WATER RESOURCES REPORT NUMBER FOURTEEN

ARIZONA STATE LAND DEPARTMENT

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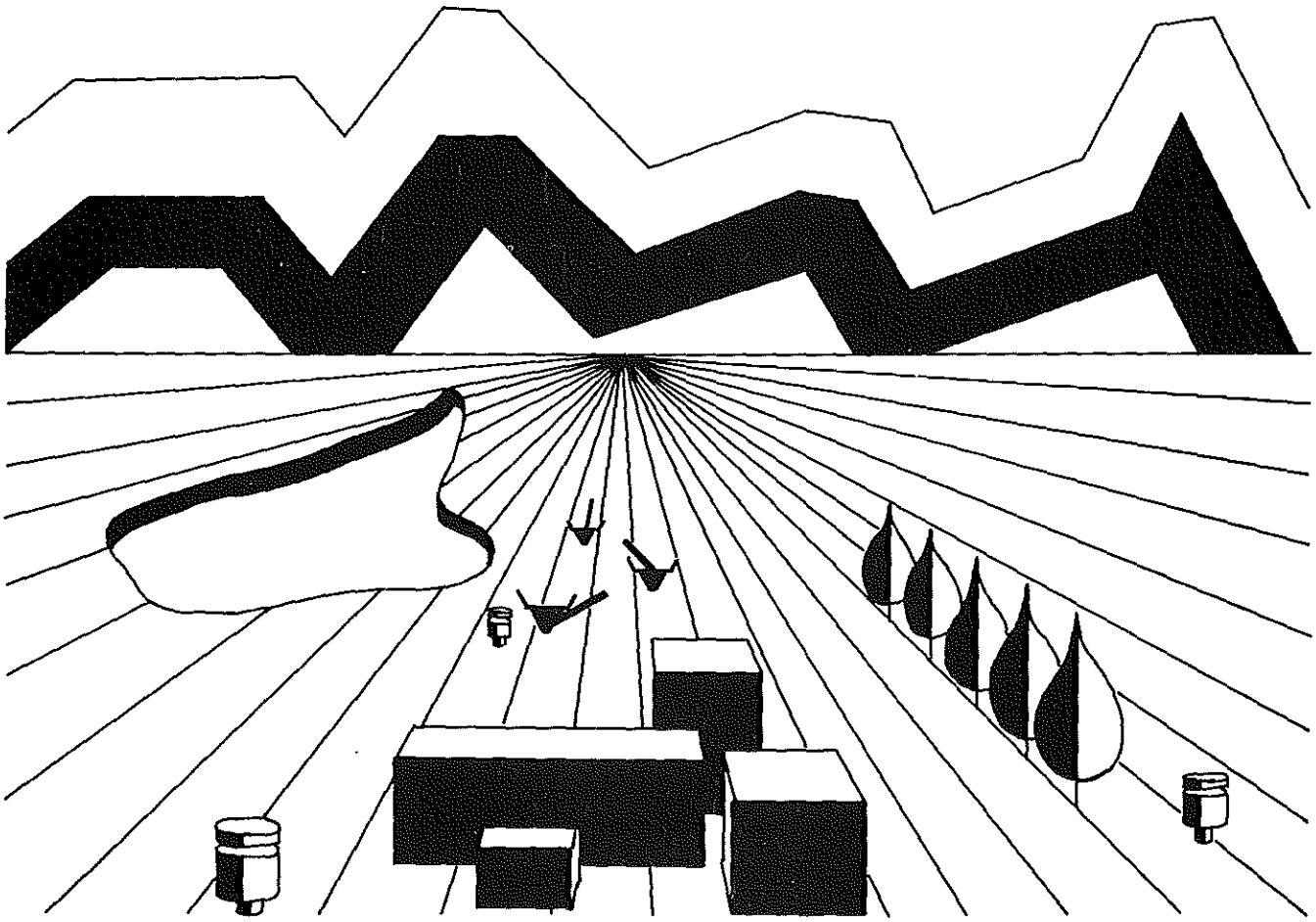
BASIC GROUND-WATER DATA OF THE WILLCOX BASIN, GRAHAM AND COCHISE COUNTIES, ARIZONA

BY

S.G. BROWN, H.H. SCHUMANN, L.R. KISTER, AND P.W. JOHNSON



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*Water Rights Adjudication Team
Civil Division
Attorney General's Office:

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BASIC GROUND-WATER DATA OF THE WILLCOX BASIN, GRAHAM AND COCHISE COUNTIES, ARIZONA

By S. G. Brown, H. H. Schumann, L. R. Kister, and P. W. Johnson

Introduction

In July 1959 the U.S. Geological Survey in cooperation with the State Land Department, Obed M. Lassen, Commissioner, began an investigation of the geology and ground-water resources of the Willcox basin as a part of the overall investigation of the ground-water resources of Arizona. This report is a summary of the basic data collected as they relate to the water resources of the area. Figure 1 is a map of Arizona showing the location and extent of the area investigated.

The purpose of this report is to make available basic ground-water data that are useful in planning and studying water-resources development and to supplement a report that will be published later.

The data were collected chiefly during the period 1945 to 1960. Most of the well data, logs, well discharges, and reported drawdowns were obtained from well-registration forms of the Arizona State Land Department. Drill cuttings for laboratory analysis were obtained through the cooperation of the drillers working in the area. Water-level measurements have been made by the U.S. Geological Survey more or less regularly since 1946, but some water-level records extend back to 1942.

Acknowledgments

Well owners and operators in the area have been cooperative in furnishing information. Much supplemental information was obtained from pump companies and well drillers operating in the Willcox area. Mr. Carmy G. Page, County Agricultural Agent, Willcox, supplied estimates of irrigated acreage that were especially useful in computing irrigation pumpage. Mr. Samuel F. Turner, consulting engineer, Phoenix, Ariz., and the mayor and council of the city of Willcox granted access to data gathered by Mr. Turner during an investigation made for the city. Mr. Gene Anderson and Mr. S. B. Evans of the consulting firm of Gene Anderson, civil engineers, Tucson, Ariz., allowed the use of data collected by them during a water-supply investigation for a housing development near Ash Creek School. Mr. Leonard C. Halpenny of the Water Development Corp. and Mr. W. B. Loving, manager of the Arizona Electric Power Cooperative, allowed access to data collected during an investigation for water to supply a thermoelectric plant near Cochise.

Personnel

Work in the Willcox basin was begun under the immediate direction of L. A. Heindl, former acting district geologist, and continued under P. E. Dennis, present district geologist of the Ground Water Branch in Arizona. Substantial contributions, including most of the basic-data collection, were made by personnel of the Arizona district. Those deserving special mention are E. K. Morse, C. S. English, T. W. O'Brien, R. L. Thompson, and J. T. Hollander. N. B. Carmony aided in the chemical analyses of the water samples. G. S. Smith, W. D. Potts, and F. H. Rascop drafted the illustrations. Mrs. Ruth Blubaugh and Mrs. Carol Jenkins typed the tables and manuscript.

Well-Numbering System

The well numbers used by the Geological Survey in Arizona are in accordance with the Bureau of Land Management's system of land subdivision. The land survey in Arizona is based on the Gila and Salt River base line and meridian, which divide the State into four quadrants (fig. 2). These quadrants are designated counterclockwise by the capital letters A, B, C, and D. All land north and east of the point of origin is in A quadrant, that north and west in B quadrant, that south and west in C quadrant, and that south and east in D quadrant. The first digit of a well number indicates the township, the second the range, and the third the section in which the well is situated. The lowercase letters a, b, c, and d, after the section number, indicate the well location within the section. The first letter denotes a particular 160-acre tract, the second the 40-acre tract, and the third the 10-acre tract (fig. 2). These letters also are assigned in a counterclockwise direction, beginning in the northeast quarter. If the location is known within a 10-acre tract, three lowercase letters are shown in the well number. In the example shown, well number (D-4-5)19caa designates the well as being in the NE-1/4NE-1/4SW-1/4 sec. 19, T. 4 S., R. 5 E. Where there is more than one well within a 10-acre tract, consecutive numbers beginning with 1 are added as suffixes.

Use of Tables and Maps

Included in this report are well tables, drillers' logs, chemical analyses, well-location maps, water-table maps, and hydrographs, which are discussed separately in numerical order.

Table 1.--Most of the wells included in this table are those considered to be representative. Not every well is included, nor would including data on every well add little more than bulk to the report. Some wells are included in table 1 because the depth to water has been measured regularly, although other well data are meager or are not available. Table 1 is cross-referenced with tables 2, 3, and 4 as explained below. Wells listed in table 1 are located on figure 3.

Table 1 includes the well location number, the date the well was completed to the depth shown, and the casing and perforation record, if available. The first water levels shown are those reported by the owners or

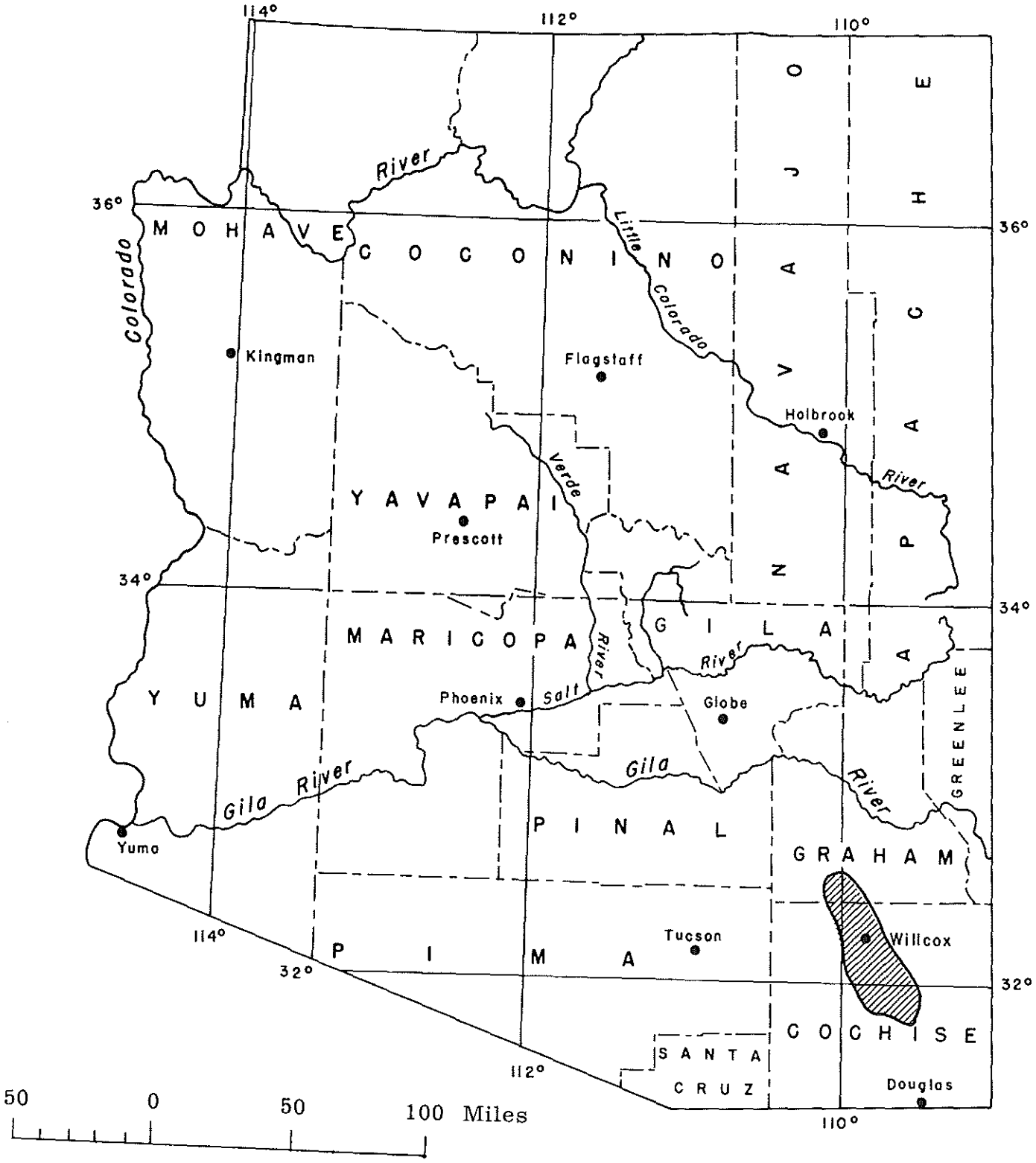


Figure 1. --Map of Arizona showing location of Willcox basin.

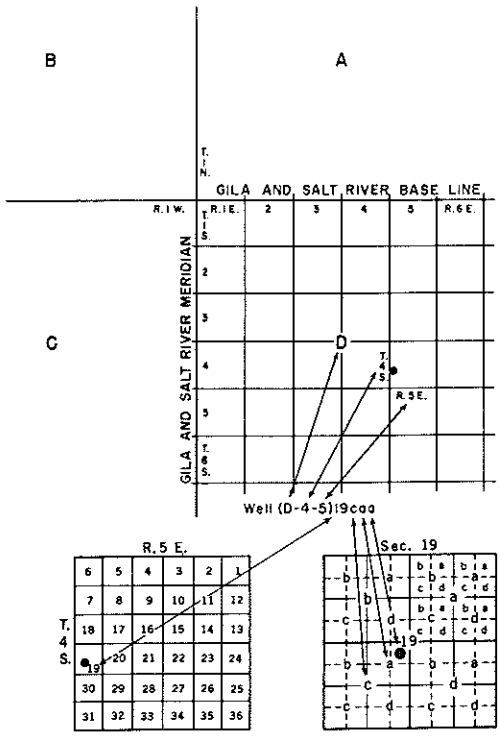


Figure 2.--Well-numbering system used in Arizona.

drillers when the well was drilled or the first depth-to-water measurements made by the Geological Survey if the well was visited by a Survey representative. The second water level shown is the latest measured depth to water for that well. Well yields were either reported by the driller or owner or estimated by the Geological Survey. The reported drawdown was determined by computing the difference between the static, nonpumping water level in the well and the pumping water level at a given production rate. Thus, the drawdown is the amount of lowering of the water table caused by pumping the well. The reported drawdowns were measured by the driller, pump installer, or the owner at the time of the production test. The length of time that the well was pumped to obtain the drawdown usually is not now known. The specific capacity is obtained by dividing the production of the well, in gallons per minute, by the drawdown, in feet, at that production rate. The resulting figure has the units of gallons per minute per foot of drawdown. The availability of supplementary information in tables 2, 3, and 4 is indicated by appropriate symbols in the columns headed "Log" and "Chemical Analysis." The principal source of information is shown in the column headed "Source of Data." The remarks column contains such information as whether or not water levels have been measured regularly, reported well deepenings, and other supplementary data.

Table 2.--Table 2 includes drillers' logs that are considered representative or otherwise of special significance. Wells listed in table 2 are located on figure 4. The drillers' terminology has been used, and except for minor changes in spelling and punctuation these logs are the same as those submitted by the driller or the owner to the State Land Department, the Oil and Gas Commission, or a U. S. Geological Survey representative.

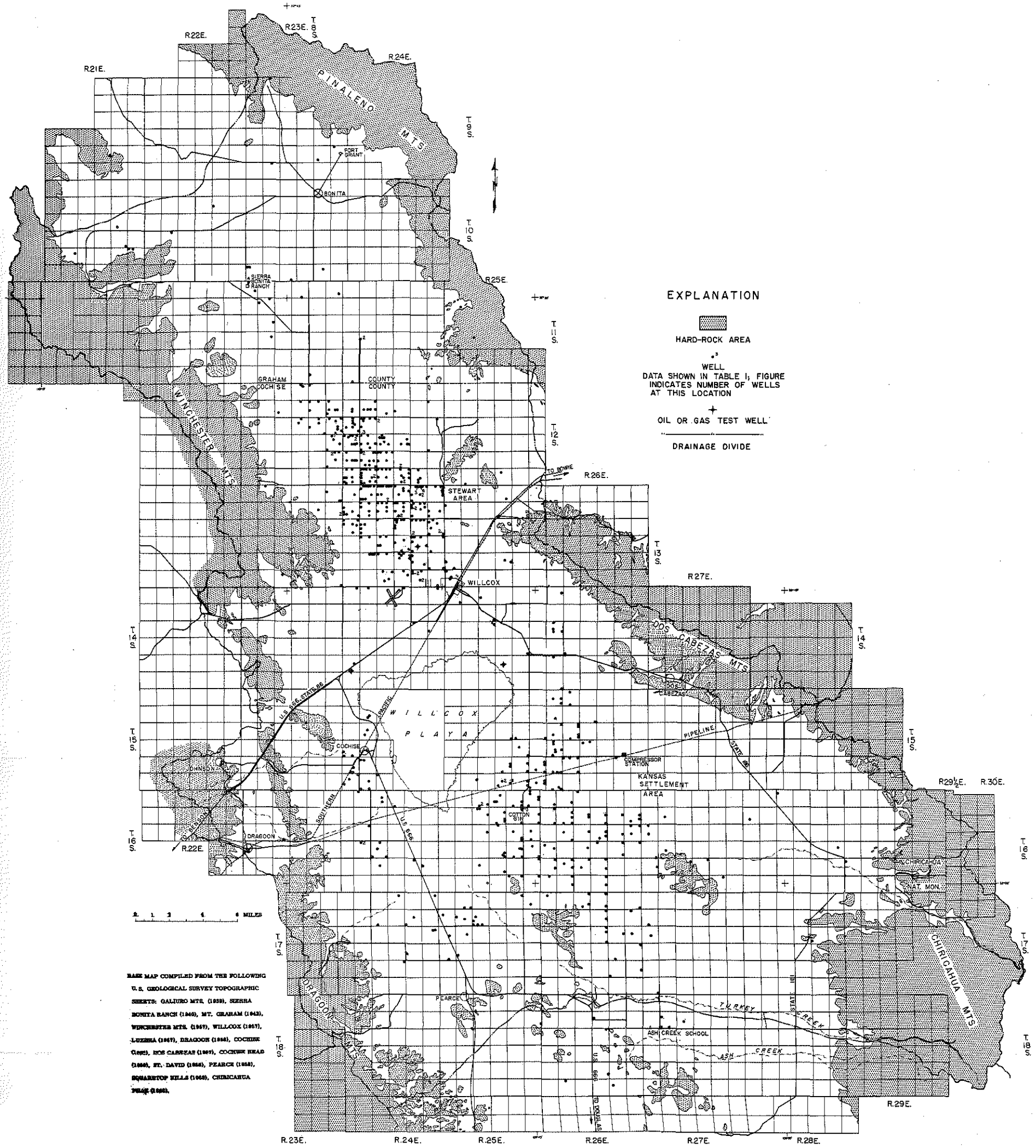
Tables 3 and 4.--Table 3 contains laboratory determinations of the amount of the dissolved constituents in the ground water, and table 4 contains field determinations of the dissolved constituents. Wells listed in tables 3 and 4 are located on figure 5. From these tables the potential user can get an idea of the quality and the variations in the quality of ground water from place to place, and can make estimates of the type of water likely to be obtained.

Illustrations.--Figures 6 through 12 show hydrographs of depths to water in 26 representative wells and graphs of the annual and cumulative pumpage in the Stewart and Kansas Settlement areas. Included in the annual and cumulative pumpage in the Kansas Settlement area is the estimate of the pumpage in the Pearce-Cochise area west of the Willcox playa. The hydrographs show the water-level fluctuations as measured by the personnel of the U. S. Geological Survey. They are especially useful in demonstrating and projecting the probable long-term effects of concentrated pumping, such as occurs in the heavily irrigated areas.

Figure 13 shows contours of the altitude of the water levels, in feet above mean sea level. This map shows the shape of the water surface for the spring of 1963. More than 300 depth-to-water measurements were made during the period of minimum pumping and before pumping began for preseason irrigation. At this time of year the water table has recovered from the effects of pumping during the previous irrigation season. The salient features shown on the water-level contour map are the large cones of depression caused by pumping for irrigation in the Kansas Settlement and Stewart areas and two "mounds" where water levels are rising in the area just east of the playa and west of the large cone of depression in the Kansas Settlement area. There is a shallow cone of depression just north of Pearce in T. 17 S., Rs. 24 and 25 E., and a deeper one of small areal extent in Tps. 15 and 16 S., R. 25 E.

Figure 14 is a map showing, by zones, the decline in water levels that has occurred during the period 1953-63.

Figure 15 is a map showing, by zones, the depth to water as measured in the spring of 1963.



BASE MAP COMPILED FROM THE FOLLOWING U. S. GEOLOGICAL SURVEY TOPOGRAPHIC SHEETS: GALIURO MTS. (1939), SIERRA BONITA RANCH (1940), MT. GRAHAM (1942), WINCHESTER MTS. (1957), WILLCOX (1957), LUZENA (1957), DRAGOON (1956), COCHISE (1956), DOS CABEZAS (1957), COCHISE HEAD (1956), ST. DAVID (1956), PEARCE (1956), SQUARETOP HILLS (1956), CHIRICAHUA PEAK (1956).

Figure 3.-- Map of Willcox basin, Cochise and Graham Counties, Ariz., showing the location of selected wells.

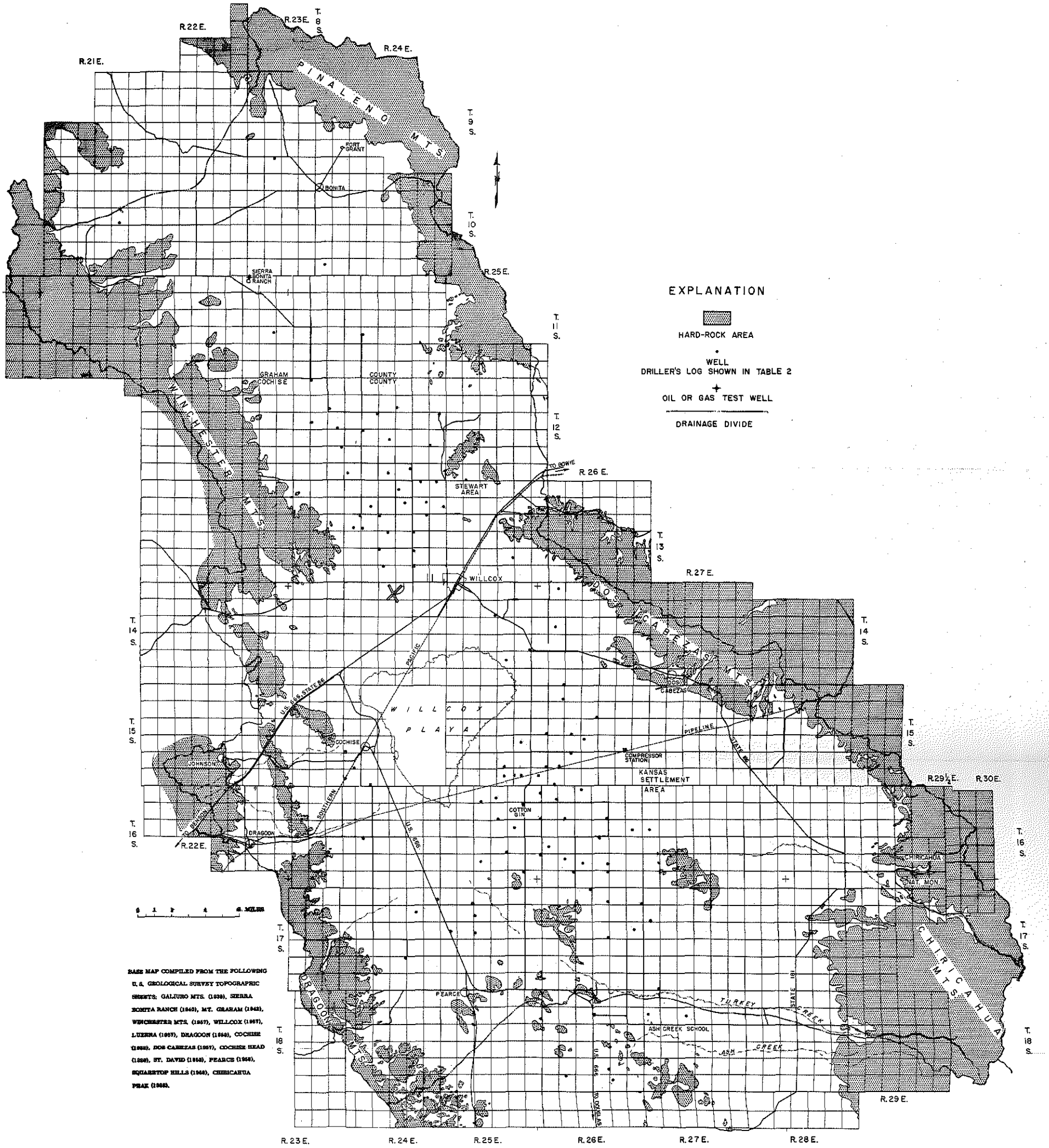


Figure 4.— Map of Willcox basin, Cochise and Graham Counties, Ariz., showing location of selected wells with drillers' logs.

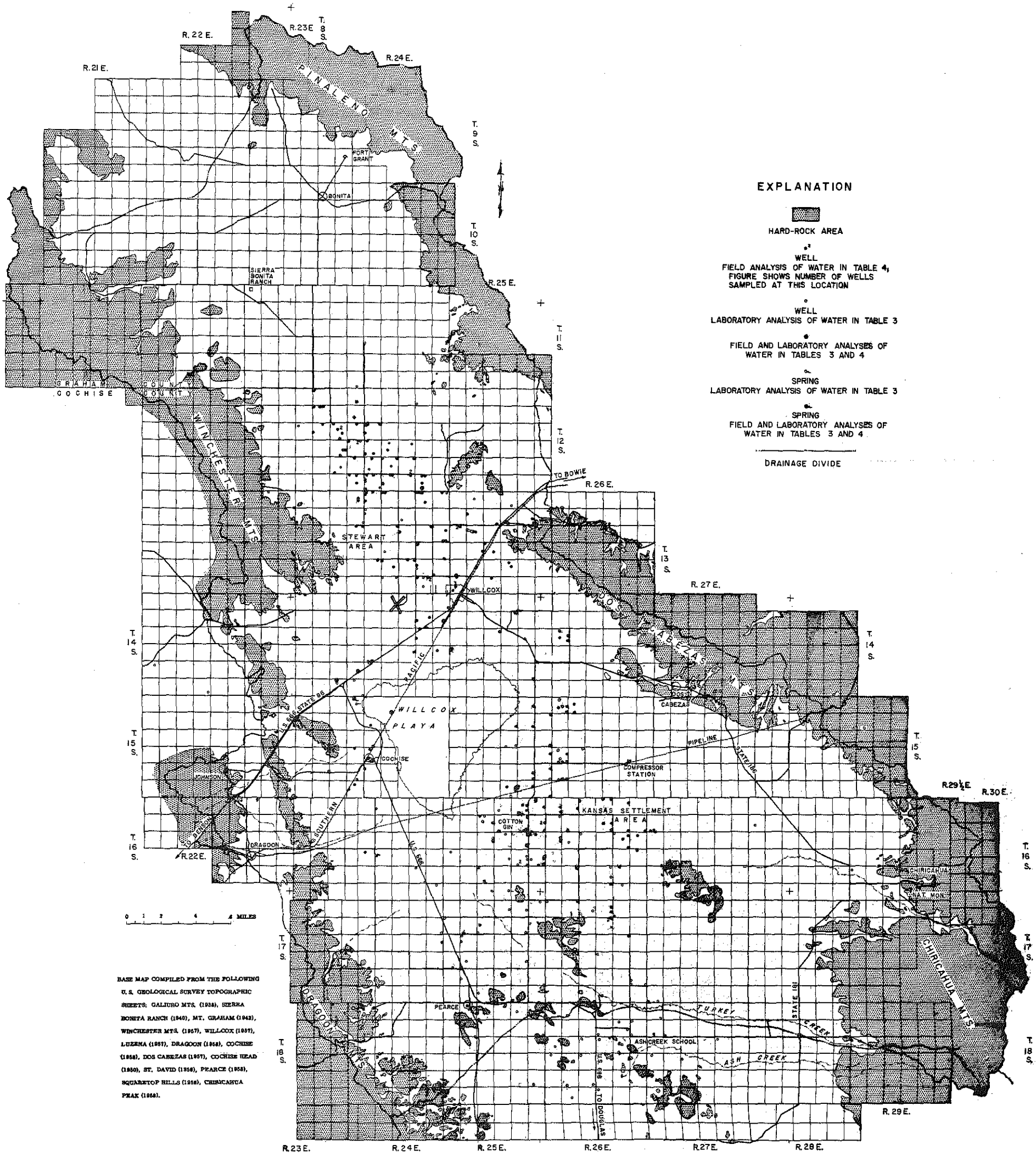


Figure 5.-- Map of Willcox basin, Cochise and Graham Counties, Ariz., showing location of wells and springs sampled.

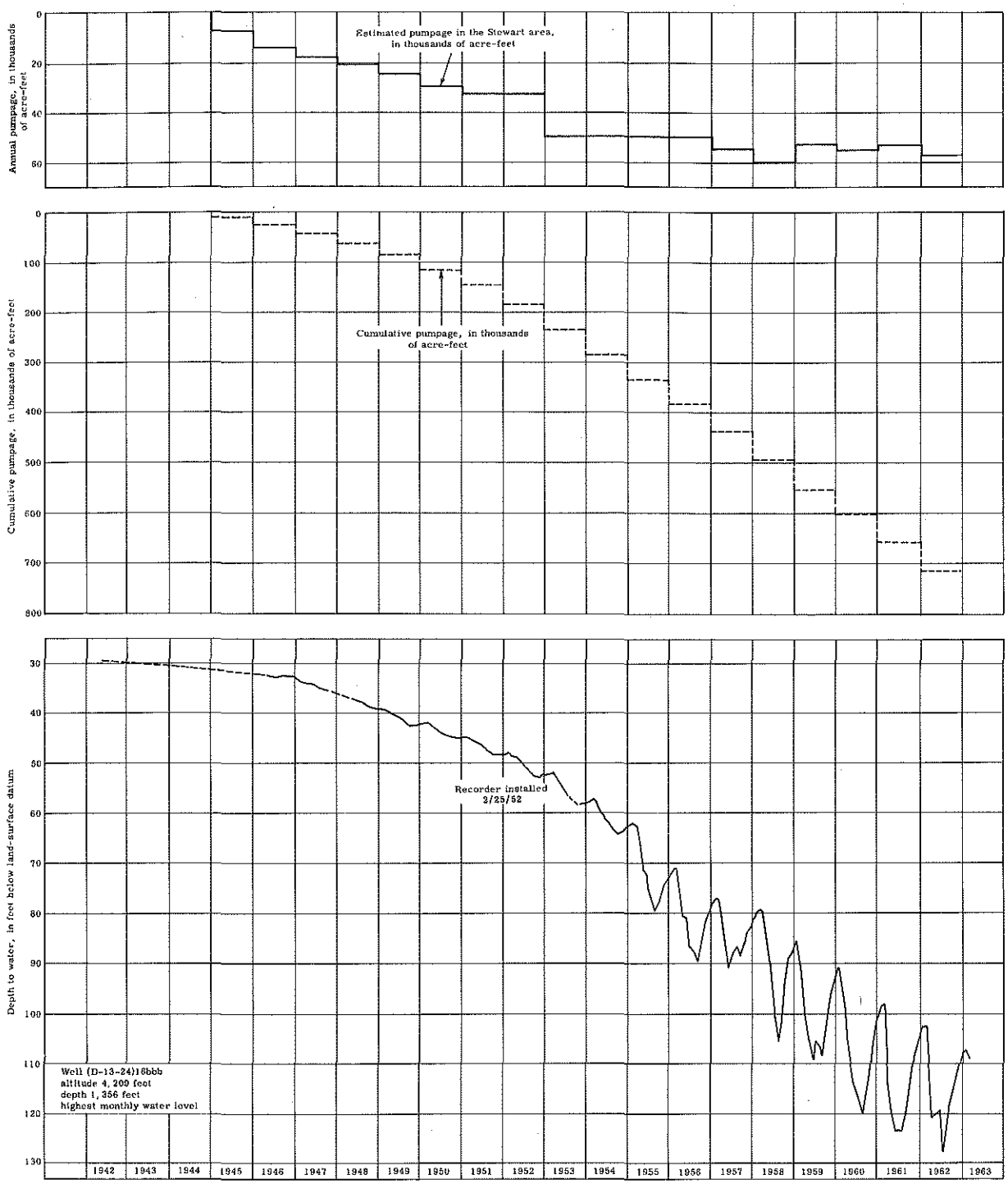


Figure 6.--Hydrograph of well (D-13-24)16bbb compared with estimated annual and cumulative pumpage in the Stewart area, Willcox basin, Cochise and Graham Counties, Ariz.

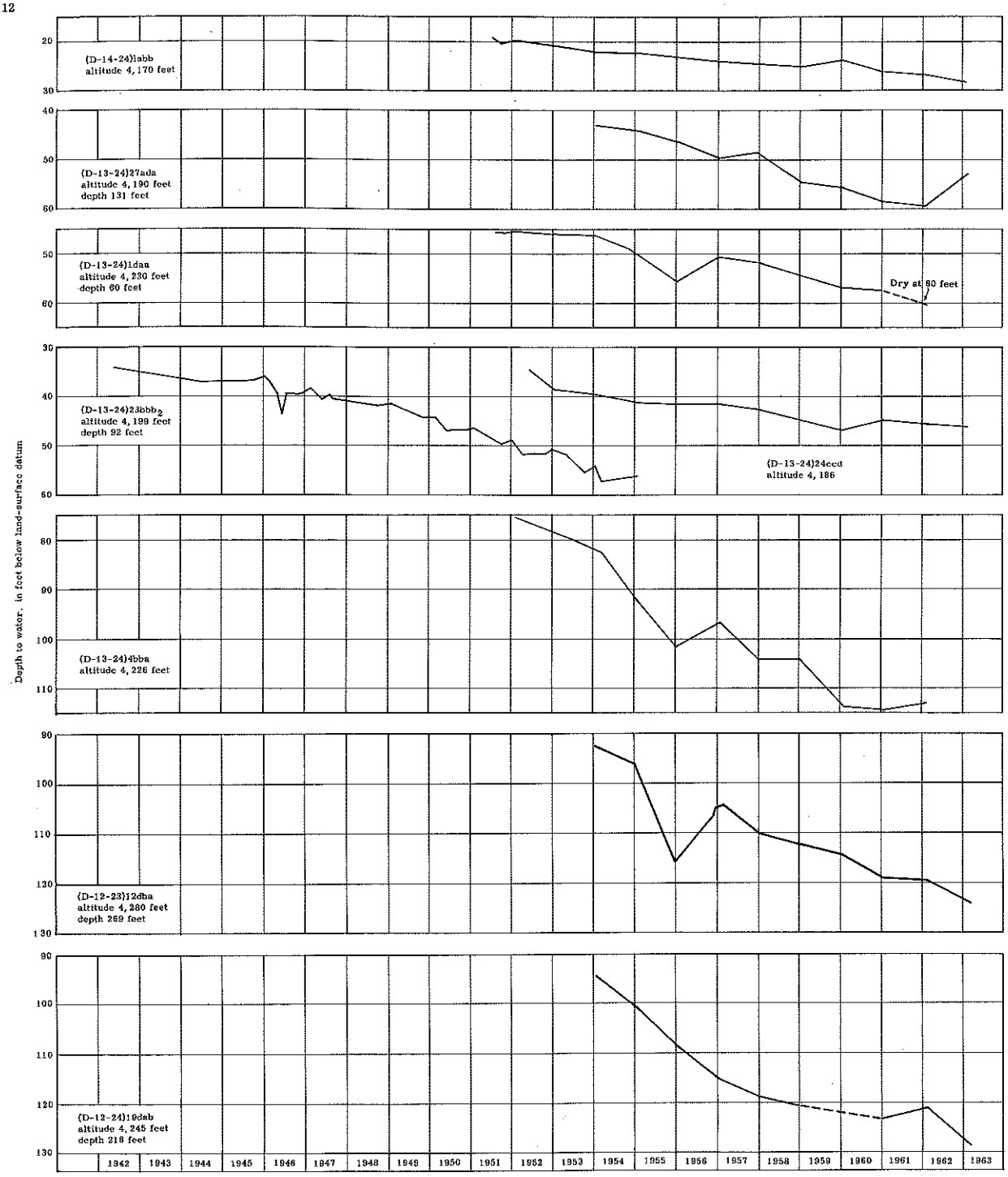


Figure 7.--Hydrographs of eight wells in the Stewart area, Willcox basin, Cochise and Graham Counties, Ariz.

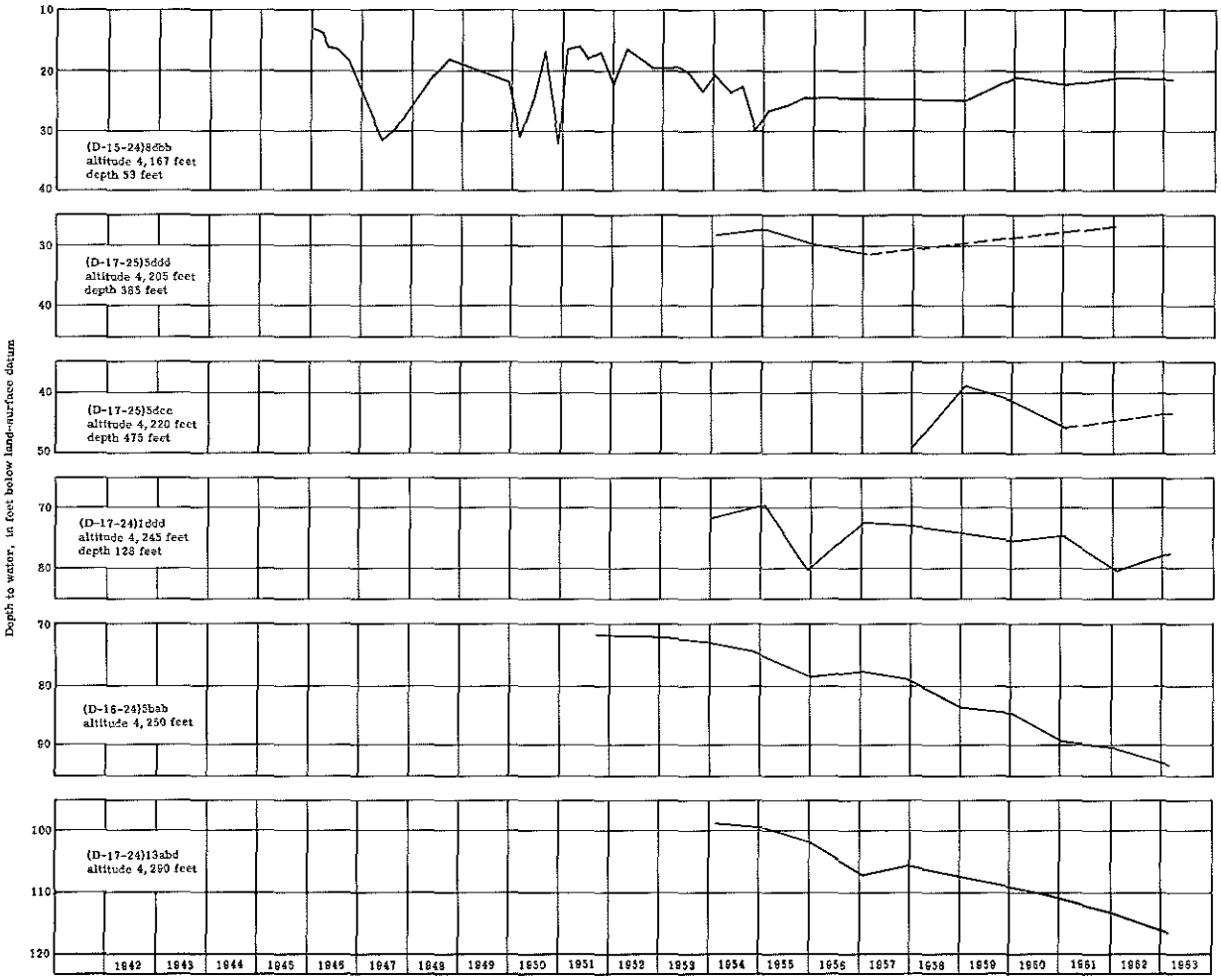


Figure 8.--Hydrographs of six wells in the Pearce-Cochise area, Willcox basin, Cochise and Graham Counties, Ariz.

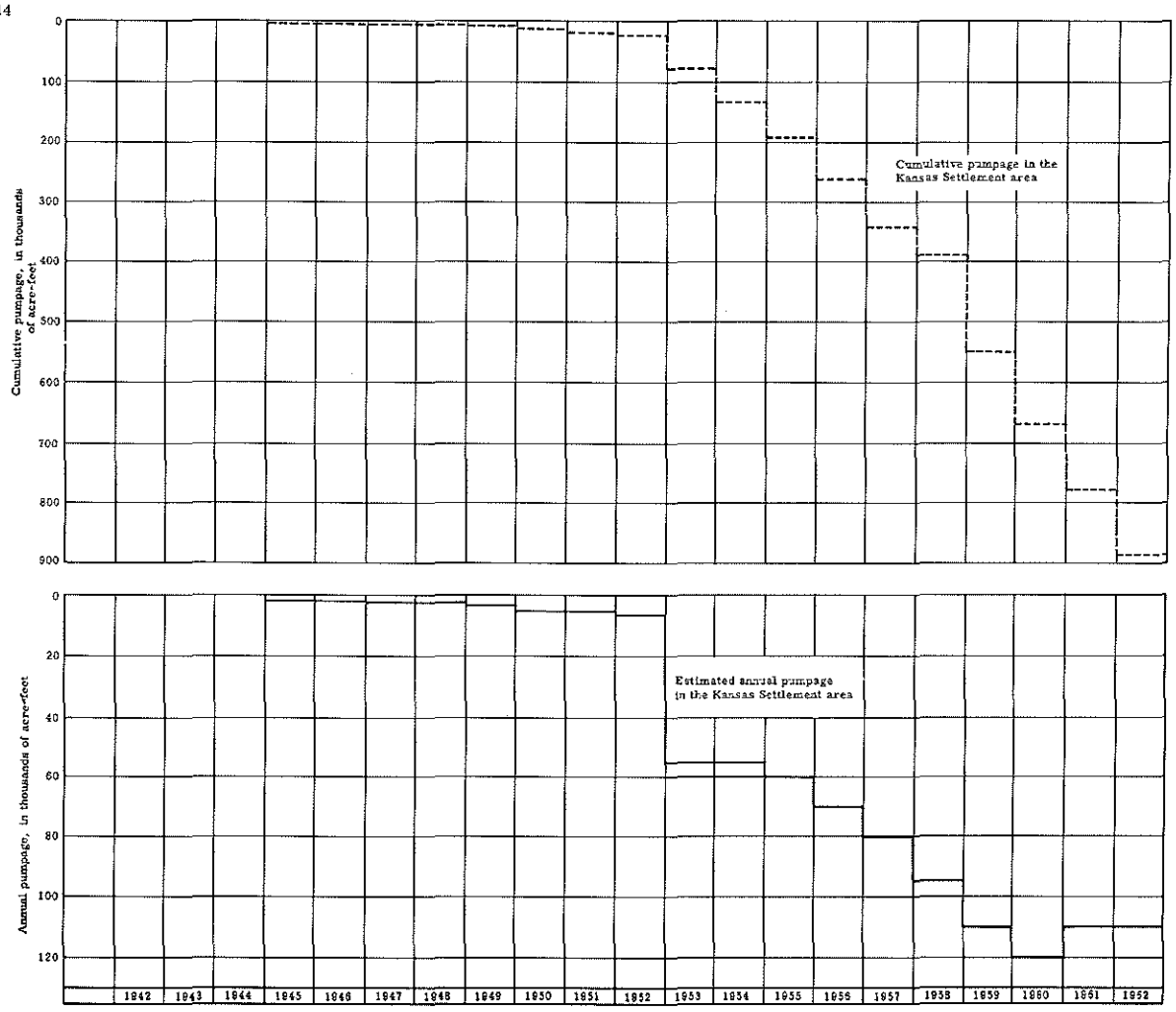


Figure 8.--Estimated annual and cumulative pumpage in the Kansas Settlement area, Willcox basin, Cochise and Graham Counties, Ariz.

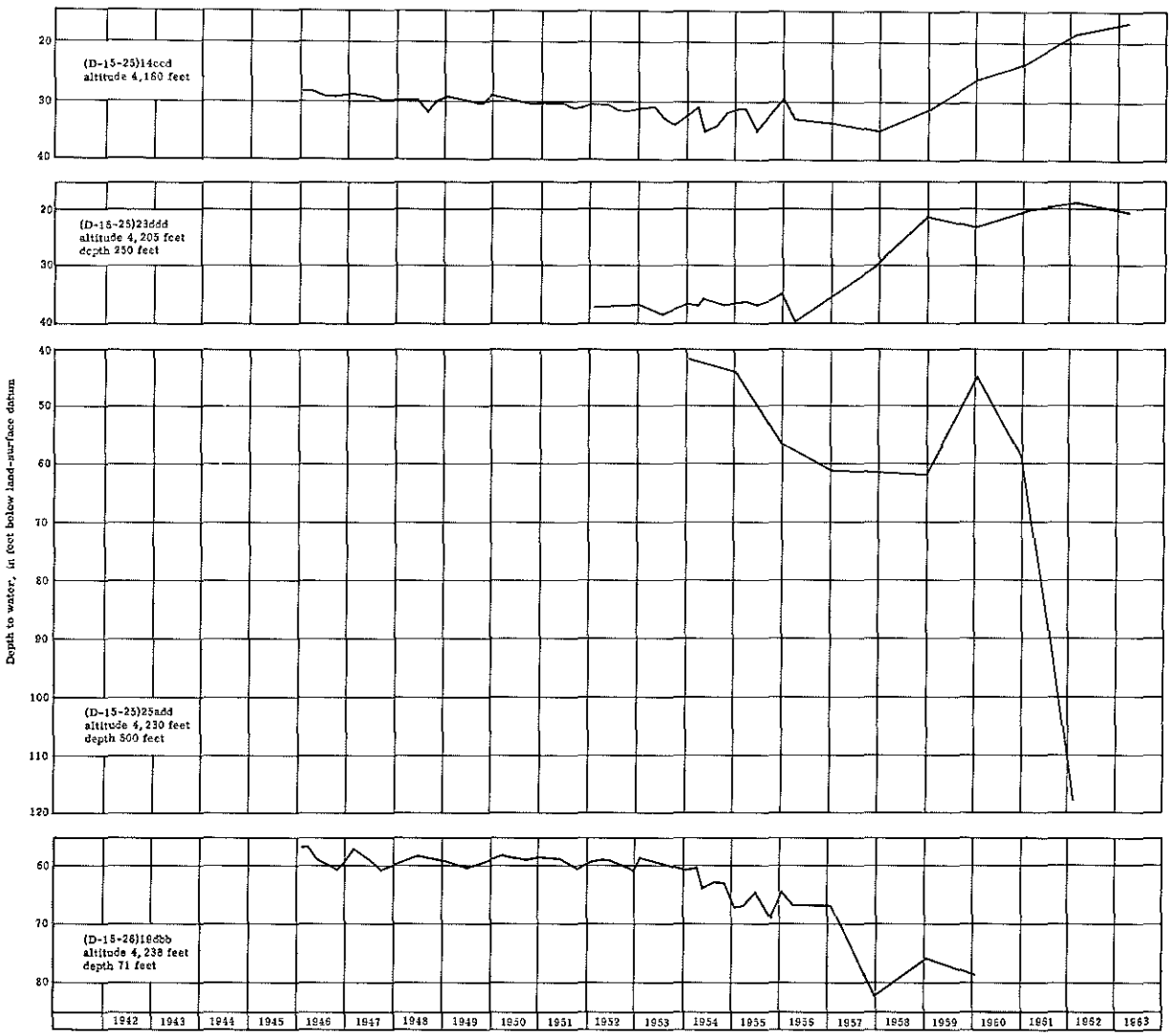


Figure 10.--Hydrographs of four wells in the western part of the Kansas Settlement area, Willcox basin, Cochise and Graham Counties, Ariz.

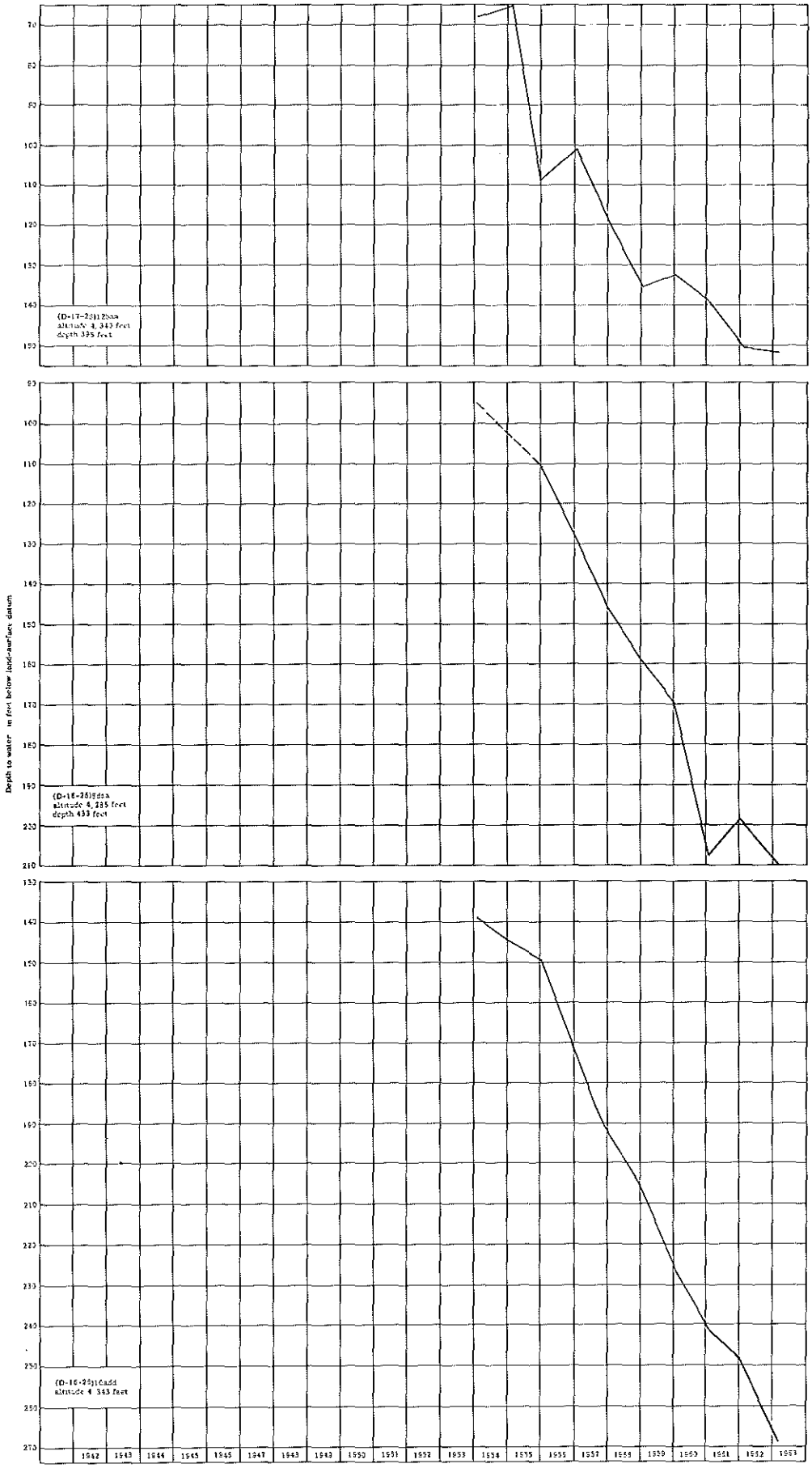


Figure 11.--Hydrographs of three wells near the area of maximum pumpage and drawdown in the Kansas Settlement area, Willcox basin, Cochise and Graham Counties, Ariz.

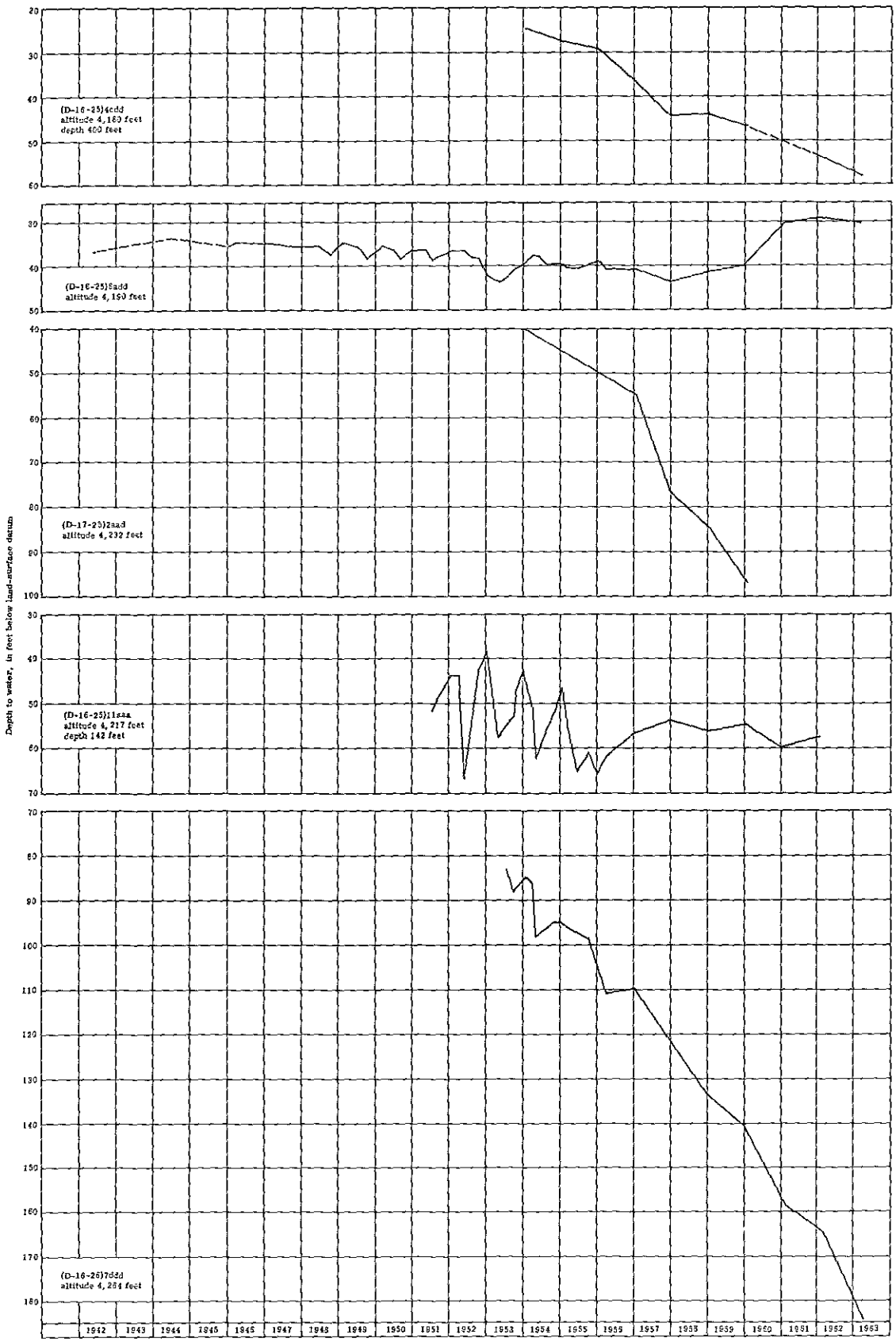
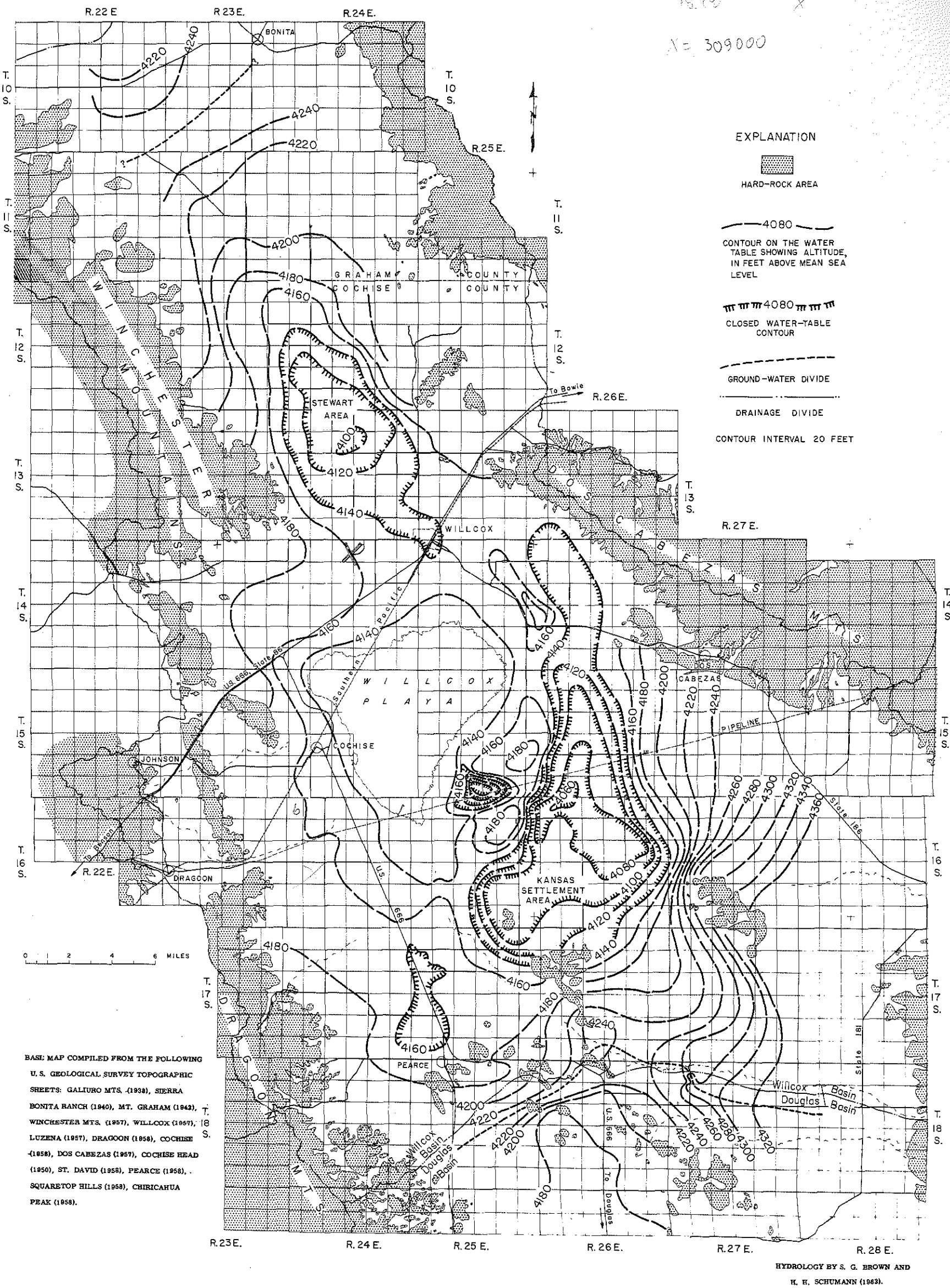


Figure 12.--Hydrographs of five wells in the southwestern part of the Kansas Settlement area, Willcox basin, Cochise and Graham Counties, Ariz.

$\frac{14.71}{19.19} = \frac{250\,000}{X}$

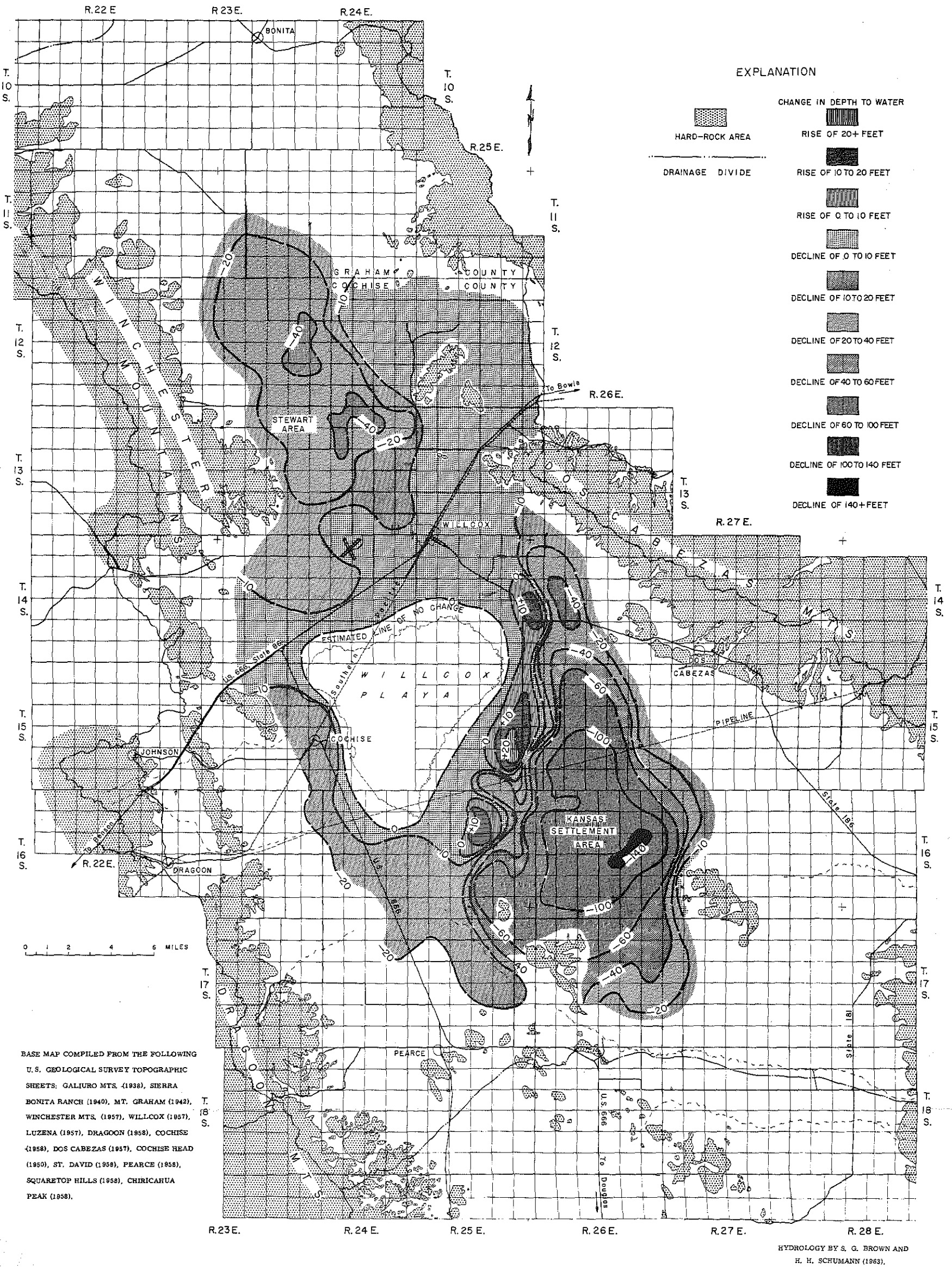
$X = 309000$



BASE MAP COMPILED FROM THE FOLLOWING U. S. GEOLOGICAL SURVEY TOPOGRAPHIC SHEETS: GALIURO MTS. (1938), SIERRA BONITA RANCH (1940), MT. GRAHAM (1942), WINCHESTER MTS. (1957), WILLCOX (1957), LUZENA (1957), DRAGOON (1956), COCHISE (1956), DOS CABEZAS (1957), COCHISE HEAD (1950), ST. DAVID (1956), PEARCE (1956), SQUARETOP HILLS (1956), CHIRICAHUA PEAK (1956).

HYDROLOGY BY S. G. BROWN AND H. H. SCHUMANN (1963).

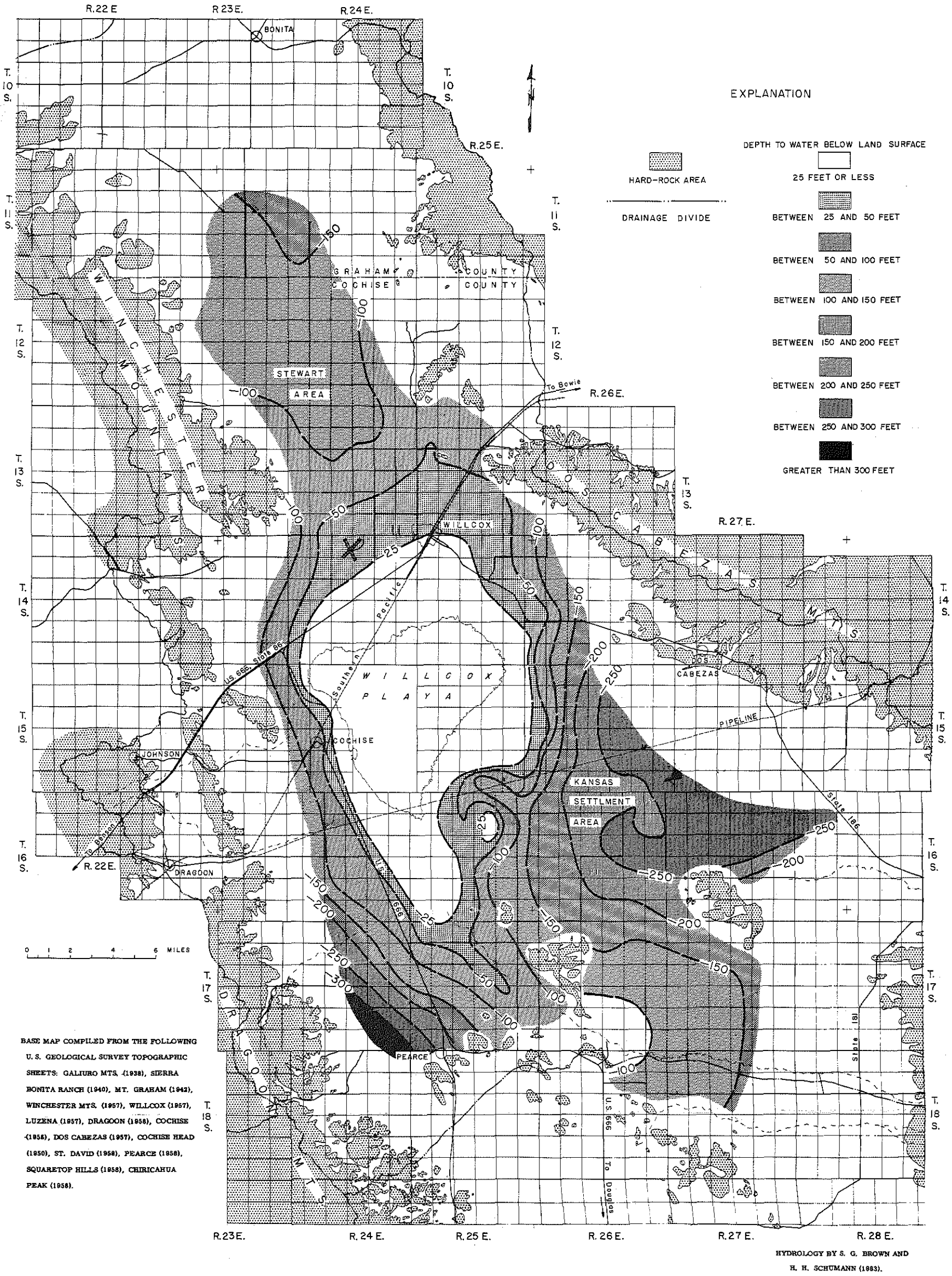
Figure 13.-- Map of Willcox basin, Cochise and Graham Counties, Ariz., showing water-table contours, spring 1963.



BASE MAP COMPILED FROM THE FOLLOWING U.S. GEOLOGICAL SURVEY TOPOGRAPHIC SHEETS: GALIURO MTS. (1938), SIERRA BONITA RANCH (1940), MT. GRAHAM (1942), WINCHESTER MTS. (1957), WILLCOX (1957), LUZENA (1957), DRAGOON (1958), COCHISE (1958), DOS CABEZAS (1957), COCHISE HEAD (1950), ST. DAVID (1958), PEARCE (1958), SQUARETOP HILLS (1958), CHIRICAHUA PEAK (1958).

HYDROLOGY BY S. G. BROWN AND H. H. SCHUMANN (1963).

Figure 14.-- Map of Willcox basin, Cochise and Graham Counties, Ariz., showing water-table decline for the 10-year 1953-63.



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HYDROLOGY BY S. G. BROWN AND H. H. SCHUMANN (1963).

Figure 15.--Map of Willcox basin, Cochise and Graham Counties, Ariz., showing depth to water, by zones, for spring 1963.

T A B L E S

Table 1.--Records of selected drilled wells in the Willcox basin, Cochise and Graham Counties, Ariz.

Location: See figure 2 for sketch map that shows numbering and location system in Arizona.
Altitude of land-surface datum: Altitude of land surface of most wells determined from topographic maps.
Water level: Water levels are in feet below or above (+) land-surface datum, and where reported are to the nearest foot; those measured by the U.S. Geological Survey are given to the nearest tenth of a foot. F, well flows at land surface, no static measurement available.
Yield: Yield is given to the nearest ten gallons per minute (gpm).
Well logs: L, log available but not included in table 2; L2, log included in table 2.
Well cuttings: X, well cuttings available.
Chemical analysis: X, listed in table 3; Y, partial analysis in table 4.
Source of data: FO, field observation by U.S. Geological Survey; OG, State Oil and Gas Commission; S, State Land Department drillers' reports.

Location	Altitude of land-surface datum (feet above mean sea level)	Date completed	Depth of well (feet)	Diameter of casing (inches)	Depth of casing (feet)	Perforation record				Water level		Yield (gpm)	Drawdown (feet)	Specific capacity (gallons per minute per foot of drawdown)	Well logs	Well cuttings	Chemical analysis in tables 3 or 4	Source of data	Remarks
						Depth (feet)		Size (inches)	Number per foot	Feet	Date								
						From	To												
(D-9-21)27daa	4,425	6/57	1,205	16	600					218	7/57	50			L2	X		FO	
(D-9-23)5baa	5,400	/47	365	6						86.3	10/46				L		X	FO	
25bba	4,900	2/58	97	16						Dry	2/58				L				Abandoned. Drilled for
																			State Industrial School.
26cca	4,655	1/58	430	16	400	150	388	1/2 x 5	8	149	1/58				L			S	
32abb	4,650		452	7						410	12/44				L2		X		
(D-10-21)14cda	4,660	7/43	515							455.1	8/51				L2				
23ddd	4,630	6/51	476							445	6/51				L				
25bab	4,615									11.1 5.1	9/46 2/62								
25bbb	4,628									10.2	8/51								
29abd	4,845	9/45	708									10			L				
(D-10-22)11cbb	4,447		189	6						180.9 231.0	2/46 2/62								
20abb	4,508									10.8 10.4	8/51 2/63								
(D-10-23)31bbc	4,395	7/41	240	16	150	180	220	1/4 x 3	6	155	11/46	1,050	40.5	26					
				14	240														
				6	178														
31bbd	4,386		270	5	270										L				
33dcd	4,414	/47								188.2	8/51								
35acb	4,469		350	6						233.1 244.1	7/46 2/63				L2		X		
(D-11-21)1bbd	4,650									55.9	12/59								
(D-11-23)1bdb	4,457			6						226.7	9/51								
3dcc	4,388			6						163	8/51								

Table 1.--Records of selected drilled wells in the Willcox basin, Cochise and Graham Counties, Ariz.--Continued

Location	Altitude of land-surface datum (feet above mean sea level)	Date completed	Depth of well (feet)	Diameter of casing (inches)	Depth of casing (feet)	Perforation record				Water level		Yield (gpm)	Drawdown (feet)	Specific capacity (gallons per minute per foot of drawdown)	Well logs	Well cuttings	Chemical analysis in tables 3 or 4	Source of data	Remarks
						Depth (feet)		Size (inches)	Number per foot	Feet	Date								
						From	To												
(D-11-23)6baa	4,385	/30	1,985	20	35					10		200+			L[2]			FO, OG	Hooker 1, oil test.
				15	215														
				12-1/2	595														
				10	1,207														
				8-1/4	1,915														
6baa1	4,385		20							10	11/46	300-							Yield varies seasonally.
												1,000							
6baa2	4,380	12/39								10	11/46								
6baa3	4,380	12/38	240	16		160	220	1/4 x 3	6	153	11/46	1,100	37	30				S	
6dab	4,390	5/44	240	16		160	220	1/4 x 3	6	151	11/46	1,200	41	29				S	
8aba	4,383	3/60	425	16	390	140	390	1/4 x 12	8	180	3/60				L			S	
8bcb	4,375	9/51	250	16		120	240	3/8 x 6		138.3	9/51	600	116	5	L			S, FO	
17add	4,345	7/41	135	16	135					120	1/47				L			S	
20adb	4,325	10/47	246	20	246	160	244	5/8		116	10/47	1,300	39	33	L2			S	
35cbb	4,305	9/59	285	16	256	0	256	3/8 x 12	6	85	9/59				L			S	
(D-11-24)20bcc2	4,395		345	6						178.0	8/51				L2		X	FO	
										182.1	12/57								
20bcc3	4,390	2/45	300												L			FO	
31dcc	4,295		87	6						81.8	7/46						X	FO	
(D-11-25)8cbb	4,957																X	FO	
20adb	4,978																X	FO	
(D-12-23)2bbb	4,300	8/54	336	16	336	108	122	3/8	15	103	8/54	1,500	16	94	L2		Y	S, FO	
						126	136			130.6	2/63								
						138	179												
						244	252												
						265	272												
						301	308												
3abd	4,295											524						FO	

Table 1.--Records of selected drilled wells in the Willcox basin, Cochise and Graham Counties, Ariz.--Continued

Location	Altitude of land-surface datum (feet above mean sea level)	Date completed	Depth of well (feet)	Diameter of casing (inches)	Depth of casing (feet)	Perforation record				Water level		Yield (gpm)	Drawdown (feet)	Specific capacity (gallons per minute per foot of drawdown)	Well logs	Well cuttings	Chemical analysis in tables 3 or 4	Source of data	Remarks
						Depth (feet)		Size (inches)	Number per foot	Feet	Date								
						From	To												
(D-12-23)9cbd	4,345									117.3	8/51							FO	
										124.0	1/59								
10abb	4,290	5/59	650	16	400					109	6/59	417						FO	
				12	650														
11abb	4,280	/58										650					Y	FO	
11bbb	4,285	7/58	303	16	303			3/8	4	100.3	5/58	326			L		Y	S, FO	
11cbb	4,278	6/58	400	16	400	120	400	3/8	4	115	6/58	480			L			S, FO	
12bba	4,280	2/58	1,001							85	2/58	1,930	85	23				S	
12cba	4,275	3/48	131	16	130	73	83	1/4 x 8		74	3/48	1,270			L			S, FO	Reported deepened to
						95	130			96.1	1/55								303 feet.
12ccb	4,280	11/57	655	16	561	135	139	3/8 x 3-	18	109	11/57	815			L2			S, FO	
						236	246	1/2											
						260	262												
						312	317												
						330	332												
						368	394												
						427	430												
12dba	4,280	/53	269	16						95	6/53	750						FO	
										124.3	2/63								
12dbb	4,275	12/52	251	18		81	98	3/4	7	81	12/52	1,490	10	149	L			S, FO	
						160	170												
						195	215												
						230	245												
13aaa	4,269		75	6						64.3	5/42							FO	
13abc	4,270	1/52	200	16				3/8 x 4	8	80	1/52	1,000	35	29	L			S	
13bba	4,275	5/49	172	16	172	72	172	3/8 x 6	8	76	5/49	610			L		Y	S, FO	
13dbb	4,270	1/53	265		260	85	145	3/4	8	85	1/53	1,400	42	33	L		Y	S, FO	
						155	175												
						235	250												
						255	260												

Table 1.--Records of selected drilled wells in the Willcox basin, Cochise and Graham Counties, Ariz.--Continued

Location	Altitude of land-surface datum (feet above mean sea level)	Date completed	Depth of well (feet)	Diameter of casing (inches)	Depth of casing (feet)	Perforation record				Water level		Yield (gpm)	Drawdown (feet)	Specific capacity (gallons per minute per foot of drawdown)	Well logs	Well cuttings	Chemical analysis in tables 3 or 4	Source of data	Remarks
						Depth (feet)		Size (inches)	Number per foot	Feet	Date								
						From	To												
(D-12-23)13dbc	4,260	3/55	400	16	382	98	106	3/8	15	95	3/55	1,480	43	34	L			S,FO	
						113	127			105	5/55	1,150	71	16					
						142	158												
						200	211												
						260	270												
						291	299												
						315	325												
						336	345												
						374	382												
13dcc	4,265	7/55	384	16		117	125	3/8	15	104	7/55	350	38	9	L2		Y	S,FO	
						143	154			117	8/55								
						161	171												
						195	205												
						258	265												
						300	307												
						320	328												
						332	340												
						349	357												
						368	376												
13dda	4,255		165	16	165					90	3/51	600						S,FO	
										92.3	1/54								
14abb	4,275	3/53	285	16		90	110		8	105	3/53	1,200	128	9	L		Y	S,FO	
						135	150			112.9	2/63	600							
						155	170												
						175	185												

Table 1.--Records of selected drilled wells in the Willcox basin, Cochise and Graham Counties, Ariz.--Continued

Location	Altitude of land-surface datum (feet above mean sea level)	Date completed	Depth of well (feet)	Diameter of casing (inches)	Depth of casing (feet)	Perforation record				Water level		Yield (gpm)	Drawdown (feet)	Specific capacity (gallons per minute per foot of drawdown)	Well logs	Well cuttings	Chemical analysis in tables 3 or 4	Source of data	Remarks
						Depth (feet)		Size (inches)	Number per foot	Feet	Date								
						From	To												
(D-12-23) 14acb	4,275	5/53	262	16		88	95	3/8	15	79	5/53	1,250	140	9	L			S, FO	
						118	132												
						153	180												
						216	223												
						234	244												
						250	257												
14cbb	4,278	4/53	266	16		83	90	3/8	8	77	5/53	1,200	61	20	L2		Y	S, FO	
						178	194			83.6	6/53								
						224	236												
						255	261												
14ddd	4,270			8						74.9 104.2	8/51 2/63							FO	
15abb	4,285			16						88.9	1/57							FO	
										108.1	2/63								
15bdb	4,290									82.4	8/51						X	FO	
										116.4	2/63								
24bab	4,268	5/48	164	16	164	114	164			75	10/48	1,000	10	100				S	
24bda	4,260	3/52	168	16		76	107	3/8	15	80.5	2/52	1,100	35	31	L			S, FO	
						138	156												
24ccc	4,262	12/48	165	16		75	165	3/8 x 6		65	12/48	360			L			S, FO	
										100.9	12/57	700							
24dab	4,260	7/47	161	20		78	161	1/4 x 6	8	46	7/47				L		Y	S, FO	
25aab	4,250	6/58	455	16	455	115	435	3/16 x 8	8	123	6/58	800	110	7	L2			S, FO	
25abb	4,250	6/58	350	16	350	115	340	3/16 x 8	8	115	6/58	1,150	35	33	L			S, FO	
25abb2	4,250	6/49	165	16		75	163	3/8				1,000			L			S, FO	Owners 2.
25ccc	4,280			4						97.5	3/56								
25dbb	4,250	6/43	118	16						81.2	1/54	500					X	FO	
										108.2	2/63								
(D-12-24) 7dbb	4,270									82.0	1/52	1,000						FO	
										123.4	2/63								

Table 1.--Records of selected drilled wells in the Willcox basin, Cochise and Graham Counties, Ariz.--Continued

Location	Altitude of land-surface datum (feet above mean sea level)	Date completed	Depth of well (feet)	Diameter of casing (inches)	Depth of casing (feet)	Perforation record				Water level		Yield (gpm)	Drawdown (feet)	Specific capacity (gallons per minute per foot of drawdown)	Well logs	Well cuttings	Chemical analysis in tables 3 or 4	Source of data	Remarks
						Depth (feet)		Size (inches)	Number per foot	Feet	Date								
						From	To												
(D-12-24)7dbc	4,270	1/53	248	16		85	98	3/8	8	80	1/53	2,250	140	16	L			S,FO	
						105	112												
						125	137												
						163	175												
						218	227												
8aaa	4,294									98.1	1/54							FO	
										114.0	2/63								
8caa	4,275	3/55	300	16	300	90	298	1/4 x 12	4	88	3/55	600	190	3.2	L			S	
8cba	4,270	11/47	150	16	150	90	95	1/2 x 4	16	86	11/47	1,000			L			S,FO	
						128	137			117.7	2/63								
8daa	4,276	5/48	140	16		80	140			70	5/48	450	50	9	L			S	
8dbb	4,270	4/48	136	16	136	50	136			72	4/48	1,000	40	25	L				
9dcb	4,285									97.0	1/54							FO	
										103.6	2/63								
10cbc	4,305	12/57	250	8	250	110	250	1/4 x 12	2	112	12/57				L2			S	
12bbb	4,436		88	14	88	20	88			20	2/48				L			S	
13abb	4,415	4/59	450	8	335	176	335	1/4 x 8	4	235	4/59				L2			S	
17aaa1	4,268	/47	130	16	120					80	10/51	507						S,FO	Reported destroyed 1/20/61.
								3/16 x 8		102.9	1/59								
17aaa2	4,268	2/60	1,385	16 12	950 1,355	180	1,325			120 108.0	2/60 2/63	750 1,000	115 180	6.5 5.5	L2	X	Y	S,FO	
17abb	4,267	5/51	270	18	160	80	155	3/8 x 12	5	78	5/51	900	42	21	L			S,FO	
										87.6	7/51								
17bba	4,265	4/49	100	6	100	75	100			93.4	6/54	100			L		Y	S,FO	Deepened to 260 feet.
										114.8	2/63								

Table 1.--Records of selected drilled wells in the Willcox basin, Cochise and Graham Counties, Ariz.—Continued

Location	Altitude of land-surface datum (feet above mean sea level)	Date completed	Depth of well (feet)	Diameter of casing (inches)	Depth of casing (feet)	Perforation record				Water level		Yield (gpm)	Drawdown (feet)	Specific capacity (gallons per minute per foot of drawdown)	Well logs	Well cuttings	Chemical analysis in tables 3 or 4	Source of data	Remarks
						Depth (feet)		Size (inches)	Number per foot	Feet	Date								
						From	To												
(D-12-24)17bbb	4,270	6/55	320	16		98	135	3/8	15	104	6/55	1,000	45	22	L		Y	S,FO	
						154	162			100	7/55								
						185	194												
						198	214												
						231	242												
						286	296												
						308	315												
17bbd	4,265	3/49	150	16		70	150	3/8 x 8							L			S	
17cbb	4,260	4/48	148	16	147	70	147	1/4 x 6	8	67	4/48	1,200	13	92	L		Y	S	
18abb	4,270	3/48	170	16	170	90	170	1/4 x 10	6	60	3/48	1,450	50	29	L		Y	S	
18abc	4,265	8/51	180	16		80	180	3/8				830	40	21	L			S	
18acb	4,265	1/42	140	16		60	126	3/8 x 6	24	61	1/42	1,000	12	83	L			S	
18acd	4,260	1/42	140	16		60	126	3/8 x 6	24	62	4/44	1,000	12	83	L			S	
18cba	4,260	2/53	248	16		86	96	3/8 x 8		80	2/53	1,400	42	33	L			S	
						138	149												
						156	167												
						216	224												
						232	242												
18dbb	4,262		125	16	125					79	3/51							S	
18dda	4,260																	FO	
19aab$_1$	4,256	/39	227	16						70	5/42	950					X	FO	
19aab$_2$	4,256	5/52	208	16	208			3/8		87	5/52				L		X	S,FO	
19abb	4,257	7/58	350	16	300	130	296	3/8 x 8	6	129	7/58	585			L			S,FO	
19baa	4,257		152	16	152	60	150			67	/47	700	20	35	L			S,FO	
19bac	4,258		150	16	150	60	148			67	4/48	1,100	20	55	L			S,FO	
19bbb	4,259	9/53	280	16	280	106	125	3/8	15	105	9/53	900	20	45	L		Y	S	
						140	152												
						258	268												
19dab	4,245	3/53	216	16			205	3/8	8	78	3/53	1,000	122	82	L			S,FO	
										128.9	2/63								

Table 1.--Records of selected drilled wells in the Willcox basin, Cochise and Graham Counties, Ariz.--Continued

Location	Altitude of land-surface datum (feet above mean sea level)	Date completed	Depth of well (feet)	Diameter of casing (inches)	Depth of casing (feet)	Perforation record				Water level		Yield (gpm)	Drawdown (feet)	Specific capacity (gallons per minute per foot of drawdown)	Well logs	Well cuttings	Chemical analysis in tables 3 or 4	Source of data	Remarks
						Depth (feet)		Size (inches)	Number per foot	Feet	Date								
						From	To												
(D-12-24)19dba	4,250	3/48	152	16		60	150			60	3/48								
19dbb	4,250	3/53	216	16		86	94	3/8	8	78	3/53	1,000	122	8	L			S	
						106	124												
						154	171												
						196	205												
20baa	4,255	11/51	158	16		85	150	3/8 x 8		85	11/51	500			L			S	
20bbb$_1$	4,255		233	16	164	72	160			67	5/48	1,200	13	92	L			S, FO	
										116.6	12/57								
20bbb$_2$	4,255	12/54	250	16		132	140	3/8 x 6		95	12/54				L			S	
						150	158												
						189	196												
						225	233												
20bbb$_3$	4,255	8/59	660	16	660	250	600	3/8 x 3-1/2	8	140	8/59				L2			FO	Replaces 20bbb$_1$.
20caa	4,250	/49	300	16						120	3/56	1,260						FO	
20cbb	4,248	/49	200	16						120	3/56	608						FO	
20ccc	4,247		200	16														FO	
20daa	4,248		210	16						85	3/56							FO	
20dcb	4,248	4/57	424	16		107	414	3/8	8	107	4/57				L		Y	S	
21bab	4,255	/47	474	20	475	58	474			58	7/47	1,200	102	12	L			S, FO	
										110.7	2/63								
21bac	4,251	/46	160							95	3/46	680						FO	
21bad	4,253											500					X	FO	
21bbd	4,251	3/46	160	48		64	160	3/8 x 5-1/2	12	96	3/46				L			S	
21bdd	4,248											1,000						FO	
21cba	4,248	/43	173	16	173	120	173			82	7/42	750	42	18				S, FO	Deepened from 120 to 173 feet. Production reported "increased by 50 percent."
										111.1	2/63								
21dba	4,245	8/49	512	20	512	83	512		10	83	8/49				L2			S	

Table 1.--Records of selected drilled wells in the Willcox basin, Cochise and Graham Counties, Ariz.--Continued

Location	Altitude of land-surface datum (feet above mean sea level)	Date completed	Depth of well (feet)	Diameter of casing (inches)	Depth of casing (feet)	Perforation record				Water level		Yield (gpm)	Drawdown (feet)	Specific capacity (gallons per minute per foot of drawdown)	Well logs	Well cuttings	Chemical analysis in tables 3 or 4	Source of data	Remarks
						Depth (feet)		Size (inches)	Number per foot	Feet	Date								
						From	To												
(D-12-24)22adb	4,280	/56		14						79.0	1/58	1,150	133	9			X	FO	
										86.9	2/63								
22caa	4,270	4/54	252	14		71	250	3/8	12	87	4/54				L			S	
22daa	4,270	7/54	250	14	250	80	250	3/8 x 12	5	74	7/54	1,375			L			S, FO	
22dab	4,275	6/54	250	14		75	250	3/8	15	78	6/54				L			S	
24ccc	4,308	9/57	254	8	254	220	254	3/8 x 8	2						L2			S	
28aaa	4,246	7/48	210	16	204	84	204			73	6/48	760	100	8	L		Y	S, FO	
										109.9	2/63								
28abb	4,245		158	14	156	60	156			58	1/42	400			L			S	
28bba	4,245		250	16						87.0	1/53							FO	
										116.2	2/63								
28bbb	4,244			6						55.3	5/42	442					X	FO	
										99.9	12/57								
28cbb	4,239		140	14	140	70	140			66 113.2	5/48 2/63	800	20	40	L			S	
28dbb	4,240		130	16	120					52	1/44	610			L		X	S, FO	
29aaa	4,244	/60	1,080													X		FO	
29aab	4,245		116	16						65	7/47	780						S	
29bbb$_1$	4,245		156	16						64	4/48	1,180						FO	
29bbb$_2$	4,245	6/58	613	16	613	120	136	3/8 x 4	20	120	6/58				L			S	
						137	609	3/8 x 12	8										
29cbb	4,242	/38	230	16						95	3/56	1,060						FO	
29cdb	4,237	/55	268	16						96	3/56	600					X	FO	
29dab	4,236	/53	285	16						58.4	4/46							FO	
										95.0	3/56								
29dbb	4,240	10/51	177	16	170	80	170	3/8		89.1	10/52				L		X	S, FO	
										91.5	1/54								

Table 1.--Records of selected drilled wells in the Willcox basin, Cochise and Graham Counties, Ariz.—Continued

Location	Altitude of land-surface datum (feet above mean sea level)	Date completed	Depth of well (feet)	Diameter of casing (inches)	Depth of casing (feet)	Perforation record				Water level		Yield (gpm)	Drawdown (feet)	Specific capacity (gallons per minute per foot of drawdown)	Well logs	Well cuttings	Chemical analysis in tables 3 or 4	Source of data	Remarks
						Depth (feet)		Size (inches)	Number per foot	Feet	Date								
						From	To												
(D-12-24)29dcb	4,240	2/56	417	16		103	110	3/8	15			548			L			S, FO	
						156	165												
						199	204												
						222	230												
						239	247												
						256	265												
						323	332												
						351	360												
						398	404												
29ddd	4,234		517	16						110		700						S	Gravel packed.
												1,180	118	10					
30bba	4,248		160	16	160	80	160	3/8 x 6	8	70	2/49	504			L			S, FO	
30cba	4,245	1/53	216	16	216	68	78	5/8	12	82	1/53	1,120	36	31	L			S, FO	
						118	200			117.0	12/57	810							
30dab	4,245		120	16		57	120			57	3/46	900	12	75	L			S	
30dba	4,245		600	16		200	600			116	/59	800							
30dbb	4,245	12/48	151	16	151	80	151	1/4	5	68	12/48	725			L			S, FO	
31abb	4,239		215	16						98.5	3/51	580					Y	FO	
										117.3	1/61	525							
31bba	4,240	2/56	377	16	377	135	141	3/8 x 12		96	1/57	780			L		Y	S, FO	
						255	260					800	64	12					
						266	274												
						280	284												
						286	293												
						325	338												
31cba	4,240	12/58	504	16	450	0	504	3/16 x 12	3	80	12/58	310			L2			S, FO	
				14	504														
31cbb	4,240	4/48	150	16	150	55	150	3/16 x 16	2	55	4/48	1,200	25	48	L			S	
31ccb	4,238	3/48	204	16	176	78	87	1/2 x 4	21	87.5	2/52	1,000			L			S, FO	
						125	145			105.9	2/63								

Table 1.--Records of selected drilled wells in the Willcox basin, Cochise and Graham Counties, Ariz.—Continued

Location	Altitude of land-surface datum (feet above mean sea level)	Date completed	Depth of well (feet)	Diameter of casing (inches)	Depth of casing (feet)	Perforation record				Water level		Yield (gpm)	Drawdown (feet)	Specific capacity (gallons per minute per foot of drawdown)	Well logs	Well cuttings	Chemical analysis in tables 3 or 4	Source of data	Remarks
						Depth (feet)		Size (inches)	Number per foot	Feet	Date								
						From	To												
(D-12-24)31ccd	4,235	3/48	124	16		60	122	3/8 x 8				900			L			S	
31dbb	4,238	3/48	142	16	131	71	86	1/2 x 4	21	57	3/48	1,000			L		Y	S, FO	
						120	127			80	3/56								
31deb	4,234									80	5/56	1,250	60	21				S	
												1,000	50	20					
32aaa	4,234	5/51	192	16	192	72	192	3/8 x 6	7	83	5/51				L			S, FO	
										88.0	10/52								
32abb	4,235		132	16		44	132			63	11/46	336					Y	S, FO	Reported deepened to 450 feet.
32bab	4,236									92.3	1/54	264							
32bba	4,236											500	121	4			Y	S	
32bbb	4,236		132	16	132	60	132			60	2/46	800	5.5	145				S, FO	
										121.2	2/63	580							
32bcb	4,234	1/53	235	16		86	94			82	1/53	497			L		Y	FO	
						143	152												
						158	167												
						176	187												
						219	228												
32bcc	4,234		70	6						49.9	5/42	430				X	X	FO	
32cbb1	4,234		132	16	122	60	122			60	11/47	320			L	X		S	
												240							
32ccb	4,233	/58	700									507						FO	
32ccc	4,231	4/43	115	16						85	3/46	750	60	12	L		Y	S, FO	
32ccd	4,230			6						109.0	3/49							FO	
32dba1	4,232		130	16		60	120			70	9/47				L			S	
32dba2	4,232		85							55.8	3/46	700	8	88				S, FO	
												580							
32deb	4,232	7/52	250	16		95	105		8	100	7/52	650	35	19	L			S, FO	
						115	160												
						205	210												

Table 1.--Records of selected drilled wells in the Willcox basin, Cochise and Graham Counties, Ariz.--Continued

Location	Altitude of land-surface datum (feet above mean sea level)	Date completed	Depth of well (feet)	Diameter of casing (inches)	Depth of casing (feet)	Perforation record				Water level		Yield (gpm)	Drawdown (feet)	Specific capacity (gallons per minute per foot of drawdown)	Well logs	Well cuttings	Chemical analysis in tables 3 or 4	Source of data	Remarks
						Depth (feet)		Size (inches)	Number per foot	Feet	Date								
						From	To												
(D-12-24)32dda	4,229		124	16	124					54	3/46	650	15	43	L		X	S, FO	
												460							
33aab	4,232	6/54	315	16		90	100	1/4 x 3	6			690			L			S, FO	
						110	125					360							
						135	160												
						175	200												
						210	240												
						250	265												
						300	315												
33abb	4,233	4/45	132	16		27	122			64	7/46	1,150	26.5	43	L	X	X	S, FO	
										117.8	2/63								
33bba	4,234	/29	103	16		65	103			57.5 120.4	7/46 2/63	1,170	22.5	52				S, FO	
33bbb	4,234		207	16	172	72	172			72	8/48	1,100			L			S	
33cbb	4,230		104	16	104	48	104			56	3/44	900					Y	S	
												760							
33dbb	4,230	5/58	400	16	400	100	400	3/8 x 12	4	98	5/58	1,400	100	14	L2			S	
34aaa	4,243		130	16	108	44	108			68	6/47	525						S, FO	
										96.3	2/63								
34ada	4,238		108	16	108	70	106			76	5/48	500	25	20	L2			S	Reported deepened to 880 feet.
		7/58	875	16											L	X		S, FO	
34b	4,235	3/50	176	16	167	67	176	1/2 x 3	8	67	3/50	750	110	7	L			S	
				14	176														
34baa$_1$	4,238		123	16		68	123			54	10/42	440			L			S, FO	
										113.1	2/63								
34baa$_2$	4,238	7/54	301	16	301	92	301	1/4 x 8	8	90	7/54	800	70	11	L			S	
34bdd	4,230		134	16		67	113			52	7/45	1,200	12	100	L			S	
34cda$_1$	4,228	5/51	140	14	132	68	132	1/4 x 4	45	75	5/51	926			L			S, FO	
										70.9	10/51								
										75.7	1/53								

Table 1.--Records of selected drilled wells in the Willcox basin, Cochise and Graham Counties, Ariz.--Continued

Location	Altitude of land-surface datum (feet above mean sea level)	Date completed	Depth of well (feet)	Diameter of casing (inches)	Depth of casing (feet)	Perforation record				Water level		Yield (gpm)	Drawdown (feet)	Specific capacity (gallons per minute per foot of drawdown)	Well logs	Well cuttings	Chemical analysis in tables 3 or 4	Source of data	Remarks
						Depth (feet)		Size (inches)	Number per foot	Feet	Date								
						From	To												
(D-12-24)34cda2	4,228	/40	108	16		60	108			52	3/40	920	10	92	L			S, FO	
										76.9	1/54								
										97.2	12/57								
34daa	4,230	3/59	454	18	200	0	454	3/8 x 12	8	105	3/59	600	45	13	L			S	
				16	335														
				14	454														
34dbb	4,230	12/51	200	18		81	96	3/8 x 6	8	73	12/51	720	57	13	L			S	
						130	190												
35baa	4,252		936	16	805					56	12/58	3,120	154	20			Y	FO	
35cad	4,250		104	16	104	86	100			65	7/47	600	8	75	L			S	
35cda	4,230		80	16	80					78.3	1/54	400					X, Y	FO	Reported deepened to 200 feet.
										69.4	2/63								
35dbb	4,240	9/54	214	16	214	94	212	1/4 x 12	4	60	9/54	460	132	3.5	L			S	
												370	100	3.7					
(D-12-25)32ccd	4,292	8/60	217	6	171	101	185	1/4 x 12	1	108.7	8/51				L2			S, FO	
				5	217	204	217			134	8/60								
34bac	4,395		84	6						47.3	2/46							FO	
										46.6	12/57								
(D-13-23)1bcb	4,280									86.4	7/51							FO	
										97.0	12/57								
1ddc	4,235									87	8/56							FO	
5baa	4,650			6													X	FO	
11acc	4,325		200	4						131.1	12/59							FO	
33bad	4,610		90	8						27.1	10/59							FO	
36ddd	4,317			7						138.4	10/51							FO	
										140.6	2/62								
(D-13-24)1aaa	4,243									61.2	10/51							FO	
1aab	4,238		68	34	45					55.8	3/49						X	FO	
1aad	4,240		85	16								200						FO	

Table 1.--Records of selected drilled wells in the Willcox basin, Cochise and Graham Counties, Ariz.—Continued

Location	Altitude of land-surface datum (feet above mean sea level)	Date completed	Depth of well (feet)	Diameter of casing (inches)	Depth of casing (feet)	Perforation record				Water level		Yield (gpm)	Drawdown (feet)	Specific capacity (gallons per minute per foot of drawdown)	Well logs	Well cuttings	Chemical analysis in tables 3 or 4	Source of data	Remarks
						Depth (feet)		Size (inches)	Number per foot	Feet	Date								
						From	To												
(D-13-24)1adđ	4,240		116	16						47.0	10/46	495						FO	
1baa	4,236	6/51	310	16	310	50	70			42.6	7/51	450	88	5	L2			S, FO	
						180	210					270							
						280	310												
1daa	4,230									45.3	8/51							FO	Hydrograph shown.
										67.1	2/63								
2aaa	4,229		178	16	86					59 69.1	7/46 12/57	850	20	42				FO	
										78.8	2/63								
2aba	4,228		218	15	150	70	150	3/8 x 4		68		100	42	2.4	L			S	
$2abb_1$	4,227			8						51.2	5/42							S, FO	
$2abb_2$	4,227		84	16	80					63.9	3/49	560						S, FO	
										88.4	2/63	320							
$2abb_3$	4,227	4/49	150	16		70	148					800			L			S, FO	
$2abb_4$	4,227		80	60						55		500	10	50					
$2baa_1$	4,227	10/55	256	14						80	3/56	302						FO	
$2baa_2$	4,227	4/51	470	15-1/2	199	60	110	3/8 x 4		68		300	52	6	L			S, FO	
						170	199												
$2baa_3$	4,227	6/60	843	20	157	320	820	1/2 x 5	4						L2		Y	S	
				16	823														
2bab	4,226		131	16	131	65	131			60	6/49	521			L		Y	S, FO	
2cbb	4,220	10/55	256	14	256	100	256	1/4	8	92	10/55	750	80	9	L			S	
												700	75	9					
2ccc	4,214		100	16		40	80			40	2/45	600	6	100	L		X	S	
$2dbb_1$	4,219		114	16	96	36	96			46	4/46	1,100						S	Well destroyed prior
																			to 6/25/53.
$2dbb_2$	4,219		194	12	78							250					Y	S	Do.
3abc	4,221	1/56	260	16						90	3/56	1,200	180	7				FO	
3acb	4,221											750						FO	
3ada	4,224	/53								75.8	1/54	264						FO	
										111.9	2/63								

Table 1.--Records of selected drilled wells in the Willcox basin, Cochise and Graham Counties, Ariz.—Continued

Location	Altitude of land-surface datum (feet above mean sea level)	Date completed	Depth of well (feet)	Diameter of casing (inches)	Depth of casing (feet)	Perforation record				Water level		Yield (gpm)	Drawdown (feet)	Specific capacity (gallons per minute per foot of drawdown)	Well logs	Well cuttings	Chemical analysis in tables 3 or 4	Source of data	Remarks
						Depth (feet)		Size (inches)	Number per foot	Feet	Date								
						From	To												
(D-13-24)3bbb	4,224	/46	96	16	88	28	88			44	9/46	900			L			S,FO	
3cba	4,220	3/57	350	16	350	100	350	3/8 x 8	10	92	3/57	800	80	10	L2			S	
4aab	4,225		100	16		60	100			40		700			L			S	
4aba	4,225		133	16						57	5/48	700			L			S	
4abb	4,225	/51	260	16						82	6/53	286						FO	
4bab	4,226		231	16	117					53.9		1,020	16	64			Y	S,FO	
				14	231														
4bba	4,226									75.7	2/52							FO	Hydrograph shown.
										113.3	2/62								
4bbb	4,227	6/59	600							158	6/59	900	99	9			Y	S	
4cba	4,221		150	16	128	28	124			52	3/46	1,200	14	9	L			S	
4cbb	4,221		84	16						48		900						S	
5aab	4,228	4/41	165	16	152	60	152	3/8 x 6	36	72	/41	520	136	4	L			S,FO	
										116.7	2/63	296							
5abb	4,229	6/45	220	16		82	96			55	6/45	320			L		Y	S,FO	
				14		206	220			67.8	3/50								
5baa	4,229		98	14	98	57	84			57	/42				L		X	S,FO	
5bab	4,229	10/47	140	16	120	76	111			58	10/47	1,000			L			S,FO	
5bba	4,230	6/53		16						116	6/53	335					Y	FO	
5bbc	4,230		110	16	100	40	100			54	3/46	600	10	6	L		Y	S,FO	
										116.8	2/63								
5cca2	4,223	8/56	350									467						FO	
5ccb	4,225	8/53	203	14	203	0	201	1/4 x 8	4	85	8/53	750	13	58	L			S,FO	
										112.8	2/63								
5cdb	4,224	8/56	352	16	328	75	328	3/8 x 8	8	116.4	7/57				L			S,FO	
5dba	4,224		125	16	104					52	2/45	660						S,FO	
6dba	4,226		132	16	132	76	132			56	7/47	435					Y	S,FO	
										111.4	2/63								
7bcb	4,226	3/53	253	16														FO	

Table 1.--Records of selected drilled wells in the Willcox basin, Cochise and Graham Counties, Ariz.—Continued

Location	Altitude of land-surface datum (feet above mean sea level)	Date completed	Depth of well (feet)	Diameter of casing (inches)	Depth of casing (feet)	Perforation record				Water level		Yield (gpm)	Drawdown (feet)	Specific capacity (gallons per minute per foot of drawdown)	Well logs	Well cuttings	Chemical analysis in tables 3 or 4	Source of data	Remarks
						Depth (feet)		Size (inches)	Number per foot	Feet	Date								
						From	To												
(D-13-24)7cbb	4,224	1/58	285									1,620	84	19				S	
7cbc$_1$	4,223		75	16						47.8	11/46	950						FO	
7cbc$_2$	4,223		100	18						48.6	11/46	1,000						FO	
										85.9	12/63								
7cbd	4,220	/48	130							55.9		1,000						FO	
7dbb	4,220	1/58	285	16	285	65	285	3/8 x 8				675			L			S, FO	
7dda	4,222		65							41.6	5/42						X	FO	
8abb$_2$	4,218		158	16						57	3/47	451			L			S, FO	
8bbb	4,222		297	16	84	52	84			46	5/46	750					X	S, FO	
										81	3/56	250							
8bcb	4,218		100							44	5/46	600	12	50			X	S	
8dbb	4,216	9/53	325	16		69	80	3/8	15	71.7	1/54	1,200	150	8	L[2]			S, FO	
						88	102			109.3	2/63								
						148	163												
						170	179												
						191	200												
						204	215												
						258	271												
8dcb	4,215	/58	400	16								365				X		FO	
9abb$_1$	4,215	4/48	140	16	140	60	140			60	4/48	800	20	40	L			S, FO	
												770							
9abb$_2$	4,215	2/56	250	16	250					90	3/56	580						FO	
9acb	4,211	3/56	176	16						87.2	3/56							FO	
9bab	4,215	11/51	220	16		76	88	3/8 x 6	8	67	11/51	300	69	4	L			S, FO	
						101	113			74.0	10/52								
						122	137												
						151	161												
9bbb	4,216		269	16						54	3/47	550	47	12	L			S, FO	
				14															
				12															

Table 1.--Records of selected drilled wells in the Willcox basin, Cochise and Graham Counties, Ariz.—Continued

Location	Altitude of land-surface datum (feet above mean sea level)	Date completed	Depth of well (feet)	Diameter of casing (inches)	Depth of casing (feet)	Perforation record				Water level		Yield (gpm)	Drawdown (feet)	Specific capacity (gallons per minute per foot of drawdown)	Well logs	Well cuttings	Chemical analysis or tables 3 or 4	Source of data	Remarks
						Depth (feet)		Size (inches)	Number per foot	Feet	Date								
						From	To												
(D-13-24)9cbb	4,212	4/48	154	16	154	56	154			56	3/48	900	30	30	L				
												890							
9dbb	4,212			16						60.7	1/54	398						FO	
										112.1	2/63								
10abb	4,214	5/51	168	16	167	80	155	1/4	8	80		308			L			S, FO	Deepened.
										74.8	1/54								
		6/57	285	14	285	165	285	3/8 x 8	8	96	6/57	750	48	16	L			S	
10acb	4,210	3/56	178	16	176	80	176	3/8 x 3	8	82	3/56	650	48	14	L2			S, FO	Deepened to 404 feet.
										100	7/57	600	40	15					
10bba	4,212	2/58	306	16	306	112	290			126	2/58	550	90	6	L			S	Yield estimated.
10bbb	4,214	7/48	124	16	124	44	124			55	7/48	312			L			S, FO	
										101.3	1/61								
10cbb	4,210	4/51	142	16	123	36	122			72		483			L			S, FO	
10cbd$_1$	4,209		80	12						38	5/42	520	11	47			X	FO	
10cbd$_2$	4,209	9/47	110	16	92	60	82			58	10/47	434			L			FO	
10dbb	4,208		115	16		40	84			42	7/45	1,300	10	130	L			S	
11aab	4,210	4/53	248	18	248	60	248	1/2 x 6	6	60		366			L			S, FO	
11abb	4,213	/45	163	16	100	40	100			48.1	10/46	700	8	88				S, FO	
										40	6/48								
11acc	4,209		175	16		56	96			60	3/49				L			S, FO	
11adb	4,210	5/53	246	16	246	60	246	1/2	6	60		800	30	27	L2			S, FO	
11bba	4,213	3/49	100	16		50	100			53	3/49				L			S, FO	
11bbc	4,212	4/53	244	16		71	239	3/8	8	76.9	1/54	900	110	8	L			S, FO	
										108.9	2/63								
11bcb$_1$	4,212	/13	92	10	76							500							
11bcb$_2$	4,212	4/53	244	16		71	82	3/8	8	66	4/53	900	110	8	L			S	
						96	132												
						146	172												
						232	239												
11ccb	4,207		80	12	62	43	62			42	9/43	240	10	24				S	

Table 1.--Records of selected drilled wells in the Willcox basin, Cochise and Graham Counties, Ariz.—Continued

Location	Altitude of land-surface datum (feet above mean sea level)	Date completed	Depth of well (feet)	Diameter of casing (inches)	Depth of casing (feet)	Perforation record				Water level		Yield (gpm)	Drawdown (feet)	Specific capacity (gallons per minute per foot of drawdown)	Well logs	Well cuttings	Chemical analysis in tables 3 or 4	Source of data	Remarks
						Depth (feet)		Size (inches)	Number per foot	Feet	Date								
						From	To												
(D-13-24)12cbb	4,210			16						62.4	2/52	250						FO	
										76.0	2/63	234							
12ccb	4,204			14	70					65.6	8/56							FO	
				12	165														
12dab	4,203	7/52	200	16		48	192	3/8		43	7/52				L2			S	
13acb	4,197									44.7	2/52							FO	
										62.4	2/63								
13bab	4,201		84	14	84	38	84			38	6/46	253			L			S, FO	
										43.4	3/49								
13bbc	4,201	6/50	100	16	100	40	100			49.8	2/52	249			L			S, FO	
13cba	4,196			16						77	6/53	550						FO	Smells like rotten eggs.
13ccc	4,196		80	12	64	24	40			36	3/47				L			S, FO	
										60.7	2/63								
13ddd$_1$	4,189	/12	54	16						21	/12	360			L			FO	
										29.7	5/42								
13ddd$_2$	4,189	/10	55	6		48	60			29.7	5/42				L			S, FO	
										39.4	11/49								
14aab	4,203	2/60	380	16	330	80	330	3/8 x 8	8	98	3/60				L2			S	
14abb	4,205									62.0	1/54	850	21	40				S, FO	
										78.4	2/63								
14bab	4,205	/44	150	16	100	40	100			40	6/48	1,100	7	160				S, FO	
										51.8	3/49								
14bbb	4,206											580							
15abb	4,206		151	16						73.4 94.2	1/57 2/63							FO	
15baa	4,207	3/51	105	18		55	105			58	3/51	237			L			S, FO	
15bba	4,207		164	16						44		660	8	82				FO	
				14															
15bbb	4,208		395	16								318				X		FO	
15bbd	4,205	8/49	154	16	100	60	100			60	8/49	800	15	53	L			S	
15bcc	4,204	/47	150							48.7	3/49	415					Y	FO	

Table 1. --Records of selected drilled wells in the Willcox basin, Cochise and Graham Counties, Ariz. —Continued

Location	Altitude of land-surface datum (feet above mean sea level)	Date completed	Depth of well (feet)	Diameter of casing (inches)	Depth of casing (feet)	Perforation record				Water level		Yield (gpm)	Drawdown (feet)	Specific capacity (gallons per minute per foot of drawdown)	Well logs	Well cuttings	Chemical analysis in tables 3 or 4	Source of data	Remarks
						Depth (feet)		Size (inches)	Number per foot	Feet	Date								
						From	To												
(D-13-24)15cbb	4,204									53.1	2/52	608						FO	
										75.0	2/62								
16bbb	4,209	/32	1,356	16						28.6	5/42				L2	X		FO	Hydrograph shown.
										106.0	3/61								
17bcb	4,215		500	16						85	12/57	1,350	66	20				S, FO	
17bdb	4,215	1/58	500	16	500	105	500	5/16 x 12	6	84	1/58	1,450	78	19	L			S, FO	
17cbb	4,213	12/57	505	16	500	180	495	1/4 x 12	6	80	1/59	1,050	120	9	L			FO	
17ccb	4,210	12/57	505	16	505	175	505	5/16 x 12	6	75	12/57	1,000	62	16	L2			S, FO	
												650	25	26					
18aaa	4,217	8/59	1,000	16	525	180	515	3/16 x 6	16	110	8/59	1,630	58	28	L2	X	Y	S, FO	12-1/4-inch open hole
																			from 525 to 1,000 feet.
18acb	4,217									54.7	2/52	350						FO	
										92.7	2/63								
18adb	4,218	3/49	130	16		70	100					600			L			S, FO	
18bbb	4,220		410	16	170					40	2/47	200			L			S, FO	
18bcb	4,225		160	16						70.5	1/53	250						FO	
										78.5	2/63								
18dcb	4,220	2/58	475	16	475	180	465	1/2 x 3-	11						L2			S, FO	
								1/2											
20abb	4,207	/53	160	16						54	6/53	930						FO	
20bbb	4,209	7/58	301	16	301	90	296	5/16 x 12	6						L			S	
21abb	4,205	11/52	160	16		55	155	3/8	8	55	11/57	565			L2			S, FO	
21bba	4,205		100	14	100					40	1/45	618						S, FO	
										83.7	2/63								
21cba	4,200	/10	60	16						32.1	5/42	840					X	FO	
21cbb	4,201	6/53	141	18	141	48	140	1/4 x 12	6	50.1	1/54				L			S, FO	
										73.3	2/63								
22acb	4,199		80	16		30	80			35	12/44	750	17	44	L			S	
22bcc	4,200	/51	145	16								550						FO	
22cdd	4,195		82	12	82	40	82			40	5/48				L			S	

Table 1.--Records of selected drilled wells in the Willcox basin, Cochise and Graham Counties, Ariz.--Continued

Location	Altitude of land-surface datum (feet above mean sea level)	Date completed	Depth of well (feet)	Diameter of casing (inches)	Depth of casing (feet)	Perforation record				Water level		Yield (gpm)	Drawdown (feet)	Specific capacity (gallons per minute per foot of drawdown)	Well logs	Well cuttings	Chemical analysis in tables 3 or 4	Source of data	Remarks
						Depth (feet)		Size (inches)	Number per foot	Feet	Date								
						From	To												
(D-13-24)22ddb	4,193		80	12						45	/18	900						S, FO	
23abb	4,198		89	14						38.5	10/46	218						FO	
23bba	4,198	/20	50	8						34.1	5/42							FO	
23bbb$_1$	4,199		62	10						21	/10	460	12				X	FO	
										41.4	2/49								
23bbb$_2$	4,199	3/49	92	16		46	92	3/8 x 6	8	43	3/49	300			L2		Y	FO	
										57.0	3/53								
23bcb	4,198		105	16	75	30	75			34		360						S, FO	
												350							
23ca	4,195	7/53	6,865												L	X		OG	
23ccc	4,192	/41	104	6	56					31	5/48				L			S	
23daa	4,191			12						53	4/56							FO	
24aaa	4,190	12/51	100	18		46	95	3/8 x 6	8	43	12/51				L			S	
24ccd	4,186									34.8	2/52							FO	Hydrograph shown.
										46.2	2/63								
25ccc	4,179			12						22.0	5/42						X	FO	Hydrograph shown.
25ddd	4,175	/48		8	52	42	52					150						FO	
26bbc	4,190	2/52	108	10		48	108	1/4 x 4		40	2/52	250	15	17	L2			S, FO	
26cbb	4,187		50	12						30	5/42	400					X	S	Deepened 3/49.
26dac	4,182		130	16	80	30	80			27	3/47	1,000	25	40	L			S	
27aad	4,191	/20	102	16						64	6/53	500						FO	
27abb	4,193		118	14	102	20	76			38	3/47	800			L		Y	S, FO	
										45.7	1/54								
27ada	4,190	/45	131	16						32	/45	610						FO	Hydrograph shown.
										58.1	1/61								
										52.8	2/63								
27bab	4,193	/47	115	16								580						FO	
27bad	4,193									48.6	8/56	271						FO	

Table 1.--Records of selected drilled wells in the Willcox basin, Cochise and Graham Counties, Ariz.--Continued

Location	Altitude of land-surface datum (feet above mean sea level)	Date completed	Depth of well (feet)	Diameter of casing (inches)	Depth of casing (feet)	Perforation record				Water level		Yield (gpm)	Drawdown (feet)	Specific capacity (gallons per minute per foot of drawdown)	Well logs	Well cuttings	Chemical analysis in tables 3 or 4	Source of data	Remarks
						Depth (feet)		Size (inches)	Number per foot	Feet	Date								
						From	To												
(D-13-24)27bdb	4,195	11/52	136	16	136	46	56	3/8	8	48	11/52	650	10	65	L			S	
						78	87												
						109	132												
28abb	4,198		135	12						55	6/46	150			L			S,FO	
28bbb	4,200	1/58	500	16	400	230	400	1/4 x 12	6						L2		Y		Bore filled with rock
																			from 400 to 500 feet.
29aab2	4,201	4/53	100	16	100	46	100	5/10 x 12	4	42	4/53	500	20	25	L		Y	S	
29aba	4,203									47.0	6/54							FO	
										68.6	2/63								
29abb	4,204		104	6						41.9	7/51							FO	
										46.4	1/54								
33aa	4,187	/08	36	6						32	5/42						X	FO	
33bab	4,193	9/59	155	16	145	45	145	1/4 x 12	5	42	9/59				L2			S	
33cad	4,190									29.2	7/51							FO	
										38.4	2/63								
33dba	4,187	6/53	148	16		34	54	3/8	15	36	6/53	1,000	45	22	L			S	
						60	68												
						76	82												
						84	92												
						102	112												
						122	131												
34abb	4,187	7/54	138	14		38	135	3/8	15	38	7/54	1,000	48	21	L			S	
												740	24	31					
34adb	4,186		55	16						27.8	10/46	710						FO	
35abb	4,182									27.3	10/46	540						FO	
35bbb	4,186	6/59	757	16		46	147	3/8 x 4	10	80	6/59	262			L2		Y	S	
35bbc1	4,185		55	12						27.8	10/46	470						FO	
										44.0	2/63								
35bbc2	4,185	11/51	105	16								460						FO	

Table 1. --Records of selected drilled wells in the Willcox basin, Cochise and Graham Counties, Ariz. —Continued

Location	Altitude of land-surface datum (feet above mean sea level)	Date completed	Depth of well (feet)	Diameter of casing (inches)	Depth of casing (feet)	Perforation record				Water level		Yield (gpm)	Drawdown (feet)	Specific capacity (gallons per minute per foot of drawdown)	Well logs	Well cuttings	Chemical analysis in tables 3 or 4	Source of data	Remarks
						Depth (feet)		Size (inches)	Number per foot	Feet	Date								
						From	To												
(D-13-24)35caa$_1$	4,180	/38	54	6						20.1	5/42						X	FO	
										39.5	2/63								
35caa$_2$	4,180		100	16		45	60			56	3/45	500	12	42				S, FO	
										23	4/46								
36dcc	4,172	1/58	85	10	85	60	80	1/4 x 8	4	22	1/58				L			S, FO	
(D-13-25)3dca	4,300		118	6						105.3	2/46						X	FO	
										112.2	12/57								
7bbc	4,204			16						40.3	2/52							FO	
										54.6	2/63								
10cca	4,290									116.1	1/54							FO	
										3.8	2/63								
27acc2	4,189		90							33.0	1/46						Y	FO	
										38.2	12/57								
27daa	4,195	3/60	358	16	305	55	300	1/4 x 6	8	33	3/60				L2			S	
30cbb	4,179									25.4	3/49						X	FO	
										36.9	2/63								
30dcc	4,179		62							24.3	2/52	250	3	83				FO	
										33.7	2/63								
31bbb$_2$	4,175	7/46	123	16	68	18	68					450						FO	
31bcd	4,170	4/58	70	16	70	29	69	3/8 x 3	6	29	4/58	525	36	15	L			S, FO	
31cab$_2$	4,170	/58	800													X	Y	FO	
31dcd$_1$	4,167	2/49	102	12		36	56								L		Y	S	
(D-14-24)1abb	4,170									19.7	7/51							FO	Hydrograph shown.
										27.2	2/63								
3abb	4,182									31.0	7/51							FO	
										32.9	2/63								
5baa	4,175									27.4	3/49							FO	
										43.8	2/63								

Table 1.--Records of selected drilled wells in the Willcox basin, Cochise and Graham Counties, Ariz.—Continued

Location	Altitude of land-surface datum (feet above mean sea level)	Date completed	Depth of well (feet)	Diameter of casing (inches)	Depth of casing (feet)	Perforation record				Water level		Yield (gpm)	Drawdown (feet)	Specific capacity (gallons per minute per foot of drawdown)	Well logs	Well cuttings	Chemical analysis in tables 3 or 4	Source of data	Remarks
						Depth (feet)		Size (inches)	Number per foot	Feet	Date								
						From	To												
(D-14-24)6aab	4,213									60.9	3/49							FO	
										65.5	12/55								
13cbb	4,162			8						12.9	7/53							FO	
										17.8	2/63								
14bba	4,167		21	5						12.5	5/42							FO	
										18.9	1/61								
30cdd	4,190	5/49	3,340												L	X		OG, FO	
30dba	4,187		50	6						20.0	5/42						X, Y	FO	
										27.3	2/63								
(D-14-25)4cb	4,175		2,702												L	X		OG	
6cab	4,162	/41	34	6						12.0	5/42						X	FO	
										20.8	1/61								
6dd	4,160		700												L		X	S	
9dd	4,175		1,810							F					L2	X		OG	
16aad	4,173									23.1	3/53						Y	FO	
										24.6	2/63								
23ddd	4,189	11/59	458	16	408	60	220	3/8 x 12	8	40	11/59				L2			S, FO	
										27.8	12/57								
27	4,145		2,360							F					L2			S, OG	Not recovered; exact location in section uncertain.
(D-14-26)6ac	4,286	7/17	650	54	33					10	7/17				L2			FO	
				12	41														
				7-5/8	650														
18baa	4,248	2/53	475	16	475	90	475	1/4 x 8	8	71.8	1/54	1,100	18	61				S, FO	
										74.2	1/57								
18bdd	4,245									69.1	1/54							FO	
										123.6	2/63								

Table 1. --Records of selected drilled wells in the Willcox basin, Cochise and Graham Counties, Ariz. —Continued

Location	Altitude of land-surface datum (feet above mean sea level)	Date completed	Depth of well (feet)	Diameter of casing (inches)	Depth of casing (feet)	Perforation record				Water level		Yield (gpm)	Drawdown (feet)	Specific capacity (gallons per minute per foot of drawdown)	Well logs	Well cuttings	Chemical analysis in tables 3 or 4	Source of data	Remarks
						Depth (feet)		Size (inches)	Number per foot	Feet	Date								
						From	To												
(D-14-26)18caa	4,248	3/53	500	16		80	95	3/4	8	80	3/53	1,050	60	18	L_2		Y	S	
						185	195												
						225	235												
						300	315												
						365	370												
						375	380												
						400	420												
						435	455												
						490	495												
18daa	4,275	12/52	425	14		118	125	3/8	8	94	12/52	900	66	13	L			S, FO	
						136	143			147.3	2/63								
						189	203												
						223	230												
						258	265												
						303	400												
20ccc	4,272		200	8						89.8	1/46							FO	
										144.0	2/63								
30baa	4,245									74.5	1/59							FO	
										91.6	2/63								
31ddd	4,270	6/59	512	16	290	120	290	1/4 x 12	6	112	6/59	2,700	52	52	L2	X		S, FO	
(D-15-24)8cad	4,168	/58										700					Y	FO	Samples taken.
8dbb	4,167		53	4						13.4	1/46							FO	Hydrograph shown.
										21.6	2/63								
17bdd	4,185	11/58	730													X		FO	
17cac	4,200		100	8								200						FO	
19cbc	4,295		200	16	150	80	150			150	5/45				L			S, FO	
19ccc	4,300	3/58	400	16	400	140	400	3/16 x 10	4	130	3/58	700	80	9	L2			S	
19dcc	4,270	1/56	425	16						100	2/57	1,400	52	27				S, FO	
20cac	4,215		103	6						52.3	1/46						Y	FO	
										66.8	2/63								

Table 1. --Records of selected drilled wells in the Willcox basin, Cochise and Graham Counties, Ariz. --Continued

Location	Altitude of land-surface datum (feet above mean sea level)	Date completed	Depth of well (feet)	Diameter of casing (inches)	Depth of casing (feet)	Perforation record				Water level		Yield (gpm)	Drawdown (feet)	Specific capacity (gallons per minute per foot of drawdown)	Well logs	Well cuttings	Chemical analysis in tables 3 or 4	Source of data	Remarks
						Depth (feet)		Size (inches)	Number per foot	Feet	Date								
						From	To												
(D-15-24)29bac	4,230		300	14								688						FO	
29bbc	4,240	5/55	300	14	300	62	300			60	5/55	1,200	39	31	L			S, FO	
30cdd	4,280	1/56	260							114	6/56							FO	
30db	4,263	/07	674												L			FO	
30dcc	4,275	/57	400	16			365	3/16 x 10	4	105	12/57	610	78	8	L2		Y	FO	
										114	7/58	710	97	7					
												800	117	7					
												920	143	6					
31aaa	4,250									77.7	9/51							FO	
										97.5	2/63								
31bda	4,275	2/56	280	16	260	100	260	3/8 x 8	6	105	2/56	1,650	45	37	L			S	
31cbb	4,300	2/55	725	16	300	100	300	3/8 x 8	10	124	2/58	1,100	102	11	L2			S	
32acc	4,225	12/58	615	16	615	160	175	1/4 x 6	8	55	12/58	1,400	130	11	L			S	
						185	195												
						210	615												
32ccc	4,250	7/57	846	20	400	275	400	3/16 x 10	6	80	7/57	2,000	90	22	L			S	Open hole from 789 to
				12	789	425	779		4										846 feet.
32dcc	4,225	7/58	982	16	875	168	179	3/16 x 6	8	61	7/58	3,160	105	29	L2	X		S, FO	
						231	248												
						264	300												
						308	875												
33bbb	4,189		50	6						38.9	1/46							FO	
										37.5	2/63								
(D-15-25)13ddd	4,220	1/58	510	16	472	63	472	5/8 x 12	6	49	1/58	1,200	52	23	L2		Y	S	
14ccd	4,180		38	8						28.9	1/46							FO	Hydrograph shown.
										17.2	2/63								
15ddd	4,175		48	6						25.6	1/54	335						FO	
										25.1	12/57								

Table 1.--Records of selected drilled wells in the Willcox basin, Cochise and Graham Counties, Ariz.--Continued

Location	Altitude of land-surface datum (feet above mean sea level)	Date completed	Depth of well (feet)	Diameter of casing (inches)	Depth of casing (feet)	Perforation record				Water level		Yield (gpm)	Drawdown (feet)	Specific capacity (gallons per minute per foot of drawdown)	Well logs	Well cuttings	Chemical analysis in tables 3 or 4	Source of data	Remarks
						Depth (feet)		Size (inches)	Number per foot	Feet	Date								
						From	To												
(D-15-25)23bdd	4,190	2/60	567	16	559	259	560	3/16 x 12	3	20	2/60				L2			S	
23ddd	4,205	9/48	250	12						37.3	2/52	600			L			S, FO	Hydrograph shown.
										20.3	2/63								
25ada	4,230	8/53	516	18												X	Y	FO	
25add	4,230		500							41.8	1/58							FO	Hydrograph shown.
										117.7	2/63								
25cda	4,225		566	14						55.1	10/53	1,250						FO	
										77.6	2/63								
25ddd	4,230	4/52	472	18				3/8 x 8		43.6	4/52	1,900	97	20	L2		X	S, FO	
26add	4,210	11/52	503	18	503		500	3/8	8						L			S	
26ddd$_1$	4,213		455	16	350					12.4	10/46						Y	S, FO	Reported "rock ledge"
				12	450					32.7	2/63								at 450 feet. After
																			drilling through "ledge"
																			water level rose from
																			38 to 9 feet.
27add$_2$	4,190	7/58	1,300	20	610	403	1,295	5/16 x 12	6	95	7/58	3,650	101	36	L	X		S	
				12	1,295														
27edd	4,190	8/58	1,100	20	610	400	1,100	5/16 x 12	6	96	8/58	3,800	102	37	L2			S	
				16	1,100														
27daa$_1$	4,190	4/52	606	20		366	409	3/4	8	6	4/52				L			S	When well was at 400-
						468	580												foot depth, water level
																			rose from 36 to 30
																			feet. At 468-foot depth
																			water level raised to
																			15 feet.
32ada	4,165	6/58	1,280	20	700											X		S, FO	
				16	1,280														

Table 1.--Records of selected drilled wells in the Willcox basin, Cochise and Graham Counties, Ariz.,—Continued

Location	Altitude of land-surface datum (feet above mean sea level)	Date completed	Depth of well (feet)	Diameter of casing (inches)	Depth of casing (feet)	Perforation record				Water level		Yield (gpm)	Drawdown (feet)	Specific capacity (gallons per minute per foot of drawdown)	Well logs	Well cuttings	Chemical analysis in tables 3 or 4	Source of data	Remarks
						Depth (feet)		Size (inches)	Number per foot	Feet	Date								
						From	To												
(D-15-25) 34bdd$_1$	4,190	/14	601	4						F	5/42	50			L			FO	
				3															
34bdd$_2$	4,190	3/57	1,100	16	300					86	3/57	2,500			L2		Y	S	
				12	700														
34cbd	4,190	5/47	575	18	550					F	5/47	1,120			L			S, FO	
										121.6	2/63								
34daa	4,205	12/52	486	20		312	486	5/8 x 3	10	22	1/53	2,400			L		Y	S, FO	
35add	4,220	11/52	700	20	600	172	600	1/2 x 3	10	29.9	12/52	4,150	91	47	L2		Y	S, FO	
										53.5	7/53	3,850							
35dad	4,220	2/53	592	20	550	116	361	1/2 x 4	6	45	2/53	2,000	140	14	L			S, FO	
										75.3	7/53								
36add	4,240	4/50	496	20	318	264	304			42.5	4/50	1,465			L2			S, FO	
										45.1	6/50								
36caa	4,225	7/58	490	16		150	490	1/2 x 5	6	60	7/58	1,800	70	26	L			S	
36ccb	4,222			8						51.3	8/51							FO	
										50.1	2/63								
36daa	4,240									43.2	2/52							FO	
										95.1	12/57								
(D-15-26) 5bad	4,305	11/58	503	16	313	170	313	1/2 x 6	8	176	11/58	1,730	20	84	L	X		S, FO	
												1,690	20	84					
5cdd	4,305	8/58	470	16	263	80	263	1/2 x 8	6	183	8/58	1,250	55	23	L		Y	S, FO	
6caa	4,242									76.4	1/57							FO	
										128.9	2/63								
6daa	4,265	9/57	453	16	300	122	300	1/2 x 8	6	123	9/57	1,200	30	40	L		Y	S, FO	
6dda	4,265	12/57	460	16	310	111	310	1/2 x 6	6	112	12/57	1,200	30	40	L2		Y	S	
7dbc	4,240									84.6	1/59							FO	Cascading water.
										96.4	2/62								
9ddd	4,415	3/59	500	16	328	110	368	1/2 x12	7	160	3/59	1,630	66	25	L2			S	

Table 1.--Records of selected drilled wells in the Willcox basin, Cochise and Graham Counties, Ariz.--Continued

Location	Altitude of land-surface datum (feet above mean sea level)	Date completed	Depth of well (feet)	Diameter of casing (inches)	Depth of casing (feet)	Perforation record				Water level		Yield (gpm)	Drawdown (feet)	Specific capacity (gallons per minute per foot of drawdown)	Well logs	Well cuttings	Chemical analysis in tables 3 or 4	Source of data	Remarks
						Depth (feet)		Size (inches)	Number per foot	Feet	Date								
						From	To												
(D-15-26)17aaa	4,332		273	16						158	/60	150				X		S, FO	Deepened from 273 to
			510									500							510 feet. Reported
																			bedrock at 375 feet.
17aad	4,325	3/59	507	16	273			1/2 x 12	8	176	3/59	500	80	6	L			S	
17cdd	4,280	2/58	504	16	278	138	278	1/2 x 12	7	124	2/58	1,730	48	36	L2			S	
17dad	4,315									177.5	1/59							FO	
										232.2	2/63								
17dda	4,315	12/58	475	13	306	180	306	1/2 x 12	7	182	12/58	1,560	50	31	L			S, FO	Driller reports rhyo-
																			lite(?) at bottom of
																			hole.
18aaa	4,260	4/57	575	16	317	0	575	3/8 x 12	3	90	4/57	2,000	50	40	L			S	
				14	575														
18cad	4,240	4/58	500	16	500	100	433	3/16 x 12	3	72	4/58	2,000	120	17	L			S	
19baa	4,240		93	10						59.7	8/51	500	15	33				S, FO	
19bad	4,235	10/52	340	16	340	41	340	1/2	4	59.7	8/51	1,680	126	13	L		X	S, FO	
										65.4	1/61								
19cdd	4,236	7/56	918									800				X	Y	S	
19daa	4,255	2/57	640	18	640	125	638	3/8 x 12	4	80	2/57	3,000	70	43	L			S	
19dbc	4,240	10/31	3,298												L			OG, FO	
19dbb	4,238			8						56.8	2/46						X	FO	Hydrograph shown.
										78.6	1/60								
21ab	4,350	/59								215	/59	1,460	100	15				FO	
												1,200	50	24					
												800	30	27					
21bbd	4,315	5/59	504	16	340	204	340	1/4 x 12	7	215	5/59	1,200	50	24	L2			S	
23dcb	4,460	9/47	505	10	505	110	330			251	9/47	200	4	50	L2			S, FO	
										252 258.6	4/51 /52								
23dcd	4,475	3/47	502	10	502	285	502	1/2 x 7		251	3/47	120	4	30	L			S, FO	
26bba	4,440		350							226.9	7/51						X	FO	
										Dry	1/61								

Table 1.--Records of selected drilled wells in the Willcox basin, Cochise and Graham Counties, Ariz.--Continued

Location	Altitude of land-surface datum (feet above mean sea level)	Date completed	Depth of well (feet)	Diameter of casing (inches)	Depth of casing (feet)	Perforation record				Water level		Yield (gpm)	Drawdown (feet)	Specific capacity (gallons per minute per foot of drawdown)	Well logs	Well cuttings	Chemical analysis in tables 3 or 4	Source of data	Remarks
						Depth (feet)		Size (inches)	Number per foot	Feet	Date								
						From	To												
(D-15-26)29aaa	4,300	7/57	538	16	420	100	400	3/8 x 12	4	151	7/57				L			S	
29baa	4,275	12/57	600	16	420	100	400	3/8 x 12	4	154	12/57				L2			S	
29bbb	4,250	12/56	502	16	420	100	400	3/8 x 12	4	149	12/56				L			S	
29ddd	4,287									152.6	1/59							FO	
										206.7	2/63								
30cdd	4,238	5/56	520		520					66	9/56	1,800	84	21			Y	S	
30dcd	4,250	1/56	587	16		84	500	1/2 x 3	8	84	1/56	2,200	58	38	L2		Y	S	
30ddd	4,254	6/58	999	20	550					47	6/58	1,428				X	Y	FO	Reported hard rock
																			encountered from
																			627 to 999 feet.
31cdd	4,255	9/54	650	16	300	80	90	5/16 x 12	5	78	9/54	1,300	70	19	L2				
						120	140												
						180	240												
						260	300												
31ddb	4,260			18						80.7	1/54							FO	
										199.8	2/63								
31ddd	4,265	6/58	900	16												X		FO	
(D-16-23)15dcc	4,550	7/18	554	16						387	10/56	100			L		X	FO	
19bdd	4,615	/50	362												L			FO	
19caa	4,625	3/50	565	6						400					L2		X	FO	
19cbd	4,620															X		FO	
(D-16-24)3cdd	4,175									27.3	1/53							FO	—
										25.2	2/63								
4acd	4,205		555	16	500					57	9/58	2,800	186	15				FO	
4dbd	4,210	12/58	550	16	500	130	500	3/16 x 6	8						L			S	
5bab	4,250									72.0	9/51							FO	Hydrograph shown.
										93.1	2/63								
17aaa	4,265									89.4	9/51							FO	
										97.5	1/59								Destroyed 1/19/61.
20baa1	4,290	12/59	510	16	510	124	510	3/16 x 12	8	121	12/59				L2			S	

Table 1. --Records of selected drilled wells in the Willcox basin, Cochise and Graham Counties, Ariz. —Continued

Location	Altitude of land-surface datum (feet above mean sea level)	Date completed	Depth of well (feet)	Diameter of casing (inches)	Depth of casing (feet)	Perforation record				Water level		Yield (gpm)	Drawdown (feet)	Specific capacity (gallons per minute per foot of drawdown)	Well logs	Well cuttings	Chemical analysis in tables 3 or 4	Source of data	Remarks
						Depth (feet)		Size (inches)	Number per foot	Feet	Date								
						From	To												
(D-16-24)20baa$_2$	4,290	10/57	720	16	450	200	720	1/4 x 12	4	121	10/57				L			S	
				12	720														
21abb	4,235									73.9	1/46							FO	
										78.3	2/63								
21bcc	4,260	6/58	770	16								1,418				X	Y	FO	
21ccc	4,375	6/58	384	20						109.4	6/58	800				X		FO	
21ddd	4,240									102.8	1/59				L			FO	Core drilling, casing
										111.2	2/63								pulled.
25bcc$_2$	4,185	/51	112							14		400			L			S	
26ab	4,180									20.2	1/46							FO	
										23.4	12/57								
28acc	4,270		212	16	212	122	208			81	12/48	1,250	15	83	L			S	
(D-16-25)1add	4,240	6/52	573					1/2 x 3	10						L2			S	
1baa	4,222	3/56	437	16						45	4/56	855	96				Y	FO	
1bad	4,220	6/52	100	16	99	78	99	3/16 x 12	5	48	6/52	550	76	7	L		Y	S, FO	
										131.5	7/52								
1cdc	4,220	3/40	150	14		51	65		12						L			S, FO	
						65	135		4										
1daa	4,240	2/53	505	18		80	505		8	58.4	1/54	888			L		Y	S, FO	
										100.8	2/62								
2cdd	4,210	9/45	104	16		70	102			42.4	10/46	1,200			L		X, Y	S	
2dad	4,216									37.6	2/52	770					Y	FO	
										128.9	2/63								
2ddd	4,218		318	18	318	50	318			36	3/48	1,000	85	12	L			S, FO	
3aca	4,190	5/47	637	3	610					3	7/49	60			L			S	
3cac	4,188	/25	554	6	375					+11 F	/25	80			L2		X	FO	
										21.4	2/62								
3cad	4,190	8/59	407	16	400	55	400	3/16 x 12	3	31	8/59				L			S	
4cdd$_1$	4,180	8/50	400	14						9	8/50				L2			S, FO	Hydrograph shown.
										57.9	2/63								

Table 1.--Records of selected drilled wells in the Willcox basin, Cochise and Graham Counties, Ariz.--Continued

Location	Altitude of land-surface datum (feet above mean sea level)	Date completed	Depth of well (feet)	Diameter of casing (inches)	Depth of casing (feet)	Perforation record				Water level		Yield (gpm)	Drawdown (feet)	Specific capacity (gallons per minute per foot of drawdown)	Well logs	Well cuttings	Chemical analysis in tables 3 or 4	Source of data	Remarks
						Depth (feet)		Size (inches)	Number per foot	Feet	Date								
						From	To												
(D-16-25)4cdd2	4,180	4/53	300	14		100	235	3/4	6	60	4/53	488			L			S,FO	Deepened.
4dda	4,185	1/52	356	12				1/4 x 12	4	16	7/52	600	84	7	L			S	When well reached depth
				8															of 351 feet, water level
																			rose from 38 to 16 feet.
9add	4,187	3/53	445	14	350	35	350	1/2 x 4	8	37.7	1/54	1,500	100	15	L		Y	S,FO	
										28.6	2/63								
9baa	4,180	/33	390	6	365					F	/47	80			L		X	S,FO	
				4	390														
9bab	4,180	1/52	150	13-1/2	150	33	150	1/4 x 7	6	38.7	7/53				L			S,FO	
10ada	4,200	8/57	300	18	235	50	235	1/4 x 12	5	35	8/57				L			S	
10cdd	4,195	7/53	290	14	152	56	152			41.6	7/53	550			L2			FO	
10dad	4,201									26.8	2/52							FO	
										15.5	1/60								
10dda	4,202		236	16	236	55	236			38	9/46	550	50	11	L			S,FO	
11aaa1	4,217	11/51	142	14	142	52	142			51.6	7/51	300			L			S,FO	Hydrograph shown.
										54.6	1/60								
11aaa2	4,217	6/51	115	8	101	61	101	3/8 x 4	15	50	6/51				L			S	
										57.3	2/62								
11aaa3	4,215	5/52	500					3/8	8			1,500	100	15	L2			S,FO	
11ddd	4,220		500									1,260				X		FO	
12add	4,240	6/53	445	18		55	271	3/8	10	61	7/53	905			L		Y	S,FO	Reported cascading
										84.8	12/57								water.
12ddd	4,240	3/53	303	18		58	302	3/4	8	66.6	7/53	962			L2		Y	S,FO	
										161.95	2/63								
13bdd	4,235	4/60	163	16	160	81	161	5/16x12	3-1/2	57	4/60				L			S	
13cdd	4,235	6/52	381	18	381	75	90		6	42.8	3/53	2,000	75	27	L	X		FO	
						130	145			82.5	2/62								
						150	155												
						240	275												
						365	378												

Table 1. --Records of selected drilled wells in the Willcox basin, Cochise and Graham Counties, Ariz. ---Continued

Location	Altitude of land-surface datum (feet above mean sea level)	Date completed	Depth of well (feet)	Diameter of casing (inches)	Depth of casing (feet)	Perforation record				Water level		Yield (gpm)	Drawdown (feet)	Specific capacity (gallons per minute per foot of drawdown)	Well logs	Well cuttings	Chemical analysis in tables 3 or 4	Source of data	Remarks
						Depth (feet)		Size (inches)	Number per foot	Feet	Date								
						From	To												
(D-16-25)14bdd	4,215	4/53	493	20		0	100	1/2x5/8	10	36.3	1/54	3,000	86	35	L2			S, FO	
										63.0	12/57								
14dda	4,222	4/52	613	18	453		607	1/4	8	38.3	6/52	2,440	80	30	L		X, Y	FO	
				12	613					63.9	1/57								
14ddd	4,225	1/52	219	14	212	48	212	1/4 x 4	8	42		750	108	7	L			S, FO	
													66						
15abb$_2$	4,195	/53	132	12						38.9	7/53	468			L			FO	
16add	4,190			6						36.7	5/42						X	FO	Hydrograph shown.
										30.5	2/63								
22dad	4,210	7/53	596	16	570	180	570	1/4 x 12		40.6	7/53	2,010			L			S, FO	
22ddb	4,210	/46	220	12	220	50	220			32	4/46				L			S	
22ddd	4,214	7/53	515	16	485	120	485			35.7 23.0	7/53 2/63	1,732			L2			S, FO	
23adc	4,224		390	16		37	300			41.1	5/46	320			L			S, FO	
23ndd	4,228	6/58	900	18								399				X		FO	
23cdd	4,220		225	12		37				27	10/45				L		X		
23ddd	4,232									47.3	1/54	787					Y	FO	
										82.2	2/62								
24acb	4,237	/47	110	18	110	44	108			44	5/47				L			S	
24add	4,245	12/51	400	16		85	100	7/16 x 2	12	54.1	3/53	2,000	80	25	L	X	Y	S, FO	
						157	163												
						245	252												
						337	352												
						370	380												
24ddd	4,251	/51		16						58.9	3/53	887					X, Y	FO	
										139.8	2/62								
25aaa	4,250	4/59	745	16	623	164	225	3/8 x 3	12	100	4/59				L2			S	
						225	240		15										
						240	618		12										
27dda	4,215	6/59	512		490	85	488	3/8 x 12	4	58	6/59				L			S	

Table 1.--Records of selected drilled wells in the Willcox basin, Cochise and Graham Counties, Ariz.--Continued

Location	Altitude of land-surface datum (feet above mean sea level)	Date completed	Depth of well (feet)	Diameter of casing (inches)	Depth of casing (feet)	Perforation record				Water level		Yield (gpm)	Drawdown (feet)	Specific capacity (gallons per minute per foot of drawdown)	Well logs	Well cuttings	Chemical analysis in tables 3 or 4	Source of data	Remarks
						Depth (feet)		Size (inches)	Number per foot	Feet	Date								
						From	To												
(D-16-25)28bdd	4,190	8/60	850	20	630	100	625	1/2 x 4	10	72	8/60				L2			S	Open hole from 630 to
																			850 feet.
35aaa	4,230	7/59	500	16	500	100	495	3/8 x 4	8	100	7/59				L2			S, FO	
35bba	4,220	4/47	350	18	220	30	220			18	4/47	1,400	86	16	L			S, FO	
										118.1	2/63								
36aaa	4,245									103.3	1/59	605						FO	
										151.9	2/62								
(D-16-26)4bad	4,290	3/58	500	16	500	200	500	1/4 x 12	3	150	3/58				L2			S	
5dad	4,285									101.9	1/54	1,012					Y	FO	
										215.4	2/63	413							
6dad	4,260	3/58	662	16	494	135	155	1/4	3	106	3/58	1,000			L2		Y	S, FO	
						338	380												
						420	490												
7aaa	4,259		514							73.2	1/54	875					X	FO	
										177.9	2/63								
7ddd	4,264		500							73.0	7/53	448						FO	Hydrograph shown.
										174.1	2/63								
8ada	4,285	6/58	765	16		195	480	1/2 x 5	6	190	6/58				L			S	
8cdd	4,280	6/58	805	16	464	140	144			140	6/58	793			L2	X	Y	FO	
				14	738	165	171												
						181	184												
						212	220												
						260	265												
						276	284												
						317	344												
						390	405												
						448	458												
8daa	4,285	3/53	433	16	408	98	406			90	3/53	1,800	140	13	L			S, FO	Hydrograph shown.
										209.8	2/63								
8ddd	4,290	4/53	458	16		92	455	1/2	4	92	4/53	1,600	140	11	L			S, FO	

Table 1.--Records of selected drilled wells in the Willcox basin, Cochise and Graham Counties, Ariz.—Continued

Location	Altitude of land-surface datum (feet above mean sea level)	Date completed	Depth of well (feet)	Diameter of casing (inches)	Depth of casing (feet)	Perforation record				Water level		Yield (gpm)	Drawdown (feet)	Specific capacity (gallons per minute per foot of drawdown)	Well logs	Well cuttings	Chemical analysis in tables 3 or 4	Source of data	Remarks
						Depth (feet)		Size (inches)	Number per foot	Feet	Date								
						From	To												
(D-16-26)9add	4,315			18						118.2	1/54							FO	
										242.2	2/63								
9daa	4,315	4/53	460	18	460	110	460	3/8 x 12	4	120.7	7/53	2,000	40	50	L			S,FO	
10add	4,343									138.7	1/54	445					Y	FO	Hydrograph shown.
										269.1	2/63								
10ddd	4,345	4/58	615	18	530	250	530	1/4	5	218	4/58	724			L2			S,FO	
11add	4,375	5/58	1,015	20												X		FO	
12add	4,405	12/58	900	16	600	200	600	1/4 x 12	2	220	12/58				L			S	
12cda	4,390	9/58	700	16	500					218	9/58	500	132	4	L			FO	
12dad	4,405	12/58	900	16	700	228	700	1/4 x 12	2	228	12/58				L			S	
13aaa	4,407		440									930				X		FO	
13baa	4,390		700									258				X		FO	
13caa	4,385	11/59	850	16	600	200	600	1/2 x 18	5	180	11/59				L2			S	
14daa	4,375									159.8	1/54							FO	
										303.2	2/63								
15add	4,348									142.3	1/54	1,880						FO	
										272.5	2/63								
15dad	4,350	10/58	821	16						212	10/58					X		FO	
15dcb	4,348		800							220	11/58					X		FO	
16add	4,320									192.8	1/59							FO	
										250.8	2/63								
17bdd	4,280									86.6	1/54							FO	
										195.9	2/63								
17ddd	4,298									100.6	1/54							FO	
										210.6	2/63								
19add	4,269									90.4	10/53	890						FO	
										183.2	2/63								
19bac	4,250	3/59	650	16	450	160	450	1/4	8	160	3/58				L			S	
21ad	4,318		800													X		FO	
22baa	4,330	/58	526	20	481	198	480	9/16	8	199.4	4/58				L2			FO	

Table 1.--Records of selected drilled wells in the Willcox basin, Cochise and Graham Counties, Ariz.--Continued

Location	Altitude of land-surface datum (feet above mean sea level)	Date completed	Depth of well (feet)	Diameter of casing (inches)	Depth of casing (feet)	Perforation record				Water level		Yield (gpm)	Drawdown (feet)	Specific capacity (gallons per minute per foot of drawdown)	Well logs	Well cuttings	Chemical analysis in tables 3 or 4	Source of data	Remarks
						Depth (feet)		Size (inches)	Number per foot	Feet	Date								
						From	To												
(D-16-26)23aaa	4,369									185.5	1/57							FO	
										275.6	2/63								
23dda	4,368	10/53	1,010	18	500	160	490		3	156.7	10/53	3,200	54	59	L	X		FO	
										259.4	2/63								
24aaa	4,404									229.6	1/59	517						FO	
										265.9	2/63								
27aaa	4,336									140.3	7/53	670					X	FO	
										237.2	2/63								
27daa	4,335	4/53	540	18	385	40	385	1/2 x 4	10	24	4/53	3,000	200	15	L2		X	S, FO	
28aaa2	4,314									117.1	1/54	550						FO	
										233.3	2/63								
28caa	4,295	11/57	613	16	613	180	610	1/2	6	154	11/57				L2			S	
29aaa	4,291	/53		18						94.9	10/53	770					X, Y	FO	
										138.5	1/59								
29bda	4,280	3/59	700	16	380	160	380	1/4	8	160	3/59				L2			S	
29daa	4,288			18						85.3	1/54							FO	
										176.3	1/62								
30aaa	4,268	/53	650	16	350					67.6	3/53	1,036						FO	
										174.1	2/63								
30daa	4,265									71.0	1/54	962						FO	
31abb	4,260	8/46	307	14		55	307			48	8/46				L			S, FO	
32aaa	4,285	3/60	615	16	320	175	320	1/2 x 6	5	175	3/60				L2			S	
32daa	4,285									124.2	1/59	741						FO	
										169.7	2/63								
34aaa	4,328	3/58	825	16	345	165	345	1/2	5	175	3/58	1,200			L2	X	Y	S, FO	
34daa	4,325	4/58	1,305	16	393	138	207	1/4 x 6	12	138	4/58	560			L	X		S, FO	
										175.2	2/63								
(D-16-27)8caa	4,460									216.3	8/51				I			FO	
										222.8	12/55								

Table 1.--Records of selected drilled wells in the Willcox basin, Cochise and Graham Counties, Ariz.—Continued

Location	Altitude of land-surface datum (feet above mean sea level)	Date completed	Depth of well (feet)	Diameter of casing (inches)	Depth of casing (feet)	Perforation record				Water level		Yield (gpm)	Drawdown (feet)	Specific capacity (gallons per minute per foot of drawdown)	Well logs	Well cuttings	Chemical analysis in tables 3 or 4	Source of data	Remarks
						Depth (feet)		Size (inches)	Number per foot	Feet	Date								
						From	To												
(D-16-27)18baa	4,420	3/59	880	18	200	200	880	1/4 x 12	5	214	3/59				L			S	
				16	700														
18caa	4,420	8/59	750	18	100	230	600	1/2 x 12	5	235	8/59				L2			S	
				16	600														
20caa	4,445									214.2	3/55							FO	
										244.0	1/61								
27aaa	4,537			6						192.3	9/51							FO	
										198.4	12/57								
28aad	4,555									246.4	9/51							FO	
										254.2	12/57								
35aa	5,360	/58	115	6						49	2/58	7				X		FO	
(D-16-28)4bbc	4,716			8						248.2	3/49							FO	
										326.2	2/62								
7cad	4,615		295	6						253.5	2/46						X	FO	
										256.6	9/57								
24ac	4,912	3/49	362	6						317.3	3/50							FO	
										323.6	2/60								
(D-16-29)30bbd	4,950		70	8						15.0	3/49						X	FO	
										39.7	1/57								
(D-17-24)1dac	4,245	8/50	128	12	128	68	126			68.5	7/53	697			L2			S, FO	Hydrograph shown.
										77.7	2/63								
3abd	4,310									138.6	1/59							FO	
										156.9	2/63								
9cdd	4,450									273.8	9/51							FO	
										278.9	1/57								
11acc	4,330	4/60	423	16	417	150	411	3/16 x 12		146	4/60				L2			S	
11ccc	4,375	5/60	480	16	198	180	456	1/4	6	184	5/60	675			L			S, FO	
				10	405														
				8	456														
13aac	4,285	4/52	272	16						98	4/52	475			L			S, FO	

Table 1.--Records of selected drilled wells in the Willcox basin, Cochise and Graham Counties, Ariz.--Continued

Location	Altitude of land-surface datum (feet above mean sea level)	Date completed	Depth of well (feet)	Diameter of casing (inches)	Depth of casing (feet)	Perforation record				Water level		Yield (gpm)	Drawdown (feet)	Specific capacity (gallons per minute per foot of drawdown)	Well logs	Well cuttings	Chemical analysis in tables 3 or 4	Source of data	Remarks
						Depth (feet)		Size (inches)	Number per foot	Feet	Date								
						From	To												
(D-17-24)13abd	4,290									98.5	1/54							FO	Hydrograph shown.
										117.7	2/63								
23cbb	4,450									261.4	3/49							FO	
										269.9	1/59								
27aaa2	4,490	4/50	101	8	101	68	98			68	4/50				L2			S	
(D-17-25)1cad	4,240		335	16	230	45	230			40	12/48	700	55	13	L			S, FO	
										77.6	12/57								
2aad	4,232		208	16	175	40	172			34	4/48	900	74	12	L			S, FO	Hydrograph shown.
										96.6	1/60								
5dcc2	4,220	8/51	475	18		60	70	1/2 x 4	18	33	8/51	1,200	115	10	L			S, FO	
						125	135			43.4	2/63								
						340	345												
5ddd2	4,205	6/47	385	18	385	360	385			20	6/47	1,400	80	18	L2			S, FO	Hydrograph shown.
										26.8	2/62								
7bdb	4,240	/60	490													X		FO	
8bcc	4,225									44.0	1/54	657						FO	
										66.9	2/63								
8dbb	4,230	3/53	414	14	400	45	370	5/8 x 4	8	45	3/53	1,000	158	6	L			S, FO	
										55.3	7/53								
9bcd	4,222	/46	130	12	130	55	130			36	10/46				L		Y	S	
9cbc	4,225	10/58	1,172	16	674	200	630		8	39	10/58	1,030			L2			S, FO	
				14	793	640	790		8										
9ccc	4,235	3/53	358	16		56	350	3/8	8	53	3/53	770			L		X	S, FO	
9cdc	4,250									56.4	1/54	786						FO	
										62.8	2/63								
9dcc	4,220	10/52	269	16		57	65	3/8	8	55	10/52	750	150	5	L			S, FO	Deepened in 1953 to
						175	186												400 feet.
						240	265												
17acd	4,250	3/60	600	16	586	200	586	3/8 x 4	6	70	3/60				L			S	

Table 1.--Records of selected drilled wells in the Willcox basin, Cochise and Graham Counties, Ariz.--Continued

Location	Altitude of land-surface datum (feet above mean sea level)	Date completed	Depth of well (feet)	Diameter of casing (inches)	Depth of casing (feet)	Perforation record				Water level		Yield (gpm)	Drawdown (feet)	Specific capacity (gallons per minute per foot of drawdown)	Well logs	Well cuttings	Chemical analysis in tables 3 or 4	Source of data	Remarks
						Depth (feet)		Size (inches)	Number per foot	Feet	Date								
						From	To												
(D-17-25)18dbb	4,280	4/53	550	18	460	330	455	1/2	16	88	4/53	2,800	210	13	L2			S, FO	
										92.7	7/53								
19dcc	4,349		190							161.3	2/46						X	S, FO	
										172.8	4/56								
20cbc	4,320	2/60	592	16	592	275	592	3/8 x 4	6	152	2/60				L2			S	
(D-17-26)1ddd	4,350	7/59	520	16	478	180	470	1/2 x 4	8	132	7/59				L2	X		S, FO	Well 2.
3aaa	4,320	/58	500	16						143	10/58	940	30	31		X		S	
												1,160	47	25					
												1,500	77	19					
3dda	4,315	1/58	600	16	254	54	254	1/4	6	130	1/58				L2			S, FO	
4aaa	4,299	12/59	797	16	590	160	497	3/8 x 4	9	145	12/59				L2			S	
4dad	4,300	1/59	350	16	260	130	258	3/8 x 12	4	127	1/59				L			S	
4dcb	4,295									130.6	1/59							FO	
										168.4	2/63								
6bad	4,260	1/58	580	16						98.2	1/59							FO	
										146.8	2/63								
10aaa	4,315									122.6	1/59						Y	FO	
										149.8	2/63								
10daa	4,315	1/58	650	16	334					102.5	1/58	288			L		Y	FO	Hit water at 130 feet.
12baa	4,340	10/52	395	18	300	115	286	5/8	16	107	/52	2,000	45	44	L			S, FO	Hydrograph shown.
										152.0	2/63								
13bdd	4,280	11/52	503	18	377	120	291	1/2	16	98	11/52	1,800	27	67	L2			S, FO	
										140.9	2/63								
14add	4,325	7/59	355	16	308	71	308	3/16 x 12	3	117	7/59				L			S	Bell 6.
15aaa	4,310	10/58	575	18	290	160	180	1/2 x 3	11	102	10/58	300			L	X		S, FO	
						200	220												
						250	280												
15adn	4,310	6/59	470	16	260	105	260	1/2		105	6/59							S	

Table 1.--Records of selected drilled wells in the Willcox basin, Cochise and Graham Counties, Ariz.—Continued

Location	Altitude of land-surface datum (feet above mean sea level)	Date completed	Depth of well (feet)	Diameter of casing (inches)	Depth of casing (feet)	Perforation record				Water level		Yield (gpm)	Drawdown (feet)	Specific capacity (gallons per minute per foot of drawdown)	Well logs	Well cuttings	Chemical analysis in tables 3 or 4	Source of data	Remarks
						Depth (feet)		Size (inches)	Number per foot	Feet	Date								
						From	To												
(D-17-26) 15ddd	4,310	9/52	360	18	268	100	255	1/2	16	76	9/52	1,000	130	8	L2			S, FO	
										105.4	2/63								
23cdd	4,315			20						73.1	1/54							FO	
										97.9	2/63								
24aaa	4,350	6/59	380	16	355	63	355	3/16 x 1	8	132	6/59				L			S	
25daa	4,350	7/58	415	16	415	80	244	1/4 x 12	5	89	7/58				L	X		FO	
26ccc	4,315		85	4						72.1	3/46							FO	
										Dry	1/61								
(D-17-27) 7cdd	4,365	5/60	300	16	300					220	5/60				L2			S	
18dbb	4,365	6/60	300	16	250	200	250	3/8 x 12	5	220	6/60				L			S	
31ddd	4,381	7/58	555	16	555	108	555	5/8 x 12	3	108	7/58				L2		Y	S	
(D-17-28) 14ccb	4,920			6						8.8	5/49							FO	
										13.6	12/57								
(D-18-25) 12dad	4,320		209	6						80	8/51				L2			S, FO	
(D-18-26) 10bcc	4,295	8/61	215	12	143	110	143	3/16 x 1	3	104	8/61				L2			S, FO	
27dad	4,290	10/52	170	16	132	96	132	5/16	10	89	10/52				L2			S, FO	
32baa	4,270	12/51	135	14	119	0	119	5/16 x12	10	93	12/59				L2			S, FO	
35bca	4,290	12/52	285	18	162	85	162	1/2	16	84	12/52				L2			S, FO	
(D-18-27) 8bc	4,390		350	10	316	155	315	3/16 x 12	2	126		430	152	3	L2			S	
8ccc	4,390	10/60	331	10	331	160	331	3/16 x 12	2	132	10/60	220	100	2	L		Y	S	
8dcc	4,395	11/60	350	10	316	155	315	3/16 x 12	2	126	11/60	110	101	1					
9caa	4,440	11/60	263	10	263	155	159	3/16 x 12	2	157	11/60	60	63	1	L2			S	

Table 2.--Selected drillers' logs of wells in the Willcox basin, Cochise and Graham Counties, Ariz.

	Thickness (feet)	Depth (feet)
(D-9-21)27daa		
Fill and broken rock with considerable silt and clay	80	80
Hard blue malpais, well crevassed above 400 feet and solid from 400 to 600 feet. Small flow of water at 235 feet. Only water	520	600
Soft red clay	5	605
Volcanic rock, below 600 feet rock seemed more shattered than above 800 feet	600	1,205
TOTAL DEPTH		1,205
(D-9-23)32abb		
Sandy, set surface casing	8	8
Red clay, some small pebbles	22	30
Decomposed granite, some pieces of hard granite 2 to 6 inches	90	120
Red clay	18	138
Decomposed granite, some hard chunks and some quartz boulders	62	200
Decomposed granite, some hard chunks and some quartz boulders	50	250
Sand with enough clay to cement it together	12	262
Decomposed granite, some hard spots	38	300
Decomposed granite, some hard spots	124	424
Red sandy clay	4	428
Water sand	4	432
Decomposed granite	13	445
Partially decomposed granite, fairly hard	7	452
TOTAL DEPTH		452
(D-10-21)14cda		
Clay and rock	245	245
Boulders	20	265
Soft rock	80	345
Red clay, some rock	45	390
Soft concrete rock	80	470
Broken rock, some water	20	490
Hard black rock	25	515
TOTAL DEPTH		515
(D-10-23)35acb		
Sandy clay	5	5
Red clay	10	15
Sandy clay, hard and soft streaks alternating about 5 or 6 feet thick, very abrasive	220	235
Red clay	5	240
Water sand	6	246
Sandy clay	4	250
TOTAL DEPTH		250
(D-11-23)6baa		
Soil and clay	40	40
Water and gravel	20	60
Red clay	100	160
Water gravel	20	180
Red clay	60	240
Water gravel	20	260
Red mud	30	290
Sand and gravel	10	300
Red mud	30	330
Water gravel	90	420
Red clay with some water	180	600
Quicksand, 160 feet to water	30	630
Red rock	20	650
Cavey sand	15	665
Red rock	10	675
Cavey sand	15	690
Red rock	320	1,010
Yellow clay	80	1,090
Red rock	10	1,100
Yellow clay	20	1,120
Red rock	60	1,180
Yellow clay	20	1,200
Red rock	85	1,285
Brown sand	50	1,335
Gray sandy shale and clay	45	1,380
Red sand	40	1,420
Hard red rock	50	1,470
Sand, yellow clay	20	1,490
(D-11-23)6baa--Continued		
Gray shale	20	1,510
Brown sandy shale	100	1,610
Brown sand	375	1,985
TOTAL DEPTH		1,985
(D-11-23)20adb		
Sandy soil	4	4
Brown clay	6	10
Brown sand	10	20
Sand and boulders	18	38
Yellow clay	8	46
Yellow sand and boulders	12	58
Yellow sand	8	66
Yellow clay	32	98
Yellow sand gravel	8	106
Yellow clay	30	136
Water sand and gravel	8	144
Yellow clay	4	148
Sand gravel and boulders	8	156
Yellow clay and boulders	8	164
Brown water sand and gravel	10	174
Red clay	6	180
Sand boulders	7	187
Brown clay	3	190
Sand gravel	4	194
Red clay	12	206
Water sand and gravel	10	216
Red clay	23	239
Sand and gravel	4	243
Red clay	3	246
TOTAL DEPTH		246
(D-11-24)20bcc		
Sandy clay	6	6
Red clay	6	12
Red sandy clay	28	40
Red clay	40	80
Red clay, some sand and rocks	115	195
Sandy clay, some water	5	200
Water sand	5	205
Red clay	5	210
Soft sandy clay	30	240
Fine sand	5	245
Sandy clay	15	260
Water sand	5	265
Sandy clay	10	275
Fine sand	5	280
Mud and sand	20	300
Mud and quicksand	20	320
Sand	10	330
Coarse sand	5	335
Fine sand	10	345
TOTAL DEPTH		345
(D-12-23)2bbb		
Sandy soil	4	4
Clay	76	80
Dry sand	6	86
Clay	24	110
Sand and gravel, water	10	120
Clay	8	128
Sand	6	134
Clay	6	140
Sand and gravel	7	147
Clay	5	152
Sand and gravel	6	158
Clay	3	161
Sand and gravel	5	166
Clay	4	170
Sand and gravel	7	177
Clay	3	180
Sand	2	182
Clay	64	246
Sand	4	250
Clay	17	267
Gravel	3	270
Clay	33	303
Fine sand	10	313
Clay	23	336
TOTAL DEPTH		336

Table 2.--Selected drillers' logs of wells in the Willcox basin, Cochise and Graham Counties, Ariz.—Continued

	Thickness (feet)	Depth (feet)
(D-12-23)12ccb		
Tan sandy clay	95	95
Sand	2	97
Sandy clay	38	135
Good sand	4	139
Red sandy clay	97	236
Good sand	10	246
Red clay	14	260
Sand	2	262
Light red clay	50	312
Sand	5	317
Sticky red clay	13	330
Sand	2	332
Clay	36	368
Sand	3	371
Clay	2	373
Good sand	5	378
Clay	4	382
Sand	3	385
Sticky clay	7	392
Sand	2	394
Clay	33	427
Sand	3	430
Clay	10	440
Sand	5	445
Sand and sandy clay	40	485
Red clay	180	665
TOTAL DEPTH		665
(D-12-23)13dcc		
Soil	2	2
Clay	16	18
Sandy	5	23
Clay	69	92
Sand	4	96
Clay	23	119
Sand (water)	4	123
Clay	22	145
Sand	7	152
Clay	11	163
Sand	6	169
Clay	28	197
Sand	6	203
Clay	57	260
Sand	3	263
Clay	37	300
Sand	5	305
Clay	17	322
Sand	4	326
Clay	8	334
Sand	4	338
Clay	13	351
Sand	4	355
Clay	15	370
Sand	6	376
Clay	8	384
TOTAL DEPTH		384
(D-12-23)14cbb		
Top soil	1	1
Red clay	19	20
Hardpan	5	25
Sandy clay	17	42
Clay	43	85
Sand, water	3	88
Clay	44	132
Sandy clay	5	137
Clay	39	176
Sandy clay	4	180
Sand and gravel	12	192
Clay	34	226
Sand and gravel	8	234
Clay	23	257
Sand	2	259
Clay	7	266
TOTAL DEPTH		266
(D-12-23)25aab		
Top soil	3	3
Caliche	9	12
Sand and gravel	6	18
(D-12-23)25aab—Continued		
Sandy clay	9	27
Sand	2	29
Sandy clay	59	88
Sand	13	101
Sandy clay	15	116
Sand and gravel, water	15	131
Sandy clay	16	147
Sandy, water	45	192
Sandy clay	33	225
Sand and gravel, water	9	234
Clay	6	240
Sand and gravel, water	9	249
Sandy clay	37	286
Sand and gravel, water	16	302
Clay	116	418
Sand and gravel, water	7	425
Clay	30	455
TOTAL DEPTH		455
(D-12-24)10cbc		
Red rock, dirt, clay	20	20
Red rock, little gravel	80	100
Clay	12	112
Sand	3	115
Clay	81	196
Sand, gravel	5	201
Clay	28	229
Sand	3	232
Clay	18	250
TOTAL DEPTH		250
(D-12-24)13abb		
Sand, gravel, and boulders	235	235
Water sand	15	250
Dry sand and gravel (hard)	60	310
Gravel and water sand possible, not sure	25	335
Hard sandy lime	30	365
Hard sandy lime and quartz	85	450
TOTAL DEPTH		450
(D-12-24)17aaa		
Sand	655	655
Various strata sand	245	900
Gravel	35	935
Moderate conglomerate	290	1,225
Gravel	125	1,350
TOTAL DEPTH		1,350
(D-12-24)20bbb$_3$		
Top soil	2	2
Caliche	8	10
Sand and gravel	4	14
Clay	22	36
Sand and gravel	7	43
Clay	11	54
Sand and gravel	7	61
Clay	13	74
Sand and gravel, dry	13	87
Clay	9	96
Sand and gravel, dry	8	104
Clay	2	106
Sand and gravel, dry	6	112
Clay	1	113
Sand and gravel, dry	6	119
Clay	9	128
Sand and gravel, dry	4	132
Clay	4	136
Sand and gravel, dry	5	141
Clay	9	150
Sand and gravel, wet	1	151
Clay	25	176
Sand and gravel	5	181
Clay	8	189
Sand and gravel	8	197
Clay	4	201
Sand and gravel	5	206
Clay	6	212
Sand and gravel	2	214

Table 2.--Selected drillers' logs of wells in the Willcox basin, Cochise and Graham Counties, Ariz.—Continued

	Thickness (feet)	Depth (feet)
(D-12-24)20bbb$_3$—Continued		
Clay	4	218
Sand and gravel	7	225
Clay	10	235
Sand and gravel	4	239
Clay	87	326
Cemented gravel	4	330
Clay with sand streak	1	331
Sand and gravel	3	334
Clay with gravel	38	372
Sand and gravel	3	375
Clay	17	392
Sand and gravel	7	399
Clay	5	404
Sand and gravel	4	408
Clay	49	457
Sand and gravel	8	465
Clay	2	467
Sand and gravel	2	469
Clay	7	476
Sand and gravel	7	483
Clay	3	486
Sand and gravel	3	489
Clay	15	504
Clay with streaks of sand and gravel	13	517
Clay	18	535
Sand and gravel	2	537
Clay	14	551
Sand and gravel	4	555
Clay	13	568
Sand and gravel	8	576
Clay with streaks of sand and gravel	15	591
Shale	10	601
Clay and sand	3	604
Shale	31	635
Clay	25	660
TOTAL DEPTH		660
(D-12-24)21dba		
Black mud	5	5
Red clay	19	24
Sand	18	42
Red clay	18	60
White clay	5	65
Red clay	21	86
Sand (water)	12	98
White clay	64	162
Sand (water)	4	166
Red clay	4	170
Conglomerate, sand, and clay	8	178
Red clay	24	202
Sand	4	206
White clay	52	258
Red clay	24	282
White clay	20	302
Sand	24	326
Red clay	4	330
White clay	15	345
Red clay	109	454
Blue clay	4	458
White clay	4	462
Red clay	50	512
TOTAL DEPTH		512
(D-12-24)24ccc		
Red rock, dirt, clay	20	20
Red clay, little gravel	80	100
Clay, sand, little gravel	30	130
Sand, gravel—water	10	140
Clay, gravel	10	150
Sand, gravel	5	155
Clay, gravel	30	185
Red rock, little clay	35	220
(?)—water	10	230
Clay, sand gravel	24	254
TOTAL DEPTH		254
(D-12-24)31cba		
Black loam soil	6	6
Red clay	119	125
Gravel and sand	6	131
(D-12-24)31cba—Continued		
Red sandy clay	229	360
Gravel and sand	3	363
Red sandy clay	132	495
Sand and gravel	5	500
Red clay	4	504
TOTAL DEPTH		504
(D-12-24)33dbb		
No record	15	15
Sand	3	18
Clay	14	32
Sand	3	35
Clay	24	59
Sand	6	65
Clay	30	95
Sand (struck water at 95 feet)	14	109
Clay	36	145
Sand	24	169
Clay	21	190
Sand	13	203
Clay	5	208
Lime	2	210
Clay	28	238
Sand and clay	32	270
Clay	44	314
Sand	15	329
Clay	21	350
Sand	8	358
Clay	18	376
Sand	19	395
Clay	5	400
TOTAL DEPTH		400
(D-12-24)34ada		
Sandy clay	18	18
White clay	30	48
Red clay	15	63
Heavy red clay and gravel	12	75
Sand and clay mixture (little water)	12	87
Heavy red clay	6	93
Sand and gravel and water	7	100
Clay	3	103
Fine sand and clay	5	108
TOTAL DEPTH		108
(D-12-25)32ccd		
Clay-gravel	25	25
Sand-gravel	2	27
Clay-gravel	46	73
Gravel conglomerate	45	118
Conglomerate	2	120
Sand	4	124
Conglomerate	10	134
Gravel (first water)	4	138
Conglomerate	6	144
Sand	6	150
Hard conglomerate	4	154
Sand and gravel	4	158
Conglomerate	10	168
Sand and gravel (water)	4	172
Hard conglomerate	4	176
Sand and gravel	9	185
Blue shale	19	204
Sand and gravel	13	217
TOTAL DEPTH		217
(D-13-24)1baa		
Sandy loam	3	3
Buck shot clay	4	7
Red clay	21	28
White clay	28	56
Sand and water	1	57
White clay	53	110
Blue clay	56	166
Sand clay	14	180
Yellow clay sand gravel	30	210
White clay	60	270
Sand gravel red clay	30	300

Table 2.--Selected drillers' logs of wells in the Willcox basin, Cochise and Graham Counties, Ariz.--Continued

	Thickness (feet)	Depth (feet)
(D-13-24)1baa--Continued		
Red rock	10	310
TOTAL DEPTH		310
(D-13-24)2baa$_3$		
Soil	5	5
Gravel	5	10
Talc	50	60
Shale	30	90
Sand (water)	45	135
Sandy shale	5	140
Brown shale	7	147
Sand	21	168
White chalk	34	202
Brown shale	36	238
White chalk	10	248
Brown shale	26	274
Sandy shale	6	280
Sand	8	288
Sand (hard)	2	290
Sandy shale	15	305
Hard lime shell or shale	7	312
Blue shale	13	325
Brown shale and gravel	20	345
Blue shale	14	359
Lime shell	2	361
Blue shale	19	380
Hard lime shale	10	390
Lime shell and shale	30	420
Conglomerate	105	525
Conglomerate (first water vein)	70	595
Shale and gravel	18	613
Shale	37	650
Gravel wash	5	655
Wash with shale breaks	135	790
Sand and gravel	46	836
Solid rock	7	843
TOTAL DEPTH		843
(D-13-24)3cba		
Top soil	4	4
Clay	56	60
Sand	25	85
Clay	5	90
Sand, water	21	111
Clay	4	115
Sand	5	120
Clay	11	131
Sand	4	135
Clay	8	143
Sand	5	148
Clay	32	180
Sand	6	186
Clay	19	205
Sand	15	220
Clay	60	280
Sand	3	283
Clay	23	306
Sand	6	312
Clay	30	342
Sand	5	347
Clay	3	350
TOTAL DEPTH		350
(D-13-24)8dbb		
Top soil	3	3
Caliche	7	10
Clay	25	35
Sandy clay	8	43
Clay	28	71
Sand, water	7	78
Sandy clay	12	90
Sand	10	100
Sandy clay	40	140
Clay	10	150
Sand	11	161
Clay	11	172
Sand	5	177
Clay	16	193
Sand	5	198
Clay	8	206
(D-13-24)8dbb--Continued		
Sand	7	213
Clay	47	260
Sand	11	271
Clay	54	325
TOTAL DEPTH		325
(D-13-24)10acb		
Top soil	5	5
Clay	65	70
Sand, dry	10	80
Clay	10	90
Sand	3	93
Clay	9	102
Sand, water	3	105
Clay	3	108
Sand, water	30	138
Clay	3	141
Water gravel	19	160
Rock	2	162
Clay	1	163
Sand	6	169
Clay	31	200
Sand	3	203
Clay	12	215
Sand	5	220
Clay	40	260
Sand	2	262
Clay	56	318
Blue sand	2	320
Hard sand rock	20	340
Clay	20	360
Sandy	20	380
Blue clay	24	404
TOTAL DEPTH		404
(D-13-24)11adb		
Top soil	7	7
Caliche	8	15
Brown clay	15	30
Caliche	15	45
Sand	15	60
Water sand	7	67
Clay	10	77
Sandy clay	3	80
Clay	4	84
Sand	36	120
Clay	3	123
Sand	27	150
Blue clay	5	155
Sand	15	170
Sandy clay	68	238
Sand	7	245
Clay	1	246
TOTAL DEPTH		246
(D-13-24)12dab		
Top soil	2	2
White caliche	49	51
Water sand	4	55
Clay	16	71
Sand, water	9	80
Sandy clay	10	90
Fine sand	8	98
Sandy clay	27	125
Clay	25	150
Sand	5	155
Clay	21	176
Sand	6	182
Sandy clay	10	192
Clay	8	200
TOTAL DEPTH		200
(D-13-24)14aab		
Top soil	2	2
Clay	10	12
Sand dry	8	20
Clay	40	60
Sand	5	65

Table 2.--Selected drillers' logs of wells in the Willcox basin, Cochise and Graham Counties, Ariz. — Continued

	Thickness (feet)	Depth (feet)
(D-13-24)14aab—Continued		
Clay	45	110
Water sand	3	113
Clay	17	130
Water sand	4	134
Clay	21	155
Water sand	8	163
Clay	67	230
Sand	2	232
Clay	28	260
Sand	3	263
Clay	17	280
Sand	1	281
Clay	22	303
Sand	5	308
Clay	12	320
Sand	2	322
Clay	58	380
TOTAL DEPTH		380
(D-13-24)16bbb		
Top soil	3	3
Caliche	2	5
Yellow clay	13	18
Red clay	17	35
Sand and gravel (water)	5	40
Sandy clay	40	80
Clay	3	83
Sandy clay	35	118
Sand (water)	3	121
Packed sand	13	134
Sticky yellow clay	6	140
Sand gravel and clay (water)	4	144
Fine gravel and sand (water)	6	150
Yellow clay	2	152
Sandy clay (water)	15	167
Sticky blue clay	13	180
Brown clay with sand	8	188
Sticky blue clay	24	212
Brown sandy clay	6	218
Sand and gravel (water)	4	222
Sandy clay	21	243
Sticky yellow clay	18	261
Sand (water)	4	265
Gray shale	2	267
Brown sandy clay	5	272
Sand and gravel (water)	7	279
Blue sandy clay	23	302
Fine gravel (water)	8	310
Blue sandy clay	6	316
Large gravel (water)	3	319
Fine sand and clay (water)	1	320
Gravel (water)	4	324
Blue sandy clay	8	332
Sand (water)	1	333
Blue sandy clay. Oil and gas bubble and oil showing on slush pit	7	340
Sand with little clay (water)	3	343
Dark brown sandy clay	7	350
Fine sandy gravel (water)	11	361
Blue sandy shale	10	371
Blue shale, hard	21	392
Gray shale	6	398
Light gray shale	5	403
Gray shale	9	412
Blue shale, sticky	10	422
Gray shale	20	442
Blue shale, sticky	18	460
Gray sandstone, hard	6	466
Gray shale	14	480
Blue clay	50	530
Brown clay	65	595
Hard gray sand	3	598
Brown clay	138	736
Gypsum	3	739
Brown clay	156	895
Brown clay and gypsum	23	918
Gray clay	2	920
Brown clay and gypsum	2	922
Dark brown clay	228	1,150
Brown clay and crystallized gypsum	4	1,154
Brown clay	126	1,280
Sandy brown clay	10	1,290
Brown clay	20	1,310
(D-13-24)16bbb—Continued		
Dark brown clay	46	1,356
TOTAL DEPTH		1,356
(D-13-24)17ccb		
Top soil	3	3
Hardpan, clay and sand	13	16
Sand with cemented streaks	104	120
Sand with silty streaks loose	290	410
Blue shale	95	505
TOTAL DEPTH		505
(D-13-24)18aaa		
Top soil	2	2
Hard clay and small gravel	28	30
Sand and some clay	110	140
Large gravel, some clay	210	350
Gravel and clay	55	405
Clay, some gravel	115	520
Blue shale, some gravel	10	530
Blue shale	470	1,000
TOTAL DEPTH		1,000
(D-13-24)18dcb		
Clay	90	90
Sand	25	115
Sandy clay	40	155
Clay, sand streaks	55	210
Clay	40	250
Sand	15	265
Clay	15	280
Clay, sticky	30	310
Clay	10	320
Sand	7	327
Clay	43	370
Gravel	5	375
Clay	32	407
Clay and gravel	33	440
Sand and gravel	26	466
Conglomerate	9	475
TOTAL DEPTH		475
(D-13-24)21abb		
Top soil	2	2
Red clay	43	45
Sandy clay	13	58
Sand, water	4	62
Sandy clay	43	105
Sand	10	115
Sticky clay	5	120
Sandy clay	36	156
Clay	4	160
TOTAL DEPTH		160
(D-13-24)23bbb$_2$		
Clay and sand (no water)	43	43
Sand (some water)	2	45
Clay	20	65
Gravel (water)	9	74
Clay	7	81
Sand (water)	11	92
Clay	?	92
TOTAL DEPTH		92
(D-13-24)26bbc		
Sandy loam	7	7
Gray clay	8	15
Gravel	10	25
Red sand	8	33
Yellow clay	15	48
Sand, water	12	60
Sand, clay	18	78
Gravel, water	24	102
Gray clay	6	108
TOTAL DEPTH		108

Table 2.--Selected drillers' logs of wells in the Willcox basin, Cochise and Graham Counties, Ariz.--Continued

	Thickness (feet)	Depth (feet)
(D-13-24)28bbb		
Soil	3	3
Clay and gravel, hard	9	12
Coarse sand	128	140
Sand with clay binder	230	370
Shale with some sand	30	400
Blue shale	100	500
TOTAL DEPTH		500
(D-13-24)33bab		
Top soil	2	2
Clay and sand	44	46
Water sand	3	49
Clay	19	68
Sand, water	3	71
Clay	12	83
Sand, water	2	85
Clay	15	100
Sand, water	3	103
Clay	35	138
Sand, water	2	140
Sandy clay	5	145
Blue clay	10	155
TOTAL DEPTH		155
(D-13-24)35bbb		
Sandy clay	100	100
Sand	3	103
Blue mud	27	130
Black mud	100	230
Gray mud	120	350
Green clay	45	395
Sand	10	405
Soft lime among clay	352	757
TOTAL DEPTH		757
(D-13-25)27daa		
Top soil	12	12
Blow sand	18	30
Red clay	25	55
First water sand	5	60
Clay and gravel	35	95
Sand and gravel (second water)	35	130
White conglomerate	75	205
Soft red clay	20	225
Hard red clay and rock	40	265
Clay and gravel	25	290
Blow sand mixed with clay	68	358
TOTAL DEPTH		358
(D-14-25)9dd		
Yellow clay and sand	55	55
Salt water and water sand	13	68
Yellow clay	17	85
Water sand	5	90
Blue clay	260	350
Sticky shale	100	450
Lime shell	4	454
Sticky shale	31	485
Conglomerate	25	510
Yellow shale	5	515
Lime shell	4	519
Red bed and gravel	41	560
Sandy lime	8	568
Red mud	8	576
Lime shell	4	580
Red bed	33	613
Sandy shale	5	618
Lime shell	3	621
Sandy shale	9	630
Hard sand	5	635
Red bed and gravel	10	645
Conglomerate	100	745
Fresh water sand	15	760
Cement gravel	100	860
Red bed	10	870
Cement gravel	26	896
Red bed	10	906
Sandy gravel	10	916
(D-14-25)9dd--Continued		
Conglomerate	109	1,025
Red chalk	37	1,062
Sand and gravel	53	1,115
Water sand	10	1,125
Lime shell	5	1,130
Sandstone	15	1,145
Conglomerate	55	1,200
Yellow clay	10	1,210
Sandstone	10	1,220
Sandy lime	11	1,231
Sandstone	7	1,238
Conglomerate	35	1,273
Sandstone	9	1,282
Sandy lime	8	1,290
Sandstone	5	1,295
Water sand	15	1,310
Conglomerate	25	1,335
Yellow clay and gravel	5	1,340
Lime shell	10	1,350
Yellow clay and gravel	10	1,360
Red sandstone and clay	30	1,390
Hard coarse sand	20	1,410
Conglomerate	35	1,445
Quicksand and gravel, flowing hot water	15	1,460
Brown sand rock	15	1,475
Yellow clay and gravel	45	1,520
Hard sharp sandstone	10	1,530
Yellow clay and gravel	30	1,560
Hard brown sand	15	1,575
Yellow conglomerate	55	1,630
Pink sand	15	1,645
Yellow clay and gravel	5	1,650
Hard red sand	10	1,660
Yellow clay and gravel	5	1,665
Pink sandstone	15	1,680
Red sand rock	105	1,785
Brown shale and sand	25	1,810
Red sand	20	1,830
Blue and brown shale	10	1,840
Blood-red sandstone	45	1,885
Red water sand	20	1,905
Brown sand	105	2,010
Yellow sand	55	2,065
Red sand	5	2,070
Brown sandstone	100	2,170
Water seepage	3	2,173
Brown sandstone	62	2,235
Sand, gravel, and water	15	2,250
Red and brown sandstone	50	2,300
Sand and shale	40	2,340
Red sand and gravel; showing of oil	20	2,360
TOTAL DEPTH		2,360
(D-14-25)23ddd		
Soil	10	10
Blue shale	26	36
Running sand	19	55
Blue sandy shale	51	106
Red sandy shale	4	110
Blue shale showing	298	408
Lime shell, small streaks of gravel	2	410
Bad caving blue shale	48	458
TOTAL DEPTH		458
(D-14-25)27		
Yellow clay, sand	55	55
Salt water, sand	13	68
Blue clay	282	350
Sticky shale	135	485
Conglomerate	130	615
Sandy shale	30	645
Conglomerate	100	745
Fresh water sand	15	760
Cement, gravel	100	860
Red bed	59	919
Conglomerate	106	1,025
Sand and gravel	90	1,115
Conglomerate	85	1,200
Sandy lime	38	1,238
Conglomerate	72	1,310
Yellow clay, gravel	50	1,360

Table 2.--Selected drillers' logs of wells in the Willcox basin, Cochise and Graham Counties, Ariz. —Continued

	Thickness (feet)	Depth (feet)
(D-14-25)27—Continued		
Red sandstone	30	1,390
Hard coarse sand	20	1,410
Conglomerate	35	1,445
Quicksand, gravel, large flow of hot water	15	1,460
Red water sand	445	1,905
Bottom of well, no water below 1,905 feet (rock?)	455	2,360
TOTAL DEPTH		2,360
(D-14-26)6ac		
No record	33	33
Fine sand	10	43
Hardpan or sandstone	2	45
Soft sandstone	3	48
Hardpan	10	58
Gravel and sand (no water in it)	14	72
Soft blue clay	3	75
Blue sandstone (hard)	5	80
Blue sandstone (soft)	20	100
Black clay	230	330
Blue clay	94	424
Soft sandstone	91	515
Red clay	83	598
Rock	4	602
Red joist clay	48	650
TOTAL DEPTH		650
(D-14-26)18caa		
Soil clay	55	55
Sand and clay	25	80
Water sand	15	95
Sandy shale	65	160
Shale	65	225
Gravel and water	10	235
Sandy shale	65	300
Sand and gravel	15	315
Sandy shale	60	375
Sand and gravel	5	380
Shale	20	400
Sand and gravel	20	420
Shale	20	440
Gravel	10	450
Gravel and shale	10	460
Sandy shale	25	485
Limestone and granite	15	500
TOTAL DEPTH		500
(D-14-26)31ddd		
Red sandy clay	12	12
Red clay and boulders	23	35
Red clay, sandy	47	82
Gray sandy clay	25	107
Red clay	13	120
Sand and gravel, water	5	125
Clay and sand	65	190
Red clay, sand, and boulders	45	235
Clay	45	280
Conglomerate	47	327
Clay, sand, and boulders	78	405
Conglomerate, water	62	467
Conglomerate	45	512
TOTAL DEPTH		512
(D-15-24)19ccc		
Soil	10	10
Caliche	40	50
Boulders	20	70
Caliche	60	130
Caliche, gravel	20	150
Gravel, caliche	95	245
Boulders, gravel	15	260
Boulders, caliche, gravel	100	360
Lime rock	20	380
Boulders	7	387
Lime rock	13	400
TOTAL DEPTH		400

	Thickness (feet)	Depth (feet)
(D-15-24)30dcc		
No record	135	135
Gravel	10	145
Caliche and gravel	73	218
Soft gravel and caliche	10	228
Hard rock	7	235
Caliche, gravel	4	239
Soft caliche, gravel	10	249
River bed gravel	4	253
Hard caliche, gravel boulders	2	255
(Changed drillers)		
Clay	15	270
Gravel	25	295
Clay	10	305
Gravel	30	335
Caliche and gravel	7	342
Rock and gravel	23	365
Red clay	35	400
TOTAL DEPTH		400
(D-15-24)31cbb		
Top soil	4	4
Clay	4	8
Dry sand	8	16
Clay and rock	114	130
Water sand	2	132
Clay and rock	18	150
Water sand	2	152
Clay and rock	43	195
Rock	9	204
Clay	18	222
Rock and sand	9	231
Rock and clay	64	295
Rock and sand	10	305
Rock and clay	50	355
Rock	21	376
Rock and clay	101	477
Rock	148	625
Rock and gravel	10	635
Clay with gravel	63	698
Limestone rock	27	725
TOTAL DEPTH		725
(D-15-24)32dcc		
Top soil	2	2
Clay	7	9
Dry sand and gravel	9	18
Clay	32	50
Sandy clay	14	64
Clay	6	70
Sand—water	3	73
Clay	35	108
Sand clay	19	127
Clay	43	170
Rocks and gravel	7	177
Clay	13	190
Sandy clay	22	212
Clay	30	242
Sand, gravel	4	246
Clay	29	275
Sand	3	278
Clay	7	285
Gravel and clay	13	298
Hard rock formation	29	327
Clay-gravel	24	351
Hard rock formation	39	390
Sticky clay	10	400
Hard gravel formation	40	440
Red sticky clay	142	582
Gravel	78	660
Caliche, gravel	30	690
Caliche	50	740
Clay and gravel	20	760
Sand, gravel	10	770
Red clay	5	775
Gravel	13	788
Red clay	3	791
Gravel-caliche	84	875
Caliche and gravel	25	900
Clay-shale and rock	82	982
TOTAL DEPTH		982

Table 2.--Selected drillers' logs of wells in the Willcox basin, Cochise and Graham Counties, Ariz.—Continued

	Thickness (feet)	Depth (feet)
(D-15-25)13ddd		
Top soil	3	3
Clay	43	46
Sandy clay	6	52
Clay	11	63
Sand, water	5	68
Clay	15	83
Sandy clay, water	14	97
Clay	27	124
Joint clay	22	146
Clay	34	180
Gravel, water	6	186
Clay	88	274
Sand, water	5	279
Clay	7	286
Joint clay	61	347
Clay	101	448
Joint clay	12	460
Clay	18	478
Gravel, water	5	483
Conglomerate	7	490
Rock and sand in layers	20	510
TOTAL DEPTH		510
(D-15-25)23bdd		
Top soil	3	3
Brown caliche	20	23
(No water) caving clays (water rose to here)	5	28
Clay	2	30
Gravel, first water strata	2	32
Brown clay	42	74
Gravel	3	77
Brown clay	24	101
Fine gravel (water)	4	105
Clay	25	130
Sand (water)	3	133
Clay	20	153
Sandy clay	10	163
Good water gravel	4	167
Clay	53	220
Joint clay (little water)	4	224
Lake bed, blue	57	281
Gravel	4	285
Sticky clay	61	346
Gravel (water)	4	350
Sticky clay	24	374
Gravel (water)	4	378
Conglomerate	39	417
Gravel	3	420
Tight clay and rock	40	460
Gravel and sand (water)	10	470
Conglomerate	14	484
Sand (water)	2	486
Sticky clay	26	512
Fine sand and joint clay	2	514
Sandstone and lime	37	551
Gravel (water)	3	554
Limestone	13	567
TOTAL DEPTH		567
(D-15-25)25ddd		
Top soil	3	3
Clay	15	18
Caliche	6	24
Red clay	38	62
Sand, water	3	65
Red clay	57	122
Sandy clay	3	125
Red clay	25	150
Sandy clay	5	155
Red clay	80	235
Sand, water	5	240
Red clay	9	249
Sand, water	3	252
Clay	3	255
Sand, water	5	260
Red clay	8	268
Sand, water	3	271
Red clay	14	285
Sand, water	5	290
Clay	3	293
Sand, water	5	298
Red clay	18	316
(D-15-25)25ddd—Continued		
Sand, water	6	322
Clay	7	329
Sand, water	5	334
Clay	1	335
Sand, water	5	340
Clay	3	343
Sand, water	7	350
Clay	46	396
Sand	2	398
Clay	22	420
Sand	3	423
Clay	2	425
Sand, water	7	432
Clay	3	435
Sand	3	438
Sandy clay	11	449
Broken rock	23	472
TOTAL DEPTH		472
(D-15-25)27cdd		
Top soil	5	5
Sandy clay	20	25
Clay and gravel	200	225
Sand and gravel, clay streaks	425	650
Sand and large boulders	258	908
Conglomerate with hard streaks and quartz	192	1,100
TOTAL DEPTH		1,100
(D-15-25)34bdd$_2$		
No record	300	300
Clay	48	348
Sand	12	360
Clay	125	485
Gravel	5	490
Clay	180	670
Sand	15	685
Clay	65	750
Joint clay	15	765
Clay	175	940
Gravel	15	955
Clay	105	1,060
Gravel and sand	18	1,078
Rock	22	1,100
TOTAL DEPTH		1,100
(D-15-25)35add		
Black top soil	8	8
White caliche clay—first water	47	55
Yellow brown soft clay	55	110
Second water	4	114
Yellow soft clay	37	151
Third water	3	154
Hard yellow clay	22	176
Fourth water—heavy gravel	4	180
Yellow clay	9	189
White clay	11	200
Soft yellow clay	53	253
Hard sticky yellow brown clay	67	320
Fifth water—heavy gravel	5	325
Sixth water—white sand	19	344
Soft clay	6	350
Seventh water—fine sand	4	354
Hard yellow conglomerate clay	16	370
Hard gray rock conglomerate	6	376
Eighth water—fine heavy sand	6	382
Soft sandy clay	20	402
Hard gray conglomerate	7	409
Soft yellow clay	3	412
Hard sandstone	37	449
Ninth water—heavy gravel	2	451
Soft clay	3	454
Conglomerate	3	457
Clay conglomerate	3	460
Hard conglomerate	4	464
Sandy clay	7	471
Tenth water—heavy sand	5	476
Sticky clay	4	480
Sandy hard conglomerate or sandstone	10	490
Clay	30	520
Hard conglomerate	15	535

Table 2.--Selected drillers' logs of wells in the Willcox basin, Cochise and Graham Counties, Ariz.—Continued

	Thickness (feet)	Depth (feet)
(D-15-25)35add—Continued		
Sticky clay	3	538
Hard gray conglomerate	42	580
Eleventh water	6	586
Soft clay	4	590
Gray hard conglomerate	10	600
TOTAL DEPTH		600
(D-15-25)36add		
Brown clay	6	6
Caliche	59	65
Caliche clay, water 60 feet	20	85
Hard brown clay	25	110
Blue clay	20	130
Streaks of sand and gravel	1	131
Blue clay	54	185
Sand, mucky	6	191
Hard clay	89	280
Quicksand, dirty	6	286
Caliche, water rose from 47 feet to 13 feet	24	310
Caliche shell	5	315
Brown broken shell	5	320
Broken formation or partly cemented rock	20	340
Solid rock	68	408
Decomposed rhyolite, water rose 5 feet	6	414
Solid rock	82	496
TOTAL DEPTH		496
(D-15-26)6dda		
Whitish blue clay	90	90
Red sandy clay	26	116
Sand and gravel—water	8	124
Red clay and sand	8	132
Gravel	14	146
Clay	14	160
Sandy clay	20	180
Yellow clay	30	210
Sandy clay	15	225
Sand and gravel	18	243
Clay	17	260
Conglomerate	11	271
Sand and gravel	14	285
Clay	25	310
Clay and gravel	14	324
Gravel, little clay	6	330
Conglomerate	25	355
Sand and gravel	25	380
Clay and gravel	10	390
Gravel and sand	15	405
Clay	17	422
Conglomerate	6	428
Sand and gravel	19	447
Conglomerate, hard	13	460
TOTAL DEPTH		460
(D-15-26)9ddd		
Sandy loam	10	10
Red clay	30	40
Yellow clay	36	76
Red sandy clay	49	125
Red clay	35	160
Red sand and water	10	170
Gravel and clay	40	210
Conglomerate, set casing	118	328
Red rock	17	345
Sand rock	15	360
Conglomerate	30	390
Red rock, sandy	35	425
Red clay and boulders	55	480
Rock, gray, hard	20	500
TOTAL DEPTH		500
(D-15-26)17cdd		
Top soil, red, sandy	5	5
Red and white clay	30	35
Red clay	35	70
Gray sandy clay	35	105
Red sandy clay	21	126
Sand and water	2	128
(D-15-26)17cdd—Continued		
Red bed	28	156
Red sand, gravel, and clay	24	180
Joint clay, red, caving bad	30	210
Sand, gravel, and clay, red	77	287
Conglomerate shell	18	305
Sand and clay	10	315
Hard sand, rock, shell	15	330
Conglomerate	55	385
Sand rock, red	12	397
Conglomerate	51	448
Shell rock, hard	56	504
TOTAL DEPTH		504
(D-15-26)21bbd		
Sandy loam, red	10	10
Sandy clay	25	35
Red clay	51	86
Gray sandy clay	17	103
Boulders and clay	53	156
Red sandy clay	49	205
Red sand and water	7	212
Red clay	22	234
Red sandy clay and water	29	263
Gray sandy clay and boulders	41	304
Conglomerate	56	360
Gray clay and rock	120	480
Reddish conglomerate rock	24	504
TOTAL DEPTH		504
(D-15-26)23dcb		
Very coarse sand, gravel, and some caliche	40	40
Gravel, mixture of caliche	60	100
Coarse gravel with mixture of lime rock	50	150
Very coarse gravel	60	210
Medium to coarse sandstone	40	250
Very coarse gravel	65	315
Gravel and sand, small showing of water at approximately 40 gpm	45	360
Medium gravel and sand	90	450
Fine sand and gravel	55	505
TOTAL DEPTH		505
(D-15-26)29baa		
Soil	5	5
Gray clay and gravel	35	40
Brown clay and gravel	45	85
Brown shale	50	135
Water sand and gravel	25	160
Brown shale	10	170
Sand and gravel	115	285
Hard clay and gravel	30	315
Sand and gravel	70	385
Loose gravel	95	480
Gravel	120	600
TOTAL DEPTH		600
(D-15-26)30dcd		
Top soil	4	4
Yellow soft clay	77	81
Light red clay	24	105
First water	2	107
Yellow soft clay	103	210
Second water	3	213
Soft red and yellow clay	167	380
Third water—heavy gravel	4	384
Hard gray conglomerate	124	508
Soft clay	2	510
Hard gray conglomerate	77	587
TOTAL DEPTH		587
(D-15-26)31cdd		
Brown clay	20	20
Caliche	64	84
Gravel	2	86
Clay and caliche	44	130
Sand	5	135

Table 2.--Selected drillers' logs of wells in the Willcox basin, Cochise and Graham Counties, Ariz.--Continued

	Thickness (feet)	Depth (feet)
(D-15-26)31cdd—Continued		
Good gravel	5	140
Clay and caliche	50	190
Gravel	15	205
Sand and clay	15	220
Heavy clay	10	230
Coarse gravel	10	240
Heavy clay	20	260
Gravel	10	270
Clay	5	275
Quicksand	5	280
Gravel	20	300
Granite	19	319
Clay	29	348
Gravel	21	369
Clay	6	375
Gravel	12	387
Clay	6	393
Gravel	7	400
Clay	10	410
Gravel	7	417
Clay	5	422
Gravel	8	430
Clay	4	434
Gravel	15	449
Clay	5	454
Gravel	6	460
Red granite	190	650
TOTAL DEPTH		650
(D-16-23)19caa		
Caliche	100	100
Cemented gravel	185	285
Sticky clay	115	400
Cemented gravel	10	410
Gravel—water 6 gpm	2	412
Cemented gravel	48	460
Sand streak—some water	1	461
Cemented gravel	103	564
TOTAL DEPTH		564
(D-16-24)20baa		
Soil, clay, gravel mixture—water	119	119
Caliche and gravel	21	140
Sand, gravel, and caliche—water strata	16	156
Caliche and gravel	17	173
Gravel, caliche—good water strata	7	180
Caliche and gravel	8	188
Gravel and caliche—good water strata	57	245
Caliche and gravel	123	368
Gravel and caliche—good water strata	32	400
Caliche, gravel	88	488
Good gravel water strata	22	510
TOTAL DEPTH		510
(D-16-25)1add		
Top soil	8	8
Yellow conglomerate clay	24	32
Hard conglomerate	28	60
Soft yellow clay	12	72
First water, fine sand	10	82
Soft clay	38	120
Second water	5	125
Yellow clay fill	68	193
Heavy gravel—water	10	203
Hard clay	35	238
Fine sand—water	2	240
Soft yellow conglomerate	112	352
Heavy gravel—water	18	370
Soft clay	142	512
Heavy gravel, boulders (up pressure 26 feet in casing)	8	520
Hard gray conglomerate	20	540
Soft brown conglomerate	33	573
TOTAL DEPTH		573
(D-16-25)3cac		
Sand	4	4
Soil	46	50
Brown clay, some sand	62	112
Sand and gravel	8	120
Sticky brown clay	200	320
Sand and gravel	15	335
Brown clay	185	520
Sand, gravel, boulders	34	554
TOTAL DEPTH		554
(D-16-25)4cdd		
Soil	5	5
Clay, light	10	15
Clay, red	30	45
Sand, water	10	55
Clay	35	90
Sandy clay	20	110
Clay	5	115
Clay, sandy	45	160
Clay, sticky	65	225
Clay, sandy	20	245
Clay	10	255
Caliche	10	265
Clay	5	270
Clay, sandy	20	290
Clay, brown	5	295
Clay, sticky	30	325
Sand, gray	5	330
Clay, sticky	15	345
Sand, water rose 16 feet	5	350
Clay	5	355
Sand, water	5	360
Clay	5	365
Sand, water rose to 9 feet of surface	10	375
Clay	25	400
TOTAL DEPTH		400
(D-16-25)10cdd		
Water	45	45
Red clay	12	57
Sand and water	3	60
Clay gravel	5	65
Gravel, sand, water	3	68
Red clay	10	78
Pack sand	2	80
Water, fine sand	2	82
Red clay, gravel, caliche	4	86
Red clay	4	90
Fine sand and water	3	93
Clay and sand	7	100
Red clay, silt	16	116
Red clay, sand	5	121
Red clay	9	130
Red clay, gravel, caliche	6	136
Fine gray water sand	3	139
Red clay	26	165
Water sand	3	168
Red clay	22	190
Water sand	2	192
Red clay—little sand and gravel	76	268
Water sand	3	271
Red clay mixed with sand and gravel	16	287
Water sand	3	290
Red clay sand	5	295
TOTAL DEPTH		295
(D-16-25)11aaa$_3$		
Top soil	3	3
Red clay	44	47
Sand, water	3	50
Hardpan	10	60
Gravel, water	5	65
Clay	5	70
Sandy clay	15	85
Clay	105	190
Sandy clay	60	250
Fine sand	6	256
Clay	54	310
Sandy clay	5	315
Sand, water	5	320
Sandy clay	35	355
Sand	7	362

Table 2.--Selected drillers' logs of wells in the Willcox basin, Cochise and Graham Counties, Ariz.--Continued

	Thickness (feet)	Depth (feet)
(D-16-25)11aaa$_3$—Continued		
Sticky clay	22	384
Sand	6	390
Clay	10	400
Sand	5	405
Clay	39	444
Sand	38	482
Sandy clay	8	490
Sand	10	500
TOTAL DEPTH		500
(D-16-25)12ddd		
Clay	58	58
Water sand and gravel	2	60
Clay	42	102
Water gravel	4	106
Clay	44	150
Water	3	153
Clay	12	165
Water	4	169
Clay	21	190
Clay	5	195
Water	7	202
Clay	51	253
Water	8	261
Clay	32	293
Water	9	302
Clay	1	303
TOTAL DEPTH		303
(D-16-25)14bdd		
Top soil	4	4
Light caliche	27	31
Heavy dry sand and gravel	16	47
Soft red clay	3	50
First water	3	53
Soft red clay	29	82
Water, heavy gravel	4	86
Hard red conglomerate	107	193
Soft gray clay	23	216
Soft white clay	8	224
Water	4	228
Sticky gray clay	92	320
Various streaks of quicksand and water	40	360
Soft white clay	5	365
Water, heavy gravel (water rose 8 feet at this point)	5	370
Soft red sandy clay	32	402
Hard gray sandstone	47	449
Sticky red clay	34	483
Sand and gravel, water	3	486
Light red conglomerate clay	7	493
TOTAL DEPTH		493
(D-16-25)22ddd		
Clay, caliche	42	42
Clay and boulders	63	105
Silty sand	10	115
Clay with streaks sand	131	246
Clay, shells	84	330
Sand, shells	70	400
Sand	42	442
Hard sand	12	454
Gravel sand	28	482
Hard sand	33	515
TOTAL DEPTH		515
(D-16-25)25aaa		
White lake bed	90	90
Red sandy clay	135	225
Good gravel	5	230
Red sandy clay	270	500
Hard conglomerate	75	575
Soft conglomerate, gravel, and clay	45	620
Hard conglomerate	125	745
TOTAL DEPTH		745
(D-16-25)28bdd		
Soil	2	2
Caliche	28	30
Clean gravel—water	11	41
White clay	109	150
Red clay	58	208
Clean gravel—water	7	215
Red clay	20	235
Clean gravel—water	7	242
Gravel, clay	168	410
Clean gravel—water	15	425
Clay, gravel	155	580
Muddy gravel—water	20	600
Medium hard red shale	30	630
Very hard red shale	60	690
Very hard red lime shale	100	790
Very hard red lime conglomerate	6	796
Very hard red lime shale	54	850
TOTAL DEPTH		850
(D-16-25)35aaa		
Clay	15	15
Sand	5	20
White lake bed	40	60
Red sandy clay	120	180
Hard brown (clay?)	5	185
Red clay	105	290
Red clay with gravel	80	370
Gravel	5	375
Red clay	4	379
Hard light tan conglomerate	11	390
Hard boulders or lava flow	5	395
Soft pink (clay?)	75	470
Hard conglomerate	30	500
TOTAL DEPTH		500
(D-16-26)4bad		
Clay	165	165
Fine sand	5	170
Clay	31	201
Coarse sand and gravel	24	225
Clay and fill	61	286
Coarse sand and gravel	4	290
Clay and fill	54	344
Coarse sand and gravel	3	347
Clay and fill	13	360
Coarse sand and gravel	5	365
Shale	135	500
TOTAL DEPTH		500
(D-16-26)6dda		
Top soil	7	7
Caliche	11	18
Clay	42	60
Water sand	2	62
Clay	73	135
Sand and gravel	20	155
Sandy clay and boulders	55	210
Fine sand	12	222
Clay and boulders	91	313
Rock	4	317
Sand and gravel (good)	63	380
Clay	24	404
Lime rock	16	420
Hard shale	5	425
Sand and gravel	62	487
Broken clay and sand	8	495
Conglomerate	17	512
Hard sand	4	516
Sandy clay	9	525
Hard solid rock	23	548
Sand and gravel	50	598
Quartz and chert	35	633
Chert	31	664
TOTAL DEPTH		664
(D-16-26)8cdd		
Surface	3	3
Clay	137	140

Table 2.--Selected drillers' logs of wells in the Willcox basin, Cochise and Graham Counties, Ariz.--Continued

	Thickness (feet)	Depth (feet)
(D-16-26)8cdd--Continued		
Gravel	4	144
Clay	21	165
Sand	5	170
Clay	11	181
Sand and gravel	13	194
Clay	18	212
Sand	8	220
Clay, gravel	40	260
Sand	5	265
Clay	11	276
Sand and gravel	8	284
Clay	16	300
Sand and gravel	8	308
Clay	9	317
Sand	7	324
Clay	34	358
Sandy shale	12	370
Clay	20	390
Sand and gravel	15	405
Clay	43	448
Sand	10	458
Clay	22	480
Sand	4	484
Conglomerate	76	560
Sand and gravel	5	565
Clay	20	585
Conglomerate	75	660
Sand and gravel	10	670
Conglomerate	135	805
TOTAL DEPTH		805
(D-16-26)10ddd		
Soil	5	5
Red clay	80	85
Large gravels	3	88
Red clay	121	209
Sand rock	2	211
Red clay	4	215
Clay and gravels	3	218
Water and gravels	275	493
Red clay	37	530
Sand and gravels	85	615
Cave in		615
TOTAL DEPTH		615
(D-16-26)13caa		
First water	?	240
Gravel	10	250
Clay formation	85	335
Water carrying gravel formation	15	350
Clay formation	100	450
Gravel formation	10	460
Clay formation	200	660
Gravel formation	5	665
Clay formation	185	850
TOTAL DEPTH		850
(D-16-26)22baa		
Top soil	20	20
Yellow clay	160	180
Yellow clay and gravel	17	197
Gravel, first water	1	198
Gravel and clay	32	230
Gravel	5	235
Gravel and clay streaks	75	310
Gravel bed, good	40	350
Conglomerate	56	406
Gravel, good	75	481
Conglomerate	45	526
TOTAL DEPTH		526
(D-16-26)27daa		
Top soil	3	3
Brown clay and gravel	12	15
Red clay and sand	10	25
Clay and sand	15	40
Red clay	50	90
Water gravel	5	95
(D-16-26)27daa--Continued		
Red clay	190	285
Gravel and sand and water	20	305
Conglomerate	220	525
Water gravel	15	540
TOTAL DEPTH		540
(D-16-26)28caa		
Top soil	15	15
Gravel	10	25
Clay	15	40
Gravel	15	55
Clay	30	85
Gravel	12	97
Clay	6	103
Gravel	22	125
Clay	15	140
Sandy clay	10	150
Joint clay, dry sand	20	170
Sand (little water)	10	180
Joint clay	30	210
Dry sand	7	217
Sand and gravel (good water)	18	235
Clay	35	270
Sandstone	6	276
Gravel (water)	6	282
Sandy joint clay	13	295
Hard conglomerate	10	305
Sand and gravel	10	315
Conglomerate	288	603
Small gravel	6	609
Sticky clay	4	613
TOTAL DEPTH		613
(D-16-26)29bda		
Soil	18	18
Sandy clay	107	125
Clay and gravel	35	160
Water sand	120	280
Rhyolite	30	310
Water sand and gravel	110	420
Water formations	280	700
TOTAL DEPTH		700
(D-16-26)32aaa		
Black top soil	12	12
Clay	98	110
Gravel	2	112
Clay	58	170
Gravel, first water	5	175
Clay	75	250
Gravel	25	275
Clay	20	295
Gravel	15	310
Conglomerate	50	360
Gravel	12	372
Conglomerate	28	400
Gravel	10	410
Conglomerate	15	425
Gravel	5	430
Conglomerate	105	535
Gravel	5	540
Conglomerate	60	600
Gravel	5	605
Conglomerate	10	615
TOTAL DEPTH		615
(D-16-26)34aaa		
Clay	105	105
Gravel and clay	10	115
Clay and some gravel streaks	45	160
Gravel, first water at 175 feet	15	175
Coarse gravel and sand	150	325
Hard conglomerate	470	795
Gravel and sand	40	835
TOTAL DEPTH		835

Table 2.--Selected drillers' logs of wells in the Willcox basin, Cochise and Graham Counties, Ariz.—Continued

	Thickness (feet)	Depth (feet)
(D-16-27)18caa		
No record	235	235
Gravel, first water	15	250
Clay formation	30	280
Hard caprock granite formation	20	300
Heavy gravel	20	320
A dull clay formation	430	750
TOTAL DEPTH		750
(D-17-24)1dac		
Top soil	4	4
Sand	4	8
Clay	45	53
Caliche	16	69
Sand (very little water)	4	73
Caliche	18	91
Sand (water)	4	95
Clay	23	118
Coarse sand (good water)	8	126
Caliche	2	128
TOTAL DEPTH		128
(D-17-24)11acc		
Top soil	3	3
Clay	7	10
Clay with gravel streaks	138	148
Gravel, water in bottom gravel	6	154
Sandy clay	18	172
Coarse sand and small gravel	3	175
Sandy clay	25	200
Coarse gravel and sand	5	205
Sandy clay	28	233
Sand	3	236
Sandy clay joint	24	260
Sand	3	263
Clay joint	67	330
Coarse gravel	3	333
Hard ribs and sticky clay	27	360
Coarse sand, small gravel	6	366
Hard ribs and sticky clay	24	390
Sand	6	396
Gravel, coarse	13	409
Conglomerate	14	423
TOTAL DEPTH		423
(D-17-24)27aaa		
Top soil	1	1
Clay	1	2
Caliche	6	8
Boulders and clay	8	16
Clay	30	46
Sand	6	52
Clay	8	60
Clay	8	68
Sand (water)	22	90
Clay	11	101
TOTAL DEPTH		101
(D-17-25)5ddd		
Clay	20	20
Sandy clay	10	30
Clay, yellow	30	60
Sand, water fine	5	65
Clay	18	83
Fine sand	13	96
Hard red clay	22	118
Yellow clay	62	180
Sand, water	3	183
Clay, set 18-inch casing to 200 feet	17	200
Clay	97	297
Sand and water	12	309
Yellow clay	51	360
Porous rock carrying lots of water	25	385
TOTAL DEPTH		385
(D-17-25)9cbc		
Top soil	3	3
Caliche	20	23
Sand and clay in layers, little water	7	30
Sand	54	84
Clay	36	120
Joint clay and fine sand	70	190
Clay	38	228
Sand	3	231
Clay	39	270
Joint clay	90	360
Clay and sandstone layers	105	465
Clay	75	540
Gravel	25	565
Clay	70	635
Sand and gravel	20	655
Joint clay	65	720
Rock in broken formation	120	840
Solid rock	120	960
Blue rock	15	975
Rock	105	1,080
Block rock	40	1,120
Black sand, dry	30	1,150
Brown rock	22	1,172
TOTAL DEPTH		1,172
(D-17-25)18dbb		
Top soil	8	8
Red clay	32	40
Light brown clay	45	85
Red joint clay (water)	15	100
Caliche	90	190
Joint clay	10	200
Blue and green clay	2	202
Light brown sand clay	78	280
Joint clay	10	290
Clay	44	334
Small gravel (water)	7	341
Clay	35	376
Gravel (water)	4	380
Clay	30	410
Small gravel	2	412
Clay	35	447
Gravel	6	453
Sandstone with narrow strips clay	27	480
Gravel	3	483
Sandstone	17	500
Gravel	2	502
Sandstone	21	523
Gravel with very good water	7	530
Sandstone	20	550
TOTAL DEPTH		550
(D-17-25)20cbc		
Surface soil	5	5
Clay	175	180
Sandy clay	30	210
Water, sand and gravel	5	215
Clay (red)	60	275
Gravel and boulders (water)	10	285
Clay (red)	35	320
Pea gravel (water)	10	330
Clay (sandy)	95	425
Gravel and boulders (large)—lots of water	10	435
Sandy clay	40	475
Gravel and sand	15	490
Clay and boulders	72	562
Pea gravel	28	590
Clay	2	592
TOTAL DEPTH		592
(D-17-26)1ddd		
Top soil	3	3
Clay	82	85
Gravel	9	94
Clay	31	125
Sandy clay	10	135
Clay	15	150
Gravel	8	158
Clay	22	180
Gravel (water)	15	195

Table 2.--Selected drillers' logs of wells in the Willcox basin, Cochise and Graham Counties, Ariz.--Continued

	Thickness (feet)	Depth (feet)
(D-17-26)1ddd--Continued		
Sandy clay	25	220
Gravel (water)	15	235
Joint clay	45	280
Gravel and rock	15	295
Clay and rock	45	340
Gravel	8	348
Conglomerate	32	380
Gravel	15	395
Clay and rock	40	435
Gravel	10	445
Rock	45	490
Rock and clay	15	505
Gravel	13	518
Clay	2	520
TOTAL DEPTH		520
(D-17-26)3dda		
Surface	4	4
Clay, gravel	26	30
Clay	40	70
Gravel and clay	60	130
Gravel, first water	5	135
Clay	15	150
Gravel	5	155
Clay	17	172
Gravel	14	186
Clay	25	211
Gravel	6	217
Clay, gravel	35	252
Hard shell	9	261
Gravel and clay	141	402
Red clay	7	409
Conglomerate	63	472
Sand rock	93	565
Conglomerate	35	600
TOTAL DEPTH		600
(D-17-26)4aaa		
Red clay	40	40
Light tan clay	40	80
Red clay	65	145
Sand	5	150
Red clay and gravel	50	200
Soft conglomerate	115	315
Boulders and clay	130	445
Hard conglomerate	155	600
Soft conglomerate	197	797
TOTAL DEPTH		797
(D-17-26)13bdd		
Top soil	5	5
Clay	97	102
Sand	10	112
Clay	10	122
Gravel	5	127
Clay	11	138
Gravel	5	143
Joint clay	9	152
Gravel	4	156
Clay	19	175
Conglomerate	65	240
Sand	7	247
Clay	38	285
Gravel	8	293
Joint clay	15	308
Clay	104	412
Rock	73	485
Sand and gravel	5	490
Joint clay	13	503
TOTAL DEPTH		503
(D-17-26)15ddd		
Top soil	3	3
Clay	83	86
Sand	5	91
Clay	27	118
Sand	5	123
Joint clay	13	136
(D-17-26)15ddd--Continued		
Clay	49	185
Gravel	6	191
Clay	17	208
Gravel	2	210
Clay	38	248
Gravel	6	254
Clay	78	332
Gravel	15	347
Clay	13	360
TOTAL DEPTH		360
(D-17-27)7cdd		
Top soil	10	10
Red clay formation	210	220
Gravel, large	20	240
Clay formation	40	280
Sand and gravel	20	300
TOTAL DEPTH		300
(D-17-27)31ddd		
Top soil	4	4
Clay and gravel	21	25
Gravel	35	60
Clay	4	64
Gravel	36	100
Fine sand	17	117
Gravel (water)	3	120
Clay with gravel	25	145
Gravel (water)	3	148
Clay with gravel	59	207
Small gravel (water)	3	210
Clay with gravel	77	287
Small gravel (water)	3	290
Tight gravel formation	48	338
Small gravel (water)	4	342
Conglomerate	38	380
Gravel (water)	6	386
Conglomerate	34	420
Gravel (water)	10	430
Conglomerate	50	480
Gravel, all colors (water)	5	485
Conglomerate	59	544
Gravel, all colors (water)	4	548
Conglomerate	7	555
TOTAL DEPTH		555
(D-18-25)12dad		
Clay	4	4
Rhyolite	31	35
Rhyolite	45	80
Rhyolite, water	2	82
Rhyolite	127	209
TOTAL DEPTH		209
(D-18-26)10bcc		
Top soil loam	5	5
Sandy clay	5	10
Sandy and gravel	10	20
Clay	20	40
Sandy clay	10	50
Rocky clay	10	60
Sandy clay	10	70
Coarse gravel	20	90
Sandy clay	20	110
Seep, small gravel	2	112
Sandy clay	8	120
Water, gravel	3	123
Blue clay--123-210--blue--black shale (engineer)	37	160
Rock	10	170
Black clay	30	200
Semi-solid brownish-black rock	10	210
Solid rock	5	215
TOTAL DEPTH		215

Table 2.--Selected drillers' logs of wells in the Willcox basin, Cochise and Graham Counties, Ariz. —Continued

	Thickness (feet)	Depth (feet)
(D-18-26)27dad		
Soil	4	4
Sand	1	5
Hardpan	9	14
Clay, water at 92 feet	78	92
Streaks of sand and clay	26	118
Clay	52	170
TOTAL DEPTH		170
(D-18-26)32baa		
Soil	4	4
Hardpan	7	11
Clay	4	15
Gravel	1	16
Clay	53	69
Sandy clay	11	80
Tough clay	8	88
Sand, gravel	18	106
Sandy clay	29	135
TOTAL DEPTH		135
(D-18-26)35bca		
Top soil	3	3
Red clay	83	86
Sand	18	104
Sandy clay	16	120
Gravel	3	123
Clay	37	160
Gravel	4	164
Clay	48	212
Gravel and sand	3	215
Clay	57	272
Conglomerate	13	285
TOTAL DEPTH		285
(D-18-27)8bc		
Top soil	3	3
Caliche	15	18
Boulders	16	34
Clay, rock (boulders)	26	60
Gravel	14	74
Clay, rock (boulders)	29	103
Gravel, seepage, first water (not enough to drill with)	29	132
Clay	16	148
Gravel (some water)	2	150
Clay	30	180
Gravel	3	183
Clay	22	205
Gravel and sand	3	208
Clay	17	225
Sand with small gravel	3	228
Sand and narrow strips of clay	79	307
Gravel and sand, possible some water	2	309
Compact gritty clay	41	350
TOTAL DEPTH		350
(D-18-27)9caa		
Blue clay	6	6
Dirty gravel, boulders	27	33
Fine clay	32	65
Gravelly clay	87	152
Gravel, first water, seep	2	154
Fine clay	13	167
Open gravel, water strata	4	171
Light brown clay	22	193
Gravel	4	197
Fine light brown clay	26	223
Gravel	5	228
Fine sticky light brown clay	20	248
Open gravel	5	253
Clay	10	263
TOTAL DEPTH		263

Table 3.--Laboratory chemical analyses of water from wells and springs in the Willcox basin, Cochise and Graham Counties, Ariz.

[Analyses in parts per million, except as indicated]

Well location	Date of collection	Depth (feet)	Temperature (°F)	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids: Parts per million	Dissolved solids: Tons per acre-foot	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Percent sodium	Sodium-adsorption ratio (SAR)	Specific conductance (micromhos at 25°C)	pH	Remarks
(D-11-24)																							
20bcc$_2$	7/2/46	345	70	-----	-------	------	----------		121	0	------	3.0	0.4	----	------	------	-------	-------	----	-------	206	----	
31dcc	3/2/46	87	68	-----	-------	------	----------		142	0	------	14	-----	----	------	------	-------	-------	----	-------	291	----	
(D-11-25)																							
8cbb	4/30/46	-----	-----	-----	47	17	29		186	0	73	11	1.2	4.6	274	0.37	188	35	25	0.9	471	----	
20adb	4/29/46	-----	-----	-----	86	19	13		320	0	26	19	.8	2.2	324	.44	292	30	9	.3	576	----	
(D-12-23)																							
15bbd	5/21/46	190	-----	-----	-------	------	----------		124	0	------	14	.8	----	------	------	-------	-------	----	-------	259	----	
25dbb	4/5/46	118	66	-----	20	3.8	22		104	0	7.2	11	0	6.7	122	.17	66	0	42	1.2	218	----	
(D-12-24)																							
2ccc	7/2/46	183	76	-----	-------	------	----------		149	0	------	14	-----	----	------	------	-------	-------	----	-------	307	----	
19aab$_1$	5/12/42	227	-----	-----	24	5.0	8.5		103	0	5.0	4.0	.6	2.5	100	.14	80	0	70	.4	185	----	
19aab$_2$	4/12/46	208	68	-----	18	1.7	23		104	0	6.2	5.0	.4	4.0	110	.15	52	0	49	1.4	182	----	
21bad	4/5/46	-----	69	-----	-------	------	----------		146	0	------	6.0	-----	----	------	------	-------	-------	----	-------	312	----	
22adb	6/6/57	-----	77	40	26	5.2	29		142	0	16	10	1.0	1.5	199	.27	86	0	43	1.4	282	7.3	Boron 0.65.
28bbb	5/13/42	-----	-----	-----	28	6.8	2.3		111	0	3	4.0	.4	2.5	102	.14	98	7.0	5	.1	199	----	
28dbb	4/5/46	130	66	-----	24	4.0	19		120	0	6.2	6.0	.8	2.2	121	.16	76	0	35	.9	212	----	
29cdb	6/11/46	94	67	-----	42	6.9	17		112	0	7.0	46	.4	5.8	180	.24	134	42	22	.6	362	----	
32bcc	5/12/42	70	-----	-----	34	7.6	5.1		131	0	3.0	7.0	.4	7.1	120	.18	116	9.0	9	.2	243	----	
32dda	4/5/46	124	66	-----	34	8.0	25		136	0	15	24	.4	13	186	.25	118	6.0	32	1.0	310	----	Boron 0.
33abb	6/11/46	132	66	-----	-------	------	----------		116	0	------	6.0	-----	----	------	------	-------	-------	----	-------	206	----	
35cda	4/5/46	80	67	-----	43	7.0	26		166	0	22	22	.4	1.9	204	.28	136	0	29	1.0	304	----	
(D-13-23)																							
5bna	5/8/46	-----	74	-----	-------	------	----------		177	0	------	6.0	-----	----	------	------	-------	-------	----	-------	313	----	
(D-13-24)																							
1aab	5/13/42	60	-----	-----	-------	45	----------		107	0	93	115	-----	5.4	------	------	-------	-------	----	-------	782	----	
7dda	5/12/42	65	-----	-----	40	11	26		200	0	13	16	-----	2.0	206	.28	145	0	28	.9	369	----	
8bbb	9/3/52	243	69	62	14	2.5	26		99	0	5.6	8.0	.6	2.7	170	.23	46	0	55	1.7	202	----	Annual well sample.
Do	7/30/53	243	-----	-----	-------	------	----------		74	16	------	7.0	-----	----	------	------	-------	-------	----	-------	197	----	Annual well sample.

Table 3. --Laboratory chemical analyses of water from wells and springs in the Willcox basin, Cochise and Graham Counties, Ariz. --Continued

Well location	Date of collection	Depth (feet)	Temperature (°F)	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids		Hardness as $CaCO_3$		Percent sodium	Sodium-adsorption ratio (SAR)	Specific conductance (micromhos at 25°C)	pH	Remarks
															Parts per million	Tons per acre-foot	Calcium, magnesium	Noncarbonate					
(D-13-24)—Con.																							
8bbb	8/24/54	243	70	------	--------	-------	----------		103	0	------	6.5	----	-----	-------	-------	--------	--------	----	--------	191	----	Annual well sample.
Do	7/11/55	243	68	------	--------	-------	----------		104	0	------	6.0	----	-----	-------	-------	--------	--------	----	--------	195	7.0	Annual well sample.
Do	5/28/56	243	69	------	--------	-------	----------		104	0	------	8.0	----	-----	-------	-------	--------	--------	----	--------	203	8.0	Annual well sample.
Do	5/27/57	243	68	------	--------	-------	----------		108	0	------	6.2	----	-----	-------	-------	34	0	----	--------	203	7.1	Annual well sample.
Do	6/5/58	243	67	------	--------	-------	----------		119	0	------	12	----	-----	-------	-------	70	0	----	--------	243	7.4	Annual well sample.
Do	9/14/59	243	69.5	------	--------	-------	----------		86	5.9	------	7.0	----	-----	-------	-------	23	0	----	--------	190	8.6	Annual well sample.
Do	6/23/60	243	69	------	--------	-------	----------		103	0	------	6.5	----	-----	-------	-------	21	0	----	--------	201	7.2	Annual well sample.
8bcb	4/11/46	78	66	------	--------	-------	----------		141	0	------	18	----	-----	-------	-------	--------	--------	----	--------	319	----	
$10cbd_1$	4/4/46	80	68	------	30	5.5	22		144	0	10	8.0	0.4	4.4	151	0.21	98	0	33	1.0	255	----	
21cba	5/12/42	60	------	------	28	7.0	16		125	0	7.0	14	.4	3.0	137	.19	99	0	26	.7	251	----	
$23bbb_1$	3/27/46	62	68	------	47	6.4	48		204	0	31	30	.8	4.8	268	.36	144	0	42	1.7	476	----	
Do	4/3/46	62	67	------	--------	-------	----------		206	0	------	30	----	-----	-------	-------	--------	--------	----	--------	475	----	
25ccc	5/13/42	------	------	------	--------	15	----------		155	0	18	17	1.2	5.4	-------	-------	--------	--------	----	--------	333	----	
26cbb	5/12/42	50	------	------	23	9.2	31		121	0	15	31	.6	4.0	173	.24	95	0	41	1.4	336	----	
33aa	5/12/42	36	------	------	--------	21	----------		217	0	65	36	-----	15	-------	-------	--------	--------	----	--------	621	----	
35baa	4/24/56	138	65	58	--------	-------	152		210	0	81	156	6.0	4.4	-------	-------	166	0	67	5.1	1,030	7.7	Boron 0.50, iron 0.04.
$35caa_1$	2/28/46	54	64	------	44	10	144		274	0	63	117	2.2	3.7	519	.71	151	0	67	5.11	897	----	
Do	5/12/42	54	------	------	--------	37	----------		124	0	58	144	2.0	5.4	-------	-------	--------	--------	----	--------	821	----	
(D-13-25)																							
3dca	2/20/46	118	69	------	37	14	42		190	0	18	28	.6	.3	265	.36	150	0	38	1.5	470	----	Boron 0.05.
5	6/12/50	2,500	88	46	7.0	2.8	502		302	35	282	360	12	2.3	1,380	1.88	29	0	97	41	2,280	----	
(D-14-22)																							
31a	7/5/51	160	71	------	--------	-------	----------		171	0	------	5.0	----	-----	-------	-------	--------	--------	----	--------	310	----	
34d	7/5/51	430	71	31	29	14	8.5		161	0	2.7	3.0	.6	9.8	178	.24	130	0	12	.3	277	----	
(D-14-23)																							
36ba	7/13/51	80	67	------	--------	-------	----------		215	0	------	91	----	-----	-------	-------	--------	--------	----	--------	1,020	----	
(D-14-24)																							
20cd	2/14/46	6	61	50	20	1.7	138		201	0	107	46	5.9	1.3	469	.64	57	0	84	7.9	705	----	Boron 0.07.
Do	2/14/46	------	39	------	--------	-------	----------		353	0	1,120	250	----	-----	-------	-------	--------	--------	----	--------	3,360	----	Sample taken from spring.

Table 3.--Laboratory chemical analyses of water from wells and springs in the Willcox basin, Cochise and Graham Counties, Ariz.—Continued

Well location	Date of collection	Depth (feet)	Temperature (°F)	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids		Hardness as $CaCO_3$		Percent sodium	Sodium-adsorption ratio (SAR)	Specific conductance (micromhos at 25°C)	pH	Remarks
															Parts per million	Tons per acre-foot	Calcium, magnesium	Noncarbonate					
(D-14-24)—Con.																							
30dba	3/26/46	50+	60	------	39	2.2	239		204	0	297	94	5.8	1.1	779	1.06	106	0	83	10	1,250	----	
31ba	2/14/46	25	65	41	30	3.4	214		199	0	260	74	5.8	.8	727	.99	89	0	84	9.9	1,110	----	Windmill.
31dd	2/14/46	------	50	26	66	38	904		358	9.8	1,250	460	9.3	1.8	2,940	4.00	320	10	86	21	4,260	----	Spring; boron 0.23.
(D-14-25)																							
6cab	5/14/42	34	------	------	16	9.0	114		234	0	43	60	1.0	1.0	359	.49	77	0	76	5.6	564	----	
6cbd	5/14/42	700	95	------	8.0	3.7	516		336	0	238	430	9.9	1.0	1,370	1.86	35	0	97	38	2,390	----	
14ca	2/28/46	------	64	------	21	4.0	92		186	0	32	52	2.2	3.4	298	.41	69	0	74	4.8	522	----	Tank sample.
(D-14-26)																							
14aba	4/2/46	------	------	------	65	23	80		380	0	73	25	1.4	4.2	459	.62	256	0	40	2.2	772	----	
(D-14-27)																							
32aaa	5/9/46	30	------	------	70	7.9	95		338	0	70	40	2.4	1.2	453	.62	207	0	50	2.9	809	----	
32bcc	5/9/46	50	------	------	92	23	50		302	0	129	32	1.1	2.8	479	.65	324	76	25	1.2	801	----	
33aca	5/9/46	------	65	------	------	------	------		285	0	------	13	1.1	----	------	------	------	------	----	------	676	----	
34daa	5/9/46	90	62	------	60	9.0	43		182	0	100	12	3.2	2.6	320	.44	186	38	33	1.4	536	----	
(D-14-28)																							
35dc	8/2/46	2	71	------	94	11	39		329	0	58	19	1.4	5.5	390	.53	280	10	23	1.0	657	----	Goodwin Spring.
(D-15-24)																							
4dc	2/8/63	6+	68	9.7	0.0	4.4	39,700	84	3,170	2,850	20,800	40,500	282	10	106,000	144	50	0	100	4,070	117,000	9.2	Auger hole in playa; boron 22.
6ac	2/14/46	------	55	35	11	2.4	448		265	15	195	375	14	1.6	1,230	1.67	38	0	96	32	2,060	----	Croton Spring; boron 0.23.
6ba	2/14/46	------	45	36	12	3.7	553		367	0	251	455	16	1.6	1,510	2.05	45	0	96	36	2,550	----	Spring; boron 0.23.
(D-15-25)																							
15cdd	10/30/46	600	72	------	------	------	------		122	4.8	------	10	----	----	------	------	------	------	----	------	313	----	
15dda	8/10/53	250	70	44	54	13	44		226	0	70	16	1.2	1.5	355	.48	188	3.0	34	1.4	528	----	
25ddd	8/10/53	472	78	35	29	3.6	39		140	0	39	8.0	1.6	1.0	225	.31	88	0	49	1.8	322	----	
34dc	5/28/42	640	------	------	39	3.1	29		104	0	66	12	.8	1.0	202	.27	110	0	36	1.2	340	----	
35bc	5/28/42	------	------	------	38	2.8	30		123	0	50	11	.8	1.0	194	.26	106	0	38	1.3	349	----	
(D-15-26)																							
19bad	8/10/53	340	72	------	------	------	------		184	0	------	6.5	----	----	------	------	------	------	----	------	342	----	
Do	8/18/54	340	70	33	40	7.8	35		201	0	26	8.5	1.4	.5	251	.34	132	0	36	1.3	386	----	

Table 3.--Laboratory chemical analyses of water from wells and springs in the Willcox basin, Cochise and Graham Counties, Ariz.—Continued

Well location	Date of collection	Depth (feet)	Temperature (°F)	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids: Parts per million	Dissolved solids: Tons per acre-foot	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Percent sodium	Sodium-adsorption ratio (SAR)	Specific conductance (micromhos at 25°C)	pH	Remarks
(D-15-26)—Con.																							
19bad	5/28/56	340	70	19	52	11	33		196	0	28	35	1.8	3.6	280	0.38	174	14	29	1.1	485	7.3	Iron 0.02, boron 1.6.
Do	5/27/57	340	66	19	56	12	39		208	0	36	42	1.6	2.5	310	.42	189	18	31	1.2	534	7.2	
Do	6/19/58	340	----	----	----	----	----		----	----	----	----	----	----	----	----	----	----	----	----	563	----	
19dbc	5/21/46	3,298	69	----	35	6.8	40		192	0	26	10	.8	1.0	214	.29	116	0	43	1.6	366	----	
20aaa	7/31/51	----	70	30	59	11	34		191	0	49	38	.8	3.5	319	.43	192	36	28	1.1	518	----	
26bba	7/31/51	350	76	30	44	7.4	24		181	0	20	12	.6	5.3	232	.32	140	0	27	.9	366	----	
(D-15-27)																							
1ada	5/9/46	35-40	----	----	32	3.7	51		187	0	27	7.0	2.8	8.3	224	.30	95	0	54	2.3	414	----	
3bbc	5/9/46	----	62	----	40	4.7	55		243	0	35	7.0	4.0	5.6	281	.38	120	0	54	2.6	491	----	
(D-15-29)																							
7cdd	8/2/46	----	66	----	----	----	----		300	0	----	13	.4	----	----	----	----	----	----	----	556	----	Bear Spring.
(D-16-22)																							
15ada	10/4/56	106	70	----	----	----	----		120	0	----	8.0	----	----	----	----	55	0	----	----	235	6.9	
(D-16-23)																							
16dcc	10/4/56	554	70	----	----	----	----		259	0	----	12	----	----	----	----	245	32	----	----	492	7.5	
19caa	10/4/56	565	79	28	39	20	19		223	0	18	9.0	1.0	5.0	249	.34	180	0	18	.6	416	7.4	
(D-16-24)																							
26ba	5/23/46	26	65	----	----	----	----		160	0	----	16	----	----	----	----	----	----	----	----	483	----	
26dd	5/23/46	41	65	----	60	11	49		274	0	33	28	.6	2.2	319	.43	194	0	35	1.5	568	----	
36ab	5/23/46	77	67	----	----	----	----		163	0	----	22	----	----	----	----	----	----	----	----	369	----	
(D-16-25)																							
2cdd	8/10/53	104	66	36	96	11	41		176	0	142	55	.4	5.1	474	.64	284	140	24	1.1	720	----	
3cac	5/28/42	554	----	----	31	2.2	36		102	0	61	10	1.2	1.0	195	.27	86	2.0	48	1.7	335	----	
9baa	8/10/53	390	78	----	----	----	----		84	0	----	10	----	----	----	----	----	----	----	----	302	----	Annual well sample.
Do	9/9/54	390	78	----	----	----	----		89	0	----	12	----	----	----	----	----	----	----	----	306	----	Annual well sample.
Do	7/12/55	390	----	----	----	----	----		85	0	----	12	----	----	----	----	----	----	----	----	300	----	Annual well sample.
Do	5/28/56	390	78	8.1	29	.2	35		82	0	60	12	1.2	.7	187	.25	74	6.0	51	1.8	308	7.0	Annual well sample.
Do	5/27/57	390	79	----	----	----	----		87	0	----	9.8	----	----	----	----	75	4.0	----	----	308	6.8	Annual well sample.
Do	6/5/58	390	76	----	----	----	----		84	0	----	12	----	----	----	----	70	1.0	----	----	307	6.9	Annual well sample.
9bd	5/14/42	380	----	----	32	3.1	27		85	0	60	11	.8	1.0	177	.24	93	0	39	1.2	301	----	

Table 3.--Laboratory chemical analyses of water from wells and springs in the Willcox basin, Cochise and Graham Counties, Ariz.—Continued

Well location	Date of collection	Depth (feet)	Temperature (°F)	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids: Parts per million	Dissolved solids: Tons per acre-foot	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Percent sodium	Sodium-adsorption ratio (SAR)	Specific conductance (micromhos at 25°C)	pH	Remarks
(D-16-25)—Con.																							
11dc	5/21/46	65	65	------	147	17	96		171	0	357	90	0.6	5.9	798	1.09	437	297	32	2.0	1,210	----	
13bb	5/21/46	60	69	------	------	------	------		162	0	------	19	------	------	------	------	------	------	------	------	575	----	
14dda	9/3/52	613	73	34	33	2.8	35		123	0	52	8.0	1.0	1.0	228	.31	94	0	45	1.6	332	----	Annual well sample.
Do	7/28/53	613	70	34	44	5.5	------		159	0	66	------	1.4	1.1	------	------	132	2.0	------	------	434	----	Annual well sample.
Do	9/9/54	613	76	------	------	------	------		149	0	------	9.0	------	------	------	------	------	------	------	------	380	----	Annual well sample.
Do	7/11/55	613	72	36	36	5.7	35		128	0	59	14	1.4	7.0	251	.34	114	8.0	40	1.4	373	7.0	Annual well sample.
Do	5/28/56	613	70	------	------	------	------		130	0	------	13	------	------	------	------	------	------	------	------	358	7.4	Annual well sample.
Do	5/27/57	613	75	------	------	------	------		129	0	------	16	------	------	------	------	112	6.0	------	------	391	7.0	Annual well sample.
Do	6/18/58	613	------	------	------	------	------		------	------	------	------	------	------	------	------	------	------	------	------	429	----	Annual well sample.
15ab	5/14/42	550	------	------	44	4.4	30		102	0	81	13	1.6	2.5	227	.31	128	44	34	1.2	395	----	
Do	5/21/46	550	77	------	------	------	------		98	0	------	12	.4	------	------	------	------	------	------	------	367	----	
16add	5/21/46	65	66	------	------	------	------		264	0	------	20	2.7	------	------	------	------	------	------	------	667	----	Depth reported.
19bad	7/12/55	------	68	38	44	12	26		200	0	27	13	1.4	1.6	261	.35	160	0	26	.9	420	7.3	
22da	5/21/46	------	67	------	------	------	------		194	0	------	12	4.8	------	------	------	------	------	------	------	454	----	
23ad	5/21/46	52	67	------	29	2.3	52		168	0	33	10	3.2	2.0	214	.29	82	0	58	2.5	362	----	
23cd	5/21/46	------	66	------	208	26	325		290	0	884	105	4.3	17	1,710	2.33	626	386	53	5.7	2,290	----	Boron 0.69; shallow depth.
23cdd	5/21/46	225	67	------	------	------	------		169	0	44	10	4.4	------	------	------	------	------	------	------	421	----	Deep well.
23da	5/21/46	------	69	------	51	5.1	112		220	0	146	36	2.7	2.6	464	.63	148	0	62	4.0	744	----	
24cb	5/21/46	------	67	------	------	------	------		156	0	------	25	------	------	------	------	------	------	------	------	538	----	
24ddd	8/10/53	------	67	33	28	3.4	42		153	0	29	9.5	2.6	.2	223	.30	84	0	52	2.0	323	----	
34ad	5/21/46	------	66	------	29	3.4	79		208	0	50	10	6.0	5.9	286	.39	86	0	67	3.7	474	----	
(D-16-26)																							
7aaa	8/10/53	514	72	33	38	4.2	19		124	0	35	9.0	.8	1.5	202	.27	112	11	27	.8	291	----	
14bb	5/29/46	------	------	------	------	------	------		121	0	------	9.0	------	------	------	------	------	------	------	------	252	----	Tank sample.
16bb	5/29/46	------	71	------	------	------	------		131	0	------	10	------	------	------	------	------	------	------	------	303	----	
17cad	8/10/53	------	72	32	57	7.0	41		144	0	114	16	.6	.8	339	.46	171	53	34	1.4	501	----	
27aaa	9/9/54	------	74	42	27	4.1	71		141	0	92	12	4.0	.9	322	.44	84	0	65	3.4	466	----	
27daa	8/10/53	540	73	35	22	2.3	54		136	0	46	8.0	3.2	2.5	240	.33	64	0	64	2.9	342	----	Annual well sample.
Do	9/8/55	540	73	------	------	------	------		141	0	------	6.0	------	------	------	------	------	------	------	------	354	7.3	Annual well sample.
Do	7/10/56	540	74	------	------	------	------		139	0	------	10	------	------	------	------	------	------	------	------	348	7.3	Annual well sample.

Table 3.--Laboratory chemical analyses of water from wells and springs in the Willcox basin, Cochise and Graham Counties, Ariz.--Continued

Well location	Date of collection	Depth (feet)	Temperature (°F)	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids		Hardness as $CaCO_3$		Percent sodium	Sodium-adsorption ratio (SAR)	Specific conductance (micromhos at 25°C)	pH	Remarks
															Parts per million	Tons per acre-foot	Calcium, magnesium	Noncarbonate					
(D-16-26)—Con.																							
27daa	5/27/57	540	75	------	--------	-------	----------		146	0	------	6.8	-----	-----	-------	------	64	0	-----	--------	358	8.0	Annual well sample.
Do	6/5/58	540	------	------	--------	-------	----------		------	-------	------	--------	-----	-----	-------	------	-------	--------	-----	--------	350	----	Annual well sample.
29aaa	8/10/53	------	70	33	22	2.3	51		142	0	38	7.0	3.2	1.0	228	0.31	64	0	63	2.8	320	----	
35ab	5/29/46	------	69	------	--------	-------	----------		248	0	------	12	-----	-----	-------	------	-------	--------	-----	--------	541	----	
(D-16-28)																							
7cad	9/9/54	295	------	27	28	3.6	14		92	0	14	12	1.0	1.0	145	.20	80	5.0	27	.7	218	----	Annual well sample.
Do	7/28/55	295	66	------	--------	-------	----------		92	0	------	13	-----	-----	-------	------	-------	--------	-----	--------	219	6.8	Annual well sample.
Do	5/28/56	295	67	------	--------	-------	----------		90	0	------	11	-----	-----	-------	------	-------	--------	-----	--------	215	7.3	Annual well sample.
Do	5/28/57	295	63	------	--------	-------	----------		94	0	------	11	-----	-----	-------	------	83	0	-----	--------	219	6.8	Annual well sample.
Do	6/5/58	295	------	------	--------	-------	----------		------	-------	------	--------	-----	-----	-------	------	-------	--------	-----	--------	221	----	Annual well sample.
(D-16-29)																							
30bbd	11/14/46	70	63	------	--------	-------	----------		216	0	------	10	.8	-----	-------	------	-------	--------	-----	--------	500	----	
$35aa_2$	2/14/58	55	------	------	17	2.8	16		40	0	41	7.0	1.0	.3	137	.19	54	21	39	.9	197	6.2	
(D-17-24)																							
12dd	5/23/46	150	70	------	--------	-------	----------		161	6.9	------	24	-----	-----	-------	------	-------	--------	-----	--------	462	----	
(D-17-25)																							
1ab	5/29/46	56	------	------	--------	-------	----------		158	0	------	11	5.2	-----	-------	------	-------	--------	-----	--------	428	----	
2da	5/21/46	47	68	------	--------	-------	----------		159	0	------	6.0	4.4	-----	-------	------	-------	--------	-----	--------	332	----	
3da	5/21/46	58	71	------	--------	-------	----------		160	0	------	10	-----	-----	-------	------	-------	--------	---	--------	356	----	
7bb	5/23/46	78	70	------	--------	-------	----------		179	0	------	18	1.2	-----	-------	------	-------	--------	-----	--------	461	----	
9ccc	8/14/53	358	------	33	52	11	39		216	0	49	17	2.2	2.5	312	.42	174	0	33	1.3	485	----	
11dd	5/22/46	------	------	------	--------	-------	----------		185	0	------	14	-----	-----	-------	------	-------	--------	-----	--------	412	----	Tank sample.
17bb	5/23/46	78	70	------	--------	-------	----------		182	0	------	23	1.2	-----	-------	------	-------	--------	-----	--------	464	----	
17bc	5/23/46	------	69	------	--------	-------	----------		213	0	------	20	.4	-----	-------	------	-------	--------	-----	--------	409	----	
19dcc	2/28/46	190	71	------	53	8.0	27		198	0	22	23	.6	4.8	236	.32	155	3.0	28	.9	415	----	
20ca	5/23/46	140	------	------	--------	-------	----------		197	0	------	25	.6	-----	-------	------	-------	--------	-----	--------	421	----	Tank sample.
23da	5/22/46	75	69	------	108	11	159		216	0	321	88	6.8	10	810	1.10	314	138	52	3.9	1,250	----	
29cb	5/23/46	187	66	------	--------	-------	----------		200	8.9	------	15	.4	-----	-------	------	-------	--------	-----	--------	402	----	Depth reported.
33bc	5/22/46	127	72	------	--------	-------	----------		210	0	------	8.0	-----	-----	-------	------	-------	--------	-----	--------	416	----	Depth reported.
35cc	5/22/46	146	71	------	--------	-------	----------		184	0	------	15	-----	-----	-------	------	-------	--------	-----	--------	515	----	

Table 3.--Laboratory chemical analyses of water from wells and springs in the Willcox basin, Cochise and Graham Counties, Ariz.—Continued

Well location	Date of collection	Depth (feet)	Temperature (°F)	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids		Hardness as $CaCO_3$		Percent sodium	Sodium-adsorption ratio (SAR)	Specific conductance (micromhos at 25°C)	pH	Remarks
															Parts per million	Tons per acre-foot	Calcium magnesium	Noncarbonate					
(D-17-26)																							
2cc	5/29/46	------	74	------	-------	-------	---------		140	0	------	7.0	-----	-----	-------	------	-------	--------	-----	---------	295	----	
4da	5/29/46	103	------	------	-------	-------	---------		163	0	------	14	-----	-----	-------	------	-------	--------	-----	---------	366	----	Tank sample.
6bb	5/29/46	------	------	------	-------	-------	---------		146	0	------	11	-----	-----	-------	------	-------	--------	-----	---------	320	----	Tank sample.
22bb	5/29/46	------	69	------	-------	-------	---------		136	0	------	10	-----	-----	-------	------	-------	--------	-----	---------	275	----	
25cbc	2/12/52	------	65	------	-------	-------	---------		120	0	------	10	-----	-----	-------	------	-------	--------	-----	---------	244	----	
25cc	5/29/46	------	66	------	20	4.4	29		118	0	12	11	2.0	1.7	138	0.19	68	0	48	1.5	249	----	
25dd	5/29/46	125	65	------	-------	-------	---------		139	0	------	8.0	2.4	-----	-------	------	-------	--------	-----	---------	266	----	
34ca	5/29/46	100	68	------	-------	-------	---------		214	0	------	6.0	.8	-----	-------	------	-------	--------	-----	---------	388	----	Tank sample.
(D-17-27)																							
31dc	5/30/46	------	------	------	-------	-------	---------		62	16	------	8.0	-----	-----	-------	------	-------	--------	-----	---------	178	----	Tank sample.
(D-17-29)																							
9cc	11/5/46	------	60	------	-------	-------	---------		32	0	------	6.0	-----	-----	-------	------	-------	--------	-----	---------	141	----	
(D-18-24)																							
28cd	9/18/51	------	90	18	126	9.0	19		398	0	41	15	1.2	.3	426	.58	352	26	10	.1	698	----	Spring.
34cc	9/18/51	------	75	18	96	14	14		326	0	46	6.0	.2	3.9	359	.49	297	30	9	.1	585	----	Spring.
(D-18-25)																							
2ca	2/28/46	------	70	------	-------	-------	---------		203	0	------	6.0	-----	-----	-------	------	-------	--------	-----	---------	446	----	
5ac	5/22/46	------	77	------	46	9.3	25		175	0	22	16	2.0	16	222	.30	153	10	26	.9	398	----	
9bb	5/22/46	195+	71	------	-------	-------	---------		201	0	------	13	-----	-----	-------	------	-------	--------	-----	---------	409	----	
12dd	9/4/51	209	71	------	-------	-------	---------		243	0	------	37	1.1	-----	-------	------	-------	--------	-----	---------	574	----	
25cd	5/28/46	320	70	------	-------	-------	---------		159	0	------	7.0	-----	-----	-------	------	-------	--------	-----	---------	308	----	
(D-18-26)																							
10cc	5/28/46	110	70	------	-------	-------	---------		133	0	------	9.0	.4	-----	-------	------	-------	--------	-----	---------	278	----	
11ba	5/30/46	100	67	------	20	5.1	16		107	0	7.6	4.0	.8	3.3	110	.15	71	0	33	.8	196	----	
11da	5/30/46	------	------	------	-------	-------	---------		144	0	------	7.0	.8	-----	-------	------	-------	--------	-----	---------	265	----	Tank sample.
12bb	5/30/46	80	------	------	-------	-------	---------		142	0	------	13	-----	-----	-------	------	-------	--------	-----	---------	285	----	
12cc	5/30/46	------	------	------	-------	-------	---------		150	0	------	10	1.2	-----	-------	------	-------	--------	-----	---------	293	----	
15bb	5/28/46	110	70	------	30	5.2	26		141	0	18	6.0	3.0	3.0	161	.22	96	0	37	1.2	286	----	
16bb	5/28/46	120	68	------	-------	-------	---------		126	0	------	12	-----	-----	-------	------	-------	--------	-----	---------	292	----	
18bb	5/28/46	350	70	------	33	14	61		236	0	23	23	1.2	25	296	.40	140	0	49	2.2	500	----	
18db	5/28/46	300	------	------	32	15	71		148	0	53	62	2.0	32	340	.46	142	20	52	2.6	600	----	Boron 0.14; tank sample.

Table 3.--Laboratory chemical analyses of water from wells and springs in the Willcox basin, Cochise and Graham Counties, Ariz.—Continued

Well location	Date of collection	Depth (feet)	Temperature (°F)	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids		Hardness as $CaCO_3$		Percent sodium	Sodium-adsorption ratio (SAR)	Specific conductance (micromhos at 25°C)	pH	Remarks
															Parts per million	Tons per acre-foot	Calcium, magnesium	Noncarbonate					
(D-18-26)—Con.																							
19ba	5/28/46	160	70	------	------	------	------		142	0	------	6.0	3.2	------	------	------	------	------	----	------	288	----	
21bb	5/28/46	------	68	------	------	------	------		107	0	------	5.0	----	------	------	------	------	------	----	------	220	----	
28dd	5/28/46	80	68	------	------	------	------		141	0	------	9.0	----	------	------	------	------	------	----	------	281	----	
29cd	5/20/46	86	67	------	------	------	------		119	0	------	10	1.2	------	------	------	------	------	----	------	246	----	
32db	5/28/46	80	67	------	------	------	------		101	0	------	16	1.2	------	------	------	------	------	----	------	267	----	
34bb	5/28/46	85	68	------	------	------	------		137	0	------	8.0	----	------	------	------	------	------	----	------	263	----	
(D-18-27)																							
6dd	5/30/46	146	65	------	------	------	------		170	0	------	9.0	----	------	------	------	------	------	----	------	317	----	
7cd	5/30/46	135	----	------	------	------	------		167	0	------	21	.4	------	------	------	------	------	----	------	391	----	
14bb	5/30/46	------	75	------	------	------	------		158	0	------	10	.8	------	------	------	------	------	----	------	283	----	
19ba	5/30/46	------	----	------	------	------	------		194	0	------	12	----	------	------	------	------	------	----	------	370	----	Tank sample.
21bc	5/30/46	200	----	------	------	------	------		182	0	------	6.0	.6	------	------	------	------	------	----	------	315	----	

Table 4.--Field chemical analyses of water from wells and springs in the Willcox basin, Cochise and Graham Counties, Ariz.

[Analyses in parts per million, except as indicated. Remarks: SD, sample depth in feet below land surface; WL, water level in feet below land surface.]

Well location	Date of collection	Depth (feet)	Temperature (°F)	Bicarbonate (HCO_3)	Chloride (Cl)	Fluoride (F)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Specific conductance (micromhos at 25°C)	Remarks
(D-12-23) 2bbb	7/19/62	-------	68	105	15	0.2	86	0	210	
11abb	7/19/62	-------	68	105	8	.2	86	0	200	
11baa	7/19/62	-------	68	105	11	.2	68	0	180	
11bbb	7/19/62	303	67	105	8	.2	68	0	200	Cooling jacket.
13bba	7/19/62	172	68	146	45	.2	188	68	475	
13bda	7/18/62	-------	68	105	22	.2	103	17	260	
13dba	7/18/62	265	71	117	15	.3	51	0	185	Cooling jacket.
13dcc	7/18/62	384	70	109	15	.3	68	0	200	Cooling jacket.
14abb	7/19/62	285	70	83	8	.2	51	0	165	
14cbb	7/19/62	268	68	126	15	.2	86	0	240	
24daa	7/18/62	-------	68	83	49	.8	86	18	440	SD 150 feet, WL 128 feet.
24dab	7/18/62	161	70	105	22	.4	86	0	240	
24dcc	7/18/62	-------	69	105	15	.3	68	0	200	
25cdc	7/18/62	-------	84	105	19	.2	68	0	225	Domestic, windmill, tap sample.
(D-12-24) 6dcb	7/19/62	-------	74	105	8	.4	68	0	175	Sample taken from tank, domestic.
7cad	7/19/62	-------	70	105	15	.3	68	0	200	
$17aaa_2$	7/18/62	1,385	70	62	15	2.5	51	0	440	
17bba	7/18/62	260	68	105	19	.3	86	0	225	
17bbb	7/18/62	320	69	105	15	.3	86	0	210	
17cbb	7/18/62	148	70	105	22	.3	68	0	220	
18abb	7/18/62	170	71	105	19	.3	68	0	220	Cooling jacket.
19bbb	7/18/62	280	70	105	15	.3	68	0	190	
20bba	7/19/62	-------	73	105	15	.4	51	0	170	
20ccb	7/18/62	-------	72	83	13	.5	34	0	170	
20dcb	7/19/62	424	70	105	22	.4	68	0	250	
21caa	7/19/62	-------	78	105	8	.7	51	0	170	
27aaa	7/18/62	-------	79	109	11	2.8	17	0	200	SD 100 feet.
Do	7/18/62	-------	80	105	11	2.8	17	0	200	SD 300 feet.
Do	7/18/62	-------	80	105	11	2.7	17	0	200	SD 500 feet.
Do	7/18/62	-------	82	105	11	2.2	34	0	200	SD 925 feet.
28aaa	7/18/62	210	80	109	11	2.8	34	0	215	
29baa	7/19/62	-------	72	105	22	1.4	34	0	250	
30baa	7/18/62	-------	72	105	38	.7	68	0	350	
31abb	7/18/62	215	70	105	38	.3	103	17	300	
31bba	7/18/62	377	74	83	11	.6	34	0	160	
31dbb	7/17/62	200	75	83	30	1.3	34	0	240	
32abb	7/18/62	450	69	83	22	.3	68	0	200	
32bba	7/18/62	-------	70	83	22	.3	68	0	230	
32bcb	7/18/62	235	68	105	45	.2	137	51	370	
32ccc	7/18/62	115	70	115	30	.2	120	26	300	

Table 4. --Field chemical analyses of water from wells and springs in the Willcox basin, Cochise and Graham Counties, Ariz. —Continued

Well location	Date of collection	Depth (feet)	Temperature (°F)	Bicarbonate (HCO_3)	Chloride (Cl)	Fluoride (F)	Hardness as $CaCO_3$		Specific conductance (micromhos at 25°C)	Remarks
							Calcium, magnesium	Noncarbonate		
(D-12-24) 33aba	7/18/62	-------	70	105	8	0.5	51	0	160	
33cbb	7/19/62	104	69	105	38	.7	103	17	340	
34aba$_1$	7/19/62	201	76	146	15	2.6	103	0	270	Domestic, tank, tap sample.
34aba$_2$	7/19/62	300	70	146	8	3.6	86	0	260	
35abb	7/19/62	900	78	109	15	1.8	51	0	220	
35baa	7/18/62	936	79	146	15	.4	103	0	280	Domestic, tap sample.
35caa	7/18/62	990	79	109	11	1.5	51	0	230	
35cda	7/18/62	200	74	146	15	1.2	86	0	280	
(D-13-24) 1abb	7/16/62	-------	74	176	30	3.0	103	0	395	
2baa	7/16/62	843	80	142	22	2.4	86	0	320	
2bab	7/16/62	131	68	229	68	1.4	274	86	710	
2bba	7/16/62	-------	89	92	22	5.3	34	0	320	
2dbb	7/18/62	194	71	146	68	2.1	188	68	535	SD 194 feet.
4bab	7/16/62	231	68	126	22	1.2	51	0	250	
4bbb	7/16/62	600	73	109	22	1.5	17	0	250	
5abb	7/16/62	220	72	100	15	1.2	34	0	165	
5bba	7/16/62	-------	72	92	15	1.4	34	0	160	
5bbc	7/16/62	110	70	100	15	1.6	51	0	200	
5cbb	7/18/62	-------	69	126	15	.4	86	0	205	
6acd	7/17/62	-------	70	105	15	1.2	34	0	200	
6dba	7/17/62	132	69	126	15	1.0	103	0	260	
13adb	7/17/62	-------	75	126	22	4.3	86	0	350	Shallow well.
13dcd	7/20/62	-------	70	188	26	1.4	120	0	430	
13ddc	7/20/62	-------	81	146	22	4.0	68	0	350	Domestic, tank, tap sample.
14aaa	7/16/62	-------	72	200	38	6.2	68	0	475	
15bcc	7/17/62	150	73	271	68	10.0	17	0	800	
16aaa	7/16/62	-------	72	33	15	1.6	17	0	200	
18aaa	7/17/62	1,900	70	126	30	.8	86	0	300	
18abb	7/17/62	-------	71	126	30	1.0	68	0	300	
23bbb	7/17/62	92	69	229	45	1.4	239	51	690	
24dcd	7/17/62	66	80	146	15	1.9	103	0	275	WL 52 feet.
26bcc	7/19/62	-------	68	167	113	3.6	154	17	700	
27aaa	7/16/62	131	66	250	135	1.2	393	188	1,050	
27abb	7/16/62	118	68	161	232	4.5	256	124	1,250	
28acd	7/17/62	500	67	188	38	1.1	120	0	440	
28bbb	7/17/62	500	67	167	38	3.0	68	0	410	
29aab	7/17/62	100	69	167	22	2.5	68	0	370	
35aba$_1$	7/16/62	80	69	209	83	1.5	188	17	700	
35aba$_2$	7/16/62	80	67	229	127	2.0	257	69	990	
35bbb	7/17/62	757	70	334	143	2.0	308	34	1,150	
(D-13-25) 8bcb	7/20/62	-------	72	135	26	7.0	34	0	390	Windmill.
9ddc	7/20/62	100	76	209	39	.8	171	0	540	Domestic, tap sample.

Table 4.--Field chemical analyses of water from wells and springs in the Willcox basin, Cochise and Graham Counties, Ariz.—Continued

Well location	Date of collection	Depth (feet)	Temperature (°F)	Bicarbonate (HCO_3)	Chloride (Cl)	Fluoride (F)	Hardness as $CaCO_3$		Specific conductance (micromhos at 25°C)	Remarks
							Calcium, magnesium	Noncarbonate		
(D-13-25) 10cdb	7/18/62	-------	74	229	53	1.6	222	34	620	
10cdd	7/19/62	-------	70	209	287	2.3	510	339	1,600	Windmill.
17acc	7/20/62	100	75	198	26	9.0	17	0	525	Domestic, tank, tap sample.
18abb$_1$	7/17/62	-------	78	250	22	14.2	17	0	600	
18abb$_2$	7/17/62	60	76	167	45	8.8	68	0	560	Windmill.
20daa	7/20/62	65	-------	335	61	6.5	120	0	990	Domestic, tank, tap sample.
21bbb	7/20/62	-------	80	167	35	9.0	34	0	500	Domestic, tank, tap sample.
21dbb	7/19/62	-------	70	312	87	11.5	51	0	1,020	Windmill.
27acc	7/19/62	90	71	396	91	17.6	34	0	1,050	Windmill.
27bad	7/19/62	-------	73	271	52	19.0	34	0	730	Windmill.
29acc	7/19/62	-------	68	522	52	17.0	17	0	1,100	Domestic, tank.
30cdd	7/20/62	-------	68	209	26	7.2	34	0	440	Stock well.
31baa	7/20/62	74	68	177	22	2.5	86	0	390	City of Willcox well 6.
31cab$_1$	7/20/62	-------	69	167	9	1.2	68	0	280	City of Willcox well 4, tank.
31cab$_2$	7/17/62	800	89	355	420	13.0	17	0	2,300+	City of Willcox deep well, flowing.
31cab$_3$	7/17/62	-------	-------	188	17	2.1	68	0	-------	City of Willcox well 2.
31cca	7/20/62	79	70	209	26	2.0	86	0	500	City of Willcox well 5.
31dcd$_1$	7/20/62	102	71	220	35	3.1	103	0	545	City of Willcox well 1.
33abb	7/20/62	-------	67	376	78	7.8	86	0	1,080	Windmill.
(D-14-23) 36baa	7/20/62	-------	72	229	113	4.5	137	0	1,000	Domestic.
(D-14-24) 1dda	/62	-------	65	282	117	1.8	137	0	850	Windmill.
11adb	/62	-------	66	292	35	6.0	68	0	630	Windmill.
11cbb	/62	-------	66	271	22	7.0	68	0	540	Windmill.
11dcc	/62	-------	70	209	17	6.5	43	0	480	Windmill.
12dba	/62	-------	72	250	54	6.0	120	0	610	
14bab	/62	-------	83	250	26	7.0	78	0	590	Domestic, tap sample.
14cbb	/62	-------	69	314	35	7.0	94	0	740	Windmill.
20cdd	/62	-------	65	209	61	4.9	86	0	810	
22add	/62	-------	72	917	139	24.0	17	0	2,450	
24bdb	/62	-------	70	752	109	16.0	17	0	1,800	
30dba	/62	-------	80	250	113	5.1	154	0	1,500	
(D-14-25) 10aab	7/24/62	-------	86	188	660	1.9	581	427	2,800	Windmill, tank.
16aad	7/24/62	-------	67	417	540	5.6	410	68	3,000	Windmill.
19bbc	7/24/62	-------	70	626	96	15.2	17	0	1,500	
26ddd	8/1/62	-------	79	209	61	1.4	120	0	580	
(D-14-26) 18add	7/24/62	-------	79	146	53	2.1	51	0	475	Cooling jacket.
18bad	7/24/62	-------	81	105	165	2.5	86	0	850	Cooling jacket.
18caa	7/24/62	500	84	126	60	3.0	34	0	400	Cooling jacket.
18dad	7/24/62	-------	80	146	30	2.1	51	0	375	Cooling jacket.
(D-15-23) 26add	-------	-------	74	209	26	1.4	188	17	510	Domestic.
(D-15-24) 6bad	/62	-------	91	314	322	13.5	51	0	1,825	Croton Spring.

Table 4.--Field chemical analyses of water from wells and springs in the Willcox basin, Cochise and Graham Counties, Ariz.—Continued

Well location	Date of collection	Depth (feet)	Temperature (°F)	Bicarbonate (HCO_3)	Chloride (Cl)	Fluoride (F)	Hardness as $CaCO_3$		Specific conductance (micromhos at 25°C)	Remarks
							Calcium, magnesium	Noncarbonate		
(D-15-24) 8cad	/62	-------	75	282	348	9.0	103	0	1,850	
17dcc	/62	-------	77	209	209	1.0	462	291	1,300	Domestic, tap sample.
19baa	/62	-------	86	250	209	1.6	239	34	1,370	Domestic, tap sample.
20bac	/62	81	72	209	148	.9	428	257	1,150	Domestic, WL 67 feet (reported).
20cac	/62	100±	74	209	52	.8	325	154	770	Domestic, tap sample.
20cda	/62	99	72	188	270	.8	496	342	1,390	Domestic, tap sample.
20dcb	/62	200±	74	188	574	1.0	2,189	2,035	4,000	Domestic, tap sample.
29bcb	/62	-------	74	198	426	1.1	616	454	2,050	
30dcc	/62	400	73	209	22	.8	257	86	645	
31bad	/62	-------	73	209	30	.8	274	103	720	
31cba	/62	-------	73	209	17	.7	239	68	570	
(D-15-25) 2daa	7/24/62	-------	64	314	45	1.7	205	0	710	Windmill.
10dda	7/24/62	-------	68	250	15	1.5	171	0	500	Windmill.
11dda	7/24/62	-------	66	229	30	1.4	188	0	590	Windmill.
12aaa	7/24/62	-------	74	188	45	2.1	171	17	530	Cooling jacket.
13ddd	7/24/62	510	74	167	75	1.4	171	34	600	
24add	7/24/62	-------	69	209	90	.8	308	137	890	
25ada	7/24/62	516	76	167	19	1.4	103	0	350	Cooling jacket.
26daa	7/24/62	-------	70	167	80	1.3	291	154	850	Cooling jacket.
26ddd	7/24/62	455	79	146	22	1.5	103	0	390	Cooling jacket.
34add	7/24/62	-------	81	126	15	1.6	86	0	375	Cooling jacket.
34bdd	7/24/62	1,100	72	250	150	1.8	308	103	1,450	Cooling jacket.
34daa	7/24/62	486	74	126	15	1.2	120	17	340	Cooling jacket.
35add	7/24/62	700	80	126	15	1.6	103	0	380	Cooling jacket.
36ddd	7/24/62	-------	78	126	15	1.5	120	17	350	
(D-15-26) 5bdd	7/24/62	-------	74	188	22	1.6	137	0	400	
5cdd	7/24/62	470	75	188	41	2.2	137	0	420	
6cad	7/24/62	-------	75	188	86	1.4	205	51	650	
6daa	7/24/62	453	77	167	22	2.0	103	0	400	
6dda	7/24/62	460	77	167	22	1.7	103	0	390	
19add	7/24/62	-------	74	209	15	1.9	120	0	390	Cooling jacket.
19cdd	7/24/62	918	74	167	15	1.6	120	0	345	
30cdd	7/24/62	520	78	167	22	1.6	103	0	335	Cooling jacket.
30dcd	7/24/62	587	75	167	22	1.2	137	0	485	Cooling jacket.
30ddd	7/24/62	999	77	146	15	1.9	86	0	340	Cooling jacket.
(D-16-24) 4cbb	/62	-------	76	240	26	.6	239	42	650	
20bad	/62	-------	73	261	17	.4	222	0	510	Cooling jacket.
21bcc	/62	770	76	292	17	.4	205	0	480	
(D-16-25) 1baa	7/24/62	437	68	167	60	1.0	205	68	530	
1bad	7/24/62	100	67	159	90	.5	325	195	760	
1daa	7/24/62	505	68	146	86	.5	239	119	620	
2acd	7/24/62	-------	70	126	45	.6	188	85	470	Cooling jacket.

Table 4. --Field chemical analyses of water from wells and springs in the Willcox basin, Cochise and Graham Counties, Ariz. —Continued

Well location	Date of collection	Depth (feet)	Temperature (°F)	Bicarbonate (HCO_3)	Chloride (Cl)	Fluoride (F)	Hardness as $CaCO_3$		Specific conductance (micromhos at 25°C)	Remarks
							Calcium, magnesium	Noncarbonate		
(D-16-25) 2add	7/24/62	-------	68	146	98	0.4	290	170	740	
2cdd	7/24/62	104	70	146	150	.4	581	461	1,370	
2dad	/62	-------	70	126	68	.6	291	188	700	
2dcd	7/24/62	-------	70	126	135	.6	496	393	1,120	
9add	7/19/62	445	69	142	22	2.0	68	0	395	Surface sample.
9bba	/62	-------	75	105	35	4.8	68	0	320	Domestic.
10cdc	/62	-------	67	146	210	1.6	564	444	1,500	
11dcd	/62	-------	67	126	300	.9	718	615	2,140	
11dda	/62	-------	69	188	150	.8	735	581	1,750	
12ada	7/18/62	445	69	-------	-------	.6	-------	-------	1,090	SD 150 feet, cascading water.
Do	7/18/62	445	70	146	75	.6	308	188	760	SD 300 feet.
Do	7/18/62	445	70	-------	-------	.6	-------	-------	780	SD 400 feet.
12add	7/18/62	-------	78	126	26	3.0	137	34	490	
12ddd	/62	303	70	146	83	.7	393	273	1,000	
13bad	/62	-------	68	146	210	1.2	684	564	1,750	
14aad	/62	-------	76	126	22	1.2	103	0	415	
14dda	/62	613	74	146	17	2.6	94	0	390	
16daa	/62	-------	68	292	19	3.6	188	0	750	Windmill.
23ddd	/62	-------	75	146	26	3.1	103	0	420	
24add	/62	400	73	146	26	2.8	103	0	430	
24daa	/62	-------	74	146	13	3.2	68	0	325	
24dcc	/62	-------	75	146	22	3.0	60	0	325	
24ddd	8/1/62	-------	73	146	17	2.7	60	0	325	
28bbb	/62	-------	79	156	17	6.5	51	0	410	Domestic, tap sample.
28cda	/62	-------	80	126	17	1.6	51	0	370	Cooling jacket.
(D-16-26) 2ada	/62	-------	81	146	17	1.2	51	0	270	Cooling jacket.
3aaa	/62	-------	78	167	13	1.9	51	0	300	
3baa	/62	-------	77	167	13	2.0	51	0	310	Cooling jacket.
4bbc	7/24/62	-------	82	146	11	.6	103	0	260	Domestic, tank.
5dad	7/24/62	-------	78	126	15	.6	103	0	270	Cooling jacket.
6daa	7/24/62	-------	75	126	11	.4	103	0	280	
6dad	7/24/62	662	75	126	15	.5	120	17	325	
8cdd	/62	805	79	126	17	.7	145	42	440	
10add	/62	-------	76	115	17	1.9	120	26	490	Cooling jacket.
10bdd	/62	-------	76	126	17	1.0	86	0	330	Cooling jacket.
10dda	/62	-------	76	135	17	1.0	86	0	255	Cooling jacket.
11ddd	/62	-------	82	105	44	1.0	257	171	920	Cooling jacket.
12ddd	/62	-------	79	105	9	.5	86	0	240	
13bad	/62	-------	80	126	9	.5	86	0	250	
14acc	/62	-------	78	126	17	1.2	120	17	410	Cooling jacket.
14ada	/62	-------	80	115	26	1.1	154	60	640	Cooling jacket.
14ddd	/62	-------	79	126	17	.8	103	0	350	Cooling jacket.

Table 4. --Field chemical analyses of water from wells and springs in the Willcox basin, Cochise and Graham Counties, Ariz. —Continued

Well location	Date of collection	Depth (feet)	Temperature (°F)	Bicarbonate (HCO_3)	Chloride (Cl)	Fluoride (F)	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Specific conductance (micromhos at 25°C)	Remarks
(D-16-26) 18ada	/62	-------	72	126	35	1.0	171	68	550	
18daa	/62	-------	73	126	35	1.6	171	68	550	
24baa	8/1/62	-------	76	126	22	.9	171	68	510	Tank.
26baa	8/1/62	-------	71	146	22	3.0	86	0	515	Domestic, tap sample.
29aaa	8/1/62	-------	80	146	17	2.7	68	0	340	Cooling jacket.
34aaa	/62	825	75	135	13	3.9	51	0	305	Cooling jacket.
(D-16-27) 7ccd	/62	-------	76	126	9	.6	86	0	240	
7cdd	/62	-------	76	126	13	.5	86	0	240	
(D-17-23) 26dda	/62	-------	65	21	17	.8	68	51	235	
(D-17-24) 13add	8/1/62	-------	73	229	26	.5	188	0	440	
(D-17-25) 8ccd	8/1/62	-------	81	240	17	2.5	171	0	500	
9bcd	8/1/62	130	71	229	78	2.8	239	51	810	
20ccc	/62	-------	83	229	17	.4	171	-------	400	Domestic, tap sample.
(D-17-26) 3add	/62	-------	78	146	22	8.0	68	0	720	Cooling jacket.
3dad	/62	-------	83	135	17	7.0	51	0	650	Cooling jacket.
5aaa	8/1/62	-------	84	126	17	4.2	68	0	325	Domestic, tank.
$10aaa_1$	/62	-------	82	135	17	7.0	51	0	650	Cooling jacket.
$10aaa_2$	/62	-------	79	146	17	6.5	51	0	430	
10daa	/62	650	80	126	22	8.0	68	0	680	Cooling jacket.
14aaa	/62	-------	73	146	13	3.5	68	0	280	Cooling jacket.
(D-17-27) 31ddd	/62	555	70	126	13	2.0	51	0	230	Cooling jacket.
(D-18-25) 5bad	/62	-------	78	209	17	.5	154	0	420	Pearce School well.
(D-18-27) 8ccc	/62	-------	76	167	17	1.2	86	0	280	Sunizona well, tank.