

WATER LEVELS AND CHEMICAL
ANALYSES FROM OBSERVATION
WELLS IN THE DELL CITY AREA
HUDSPETH AND CULBERSON
COUNTIES, TEXAS
1948 THROUGH JANUARY 1964

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TEXAS WATER COMMISSION
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TEXAS WATER COMMISSION

Joe D. Carter, Chairman
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1948 through January 1964

By

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March 1964

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WATER LEVELS AND CHEMICAL ANALYSES FROM
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INTRODUCTION

Location

The report area is located in the northeastern corner of Hudspeth County and the northwestern corner of Culberson County in West Texas. Dell City, the town from which the report area receives its name, is approximately 18 miles west of the Hudspeth-Culberson County line and 13 miles north of the highway designated as U. S. 62 and 180. Adjacent to the Dell City area, to the north, is the Crow Flats area, Otero County, New Mexico.

Purpose and Scope

This report is presented for the purpose of supplying interested parties with basic water-level and water-quality data that have been collected by various personnel of the Texas Water Commission and the U. S. Geological Survey since 1948.

In view of the complex conditions of the area, interpretation and evaluation of the hydrology can only be accomplished after a detailed investigation. The scope of this report is intended to encompass only basic water-level and water-quality data. These data are presented in Tables 1 and 2.

Table 1 is a tabulation of water-level measurements since 1948, in feet below land surface, made in 48 observation wells in the Dell City area. The tabulations of water levels are direct print-outs from machine record cards.

Table 2 provides chemical analyses of water samples from 61 water-quality-observation wells. Locations of the observation wells are shown on Plate 1, and Table 3 provides a cross reference to well numbers used by previous investigators.

This report gives data only for wells in the Commission's water-level and water-quality-observation programs. It should be pointed out that records of water levels and chemical analyses for other wells in the Dell City area are available in the Commission's office at Austin.

Previous Investigations

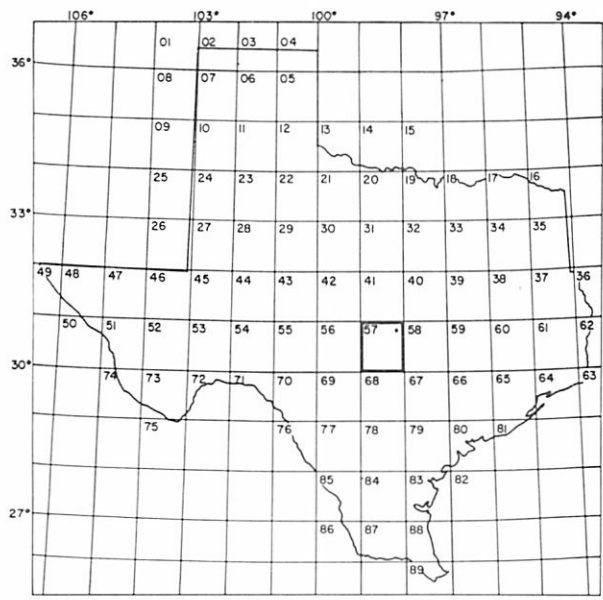
P. B. King (1948) mapped the geology of the region of Texas and New Mexico in which the Dell City area is located. Water levels have been measured and chemical analyses made of water samples from various wells in the Dell City area since 1948. This work was performed by personnel of the Texas Water Commission and the U. S. Geological Survey.

The first ground-water investigation of the area was made by R. A. Scalapino (1950). In 1954, R. A. Kennedy of the U. S. Geological Survey did extensive ground-water work in the area and that information is available as a USGS open-file report. Water-level data were compiled also by Follett (1954) and Stearman (1960). The State of New Mexico has studied the ground-water conditions north of Dell City in the Crow Flats area, Otero County (Bjorklund, 1957).

Well-Numbering System

In order to facilitate the location of wells and to avoid duplication of well numbers in the present and future studies, the Texas Water Commission has adopted a statewide well-numbering system. This system is based on division of the State into quadrangles formed by degrees of latitude and longitude and the repeated division of these quadrangles into smaller ones, as shown in the following diagram.

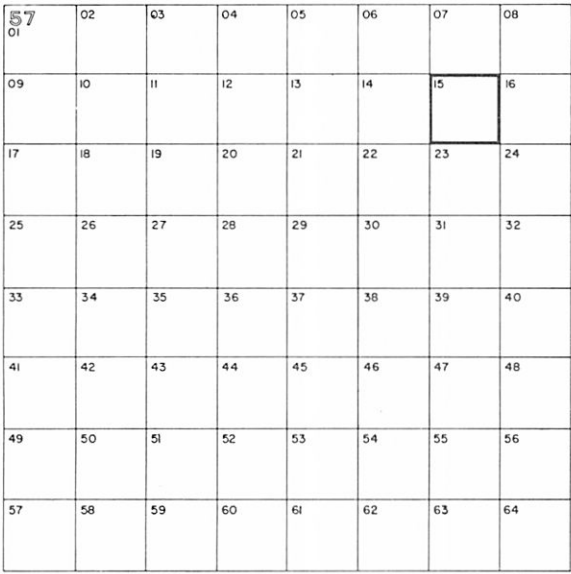
The largest quadrangle, a 1-degree quadrangle, is divided into sixty-four 7-1/2 minute quadrangles, each of which is further divided into nine 2-1/2 minute quadrangles. Each 1-degree quadrangle in the State has been assigned a number for identification. The 7-1/2 minute quadrangles are numbered consecutively from left to right, beginning in the upper left-hand corner of the 1-degree quadrangle, and the 2-1/2 minute quadrangles within the 7-1/2 minute quadrangle are similarly numbered. The first 2 digits of a well number identify the 1-degree quadrangle; the 3rd and 4th, the 7-1/2 minute quadrangles; the 5th digit identifies the 2-1/2 minute quadrangle; and the last 2 digits identify the well within the 2-1/2 minute quadrangle.



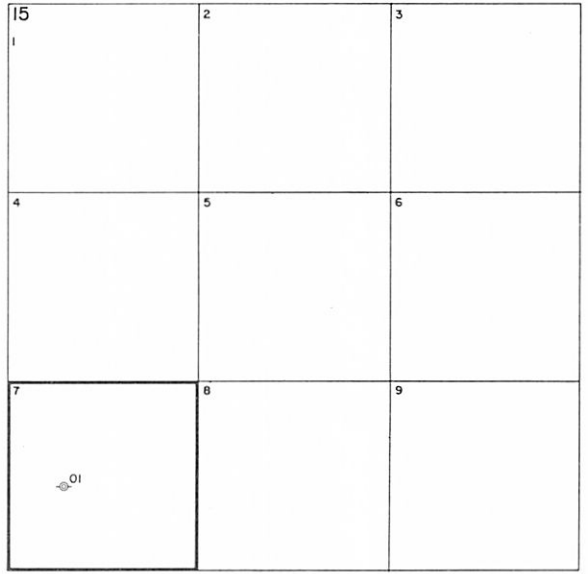
1-degree Quadrangles

Location of Well 57-15-701

- 57 1-degree quadrangle
- 15 7 1/2 minute quadrangle
- 7 2 1/2 minute quadrangle
- 01 Well number within 2 1/2 minute quadrangle



7 1/2-minute Quadrangles



2 1/2-minute Quadrangles

REFERENCES

- Bjorklund, L. J., 1957, Reconnaissance of ground-water conditions in the Crow Flats area, Otero County, New Mexico: State of New Mexico Technical Report No. 8.
- Follett, C. R., 1954, Records of water-level measurements in Culberson, Hudspeth, and Jeff Davis Counties, Texas: Texas Board Water Engineers* Bull. 5415.
- King, P. B., 1948, Geology of the southern Guadalupe Mountains, Texas: U. S. Geological Survey Prof. Paper 215.
- Scalapino, R. A., 1950, Development of ground water for irrigation in the Dell City area, Hudspeth County, Texas: Texas Board Water Engineers* Bull. 5004.
- Stearman, Jack, 1960, Water-level measurements in Culberson, Hudspeth, and Jeff Davis Counties, Texas: Texas Board Water Engineers* Bull. 6005.

* Name of agency changed to Texas Water Commission January 30, 1962.

Table 1.--Water levels in observation wells

Column 3: Asterisk (*) indicates unable to obtain a measurement.

Well number	Date of measurement	Water level, in feet below land surface
Hudspeth County		
47 09 801	1-26-60	86.37
	2-07-61	88.02
	2-12-62	88.10
	2-08-63	89.84
	1-23-64	93.68
47 17 202	1-17-58	54.55
	1-26-60	55.32
	2-07-61	55.75
	2-12-62	57.30
	2-08-63	56.81
	1-23-64	56.91
47 17 203	1-17-58	118.05
	1-26-60	119.40
	2-07-61	*
	2-12-62	120.76
	2-08-63	121.37
	1-23-64	121.91
47 17 205	2----57	64.00
	1-26-60	76.00
	2-07-61	76.35
	2-12-62	76.95
	2-08-63	78.66
	1-23-64	78.32
47 17 206	1-26-60	85.95
	2-07-61	88.28
	2-12-62	*
	2-08-63	90.10
	1-23-64	95.73
47 17 501	1-23-64	59.17
48 06 201	1-23-64	290.48
48 06 601	1-23-64	306.28

Table 1.--Water levels in observation wells--Continued

Well number	Date of measurement	Water level, in feet below land surface
48 07 101	8-16-49	182.0-
	2-21-50	179.23
	2-05-51	179.77
	2-07-52	195.82
	1-28-53	184.60
	1-22-54	187.45
	1-21-55	187.41
	1-20-56	188.53
	1-25-57	190.23
	1-15-58	193.22
	1-25-60	195.48
	2-06-61	195.14
	2-12-62	196.43
	2-08-63	197.37
	1-23-64	200.72
48 07 102	1-23-64	198.56
48 07 103	1-23-64	*
48 07 203	3-11-48	87.85
	8-12-48	90.80
	11-08-48	88.79
	2-03-49	88.23
	8-12-49	90.67
	9-22-49	90.65
	11-23-49	89.39
	11-01-50	91.25
	2-05-51	89.39
	2-07-52	93.89
	1-28-53	94.71
	1-22-54	98.93
	1-21-55	101.40
	1-20-56	102.80
	1-25-57	103.63
	1-15-58	107.00
	3-22-60	104.92
	2-06-61	104.90
2-12-62	105.43	
2-08-63	109.69	
1-23-64	112.00	

Table 1.--Water levels in observation wells--Continued

Well number	Date of measurement	Water level, in feet below land surface
48 07 206	1-25-60	100.94
	2-06-61	105.16
	2-08-63	103.97
	1-23-64	107.02
48 07 207	5-28-54	102.50
	1-25-60	104.64
	2-06-61	103.01
	2-12-62	104.79
	2-08-63	105.32
	1-23-64	107.60
48 07 301	3-----48	44.60
	9-28-48	46.45
	2-03-49	46.15
	9-22-49	47.53
	1-03-50	46.54
	2-21-50	46.51
	11-01-50	50.09
	2-05-51	49.42
	2-07-52	51.20
	1-28-53	53.08
	1-22-54	55.81
	5-21-54	58.20
	1-21-55	57.30
	1-20-56	58.34
	1-16-58	62.29
	1-25-60	64.58
	2-06-61	65.08
2-12-62	66.46	
2-08-63	67.57	
1-23-64	69.80	
48 07 304	1-25-60	36.50
	2-06-61	37.19
	2-12-62	40.97
	2-08-63	39.51
	1-23-64	41.58

Table 1.--Water levels in observation wells--Continued

Well number	Date of measurement	Water level, in feet below land surface
48 07 402	11-12-48	141.15
	2-03-49	140.65
	11-24-49	141.50
	1-03-50	140.99
	2-21-50	140.99
	7-28-50	143.18
	11-01-50	142.75
	2-05-51	142.02
	2-07-52	144.02
	1-28-53	146.12
	1-22-54	148.80
	1-21-55	150.45
	1-20-56	151.78
	1-25-57	152.64
	1-15-58	155.42
	1-26-60	157.16
	2-06-61	159.55
2-12-62	158.17	
2-08-63	162.18	
1-23-64	162.08	
48 07 403	8-12-48	111.15
	2-03-49	109.62
	11-23-49	110.84
	2-05-51	111.13
	2-07-52	113.14
	1-28-53	118.48
	1-22-54	118.23
	1-21-55	119.45
	1-20-56	121.08
	1-25-57	121.78
	1-15-58	124.57
	1-25-60	126.75
	2-06-61	126.24
2-08-63	129.75	
1-23-64	132.10	
48 07 404	1-24-54	118.28
	1-21-55	119.60
	1-20-56	121.05
	1-25-57	121.68
	1-15-58	124.57
	1-25-60	126.67
	2-06-61	126.65
	2-08-62	136.19
1-23-64	131.86	

Table 1.--Water levels in observation wells--Continued

Well number	Date of measurement	Water level, in feet below land surface
48 07 405	3----48	130.30
	11-12-48	130.45
	2-03-49	129.92
	9-23-49	133.75
	1-03-50	130.84
	2-05-51	131.40
	2-07-52	133.22
	1-28-53	136.34
	1-22-54	139.75
	1-21-55	140.35
	1-20-56	141.53
	1-25-57	142.76
	1-15-58	145.80
	1-25-60	147.19
	2-06-61	147.27
	2-12-62	148.67
	2-08-63	150.95
1-23-64	153.59	
48 07 414	1-23-64	203.61
48 07 501	3-01-48	62.50
	9-28-48	63.47
	2-03-49	62.83
	11-01-50	65.06
	2-05-51	64.20
	2-07-52	66.20
	1-28-53	68.09
	1-22-54	71.53
	5-25-54	83.20
	1-21-55	73.13
	1-26-57	78.08
	1-16-58	80.85
	1-26-60	83.60
	2-06-61	83.69
	2-08-63	85.75
	1-23-64	88.16

Table 1.--Water levels in observation wells--Continued

Well number	Date of measurement	Water level, in feet below land surface
48 07 502	8-05-48	47.0-
	8-08-48	52.45
	11-08-48	49.11
	2-03-49	47.64
	9-22-49	51.67
	11-24-49	48.74
	1-03-50	48.22
	2-21-50	48.02
	11-01-50	50.63
	2-07-52	52.48
	1-22-54	58.29
	1-21-55	58.60
	1-20-56	64.07
	1-26-57	60.59
	1-16-58	62.95
	1-25-60	66.05
	2-07-61	64.75
	2-12-62	66.24
2-08-63	*	
1-23-64	73.51	
48 07 504	3-11-48	73.75
	8-17-48	76.70
	11-28-48	75.72
	2-03-49	76.72
	8-16-49	79.42
	11-24-49	75.98
	1-03-50	75.40
	2-21-50	75.23
	2-05-51	76.38
	2-07-52	76.69
	1-28-53	81.37
	1-22-54	84.44
	1-21-55	85.46
	1-20-56	87.66
	1-26-57	88.90
	1-16-58	91.00
	1-25-60	93.12
	2-06-61	92.97
2-12-62	93.10	
2-08-63	94.07	
7-27-63	121.58	
1-23-64	97.18	

Table 1.--Water levels in observation wells--Continued

Well number	Date of measurement	Water level, in feet below land surface
48 07 505	1-21-55	72.68
	1-26-57	78.45
	1-16-58	81.16
	1-26-60	83.60
	2-06-61	83.69
	2-08-63	86.14
	1-23-64	88.50
48 07 606	3-02-48	27.29
	8-06-48	31.50
	2-03-49	27.72
	11-24-49	28.35
	1-03-50	27.97
	2-21-50	27.96
	2-05-51	28.93
	2-07-52	30.86
	1-28-53	33.09
	1-22-54	36.01
	1-21-55	37.50
	1-20-56	38.79
	1-26-57	40.02
	1-16-58	42.55
	1-25-60	44.56
	2-06-61	45.04
	2-12-62	46.13
2-08-63	47.50	
1-23-64	49.45	
48 07 607	1-26-60	35.43
	2-06-61	35.27
	2-12-62	37.67
	2-08-63	38.12
	1-23-64	40.77
48 07 702	1-26-60	128.08
	2-06-61	126.06
	2-12-62	*
	2-08-63	118.40
	1-23-64	*

Table 1.--Water levels in observation wells--Continued

Well number	Date of measurement	Water level, in feet below land surface
48 07 703	1-22-54	148.70
	1-21-55	*
	1-20-56	153.85
	1-15-58	157.43
	1-26-60	159.90
	2-12-62	178.74
	2-08-63	*
	1-23-64	*
48 07 706	1-23-64	110.88
48 07 801	11-18-48	38.00
	2-03-49	37.50
	1-26-60	57.24
	2-07-61	57.70
	2-12-62	58.52
	2-08-63	61.60
	1-23-64	62.46
48 07 803	1-28-53	65.45
	1-22-54	68.35
	1-21-55	70.35
	1-20-56	71.83
	1-26-57	73.00
	1-16-58	76.00
	1-26-60	78.75
	2-06-61	78.52
	2-12-62	78.69
	2-08-63	79.19
	1-23-64	*
48 07 901	2-06-61	35.38
	2-08-63	35.72
	1-23-64	38.96
48 07 904	1-16-58	39.22
	1-26-60	41.75
	2-06-61	42.13
	2-12-62	43.40
	2-08-63	45.70
	1-23-64	46.58

Table 1.--Water levels in observation wells--Continued

Well number	Date of measurement	Water level, in feet below land surface
48 07 908	8-12-48	18.77
	2-04-49	18.68
	1-28-53	22.68
	1-22-54	24.63
	1-21-55	25.83
	1-20-56	26.68
	1-26-57	28.63
	1-16-58	30.22
	2-06-61	33.78
	2-12-62	35.86
	2-08-63	34.48
	1-23-64	35.56
	48 08 401	11-19-51
2-07-52		15.96
1-28-53		16.48
1-22-54		17.51
6-09-54		21.1-
1-21-55		18.58
1-20-56		19.85
1-26-57		20.44
1-16-58		21.80
1-25-60		23.00
2-06-61		22.76
2-12-62		23.48
2-08-63		22.90
1-23-64	*	
48 15 101	1-23-64	253.75
48 15 201	1-26-60	46.99
	2-06-61	47.43
	2-12-62	49.76
	2-08-63	51.93
	1-23-64	*

Table 1.--Water levels in observation wells--Continued

Well number	Date of measurement	Water level, in feet below land surface
48 15 203	1-22-54	93.33
	1-21-55	94.62
	1-20-56	95.72
	1-22-56	95.61
	1-26-57	97.20
	1-16-58	99.82
	1-25-60	106.48
	2-06-61	108.27
	2-12-62	104.12
	2-08-63	112.62
	1-23-64	*
48 15 301	1-26-60	40.65
	2-06-61	40.54
	2-12-62	40.76
	2-08-63	44.60
	1-23-64	46.28
48 15 302	1-23-64	33.75
48 15 902	1-26-60	147.00
	2-06-61	145.47
	2-12-62	142.02
	2-08-63	151.30
	1-23-64	150.31
48 16 402	1-26-60	38.28
	2-07-61	39.30
	2-12-62	42.71
	2-08-63	40.41
	1-23-64	41.66
48 16 702	1-26-60	57.35
	2-07-61	58.29
	2-12-62	61.70
	2-08-63	62.72
	1-23-64	64.90
48 23 201	1-23-64	418.00

Table 1.--Water levels in observation wells--Continued

Well number	Date of measurement	Water level, in feet below land surface
Culberson County		
47 17 301	3-22-60	154.1-
	2-08-63	*
	1-23-64	*
47 17 302	1-17-58	146.85
	1-26-60	149.75
	2-07-61	149.20
	2-12-62	150.31
	2-08-63	151.51
	1-23-64	154.09
47 17 601	1-26-60	122.15
	2-07-61	116.68
	2-12-62	115.88
	2-08-63	116.88
	1-23-64	120.82

Table 2.--Chemical analyses of ground water from quality-observation wells

(Analyses given are in parts per million except specific conductance and pH)

Well no.	Owner	Depth of well (ft.)	Date of collection	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Dissolved solids	Total hardness as CaCO ₃	Specific conductance (micromhos at 25°C.)	pH	Analyst ¹
<u>Hudspeth County</u>																
47-09-802	Wisburn Fms.	250	7-26-60 7-26-63	20 17	156 152	67 79	93 92	278 276	440 439	128 133	1.2 1	1,040 1,010	664 710	1,490 1,560	7.3 7.4	USGS TSDH
804	C. R. Bramblett	515	7-26-60 7-26-63	22 15	145 149	65 77	91 77	278 272	438 433	98 112	5.4 5	1,000 1,002	630 690	1,460 1,510	7.1 7.5	USGS TSDH
17-202	Gilbert Gill	250	7-26-60	19	448	245	601	252	1,370	1,270	11	4,090	2,130	5,760	7.0	USGS
206	C. R. Bramblett	750	7-26-63	15	154	69	112	283	454	144	Tr. ²	1,086	670	1,600	7.5	TSDH
501	Bob Bennett	300±	7-26-63	17	172	112	690	243	1,310	530	Tr.	2,957	890	4,080	7.5	TSDH
48-06-201	Ayres & Kasperian	1,100	7-26-63	20	560	166	40	229	1,910	20	Tr.	2,834	2,080	2,930	7.2	TSDH
601	Bennett, et al.	1,505	7-25-63	20	520	178	58	201	1,900	27	Tr.	2,808	2,030	2,900	7.3	TSDH
07-101	C & L Ranch	700	6- 2-54 7-27-60 7-25-63	19 -- 15	324 -- 316	139 -- 154	168 -- 243	193 189 176	1,300 1,360 1,380	145 200 213	31 -- 39	2,220 -- 2,451	1,380 1,400 1,420	2,740 2,940 3,000	7.7 6.9 7.3	USGS USGS TSDH
102	do	962	7-25-63	19	540	171	118	214	1,810	139	Tr.	2,901	2,050	3,220	7.3	TSDH
103	H. B. Harris	1,206	7-25-63	20	428	175	85	216	1,540	91	1	2,450	1,790	2,800	7.4	TSDH
203	James Napier	280	8-17-48 5-20-54 3-22-60	15 15 14	207 208 260	89 91 116	25 71 159	214 211 219	663 714 944	45 75 198	9.8 13 59	1,160 1,290 1,860	883 893 1,130	1,560 1,740 2,470	-- 7.6 7.0	USGS USGS USGS
204	C & L Ranch	--	7- 2-60 7-25-63	18 14	465 485	209 268	255 362	217 204	1,370 1,700	590 700	102 80	3,120 3,716	2,020 2,310	3,940 4,700	7.1 7.1	USGS TSDH
205	G. S. McConnell	256	8- 6-48 5-20-54	16 15	213 285	79 173	25 240	260 232	624 1,180	32 312	2.8 82	1,120 2,400	856 1,420	1,470 3,190	-- 7.5	USGS USGS
206	James Napier	250	3-31-59	--	--	--	--	227	1,090	320	--	--	1,390	3,070	--	USGS
209	R. S. Hamer	--	7-26-63	17	280	110	34	201	990	32	1	1,568	1,150	1,860	7.3	TSDH
301	E. O. Brownfield	150	8-12-48 5-25-54 3-31-59 7-25-63	16 18 17 14	212 276 288 256	71 103 115 117	56 55 90 70	224 226 244 217	683 925 912 910	28 55 158 81	9.8 8.5	1,190 1,550 1,720 1,570	821 1,110 1,190 1,120	1,520 1,890 2,210 1,990	-- 7.4 7.2 7.3	USGS USGS USGS TSDH
302	Chaves Bros.	--	7-25-60	16	242	86	90	255	656	182	4.7	1,400	958	1,940	6.9	USGS
307	List Estate	--	7-25-63	14	380	108	169	227	1,120	426	17	2,405	1,640	3,190	7.4	TSDH
401	J. P. Williams	187	8- 9-49 5-20-54 7- 2-60	14 18 18	254 268 345	99 118 165	192 266 381	236 249 217	845 819 1,160	268 462 630	8.5 22 80	1,800 2,100 2,890	1,040 1,150 1,540	2,480 3,090 3,980	7.5 7.6 7.4	USGS USGS USGS
405	F. W. Dodson	230	3-31-59 Spring-63	18 18	360 192	161 295	348 446	215 216	1,190 1,320	600 740	66 82	2,850 3,200	1,560 1,690	3,890 4,360	7.2 6.9	USGS TSDH

See footnotes at end of table.

Table 2.--Chemical analyses of ground water from quality-observation wells--Continued

Well no.	Owner	Depth of well (ft.)	Date of collection	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Dis-solved solids	Total hardness as CaCO ₃	Specific conductance (micromhos at 25°C.)	pH	Analyst ^{1/}
48-07-406	D. I. Leatherman	390	3-11-48	18	170	90	99	252	608	118	3.8	1,230	794	1,750	--	USGS
411	John Segulia	--	5-20-54	18	255	131	230	232	889	390	25	2,050	1,170	2,930	7.4	USGS
413	D. T. Leatherman	248	Spring-63	18	216	357	484	199	1,910	590	92	3,769	2,000	4,700	7.0	TSDH
414	C & L Ranch	680	7-25-63	15	260	117	425	271	770	670	19	2,412	1,130	3,590	7.4	TSDH
501	C. W. Voyles	220	3-12-48	--	216	86	54	208	695	82	1.2	1,240	892	1,720	--	USGS
			8- 5-48	19	189	92	175	150	609	335	1.2	1,490	850	2,460	--	USGS
			8- 9-49	15	235	82	246	278	649	392	1.5	1,760	924	2,590	7.2	USGS
			3-22-60	16	458	185	448	223	1,450	820	63	3,550	1,900	4,850	6.9	USGS
			7-25-63	17	400	200	520	233	1,350	860	34	3,502	1,820	4,800	7.2	TSDH
502	Frank Gentry	201	3- 3-48	22	144	150	156	280	801	178	1.2	1,590	976	2,210	--	USGS
			7-25-63	16	590	278	481	210	1,690	1,140	78	4,383	2,630	5,650	7.1	TSDH
504	C. W. Voyles	175	3-11-48	20	192	101	104	196	775	105	5	1,400	894	1,900	--	USGS
			8-12-48	19	228	96	61	244	737	90	3.2	1,350	964	1,820	--	USGS
506	J. D. Williams	250	3-12-48	18	190	90	105	248	663	125	1.8	1,320	844	1,780	--	USGS
			6- 3-54	18	292	115	190	246	930	302	18	1,990	1,200	2,790	7.9	USGS
512	Frank Gentry	187	8- 5-48	19	251	97	89	248	798	130	2.2	1,510	1,030	2,050	--	USGS
			8- 9-49	15	250	107	130	253	854	175	3.8	1,660	1,060	2,180	7.3	USGS
			5-27-54	18	350	152	228	240	1,040	495	28	2,430	1,500	3,310	7.5	USGS
			3-31-59	20	665	297	374	218	1,490	1,320	124	4,400	2,880	6,090	7.0	USGS
			7- 2-60	18	630	285	392	205	1,480	1,230	120	4,260	2,740	5,750	6.7	USGS
514	Hays Bros.	--	6- 9-54	18	324	138	368	269	851	750	30	2,610	1,380	3,980	7.6	USGS
			7- 2-60	19	320	141	461	264	976	790	33	2,870	1,380	4,180	7.4	USGS
			7-25-63	16	329	153	464	255	980	810	38	2,911	1,450	4,200	7.3	TSDH
601	J. R. Speights	260	3-25-60	15	228	77	204	278	592	345	4.8	1,600	886	2,420	7.0	USGS
			7-26-63	14	232	94	228	275	620	380	4	1,710	970	2,510	7.3	TSDH
603	Roy Keeney	200	3-11-48	22	242	100	115	268	867	100	2.5	1,580	1,020	2,030	--	USGS
			6-22-54	20	280	96	100	270	771	211	3	1,610	1,090	2,200	7.2	USGS
604	James Napier	300	8- 5-48	23	229	95	98	254	738	140	1.8	1,450	962	1,970	--	USGS
			5-27-54	--	--	--	--	274	--	152	--	--	930	1,920	7.7	USGS
			3-31-59	17	235	86	188	278	604	345	4.0	1,620	940	2,340	7.0	USGS
			7- 2-60	24	289	122	111	245	712	358	7.1	1,740	1,220	2,520	6.8	USGS
606	C & L Ranch	3,700±	7-26-63	14	368	220	338	259	1,230	670	42	3,009	1,820	4,000	7.2	TSDH
608	Ed Bullard	--	6-22-54	17	217	114	153	158	785	269	14	1,650	1,010	2,330	7.9	USGS
			7-25-60	18	308	162	299	262	1,090	505	28	2,540	1,430	3,470	6.8	USGS
			7-25-63	14	291	139	272	261	980	437	15	2,278	1,300	3,190	7.4	TSDH
611	C & L Ranch	3,700±	7-26-63	14	372	234	353	255	1,250	730	42	3,111	1,890	4,250	7.4	TSDH
612	W. C. Chandler	250	8- 6-48	18	237	86	44	262	724	50	2.5	1,290	945	1,710	--	USGS
			7- 2-60	16	295	106	72	259	648	294	6.8	1,570	1,170	2,200	6.8	USGS
			7-25-63	14	368	156	144	234	1,040	410	12	2,261	1,560	3,000	7.3	TSDH

See footnotes at end of table.

Table 2.--Chemical analyses of ground water from quality-observation wells--Continued

Well no.	Owner	Depth of well (ft.)	Date of collection	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Dissolved solids	Total hardness as CaCO ₃	Specific conductance (micromhos at 25°C.)	pH	Analyst ¹
48-07-618	Clay Dyer	--	7-25-63	17	330	140	121	240	790	410	Tr.	1,928	1,400	2,750	7.2	TSDH
619	J. R. Speights	--	7-25-63	14	235	90	228	276	600	383	3	1,690	960	2,520	7.4	TSDH
701	C & L Ranch	400	6- 3-54 7- 2-60 7-26-63	18 18 15	226 265 279	76 109 126	364 440 488	305 286 273	545 728 890	598 715 750	4.6 13 8	1,980 2,430 2,692	876 1,110 1,210	3,140 3,710 3,930	7.5 7.2 7.4	USGS USGS TSDH
704	do	350	6- 8-54 3-25-60 7-26-63	18 16 17	268 302 297	111 130 134	452 500 497	288 272 266	799 984 980	730 770 760	18 31 15	2,540 2,870 2,835	1,120 1,290 1,290	3,830 4,200 4,090	7.4 7.3 7.3	USGS USGS TSDH
706	do	835	7-25-63	14	225	85	328	290	590	530	2	1,923	910	2,950	7.3	TSDH
803	G. J. Collier	278	7-25-63	14	408	239	900	225	1,770	1,260	46	4,756	2,000	6,250	7.5	TSDH
807	N. R. Hays	--	6-24-54 6-25-63	18 17	336 350	149 162	540 570	273 244	1,030 1,170	930 860	27 23	3,160 3,276	1,450 1,540	4,670 4,640	7.3 7.2	USGS TSDH
901	C & L Ranch	300	7- 2-60 7-25-63	19 15	230 228	86 94	155 164	270 264	616 600	273 303	5.2 4	1,520 1,536	928 960	2,170 2,250	6.9 7.5	USGS TSDH
907	Wilber Lee	235	7-25-60 7-25-63	19 18	518 550	188 235	666 770	223 212	1,340 1,710	1,360 1,430	22 21	4,220 4,842	2,070 2,350	5,980 6,450	6.7 7.3	USGS TSDH
08-401	Lorenzo Gallegos	250	7-25-63	18	550	231	435	203	2,040	640	22	4,037	2,310	4,850	7.4	TSDH
15-101	C & L Ranch	4,797	6- 8-54 7- 2-60 7-26-63	19 18 15	248 255 260	89 84 100	305 339 361	292 285 277	670 696 740	510 512 550	1.0 5.0 5.0	1,990 2,050 2,169	985 982 1,060	2,920 3,070 3,200	7.4 6.8 7.3	USGS USGS TSDH
202	J. D. Lee	295	2-27-54 7- 2-60	20 20	-- 230	-- 72	274 339	238 298	554 556	458 535	.0 5.0	-- 1,910	780 870	2,760 2,980	7.8 7.1	USGS USGS
203	Earl Franklin	325	5-21-54	18	200	85	267	301	520	450	2.8	1,690	848	2,680	7.4	USGS
204	S. W. Magee	--	3-25-60 7-25-63	16 15	395 355	194 184	779 730	273 265	1,180 1,180	1,430 1,180	18 13	4,150 3,786	1,780 1,640	6,160 5,400	7.1 7.1	USGS TSDH
205	--	--	7-25-63	15	233	80	331	292	620	540	3	1,972	910	3,000	7.3	TSDH
301	Jessie Berry	320	7-25-63	14	224	90	328	270	610	520	3	1,923	930	2,900	7.2	TSDH
302	R. L. Merrill	--	7-27-63	14	242	95	316	281	600	560	3	1,967	1,000	2,990	7.4	TSDH
801	H. McLaughlin	450	12- 9-48	13	292	156	147	202	1,510	142	1.8	2,460	1,620	2,950	--	USGS
901	C. E. Nelson	250	7-26-60	18	234	77	266	272	612	432	12	1,780	900	2,670	6.8	USGS
902	do	250	7-25-63	14	220	90	272	267	600	436	9	1,775	920	2,650	7.3	TSDH
16-501	Jack Stallings	70	7-27-60	24	645	427	1,480	232	2,830	2,450	--	7,970	3,370	10,500	7.2	USGS

See footnotes at end of table.

Table 2.--Chemical analyses of ground water from quality-observation wells--Continued

Well no.	Owner	Depth of well (ft.)	Date of collection	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Dissolved solids	Total hardness as CaCO ₃	Specific conductance (micromhos at 25°C.)	pH	Analyst ¹
48-16-701	B. Ravousett	122	7-26-60	20	270	126	443	264	1,010	590	68	2,660	1,190	3,750	6.8	USGS
			7-25-63	15	249	110	353	267	820	510	21	2,214	1,070	3,210	7.4	TSDH
23-201	Moes Diaz	--	7-26-63	14	122	57	90	134	425	85	34	892	540	1,350	7.4	TSDH

Culberson County

47-17-301	G. S. Gill	385	7-26-63	15	148	68	94	298	403	112	--	989	650	1,490	7.6	TSDH
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¹/ Analyst: TSDH - Texas State Department of Health; USGS - United States Geological Survey.

²/ Tr. - Trace.

Table 3.--Index of previously assigned well numbers in Hudspeth County and corresponding numbers in this report

This report	Scalapino* (1950)	Davist (1960)	Western Cotton Oil Co.‡
47-09-801	--	M-19	184
802	--	M-21	180
804	--	M-20	--
17-202	--	M-27	172
203	--	M-30	177
205	--	M-28	171
206	--	M-25	182
501	--	M-32	--
48-06-201	--	E-1	--
601	--	E-158	--
07-101	4	E-6	107
102	--	E-162	--
103	--	E-163	--
203	30	E-16	57
204	--	E-61	64
205	34	E-29	62
206	32	E-15	58
207	--	E-27	60
209	--	E-17	--
301	81	F-1	81
302	--	F-31	10
304	--	F-40	--
307	--	F-30	6
401	9	E-44	114
402	--	E-88	--
403	24	E-35	124
404	--	E-36	125
405	8	E-43	127
406	25	E-32	--
411	10	E-45	115
413	--	E-33	--
414	--	E-161	--
501	42	E-80	--
502	58	E-113	--
504	38	E-75	--
505	--	E-81	--
506	21	E-47	123
512	59	E-114	--
514	46	E-101	85
601	--	F-115	--
603	77	F-53	--
604	74	F-70	--
606	67	F-47	35
607	--	F-81	--
608	--	F-42	20

See footnotes at end of table.

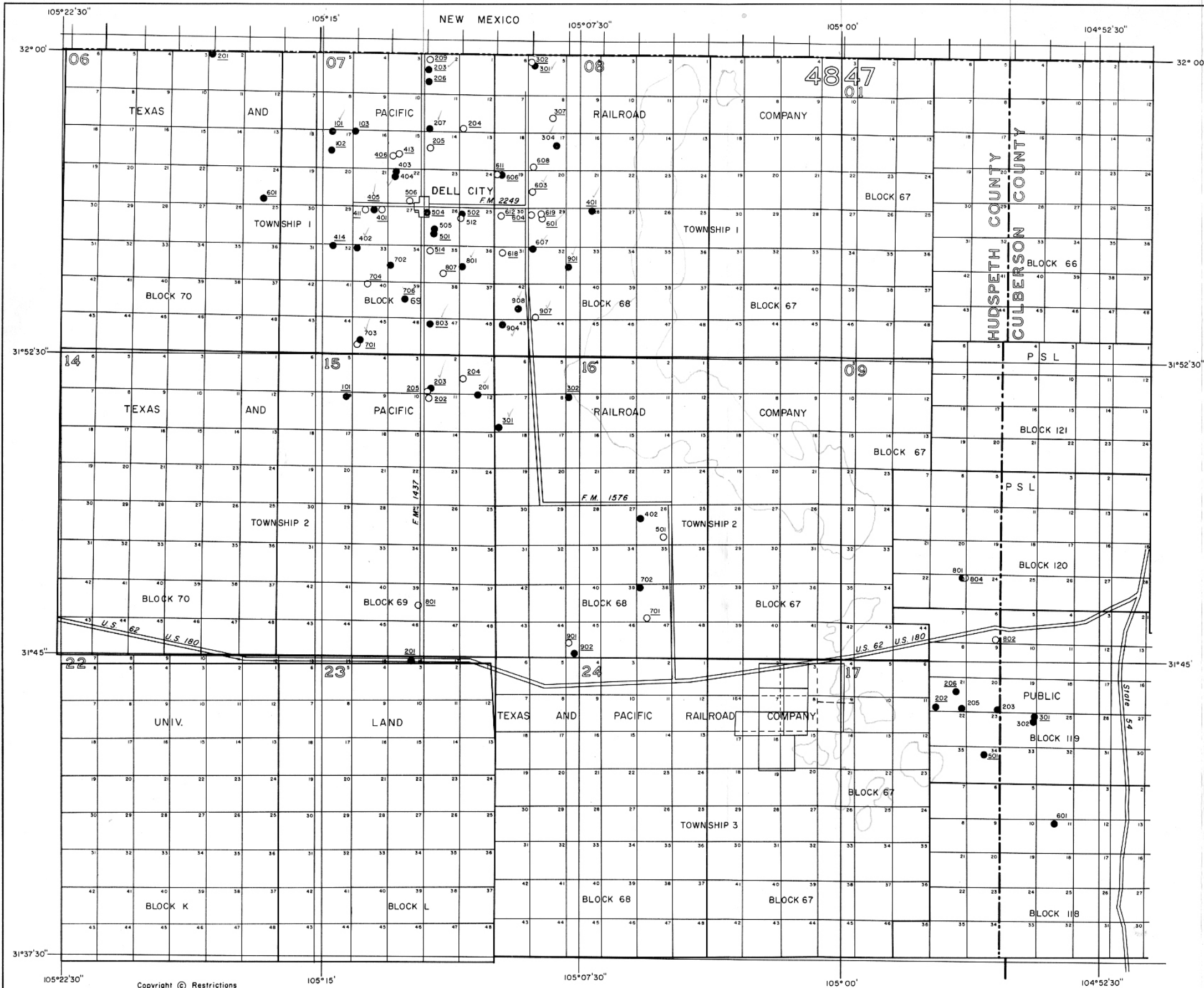
Table 3.--Index of previously assigned well numbers in Hudspeth County and corresponding numbers in this report--Continued

This report	Scalapino* (1950)	Davis† (1960)	Western Cotton Oil Co.‡
48-07-611	66	F-46	36
612	69	F-51	--
618	--	F-76	99
619	--	F-115a	--
701	13	E-129	119
702	--	E-94	129
703	14a	E-130	--
704	--	E-92	116
706	--	E-160	--
801	52	E-118	94
803	--	E-133	--
807	--	E-125	92
901	--	F-90	41
904	--	F-109	102
908	70	F-100	--
08-401	--	F-88	28
15-101	--	E-131	--
201	--	E-156	147
202	--	E-146	--
203	--	E-143	162
204	--	E-150	144
205	--	E-159	--
301	--	F-113	152
302	--	F-116	--
801	--	--	--
901	--	M-15	169
902	--	M-17	170
16-402	--	M-2	197
501	--	M-10	195
701	--	M-14	167
702	--	M-7	168
23-201	--	M-33	--

* Numbers assigned by Scalapino also were used in later publications by Follett (1954) and Stearman (1960).

† Numbers established by Marvin E. Davis of the USGS are according to a 10-minute grid system. These numbers are unpublished but are presented here for those who are more familiar with this listing.

‡ Numbers assigned by Western Cotton Oil Co. during early development of ground water in the area. They are presented here as cross reference for those who are more familiar with this listing.



EXPLANATION

- Water-Level Observation Well
- Water-Quality Observation Well
- ²⁰⁴ Well Number
Line under number indicates that a chemical analysis of water from the well is given in Table 2.

A well may be both a water-level and water-quality observation well.



Plate I
 Location of Water-Level and Water-Quality
 Observation Wells, Dell City Area,
 Hudspeth and Culberson Counties, Texas
 Texas Water Commission

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