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**TEXAS BOARD OF WATER ENGINEERS**

H. A. Beckwith, Chairman  
A. P. Rollins, Member  
James S. Guleke, Member



**BULLETIN 5209**

**GROUND-WATER RESOURCES OF STARR COUNTY, TEXAS**

PREPARED COOPERATIVELY BY THE GEOLOGICAL SURVEY,  
UNITED STATES DEPARTMENT OF THE INTERIOR

DECEMBER 1952

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By

Oscar C. Dale, Engineering Aid

United States Geological Survey

Prepared cooperatively by the Geological Survey,  
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# GROUND-WATER RESOURCES OF STARR COUNTY, TEXAS

By

Oscar C. Dale

December 1952

## INTRODUCTION

This report contains a brief discussion of the ground-water resources of Starr County, Tex. It includes records of 421 wells, chemical analyses of water from 132 wells, drillers' logs of 67 wells, two cross sections showing electric logs of oil tests and water wells, and a map showing the location of wells listed.

The records were obtained in the course of an investigation that is a part of a State-wide study of the underground-water resources of Texas. The investigation was made cooperatively by the United States Geological Survey and the State Board of Water Engineers. The field work was started by the writer in August 1950 and completed in December 1950. A preliminary investigation of ground water in the El Sauz area of north-central Starr County was made in January 1950 by W. N. White and C. R. Follett of the State Board of Water Engineers, and the data obtained by them were incorporated in the present report.

## LOCATION OF AREA AND ECONOMIC DEVELOPMENT

Starr County is in southern Texas, approximately 170 miles south of San Antonio and 120 miles from the mouth of the Rio Grande. The county has an area of 1,207 square miles and extends about 35 miles east and west and 42 miles north and south. According to the United States Census, Starr County had a population of 13,948 in 1950. Rio Grande City, the largest town and the county seat, had a population of 2,500. The climate is hot and dry; the average annual rainfall is 17½ inches and the mean annual temperature is 72° F.

The principal sources of income for the people of Starr County are ranching, farming, and oil. About 15,000 acres of land is irrigated with water from the Rio Grande. About 90 percent of this acreage was planted in cotton in 1951. Cotton production from both dry farming and irrigation amounted to about 10,000 bales in 1951. There are 26 oil and gas fields in the county, and 6,672,134 barrels of oil was produced in 1950. Commercial sand and gravel pits are operated in the southeastern part of the county and in the southern part west of Rio Grande City. A brick kiln is in operation 5 miles east of Rio Grande City.

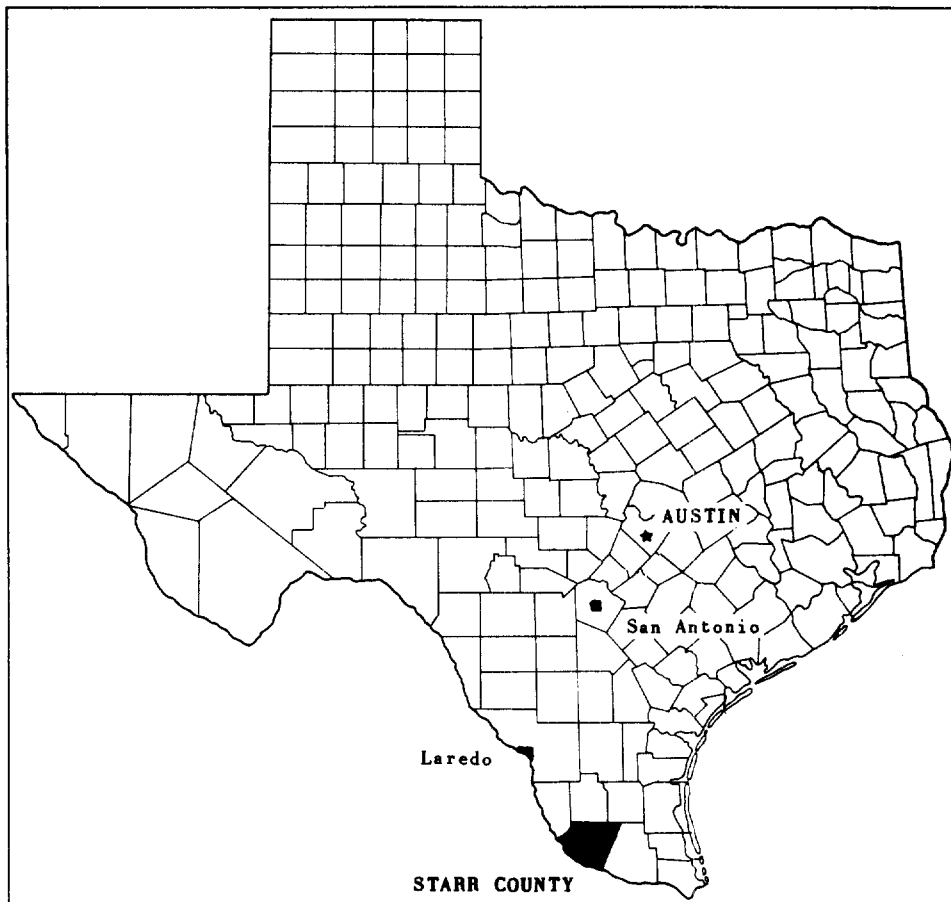


FIGURE 1.- Map of Texas showing location of Starr County.

#### ACKNOWLEDGMENTS

Acknowledgments are due many persons who contributed information that was used in the preparation of this report. Well-drilling contractors cooperated generously by furnishing well logs and other data. Representatives of the Sun Oil Co., the Continental Oil Co., and the Arkansas Fuel Oil Co. supplied valuable information. Special mention is made of the assistance given by the Rio Grande City offices of the Soil Conservation Service and the Production and Marketing Administration of the Department of Agriculture, and the San Benito office of the Hydrological Section of the International Boundary and Water Commission. The friendly interest shown by the farmers and ranchers of Starr County is sincerely appreciated.

## OCCURRENCE OF GROUND WATER

The geologic map of Texas, which was published by the U. S. Geological Survey in 1937, shows that the following formations crop out in Starr County, from oldest to youngest and from west to east: The Cook Mountain formation and Sparta sand, undifferentiated, the Yegua formation, and the Jackson group, undifferentiated, all of Eocene age, the Frio clay, of Oligocene (?) age; the Catahoula tuff, of Miocene (?) age; and the Goliad sand, of Pliocene age. Sand dunes of Recent age cover the surface in the northeastern corner of the county; alluvial deposits, also of Recent age, are present in the Rio Grande Valley below Roma. A portion of the geologic map which includes Starr County is shown on plate 1.

The Cook Mountain formation crops out in an area of less than 10 square miles in the extreme western part of the county. It dips eastward beneath younger strata, but available records indicate that it yields water to only a few wells in the county. Well E-14, 818 feet deep, is believed to draw water from sands of the Cook Mountain formation or possibly from the underlying Sparta sand. The well is reported to yield good water. Well E-28, however, which is only 100 feet deep, yields water containing 4,400 parts per million of dissolved solids.

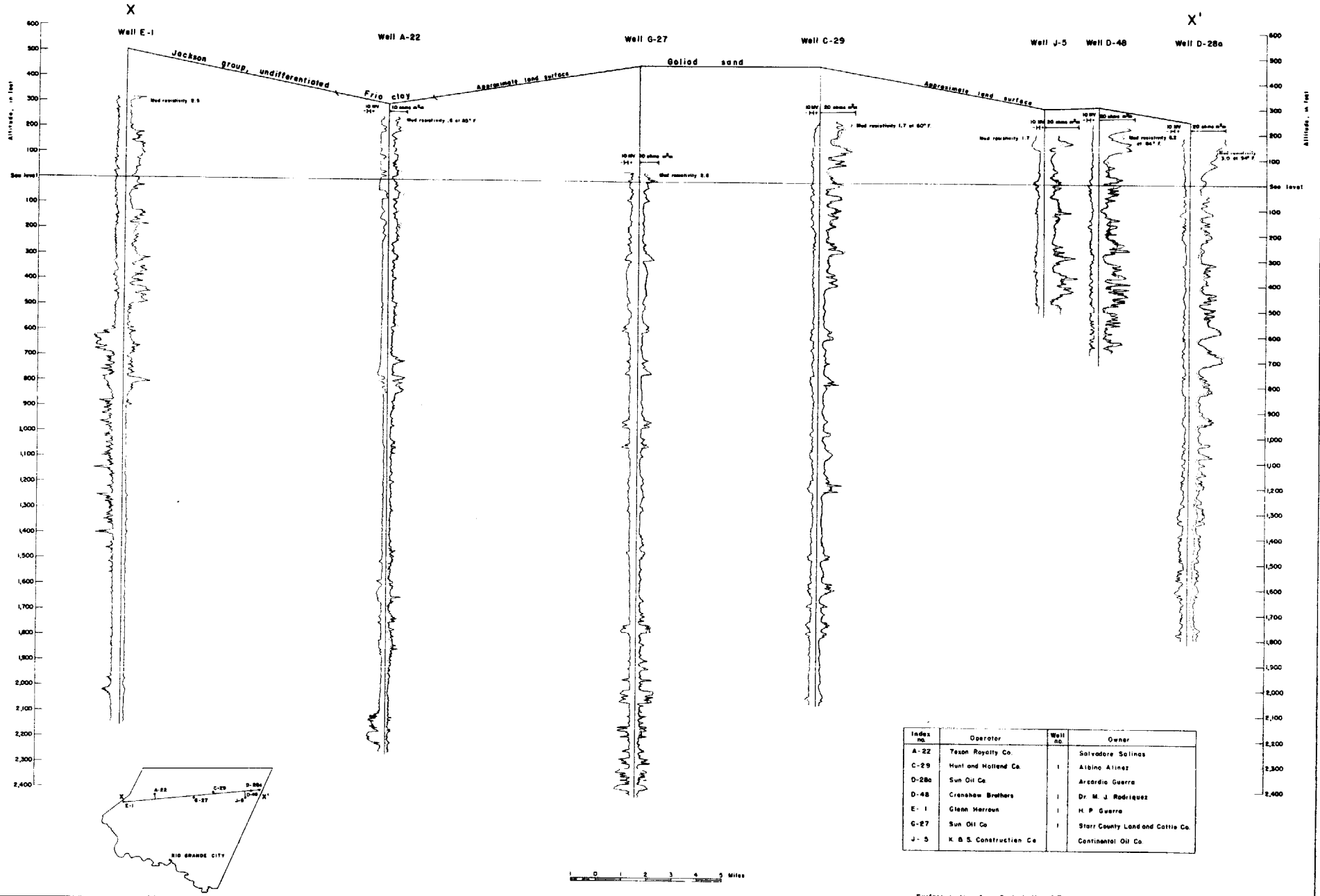
The Yegua formation, the Jackson group, the Frio clay, and the Catahoula tuff crop out, from west to east, in parallel bands which trend north and south. The outcrop of the Yegua formation is east of the outcrop of the Cook Mountain formation and is approximately 4 miles wide. The outcrop of the Jackson group is about 12 miles wide, and the outcrops of the Frio clay and the Catahoula tuff each range in width from 2 to 4 miles. Available records indicate that sands in these formations yield only highly mineralized water; consequently throughout most of the western part of Starr County very little potable ground water is available.

The Goliad sand, which crops out over most of the eastern two-thirds of the county, is the principal ground-water reservoir in Starr County. Approximately 300 wells obtain water from the Goliad sand in the county. Most of the wells were drilled for domestic or stock supplies and have not been tested for large yields. The maximum yield reported is 500 gallons a minute. Most of the wells yield water whose quality is satisfactory for most purposes.

Recent valley fill along the Rio Grande furnishes water to about 30 wells for domestic and stock use. The quality of the water varies from place to place; some wells yield highly mineralized water whereas others yield water suitable for most purposes.

The sand dunes in the northeastern corner of the county are not important sources of ground water.

Electrical logs of oil tests along two lines, X-X' and Y-Y', are shown in figures 2 and 3. The logs show the nature of the formations underlying the county and indicate to some extent the quality of the water contained in the sands.



Surface geology from Geologic Map of Texas, U. S. Geological Survey, 1937

FIGURE 2.-Electrical logs of wells along line X-X' in northern Starr County, Tex.

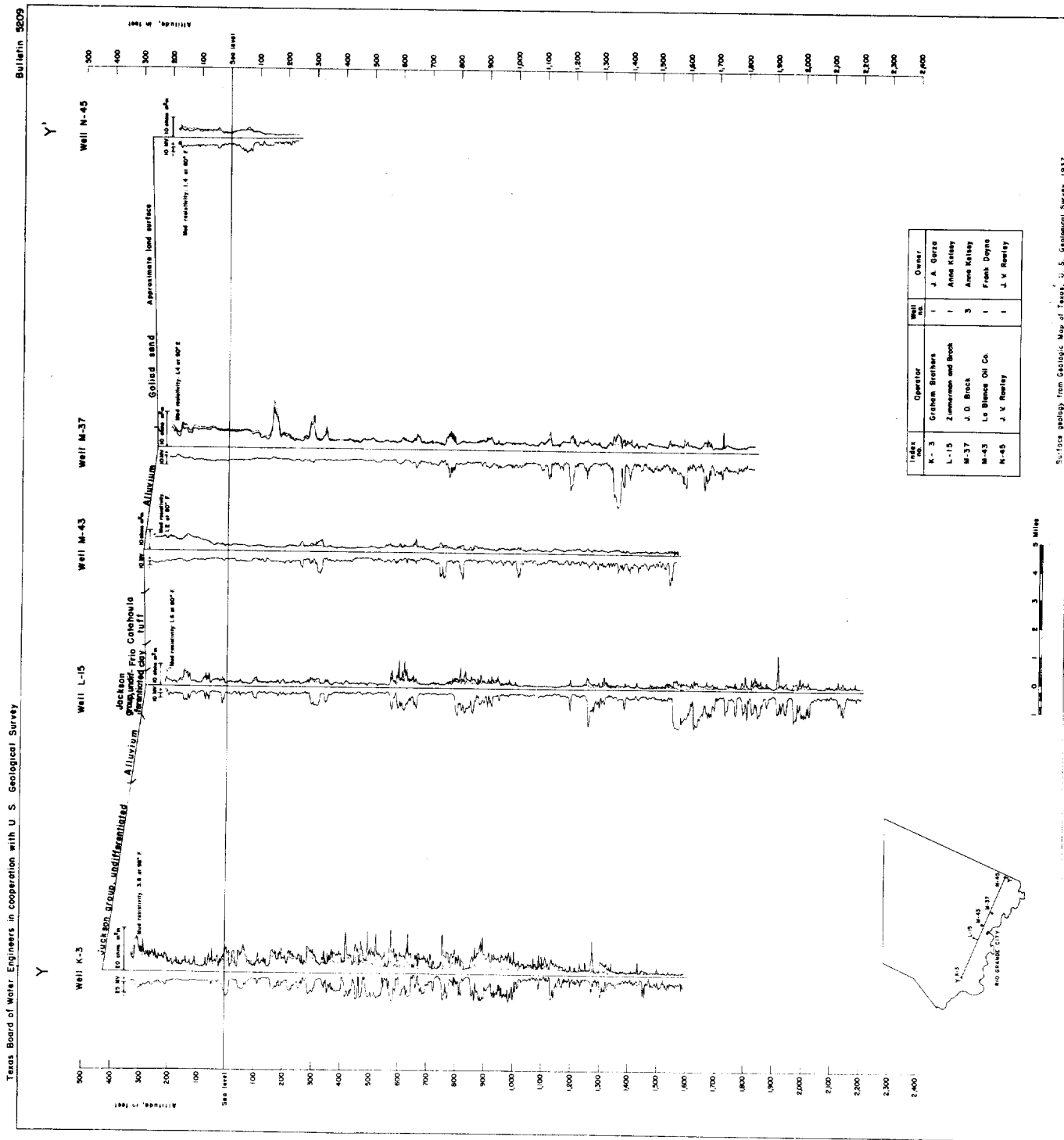


FIGURE 3.-Electrical logs of wells along line Y-Y' in southern Starr County, Tex.



Table 1.- Records of wells in Starr County, Texas

All wells are drilled unless otherwise noted in the remarks column.

Method of lift: A, air lift; C, cylinder; E, electric; G, gasoline; H, hand; T, turbine; W, windmill. Number indicates horsepower.

Use of water: D, domestic; Ind, industrial; Irr, irrigation; N, not used; P, public supply; S, stock.

Well	Distance from Rio Grande City	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift	Use of water	Remarks
							Below land surface (ft.)	Date of measurement			
A-1	28½ miles northwest	Downs Royalty Co.	John Dickens	Old	159	6	109.9	Oct. 23, 1950	C,W	S	Casing reported to 150 feet.
A-2	do.	H. P. Guerra	L. A. Fears	1949	217	5½	130.2	Oct. 26, 1950	C,W	S	Cased to 217 feet. Temp. 85½° F. See log.
A-3	28 miles north	Antioco Munoz	H. L. Staggs	1946	214	6	86.8	Oct. 23, 1950	C,W	S	Cased to 214 feet. Slotted from 196 to 214 feet. See log.
A-4	27½ miles north	do.	Antioco Munoz	1910	48	60	28.9	do.	C,W	D,S	Dug. Casing: 20 feet of stone. Las Comas Ranch.
A-5	28 miles north	H. P. Guerra	--	1910	36	96	27.4	Oct. 26, 1950	C,W	S	Dug. Casing: 20 feet of concrete. Charco Largo Ranch. Temp. 82° F.
A-6	do.	do.	John Dickens	1946	325	6½	132.2	do.	C,W	S	Cased to 325 feet. Temp. 85° F.
A-7	26 miles north	do.	Fritz Vollmer	1932	112	6	26.0	do.	C,G	D,S, Ind	Cased to 112 feet. Pumps 75 gpm. Supplies Sun Oil Camp 3 miles west through 2-inch pipeline. San Roman Ranch. Temp. 81° F.
A-8	26½ miles north	do.	do.	1926	170	4	56.7	do.	C,W	S	Cased to 170 feet. "Moro Ranch". Temp. 81½° F.
A-9	26½ miles northwest	F. S. de Canales Estate	Raphael Canales	1915	200	6	151.3	Oct. 23, 1950	C,W	S	
A-10	25½ miles northwest	Zaragoza Salinas	L. A. Fears	1948	185	4½	--	--	C,W	S	Cased to 185 feet. "El Fresno Ranch". See log.
A-11	25 miles northwest	do.	Antonio Saenz	1942	100	5	47.4	Oct. 18, 1950	C,W	S	Cased to 100 feet. Temp. 79° F.
A-12	24 miles north	Manuel Hinojosa	-- Williams	1930	255	5½	38.6	Oct. 26, 1950	C,W	D,S	Cased to 60 feet. "Viboras Ranch".
A-13	22½ miles north	Felipe Saenz	Antonio Saenz	1939	42	6	22.9	Oct. 23, 1950	C,W	S	Cased to 20 feet.
A-14	22 miles north	Guerra & Canales	Guerra & Canales	1919	36	60	25.5	do.	C,W	D,S	Dug. Casing: 2½ feet of concrete and 17½ feet of wood. San Juan de Dios Ranch.
A-15	23½ miles northwest	Fidel Gonzalez	Fidel Gonzalez	1930	20	48	16.1	Oct. 18, 1950	C,W	D,S	Dug. Casing: 10 feet of wood.
A-16	24 miles northwest	Juan Ramos	A. L. Herschapp	1950	363	4½	--	--	C,W	D,S	Cased to 360 feet. "La Casita Ranch".
A-17	do.	J. O. Clark Fuel Co.	L. A. Fears	1949	540	4	--	--	A	Ind, S	Cased to 540 feet. Used in steam boiler drill rigs. See log.
A-18	23½ miles northwest	Cayetano Ramos	--	1950	36	48	32.3	Oct. 18, 1950	H	D,S	Dug. No casing. "Aqua Dulce Ranch".
A-19	23 miles northwest	do.	Danrey Petroleum Co.	1937	1,261	8	--	--	C,W	N	Oil test, now abandoned.

Table 1. - Records of wells in Starr County--Continued

Well	Distance from Rio Grande City	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift	Use of water	Remarks
							Below land surface (ft.)	Date of measurement			
A-20	21½ miles northwest	Salvadore Salinas	L. A. Fears	1947	238	6	--	--	C, G, 3	S, Ind	Cased to 238 feet. Supplies water for drill rigs. See log.
A-21	21 miles northwest	do.	Salvadore Salinas	1948	11	60	--	--	C, W	D, S	Dug. Casing: 11 feet of concrete. Las Escobas Ranch.
A-22	20½ miles northwest	do.	Texon Royalty Co.	1947	2,610	--	--	--	--	N	Oil test. Electric log in files of the Texas Board of Water Engineers. Altitude 310 feet.
A-23	22 miles northwest	do.	Salvadore Salinas	1925	30	60	16.0	Oct. 17, 1950	C, W	S	Dug. Casing; 12 feet of concrete. Lavor Ranch.
A-24	21 miles north	Maria Guerra	--	1927	30	60	26.7	Oct. 23, 1950	C, W	D, S	Dug. Casing: 10 feet of concrete. San Pedro Ranch.
A-25	do.	Antonio Garcia	Antonio Garcia	1942	38	5	26.8	do.	C, W	D, S	Cased to 38 feet. "El Capotito Ranch."
B-1	28 miles north	King Ranch Corp.	E. R. David	1938	250	5	224.9	Mar. 6, 1951	C, W	S	Cased to 240 feet. "La Coma" well.
B-2	28½ miles northeast	do.	do.	1936	300	5	188.7	do.	C, W	S	Cased to 285 feet. Sand reported from 285 to 300 feet. San Juan well.
B-3	do.	do.	do.	1946	260	5	216.8	do.	C, W	S	Cased to 245 feet. "El Sordo" well.
B-4	27½ miles northeast	do.	do.	1932	250	6	--	--	C, W	S	Cased to 245 feet. "Granjenitos" well.
B-5	26½ miles northeast	do.	do.	1943	240	5	225.3	Mar. 6, 1951	C, W	S	Cased to 236 feet. "Brazil" well. Temp. 86° F.
B-6	27 miles north	do.	do.	1932	260	5	145.1	do.	C, W	S	"San Jose" well.
B-7	26½ miles north	do.	do.	1932	500	5	166.1	do.	C, W	S	Cased to 250+ feet. "Leoncitos" well.
B-8	27½ miles north	do.	--	--	300	6	94.9	do.	C, W	S	"San Alvarado" well. Temp. 84° F.
B-9	23½ miles north	Isidro Guerra	Isidro Guerra	1937	74	60	50.3	Oct. 23, 1950	C, W	D, S	Dug. Casing: 6 feet of concrete. Santa Brijida Ranch.
B-10	22 miles north	Camillo Gonzalez	Antonio Saenz	1948	250	4½	--	--	C, W	S	Cased to 250 feet. See log.
B-11	20½ miles north	Adolpho Gonzalez	do.	1935	500	5	197.5	Nov. 16, 1950	C, W	S	Temp. 84° F.
B-12	22½ miles north	Enrique Gonzalez	do.	1928	224	4½	--	--	C, W	D, S	Cased to 224 feet. "El Matho Ranch."
B-13	do.	do.	do.	1933	360	4½	107+	Nov. 16, 1950	C, W	S	Cased to 360 feet. Well obstructed at 107 feet.
B-14	21½ miles north	Santiago Gonzalez	John Dickens	1912	300	4	190.1	do.	C, W	S	Cased to 300 feet. Temp. 87° F.
B-15	23 miles northeast	H. P. Guerra	Fritz Vollmer	1922	294	--	139+	Oct. 25, 1950	C, W	D, S	Well obstructed at 139 feet. Las Islas Ranch.
B-16	25 miles northeast	do.	Jack O'Neill	1940	318	5½	232.5	do.	C, W	S	Cased to 318 feet.

Table 1. - Records of wells in Starr County--Continued

Well	Distance from Rio Grande City	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift	Use of water	Remarks
							Below land surface (ft.)	Date of measurement			
B-17	24 miles northeast	Pedro A. Saenz	Fred Fielder	1949	462	5½	240.7	Oct. 5, 1950	C, W	S	Cased to 462 feet. See log.
C-1	30 miles northeast	M. M. Guerrero	Sun Oil Co.	1942	700	8	--	--	None	N	Oil test. Drilled to 5,282 feet. Plugged back to 700 feet. Casing: 100 feet of 8-inch; 600 feet of 6-inch. See log.
C-2	29 miles northeast	do	Fritz Vollmer	1937	350	4½	--	--	C, W	D, S	Cased to 350 feet. "Buenos Aries Ranch".
C-3	29½ miles northeast	do	L. A. Fears	1950	308	4½	85.4	Oct. 11, 1950	C, W	S	Cased to 303 feet. Temp. 84° F. See log.
C-4	27½ miles northeast	H. P. Guerra	Ramon Falcon	1937	311	4½	117.6	Oct. 25, 1950	C, W	D, S	Cased to 311 feet.
C-5	28 miles northeast	R. T. Margo	John Dickens	1944	265	4½	--	--	C, W	S	Cased to 265 feet.
C-6	28½ miles northeast	do.	Fritz Vollmer	1932	300	5	113.0	Oct. 11, 1950	C, W	S	Cased to 285 feet.
C-7	29 miles northeast	do.	A. L. Herschap	1950	665	6	--	--	A	Ind, S	Cased to 651 feet. Used for State road construction. To be used for irrigation. See log.
C-8	do.	do.	Antonio Saenz	1937	305	6	--	--	C, W	Ind, D	Cased to 300 feet. Supplies water for cotton gin.
C-9	29½ miles northeast	Antonio Garcia	Antonio Garcia	1920	100	88	28.5	Oct. 11, 1950	C, W	D, S	Dug. Casing: 10 feet of concrete. "Sal Colorado Ranch".
C-10	31 miles northeast	Leocadio Olivarez	L. A. Fears	1948	90	4½	72.9	do.	C, W	D, S	Cased to 90 feet.
C-11	32 miles northeast	Ramon Lopez Estate	Francisco Vela	1930	76	4	--	--	C, W	D, S	Driven. No casing. "Tres Reyes Ranch".
C-12	30 miles northeast	Pedro A. Saenz	--	1935	98	4	67.2	Sept. 3, 1945	C, W	D	Cased to 22 feet. "La Gloria Ranch".
C-13	29½ miles northeast	H. P. Guerra	Fritz Vollmer	1941	110	4	79.8	Oct. 25, 1950	C, G	Ind	Cased to 110 feet. Used for cotton gin.
C-14	28½ miles northeast	W. B. Osburn	--	1941	420	6	86.7	Oct. 5, 1950	C, W	S	
C-15	26 miles northeast	H. P. Guerra	Ramon Falcon	1928	310	5½	211.0	Oct. 25, 1950	C, W	S	
C-16	24 miles northeast	Arcadio Rodriguez	Fred Fielder	1949	382	4½	204.1	Oct. 5, 1950	C, W	S	Cased to 382 feet. See log.
C-17	24½ miles northeast	Ignacio Trevino	Antonio Saenz	1949	410	4½	208.6	do.	C, W	S	Cased to 410 feet. Temp. 78° F. See log.
C-18	29½ miles northeast	E. A. Montalvo	Pedro Garcia	1903	110	4½	--	--	C, W	D, S	Cased to 110 feet.
C-19	28½ miles northeast	Vidal Perez	--	1924	330	4	175.4	Sept. 11, 1950	C, W	D, S	Cased to 300 feet. "San Jose Ranch".

Table 1 - Records of wells in Starr County--Continued

Well	Distance from Rio Grande City	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift	Use of water	Remarks
							Below land surface (ft.)	Date of measurement			
C-20	28 miles northeast	Leandro Saenz	L. A. Fears	1948	254	4½	92.6	Sept. 11, 1950	C, W	S	Cased to 254 feet. Temp. 90° F.
C-21	do.	Mrs. S. G. Pena	do.	1949	251	4½	84.5	do.	C, W	S	Cased to 251 feet. See log.
C-22	27½ miles northeast	Vincente Saenz	Antonio Saenz	1937	250	4	75.4	do.	C, W	D, S	"Las Medanito Ranch".
C-23	27 miles northeast	do.	--	Old	145	84	78.1	do.	C, W	D, S	Dug. Casing: 10 feet of stone.
C-24	25½ miles northeast	Cruz Saenz	Crenshaw Co.	1949	150	4½	51.1	Sept. 12, 1950	C, W	D	Cased to 20 feet. "Santa Anna Ranch".
C-25	do.	S. S. Saenz	Antonio Saenz	1947	175	4½	62.0	do.	C, W	D	Cased to 60 feet.
C-26	24 miles northeast	Gilberto Alinez	do.	1949	262	4	--	--	C, W	D, S	Cased to 262 feet.
C-27	do.	Raphael Ramirez	Felipe Saenz	1920	220	5	191.6	Sept. 26, 1950	C, W	S	"El Estribo Ranch".
C-28	23 miles northeast	Maurio Ramirez	do.	1927	365	5	--	--	C, W	D, S	Cased to 365 feet. "Santa Anita Ranch".
C-29	20 miles northeast	Albino Alinez	Hunt & Holland Co.	1947	5,511	--	--	--	--	--	Oil test. Electric log in files of Texas Board of Water Engineers. Altitude, 464 feet.
D-1	33½ miles northeast	Rene Montalvo	--	Old	51	84	28.3	Sept. 6, 1950	C, W	D, S	Dug. Casing: 4 feet of stone. "Santa Elena Ranch".
D-2	do.	Laurencio Garza	Enrique Garza	1940	90	5	45.0	do.	C, W	D, S	Driven. Cased to 20 feet.
D-3	34 miles northeast	do.	--	1860	72	120	41.9	do.	C, W	S	Dug. Casing: 20 feet of stone.
D-4	33½ miles northeast	Victor Contreras	Alberto Vela	1947	84	6	37.7	do.	C, W	D, S	Driven. Cased to 12 feet.
D-5	35 miles northeast	Andres Garza	Antonio Saenz	1948	217	4½	43.1	Oct. 5, 1950	C, W	S	Cased to 217 feet.
D-6	do.	Santiago Pena	Santiago Pena	1929	60	4½	43.3	Aug. 31, 1950	C, W	D, S	Driven. Cased to 6 feet.
D-7	35½ miles northeast	Emilio Trevino	Eugene Garner	1943	407	4½	--	--	C, W	D, Ind	Cased to 407 feet. Gun-perforated 371 to 407 feet. Water used for steam boiler rigs for drilling. See log.
D-8	do.	do.	--	1910	125	4	44.2	Sept. 6, 1950	C, W	D, S, Irr	Cased to 10 feet. Irrigates approximately one acre.
D-9	do.	Mrs. Eustacio Zarate	Sun Oil Co.	1945	500	4	89.0	do.	C, W	S	Cased to 500 feet.
D-10	37 miles northeast	Juan Villareal	--	Old	85	12	69.9	do.	C, W	S	Driven.
D-11	35½ miles northeast	M. Valverde	Francisco Vela	--	55	8	28.1	Aug. 30, 1950	C, W	D, S	Driven. Casing 4 feet of tile.

Table 1. - Records of wells in Starr County--Continued

Well	Distance from Rio Grande City	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift	Use of water	Remarks
							Below land surface (ft.)	Date of measurement			
D-12	34½ miles northeast	Augustine Olivarez	--		120	6	25.1	Sept. 5, 1950	C, W	D, S	Driven.
D-13	32½ miles northeast	Enrique Garza	Enrique Garza	1923	90	60	28.8	Aug. 31, 1950	C, W	D, S	Dug. Casing: 40 feet of stone.
D-14	31 miles northeast	Manuel Laurel	L. A. Fears	1949	124	4½	54.3	do.	C, W	D, S	Cased to 124 feet. San Raphael Ranch.
D-15	32 miles northeast	Meliso Contreras	M. Vela	1930	70	5	20.4	do.	C, W	D, S	Driven. Cased to 8 feet.
D-16	31½ miles northeast	Rene Montalvo	Manuel Villareal	1938	90	4½	42.3	do.	C, W	S	Driven. Cased to 10 feet.
D-17	do.	E. A. Montalvo	A. H. Masiran	1941	927	7.6	--	--	C, G	D, Ind	Casing: 482 feet of 7-inch, 445 feet of 6-inch. Water used for steam boiler for drilling rigs. See log.
D-18	33 miles northeast	San Isidro School District	Francisco Vela	1928	100	4½	25.3	Aug. 17, 1950	C, W	N	Cased to 2 feet.
D-19	do.	do.	Pursley & Sons	1950	823	7	--	--	T, E, 3	P	Cased to 823 feet. Supplies San Isidro School, 700 enrollment. See log.
D-20	33½ miles northeast	Blas Pena Gonzalez	--	1820	36	72	18.7	Aug. 17, 1950	H	S	Dug. Believed to be oldest well in Starr County. Used in 1949 for gravel-pit work. San Isidro Viejo Ranch.
D-21	do.	Francisco Vela	Santiago Vela	1910	85	4½	--	--	C, W	S	Driven.
D-22	34 miles northeast	Bruna Zarate Silva	Francisco Vela	1906	80	5	19.6	Aug. 17, 1950	H	S	Do.
D-23	33½ miles northeast	Faustino Villareal	do.	1926	60	6	22.7	do.	C, W	D, S	Do.
D-24	34½ miles northeast	Humble Oil Co.	Pursley & Sons	1950	889	4	--	--	A	Ind	Cased to 880 feet. Water used for steam boilers for drilling rigs. See log.
D-25	35 miles northeast	Armado Garza	Basilio Olivarez	1880	50	84	39.1	Aug. 30, 1950	C, W	D, S	Casing: 5 feet of rock.
D-26	35½ miles northeast	Jay Simmons	A. H. Maisen	1947	844	4	--	--	A	D, Ind	Cased to 844 feet. Water used for steam boilers for drilling rigs, and by two families for domestic use.
D-27	36 miles northeast	Dr. J. Garcia	--	1929	90	6	52.0	Sept. 5, 1950	C, W	S	Casing: 4 feet of tile.
D-28	35 miles northeast	Guerra Bros.	Fred Fielder	1945	710	4	35.2	do.	C, G, 4	D, S, Ind	Cased to 710 feet. Used in cotton gin. La Reforma Ranch.
D-28a	34½ miles northeast	Arcadio Guerra	Sun Oil Co.	1949	2,036	--	--	--	None	N	Oil test. See electrical log in files of Texas Board of Water Engineers. Owner intends to irrigate with well.

Table 1.- Records of wells in Starr County--Continued

Well	Distance from Rio Grande City	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift	Use of water	Remarks
							Below land surface (ft.)	Date of measurement			
D-29	34 miles northeast	Blas Recenes	Blas Recenes	1938	79	5	33.7	Aug. 30, 1950	C, W	D, S, Irr	Driven. Cased to 3 feet. Irrigates 50 citrus trees.
D-30	34½ miles northeast	Josepha L. Hinojosa	Marcos Pena	1920	80	4½	27.6	do.	C, W	D, S, Irr	Driven. Cased to 20 feet. Irrigates one-half acre.
D-31	33¾ miles northeast	Felipe Recenes	Felipe Recenes	1932	60	4	--	--	C, W	D, S	Driven. No casing.
D-32	do.	Saras Faries	Francisco Vela	1925	53	5½	21.6	Aug. 17, 1950	H	D, S	Driven. Cased to 4 feet.
D-33	33 miles northeast	Daniel Garza	do.	1916	100	7	15.7	Aug. 31, 1950	C, W	D, S	Driven. Casing: 4 feet of tile.
D-34	29¾ miles northeast	E. A. Montalvo	John Dickens	1910	220	7	62.5	Nov. 15, 1950	C, W	S	Casing: 4 feet of galvanized iron.
D-35	32 miles northeast	Santiago Rodriguez	Francisco Vela	1928	100	7	58.4	Aug. 16, 1950	C, W	S	Driven. Cased to 5 feet.
D-36	33 miles northeast	Francisco Alvarado	--	Old	60	72	--	--	H	S	Dug. Casing: 4 feet of stone.
D-37	32½ miles northeast	Martha F. Villareal	Marcos Pena	1920	130	4½	41.1	Aug. 16, 1950	C, W	D, S	Driven. Casing: 5 feet of galvanized iron.
D-38	33 miles northeast	N. G. Pena	Manuel Villareal	1929	90	4½	32.7	Aug. 30, 1950	C, W	D, Irr	Driven. Cased to 13 feet. Irrigates 25 citrus trees. Delmita Ranch.
D-39	do.	Marcos Pena	Sun Oil Co.	1947	200	3¾ 4	29.3	Aug. 15, 1950	C, W	S	Casing: 20 feet of 4-inch; 180 feet of 3½-inch.
D-40	do.	Narcisco Gonzalez	Inocente Gonzalez	1890	190	108	50.0	Aug. 10, 1950	C, W	D, S	Dug. Casing: 5 feet of stone.
D-41	do.	Cristophe Lopez	Miquel Gonzalez	1923	120	6	41.6	do.	C, W	D, S	Driven. Cased to 20 feet.
D-42	do.	G. S. Pena	Francisco Vela	1929	100	4	--	--	C, W	D, S	Driven.
D-43	32¾ miles northeast	Pedro Pena	N. Pena	1924	90	5	47.8	Aug. 30, 1950	C, W	D, S	Driven. Cased to 6 feet.
D-44	31½ miles northeast	L. Pena	Manuel Villareal	1945	150	5	--	--	C, W	D, S	Driven.
D-45	32 miles northeast	Maria Lopez Pena	Raphael Pena	1908	152	4½	68.0	Aug. 15, 1950	C, W	D, S	Driven. Cased to 5 feet.
D-46	31½ miles northeast	Jose R. Laurel	Francisco Vela	--	130	4½	--	--	C, W	D, S, Irr	Driven. Cased to 10 feet. Irrigates 9 citrus trees.
D-47	32 miles northeast	Ignacia Villareal	do.	1918	135	4½	56.8	Aug. 16, 1950	C, W	D, S	Driven. Cased to 5 feet.
D-48	do.	Dr. M. J. Rodriguez	Crenshaw Bros.	1949	925	8- 5/8	--	--	T, G, 40	Irr	Cased to 925 feet. Irrigates approximately 50 acres. Supplies water for construction of State Highway. El Centro Ranch.

Table 1.- Records of wells in Starr County--Continued

Well	Distance from Rio Grande City	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift	Use of water	Remarks
							Below land surface (ft.)	Date of measurement			
D-49	30½ miles northeast	Dr. M. J. Rodriguez	L. A. Fears	1950	307	6	95.2	Sept. 25, 1950	None	N	Cased to 307 feet. See log.
D-50	do.	do.	J. R. Johnson	1950	962	8-5/8	--	--	T, G, 40	Irr	Cased to 962 feet. Reported yield 589 gpm; drawdown 172 feet. Cemented from 532 feet to surface. Electric log in files of Texas Board of Water Engineers. Irrigates approximately 50 acres. See log.
D-51	30 miles northeast	do.	L. A. Fears	1949	338	5½	--	--	C, G	S	Cased to 186 feet. See log.
D-52	31 miles northeast	Santiago Hernandez	Manuel Villareal	1944	125	6	84.2	Aug. 21, 1950	C, W	D, S, Irr	Cased to 5 feet. Irrigates 15 citrus trees.
E-1	23¼ miles northwest	H. P. Guerra	Glenn Harroun	1937	3,003	--	--	--	None	N	Oil test. See electric log in files of Texas Board of Water Engineers.
E-2	23 miles northwest	do.	--	1922	280	6	188.7	Nov. 2, 1950	C, W	S	Cased to 280 feet. Temp. 83° F.
E-3	do.	do.	John Dickens	1938	305	4	291.0	do.	C, G	S	Cased to 305 feet.
E-4	21½ miles northwest	do.	--	1907	280	5	184.2	Oct. 31, 1950	C, W	S	Temp. 81½° F.
E-5	23 miles northwest	do.	John Dickens	1926	315	5	254.3	Nov. 2, 1950	C, W	S	Cased to 515 feet. Temp. 84° F.
E-6	23¼ miles northwest	do.	Bob Colbath	1921	250	4¼	214.5	do.	C, W	S	Temp. 81½° F.
E-7	22½ miles northwest	do.	John Dickens	1940	300	6	186.1	do.	C, W	D, S	Cased to 300 feet. "Sandia Ranch".
E-8	19¼ miles northwest	R. T. Margo	Berkshire Co.	--	700	8	--	--	C, W	S	Oil test drilled to 3,011 feet. Plugged back to 700 feet in 1940. Temp. 81° F.
E-9	18 miles northwest	H. P. Guerra	T. E. Stephens	1935	360	5½	182.5	Oct. 31, 1950	C, W	S	Oil test drilled to 3,000 feet. Finished as water well to 360 feet. Cased to 360 feet.
E-10	20 miles northwest	Santos Canales	John Dickens	1930	262	6	--	--	C, W	D, S	Cased to 262 feet.
E-11	21 miles northwest	Ubaldo Hinojosa	Gil Hinojosa	1947	250	4	219.6	Nov. 2, 1950	C, W	S	Cased to 250 feet. See log.
E-12	24 miles northwest	H. P. Guerra	Bob Colbath	1921	275	4¼	--	--	C, W	D, S	Cased to 275 feet. Headquarters "Guerra Ranch".
E-13	23 miles northwest	L. J. Ruthven	L. A. Fears	1949	268	6	154.6	Dec. 15, 1950	T, E, 2	D, P	Cased to 268 feet. "Falcon Heights Tourist Camp". See log.
E-14	do.	do.	A. L. Herschap	1951	818	7	--	--	T, E, 5	D, P	Cased to 818 feet. "Falcon Heights Tourist Camp".

Table 1.- Records of wells in Starr County--Continued

Well	Distance from Rio Grande City	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift	Use of water	Remarks
							Below land surface (ft.)	Date of measurement			
E-15	22½ miles northwest	Mrs. -- Bates	A. L. Herschap	1950	303	4	--	--	T, E, I	D, P	Cased to 297 feet. Water sands at 256-275 feet and 281-303 feet. Supplies water for tourist camp.
E-16	20 miles northwest	Jose Pena	John Dickens	1928	115	6	--	--	C, W	D, S	Cased to 115 feet.
E-17	do.	Andres Canales	Antonio Saenz	1944	180	6	--	--	C, W	D, S	Cased to 180 feet. Well obstructed at 72 feet.
E-18	18½ miles northwest	Ubaldo Hinojosa	L. A. Fears	1947	240	4½	187.5	Nov. 20, 1950	C, W	S	Cased to 240 feet. Temp. 81° F.
E-19	17½ miles northwest	Juan Margo	Juan Margo	1910	71	60	59.4	Oct. 31, 1950	C, W	D, S	Casing: 8 feet of brick. "Loma Blanca Ranch".
E-20	17 miles northwest	Melquiades S. Salinas	R. C. Hillman	1946	350	4½	237.3	do.	C, W	D, S	Oil test to 3,937 feet. Finished as water well to 350 feet. Temp. 83½° F.
E-21	17½ miles northwest	Manuel Ramirez	John Dickens	1932	260	5	--	--	C, W	S	Cased to 260 feet. Reported water of poor quality.
E-22	do.	Rodolfo Munoz	Rodolfo Munoz	1925	62	60	57.0	Nov. 1, 1950	C, W	S	Casing: 12 feet of brick. Temp. 80° F.
E-23	17 miles northwest	H. P. Guerra	John Dickens	1936	315	4½	135.2	do.	C, W	S	Cased to 315 feet.
E-24	16½ miles northwest	do.	R. C. Hillman	1940	382	6	233.2	Oct. 31, 1950	C, W	S	Oil test to 2,241 feet. Finished as water well to 382 feet. Cased to 380 feet.
E-25	do.	do.	-- Borah	1930	250	10	105.8	Nov. 1, 1950	C, W	S	Oil test to 897 feet. Temp. 80½° F.
E-26	do.	do.	Bob Colbath	1920	300	6	108.3	do.	C, W	S	Temp. 78° F.
E-27	19 miles northwest	H. Gonzalez Estate	--	--	192	6	106.4	Sept. 1, 1945	C, W	S	Abandoned.
E-28	24 miles northwest	Nicolas Silva	John Dickens	1943	100	6	92.0	Nov. 1, 1950	C, W	D, S	Cased to 13 feet. In Falcon Dam right-of-way. "Chapeno Ranch". Temp. 82° F.
E-29	23½ miles northwest	do.	L. A. Fears	1946	60	6	49.7	do.	C, W	D	Cased to 38 feet. "Chapeno Ranch".
E-30	do.	Felix Luera	do.	1946	125	6	--	--	C, W	D, S	Cased to 125 feet.
F-1	21 miles northwest	Salvadore Salinas	do.	1950	340	6-5/8	125.4	Oct. 18, 1950	C, W	S	Cased to 340 feet. Temp. 83° F. See log.
F-2	20 miles northwest	do.	do.	1950	250	6	79.2	do.	C, W	S	Cased to 250 feet. Temp. 81½° F. "Chapotito Ranch".
F-3	19 miles north	do.	do.	1947	240	4½	40.7	Oct. 17, 1950	C, W	S	Cased to 240 feet. Temp. 82° F.
F-4	18½ miles north	Ignacio Gutierrez	do.	1950	232	6-5/8	--	--	None	N	Cased to 232 feet. Reported water unfit for any use. See log.
F-5	18 miles north	Pilar Guerra	Felipe Saenz	1929	280	4½	--	--	C, W	D, S	Cased to 220 feet. "Mira Solis Ranch".



Table 1.- Records of wells in Starr County--Continued

Well	Distance from Rio Grande City	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift	Use of water	Remarks
							Below land surface (ft.)	Date of measurement			
F-6	17½ miles north	Nicasio Guerra	Antonio Saenz	1944	110	4½	46.6	Oct. 2, 1950	C,W	D,S	Cased to 110 feet.
F-7	18 miles northwest	Francisco Pena	--	Old	46	84	32.2	Oct. 19, 1950	C,W	D,S	Casing: 23 feet of stone. Puerto Ranch.
F-8	do.	H. Gonzalez Estate	--	1925	95	4	13.6	do.	None	N	Cased to 95 feet. Abandoned.
F-9	16½ miles northwest	Faustino Ramos	A. L. Herschap	1950	258	4½	13.4	Oct. 2, 1950	C,W	S	Cased to 254 feet. Well flowed when drilled. See log.
F-10	16 miles northwest	Juan Ramos	do.	1950	129	4½	13.8	do.	C,W	S	Cased to 129 feet. Well flowed when drilled. See log.
F-11	15½ miles northwest	Guillermo Villareal	Antonio Saenz	1944	110	4½	56.4	Oct. 16, 1950	C,W	D,S	Cased to 110 feet.
F-12	15 miles north	Nicasio Guerra	A. L. Herschap	1950	381	4½	44.2	do.	C,W	S	Cased to 381 feet. Well flowed when drilled. Temp. 78° F. See log.
F-13	13½ miles north	Jesus Villareal	L. A. Fears	1950	318	4½	7.3	Oct. 2, 1950	C,W	S	Cased to 318 feet. See log.
F-14	15 miles northwest	Abel J. Sanchez	Antonio Saenz	1940	285	6	--	--	C,W	D,S	Cased to 285 feet.
F-15	17 miles northwest	H. Gonzalez Estate	-- Kelly	1937	300	4½	--	--	C,W	S	Cased to 300 feet. Temp. 81½° F.
F-16	13 miles northwest	Antonio Saenz	Antonio Saenz	1944	200	5	97.2	Nov. 13, 1950	C,W	S	Cased to 200 feet. Water sand reported at 160-163 feet. Temp. 82° F.
F-17	do.	Franquilino Garcia	L. A. Fears	1947	278	6	141.9	Oct. 16, 1950	C,W	S	Cased to 278 feet.
F-18	do.	T. M. Munoz	Felipe Saenz	1930	300	4	--	--	C,W	D,S	Cased to 90 feet. "San Manuel Ranch".
F-19	10½ miles northwest	Pedro Olivarez	--	1943	26	42	21.5	Nov. 13, 1950	C,W	S	Casing: 18 feet of concrete and brick. Abandoned.
F-20	10 miles northwest	do.	Antonio Saenz	1948	280	5	58.8	do.	C,W	S	Cased to 204 feet. Screened: 153 to 186 feet. See log.
F-21	10 miles north	Enrique Gonzalez	Dan Tarbutton	1946	204	5½	42.7	Sept. 20, 1950	C,W	S	Cased to 155 feet. See log.
F-22	9½ miles northwest	Pedro Olivarez	L. A. Fears	1950	155	4½	--	--	C,W	S	Cased to 155 feet. See log.
F-23	11 miles northwest	Santiago Clark	--	Old	37	42	25.7	Oct. 2, 1950	C,W	S	Dug. Casing: 20 feet of stone.
F-24	11½ miles northwest	Estaban Escobar	Estaban Escobar	1917	64	54	44.1	Oct. 19, 1950	C,W	D,S	Dug. Casing: 10 feet of concrete.
G-1	18 miles north	Procopio Guerra	A. L. Herschap	1949	515	5	+	Jan. 3, 1951	Flowing	S	Cased to 450 feet. Flows 1½ gpm. Temp. 84° F.

Table 1.- Records of wells in Starr County--Continued

Well	Distance from Rio Grande City	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift	Use of water	Remarks
							Below land surface (ft.)	Date of measurement			
G-2	17½ miles north	Adolpho Gonzalez	Stanolin Oil Co.	1949	1,000	5	14.6	Nov. 16, 1950	None	N	Oil test. To be used as water well for stock.
G-3	18 miles north	do.	Antonio Saenz	1940	225	4	--	--	C, W	S	Cased to 225 feet. "Monterrey Ranch".
G-4	21 miles northeast	H. P. Guerra	John Dickens	1935	290	4	185.6	Oct. 25, 1950	C, W	S	Cased to 290 feet. "Las Islas Ranch".
G-5	20 miles northeast	do.	Bob Colbath	1921	276	4½	--	--	C, G, 2	S	Cased to 276 feet.
G-6	19 miles northeast	do.	Fritz Vollmer	1934	298	6	209.4	Sept. 13, 1950	C, W	S	Temp. 83° F.
G-7	18½ miles northeast	do.	Bob Colbath	1921	290	5	247.8	do.	C, W	S	Cased to 290 feet.
G-8	17 miles northeast	Pedro Salinas	A. L. Herschap	1949	396	4½	241.8	Sept. 14, 1950	C, W	S	Cased to 391 feet. See log.
G-9	17 miles north	George Coates	Antonio Saenz	1928	402	4½	--	--	C, W	S	"El Negro Ranch".
G-10	do.	do.	A. D. Killinger	--	400	4½	--	--	C, W	D, S	Do.
G-11	16 miles north	do.	--	1943	530	4½	--	--	C, W	S	Temp. 85° F.
G-12	15½ miles north	do.	Antonio Saenz	1944	500	4½	127.0	Sept. 14, 1950	C, W	N	Cased to 500 feet.
G-13	15 miles northeast	do.	do.	1944	375	4½	163.9	Sept. 15, 1950	C, W	S	Cased to 375 feet.
G-14	do.	do.	do.	1942	275	5	121.4	Sept. 14, 1950	C, W	S	Cased to 275 feet.
G-15	do.	Raphaela Lopez	L. A. Fears	1948	243	4½	--	--	C, W	S	Cased to 243 feet. See log.
G-16	16 miles northeast	Horacio Saldana	do.	1948	308	4½	199.8	Sept. 14, 1950	C, W	S	Cased to 308 feet. See log.
G-17	do.	Isabel S. Lopez	J. M. Lopez	1905	32	84	24.4	do.	C, W	D, S, Ind	Dug. Casing: 1.5 feet of concrete. Supplies water for 5 families. Has been used for water for steam boilers for drilling rigs. "El Rucio Ranch".
G-18	do.	Lila Martinez	--	1931	285	6	--	--	C, W	D, S	"La Morita Ranch".
G-19	15 miles northeast	Enrique Gonzalez	John Dickens	--	290	6	--	--	C, W	S	Cased to 290 feet.
G-20	14 miles northeast	do.	Antonio Saenz	1940	260	6	--	--	C, W	S	Cased to 260 feet.
G-21	do.	Mrs. Edna Schwartz	L. A. Fears	1950	535	5½	--	--	T, E, 1½	S	Cased to 382 feet. See log.
G-22	12½ miles northeast	Domingo L. Garza	Antonio Saenz	1934	400	5	259.9	Sept. 7, 1950	C, W	S	Cased to 300 feet.

Table 1.- Records of wells in Starr County--Continued

Well	Distance from Rio Grande City	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift	Use of water	Remarks
							Below land surface (ft.)	Date of measurement			
G-23	12 miles northeast	Domingo L. Garza	Antonio Saenz	1929	284	5½	217.1	Sept. 20, 1950	C, W	S	Cased to 283 feet. "Santa Rosa Ranch".
G-24	13½ miles north	Leandro Resendez	do.	1943	380	6	100.3	Nov. 15, 1950	C, W	S	Cased to 380 feet.
G-25	10 miles northeast	Martin Garza	Howard Staggs	1940	275	6	64.5	Aug. 2, 1950	C, W	S	Cased to 275 feet.
G-26	9½ miles northeast	Santano Guerrero	Antonio Saenz	1945	303	6	135.1	do.	C, W	S	Cased to 303 feet.
G-27	18½ miles northeast	Starr County Land & Cattle Co.	Sun Oil Co.	1942	5,119	--	--	--	--	--	Oil test. See electric log in files of Texas Board of Water Engineers.
H-1	22½ miles northeast	Cecilia S. Alaniz	Antonio Saenz	1948	260	4	186.3	Sept. 26, 1950	C, W	S	Cased to 260 feet. See log.
H-2	23½ miles northeast	do.	--	1915	360	5	170.6	do.	C, W	D, S	Supplies water for 2 families. San Pedro Ranch.
H-3	25½ miles northeast	Cruz Saenz	--	1890	71	72	42.6	Sept. 12, 1950	C, W	D, S	Dug. Casing: 18 feet of concrete. Supplies water for 4 families. Santa Anna Ranch.
H-4	27 miles northeast	Jose Trevino	--	1920	--	4	--	--	C, W	D, S	
H-5	25 miles northeast	Cruz Saenz	Fred Fielder	1949	375	4½	66.2	Sept. 12, 1950	None	N	Cased to 375 feet. See log.
H-6	24½ miles northeast	Felix Mexia	S. Saenz	1890	96	60	78.3	do.	C, W	D, S	Dug. Casing: 20 feet of concrete. Santa Catarina Ranch.
H-6a	25 miles northeast	Santiago Saenz	Santiago Saenz	1908	60	48	11.8	Sept. 11, 1950	C, W	D, S	Dug. Casing: 10 feet of stone. Las Delicia Ranch.
H-7	24½ miles northeast	M. S. Hinojosa	L. A. Fears	1946	130	4½	44.3	do.	C, W	D, S	Cased to 130 feet. "Berlin Ranch". Temp. 85° F.
H-8	24 miles northeast	Hilario Saenz	do.	1945	256	4½	72.7	do.	C, W	D, S	Cased to 256 feet. Temp. 87° F.
H-9	do.	Elizondo & Ramirez	A. L. Herschap	1949	490	4½	--	--	T, E, 1½	Ind	Cased to 490 feet. Used in cotton gin only.
H-10	22 miles northeast	Eugenio A. Saenz	Lazro Guerrero	1925	365	4½	239.5	Sept. 26, 1950	C, W	D, S	Cased to 365 feet. "San Blas Ranch".
H-11	21 miles northeast	H. P. Guerra	Antonio Saenz	1937	276	4	--	--	C, W	S	Cased to 276 feet.
H-12	do.	Dr. Rene Solis	L. A. Fears	1946	216	4½	165.4	Sept. 26, 1950	None	N	Cased to 216 feet. See log.
H-13	23 miles northeast	Librado Garza	do.	1948	282	4½	152.6	Sept. 12, 1950	C, W	S	Cased to 282 feet. Temp. 81° F. See log.
H-14	24 miles northeast	Hilario Garza	Antonio Saenz	1948	300	4½	195.1	do.	C, W	D, S	Cased to 300 feet. "Santa Maria Ranch".

Table 1.- Records of wells in Starr County--Continued

Well	Distance from Rio Grande City	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift	Use of water	Remarks
							Below land surface (ft.)	Date of measurement			
H-15	23 miles northeast	Santiago S. Valverde	L. A. Fears	1946	311	4½	165.3	Sept. 12, 1950	C, W	D, S	Cased to 311 feet. Temp. 82° F. See log.
H-16	23½ miles northeast	Andres Garza	Antonio Saenz	--	250	4½	165.3	do.	C, W	D, S	Cased to 250 feet.
H-17	23 miles northeast	Hilario Garza	--	1928	325	4½	190.0	do.	C, W	S	Cased to 325 feet. Temp. 81° F.
H-18	25 miles northeast	Andres Garza	Andres Garza	1912	90	156	20.4	Sept. 11, 1950	C, W	D, S	Dug. 5½ feet of stone. Coyote Ranch.
H-19	do.	Vidal Perez	Antonio Saenz	1934	100	4½	16.5	do.	C, W	S	Cased to 100 feet.
H-20	25½ miles northeast	Mrs. S. G. Pena	do.	1938	325	6	194.6	Aug. 1, 1950	C, W	S	Cased to 325 feet.
H-21	26 miles northeast	do.	do.	1947	400	6	199.0	do.	C, W	S	Cased to 400 feet.
H-22	24½ miles northeast	F. A. Garza	L. A. Fears	1946	318	5½	202.2	Sept. 27, 1950	C, W	S	Cased to 318 feet. See log.
H-23	do.	Andres Garza	Antonio Saenz	1947	330	4½	166.3	do.	C, W	S	Cased to 330 feet.
H-24	24 miles northeast	Humberto Rangel	do.	1936	375	5	--	--	C, W	D, S	Cased to 375 feet.
H-25	23 miles northeast	Felix F. Martinez	Santiago Barrera	1927	380	6	223.3	Aug. 1, 1950	C, W	D, S	Cased to 380 feet. "Santa Fe Ranch."
H-26	22 miles northeast	do.	Antonio Saenz	1948	350	5½	240.1	Aug. 21, 1950	C, W	S	Cased to 350 feet. See log.
H-27	do.	Arkansas Fuel Co.	M. & W. Pullen Co.	1945	1,007	6	--	--	C, G, 5	D	Cased to 900 feet. Reported unfit for human consumption. Sand from 900 to 1,000 feet.
H-28	22½ miles northeast	Pablo A. Saenz	Santiago Escobar	1925	100	4	--	--	C, W	D, S	Driven. Cased to 10 feet. La Copita Ranch.
H-29	do.	Sun Oil Co.	Sun Oil Co.	1941	335	4½	--	--	C, G, 5	D	Cased to 325 feet. See log.
H-30	20½ miles northeast	Melico Longoria	do.	1942	200	3	--	--	C, W	D, S	Cased to 100 feet. Supplies 3 families. U. S. Coast & Geodetic Survey B. M. 25 feet west. Altitude 431.32. El Perdido Ranch.
H-31	do.	Dr. Rene Solis	L. A. Fears	1948	250	4½	--	--	C, W	D, S	Cased to 250 feet.
H-32	20 miles northeast	Roberto Garza	Antonio Saenz	1942	245	4½	--	--	C, W	D, S	Cased to 233 feet.
H-33	19 miles northeast	Cameron Ranch	John Dickens	1934	270	6	193.9	Aug. 1, 1950	C, W	D, S	Cased to 270 feet.
H-34	18 miles northeast	Liberato Barrera	L. A. Fears	1949	281	4½, 5½	160.5	Sept. 13, 1950	C, W	D, S	Casing: 162 feet of 5½-inch; 119 feet of 4½-inch. See log.

Table 1.- Records of wells in Starr County--Continued

Well	Distance from Rio Grande City	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift	Use of water	Remarks
							Below land surface (ft.)	Date of measurement			
H-35	19 miles northeast	Leandro Elizondo	Lazaro Guerra	1925	215	4	121.6	Sept. 7, 1950	C, W	D, S	Cased to 200 feet.
H-36	do.	do.	John Dickens	1944	100	4	20.5	do.	C, W	D, S	Cased to 100 feet.
H-37	19½ miles northeast	do.	Kirby Petroleum Co.	1944	470	4	--	--	C, W	S	Cased to 470 feet.
H-38	23 miles northeast	Manuel Martinez	Gene Liberty	1948	425	7	--	--	C, W	S	Cased to 425 feet.
H-39	23¾ miles northeast	Rowan & Hope	L. A. Fears	1948	540	6	--	--	A	D, Ind	Cased to 540 feet. Water sand at 500-540 feet. Water used in steam boilers for drilling rigs. Temp. 86° F.
H-40	23 miles northeast	George Pridemore	--	1946	300	5	--	--	C, W	D, S	
H-41	22 miles northeast	Francisco Alvarado	Eugene Garner	1944	364	6	262.2	Aug. 1, 1950	C, W	D, S	Cased to 374 feet. "El Rabon Ranch".
H-42	17 miles northeast	J. M. Martinez	John Dickens	1927	240	4½	208.7	Sept. 7, 1950	C, W	S	Cased to 240 feet. U. S. Coast & Geodetic Survey B. M. 100 feet east. Altitude 462.46 feet.
H-43	16 miles northeast	Ramon Alvarez	--	1932	250	5	--	--	C, W	S	"Piloncillo Ranch".
H-44	16½ miles northeast	Cameron Ranch	--	1932	375	6	189.9	Sept. 13, 1950	C, W	S	"La Corona Ranch".
H-45	17 miles northeast	do.	John Dickens	1943	245	6	--	--	C, W	S	Cased to 245 feet.
H-46	18 miles northeast	do.	do.	1937	250	6	172.3	Sept. 13, 1950	C, W	S	Cased to 250 feet.
H-47	19 miles northeast	do.	do.	1946	260	6	--	--	C, W	D, S	Cased to 260 feet. "Cameron Ranch" headquarters.
H-48	do.	D. W. Cowan	Arthur Erdmann	1950	316	4	189.8	Sept. 26, 1950	C, G, 4	S	Cased to 316 feet. See log.
H-49	19½ miles northeast	Cameron Ranch	John Dickens	1936	240	5	220.0	Sept. 14, 1950	C, W	S	Cased to 240 feet.
H-50	do.	T. W. Slick Estate	do.	1938	240	6	196.8	Aug. 1, 1950	C, G, 3	S	Do.
H-51	20½ miles northeast	Cameron Ranch	do.	1937	254	6	--	--	C, W	S	Cased to 254 feet.
H-52	21¼ miles northeast	do.	Dan Tarbutton	1946	260	6	--	--	C, W	S	Cased to 260 feet.
H-53	do.	George Pridemore	--	1935	300	5	--	--	C, W	S	
H-54	21 miles northeast	J. A. Wetzel	H. C. Stoops	1920	270	6	--	--	C, W	D, S	Cased to 100 feet. "Rincon Ranch".

Table 1.- Records of wells in Starr County--Continued

Well	Distance from Rio Grande City	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift	Use of water	Remarks
							Below land surface (ft.)	Date of measurement			
H-55	17 miles northeast	Continental Oil Co.	W. R. Davis Co.	1945	963	7	--	--	A	Ind	Cased to 907 feet. Too salty for steam boilers. Used for cooling in Diesel rigs. Continental Rincon Camp.
H-56	15 miles northeast	San Antonio Loan & Trust Co.	Humble Oil Co.	1947	400	5	159.5	Nov. 15, 1950	C,W	S	Reported small supply.
H-57	14½ miles northeast	do.	Antonio Saenz	1941	240	5	168.6	Jan. 10, 1951	C,W	S	Cased to 240 feet.
H-58	16 miles northeast	Cameron Ranch	John Dickens	1936	240	6	167.2	Sept. 13, 1950	C,W	S	Cased to 240 feet. Temp. 81° F.
J-1	28 miles northeast	G. H. Speer	Bob Colbath	1917	275	6	134.6	Aug. 14, 1950	C,W	D,S	Cased to 275 feet. "Speer Ranch" headquarters.
J-2	do.	do.	-- Murdock	1929	275	5	153.0	do.	C,W	D,S	Cased to 275 feet.
J-3	28½ miles northeast	Sun Oil Co.	Layne-Texas Co.	1948	852	8-5/8	--	--	T,E, 20	Ind	Cased to 852 feet. Sun Oil Gas Plant. Screens: 794-814; 677-737; 637-652; and 587-607 feet. See log.
J-4	do.	do.	do.	1948	911	8-5/8	--	--	T,E, 20	Ind	Cased to 911 feet. Sun Oil Gas Plant. Pumps approximately 150 gpm. See log.
J-5	29½ miles northeast	Continental Oil Co.	K. & S. Construction Co.	1947	875	10½	--	--	T,G, 40	D,Ind	Cased to 528 feet. Finished with 5-inch screens and blanks. Gravel-packed. Supplies water for Continental Oil Camp and Gas Plant 20 miles south. See electric log in files of Texas Board of Water Engineers. See log.
J-6	do.	do.	Barrett Well Service	1945	885	10½	--	--	T,G, 40	D,Ind	Cased to 528 feet. Yield 350 barrels per hour. 500 feet east of J-5. Total usage from J-5 and J-6, 7,000 barrels a day.
J-7	do.	Jose N. Laurel	Manuel Villareal	Old	133	5	105.9	Aug. 19, 1950	C,W	D,S	Driven. Cased to 10 feet.
J-8	30½ miles northeast	Felix Jaurez	A. L. Herschap	1950	311	4	--	--	C,W	D,S	Cased to 311 feet.
J-9	do.	Armanda McKinney	Bob Colbath	1923	175	5	79.8	Aug. 7, 1950	C,W	S	Cased to 20 feet.
J-10	31 miles northeast	H. Barrera Guerra	Gene Liberty	1947	490	6	105.9	do.	C,W	S	Cased to 490 feet. "Arkansas City Ranch".
J-11	32 miles northeast	do.	Raphael Pena	1905	165	5	--	--	C,W	S	Driven.
J-12	32½ miles northeast	do.	Francisco Vela	--	100	5½	54.3	Aug. 10, 1950	C,W	S	Driven. Not in use.
J-13	33½ miles northeast	do.	L. Calderon	1930	200	--	--	--	C,W	S	
J-14	31 miles northeast	do.	Baldrige & King	1946	250	5	123.7	Aug. 10, 1950	C,W	S	Cased to 250 feet.

Table 1.- Records of wells in Starr County--Continued

Well	Distance from Rio Grande City	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift	Use of water	Remarks
							Below land surface (ft.)	Date of measurement			
J-15	30 miles northeast	H. Barrera Guerra	Ed Dean	1947	245	4	89.5	Aug. 10, 1950	C, W	S	Dug to 100 feet in 1903; drilled to 245 feet in 1947. Cased to 245 feet.
J-16	do.	S. Pena	Francisco Vela	1928	130	5	70.1	Aug. 8, 1950	C, W	D, S	Cased to 10' feet.
J-17	do.	G. Garcia Perez	Raphael Pena	1906	125	5	71.2	do.	C, W	D, S	
J-18	do.	B. G. de Villareal	Francisco Vela	1930	100	4½	75.0	do.	C, W	N	Driven.
J-19	29½ miles northeast	Mrs. Sobera Salinas	E. Guerra	1930	135	4	--	--	C, W	D, S	Cased to 135 feet.
J-20	30 miles northeast	G. S. Pena	Francisco Vela	1915	120	4	84.6	Aug. 8, 1950	C, W	D, S, Irr	Driven. Cased to 6 feet. Irrigates 70 citrus trees.
J-21	29½ miles northeast	George H. Speer	--	Old	125	5	--	--	--	--	Driven.
J-22	29 miles northeast	V. L. Pena	Francisco Vela	Old	130	6	--	--	C, W	S	Driven. Cased to 10 feet.
J-23	do.	Sun Oil Co.	Sun Oil Co.	1939	889	7	--	--	T, E, 15	D, Ind	Cased to 889 feet. Yield: 92 barrels per hour. Screens at 595-682; 691-729; and 793-853 feet. See log.
J-24	do.	do.	A. H. Masiran	1939	895	7	--	--	T, E, 15	D, Ind	Cased to 895 feet. Yield: 97 barrels per hour. Screens at 558-601; 688-708; 722-779; and 855-871 feet. See log.
J-25	do.	do.	Sun Oil Co.	1940	902	7	--	--	T, E, 15	D, Ind	Cased to 902 feet. Yield: 107 barrels per hour. Screens at 586-606; 644-652; 696-756; 818-851; and 861-891 feet. Wells J-23, J-24, and J-25 supplies water for Sun Oil Camp - approximately 75 families. See log.
J-26	27½ miles northeast	George H. Speer	do.	1938	200	6	169.1	Aug. 1, 1950	C, W	D, S	Cased to 200 feet. Temp. 84° F.
J-27	27 miles northeast	do.	Raphael Pena	1914	270	6	158.1	do.	C, W	S	Cased to 270 feet.
J-28	28 miles northeast	Felix Martinez	Santiago Barrera	1932	380	5	144.6	Aug. 7, 1950	C, W	S	Cased to 380 feet.
J-29	do.	Flavio Ramirez	Manuel Villareal	1936	150	6	124.1	do.	C, W	D, S	Driven. Cased to 20 feet.
J-30	do.	Melico Perez	--	1928	150	8	122.9	do.	C, W	S	Driven. Cased to 8 feet.
J-31	29 miles northeast	P. H. Longoria	Santiago Barrera	1924	200	5	108.1	Aug. 8, 1950	C, W	D, S	Cased to 200 feet. Temp. 81° F.
J-32	28 miles northeast	Dario Guerra	do.	1926	352	5	134.3	Aug. 7, 1950	C, W	D, S	Cased to 352 feet.

Table 1.- Records of wells in Starr County--Continued

Well	Distance from Rio Grande City	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift	Use of water	Remarks
							Below land surface (ft.)	Date of measurement			
J-33	28½ miles northeast	Dario Guerra	Pursley & Sons	1949	838	4	--	--	None	N	Cased to 838 feet. Screens at 773-814; and 819-829 feet. Water sand also at 750-751 feet. Owner plans to irrigate.
J-34	do.	T. W. Lee	Gene Liberty	1936	220	6	164.5	Aug. 7, 1950	C, W	S	"Va Lee Ranch". Temp. 83° F.
J-35	27 miles northeast	do.	Pursley & Sons	1949	825	10	170.3	Aug. 11, 1950	T	N	No motor installed. To be used for irrigation. "Va Lee Ranch".
J-36	26 miles northeast	do.	Gene Liberty	1936	750	6	--	July 26, 1950	T, G, 70	D, S Irr	Cased to 750 feet. Irrigates 5 acres of citrus trees. Yield: 550 gpm.
J-37	do.	do.	do.	1936	750	6	--	--	T, E, 1½	D	Cased to 750 feet.
J-38	do.	do.	do.	1936	750	6	--	--	T, G, 70	D, S, Irr	Cased to 750 feet. Irrigates one acre of lawn. Fills large swimming pool.
J-39	24½ miles northeast	do.	Pursley & Sons	1950	823	10	--	--	T, E, 1½	D, S	Cased to 823 feet. Water level at time of drilling 51 feet. Screens at 703-737; and 760-823 feet. See log.
J-40	do.	Mrs. Fannie Heard	--	1936	350	5	--	--	C, W	S	
J-41	23 miles northeast	W. P. Hauser	Arthur Erdmann	1950	434	4	--	--	C, W	D, S	Cased to 434 feet.
K-1	17 miles northwest	H. P. Guerra	John Dickens	1930	300	4½	94.0 101.2	Aug. 31, 1945 Dec. 7, 1950	C, W	S	Cased to 300 feet. "Anaqua Ranch".
K-2	15½ miles northwest	do.	do.	1930	400	4	169.5 176.1	Aug. 31, 1945 Dec. 7, 1950	C, W	S	
K-3	14½ miles northwest	J. A. Garza	Graham Bros.	1941	2,010	--	--	--	None	N	Oil test. See electric log in files of Texas Board of Water Engineers.
K-4	14 miles northwest	H. P. Guerra	Borah Co.	1932	300	10	91.3	Sept. 30, 1945	C, W	S	Oil test. Finished as water well to 300 feet.
K-5	16½ miles northwest	do.	Fritz Vollmer	1930	250	5½	141.5	Dec. 7, 1950	C, W	S	Cased to 250 feet.
K-6	13 miles northwest	Manuel Ramirez	John Dickens	--	200	6	40.5	Sept. 30, 1945	C, W	S	Temp. 84° F.
L-1	10½ miles northwest	Pedro B. Rosa	--	--	314	6	--	--	C, W	D, S	Cased to 180 feet.
L-2	10 miles northwest	Pedro Guerra	Antonio Saenz	1943	162	4	--	--	C, W	D, S	Cased to 162 feet. "San Jose Ranch".
L-3	9½ miles northwest	Francisco E. Garcia	do.	1944	275	6	212.9	Oct. 16, 1950	C, W	D, S	Cased to 275 feet.
L-4	7½ miles northwest	M. M. Guerrero	L. A. Fears	1949	318	4½	82.2	Oct. 17, 1950	C, W	S	Cased to 318 feet. See log.



Table 1.- Records of wells in Starr County--Continued

Well	Distance from Rio Grande City	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift	Use of water	Remarks
							Below land surface (ft.)	Date of measurement			
L-5	5½ miles west	Jurvencio Garza	Jurvencio Garza	1936	45	38	40.2	Sept. 29, 1945	C, W	D	Dug. Casing: 45 feet of concrete.
L-6	do.	Guadalupe Alvarez	Guadalupe Alvarez	1932	35	48	34.5	do.	C, W	D	Dug. Casing: 35 feet of concrete. Temp. 81° F.
L-7	do.	Margarito Bermudez	--	1944	40	42	33.5	do.	C, W	D	Dug. Casing: 40 feet of concrete.
L-8	4¼ miles west	A. Perez	John Dickens	1944	100	4	36.0	do.	C, W	D	Cased to 100 feet.
L-9	4¼ miles west	Las Garzas Ranch	do.	1943	32	5	24.1	do.	C, W	D, S	Cased to 32 feet.
L-10	1¼ miles west	Martin Cavazos	do.	1945	32	6	25.5	Sept. 28, 1945	C, W	D, S	Do.
L-11	1½ miles west	Raphael Trevino	Raphael Trevino	1940	35	36	28.7	do.	C, W	D, S	Dug. Casing: 35 feet of concrete pipe.
L-12	do.	Leo Herrera	Leo Herrera	1949	34	36	32.5	July 24, 1950	C, W	D	Dug. Casing: 34 feet of concrete pipe.
L-13	1¼ miles west	Juan Galindo	A. L. Herschap	1949	36	4½	--	--	H	D	Cased to 36 feet. Yield 250 gallons per day.
L-14	2½ miles northwest	Manuel Munoz	L. A. Fears	1949	206	5½	45.4	Nov. 13, 1950	C, W	S	Cased to 206 feet. See log.
L-15	4¼ miles northwest	Anna Kelsey	Zimmerman & Brock	1945	3,196	--	--	--	--	--	Oil test. See electric log in files of Texas Board of Water Engineers.
M-1	10 miles northeast	Domingo L. Garza	Bob Colbath	1927	284	5	145.7	Aug. 22, 1950	C, W	D, S	Cased to 279 feet.
M-2	do.	do.	Domingo L. Garza	1907	150	96	67.2	do.	C, W	S	Dug. Casing: 11 feet of rock.
M-3	do.	D. L. Garza Estate	--	Old	120	84	51.6	Sept. 7, 1950	C, W	D, S	Casing: 20 feet of rock. Barbacoas Ranch.
M-4	9 miles northeast	do.	--	Old	38	96	34.3	Aug. 3, 1950	C, W	S	Casing: 20 feet of wood. Barbacoas Ranch.
M-5	10 miles northeast	J. D. Brock	Coastal Oil Co.	--	--	6	117.0	do.	C, W	S	Oil test.
M-6	9½ miles northeast	W. L. Goldston	John Dickens	1931	300	4½	107.4	Aug. 2, 1950	C, W	S	
M-7	8 miles northeast	J. D. Brock	--	--	275	5	131.1	do.	C, W	S	
M-8	do.	D. G. Wood, Sr.	--	Old	58	60	26.1	Aug. 3, 1950	H	S	Dug. Casing: 8½ feet of stone. Sagonado Ranch.
M-9	do.	do.	--	Old	36	60	27.2	do.	C, W	D, S	Dug. Casing: 7½ feet of concrete. Sagonada Ranch.
M-10	do.	Trinidad Rodriguez	Killenger Bros.	1926	172	5½	130.0	July 27, 1950	C, W	D, S	Cased to 8 feet.

Table 1.- Records of wells in Starr County--Continued

Well	Distance from Rio Grande City	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift	Use of water	Remarks
							Below land surface (ft.)	Date of measurement			
M-11	8 miles northeast	Santano Guerrero	Antonio Saenz	1946	204	5½	146.1	July 27, 1950	C,W	S	Cased to 204 feet. Temp. 83° F.
M-12	9 miles northeast	Martin Garza	Francisco Loera	1934	280	5	60.9	Aug. 2, 1950	C,W	S	Cased to 280 feet.
M-13	8 miles northeast	Mary H. Edgerton	Bob Colbath	1916	265	6	127.3	do.	C,W	S	Cased to 20 feet.
M-14	6 miles northeast	Trinidad Rodriguez	Antonio Saenz	1945	150	6	65.2	July 27, 1950	C,W	S	Cased to 150 feet.
M-15	do.	George Decker	L. A. Fears	1950	219	6	--	--	None	N	Dry hole. See log.
M-16	7 miles northeast	Trinidad Rodriguez	Antonio Saenz	1949	182	6	77.6	July 27, 1950	C,W	S	Cased to 182 feet.
M-17	8 miles northeast	W. L. Goldston	--	1935	--	4	119.4	Aug. 2, 1950	C,W	S	
M-18	do.	Domingo L. Garza	Pedro Perez	1905	80	108	74.5	Aug. 3, 1950	C,W	S	Dug. Casing: 20 feet of stone. Reported that well fills to top during heavy rains.
M-19	9½ miles northeast	Florentino Barrera	L. A. Fears	1950	182	4½	89.4	Nov. 22, 1950	C,W	S	Cased to 182 feet. See log.
M-20	7½ miles northeast	Maria Ruiz	John Dickens	1945	116	5	63.8	Aug. 3, 1950	C,W	S	Cased to 116 feet.
M-21	do.	Apolonia Molina	do.	1938	100	4	45.2	do.	C,W	S	Cased to 100 feet.
M-22	5½ miles northeast	Luis Martinez	do.	1939	85	6	42.8	Oct. 5, 1945	H	D	Cased to 12 feet.
M-23	4½ miles northeast	Felix Chapa	Antonio Saenz	1943	200	4½	74.7	do.	C,W	D	Cased to 200 feet.
M-24	5 miles northeast	G. E. Dodd	--	1937	80	6	55.1	do.	C,W	D,S	Cased to 80 feet.
M-25	4¼ miles northeast	Ismeal Salinas	L. A. Fears	1949	120	4	48.5	Oct. 5, 1950	C,W	D	Cased to 46 feet. See log.
M-26	6 miles northeast	Quirino Vela Estate	--	--	250	6	103.1	Aug. 2, 1950	C,W	D,S	Cased to 250 feet.
M-27	7½ miles northeast	Encarracion Saenz	Antonio Saenz	1940	180	4	--	--	C,W	D,S	
M-28	7 miles east	Manuel Munoz	do.	1945	182	6	42.4	Aug. 3, 1950	C,W	N	Cased to 182 feet. "Viejo Ranch".
M-29	7½ miles east	do.	John Dickens	1946	48	6	40.9	do.	C,W	S	Cased to 47½ feet.
M-30	10 miles southeast	Ignacio Ramirez	A. L. Herschap	1950	350	4¼	17.0	Dec. 15, 1950	C,W	S	Cased to 350 feet. Two miles from Rio Grande.
M-31	9½ miles southeast	Clopton Estate	--	Old	60	6	41.5	Sept. 16, 1945	C,W	S	"Santo Domingo Ranch".

Table 1.- Records of wells in Starr County--Continued

Well	Distance from Rio Grande City	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift	Use of water	Remarks
							Below land surface (ft.)	Date of measurement			
M-32	9 miles southeast	Mrs. Mary Edgerton	--	Old	30	36	13.6	Sept. 16, 1950	C, W	D	Dug. Casing: 30 feet of concrete. Well reported to be supplied by seepage water from lake.
M-33	8 miles southeast	Garciasville School District	Pursley & Sons	1950	734	7	--	--	None	N	Reported sulphur water. See log.
M-34	7½ miles southeast	Willie Richmond	Bob Colbath	1923	32	6	26.3	Sept. 27, 1945	C, W	D	Cased to 32 feet. "La Casito Ranch".
M-35	do.	Julio Mayorga	Julio Mayorga	1929	30	48	--	do.	C, W	D	Dug. Dry at time of measurement. Water level in well affected by stage of Rio Grande.
M-36	6 miles southeast	J. D. Brock	Pursley & Sons	1950	2,151	--	--	--	None	N	Oil test. See log.
M-37	5½ miles east	Mrs. Anna Kelsey	J. D. Brock	1946	2,068	--	--	--	--	--	Oil test. Altitude 248 feet. Electric log in files of Texas Board of Water Engineers.
M-38	5½ miles southeast	Valley Brick & Tile Co.	Bob Colbath	1921	54	4½	--	--	C, G, 1½	Ind	Cased to 54 feet. Supplies brick plant.
M-39	3½ miles southeast	Jose Pena	John Dickens	1945	40	5	30.1	Sept. 27, 1945	C, W	D	"Santa Cruz Ranch".
M-40	do.	-- Backe	--	--	70	4	39.6	do.	H	D	
M-41	3 miles southeast	E. Moore	E. Moore	--	35	48	37.3	do.	C, W	S	Casing: 35 feet of tile.
M-42	1 mile south	C. H. McColrey	C. H. McColrey	1930	32	36	14.1	Sept. 28, 1945	C, W	D	Casing: 12 feet of brick. Temp. 70° F.
M-43	3 miles northeast	Frank Doyno	LaBlanca Oil Co.	1947	--	--	--	--	--	--	Oil test. Electric log in files of Texas Board of Water Engineers.
N-1	15 miles northeast	Continental Oil Co.	Continental Oil Co.	1950	1,550	6	--	--	A	Ind	Cased to 629 feet. Reported too salty for boiler feed.
N-2	19 miles northeast	T. W. Lee	--	1935	285	4	204.2	Oct. 1, 1945	C, W	S	Cased to 200 feet. Abandoned.
N-3	22½ miles northeast	J. A. Wetzel	H. C. Stoops	1905	240	4	--	--	C, W	S	"El Javalina Ranch".
N-4	15 miles northeast	T. B. Slick Estate	John Dickens	1936	400	6	216.0	Dec. 12, 1950	C, W	S	Cased to 400 feet.
N-5	18 miles northeast	J. A. Wetzel	A & T Drilling Co.	1946	447	6	183.3	July 25, 1950	C, W	S	Cased to 447 feet. See log.
N-6	20½ miles northeast	Baldrige & King	Pursley & Sons	1950	999	5½	--	--	A	Ind	Cased to 990 feet. Water used in steam boilers for drilling rigs. See log.
N-7	do.	T. B. Slick Estate	--	--	220	6	163.9	Sept. 29, 1945	C, W	S	Cased to 220 feet. "El Penal Ranch".
N-8	19½ miles northeast	George Pridmore	Slick-Moorman Co.	1949	900	6	--	--	A	S, Ind	Water used in steam boilers for drilling rigs.

Table 1.- Records of wells in Starr County--Continued

Well	Distance from Rio Grande City	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift	Use of water	Remarks
							Below land surface (ft.)	Date of measurement			
N-9	18 miles northeast	T. B. Slick Estate	--	--	210	6	150.1	July 25, 1950	C, W	S	Cased to 210 feet.
N-10	13 miles northeast	La Briza Land & Cattle Co.	John Dickens	1940	380	6	--	--	C, W	S	Cased to 380 feet.
N-11	11 miles northeast	Lalo Hinojosa	L. A. Fears	1950	328	4½	87.7	Dec. 13, 1950	None	N	Cased to 328 feet. See log.
N-12	11½ miles northeast	La Briza Land & Cattle Co.	John Dickens	1935	375	6	128.1	Dec. 12, 1950	C, W	S	Cased to 375 feet.
N-13	17 miles northeast	Filomena Flores	do.	1927	217	4	181.8	Sept. 6, 1945	C, G, 1½	D, S	Cased to 200 feet.
N-14	18½ miles east	M. Flores	--	1930	225	6	162.1	Sept. 28, 1945	C, W	D, S	Cased to 225 feet.
N-15	18 miles east	Juan Ruiz	Antonio Saenz	1940	170	4	158.0	do.	C, W	D, S	Cased to 170 feet.
N-16	do.	M. Flores	--	--	200	6	142.9	do.	C, G, 4½	D	Cased to 200 feet. "El Pinto Ranch."
N-17	do.	L. Flores	John Dickens	1925	160	6	158.7	do.	C, W	D, S	Cased to 160 feet.
N-18	17 miles east	Juan Flores	--	1916	217	4½	175.1	Sept. 19, 1945	C, W	D	Cased to 217 feet.
N-19	12 miles east	Sun Oil Co.	Eugene Garner	1944	449	5½	--	--	A	Irr	Cased to 449 feet. Yield: 45 gpm. Water used in steam boilers for drilling rigs. Gun perforated at 322-385 and 431-449 feet. See log.
N-20	11½ miles east	do.	Camelor Well Service	1944	514	5½	--	--	A	Irr	Cased to 514 feet. Yield: 40 barrels per hour. See log.
N-21	12 miles east	Narcisco Solis	John Dickens	1946	55	4½	48.2	Nov. 22, 1950	C, W	S	Cased to 55 feet.
N-22	15 miles east	Sun Oil Co.	Gus Canales	1945	203	4	--	--	C, E, 4	D, Irr	Cased to 162 feet. See log.
N-23	do.	do.	Eugene Garner	1944	200	3	--	--	C, E, 4	D, Irr	Cased to 185½ feet. Supplies water for Sun Oil Garcia Camp. Water used in drilling rigs. See log.
N-24	16½ miles east	Manuel Gonzalez	Antonio Saenz	1940	180	6	145.4	Sept. 6, 1945	C, W	D	Cased to 180 feet. Temp. 83° F.
N-25	18 miles east	Manuel Samano	--	1929	171	4	151.5	Sept. 19, 1945	C, G, 4½	D	Cased to 160 feet.
N-26	16 miles east	Juan Salinas	--	1907	208	8	115.1	Sept. 6, 1945	C, W	D, S	
N-27	do.	do.	John Dickens	1930	200	6	135.6	do.	C, W	S	
N-28	15 miles east	Sun Oil Co.	--	--	250	3	144.9	do.	C, G, ¾	D	Cased to 250 feet.

Table 1.- Records of wells in Starr County--Continued

Well	Distance from Rio Grande City	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift	Use of water	Remarks
							Below land surface (ft.)	Date of measurement			
N-29	15 miles east	Sun Oil Co.	--	--	200	6	--	--	A	Irr	Water used only for steam boilers for drilling rigs.
N-30	11½ miles east	Felipe Solis	John Dickens	1928	45	5	28.5	Sept. 28, 1950	C, W	D, S	Cased to 10 feet.
N-31	do.	Donaciano Perez	Antonio Saenz	1932	55	4½	--	--	C, W	D, S	Cased to 55 feet.
N-32	12 miles east	Roman Ybarra	John Dickens	1945	53	4¾, 5	46.2	Aug. 29, 1950	C, W	D, S	Casing: 2 feet of 5-inch; remainder 4¾-inch.
N-33	11½ miles east	Octaviano Cantu	do.	1945	50	4	--	--	C, W	D, S, Irr	Cased to 50 feet. Irrigates 2 acres.
N-34	12 miles east	Basilio Solis	--	1905	140	6	12.8	Aug. 29, 1950	C, W	D, S	Cased to 20 feet.
N-35	do.	Miguel Guzman	John Dickens	1946	43	4½	37.9	do.	C, W	D, S	Cased to 43 feet.
N-36	11½ miles southeast	Mrs. Cruz Solis	Antonio Saenz	1933	45	4½	33.7	do.	C, W	D, Irr	Cased to 45 feet. Irrigates 12 citrus trees.
N-37	do.	Joaquin Gutierrez	do.	1942	60	6	--	--	C, W	D, Irr	Cased to 47 feet. Supplies water for 3 families. Irrigates 25 citrus trees.
N-38	12 miles southeast	Leandro Solis	do.	1945	44	5¾	32.6	Aug. 29, 1950	C, W	D, S	
N-39	11½ miles southeast	Pedro Solis	John Dickens	1946	45	4¾	25.8	do.	C, W	D, S, Irr	Cased to 45 feet. Irrigates 15 citrus trees.
N-40	do.	Narcisco Pena	do.	1929	56	4	41.2	do.	C, W	D, S	Cased to 56 feet.
N-41	12½ miles southeast	Bruno Lozano	Victoriano Lozano	1918	100	9	44.1	do.	C, W	D, S	Cased to 100 feet.
N-42	14 miles southeast	Estaban Garcia	Antonio Saenz	1930	180	5	78.5	Dec. 12, 1950	C, W	D, S	Cased to 180 feet.
N-43	16 miles southeast	do.	--	--	800	4	105.2	Sept. 5, 1945	C, W	N	Unfit for any use.
N-44	do.	Luis Pena	Antonio Saenz	1932	95	4	71.0	do.	C, W	D	Cased to 95 feet.
N-45	do.	J. V. Rowley	--	1950	497	--	--	--	--	--	Test well for irrigation water. Electric log in files of Texas Board of Water Engineers.
N-46	do.	Maximo Diaz	--	--	90	4	57.2	Sept. 5, 1945	C, W	S	"Guarache Ranch".
N-47	16½ miles southeast	Juan Flores	--	--	100	4	56.5	do.	None	N	
N-48	16 miles southeast	Jose Pena	John Dickens	1925	175	4	67.4	do.	C, W	S	Cased to 175 feet.
N-49	13 miles southeast	S. Garza	do.	1946	75	5¾	49.0	Dec. 12, 1950	C, W	D, S	Cased to 40 feet.

Table 1.- Records of wells in Starr County--Continued

Well	Distance from Rio Grande City	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift	Use of water	Remarks
							Below land surface (ft.)	Date of measurement			
N-50	11 miles southeast	Julio Garza	--	--	141	7	95.6	Aug. 28, 1945	C, W	S	
N-51	do.	-- Cavazos	--	--	75	4	--	--	C, W	S	
N-52	13 miles southeast	Cristobal Saenz	John Dickens	1945	62	8	28.3	Aug. 25, 1945	C, W	D	Cased to 20 feet.
N-53	do.	Juan Solis	do.	1944	61	6	30.5	do.	C, W	D	Cased to 60 feet.
N-54	do.	Blas Gonzalez	do.	1925	60	4	28.3	do.	C, W	D	Do.
N-55	do.	Severa Moreno	do.	1942	74	6	26.5	Aug. 16, 1945	C, W	D	Cased to 74 feet.
N-56	do.	La Grulla School District	L. A. Fears	1949	70	6	--	--	T, E. 2	P	Cased to 70 feet. Supplies water for 200 to 300 school children. See log.
N-57	15½ miles southeast	-- Garza	-- Garza	Old	28	36	21.3	Aug. 24, 1950	C, W	D	Dug. Casing: "28 feet of concrete tile. Artesitas Ranch."

Table 2.- Drillers' logs of wells in Starr County, Tex.

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well A-2					
H. P. Guerra, 28½ miles northwest of Rio Grande City. Driller: L. A. Fears.					
Caliche .....	21	21	Clay, red .....	32	202
Clay, red .....	27	48	Sand .....	15	217
Clay, blue .....	122	170			
Well A-3					
Antioco Munoz, 28 miles north of Rio Grande City. Driller: H. L. Staggs.					
Caliche .....	6	6	Sand .....	34	214
Clay, sandy .....	174	180			
Well A-10					
Zaragoza Salinas, 25¼ miles northwest of Rio Grande City. Driller: L. A. Fears.					
Surface soil .....	5	5	Sandstone .....	2	164
Clay, red and yellow .....	91	96	Sand, hard .....	6	170
Shale, sandy .....	3	99	Clay, blue .....	4	174
Clay, blue .....	60	159	Clay and rock .....	3	177
Clay, blue, and streaks of rock .....	3	162	Sand and rock .....	8	185
Well A-17					
J. O. Clark Fuel Co., 24 miles northwest of Rio Grande City. Driller: L. A. Fears.					
Surface soil .....	5	5	Shale .....	12	494
Clay, red .....	43	48	Sand .....	12	506
Clay, blue, sandy .....	8	56	Shale .....	9	515
Clay, blue with hard streaks .....	292	348	Sand and rock .....	6	521
Clay, blue, sandy .....	93	441	Shale, hard .....	6	527
Rock and clay .....	41	482	Sand, water .....	13	540
Well A-20					
Salvadore Salinas, 21½ miles northwest of Rio Grande City. Driller: L. A. Fears.					
Surface soil .....	11	11	Shale, streaked .....	143	220
Clay .....	34	45	Sand, water .....	18	238
Shale, sandy .....	32	77			
Well B-10					
Camilio Gonzalez, 22 miles north of Rio Grande City. Driller: Antonio Saenz.					
Sand .....	10	10	Clay, red .....	60	150
Caliche .....	40	50	Rock .....	50	200
Gravel .....	8	58	Clay, red .....	25	225
Rock .....	22	80	Sand, water .....	5	230
Sand .....	10	90	Clay, red .....	20	250

Table 2.- Drillers' logs of wells in Starr County--Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well B-17					
Pedro A. Saenz, 24 miles northeast of Rio Grande City. Driller: Fred Fielder.					
Soil .....	1	1	Gravel .....	40	340
Caliche .....	39	40	Clay .....	80	420
Clay .....	260	300	Sand, water .....	42	462
Well C-1					
M. M. Guerrero, 30 miles northeast of Rio Grande City. Driller: Sun Oil Co.					
Caliche .....	65	65	Sand .....	30	230
Clay, sandy with gravel .....	66	131	Shale, sand streaks .....	212	442
Shale, sand streaks .....	69	200	Shale, sandy .....	258	700
Well C-3					
M. M. Guerrero, 29½ miles northeast of Rio Grande City. Driller: L. A. Fears.					
Soil .....	4	4	Rock .....	3	83
Clay and boulders .....	6	10	Clay, yellow .....	3	86
Gravel .....	2	12	Clay, yellow, and rock .....	4	90
Clay, yellow .....	52	64	Clay, blue .....	188	278
Rock .....	4	68	Clay, red .....	19	297
Clay, blue .....	10	78	Clay, hard, blue .....	5	302
Sand, hard .....	2	80	Sand, water .....	6	308
Well C-7					
R. T. Margo, 29 miles northeast of Rio Grande City. Driller: A. L. Herschap.					
Soil .....	5	5	Sand, gray .....	28	306
Sand, gray .....	63	68	Shale, brown .....	274	580
Shale, brown .....	210	278	Sand, water .....	85	665
Well C-16					
Arcadio Rodriguez, 24 miles northeast of Rio Grande City. Driller: Fred Fielder.					
Sand .....	8	8	Clay, red .....	80	300
Caliche .....	10	18	Gravel .....	30	330
Clay .....	182	200	Clay, red .....	5	335
Clay, sandy .....	20	220	Sand .....	47	382
Well C-17					
Ignacio Trevino, 24½ miles northeast of Rio Grande City. Driller: Antonio Saenz.					
Soil .....	8	8	Clay, red .....	103	340
Caliche .....	77	85	Sandstone .....	10	350
Clay, red .....	90	175	Clay, red .....	30	380
Clay, sandy .....	62	237	Sand, water .....	30	410



Table 2.- Drillers' logs of wells in Starr County--Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well C-21					
Mrs. S. G. Pena, 28 miles northeast of Rio Grande City. Driller: L. A. Fears					
Soil .....	7	7	Clay, red, and rock .....	16	228
Caliche and clay .....	9	16	Clay, sandy .....	6	234
Caliche .....	58	74	Sand, clay streaks .....	12	246
Clay, red, and caliche .....	11	85	Sand, water .....	5	251
Clay, red .....	127	212			
Well D-7					
Emilio Trevino, 35½ miles northeast of Rio Grande City. Driller: Eugene Garner.					
Soil .....	3	3	Sand .....	6	335
Sand .....	17	20	Sand and shale .....	20	355
Sand and caliche .....	65	85	Shale, sticky .....	19	374
Shale, sandy .....	8	93	Sand .....	33	407
Shale .....	236	329			
Well D-17					
E. A. Montalvo, 31½ miles northeast of Rio Grande City. Driller: A. H. Masiran.					
Soil, surface .....	3	3	Shale .....	56	629
Caliche .....	84	87	Sand, hard .....	20	649
Sand, hard .....	14	101	Rock .....	1	650
Shale and boulders .....	115	216	Shale .....	18	668
Sand, hard .....	16	232	Sand and boulders .....	36	704
Shale .....	76	308	Shale .....	3	707
Sand, soft .....	24	332	Sand .....	7	714
Shale .....	19	351	Shale .....	2	716
Sand, soft .....	25	376	Sand, hard .....	29	745
Shale .....	10	386	Shale .....	18	763
Sand and boulders .....	34	420	Sand .....	31	794
Shale .....	27	447	Shale .....	10	804
Sand, hard .....	38	485	Sand, hard .....	36	840
Shale .....	4	489	Shale .....	44	884
Sand, hard streaks .....	28	517	Sand .....	42	926
Shale .....	53	570	Shale .....	1	927
Sand .....	3	573			

Table 2.- Drillers' logs of wells in Starr County--Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well D-19					
San Isidro School District, 33 miles northeast of Rio Grande City. Driller: Pursley & Sons.					
Soil, surface .....	9	9	Sand .....	8	525
Caliche .....	80	89	Shale .....	8	533
Caliche, sandy .....	14	103	Sand .....	13	546
Sand .....	35	138	Shale .....	16	562
Shale, sandy .....	216	354	Sand .....	139	701
Sand .....	15	369	Shale .....	4	705
Shale .....	33	402	Sand .....	110	815
Sand .....	56	458	Shale, sandy .....	8	823
Shale .....	59	517			
Well D-24					
Humble Oil Co., 34½ miles northeast of Rio Grande City. Driller: Pursley & Sons.					
Soil .....	5	5	Shale .....	67	463
Caliche .....	31	36	Sand, hard, streaky .....	52	515
Sand and caliche .....	38	74	Sand .....	33	548
Shale, streaky .....	77	151	Shale, streaky .....	8	556
Sand .....	12	163	Sand, hard .....	53	609
Shale .....	78	241	Shale, streaky .....	75	684
Sand .....	49	290	Sand, hard .....	44	728
Shale .....	37	327	Shale .....	21	749
Sand .....	25	352	Sand, firm .....	106	855
Shale .....	13	365	Shale, sandy .....	34	889
Sand, hard .....	31	396			
Well D-49					
Dr. M. J. Rodriguez, 39½ miles northeast of Rio Grande City. Driller: L. A. Fears.					
Soil .....	6	6	Clay, sandy .....	22	238
Caliche .....	77	83	Clay, sticky .....	21	259
Clay, red .....	43	126	Clay, sandy .....	23	282
Clay, red with rock .....	12	138	Sand, water .....	25	307
Clay, red .....	78	216			

Table 2.- Drillers' logs of wells in Starr County--Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well D-50					
Dr. M. J. Rodriguez, 30½ miles northeast of Rio Grande City. Driller: J. R. Johnson.					
Soil, red, sandy .....	2	2	Shale, blue, sticky .....	36	608
Caliche, white .....	8	10	Shale, yellow, sandy .....	52	660
Caliche, yellow, hard .....	50	60	Sand, yellow, and shale .....	118	778
Shale, red, and lime .....	70	130	Sand, green, hard .....	24	802
Sandstone, hard .....	39	169	Sand, yellow, and shale .....	58	860
Shale, red .....	59	228	Shale, yellow .....	60	920
Shale, blue and sandstone .....	204	432	Sand, yellow, fine-grained .....	30	950
Shale, blue, and lime .....	86	518	Clay, yellow, and sand .....	12	962
Sand, bluish-gray .....	54	572			
Well D-51					
Dr. M. J. Rodriguez, 30 miles northeast of Rio Grande City. Driller: L. A. Fears.					
Soil .....	10	10	Sand, fine-grained .....	17	240
Caliche .....	48	58	Clay, red .....	36	276
Clay, red .....	158	216	Sand, water .....	62	338
Clay, red, and sand .....	7	223			
Well E-11					
Ubaldo Hinojosa, 21 miles northwest of Rio Grande City. Driller: Gil Hinojoza.					
Rock .....	75	75	Shale .....	40	215
Shale .....	70	145	Shale, sandy .....	33	248
Clay .....	30	175	Sand .....	2	250
Well E-13					
L. J. Ruthven, 23 miles northwest of Rio Grande City. Driller: L. A. Fears.					
Soil .....	5	5	Clay, sandy .....	18	167
Clay, sandy and caliche .....	9	14	Clay, sticky .....	17	184
Clay, sandy and hard rock .....	22	36	Clay, hard sandy .....	10	194
Rock, streaky clay .....	32	68	Rock .....	9	203
Clay, hard, sandy .....	6	74	Clay, sandy with rock streaks .....	31	234
Clay, blue, hard .....	69	143	Clay, blue .....	34	268
Rock .....	6	149			

Table 2.- Drillers' logs of wells in Starr County--Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well F-1					
Salvadore Salinas, 21 miles northwest of Rio Grande City. Driller: L. A. Fears.					
Soil .....	6	6	Clay, hard, red .....	21	158
Clay, mixed .....	52	58	Clay, blue .....	113	271
Sandstone .....	11	69	Clay, blue and rock .....	47	318
Clay, hard, sandy .....	12	81	Rock .....	3	321
Rock and clay .....	8	89	Sand, water .....	19	340
Clay, hard, blue .....	48	137			
Well F-4					
Ignacio Gutierrez, 18½ miles north of Rio Grande City. Driller: L. A. Fears.					
Clay, sandy .....	20	20	Sand, hard .....	9	190
Clay, sandy and rock .....	55	75	Rock .....	4	194
Clay, blue, sandy .....	48	123	Sand .....	2	196
Clay, blue and rock .....	4	127	Rock .....	2	198
Sand, hard, and rock .....	13	140	Sand .....	28	226
Clay, sandy .....	41	181	Clay, sandy .....	6	232
Well F-9					
Faustino Ramos, 16½ miles northwest of Rio Grande City. Driller: A. L. Herschap.					
Sand, hard, gray .....	60	60	Sand, gray, soft .....	32	258
Shale, brown .....	166	226			
Well F-10					
Juan Ramos, 16 miles northwest of Rio Grande City. Driller: A. L. Herschap.					
Sand, gray, soft .....	10	10	Shale, brown .....	53	108
Caliche .....	45	55	Sand, gray, soft .....	21	129
Well F-12					
Nicasio Guerro, 15 miles north of Rio Grande City. Driller: A. L. Herschap.					
Sand, gray .....	60	60	Shale, green .....	80	340
Shale, brown .....	200	260	Sand, gray .....	41	381

Table 2.- Drillers' logs of wells in Starr County--Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well F-13					
Jesus Villareal, 13½ miles north of Rio Grande City. Driller: L. A. Fears.					
Caliche .....	40	40	Clay, sandy .....	14	292
Clay, red, and boulders .....	16	56	Sand, water .....	24	316
Clay, hard, red .....	76	132	Clay, red .....	2	318
Clay, sticky .....	146	278			
Well F-21					
Enrique Gonzalez, 10 miles north of Rio Grande City. Driller: Dan Tarbutton.					
Clay and gravel .....	6	6	Shale, blue .....	49	153
Sand .....	6	12	Sand .....	33	186
Sand and gravel .....	22	34	Shale, blue .....	18	204
Shale with caliche streaks .....	70	104			
Well F-22					
Pedro Olivarez, 9½ miles northwest of Rio Grande City. Driller: L. A. Fears.					
Soil .....	5	5	Clay, red .....	8	106
Clay, sandy .....	7	12	Clay, blue .....	12	118
Clay, hard, sandy .....	15	27	Clay, red .....	26	144
Clay, blue with sandstone .....	55	82	Sand, hard .....	11	155
Clay, hard, blue .....	16	98			
Well G-8					
Pedro Salinas, 17 miles northeast of Rio Grande City. Driller: A. L. Herschap.					
Caliche .....	65	65	Shale, brown .....	207	372
Sand and gravel .....	100	165	Sand, gray .....	24	396
Well G-15					
Raphaela Lopez, 15 miles northeast of Rio Grande City. Driller: L. A. Fears.					
Soil .....	5	5	Clay, sandy .....	24	227
Gravel .....	7	12	Sand .....	3	230
Caliche, sandy .....	2	14	Rock .....	1	231
Caliche, hard, and rock .....	56	70	Sand .....	2	233
Clay, hard, red .....	120	190	Rock .....	1	234
Clay, soft, pink .....	13	203	Sand .....	9	243

Table 2.- Drillers' logs of wells in Starr County--Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well G-16					
Horacio Saldano, 16 miles northeast of Rio Grande City. Driller: L. A. Fears.					
Soil .....	7	7	Sand .....	4	285
Caliche, sandy .....	4	11	Clay, red .....	9	294
Caliche .....	32	43	Rock .....	1	295
Clay, red .....	238	281	Sand, clay streaks .....	13	308
Well G-21					
Mrs. Edna Schwartz, 14 miles northeast of Rio Grande City. Driller: L. A. Fears.					
Soil .....	4	4	Sand, fine-grained .....	2	86
Caliche .....	11	15	Clay, red, and rock .....	62	148
Clay, red .....	18	33	Clay, red .....	191	339
Sand, hard, and rock .....	16	49	Sand and ash, sandy .....	43	382
Clay, red, and rock .....	35	84	Ash, sandy, and clay .....	153	535
Well H-1					
Cecilia Alaniz, 22½ miles northeast of Rio Grande City. Driller: Antonio Saenz.					
Soil .....	8	8	Clay and caliche .....	30	200
Caliche .....	22	30	Sand and rock .....	40	240
Clay, red .....	140	170	Sand, water .....	20	260
Well H-5					
Cruz Saenz, 25 miles northeast of Rio Grande City. Driller: Fred Fielder.					
Clay .....	20	20	Shell .....	20	210
Caliche .....	90	110	Clay .....	20	230
Clay .....	20	130	Shell .....	20	250
Clay, sandy .....	20	150	Sand and shell .....	20	270
Sand .....	20	170	Clay .....	40	310
Sand and shells .....	20	190	Sand .....	65	375
Well H-12					
Dr. Rene Solis, 21 miles northeast of Rio Grande City. Driller: L. A. Fears.					
Sand .....	5	5	Clay, red sticky .....	80	144
Clay, sandy .....	3	8	Clay, red, limestone streaks ..	33	177
Clay, sandy, and caliche .....	2	10	Ash, sandy .....	19	196
Caliche .....	14	24	Ash, sandy, sand streaks ....	5	201
Clay, red .....	11	35	Sand, limestone streaks .....	15	216
Clay, red, soft .....	21	56			
Clay, red, limestone streaks .....	8	64			

Table 2.- Drillers' logs of wells in Starr County--Continued

Thickness (feet)		Depth (feet)		Thickness (feet)		Depth (feet)	
Well H-13							
Librado Garza, 23 miles northeast of Rio Grande City.				Driller: L. A. Fears.			
Sand .....	8	8	Clay, caliche streaks .....	9	96		
Caliche, sandy .....	4	12	Clay, red .....	127	223		
Caliche .....	22	34	Clay, pink, sandy .....	28	251		
Clay, red, caliche streaks .....	11	45	Ash, sandy, and clay .....	21	272		
Clay, red .....	8	53	Sand .....	7	279		
Clay, red, caliche streaks .....	23	76	Clay, sticky .....	3	282		
Clay, red .....	11	87					
Well H-15							
Santiago Valverde, 23 miles northeast of Rio Grande City				Driller: L. A. Fears.			
Sand .....	8	8	Clay, pink and limestone .....	17	235		
Caliche, sandy .....	4	12	Clay, red sticky .....	17	252		
Caliche, soft .....	29	41	Clay, sandy .....	32	284		
Caliche, hard .....	19	60	Clay, sandy, and limestone .....	3	287		
Clay, red .....	8	68	Ash, sandy, and sand .....	24	311		
Clay, red sticky .....	150	218					
Well H-22							
F. A. Garza, 24½ miles northeast of Rio Grande City.				Driller: L. A. Fears.			
Sand .....	8	8	Sand .....	2	266		
Caliche, sandy .....	6	14	Ash, sandy .....	11	277		
Caliche .....	8	22	Clay, sandy, and limestone .....	21	298		
Clay, red, and caliche .....	14	36	Rock .....	1	299		
Clay, red sticky .....	198	234	Clay .....	5	304		
Clay, red, and limestone .....	11	245	Rock, broken, sandy .....	11	315		
Clay, sandy, and limestone .....	7	252	Clay, red, sticky .....	3	318		
Ash, sandy, and clay .....	12	264					
Well H-26							
Felix F. Martinez, 22 miles northeast of Rio Grande City.				Driller: Antonio Saenz.			
Soil .....	8	8	Rock .....	18	260		
Caliche .....	42	50	Clay .....	52	312		
Clay, red .....	135	185	Rock .....	12	324		
Rock, sandy .....	15	200	Sand, water .....	26	350		
Clay, red .....	42	242					

Table 2.- Drillers' logs of wells in Starr County--Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well H-29					
Sun Oil Co., 22½ miles northeast of Rio Grande City. Driller: Sun Oil Co.					
Sand, brown .....	3	3	Clay, yellow and shells .....	30	300
Caliche, sandy .....	72	75	Clay, yellow .....	31	331
Caliche .....	55	130	Sand, water .....	2	333
Clay, yellow .....	140	270	Shells, gray .....	2	335
Well H-34					
Liberato Barrera, 18 miles northeast of Rio Grande City. Driller: L. A. Fears.					
Soil .....	7	7	Clay red, and rock .....	33	190
Caliche .....	41	48	Clay, red .....	80	270
Clay, red .....	109	157	Sand .....	11	281
Well H-48					
D. W. Cowan, 19 miles northeast of Rio Grande City. Driller: Arthur Erdmann.					
Soil .....	6	6	Shale, pink sticky .....	75	265
Caliche .....	19	25	Shale and boulders .....	20	285
Shale, pink .....	160	185	Rock, hard .....	2	287
Sand, dry .....	5	190	Sand and boulders .....	29	316
Well J-3					
Sun Oil Co., 28½ miles northeast of Rio Grande City. Driller: Layne-Texas Co.					
Soil .....	5	5	Shale, hard, gray .....	14	578
Caliche .....	18	23	Sand .....	42	620
Sand, pink, and caliche .....	60	83	Shale, hard, yellow .....	11	631
Shale, red .....	115	198	Shale .....	20	651
Shale, red, and caliche .....	33	231	Sand .....	20	671
Shale, sandy .....	139	370	Shale, sandy .....	15	686
Sand .....	30	400	Sand .....	85	771
Shale, rock .....	111	511	Shale .....	49	820
Shale, sandy .....	19	530	Shale, sandy .....	30	850
Shale, hard, red .....	23	553	Shale .....	2	852
Sand, hard .....	11	564			



Table 2.- Drillers' logs of wells in Starr County--Continued

Thickness (feet)		Depth (feet)		Thickness (feet)		Depth (feet)	
Well J-4							
Sun Oil Co., 28½ miles northeast of Rio Grande City.				Driller: Layne-Texas Co.			
Soil .....	6	6	Shale, sandy .....	38	529		
Caliche .....	163	169	Shale, hard, gray, sandy .....	55	584		
Shale, red .....	71	240	Shale .....	47	631		
Shale, soft, yellow .....	19	259	Shale, hard .....	49	680		
Shale, hard, yellow .....	42	301	Shale, sandy .....	96	776		
Shale and rock .....	6	307	Shale, hard .....	95	871		
Shale, hard .....	24	331	Shale, hard, red .....	40	911		
Shale .....	160	491					
Well J-5							
Continental Oil Co., 29¼ miles northeast of Rio Grande City.				Driller: K & S Construction Co.			
Soil, sandy .....	4	4	Sand, very fine-grained .....	12	604		
Caliche .....	26	30	Shale, hard .....	11	615		
Caliche, rocky .....	33	63	Sand, yellow, fine-grained ..	3	618		
Clay, hard, sticky .....	77	140	Shale, sandy .....	25	643		
Shale, hard, sandy .....	52	192	Sand, fine-grained .....	11	654		
Clay, sandy .....	20	212	Shale, sandy .....	5	659		
Clay, hard, sticky .....	42	254	Sand, fine-grained .....	13	672		
Clay, sandy .....	91	345	Shale, sandy .....	25	697		
Shale .....	83	428	Sand, fine-grained .....	15	712		
Sand, fine-grained .....	41	469	Shale .....	19	731		
Clay, sandy .....	32	501	Sand, fine-grained .....	78	809		
Shale, hard .....	30	531	Shale, sandy .....	18	827		
Clay, sandy .....	16	547	Sand, fine-grained .....	32	859		
Sand, fine-grained .....	23	570	Shale, hard .....	2	861		
Clay, sandy .....	10	580	Sand, fine-grained .....	9	870		
Sand, fine-grained .....	12	592	Shale, hard .....	5	875		
Well J-23							
Sun Oil Co., 29 miles northeast of Rio Grande City.				Driller: Sun Oil Co.			
Caliche .....	40	40	Sand, hard .....	140	780		
Ash, red, sandy .....	45	85	Sand, water .....	55	835		
Shale, sandy .....	380	465	Sand, hard .....	40	875		
Shale and sand .....	110	575	Sand, water .....	14	889		
Sand, water .....	65	640					

Table 2.- Drillers' logs of wells in Starr County--Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well J-24					
Sun Oil Co., 29 miles northeast of Rio Grande City. Driller: A. H. Masiran.					
Caliche and shale .....	119	119	Shale .....	2	749
Shale, hard .....	207	326	Sand, hard .....	17	766
Sand .....	5	331	Shale, sandy .....	12	778
Shale .....	238	569	Sand, hard streaks .....	12	790
Sand .....	45	614	Shale .....	47	837
Shale .....	15	629	Shale and sand .....	18	855
Sand .....	29	658	Shale and sandy rock .....	9	864
Shale .....	36	694	Rock, sand .....	28	892
Sand, water .....	53	747	Shale .....	3	895
Well J-25					
Sun Oil Co., 29 miles northeast of Rio Grande City. Driller: Sun Oil Co.					
Caliche .....	187	187	Shale .....	38	648
Shale .....	78	265	Sand .....	8	656
Sand .....	5	270	Shale .....	44	700
Shale .....	177	447	Sand .....	60	760
Sand .....	8	455	Shale .....	62	822
Shale .....	134	589	Sand .....	32	854
Sand .....	21	610	Sand and shale .....	48	902
Well J-39					
T. W. Lee, 24 $\frac{1}{2}$ miles northeast of Rio Grande City. Driller: Pursley and Sons.					
Soil .....	189	189	Shale, sand streaks .....	20	619
Sand .....	22	211	Shale, streaky .....	24	643
Shale .....	40	251	Sand .....	14	657
Sand .....	63	314	Shale, sandy .....	6	663
Shale .....	29	343	Sand .....	4	667
Sand, hard .....	60	403	Shale, streaky .....	2	669
Sand, hard streaks .....	39	442	Sand .....	34	703
Shale, streaky .....	80	522	Shale, sandy .....	23	726
Sand, hard .....	45	567	Sand .....	72	798
Shale .....	7	574	Shale .....	25	823
Sand, hard .....	25	599			

Table 2.- Drillers' logs of wells in Starr County--Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well L-4					
M. M. Guerrero, 7½ miles northwest of Rio Grande City. Driller: L. A. Fears.					
Soil .....	4	4	Clay, yellow .....	3	86
Clay, red, and boulders .....	6	10	Sand, hard, clay streaks .....	4	90
Gravel .....	2	12	Clay, hard, blue, rock streaks .....	188	278
Clay, yellow .....	52	64	Clay, red .....	19	297
Clay, sandy, blue .....	4	68	Clay, hard, blue .....	5	302
Clay, blue .....	10	78	Sand, blue .....	6	308
Sand, fine-grained, blue .....	2	80	Clay, blue .....	10	318
Rock .....	3	83			
Well L-14					
Manuel Munoz, 2½ miles northwest of Rio Grande City. Driller: L. A. Fears.					
Caliche .....	6	6	Clay, blue .....	6	92
Gravel .....	13	19	Clay, mixed .....	12	104
Clay, mixed .....	3	22	Clay, red .....	16	120
Clay, blue .....	21	43	Clay, soft mixed .....	5	125
Clay, red .....	7	50	Clay, blue, rock streaks .....	15	140
Clay, blue .....	4	54	Clay, mixed .....	50	190
Clay, mixed, rock streaks .....	26	80	Sand .....	14	204
Clay, red .....	6	86	Clay .....	2	206
Well M-15					
George Decker, 6 miles northeast of Rio Grande City. Driller: L. A. Fears.					
Caliche, hard .....	6	6	Clay, blue .....	138	219
Caliche, soft .....	75	81	(Dry well)		
Well M-19					
Florentino Barrera, 9½ miles northeast of Rio Grande City. Driller: L. A. Fears.					
Caliche .....	36	36	Sand .....	15	179
Clay, red .....	128	164	Clay, red .....	3	182

Table 2.- Drillers' logs of wells in Starr County--Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well M-25					
Ismeal Salinas, 4½ miles northeast of Rio Grande City. Driller: L. A. Fears.					
Caliche .....	7	7	Sand and gravel .....	11	47
Clay, yellow .....	23	30	Caliche, sandy .....	73	120
Caliche .....	6	36			
Well M-33					
Garciasville School District, 8 miles southeast of Rio Grande City. Driller: Pursley & Sons.					
Soil .....	27	27	Sand, shale streaks .....	35	272
Gravel .....	9	36	Shale, sandy .....	223	495
Shale, streaky .....	122	158	Shale, streaky .....	56	551
Sand .....	19	177	Shale, blue, and sand .....	121	672
Shale, streaky .....	27	204	Sand, hard .....	34	706
Sand, fine-grained .....	23	227	Shale .....	28	734
Shale, sandy .....	10	237			
Well M-36					
J. D. Brock, 6 miles southeast of Rio Grande City. Driller: Pursley & Sons.					
Soil .....	1	1	Shale, streaky .....	55	909
Gravel .....	12	13	Sand .....	14	923
Caliche and shale .....	45	58	Shale, reddish-brown .....	38	961
Shale, blue .....	264	322	Shale, sandy .....	24	985
Sand, hard .....	33	355	Sand .....	58	1,043
Shale, streaky .....	18	373	Shale .....	26	1,069
Sand, shale streaks .....	48	421	Shale, sandy .....	54	1,123
Rock, sandy, hard .....	4	425	Sand .....	2	1,125
Shale .....	44	469	Sand, hard .....	1	1,126
Sand .....	29	498	Shale, streaky .....	27	1,153
Shale .....	90	588	Shale, sandy .....	19	1,172
Sand .....	6	594	Shale and limestone .....	15	1,187
Shale, sandy .....	43	637	Shale, sandy .....	32	1,219
Sand, hard .....	4	641	Sand .....	37	1,256
Shale, sandy .....	16	657	Shale, sandy .....	111	1,367
Sand .....	40	697	Shale, streaky .....	22	1,389
Shale, streaky .....	12	709	Shale, sandy .....	43	1,432
Shale, sandy .....	77	786	Sand, hard .....	1	1,433
Sand .....	9	795	Sand .....	10	1,443
Shale, green, streaky .....	30	825	Shale, sandy .....	49	1,492
Shale, sandy .....	4	829	Sand .....	34	1,526
Shale, streaky .....	15	844	Shale, sandy .....	5	1,531
Shale, sandy .....	10	854	Sand .....	38	1,569

(Continued on next page)

Table 2.- Drillers' logs of wells in Starr County--Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well M-36--Continued					
Shale .....	150	1,719	Shale .....	12	1,881
Sand, hard streaks .....	2	1,721	Sand .....	4	1,885
Sand, hard .....	11	1,732	Shale, streaky .....	79	1,964
Shale, sandy .....	66	1,798	Sand .....	9	1,973
Sand .....	31	1,829	Shale .....	69	2,042
Shale, streaky .....	17	1,846	Sand .....	46	2,088
Sand .....	6	1,852	Shale, sandy .....	19	2,107
Sand, hard .....	2	1,854	Sand, firm .....	43	2,150
Sand .....	15	1,869	Limestone, hard .....	1	2,151
Well N-5					
J. A. Wetzel, 18 miles northeast of Rio Grande City. Driller: A & T Drilling Co.					
Soil .....	6	6	Sand and gravel .....	44	343
Caliche .....	114	120	Sand .....	20	363
Sand, hard, and caliche .....	26	146	Shale .....	53	416
Sand and gravel .....	60	206	Sand .....	29	445
Shale .....	93	299	Shale .....	2	447
Well N-6					
Baldrige & King, 20½ miles northeast of Rio Grande City. Driller: Pursley & Sons.					
Soil .....	12	12	Sand .....	45	709
Caliche .....	19	31	Shale, streaky .....	62	771
Caliche, hard .....	107	138	Sand, shale streaks .....	16	787
Shale, hard, sandy .....	137	275	Sand, firm .....	46	833
Shale .....	22	297	Shale, streaky .....	13	846
Sand .....	66	363	Sand, tight .....	16	862
Shale, sand streaks .....	180	543	Shale, streaky .....	17	879
Sand .....	39	582	Sand .....	108	987
Shale .....	82	664	Shale .....	12	999
Well N-11					
Lalo Hinojosa, 11 miles northeast of Rio Grande City. Driller: L. A. Fears.					
Soil .....	5	5	Clay, red .....	190	234
Caliche .....	23	28	Clay, red, and sand .....	16	250
Clay, pink .....	16	44	Clay, red .....	78	328

Table 2.- Drillers' logs of wells in Starr County--Continued

	Thickness (feet)	Depth (feet)		Thickness (feet)	Depth (feet)
Well N-19					
Sun Oil Co., 12 miles east of Rio Grande City. Driller: Eugene Garner.					
Soil .....	3	3	Shale, brittle .....	23	301
Clay .....	34	37	Shale, sticky .....	17	318
Sand .....	11	48	Sand, streaky .....	65	383
Shale .....	137	185	Shale, streaky .....	34	417
Shale, sandy .....	20	205	Sand .....	2	419
Shale .....	25	230	Shale, sandy .....	6	425
Shale, sandy .....	11	241	Sand, shale streaks .....	24	449
Shale .....	37	278			
Well N-20					
Sun Oil Co., 11½ miles east of Rio Grande City. Driller: Camelor Well Service.					
Soil .....	4	4	Shale .....	61	310
Clay .....	35	39	Sand .....	20	330
Sand .....	14	53	Shale .....	46	376
Shale .....	135	188	Sand .....	5	381
Shale, broken, and sand .....	12	200	Shale, sand streaks .....	99	480
Shale .....	37	237	Sand .....	34	514
Sand .....	12	249			
Well N-22					
Sun Oil Co., 15 miles east of Rio Grande City. Driller: Gus Canales.					
Soil .....	3	3	Sand and shale .....	112	170
Clay .....	50	53	Rock, sandy, hard .....	2	172
Gravel .....	5	58	Sand .....	31	203
Well N-23					
Sun Oil Co., 15 miles east of Rio Grande City. Driller: Eugene Garner.					
Soil .....	6	6	Shale .....	64	160
Clay .....	44	50	Sand and shale .....	10	170
Gravel, sandy, and shale .....	22	72	Sand .....	30	200
Sand and gravel .....	24	96			
Well N-56					
LaGrulla School District, 13 miles southeast of Rio Grande City. Driller: L. A. Fears.					
Soil .....	18	18	Sand and gravel .....	3	69
Clay .....	19	37	Clay, blue .....	1	70
Sand .....	29	66			

Table 3.- Analyses of water from wells in Starr County, Texas  
(Analyses given are in parts per million except specific conductance, pH, and percent sodium)

Well	Owner	Depth of well (ft.)	Date of collection	Specific conductance (Microghos at 25° C.)	pH	Silica (SiO <sub>2</sub> )	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Boron (B)	Dis-solved solids	Total hardness as CaCO <sub>3</sub>	Percent sodium
A-2	H. P. Guerra	217	Oct. 26, 1950	5,370	8.2	18	68	16	1,090	308	155	1,550	14	3.1	3,040	236	91
A-5	do.	36	do.	1,890	8.3	70	22	18	377	496	170	252	12	2.8	1,170	129	86
A-6	do.	325	do.	6,700	7.8	28	126	19	1,400	156	939	1,640	34	9.9	4,270	392	89
A-7	do.	112	do.	1,110	8.2	117	43	21	171	355	76	100	68	1.0	772	194	66
A-8	do.	170	do.	10,100	7.7	17	227	42	2,040	156	685	3,080	--	4.9	6,170	739	86
A-11	Zaragoza Salinas	100	Oct. 18, 1950	6,920	7.9	24	132	27	1,350	167	384	2,020	--	3.6	4,020	440	87
A-17	J.O. Clark Fuel Co	540	Dec. 4, 1950	10,100	7.8	11	58	12	2,310	222	654	3,080	--	3.0	6,240	194	96
A-23	Zalvadore Salinas	30	Oct. 17, 1950	1,300	8.1	128	7.5	1.9	311	590	135	56	--	--	932	27	96
B-5	King Ranch Corp.	240	Mar. 6, 1951	2,540	7.8	23	20	19	542	422	277	476	1.2	3.0	1,570	128	90
B-8	do.	300	do.	4,040	8.5	32	16	4.4	907	252	559	870	18	6.2	2,540	58	97
B-11	Adolpho Gonzalez	500	Nov. 15, 1950	13,100	7.7	50	354	40	2,730	184	1,150	4,000	--	12	8,410	1,050	85
B-12	Enrique Gonzalez	224	do.	6,880	8.1	88	158	36	1,360	280	754	1,750	20	7.2	4,310	542	85
C-3	M. M. Guerrero	308	Oct. 11, 1950	3,620	7.9	38	179	61	473	244	203	920	21	1.6	2,020	698	50
C-4	H. P. Guerra	311	Oct. 25, 1950	2,060	7.5	78	146	39	189	204	44	368	252	72	1,220	525	44
C-7	R. T. Margo	665	Oct. 11, 1950	2,970	7.7	45	106	47	438	160	213	740	18	1.6	1,690	458	68
C-9	Antonio Garcia	100	do.	2,910	8.6	67	25	21	604	644	212	489	28	--	1,800	149	90
C-12	Pedro Saenz	98	Sept. 3, 1945	--	--	--	17	8.9	364	588	61	224	12	--	1,070	79	--
C-12	Pedro Saenz	98	Sept. 3, 1945	--	--	--	17	8.9	364	588	61	224	12	--	1,070	79	--
C-13	H. P. Guerra	110	Oct. 25, 1950	3,360	8.4	34	12	20	739	664	280	620	10	5.9	2,030	112	93
C-17	Ignacio Trevino	410	do.	2,750	8.0	23	71	35	473	258	260	605	17	2.1	1,610	321	76
C-20	Leandro Saenz	254	Sept. 11, 1950	1,100	8.2	42	64	24	119	235	47	193	4.5	--	610	258	50
C-24	Cruz Saenz	150	Sept. 12, 1950	7,830	7.6	63	322	107	1,370	230	1,270	1,910	17	7.4	5,170	1,240	71
D-4	Victor Contreras	84	Sept. 6, 1950	3,060	8.2	70	60	48	498	268	226	565	222	2.2	1,820	347	76
D-5	Andres Garza	217	Oct. 5, 1950	4,570	8.4	71	85	62	785	409	323	1,060	7.5	2.0	2,590	467	79
D-9	Mrs. E. Zarate	500	Sept. 6, 1950	4,940	8.1	20	94	42	921	236	437	1,240	16	2.9	2,890	407	83
D-12	Augustine Olivarez	120	do.	5,790	7.8	18	202	107	911	220	563	1,500	52	4.3	3,470	944	68
D-19	San Isidro School District	823	do.	1,580	8.5	22	13	4.5	316	242	84	320	--	1.0	895	51	93
D-26	Jay Simmons	844	do.	1,480	8.6	23	5.2	2.1	315	290	112	250	.5	1.3	870	22	97
D-28	Guerra Bros.	710	Sept. 5, 1950	1,620	8.5	20	5.5	2.3	344	296	122	285	--	1.6	935	23	97
D-44	L. Pena	150	do.	4,530	8.6	24	44	46	918	758	395	892	6.6	6.4	2,710	299	86
D-50	Dr. M. J. Rodriguez	962	Nov. 10, 1950	2,470	8.3	20	15	6.1	533	350	221	500	--	2.1	1,470	62	95
E-3	H. P. Guerra	305	Nov. 2, 1950	3,190	8.0	22	51	19	636	250	568	560	1.0	2.3	1,970	205	87
E-6	do.	250	do.	10,800	6.5	24	702	48	1,990	30	2,600	2,520	--	5.1	7,900	1,950	69
E-7	do.	300	do.	3,980	7.7	50	102	29	761	224	797	720	--	2.4	2,570	374	82
E-8	R. T. Margo	700	Oct. 31, 1950	7,480	8.8	18	9.5	6.6	1,840	1,740	78	1,800	--	15	4,620	50	99
E-10	Santon Canales	262	Nov. 2, 1950	3,540	8.2	19	2.5	1.7	795	426	496	620	1.5	--	2,140	13	99.2
E-13	L. J. Ruthvin	268	Dec. 15, 1950	7,120	8.0	10	142	24	1,570	140	1,700	1,400	7.5	6.0	4,930	453	88
E-19	Juan Margo	71	Oct. 31, 1950	1,080	8.4	52	28	4.2	223	489	49	58	47	1.2	702	88	85

Table 3.- Analyses of water from wells in Starr County--Continued

Well	Owner	Depth of well (ft.)	Date of collection	Specific conductance (Micromhos at 25° C.)	pH	Silica (SiO <sub>2</sub> )	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Boron (B)	Dissolved solids	Total hardness as CaCO <sub>3</sub>	Percent sodium
E-20	Melquiades Salinas	350	Oct. 31, 1950	4,550	8.4	26	9.0	9.7	1,020	784	109	1,080	-	3.5	2,640	62	97
E-25	H. P. Guerra	250	Nov. 1, 1950	3,450	7.5	16	128	36	611	140	938	500	.5	2.1	2,300	468	74
E-28	Nicolas Silva	100	do.	6,640	7.9	10	102	31	1,440	188	1,420	1,330	4.0	4.2	4,430	382	89
F-1	Salvadore Salinas	340	Oct. 18, 1950	5,800	7.8	19	13	2.9	1,240	240	387	1,520	1.0	2.0	3,300	44	98
F-3	do.	240	Oct. 17, 1950	9,370	7.9	20	66	7.3	2,030	102	600	2,760	-	11	5,540	194	96
F-10	Juan Ramos	129	do.	7,210	7.9	19	34	2.2	1,580	97	458	2,100	-	12	4,250	94	97
F-12	Nicasio Guerra	381	Oct. 16, 1950	26,300	7.4	34	491	28	6,160	115	1,190	9,500	-	13	17,500	1,340	91
F-14	Abel Sanchez	285	Jan. 13, 1950	10,600	7.2	18	212	24	2,300	196	1,660	2,650	5.0	6.2	6,970	628	89
F-16	Antonio Saenz	200	do.	9,820	7.2	22	248	69	1,920	336	914	2,730	5.0	3.8	6,080	902	82
F-21	Enrique Gonzalez	204	Sept. 20, 1950	11,400	7.5	26	74	7.9	2,640	311	885	3,390	-	14	7,190	217	96
G-1	Procopio Guerra	515	Jan. 3, 1951	11,700	7.8	14	105	9.6	2,720	106	1,220	3,450	-	15	7,590	302	95
G-4	H. P. Guerra	290	Oct. 25, 1950	2,410	7.8	52	88	30	385	238	277	470	42	1.4	1,460	343	71
G-11	George Coates	530	Sept. 14, 1950	10,100	7.9	96	292	49	2,080	236	1,640	2,520	.8	6.7	6,810	930	83
G-17	Isabel S. Lopez	32	do.	553	8.0	100	22	17	70	226	44	28	9.2	.50	407	125	55
G-18	Mrs. Lila Martinez	285	Jan. 13, 1950	1,680	8.1	24	34	12	323	512	106	205	21	1.3	1,000	134	84
G-19	Enrique Gonzalez	290	do.	9,880	7.1	88	452	108	1,630	252	818	2,790	164	4.5	6,180	157	69
G-20	do.	260	do.	6,050	7.4	23	202	48	1,080	242	751	1,390	122	4.4	3,740	702	77
G-23	Domingo L. Garza	284	Sept. 20, 1950	1,620	8.3	103	63	20	244	300	72	265	93	-	1,010	239	69
G-24	Leandro Resendez	380	Jan. 13, 1950	17,700	7.4	88	519	101	3,680	233	1,810	5,420	-	16	11,700	171	82
G-25	Martin Garza	275	Sept. 7, 1950	2,890	8.3	90	106	33	541	274	1,120	125	12	1.9	2,160	400	75
H-3	Cruz Saenz	71	Sept. 12, 1950	449	7.8	84	32	17	31	174	15	30	21	-	324	150	31
H-7	M. S. Hinojosa	130	Sept. 11, 1950	1,670	8.5	52	28	12	305	372	51	293	13	-	971	120	85
H-8	Hilario Saenz	256	do.	520	7.8	84	46	12	32	220	9.2	28	6.6	.45	330	164	30
H-19	Eugenio Saenz	100	Sept. 26, 1950	2,220	8.1	34	100	29	318	350	45	498	29	1.2	1,220	368	65
H-21	Mrs. S. G. Pena	400	Sept. 7, 1950	4,990	8.1	22	147	66	810	236	282	1,340	28	3.6	2,810	638	73
H-27	Arkansas Fuel Co.	1,007	Nov. 14, 1950	3,780	7.7	13	54	12	815	138	1,330	325	-	5.3	2,620	184	91
H-30	Melico Longoria	200	Oct. 25, 1950	621	8.1	78	60	9.9	54	304	17	22	13	1.9	418	190	38
H-34	Liberato Barrera	281	Sept. 13, 1950	4,340	8.0	32	188	43	678	251	462	990	46	3.5	2,700	646	70
H-35	Lorenzo Elizondo	215	Sept. 7, 1950	3,920	8.0	36	174	59	532	150	209	1,030	50	2.3	2,170	676	63
H-39	Rowan & Hope	540	Sept. 5, 1950	4,250	8.0	26	96	43	723	164	288	1,100	4.0	2.6	2,360	416	79
H-45	Cameron Ranch	245	Jan. 13, 1950	4,050	7.1	20	128	50	652	314	288	970	20	3.3	2,290	525	73
H-47	do.	260	do.	3,510	7.3	25	128	47	556	314	311	780	50	2.8	2,050	513	70
H-51	do.	254	do.	3,320	7.3	28	128	38	514	324	250	730	46	3.3	1,900	476	70
H-52	do.	260	do.	5,100	7.3	15	202	82	774	212	441	1,310	55	3.6	2,990	841	67
H-55	Continental Oil Co.	963	Sept. 15, 1950	7,070	7.9	26	213	25	1,590	153	3,040	570	1.0	10	5,540	634	85
J-5	do.	875	Sept. 27, 1950	2,200	8.3	18	18	5.8	448	240	208	447	-	-	1,260	69	93
J-31	P. H. Longoria	200	Sept. 5, 1950	2,640	8.2	34	50	42	399	196	260	505	27	1.8	1,410	298	74

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Table 3.- Analyses of water from wells in Starr County--Continued

Well	Owner	Depth of well (ft.)	Date of collection	Specific conductance (Micromhos at 25° C.)	pH	Silica (SiO <sub>2</sub> )	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Boron (B)	Dissolved solids	Total hardness as CaCO <sub>3</sub>	Percent sodium
J-34	T. W. Lee	220	Sept. 5, 1950	7,600	8.0	22	150	107	1,360	200	655	2,080	-	6.2	4,480	814	78
J-39	do.	823	do.	3,110	8.4	17	25	6.6	638	230	261	720	.5	2.6	1,780	90	94
J-41	W. P. Hauser	434	do.	4,040	8.2	20	105	37	697	228	291	1,020	-	3.0	2,290	414	79
K-1	H. P. Guerra	300	Aug. 31, 1945	-	-	-	-	-	-	289	500	384	3.9	-	-	150	-
K-2	do.	400	do.	-	-	-	-	-	-	756	0	2,310	9.8	-	-	57	-
K-4	do.	300	Aug. 30, 1945	-	-	-	-	-	-	776	6	4,780	3.5	-	-	165	-
K-5	do.	250	Dec. 7, 1950	6,730	8.2	11	12	7.0	1,640	487	1,580	1,120	2.5	2.2	4,610	59	98
K-6	Manuel Ramirez	200	Aug. 30, 1945	-	-	-	-	-	-	460	900	2,410	9.6	-	-	24	-
L-1	Pedro B. Rosa	314	Jan. 13, 1950	8,850	7.4	12	84	19	1,990	236	1,640	1,920	5.0	6.2	5,790	288	94
L-3	Francisco Garcia	275	Oct. 16, 1950	38,400	7.1	5.6	598	165	9,290	93	2.6	15,800	-	13	25,900	2,170	90
L-5	Jurvencia Garza	45	Aug. 29, 1945	-	-	-	-	-	-	487	380	505	102	-	-	158	-
L-6	Guadalupe Alvarez	35	do.	-	-	-	-	-	-	280	60	69	38	-	-	158	-
L-7	Margarito Bermudez	40	do.	-	-	-	-	-	-	197	24	32	2.2	-	-	285	-
L-8	Ignacio Alaniz	100	do.	-	-	-	-	-	-	531	2,500	1,920	26	-	-	525	-
L-9	Las Garzas Ranch	32	do.	-	-	-	-	-	-	251	340	1,900	5.0	-	-	1,380	-
L-10	Martin Cavazos	32	do.	-	-	-	-	-	-	379	550	1,530	38	-	-	690	-
L-14	Manuel Munoz	206	Nov. 13, 1950	5,910	8.3	9.2	16	4.4	1,310	530	264	1,550	4.0	13	3,420	58	98
M-1	Domingo L. Garza	284	Sept. 7, 1950	2,460	8.3	96	55	10	460	272	285	420	82	3.8	1,550	178	85
M-11	Santano Guerrero	204	do.	4,860	8.3	101	145	26	937	308	821	945	81	6.6	3,210	469	81
M-16	Trinidad Rodriguez	182	do.	4,060	8.0	88	115	17	707	139	255	1,070	8.0	2.5	2,330	357	81
M-19	Florentino Barrera	182	Nov. 22, 1950	6,860	8.1	39	278	80	1,140	252	591	1,880	42	7.4	4,180	1,020	71
M-22	Luis Martinez	85	Oct. 5, 1945	-	-	-	78	24	445	264	190	525	130	-	1,520	293	-
M-23	Felix Chapa	200	do.	-	-	-	224	45	1,510	284	1,200	1,790	22	-	4,930	744	-
M-24	G. E. Dodd	80	do.	-	-	-	175	36	837	384	291	1,260	11	-	2,800	584	-
M-31	Clopton Estate	60	Aug. 16, 1945	-	-	-	524	152	637	108	1,820	945	3.0	-	4,130	1,930	-
M-34	Willie Richmond	32	Aug. 27, 1945	-	-	-	-	-	-	183	1,100	1,030	30	-	-	1,260	-
M-38	Valley Brick & Tile Co.	54	Aug. 16, 1945	-	-	-	122	35	1,890	361	2,360	1,280	.8	-	5,870	448	-
M-40	-- Backe	70	Aug. 27, 1945	-	-	-	118	47	257	523	359	173	.8	-	1,210	488	-
M-41	E. Moore	35	do.	-	-	-	-	-	-	326	1,200	2,860	5.5	-	-	990	-
M-42	C. H. McColrey	32	Aug. 29, 1945	-	-	-	-	-	-	385	60	370	6.3	-	-	585	-
N-2	T. W. Lee	285	Oct. 1, 1945	-	-	-	184	59	687	253	462	1,040	50	-	2,610	702	-
N-3	J. A. Wetzell	240	do.	-	-	-	178	52	588	278	310	960	36	-	2,260	658	-
N-5	do.	477	Sept. 20, 1950	5,130	7.8	3.6	82	25	1,060	101	1,130	945	22	-	3,320	308	88
N-7	T. B. Slick Estate	220	Sept. 29, 1945	-	-	-	120	35	228	345	80	385	37	-	1,060	444	-
N-9	do.	210	do.	-	-	-	82	24	479	310	172	605	72	-	1,590	303	-
N-13	Filomena Flores	217	Sept. 6, 1945	-	-	-	71	21	302	380	58	368	37	-	1,040	264	-
N-15	Juan Ruiz	170	Sept. 28, 1945	-	-	-	68	23	421	365	67	545	51	-	1,350	264	-

Table 3.- Analyses of water from wells in Starr County--Continued

Well	Owner	Depth of well (ft.)	Date of collection	Specific conductance (Micromhos at 25° C.)	pH	Silica (SiO <sub>2</sub> )	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Boron (B)	Dissolved solids	Total hardness as CaCO <sub>3</sub>	Percent sodium
N-16	M. Flores	200	Sept. 19, 1945	-	-	-	76	18	211	441	62	191	33	-	808	264	-
N-17	L. Flores	160	do.	-	-	-	150	41	393	276	40	775	45	-	1,580	543	-
N-18	Juan Flores	217	Sept. 28, 1945	-	-	-	68	20	450	388	60	400	43	-	1,230	252	-
N-22*	Sun Oil Co.	200	Sept. 28, 1950	1,760	8.0	58	70	32	231	169	89	397	22	-	1,080	306	62
N-23		203															
N-24	Manuel Gonzalez	180	Sept. 6, 1945	-	-	-	159	44	340	336	118	625	45	-	1,500	578	-
N-25	Manuel Samano	171	Sept. 19, 1945	-	-	-	183	54	464	375	78	900	37	-	1,900	678	-
N-26	Juan Salinas	208	Sept. 6, 1945	-	-	-	150	30	280	319	81	512	48	-	1,260	498	-
N-27	do.	200	Jan. 13, 1950	10,200	7.5	18	224	111	1,950	316	871	2,870	60	14	6,270	1,020	81
N-28	Sun Oil Co.	250	Sept. 6, 1945	-	-	-	108	31	250	289	138	380	30	-	1,080	397	-
N-29	do.	200	do.	-	-	-	-	-	-	83	5,000	598	1.0	-	-	638	-
N-30	Felipe Solis	45	Sept. 28, 1950	2,030	8.2	74	33	20	371	253	89	418	101	1.5	1,230	164	83
N-33	Octaviano Cantu	50	do.	5,250	7.9	84	97	47	1,000	230	835	1,080	26	5.3	3,290	436	83
N-40	Narciso Pena	56	do.	2,110	8.3	56	24	9.4	447	512	118	295	138	1.4	1,340	398	91
N-43	Estaban Garcia	800	Sept. 5, 1945	-	-	-	-	-	-	81	5,000	785	1.8	-	-	532	-
N-44	Luis Pena	95	do.	-	-	-	111	32	455	474	274	498	26	-	1,630	408	-
N-46	Maximo Diaz	90	do.	-	-	-	-	-	-	262	300	1,080	42	-	-	1,080	-
N-52	Cristobal Saenz	62	Aug. 24, 1945	-	-	-	146	67	239	612	347	208	3.8	-	1,310	640	-
N-53	Juan Solis	61	Aug. 25, 1945	-	-	-	-	-	-	433	190	225	1.8	-	-	450	-
N-54	Blas Gonzalez	60	Aug. 24, 1945	-	-	-	-	-	-	331	200	124	1.2	-	-	352	-
N-55	Severa Moreno	74	Aug. 16, 1945	-	-	-	136	89	316	432	527	348	.8	-	1,630	706	-
N-57	-- Garza	28	Aug. 24, 1945	-	-	-	-	-	-	414	380	212	62	-	-	675	-

\* Composite sample.