -----	10	10
Sand, fine to medium -----	20	30
Sand, very fine to medium, and some clay -----	10	40
Sand, very fine to medium, and some granules -----	10	50
Sand, fine to coarse, and some caliche -----	10	60
Sand, fine to coarse, some caliche, and mica -----	20	80
Sand, fine to coarse, some caliche, and clay -----	10	90
Sand, fine to coarse, some caliche, clay, and mica -----	10	100
Sand, fine to coarse, some caliche, and clay -----	10	110
Sand, fine to coarse, and some caliche -----	10	120
Sand, clay, and some caliche -----	100	220
Clay, sandy, silty, and some caliche -----	40	260
Clay, dark brown, silty, some sand and caliche -----	50	310
Clay, reddish-brown and gray, and some caliche -----	90	400
Clay, medium brown, silty, some sand and caliche -----	130	620
Clay, reddish-brown, and some caliche -----	280	900
Clay, medium brown, silty -----	309	1,209
Well K-13		
Owner: U. S. Geological Survey. Driller: B & W Drilling Co. of Texas.		
Sand, caliche, and gravel, medium -----	10	10
Sand, coarse, and gravel, coarse -----	20	30
Sand, fine to coarse, and gravel, coarse -----	70	100
Sand, fine to coarse, and some gravel, fine -----	20	120
Sand, very fine to coarse, and gravel, fine -----	40	160
Sand, very fine to coarse -----	20	180
Sand, very fine to coarse, and some gravel, fine -----	20	200
Sand, very fine to fine -----	10	210
Sand, very fine to fine, and gravel, fine to medium -----	10	220
Sand, very fine to fine, gravel, medium, and caliche -----	30	250
Sand, very fine to medium, and gravel, fine to medium -----	60	310
Sand, very fine to medium, and gravel, fine to medium -----	50	360
Sand, medium -----	10	370
Sand, fine to medium, and gravel, fine -----	10	380
(continued on next page)		

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well K-13--continued		
Sand, fine to medium -----	20	400
Sand, very fine, and gravel, coarse -----	20	420
Sand, very fine to medium, and gravel, fine to coarse ---	10	430
Gravel, fine to medium, well-rounded -----	10	440
Gravel, fine to medium, subangular -----	10	450
Gravel, fine to coarse, rounded to subangular -----	10	460
Gravel, fine to medium, rounded -----	10	470
Sand, very fine to medium, gravel, fine to medium, subangular -----	10	480
Sand, very fine to medium, gravel, fine to medium, and caliche -----	20	500
Sand, fine to coarse, gravel, round to subangular, and arkose -----	10	510
Gravel, fine to coarse -----	10	520
Gravel, fine to coarse, sand, and calcite -----	10	530
Gravel, fine, chert, quartz, and sand -----	20	550
Sand, medium, and gravel, fine -----	10	560
Gravel, fine to medium, and sand, medium -----	80	640
Sand, very fine to fine, gravel, fine, and shale, black	10	650
Gravel, fine to coarse, round, and sand, medium -----	10	660
Gravel, fine to coarse, round, and medium sand -----	10	670
Gravel, fine to coarse, round, and sand, coarse -----	30	700
Sand, fine to coarse, and gravel, medium, round -----	10	710
Sand, very fine to medium, gravel, medium, angular -----	20	730
Gravel, fine, and some sand -----	20	750
Gravel, medium, round to angular -----	20	770
Gravel, medium, angular -----	80	850
Gravel, medium, dolomite, and some arkose -----	10	860
Sand, fine to very coarse, and some gravel -----	30	890
Gravel, medium to coarse, and clay, sandy -----	10	900
Gravel, medium to coarse, subangular -----	10	910
Gravel, medium to coarse, subangular -----	10	920
Gravel, medium, dolomite, and arkose, round to subangular	20	940
Gravel, medium, some limestone, and some arkose, angular	20	960
Gravel, medium, limestone, and some arkose, angular -----	10	970
Limestone, light-colored, fine, crystalline -----	7	977

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well K-14		
Owner: U. S. Geological Survey. Driller: B & W Drilling Co. of Texas.		
Sand, medium to coarse, and gravel, medium -----	40	40
Sand, very fine to coarse -----	80	120
Sand, fine to coarse, and some gravel, fine -----	30	150
Sand, very fine, clay, and caliche -----	60	210
Clay, buff, very sandy, and some caliche -----	10	220
Sand, coarse, some clay, and caliche -----	20	240
Sand, fine to medium, and caliche -----	10	250
Sand, fine to medium, gravel, and caliche -----	10	260
Sand, fine to medium, and some gravel, fine -----	10	270
Sand, very fine to medium, gravel, and andesite -----	10	280
Sand, very fine to medium, and gravel -----	10	290
Sand, very fine to fine, and some gravel, medium angular	50	340
Sand, very fine to fine, and some gravel, angular, medium	40	380
Sand, very fine to coarse, and some gravel, angular, medium -----	40	420
Sand, very fine to medium, gravel, and caliche -----	20	440
Clay, very sandy and some gravel, fine -----	30	470
Sand, fine to medium, and gravel, fine -----	40	510
Sand, very fine to fine -----	10	520
Sand, very fine to medium -----	60	580
Gravel, medium to fine, and sand -----	10	590
Gravel, medium, granitic and sand -----	40	630
Gravel, medium, granitic, sand, shale, red -----	10	640
Sand, fine to medium, gravel, medium -----	10	650
Gravel, medium to coarse -----	40	690
Gravel, medium to coarse, subangular -----	20	710
Gravel, medium to coarse, round to subangular, sand -----	30	740
Sand, fine to medium, and gravel -----	10	750
Sand, very fine to coarse, and gravel, medium -----	10	760
Sand, very fine to coarse, and gravel, medium to coarse -	30	790
Gravel, medium to coarse, and sand -----	10	800
Gravel, fine to coarse, and sand -----	30	830
Sand, fine to medium and gravel, medium -----	40	870
Gravel, granitic, medium to coarse, subangular -----	20	890
Granite -----	12	902

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well K-16		
Owner: U. S. Geological Survey. Driller: B & W Drilling Co. of Texas.		
Sand, and caliche -----	20	20
Sand, very coarse, gravel, and pebbles -----	30	50
Sand, very coarse, gravel, and clay -----	30	80
Pebbles, round, boulders, some sand, coarse, and gravel -	20	100
Gravel, round, sand, very coarse, and pebbles -----	10	110
Sand, very coarse -----	30	140
Sand, very coarse, and gravel -----	40	180
Sand, very coarse -----	10	190
Sand, fine to very coarse -----	10	200
Sand, fine to medium -----	20	220
Sand, fine to coarse -----	10	230
Sand, coarse to very coarse -----	10	240
Sand, medium to very coarse -----	30	270
Sand, fine to medium -----	10	280
Sand, very coarse, and gravel -----	10	290
Sand, very coarse -----	20	310
Sand, medium to coarse -----	10	320
Sand, very coarse -----	20	340
Sand, medium -----	20	360
Sand, medium to coarse -----	10	370
Sand, fine to coarse -----	20	390
Sand, very coarse -----	10	400
Sand, fine to medium, granules, angular, and clay -----	10	410
Sand, medium to coarse -----	10	420
Sand, medium -----	10	430
Sand, medium to coarse -----	10	440
Sand, medium to very coarse, and granules -----	20	460
Sand, very coarse, granules, and caliche -----	20	480
Sand, very coarse, granules, caliche, and clay, buff ----	10	490
Sand, very coarse, granules, and pebbles -----	10	500
Sand, fine to very coarse, granules, and pebbles -----	10	510
Sand, fine to very coarse, pebbles round and granules --	5	515
Sand, coarse to very coarse, and granules -----	5	520
Sand, medium to coarse, and granules -----	10	530
Sand, medium to coarse -----	20	550
Sand, medium to coarse, and clay -----	10	560
Sand, fine to medium -----	10	570
Sand, very fine to medium -----	20	590

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Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well K-16--continued		
Sand, coarse -----	10	600
Sand, coarse to very coarse -----	10	610
Sand, medium to coarse -----	10	620
Sand, medium to coarse and clay -----	20	640
Sand, medium to coarse -----	8	648
Sand, fine to medium, and caliche -----	12	660
Sand, fine to medium, and granules -----	9	669
Sand, fine to medium, and clay -----	11	680
Sand, fine to medium -----	10	690
Sand, fine to coarse -----	10	700
Sand, fine to medium -----	50	750
Sand, medium -----	10	760
Sand, fine to medium -----	10	770
Sand, fine to medium -----	10	780
Sand, very fine to medium -----	10	790
Sand, very fine to fine -----	30	820
Sand, very fine to fine, and granules -----	10	830
Sand, fine to coarse, granules, and clay -----	10	840
Sand, very fine to fine -----	10	850
Sand, very fine to medium, and granules -----	10	860
Sand, very fine to medium, and some clay -----	8	868
Clay, buff -----	2	870
Sand, very fine to medium, shale, buff, and granules ----	6	876
Sand, very fine to coarse, and granules -----	4	880
Sand, very fine to fine -----	10	890
Sand, very fine to coarse, and granules -----	10	900
Sand, very fine to coarse, and granules -----	10	910
Sand, very fine to medium, caliche, granules, and clay --	10	920
Sand, very fine to medium, granules, and caliche -----	14	934
Sand, very fine to medium, granules, caliche, and clay --	16	950
Sand, very fine to coarse, and pebbles -----	10	960
Sand, very fine to medium, granules, and pebbles -----	20	980
Sand, very fine to very coarse, granules, and pebbles ---	10	990
Sand, very fine to medium, pebbles, and some clay -----	10	1,000
Sand, very fine to medium, pebbles, and some sandstone --	20	1,020
Sand, very fine to coarse, and granules -----	10	1,030
Sand, very fine to medium, and granules -----	10	1,040
Sand, very fine to coarse, limestone, and granules -----	10	1,050
Sand, very fine to very coarse, pebbles and granules ---	10	1,060

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Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well K-16--continued		
Sand, fine to coarse, cobbles, pebbles, and granules -----	20	1,080
Sand, very coarse, boulders, cobbles, and pebbles -----	5	1,085
Well L-1		
Owner: U. S. Geological Survey. Driller: B & W Drilling Co. of Texas.		
Sand, fine -----	20	20
Sand, very fine, and clay -----	20	40
Sand, fine, gravel, and caliche -----	10	50
Clay, buff, sandy -----	10	60
Clay, buff -----	40	100
Clay, buff, and sandstone -----	40	140
Clay, buff, sandy -----	10	150
Clay, buff, and gravel, coarse -----	12	162
Sand, fine -----	8	170
Clay, buff -----	39	209
Sand, fine -----	19	228
Clay, buff -----	12	240
Sand, medium -----	10	250
Clay, buff -----	1	251
Sand, medium -----	10	261
Sand, very coarse to medium -----	10	271
Sand, fine -----	20	291
Sand, very fine -----	10	301
Sand, very coarse, and gravel -----	20	321
Clay, very sandy -----	10	331
Sand, very coarse, and clay -----	10	341
Clay, sandy, and gravel, angular -----	12	353
Clay, sandy -----	3	356
Clay, buff -----	15	371
Clay and sand -----	10	381
Sand, and some clay -----	10	391
Sand, fine -----	10	401
Sand, medium -----	10	411
Sand, medium, and clay -----	10	421
Sand, medium -----	10	431
Sand, fine to medium -----	10	441
Sand, fine to medium and clay -----	20	461
(continued on next page)		



Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well L-1--continued		
Sand, medium -----	10	471
Clay, sandy -----	14	485
Clay, brown, and gravel, angular -----	10	495
Gravel, coarse, angular, sand, and clay -----	10	505
Sand, coarse, clay, and gravel -----	10	515
Clay, sandy -----	16	531
Clay, sandy, and gravel, very coarse -----	10	541
Sand, fine to medium, and some clay -----	10	551
Clay, buff, sandy -----	10	561
Clay, sandy, and shale, gray -----	10	571
Clay, buff, sandy -----	10	581
Clay, buff, sandy, and caliche -----	10	591
Clay, buff, and some sand, very fine -----	10	601
Sand, very fine to medium, and clay -----	10	611
Sand, very fine to medium, and gravel -----	5	616
Clay, buff, and sand -----	20	636
Clay, buff, sand, and gravel -----	10	646
Clay, buff, and sand -----	20	666
Sand, medium, gravel, and clay -----	10	676
Clay, buff, and sand -----	13	689
Clay, buff, and bentonite -----	10	699
Clay, buff, sandy -----	10	709
Clay, buff, and sand, medium -----	10	719
Sand, very fine and clay -----	10	729
Sand, fine to coarse, and clay -----	10	739
Sand, very fine, and clay -----	20	759
Sand, very fine to coarse, and clay -----	4	763
Clay, buff, sandy -----	10	773
Sand, very fine and clay -----	10	783
Clay, buff and some sand -----	25	808
Clay, buff -----	20	828
Clay, buff, and some sand, fine -----	20	848
Sand, medium, and clay -----	10	858
Clay, buff -----	10	868
Clay, buff and sand, medium -----	20	888
Sand, medium, to fine, and clay -----	10	898
Sand, fine and clay -----	10	908
Sand, very fine to medium, clay, and gravel -----	10	918
Clay, buff, sandy -----	10	928
Sand, very fine, and clay -----	10	938

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Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well L-1--continued		
Sand, very fine -----	10	948
Sand, very fine, and clay -----	10	958
Clay, and sand, very fine -----	10	968
Sand, very fine and clay -----	20	988
Clay and sand, very fine -----	40	1,028
Clay, sand, very fine to coarse, and gravel -----	10	1,038
Shale, brown -----	10	1,048
Shale, brown, and gravel, fine -----	38	1,086
Clay, buff and sand, fine -----	10	1,096
Shale, brown, fine sand, and gravel -----	9	1,105
Sand, very fine, gravel, and clay -----	11	1,116
Clay, buff, sandy -----	20	1,136
Clay, buff, and sand, very fine -----	20	1,156
Clay, buff -----	10	1,166
Sand, very fine, and clay -----	10	1,176
Sand, medium, and clay -----	10	1,186
Sandstone, very fine -----	10	1,196
Clay, buff -----	9	1,205
No record -----	3	1,208
Well L-2		
Owner: U. S. Geological Survey. Driller: B & W Drilling Co. of Texas.		
Sand, fine to very coarse, caliche, granules, and pebbles	10	10
Sand, very fine to very coarse, granules, and pebbles ---	20	30
Sand, fine to medium -----	20	50
Sand, fine to very coarse -----	20	70
Clay, and sand, very fine -----	10	80
Clay, silt, and sand, very fine -----	10	90
Sand, medium to coarse -----	10	100
Sand, very fine to coarse, clay, and granules -----	10	110
Sand, fine to coarse, and some granules -----	10	120
Sand, very fine to very coarse, granules, and pebbles ---	10	130
Sand, medium to very coarse -----	10	140
Sand, fine to coarse -----	20	160
Sand, medium to coarse -----	10	170
Sand, medium to very coarse -----	20	190
(continued on next page)		

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well L-2--continued		
Sand, medium to very coarse, and granules -----	30	220
Granules, pebbles, clay, and sand, fine to coarse -----	20	240
Granules and sand, very fine to very coarse -----	10	250
Sand, very fine to coarse, and granules -----	10	260
Sand, very fine to coarse, granules, and clay -----	20	280
Granules, and sand, medium to coarse -----	20	300
Sand, fine to very coarse, and granules -----	10	310
Granules, sand, very fine to medium, and clay -----	10	320
Granules and sand, fine to very coarse -----	20	340
Granules, sand, very fine to medium, and clay -----	20	360
Clay, granules, and sand, very fine to medium -----	20	380
Granules, sand, fine to very coarse, and clay -----	10	390
Clay, sand, very fine to medium and granules -----	20	410
Sand, very fine to medium, clay, and granules -----	20	430
Clay, silt, sand, fine, and some granules -----	20	450
Clay, sandy -----	10	460
Clay, sand, fine to medium, granules, and pebbles-----	10	470
Clay, red, and pebbles -----	20	490
Clay, red, sandy -----	20	510
Clay, silt, sand, very fine to coarse, and caliche -----	30	540
Clay, sand, very fine to medium, granules and pebbles ---	10	550
Clay, sand, very fine to medium, granules, pebbles, and caliche -----	30	580
Clay, sand, very fine to coarse, granules, and pebbles --	10	590
Sand, very fine to coarse, clay, granules, and pebbles --	20	610
Clay, sand, very fine to coarse, granules, and pebbles --	10	620
Sand, fine to coarse, clay, and granules -----	10	630
Sand, very fine to very coarse, and granules -----	10	640
Sand, very fine to medium, clay, granules, and pebbles --	20	660
Clay, sand, very fine to medium, silt, and caliche -----	10	670
Sand, very fine to medium, clay, and caliche -----	10	680
Sand, very fine to coarse, clay, and caliche -----	20	700
Sand, very fine to medium, silt, clay, and granules -----	10	710
Sand, very fine to medium, clay, and granules -----	10	720
Sand, very fine to medium, and clay -----	10	730
Clay and sand, very fine to medium -----	20	750
Clay, red -----	10	760
Clay, red, sand, fine to medium, and caliche -----	10	770
Clay, red, sandy, and some caliche -----	20	790
Clay, red, and sand, very fine to fine -----	10	800

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Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well L-2--continued		
Clay, brown, sand, very fine to fine, and caliche -----	10	810
Clay and sand, fine to medium -----	10	820
Clay, sand, fine to medium, caliche, and some granules --	10	830
Sand, fine to coarse, and some clay -----	10	840
Clay, sand, fine to medium, and caliche -----	10	850
Sand, gray, medium, and some clay -----	5	855
Sand, fine to very coarse, some granules, clay and caliche -----	25	880
Clay, brown, sandy -----	20	900
Clay, brown, and sand, fine to medium -----	20	920
Clay, brown, sand, fine to medium, and caliche -----	20	940
Sand, fine to medium, clay, and caliche -----	8	948
Clay, red, sand, medium to coarse, granules, pebbles, and caliche -----	5	953
Sand, fine to very coarse, granules, pebbles and some clay -----	10	963
Sand, gray, fine to medium, and some granules -----	7	970
Sand, fine to coarse, granules, and clay -----	10	980
Sand, fine to very coarse, some granules, clay, and caliche -----	20	1,000
Sand, very fine to medium, and some clay -----	10	1,010
Sand, very fine to very coarse, granules, and some clay -	10	1,020
Clay, sand, fine to medium, and some granules -----	10	1,030
Sand, fine to medium, and some clay -----	10	1,040
Sand, fine to very coarse, and some granules -----	10	1,050
Sand, fine to very coarse, some granules, and clay -----	10	1,060
Granules, pebbles, caliche, some sand, and clay -----	20	1,080
Clay, sand, very fine to medium, and caliche -----	10	1,090
Clay, sand, medium to very coarse, granules, and some caliche -----	10	1,100
Clay, sand, very fine to coarse, some granules and caliche -----	10	1,110
Sand, very fine to medium -----	30	1,140
Clay, buff and caliche -----	10	1,150
Sand, very fine to coarse, granules, and caliche -----	10	1,160
Sand, fine to medium, and clay -----	10	1,170
Sand, very fine to coarse, clay, some granules, and pebbles -----	10	1,180

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Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well L-2--continued		
Sandstone, hard, clay, and some caliche -----	10	1,190
Clay, hard, sand, medium to coarse, and some granules ----	10	1,200
Clay and sand, fine to medium -----	20	1,220
Clay, brown, sandy -----	10	1,230
Clay, brown, sand, fine to coarse, and caliche -----	40	1,270
Clay, brown, sand, fine to coarse, and caliche -----	30	1,300
Clay, brown, sand, fine to medium, some granules, and caliche -----	10	1,310
Sand, fine to medium, and some clay -----	10	1,320
Sand, very fine to very coarse and clay -----	10	1,330
Clay, brown, and sand, very fine to medium -----	20	1,350
Sand, very fine to fine and some clay -----	20	1,370
Sand, very fine to fine, clay, and granules -----	30	1,400
Sand, fine to coarse, some clay, granules, and pebbles ---	10	1,410
Clay, sand, very fine to fine, and caliche -----	30	1,440
Clay, brown, sand, very fine to fine, caliche, and some granules -----	30	1,470
Sand, very fine to medium, some clay, and caliche -----	20	1,490
Sand, very fine to fine, clay and caliche -----	20	1,510
Clay, sand, very fine, to medium, caliche and some granules	10	1,520
Clay, brown, sandstone, and caliche -----	10	1,530
Clay, brown, sand, very fine, to fine, and caliche -----	10	1,540
Clay, brown, sand, very fine to very coarse, granules and caliche -----	10	1,550
Clay, brown, sand, very fine to very coarse, and some granules -----	10	1,560
Clay, brown, sand, very fine to very coarse, and caliche -	20	1,580
Clay, brown, sandstone, sand, very coarse, and caliche ---	10	1,590
Clay, brown, sand, very fine to very coarse, some granules, and caliche -----	10	1,600
Clay, brown, sand, very fine to fine, caliche, pebbles, and granules -----	10	1,610
Clay, brown, sand, very fine, and caliche -----	10	1,620
Clay, brown, sand, very fine to medium, some granules, and caliche -----	10	1,630
Sand, fine to medium, and caliche -----	20	1,650
Sand, fine to medium, caliche, and clay -----	10	1,660
Clay, brown, sand, very fine to very coarse, granules, and caliche -----	10	1,670
Sand, fine to medium, granules, and caliche -----	10	1,680
No record -----	6	1,686

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well L-4		
Owner: U. S. Geological Survey. Driller: B & W Drilling Co. of Texas.		
Sand, fine to coarse, and caliche -----	10	10
Clay, brown, granules, sand, coarse to very coarse, and caliche -----	10	20
Granules, sand, coarse to very coarse -----	10	30
Clay, buff, granules, sand, fine to very coarse, and caliche -----	10	40
Sand, fine to very coarse, and granules -----	10	50
Granules, pebbles, and sand, fine to very coarse -----	10	60
Clay, buff, and sand, fine to coarse -----	10	70
Clay and sand, very fine to coarse -----	10	80
Clay, buff, sand, fine to very coarse, and granules -----	30	110
Sand, fine to very coarse, granules and pebbles -----	30	140
Sand, fine to very coarse, and some granules -----	30	170
Sand, very fine to very coarse -----	30	200
Sand, very fine to very coarse, and some granules -----	10	210
Sand, very fine to very coarse, and some caliche -----	10	220
Sand, very fine to coarse, and some caliche -----	30	250
Sand, very fine to very coarse, granules, and caliche ---	60	310
Clay, sandy, sand, very fine to very coarse, granules, and some caliche -----	30	340
Sand, very fine to very coarse, granules, and clay, sandy	10	350
Sand, very fine to very coarse, and some granules -----	30	380
Sand, very fine to very coarse, and caliche -----	60	440
Sand, very fine to very coarse -----	10	450
Clay, sandy, sand, very fine to very coarse, and granules	20	470
Missing -----	17	487
Sand, very fine to very coarse, clay, sandy, and caliche	10	497
Sand, very fine to coarse, and caliche -----	3	500
Clay, sandy, sand, very fine to very coarse, granules, pebbles, caliche -----	10	510
Sand, very fine to very coarse, granules, caliche, clay, sandy -----	13	523
Sand, very fine to very coarse, granules, and caliche ---	15	538
Clay, sandy, sand, very fine to very coarse, granules, and caliche -----	10	548
Clay, and some sand, fine to very coarse -----	2	550
Clay, sand, very fine to very coarse, granules, pebbles, and caliche -----	20	570
(continued on next page)		

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well L-4--continued		
Clay, sandy, sand, very fine to very coarse, granules, pebbles, caliche -----	10	580
Clay, sandy, sand, very fine to very coarse, some granules, and caliche -----	20	600
Sand, very fine to very coarse, granules, pebbles, and caliche -----	5	605
Clay, sandy, sand, very fine to very coarse, and caliche	17	622
Clay, sandy, sand, very fine to fine, and caliche -----	10	632
Clay, sand, very fine to fine, some pebbles, and caliche	10	642
Missing -----	10	652
Clay, sandy, sand, very fine to fine, some granules, and caliche -----	20	672
Clay, sandy, sand, very fine to fine, and some caliche --	30	702
Clay, silty, sand, medium to very coarse -----	20	722
Clay, sandy, sand, very fine to fine -----	10	732
Clay, sandy, sand, very fine to very coarse, and caliche	10	742
Clay, sandy, sand, very fine to very coarse, granules, pebbles, caliche -----	10	752
Clay, sand, very fine to very coarse, granules, pebbles, caliche -----	10	762
Clay, sandy, sand, very fine to very coarse, granules, pebbles, caliche -----	10	772
Sand, very fine to very coarse, granules, pebbles, and caliche -----	10	782
Clay, sandy, sand, very fine to very coarse, granules, caliche -----	10	792
Sand, very fine to very coarse, some granules, and caliche -----	10	802
Clay, sandy, sand, very fine to fine, and caliche -----	40	842
Sand, very fine to very coarse, caliche, and clay, sandy	10	852
Clay, sandy, sand, very fine to very coarse, and caliche	10	862
Clay, sandy, sand, very fine to very coarse, granules, caliche -----	20	882
Clay, sandy, sand, very fine to fine, granules, and caliche -----	10	892
Clay, sandy, very fine to fine, and caliche -----	58	950

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico continued

	Thickness (feet)	Depth (feet)
Well L-6		
Owner: U. S. Geological Survey. Driller: B & W Drilling Co. of Texas.		
Clay, pink, and sand, fine -----	10	10
Sand, medium to coarse -----	10	20
Sand, very coarse -----	10	30
Clay, buff, sand, very coarse, and gravel -----	10	40
Clay, buff, sandy, and caliche -----	10	50
Sand, coarse -----	20	70
Sand, coarse, gravel, and caliche -----	10	80
Sand, medium -----	10	90
Sand, coarse to very coarse -----	10	100
Clay, buff -----	20	120
Sand, medium -----	10	130
Sand, fine to medium -----	10	140
Sand, medium to coarse -----	10	150
Sand, coarse to very coarse -----	10	160
Sand, medium -----	20	180
Sand, coarse to very coarse, and gravel -----	62	242
Sand, medium to coarse, pebbles -----	10	252
Sand, medium to coarse, and gravel -----	10	262
Sand, coarse to very coarse, and gravel -----	30	292
Sand, coarse to very coarse, gravel, and clay -----	10	302
Sand, fine to medium -----	10	312
Sand, medium to coarse -----	10	322
Sand, coarse to very coarse -----	10	332
Sand, very coarse, and gravel -----	10	342
Sand, medium to very coarse -----	10	352
Sand, medium to coarse, and gravel -----	10	362
Sand, fine to very coarse, and gravel -----	30	392
Clay, buff, sandy, and gravel -----	10	402
Sand, fine to coarse, and gravel -----	30	432
Sand, fine to coarse, and gravel, coarse, angular -----	10	442
Sand, fine to coarse, clay, and gravel -----	9	451
Clay, sand, and gravel, coarse -----	5	456
Clay, sand, gravel, coarse, and pebbles -----	4	460
Clay, buff, sandy, and pebbles -----	17	477
Sand, fine to coarse, gravel, and clay -----	20	497
Sand, coarse to very coarse, and clay -----	5	502
Sand, medium to coarse -----	10	512
Sand, medium -----	8	520

(continued on next page)



Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Dona Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well L-6--continued		
Gravel, coarse, angular, and sand, medium -----	5	525
Gravel, coarse, angular, sand, medium, and clay -----	5	530
Sand, fine to coarse, and gravel -----	15	545
Sand, medium to very coarse -----	10	555
Sand, fine to coarse, and gravel -----	7	562
Sand, very fine to very coarse, and gravel -----	13	575
Sand, very fine to medium, and clay -----	10	585
Sand, very fine to coarse, and gravel -----	5	590
Sand, coarse to very coarse, and gravel -----	10	600
Sand, very fine to fine -----	10	610
Sand, medium to very coarse -----	10	620
Sand, fine to coarse -----	10	630
Sand, very fine to medium -----	10	640
Sand, very fine to coarse -----	10	650
Gravel, and sand, medium to coarse -----	10	660
Gravel, sand, medium, and some clay -----	7	667
Clay, sandy, gravel, and pebbles -----	3	670
Sand, fine to very coarse, gravel, and clay -----	3	673
Shale, buff, and gravel -----	5	678
Clay, sandy, and gravel -----	12	690
Well L-12		
Owner: U. S. Geological Survey. Driller: B & W Drilling Co. of Texas.		
Sand, fine to medium -----	20	20
Sand, medium to coarse -----	10	30
Sand, medium to very coarse -----	10	40
Sand, medium to coarse -----	10	50
Gravel and pebbles -----	40	90
Sand, very coarse, gravel, and pebbles -----	50	140
Sand, very fine to fine, some gravel, and pebbles -----	20	160
Gravel, pebbles, some sand, coarse to very coarse -----	30	190
Sand, medium to very coarse, gravel, and pebbles -----	40	230
Sand, medium to very coarse, some gravel, and pebbles ---	10	240
Sand, fine to medium -----	30	270
Sand, fine to medium, some gravel, and pebbles -----	10	280
(continued on next page)		

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well L-12--continued		
Sand, fine to coarse -----	20	300
Sand, fine to medium -----	10	310
Sand, fine to coarse -----	60	370
Sand, fine to very coarse, and gravel -----	10	380
Clay -----	20	400
Clay and sand, fine to medium -----	10	410
Sand, fine to medium, and some clay -----	20	430
Sand, fine to very coarse, some gravel, and pebbles -----	20	450
Sand, fine to very coarse, and gravel -----	10	460
Gravel and pebbles -----	20	480
Sand, medium to very coarse, and gravel -----	10	490
Clay and sand, medium to very coarse -----	10	500
Sand, medium to coarse, and some clay -----	10	510
Sand, fine to medium -----	10	520
Missing -----	10	530
Sand, fine to medium -----	30	560
Sand, coarse to very coarse, and gravel -----	10	570
Missing -----	10	580
Sand, fine to medium -----	20	600
Missing -----	5	605
Sand, fine to medium -----	5	610
Sand, medium to very coarse -----	10	620
Sand, fine to very coarse -----	40	660
Sand, fine to medium -----	90	750
Missing -----	10	760
Clay -----	80	840
Clay and sand, very fine to fine -----	10	850
Missing -----	10	860
Sand, fine to medium -----	40	900
Missing -----	10	910
Sand, medium to coarse -----	20	930
Clay and sand, very fine to medium -----	20	950
Sand, fine to medium -----	40	990
Clay and sand, very fine to fine -----	10	1,000
Clay and sand, very fine to medium -----	10	1,010
Clay and sand, very fine to fine -----	40	1,050
Missing -----	10	1,060
Clay and sand, very fine to fine -----	149	1,209

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well M-2		
Owner: U. S. Geological Survey. Driller: B & W Drilling Co. of Texas.		
Sand, fine to medium, and caliche-----	20	20
Sand, fine to very coarse, gravel, and caliche -----	10	30
Gravel, pebbles, and caliche -----	10	40
Pebbles, gravel, and caliche -----	10	50
Sand, very coarse, quartz, and gravel -----	20	70
Sand, fine to very coarse, and gravel -----	10	80
Shale, brown, and gravel -----	10	90
Sand, fine to coarse, and gravel -----	10	100
Shale, brown, sand, and gravel -----	10	110
Sand, very fine to very coarse, and gravel -----	20	130
Sand, very fine to medium -----	30	160
Sand, very fine to medium, gravel, and clay -----	10	170
Shale, brown -----	10	180
Shale, brown, and caliche -----	6	186
Clay, buff, sandy -----	4	190
Clay, buff, and pebbles -----	10	200
Shale, brown, and gravel -----	6	206
Sand, coarse, and some clay -----	4	210
Sand, medium to coarse, and gravel -----	5	215
Shale, brown, sand, and gravel -----	2	217
Sand, very fine to coarse -----	3	220
Sand, fine to very coarse, and gravel -----	10	230
Sand, fine to coarse, gravel, and shale -----	10	240
Shale, buff, and gravel, coarse -----	14	254
Sand, coarse to very coarse, and clay -----	6	260
Shale, buff, and pebbles -----	10	270
Sand, coarse to very coarse, and some clay -----	10	280
Gravel, angular, and caliche -----	10	290
Clay, buff, sandy -----	10	300
Gravel, angular, and some clay -----	10	310
Sand, buff, very fine to medium, and clay -----	6	316
Clay, buff -----	4	320
Shale, brown, clay, buff, and caliche -----	10	330
Sand, fine to coarse -----	6	336
Shale, buff -----	4	340
Shale, buff, and gravel -----	6	346
Sand, fine -----	7	353
Shale, buff -----	3	356

(continued on next page)

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well M-2--continued		
Sand, medium -----	4	360
Shale, buff, and gravel, coarse -----	10	370
Shale, buff -----	20	390
Sand, medium -----	10	400
Sand, very fine to fine -----	10	410
Sand, fine, gravel, and caliche -----	11	421
Sand, fine to medium, and caliche -----	19	440
Sand, very fine to fine -----	11	451
Clay, buff, sandy, and caliche -----	9	460
Clay, buff, sandy, gravel, and caliche -----	10	470
Sand, very fine to fine, and clay -----	10	480
Clay, buff, sandy, and caliche -----	10	490
Clay, buff, sand, coarse, and gravel -----	10	500
Sand, very coarse, gravel, and clay -----	20	520
Sand, very fine to fine -----	10	530
Sand, medium to coarse, gravel, and caliche -----	12	542
Sand, fine to coarse, and caliche -----	18	560
Sand, medium to coarse, gravel, caliche, and clay -----	10	570
Clay, buff, sandy, gravel, and caliche -----	10	580
Clay, sand, coarse, and gravel -----	5	585
Sand, fine to coarse, and gravel -----	10	595
Clay, very sandy, and gravel -----	10	605
Clay, sandy, and much caliche -----	3	608
Clay, sandy, gravel, and caliche -----	7	615
Clay, buff -----	10	625
Sand, very fine -----	20	645
Sand, medium to coarse, and caliche -----	20	665
Sand, very coarse, and gravel -----	12	677
Clay, sandy, and caliche -----	13	690
Sand, medium to coarse, and clay -----	10	700
Sand, medium, and clay -----	10	710
Sand, medium, and granules -----	10	720
Sand, medium to coarse, and granules-----	15	735

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well M-5		
Owner: U. S. Geological Survey. Driller: B & W Drilling Co. of Texas.		
Caliche -----	20	20
Gravel, coarse, clay, red, and caliche -----	30	50
Gravel, coarse, angular, and caliche -----	10	60
Shale, brown, and caliche -----	10	70
Clay, brown, sandy, and caliche -----	10	80
Shale, brown, sand, and caliche -----	20	100
Gravel, very coarse, angular -----	20	120
Sand, reddish, fine -----	2	122
Sand, coarse, clay, and caliche -----	8	130
Caliche -----	10	140
Sand, very coarse to coarse -----	10	150
Shale, brown, and caliche -----	10	160
Sand, very fine to very coarse, and gravel, coarse, angular -----	30	190
Sand, very fine to coarse, gravel, coarse, angular, and caliche -----	10	200
Clay, buff, sandy -----	20	220
Shale, brown, sandy, and caliche -----	10	230
Clay, buff, gravel, fine, angular -----	10	240
Sand, very coarse, gravel, angular, and shale, brown ----	10	250
Gravel, fine to coarse, angular -----	10	260
Sand, fine to coarse -----	10	270
Sand, coarse, and gravel, angular -----	10	280
Sand, fine to coarse -----	10	290
Clay, buff, sandy -----	10	300
Sand, fine to coarse -----	10	310
Sand, coarse, some gravel, and shale, pink -----	10	320
Clay, brown, sandy -----	10	330
Clay, brown, sand, coarse, and gravel -----	10	340
Sand, very fine -----	8	348
Clay, buff, and sand, coarse -----	2	350
Clay, brown, and sandstone, very fine -----	20	370
Gravel, angular, and sand, very fine -----	10	380
Sand, very fine to fine -----	10	390
Clay, buff, sandy -----	7	397
Shale, brown, and bentonite -----	3	400
Clay, pink, and sand, coarse -----	10	410
Clay, pink, sandy -----	4	414

(continued on next page)

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well M-5--continued		
Sand, and clay -----	6	420
Sand, fine to medium -----	10	430
Sand, fine to medium, and clay -----	10	440
Clay, pink, sandy -----	20	460
Sand, medium, and clay -----	10	470
Sand, fine to medium-----	10	480
Sand, fine to medium, and clay -----	10	490
Clay, pink, and some sand -----	20	510
Clay, pink, sandy -----	10	520
Clay, pink -----	24	544
Clay, and sand -----	6	550
Sand, medium, and clay -----	10	560
Clay, pink -----	20	580
Sand, fine to medium -----	4	584
Clay, pink, sandy -----	6	590
Sand, fine to medium -----	10	600
Clay, pink, sandy -----	10	610
Sand, very fine to medium, and clay -----	10	620
Gravel, angular, quartz, sand, and clay -----	4	624
Sand, fine to medium -----	6	630
Sand, medium -----	5	635
Shale, red, and sand, coarse -----	5	640
Sandstone, fine, and sand -----	10	650
Sand, coarse, gravel, and clay -----	10	660
Shale, brown, and clay, sandy -----	10	670
Sand, medium to coarse -----	3	673
Shale, brown -----	17	690
Shale, brown, sandy, and caliche -----	10	700
Shale, brown, and sandstone -----	10	710
Sand, fine to medium -----	8	718
Sand, medium, sandstone, and clay -----	2	720
Sand, medium to coarse -----	10	730
Sand, medium to coarse, and gravel -----	10	740
Sand, very fine to fine -----	10	750
Sand, fine to medium -----	5	755
Clay, brown, and bentonite -----	5	760
Clay, sandy, and bentonite -----	9	769
Sand, fine to medium -----	5	774
Clay, brown -----	3	777
Sand, medium -----	3	780

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Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well M-5--continued		
Sand, very fine to medium -----	10	790
Sand, very fine to medium, and clay -----	3	793
Clay, brown, and shale, gray -----	7	800
Clay, brown, sandy -----	10	810
Sand, medium, and clay -----	12	822
Clay, brown, and sandstone, very fine -----	18	840
Clay, brown, sandy -----	4	844
Sand, very fine to fine -----	5	849
Clay, brown -----	11	860
Sandstone, very fine, and clay, brown -----	10	870
Sandstone, very fine, and sand, medium -----	10	880
Well N-1		
Owner: U. S. Geological Survey. Driller: B & W Drilling Co. of Texas.		
Sand, buff, clay, and caliche -----	10	10
Clay, light red, sandy, and caliche -----	10	20
Clay, red -----	10	30
Clay, light-brown -----	10	40
Clay, light brown, sandy and caliche -----	4	54
Sand, red, fine -----	10	64
Clay, light brown, sandy, and caliche -----	10	74
Sand, buff, clayey, and caliche -----	18	92
Sand, gray, fine, clayey -----	10	102
Sand, gray, fine, and caliche -----	22	124
Clay, light red -----	20	144
Clay, red, hard -----	10	154
Clay, red, and caliche -----	40	194
Clay, light red, sandy -----	10	204
Clay, light red, hard, and caliche -----	60	264
Missing -----	3	267
Clay, light red, very hard -----	7	274
Clay, light red, and caliche -----	10	284
Clay, light red, sandy, and caliche -----	20	304
Clay, light red, hard, and caliche -----	10	314
Clay, light red, and caliche -----	10	324
Clay, buff -----	30	354
(continued on next page)		

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well N-1--continued		
Clay, light red, and caliche -----	20	374
Clay, dark red, and caliche -----	10	384
Clay, red, shaley, and caliche -----	20	404
Shale, red, and caliche -----	10	414
Shale, red, hard -----	50	464
Shale, red, hard, sandy -----	8	472
Shale, red, hard -----	32	504
Shale, red, sandy -----	6	510
Shale, light red, sandy, and caliche -----	10	520
Shale, light, red, sandstone, very fine, and caliche ----	10	530
Shale, light red, sandy, and caliche -----	10	540
Shale, light red, calcareous, sandy -----	40	580
Shale, light-red and gray, calcareous, sandy -----	24	604
Shale, light red, sandy -----	34	638
Clay, buff to reddish-brown -----	132	770
Shale, reddish-brown -----	120	890
Missing -----	40	930
Shale and limestone -----	15	945
Well N-6		
Owner: U. S. Geological Survey. Driller: B & W Drilling Co. of Texas.		
Sand, medium to coarse, and caliche -----	30	30
Sand, medium to coarse -----	20	50
Sand, very fine to fine -----	40	90
Sand, very fine to medium -----	10	100
Sand, fine to coarse -----	10	110
Sand, very fine to medium -----	60	170
Sand, very fine to very coarse -----	30	200
Sand, very fine to coarse, and some clay -----	30	230
Sand, very fine, silt, and some clay -----	20	250
Sand, very fine to medium, and some clay -----	10	260
Sand, very fine to medium, and clay -----	10	270
Clay, brown, and sand, very fine -----	10	280
Clay, brown -----	10	290
Clay, brown, and some sand, very fine -----	10	300
Clay, red, some silt, and sand, fine -----	10	310
Clay, red, and some sand, fine -----	30	340
Clay, red, and sand, very fine, and silt, gray -----	30	370
Clay, red and sand, medium to coarse -----	10	380
(continued on next page)		



Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well N-6--continued		
Clay, red, and sand, medium to very coarse -----	10	390
Sand, medium to very coarse, clay, and some granules ----	10	400
Sand, medium to very coarse, and clay, red -----	10	410
Clay, red, and sand, very coarse-----	10	420
Clay, red, and sand, very coarse, and some granules ----	10	430
Clay, red, and sand, very fine to coarse -----	10	440
Clay, red, silt grey, and some granules -----	10	450
Clay, red, and silt -----	10	460
Clay, red, silt, sandy, very coarse, and some granules --	20	480
Clay, red, silt, sand, very coarse, some granules, and lime -----	10	490
Clay, red, and silt -----	10	500
Clay, red, silt, and some calcite -----	10	510
Clay, red, silt, caliche, and some sand, coarse -----	10	520
Clay, red, silt, and some caliche -----	10	530
Clay, red, silt, some caliche, and some sand, coarse ----	10	540
Clay, red, sand, medium to coarse, silt, and some granules -----	10	550
Clay, brown, sand, medium to coarse, and silt -----	20	570
Clay, brown, and sand, very fine to medium -----	10	580
Clay, brown, sand, very fine to medium, and some granules	10	590
Clay, brown, sand, very fine to coarse, and granules ----	10	600
Clay, red and brown, silt, and sand, very fine to medium	10	610
Clay, red and brown, silt, sand, very fine to medium, and granules -----	10	620
Clay, brown, sand, very fine to medium, and granules ----	10	630
Clay, brown, sand, very fine to coarse, granules, and pebbles -----	10	640
Sand, very fine to very coarse, clay, granules, and pebbles -----	10	650
Clay, brown, sand, very fine to very coarse, and granules	20	670
Clay, brown, sand very fine, granules, and pebbles -----	10	680
Granules, pebbles, lime, sand, very fine to medium, and clay -----	5	685
Granules and pebbles -----	5	690
Granules, pebbles, clay, red, and sand, fine to medium --	10	700
Conglomerate of granules, lime shell, and sand, fine ----	10	710
Conglomerate of granules, sand, very fine to coarse, and lime shell -----	20	730
Conglomerate of granules, pebbles, and sand, fine -----	10	740
Conglomerate of granules and pebbles -----	40	780
Conglomerate of granules, pebbles, some clay, red, and sand, very fine -----	30	810
Conglomerate of granules, pebbles, and sand, very fine to coarse -----	10	820

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Dona Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well R-1		
Owner: U. S. Geological Survey. Driller: B & W Drilling Co. of Texas.		
Sand -----	10	10
Granules, limestone, pebbles, and clay -----	10	20
Granules, pebbles, and limestone, black -----	10	30
Sand, very coarse, granules, and pebbles -----	100	130
Clay, buff, sand, very coarse, granules, and pebbles ----	20	150
Sand, coarse to very coarse, granules, and clay -----	20	170
Sand, coarse to very coarse, granules, and pebbles -----	20	190
Sand, coarse to very coarse, granules, and clay -----	10	200
Sand, coarse to very coarse, and granules -----	20	220
Granules, sand, coarse, and pebbles -----	30	250
Granules, sand, coarse, pebbles, and clay -----	10	260
Sand, very coarse, granules, and clay -----	50	310
Sand, medium to very coarse, granules, and pebbles -----	10	320
Sand, medium to very coarse, granules, pebbles, and clay	50	370
Sand, fine to very coarse, and granules -----	10	380
Sand, fine to very coarse, granules, and clay -----	20	400
Sand, coarse to very coarse, granules, and clay -----	30	430
Clay, very sandy, and granules -----	10	440
Sand, medium to very coarse, granules, and clay -----	30	470
Clay, white, very sandy, caliche, granules, and pebbles -	10	480
Sand, fine to very coarse, clay, white, and granules ----	10	490
Sand, very fine to coarse, and granules -----	10	500
Granules and sand, fine -----	6	506
Sand, very fine to coarse, and granules -----	4	510
Sand, very fine to coarse, granules, pebbles, and clay --	20	530
Sand, medium to very coarse, granules, pebbles, and caliche	10	540
Sand, fine to very coarse, granules, and clay -----	10	550
Sand, fine to very coarse, granules, and clay -----	10	560
Sand, fine to very coarse, and clay -----	10	570
Sand, medium to very coarse, granules, and pebbles -----	10	580
Sand, medium to very coarse, and granules -----	90	670
Sand, very fine to very coarse, granules, and caliche ----	10	680
Sand, very fine to very coarse, granules, and pebbles ----	10	690
Pebbles, granules, and sand, fine to coarse -----	10	700
Sand, very fine to coarse, and some clay -----	10	710
Sand, very fine to very coarse, and some clay -----	10	720
Clay, gray, sand, and caliche -----	10	730

(continued on next page)

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well R-1--continued		
Sand, very fine to very coarse, and some clay -----	40	770
Sand, medium to coarse, granules, and caliche -----	10	780
Caliche, sand, and granules -----	10	790
Sand, very fine to coarse, and caliche -----	5	795
Sand, very fine to coarse, granules, and caliche -----	10	805
Missing -----	10	815
Sand, fine to very coarse -----	24	839
Sand, fine to coarse, and granules -----	11	850
Sand, fine to coarse, granules, and clay -----	20	870
Clay, sandy, granules, and caliche -----	10	880
Clay, granules, and caliche -----	10	890
Clay, sandy, granules, and caliche -----	30	920
Clay, very sandy -----	10	930
Sand, fine to coarse -----	20	950
Clay, sandy and sand, very fine -----	10	960
Clay, very sandy, and sand, very fine -----	30	990
Sand, very fine, and clay -----	20	1,010
Clay and sand, very fine -----	10	1,020
Clay, buff, sandy, and sand, fine -----	40	1,060
Clay, buff, sand, fine, gravel, and pebbles -----	30	1,090
Clay, buff, sand, fine, gravel, pebbles, and lignite ----	10	1,100
Gravel, sand, very fine, and clay -----	10	1,110
Clay, buff, sand, fine, gravel, and pebbles -----	30	1,140
Sand, very fine to coarse, and gravel -----	20	1,160
Sand, very fine to medium -----	40	1,200
Well R-3		
Owner: U. S. Geological Survey. Driller: B & W Drilling Co. of Texas.		
Sand, fine caliche, and granules -----	10	10
Sand, fine, granules, and pebbles -----	10	20
Gravel -----	10	30
Gravel and sand, medium to coarse -----	10	40
Sand, medium to coarse, and gravel -----	10	50
Sand, fine to coarse, and gravel -----	10	60
Gravel, sand, and clay -----	10	70
(continued on next page)		

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well R-3--continued		
Gravel, sand, fine, and clay -----	10	80
Sand, fine to coarse, and gravel -----	20	100
Sand, medium to coarse, and gravel -----	70	170
Sand, gray, fine to coarse, and gravel -----	10	180
Sand, gray, fine to medium, and gravel -----	4	184
Sand, fine to coarse, and gravel -----	6	190
Sand, fine to medium -----	10	200
Sand, fine to medium, and gravel -----	10	210
Sand, medium to coarse, and gravel -----	10	220
Sand, fine to coarse, and gravel -----	20	240
Sand, fine to coarse, gravel, and clay -----	10	250
Sand, fine to medium, and gravel -----	10	260
Sand, fine to coarse, gravel, and clay -----	10	270
Sand, fine to medium, and some gravel -----	20	290
Sand, fine to medium, some clay, and gravel -----	10	300
Sand, medium to very coarse -----	10	310
Sand, fine to coarse, some clay, and gravel -----	10	320
Sand, fine to coarse, and gravel -----	10	330
Sand, fine to coarse, and some gravel -----	10	340
Sand, fine to coarse, some gravel, and caliche -----	10	350
Sand, fine to very coarse -----	20	370
Sand, fine to very coarse, and some caliche -----	10	380
Sand, fine, and some gravel -----	10	390
Sand, fine to coarse, and some gravel -----	50	440
Sand, fine to medium, and clay -----	10	450
Missing -----	10	460
Sand, fine to medium -----	10	470
Sand, fine to medium, and caliche -----	10	480
Sand, fine to coarse and caliche -----	20	500
Sand, fine to medium -----	20	520
Sand, clayey -----	10	530
Sand, fine to medium -----	20	550
Sand, fine to medium, and some gravel -----	45	595
Clay and gravel, very coarse -----	5	600
Sand, medium to coarse, granules, and pebbles -----	10	610
Sand, fine to medium, and granules -----	10	620
Sand, very fine, silt, clay, and some granules -----	10	630
Sand, very fine, silt, clay, and caliche -----	10	640
Sand, very fine to medium, and caliche -----	10	650
Sand, very fine to fine, and caliche -----	6	656

(continued on next page)

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well R-3--continued		
Sand, fine to medium, and caliche -----	3	659
Sandstone, fine to medium, and granules -----	10	669
Sand, very fine to medium, caliche, and granules -----	10	679
Sand, fine to coarse, caliche, and clay -----	10	689
Sand, fine to medium, indurated, granules, and pebbles --	11	700
Silt, clay, sand, fine to medium, indurated -----	10	710
Clay, sandy and caliche -----	20	730
Sand, fine to medium, some clay, and caliche -----	10	740
Silt, clay, and sand, very fine -----	20	760
Silt, clay, sand, very fine to fine, and caliche -----	10	770
Silt, clay, sand, very fine, and caliche -----	10	780
Missing -----	3	783
Clay, sandy, granules, caliche, and pebbles -----	7	790
Clay, silt, and sand, very fine -----	30	820
Clay and silt -----	20	840
Clay, silt, and sand, very fine -----	30	870
Clay, silt, and sand, very fine, indurated -----	10	880
Sand, fine to medium, and some clay -----	10	890
Sand, fine to medium, caliche, and some clay -----	30	920
Sandstone, fine to medium, granules, and caliche -----	10	930
Sand, fine to coarse, and granules -----	10	940
Sand, fine to coarse, clay, granules, and caliche -----	10	950
Well R-4		
Owner: U. S. Geological Survey. Driller: B & W Drilling Co. of Texas.		
Sand, and clay -----	10	10
Sand, silt, and caliche -----	10	20
Sand, medium to coarse -----	10	30
Sand, medium to very coarse, granules, and pebbles -----	10	40
Sand, medium to very coarse, some granules, and clay ----	10	50
Sand, some granules, pebbles, and clay-----	40	90
Sand, fine to very coarse, and clay, sandy -----	10	100
Sand, fine to coarse, some clay, and silt -----	10	110
Clay, sand, and some gravel -----	20	130
Clay, silt, sand, medium to very coarse, granules, and pebbles -----	40	170
Sand, fine to very coarse, some granules, clay, silt ----	30	200
(continued on next page)		

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--  
continued

	Thickness (feet)	Depth (feet)
Well R-4--continued		
Sand, fine to very coarse, and granules -----	50	250
Sand, fine to very coarse, granules, and pebbles -----	10	260
Sand, fine to very coarse, granules, pebbles, clay and silt -----	10	270
Sand, fine to very coarse -----	20	290
Sand, fine to very coarse, granules, some silt, and clay	10	300
Sand, fine to medium, and clay, sandy -----	10	310
Clay, sandy, and sand, fine to medium -----	10	320
Sand, medium to coarse -----	10	330
Sand, fine to coarse, and a few granules -----	10	340
Sand, clay, sandy, and clay -----	10	350
Sand, fine to very coarse, some clay, and silt -----	20	370
Sand, fine to medium, some silt, and clay -----	10	380
Sand, fine to coarse, and some granules -----	20	400
Sand, fine to very coarse, and some clay -----	20	420
Sand, clay, sandy, and clay -----	10	430
Sand, fine to very coarse, granules, and clay -----	10	440
Sand, clay, and clay, sandy -----	10	450
Clay, sandy -----	10	460
Clay and clay, sandy -----	10	470
Clay, sandy, and clay -----	10	480
Sand, and clay, sandy -----	10	490
Sand, fine to coarse, granules, and clay -----	10	500
Sand, medium to coarse, and some granules -----	10	510
Sand, fine to very coarse, granules, and silt -----	20	530
Sand, fine to coarse, and clay -----	10	540
Sand, fine to medium, and clay -----	20	560
Sand, very fine to coarse -----	10	570
Sand, fine to coarse, and granules -----	10	580
Sand, fine to coarse, granules, and pebbles -----	5	585
Sand, medium to very coarse, granules, and pebbles -----	5	590
Sand, fine to very coarse, and some clay -----	10	600
Sand, fine to coarse, and some clay -----	30	630
Sand, medium to very coarse, granules, and pebbles -----	10	640
Sand, and clay -----	10	650
Sand, fine to very coarse, granules, and pebbles -----	10	660
Sand, fine to coarse, granules, and clay -----	10	670
Sand, fine to medium, and pebbles -----	10	680
Sand, clay, sandy, and some pebbles -----	10	690
Sand, fine to very coarse, granules, and pebbles -----	10	700

(continued on next page)

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well R-4--continued		
Sand, medium to very coarse -----	20	720
Sand, medium to very coarse, and granules -----	20	740
Sand, fine to medium, clay, and clay, sandy -----	10	750
Sand, fine to medium, and some clay -----	10	760
Sand, medium to very coarse -----	20	780
Sand, very fine to medium, and some clay -----	10	790
Sand, very fine to coarse -----	17	807
Sand, very fine to medium -----	3	810
Sand, very fine to coarse -----	15	825
Well R-13		
Owner: U. S. Geological Survey. Driller: B & W Drilling Co. of Texas.		
Sand, fine to very coarse, and caliche -----	10	10
Sand, medium to very coarse -----	10	20
Sand, medium to very coarse, and caliche -----	10	30
Sand, fine to coarse, and caliche -----	10	40
Sand, fine to very coarse, and caliche -----	10	50
Sand, fine to very coarse, granules, and pebbles -----	50	100
Sand, fine to very coarse, clay, granules, and pebbles --	10	110
Sand, fine to medium, clay, and granules -----	10	120
Sand, very fine to medium, caliche, and pebbles -----	30	150
Sand, fine to coarse, granules, pebbles, and caliche ----	30	180
Sand, very fine to medium, granules, pebbles, caliche, and clay -----	10	190
Sand, very fine to medium, granules, pebbles, and caliche -----	10	200
Sand, very fine to coarse, granules, and caliche -----	10	210
Sand, fine, and caliche -----	10	220
Sand, very fine to medium, some caliche, and granules ---	10	230
Sand, very fine to medium -----	10	240
Sand, very fine to fine, and silt -----	10	250
Sand, very fine to coarse, and clay, red -----	10	260
Sand, very fine to medium, caliche, and some clay -----	10	270
Sand, fine to coarse, granules, and pebbles -----	10	280
Sand, fine to medium, granules, and pebbles -----	10	290
Sand, very fine to very coarse -----	20	310
(continued on next page)		

Table 6.- Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico-- continued

	Thickness (feet)	Depth (feet)
Well R-13--continued		
Sand, very fine to very coarse -----	10	320
Sand, very fine to medium -----	10	330
Sand, very fine to medium, and some clay -----	10	340
Sand, very fine to fine -----	10	350
Sand, very fine to coarse, and some clay -----	10	360
Clay, silt, and sand, very fine -----	20	380
Sand, very fine to coarse -----	10	390
Sand, fine to coarse -----	10	400
Sand, fine to very coarse -----	30	430
Sand, fine to coarse, and some granules -----	10	440
Sand, fine to coarse, and caliche -----	10	450
Sand, fine to coarse, and some granules -----	10	460
Sand, fine to coarse -----	10	470
Sand, very fine to coarse, and some clay -----	10	480
Sand, very fine to very coarse -----	10	490
Sand, very fine to very coarse, and some granules -----	10	500
Sand, very fine to coarse -----	20	520
Sand, very fine to very coarse -----	10	530
Sand, very fine to coarse -----	10	540
Sand, very fine to medium -----	10	550
Sand, very fine to very coarse -----	20	570
Sand, very fine to very coarse, and some granules -----	3	573
Sand, fine to very coarse, and granules -----	7	580
Sand, fine to very coarse, granules, and clay -----	10	590
Sand, very fine to coarse, and granules -----	10	600
Sand, very fine to very coarse, granules, and clay -----	10	610
Sand, fine to very coarse, granules, and pebbles-----	10	620
Sand, very fine to coarse, and clay -----	10	630
Sand, very fine to very coarse -----	10	640
Sand, fine to coarse, granules, and clay -----	10	650
Sand, fine to very coarse, granules, and pebbles -----	10	660
Sand, very fine to very coarse, and some granules -----	30	690
Sand, fine to very coarse, and clay -----	10	700
Sand, fine to very coarse, granules, some pebbles, and clay -----	10	710
Sand, fine to very coarse, granules, and pebbles -----	10	720
Sand, fine to very coarse, granules, and clay -----	8	728
Sand, fine to very coarse, granules, pebbles, and clay ---	2	730
Sand, very fine to medium, and granules -----	10	740
Sand, fine to medium, granules, pebbles, and clay -----	10	750

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Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well R-13--continued		
Sand, fine to medium, and some granules -----	10	760
Sand, gray, fine to medium -----	10	770
Sand, very fine to coarse, and some granules -----	6	776
Sand, fine to medium -----	14	790
Sand, medium to coarse, and granules -----	10	800
Sand, very fine to medium, and some granules -----	10	810
Sand, fine to medium, and some clay -----	10	820
Sand, fine to medium -----	10	830
Sand, fine to medium, clay, and granules -----	10	840
Sand, fine to medium, and clay -----	10	850
Sand, fine to medium, granules, and pebbles -----	10	860
Sand, fine to medium, granules, pebbles, and clay -----	10	870
Sand, very fine to medium, and clay -----	4	874
Sand, very fine to medium, granules, and clay -----	6	880
Sand, very fine to coarse, granules, pebbles, and clay --	10	890
Sand, very fine to coarse, and clay -----	10	900
Silt, sand, very fine to medium, and clay -----	10	910
Silt, sand, very fine to medium, and clay -----	6	916
Sand, fine to coarse, granules, and pebbles -----	4	920
Sandstone, granules, pebbles, clay, and sand, medium, to corase -----	20	940
Sand, fine to coarse, granules, pebbles, and clay -----	10	950
Sandstone, hard, fine sand, fine to coarse, granules, pebbles and clay -----	30	980
Silt, sand, very fine to medium, sandstone, and clay ----	10	990
Silt, sand, very fine to medium, granules, pebbles, and clay -----	20	1,010
Silt, sandstone, and clay -----	22	1,032
Silt, very fine to medium, granules, and clay -----	8	1,040
Sand, very fine to very coarse, granules, and some clay -	10	1,050
Sand, very fine to medium, granules, and clay -----	10	1,060
Clay, very sandy -----	10	1,070
Clay, sand, granules, and caliche -----	10	1,080
Sand, very fine to fine, granules, and some clay -----	10	1,090
Sand, very fine to fine -----	10	1,100
Sand, very fine to coarse -----	10	1,110
Sand, very fine to medium -----	20	1,130
Sand, very fine to medium, granules, and pebbles -----	2	1,132
Sand, very fine to medium, pebbles, and clay -----	8	1,140
Sand, fine to medium, granules, and some clay -----	10	1,150
Sand, very fine to fine, granules, pebbles and some clay	10	1,160
Sand, fine to coarse, and granules -----	10	1,170
Sand, very fine to fine, and granules -----	10	1,180
Sand, very fine to very coarse, granules, and clay -----	10	1,190
Sand, very fine to very coarse, and granules -----	10	1,200

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well R-28		
Owner: U. S. Geological Survey. Driller: B & W Drilling Co. of Texas.		
Sand, brown, medium to coarse, and some granules -----	10	10
Sand, medium to coarse, granules, brown -----	10	20
Sand, fine to coarse, and some granules -----	10	30
Granules, sand, very coarse, pebbles, quartz, and ferro- magnesium -----	20	50
Pebbles, granules, and sand, coarse -----	10	60
Granules, pebbles, and sand, very coarse -----	10	70
Pebbles, granules, and sand, coarse -----	20	90
Sand, coarse to very coarse, and some granules -----	10	100
Sand, medium to very coarse -----	10	110
Sand, coarse to very coarse, and some granules -----	10	120
Granules, pebbles, and sand, medium to very coarse -----	10	130
Granules, pebbles, and sand, coarse to very coarse -----	10	140
Sand, very coarse, granules, and pebbles -----	10	150
Granules, sand, coarse to very coarse and pebbles -----	20	170
Pebbles, granules, and sand, very coarse -----	10	180
Pebbles and granules -----	10	190
Granules, sand, coarse to very coarse, pebbles, and clay -	10	200
Pebbles, granules, sand, coarse to very coarse, and clay	20	220
Pebbles, granules, sand, medium to very coarse, and some clay -----	10	230
Granules, pebbles, and sand, medium, to very coarse -----	10	240
Pebbles, granules, and sand, coarse to very coarse -----	10	250
Pebbles, granules, sand, medium to very coarse, some silt, and clay -----	10	260
Sand, coarse to very coarse, granules, and some clay ----	20	280
Granules and sand, coarse to very coarse -----	10	290
Sand, medium to very coarse, and granules -----	10	300
Sand, coarse to very coarse -----	10	310
Sand, medium, and some coarse -----	10	320
Sand, medium to coarse -----	10	330
Sand, coarse to very coarse, and granules -----	20	350
Sand, medium to very coarse, granules, and some clay ----	10	360
Sand, medium to very coarse, some granules, and clay ----	10	370
Sand, medium to very coarse, and granules -----	10	380
Sand, clay, and some granules -----	10	390
Clay, sandy, and granules -----	20	410
Sand, coarse to very coarse, and some granules -----	10	420

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Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well R-28--continued		
Sand, medium to very coarse, granules, and pebbles -----	10	430
Sand, coarse to very coarse, granules, and pebbles -----	20	450
Sand, medium to very coarse, granules, and clay -----	10	460
Sand, coarse to very coarse, granules, pebbles, and clay	10	470
Sand, medium to very coarse, granules, pebbles, and some clay -----	10	480
Sand, medium to very coarse, granules, and pebbles -----	10	490
Sand, medium to very coarse, granules, pebbles, and some clay -----	10	500
Sand, medium to very coarse, some granules, and pebbles	20	520
Sand, coarse to very coarse, granules, and pebbles -----	20	540
Sand, coarse to very coarse, granules, and pebbles, rounded -----	10	550
Sand, fine to very coarse, granules, and clay -----	10	560
Sand, medium to very coarse, and some clay -----	10	570
Sand, coarse to very coarse, and granules -----	10	580
Sand, medium to very coarse -----	17	597
Clay, sandy, sand, fine to very coarse, and some granules	3	600
Clay, sandy, fine to coarse -----	10	610
Sand, fine to coarse, and clay -----	10	620
Clay, sandy, sand, very fine to very coarse, granules, and pebbles -----	30	650
Clay, sand, very fine to very coarse, granules, pebbles, and caliche -----	20	670
Clay, sandy, sand, very fine to very coarse, granules, pebbles, and caliche -----	10	680
Sand, very fine to very coarse, granules, pebbles, caliche and clay, sandy -----	10	690
Clay, sandy, sand, very fine to very coarse, granules, pebbles, and caliche -----	10	700
Clay, sandy, granules, and pebbles -----	10	710
Clay, and some pebbles -----	10	720
Clay, sandy -----	30	750
Clay, sandy, granules, and pebbles -----	10	760
Clay, sandy, sand, fine to medium -----	10	770
Clay, and some sand -----	10	780
Clay, sandy, and some sand, fine to medium -----	10	790
Clay, sandy, and sand, fine to coarse -----	10	800
Sand, medium to coarse, and clay, sandy -----	10	810
Sand, medium to very coarse, granules, pebbles, and clay, sandy -----	10	820

(continued on next page)

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well R-28--continued		
Sand, fine to coarse, some granules, and clay, sandy ----	10	830
Sand, medium to coarse, granules, and some pebbles -----	10	840
Sand, medium to coarse, granules, some pebbles, and clay	5	845
Sand, fine to very coarse, granules, and clay, sandy ----	10	855
Clay, sandy, and sand, fine to coarse -----	10	865
Clay, sandy, sand fine to very coarse, granules, and pebbles -----	10	875
Clay, sandy, and sand, fine to medium-----	10	885
Clay, sandy, some granules, and pebbles -----	10	895
Sand, fine to very coarse, clay, sandy, granules, and some pebbles -----	10	905
Clay, sand, medium to very coarse, and granules -----	10	915
Clay, sandy, and some granules -----	22	937
Sand, fine to very coarse, granules, and some clay -----	8	945
Sand, fine to coarse, clay, and some granules -----	10	955
Clay, sandy, and sand, fine to medium -----	10	965
Clay, and sand, fine to medium -----	5	970
Clay, sandy -----	10	980
Clay, sandy, and sand, fine to coarse -----	25	1,005
Clay, sand, fine to coarse, and granules -----	9	1,014
Clay, sand, granules, and pebbles -----	3	1,017
Sand, fine to very coarse, granules, and some pebbles ---	13	1,030
Sand, medium to very coarse, granules, and some pebbles -	10	1,040
Sand, fine to medium, some granules, and clay -----	20	1,060
Sand, fine to very coarse, and a few granules -----	10	1,070
Sand, fine to coarse - -----	10	1,080
Sand, medium to very coarse, some lime, and some granules	15	1,095
Sand, fine to very coarse, and clay -----	10	1,105
Sand, fine to coarse, clay, sandy, and clay -----	10	1,115
Sand, fine to very coarse, granules, and some clay -----	10	1,125
Sand, very fine to medium, and some clay -----	7	1,132
Sand, fine to very coarse, some granules, pebbles, and clay -----	10	1,142
Sand, fine to very coarse, granules, pebbles, and some clay -----	20	1,162
Clay, sandy, and sand, fine to medium -----	20	1,182
Sand, clayey, fine to medium -- -----	10	1,192
Clay and sand -----	8	1,200
Clay, sandy, sand, fine to very coarse, granules, and pebbles -----	14	1,214

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Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well R-28--continued		
Sand, fine to very coarse, granules, and some clay -----	10	1,224
Sand, fine to coarse, some granules, and silt -----	10	1,234
Clay, sandy, sand, medium to very coarse, granules, and pebbles -----	10	1,244
Sand, fine to coarse -----	16	1,260
Clay, and clay, sandy -----	10	1,270
Clay, silt, and clay, sandy -----	10	1,280
Sand, medium to very coarse, some granules, and silt ----	10	1,290
Clay, sandy, and silt -----	10	1,300
Clay, sandy, sand, and some granules -----	10	1,310
Clay, sandy, silt, and sand, fine to coarse -----	10	1,320
Sand, fine to medium, some granules, pebbles, and clay, sandy -----	10	1,330
Sand, medium to coarse -----	10	1,340
Sand, fine to medium, some granules, and clay -----	10	1,350
Sand, fine to coarse, granules, and silt -----	10	1,360
Sand, medium to coarse -----	20	1,380
Sand, very fine to medium -----	10	1,390
Sand, medium to coarse -----	10	1,400
Clay, and clay, sandy -----	10	1,410
Clay, sandy, and sand, fine to medium -----	10	1,420
Sand, fine to medium, and clay, sandy -----	20	1,440
Missing -----	20	1,460
Sand, fine to medium, and some clay, sandy -----	10	1,470
Sand, fine to medium, and clay -----	20	1,490
Sand, medium -----	10	1,500
Sand, fine to medium -----	30	1,530
Sand, medium, and some clay -----	10	1,540
Sand, medium to coarse -----	10	1,550
Sand, fine to medium -----	30	1,580
Sand, medium to coarse -----	10	1,590
Sand, fine to coarse, and clay -----	10	1,600
Sand, coarse --- -----	10	1,610
Sand, medium to coarse -----	8	1,618
No record -----	17	1,635

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well R-37		
Owner: U. S. Geological Survey. Driller: B & W Drilling Co. of Texas.		
Sand, very fine to coarse, gravel, and pebbles -----	10	10
Sand, pebbles, and boulders -----	10	20
Sand, gravel, and pebbles -----	180	200
Gravel, medium, angular, and sand, fine -----	30	230
Gravel, medium, angular to subangular, and arkose -----	20	250
Gravel, medium to coarse, and arkose -----	10	260
Gravel and sand, fine to very fine -----	30	290
Gravel, medium to coarse, and arkose -----	10	300
Gravel, medium, and arkose -----	20	320
Pebbles, and arkose -----	10	330
Gravel, medium -----	20	350
Gravel, and arkose, medium to fine -----	10	360
Gravel, arkose, medium, and sand, very fine -----	40	400
Gravel, medium, and some clay, and caliche -----	40	440
Gravel, medium, and arkose -----	10	450
Gravel, medium, and clay -----	10	460
Gravel, medium, some clay and sand -----	10	470
Gravel, medium, and clay -----	10	480
Clay, buff, some caliche, and gravel -----	10	490
Clay, buff, caliche, gravel, and sand, fine -----	10	500
Caliche, some sand, gravel, and clay -----	20	520
Clay, buff, sandy, some caliche and gravel -----	20	540
Caliche, some clay, sandy and gravel -----	10	550
Clay, sandy, some caliche and gravel -----	20	570
Clay, some caliche, and gravel -----	10	580
Clay, sandy, some caliche, and gravel -----	20	600
Clay, some caliche and some gravel -----	50	650
Clay, some caliche, and gravel -----	10	660
Caliche and clay -----	30	690
Clay and caliche -----	20	710
Clay, buff -----	20	730
Clay and gravel -----	10	740
Clay, buff -----	180	920
Clay, and sandstone, white -----	10	930
Clay, buff -----	10	940
Clay, and some sandstone, white, and shale, brown -----	10	950
Clay, and sandstone, white -----	10	960
Gravel, coarse, and some clay -----	10	970
Gravel, coarse, and arkose -----	10	980
Gravel, fine to coarse, and arkose -----	10	990

(continued on next page)

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well R-37--continued		
Gravel, fine to coarse, arkose, and sand, medium -----	10	1,000
Gravel, fine to coarse, arkose, and sand, fine to coarse	10	1,010
Gravel, medium, some clay, sandy, and pebbles -----	5	1,015
Clay, some gravel, coarse, and pebbles -----	5	1,020
Caliche, some clay, and pebbles -----	20	1,040
Gravel, clay, and caliche -----	10	1,050
Caliche, some clay, and some pebbles -----	20	1,070
Gravel, fine to coarse, some pebbles, and sand, coarse --	10	1,080
Gravel, medium -----	10	1,090
Gravel, fine to coarse -----	10	1,100
Gravel -----	10	1,110
Gravel and clay -----	10	1,120
Gravel and some clay -----	10	1,130
Clay and gravel -----	40	1,170
Sand, clay, and some gravel -----	10	1,180
Clay and gravel -----	10	1,190
Clay and some gravel -----	30	1,220
Well R-46		
Owner: U. S. Army. Driller: Bassett Drilling Company.		
Sand, medium -----	30	30
Sand, medium to very coarse -----	10	40
Sand, coarse to very coarse -----	20	60
Sand, fine -----	30	90
Sand, fine to coarse -----	10	100
Sand, medium -----	10	110
Sand, fine to very coarse -----	30	140
Sand, fine -----	50	190
Sand, fine to medium -----	10	200
Sand, fine -----	10	210
Sand, medium to coarse -----	10	220
Sand, coarse -----	10	230
Sand, fine to coarse -----	10	240
Sand, very fine to medium -----	10	250
Sand, fine -----	10	260
Sand, medium -----	90	350
(continued on next page)		

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well R-46--continued		
Sand, very fine to fine -----	10	360
Sand, medium to coarse -----	10	370
Sand, very fine to medium -----	20	390
Sand, very fine to fine -----	60	450
Sand, fine to medium -----	10	460
Sand, very fine to fine -----	50	510
Sand, very fine to medium -----	30	540
Sand, very fine to fine -----	20	560
Sand, very fine to medium -----	40	600
Sand, medium -----	10	610
Sand, very fine to medium -----	20	630
Sand, medium -----	30	660
Sand, very fine to coarse -----	10	670
Sand, very fine to medium -----	10	680
Sand, medium -----	20	700
Sand, fine to medium -----	10	710
Sand, fine to coarse -----	60	770
Sand, very fine to medium -----	20	790
Sand, fine to coarse -----	30	820
Well R-48		
Owner: U. S. Army. Driller: Bassett Drilling Company.		
Sand, medium to coarse -----	10	10
Sand, fine to coarse -----	50	60
Sand, very fine to fine -----	10	70
Clay, sand, very fine to very coarse, and granules -----	40	110
Sand, medium to very coarse -----	10	120
Sand, fine to coarse -----	10	130
Sand, fine to very coarse -----	10	140
Sand, fine to very coarse, ganules, pebbles -----	30	170
Sand, very fine to coarse -----	10	180
Clay, sand, very fine to very coarse -----	20	200
Clay -----	10	210
Clay, sandy, very fine to very coarse -----	30	240
Clay, sand, very fine to medium-----	20	260
(continued on next page)		



Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well R-48--continued		
Sand, fine to coarse -----	50	310
Sand, very fine to very coarse -----	90	400
Sand, very fine to very coarse -----	10	410
Clay, sand, very fine to coarse -----	40	450
Sand, very fine to coarse, and some clay -----	40	490
Sand, very fine to coarse -----	160	650
Sand, very fine to medium -----	10	660
Sand, very fine to very coarse and some clay -----	10	670
Sand, very fine to coarse -----	30	700
Sand, very fine to very coarse -----	40	740
Sand, very fine to coarse -----	40	780
Clay and sand, very fine to coarse -----	10	790
Clay and some sand, very fine to coarse -----	20	810
Well R-52		
Owner: U. S. Army. Driller: Bassett Drilling Company.		
Sand, coarse, to very coarse, and granules -----	60	60
Sand, coarse to very coarse, granules, and pebbles -----	10	70
Granules and pebbles -----	20	90
Sand, medium to very coarse, granules, and pebbles -----	50	140
Sand, coarse, to very coarse, and granules -----	20	160
Granules and pebbles -----	40	200
Clay, and sand, very fine to fine -----	30	230
Sand, very fine to fine -----	20	250
Clay and sand, very fine to fine -----	10	260
Clay, sand, very fine to very coarse, and some granules -----	40	300
Clay -----	20	320
Clay, sandy, very fine to coarse, and some granules -----	10	330
Sand, medium to very coarse, some granules, and pebbles -----	130	460
Sand, medium to coarse -----	10	470
Sand, medium to very coarse -----	10	480
Sand, fine to coarse -----	10	490
Sand, medium to very coarse, and granules -----	10	500
Clay and sand, very fine to medium -----	20	520
Clay, brown -----	10	530
Sand, very fine to very coarse, and granules -----	40	570
(continued on next page)		

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well R-52--continued		
Sand, very fine to very coarse, granules, and pebbles ---	30	600
Clay and sand, very fine to coarse -----	30	630
Sand, fine to very coarse, and some granules -----	10	640
Clay and sand, very fine to coarse -----	10	650
Clay, brown -----	10	660
Clay and sand, very fine to very coarse, and some granules -----	20	680
Sand, medium to very coarse, and granules -----	70	750
Clay, brown, and sand, very fine to medium -----	20	770
Clay, brown -----	40	810
No record -----	2	812
Well S-1		
Owner: U. S. Geological Survey. Driller: B & W Drilling Co. of Texas.		
Sand, medium, caliche, and clay, pink -----	20	20
Sand, medium, and gravel, very coarse -----	10	30
Sand, medium to coarse, caliche, and pebbles -----	10	40
Sand, medium -----	10	50
Sand, coarse, shale, red, and caliche -----	20	70
Sand, medium to coarse -----	10	80
Clay, pink -----	10	90
Clay, pink, sandy -----	10	100
Sand, coarse -----	10	110
Sand, medium to coarse -----	30	140
Sand, medium to coarse, and some gravel, large -----	40	180
Clay, buff, sandy -----	10	190
Clay, buff -----	23	213
Sand, medium to coarse -----	7	220
Sand, medium to fine -----	30	250
Sand, fine to medium, some clay, and caliche -----	10	260
Sand, fine to medium -----	10	270
Sand, fine to medium, some clay, and gravel -----	20	290
Sand, fine -----	1	291
Sand, fine to medium, and clay -----	9	300
Sand, medium, and clay -----	5	305
Sand, coarse to very coarse -----	15	320
(continued on next page)		

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well S-1--continued		
Sand, coarse, to very coarse -----	10	330
Sand, fine to medium -----	10	340
Sand, medium to coarse, and clay -----	10	350
Clay, buff, sandy -----	19	369
Sand, fine to very fine -----	6	375
Sand, medium to coarse -----	5	380
Sand, fine to medium -----	20	400
Clay, sandy -----	2	402
Sand, medium to coarse -----	7	409
Sand, medium and clay -----	11	420
Clay, pink -----	10	430
Clay, pink, sandy -----	20	450
Sand, coarse -----	10	460
Sand, medium to coarse -----	12	472
Sand, very coarse, caliche, and pebbles -----	8	480
Shale, red -----	7	487
Sand, fine to medium -----	3	490
Shale, red -----	5	495
Sand, fine to medium, and clay -----	5	500
Sand, fine to coarse, and quartz -----	5	505
Sand, fine to coarse, and some gravel -----	5	510
Sand, fine to medium -----	10	520
Sand, fine, and some shale, red -----	5	525
Clay, pink, sandy -----	5	530
Gravel, coarse, and clay -----	22	552
Clay, pink, sandy -----	4	556
Clay, pink -----	4	560
Clay, pink, sandy -----	9	569
Sand, coarse -----	35	604
Clay, pink, sandy -----	24	628
Clay, pink -----	12	640
Sand, very coarse -----	10	650
Sand, very coarse, and some clay -----	20	670
Clay, pink, sandy -----	10	680
Clay, sandy, some caliche, and gravel -----	10	690
Sand, coarse to very coarse -----	10	700
Clay, pink, sandy -----	7	707
Sand, fine to medium -----	3	710
Sand, medium to coarse -----	10	720
Sand, fine to coarse -----	15	735

(continued on next page)

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well S-1--continued		
Clay, pink, sandy -----	5	740
Clay, some gravel, coarse, and boulders -----	2	742
Sand, medium, and shale, red -----	8	750
Sand, very coarse -----	10	760
Sand, very coarse, and shale, gray -----	10	770
Sand, very coarse, some gravel, and shale -----	3	773
Clay, pink, and some gravel, very coarse -----	7	780
Clay, pink, sandy -----	20	800
Well S-5		
Owner: U. S. Geological Survey. Driller: B & W Drilling Co. of Texas.		
Sand and caliche -----	10	10
Sand, medium to coarse -----	40	50
Sand, medium to coarse, some clay, and gravel -----	10	60
Clay, buff, and some gravel, coarse -----	10	70
Sand, coarse, and some gravel, coarse -----	10	80
Sand, coarse, some clay, and gravel -----	10	90
Sand, fine to coarse, and some clay -----	30	120
Clay, buff, and some gravel, coarse -----	10	130
Clay, buff, sandy, and some gravel, coarse -----	20	150
Sand, very fine to fine -----	10	160
Sand, medium to coarse -----	30	190
Sand, very fine to coarse, and some gravel, fine -----	10	200
Sand, fine to medium -----	90	290
Sand, medium to coarse -----	60	350
Sand, very fine to medium -----	10	360
Sand, very fine to medium, and some gravel -----	10	370
Gravel, medium, and some sand, medium -----	10	380
Gravel, medium, and some clay -----	10	390
Sand, very fine, clay, and gravel -----	10	400
Clay, buff, and some sand -----	10	410
Sand, very fine to medium, and some gravel -----	10	420
Clay, buff, and some sand -----	10	430
Sand, fine to medium, and some caliche -----	10	440
Sand, very fine to fine, and some gravel -----	20	460
Sand, very fine to fine -----	10	470
(continued on next page)		

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well S-5--continued		
Clay, buff, sandy, and some gravel, coarse -----	10	480
Gravel, coarse, some pebbles, and clay -----	10	490
Sand, medium -----	10	500
Clay, buff-----	5	505
Pebbles, subangular, gravel, and clay, sandy -----	15	520
Sand, very fine to coarse, some gravel, and pebbles -----	10	530
Clay, sandy, some sandstone, brown, and pebbles, angular	10	540
Sand, medium to coarse, gravel, round, and pebbles -----	20	560
Sand, very fine to medium, and some gravel, round -----	10	570
Sand, medium to coarse, gravel, round, and pebbles -----	10	580
Sand, medium to coarse, gravel, round, and pebbles -----	10	590
Sand, fine to coarse, clay, and gravel -----	30	620
Clay, sandy, and some gravel -----	10	630
Clay, sandy -----	10	640
Sand, fine to medium, gravel, and pebbles -----	10	650
Clay, sandy, and gravel -----	10	660
Sand, very fine to coarse, clay, and gravel -----	20	680
Sand, fine to coarse, clay, and gravel -----	20	700
Sand, very fine to fine, and clay -----	20	720
Sand, medium -----	10	730
Clay, sandy, and pebbles, subangular -----	10	740
Sand, fine to medium, clay, and gravel -----	30	770
Clay, sandy, and some gravel, subangular -----	10	780
Clay, sandy -----	140	920
Sand, fine to medium, and some clay -----	20	940
Sand, fine to coarse -----	40	980
Sand, very fine to coarse, and some clay -----	10	990
Sand, very fine to fine -----	15	1,005
Well S-8		
Owner: U. S. Geological Survey. Driller: B & W Drilling Co. of Texas.		
Caliche and some sand -----	10	10
Sand, very fine to very coarse, and caliche -----	10	20
Sand, very fine to very coarse -----	40	60
Granules -----	20	80
Granules and pebbles -----	50	130
(continued on next page)		

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well S-8--continued		
Granules, pebbles, clay, and sand -----	10	140
Granules pebbles, and clay -----	60	200
Granules, pebbles, and sand, coarse -----	20	220
Sand, medium to very coarse, granules, and pebbles -----	40	260
Sand, fine to very coarse, and granules -----	10	270
Clay, buff, sandy, and some granules -----	20	290
Sand, medium to very coarse, and granules -----	10	300
Sand, fine to medium, and some clay -----	10	310
Sand, fine to very coarse, granules, and clay -----	10	320
Sand, fine to medium, granules, and clay -----	10	330
Sand, medium to very coarse, and some granules -----	10	340
Granules -----	20	360
Sand, medium to very coarse, and granules -----	30	390
Sand, medium to very coarse, granules, and some clay ----	10	400
Sand, fine to coarse, and some granules -----	10	410
Clay, buff, sandy -----	20	430
Sand, fine to coarse, chert, quartz, and clay -----	10	440
Clay, buff, and sand-----	10	450
Clay, buff, sand, and granules -----	40	490
Sand, fine to very coarse -----	10	500
Sand, very fine to very coarse, and granules -----	10	510
Clay, red, and some granules -----	5	515
Clay, buff, sandy, some granules, and pebbles -----	10	525
Sand, fine, some granules, pebbles, and clay -----	25	550
Clay, buff, sandy, and some granules -----	50	600
Clay, buff, sandy -----	10	610
Clay, gray, sandy -----	10	620
Clay, gray, sandy, and some granules -----	20	640
Clay, gray, some sand, and granules -----	20	660
Clay, gray, sandy, and some granules -----	10	670
Sand, fine to medium, and clay -----	10	680
Sand, fine to medium, granules, and clay -----	10	690
Sand, fine to medium, granules, and some clay -----	10	700
Sand, fine to medium, and some granules -----	10	710
Sand, fine to medium, granules, and clay -----	10	720
Sand, very fine, some granules, and clay -----	10	730
Sand, very fine, and some granules -----	10	740
Sand, very fine to very coarse -----	10	750
Sand, very fine to very coarse, and some granules -----	10	760
Sand, very fine to very coarse, granules, and clay -----	10	770
(continued on next page)		

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well S-8--continued		
Sand, very fine to coarse, and some granules -----	10	780
Sand, very fine to very coarse, some granules and clay -	10	790
Sand, fine to very coarse, and some granules -----	10	800
Sand, coarse to very coarse, and granules -----	10	810
Granules, and pebbles -----	10	820
Clay, gray, sandy -----	70	890
Sand, very fine to coarse, some granules, and clay -----	10	900
Clay, gray, sandy -----	20	920
Clay, buff -----	10	930
Clay, buff, sandy -----	10	940
Sand, very fine to fine, and some clay -----	10	950
Clay, buff, some sand, and granules-----	10	960
Clay, buff, sandy, and some granules -----	10	970
Sand, fine to coarse, some granules, and clay -----	10	980
Sand, fine to medium, and some clay -----	10	990
Sand, fine to medium, granules, and some clay -----	10	1,000
Clay, buff, sandy -----	20	1,020
Well S-9		
Owner: U. S. Geological Survey. Driller: B & W Drilling Co. of Texas		
Clay, brown, sand, and caliche -----	10	10
Sand, fine to very coarse, gravel, caliche, and some clay	110	120
Sand, clayey, fine to medium -----	60	180
Sand, fine to very coarse, gravel, caliche, and some clay	20	200
Clay, brown, sandy, some gravel, and caliche -----	10	210
Sand, fine to very coarse, some gravel, and caliche -----	30	240
Sand, very fine to coarse, some granules, and caliche ---	110	350
Clay, sandy, sand, clayey, clay, brown, and sand, fine to coarse -----	30	380
Clay, sandy, and clay, reddish-brown -----	20	400
Clay, brown, sandy, sand, fine to medium, and caliche ---	110	510
Sand, very fine to coarse, some clay, and caliche -----	40	550
Sand, clayey, clay, brown, sandy, sand, fine, some gravel and caliche -----	50	600
Clay, brown, sandy, and some caliche -----	30	630
Sand, fine to medium -----	20	650
Clay, brown, sandy -----	30	680
(continued on next page)		

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well S-9--continued		
Clay, brown, silty, some sand, and some caliche -----	100	780
Clay, grayish brown, silty, some sand, and caliche -----	30	810
Clay, brown, sandy, silty, and some caliche -----	30	840
Clay, tan, sandy, silty, some gravel, and caliche -----	70	910
Clay, sandy, sand, clayey, sand, fine to medium, some gravel, and caliche -----	20	930
Clay, brown, silty, some sand, and caliche -----	70	1,000
Well S-14		
Owner: U S. Geological Survey. Driller: B & W Drilling Co. of Texas.		
Caliche -----	10	10
Clay and sand, silty, very fine -----	16	26
Gravel, and sand, fine to coarse -----	4	30
Clay, red, sandy, and gravel -----	20	50
Clay, red, sand, fine, and gravel -----	10	60
Clay, red -----	10	70
Sand, very fine, and clay, red -----	4	74
Gravel, and sand, fine to medium -----	6	80
Sand, medium to coarse, and some gravel -----	12	92
Clay, sandy, and gravel -----	8	100
Clay, sandy, very fine, and some gravel -----	10	110
Clay, red, silty, and some caliche -----	20	130
Gravel, sand, coarse to medium, and clay -----	5	135
Sandstone, very fine, and gravel -----	10	145
Clay, red, silty -----	21	166
Clay, red, sandy, gravel, and caliche -----	34	200
Sand, medium to coarse, and gravel -----	10	210
Sand, gray, fine to medium -----	90	300
Sand, very fine -----	10	310
Sand, very fine, and gravel -----	30	340
Sand, very fine, and some clay -----	20	360
Sand, medium to very coarse -----	60	420
Sand, medium to coarse -----	10	430
Sand, medium to coarse, and some clay -----	20	450
Sand, medium to coarse, some clay, and caliche-----	10	460
(continued on next page)		



Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well S-14--continued		
Sand and clay -----	10	470
Sand, medium to coarse -----	10	480
Clay, pink, sandy, and some caliche -----	20	500
Clay, pink, sandy -----	20	520
Clay, buff, sandy -----	20	540
Clay, brown, sandy -----	29	569
Clay, brown -----	31	600
Sand, fine to medium, and some caliche -----	10	610
Clay, brownish-gray, sandy -----	10	620
Sandstone and shale, gray -----	10	630
Shale, gray, sandy, and some caliche -----	20	650
Shale, gray, sandy -----	10	660
Sandstone and shale, gray -----	20	680
Shale, sandy, very fine, and some gravel -----	30	710
Sand and shale, very fine, hard -----	7	717
Sandstone, very fine and caliche -----	34	751
Sandstone, hard, and gravel -----	3	754
Sandstone, and clay, sandy, hard -----	6	760
Clay, red, silty -----	17	777
Clay, red, silty, and gravel -----	17	794
Gravel, sand, and clay, red -----	3	797
Shale, red, silty -----	23	820
Shale, red, silty, and caliche -----	10	830
Shale, red, sandy, and caliche -----	10	840
Shale, red, silty, and caliche -----	7	847
Shale, red, sandy -----	13	860
Shale, red, and caliche -----	20	880
Shale, red, sandy, and caliche -----	2	882
Gumbo, red -----	8	890
Shale, red, and caliche -----	10	900
Shale, red, sandy -----	20	920
Shale, red -----	10	930
Shale, red, sandy -----	20	950
Shale, red, silty -----	20	960
Shale, sandy, and caliche -----	20	980
Shale, red -----	20	1,000
Sand, very fine, shale, and caliche -----	20	1,020
Shale, red, sandy -----	10	1,030
Sand, very fine, shale, and caliche -----	20	1,050
Shale, red, sandy, and caliche -----	10	1,060

(continued on next page)

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well S-14--continued		
Shale, red -----	10	1,070
Sandstone, shale, and caliche -----	10	1,080
Shale, red, and caliche -----	10	1,090
Shale, sandy -----	10	1,100
Shale, red, and caliche -----	10	1,110
Sandstone, very fine -----	10	1,120
Shale, sand, red, and caliche -----	23	1,143
Shale, red, hard -----	7	1,150
Shale, buff, hard -----	40	1,190
Shale, red, hard -----	10	1,200
Well V-33		
Owner: U. S. Geological Survey. Driller: B & W Drilling Co. of Texas.		
Caliche and sand, very fine -----	10	10
Sand, very fine -----	20	30
Sandstone, fine -----	20	50
Sand, fine, and caliche -----	10	60
Gravel, coarse, caliche, and sand -----	10	70
Sandstone, fine -----	50	120
Sand, fine to medium, and caliche -----	20	140
Sand, coarse -----	10	150
Sand, coarse to medium -----	10	160
Sand, very coarse, and gravel -----	10	170
Sand, fine -----	10	180
Sand, fine, and clay -----	10	190
Sand, fine, clay, and caliche -----	10	200
Clay, buff, sandy -----	27	227
Sand, very coarse -----	2	229
Clay, buff -----	13	242
Caliche, hard, and gravel -----	4	246
Gravel and sand, fine -----	8	254
Gravel, sand, coarse, and caliche -----	4	258
Caliche and sand, fine -----	2	260
Shale, red -----	19	279
Clay, buff, and some gravel -----	20	299
Sand, coarse, clay, and gravel -----	11	310
(continued on next page)		

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--  
continued

	Thickness (feet)	Depth (feet)
Well V-33--continued		
Clay, buff, sandy -----	10	320
Sand, coarse and gravel -----	10	330
Sand, fine -----	10	340
Clay, buff, sandy -----	10	350
Clay, buff -----	20	370
Clay, buff, and caliche -----	20	390
Clay, buff, sandy -----	15	405
Sand, fine, and clay, buff -----	5	410
Clay, pink -----	40	450
Clay, pink, sandy -----	10	460
Clay, pink -----	100	560
Clay, pink, sandy -----	30	590
Clay, pink, sandy, and caliche -----	10	600
Clay, pink -----	15	615
Clay, pink, sandy, and some caliche -----	9	624
Clay, pink -----	6	630
Clay, pink, sandy -----	10	640
Clay, pink, and some caliche -----	10	650
Clay, pink, sandy -----	20	670
Clay, pink -----	10	680
Sand, fine, and shale, red -----	10	690
Clay, pink -----	10	700
Shale, red -----	10	710
Clay, pink -----	10	720
Clay, pink, and some sandstone -----	10	730
Clay, pink -----	10	740
Sand, medium, and some clay -----	40	780
Sand, fine and some clay -----	10	790
Clay, buff -----	20	810
Clay, gray -----	10	820
Clay, pink -----	40	860
Clay, pink, and some shale, black -----	20	880
Shale, black, and shale, red -----	19	899
Sand -----	6	905

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well W-1		
Owner: U. S. Geological Survey. Driller: B & W Drilling Company of Texas.		
Sand -----	5	5
Caliche -----	5	10
Gravel, sand and caliche -----	15	25
Clay, red and sand -----	5	30
Clay, red -----	10	40
Clay, red and gravel -----	20	60
Gravel, coarse to medium, sand and clay -----	10	70
Gravel, and sand, coarse to medium -----	17	87
Clay, red -----	13	100
Clay, red, gravel and sand -----	7	107
Sand, fine to coarse and gravel -----	23	130
Gravel, sand and clay -----	10	140
Clay, red -----	9	149
Clay, red, and caliche -----	11	160
Clay, red, and gravel -----	10	170
Clay, red, sandstone and gravel -----	10	180
Gravel, sand, coarse, and caliche -----	8	188
Clay, red, and some gravel -----	52	240
Sandstone, clay, gravel and caliche -----	10	250
Clay, red, sandstone and gravel -----	10	260
Clay, red, sandy -----	10	270
Sand, clayey, fine to medium -----	14	284
Sand, gray, fine to medium and caliche -----	20	304
Sand, gray, fine and caliche -----	10	314
Sand, fine to coarse and caliche -----	10	324
Sand, gray, gravel and clay, gray -----	6	330
Sand, gray, fine, and caliche -----	6	336
Sand, gray, clayey, fine -----	10	346
Clay, gray, sandy -----	10	356
Sand, gray, fine -----	10	366
Clay, gray, sandy -----	10	376
Sand, gray, fine to medium -----	6	382
Sand, medium to coarse, some gravel, and caliche -----	6	388
Sand, fine to coarse, caliche, and clay -----	10	398
Sandstone, gray and some gravel -----	10	408
Sand, red silty -----	10	418
Sandstone, fine, silty and some clay -----	20	438
Sand, gray, clayey, fine and caliche -----	20	458

(continued on next page)

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well W-1--continued		
Sand, gray, fine -----	10	468
Clay, red, sandy -----	8	476
Clay, red, plastic -----	3	479
Clay, red, sandy -----	5	484
Sand, fine to coarse -----	10	494
Sand, gravel, and caliche -----	6	500
Sand, gray, medium -----	10	510
Sand, clayey, very fine-----	10	520
Sand, medium to coarse, gravel and caliche -----	8	528
Clay, red, sandy, and caliche -----	30	558
Clay, red, silty -----	30	588
Clay, red, sandy -----	30	618
Clay, red, sandy, coarse to medium, and caliche -----	30	648
Sand, gray, clayey, fine to medium -----	10	658
Clay, red, sandy -----	10	668
Clay, calcareous, silty, and sand, fine -----	10	678
Sandstone, brownish-gray, clayey -----	10	688
Sand, gray, very fine -----	50	738
Sand, gray, very fine, and clay, red -----	10	748
Sand, gray, and shale, reddish-brown -----	20	768
Sand, gray, and shale, red and green -----	10	778
Sand, gray, clayey, fine to medium -----	20	798
Sand, gray, fine to medium and shale -----	10	808
Sand, gray, very fine -----	5	813
Sand, gray, clayey, very fine -----	10	823
Sand, silty, shale brown and some gravel -----	10	833
Shale, red -----	50	883
Missing -----	17	900
Clay, buff and gravel, coarse -----	28	928
Clay, buff, and some pebbles -----	2	930
Clay, buff and some gravel -----	20	950
Well W-4		
Owner: El Paso Natural Gas Co. Driller: Mountain Drilling Co.		
Missing -----	30	30
Sand, fine to medium, and caliche -----	10	40
Sand, very fine to fine -----	10	50
(continued on next page)		

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well W-4--continued		
Sand, fine to medium, and caliche -----	10	60
Sand, fine to coarse, and caliche -----	10	70
Sand, fine to medium -----	20	90
Sand, medium to coarse -----	10	100
Sand, coarse to very coarse, and caliche -----	20	120
Sand, very fine to very coarse, and granules -----	10	130
Sand, very fine to very coarse -----	10	140
Sand, fine to medium -----	20	160
Sand, fine to medium, and caliche -----	20	180
Sand, very coarse, granules and caliche -----	10	190
Sand, fine to very coarse, granules, and caliche -----	10	200
Sand, medium to coarse -----	10	210
Sand, fine to coarse -----	10	220
Sand, fine to very coarse, granules and caliche -----	10	230
Sand, fine to very coarse, granules, small pebbles and caliche -----	10	240
Sand, fine to very fine, and granules -----	10	250
Sand, fine to very coarse -----	10	260
Sand, fine to coarse, and some caliche -----	10	270
Sandstone, caliche, and some sand, fine -----	20	290
Sand, coarse, pebbles, and clay, brown -----	10	300
Sand, fine to medium -----	10	310
Sand, medium to coarse, granules, and clay, brown, sandy	10	320
Sand, fine to medium, and caliche -----	10	330
Sand, fine to coarse, caliche and clay -----	10	340
Clay, brown sandy, silt, and caliche -----	20	360
Clay, brown, sandy, sand, fine and caliche -----	10	370
Sand, fine, and caliche -----	10	380
Sand, very fine -----	10	390
Sand, fine, and caliche -----	10	400
Silt, some granules, and pebbles -----	20	420
Clay, silty -----	10	430
Sand, very fine to coarse, and some clay -----	10	440
Clay, reddish-brown, and some sand, fine -----	10	450
Clay, brown, sandy -----	10	460
Clay, brown, silty -----	20	480
Clay, brown, silty, and caliche -----	20	500
Clay, brown, silty, granules, and caliche -----	10	510
Clay, brown, sandy, and caliche -----	10	520
Clay, red-brown, and sand, fine -----	10	530
Clay, red-brown, and some caliche -----	10	540
Clay, red-brown -----	20	560
Clay, red-brown, and some caliche -----	10	570
Missing -----	26	596

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well W-5		
Owner: El Paso Natural Gas Co. Driller: Mountain Drilling Co.		
Missing -----	50	50
Sand, fine to very coarse, some granules and pebbles ----	10	60
Sand, fine to coarse, some granules and caliche -----	10	70
Sand, fine to very coarse -----	10	80
Sand, fine to very coarse, and some caliche, angular ----	10	90
Sand, very fine, very coarse, and some clay -----	10	100
Sand, fine to coarse, and some caliche, angular -----	10	110
Sand, very fine to medium, and some caliche, angular ----	10	120
Sand, very coarse, granules, and some clay -----	10	130
Sand, medium -----	10	140
Sand, medium to coarse, and some granules -----	10	150
Sand, fine to coarse, and some caliche, angular -----	10	160
Sand, very coarse, very fine, some caliche and clay -----	10	170
Granules, pebbles, and caliche -----	10	180
Sand, very coarse, granules, some pebbles, and caliche --	5	185
Sand, fine to coarse -----	5	190
Sand, fine to medium -----	10	200
Sand, very fine to medium -----	10	210
Sand, fine to coarse and some caliche, angular -----	30	240
Sand, very fine to coarse, and caliche, angular -----	10	250
Sand, very coarse, granules and caliche, angular -----	10	260
Sand, very coarse, granules, pebbles, some sandstone and caliche -----	10	270
Sand, very coarse, and clay -----	10	280
Sand, fine to very coarse, caliche and some clay -----	10	290
Sand, fine to medium, some clay, and caliche, angular ---	10	300
Sand, fine to coarse, caliche, angular and sandstone-----	10	310
Sand, fine to coarse, clay, and sandstone -----	10	320
Sand, medium to coarse -----	10	330
Sand, fine to medium -----	10	340
Sand, fine, some coarse, and clay -----	10	350
Sand, fine to coarse, some caliche and clay -----	10	360
Sand, fine to medium, some caliche, and clay -----	10	370
Sand, fine to medium, caliche and sandstone -----	10	390
Granules, caliche, and some sand, very fine -----	10	400
Sand, very fine to medium, and some clay -----	10	410
Clay, tan, silt, and some granules -----	10	420
Clay, tan, soft, caliche, and sand, fine -----	10	430

(continued on next page)

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well W-5--continued		
Clay, tan, sand, brown, fine, and some caliche -----	10	440
Clay, tan, sandy, sand, fine and caliche, nodular -----	10	450
Clay, red, brown, and some caliche, nodular -----	10	460
Clay, tan -----	20	480
Sand, fine, some clay, tan, sandy and caliche-----	10	490
Clay, tan, sandy, some caliche and sand, fine -----	10	500
Well X-1		
Owner: U. S. Geological Survey. Driller: B & W Drilling Company of Texas.		
Caliche -----	10	10
Caliche, and some sand, fine to medium -----	10	20
Granules, some sand, medium to coarse, pebbles and caliche	20	40
Granules, sand, medium to coarse, pebbles and caliche ---	20	60
Pebbles, sand, fine to coarse, granules, and caliche ----	40	100
Sand, very fine to very coarse, granules, and some pebbles	20	120
Sand, very fine to very coarse, granules some pebbles and clay -----	20	140
Sand, very fine to very coarse, and some granules -----	20	160
Sand, fine to coarse -----	40	200
Sand, fine to coarse, some silt and clay -----	20	220
Sand, fine to very coarse -----	10	230
Sand, fine to coarse, some granules, and caliche -----	20	250
Clay, sand, and caliche -----	20	270
Clay, some sand, and caliche -----	130	400
Clay, brown, sandy, and some caliche -----	150	550
Clay, brown, silty, some sand, and caliche -----	20	570
Clay, brown, silty, sand and caliche -----	30	600
Clay, reddish-brown silty, some sand and caliche -----	20	620
Clay, reddish-brown, silty -----	90	710
Clay, reddish-brown, silty, and some sand -----	40	750
Clay, light-brown, silty, and some sand -----	80	830
Clay, light-brown, sandy -----	10	840
Clay, light-brown, silty, and some sand -----	80	920
Clay, light-brown, silty, some sand and caliche -----	10	930
Clay, light-brown, silty, and some sand -----	10	940
Clay, light-brown, silty, some sand and caliche -----	10	950
Clay, light-brown, silty, and some sand -----	50	1,000
Clay, light-brown, silty, and in limestone -----	10	1,010
Limestone, light-gray, dense -----	3	1,013



Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well X-3		
Owner: Davis and McMillion. Driller: Tillery and Parks.		
Missing -----	118	118
Limestone, black -----	34	152
Clay -----	18	170
Limestone, black -----	12	182
Shale, black -----	10	192
Shale, black, hard -----	8	200
Shale, black, and speckled ore -----	20	220
Shale, buff and limestone -----	40	260
Shale, buff -----	13	273
Chert, buff -----	12	285
Shale, buff -----	15	300
Shale, buff and limestone, buff -----	15	315
Limestone, buff -----	15	330
Clay, buff -----	10	340
Clay, buff and chert -----	14	354
Quartzite -----	76	430
Sand, quartz -----	10	440
Limestone, brown to dark gray -----	10	450
Limestone, buff -----	35	485
Limestone, buff to pink -----	15	500
Limestone, buff -----	10	510
Limestone, buff to white -----	44	554
Quartzite, pink -----	6	560
Limestone, buff -----	8	568
Sand and limestone -----	7	575
Limestone, white -----	5	580
Limestone, white and quartzite, red -----	25	605
Limestone, white -----	208	813
Well X-9		
Owner: El Paso Natural Gas Co. Driller: Tillery & Parks.		
Caliche -----	10	10
Caliche and gravel -----	30	40
Caliche, sand, and gravel -----	10	50
Sandstone and gravel -----	10	60
(continued on next page)		

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued.

	Thickness (feet)	Depth (feet)
Well X-9--continued		
Clay, brown and gravel -----	10	70
Sand, fine, clay and gravel -----	20	90
Sand, fine -----	40	130
Gravel, coarse, and clay -----	20	150
Sand, fine and gravel -----	15	165
Limestone, brown, hard -----	25	190
Limestone and clay, brown -----	20	210
Limestone and caliche -----	10	220
Limestone and sand -----	10	230
Limestone and quartz -----	20	250
Limestone, brown, hard -----	26	276
Well X-10		
Owner: U. S. Geological Survey. Driller: B & W Drilling Co.		
Caliche, granules, clay, and sand -----	10	10
Sand, fine to very coarse granules, and pebbles -----	10	20
Sand, fine to very coarse, and some granules -----	10	30
Sand, medium and some granules -----	10	40
Sand, medium -----	40	80
Clay, buff, sandy -----	10	90
Sand, fine to medium -----	100	190
Sand, fine to medium, and some clay -----	10	200
Sand, medium, some caliche, and clay -----	40	240
Clay, buff, sandy -----	20	260
Clay, buff, and some sand -----	20	280
Clay, buff -----	10	290
Clay, buff, some sand and granules-----	20	310
Granules, and some shale, buff -----	10	320
Shale, buff and some granules -----	10	330
Shale, buff, sandy -----	100	430
Sand, medium, and some clay -----	10	440
Clay, buff, sandy, and granules -----	20	460
Clay, buff, and some granules -----	10	470
Clay, buff, sandy, and some granules -----	30	500
Clay, buff and some sand -----	10	510
Clay, buff -----	70	580
(continued on next page)		

Table 6.--Sample logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)
Well X-10--continued		
Clay, buff, sandy, and some granules -----	20	600
Clay, buff, and some sand -----	90	690
Sand, very fine to fine, some clay, and caliche -----	10	700
Sand, very fine, and clay -----	20	720
Clay, buff, some caliche, and sand -----	30	750
Clay, buff, sandy -----	100	850
Sand, fine, and some clay -----	10	860
Clay, sandy -----	40	900
Clay, gray, sandy, and some caliche-----	40	940
Sand, very fine to fine, and some clay -----	10	950
Clay, sandy -----	100	1,050
Clay, buff, sandy -----	40	1,090
No record -----	10	1,100

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico

Thickness (feet)		Depth (feet)		Thickness (feet)		Depth (feet)	
Well K-15							
Owner: U. S. Army.							
Sand -----	6	6	Sand and boulders -----	40	470		
Caliche -----	2	8	Clay -----	6	476		
Sand -----	73	81	Sand and boulders -----	24	500		
Clay -----	39	120	Sand and gravel -----	9	509		
Gravel -----	14	134	Clay, sandy -----	5	514		
Clay -----	9	143	Sand, gravel, and boulders	15	529		
Sand and boulders -----	47	200	Clay, sandy -----	12	541		
Clay -----	8	208	Sand -----	32	573		
Sand and gravel -----	22	230	Clay, sandy -----	16	589		
Sand -----	34	264	Sand and boulders -----	18	607		
Sand and gravel -----	17	281	Clay, sandy -----	12	619		
Clay -----	4	285	Sand and gravel -----	11	630		
Sand and boulders -----	11	296	Sand and clay -----	6	636		
Sand and rock -----	3	299	Sand and boulders -----	26	662		
Sand and boulders -----	20	319	Sand and gravel -----	11	673		
Sand -----	10	329	Rock -----	2	675		
Clay -----	3	332	Sand and clay -----	6	681		
Sand and boulders -----	13	345	Sand and boulders -----	12	693		
Clay -----	30	375	Clay, sandy -----	9	702		
Sand and boulders -----	28	403	Sand rock -----	5	707		
Sand and clay -----	7	410	Sand and boulders -----	67	774		
Sand and boulders -----	11	421	Sand -----	20	794		
Clay -----	9	430	Sand rock -----	4	798		
Well L-7							
Owner: U. S. Army. Driller: Layne-Texas Co., Ltd.							
Sand -----	3	3	Clay -----	15	270		
Caliche -----	2	5	Sand, hard, and gravel -	23	293		
Sand -----	21	26	Boulders -----	7	300		
Clay -----	8	34	Clay and sand -----	9	309		
Sand -----	20	54	Clay sandy -----	28	337		
Sand and clay -----	68	122	Sand -----	32	369		
Clay -----	31	153	Sand and clay -----	13	382		
Sand -----	4	157	Clay -----	22	404		
Clay -----	27	184	Sand, hard, and gravel -	15	419		
Shale -----	65	249	Sand and boulders -----	16	435		
Sand and boulders -----	6	255	Shale, hard -----	4	439		

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

Thickness (feet)		Depth (feet)		Thickness (feet)		Depth (feet)	
Well L-8							
Owner: U. S. Army. Driller: Layne-Texas Co., Ltd.							
Sand, clay and caliche -----	17	17	Clay and sand -----	10	318		
Sand -----	13	30	Boulders -----	7	325		
Sand and clay -----	21	51	Sand -----	29	354		
Clay -----	31	82	Clay and sand -----	36	390		
Sand and clay -----	90	172	Sand and clay -----	14	404		
Clay -----	42	214	Boulders -----	8	412		
Sand -----	52	266	Clay -----	10	422		
Clay -----	12	278	Sand -----	14	436		
Sand, hard, and gravel -----	18	296	Shale -----	4	440		
Clay -----	12	308					
Well R-2							
Owner: City of El Paso. Driller: C. R. Jensen.							
Clay -----	20	20	Sand -----	14	337		
Clay and gravel -----	17	37	Clay, sandy -----	12	349		
Sand and gravel -----	40	77	Sand -----	7	356		
Sand -----	20	97	Clay -----	19	375		
Sand and gravel -----	29	126	Sand -----	29	404		
Clay -----	2	128	Clay -----	1	405		
Sand and gravel -----	23	151	Sand -----	20	425		
Clay -----	16	167	Clay -----	3	428		
Sand -----	14	181	Sand -----	90	518		
Clay, sandy -----	14	195	Clay -----	10	528		
Sand and boulders -----	4	199	Sand -----	46	574		
Sand -----	17	216	Clay -----	2	576		
Clay -----	5	221	Sand -----	71	647		
Clay, sandy -----	15	236	Clay and boulders -----	2	649		
Clay -----	1	237	Sand -----	35	684		
Clay, sandy -----	7	244	Clay -----	15	699		
Sand -----	41	285	Sand -----	23	722		
Clay -----	2	287	Clay, sandy -----	4	726		
Sand -----	29	316	Clay -----	11	737		
Clay -----	1	317	Sand -----	49	786		
Clay, sandy -----	3	320	Rock -----	1	787		
Sand -----	2	322	Clay -----	15	802		
Clay -----	1	323	Sand -----	16	818		
(continued on next page)							

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

Thickness (feet)		Depth (feet)		Thickness (feet)		Depth (feet)	
Well R-2--continued							
Clay and boulders -----	2	820	Clay -----	2	957		
Sand -----	27	847	Sand -----	4	961		
Boulders -----	1	848	Sand and clay -----	7	968		
Clay -----	2	850	Sand -----	5	973		
Clay, sandy -----	10	860	Sand and clay -----	9	982		
Sand -----	14	874	Rock -----	1	983		
Clay -----	8	882	Sand -----	10	993		
Sand -----	10	892	Sand and clay -----	4	997		
Clay, sandy -----	9	901	Sand -----	5	1,002		
Sand -----	26	927	Clay -----	7	1,009		
Clay, sandy -----	18	945	Sand and clay -----	4	1,013		
Sand -----	10	955	Clay -----	5	1,018		
Well R-8							
Owner: El Paso Natural Gas Co. Driller: Folk and Bassett.							
Soil -----	3	3	Sand and gravel -----	38	335		
Caliche -----	18	21	Sand -----	25	360		
Sand -----	33	54	Rock -----	37	397		
Sand and gravel -----	26	80	Sand and gravel -----	15	412		
Sand, gravel, and some boulders -----	25	105	Rock -----	46	458		
Sand -----	20	125	Gravel -----	46	504		
Sand and gravel -----	50	175	Rock, hard -----	66	570		
Boulders -----	20	195	Sand and gravel -----	60	630		
Sand -----	15	210	Rock, hard -----	60	690		
Sand rock -----	18	228	Sand and gravel -----	40	730		
Sand and gravel -----	36	264	Rock, hard -----	22	752		
Sand and boulders -----	16	280	Sand and gravel -----	19	771		
Rock, hard -----	17	297					

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well R-10					
Owner: City of El Paso. Driller: C. R. Jensen.					
Sand -----	20	20	Sand -----	17	466
Sand and gravel -----	67	87	Clay -----	14	480
Sand -----	60	147	Sand -----	9	489
Clay and boulders -----	8	155	Clay and boulders -----	2	491
Sand -----	12	167	Sand -----	15	506
Clay -----	22	189	Clay -----	5	511
Sand -----	33	222	Sand -----	24	535
Sand and clay -----	19	241	Clay -----	3	538
Sand -----	10	251	Sand -----	17	555
Sand and clay -----	6	257	Clay -----	6	561
Sand -----	39	296	Sand -----	4	565
Clay -----	4	300	Clay -----	2	567
Sand -----	7	307	Sand -----	11	578
Clay -----	5	312	Clay -----	8	586
Sand -----	11	323	Sand -----	25	611
Clay -----	6	329	Clay -----	6	617
Sand -----	5	334	Sand -----	6	623
Clay -----	6	340	Clay, sandy -----	3	626
Sand -----	31	371	Sand -----	8	634
Clay -----	6	377	Clay, sandy -----	3	637
Sand and clay -----	5	382	Clay -----	9	646
Sand -----	11	393	Sand -----	29	675
Boulders -----	1	394	Clay -----	6	681
Clay, sandy -----	5	399	Sand -----	14	695
Sand -----	12	411	Clay -----	4	699
Clay -----	10	421	Sand -----	16	715
Sand -----	8	429	Clay -----	16	731
Clay, sandy -----	4	433	Sand -----	9	740
Clay -----	16	449	Clay -----	48	788

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

Thickness (feet)		Depth (feet)		Thickness (feet)		Depth (feet)	
Well R-11							
Owner: City of El Paso. Driller: C. R. Jensen.							
Sand -----	2	2	Clay -----	12	554		
Clay, red -----	3	5	Sand -----	23	577		
Sand and gravel -----	82	87	Sand and clay, hard -----	21	598		
Sand -----	58	145	Clay -----	4	602		
Clay -----	4	149	Sand -----	20	622		
Sand -----	31	180	Rock and sand, hard -----	1	623		
Clay -----	2	182	Sand -----	6	629		
Sand -----	39	221	Clay -----	8	637		
Clay, sandy -----	20	241	Sand -----	32	669		
Sand -----	7	248	Clay -----	8	677		
Clay, sandy -----	9	257	Sand -----	13	690		
Sand -----	14	271	Clay, sandy -----	19	709		
Clay -----	6	277	Sand -----	4	713		
Sand -----	5	282	Clay -----	4	717		
Clay, sandy -----	5	287	Sand -----	29	746		
Sand -----	27	314	Clay -----	6	752		
Clay, sandy -----	3	317	Sand -----	6	758		
Sand -----	6	323	Clay -----	49	807		
Clay -----	3	326	Sand -----	15	822		
Sand -----	5	331	Clay -----	6	828		
Clay -----	8	339	Clay, sandy -----	4	832		
Sand -----	29	368	Clay -----	5	837		
Clay -----	2	370	Sand -----	5	842		
Sand -----	3	373	Clay -----	5	847		
Clay -----	2	375	Sand -----	12	859		
Sand -----	14	389	Clay -----	18	877		
Clay -----	11	400	Clay, sandy -----	4	881		
Clay, sandy -----	7	407	Sand -----	6	887		
Clay -----	6	413	Clay -----	30	917		
Sand -----	7	420	Clay and sand -----	9	926		
Clay -----	1	421	Clay -----	13	939		
Sand -----	9	430	Sand -----	5	944		
Clay -----	5	435	Clay -----	5	949		
Sand -----	22	457	Sand -----	20	969		
Clay, sandy -----	15	472	Clay -----	11	980		
Sand -----	18	490	Sand -----	6	986		
Clay, sandy -----	7	497	Clay -----	14	1,000		
Clay -----	3	500	Sand -----	23	1,023		
Sand -----	23	523	Clay -----	4	1,027		
Clay -----	3	526	Sand -----	10	1,037		
Clay, sandy -----	13	530	Clay -----	6	1,043		
Sand -----	3	542	Sand -----	10	1,053		

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Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well R-11--continued					
Clay -----	13	1,066	Clay -----	14	1,140
Sand -----	15	1,081	Sand -----	24	1,164
Clay -----	6	1,087	Clay -----	16	1,180
Sand -----	3	1,090	Rock and sand, hard ----	1	1,181
Clay -----	16	1,106	Sand -----	14	1,195
Sand -----	20	1,126	Clay -----	7	1,202
Well R-14					
Owner: J. K. Shearman. Driller: Layne-Texas Co., Ltd.					
Sand -----	3	3	Sand, hard -----	33	261
Clay and caliche -----	9	12	Clay -----	5	266
Sand and gravel -----	18	30	Sand, hard -----	54	320
Gravel -----	12	42	Clay -----	30	350
Clay -----	88	130	Sand -----	46	396
Sand -----	20	150	Clay -----	12	408
Clay -----	20	170	Sand -----	14	422
Sand, hard -----	29	199	Clay -----	12	434
Rock -----	1	200	Sand and gravel -----	81	515
Sand and boulders -----	28	228			
Well R-15					
Owner: U. S. Army. Driller: Layne-Texas Co., Ltd.					
Clay, sandy and caliche ----	13	13	Shale, sand and gravel -	43	317
Sand and gravel -----	64	77	Sand -----	34	351
Clay -----	15	92	Sand, coarse, gravel, and		
Gravel and sand -----	65	157	clay -----	34	385
Sand -----	28	185	Clay, sandy -----	23	408
Gravel and sand -----	15	200	Sand -----	33	441
Sand -----	74	274	Clay, red -----	9	450

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well R-16					
Owner: U. S. Army. Driller: Layne-Texas Co., Ltd.					
Sand -----	4	4	Clay, sandy, and gravel-	14	310
Gravel -----	10	14	Shale and gravel -----	3	313
Sand and gravel -----	64	78	Clay, sandy, and gravel	57	370
Clay -----	12	90	Sand and gravel -----	23	393
Sand and gravel -----	37	127	Shale -----	12	405
Clay, sandy and gravel -----	30	157	Shale, sandy, hard, and		
Sand and gravel -----	37	194	caliche -----	41	446
Sand and clay -----	13	207	Clay -----	6	452
Sand, gravel, and clay -----	30	237	Clay, sandy -----	16	468
Gravel and clay -----	6	243	Sand -----	23	491
Sand and gravel -----	41	284	Sand -----	14	505
Sand, clay, and gravel -----	12	296	Sand and sand rock -----	45	550
Well R-17					
Owner: City of El Paso. Driller: C. R. Jensen.					
Sand-----	2	2	Clay, sandy -----	6	299
Caliche -----	13	15	Clay -----	18	317
Sand and gravel -----	18	33	Clay, sandy -----	5	322
Clay -----	16	49	Sand -----	10	332
Sand and clay -----	13	62	Clay -----	1	333
Clay -----	10	72	Sand -----	5	338
Sand and gravel -----	8	80	Clay -----	1	339
Clay -----	49	129	Sand -----	2	341
Sand and clay -----	24	153	Clay -----	3	344
Clay -----	16	169	Clay, sandy -----	7	351
Sand -----	18	187	Clay -----	6	357
Clay, sandy -----	19	206	Sand -----	24	381
Sand -----	2	208	Clay -----	14	395
Clay -----	2	210	Sand -----	10	405
Sand -----	23	233	Clay -----	8	413
Clay -----	19	252	Sand -----	15	428
Clay, sandy -----	15	267	Clay -----	1	429
Clay -----	6	273	Sand -----	9	438
Clay, sandy -----	9	282	Clay -----	11	449
Clay -----	11	293	Sand -----	41	490
(continued on next page)					

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well R-17--continued					
Clay -----	10	500	Sand -----	14	726
Sand -----	4	504	Boulders -----	2	728
Clay, sandy -----	4	508	Sand -----	5	733
Sand -----	31	539	Clay -----	2	735
Boulders -----	4	543	Sand -----	38	773
Sand -----	17	560	Clay -----	15	788
Rock -----	1	561	Sand -----	40	828
Sand -----	16	577	Clay -----	5	833
Clay, sandy -----	2	579	Sand -----	32	865
Clay -----	13	592	Clay -----	1	866
Boulders -----	1	593	Sand -----	3	869
Clay -----	10	603	Clay -----	4	873
Sand -----	6	609	Sand -----	11	884
Clay -----	5	614	Clay -----	15	899
Clay, sandy -----	4	618	Clay, sandy -----	12	911
Sand -----	8	626	Clay -----	3	914
Clay -----	3	629	Sand -----	17	931
Sand -----	3	632	Clay -----	3	934
Clay -----	19	651	Sand -----	30	964
Sand -----	28	679	Clay -----	7	971
Clay -----	2	681	Sand -----	16	987
Sand -----	19	700	Clay -----	3	990
Clay -----	12	712			
Well R-18					
Owner: City of El Paso. Driller: C. R. Jensen.					
Sand -----	2	2	Sand -----	66	299
Caliche -----	9	11	Clay -----	1	300
Sand and gravel -----	17	28	Clay, sandy -----	2	302
Clay -----	83	111	Clay -----	2	304
Sand -----	5	116	Clay, sandy -----	4	308
Clay -----	6	122	Clay -----	7	315
Sand -----	13	135	Clay, sandy -----	8	323
Clay -----	40	175	Clay -----	6	329
Sand -----	12	187	Sand -----	17	346
Clay -----	3	190	Clay -----	4	350
Sand -----	32	222	Sand -----	3	353
Clay -----	11	233	Clay -----	4	357
(continued on next page)					

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

Thickness (feet)		Depth (feet)		Thickness (feet)		Depth (feet)	
Well R-18--continued							
Sand -----	7	364	Clay -----	7	674		
Clay -----	12	376	Sand -----	27	701		
Sand -----	11	387	Clay -----	19	720		
Clay -----	16	403	Sand -----	12	732		
Sand -----	43	446	Clay -----	2	734		
Clay -----	12	458	Sand -----	42	776		
Sand -----	51	509	Clay and boulders -----	1	777		
Clay -----	11	520	Clay -----	5	782		
Sand -----	34	554	Sand -----	4	786		
Clay -----	7	561	Clay -----	7	793		
Sand -----	4	565	Sand -----	15	808		
Clay -----	2	567	Clay -----	14	822		
Sand -----	6	573	Sand -----	13	835		
Clay -----	3	576	Clay -----	7	842		
Sand -----	7	583	Sand -----	34	876		
Clay -----	4	587	Clay -----	3	879		
Sand -----	13	600	Sand -----	23	902		
Clay -----	8	608	Clay and boulders -----	23	925		
Sand -----	42	650	Sand -----	27	952		
Clay -----	12	662	Clay -----	5	957		
Sand -----	5	667					
Well R-20							
Owner: City of El Paso. Driller: C. R. Jensen.							
Sand -----	3	3	Clay -----	13	155		
Caliche -----	5	8	Sand -----	13	168		
Sand -----	21	29	Clay -----	3	171		
Gravel -----	2	31	Sand -----	36	207		
Clay, sand -----	7	38	Clay, sandy -----	7	214		
Sand and gravel -----	12	50	Clay -----	22	236		
Clay, sandy -----	7	57	Sand -----	21	257		
Clay -----	6	63	Clay -----	3	260		
Sand -----	14	77	Clay, sandy -----	7	267		
Clay -----	16	93	Sand -----	18	285		
Sand -----	29	122	Clay -----	2	287		
Clay -----	6	128	Sand -----	26	313		
Sand -----	9	137	Clay -----	7	320		
Gravel -----	5	142	Sand -----	43	363		
(continued on next page)							

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well R-20--continued					
Clay -----	17	380	Clay, sandy -----	10	667
Sand -----	25	405	Sand -----	49	716
Clay, sand -----	4	409	Clay -----	18	734
Sand -----	53	462	Sand -----	62	796
Boulders and sand -----	2	464	Clay -----	3	799
Sand -----	15	479	Sand -----	17	816
Clay -----	6	485	Clay -----	1	817
Clay and sand -----	4	489	Sand -----	13	830
Sand -----	16	505	Clay -----	19	849
Clay -----	3	508	Sand -----	25	874
Sand -----	9	517	Clay -----	9	883
Clay -----	3	520	Sand -----	9	892
Sand -----	12	532	Clay -----	7	899
Clay -----	3	535	Sand -----	17	916
Sand and clay -----	1	536	Clay -----	6	922
Sand -----	39	575	Sand -----	5	927
Clay -----	3	578	Clay -----	4	931
Clay, sandy -----	2	580	Sand -----	7	938
Sand -----	4	584	Clay -----	14	952
Rock -----	3	587	Sand -----	13	965
Sand and boulders -----	7	594	Sand and clay -----	2	967
Clay -----	10	604	Clay -----	5	972
Sand -----	26	630	Sand -----	29	1,001
Clay -----	27	657	Clay -----	6	1,007
Well R-22					
Owner: City of El Paso. Driller: H. M. Stanley.					
Clay -----	4	4	Clay -----	6	148
Clay, sandy -----	6	10	Sand and gravel -----	23	171
Sand, coarse -----	36	46	Clay -----	19	190
Clay -----	2	48	Sand -----	14	204
Gravel -----	24	72	Sand and gravel -----	13	217
Clay -----	11	83	Clay -----	3	220
Sand -----	3	86	Sand and gravel -----	4	224
Sand, coarse and gravel -----	24	110	Clay -----	15	239
Clay -----	9	119	Sand -----	3	242
Sand and gravel -----	23	142	Clay, sandy -----	6	248
(continued on next page)					

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well R-22--continued					
Clay -----	5	253	Clay -----	7	421
Gravel -----	1	254	Sand, medium -----	11	432
Sand, clayey, silty -----	39	293	Clay -----	7	439
Sand, fine -----	30	323	Clay, sandy -----	5	444
Sand, coarse -----	13	336	Sand -----	3	447
Clay and sand -----	24	360	Clay, sandy -----	13	460
Sand, fine -----	23	383	Sand and gravel -----	4	464
Sand -----	5	388	Clay, sandy -----	17	481
Clay, sand, and gravel -----	3	391	Sand -----	9	490
Clay, sandy and sand -----	8	399	Clay -----	2	492
Clay, sandy -----	15	414	Sand, coarse -----	8	500
Well R-23					
Owner: City of El Paso. Driller: Layne-Texas Co., Ltd.					
Sand -----	2	2	Clay and boulders -----	16	337
Clay, red -----	5	7	Sand -----	3	340
Sand and gravel -----	25	32	Rock -----	1	341
Clay -----	1	33	Clay -----	6	347
Sand and gravel -----	36	69	Sand -----	5	352
Clay -----	9	78	Clay -----	7	359
Sand -----	5	82	Sand -----	14	373
Clay -----	6	88	Clay -----	4	377
Sand -----	18	106	Sand -----	5	382
Clay -----	8	114	Sand and clay -----	12	394
Sand -----	57	171	Sand -----	20	414
Clay -----	12	183	Rock -----	1	415
Sand -----	12	195	Sand -----	8	423
Clay -----	2	197	Clay -----	14	437
Sand and clay -----	7	204	Clay and sand -----	17	454
Sand -----	6	210	Sand -----	15	469
Clay -----	10	220	Rock -----	1	470
Sand -----	37	257	Sand -----	14	484
Clay -----	10	267	Clay -----	7	491
Sand -----	21	288	Sand -----	21	512
Clay and boulders -----	9	297	Clay -----	5	517
Sand -----	24	321	Sand and clay -----	16	533
(continued on next page)					

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well R-23--continued					
Sand -----	52	585	Clay -----	5	837
Clay -----	5	590	Sand and clay -----	19	856
Sand -----	19	609	Clay -----	21	877
Boulders -----	2	611	Sand and clay -----	17	894
Sand -----	6	617	Sand -----	3	897
Clay -----	9	626	Sand and clay -----	30	927
Sand -----	11	637	Clay -----	10	937
Clay -----	20	657	Sand and clay -----	15	952
Sand and clay -----	15	672	Sand -----	10	962
Clay -----	14	686	Clay -----	15	977
Sand -----	11	697	Sand and clay -----	32	1,009
Sand and clay -----	15	712	Sand -----	18	1,027
Sand -----	9	721	Sand and clay -----	39	1,066
Clay -----	26	747	Clay -----	6	1,072
Rock -----	1	748	Sand and clay -----	25	1,097
Sand -----	9	757	Clay -----	15	1,112
Sand, hard -----	20	777	Sand and clay -----	5	1,117
Sand -----	10	787	Sand -----	10	1,127
Clay -----	15	802	Clay -----	5	1,132
Sand -----	5	807	Sand and clay -----	25	1,157
Clay -----	3	810	Clay -----	20	1,177
Sand -----	22	832			
* Well R-29					
Owner: City of El Paso. Driller: Layne-Texas Co., Ltd.					
Soil -----	6	6	Clay -----	11	183
Sand -----	14	20	Sand -----	30	213
Sand and gravel -----	22	42	Clay -----	10	223
Sand and clay -----	6	48	Sand -----	10	233
Sand and gravel -----	24	72	Clay -----	10	243
Clay -----	5	77	Sand -----	8	251
Sand and gravel -----	45	122	Sand and boulders -----	3	254
Clay -----	15	137	Sand -----	8	262
Sand -----	35	172	Clay -----	4	266
* Drillers' log is for test well drilled in 1939 at same location as well R-29.					
(continued on next page)					

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well R-29--continued					
Sand -----	17	283	Sand and clay -----	9	792
Clay -----	14	297	Clay and boulders -----	5	797
Sand -----	10	307	Pack sand -----	15	812
Clay -----	5	312	Clay -----	5	817
Sand -----	11	323	Sand -----	14	831
Clay -----	14	337	Clay -----	16	847
Sand -----	23	360	Sand and clay -----	5	852
Clay -----	4	364	Clay -----	15	867
Sand -----	21	385	Sand -----	16	883
Clay -----	4	389	Clay -----	4	887
Sand -----	32	421	Sand -----	10	897
Clay -----	2	423	Rock -----	2	899
Sand -----	9	432	Sand -----	3	902
Clay -----	15	447	Rock -----	2	904
Sand -----	24	471	Sand -----	6	910
Clay -----	13	484	Rock -----	1	911
Sand -----	29	513	Sand -----	12	923
Clay -----	6	519	Clay -----	18	941
Sand -----	22	541	Sand -----	36	977
Clay -----	16	557	Sand, clay, and boulders	20	997
Clay, sandy -----	14	571	Clay -----	9	1,006
Sand -----	8	579	Sand -----	10	1,016
Rock -----	2	581	Clay and boulders -----	17	1,033
Sand -----	43	624	Sand -----	10	1,043
Clay and boulders -----	13	637	Sand and clay -----	24	1,067
Sand -----	17	654	Pack sand -----	21	1,088
Clay -----	10	664	Clay -----	15	1,103
Sand -----	36	700	Sand -----	3	1,106
Clay -----	13	713	Rock -----	1	1,107
Sand -----	4	717	Pack sand -----	22	1,129
Clay, sandy -----	35	752	Clay -----	8	1,137
Pack sand -----	19	771	Pack sand -----	34	1,171
Clay -----	2	773	Sand and clay -----	13	1,184
Sand -----	8	781	Sand -----	19	1,203
Clay -----	2	783	Clay -----	3	1,206



Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
* Well R-31					
Owner: City of El Paso. Driller: Layne-Texas Co. Ltd.					
Sand -----	1	1	Clay -----	5	668
Clay -----	5	6	Sand -----	5	673
Sand -----	14	20	Clay -----	4	677
Sand and gravel -----	37	57	Sand -----	20	697
Sand -----	8	65	Clay -----	31	728
Clay -----	6	71	Sand -----	2	730
Sand -----	15	86	Rock -----	1	731
Clay -----	4	90	Sand -----	33	764
Sand -----	18	108	Clay -----	3	767
Clay -----	13	121	Sand -----	22	789
Sand -----	32	153	Clay -----	28	817
Clay -----	24	177	Sand -----	8	825
Sand -----	10	187	Clay -----	14	839
Clay -----	9	196	Sand -----	13	852
Sand -----	5	201	Clay -----	5	857
Clay -----	5	206	Clay, sandy -----	16	873
Sand -----	20	226	Clay and boulders -----	19	892
Clay -----	11	237	Clay -----	5	897
Sand and clay -----	16	253	Sand -----	20	917
Clay -----	4	257	Clay -----	10	927
Sand -----	27	284	Sand -----	7	934
Clay -----	16	300	Clay -----	11	945
Sand -----	47	347	Sand -----	36	981
Clay -----	7	354	Clay and boulders -----	16	997
Sand -----	23	377	Clay -----	20	1,017
Clay -----	16	393	Sand and clay -----	40	1,057
Sand -----	7	400	Clay -----	50	1,107
Clay -----	4	404	Sand -----	8	1,115
Sand -----	3	407	Clay -----	15	1,130
Boulders -----	2	409	Rock -----	4	1,134
Sand -----	60	469	Clay, sandy -----	43	1,177
Clay -----	34	503	Clay -----	20	1,197
Sand -----	20	523	Clay and boulders -----	15	1,212
Clay -----	14	537	Sand -----	14	1,226
Sand -----	24	561	Rock -----	1	1,227
Clay, sandy -----	16	577	Sand and clay -----	45	1,272
Clay -----	4	581	Sand -----	5	1,277
Sand and clay -----	12	593	Sand and clay -----	20	1,297
Clay -----	6	599	Sand -----	8	1,305
Sand -----	12	611	Clay -----	32	1,337
Clay -----	14	625	Clay, sandy -----	20	1,357
Sand -----	38	663			

\* Drillers' log is for test well drilled in 1939 at same location as well R-31.

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico-- continued

Thickness (feet)		Depth (feet)		Thickness (feet)		Depth (feet)	
Well R-33							
Owner: City of El Paso. Driller: C. R. Jensen.							
Sand -----	1	1	Clay-----	7	630		
Clay -----	5	6	Sand -----	24	654		
Sand and gravel -----	4	10	Clay -----	3	657		
Sand and clay -----	27	37	Sand -----	9	666		
Sand and gravel -----	20	57	Clay -----	15	681		
Clay, sandy -----	10	67	Sand -----	16	697		
Clay -----	10	77	Clay -----	10	707		
Clay and gravel -----	20	97	Sand -----	30	737		
Sand and gravel -----	14	111	Clay -----	25	762		
Clay -----	18	129	Sand and clay -----	10	772		
Sand -----	48	177	Sand -----	40	812		
Clay -----	4	181	Clay -----	9	821		
Sand -----	42	223	Sand -----	12	833		
Clay -----	4	227	Clay -----	13	846		
Sand -----	20	247	Sand -----	11	857		
Clay, sandy -----	10	257	Clay -----	4	861		
Clay -----	5	262	Sand -----	11	872		
Sand -----	13	275	Clay -----	15	887		
Clay -----	46	321	Clay, sandy -----	10	897		
Sand -----	10	331	Clay and boulders -----	20	917		
Clay -----	4	335	Clay -----	22	939		
Sand -----	51	386	Sand -----	13	952		
Clay -----	7	393	Clay -----	40	992		
Sand -----	63	456	Sand -----	5	997		
Rock -----	1	457	Clay, sandy -----	30	1,027		
Sand -----	29	486	Clay -----	30	1,057		
Clay -----	17	503	Sand -----	16	1,073		
Sand -----	9	512	Clay -----	4	1,077		
Clay -----	7	519	Sand -----	10	1,087		
Sand -----	4	523	Clay -----	10	1,097		
Clay -----	17	540	Sand -----	14	1,111		
Sand -----	20	560	Clay -----	14	1,125		
Clay -----	6	566	Sand -----	5	1,130		
Sand -----	10	576	Clay -----	29	1,159		
Clay -----	16	592	Sand -----	28	1,187		
Sand -----	12	604	Clay -----	15	1,202		
Clay -----	8	612	Sand -----	15	1,217		
Sand -----	11	623					

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

Thickness (feet)		Depth (feet)		Thickness (feet)		Depth (feet)	
* Well R-34							
Owner: City of El Paso. Driller: Layne-Texas Co., Ltd.							
Clay -----	16	16	Clay -----	20	600		
Sand and gravel -----	31	47	Sand -----	30	630		
Sand -----	10	57	Clay -----	14	644		
Sand and clay -----	14	71	Sand -----	3	647		
Sand -----	22	93	Rock -----	1	648		
Clay -----	28	121	Clay -----	19	667		
Sand -----	12	133	Sand -----	5	672		
Clay -----	9	142	Clay -----	35	707		
Sand -----	13	155	Sand -----	6	713		
Clay -----	13	168	Clay -----	34	747		
Sand -----	19	187	Sand and clay -----	6	753		
Clay -----	6	193	Sand -----	60	813		
Sand -----	6	199	Clay -----	14	827		
Clay -----	8	207	Sand -----	10	837		
Sand -----	7	214	Clay -----	5	842		
Clay -----	6	220	Sand -----	5	847		
Sand -----	21	241	Clay -----	32	879		
Clay -----	31	272	Sand -----	5	884		
Sand -----	7	279	Clay -----	41	925		
Clay -----	15	294	Sand -----	8	933		
Sand -----	7	301	Clay -----	34	967		
Clay -----	7	308	Sand -----	14	981		
Sand -----	4	312	Sand and clay -----	11	992		
Clay -----	4	316	Sand -----	14	1,006		
Sand -----	1	317	Clay -----	36	1,042		
Clay -----	13	330	Sand -----	16	1,058		
Sand -----	62	392	Rock -----	1	1,059		
Clay -----	9	401	Sand -----	18	1,077		
Sand -----	29	430	Rock -----	1	1,078		
Clay -----	10	440	Sand -----	12	1,090		
Sand -----	32	472	Clay -----	14	1,104		
Clay -----	8	480	Sand -----	6	1,110		
Sand -----	19	499	Clay -----	33	1,143		
Clay -----	9	508	Sand -----	24	1,167		
Sand -----	6	514	Clay -----	24	1,191		
Clay -----	6	520	Rock -----	1	1,192		
Sand -----	20	540	Sand -----	2	1,194		
Clay -----	13	553	Clay -----	3	1,197		
Sand -----	27	580	Sand and clay -----	20	1,217		
* Drillers' log is for test well drilled in 1939 at same location as well R-34.							

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Dona Ana and Otero Counties, New Mexico--continued

		Thickness (feet)	Depth (feet)			Thickness (feet)	Depth (feet)
Well R-39							
Owner: City of El Paso. Driller: C. R. Jensen.							
Sand -----		5	5	Clay -----		8	524
Boulders -----		1	6	Sand -----		22	546
Clay -----		12	18	Clay -----		11	557
Sand and gravel -----		23	41	Sand -----		12	569
Clay -----		16	57	Clay -----		3	572
Sand and clay -----		20	77	Sand -----		18	590
Sand -----		10	87	Clay -----		20	610
Clay -----		10	97	Sand -----		37	647
Sand and clay -----		36	133	Clay -----		2	649
Clay -----		7	140	Sand -----		8	657
Sand and clay -----		37	177	Clay -----		34	691
Clay -----		10	187	Sand -----		4	695
Sand -----		22	209	Clay -----		7	702
Clay -----		28	237	Sand -----		20	722
Sand -----		14	251	Clay -----		11	733
Boulders -----		1	252	Sand -----		9	742
Clay -----		25	277	Clay -----		25	767
Sand -----		6	283	Sand -----		25	792
Clay -----		24	307	Clay -----		9	801
Sand -----		13	320	Sand -----		5	806
Clay -----		5	325	Clay -----		6	812
Clay, sandy -----		12	337	Sand -----		24	836
Sand -----		16	353	Clay -----		79	915
Clay -----		34	387	Sand -----		6	921
Sand -----		6	393	Clay -----		60	981
Clay -----		9	402	Sand -----		8	989
Sand -----		12	414	Rock -----		1	990
Clay -----		3	417	Sand -----		27	1,017
Sand -----		10	427	Clay -----		55	1,072
Clay, sandy -----		7	434	Sand -----		5	1,077
Clay -----		8	442	Clay and boulders -----		10	1,092
Sand -----		5	447	Sand -----		11	1,103
Clay -----		34	481	Clay -----		14	1,117
Sand -----		14	495	Sand -----		13	1,130
Clay -----		11	506	Clay -----		7	1,137
Sand -----		10	516				

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--  
continued

Thickness (feet)		Depth (feet)		Thickness (feet)		Depth (feet)	
* Well R-40							
Owner: City of El Paso. Driller: Layne-Texas Co., Ltd.							
Sand -----	2	2	Sand -----	6	603		
Caliche -----	3	5	Clay -----	38	641		
Clay, sandy -----	12	17	Sand -----	10	651		
Sand -----	3	20	Clay -----	6	657		
Sand and gravel -----	8	28	Sand -----	8	665		
Sand and clay -----	8	36	Clay -----	42	707		
Sand and gravel -----	16	52	Sand -----	32	739		
Clay -----	12	64	Clay -----	29	768		
Sand -----	16	80	Sand -----	4	772		
Clay -----	22	102	Clay -----	4	776		
Sand -----	31	133	Sand -----	12	788		
Clay -----	6	139	Clay -----	23	811		
Sand -----	44	183	Sand -----	16	827		
Clay -----	2	185	Boulders -----	2	829		
Sand -----	40	225	Sand -----	12	841		
Clay -----	12	237	Sand and clay -----	16	857		
Sand -----	23	260	Clay -----	36	893		
Clay -----	17	277	Sand -----	4	897		
Sand -----	16	293	Clay -----	25	922		
Clay -----	8	301	Sand -----	10	932		
Sand -----	26	327	Clay -----	5	937		
Clay -----	4	331	Sand -----	2	939		
Sand -----	25	356	Clay -----	3	942		
Clay -----	10	366	Sand -----	5	947		
Sand -----	15	381	Clay -----	10	957		
Clay -----	26	407	Sand and clay -----	20	977		
Sand -----	6	413	Sand -----	22	999		
Clay -----	6	419	Clay -----	3	1,002		
Sand -----	9	428	Sand -----	10	1,012		
Clay -----	4	432	Clay -----	20	1,032		
Sand -----	5	437	Sand -----	5	1,037		
Clay -----	20	457	Sand and clay -----	30	1,067		
Sand -----	5	462	Sand -----	14	1,081		
Clay -----	25	487	Rock -----	1	1,082		
Sand -----	10	497	Sand -----	3	1,085		
Clay -----	31	528	Rock -----	1	1,086		
Sand -----	21	549	Clay -----	6	1,092		
Clay -----	12	561	Sand -----	9	1,101		
Sand -----	20	581	Clay -----	16	1,117		
Clay -----	16	597	Sand -----	16	1,133		

(continued on next page)

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well R-40--continued					
Clay -----	22	1,155	Sand and clay -----	30	1,227
Sand -----	14	1,169	Sand -----	3	1,230
Clay -----	28	1,197	Sand and clay -----	7	1,237
* Drillers' log is for test well drilled in 1939 at same location as well R-40.					
Well R-42					
Owner: City of El Paso. Driller: C. R. Jensen.					
Soil -----	3	3	Sand -----	14	542
Caliche -----	7	10	Clay -----	1	543
Sand and gravel -----	57	67	Sand -----	4	547
Sand -----	10	77	Sand and clay -----	10	557
Sand and gravel -----	10	87	Sand -----	10	567
Sand and clay -----	10	97	Clay -----	10	577
Clay -----	8	105	Sand -----	16	593
Sand -----	34	139	Clay -----	18	611
Clay -----	7	146	Rock -----	1	612
Sand -----	16	162	Sand -----	7	619
Clay and boulders -----	4	166	Sand and clay -----	18	637
Clay -----	21	187	Clay -----	57	694
Sand -----	30	217	Sand -----	23	717
Clay -----	4	221	Clay -----	10	727
Sand -----	8	229	Sand -----	4	731
Clay -----	18	247	Clay -----	8	739
Sand -----	17	264	Sand -----	28	767
Clay -----	41	305	Clay -----	18	785
Sand -----	12	317	Sand -----	14	799
Clay -----	10	327	Clay -----	35	834
Sand -----	37	364	Sand -----	19	853
Clay -----	8	372	Clay -----	62	915
Sand -----	45	417	Sand -----	10	925
Clay -----	5	422	Clay -----	8	933
Sand -----	10	432	Sand -----	4	937
Clay -----	62	494	Clay -----	20	957
Sand -----	13	507	Sand and clay -----	20	977
Clay -----	5	512	Clay -----	5	982
Sand -----	10	522	Sand -----	52	1,034
Clay -----	6	528	Clay -----	15	1,049

(continued on next page)

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

Thickness (feet)		Depth (feet)		Thickness (feet)		Depth (feet)	
Well R-42--continued							
Sand and clay -----	12	1,061	Clay -----	35	1,192		
Clay -----	16	1,077	Sand -----	8	1,200		
Clay, sandy -----	45	1,122	Clay -----	37	1,237		
Sand -----	23	1,145	Clay, sandy -----	20	1,257		
Sand and clay -----	12	1,157					
Well R-49							
Owner: U. S. Army. Driller: Layne-Texas Co., Ltd.							
Sand -----	2	2	Clay -----	6	120		
Clay, red and caliche -----	11	13	Sand and gravel -----	29	149		
Gravel -----	24	37	Clay, red -----	21	170		
Clay, red -----	5	42	Sand and gravel -----	100	270		
Sand and gravel -----	17	59	Clay and sand -----	8	278		
Clay and sand -----	3	62	Sand and gravel -----	49	327		
Sand and gravel -----	16	78	Clay, sandy -----	20	347		
Clay and sand -----	7	85	Sand and gravel -----	28	375		
Sand -----	29	114	Sand and clay -----	29	404		
Well R-50							
Owner: City of El Paso. Driller: C. R. Jensen.							
Soil, sandy -----	3	3	Clay -----	9	215		
Caliche -----	4	7	Sand -----	26	241		
Sand -----	30	37	Clay -----	4	245		
Clay -----	5	42	Sand -----	10	255		
Sand -----	4	46	Clay -----	2	257		
Clay -----	11	57	Sand -----	7	264		
Sand -----	21	78	Clay -----	4	268		
Clay -----	6	84	Sand -----	27	295		
Sand and gravel -----	19	103	Clay -----	18	313		
Clay -----	10	113	Sand -----	3	316		
Sand -----	10	123	Clay -----	9	325		
Clay -----	81	204	Sand -----	2	327		
Sand -----	2	206	Clay -----	10	337		
(continued on next page)							

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well R-50--continued					
Sand-----	2	339	Sand-----	17	661
Clay-----	18	357	Clay-----	1	662
Sand-----	50	407	Sand-----	13	675
Clay-----	4	411	Clay-----	2	677
Sand-----	4	415	Sand-----	3	680
Clay-----	4	419	Clay-----	21	701
Sand-----	27	446	Sand-----	35	736
Clay-----	41	487	Clay-----	23	759
Sand-----	22	509	Sand-----	56	815
Clay-----	6	515	Clay-----	11	826
Clay, sandy-----	5	520	Sand-----	14	840
Sand-----	35	555	Clay-----	2	842
Clay-----	30	585	Sand-----	10	852
Sand-----	21	606	Clay-----	20	872
Clay-----	8	614	Sand-----	24	896
Sand-----	21	635	Clay, sandy-----	11	907
Clay-----	3	638	Clay-----	4	911
Clay, sandy-----	1	639	Sand-----	19	930
Sand-----	3	642	Clay-----	20	950
Clay-----	2	644			
Well R-51					
Owner: U. S. Army. Driller: Bassett Drilling Co.					
Caliche, gravel, and sand --	52	52	Sand and gravel-----	70	480
Sand and gravel-----	78	130	Clay and rock-----	30	510
Clay and rock-----	31	161	Sand and gravel-----	20	530
Sand-----	25	186	Clay and gravel-----	19	549
Clay-----	22	208	Clay-----	38	587
Sand-----	13	221	Boulders and gravel-----	4	591
Clay-----	2	223	Gravel-----	28	619
Sand and gravel-----	7	230	Clay and gravel-----	17	636
Missing-----	10	240	Sand and gravel-----	14	650
Sand-----	28	268	Boulders and gravel-----	10	760
Clay and rock-----	22	290	Sand and gravel-----	20	780
Sand and gravel-----	89	379	Clay and gravel-----	93	773
Clay and gravel-----	4	383	Clay and rock-----	47	820
Sand-----	27	410			



Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

Thickness (feet)		Depth (feet)		Thickness (feet)		Depth (feet)	
Well R-53							
Owner: City of El Paso. Driller: Layne-Texas Co., Ltd.							
Soil -----	8	8	Boulders -----	1	355		
Sand and caliche -----	17	25	Sand, packed and clay --	76	431		
Sand and gravel -----	27	52	Clay -----	70	501		
Clay -----	12	64	Sand, packed -----	43	544		
Sand -----	9	73	Sand, packed and clay --	5	549		
Clay -----	65	138	Clay, hard -----	12	561		
Sand and gravel -----	55	193	Sand, packed and clay --	26	587		
Clay ---	2	195	Clay, soft -----	22	609		
Sand and gravel -----	22	217	Shale, hard -----	28	637		
Clay -----	17	234	Sand -----	12	649		
Sand -----	2	236	Shale, sandy -----	31	680		
Clay, sandy -----	30	266	Rock -----	1	681		
Clay -----	64	330	Shale, sandy -----	38	719		
Sand -----	12	342	Shale -----	41	760		
Sand -----	2	344	Sand -----	33	793		
Clay, sandy -----	10	354	Shale -----	7	800		
Well R-54							
Owner: City of El Paso. Driller: Layne-Texas Co., Ltd.							
Clay -----	20	20	Clay and boulders -----	5	400		
Sand -----	26	46	Clay -----	6	406		
Sand, packed-----	114	160	Clay and sand -----	34	440		
Clay and gravel -----	19	179	Clay -----	14	454		
Sand, packed -----	92	271	Rock -----	1	455		
Clay -----	25	296	Clay and boulders -----	90	545		
Clay, sandy -----	6	302	Clay -----	31	576		
Clay -----	42	344	Boulders and clay -----	9	585		
Sand -----	10	354	Clay -----	33	618		
Clay and sand -----	14	368	Clay, sand -----	12	630		
Sand -----	6	374	Rock -----	1	631		
Sand, fine -----	21	395	Clay -----	67	698		

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well R-55					
Owner: City of El Paso. Driller: Layne-Texas, Co., Ltd.					
Soil -----	14	14	Clay and boulders -----	19	389
Sand and caliche -----	4	18	Clay, sandy -----	56	445
Sand -----	34	52	Clay -----	6	451
Clay and gravel -----	6	58	Clay, sandy -----	14	465
Clay -----	17	75	Clay and boulders -----	18	483
Sand, packed -----	67	142	Sand -----	3	486
Clay and sand -----	37	179	Sand, hard and shale ---	19	505
Clay -----	25	204	Shale, sandy -----	27	532
Sand -----	16	220	Shale, hard -----	62	594
Clay -----	4	224	Shale, sandy and boulders	11	605
Clay and sand -----	30	254	Sand, packed -----	10	615
Clay, sandy -----	51	305	Boulders -----	2	617
Sand -----	14	319	Rock -----	1	618
Clay -----	15	334	Shale, hard and sand ---	40	658
Sand -----	18	352	Shale, hard - -----	41	699
Clay and boulders -----	13	365	Shale, sandy -----	61	760
Sand -----	5	370	Shale -----	70	830
* Well R-56					
Owner: City of El Paso. Driller: Layne-Texas Co., Ltd.					
Sand and clay-----	4	4	Clay -----	4	121
Sand and caliche -----	11	15	Sand -----	16	137
Gravel -----	5	20	Sand and clay -----	20	157
Clay -----	7	27	Clay -----	20	177
Sand and gravel -----	14	41	Sand and clay -----	20	197
Clay -----	25	66	Sand -----	8	205
Sand and gravel -----	19	85	Clay -----	14	219
Clay -----	8	93	Sand -----	44	263
Sand and gravel -----	4	97	Clay and sand -----	14	277
Gravel -----	2	99	Sand -----	5	282
Clay -----	4	103	Clay -----	18	300
Sand and gravel -----	4	107	Sand -----	7	307
Sand -----	10	117	Clay -----	13	320
* Drillers' log is for test well drilled in 1939 at same location as well R-56.					
(continued on next page)					

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well R-56--continued					
Sand -----	17	337	Sand and boulders -----	15	817
Clay -----	9	346	Clay -----	27	844
Sand -----	15	361	Sand -----	3	847
Clay -----	11	372	Clay -----	7	854
Sand -----	8	380	Sand -----	2	856
Clay -----	13	393	Clay -----	26	882
Sand -----	34	427	Sand -----	27	909
Clay -----	28	455	Clay -----	58	967
Sand -----	4	459	Sand -----	25	992
Clay -----	16	475	Sand and boulders -----	12	1,004
Sand -----	17	492	Clay -----	25	1,029
Clay -----	14	506	Sand -----	4	1,033
Sand -----	5	511	Clay -----	59	1,092
Clay -----	18	529	Sand -----	17	1,109
Sand -----	14	543	Clay -----	40	1,149
Clay -----	6	549	Sand -----	4	1,153
Sand -----	26	575	Clay -----	34	1,187
Sand rock -----	1	576	Sand -----	15	1,202
Sand -----	9	585	Sand and clay -----	11	1,213
Clay -----	16	601	Clay -----	9	1,222
Sand -----	7	608	Sand -----	7	1,229
Clay -----	47	655	Clay -----	2	1,231
Sand -----	10	665	Sand -----	6	1,237
Clay -----	17	682	Clay -----	70	1,307
Sand -----	15	697	Sand -----	9	1,316
Clay -----	18	715	Boulders -----	3	1,319
Sand -----	22	737	Sand -----	10	1,329
Sand rock -----	10	747	Clay -----	12	1,341
Clay -----	12	759	Sand -----	21	1,362
Sand -----	9	768	Sand and clay -----	75	1,437
Clay -----	9	777	Clay -----	20	1,457
Clay and boulders -----	25	802	Clay, sandy -----	10	1,467

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

Thickness (feet)		Depth (feet)		Thickness (feet)		Depth (feet)	
Well S-7							
Owner: City of El Paso. Driller: C. R. Jensen.							
Sand -----	4	4	Sand -----	8	467		
Caliche -----	20	24	Clay -----	3	470		
Clay -----	5	29	Sand -----	3	473		
Sand and gravel -----	8	37	Clay -----	43	516		
Sand -----	90	127	Sand -----	3	519		
Clay -----	16	143	Clay -----	5	524		
Sand -----	10	153	Sand -----	59	583		
Clay -----	3	156	Clay -----	10	593		
Sand -----	13	169	Sand -----	33	626		
Clay -----	2	171	Clay -----	1	627		
Sand -----	4	175	Sand -----	14	641		
Clay -----	25	200	Clay -----	7	648		
Sand -----	31	231	Sand -----	5	653		
Clay -----	8	239	Clay -----	2	655		
Sand -----	6	245	Sand -----	8	663		
Clay -----	10	255	Clay -----	8	671		
Sand -----	31	286	Sand -----	3	674		
Clay -----	7	293	Clay -----	2	676		
Clay and boulders -----	2	295	Sand -----	19	695		
Sand -----	26	321	Clay -----	1	696		
Clay and boulders -----	9	330	Sand -----	18	714		
Sand -----	66	396	Clay -----	6	720		
Rock -----	1	397	Sand -----	3	723		
Clay -----	1	398	Clay -----	5	728		
Clay and boulders -----	3	401	Sand -----	18	746		
Clay -----	1	402	Clay -----	14	770		
Sand -----	26	428	Sand -----	11	771		
Boulders -----	1	429	Clay -----	4	775		
Sand -----	6	435	Sand -----	18	793		
Sand and boulders -----	14	449	Clay -----	2	795		
Clay -----	10	459					

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

Thickness (feet)		Depth (feet)		Thickness (feet)		Depth (feet)	
Well S-10							
Owner: U. S. Army. Driller: Layne-Texas Co., Ltd.							
Sand -----	1	1	Sand and clay -----	30	337		
Caliche -----	2	3	Clay -----	41	378		
Clay, sandy and caliche ----	17	20	Clay, sandy -----	20	398		
Sand -----	25	45	Clay -----	24	422		
Clay -----	40	85	Shale, sandy -----	25	447		
Sand and clay -----	60	145	Sand -----	19	466		
Clay -----	4	149	Shale, hard -----	106	572		
Sand, gravel, and clay ----	51	200	Sand, and clay -----	21	593		
Clay and boulders -----	9	209	Clay -----	6	599		
Sand, hard and clay -----	28	237	Sand -----	7	606		
Clay, hard -----	70	307	Clay -----	5	611		
Well S-13							
Owner: U. S. Army. Driller: Layne-Texas Co., Ltd.							
Sand -----	2	2	Sand and clay -----	13	98		
Clay, red -----	9	11	Clay -----	30	128		
Gravel -----	25	36	Sand and clay -----	277	405		
Clay, red -----	15	51	Clay -----	52	457		
Sand -----	6	57	Sand -----	8	465		
Clay, red -----	8	65	Clay and sand -----	20	485		
Sand and clay -----	12	77	Sand -----	16	501		
Clay -----	8	85					
Well V-1							
Owner: City of El Paso. Driller: V. C. Chesney.							
Soil -----	35	35	Sand, coarse -----	18	148		
Gravel, coarse -----	5	40	Sand rock -----	1	149		
Sand -----	46	86	Sand and boulders -----	11	160		
Clay -----	16	102	Sand rock -----	2	162		
Sand and boulders -----	28	130	Sand and gravel -----	8	170		
(continued on next page)							

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Dona Ana and Otero Counties, New Mexico--continued

Thickness (feet)		Depth (feet)		Thickness (feet)		Depth (feet)	
Well V-1--continued							
Sand rock -----	1	171	Sand and boulders -----	4	357		
Sand and gravel -----	32	203	Clay -----	3	360		
Sand, gravel, and boulders -	15	218	Sand and boulders -----	7	367		
Clay -----	3	221	Clay -----	14	381		
Sand and gravel -----	14	235	Sand and boulders -----	19	400		
Clay -----	2	237	Clay -----	15	415		
Gravel -----	4	241	Sand and boulders -----	12	427		
Gravel and sand -----	14	255	Clay -----	35	462		
Clay -----	3	258	Sand rock -----	1	463		
Sand and gravel -----	20	278	Clay -----	22	485		
Clay -----	3	281	Sand and boulders -----	5	490		
Sand and gravel -----	27	308	Clay -----	45	535		
Clay -----	3	311	Sand and boulders -----	10	545		
Sand and gravel -----	11	322	Clay -----	40	585		
Clay -----	2	324	Clay and boulders -----	14	599		
Sand and gravel -----	24	348	Clay -----	13	612		
Sand, fine, hard -----	1	349	Sand rock and sane, fine	16	628		
Sand -----	4	353	Clay -----	12	640		
Well V-2							
Owner: City of El Paso. Driller: City of El Paso.							
Clay, yellow -----	4	4	Clay, yellow -----	12	327		
Caliche -----	10	14	Sand, water and gravel -	35	362		
Sand -----	9	23	Clay, yellow -----	8	370		
Clay, yellow, sandy -----	97	120	Sand, water -----	7	377		
Sand -----	11	131	Clay, yellow -----	9	386		
Gravel -----	9	140	Sand, water and gravel -	26	412		
Sand -----	36	176	Boulders -----	2	414		
Clay, yellow -----	26	202	Clay, yellow -----	4	418		
Sand, water -----	6	208	Sand, water -----	8	426		
Shale, hard -----	2	210	Clay, yellow -----	5	431		
Sand, water -----	40	250	Sand, water and gravel -	12	443		
Clay, yellow -----	5	255	Clay, yellow -----	28	471		
Sand, water -----	11	266	Sand, water -----	17	488		
Clay, yellow -----	12	278	Rock -----	5	493		
Sand, water -----	37	315	Sand, water -----	17	510		
(continued on next page)							

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--  
continued

Thickness (feet)		Depth (feet)		Thickness (feet)		Depth (feet)	
Well V-2--continued							
Clay, yellow -----	2	512	Clay, yellow -----	21	546		
Rock -----	2	514	Sand, water, and gravel	37	583		
Sand, water -----	7	521	Rock, hard -----	6	589		
Rock -----	4	525	Clay, yellow, hard -----	17	606		
Well V-3							
Owner: City of El Paso. Driller: L. Jensen.							
Soil -----	4	4	Sand and gravel -----	12	417		
Caliche -----	12	16	Clay -----	12	429		
Sand -----	55	71	Sand -----	4	433		
Clay -----	8	79	Clay, hard -----	26	459		
Gravel -----	15	94	Sand and gravel -----	40	499		
Clay -----	6	100	Clay -----	6	505		
Sand -----	64	164	Sand, packed, hard -----	17	522		
Clay -----	4	168	Sand and gravel -----	44	566		
Sand -----	39	207	Clay -----	2	568		
Clay -----	16	223	Sand -----	8	576		
Sand -----	34	257	Sand rock, hard -----	2	578		
Clay -----	19	276	Sand and gravel -----	10	588		
Sand -----	18	294	Clay -----	8	596		
Clay -----	8	302	Sand and gravel -----	6	602		
Sand and gravel -----	44	346	Clay -----	4	606		
Clay -----	15	361	Sand -----	6	612		
Sand and boulders -----	9	370	Clay -----	3	615		
Clay -----	10	380	Sand and gravel -----	17	632		
Sand and gravel -----	10	390	Clay -----	8	640		
Clay -----	5	395	Sand and gravel -----	20	660		
Sand and gravel -----	9	404	Clay -----	15	675		
Rock -----	1	405	Sand and boulders -----	40	715		

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--  
continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well V-4					
Owner: City of El Paso. Driller: V. C. Chesney.					
Soil -----	4	4	Sand and boulders -----	38	410
Caliche -----	12	16	Clay -----	4	414
Sand -----	54	70	Sand, gravel, and boulders	54	468
Clay -----	10	80	Clay -----	3	471
Gravel -----	20	100	Rock -----	1	472
Clay -----	6	106	Sand, gravel, and boulders	22	494
Sand -----	58	164	Clay -----	5	499
Clay -----	6	170	Sand, gravel, and boulders	29	528
Sand -----	30	200	Clay -----	5	533
Clay -----	24	224	Sand, boulders, and gravel	57	590
Sand -----	36	260	Clay -----	12	602
Clay -----	15	275	Sand, boulders, and gravel	26	628
Sand -----	33	308	Clay -----	3	631
Clay -----	4	312	Sand, boulders, gravel -	57	688
Sand and boulders -----	38	350	Clay -----	4	692
Rock -----	1	351	Sand -----	16	708
Sand -----	17	368	Sand, boulders, and gravel	50	758
Clay -----	4	372			
Well V-5					
Owner: City of El Paso. Driller: V. Chesney.					
Sand -----	35	35	Clay -----	5	389
Gravel, coarse -----	5	40	Boulders, sand, and		
Sand and gravel -----	80	120	gravel -----	23	412
Sand and clay -----	25	145	Sand and rock -----	1	413
Sand and boulders -----	70	215	Clay, sand, and boulders	17	430
Clay -----	7	222	Clay -----	6	436
Sand, fine and boulders ----	38	260	Sand and boulders -----	19	455
Clay -----	5	265	Sand, gravel, and		
Sand, fine -----	36	301	boulders -----	15	470
Clay -- -----	23	324	Clay -----	5	475
Boulders -----	3	327	Sand, gravel, and		
Sand, fine and boulders ----	22	349	boulders -----	7	482
Clay and sand -----	13	362	Clay -----	3	485
Sand, coarse, and gravel ---	22	384			
(continued on next page)					



Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--  
continued

Thickness (feet)		Depth (feet)		Thickness (feet)		Depth (feet)	
Well V-5--continued							
Sand, gravel, and boulders -	7	492	Clay -----	3	658		
Sand rock -----	1	493	Sand, gravel, and				
Boulders and sand -----	2	495	boulders -----	17	675		
Clay -----	5	500	Sand and rock -----	1	676		
Sand, gravel, and boulders -	35	535	Sand and gravel -----	22	698		
Clay -----	3	538	Clay -----	3	701		
Sand and boulders -----	21	559	Sand and gravel -----	14	715		
Clay -----	6	565	Clay -----	3	718		
Sand, gravel, and boulders -	36	601	Sand and gravel -----	14	732		
Clay -----	4	605	Clay -----	4	736		
Sand, gravel, and boulders -	13	618	Sand and gravel -----	29	765		
Clay -----	4	622	Clay -----	2	767		
Sand, gravel, and boulders -	11	633	Sand and rock -----	1	768		
Clay -----	3	636	Sand, gravel, and				
Sand, gravel, and boulders -	6	642	boulders -----	5	773		
Clay -----	3	645	Clay -----	7	780		
Sand and gravel -----	10	655					
Well V-6							
Owner: City of El Paso. Driller: C. R. Jensen.							
Soil, sandy -----	3	3	Sand -----	5	406		
Sand and caliche -----	7	10	Clay -----	26	432		
Sand, coarse and gravel ----	27	37	Sand -----	15	447		
Gravel, coarse, and clay ---	30	67	Clay -----	2	449		
Sand -----	12	79	Sand -----	6	455		
Clay -----	18	97	Clay -----	6	461		
Sand -----	32	129	Sand -----	5	466		
Sand and clay -----	78	207	Clay, sandy -----	5	471		
Clay -----	8	215	Sand -----	13	484		
Sand -----	49	264	Clay, sandy -----	11	495		
Clay -----	24	288	Sand -----	6	501		
Sand -----	19	307	Clay -----	2	503		
Clay -----	20	327	Sand -----	13	516		
Sand -----	3	330	Clay -----	9	525		
Clay -----	14	344	Sand -----	10	535		
Sand -----	14	358	Clay -----	6	541		
Clay -----	43	401	Sand -----	40	581		
(continued on next page)							

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well V-6--continued					
Clay -----	17	598	Clay and sand -----	47	830
Sand -----	60	658	Sand -----	7	837
Clay and sand -----	12	670	Clay -----	5	842
Clay and boulders -----	57	727	Sand -----	34	876
Clay and sand -----	29	756	Clay -----	3	879
Sand -----	27	783	Clay -----	23	902
Well V-7					
Owner: City of El Paso. Driller: Layne-Texas Co., Ltd.					
Soil, sandy -----	2	2	Clay -----	27	600
Caliche -----	6	8	Sand -----	24	624
Sand, coarse and gravel -----	70	78	Clay -----	3	627
Clay -----	20	118	Sand -----	24	651
Sand and clay -----	100	218	Clay -----	16	667
Clay -----	8	226	Rock -----	1	668
Sand -----	18	244	Sand -----	8	676
Clay -----	14	258	Clay -----	12	688
Clay, sandy -----	12	270	Clay, sandy -----	15	703
Clay -----	17	287	Sand -----	27	730
Sand -----	25	312	Clay -----	8	738
Clay -----	15	327	Clay, sandy -----	10	748
Sand -----	17	344	Sand -----	10	758
Sand, hard -----	6	350	Clay, sandy -----	44	802
Clay -----	82	432	Sand -----	12	814
Sand -----	15	447	Clay -----	21	835
Clay -----	4	451	Sand -----	28	863
Sand -----	10	461	Clay -----	15	878
Clay, sandy -----	54	515	Clay, sandy -----	50	928
Sand -----	18	533	Sand -----	10	938
Clay -----	6	539	Clay and boulders -----	60	998
Sand -----	9	548	Sand -----	25	1,023
Clay -----	2	550	Clay, sandy -----	55	1,078
Sand -----	23	573			

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--  
continued

Thickness (feet)		Depth (feet)		Thickness (feet)		Depth (feet)	
Well V-9							
Owner: City of El Paso. Driller: Layne-Texas Co., Ltd.							
Soil, sandy -----	2	2	Sand -----	14	729		
Sand and caliche -----	4	6	Rock -----	2	731		
Clay -----	41	47	Sand -----	5	736		
Sand and gravel -----	20	67	Clay -----	111	847		
Clay -----	10	77	Sand -----	25	872		
Sand and gravel -----	30	107	Clay -----	5	877		
Sand -----	42	149	Sand -----	30	907		
Clay -----	28	177	Clay -----	12	919		
Clay, sandy -----	60	237	Sand -----	16	935		
Clay -----	12	249	Clay -----	17	952		
Sand -----	83	332	Sand -----	7	959		
Clay -----	5	337	Clay -----	12	971		
Clay, sandy -----	40	377	Sand -----	8	979		
Sand -----	12	389	Clay -----	2	981		
Clay -----	11	400	Sand -----	11	992		
Sand -----	14	414	Clay -----	10	1,002		
Clay -----	3	417	Sand -----	4	1,006		
Sand -----	40	457	Clay -----	2	1,008		
Clay -----	34	491	Clay, sandy -----	9	1,017		
Sand -----	13	504	Sand -----	4	1,021		
Clay -----	8	512	Clay -----	32	1,053		
Sand -----	25	537	Sand -----	6	1,059		
Clay -----	30	567	Clay -----	13	1,072		
Sand, packed -----	9	576	Sand -----	4	1,076		
Clay, sandy -----	73	649	Clay -----	6	1,082		
Sand -----	25	674	Sand -----	17	1,099		
Clay -----	18	692	Clay, sandy -----	48	1,147		
Sand -----	16	708	Sand -----	10	1,157		
Clay -----	7	715	Clay, sandy -----	54	1,211		

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--  
continued

Thickness (feet)		Depth (feet)		Thickness (feet)		Depth (feet)	
Well V-11							
Owner: City of El Paso. Driller: H. M. Stanley.							
Sand and caliche -----	19	19	Clay and clay, sandy ---	13	312		
Sand, coarse and gravel ----	23	42	Sand, medium, and clay,				
Sand -----	5	47	sandy -----	15	327		
Sand, coarse and gravel ----	6	53	Clay -----	24	351		
Clay -----	23	76	Sand, fine -----	2	353		
Gravel -----	20	96	Clay -----	2	355		
Clay -----	8	104	Sand, fine -----	15	370		
Sand, coarse and gravel ----	37	141	Sand, clayey -----	1	371		
Clay -----	29	170	Sand, coarse -----	6	377		
Sand, fine, and clay, sandy	7	177	Clay -----	6	383		
Clay -----	25	202	Sand -----	1	384		
Gravel and clay -----	1	203	Clay -----	23	407		
Clay -----	2	205	Sand, medium -----	9	416		
Sand, fine -----	2	207	Clay and clay, sandy ---	23	439		
Clay -----	18	225	Sand -----	23	462		
Sand, fine and some gravel -	25	250	Clay -----	11	473		
Sand, coarse -----	6	256	Sand -----	33	506		
Clay, white, chalky -----	14	270	Clay -----	10	516		
Sand, fine -----	10	280	Clay, sandy -----	7	523		
Clay -----	6	286	Sand -----	59	582		
Sand -----	13	299	Clay -----	11	593		
			Sand, very fine-----	7	600		
Well V-12							
Owner: City of El Paso. Driller: C. R. Jensen.							
Sand -----	2	2	Sand and gravel -----	6	128		
Caliche -----	4	6	Clay -----	9	137		
Sand and gravel -----	14	20	Sand and clay -----	20	157		
Clay -----	11	31	Clay -----	15	172		
Clay and gravel -----	6	37	Sand -----	11	183		
Clay -----	25	62	Clay -----	14	197		
Sand and gravel -----	27	89	Sand -----	30	227		
Clay -----	14	103	Clay -----	3	230		
Sand -----	10	113	Sand -----	18	248		
Clay -----	9	122	Clay -----	8	256		
(continued on next page)							

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well V-12--continued					
Sand -----	1	257	Sand -----	23	656
Clay -----	20	277	Clay -----	5	661
Sand -----	22	299	Sand -----	38	699
Clay -----	2	301	Clay -----	13	712
Sand -----	16	317	Sand -----	24	736
Clay -----	17	334	Clay -----	33	769
Sand -----	24	358	Sand -----	16	785
Clay -----	21	379	Sand and clay -----	8	793
Sand -----	5	384	Clay -----	4	797
Clay -----	2	386	Sand -----	16	813
Sand -----	13	399	Clay -----	20	833
Clay -----	18	417	Sand -----	4	837
Sand -----	10	427	Clay -----	20	857
Clay -----	5	432	Sand -----	25	882
Sand -----	7	439	Clay -----	5	887
Clay -----	13	452	Sand -----	39	926
Sand -----	27	479	Clay -----	34	960
Clay -----	11	490	Sand -----	14	974
Sand -----	33	523	Clay -----	7	981
Clay -----	9	532	Sand -----	8	989
Sand -----	10	542	Clay -----	5	994
Clay -----	10	552	Clay, sandy -----	3	997
Sand -----	3	555	Clay -----	36	1,033
Clay -----	7	562	Sand -----	11	1,044
Sand -----	2	564	Clay -----	3	1,047
Clay -----	11	575	Sand -----	20	1,067
Sand -----	4	579	Clay -----	16	1,083
Clay -----	7	586	Sand -----	4	1,087
Sand -----	12	598	Clay -----	7	1,094
Clay -----	6	604	Sand -----	3	1,097
Sand -----	23	627	Clay -----	20	1,117
Clay -----	6	633			
Well V-13					
Owner: City of El Paso. Driller: C. R. Jensen.					
Sand and caliche -----	24	24	Clay and gravel -----	14	86
Clay and gravel -----	38	62	Sand and gravel -----	16	102
Sand and gravel -----	10	72	Clay -----	15	117
(continued on next page)					

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well V-13--continued					
Sand and clay -----	53	170	Clay -----	2	609
Clay -----	41	211	Sand -----	53	662
Sand -----	22	233	Clay -----	15	677
Sand and clay -----	4	237	Sand -----	44	721
Sand -----	16	253	Clay -----	16	737
Clay -----	11	264	Sand and clay -----	20	757
Sand -----	9	273	Sand -----	25	782
Clay -----	23	296	Clay -----	15	797
Sand -----	17	313	Sand and clay -----	55	852
Clay -----	18	331	Clay -----	5	857
Sand -----	3	334	Sand -----	35	892
Clay -----	3	337	Clay -----	10	902
Sand -----	7	344	Sand -----	49	951
Clay -----	11	355	Clay -----	39	990
Sand -----	20	375	Sand -----	5	995
Clay -----	22	397	Clay -----	8	1,003
Sand and clay -----	20	417	Sand -----	6	1,009
Clay -----	19	436	Clay -----	21	1,030
Sand -----	9	445	Sand -----	7	1,037
Clay -----	32	477	Clay -----	4	1,041
Sand -----	16	493	Sand -----	6	1,047
Clay -----	7	500	Clay -----	4	1,051
Sand -----	17	517	Sand -----	8	1,059
Clay -----	2	519	Clay -----	23	1,082
Sand -----	14	533	Sand -----	2	1,084
Clay -----	6	539	Clay -----	9	1,093
Sand -----	13	552	Sand -----	4	1,097
Clay -----	4	556	Clay -----	3	1,100
Sand -----	15	571	Sand -----	12	1,112
Clay -----	5	576	Clay -----	13	1,125
Sand -----	10	586	Sand -----	4	1,129
Clay -----	6	592	Clay -----	2	1,131
Sand -----	15	607			

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--  
continued

Thickness (feet)		Depth (feet)		Thickness (feet)		Depth (feet)	
Well V-14							
Owner: U. S. Air Force. Driller: Layne-Texas Co., Ltd.							
Sand -----	2	2	Sand -----	25	366		
Sand, gravel, and caliche --	48	50	Clay -----	7	373		
Sand and clay -----	35	85	Sand, gravel, and clay -	22	395		
Sand, clay, and gravel -----	105	190	Clay -----	10	405		
Sand, gravel, and clay -----	16	206	Sand -----	26	431		
Clay -----	5	211	Sand -----	5	436		
Sand -----	13	224	Clay -----	22	458		
Clay and clay, sandy -----	15	239	Sand and clay -----	10	468		
Sand -----	26	265	Sand -----	22	490		
Clay -----	10	275	Clay -----	5	495		
Sand and clay, sandy -----	36	311	Sand -----	7	502		
Sand -----	20	331	Caliche, sand, and gravel	48	550		
Sand, hard, and clay -----	10	341					
Well V-15							
Owner: U. S. Air Force. Driller: Layne-Texas Co., Ltd.							
Sand, gravel, and caliche --	40	40	Shale and shale, sandy--	37	465		
Sand and gravel -----	60	100	Sand and boulders -----	20	485		
Sand -----	7	107	Shale -----	9	494		
Clay and sand -----	40	147	Sand, and shale -----	48	542		
Sand -----	20	167	Shale -----	3	545		
Clay and sand -----	43	210	Sand, hard, and boulders	109	654		
Sand -----	20	230	Shale and boulders -----	46	700		
Clay and sand -----	45	275	Shale -----	25	725		
Sand -----	153	428	Sand, hard, and boulders	25	750		
Well V-16							
Owner: City of El Paso. Driller: C. R. Jensen.							
Sand and caliche -----	23	23	Clay -----	15	115		
Clay -----	37	60	Sand-----	4	119		
Sand-----	14	74	Clay -----	14	133		
Clay -----	7	81	Sand -----	8	141		
Sand and gravel -----	19	100	Clay -----	13	154		
(continued on next page)							

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

Thickness (feet)		Depth (feet)		Thickness (feet)		Depth (feet)	
Well V-16--continued							
Sand	16	170	Clay	4	601		
Clay	34	204	Sand	12	613		
Sand	18	222	Clay	2	615		
Clay	2	224	Sand	28	643		
Sand	19	243	Clay	17	660		
Clay	2	245	Sand	27	687		
Sand	45	290	Clay	25	712		
Clay	2	292	Sand	22	734		
Sand	10	302	Clay	8	742		
Clay	17	319	Sand	13	755		
Sand	8	327	Clay	2	757		
Clay	6	333	Sand and clay	37	794		
Sand	2	335	Sand	48	842		
Clay	8	343	Clay	4	846		
Sand	16	359	Sand	8	854		
Clay	14	373	Clay	6	860		
Sand	7	380	Sand	19	879		
Clay	12	392	Clay	6	885		
Sand	41	433	Sand	18	903		
Clay	19	452	Clay	2	905		
Sand	25	477	Sand	14	919		
Clay	2	479	Clay	4	923		
Sand	19	498	Sand	14	937		
Clay	7	505	Clay	6	943		
Sand	14	519	Sand	8	951		
Clay	13	532	Clay	17	968		
Sand	9	541	Sand	4	972		
Clay	4	545	Clay	25	997		
Sand	12	557	Sand	9	1,006		
Clay	16	573	Clay	2	1,008		
Sand	14	587	Sand	22	1,030		
Clay	8	595	Clay	42	1,072		
Sand	2	597					



Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--  
continued

Thickness (feet)		Depth (feet)		Thickness (feet)		Depth (feet)	
Well V-17							
Owner: City of El Paso. Driller: C. R. Jensen.							
Sand and caliche -----	20	20	Sand -----	40	577		
Sand -----	10	30	Clay -----	2	579		
Sand and gravel -----	19	49	Sand -----	10	589		
Clay -----	8	57	Clay -----	4	593		
Sand -----	14	71	Sand -----	15	608		
Sand and clay -----	26	97	Clay -----	3	611		
Gravel -----	8	105	Sand -----	38	649		
Sand -----	10	115	Clay -----	2	651		
Gravel -----	2	117	Sand -----	9	660		
Sand and clay -----	10	127	Clay -----	7	667		
Clay -----	16	143	Sand -----	13	680		
Sand -----	7	150	Clay -----	13	693		
Clay -----	11	161	Sand -----	11	704		
Sand -----	16	177	Clay -----	33	737		
Clay -----	9	186	Sand and clay -----	16	753		
Sand -----	16	202	Clay -----	26	779		
Clay -----	12	214	Sand -----	18	797		
Sand -----	33	247	Clay -----	2	799		
Clay -----	8	255	Sand -----	10	809		
Sand -----	27	282	Clay -----	4	813		
Clay -----	12	294	Sand -----	4	817		
Sand -----	10	304	Clay -----	5	822		
Clay -----	7	311	Sand -----	10	832		
Sand -----	11	322	Clay -----	23	855		
Clay -----	3	325	Sand -----	18	873		
Sand -----	5	330	Clay -----	4	877		
Clay -----	14	344	Sand -----	47	924		
Sand -----	6	350	Clay -----	9	933		
Clay -----	14	364	Sand -----	16	949		
Sand -----	8	372	Clay -----	2	951		
Clay -----	7	379	Sand -----	10	961		
Sand -----	10	389	Sand and clay -----	16	977		
Clay -----	20	409	Sand -----	29	1,006		
Sand -----	18	427	Clay -----	7	1,013		
Clay -----	22	449	Sand -----	10	1,023		
Sand -----	8	457	Clay -----	4	1,027		
Clay -----	8	465	Sand -----	19	1,046		
Sand -----	14	479	Clay -----	4	1,050		
Clay -----	18	497	Sand -----	6	1,056		
Sand -----	12	509	Clay -----	11	1,067		
Clay -----	8	517	Sand -----	20	1,087		
Sand -----	12	529	Sand and clay -----	8	1,095		
Clay -----	8	537	Clay -----	2	1,097		

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--  
continued

Thickness (feet)		Depth (feet)		Thickness (feet)		Depth (feet)	
Well V-18							
Owner: City of El Paso. Driller: C. R. Jensen.							
Soil -----	1	1	Sand -----	130	625		
Caliche -----	2	3	Clay -----	4	629		
Clay and sand -----	17	20	Sand -----	8	637		
Sand -----	15	35	Clay -----	4	641		
Clay -----	28	63	Sand -----	23	664		
Sand and gravel -----	22	85	Clay -----	7	671		
Clay -----	15	100	Sand -----	15	686		
Sand -----	22	122	Clay -----	9	695		
Clay -----	10	132	Sand -----	13	708		
Sand -----	50	182	Clay -----	2	710		
Clay -----	10	192	Sand and clay -----	6	716		
Sand -----	109	301	Sand -----	45	761		
Clay -----	17	318	Clay -----	3	764		
Sand -----	13	331	Sand -----	5	769		
Clay -----	9	340	Clay -----	8	777		
Sand -----	17	357	Sand -----	55	832		
Clay -----	9	366	Clay -----	34	866		
Sand -----	16	382	Sand -----	15	881		
Clay -----	25	407	Clay -----	6	887		
Sand -----	26	433	Sand -----	10	897		
Clay -----	3	436	Clay -----	25	922		
Sand -----	54	490	Sand -----	17	939		
Clay -----	5	495	Clay -----	18	957		
* Well V-19							
Owner: City of El Paso. Driller: C. R. Jensen.							
Sand -----	2	2	Sand -----	54	171		
Caliche -----	4	6	Clay and sand -----	76	247		
Sand and gravel -----	9	15	Clay -----	39	286		
Clay -----	5	20	Sand -----	23	309		
Sand and gravel -----	31	51	Clay -----	8	317		
Clay -----	16	67	Sand -----	14	331		
Clay and sand -----	50	117	Clay -----	5	336		
* Drillers' log is for test well drilled in 1938 at same location as well V-19.							
(continued on next page)							

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--  
continued

Thickness (feet)		Depth (feet)		Thickness (feet)		Depth (feet)	
Well V-19--continued							
Sand -----	20	356	Clay -----	6	717		
Clay -----	38	394	Sand and clay -----	25	742		
Sand -----	16	410	Clay -----	35	777		
Clay -----	27	437	Sand and clay -----	35	812		
Sand -----	10	447	Clay -----	25	837		
Clay -----	16	463	Sand and clay -----	10	847		
Clay, sandy -----	4	467	Clay -----	4	851		
Clay -----	6	473	Sand -----	16	867		
Sand -----	7	480	Clay -----	10	877		
Clay -----	17	497	Sand and clay -----	40	917		
Sand -----	7	504	Sand and clay -----	15	932		
Clay -----	25	529	Clay -----	21	953		
Sand -----	6	535	Sand -----	4	957		
Clay -----	2	537	Clay -----	15	972		
Sand -----	40	577	Sand -----	21	993		
Clay -----	25	602	Clay -----	32	1,025		
Sand -----	35	637	Sand -----	27	1,052		
Clay -----	5	642	Clay -----	3	1,055		
Sand -----	10	652	Sand -----	10	1,065		
Clay -----	7	659	Clay -----	67	1,132		
Sand -----	18	677	Sand -----	6	1,138		
Clay -----	16	693	Clay, sandy -----	12	1,150		
Sand -----	7	700	Sand -----	17	1,167		
Clay -----	2	702	Clay, sandy -----	16	1,183		
Sand -----	9	711	Clay -----	4	1,187		
Well V-20							
Owner: City of El Paso. Driller: C. R. Jensen.							
Cinders -----	3	3	Sand and gravel -----	30	237		
Sand and caliche -----	8	11	Clay, sandy -----	15	252		
Sand and gravel -----	26	37	Sand, and gravel -----	34	286		
Clay -----	20	57	Clay -----	31	317		
Sand and gravel -----	40	97	Sand -----	10	327		
Sand -----	34	131	Clay -----	10	337		
Clay -----	13	144	Sand -----	10	347		
Clay, sand and gravel -----	53	197	Clay -----	56	403		
Clay -----	10	207	Sand -----	26	429		
(continued on next page)							

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well V-20--continued					
Clay -----	5	434	Clay -----	55	821
Sand -----	3	437	Sand -----	11	832
Clay -----	20	457	Rock, hard -----	1	833
Sand -----	11	468	Clay, sandy -----	64	897
Clay, sandy -----	14	482	Sand -----	12	909
Sand -----	12	494	Sand and clay -----	68	977
Clay -----	14	508	Sand -----	15	992
Sand -----	11	519	Clay -----	39	1,031
Clay -----	2	521	Sand -----	10	1,041
Sand -----	25	546	Clay, sandy -----	12	1,053
Clay -----	27	573	Sand -----	24	1,077
Sand -----	33	606	Clay, sandy -----	40	1,117
Clay -----	19	625	Sand -----	40	1,157
Clay, sandy -----	12	637	Clay -----	67	1,224
Sand -----	13	650	Sand -----	15	1,239
Clay -----	7	657	Clay -----	13	1,252
Clay, sandy -----	30	687	Sand -----	30	1,282
Clay -----	10	697	Clay -----	8	1,290
Sand -----	69	766	Sand -----	2	1,292
Well V-21					
Owner: U. S. Army. Driller: Layne-Texas Co., Ltd.					
Surface sand -----	2	2	Sand and clay -----	22	407
Caliche -----	3	5	Sand, coarse -----	19	426
Sand and clay -----	6	11	Clay -----	31	457
Sand and gravel -----	5	16	Sand -----	41	498
Sand and clay -----	26	42	Clay -----	12	510
Clay -----	39	81	Sand -----	37	547
Sand and clay -----	90	171	Clay -----	42	589
Clay -----	49	220	Sand -----	14	603
Sand and clay -----	11	231	Clay -----	52	655
Sand -----	9	240	Sand and clay -----	42	697
Clay -----	33	273	Clay -----	13	710
Sand and clay -----	13	286	Sand -----	24	734
Sand -----	42	328	Clay -----	9	743
Clay -----	14	342	Sand and clay -----	30	773
Sand -----	25	367	Clay -----	27	800
Clay -----	18	385			

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--  
continued

Thickness (feet)		Depth (feet)	Thickness (feet)		Depth (feet)
Well V-22					
Owner: City of El Paso. Driller: C. R. Jensen.					
Soil -----	3	3	Sand -----	8	497
Caliche -----	2	5	Clay -----	3	500
Sand -----	10	15	Sand -----	15	515
Sand and gravel -----	22	37	Clay -----	3	518
Clay -----	35	72	Sand -----	14	532
Sand and gravel -----	54	126	Clay -----	34	566
Clay -----	16	142	Sand -----	6	572
Sand and gravel -----	29	171	Clay -----	3	575
Clay -----	11	182	Sand -----	10	585
Sand -----	9	191	Clay -----	4	589
Clay -----	32	223	Sand -----	11	600
Sand -----	28	251	Clay -----	36	636
Clay -----	4	255	Clay, sandy -----	20	656
Sand -----	8	263	Sand -----	8	664
Clay -----	15	278	Clay -----	6	670
Sand -----	15	293	Sand -----	16	686
Clay -----	23	316	Clay -----	22	708
Sand -----	12	328	Sand -----	17	725
Clay -----	12	340	Clay -----	7	732
Sand -----	6	346	Sand -----	41	773
Clay -----	14	360	Clay -----	51	824
Sand -----	6	366	Sand -----	20	844
Clay -----	45	411	Clay -----	51	895
Sand -----	10	421	Sand -----	16	911
Clay -----	7	428	Clay, sandy -----	97	1,008
Sand -----	9	437	Rock -----	1	1,009
Clay -----	25	462	Clay -----	8	1,017
Sand -----	10	472	Clay, sandy -----	100	1,117
Clay -----	17	489			
Well V-23					
Owner: U. S. Army. Driller: Layne-Texas Co., Ltd.					
Soil -----	9	9	Clay and gravel -----	14	56
Caliche -----	7	16	Clay -----	10	66
Sand -----	15	31	Sand and gravel -----	10	76
Sand, coarse and gravel -----	11	42	Clay -----	19	95
(continued on next page)					

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well V-23--continued					
Sand -----	7	102	Clay -----	39	449
Clay -----	10	112	Clay and boulders -----	8	457
Sand -----	30	142	Sand and clay -----	36	493
Clay -----	5	147	Sand -----	3	496
Sand -----	19	166	Clay, hard -----	21	517
Clay, hard -----	11	177	Sand -----	10	527
Sand -----	9	186	Clay -----	11	538
Clay -----	4	190	Sand -----	33	571
Sand -----	26	216	Sand and some clay -----	27	598
Clay -----	9	225	Clay -----	13	611
Sand, coarse -----	50	275	Sand -----	21	632
Clay -----	4	279	Clay -----	7	639
Sand -----	16	295	Sand -----	13	652
Clay -----	13	308	Clay -----	9	661
Sand -----	37	345	Sand -----	28	699
Clay -----	10	355	Clay -----	9	708
Sand and clay -----	9	364	Clay, sandy -----	15	723
Sand -----	10	374	Clay -----	38	761
Clay, hard -----	27	401	Sand and boulders -----	19	780
Sand and clay -----	9	410	Clay -----	20	800
Well V-24					
Owner: U. S. Army. Driller: Layne-Texas Co., Ltd.					
Soil -----	1	1	Clay -----	4	239
Caliche -----	2	3	Sand -----	61	300
Chalk and caliche -----	5	8	Boulders -----	2	302
Sand, fine -----	16	24	Sand -----	23	325
Sand, coarse and gravel -----	10	34	Clay -----	14	339
Clay and gravel -----	5	39	Sand and clay -----	10	349
Clay -----	14	53	Clay -----	15	364
Sand -----	15	68	Sand and clay -----	7	371
Clay -----	39	107	Clay -----	1	372
Sand -----	59	166	Sand and clay -----	6	378
Clay -----	5	171	Clay -----	23	401
Sand -----	23	194	Sand and clay -----	6	407
Clay -----	22	216	Clay -----	30	437
Sand -----	19	235	Sand -----	15	452
(continued on next page)					

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

		Thickness (feet)	Depth (feet)			Thickness (feet)	Depth (feet)
Well V-24--continued							
Clay -----		3	455	Sand -----		32	612
Sand -----		14	469	Clay -----		17	629
Clay -----		6	475	Sand -----		37	666
Sand -----		5	480	Clay -----		24	690
Clay and boulders -----		7	487	Sand, hard -----		2	692
Clay -----		15	502	Clay -----		2	694
Sand -----		22	524	Sand and shale -----		35	729
Clay -----		7	531	Sand and gravel -----		41	770
Sand -----		47	578	Clay -----		15	785
Clay -----		2	580				
Well V-25							
Owner: U. S. Army. Driller: Layne-Texas Co., Ltd.							
Caliche -----		3	3	Sand and boulders -----		17	548
Sand and gravel -----		59	62	Clay -----		8	556
Clay and sand -----		48	110	Clay, sandy -----		20	576
Sand -----		6	116	Sand -----		14	590
Clay and sand -----		14	130	Clay -----		31	621
Sand -----		26	156	Clay, sandy -----		8	629
Clay and sand -----		32	188	Sand -----		18	647
Sand -----		6	194	Clay and sand -----		77	724
Clay and sand -----		41	235	Sand -----		6	730
Sand -----		20	255	Clay -----		26	756
Clay, sandy -----		3	258	Sand -----		6	762
Sand -----		44	302	Clay and sand -----		46	808
Clay -----		29	331	Sand -----		4	812
Sand -----		9	340	Clay, sandy -----		25	837
Clay -----		9	349	Clay -----		8	845
Sand, gravel, and clay -----		25	374	Clay, sandy -----		5	850
Clay -----		48	422	Clay -----		12	862
Sand and clay -----		11	433	Clay, sandy -----		8	870
Clay -----		41	474	Clay -----		5	875
Sand and clay -----		13	487	Shale, sandy and sand --		17	892
Clay -----		13	500	Sand -----		17	909
Sand and gravel -----		31	531	Shale -----		7	916

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

Thickness (feet)		Depth (feet)		Thickness (feet)		Depth (feet)	
Well V-27							
Owner: U. S. Army. Driller: T. F. Hawkins.							
Caliche -----	6	6	Sand, boulders, and gravel	4	370		
Sand -----	46	52	Clay -----	13	383		
Clay -----	16	68	Gravel and boulders ----	14	397		
Sand -----	18	86	Clay -----	27	424		
Clay -----	24	110	Rock -----	1	425		
Clay and gravel -----	22	132	Sand -----	6	431		
Rock -----	2	134	Clay -----	39	470		
Sand -----	64	198	Sand -----	10	480		
Clay -----	29	227	Rock -----	4	484		
Sand -----	11	238	Sand -----	22	506		
Clay -----	2	240	Gravel and boulders ----	21	527		
Sand -----	23	263	Clay -----	8	535		
Clay -----	9	272	Sand and gravel -----	24	559		
Sand -----	35	307	Clay -----	11	570		
Clay -----	28	335	Sand and gravel -----	26	596		
Sand -----	8	343	Clay -----	31	627		
Clay -----	6	349	Sand -----	11	638		
Sand and gravel -----	17	366	Clay -----	14	652		
Well V-28							
Owner: U. S. Army. Driller: T. F. Hawkins.							
Caliche -----	5	5	Sand -----	11	464		
Sand -----	50	55	Clay -----	16	480		
Clay -----	7	62	Gravel and boulders ----	6	486		
Sand -----	125	187	Clay -----	13	499		
Clay -----	38	225	Sand -----	31	530		
Sand -----	122	347	Clay -----	8	538		
Clay -----	5	352	Sand -----	12	550		
Sand -----	12	364	Clay -----	12	562		
Clay -----	17	381	Sand, gravel, rock, and				
Sand -----	11	392	boulders -----	16	578		
Clay -----	19	411	Clay -----	4	582		
Sand -----	15	426	Sand -----	14	596		
Rock -----	1	427	Clay -----	12	608		
Sand -----	13	440	Sand -----	35	643		
Clay -----	13	453	Clay -----	14	657		



Table 7.--Drillers' logs of wells in the Hueco Bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico-- continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well V-29					
Owner: U. S. Army. Driller: --.					
Soil and rock, soft -----	3	3	Clay -----	60	360
Sand -----	45	48	Sand, water -----	5	365
Clay -----	7	55	Clay -----	7	372
Sand -----	35	90	Shale -----	8	380
Clay -----	10	100	Clay -----	50	430
Sand -----	36	136	Shale and sand -----	20	450
Sand, coarse -----	19	155	Clay -----	20	470
Clay -----	7	162	Shale and sand -----	15	485
Sand -----	23	185	Sand, water -----	15	500
Clay -----	10	195	Clay -----	10	510
Sand -----	14	209	Sand, water -----	15	525
Clay -----	8	217	Clay -----	10	535
Sand, water -----	18	235	Sand, water -----	5	540
Clay -----	3	238	Clay -----	20	560
Sand, water -----	8	246	Shale -----	10	570
Clay -----	9	255	Clay -----	10	580
Sand -----	15	270	Sand, water -----	16	596
Clay -----	5	275	Clay -----	4	600
Sand, water -----	25	300			
Well V-31					
Owner: City of El Paso. Driller: P. D. Wynne.					
Sand and boulders -----	16	16	Clay, yellow, hard -----	17	300
Sand, coarse and gravel ----	54	70	Sand, water, and gravel	19	319
Clay, yellow, hard -----	16	86	Clay, yellow, hard -----	21	340
Sand and gravel -----	15	101	Sand, brown, salt water	53	393
Clay, yellow, hard -----	60	161	Clay, yellow -----	38	431
Sand, water -----	11	172	Sand and gravel -----	19	450
Clay, yellow, hard -----	22	194	Clay, red -----	13	463
Sand, water, and boulders --	15	209	Sand, gravel, salt water	38	501
Clay, yellow, hard -----	11	220	Sand rock -----	29	530
Sand, water, coarse and			Sand, water, salt -----	6	536
gravel -----	63	283	Clay, yellow, hard -----	34	570
(continued on next page)					

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

Thickness (feet)		Depth (feet)		Thickness (feet)		Depth (feet)	
Well V-31--continued							
Sand, water, and boulders --	40	610	Shale, brown -----	13	785		
Clay, red -----	17	627	Sand, blue, fine -----	7	792		
Rock, soft -----	6	633	Clay, yellow, hard -----	14	806		
Sand, water -----	11	644	Sand, water -----	13	819		
Clay and gravel -----	14	658	Clay, yellow, soft -----	9	828		
Sand, water -----	22	680	Sand, water, and boulders	27	855		
Clay, yellow -----	12	692	Clay, yellow, hard -----	8	863		
Sand, water -----	19	711	Sand, water, and gravel	34	897		
Clay, yellow, hard -----	8	719	Clay, yellow, hard -----	18	915		
Sand, water -----	9	728	Sand, water -----	17	932		
Clay, yellow, hard -----	32	760	Clay, yellow, soft -----	22	954		
Sand, hard, dry -----	12	772					
Well V-32							
Owner: City of El Paso. Driller: V. C. Chesney.							
Sand -----	8	8	Sand, gravel, and				
Gravel and sand -----	3	11	boulders -----	53	344		
Sand and gravel -----	75	86	Sand -----	7	351		
Clay -----	5	91	Clay -----	9	360		
Sand -----	29	120	Sand, gravel, and boulders	85	445		
Rock -----	1	121	Clay -----	4	449		
Sand -----	77	198	Sand, gravel, and boulders	51	500		
Rock -----	1	199	Clay -----	5	505		
Sand, gravel, and boulders -	47	246	Sand -----	4	509		
Clay -----	5	251	Clay -----	5	514		
Sand, gravel, and boulders -	39	290	Sand -----	5	519		
Rock -----	1	291	Clay, sandy -----	141	660		

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

Thickness (feet)	Depth (feet)	Thickness (feet)	Depth (feet)
Well V-34			
Owner: Texas and New Orleans Railroad. Driller: P. D. Wynne.			
Caliche -----	3	3	Sand, water, and boulders 14
Sand and gravel -----	37	40	Clay -----
Clay, yellow -----	4	44	Boulders -----
Sand and gravel -----	19	63	Clay, soft -----
Clay, yellow, hard -----	12	75	Sand, water, and boulders 19
Sand and gravel -----	19	94	Clay, soft -----
Clay, yellow, hard -----	25	119	Sand, water -----
Sand -----	11	130	Sand -----
Clay, yellow, hard -----	5	135	Clay -----
Sand -----	5	140	Sand, water -----
Clay, yellow, hard -----	11	151	Clay and boulders -----
Sand and gravel -----	12	163	Sand rock -----
Clay, hard and gravel -----	35	198	Sand -----
Hardpan -----	4	202	Clay, yellow, hard -----
Sand, soft -----	19	221	Sand, water, and boulders 10
Clay, soft -----	8	229	Clay, hard and boulders 24
Sand, water, and boulders --	3	232	Sand, water -----
Sand -----	19	251	Clay, yellow, hard and
Sand and boulders -----	4	255	boulders -----
Clay -----	7	262	Sand, water -----
Sand, water, and boulders --	44	306	Clay, yellow -----
Sand, soft -----	29	335	Sand, water -----
Clay, soft -----	15	350	Clay -----
Sand -----	32	382	Sand -----
Clay and boulders -----	5	387	Clay, hard -----
Sand, water, and boulders --	14	401	Sand, water -----
Clay, soft -----	11	412	Clay, yellow, hard -----
Sand, water, and boulders ---	21	433	Sand, water, and boulders 11
Clay, hard -----	9	442	Clay and boulders -----

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well V-37					
Owner: Texas and New Orleans Railroad. Driller: Semple and Wynne.					
Caliche -----	5	5	Clay and boulders -----	15	455
Sand -----	43	48	Clay, soft -----	9	464
Clay -----	30	78	Sand, water -----	9	473
Sand and gravel -----	11	89	Clay, hard -----	17	490
Clay -----	23	112	Sand, water, and boulders	50	540
Sand and gravel -----	15	127	Sand rock -----	2	542
Clay -----	14	141	Clay -----	4	546
Sand -----	29	170	Sand, water, and boulders	16	562
Clay -----	5	175	Clay and boulders -----	14	576
Sand -----	30	205	Sand -----	12	588
Clay -----	5	210	Clay -----	14	602
Sand and gravel -----	15	225	Sand, water -----	28	630
Clay -----	6	231	Clay -----	20	650
Sand, water -----	29	260	Sand, water -----	27	677
Clay, sandy -----	16	276	Clay -----	5	682
Sand, water and gravel -----	44	320	Sand -----	21	703
Clay, soft -----	20	340	Clay -----	7	710
Sand, water, and gravel -----	20	360	Sand, water and boulders	44	754
Clay, gravel, and boulders -	36	396	Clay and boulders -----	40	794
Clay, yellow, hard -----	14	410	Sand, water -----	26	820
Sand and gravel -----	6	416	Clay, yellow -----	17	837
Clay, hard -----	5	421	Sand, water and boulders	27	864
Sand, water, and gravel -----	19	440			
Well V-38					
Owner: Texas and New Orleans Railroad. Driller: Layne-Texas Co., Ltd.					
Soil -----	1	1	Sand -----	9	137
Caliche -----	3	4	Clay and sand -----	73	210
Sand and clay -----	6	10	Sand and gravel -----	19	229
Clay and gravel -----	17	27	Clay -----	5	234
Clay -----	25	52	Sand and gravel -----	9	243
Sand and gravel -----	12	64	Clay -----	10	253
Clay -----	19	83	Sand, hard, coarse -----	73	326
Sand -----	14	97	Clay and sand -----	35	361
Clay -----	31	128	Sand and gravel -----	16	377
(continued on next page)					

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well V-38--continued					
Sand -----	23	400	Clay and boulders -----	10	666
Sand -----	18	418	Clay -----	2	668
Clay -----	5	423	Sand, hard -----	35	703
Sand -----	5	428	Clay, sandy -----	12	715
Sand and clay -----	14	442	Sand and clay -----	26	741
Clay, hard and boulders ----	5	447	Boulders -----	1	742
Clay and sand -----	13	460	Clay and boulders -----	10	752
Sand -----	19	479	Clay -----	2	754
Clay -----	25	504	Sand and gravel -----	9	763
Sand -----	32	536	Boulders -----	1	764
Clay -----	3	539	Sand -----	9	773
Sand and boulders -----	11	550	Clay -----	5	778
Clay and sand -----	30	580	Sand and clay -----	15	793
Sand and boulders -----	5	585	Clay -----	16	809
Clay and sand -----	9	594	Sand -----	22	831
Clay -----	37	631	Sand and boulders -----	10	841
Sand -----	10	641	Sand -----	5	846
Sand and clay -----	15	656	Clay -----	6	852
Well V-39					
Owner: City of El Paso. Driller: C. R. Jensen.					
Soil and sand -----	3	3	Sand -----	24	307
Caliche -----	2	5	Clay -----	7	314
Clay, sandy -----	13	18	Sand -----	44	358
Sand and gravel -----	17	35	Clay, sandy -----	19	377
Clay -----	8	43	Sand -----	12	389
Sand and gravel -----	14	57	Clay -----	14	403
Sand and clay -----	30	87	Sand -----	14	417
Sand and gravel -----	28	115	Clay -----	18	435
Clay -----	2	117	Sand -----	5	440
Sand and clay -----	23	140	Clay -----	11	451
Clay -----	14	154	Sand -----	18	469
Sand -----	49	203	Clay -----	17	486
Clay -----	40	243	Sand -----	11	497
Sand -----	30	273	Missing -----	23	520
Clay -----	10	283			

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well V-40					
Owner: City of El Paso. Driller: C. R. Jensen.					
Sand, soily -----	2	2	Sand-----	4	399
Caliche -----	6	8	Clay -----	11	410
Sand and gravel -----	46	54	Sand -----	27	437
Clay -----	10	64	Clay -----	2	439
Sand -----	8	72	Sand -----	1	440
Clay -----	15	87	Clay -----	16	456
Sand -----	8	95	Sand -----	13	469
Clay, sandy -----	8	103	Clay, sandy -----	4	473
Sand -----	14	117	Sand -----	24	497
Sand and clay -----	40	157	Clay -----	20	517
Sand -----	16	173	Sand -----	5	522
Clay and boulders -----	4	177	Clay, sandy -----	5	527
Clay -----	18	195	Clay -----	3	530
Sand -----	25	220	Sand -----	19	549
Clay -----	6	226	Clay -----	20	569
Sand -----	14	240	Sand -----	21	590
Clay -----	6	246	Clay -----	4	594
Sand -----	22	268	Sand -----	14	608
Clay -----	7	275	Clay -----	4	612
Sand -----	5	280	Sand -----	7	619
Clay -----	3	283	Clay -----	1	620
Sand -----	67	350	Sand -----	13	633
Clay -----	3	353	Clay -----	1	634
Sand -----	7	360	Sand -----	29	663
Clay -----	3	363	Clay -----	4	667
Sand -----	14	377	Sand -----	28	695
Clay -----	18	395	Clay -----	3	698
Well V-41					
Owner: City of El Paso. Driller: Layne-Texas Co., Ltd.					
Sand and caliche -----	20	20	Sand and gravel -----	13	401
Gravel and sand -----	45	65	Clay, sandy and gravel -	45	446
Clay and gravel -----	25	90	Sand, gravel, and clay -	57	503
Gravel and sand -----	23	113	Clay -----	3	506
Gravel -----	47	160	Clay -----	26	532
Clay and gravel -----	87	247	Gravel -----	20	552
Sand and gravel -----	12	259	Sand, gravel, and clay,		
Caliche and gravel -----	5	264	sandy -----	91	643
Sand and gravel, sandy -----	104	368	Clay, sandy, and gravel	123	766
Sand, gravel, and clay -----	20	388			

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--  
continued

Thickness (feet)		Depth (feet)		Thickness (feet)		Depth (feet)	
Well V-42							
Owner: City of El Paso. Driller: H. M. Stanley.							
Sand -----	3	3	Clay -----	32	377		
Caliche -----	8	11	Clay -----	22	399		
Clay -----	24	35	Sand -----	9	408		
Sand, fine -----	28	63	Gravel -----	3	411		
Sand -----	15	78	Clay -----	5	416		
Sand, gravel, and clay -----	55	133	Sand -----	5	421		
Sand and gravel -----	10	143	Clay, sandy -----	10	431		
Clay, sandy -----	15	158	Sand -----	15	446		
Sand -----	9	167	Sand -----	5	451		
Clay, sandy -----	5	172	Clay, sandy -----	7	458		
Sand -----	13	185	Sand -----	6	464		
Sand and gravel, coarse -----	10	195	Clay -----	16	480		
Clay -----	15	210	Gravel -----	1	481		
Gravel, coarse -----	1	211	Clay -----	9	490		
Clay -----	10	221	Sand -----	13	503		
Sand -----	20	241	Sandstone -----	3	506		
Clay, sandy -----	2	243	Clay, sandy -----	11	517		
Clay and gravel -----	12	255	Sand, fine and clay -----	6	523		
Clay, sandy -----	14	269	Clay, sandy and gravel -	10	533		
Sand, coarse -----	26	295	Clay -----	4	537		
Clay, sandy -----	10	305	Sand -----	26	563		
Clay -----	3	308	Clay -----	2	565		
Gravel -----	2	310	Sand -----	6	571		
Sand, fine -----	19	329	Clay -----	2	573		
Sand, coarse -----	1	330	Sand -----	16	589		
Clay, sandy -----	5	335	Clay, sandy -----	11	600		
Sand -----	5	340	Sand -----	12	612		
Clay, sandy -----	5	345	Clay -----	11	623		
Well V-44							
Owner: -- Ashley's. Driller: Layne-Texas Co., Ltd.							
Sand -----	1	1	Clay and gravel -----	20	195		
Caliche -----	9	10	Sand and gravel -----	10	205		
Sand and gravel -----	23	33	Clay -----	32	237		
Clay, gravel, and sand -----	85	118	Sand -----	55	292		
Sand and gravel -----	57	175	Clay -----	2	294		
(continued on next page)							

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--  
continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well V-44--continued					
Sand -----	13	307	Sand, hard -----	23	412
Clay -----	5	312	Clay -----	15	427
Sand -----	28	340	Sand, hard and clay -----	14	441
Clay -----	5	345	Clay -----	28	469
Sand and clay -----	14	359	Sand -----	27	496
Clay -----	3	362	Clay -----	8	504
Sand -----	4	366	Sand -----	22	526
Clay -----	5	371	Clay -----	10	536
Sand and clay -----	18	389			
Well V-45					
Owner: City of El Paso. Driller: P. D. Wynne.					
Sand -----	45	45	Sand -----	4	429
Clay -----	6	51	Clay, hard -----	2	431
Sand and clay -----	22	73	Sand -----	6	437
Clay, yellow -----	6	79	Sand and boulders -----	1	438
Sand and gravel -----	12	91	Clay, hard -----	5	443
Sand, water -----	35	126	Sand -----	19	462
Clay, yellow -----	3	129	Clay -----	2	464
Sand and gravel -----	18	147	Sand -----	16	480
Clay, yellow -----	5	152	Clay, yellow, hard -----	9	489
Sand and gravel -----	32	184	Sand and boulders -----	8	497
Clay -----	5	189	Clay, yellow, hard -----	2	499
Sand, water, coarse -----	51	240	Clay -----	4	503
Clay, red, hard -----	49	289	Sand -----	42	545
Sand and boulders -----	27	316	Clay -----	6	551
Clay, yellow, hard -----	10	326	Sand and boulders -----	12	563
Sand and boulders -----	11	337	Clay, yellow, hard -----	8	571
Clay, yellow, hard -----	5	342	Sand and gravel -----	20	591
Sand -----	2	344	Sand, clay, and gravel -	37	628
Clay -----	3	347	Sand -----	3	631
Sand -----	23	370	Clay and gravel -----	4	635
Clay, yellow, hard -----	6	376	Sand and boulders -----	3	638
Sand -----	37	413	Clay, hard -----	8	646
Clay, yellow, hard -----	8	421	Sand and boulders -----	39	685
Sand and boulders -----	4	425	Clay, sandy -----	6	691

(continued on next page)



Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--  
continued

Thickness (feet)		Depth (feet)	Thickness (feet)		Depth (feet)
Well V-45--continued					
Sand and boulders -----	4	695	Sand and clay -----	8	745
Clay and boulders -----	4	699	Sand and boulders -----	64	809
Sand and clay -----	12	711	Sand and clay -----	7	816
Clay and boulders -----	6	717	Sand and gravel -----	46	862
Sand -----	20	737			
Well V-47					
Owner: City of El Paso. Driller: Layne and Bowler:					
Surface sand -----	38	38	Sand -----	13	376
Gravel, fine and clay -----	5	43	Clay -----	3	379
Clay, sandy -----	38	81	Gumbo -----	21	400
Clay, hard -----	3	84	Clay -----	7	407
Clay, sandy -----	41	125	Sand and gravel -----	38	445
Clay, hard -----	18	143	Clay -----	5	450
Clay, sandy -----	9	152	Sand -----	4	454
Clay and gravel -----	12	164	Clay, sandy -----	3	457
Clay, hard -----	4	168	Rock -----	2	459
Clay, sandy -----	12	180	Clay, sandy -----	2	461
Clay and boulders -----	3	183	Sand and clay -----	22	483
Clay, sandy -----	30	213	Clay, rock and boulders	2	485
Clay, hard -----	4	217	Sand and gravel -----	40	525
Clay, sandy -----	6	223	Clay -----	1	526
Gumbo -----	4	227	Clay and gumbo -----	20	546
Clay and gumbo -----	7	234	Sand, gravel, and boulders	14	560
Clay -----	10	244	Clay -----	3	563
Clay, sandy -----	14	258	Sand and boulders -----	13	576
Clay and gumbo -----	10	268	Clay -----	8	584
Sand, packed -----	27	295	Sand -----	20	604
Rock and boulders -----	4	299	Clay, soft, and gumbo --	6	610
Clay -----	6	305	Gumbo, hard -----	16	626
Clay, sandy -----	12	317	Rock and shale -----	13	639
Boulders and sand rock -----	2	319	Rock -----	2	641
Clay, sandy -----	5	324	Clay and boulders -----	9	650
Sand and boulders -----	20	344	Gravel and boulders ----	11	661
Rock -----	4	348	Gumbo and clay -----	32	693
Clay, hard -----	7	355	Sand, gravel, and boulders	11	704
Clay, sandy -----	8	363	Shale, hard -----	4	708
(continued on next page)					

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well V-47--continued					
Boulders -----	13	721	Gumbo -----	4	855
Clay, sandy -----	3	724	Gravel and boulders ----	22	877
Clay and boulders -----	4	728	Clay and boulders -----	9	886
Gumbo -----	3	731	Sand and gravel -----	8	894
Boulders and clay -----	15	746	Clay and gumbo -----	3	897
Gumbo, hard -----	7	753	Sand, gravel, and boulders	26	923
Rock -----	3	756	Gumbo -----	4	927
Sand and sand rock -----	14	770	Sand and sand rock ----	15	942
Rock -----	5	775	Gumbo -----	19	961
Sand and gravel -----	14	789	Sand and sand rock ----	12	973
Gravel and boulders -----	21	810	Gumbo -----	14	987
Clay and gumbo -----	5	815	Gravel and boulders ----	10	997
Sand, gravel, and boulders -	12	827	Rock -----	1	998
Clay and gumbo -----	12	839	Sand, gravel, and		
Gravel and boulders -----	12	851	boulders -----	25	1,023
Well V-48					
Owner: City of El Paso. Driller: City of El Paso.					
Sand -----	15	15	Gumbo -----	21	310
Clay, red -----	27	42	Boulders and gumbo ----	32	342
Sand, brown -----	6	48	Sand, gravel, and		
Clay, red -----	13	61	boulders-----	35	377
Sand and gravel -----	12	73	Gumbo -----	36	413
Gumbo -----	12	85	Sand and salt -----	18	431
Sand and gravel, coarse ----	12	97	Gumbo -----	22	453
Gumbo -----	5	102	Sand, gravel, and salt -	45	498
Sand and gravel -----	48	150	Gumbo -----	9	507
Gumbo -----	28	178	Sand and gravel -----	31	538
Sand and gravel -----	24	202	Gumbo -----	2	540
Gumbo -----	12	214	Sand and gravel -----	6	546
Sand and gravel -----	5	219	Gumbo -----	31	577
Gumbo -----	14	233	Sand and gravel -----	29	606
Sand and gravel -----	12	245	Gumbo -----	6	612
Gumbo -----	6	251	Sand and gravel -----	18	630
Sand and gravel -----	7	258	Gumbo and boulders ----	8	638
Gumbo -----	9	267	Gumbo -----	12	650
Sand and gravel -----	22	289	Sand -----	7	657
(continued on next page)					

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well V-48--continued					
Boulders -----	3	660	Sand and gravel -----	84	804
Sand -----	15	675	Gumbo -----	10	814
Gumbo -----	18	693	Sand and gravel -----	26	840
Gravel -----	10	703	Gumbo -----	4	844
Sand and gravel -----	14	717	Sand and gravel -----	12	856
Gumbo -----	3	720			
Well V-49					
Owner: City of El Paso. Driller: P. D. Wynne.					
Sand -----	12	12	Sand, gravel, and salt -	25	412
Sand and clay -----	15	27	Clay, yellow -----	16	428
Sand -----	2	29	Boulders and sand, fine	22	450
Adobe -----	5	34	Clay -----	4	454
Gravel -----	26	60	Sand and boulders -----	6	460
Sand and clay -----	5	65	Clay -----	5	465
Sand and gravel -----	3	68	Sand and boulders -----	92	557
Clay, yellow, hard -----	13	81	Clay -----	6	563
Sand and gravel -----	29	110	Sand and boulders -----	9	572
Clay, yellow, hard -----	4	114	Clay, yellow, soft -----	24	596
Sand and boulders -----	9	123	Sand and boulders -----	30	626
Clay, yellow -----	6	129	Clay, yellow, hard -----	5	631
Sand and boulders -----	7	136	Sand and gravel -----	7	638
Clay, yellow, soft -----	5	141	Clay, hard -----	17	655
Sand, water -----	56	197	Sand, boulders, and gravel	17	672
Clay, yellow -----	9	206	Clay -----	3	675
Sand and boulders -----	25	231	Sand and boulders -----	22	697
Clay, yellow -----	8	239	Clay, yellow -----	8	705
Sand and gravel -----	7	246	Sand, red and boulders -	24	729
Clay, yellow -----	7	253	Clay, red -----	5	734
Sand and boulders -----	25	278	Sand and boulders -----	22	756
Clay -----	7	285	Rock, sandy -----	4	760
Sand, white -----	23	308	Clay, hard -----	3	763
Clay, yellow -----	6	314	Sand and boulders -----	23	786
Sand and gravel -----	49	363	Clay, hard -----	7	793
Clay, yellow -----	24	387	Sand and gravel -----	89	882

Table 7.- Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico-- continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
* Well V-50					
Owner: City of El Paso. Driller: Layne-Texas Co., Ltd.					
Soil -----	2	2	Clay -----	10	499
Sand -----	18	20	Sand -----	8	507
Sand and gravel -----	27	47	Clay -----	26	533
Sand, coarse and gravel -	37	84	Sand -----	21	554
Clay -----	2	86	Clay -----	6	560
Sand and clay -----	11	97	Sand -----	59	619
Clay and gravel -----	20	117	Sand and clay -----	8	627
Clay and sand -----	20	137	Sand -----	15	642
Clay -----	39	176	Sand and clay -----	10	652
Sand -----	24	200	Clay -----	5	657
Clay -----	21	221	Sand -----	70	727
Sand -----	39	260	Clay -----	2	729
Sand and clay -----	16	276	Sand -----	6	735
Clay -----	3	279	Clay -----	5	740
Sand -----	25	304	Sand -----	12	752
Clay -----	20	324	Clay -----	12	764
Sand -----	23	347	Sand -----	48	812
Clay -----	8	355	Clay -----	4	816
Sand -----	12	367	Sand -----	11	827
Clay -----	15	382	Clay -----	4	831
Sand -----	10	392	Sand -----	36	867
Clay -----	7	399	Clay -----	3	870
Sand -----	20	419	Sand and clay -----	3	873
Sand and clay -----	11	430	Sand -----	4	877
Clay -----	17	447	Clay -----	3	880
Sand -----	15	462	Sand -----	10	890
Sand and clay -----	10	472	Clay -----	12	902
Sand -----	17	489			

\* Driller's log is for test well drilled in 1938 at same location as well V-50.

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--  
continued

Thickness (feet)		Depth (feet)		Thickness (feet)		Depth (feet)	
Well V-51							
Owner: Harry Mitchell Brewing Company. Driller: Layne-Texas Co., Ltd.							
Sand -----	19	19	Clay, red -----	1	266		
Adobe -----	3	22	Sand and water -----	9	275		
Sand -----	5	27	Clay, red -----	5	280		
Clay -----	13	40	Rock and gravel -----	9	289		
Sand and gravel -----	37	77	Sand -----	2	291		
Clay -----	9	86	Sand, coarse, and gravel	4	295		
Sand, red -----	15	101	Clay, red -----	28	323		
Clay, yellow -----	3	104	Sand and water -----	30	353		
Sand, coarse -----	15	119	Clay, yellow -----	1	354		
Clay -----	1	120	Sandstone -----	1	355		
Sand and water -----	2	122	Sand -----	9	364		
Clay -----	1	123	Clay, yellow -----	1	365		
Sand, fine -----	14	137	Sand -----	4	369		
Clay, yellow -----	5	142	Clay, yellow -----	8	377		
Sand, red -----	23	165	Sand -----	2	379		
Sand, coarse -----	8	173	Sandstone -----	4	383		
Clay -----	7	180	Sand, fine -----	2	385		
Sand and water -----	5	185	Clay, red -----	4	389		
Clay -----	3	188	Sand, fine -----	1	390		
Sand and water -----	58	246	Sandstone -----	6	396		
Clay, yellow -----	19	265					
Well V-52							
Owner: Harry Mitchell Brewing Company. Driller: Layne-Texas Co., Ltd.							
Sand -----	2	2	Sand -----	35	220		
Clay -----	3	5	Clay -----	14	234		
Sand -----	20	25	Sand -----	6	240		
Clay -----	14	39	Clay -----	26	266		
Sand, gravel, and boulders -	51	90	Sand and gravel -----	27	293		
Sand and gravel -----	34	124	Clay -----	31	324		
Clay and boulders -----	9	133	Sand -----	29	353		
Sand -----	39	172	Clay -----	1	354		
Clay and boulders -----	13	185					

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

Thickness (feet)		Depth (feet)		Thickness (feet)		Depth (feet)	
Well V-53							
Owner: City of El Paso. Driller: V. Chesney.							
Soil -----	4	4	Sand and rock, soft ----	20	320		
Sand -----	56	60	Clay -----	20	340		
Sand, hard packed -----	3	63	Sand -----	50	390		
Sand -----	55	118	Sand, clay, and boulders	16	406		
Sand and rock -----	1	119	Sand -----	46	452		
Sand -----	101	220	Sand, clay, and rock ---	2	454		
Sand, rock, and clay -----	1	221	Sand -----	6	460		
Sand and gravel -----	63	284	Clay -----	8	468		
Clay -----	4	288	Sand -----	27	495		
Shale and clay -----	6	294	Missing -----	335	830		
Shale, clay, and rock -----	6	300					
Well V-54							
Owner: City of El Paso. Driller: Layne-Texas Co., Ltd.							
Soil, sandy -----	6	6	Clay and boulders -----	12	393		
Sand and gravel -----	34	40	Sand -----	68	461		
Clay and gravel -----	28	68	Clay and boulders -----	4	465		
Sand and gravel -----	30	98	Sand -----	41	506		
Clay -----	7	105	Sand and boulders -----	59	565		
Sand and gravel -----	79	184	Clay, hard -----	9	574		
Boulders -----	1	185	Sand -----	16	590		
Sand -----	11	196	Clay, sandy -----	24	614		
Clay -----	7	203	Sand -----	42	656		
Sand -----	16	219	Clay, sandy -----	49	705		
Clay -----	32	251	Sand -----	10	715		
Sand -----	9	260	Clay and sand -----	5	720		
Clay and sand -----	26	286	Clay, sandy -----	59	779		
Sand -----	42	328	Clay, sandy, hard -----	60	839		
Clay -----	8	336	Sand, hard -----	14	853		
Sand and gravel -----	5	341	Clay, sandy and boulders	19	872		
Sand and clay -----	29	370	Sand and boulders -----	28	900		
Sand -----	11	381	Clay and boulders -----	5	905		

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well V-56					
Owner: Southern Pacific Railroad. Driller: Layne-Texas Co., Ltd.					
Sand, gravel, and boulders -	68	68	Clay -----	6	402
Clay and boulders -----	13	81	Sand -----	23	425
Clay -----	20	101	Clay and sand -----	44	469
Sand and clay -----	19	120	Sand -----	34	503
Clay -----	27	147	Clay -----	9	512
Sand and gravel -----	70	217	Sand and boulders -----	89	601
Clay and boulders -----	15	232	Sand, clay, and boulders	14	615
Clay, sandy, and boulders --	20	252	Clay and boulders -----	11	626
Sand -----	10	262	Sand -----	20	646
Sand and clay -----	34	296	Clay and boulders -----	7	653
Clay and some boulders -----	11	307	Sand, hard and boulders	6	659
Sand -----	12	319	Clay and sand -----	16	675
Clay -----	17	336	Clay -----	18	693
Sand -----	17	353	Sand -----	35	728
Sand and boulders -----	7	360	Clay -----	19	747
Clay -----	19	379	Sand and boulders -----	35	782
Sand -----	5	384	Clay, sandy -----	3	785
Clay -----	6	390	Sand -----	10	795
Sand and boulders -----	6	396	Clay -----	3	798
Well V-58					
Owner: Texas & Pacific Railroad. Driller: Layne-Texas Co., Ltd.					
Soil -----	2	2	Clay -----	4	312
Sand -----	20	22	Sand -----	43	355
Sand, gravel, and boulders -	38	60	Clay -----	10	365
Clay -----	36	96	Clay, sandy -----	22	387
Sand and gravel -----	11	107	Sand -----	16	403
Clay and sand -----	30	137	Clay, sandy -----	15	418
Sand and gravel -----	89	226	Clay, tough -----	30	448
Clay -----	5	231	Sand -----	37	485
Sand and gravel -----	36	267	Clay -----	7	492
Rock -----	4	271	Sand and clay -----	36	528
Sand and gravel -----	7	278	Clay and boulders -----	8	536
Rock -----	1	279	Sand and clay -----	40	576
Clay -----	12	291	Clay -----	5	581
Sand -----	17	308	Sand, hard -----	43	624

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico-- continued

Thickness (feet)		Depth (feet)		Thickness (feet)		Depth (feet)	
Well V-59							
Owner: City of El Paso. Driller: Layne-Texas Co., Ltd.							
Soil -----	1	1	Clay and boulders -----	3	524		
Sand -----	28	29	Sand -----	47	571		
Sand and gravel -----	45	74	Clay -----	9	580		
Clay -----	3	77	Sand and clay -----	11	591		
Sand and gravel -----	17	94	Sand -----	20	611		
Clay -----	10	104	Clay and boulders -----	2	613		
Sand -----	106	210	Sand -----	4	617		
Clay -----	6	216	Clay -----	2	619		
Sand and clay -----	17	233	Sand -----	6	625		
Clay -----	4	237	Clay and sand -----	6	631		
Sand and clay -----	10	247	Sand -----	9	640		
Sand -----	20	267	Clay -----	4	644		
Clay -----	7	274	Sand -----	27	671		
Sand -----	5	279	Clay -----	2	673		
Clay -----	16	295	Sand -----	44	717		
Sand -----	10	305	Sand and clay -----	10	727		
Sand and clay -----	32	337	Sand -----	34	761		
Sand -----	15	352	Boulders -----	1	762		
Clay -----	5	357	Sand and clay -----	6	768		
Sand and clay -----	15	372	Clay -----	6	774		
Clay -----	5	377	Sand -----	43	817		
Sand and clay -----	15	392	Clay -----	5	822		
Sand -----	36	428	Sand -----	15	837		
Sand and clay -----	8	436	Clay -----	4	841		
Sand -----	84	520	Sand -----	10	851		
Clay -----	1	521					
Well V-60							
Owner: City of El Paso. Driller: A. Stout.							
Sand and soil -----	34	34	Clay -----	1	206		
Gravel -----	44	78	Sand and gravel -----	9	215		
Clay -----	22	100	Clay -----	8	223		
Sand and gravel -----	87	187	Sand and gravel -----	15	238		
Clay -----	3	190	Clay -----	15	253		
Sand and gravel -----	15	205	Gravel and boulders -----	13	266		
(continued on next page)							



Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--  
continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well V-60--continued					
Clay and boulders -----	6	272	Sand -----	5	440
Sand -----	10	282	Sand, gravel, and rock -	63	503
Clay -----	20	302	Clay -----	12	515
Sand -----	23	325	Sand and gravel -----	20	535
Clay -----	51	376	Clay -----	10	545
Sand and boulders -----	19	395	Sand and gravel -----	17	562
Boulders -----	21	416	Clay -----	8	570
Clay -----	19	435	Sand -----	76	646
Well V-62					
Owner: City of El Paso. Driller: V. Chesney.					
Surface sand -----	50	50	Sand -----	54	522
Sand, rock, and gravel -----	16	66	Sand rock -----	1	523
Clay -----	6	72	Sand -----	13	536
Sand, fine, loose -----	152	224	Clay -----	4	540
Clay -----	5	229	Sand, coarse and boulders	24	564
Sand, loose and boulders ---	108	337	Sand rock -----	1	565
Clay -----	6	343	Clay -----	3	568
Sand, loose -----	44	387	Sand, coarse and boulders	58	626
Clay -----	6	393	Sand rock -----	1	627
Sand and rock -----	1	394	Clay -----	2	629
Sand -----	6	400	Clay -----	2	631
Shell, sandy -----	1	401	Sand, coarse -----	22	653
Sand and gravel -----	15	416	Clay -----	4	657
Clay -----	4	420	Sand and gravel -----	10	667
Sand, coarse, sand rocks, and caliche -----	33	453	Sand rock, hard -----	1	668
Clay -----	5	458	Clay -----	4	672
Sand, coarse -----	6	464	Sand, coarse and boulders	37	709
Clay -----	4	468	Sand -----	98	807

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

		Thickness (feet)	Depth (feet)			Thickness (feet)	Depth (feet)
Well V-64							
Owner:		El Paso Electric Co.		Driller:		Layne-Texas Co., Ltd.	
Sand -----	11	11	Clay -----	1	182		
Sand, river -----	9	20	Sand -----	9	191		
Gravel -----	8	28	Clay -----	1	192		
Clay -----	4	32	Sand -----	6	198		
Sand and gravel -----	35	67	Clay -----	1	199		
Clay, red -----	4	71	Sand -----	1	200		
Gravel -----	4	75	Clay -----	9	209		
Clay, red -----	6	81	Rock -----	2	211		
Clay and gravel -----	9	90	Sand -----	23	234		
Sand, water -----	81	171	Boulders -----	6	240		
Clay and ledge -----	3	174	Sand -----	12	252		
Sand -----	7	181					
Well V-65							
Owner:		El Paso Electric Co.		Driller:		Layne-Texas Co., Ltd.	
Sand -----	16	16	Sand, fine and clay ----	6	132		
Sand and boulders -----	5	21	Sand, medium to coarse -	12	144		
Sand, boulders and clay ----	14	35	Sand, coarse -----	1	145		
Sand, gravel, and boulders -	7	42	Clay -----	8	153		
Sand and boulders -----	7	49	Sand and some clay ----	12	165		
Sand, gravel, and boulders -	29	78	Sand, coarse, and gravel	15	180		
Clay, hard -----	20	98	Sand, medium to coarse,				
Sand, medium to coarse ----	8	106	and some clay -----	15	195		
Sand, coarse -----	16	122	Sand, coarse, angular --	34	229		
Sand, coarse and gravel ----	4	126					
Well V-66							
Owner:		El Paso Electric Co.		Driller:		J. F. Hawkins.	
Soil -----	4	4	Gravel -----	6	79		
Sand -----	15	19	Sand -----	7	86		
Sand, gravel, and boulders -	45	64	Sand and gravel -----	4	90		
Sand -----	9	73	Clay -----	2	92		
(continued on next page)							

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--  
continued

Thickness (feet)		Depth (feet)		Thickness (feet)		Depth (feet)	
Well V-66--continued							
Sand and gravel -----	11	103	Clay -----	19	324		
Sand -----	36	139	Gravel -----	8	332		
Sand and gravel -----	33	172	Sand -----	15	347		
Clay -----	11	183	Clay -----	4	351		
Sand and gravel -----	14	197	Sand and gravel -----	6	357		
Sand and gravel, fine -----	23	220	Sand -----	14	371		
Sand -----	68	288	Gravel -----	11	382		
Gravel -----	8	296	Sand -----	11	393		
Sand -----	9	305	Boulders -----	1	394		
Well V-67							
Owner: El Paso Electric Co. Driller: Layne-Texas Co., Ltd.							
Sand -----	14	14	Sand rock, soft -----	2	128		
Gravel and rocks -----	11	25	Gravel -----	25	153		
Clay -----	1	26	Caliche -----	1	154		
Gravel and rocks -----	4	30	Clay, red -----	4	158		
Clay -----	1	31	Sand -----	4	162		
Gravel -----	1	32	Clay and sand -----	15	177		
Clay, sandy -----	2	34	Sand and rocks -----	3	180		
Gravel -----	17	51	Clay, yellow -----	1	181		
Clay -----	1	52	Sand -----	1	182		
Sand, coarse -----	21	73	Clay, red-----	4	186		
Sand, red, silty -----	6	79	Sand, coarse -----	20	206		
Sand -----	5	84	Clay, red -----	5	211		
Clay -----	1	85	Sand -----	17	228		
Sand -----	9	94	Caliche -----	1	229		
Clay, red -----	9	103	Clay and boulders -----	14	243		
Sand -----	8	111	Sand -----	41	284		
Clay, sandy, hard -----	4	115	Clay and boulders -----	3	287		
Sand -----	11	126	Sand, coarse -----	17	304		

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico-- continued

		Thickness (feet)	Depth (feet)			Thickness (feet)	Depth (feet)
Well V-69							
Owner: City of El Paso. Driller: C. R. Jensen.							
Soil, sand and clay -----		46	46	Clay-----		3	532
Sand and gravel -----		19	65	Sand -----		42	574
Clay -----		22	87	Clay -----		13	587
Clay, sandy -----		25	112	Sand -----		10	597
Clay -----		35	147	Clay, sandy -----		5	602
Sand -----		3	150	Sand -----		20	622
Clay -----		3	153	Clay -----		25	647
Sand -----		7	160	Clay, sandy -----		10	657
Clay -----		2	162	Clay -----		8	665
Sand -----		1	163	Sand -----		38	703
Clay -----		1	164	Clay -----		8	711
Sand -----		19	183	Sand -----		31	742
Clay -----		1	184	Clay, sandy -----		20	792
Sand -----		7	191	Sand -----		11	803
Clay -----		63	254	Clay, sandy -----		5	808
Sand -----		16	272	Sand -----		3	811
Sand -----		8	280	Clay -----		6	817
Clay -----		41	321	Sand -----		23	840
Sand -----		2	323	Clay -----		21	861
Clay -----		1	325	Sand -----		19	880
Sand -----		35	359	Clay -----		2	882
Clay, sandy -----		9	368	Sand -----		8	890
Clay -----		11	379	Clay -----		36	926
Sand -----		46	425	Sand -----		21	947
Sand and boulders -----		9	434	Clay -----		7	954
Clay -----		15	449	Sand -----		2	956
Sand, -----		32	481	Clay -----		4	960
Clay -----		2	483	Sand -----		6	966
Sand -----		2	485	Clay -----		7	973
Clay -----		14	499	Sand -----		9	982
Sand -----		29	528	Boulders -----		1	983
Boulders -----		1	529	Clay -----		24	1,007

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Dona Ana and Otero Counties, New Mexico--  
continued

Thickness (feet)		Depth (feet)		Thickness (feet)		Depth (feet)	
Well V-70							
Owner: El Paso County Water Control & Improvement Dist. No. 1. Driller: Layne-Texas Co., Ltd.							
Sand, gravel, and caliche---	81	81	Sand -----	18	436		
Caliche and clay -----	29	110	Clay -----	9	445		
Sand -----	60	170	Sand -----	15	460		
Clay -----	5	175	Clay -----	2	462		
Sand -----	10	185	Sand -----	55	517		
Clay -----	3	188	Clay -----	6	523		
Sand -----	58	246	Sand -----	8	531		
Clay -----	3	249	Clay -----	13	544		
Sand -----	6	255	Sand -----	26	570		
Sand and clay -----	9	264	Clay and boulders -----	7	577		
Clay -----	9	273	Clay -----	6	583		
Sand -----	40	313	Clay, sandy -----	8	591		
Clay -----	5	318	Sand -----	20	611		
Sand -----	16	334	Clay, sandy -----	4	615		
Clay and sand -----	9	343	Sand and boulders -----	25	640		
Clay -----	14	357	Clay -----	2	642		
Sand -----	43	400	Clay and clay, sandy ---	22	664		
Clay -----	13	413	Sand and boulders -----	5	669		
Sand -----	4	417	Sand -----	12	681		
Boulders -----	1	418	Sand and boulders -----	22	703		
			Clay -----	1	704		
Well V-72							
Owner: The Texas Company. Driller: P. D. Wynne.							
Sand -----	27	27	Sand, water, and gravel	11	131		
Clay -----	6	33	Clay -----	8	139		
Sand -----	17	50	Sand, water, and gravel	55	194		
Clay -----	3	53	Clay, yellow, hard -----	43	237		
Sand water and gravel -----	27	80	Sand, water, and boulders	53	290		
Clay -----	4	84	Clay, yellow, hard -----	17	307		
Gravel and sand -----	23	107	Sand and gravel -----	18	325		
Clay -----	13	120	Clay, yellow, hard -----	12	337		
(continued on next page)							

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

		Thickness (feet)	Depth (feet)			Thickness (feet)	Depth (feet)
Well V-72--continued							
Sand, water, and gravel ----	14	351	Sand, water, and gravel-	34	480		
Clay, yellow, hard -----	8	359	Clay, yellow, hard -----	12	492		
Sand, water, and gravel ----	11	370	Sand, water, and boulders	23	515		
Clay, yellow, hard -----	10	380	Clay, yellow, hard -----	20	535		
Sand, water, and gravel ----	26	406	Sand, water, and boulders	67	602		
Clay, yellow, hard -----	14	420	Clay, sandy -----	8	610		
Sand, and rock -----	4	424	Sand, water, and gravel	50	660		
Sand, water boulders, and gravel -----	13	437	Clay, yellow, hard -----	11	671		
Clay, yellow, hard -----	9	446	Sand, water, and gravel	17	688		
			Clay -----	6	694		
Well V-74							
Owner: Standard Oil Company of Texas. Driller: Layne-Texas Co., Ltd.							
Sand -----	47	47	Sand -----	28	379		
Sand and gravel -----	53	100	Gumbo -----	23	402		
Clay and rocks -----	15	115	Sand -----	13	415		
Sand -----	88	203	Clay -----	5	420		
Clay -----	20	223	Sand -----	34	454		
Sand -----	66	289	Clay -----	7	461		
Clay -----	3	292	Sand -----	10	471		
Sand -----	12	304	Clay -----	7	478		
Clay -----	12	316	Sand -----	39	517		
Sand -----	10	326	Clay and sand -----	28	545		
Clay -----	25	351	Sand -----	45	590		
Well V-75							
Owner: Standard Oil Company of Texas. Driller: Layne-Texas Co., Ltd.							
Soil and sand -----	84	84	Sand -----	15	209		
Gravel -----	41	125	Gumbo -----	4	213		
Sand and gravel -----	55	180	Sand -----	49	262		
Gumbo -----	14	194	Gumbo -----	6	268		
(continued on next page)							

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

Thickness (feet)		Depth (feet)		Thickness (feet)		Depth (feet)	
Well V-75--continued							
Sand -----	26	294	Sand -----	49	494		
Gumbo -----	10	304	Gumbo -----	17	511		
Sand -----	118	422	Sand -----	46	557		
Gumbo -----	3	425	Gumbo -----	8	565		
Sand -----	15	440	Sand -----	41	606		
Gumbo -----	5	445	Gumbo -----	1	607		
Well V-78							
Owner: Standard Oil Company of Texas. Driller: ---.							
Sand -----	99	99	Sand -----	13	225		
Sand and boulders -----	12	111	Clay -----	13	238		
Sand and gravel -----	88	199	Sand -----	58	296		
Clay -----	13	212	Clay -----	3	299		
Well V-79							
Owner: Phelps-Dodge Refining Corp. Driller: ---.							
Sand -----	96	96	Gumbo -----	10	481		
Sand and boulders -----	8	104	Sand -----	8	489		
Sand -----	74	178	Gumbo -----	9	498		
Clay -----	8	186	Sand -----	47	545		
Sand -----	57	243	Gumbo and boulders -----	8	553		
Clay, tough -----	6	249	Sand -----	32	585		
Sand -----	41	290	Gumbo -----	6	591		
Gumbo -----	10	300	Sand -----	13	604		
Sand -----	111	411	Gumbo -----	4	608		
Gumbo -----	8	419	Sand -----	36	644		
Sand -----	7	426	Gumbo -----	14	658		
Gumbo -----	2	428	Sand -----	41	699		
Sand -----	13	441	Rock -----	1	700		
Gumbo -----	11	452	Sand -----	6	706		
Sand -----	19	471					

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Dona Ana and Otero Counties, New Mexico--continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well V-80					
Owner: Phelps-Dodge Refining Corp. Driller: Layne-Texas Co., Ltd.					
Sand and gravel -----	40	40	Sand -----	25	445
Sand and clay -----	10	50	Clay -----	12	457
Sand -----	25	75	Sand -----	13	470
Gravel -----	29	104	Clay -----	4	474
Sand -----	46	150	Sand -----	11	485
Clay -----	14	164	Rock -----	1	486
Sand -----	94	258	Sand and boulders -----	16	502
Clay -----	13	271	Sand and clay -----	29	531
Sand -----	77	348	Sand -----	57	588
Sand and boulders -----	12	360	Clay -----	13	601
Sand -----	10	370	Sand -----	39	640
Rock -----	1	371	Clay -----	2	642
Clay -----	13	384	Sand -----	16	658
Sand -----	6	390	Sand and boulders -----	12	670
Clay -----	30	420	Clay -----	1	671
Well V-81					
Owner: Phelps-Dodge Refining Corp. Driller: Layne-Texas Co., Ltd.					
Sand -----	102	102	Clay -----	11	552
Sand and gravel -----	14	116	Sand -----	26	552
Sand -----	41	157	Clay -----	2	554
Clay and gravel -----	9	166	Clay, sandy -----	5	559
Sand -----	79	245	Clay -----	2	561
Clay -----	8	253	Clay and sand -----	19	580
Sand -----	7	260	Sand -----	19	599
Clay -----	23	283	Clay -----	2	601
Sand and gravel, fine -----	43	326	Sand -----	14	615
Clay and boulders -----	9	335	Clay -----	10	625
Sand, hard -----	45	380	Sand -----	4	629
Clay and boulders -----	14	394	Clay -----	3	632
Sand -----	59	453	Sand -----	9	641
Boulders -----	3	456	Clay -----	10	651
Sand -----	18	474	Sand -----	31	682
Clay -----	10	484	Clay -----	1	683
Sand -----	31	515			



Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--continued

Thickness (feet)		Depth (feet)		Thickness (feet)		Depth (feet)	
Well V-82							
Owner: El Paso County Water Control & Improvement District No. 1. Driller: Layne-Texas Co., Ltd.							
Sand -----	20	20	Clay -----	30	405		
Sand and clay -	20	40	Sand -----	39	444		
Gravel -----	30	70	Clay -----	6	450		
Clay -----	45	115	Sand -----	90	540		
Sand and clay -	25	140	Clay -----	14	554		
Sand -----	40	180	Sand -----	66	620		
Clay -----	30	210	Clay -----	8	628		
Sand -----	40	250	Sand -----	32	660		
Clay -----	10	260	Clay -----	5	665		
Sand -----	50	310	Sand -----	20	685		
Clay and sand -	50	360	Clay -----	4	689		
Sand -----	15	375					
Well V-86							
Owner: El Paso County Water Control & Improvement District No. 1. Driller: Layne-Texas Co., Ltd.							
Sand -----	59	59	Sand -----	37	440		
Sand, clay and boulders -	21	80	Clay -----	10	450		
Gravel -----	78	158	Sand -----	79	529		
Clay -----	5	163	Sand -----	49	578		
Gravel and sand -	55	218	Clay -----	3	581		
Clay -----	19	237	Sand -----	45	626		
Sand -----	71	308	Clay -----	45	671		
Clay and sandy clay -	30	338	Sand -----	40	711		
Sand -----	44	382	Clay -----	75	786		
Clay -----	21	403					

Table 7.--Drillers' logs of wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico-- continued

Thickness (feet)		Depth (feet)		Thickness (feet)		Depth (feet)	
Well W-9							
Owner: El Paso County Water Control & Improvement Dist. No. 1. Driller: Layne-Texas Co., Ltd.							
Sand -----	130	130	Clay, sandy -----	27	468		
Clay -----	4	134	Clay -----	17	485		
Clay, sandy -----	5	139	Clay, sandy -----	8	493		
Sand -----	77	216	Sand -----	8	501		
Clay -----	8	224	Clay -----	2	503		
Sand -----	22	246	Clay, sandy -----	11	514		
Clay -----	187	433	Clay and sand -----	48	562		
Sand -----	5	438	Clay and clay, sandy ---	15	577		
Clay -----	3	441	Clay -----	23	600		

Table 8.- Analyses of water from wells in the Hueco bolson area, El Paso County, Texas,  
and Doña Ana and Otero Counties, New Mexico  
(Chemical constituents in parts per million)

Well	Owner	Depth of well (ft.)	Date of collection	Silica (SiO <sub>2</sub> )	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)	Bicarbonate (HCO <sub>3</sub> )	Carbonate (CO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Boron (B)	Dis-solved solids	Hardness as CaCO <sub>3</sub>	Percent sodium	Specific conductance (micromhos at 25°C)	pH
F-1	U.S. Geological Survey	*404-452	Apr. 4, 1953	58	0.00	-	36	3.9	19 5.6	104	0	35	17	0.6	5.0	-	0.02	238	106	27	308	7.7
F-1	do	*470-510	Apr. 5, 1953	58	.08	-	35	4.2	22 6.3	104	0	42	19	.6	4.2	-	.08	246	105	30	324	7.6
F-1	do	*636-660	Apr. 9, 1953	34	.00	-	31	6.4	25 4.2	102	0	37	24	.5	4.2	-	.21	217	104	33	334	7.9
F-1	do	*715-744	Apr. 10, 1953	32	.02	-	28	4.9	31 3.9	106	0	38	23	.5	4.3	-	.06	218	90	41	326	7.7
F-1	do	*827-865	Apr. 12, 1953	32	.01	-	29	3.5	45 3.7	107	0	59	26	.5	4.2	-	.10	256	87	52	388	7.8
F-1	do	*962-1,012	May 3, 1953	34	.00	0.00	42	3.8	44 4.0	94	0	59	54	.5	4.0	0.00	.04	299	120	43	471	7.4
F-1	do	*1,162-1,216	May 6, 1953	32	.00	.65	640	57	421 14	54	0	541	1,550	.1	1.5	.00	.40	3,280	1,830	33	5,440	7.0
F-2	U. S. Army	181	Apr. 23, 1936	-	-	-	41	5.3	23	86	0	68	18	-	9.1	-	-	207	124	-	-	-
F-3	U.S. Geological Survey	*520-560	June 27, 1953	23	.06	.00	16	5.0	142 4.2	226	0	66	74	8.0	1.0	.01	.11	458	60	82	761	7.7
F-3	do	*685-721	June 28, 1953	26	.37	.00	12	3.8	121 3.7	212	0	49	56	5.0	1.5	.02	.15	384	46	84	628	8.2
F-3	do	*786-826	June 30, 1953	13	.15	.00	10	2.5	134 3.5	232	0	42	66	4.0	1.5	.01	.16	395	36	88	669	8.1
F-3	do	*842-882	July 1, 1953	17	.03	.00	13	4.1	120 4.1	221	0	37	60	6.0	1.0	.01	.16	371	50	83	631	8.1
F-3	do	*895-935	July 3, 1953	14	.14	.00	11	4.8	135 4.2	241	0	48	59	6.0	.5	.02	.30	402	47	83	670	8.2
F-3	do	*1,155-1,205	July 8, 1953	16	.14	.00	14	4.2	134 4.1	408	0	39	53	8.0	1.0	.01	.16	408	52	84	675	8.0
F-5	do	*408-433	Apr. 4, 1953	9.8	.00	-	155	8.3	126 8.0	31	0	71	425	.4	4.0	-	.05	823	420	39	1,630	6.9
F-5	do	*465-505	do	24	.01	-	602	20	275 12	27	0	159	1,410	.1	1.5	-	.06	2,520	1,580	27	4,620	6.8
F-5	do	*505-580	Apr. 5, 1953	25	.02	-	1,480	77	531	22	0	201	3,500	.0	-	-	-	5,830	4,010	22	10,200	6.8
G-1	do	*423-450	Mar. 30, 1953	-	-	-	-	-	-	41	0	1,410	6,710	-	-	-	-	-	7,950	-	19,000	6.5
G-1	do	*584-650	do	-	-	-	-	-	-	35	0	1,460	8,010	-	-	-	-	-	8,950	-	22,500	6.6

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a/ Analyzed by the city of El Paso.  
b/ Contains less than 0.1 ppm of iron (Fe).  
c/ Includes carbonate (CO<sub>3</sub>) as bicarbonate (HCO<sub>3</sub>).  
\* Drill-stem test, interval sampled.

Table 8.- Analyses of water from wells in the Hueco bolson area, El Paso County, Texas,  
and Doña Ana and Otero Counties, New Mexico--Continued

Well	Owner	Depth of well (ft.)	Date of collection	Silica (SiO <sub>2</sub> )	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)	Bicarbonate (HCO <sub>3</sub> )	Carbonate (CO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Boron (B)	Dissolved solids	Hardness as CaCO <sub>3</sub>	Percent sodium	Specific conductance (micromhos at 25°C)	pH
G-2	U.S. Geological Survey	*400-447	July 13, 1953	14	0.01	0.00	22	2.8	336 3.7	96	0	387	232	1.1	0.5	0.10	0.34	1,050	66	91	1,800	7.7
K-13	do	*846-889	Nov. 24, 1953	25	.14	-	99	30	261	310	0	185	348	.0	1.2	-	-	1,100	370	60	1,880	7.7
K-13	do	768	Dec. 6, 1953	38	.06	.01	137	29	219 9.8	227	0	233	365	.0	.5	.01	.24	1,140	461	50	1,920	7.5
K-14	do	*647-690	Jan. 3, 1954	14	.03	.00	22	6.4	146 6.2	176	0	177	49	.5	6.0	.00	.11	514	82	78	818	8.0
K-14	do	*818-841	Jan. 6, 1954	18	.04	.05	26	6.2	90 6.7	194	0	85	32	.3	4.2	.02	.08	364	90	66	586	8.2
K-14	do	610	Jan. 12, 1954	32	.07	.00	52	10	94 7.8	152	0	161	64	.3	5.1	.01	.14	503	170	53	772	7.9
K-15	U. S. Army	798	Feb. 12, 1931	-	-	-	-	-	-	-	-	-	63	-	.0	-	-	420	373	-	-	-
K-15	do	798	Apr. 17, 1936	-	-	-	39	23	68	232	0	67	54	-	5.7	-	-	371	192	-	-	-
K-15	do	798	May 13, 1953	-	-	-	-	-	-	231	0	-	46	-	-	-	-	-	186	-	639	7.9
K-16	U.S. Geological Survey	*485-515	May 4, 1953	15	.01	.07	32	7.4	113 10	178	0	81	93	.3	4.0	.00	.16	444	110	67	750	7.6
K-16	do	*545-580	do	28	.00	.00	33	8.1	89 8.1	175	0	70	68	.3	3.5	.00	.04	394	116	60	657	7.9
K-16	do	*635-669	May 6, 1953	24	.00	.00	31	6.6	90 7.7	171	0	91	52	.3	3.5	.00	.07	394	104	63	631	7.9
K-16	do	*688-721	May 7, 1953	24	.00	.00	31	7.1	80 6.8	174	0	69	* 50	.2	4.0	.00	.08	358	106	60	581	7.8
K-16	do	*834-868	May 9, 1953	26	.01	.01	27	4.5	157 7.2	162	0	69	162	.9	4.5	.00	.13	538	86	78	934	8.0
K-16	do	*901-935	May 10, 1953	16	.00	.40	220	28	713 17	53	0	101	1,450	1.8	.5	.00	.30	2,570	664	69	4,780	7.3
K-16	do	*963-997	May 11, 1953	18	.01	-	376	44	1,040	57	0	216	2,200	.4	-	-	-	3,920	1,120	67	6,920	7.2
K-16	do	*1,009-1,055	May 12, 1953	30	.02	-	578	88	1,370	57	0	273	3,150	.2	-	-	-	5,520	1,800	62	9,560	7.0
K-16	do	544	May 23, 1953	30	.18	.02	37	8.8	93 8.4	177	0	66	91	.3	4.1	.02	.24	429	128	59	743	7.9
L-1	do	*489-514	Mar. 31, 1953	24	.00	-	1,250	282	824	36	0	1,210	3,390	.0	-	-	-	7,000	4,280	30	11,000	6.7
L-2	do	*494-539	June 2, 1953	18	.01	.00	14	3.3	101 5.8	171	2	57	47	1.4	3.0	.01	.16	342	48	80	596	8.4

Table 8.- Analyses of water from wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--Continued

Well	Owner	Depth of well (ft.)	Date of collection	Silica (SiO <sub>2</sub> )	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)		Bicarbonate (HCO <sub>3</sub> )	Carbonate (CO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Boron (B)	Dissolved solids	Hardness as CaCO <sub>3</sub>	Percent sodium	Specific conductance (micromhos at 25°C)	pH
L-2	U.S. Geological Survey	*575-620	June 3, 1953	30	0.42	0.00	14	3.3	113	5.1	187	0	72	47	1.4	2.5	0.02	0.12	381	48	82	661	7.9
L-2	do	*823-855	June 5, 1953	22	.53	.00	25	3.3	99	4.1	222	0	74	24	1.3	.0	.11	.13	364	76	73	508	7.6
L-2	do	*908-953	June 7, 1953	34	1.3	.00	8.6	.1	91	2.6	143	0	72	23	.8	.0	.05	.13	307	24	88	469	8.0
L-2	do	*1,015-1,060	June 8, 1953	15	.02	.05	12	2.2	166	5.6	219	0	144	57	1.2	.2	.03	.17	528	39	89	836	8.0
L-2	do	*1,145-1,190	June 9, 1953	36	.14	.00	16	2.3	188	5.2	117	0	66	216	.9	.0	.01	.13	609	50	88	1,060	7.6
L-3	U. S. Army	462	Apr. 16, 1936	-	-	-	34	9.8	77		182	0	72	45	-	6.7	-	-	334	125	-	-	-
L-4	U.S. Geological Survey	*453-463	May 2, 1953	2.2	.02	.00	196	28	372	13	44	0	43	970	.1	3.2	.04	.12	1,650	604	57	3,180	6.8
L-4	do	*714-747	Apr. 27, 1953	31	.00	.24	192	42	920	20	71	0	83	1,800	.6	1.0	.00	.09	3,120	652	75	5,710	7.5
L-5	U. S. Army	350	Apr. 3, 1936	-	-	-	30	4.4	37		98	0	30	39	-	7.5	-	-	196	93	-	-	-
L-6	U.S. Geological Survey	*419-451	Apr. 10, 1953	8.8	.02	-	48	8.7	111	8.2	72	0	63	200	.6	7.0	-	.08	504	156	59	915	7.4
L-6	do	*493-535	Apr. 11, 1953	21	.00	-	150	21	149	11	39	0	32	510	.3	4.7	-	.06	918	461	41	1,790	7.4
L-6	do	*548-590	Apr. 13, 1953	22	.00	-	166	37	448	14	44	0	28	1,050	.2	4.5	-	.04	1,790	566	63	1,790	7.4
L-6	do	*625-667	Apr. 14, 1953	13	.03	-	672	161	2,810		50	0	252	5,770	.1	-	-	-	9,700	2,340	72	16,500	7.4
L-8	U. S. Army	440	Apr. 29, 1953	39	.09	-	132	33	131		91	0	50	438	.4	6.3	-	-	875	465	38	1,640	7.5
L-11	W. F. Blythe	336	Apr. 17, 1936	-	-	-	24	6.7	41		104	0	44	28	-	7.0	-	-	202	87	-	-	-
L-12	U.S. Geological Survey	*551-605	Dec. 15, 1953	10	-	-	12	3.5	89		135	0	55	47	.3	3.8	-	-	308	44	81	502	8.0
L-12	do	*706-755	Dec. 16, 1953	12	.04	.11	72	14	200	12	64	0	31	422	.1	3.2	.00	.10	798	237	63	1,540	7.4
L-12	do	*855-905	Dec. 17, 1953	8.4	.08	-	71	13	418		104	0	90	680	.7	.8	-	-	1,330	230	80	2,410	7.6
L-12	do	525	Dec. 27, 1953	28	.80	.00	25	6.8	90	6.9	160	0	73	61	.7	4.5	.00	.17	376	90	66	619	8.0
L-13	Prescott Colquitt	400	Nov. 13, 1952	30	-	-	78	15	274		74	0	20	548	-	3.5	-	-	1,000	256	70	1,900	7.5
M-2	U.S. Geological Survey	*389-421	Apr. 17, 1953	35	.00	-	298	106	461	24	92	0	779	940	.4	4.2	-	.25	2,690	1,180	45	4,150	7.5
M-2	do	*438-470	Apr. 18, 1953	20	.00	.26	314	92	417	23	96	0	571	1,020	.4	3.5	.01	.28	2,510	1,160	43	4,130	7.4

Table 8.- Analyses of water from wells in the Hueco bolson area, El Paso County, Texas,  
and Doña Ana and Otero Counties, New Mexico--Continued

Well	Owner	Depth of well (ft.)	Date of collection	Silica (SiO <sub>2</sub> )	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)	Bicarbonate (HCO <sub>3</sub> )	Carbonate (CO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Boron (B)	Dissolved solids	Hardness as CaCO <sub>3</sub>	Percent sodium	Specific conductance (micromhos at 25°C)	pH
M-2	U.S. Geological Survey	*500-542	Apr. 19, 1953	30	0.00	0.19	384	110	409 24	53	0	663	1,120	0.6	2.0	0.00	0.15	2,770	1,410	38	4,470	7.3
M-2	do	*563-585	do	12	.00	.01	214	56	316 17	69	0	410	720	.2	.2	.06	.26	1,780	764	47	1,780	7.2
M-2	do	*603-645	Apr. 20, 1953	24	.00	.00	452	109	488 24	49	0	212	1,720	.0	1.0	.01	.28	3,050	1,580	40	5,490	7.1
M-2	do	*672-710	Apr. 28, 1953	26	.00	-	760	163	685	35	0	211	2,700	.0	-	-	-	4,560	2,570	37	8,240	7.1
M-5	do	*585-610	Mar. 19, 1953	5.3	.00	.26	113	26	534 9.4	59	0	622	610	.3	.0	.00	.22	1,950	389	74	3,210	7.3
M-5	do	*715-740	Mar. 20, 1953	14	.00	-	34	5.7	336 4.5	81	0	70	505	.7	.0	-	.35	1,010	108	86	1,930	7.4
M-5	do	*855-880	Mar. 22, 1953	21	.00	.08	90	5.5	541 5.6	47	0	44	950	1.0	.0	.00	.86	1,680	247	82	3,220	7.3
M-5	do	435	May 3, 1953	21	.01	-	160	52	648 12	86	0	901	710	.5	1.0	.02	.24	2,550	613	69	3,890	7.6
M-7	Southern Pacific Railway Co.	332	Sept. 23, 1935	-	-	-	70	17	133	98	0	38	290	-	5.2	-	-	602	245	-	-	-
N-6	U.S. Geological Survey	*645-690	June 21, 1953	8.7	.03	-	119	17	880 9.3	53	0	163	1,450	.9	.5	.00	.33	2,670	367	83	4,860	7.4
N-6	do	*775-820	June 22, 1953	17	.02	-	534	61	2,850	62	0	611	5,030	.3	-	-	-	9,130	1,580	80	15,100	7.3
N-7	Navar Bros.	300	Sept. 11, 1952	34	-	-	50	12	83	134	0	136	41	.6	54	-	-	485	174	51	715	8.1
R-1	U.S. Geological Survey	*607-665	June 25, 1953	2.6	.03	.00	24	6.6	174 9.2	156	0	76	190	1.0	1.0	.01	.13	575	87	79	1,040	7.4
R-1	do	*793-839	July 19, 1953	17	.02	-	102	21	484	131	0	144	802	1.3	.5	-	.01	1,640	341	76	3,040	7.4
R-1	do	*938-969	July 20, 1953	14	.06	-	62	14	501 13	151	0	195	708	.9	.0	.02	.29	1,580	212	83	2,870	7.4
R-1	do	*1,149-1,200	July 22, 1953	-	-	-	-	-	-	46	-	-	9,000	-	-	-	-	-	3,860	-	25,200	7.0
aR-2	City of El Paso	397	Apr. 28, 1940	28	-	-	33	8.5	109	188	0	82	81	-	-	-	-	413	118	-	-	-
aR-2	do	350	Apr. 29, 1940	25	-	-	36	11	106	171	0	100	85	-	-	-	-	450	133	-	-	-
aR-2	do	*425-517	Apr. 30, 1940	30	-	-	33	9.0	100	181	0	78	76	-	-	-	-	395	120	-	-	-
aR-2	do	*585-595	May 3, 1940	25	-	-	22	4.3	5 7	121	7	56	45	-	-	-	-	323	72	-	-	-
aR-2	do	729	May 5, 1940	29	-	-	98	13	213	54	0	23	474	-	-	-	-	1,100	299	-	-	-
aR-2	do	790	May 17, 1940	31	-	-	127	17	279	51	0	24	658	-	-	-	-	1,370	389	-	-	-

Table 8.- Analyses of water from wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--Continued

Well	Owner	Depth of well (ft)	Date of collection	Silica (SiO <sub>2</sub> )	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)	Bicarbonate (HCO <sub>3</sub> )	Carbonate (CO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Boron (B)	Dissolved solids	Hardness as CaCO <sub>3</sub>	Percent sodium	Specific conductance (micromhos at 25°C)	pH
R-3	U.S. Geological Survey	*444-484	May 20, 1953	3.4	0.01	0.00	94	21	363 13	101	0	107	60	0.7	0.2	0.02	0.14	1,310	321	70	2,490	7.4
R-3	do	*555-595	May 21, 1953	5.5	.02	-	176	44	1,050	61	0	280	1,820	.5	0	-	-	3,410	620	79	6,190	7.0
R-3	do	*740-783	May 26, 1953	9.2	.00	.10	141	23	789 12	56	0	305	1,300	5	.2	.01	.32	2,610	446	79	4,720	7.3
R-4	do	*457-500	May 18, 1953	16	.00	.30	108	20	207 12	91	0	36	492	3	5.9	.01	.16	943	352	55	1,850	7.2
R-4	do	*542-586	do	18	.00	.11	222	51	638 18	64	0	25	1,510	0	3.0	.01	.09	2,520	764	64	4,850	7.3
R-4	do	*679-725	May 19, 1953	19	.09	-	218	65	1,690	94	0	233	2,950	.7	-	-	-	5,220	813	82	9,260	7.0
R-4	do	*752-798	do	26	.26	-	242	59	2,040	163	0	617	3,700	6	-	-	-	6,260	846	84	10,500	7.0
R-4	do	520	June 10, 1953	33	.04	.04	133	27	330 11	60	0	11	795	0	5.4	.02	.09	1,380	443	61	2,700	7.5
aR-10	City of El Paso	447	June 13, 1940	30	-	-	37	9.6	139	185	-	90	134	-	-	-	-	537	132	-	-	-
aR-10	do	491	June 14, 1940	25	-	-	40	9.6	162	163	0	83	191	-	-	-	-	608	139	-	-	-
aR-10	do	507	June 18, 1940	27	-	-	53	18	168	139	-	77	269	-	-	-	-	722	206	-	-	-
aR-10	do	*535-555	June 19, 1940	-	-	-	70	14	207	95	0	62	450	-	-	-	-	1,040	231	-	-	-
aR-10	do	*579-611	June 21, 1940	-	-	-	121	21	455	94	0	96	830	-	-	-	-	1,880	389	-	-	-
aR-10	do	648	June 24, 1940	-	-	-	200	30	644	91	-	110	1,300	-	-	-	-	2,700	623	-	-	-
aR-10	do	697	June 26, 1940	-	-	-	475	65	1,890	68	-	304	3,600	-	-	-	-	7,300	1,460	-	-	-
aR-11	do	*554-577	Apr. 7, 1940	34	-	-	90	15	268	104	3	85	488	-	-	-	-	1,190	285	-	-	-
aR-11	do	*342-524	Apr. 20, 1940	30	-	-	47	10	179	119	5	74	259	-	-	-	-	697	159	-	-	-
R-13	U.S. Geological Survey	*539-573	May 25, 1953	29	.05	.00	30	9.6	103 11	176	0	80	88	.7	4.3	.01	.32	447	114	64	756	7.9
R-13	do	*662-708	May 27, 1953	28	.02	.00	24	6.9	93 9.4	152	0	61	79	.7	4.6	.03	.30	384	88	67	656	7.9
R-13	do	*730-776	do	7.2	.01	.00	17	3.9	105 8.8	142	0	61	83	.7	5.2	.02	.13	370	58	77	651	7.8
R-13	do	*870-916	May 28, 1953	22	.01	.00	38	11	154 12	98	0	38	258	6	2.8	.02	.16	603	140	68	1,100	7.3
R-13	do	*986-1,032	May 29, 1953	22	.03	.14	119	27	408 15	72	0	66	840	3	0	.04	.18	1,530	408	68	3,030	7.1

Table 8.- Analyses of water from wells in the Haeco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--Continued

Well	Owner	Depth of well (ft.)	Date of collection	Silica (SiO <sub>2</sub> )	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Boron (B)	Dissolved solids	Hardness as CaCO <sub>3</sub>	Percent sodium	Specific conductance (microhos at 25°C)	pH
R-13	U.S. Geological Survey	*1,098-1,132	May 30, 1953	5.6	0.01	-	208	55	712 18	61	0	148	1,520	0.6	0.00	0.25	2,700	745	67	4,980	6.9
R-13	do	*1,162-1,208	June 1, 1953	24	.02	-	484	74	1,290	45	0	255	2,850	.3	-	-	5,000	1,510	65	8,780	7.1
R-15	U. S. Army	450	Feb. 6, 1952	27	-	-	31	8.7	132	122	0	34	187	-	5.0	-	510	114	72	889	7.9
R-15	do	450	Mar. 28, 1952	-	-	-	-	-	-	125	0	-	178	-	-	-	-	108	-	872	7.6
R-15	do	450	Aug. 26, 1952	-	-	-	-	-	-	129	0	-	177	-	-	-	-	114	-	876	7.7
R-15	do	450	Jan. 12, 1953	-	-	-	-	-	-	132	0	-	177	-	-	-	-	116	-	876	7.9
R-15	do	450	June 5, 1953	-	-	-	-	-	-	133	0	-	180	-	-	-	-	124	-	877	8.0
R-15	do	450	Feb. 25, 1954	-	-	-	-	-	-	133	0	-	177	-	-	-	-	111	-	851	8.2
R-16	do	550	Feb. 13, 1952	27	-	-	62	16	248	90	0	23	465	-	4.5	-	984	220	71	1,690	7.8
R-16	do	550	Mar. 28, 1952	-	-	-	-	-	-	90	0	-	460	-	-	-	-	212	-	1,680	7.6
R-16	do	550	Aug. 26, 1952	-	-	-	-	-	-	93	0	-	484	-	-	-	-	227	-	1,760	7.5
R-16	do	550	Jan. 12, 1953	-	-	-	-	-	-	94	0	-	462	-	-	-	-	220	-	1,700	7.5
R-16	do	550	June 5, 1953	-	-	-	-	-	-	94	0	-	472	-	-	-	-	234	-	1,720	8.0
R-16	do	550	Feb. 25, 1954	-	-	-	-	-	-	98	0	-	470	-	-	-	-	224	-	1,700	8.0
aR-17	City of El Paso	340	Sept. 27, 1940	22	-	-	29	8.5	105	123	0	35	156	-	-	-	492	108	-	-	-
aR-17	do	388	Sept. 28, 1940	21	-	-	32	9.4	114	126	0	38	159	-	-	-	489	120	-	-	-
aR-17	do	432	Oct. 1, 1940	22	-	-	44	14	155	98	0	42	268	-	-	-	655	166	-	-	-
aR-17	do	537	Oct. 2, 1940	24	-	-	62	16	271	96	0	41	490	-	-	-	1,030	220	-	-	-
aR-17	do	670	Oct. 4, 1940	23	-	-	101	30	344	75	0	35	728	-	-	-	1,435	378	-	-	-
aR-17	do	738	Oct. 5, 1940	21	-	-	84	27	329	79	0	38	626	-	-	-	1,350	322	-	-	-
aR-17	do	*781-811	Oct. 8, 1940	25	-	-	112	34	346	88	0	46	746	-	-	-	1,530	42	-	-	-
aR-18	do	*303-346	Oct. 30, 1940	32	-	-	32	11	130	99	0	38	191	-	-	-	486	125	-	-	-
aR-18	do	*354-437	Oct. 31, 1940	26	-	-	52	15	123	94	0	28	250	-	-	-	592	190	-	-	-



Table 8.- Analyses of water from wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--Continued

Well	Owner	Depth of well (ft.)	Date of collection	Silica (SiO <sub>2</sub> )	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)	Bicarbonate (HCO <sub>3</sub> )	Carbonate (CO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Boron (B)	Dissolved solids	Hardness as CaCO <sub>3</sub>	Percent sodium	Specific conductance (microhmhos at 25°C)	pH
aR-18	City of El Paso	*447-500	Nov. 1, 1940	28	-	-	45	13	113	105	0	45	198	-	-	-	-	529	166	-	-	-
aR-18	do	*515-550	Nov. 4, 1940	29	-	-	61	15	146	94	0	39	293	-	-	-	-	677	214	-	-	-
aR-18	do	*573-630	Nov. 5, 1940	30	-	-	45	16	153	106	0	47	264	-	-	-	-	650	176	-	-	-
aR-18	do	*651-697	Nov. 7, 1940	28	-	-	38	12	150	121	0	52	224	-	-	-	-	573	142	-	-	-
aR-18	do	*714-746	Nov. 8, 1940	32	-	-	45	15	162	109	0	53	271	-	-	-	-	657	174	-	-	-
aR-18	do	*835-855	Nov. 13, 1940	27	-	-	68	21	240	96	0	53	455	-	-	-	-	983	255	-	-	-
aR-20	do	*304-324	Dec. 11, 1940	38	-	-	20	7.5	91	145	5	64	61	-	-	-	-	368	80	-	-	-
aR-20	do	*354-387	Dec. 12, 1940	30	-	-	20	7.3	87	138	7	63	58	-	-	-	-	350	81	-	-	-
aR-20	do	*469-495	Dec. 13, 1940	30	-	-	18	7.5	69	128	0	46	52	-	-	-	-	290	75	-	-	-
aR-20	do	*523-565	Dec. 17, 1940	26	-	-	22	6.2	68	128	0	47	52	-	-	-	-	294	79	-	-	-
aR-20	do	*585-605	Dec. 18, 1940	22	-	-	18	8.2	72	137	0	45	54	-	-	-	-	299	88	-	-	-
aR-20	do	*622-695	Dec. 19, 1940	25	-	-	25	12	93	156	6	69	71	-	-	-	-	404	109	-	-	-
aR-20	do	*706-746	Dec. 20, 1940	28	-	-	30	8.5	93	145	10	79	67	-	-	-	-	387	109	-	-	-
aR-20	do	*787-820	Dec. 21, 1940	25	-	-	27	8.6	84	155	7	65	58	-	-	-	-	366	103	-	-	-
aR-22	do	335	July 23, 1936	-	-	-	36	13	140	200	0	130	102	-	5.2	-	-	525	143	-	-	-
aR-23	do	500	July 12, 1939	12	-	-	42	19	64	218	13	65	40	-	-	-	-	374	185	-	-	-
aR-23	do	830	Sept. 2, 1953	-	b	-	35	16	-	230	0	78	67	1.4	-	-	-	458	156	-	-	-
R-28	U.S. Geological Survey	*597-640	May 13, 1953	20	0.00	0.00	22	11	100	3.7	0	85	34	1.8	4.0	0.00	0.06	390	100	68	639	8.1
R-28	do	*660-700	do	30	.00	.00	30	17	75	3.6	0	61	28	2.0	2.5	.00	.06	370	145	52	587	8.1
R-28	do	*793-833	May 14, 1953	34	.01	.00	30	16	65	5.1	0	54	24	1.2	4.5	.00	.09	349	141	49	557	8.0
R-28	do	*877-917	May 16, 1953	31	.00	.00	29	14	63	4.6	0	50	26	.8	3.5	.00	.03	328	130	50	527	8.0
R-28	do	*977-1,017	May 18, 1953	33	.00	.00	30	15	73	5.2	0	63	29	1.2	3.0	.00	.05	364	136	53	581	8.1

Table 8.-- Analyses of water from wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--Continued

Well	Owner	Depth of well (ft.)	Date of collection	Silica (SiO <sub>2</sub> )	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)	Bicarbonate (HCO <sub>3</sub> )	Carbonate (CO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Boron (B)	Dissolved solids	Hardness as CaCO <sub>3</sub>	Percent sodium	Specific conductance (microhos at 25°C)	pH	
R-28	U.S. Geological Survey	*1,092-1,132	May 19, 1953	15	0.01	0.00	19	5.7	142	5.6	203	0	139	52	1.1	4.5	0.00	0.00	496	71	80	790	7.5
R-28	do	*1,152	May 23, 1953	26	.04	-	22	7.1	160		232	0	102	92	.9	4.2	-	-	532	84	81	888	7.8
R-28	do	1,200	June 10, 1953	33	.01	.00	37	22	54	3.4	247	0	54	25	1.2	4.5	.01	.08	355	183	39	590	8.0
aR-29	City of El Paso	497	June 30, 1939	12	-	-	51	20	67		223	10	87	48	-	-	-	-	394	211	-	-	-
aR-29	do	832	Sept. 2, 1953	-	b	-	42	18	-		228	0	72	5.7	1.3	-	-	-	430	176	-	-	-
aR-31	do	503	June 20, 1939	19	-	-	53	16	52		194	13	70	41	-	-	-	-	372	200	-	-	-
aR-31	do	790	Sept. 2, 1953	-	b	-	38	14	-		230	0	54	30	1.3	-	-	-	354	154	-	-	-
R-34	do	814	Oct. 6, 1952	30	-	-	40	13	50		207	0	42	29	1.2	6.6	-	-	314	154	42	514	7.7
R-37	U.S. Geological Survey	*968-1,016	Aug. 30, 1953	3.8	.04	.03	31	14	301	8.4	140	0	477	138	1.6	1.0	.01	.00	1,030	135	82	1,660	7.4
R-37	do	*1,068-1,114	Sept. 1, 1953	4.4	.01	.02	27	9.5	253	6.7	183	0	328	126	2.8	.0	.02	.34	848	106	83	1,380	7.9
R-38	Realtown Cemetery	640	May 4, 1937	-	-	-	36	14	33		172	0	50	14	-	8.3	-	-	240	147	-	-	-
aR-39	City of El Paso	569	Apr. 8, 1939	26	-	-	33	12	65		183	0	99	16	-	-	-	-	295	130	-	-	7.5
R-40	do	806	Mar. 11, 1942	37	.01	-	41	14	55		204	0	49	38	1.6	5.0	-	-	340	160	-	-	-
R-40	do	806	Sept. 17, 1942	-	-	-	39	13	56		204	0	46	38	-	5.0	-	-	298	151	-	-	-
R-40	do	806	Mar. 25, 1943	-	-	-	42	13	53		203	0	46	39	-	5.8	-	-	299	158	-	-	-
R-40	do	806	Feb. 15, 1944	-	-	-	43	14	51		201	0	47	39	-	8.4	-	-	301	165	-	-	-
R-40	do	806	May 8, 1944	-	-	-	40	13	59		206	0	47	42	-	5.5	-	-	308	154	-	-	-
R-40	do	806	May 22, 1945	-	-	-	43	14	55		183	9	55	42	-	5.1	-	-	360	165	-	-	-
R-40	do	806	Mar. 25, 1946	-	-	-	42	14	54		198	6	36	47	-	3.8	-	-	386	162	-	-	-
B-40	do	806	Apr. 28, 1947	-	-	-	-	-	-		204	0	-	48	-	-	-	-	-	-	-	578	-
R-40	do	806	June 7, 1948	39	-	-	45	15	63		210	0	52	52	-	5.4	-	-	377	166	45	604	-

Table 8.- Analyses of water from wells in the Hueco bolson area, El Paso County, Texas, and Dona Ana and Otero Counties, New Mexico--Continued

Well	Owner	Depth of well (ft.)	Date of collection	Silica (SiO <sub>2</sub> )	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)	Bicarbonate (HCO <sub>3</sub> )	Carbonate (CO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Boron (B)	Dissolved solids	Hardness as CaCO <sub>3</sub>	Percent sodium	Specific conductance (micromhos at 25°C)	pH	
R-40	City of El Paso	806	Apr. 21, 1949	37	-	-	43	14	60	199	0	55	50	-	6.0	-	-	372	160	44	595	7.9	
R-40	do	806	Feb. 9, 1950	-	-	-	-	-	-	199	0	-	-	-	-	-	-	-	162	-	-	589	8.1
R-40	do	806	Mar. 24, 1951	-	-	-	-	-	-	195	0	-	53	-	-	-	-	-	169	-	-	595	7.5
R-46	U. S. Army	812	May 10, 1951	42	0.03	-	29	11	126	194	0	95	90	1.1	5.2	-	-	482	118	70	809	8.1	
R-49	do	400	Feb. 25, 1952	24	-	-	23	7.0	110	142	0	50	112	-	2.5	-	-	444	86	73	718	8.0	
aR-50	City of El Paso	*242-284	Nov. 18, 1940	27	-	-	18	7.0	95	170	7	73	39	-	-	-	-	347	74	-	-	-	
aR-50	do	*311-370	Nov. 20, 1940	30	-	-	20	7.0	68	142	5	58	29	-	-	-	-	284	79	-	-	-	
aR-50	do	*416-440	Nov. 22, 1940	34	-	-	25	8.2	65	133	8	66	33	-	-	-	-	299	97	-	-	-	
aR-50	do	*472-502	Nov. 23, 1940	22	-	-	21	7.5	66	126	6	53	42	-	-	-	-	247	83	-	-	-	
aR-50	do	*557-600	do	28	-	-	20	7.9	73	133	7	62	39	-	-	-	-	296	82	-	-	-	
aR-50	do	*637-670	Nov. 27, 1940	26	-	-	20	7.3	75	127	6	58	48	-	-	-	-	303	80	-	-	-	
aR-50	do	*693-718	Nov. 29, 1940	24	-	-	17	7.0	78	122	6	46	59	-	-	-	-	307	72	-	-	-	
aR-50	do	*749-770	Dec. 2, 1940	26	-	-	18	6.1	89	106	7	58	74	-	-	-	-	338	70	-	-	-	
R-52	U. S. Army	812	Feb. 16, 1953	38	-	-	27	9.8	130	193	0	97	89	1.2	4.3	-	-	492	108	72	808	7.9	
aR-53	City of El Paso	*330-344	June 3, 1937	16	-	-	-	-	-	-	-	-	93	-	-	-	-	481	172	-	-	-	
aR-55	do	214	July --, 1927	39	-	-	-	-	-	-	-	-	62	-	-	-	-	568	242	-	-	-	
aR-55	do	*334-352	July --, 1937	39	-	-	-	-	-	-	-	-	92	-	-	-	-	574	341	-	-	-	
aR-55	do	*486-505	July --, 1937	33	-	-	-	-	-	-	-	-	29	-	-	-	-	315	187	-	-	-	
R-56	do	909	Mar. 11, 1942	32	.01	-	36	13	40	184	0	36	25	.8	6.8	-	-	276	143	-	-	-	
R-56	do	909	Sept. 17, 1942	-	-	-	35	12	41	181	0	37	25	-	5.0	-	-	-	137	-	-	-	
R-56	do	909	Mar. 25, 1943	-	-	-	38	12	36	180	0	32	26	-	6.0	-	-	-	144	-	-	-	
R-56	do	909	Feb. 15, 1944	-	-	-	36	12	39	163	7	34	25	-	10	-	-	-	139	-	-	-	

Table 8.- Analyses of water from wells in the Hueco bolson area, El Paso County, Texas, and Dona Ana and Otero Counties, New Mexico--Continued

Well	Owner	Depth of well (ft.)	Date of collection	Silica (SiO <sub>2</sub> )	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)	Bicarbonate (HCO <sub>3</sub> )	Carbonylate (CO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Boron (B)	Dissolved solids	Hardness as CaCO <sub>3</sub>	Percent sodium	Specific conductance (microhmhos at 25°C)	pH	
R-56	City of El Paso	909	May 8, 1944	-	-	-	34	13	34	166	0	35	24	-	6.0	-	-	-	138	-	-	-	-
R-56	do	909	May 22, 1945	-	-	-	35	12	38	157	10	35	25	-	7.2	-	-	278	139	-	-	-	-
R-56	do	909	Mar. 25, 1946	-	-	-	34	13	42	152	18	28	29	-	6.5	-	-	304	138	-	-	-	-
R-56	do	909	Apr. 28, 1947	-	-	-	-	-	-	184	-	-	28	-	-	-	-	-	-	-	-	447	-
R-56	do	909	June 7, 1948	32	-	-	34	14	44	180	0	39	32	-	6.7	-	-	290	142	40	-	467	-
R-56	do	909	Apr. 21, 1949	29	-	-	34	13	43	178	0	37	30	-	7.2	-	-	288	138	41	-	458	8.0
aR-56	do	909	Feb. 9, 1950	-	-	-	-	-	-	178	0	-	29	-	-	-	-	-	139	-	-	457	8.1
R-56	do	909	Mar. 24, 1951	-	-	-	-	-	-	176	0	-	32	-	-	-	-	-	139	-	-	460	7.5
S-1	U.S. Geological Survey	*506-525	Mar. 4, 1953	22	0.01	-	149	37	212 15	72	0	70	612	0.5	4.0	-	0.36	1,160	524	46	-	2,180	7.5
S-1	do	*707-732	Mar. 6, 1953	2.2	.00	-	344	78	609	37	0	72	1,700	-	.5	-	-	2,820	1,180	53	-	5,160	7.2
S-2	Navar Bros.	400	Aug. 10, 1935	-	-	-	-	-	-	146	15	-	90	-	-	-	-	-	33	-	-	-	-
S-5	U.S. Geological Survey	*461-507	Sept. 8, 1953	25	.01	0.00	36	8.3	124 7.8	133	0	67	158	.6	4.5	0.01	.25	498	124	67	-	885	7.9
S-5	do	*648-694	Sept. 9, 1953	26	.00	-	162	51	508	57	0	48	1,150	.2	.0	-	-	1,970	614	64	-	3,760	7.2
S-5	do	*927-973	Sept. 10, 1953	25	.00	-	148	47	1,170	96	0	137	2,040	.6	-	-	-	3,610	563	82	-	6,560	7.1
S-5	do	450	Sept. 14, 1953	32	.06	.00	27	7.4	91 6.4	151	0	53	89	.5	5.0	.02	.16	386	98	65	-	651	7.6
S-6	U. S. Army	-	Apr. 3, 1936	-	-	-	35	8.8	116	146	0	54	139	-	5.0	-	-	430	124	-	-	-	-
aS-7	City of El Paso	*295-321	Oct. 15, 1940	30	-	-	24	7.1	116	170	0	74	88	-	-	-	-	407	88	-	-	-	-
aS-7	do	*325-396	Oct. 17, 1940	29	-	-	27	7.8	110	155	0	68	100	-	-	-	-	410	99	-	-	-	-
aS-7	do	*425-536	Oct. 19, 1940	23	-	-	83	20	164	94	0	50	367	-	-	-	-	844	290	-	-	-	-
aS-7	do	*585-643	Oct. 22, 1940	27	-	-	122	32	250	76	0	40	620	-	-	-	-	1,290	436	-	-	-	-
aS-7	do	*755-795	Oct. 24, 1940	30	-	-	119	36	644	101	0	177	1,110	-	-	-	-	2,260	445	-	-	-	-

Table 8.- Analyses of water from wells in the Hueco bolson area, El Paso County, Texas,  
and Dona Ana and Otero Counties, New Mexico--Continued

Well	Owner	Depth of well (ft.)	Date of collection	Silica (SiO <sub>2</sub> )	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Boron (B)	Dissolved solids	Hardness as CaCO <sub>3</sub>	Percent sodium	Specific conductance (micromhos at 25°C)	pH	
S-8	U.S. Geological Survey	*479-515	June 1, 1953	4.3	0.03	0.13	81	26	256	12	77	0	316	355	0.3	3.0	0.01	1,090	309	63	1,900	6.9
S-8	do	*772-808	June 3, 1953	14	.01	.06	122	26	357	8.3	64	0	569	405	.3	.0	.02	1,530	412	65	2,460	7.1
S-8	do	*892-952	June 5, 1953	12	.02	-	370	62	1,940	54	0	1,110	2,980	.3	-	-	-	6,500	1,180	78	10,500	7.3
S-8	do	*980-1,020	June 6, 1953	6.8	.02	-	684	111	3,540	53	0	1,990	5,490	.3	-	-	-	11,800	2,160	78	18,200	7.1
S-8	do	502	Aug. 5, 1953	24	.03	.06	118	37	231	12	124	0	340	355	.5	.0	.00	1,180	446	52	1,950	7.5
S-9	do	*511-557	July 27, 1953	12	.02	.00	58	12	422	7.2	106	0	212	560	.7	1.0	.00	1,340	194	82	2,480	7.4
S-9	do	*603-649	July 29, 1953	19	.03	.01	46	7.1	370	6.4	110	0	154	488	1.0	1.0	.01	1,150	144	84	2,160	7.4
S-9	do	*895-946	July 30, 1953	3.9	.03	-	535	40	1,980	47	0	912	3,420	.4	-	-	-	6,910	500	74	11,500	7.3
S-11	Adelberto Navar	410	Aug. 17, 1935	-	-	-	-	-	-	105	13	-	280	-	-	-	-	-	158	-	-	-
S-13	U. S. Army	500	Feb. 21, 1952	4.8	-	-	35	12	161	-	90	0	101	225	-	2.0	-	614	137	72	1,100	7.8
S-14	U.S. Geological Survey	420	Mar. 30, 1953	28	.07	-	59	21	185	10	144	0	206	240	.4	4.2	-	810	234	62	1,380	7.7
V-3	City of El Paso	715	Jan. 5, 1935	-	-	-	-	-	-	190	-	60	52	-	-	-	-	-	196	-	-	-
V-3	do	715	Sept. 16, 1935	-	-	-	44	16	49	184	0	59	46	-	6.7	-	-	311	176	-	-	-
V-3	do	715	Apr. 22, 1936	-	-	-	-	-	-	182	-	-	42	-	-	-	-	-	206	-	-	-
V-3	do	715	Oct. 28, 1936	-	-	-	44	16	44	182	0	54	42	-	8.8	-	-	298	176	-	-	-
V-3	do	715	Apr. 25, 1937	-	-	-	45	17	50	184	0	64	47	-	9.4	-	-	323	182	-	-	-
V-3	do	715	Oct. 27, 1937	-	-	-	43	16	43	188	0	46	41	-	8.3	-	-	289	173	-	-	-
V-3	do	715	Sept. 23, 1938	36	-	-	44	16	52	192	0	60	45	-	7.5	-	-	355	176	-	-	-
V-3	do	715	June 10, 1940	-	-	-	46	16	52	194	0	59	46	-	9.4	-	-	324	181	-	-	-
V-3	do	715	Dec. 11, 1940	-	-	-	46	16	52	196	0	62	45	-	7.0	-	-	325	181	-	-	-
V-3	do	715	June 16, 1941	-	-	-	44	16	51	190	0	56	46	.7	7.8	-	-	315	176	-	-	-
V-3	do	715	Sept. 19, 1941	-	-	-	43	16	52	193	0	56	44	-	9.0	-	-	315	174	-	-	-
V-3	do	715	June 3, 1942	-	-	-	44	16	52	194	0	55	46	-	9.2	-	-	318	176	-	-	-

Table 8.- Analyses of water from wells in the Hueco bolson area, El Paso County, Texas,  
and Doña Ana and Otero Counties, New Mexico--Continued

Well	Owner	Depth of well (ft.)	Date of collection	Silica (SiO <sub>2</sub> )	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)	Bicarbonate (HCO <sub>3</sub> )	Carbonate (CO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Boron (B)	Dis-solved solids	Hardness as CaCO <sub>3</sub>	Percent sodium	Specific conductance (micromhos at 25°C)	pH
V-3	City of El Paso	715	Sept. 16, 1942	-	-	-	49	18	53	201	0	68	52	-	4.5	-	-	344	196	-	-	-
V-3	do	715	Mar. 25, 1943	-	-	-	51	18	49	202	0	65	49	-	7.0	-	-	338	202	-	-	-
V-3	do	715	May 22, 1945	-	-	-	51	19	52	200	0	69	51	-	13	-	-	423	206	-	-	-
V-3	do	715	June 7, 1948	42	-	-	46	17	58	200	0	60	54	-	9.6	-	-	402	185	40	616	-
V-3	do	715	Apr. 21, 1949	42	-	-	45	18	55	198	0	64	48	-	11	-	-	386	186	39	608	7.8
V-3	do	715	Feb. 10, 1950	-	-	-	-	-	-	192	-	-	48	-	-	-	-	-	182	-	596	8.3
V-3	do	715	Mar. 27, 1951	40	-	-	48	19	51	194	0	65	52	-	11	-	-	401	198	36	608	8.1
V-4	do	730	Sept. 11, 1935	-	-	-	56	21	73	193	0	84	96	-	4.5	-	-	430	226	-	-	-
V-4	do	730	Apr. 22, 1936	-	-	-	-	-	-	193	-	-	88	-	-	-	-	-	264	-	-	-
V-4	do	730	June 25, 1937	36	0.13	-	56	20	71 7.4	195	0	83	94	0.9	6.7	-	-	477	222	-	-	-
V-4	do	730	June 11, 1940	39	.04	-	56	21	78	204	0	92	92	-	5.2	-	-	498	226	78	-	-
V-4	do	730	June 16, 1941	-	-	-	56	20	81	204	0	91	91	9	6.8	-	-	447	222	81	-	-
V-4	do	730	Sept. 19, 1941	-	-	-	55	21	82	208	0	97	88	-	7.5	-	-	453	224	-	-	-
V-4	do	730	Apr. 28, 1947	-	-	-	-	-	-	204	-	-	92	-	-	-	-	-	-	-	793	-
V-4	do	730	Apr. 21, 1949	36	-	-	54	21	75	196	0	86	91	-	8.3	-	-	481	222	42	786	7.8
V-4	do	730	Apr. 5, 1951	36	-	-	56	21	78	202	0	90	92	-	8.7	-	-	509	226	43	797	7.9
V-5	do	776	Sept. 11, 1935	-	-	-	51	21	114	195	0	106	134	-	3.6	-	-	526	214	-	-	-
V-5	do	776	Apr. 7, 1937	41	.03	-	49	21	113 7.8	195	0	108	129	1.0	7.5	-	-	570	209	53	-	-
V-5	do	776	Sept. 23, 1938	43	-	-	49	22	115	204	0	112	126	-	2.8	-	-	581	213	-	-	-
V-5	do	776	Nov. 16, 1939	-	-	-	-	-	115	194	0	105	125	-	4.2	-	-	515	198	-	-	-
V-5	do	776	June 10, 1940	-	-	-	49	21	115	204	0	106	125	-	5.2	-	-	522	209	-	-	-
V-5	do	776	Nov. 28, 1940	-	-	-	50	20	116	204	0	108	122	-	4.5	-	-	519	207	-	-	-

Table 8.- Analyses of water from wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--Continued

Well	Owner	Depth of well (ft.)	Date of collection	Silica (SiO <sub>2</sub> )	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)	Bicarbonate (HCO <sub>3</sub> )	Carb-ate (CO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Boron (B)	Dissolved solids	Hardness as CaCO <sub>3</sub>	Percent sodium	Specific conductance (microhmhos at 25°C)	pH
V-5	City of El Paso	776	June --, 1941	-	-	-	47	20	115	199	0	104	121	1.5	4.3	-	-	511	200	-	-	-
V-5	do	776	Sept. 19, 1941	-	-	-	47	20	113	204	0	101	121	-	4.5	-	-	507	200	-	-	-
aV-6	do	*288-302	Dec. --, 1937	40	-	-	-	-	-	-	-	-	49	-	-	-	-	117	-	-	-	-
aV-7	do	*288-302	Nov. 23, 1937	40	-	-	-	-	-	-	-	-	-	-	-	-	-	498	117	-	-	-
aV-7	do	540	Jan. 4, 1938	15	-	-	-	-	-	-	-	-	-	-	-	-	-	665	178	-	-	-
V-7	do	1,055	Nov. 16, 1939	-	-	-	32	12	154	172	0	89	162	-	2.5	-	-	569	129	-	-	-
V-7	do	1,055	Apr. 8, 1940	25	-	-	31	10	173	177	-	109	167	-	-	-	-	530	119	-	-	-
V-7	do	1,055	June 10, 1940	-	-	-	34	12	155	180	0	91	162	-	-	-	-	543	134	-	-	-
V-7	do	1,055	June 16, 1941	34	-	-	32	11	154	177	0	85	157	1.1	2.5	-	-	580	125	-	-	-
V-7	do	1,055	June 3, 1942	-	-	-	25	10	124	202	0	73	90	-	4.5	-	-	426	104	-	-	-
V-7	do	1,055	Sept. 16, 1942	-	-	-	26	10	130	202	0	92	89	-	3.0	-	-	450	106	-	-	-
V-7	do	1,055	Mar. 25, 1943	-	-	-	28	10	126	202	0	91	87	-	4.0	-	-	446	111	-	-	-
V-7	do	1,055	Feb. 15, 1944	-	-	-	27	9.8	129	182	0	93	90	-	3.8	-	-	450	108	-	-	-
V-7	do	1,055	May 28, 1944	-	-	-	26	10	127	202	0	85	89	-	4.0	-	-	440	106	-	-	-
V-7	do	1,055	May 22, 1945	-	-	-	28	10	127	172	13	92	89	-	4.1	-	-	512	111	-	-	-
aV-7	do	1,055	Mar. 25, 1946	-	-	-	27	10	138	182	19	92	92	-	3.8	-	-	530	108	-	-	-
V-7	do	1,055	Apr. 26, 1947	-	-	-	-	-	-	146	26	-	86	-	-	-	-	-	-	-	-	793
V-7	do	1,055	June 7, 1948	39	-	-	25	12	132	208	0	92	92	-	3.8	-	-	498	112	72	-	809
V-7	do	1,055	Apr. 21, 1949	36	-	-	24	10	129	197	0	91	86	-	4.4	-	-	482	101	73	-	793
V-7	do	1,055	Aug. 2, 1949	-	-	-	-	-	-	-	-	91	86	-	-	-	-	-	-	-	-	799
V-7	do	1,055	Feb. 10, 1950	-	-	-	-	-	-	195	0	-	87	-	-	-	-	-	99	-	-	779
V-7	do	1,055	Mar. 24, 1951	-	-	-	-	-	-	196	0	-	86	-	-	-	-	-	97	-	-	778

Table 8.- Analyses of water from wells in the Hueco bolson area, El Paso County, Texas, and Dona Ana and Otero Counties, New Mexico--Continued

Well	Owner	Depth of well (ft.)	Date of collection	Silica (SiO <sub>2</sub> )	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)	Bicarbonate (HCO <sub>3</sub> )	Carbonate (CO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Boron (B)	Dissolved solids	Hardness as CaCO <sub>3</sub>	Percent sodium	Specific conductance (microhmhos at 25°C)	pH	
V-8	U. S. Air Force	780	Mar. 4, 1952	29	-	-	21	7.1	107	174	0	75	68	-	2.5	-	-	429	82	74	665	8.1	
V-8	do	780	Dec. 30, 1952	33	0.02	-	20	7.5	113	174	0	78	69	1.0	3.0	-	-	411	81	75	667	8.0	
aV-9	City of El Paso	909	Oct. 24, 1938	26	-	-	24	9.1	108	188	0	75	51	-	-	-	-	395	98	-	-	-	
V-9	do	909	Nov. 4, 1938	43	.02	-	23	8.6	101	176	4	75	63	.6	3.8	-	-	438	93	68	-	-	
aV-9	do	909	Aug. 11, 1939	22	-	-	21	12	106	176	6	81	65	-	-	-	-	416	101	-	-	-	
V-9	do	909	June 3, 1942	-	-	-	20	7.4	104	186	0	64	58	-	6.0	-	-	351	80	-	-	-	
V-9	do	909	Aug. 3, 1949	42	-	-	18	6.4	108	165	8	69	57	-	5.4	-	-	399	72	77	641	8.4	
V-9	do	909	Nov. 23, 1949	-	-	-	-	-	-	180	0	-	58	-	-	-	-	-	72	-	-	621	8.0
V-9	do	909	June 23, 1950	-	-	-	-	-	-	181	0	56	-	-	-	-	-	-	78	-	-	627	8.0
V-9	do	909	Mar. 27, 1951	45	-	-	20	7.4	116	168	0	74	83	-	2.5	-	-	440	80	76	688	8.2	
V-10	U. S. Air Force	780	Dec. 30, 1952	34	.03	-	19	7.2	102	168	0	68	61	.8	2.8	-	-	378	77	74	610	7.9	
V-11	City of El Paso	416	July 14, 1936	-	-	-	22	8.1	91	178	0	73	42	-	5.6	-	-	329	88	-	-	-	
V-14	U. S. Air Force	501	Dec. 15, 1951	26	-	-	17	6.4	76	c167	-	53	26	.0	5.5	-	-	301	69	71	475	8.3	
V-14	do	501	Mar. 28, 1952	-	-	-	-	-	-	169	0	-	25	-	-	-	-	-	66	-	-	476	7.9
V-14	do	501	Sept. 2, 1952	-	-	-	-	-	-	169	0	-	25	-	-	-	-	-	66	-	-	470	8.1
V-14	do	501	Jan. 7, 1953	-	-	-	-	-	-	169	0	-	25	-	-	-	-	-	66	-	-	470	8.1
V-14	do	501	Feb. 3, 1953	27	-	-	17	6.7	76	170	0	51	26	-	6.8	-	-	304	70	70	472	8.1	
V-14	do	501	Feb. 4, 1954	-	-	-	-	-	-	176	Tr	-	25	-	-	-	-	-	62	-	-	461	8.4
V-15	do	750	Jan. --, 1952	29	-	-	16	4.9	79	135	0	54	50	-	2.5	-	-	329	60	74	511	7.9	
V-15	do	750	Mar. 28, 1952	-	-	-	-	-	-	138	0	-	54	-	-	-	-	-	61	-	-	536	7.8
V-15	do	750	Sept. 2, 1952	-	-	-	-	-	-	133	0	-	58	-	-	-	-	-	65	-	-	542	8.0
aV-17	City of El Paso	608	Jan. 6, 1939	17	-	-	26	8.1	91	60	26	50	72	-	-	-	-	423	98	-	-	-	



Table 8.- Analyses of water from wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--Continued

Well	Owner	Depth of well (ft.)	Date of collection	Silica (SiO <sub>2</sub> )	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)	Bicarbonate (HCO <sub>3</sub> )	Carbonate (CO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Boron (B)	Dissolved solids	Hardness as CaCO <sub>3</sub>	Percent sodium	Specific conductance (micromhos at 25°C)	pH
aV-18	City of El Paso	517	Feb. 23, 1939	31	-	-	44	9.1	139	124	0	82	188	-	-	-	-	528	148	-	-	7.4
aV-18	do	652	Feb. 25, 1939	29	-	-	51	10	216	102	0	74	329	-	-	-	-	756	170	-	-	7.6
aV-18	do	737	Mar. 3, 1939	34	-	-	64	16	364	97	0	102	594	-	-	-	-	1,280	184	-	-	7.5
aV-18	do	877	Mar. 9, 1939	42	-	-	480	78	1,010	62	0	647	2,132	-	-	-	-	5,210	1,520	-	-	7.3
V-19	do	950	Mar. 25, 1943	-	-	-	34	12	117	205	0	90	86	-	6.0	-	-	446	134	-	-	-
V-19	do	950	May 8, 1944	-	-	-	28	10	130	208	0	93	86	-	5.5	-	-	455	111	-	-	-
V-19	do	950	May 22, 1945	-	-	-	27	9.8	127	177	13	92	84	-	4.5	-	-	494	108	-	-	-
V-19	do	950	Mar. 25, 1946	-	-	-	26	9.8	137	192	16	92	85	-	4.7	-	-	538	106	-	-	-
V-19	do	950	June 7, 1948	40	-	-	24	9.5	133	206	0	90	87	-	4.9	-	-	492	99	75	800	-
V-19	do	950	Apr. 21, 1949	40	-	-	24	9.8	134	199	0	103	83	-	5.6	-	-	502	100	74	783	8.1
V-19	do	950	Mar. 24, 1951	-	-	-	-	-	-	198	0	-	80	-	-	-	-	-	96	-	-	7.6
aV-19	do	950	Sept. 4, 1953	-	b	-	26	8.5	-	201	0	90	74	1.2	-	-	-	492	100	-	-	-
aV-21	U. S. Army	*231-240	June 10, 1941	-	-	-	-	-	-	196	0	-	99	-	-	-	-	589	225	-	-	-
aV-21	do	*286-328	June 11, 1941	-	-	-	-	-	-	167	0	-	122	-	-	-	-	553	252	-	-	-
aV-21	do	*342-367	June 12, 1941	-	-	-	-	-	-	143	0	-	101	-	-	-	-	437	238	-	-	-
aV-21	do	*407-426	do	-	-	-	-	-	-	153	0	-	80	-	-	-	-	371	173	-	-	-
aV-21	do	*457-498	June 13, 1941	-	-	-	-	-	-	159	0	-	108	-	-	-	-	483	191	-	-	-
aV-21	do	*510-547	June 14, 1941	-	-	-	-	-	-	164	0	-	89	-	-	-	-	412	178	-	-	-
aV-21	do	*589-603	June 15, 1941	-	-	-	-	-	-	163	0	-	73	-	-	-	-	386	164	-	-	-
aV-21	do	*655-697	June 18, 1941	-	-	-	-	-	-	162	0	-	135	-	-	-	-	654	210	-	-	-
aV-21	do	*710-734	June 20, 1941	-	-	-	-	-	-	153	0	-	163	-	-	-	-	676	212	-	-	-
aV-21	do	*743-775	June --, 1941	-	-	-	-	-	-	151	0	-	151	-	-	-	-	498	191	-	-	-

Table 8.- Analyses of water from wells in the Hueco bolson area, El Paso County, Texas,  
and Doña Ana and Otero Counties, New Mexico--Continued

Well	Owner	Depth of well (ft.)	Date of collection	Silica (SiO <sub>2</sub> )	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)	Bicarbonate (HCO <sub>3</sub> )	Carbonate (CO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Boron (B)	Dissolved solids	Hardness as CaCO <sub>3</sub>	Percent sodium	Specific conductance (micromhos at 25°C)	pH	
V-21	U. S. Army	778	May 14, 1951	33	0.08	-	48	22	100	194	0	92	118	0.9	4.5	-	0.00	528	210	51	879	7.7	
V-21	do	778	May 23, 1952	34	.00	-	48	20	100	191	0	91	115	1.2	4.5	-	-	517	202	52	882	7.7	
V-21	do	778	Apr. 29, 1953	36	.01	-	50	22	102	197	0	100	116	1.1	5.6	-	-	542	216	51	884	7.8	
V-23	do	784	Sept. 17, 1937	-	-	-	43	16	53	176	0	49	62	.5	5.5	-	-	316	173	-	-	-	
V-23	do	784	May 14, 1951	30	.12	-	53	20	73	189	0	72	97	.7	4.5	-	.02	461	214	43	762	7.8	
V-23	do	784	May 23, 1952	32	.03	-	45	16	63	177	0	58	74	1.0	5.0	5.0	-	388	178	44	658	7.9	
V-23	do	784	Apr. 29, 1953	32	.02	-	48	17	68	179	0	65	83	.9	5.4	-	-	422	190	44	688	7.8	
V-24	do	785	July 6, 1932	-	-	-	-	-	-	-	-	-	36	-	-	-	-	352	248	-	-	-	
V-24	do	785	Jan. 5, 1935	-	-	-	-	-	-	173	5	40	38	-	-	-	-	-	147	-	-	-	
V-24	do	785	Apr. 23, 1936	-	-	-	32	13	53	178	0	39	41	-	5.0	-	-	271	133	-	-	-	
V-24	do	785	Oct. 28, 1936	-	-	-	34	13	49	178	0	36	39	-	7.0	-	-	266	138	-	-	-	
V-24	do	785	Apr. 17, 1937	32	.03	-	33	12	51 5.4	178	0	36	40	.8	7.5	-	-	297	132	44	-	-	
V-24	do	785	Sept. 29, 1938	31	-	-	33	14	57	186	0	45	43	-	5.3	-	-	308	140	-	-	-	
V-24	do	785	Aug. 5, 1949	-	-	-	-	-	-	-	-	41	48	-	-	-	-	-	-	-	-	539	
V-24	do	785	Apr. 24, 1951	31	-	-	34	16	61	204	0	41	50	-	5.0	-	-	338	151	47	533	7.5	
V-24	do	785	May 14, 1951	42	.06	-	42	18	41	186	0	48	41	.9	7.5	-	.02	340	179	33	542	7.5	
V-24	do	785	May 23, 1952	33	.03	-	34	13	56	182	0	39	46	.9	4.5	-	-	321	138	47	537	7.6	
V-24	do	785	Apr. 29, 1953	39	.01	-	41	16	52	187	0	48	50	.9	7.5	-	-	346	168	40	564	7.8	
V-25	do	653	May 14, 1951	46	.08	-	41	24	45	237	0	52	28	.5	12	-	.13	356	201	33	573	7.7	
V-25	do	653	Sept. 22, 1951	-	-	-	-	-	-	226	0	-	26	-	-	-	-	-	184	-	-	548	7.8
V-25	do	653	May 23, 1952	42	.02	-	40	20	47	229	0	48	27	.8	7.8	-	-	349	182	36	568	7.6	
V-25	do	653	Apr. 29, 1953	45	.01	-	42	22	45	232	0	50	28	.7	12	-	-	376	196	33	566	7.8	

Table 8.- Analyses of water from wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--Continued

Well	Owner	Depth of well (ft.)	Date of collection	Silica (SiO <sub>2</sub> )	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)	Bicarbonate (HCO <sub>3</sub> )	Carbonate (CO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Boron (B)	Dissolved solids	Hardness as CaCO <sub>3</sub>	Percent sodium	Specific conductance (microhmhos at 25°C)	pH
aV-26	U. S. Army	600	Jan. 6, 1932	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	656	283	-	-	-
aV-27	do	652	July 6, 1932	-	-	-	-	-	-	-	-	-	-	-	.0	-	-	365	279	-	-	-
aV-28	do	657	do	-	-	-	-	-	-	-	-	-	26	-	.0	-	-	408	216	-	-	-
aV-29	do	600	do	-	-	-	-	-	-	-	-	-	-	-	.0	-	-	785	278	-	-	-
V-33	U.S. Geological Survey	*299-339	Feb. 26, 1953	18	0.01	-	22	12	177	262	0	178	58	2.0	.18	-	0.20	636	104	77	976	8.0
V-33	do	736	Apr. 5, 1953	34	.05	-	26	10	71	191	0	28	56	.5	4.2	-	.10	330	106	58	545	8.1
V-34	Texas & New Orleans Railway Co.	869	May 6, 1937	-	-	-	107	47	90	228	0	56	288	-	5.5	-	-	706	460	-	-	-
V-34	do	869	Sept. 16, 1942	-	-	-	143	63	105	178	0	55	452	-	5.0	-	-	911	616	-	-	-
V-34	do	869	Feb. 10, 1950	34	-	-	332	143	159	155	0	115	1,070	-	7.5	-	-	1,940	1,420	20	3,660	7.3
V-34	do	869	Mar. 22, 1951	32	-	-	352	148	170	155	0	125	1,130	-	5.5	-	-	2,040	1,490	20	3,820	7.2
V-35	do	860	Mar. 26, 1943	-	-	-	144	71	83	196	0	64	425	-	6.3	-	-	890	651	-	-	-
V-35	do	860	May 23, 1945	-	-	-	240	124	95	152	14	95	755	-	5.4	-	-	1,400	1,110	-	-	-
V-35	do	860	Mar. 26, 1946	-	-	-	260	139	95	141	13	99	840	-	4.0	-	-	1,520	1,220	-	-	-
V-35	do	860	Apr. 28, 1947	-	-	-	-	-	-	174	--	-	1,020	-	-	-	-	-	1,350	-	3,420	-
V-37	do	864	Jan. 5, 1935	-	-	-	-	-	-	185	7	48	202	-	-	-	-	-	218	-	-	-
V-37	do	864	Apr. 23, 1936	-	-	-	88	39	73	194	0	48	230	-	6.3	-	-	580	380	-	-	-
V-37	do	864	Oct. 28, 1936	-	-	-	100	49	72	188	0	48	282	-	7.3	-	-	651	451	-	-	-
V-37	do	864	Nov. 16, 1939	-	-	-	108	55	71	182	0	55	312	-	3.2	-	-	737	496	-	-	-
V-37	do	864	June 11, 1940	-	-	-	124	64	66	200	0	72	335	-	4.4	-	-	764	572	-	-	-
V-37	do	864	Nov. 29, 1940	-	-	-	112	55	86	200	0	58	328	-	5.6	-	-	743	506	-	-	-
V-37	do	864	June 17, 1941	-	-	-	136	67	91	178	0	68	420	.3	4.0	-	-	875	615	-	-	-
V-37	do	864	June 2, 1942	-	-	-	161	86	100	197	0	76	515	-	7.5	-	-	1,040	756	-	-	-

Table 8.- Analyses of water from wells in the Hueco bolson area, El Paso County, Texas, and Dona Ana and Otero Counties, New Mexico--Continued

Well	Owner	Depth of well (ft.)	Date of collection	Silica (SiO <sub>2</sub> )	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)	Bicarbonate (HCO <sub>3</sub> )	Carbonate (CO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Boron (B)	Dissolved solids	Hardness as CaCO <sub>3</sub>	Percent sodium	Specific conductance (microhmhos at 25°C)	pH	
V-37	Texas & New Orleans Railway Co.	864	Sept. 15, 1942	-	-	-	167	91	103	192	0	77	548	-	5.0	-	-	1,090	791	-	-	-	
V-37	do	864	Feb. 17, 1944	-	-	-	208	109	90	149	16	85	650	-	12	-	-	1,240	967	-	-	-	
V-37	do	864	May 9, 1944	-	-	-	196	111	111	148	0	91	685	-	5.5	-	-	1,270	946	-	-	-	
V-38	do	852	Sept. 18, 1941	-	-	-	136	57	80	150	0	51	402	-	5.2	-	-	805	574	-	-	-	
V-38	do	852	June 2, 1942	-	-	-	125	53	96	166	0	50	388	-	5.6	-	-	799	530	-	-	-	
V-38	do	852	June 9, 1948	35	-	-	293	130	148	154	0	102	958	-	4.3	-	-	1,750	1,270	20	3,360	-	
V-38	do	852	Apr. 21, 1949	33	-	-	280	123	154	160	0	103	920	-	5.9	-	-	1,700	1,200	22	3,210	7.4	
V-38	do	852	Mar. 22, 1951	32	-	-	352	148	170	155	0	125	1,130	-	5.5	-	-	2,040	1,490	20	3,820	7.2	
V-38	do	852	Sept. 22, 1951	32	-	-	328	170	244	154	0	135	1,260	-	5.0	-	-	2,250	1,520	26	4,210	7.3	
V-38	do	852	Mar. 25, 1952	32	-	-	398	179	187	150	0	141	1,320	-	4.0	-	-	2,340	1,730	19	4,370	7.3	
V-38	do	852	May 26, 1952	-	-	-	393	172	195	150	0	143	1,300	-	8.0	-	-	2,360	1,690	20	4,390	7.7	
V-38	do	852	May 19, 1953	36	-	-	426	188	224	150	0	159	1,440	0.2	5.5	-	-	2,550	1,840	21	4,770	7.3	
aV-39	City of El Paso	530	Jan. 7, 1935	-	-	-	-	-	-	214	0	80	74	-	-	-	-	-	117	-	-	-	-
aV-39	do	530	Apr. 8, 1935	20	-	-	-	-	-	-	-	-	80	-	-	-	-	507	274	-	-	-	-
aV-39	do	530	Mar. 13, 1936	-	-	-	25	9.9	135	228	-	100	68	-	-	-	-	460	103	-	-	-	-
aV-39	do	530	Oct. 28, 1936	-	-	-	24	9.4	138	236	-	101	66	-	-	-	-	463	99	-	-	-	-
aV-39	do	530	June 3, 1938	26	-	-	27	3.4	145	223	-	105	74	-	-	-	-	475	81	-	-	-	-
V-39	do	530	Sept. 28, 1938	62	-	-	24	11	136	224	0	109	70	-	5.0	-	-	534	105	-	-	-	-
V-39	do	530	Nov. 16, 1939	-	-	-	-	-	143	230	0	105	67	-	6.7	-	-	455	87	-	-	-	-
aV-39	do	530	Apr. 8, 1940	51	-	-	24	9.0	140	219	-	99	76	-	-	-	-	525	97	-	-	-	-
V-39	do	530	June 12, 1940	-	-	-	26	10	152	240	0	120	78	-	6.8	-	-	511	106	-	-	-	-

Table 8.- Analyses of water from wells in the Hueco bolson area, El Paso County, Texas, and Dona Ana and Otero Counties, New Mexico--Continued

Well	Owner	Depth of well (ft.)	Date of collection	Silica (SiO <sub>2</sub> )	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)	Bicarbonate (HCO <sub>3</sub> )	Carbonate (CO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Boron (B)	Dissolved solids	Hardness as CaCO <sub>3</sub>	Percent sodium	Specific conductance (micromhos at 25°C)	pH
V-39	City of El Paso	530	Nov. 28, 1940	-	-	-	24	8.8	141	240	0	105	64	-	9.0	-	-	470	96	-	-	-
V-39	do	530	June 16, 1941	57	-	-	25	9.3	137	233	0	99	68	1.0	6.8	-	-	531	100	-	-	-
V-39	do	530	Sept. 18, 1941	-	-	-	23	10	137	228	0	100	71	-	6.0	-	-	459	98	-	-	-
V-39	do	530	June 3, 1942	-	-	-	24	9.9	135	230	0	98	70	-	7.5	-	-	458	100	-	-	-
V-39	do	530	Sept. 16, 1942	-	-	-	24	8.7	130	216	0	97	69	-	4.5	-	-	440	96	-	-	-
V-39	do	530	Mar. 25, 1943	-	-	-	26	9.9	131	234	0	99	64	-	6.3	-	-	452	106	-	-	-
V-39	do	530	Mar. 27, 1946	-	-	-	25	9.1	139	210	11	100	73	-	5.5	-	-	530	100	-	-	-
V-39	do	530	Apr. 21, 1949	56	-	-	23	9.1	140	228	0	102	71	-	7.2	-	-	536	95	76	815	8.2
V-39	do	530	Aug. 7, 1949	-	-	-	-	-	-	-	-	106	72	-	-	-	-	-	-	-	-	827
V-40	do	715	May 26, 1952	50	-	-	20	8.0	110	c204	-	75	48	1.2	8.3	-	-	440	83	74	671	8.5
V-41	do	766	do	39	-	-	18	7.3	115	188	0	77	61	1.2	3.0	-	-	422	75	77	680	7.9
V-41	do	766	Sept. 4, 1953	-	b	-	18	8.2	-	189	0	84	56	1.0	-	-	-	433	78	-	-	-
V-42	do	*289-293	June 1, 1936	-	-	-	47	18	165	160	0	63	250	--	.5	-	-	622	191	-	-	-
V-42	do	*408-441	do	-	-	-	42	17	195	166	0	75	273	-	.2	-	-	684	175	-	-	-
V-45	do	862	Aug. 30, 1926	31	-	-	-	-	-	-	-	-	196	-	-	-	-	588	133	-	-	-
V-45	do	862	Aug. 30, 1930	14	-	-	-	-	-	-	-	-	220	-	-	-	-	659	157	-	-	-
V-45	do	862	Sept. 3, 1931	24	-	-	-	-	-	-	-	-	189	-	-	-	-	648	151	-	-	-
V-45	do	862	Aug. 19, 1932	22	-	-	-	-	-	-	-	-	246	-	-	-	-	694	162	-	-	-
V-45	do	862	Aug. 30, 1933	-	-	-	-	-	-	-	-	-	284	-	-	-	-	-	-	-	-	-
V-45	do	862	Aug. 18, 1934	-	-	-	-	-	-	-	-	-	397	-	-	-	-	984	-	-	-	-
V-45	do	862	June 29, 1936	-	-	-	43	18	120	184	0	72	152	-	3.0	-	-	499	181	-	-	-
V-45	do	862	Aug. 15, 1936	36	-	-	-	-	-	-	-	-	-	-	-	-	-	699	231	-	-	-
V-45	do	862	Oct. 28, 1936	-	-	-	50	17	168	162	0	66	253	-	1.2	-	-	635	195	-	-	-

Table 8.- Analyses of water from wells in the Hueco bolson area, El Paso County, Texas, and Dona Ana and Otero Counties, New Mexico--Continued

Well	Owner	Depth of well (ft.)	Date of collection	Silica (SiO <sub>2</sub> )	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)	Bicarbonate (HCO <sub>3</sub> )	Carbonate (CO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Boron (B)	Dissolved solids	Hardness as CaCO <sub>3</sub>	Percent sodium	Specific conductance (microhmhos at 25°C)	pH
V-45	City of El Paso	862	May 6, 1937	-	-	-	49	19	128	174	0	66	188	-	3.3	-	-	539	200	-	-	-
V-45	do	862	June 25, 1937	33	0.12	-	48	16	166	158	0	65	252	1.0	1.7	-	-	672	186	64	-	-
V-45	do	862	Oct. 29, 1937	0	-	-	50	18	161	162	0	66	246	-	1.4	-	-	-	199	64	-	-
V-45	do	862	Mar. 11, 1938	33	-	-	-	-	-	-	-	-	252	-	-	-	-	720	282	-	-	-
V-45	do	862	June 13, 1938	24	-	-	-	-	-	-	-	-	242	-	-	-	-	684	189	-	-	-
V-45	do	862	Sept. 23, 1938	32	-	-	48	18	174	162	0	71	258	-	1.2	-	-	691	194	-	-	-
V-45	do	862	May 1, 1939	25	-	-	-	-	-	-	-	-	258	-	-	-	-	723	186	-	-	-
V-45	do	862	June 10, 1940	-	-	-	54	19	168	168	0	72	258	-	1.8	-	-	656	213	-	-	-
V-45	do	862	June 16, 1941	-	-	-	53	17	164	163	0	65	252	.9	1.5	-	-	634	202	-	-	-
V-45	do	862	June 7, 1942	-	-	-	57	21	172	162	0	70	280	-	1.2	-	-	681	229	-	-	-
V-45	do	862	May 22, 1945	-	-	-	60	20	175	146	6	71	289	-	2.2	-	-	780	232	-	-	-
V-45	do	862	Mar. 25, 1946	-	-	-	55	19	180	145	12	67	282	-	1.5	-	-	702	216	-	-	-
V-45	do	862	June 7, 1948	36	-	-	42	17	172	170	0	82	228	-	1.8	-	-	689	175	68	-	-
V-45	do	862	Apr. 22, 1949	36	-	-	56	21	172	161	0	76	274	-	2.2	-	-	743	226	62	-	8.0
V-45	do	862	Aug. 2, 1949	-	-	-	-	-	-	-	-	66	279	-	-	-	-	-	-	-	-	-
V-45	do	862	Feb. 15, 1950	-	-	-	-	-	-	159	-	-	288	-	-	-	-	-	250	-	-	8.0
V-45	do	862	June 22, 1950	-	-	-	-	-	-	160	0	-	292	-	-	-	-	-	242	-	-	8.0
V-45	do	862	Apr. 15, 1951	-	-	-	-	-	-	-	-	76	290	-	-	-	-	-	-	-	-	-
V-45	do	862	May 2, 1951	-	-	-	-	-	-	-	-	74	290	-	-	-	-	-	-	-	-	-
V-45	do	862	Sept. 19, 1951	-	-	-	-	-	-	162	0	-	298	-	-	-	-	-	260	-	-	7.9
V-45	do	862	Mar. 19, 1952	-	-	-	-	-	-	150	0	73	288	-	-	-	-	-	185	-	-	7.9
V-45	do	862	Oct. 3, 1952	-	-	-	-	-	-	160	0	-	308	-	-	-	-	-	259	-	-	7.9

Table 8.- Analyses of water from wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--Continued

Well	Owner	Depth of well (ft.)	Date of collection	Silica (SiO <sub>2</sub> )	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)	Bicarbonate (HCO <sub>3</sub> )	Carbonate (CO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Boron (B)	Dissolved solids	Hardness as CaCO <sub>3</sub>	Percent sodium	Specific conductance (microhms at 25°C)	pH	
V-45	City of El Paso	862	June 1953	-	-	-	-	-	-	160	0	-	301	-	-	-	-	-	-	255	-	1,360	8.1
aV-45	do	862	Aug. 26, 1953	-	0.4	-	66	23	-	158	0	70	301	0.2	-	-	-	-	884	260	-	-	-
V-47	do	860	Aug. 16, 1935	-	-	-	-	-	-	128	6	-	236	-	-	-	-	-	-	170	-	-	-
V-47	do	860	Sept. 11, 1935	-	-	-	46	16	157	167	0	51	235	-	1.7	-	-	-	589	181	-	589	-
V-47	do	860	Apr. 22, 1936	-	-	-	-	-	-	164	-	-	235	-	-	-	-	-	-	225	-	-	-
V-47	do	860	May 6, 1937	-	-	-	51	19	158	166	0	57	249	-	2.5	-	-	618	205	-	-	-	-
V-47	do	860	June 25, 1937	32	.24	-	50	17	158 8.0	166	0	51	250	.9	5.0	-	-	646	195	63	-	-	-
V-47	do	860	Sept. 11, 1939	-	-	-	64	23	175	174	0	58	305	-	2.6	-	-	757	254	-	-	-	-
V-49	do	882	Jan. 5, 1935	-	-	-	-	-	-	153	0	60	256	-	-	-	-	-	-	204	-	-	-
V-49	do	882	Sept. 11, 1935	-	-	-	45	15	170	164	0	54	250	-	1.1	-	-	616	174	-	-	-	-
V-49	do	882	Apr. 22, 1936	-	-	-	-	-	-	160	-	-	249	-	-	-	-	-	-	210	-	-	-
V-49	do	882	Oct. 28, 1936	-	-	-	42	14	166	166	0	53	235	-	.8	-	-	593	162	-	-	-	-
V-49	do	882	Nov. 4, 1938	31	.02	-	51	16	169 8.6	158	0	56	274	.7	1.6	-	-	669	193	64	-	-	-
V-49	do	882	June 10, 1940	-	-	-	52	17	185	162	0	70	280	-	1.0	-	-	685	200	-	-	-	-
V-49	do	882	June 16, 1941	-	-	-	52	17	178	162	0	56	278	.7	.8	-	-	662	200	-	-	-	-
V-49	do	882	June 2, 1942	-	-	-	52	17	187	157	0	60	295	-	.5	-	-	689	200	-	-	-	-
V-49	do	882	Sept. 14, 1942	-	-	-	52	17	182	161	0	58	284	-	2.5	-	-	675	200	-	-	-	-
V-49	do	882	May 22, 1945	-	-	-	56	16	217	127	9	63	350	-	.5	-	-	836	206	-	-	-	-
V-49	do	882	Apr. 22, 1949	31	-	-	42	19	213	136	0	144	282	-	3.2	-	-	813	183	72	-	1,410	8.2
V-49	do	882	Aug. 2, 1949	28	-	-	39	18	184	169	0	57	266	-	.0	-	-	684	172	70	-	1,240	8.0
V-49	do	882	Feb. 9, 1950	-	-	-	-	-	-	159	0	-	268	-	-	-	-	-	-	-	-	1,240	7.9
V-49	do	882	May 31, 1950	34	-	-	49	18	173	160	0	58	268	.7	1.0	-	-	688	196	66	-	1,250	7.6

Table 8.- Analyses of water from wells in the Hueco bolson area, El Paso County, Texas,  
and Doña Ana and Otero Counties, New Mexico--Continued

Well	Owner	Depth of well (ft.)	Date of collection	Silica (SiO <sub>2</sub> )	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)	Bicarbonate (HCO <sub>3</sub> )	Carbonate (CO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Boron (B)	Dissolved solids	Hardness as CaCO <sub>3</sub>	Percent sodium	Specific conductance (micromhos at 25°C)	pH
V-49	City of El Paso	882	June 23, 1950	-	-	-	-	-	-	160	0	-	260	-	-	-	-	-	180	-	1,210	7.9
V-49	do	882	Oct. 4, 1950	-	-	-	-	-	-	160	-	-	262	-	-	-	-	-	192	-	1,230	7.9
V-49	do	882	Sept. 18, 1951	-	-	-	-	-	-	161	0	56	278	-	-	-	-	-	200	-	1,270	8.2
V-49	do	882	Sept. 30, 1952	32	-	-	48	17	187	159	0	56	286	0.6	3	-	-	736	190	68	1,280	8.1
aV-49	do	882	Aug. 27, 1953	-	b	-	44	16	-	155	0	73	270	.7	-	-	-	732	174	-	-	-
aV-50	do	59	Nov. 14, 1938	39	-	-	129	30	254	352	0	378	223	-	-	-	-	1,190	445	-	-	-
aV-50	do	127	Nov. 16, 1938	27	-	-	18	4.5	242	273	20	155	115	-	-	-	-	677	63	-	-	-
aV-50	do	200	Nov. 17, 1938	25	-	-	16	7.5	197	192	11	104	153	-	-	-	-	583	71	-	-	-
V-50	do	257	Nov. 18, 1938	22	-	-	31	12	219	225	12	128	201	-	-	-	-	736	127	-	-	-
aV-50	do	337	Nov. 22, 1938	21	-	-	42	17	100	164	8	70	130	-	-	-	-	448	175	-	-	-
aV-50	do	840	Nov. 30, 1938	30	-	-	51	11	315	108	0	101	471	-	-	-	-	1,000	173	-	-	-
V-50	do	643	June 16, 1941	32	-	-	43	15	149	170	0	62	203	.4	.4	-	-	601	169	-	-	-
V-50	do	643	June 2, 1942	-	-	-	40	15	156	180	0	68	200	-	.2	-	-	568	162	-	-	-
V-50	do	643	Apr. 22, 1949	29	-	-	55	21	146	159	0	89	225	-	.2	-	-	675	224	59	1,160	7.8
V-50	do	643	Apr. 2, 1949	28	-	-	50	24	123	169	0	70	197	-	1.8	-	-	590	224	54	1,060	7.9
V-50	do	643	Feb. 28, 1950	-	-	-	-	-	-	159	0	-	230	-	-	-	-	-	229	-	1,140	8.0
V-50	do	643	June 22, 1950	-	-	-	-	-	-	166	0	-	201	-	-	-	-	-	153	-	1,030	8.0
V-50	do	643	May 3, 1951	28	-	-	56	23	146	162	0	90	230	-	.5	-	-	719	234	58	1,170	8.1
V-50	do	643	Oct. 17, 1952	-	-	-	-	-	-	160	0	-	220	-	-	-	-	-	189	-	1,100	7.9
V-50	do	643	May 19, 1953	-	-	-	-	-	-	163	0	-	208	-	-	-	-	-	181	-	1,090	7.9
V-51	Harry Mitchell Brewing Co.	353	Jan. 5, 1935	-	-	-	-	-	-	176	-	68	158	-	-	-	-	-	189	-	-	-
V-51	do	353	Aug. 27, 1935	-	-	-	-	-	-	138	6	-	175	-	-	-	-	-	165	-	-	-



Table 8.- Analyses of water from wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--Continued

Well	Owner	Depth of well (ft.)	Date of collection	Silica (SiO <sub>2</sub> )	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)	Bicarbonate (HCO <sub>3</sub> )	Carbonylate (CO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Boron (B)	Dissolved solids	Hardness as CaCO <sub>3</sub>	Percent sodium	Specific conductance (microhmhos at 25°C)	pH	
V-51	Harry Mitchell Brewing Co	353	Apr. 22, 1936	-	-	-	47	18	129	168	0	71	185	-	0.0	-	-	533	191	-	-	-	-
V-51	do	353	Oct. 28, 1936	-	-	-	50	19	136	180	0	70	198	-	.0	-	-	562	203	-	-	-	-
V-51	do	353	Mar. 19, 1937	29	0.06	-	49	19	131-6.6	167	0	73	200	0.6	.1	-	-	592	200	58	-	-	-
V-51	do	353	Oct. 29, 1937	-	-	-	48	20	134	170	0	64	203	-	.2	-	-	-	202	59	-	-	-
V-51	do	353	Oct. 3, 1938	27	-	-	48	19	142	170	0	79	202	-	.0	-	-	605	198	-	-	-	-
V-51	do	353	Nov. 18, 1939	-	-	-	50	19	140	166	0	73	209	-	.0	-	-	613	203	-	-	-	-
V-51	do	353	June 11, 1940	-	-	-	49	20	152	172	0	80	220	-	.0	-	-	606	204	-	-	-	-
V-51	do	353	Nov. 28, 1940	-	-	-	52	19	146	174	0	77	215	-	.0	-	-	595	208	-	-	-	-
V-51	do	353	June 16, 1941	-	-	-	53	19	144	170	0	73	218	.5	.2	-	-	591	210	-	-	-	-
V-51	do	353	Sept. 18, 1941	-	-	-	50	20	149	170	0	74	223	-	.0	-	-	600	207	-	-	-	-
V-51	do	353	June 2, 1942	-	-	-	52	19	159	172	0	78	235	-	.0	-	-	628	208	-	-	-	-
V-51	do	353	Sept. 15, 1942	-	-	-	54	20	154	172	0	76	235	-	1.0	-	-	625	217	-	-	-	-
V-51	do	353	Mar. 27, 1943	-	-	-	59	21	163	170	0	79	260	-	.5	-	-	666	233	-	-	-	-
V-51	do	353	Feb. 11, 1944	-	-	-	60	22	157	170	0	78	256	-	.2	-	-	657	240	-	-	-	-
V-51	do	353	May 8, 1944	-	-	-	60	24	157	152	8	80	260	-	1.0	-	-	665	248	-	-	-	-
V-51	do	353	July 27, 1949	28	-	-	65	31	186	167	0	88	330	-	.0	-	-	880	290	58	-	1,470	8.2
V-51	do	353	Feb. 9, 1950	28	-	-	71	27	190	169	0	93	329	-	1.0	-	-	878	288	59	-	1,500	7.8
V-51	do	353	Apr. 24, 1951	29	-	-	75	30	188	172	0	94	340	-	1.0	-	-	934	310	57	-	1,530	8.1
V-51	do	353	Sept. 24, 1951	-	-	-	-	-	-	169	0	-	330	-	-	-	-	-	295	-	-	1,510	7.9
V-51	do	353	May 27, 1952	-	-	-	-	-	-	168	0	89	340	-	-	-	-	-	284	-	-	1,520	7.6
V-51	do	353	June 3, 1953	-	-	-	-	-	-	167	0	-	348	-	-	-	-	-	298	-	-	1,540	7.7
V-52	do	354	Apr. 24, 1951	28	-	-	47	20	136	171	0	80	193	-	.5	-	-	601	200	60	-	1,040	8.1

Table 8.- Analyses of water from wells in the Hueco bolson area, El Paso County, Texas, and Dona Ana and Otero Counties, New Mexico--Continued

Well	Owner	Depth of well (ft.)	Date of collection	Silica (SiO <sub>2</sub> )	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)	Bicarbonate (HCO <sub>3</sub> )	Carbonate (CO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Boron (B)	Dissolved solids	Hardness as CaCO <sub>3</sub>	Percent sodium	Specific conductance (microhmhos at 25°C)	pH	
V-53	City of El Paso	802	Aug. 19, 1935	-	-	-	-	-	-	146	13	-	138	-	-	-	-	-	-	72	-	-	-
V-53	do	802	Sept. 16, 1935	-	-	-	21	8.0	156	171	6	76	139	-	0.1	-	-	-	490	85	-	-	-
V-53	do	802	Mar. 17, 1937	31	0.06	-	30	10	178	174	0	78	202	0.8	.1	-	-	-	611	116	75	-	-
V-53	do	802	Sept. 24, 1938	35	-	-	20	8.1	156	186	0	83	130	-	.0	-	-	-	516	83	-	-	-
V-53	do	802	June 10, 1940	-	-	-	22	8.0	158	188	0	90	130	-	.0	-	-	-	501	88	-	-	-
V-53	do	802	Nov. 28, 1940	-	-	-	20	7.7	155	180	4	80	129	-	.0	-	-	-	484	82	-	-	-
V-53	do	802	June 16, 1941	-	-	-	23	6.9	156	176	6	74	136	.9	.0	-	-	-	489	86	-	-	-
V-53	do	802	Sept. 18, 1941	-	-	-	18	7.3	158	186	0	74	134	-	.0	-	-	-	483	75	-	-	-
V-53	do	802	June 2, 1942	-	-	-	20	7.4	152	184	0	66	135	-	.0	-	-	-	471	80	-	-	-
V-53	do	802	Mar. 23, 1943	-	-	-	25	7.7	153	186	0	76	137	-	.5	-	-	-	491	94	-	-	-
V-53	do	802	Feb. 11, 1944	-	-	-	22	7.0	155	157	14	75	136	-	.2	-	-	-	486	84	-	-	-
V-53	do	802	May 8, 1944	-	-	-	20	6.7	158	172	8	76	132	-	1.0	-	-	-	486	78	-	-	-
V-53	do	802	May 22, 1945	-	-	-	23	7.3	153	157	12	76	136	-	.0	-	-	-	526	88	-	-	-
V-53	do	802	Mar. 25, 1946	-	-	-	22	7.0	168	157	24	77	142	-	.0	-	-	-	544	84	-	-	-
V-53	do	802	Apr. 22, 1949	32	-	-	19	7.1	76	181	0	77	139	-	.0	-	-	-	524	76	82	901	8.1
V-53	do	802	Aug. 3, 1949	-	-	-	-	-	-	-	-	77	137	-	-	-	-	-	-	-	-	901	-
V-53	do	802	Feb. 9, 1950	-	-	-	-	-	-	181	0	-	133	-	-	-	-	-	-	74	-	895	8.1
V-53	do	802	Aug. --, 1950	-	-	-	-	-	-	181	0	-	132	-	-	-	-	-	-	74	-	880	8.3
V-53	do	802	Mar. 22, 1951	-	-	-	-	-	-	182	0	-	131	-	-	-	-	-	-	76	-	864	7.7
V-53	do	802	Oct. 16, 1952	-	-	-	-	-	-	181	0	-	130	-	-	-	-	-	-	74	-	872	8.1
V-53	do	802	June 3, 1953	-	-	-	-	-	-	184	0	-	134	-	-	-	-	-	-	74	-	884	8.2

Table 8 - Analyses of water from wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--Continued

Well	Owner	Depth of well (ft.)	Date of collection	Silica (SiO <sub>2</sub> )	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)	Bicarbonate (HCO <sub>3</sub> )	Carbonate (CO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Boron (B)	Dissolved solids	Hardness as CaCO <sub>3</sub>	Percent sodium	Specific conductance (micromhos at 25°C)	pH	
aV-54	City of El Paso	*90-100	Feb. 25, 1937	35	-	-	147	21	182	290	-	350	175	-	-	-	-	1,060	454	-	-	-	-
aV-54	do	*109-142	Feb. 27, 1937	27	-	-	40	7.7	204	218	-	125	189	-	-	-	-	709	132	-	-	-	-
aV-54	do	*207-223	Mar. 2, 1937	28	-	-	30	14	185	203	-	116	176	-	-	-	-	656	132	-	-	-	-
aV-54	do	*290-322	Mar. 6, 1937	20	-	-	15	4.9	211	217	-	86	176	-	-	-	-	625	58	-	-	-	-
aV-54	do	*397-418	Mar. 10, 1937	15	-	-	50	8.3	176	194	-	53	233	-	-	-	-	637	159	-	-	-	-
aV-54	do	*250-689	Apr. 20, 1937	14	-	-	-	-	-	-	-	-	-	-	-	-	-	475	86	-	-	-	-
V-54	do	703	do	26	0.12	-	23	8.6	120 6.6	172	0	69	108	-	0.0	-	-	450	93	73	-	-	-
V-54	do	703	Sept. 24, 1938	29	.02	-	22	7.5	124 4.8	161	5	63	112	0.0	.2	-	-	423	86	75	-	-	-
V-54	do	703	Nov. 16, 1939	-	-	-	-	-	138	172	0	66	118	.0	-	-	-	425	76	-	-	-	-
V-54	do	703	June 10, 1940	-	-	-	-	-	138	176	0	68	121	-	.0	-	-	435	86	-	-	-	-
V-54	do	703	June 16, 1941	-	-	-	24	8.1	135	161	6	68	122	.3	.3	-	-	443	94	-	-	-	-
V-54	do	703	Sept. 18, 1941	-	-	-	24	9.7	141	170	0	73	136	-	.0	-	-	467	100	-	-	-	-
V-54	do	703	June 2, 1942	-	-	-	22	8.5	134	172	0	69	120	-	.0	-	-	438	90	-	-	-	-
V-54	do	703	Sept. 15, 1942	-	-	-	23	7.7	141	161	16	67	118	-	.0	-	-	452	89	-	-	-	-
V-54	do	703	Mar. 23, 1943	-	-	-	26	8.1	133	173	0	69	123	-	.5	-	-	445	98	-	-	-	-
V-54	do	703	Feb. 11, 1944	-	-	-	26	8.0	135	152	9	69	128	-	.2	-	-	450	98	-	-	-	-
V-54	do	703	May 22, 1945	-	-	-	27	8.6	135	146	12	70	131	-	.0	-	-	499	103	-	-	-	-
V-54	do	703	Mar. 25, 1946	-	-	-	25	8.7	152	148	22	71	139	-	.0	-	-	519	98	-	-	-	-
V-54	do	703	Apr. 26, 1947	-	-	-	-	-	-	178	0	-	156	-	-	-	-	-	74	-	-	948	-
V-54	do	703	July 27, 1949	29	-	-	20	7.2	147	168	0	69	134	-	.0	-	-	489	80	80	-	859	8.2
V-54	do	703	Aug. 2, 1949	-	-	-	-	-	-	168	0	70	133	-	-	-	-	-	-	-	-	855	8.2
V-54	do	703	Feb. 9, 1950	-	-	-	-	-	-	168	0	-	135	-	-	-	-	-	95	-	-	868	8.1

Table 8.- Analyses of water from wells in the Hueco bolson area, El Paso County, Texas,  
and Doña Ana and Otero Counties, New Mexico--Continued

Well	Owner	Depth of well (ft.)	Date of collection	Silica (SiO <sub>2</sub> )	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)	Bicarbonate (HCO <sub>3</sub> )	Carbonate (CO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Boron (B)	Dissolved solids	Hardness as CaCO <sub>3</sub>	Percent sodium	Specific conductance (micromhos at 25°C)	pH
V-54	City of El Paso	703	June 22, 1950	-	-	-	-	-	-	168	0	-	137	-	-	-	-	-	92	-	858	8.2
V-54	do	703	Mar. 23, 1951	-	-	-	-	-	-	167	0	-	139	-	-	-	-	-	99	-	855	7.6
V-54	do	703	June 13, 1951	34	0.00	-	26	10	138 1.6	170	0	70	139	-	0.0	-	-	503	106	74	867	7.9
V-54	do	703	Oct. 15, 1952	-	-	-	-	-	-	167	0	-	149	-	-	-	-	-	101	-	911	7.8
V-54	do	703	June 3, 1953	-	-	-	-	-	-	165	0	-	152	-	-	-	-	-	105	-	934	8.0
V-55	do	425	Jan. 5, 1935	-	-	-	-	-	-	177	0	112	94	-	-	-	-	-	260	-	-	-
V-55	do	425	Sept. 11, 1935	-	-	-	84	17	75	180	0	122	119	-	.3	-	-	506	280	-	-	-
V-55	do	425	Feb. 28, 1936	-	-	-	85	19	66	181	0	130	106	-	.1	-	-	496	290	-	-	-
V-55	do	425	Apr. 22, 1936	-	-	-	-	-	-	180	0	-	120	-	-	-	-	-	330	-	-	-
V-55	do	425	Oct. 28, 1936	-	-	-	95	22	74	186	0	133	140	-	.0	-	-	556	328	-	-	-
V-55	do	425	June 25, 1937	28	.78	--	105	21	91 5.4	191	0	154	165	0.8	.1	-	-	706	349	36	-	-
V-55	do	425	Aug. 15, 1938	38	.03	-	115	23	93 7.2	199	0	172	176	.0	.3	-	-	722	382	34	-	-
V-55	do	425	Aug. 23, 1939	-	-	-	133	28	88	216	0	236	153	-	.0	-	-	792	447	-	-	-
aV-59	do	134	Oct. 6, 1938	29	-	-	301	56	192	255	0	498	473	-	-	-	-	750	987	-	-	-
aV-59	do	261	Oct. 13, 1938	23	-	-	42	16	66	171	0	76	67	-	-	-	-	375	171	-	-	-
aV-59	do	350	Oct. 15, 1938	23	-	-	39	12	66	166	0	68	59	-	-	-	-	318	146	-	-	-
aV-59	do	614	Oct. 19, 1938	37	-	-	17	5.3	133	175	0	86	85	-	-	-	-	424	64	-	-	-
aV-59	do	720	Feb. 1, 1939	16	-	-	34	15	74	88	0	62	69	-	-	-	-	426	143	-	-	-
V-59	do	720	June 10, 1940	-	-	-	37	11	71	178	0	50	66	-	.0	-	-	-	138	-	-	-
V-59	do	720	Dec. 5, 1940	31	.03	-	35	11	86	175	2	81	63	-	.0	-	-	397	133	-	-	-
V-59	do	720	June 16, 1941	26	-	-	36	11	89	178	0	81	68	.6	.0	-	-	397	135	-	-	-
V-59	do	720	Sept. 18, 1941	-	-	-	35	12	89	183	0	80	68	-	.0	-	-	374	137	-	-	-

Table 8.- Analyses of water from wells in the Hueco bolson area, El Paso County, Texas,  
and Doña Ana and Otero Counties, New Mexico--Continued

Well	Owner	Depth of well (ft.)	Date of collection	Silica (SiO <sub>2</sub> )	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)	Bicarbonate (HCO <sub>3</sub> )	Carbonate (CO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Boron (B)	Dissolved solids	Hardness as CaCO <sub>3</sub>	Percent sodium	Specific conductance (micromhos at 25°C)	pH	
V-59	City of El Paso	720	June 2, 1942	--	-	-	36	11	94	188	0	80	72	-	0.0	-	-	386	135	-	-	-	
V-59	do	720	Sept. 15, 1942	--	-	-	36	11	94	160	11	81	75	-	.0	-	-	387	135	-	-	-	
V-59	do	720	Mar. 24, 1943	--	-	-	40	12	93	186	0	85	79	-	.0	-	-	401	150	-	-	-	
V-59	do	720	May 22, 1945	--	-	-	43	12	94	160	12	87	85	-	.0	-	-	457	157	-	-	-	
V-59	do	720	Apr. 26, 1947	--	-	-	-	-	-	188	0	-	94	-	-	-	-	-	148	-	-	762	-
V-59	do	720	Apr. 22, 1949	30	-	-	67	20	88	197	0	123	107	-	.0	-	-	552	249	43	-	896	7.8
V-59	do	720	Feb. 9, 1950	-	-	-	-	-	-	187	0	-	93	-	-	-	-	-	169	-	-	798	8.1
V-59	do	720	June 23, 1950	-	-	-	-	-	-	184	0	-	92	-	-	-	-	-	166	-	-	790	8.0
V-59	do	720	Mar. 24, 1951	-	-	-	-	-	-	184	0	-	95	-	-	-	-	-	184	-	-	789	7.5
V-59	do	720	Mar. 24, 1952	-	-	-	-	-	-	196	0	-	102	-	-	-	-	-	241	-	-	876	7.7
V-60	do	480	Jan. 5, 1935	-	-	-	-	-	-	273	-	200	98	-	-	-	-	-	444	-	-	-	-
V-60	do	480	Sept. 16, 1935	-	-	-	124	23	99	268	0	227	115	-	.3	-	-	720	404	-	-	-	-
V-60	do	480	Feb. 25, 1936	-	-	-	130	26	92	272	0	238	113	-	.3	-	-	733	432	-	-	-	-
V-61	El Paso Milling Co.	400	Aug. 23, 1935	-	-	-	-	-	-	137	4	-	64	-	-	-	-	-	189	-	-	-	-
V-62	City of El Paso	650	June 25, 1937	29	0.22	-	30	10	130 7.0	180	0	97	111	0.9	.1	-	-	499	116	68	-	-	-
V-62	do	650	June 10, 1940	30	.02	-	29	10	128	182	0	97	100	-	.0	-	-	488	114	-	-	-	-
V-62	do	650	June 2, 1942	-	-	-	29	10	130	170	10	99	98	-	.0	-	-	460	114	-	-	-	-
V-62	do	650	Sept. 17, 1942	-	-	-	31	11	134	188	0	103	109	-	.0	-	-	481	123	-	-	-	-
V-63	do	52	Sept. 28, 1937	28	.45	-	146	25	211 14	328	0	348	217	.1	2.9	-	-	1,170	468	48	-	-	-
V-63	do	52	Sept. 29, 1938	20	-	-	153	28	200	308	0	355	218	-	4.2	-	-	1,170	497	-	-	-	-
V-63	do	52	June 12, 1940	-	-	-	154	29	223	344	0	370	225	-	4.0	-	-	1,180	504	-	-	-	-
V-63	do	52	Dec. 3, 1940	-	-	-	160	30	209	336	0	371	220	-	8.0	-	-	1,160	523	-	-	-	-

Table 8.- Analyses of water from wells in the Hueco bolson area, El Paso County, Texas, and Doña Ana and Otero Counties, New Mexico--Continued

Well	Owner	Depth of well (ft.)	Date of collection	Silica (SiO <sub>2</sub> )	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Boron (B)	Dissolved solids	Hardness as CaCO <sub>3</sub>	Percent sodium	Specific conductance (microhmhos at 25°C)	pH
V-63	City of El Paso	52	Mar. 25, 1952	-	-	-	-	-	-	196	0	102	-	-	-	-	-	241	-	876	7.7
V-63	do	52	Feb. 16, 1953	38	-	-	27	9.8	130	193	0	89	1.2	4.3	-	-	492	108	72	808	7.9
V-66	El Paso Electric Co.	394	Aug. 20, 1935	-	-	-	-	-	-	126	3	99	-	-	-	-	-	222	-	-	-
V-67	do	304	Feb. 28, 1936	-	-	-	123	23	178	277	0	190	.1	.9	-	-	933	402	-	-	-
V-67	do	304	Dec. 11, 1938	28	0.10	-	136	24	196	311	0	208	.0	.1	-	-	1,070	438	48	-	-
V-68	Peyton Packing Co.	775	Aug. 26, 1935	-	-	-	-	-	-	184	18	51	-	-	-	-	-	26	-	-	-
aV-69	City of El Paso	60	Aug. 28, 1940	34	-	-	120	31	177	268	0	208	-	-	-	-	1,050	426	-	-	7.9
aV-69	do	167	Aug. 30, 1940	28	-	-	89	30	94	201	-	139	-	-	-	-	696	348	-	-	-
aV-69	do	343	Sept. 3, 1940	23	-	-	74	25	117	138	-	216	-	-	-	-	732	287	-	-	-
aV-69	do	400	Sept. 4, 1940	20	-	-	45	18	143	160	-	177	-	-	-	-	586	187	-	-	-
aV-69	do	460	Sept. 5, 1940	23	-	-	49	17	137	148	-	200	-	-	-	-	618	194	-	-	-
aV-69	do	535	Sept. 6, 1940	24	-	-	20	7.7	92	174	-	48	-	-	-	-	336	82	-	-	-
aV-69	do	617	Sept. 10, 1940	23	-	-	16	4.4	99	176	-	45	-	-	-	-	337	58	-	-	-
aV-69	do	681	Sept. 11, 1940	28	-	-	14	3.6	120	191	-	47	-	-	-	-	370	50	-	-	-
aV-69	do	729	Sept. 12, 1940	27	-	-	12	3.1	132	198	0	51	-	-	-	-	398	44	-	-	-
aV-69	do	835	Sept. 14, 1940	30	-	-	16	4.8	182	198	0	97	-	-	-	-	576	61	-	-	-
aV-69	do	622	Sept. 19, 1940	28	-	-	25	8.9	106	170	0	77	-	-	-	-	390	99	-	-	-
V-70	El Paso County Water Control & Improvement District No. 1	704	June 8, 1948	36	-	-	29	11	156	190	0	150	-	1.2	-	-	582	118	74	957	-
V-70	do	704	Nov. 9, 1950	32	-	-	28	11	151	177	0	146	-	1.5	-	-	550	115	74	923	7.9
V-72	The Texas Co.	694	Jan. 5, 1935	-	-	-	-	-	-	146	4	206	-	-	-	-	-	144	-	-	-
V-72	do	694	Aug. 28, 1935	-	-	-	-	-	-	120	10	212	-	-	-	-	-	117	-	-	-

Table 8.- Analyses of water from wells in the Hueco bolson area, El Paso County, Texas, and Dona Ana and Otero Counties, New Mexico--Continued

Well	Owner	Depth of well (ft.)	Date of collection	Silica (SiO <sub>2</sub> )	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)	Bicarbonate (HCO <sub>3</sub> )	Carbonate (CO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Boron (B)	Dissolved solids	Hardness as CaCO <sub>3</sub>	Percent sodium	Specific conductance (micromhos at 25°C)	pH	
V-72	The Texas Co.	694	Apr. 22, 1936	-	-	-	33	11	172	148	0	81	210	-	0.8	-	-	581	128	-	-	-	-
V-72	do	694	Dec. 15, 1939	-	-	-	-	-	178	151	0	79	218	-	.7	-	-	586	126	-	-	-	-
V-72	do	694	Dec. 29, 1940	-	-	-	35	11	176	160	0	83	210	-	2.0	-	-	596	133	-	-	-	-
V-72	do	694	Sept. 18, 1941	-	-	-	38	14	155	178	0	71	189	-	2.5	-	-	557	152	-	-	-	-
V-72	do	694	June 3, 1942	-	-	-	34	10	176	158	0	77	212	-	.5	-	-	587	126	-	-	-	-
V-72	do	694	Sept. 16, 1942	-	-	-	-	-	-	172	0	75	208	-	.5	-	-	-	-	-	-	-	-
V-72	do	694	Mar. 24, 1943	-	-	-	47	15	171	175	0	79	228	-	4.0	-	-	630	179	-	-	-	-
V-72	do	694	Feb. 15, 1944	-	-	-	36	11	176	134	11	76	219	-	.8	-	-	596	135	-	-	-	-
V-72	do	694	May 9, 1944	-	-	-	37	11	178	163	0	79	217	-	3.5	-	-	606	138	-	-	-	-
V-72	do	694	May 22, 1945	-	-	-	42	12	165	132	11	77	217	-	.5	-	-	642	154	-	-	-	-
V-72	do	694	Mar. 25, 1946	-	-	-	36	11	181	145	12	76	220	-	.4	-	-	640	135	-	-	-	-
V-72	do	694	Apr. 26, 1947	-	-	-	-	-	-	138	10	-	225	-	-	-	-	-	-	-	-	1,120	-
V-72	do	694	June 8, 1948	40	-	-	36	12	182	164	0	77	227	-	.8	-	-	673	140	74	-	1,170	-
V-72	do	694	Apr. 22, 1949	34	-	-	35	11	180	152	0	77	225	-	3.2	-	-	643	132	75	-	1,140	8.0
V-72	do	694	Aug. 7, 1949	29	-	-	46	19	181	163	0	79	262	-	1.2	-	-	706	193	67	-	1,290	8.0
V-72	do	694	Feb. 10, 1950	-	-	-	-	-	-	150	0	-	224	-	-	-	-	-	-	134	-	1,140	8.1
V-72	do	694	Apr. 24, 1951	36	-	-	39	13	178	160	0	76	232	-	1.5	-	-	663	151	72	-	1,160	8.2
V-72	do	694	May 26, 1952	-	-	-	-	-	-	155	0	73	231	-	-	-	-	-	133	-	-	1,150	7.8
V-72	do	694	Oct. 2, 1952	-	-	-	-	-	-	155	0	-	230	-	-	-	-	-	132	-	-	1,120	8.0
V-75	Standard Oil Co. of Texas	606	Aug. 28, 1935	-	-	-	-	-	-	115	9	-	174	-	-	-	-	-	102	-	-	-	-
V-76	do	644	May 27, 1952	34	-	-	28	9.5	150	155	0	83	155	1.0	1.0	-	-	576	109	75	-	937	8.0
V-78	do	299	Mar. 13, 1936	-	-	-	339	143	1,230	284	0	579	2,310	.3	5.8	-	-	4,740	1,430	-	-	-	-

Table 8.- Analyses of water from wells in the Hueco bolson area, El Paso County, Texas,  
and Doña Ana and Otero Counties, New Mexico--Continued

Well	Owner	Depth of well (ft.)	Date of collection	Silica (SiO <sub>2</sub> )	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)	Bicarbonate (HCO <sub>3</sub> )	Carbonate (CO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Boron (B)	Dis-solved solids	Hardness as CaCO <sub>3</sub>	Percent sodium	Specific conductance (micromhos at 25°C)	pH
V-79	Phelps-Dodge Refining Co.	640	Aug. 29, 1935	-	-	-	-	-	-	111	11	-	169	-	-	-	-	-	106	-	-	-
V-79	do	640	Sept. 23, 1935	-	-	-	27	8.0	145	130	0	68	170	-	0.2	-	-	483	102	-	-	-
V-79	do	640	Dec. 18, 1940	36	0.03	-	23	6.0	127	124	6	65	128	-	.0	-	-	453	83	-	-	-
V-82	El Paso County Water Control & Improvement District No. 1	477	Sept. 20, 1948	28	.15	-	26	10	122 7.2	164	0	88	107	0.8	1.2	-	0.42	475	106	70	808	7.8
V-82	do	477	Nov. 9, 1950	30	-	-	26	10	123	158	0	93	104	-	1.5	-	-	466	106	72	783	7.8
V-85	do	490	June 10, 1952	34	-	-	12	2.9	103	153	0	76	39	2.4	.2	-	-	375	42	84	553	7.8
V-86	do	386	June 8, 1948	34	-	-	15	5.4	191	168	0	84	177	-	.8	-	-	593	60	87	987	-
V-86	do	386	Nov. 9, 1950	27	-	-	21	5.9	210	135	0	98	228	-	.0	-	-	656	77	86	1,130	7.8
W-1	U. S. Geological Survey	*484-520	Mar. 11, 1953	1.9	.01	-	20	7.5	146 9.4	111	0	80	168	.6	3.5	-	.17	525	81	77	919	7.4
W-1	do	*879-899	Apr. 17, 1953	14	.01	-	911	135	2,440	51	0	1,370	4,730	.2	-	-	-	9,630	2,830	65	14,800	6.9
W-2	U. S. Army	378	Mar. 13, 1936	-	-	-	28	11	130	171	0	125	88	-	4.6	-	-	471	115	-	-	-
W-3	Hillcrest Country Club	600	Mar. 25, 1952	31	-	-	79	29	489	120	0	685	410	.8	2.0	-	.22	1,780	316	77	2,790	8.2
W-4	El Paso Natural Gas Co.	591	June 17, 1953	33	.04	-	96	35	550	124	0	940	350	1.3	2.2	-	-	2,070	384	76	2,950	7.8
W-6	Lane Dairy	200	Apr. 22, 1936	-	.48	-	54	17	488	202	0	179	648	-	.8	-	-	1,490	205	-	-	-
W-8	R. C. Sparks	440	Dec. 8, 1952	25	-	-	60	15	477	83	0	219	675	-	.2	-	-	1,520	211	83	2,670	7.8
W-9	El Paso County Water Control & Improvement District No. 1	219	Nov. 9, 1950	28	.13	-	40	9.8	200	130	0	84	269	-	1.0	-	-	704	140	76	1,220	7.8
W-10	R. C. Sparks	500	Dec. 8, 1952	21	.53	-	25	8.2	318	134	0	146	370	-	2.8	-	-	958	96	88	1,700	7.9
X-1	U. S. Geological Survey	*475-495	July 19, 1953	12	.06	-	20	2.1	128 3.0	180	0	88	73	.9	1.5	0.00	.24	422	58	82	681	8.0
X-4	-- Davis	750	Apr. 29, 1952	28	-	-	118	87	531	200	0	269	960	-	11	-	-	2,100	652	64	3,870	8.0
X-6	R. C. Sparks	440	Aug. 20, 1935	-	-	-	-	-	-	117	12	-	44	-	-	-	-	-	4.5	-	-	-



Table 8.- Analyses of water from wells in the Hueco bolson area, El Paso County, Texas,  
and Dona Ana and Otero Counties, New Mexico--Continued

Well	Owner	Depth of well (ft.)	Date of collection	Silica (SiO <sub>2</sub> )	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)	Bicarbonate (HCO <sub>3</sub> )	Carbonate (CO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Fluoride (F)	Nitrate (NO <sub>3</sub> )	Phosphate (PO <sub>4</sub> )	Boron (B)	Dissolved solids	Hardness as CaCO <sub>3</sub>	Percent sodium	Specific conductance (micromhos at 25°C)	pH
X-6	R. C. Sparks	440	Apr. 10, 1936	-	0.40	-	7.5	2.3	74	60	0	80	40	-	1.0	-	-	234	28	-	-	-
X-8	El Paso Natural Gas Co.	526	Feb. 16, 1953	30	-	-	253	67	2,170	270	0	688	3,320	-	-	-	-	6,660	906	84	11,300	7.5
X-10	U.S. Geological Survey	*478-500	July 25, 1953	8.8	.04	0.00	22	4.3	315 4.7	85	0	97	412	0.8	1.5	0.04	0.24	930	72	89	1,780	7.2
X-10	do	*657-677	Aug. 1, 1953	16	.12	.02	28	3.1	369 3.5	84	0	65	520	1.0	1.0	.01	.36	1,050	82	90	2,070	7.7
X-11	R. C. Sparks	460	Apr. 2, 1936	-	1.0	-	29	15	134	163	16	132	75	-	27	-	-	508	134	-	-	-
Y-1	do	500	Apr. 29, 1952	-	-	-	-	-	-	57	-	-	1,530	-	-	-	-	-	430	-	5,210	7.7
Z-1	do	500	Apr. 2, 1936	-	3.1	-	136	45	905	237	0	478	1,260	-	24	-	-	2,970	524	-	-	-
Z-2	S. O. Roberts	643	do	-	-	-	66	27	778	246	0	668	758	-	1.2	-	-	2,420	276	-	-	-
Z-5	do	643	Apr. 29, 1952	14	-	-	50	24	786	212	0	661	760	-	.0	-	-	2,400	224	88	3,980	8.1
Z-6	do	521	Apr. 30, 1952	35	-	-	23	7.9	426	c204	0	322	365	-	.2	-	-	1,280	90	91	2,180	8.4

a Analyzed by city of El Paso.

b Contains less than 0.1 ppm of iron (Fe).

c Includes carbonate (CO<sub>3</sub>) as bicarbonate (HCO<sub>3</sub>).

\* Drill-stem test, interval sampled.

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Table 9

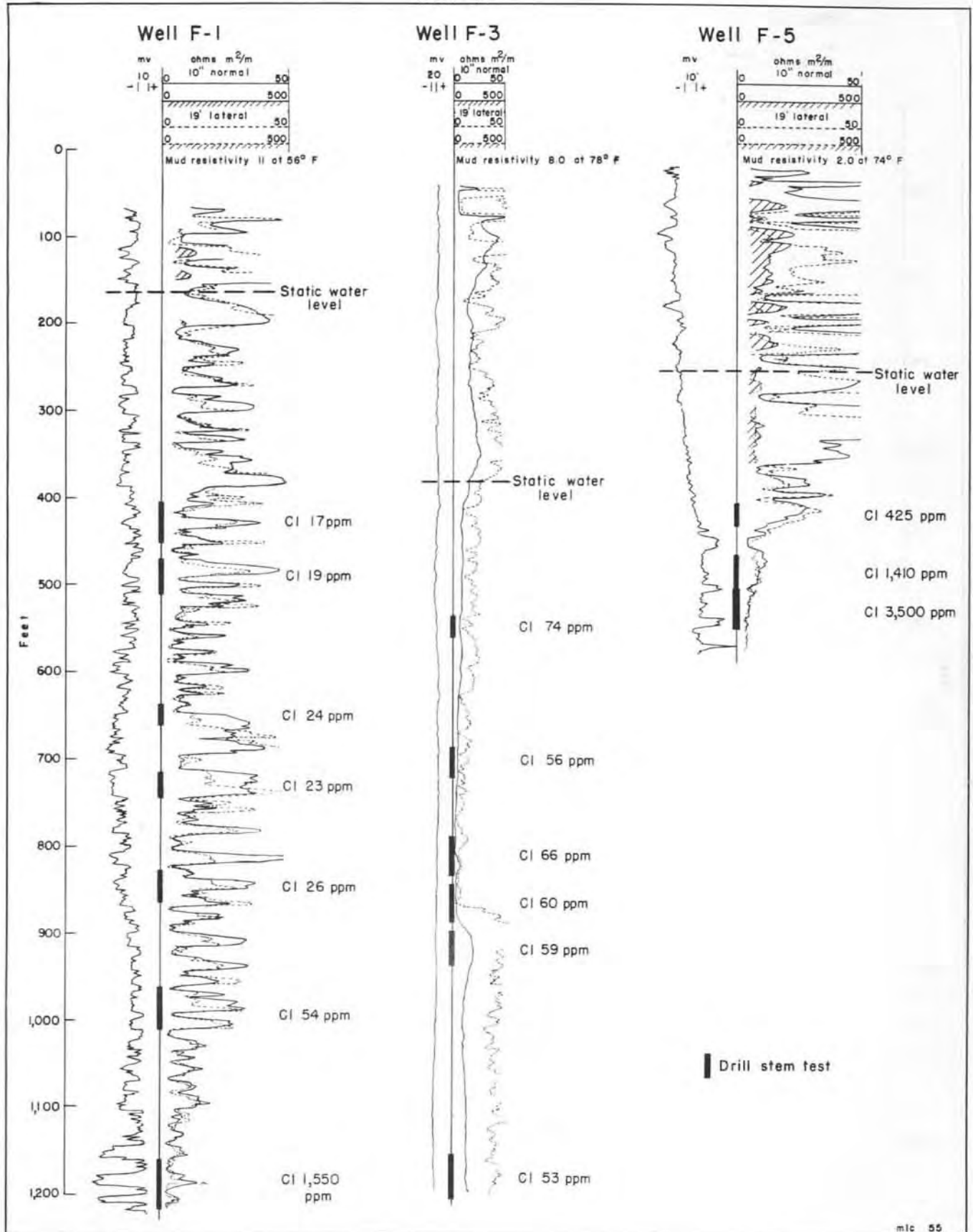


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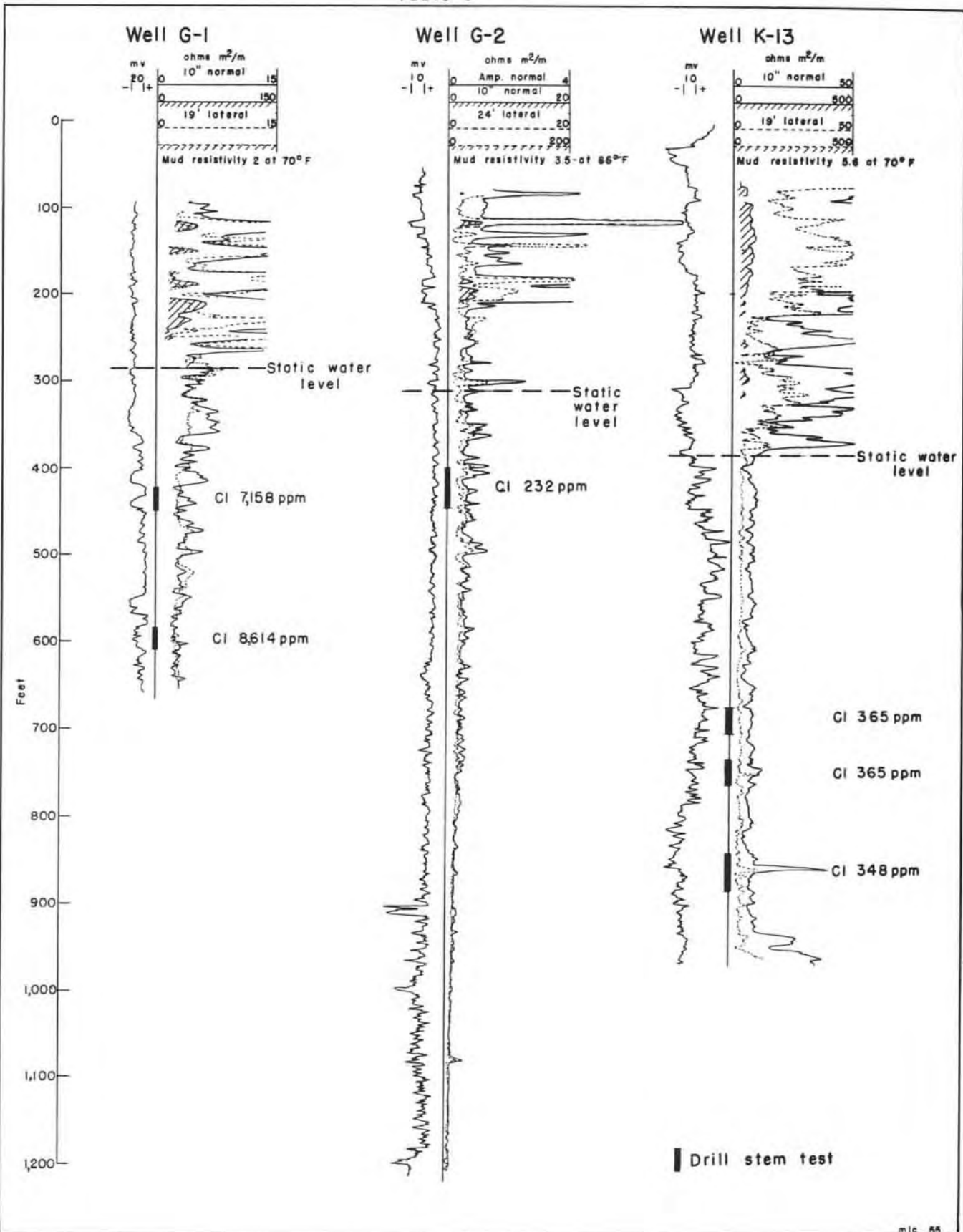


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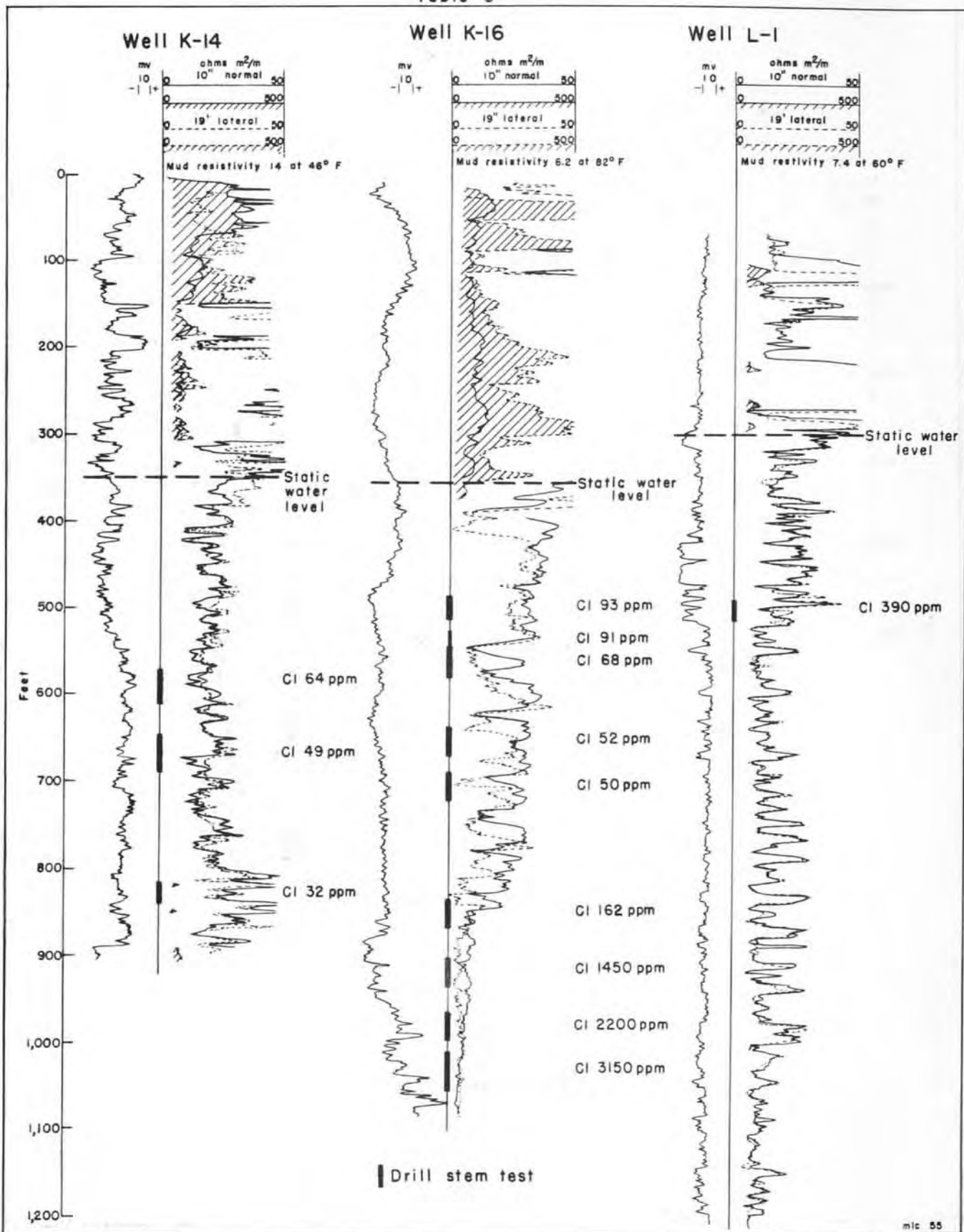
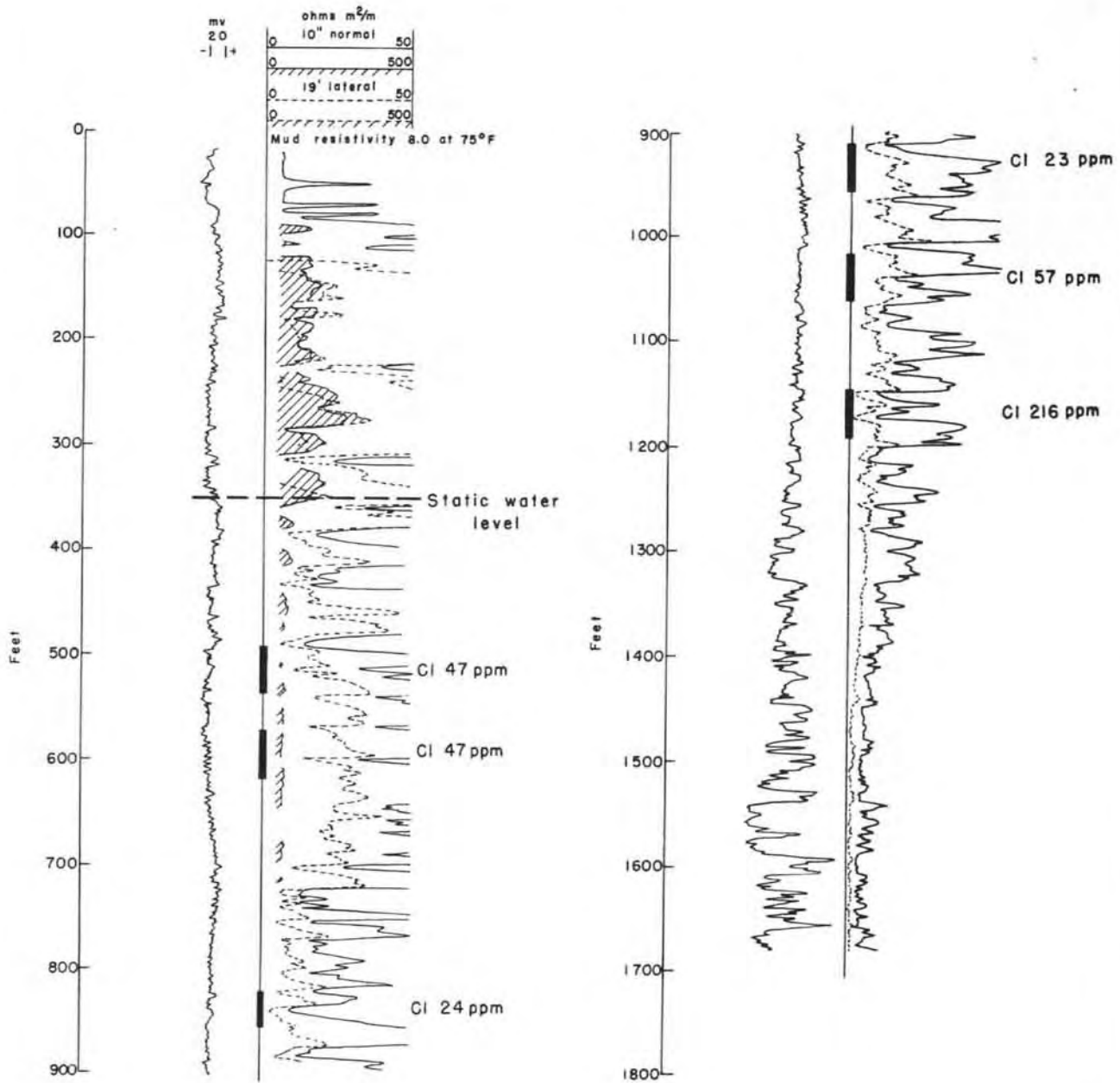


Table 9

Well L-2



| Drill stem test

Table 9

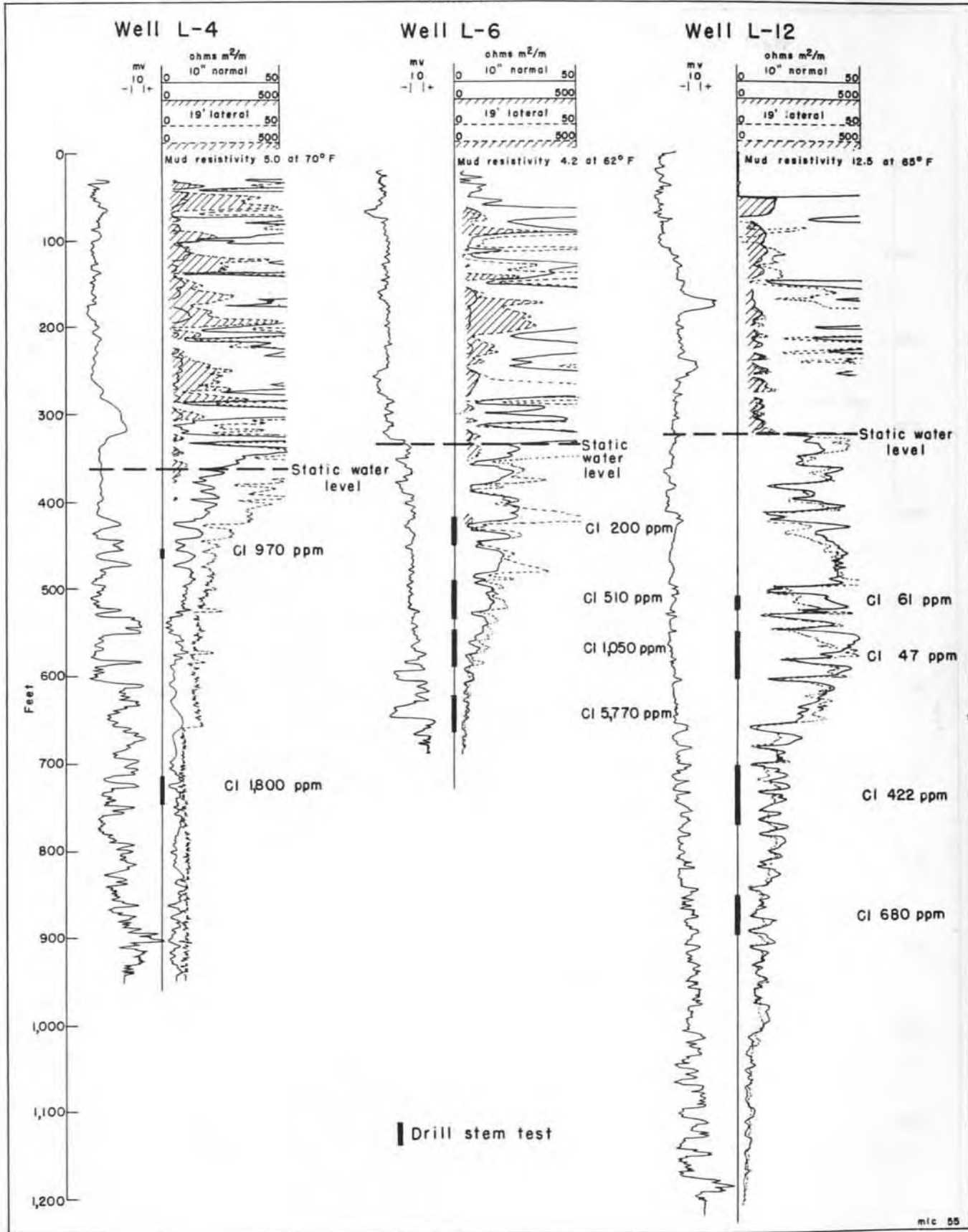


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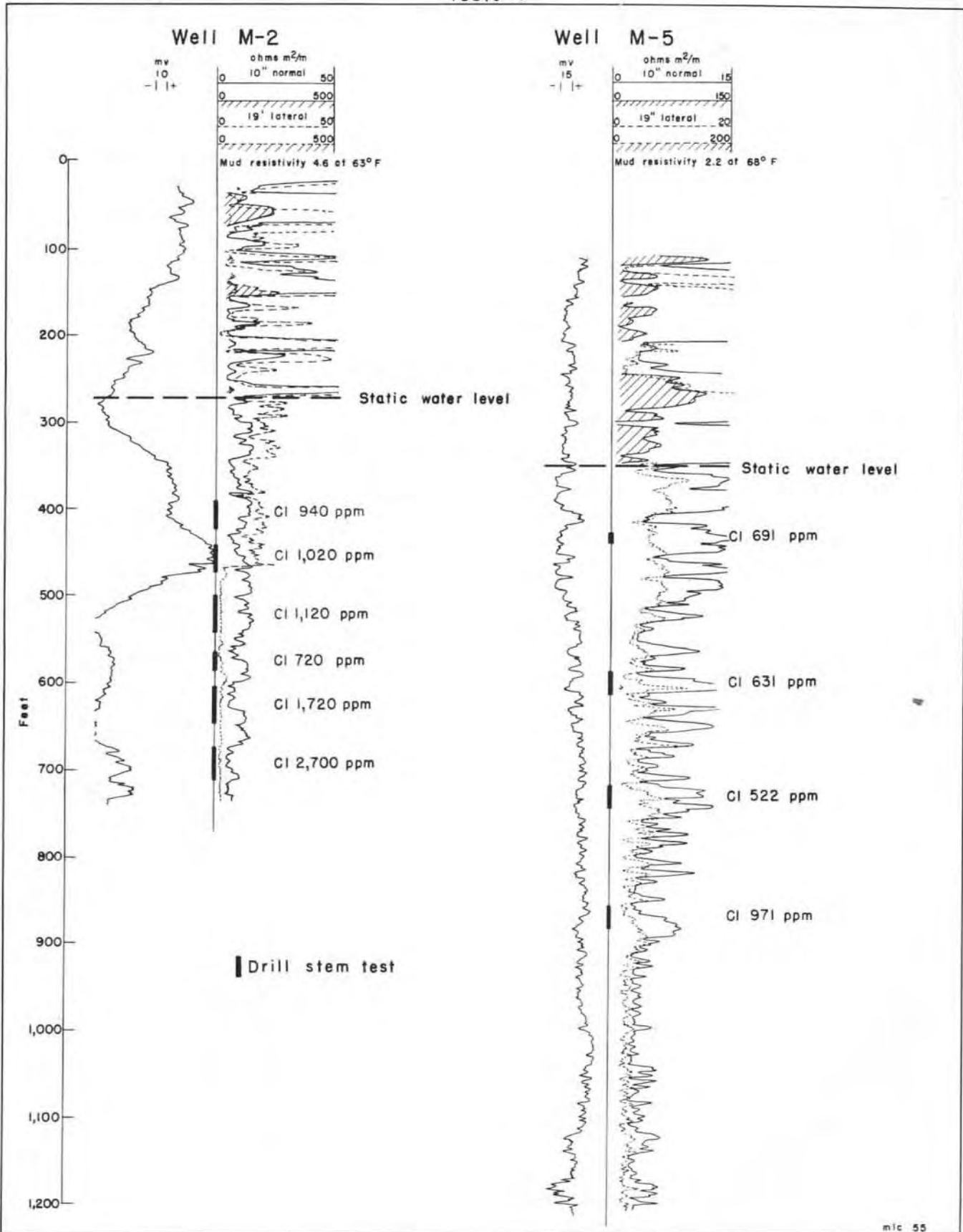


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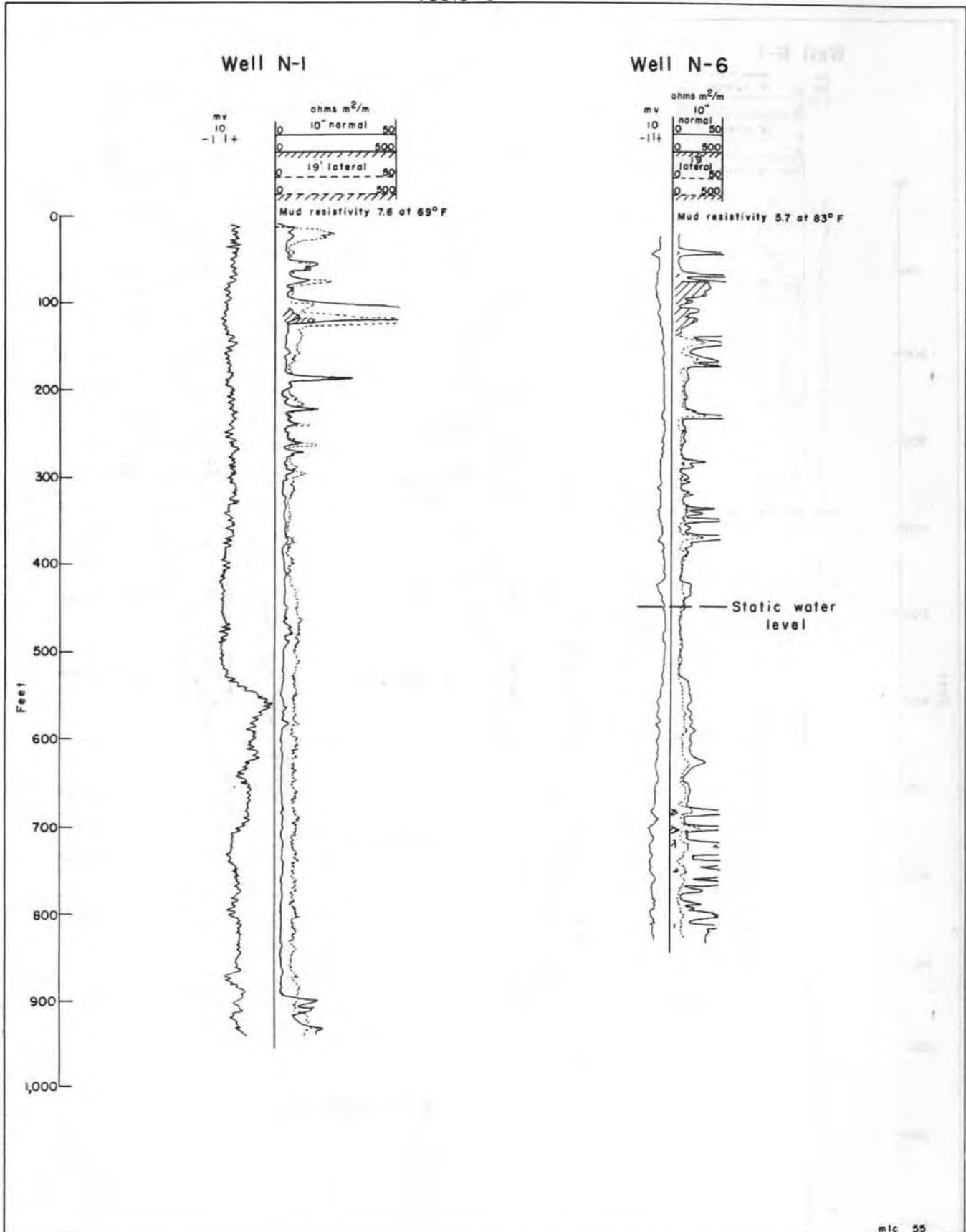




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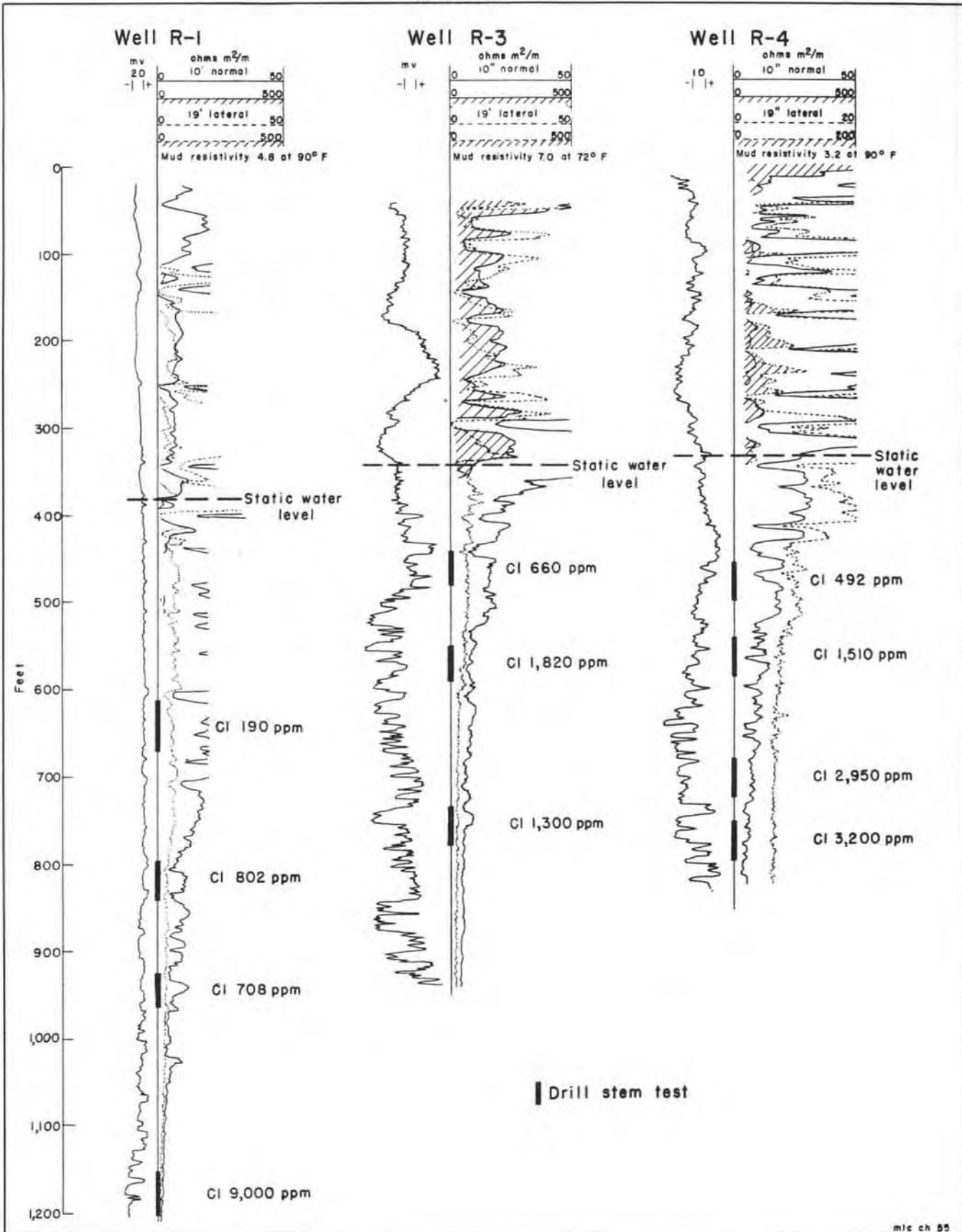


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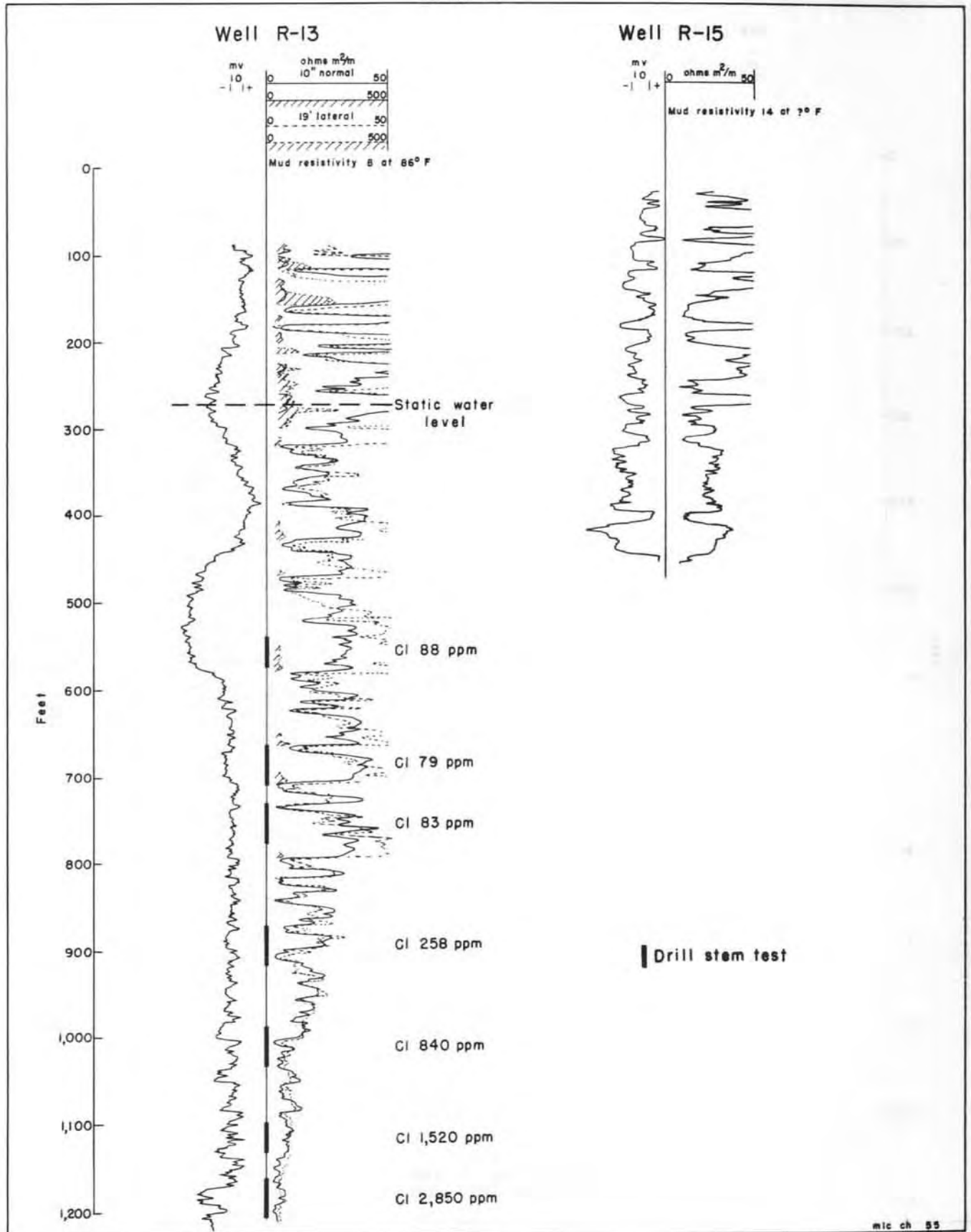


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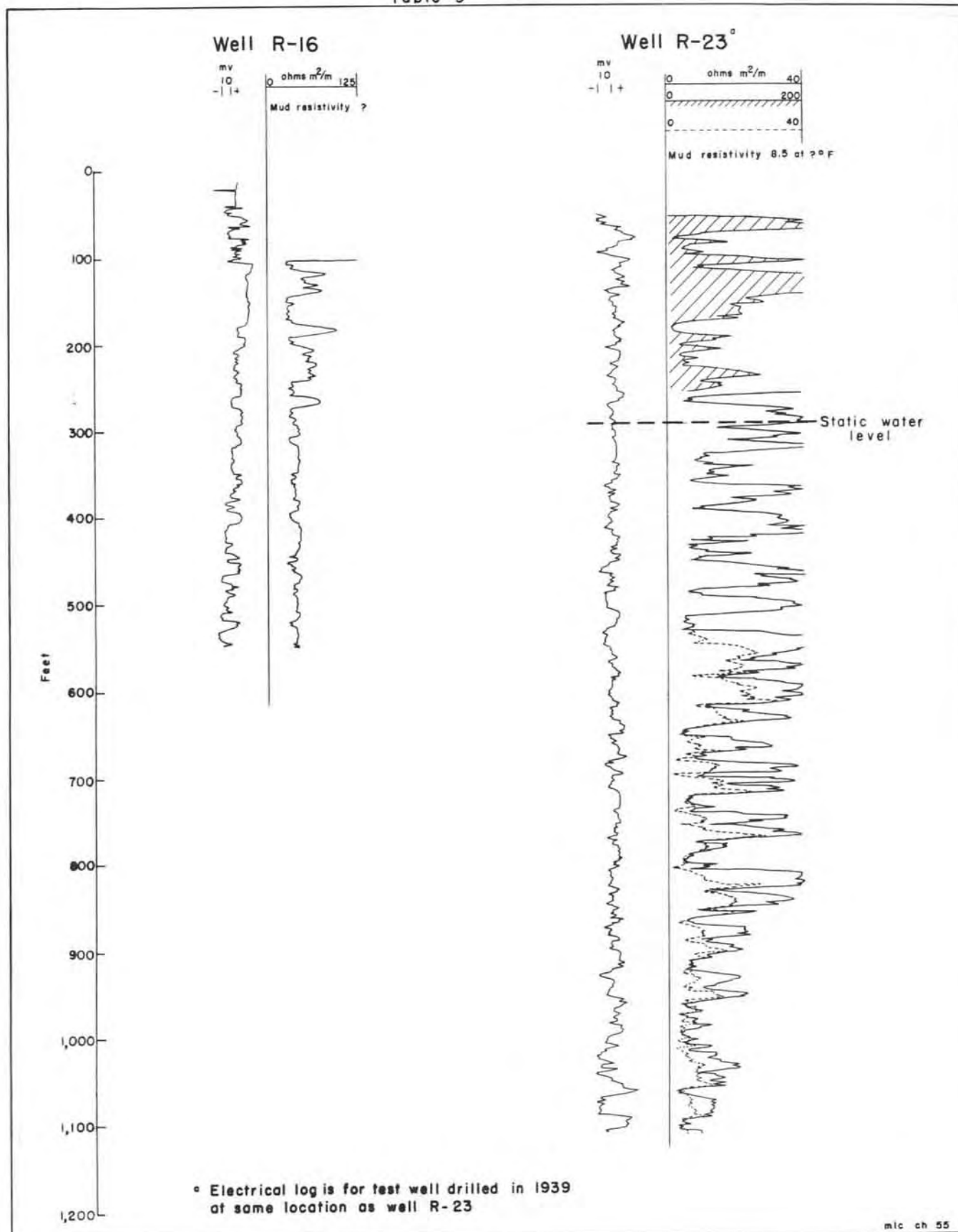


Table 9

Well R-28

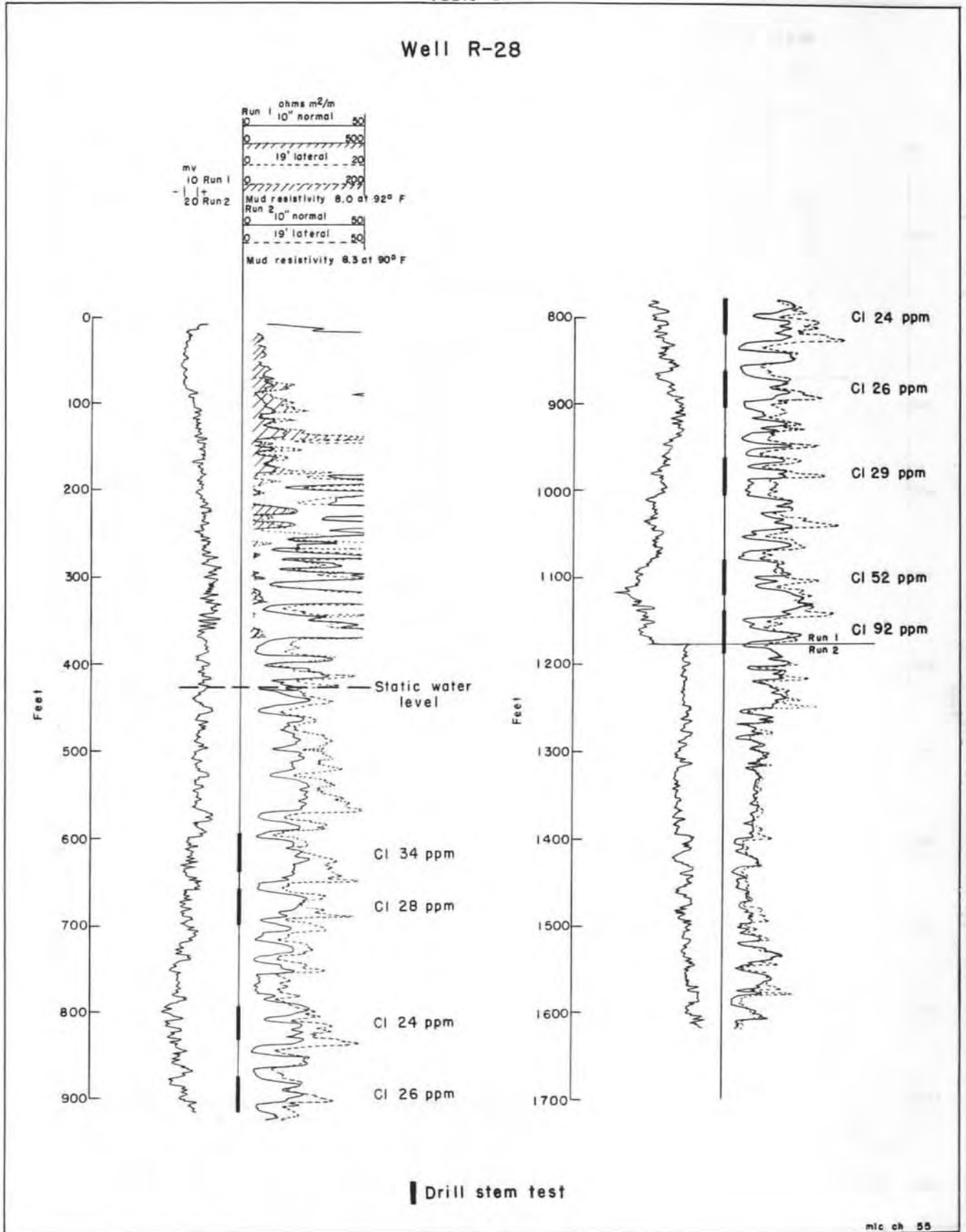
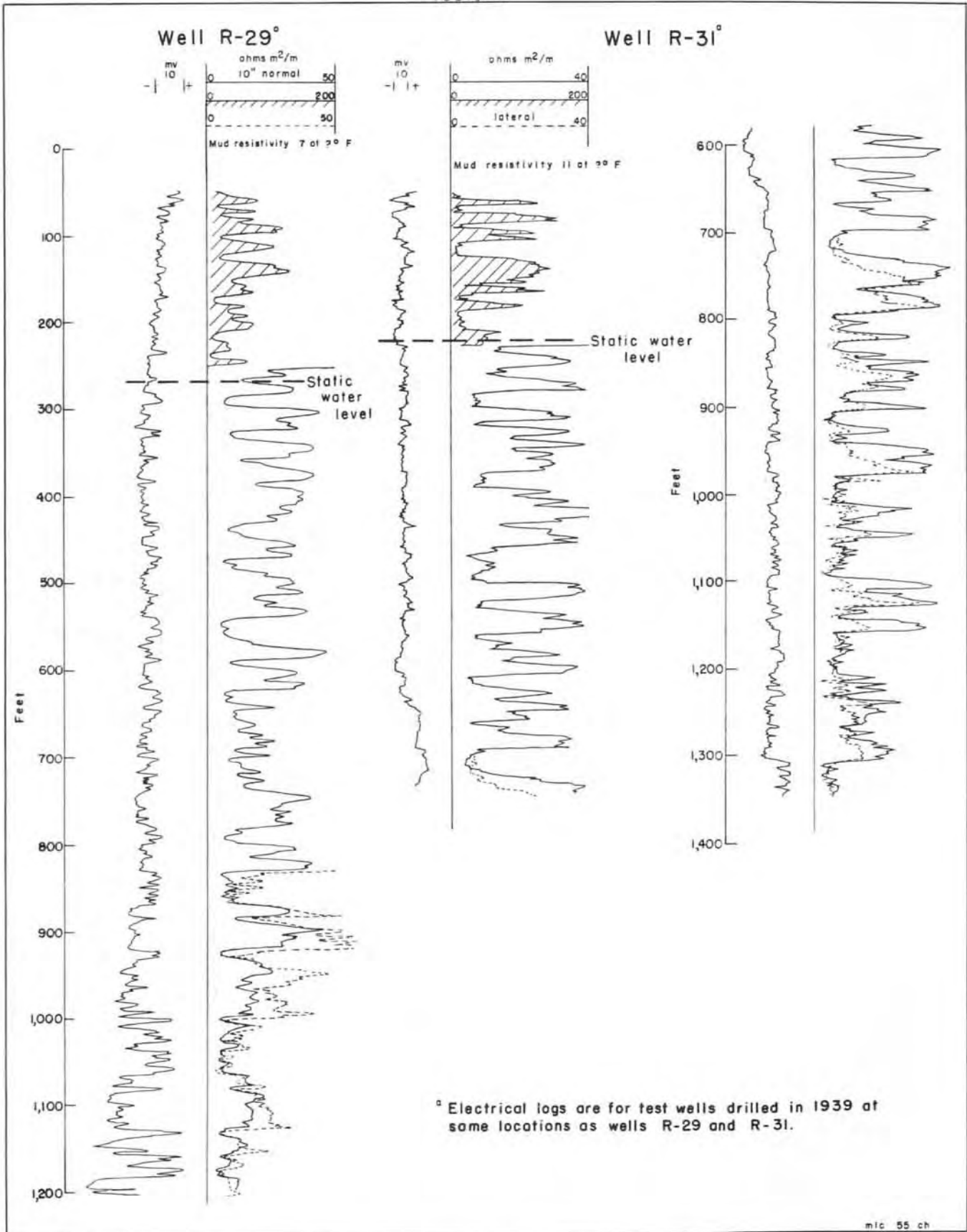
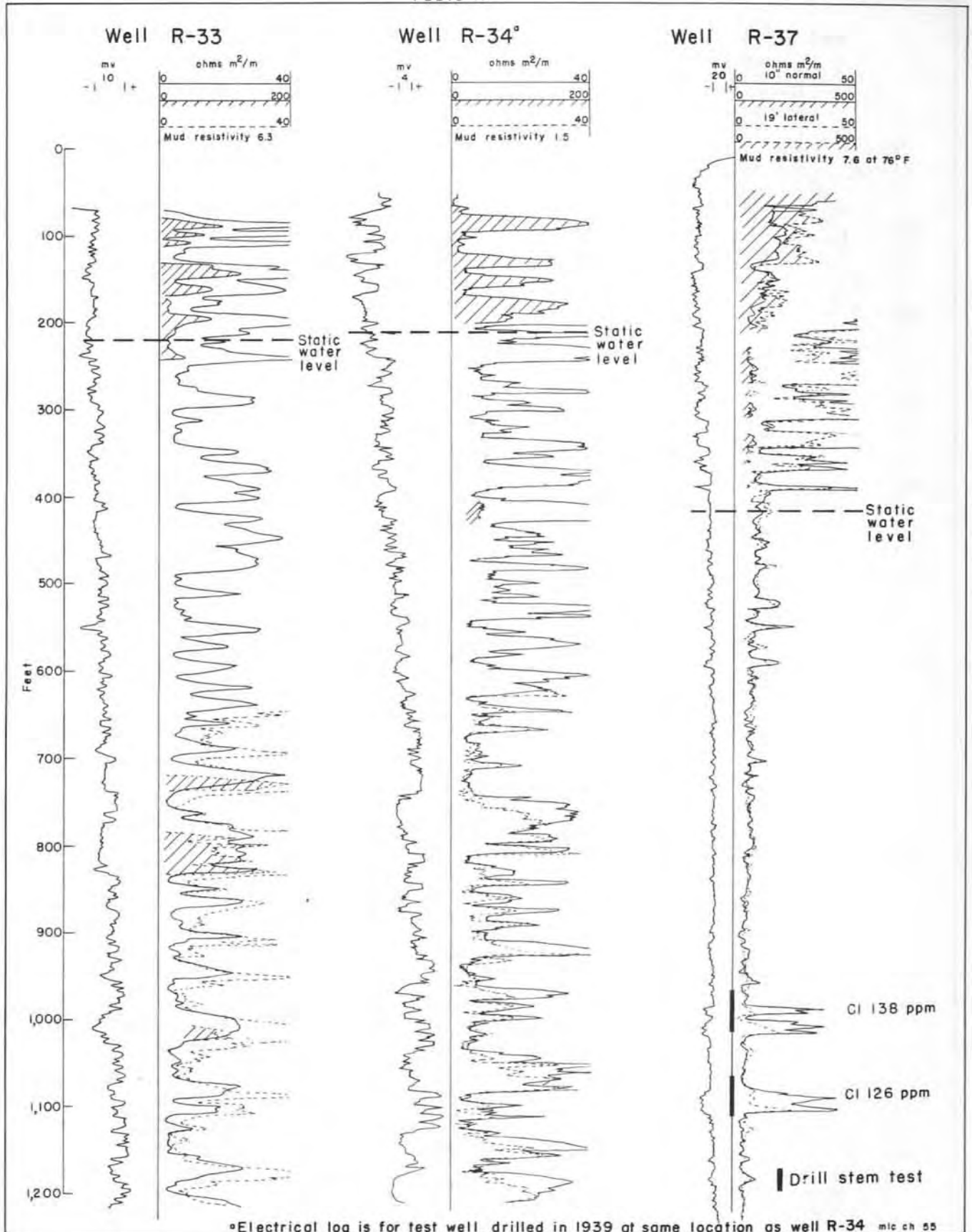


Table 9



<sup>a</sup> Electrical logs are for test wells drilled in 1939 at same locations as wells R-29 and R-31.

Table 9



<sup>a</sup>Electrical log is for test well drilled in 1939 at same location as well R-34 mic ch 55

Table 9

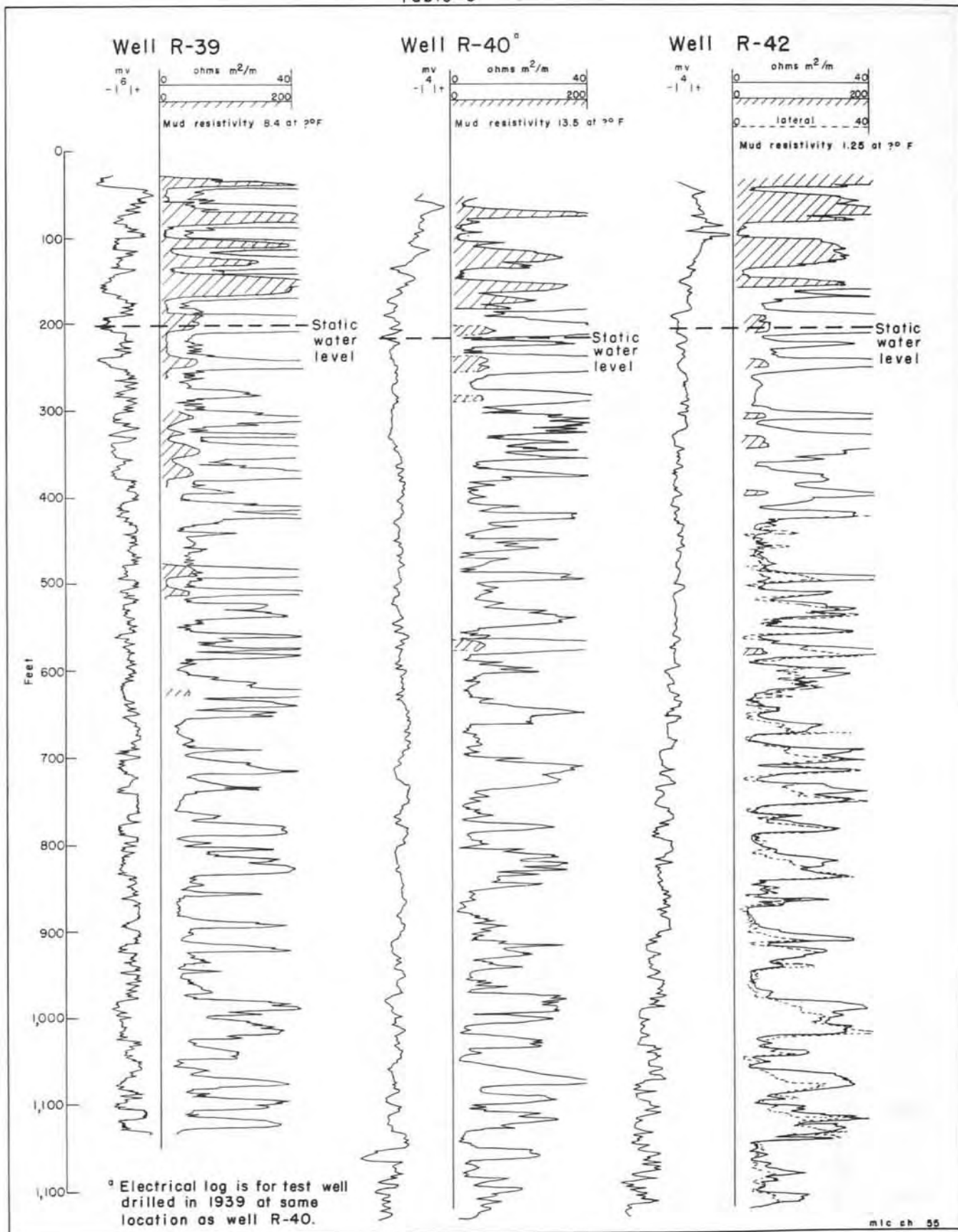


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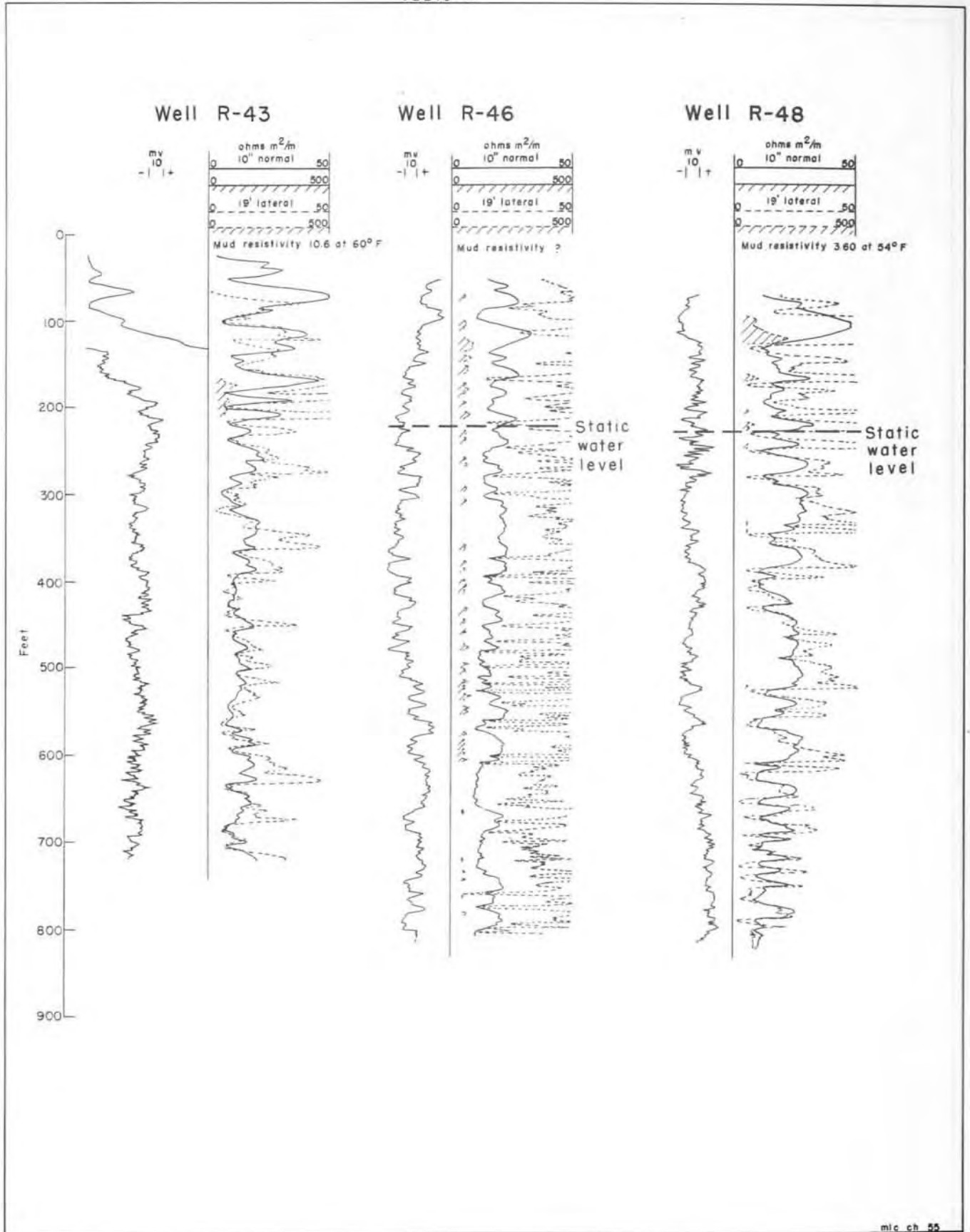




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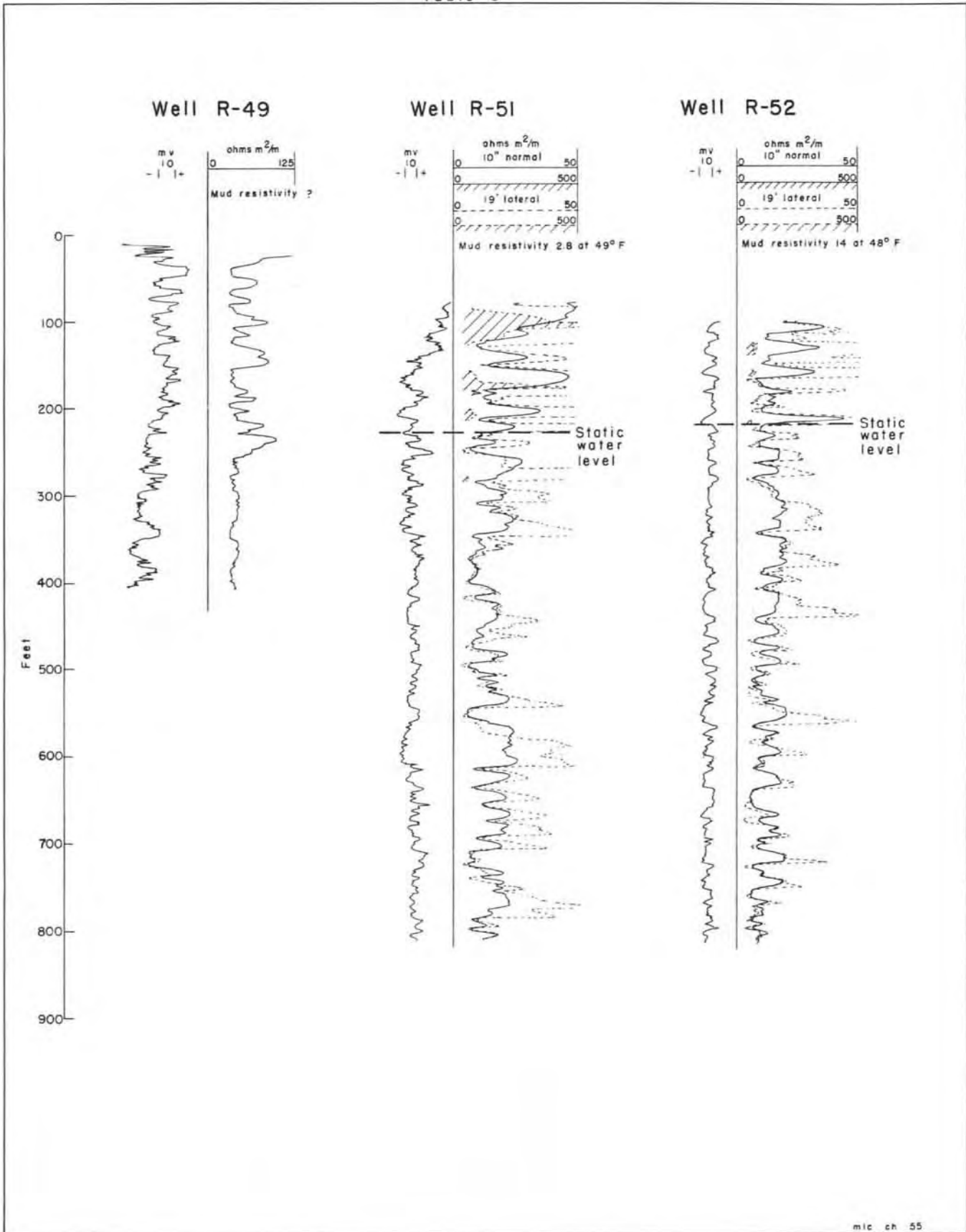
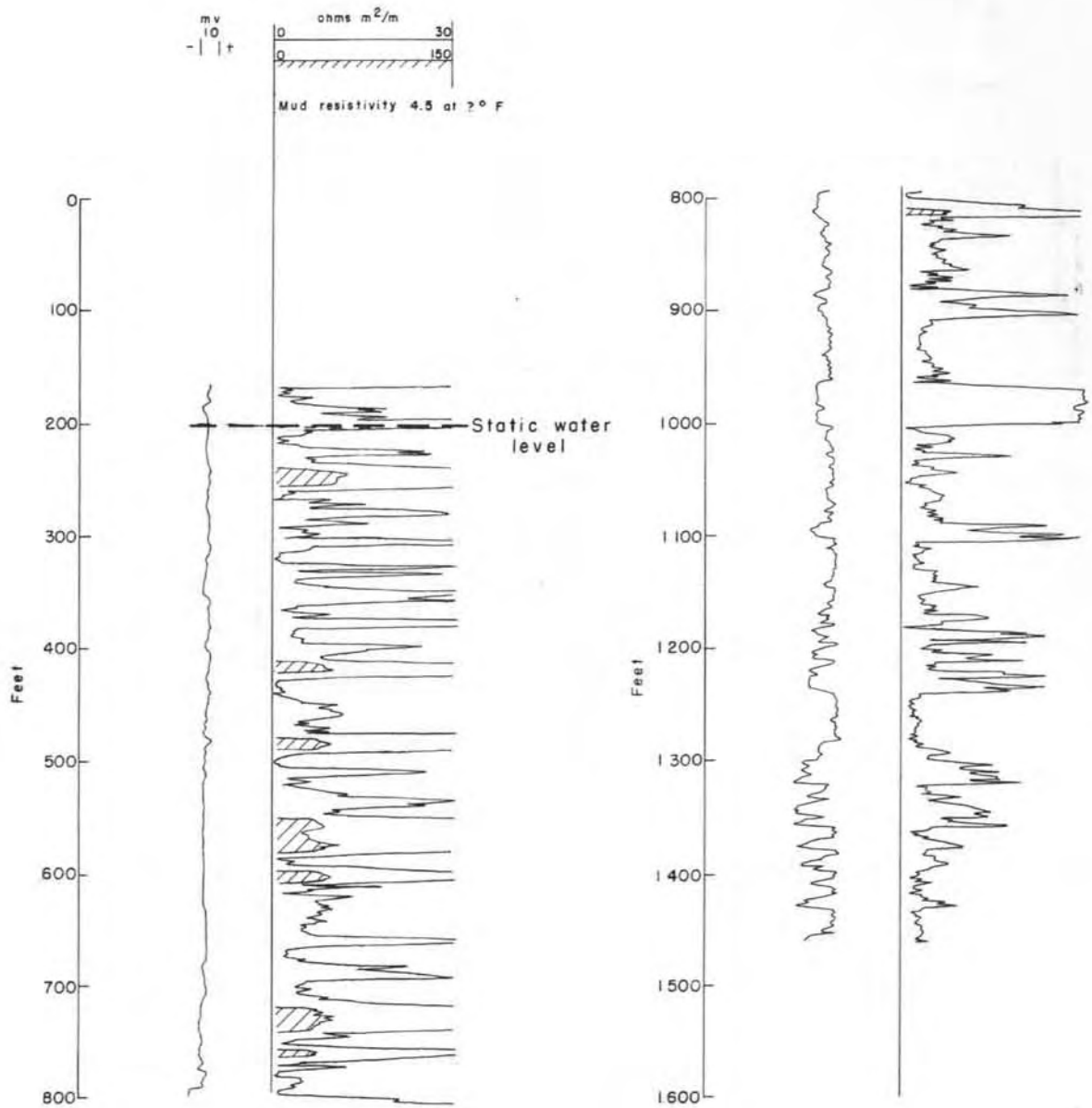


Table 9

Well R-56°



• Electrical log is for test well drilled in 1939 at same location as well R-56

Table 9

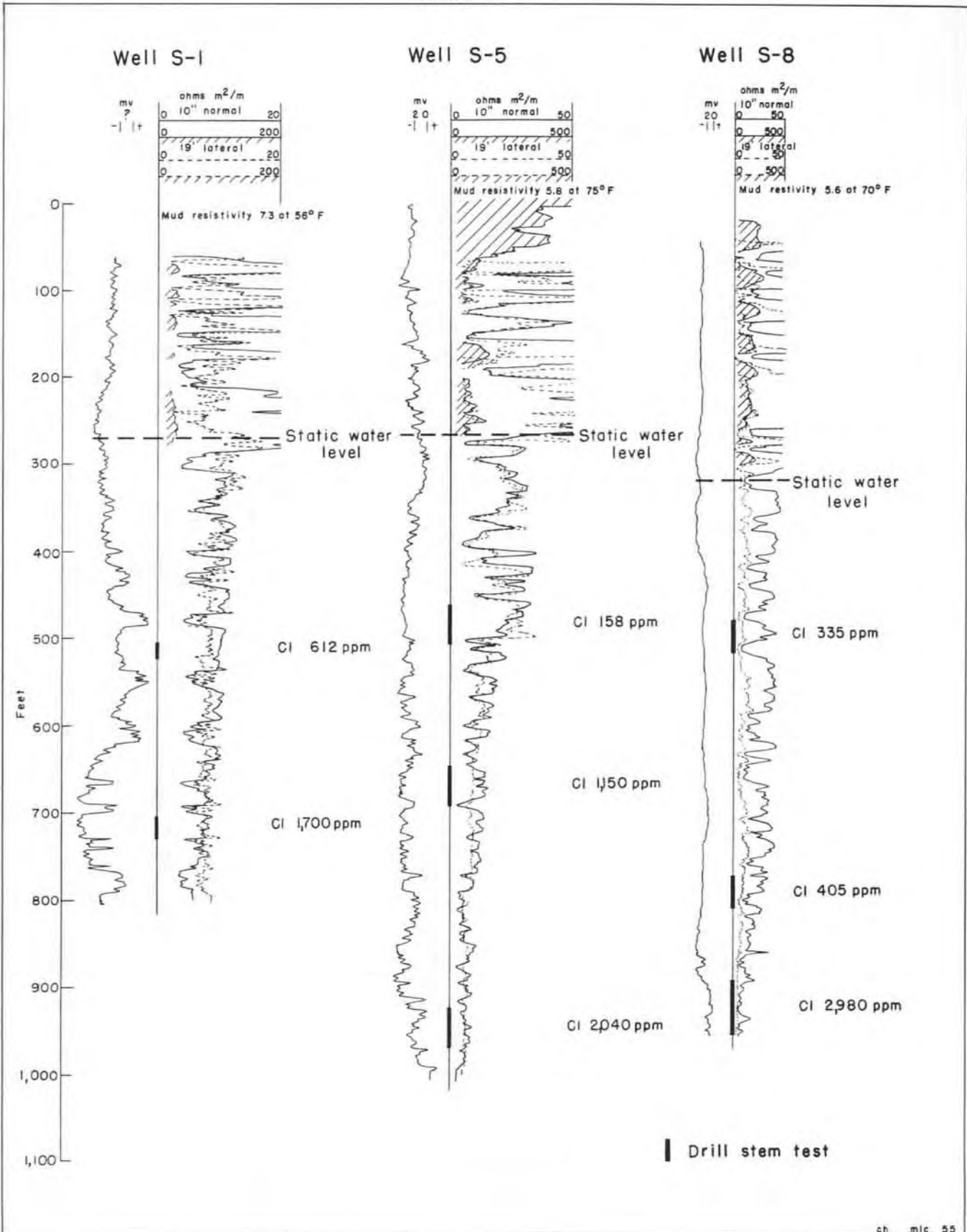


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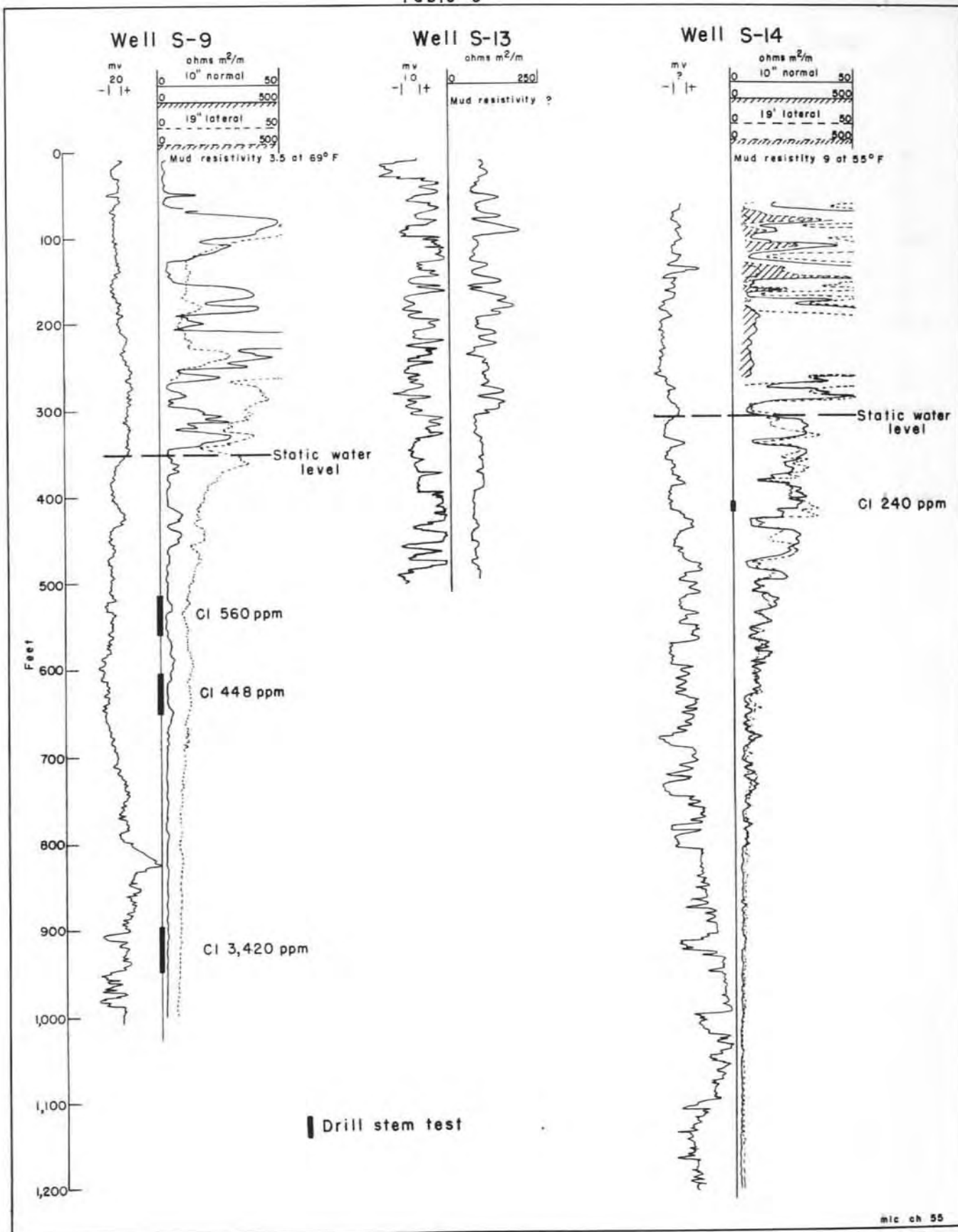


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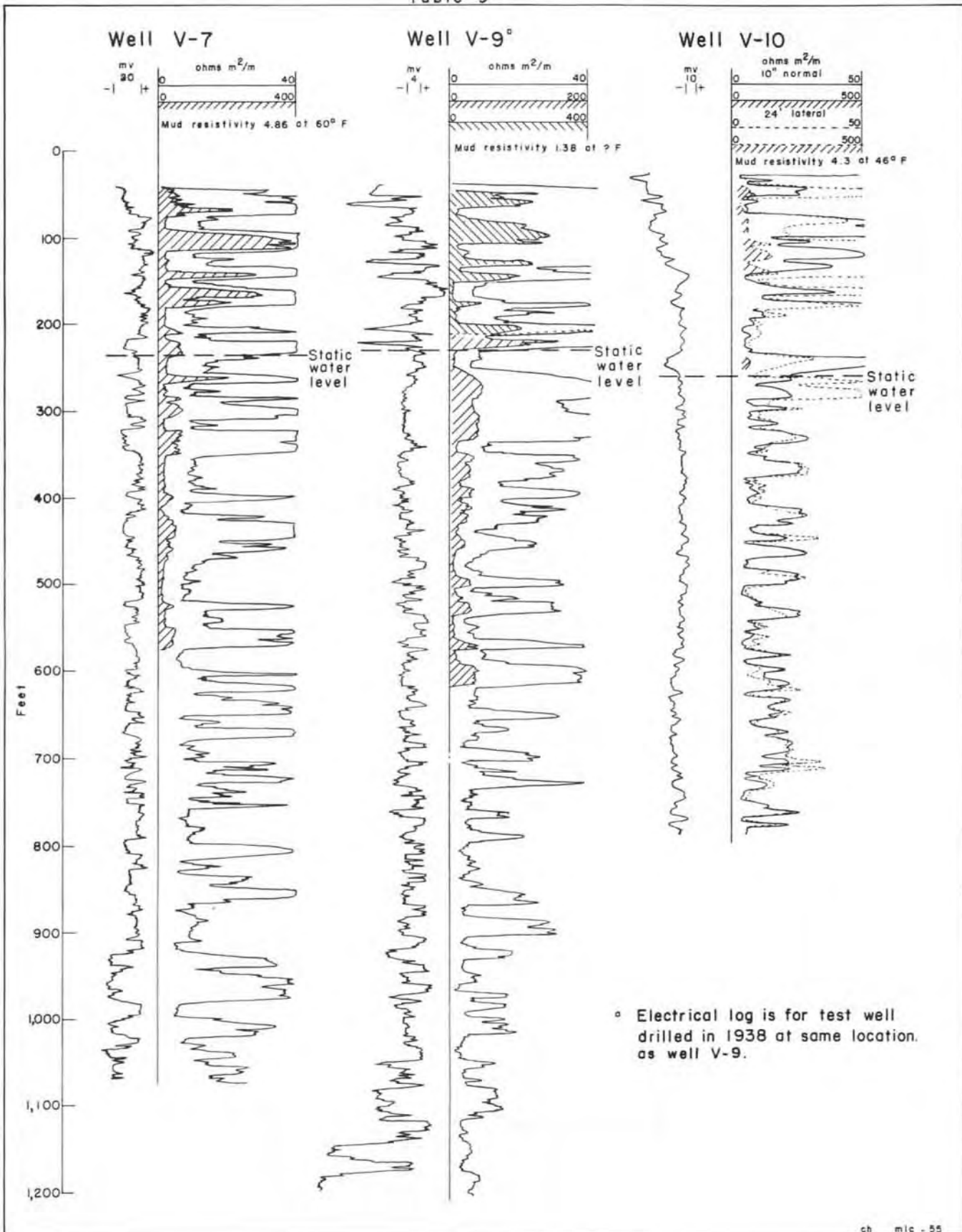


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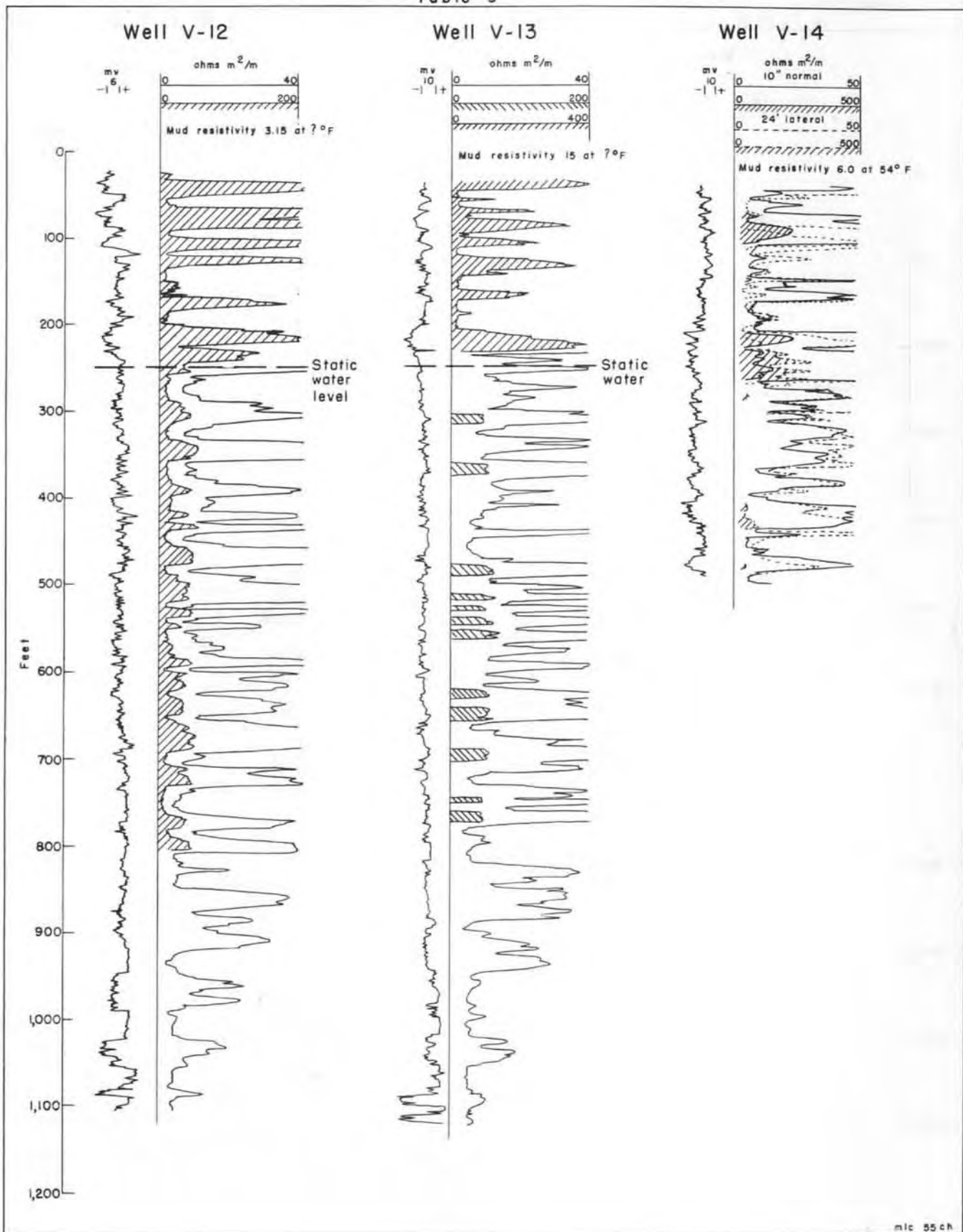


Table 9

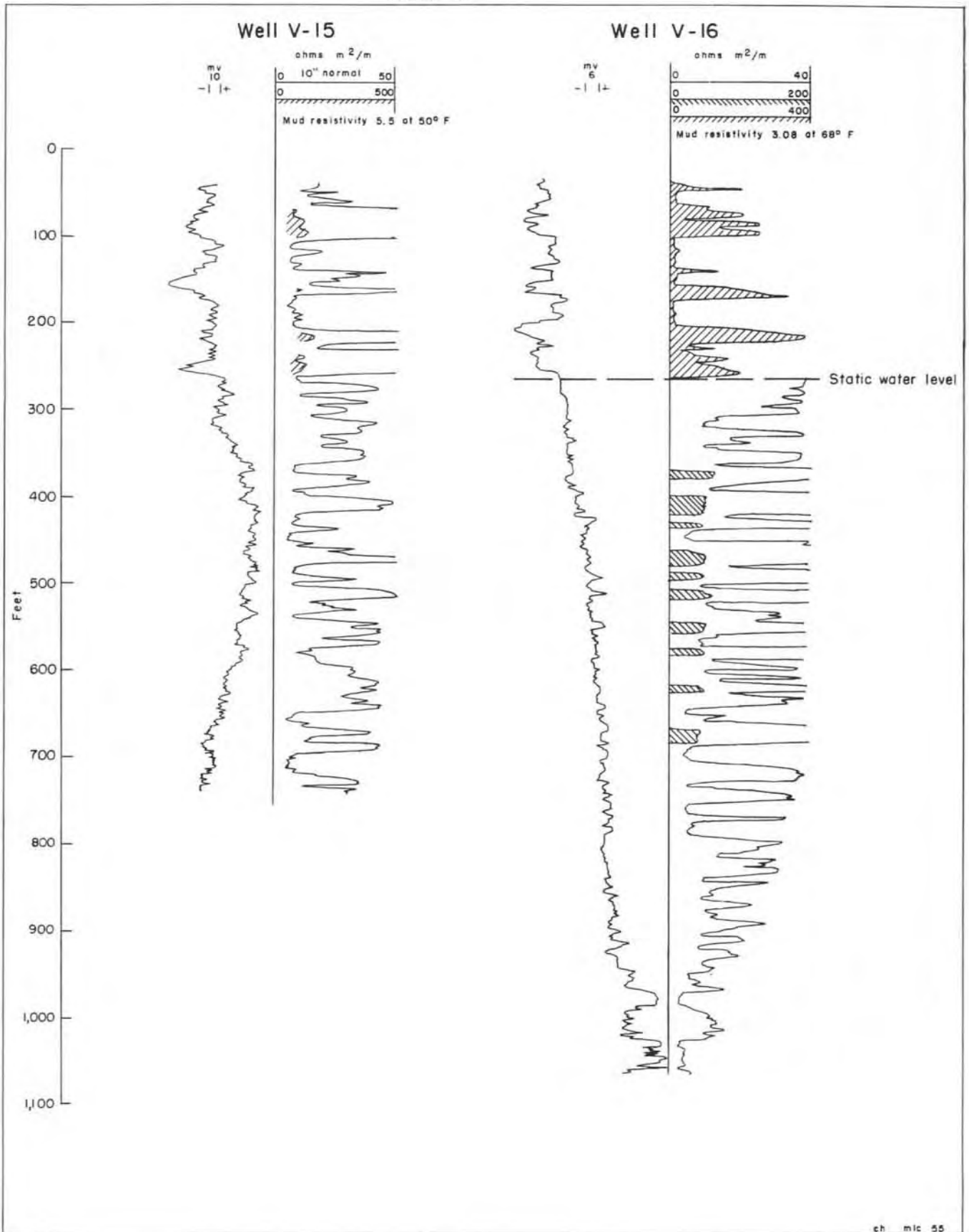


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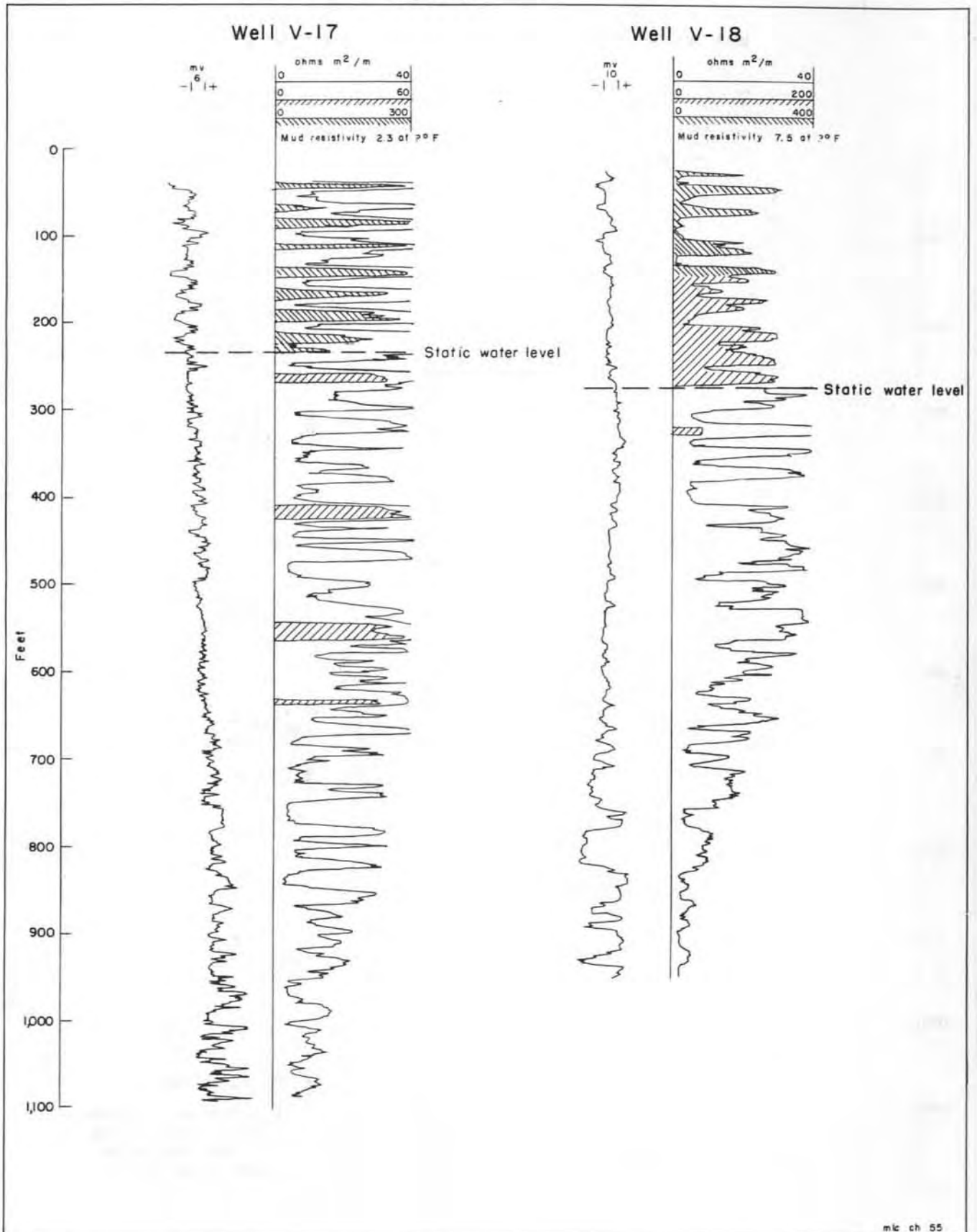




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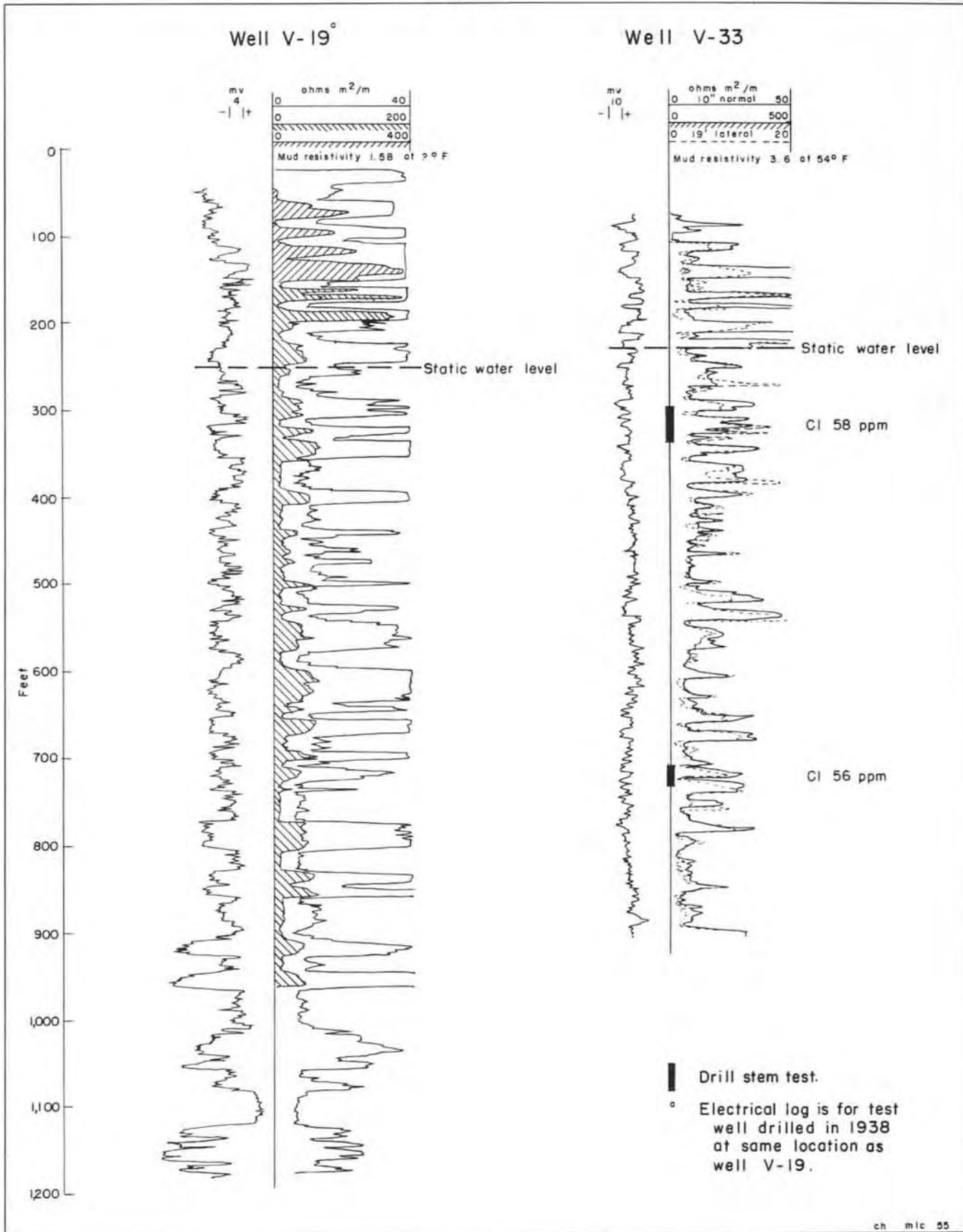
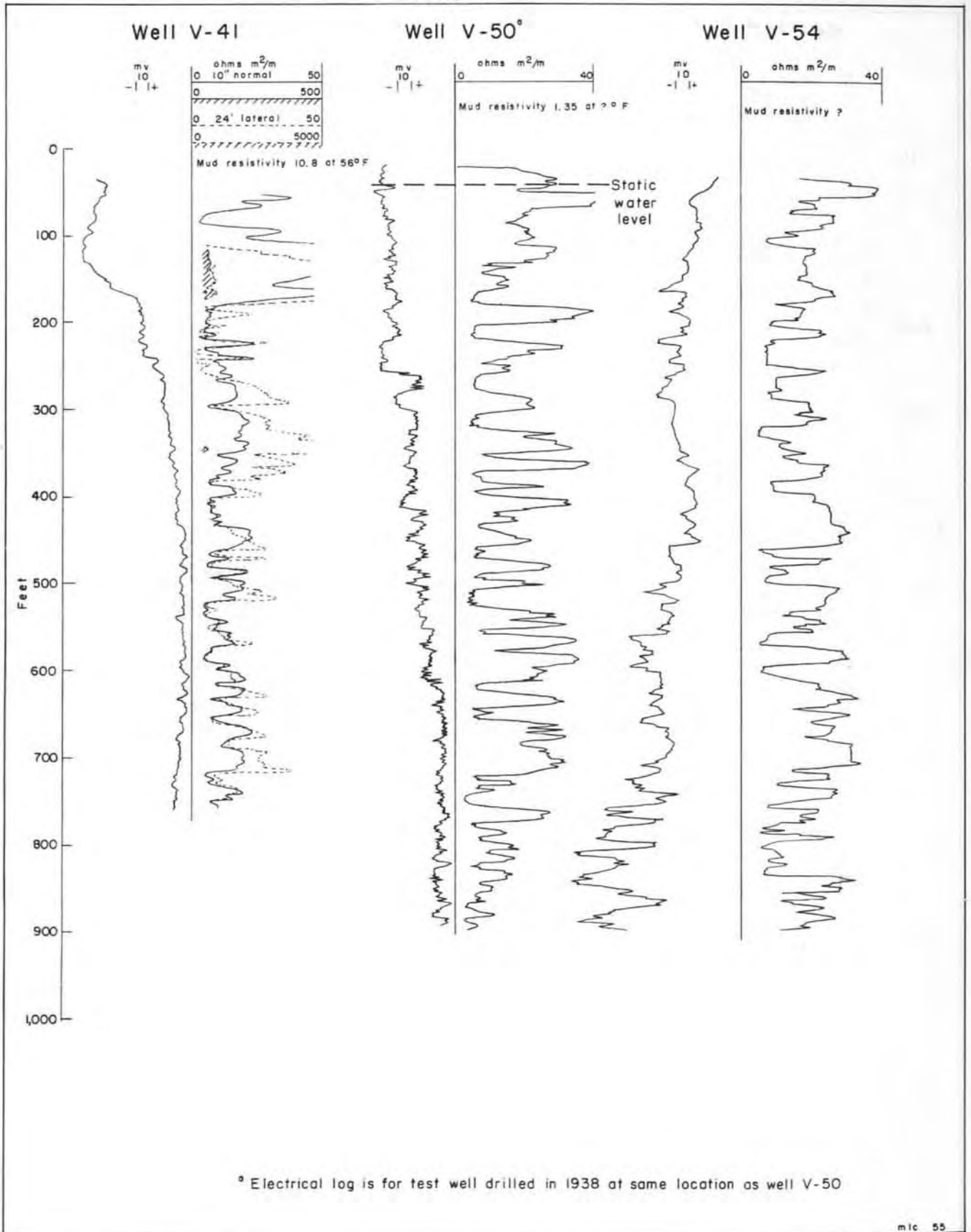


Table 9



<sup>a</sup> Electrical log is for test well drilled in 1938 at same location as well V-50

Table 9

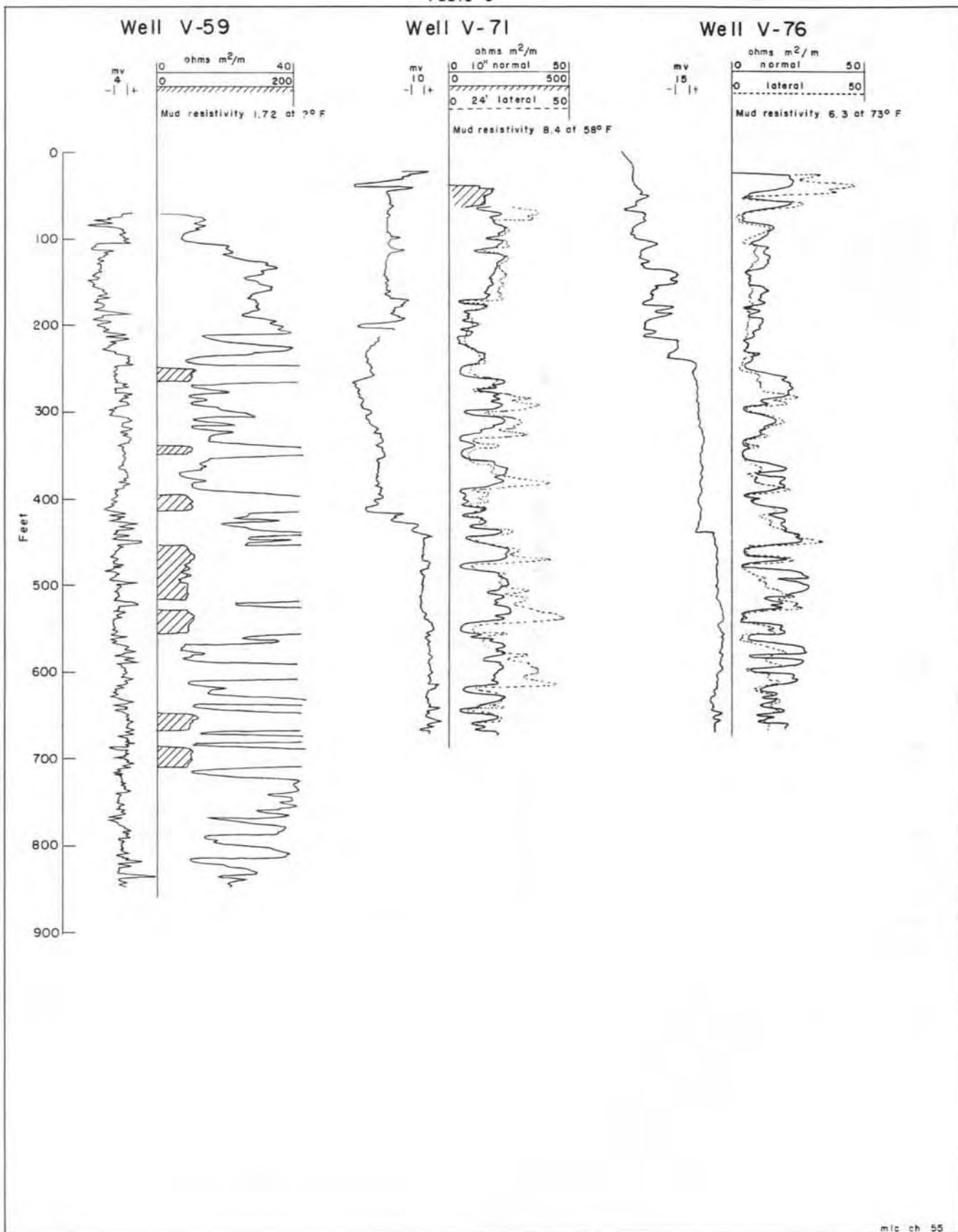


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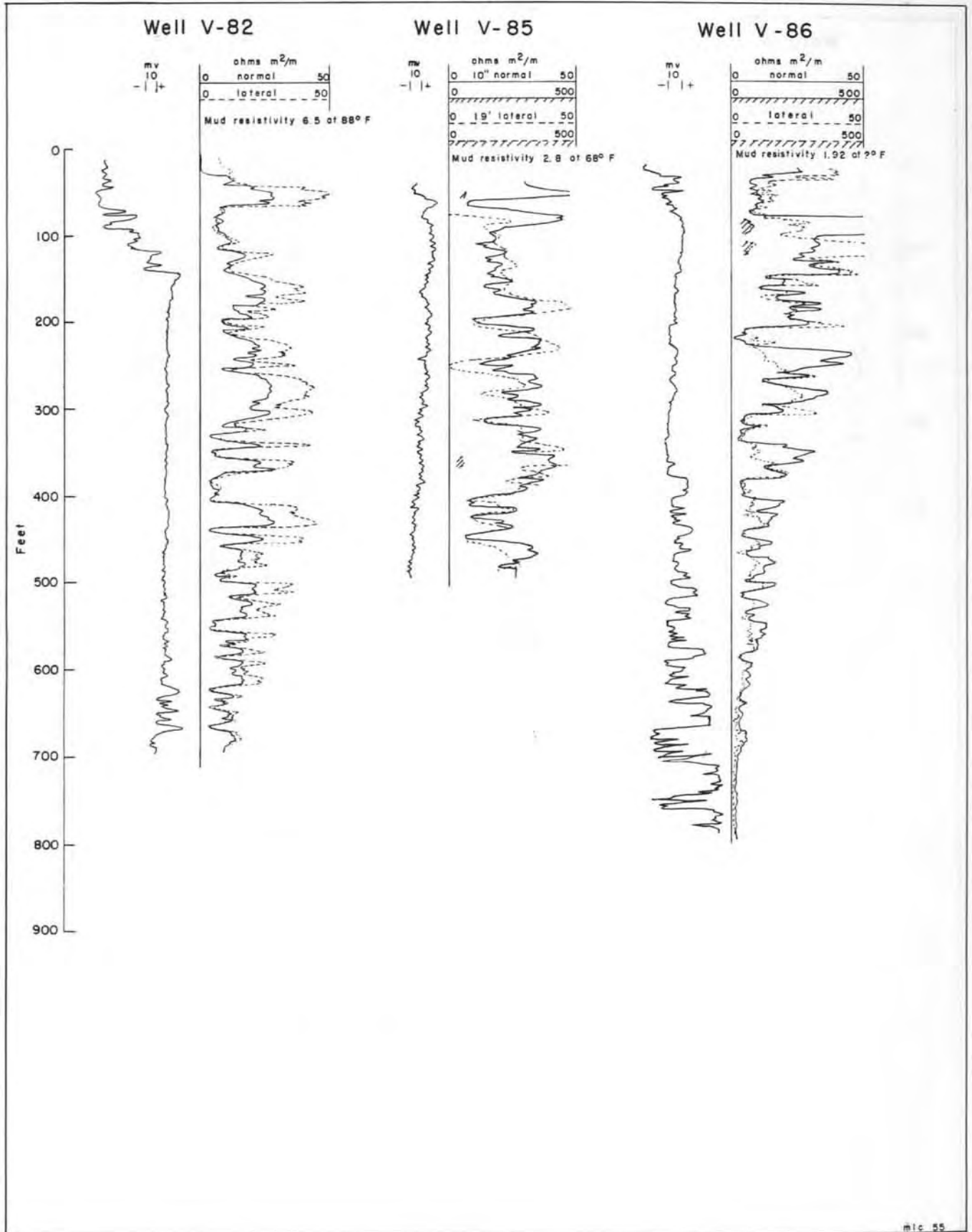


Table 9

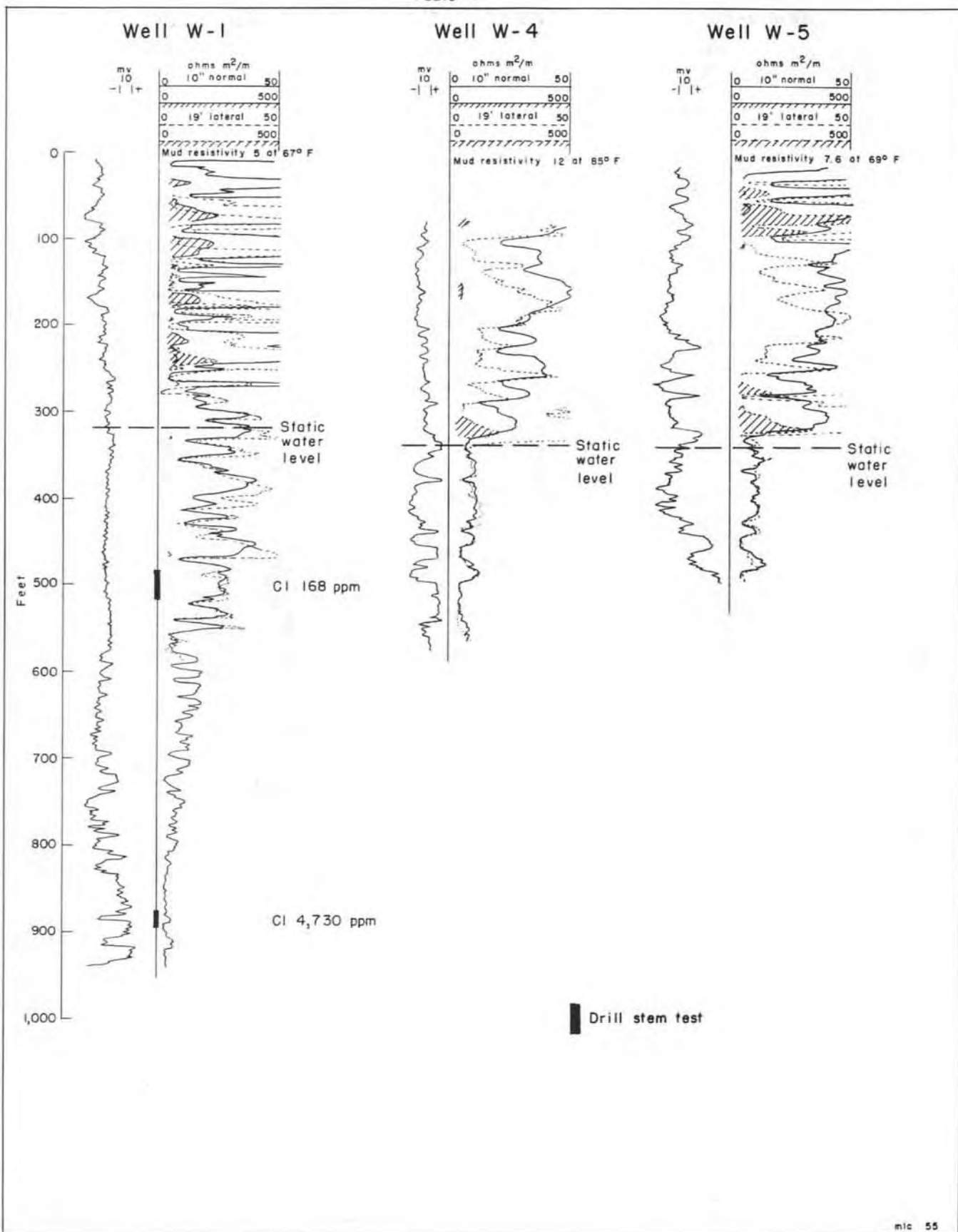
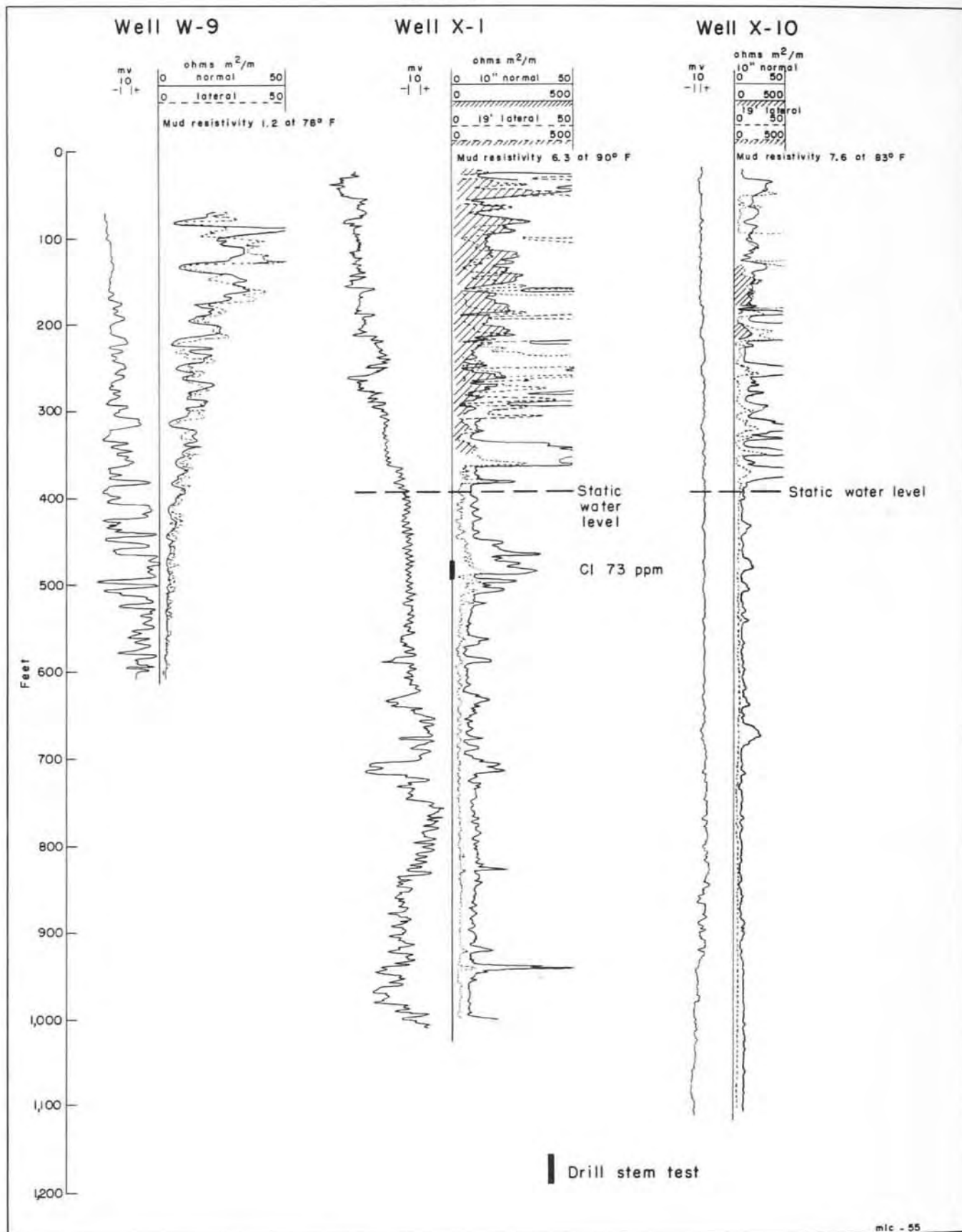


Table 9



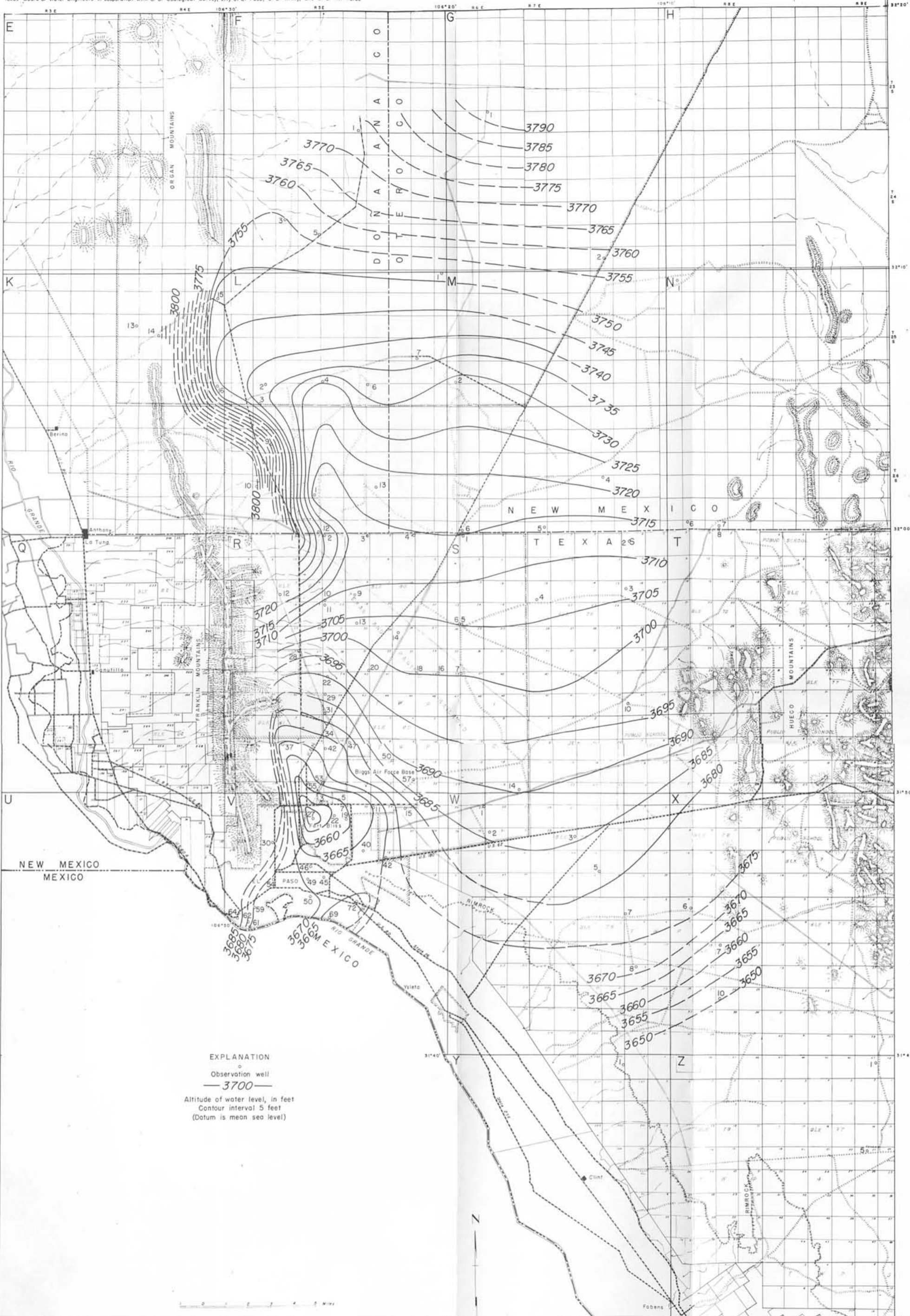


FIGURE 6.-Contour map of water level in the Hueco bolson, January 1954.

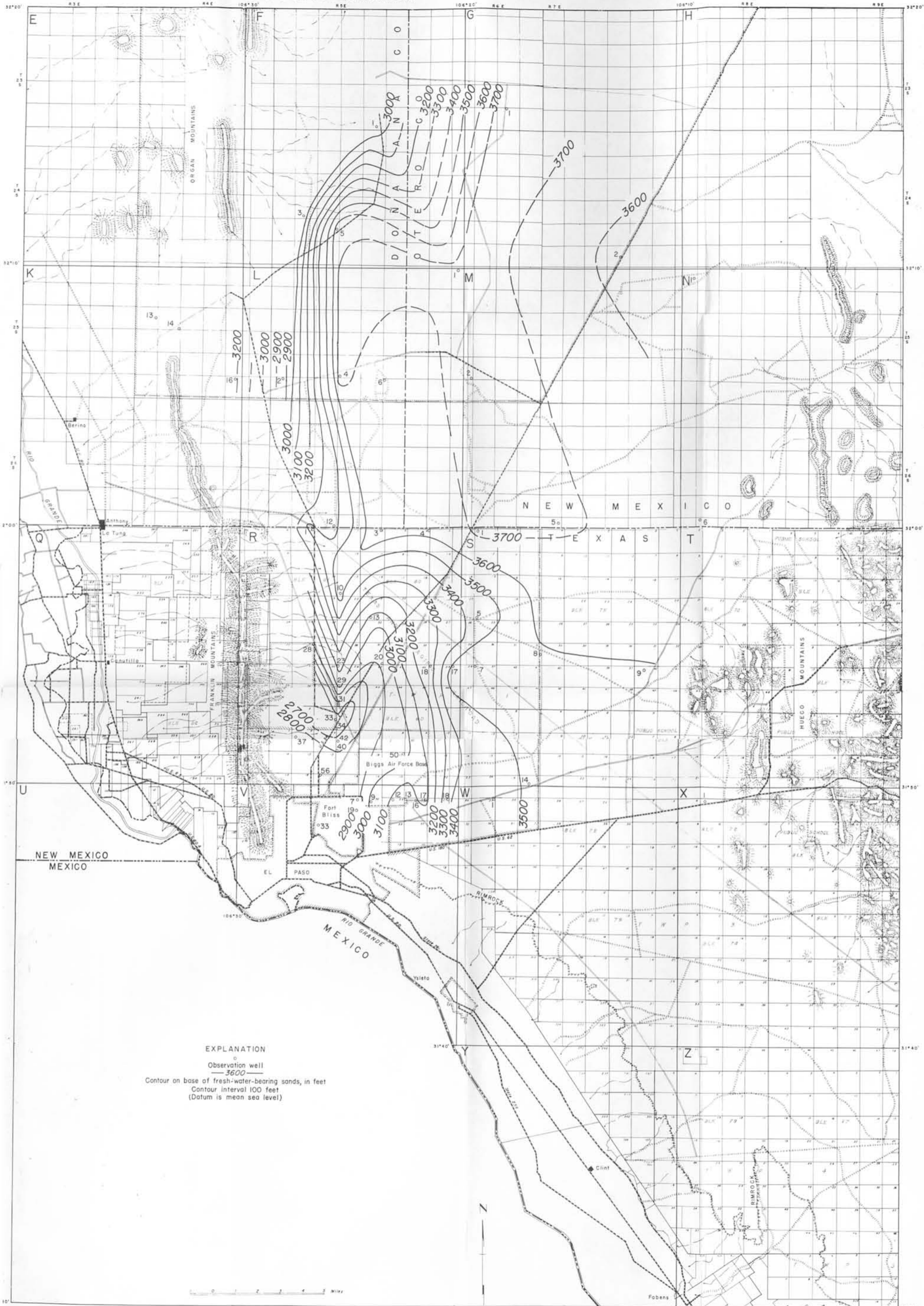


FIGURE 9.-Contours on base of the fresh-water-bearing sands in the Hueco bolson (chloride content less than 250 parts per million)



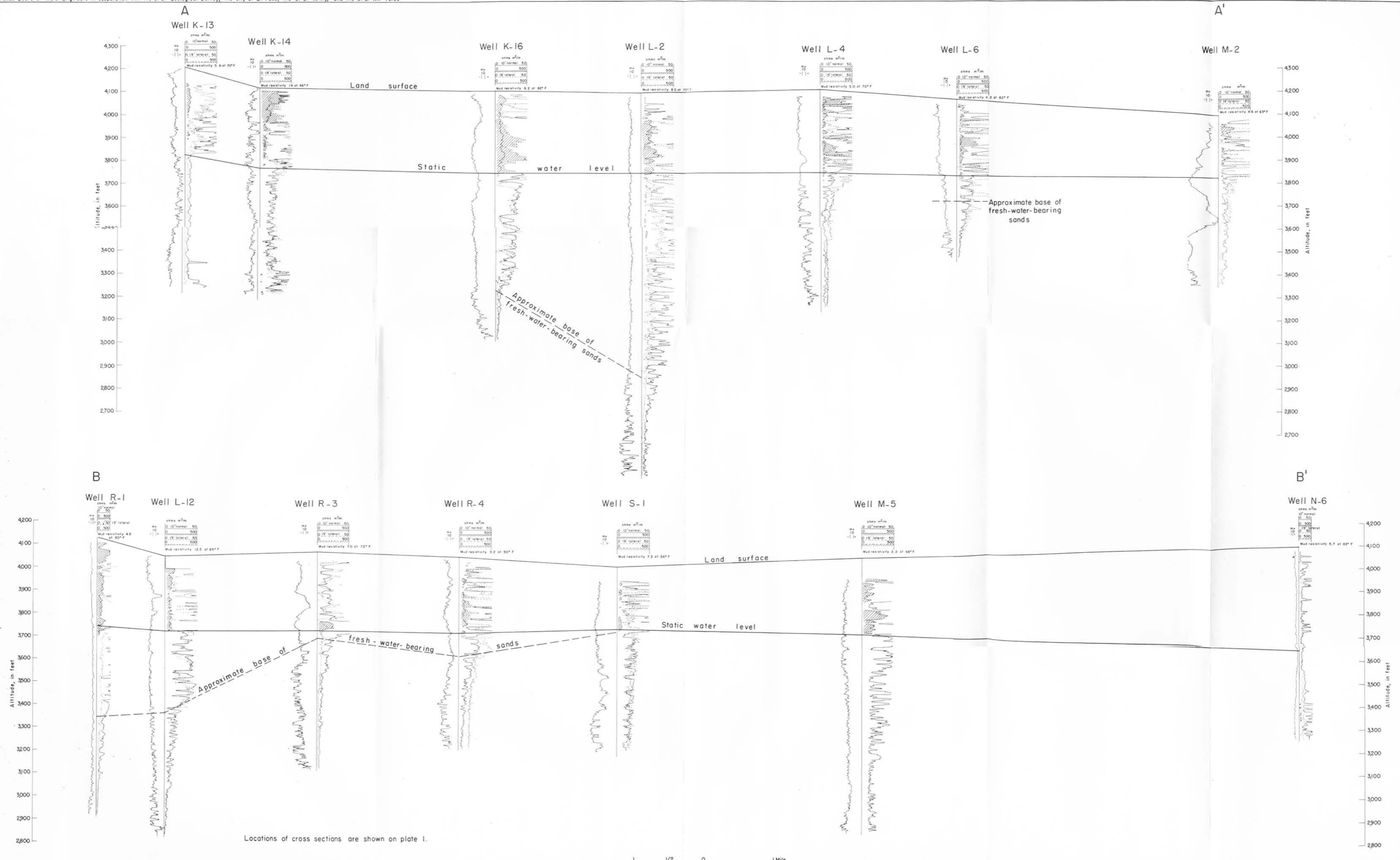


FIGURE 10.—East-west cross sections A-A' and B-B' of the Hueco bolson.

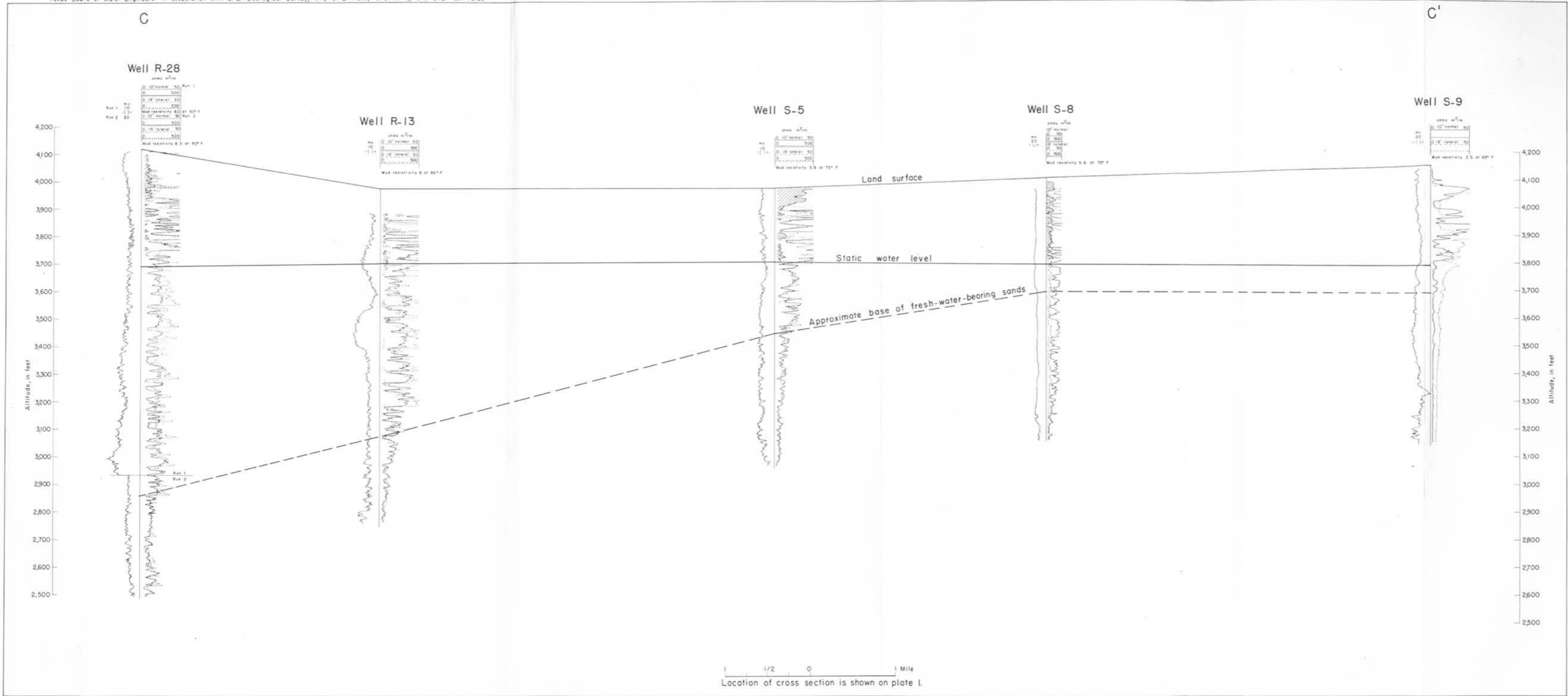
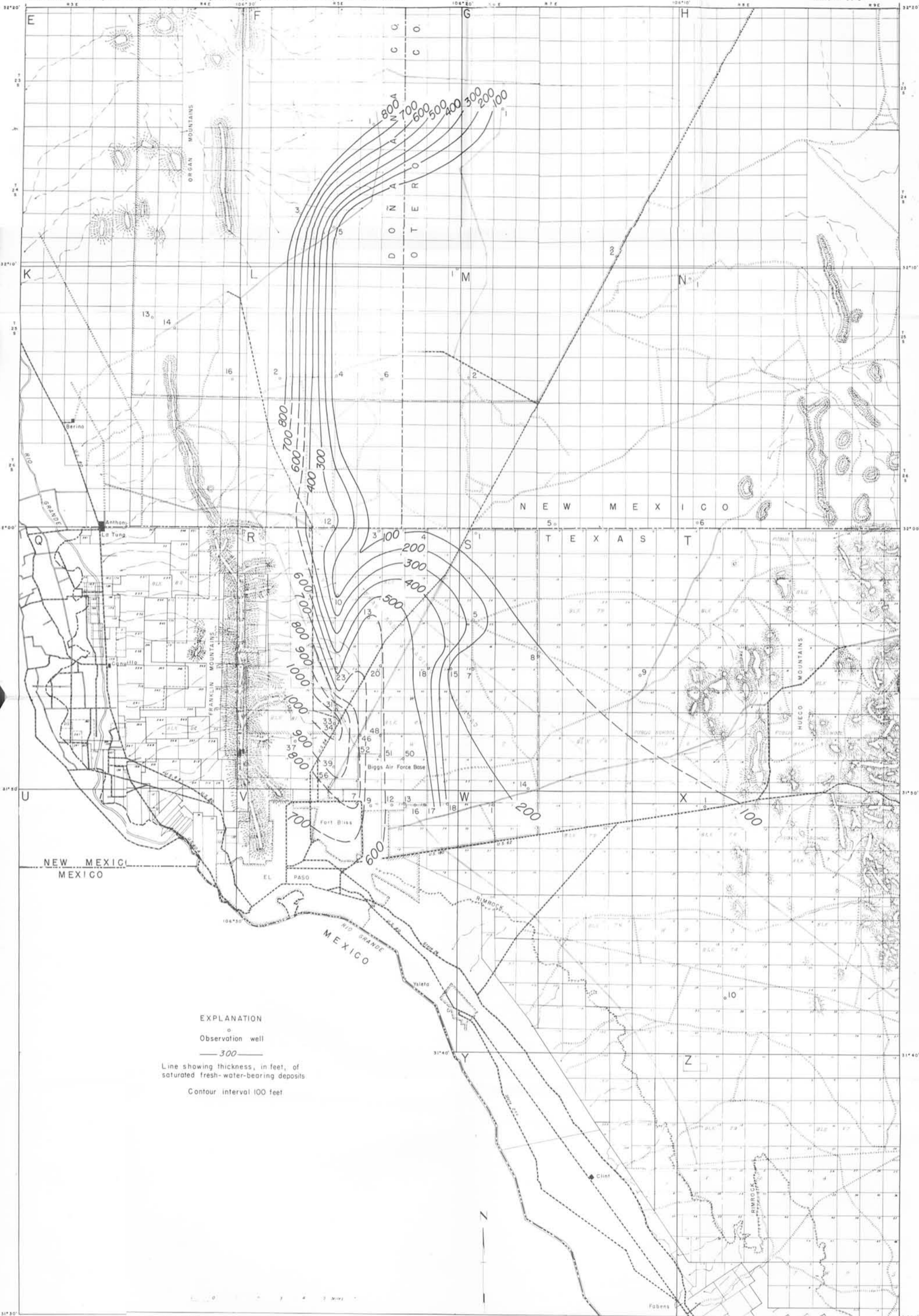


FIGURE II.-East-west cross section C-C' of the Hueco bolson.



Location of cross section is shown on plate I.

FIGURE 12.-North-south cross section D-D' of the Hueco bolson.



EXPLANATION  
 ○ Observation well  
 — 300 —  
 Line showing thickness, in feet, of saturated fresh-water-bearing deposits  
 Contour interval 100 feet

FIGURE 19.-Saturated thickness of fresh-water-bearing deposits in the Hueco bolson (chloride content less than 250 parts per million).

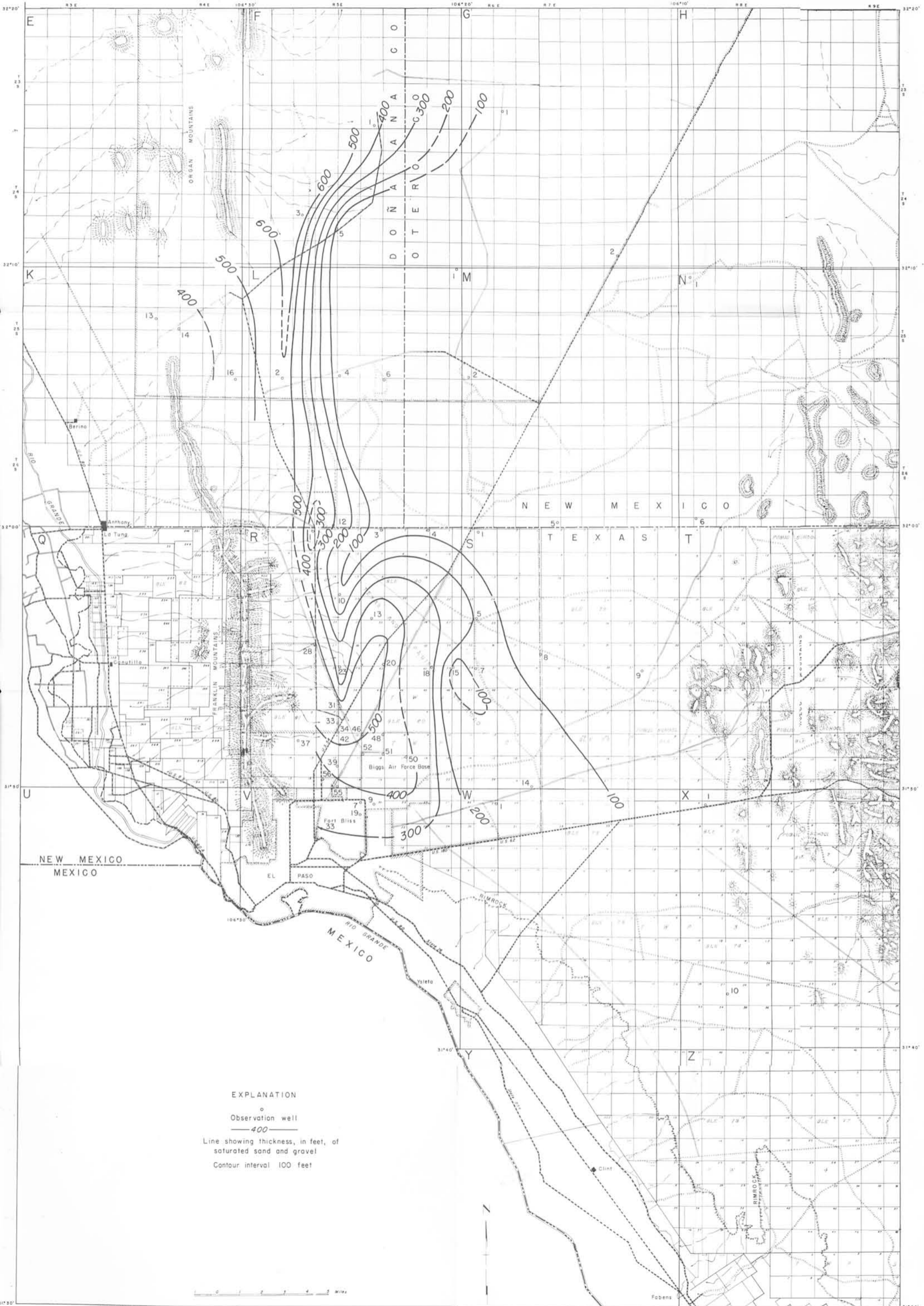
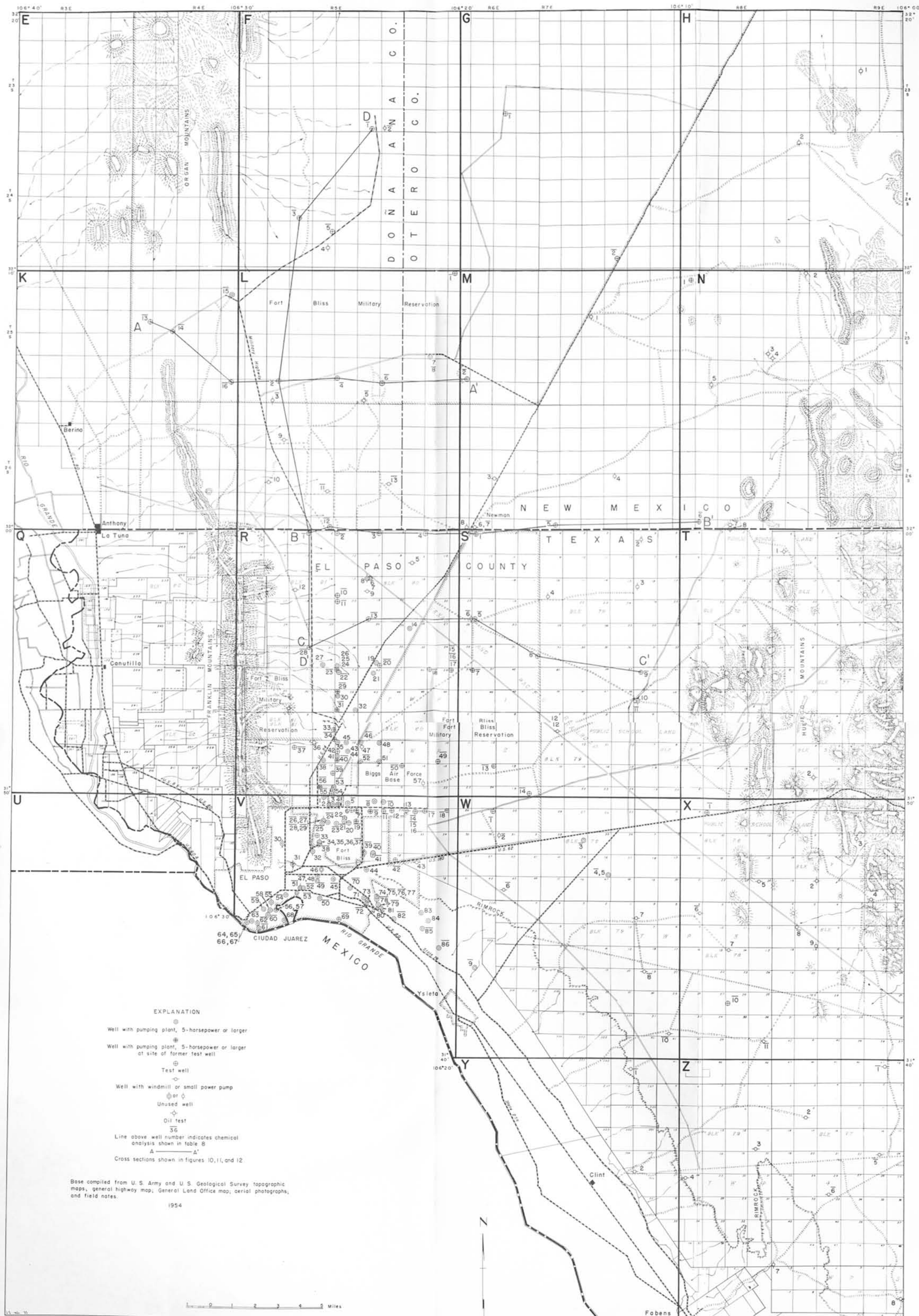


FIGURE 20.- Aggregate thickness of saturated fresh-water-bearing sand and gravel in the Hueco bolson (chloride content less than 250 parts per million).



**EXPLANATION**

- Well with pumping plant, 5-horsepower or larger
- Well with pumping plant, 5-horsepower or larger at site of former test well
- Test well
- Well with windmill or small power pump
- Unused well
- Oil test
- Line above well number indicates chemical analysis shown in table B
- A ——— Δ ———
- Cross sections shown in figures 10, 11, and 12

Base compiled from U. S. Army and U. S. Geological Survey topographic maps, general highway map, General Land Office map, aerial photographs, and field notes.

1954

MAP SHOWING LOCATION OF WELLS IN THE HUECO BOLSON