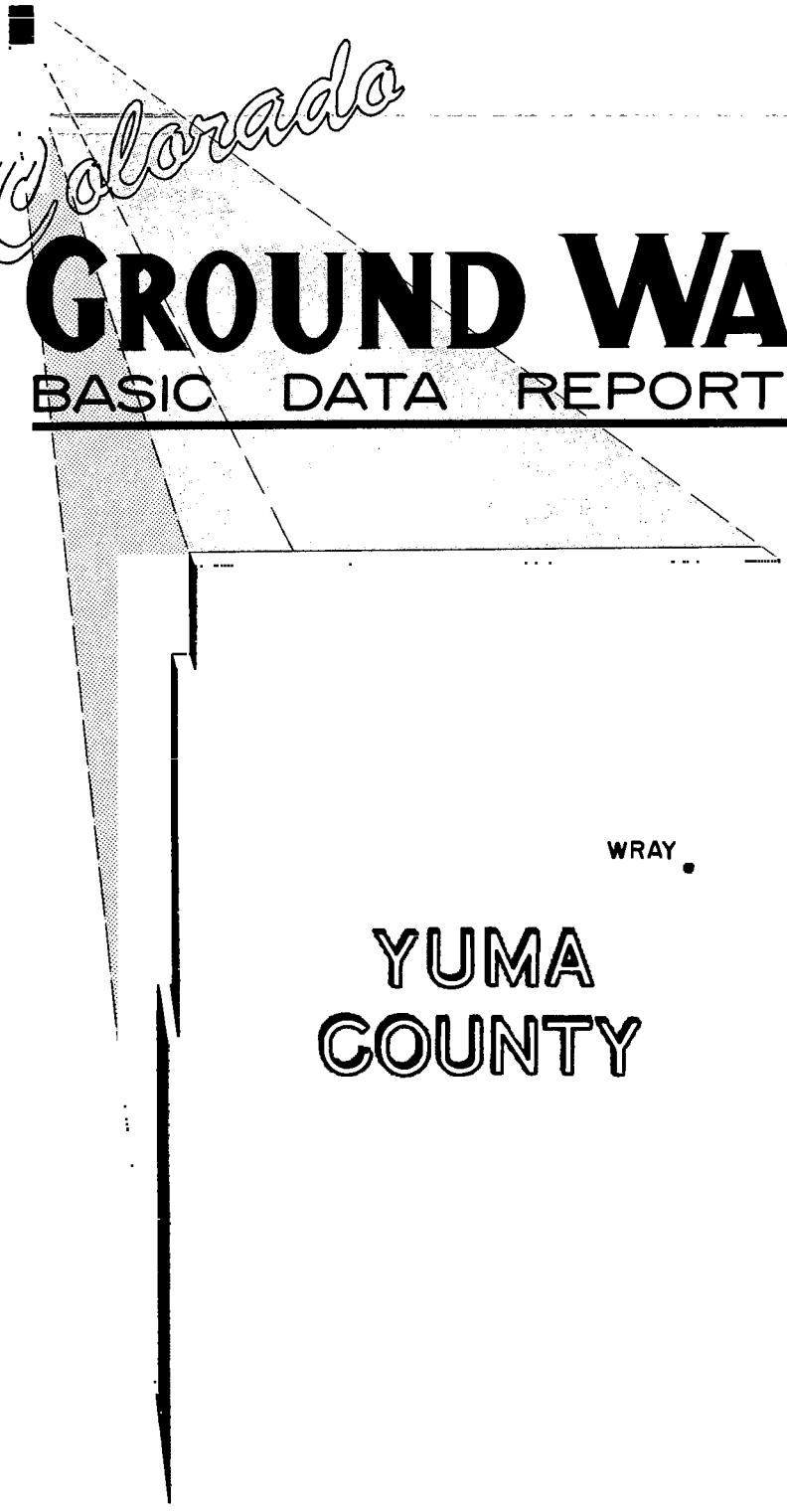
Colorado

GROUND WATER

BASIC DATA REPORT NO. 2



1960

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BASIC-DATA REPORTS - GROUND-WATER SERIES: This is one in a series of basic-data reports prepared cooperatively by the Colorado Water Conservation Board and the U.S. Geological Survey. The basic data included in this series of reports generally consist of well records, logs of wells and test holes, and chemical analyses of water samples collected during a detailed investigation. Pending publication of an interpretive companion report as a Geological Survey Water-Supply Paper, much use can be made of the basic data by the public, water-well contractors, and consultants in planning ground-water supplies.

Records and logs of selected wells and test holes, and chemical analyses of ground water, Yuma County, Colorado

By William G. Weist, Jr.
Geologist, U. S. Geological Survey

Prepared by
The United States Geological Survey
in cooperation with
The Colorado Water Conservation Board
Denver, Colorado
1960

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Introduction

This report is intended to serve two purposes: (1) to make available to the public basic ground-water data useful in planning and studying water-resources development and (2) to supplement an interpretive report that will be published later.

The records were collected during the period 1956-58 as a part of the investigation of the geology and ground-water resources of Yuma County, Colo., made by the U.S. Geological Survey in cooperation with the Colorado Water Conservation Board. The interpretive report by W. G. Weist, Jr., will be published as a Geological Survey Water-Supply Paper entitled "Geology and ground-water resources of Yuma County, Colo."

The well and test-hole numbers in the tables indicate the locations of wells shown on plate 1. The numbering system is based on the U.S. Bureau of Land Management system of land subdivision. The number shows the location of the well or test hole by township, range, section, and position within the section. A graphical illustration of this method of well location is shown in figure 1. The first letter indicates the quadrant of the base line and principal meridian - B indicates the northwest quadrant, C the southwest quadrant. The first numeral indicates the township, the second indicates the range, and the third indicates the section in which the well is situated. Lowercase letters following the section number locate the well within the section. The first letter denotes the quarter section, the second letter denotes the quarter-quarter section, and the third letter denotes the quarter-quarter-quarter section. The letters are assigned in a counterclockwise direction, beginning with (a) in the northeast quarter of the section. Letters are assigned to each quarter-quarter section and each quarter-quarter-quarter section in the same manner. If more than one well occurs in a quarter-quarter-quarter section, consecutive numbers beginning with 1 are added to the letters. For example, B3-45-24cda2 indicates a well in the northeast quarter of the southeast quarter of the southwest quarter of sec. 24, T. 3 N., R. 45 W., and shows that this is the second well inventoried in the quarter-quarter-quarter section.

This report is most useful in predicting conditions likely to be encountered when drilling a new well. The person considering the new well can spot the proposed site on plate 1 and examine the records of nearby wells. From table 2, he can determine what success his neighbors may have had; from tables 3 and 4 he may determine the type of materials likely to be encountered; and from table 5 he may determine whether the quality of water is likely to be suitable for its intended use.

The report also is useful when repairing wells, determining the extent of geologic formations, and planning large-scale developments of water supply. These and other uses of the report will be facilitated upon release of the interpretive report.

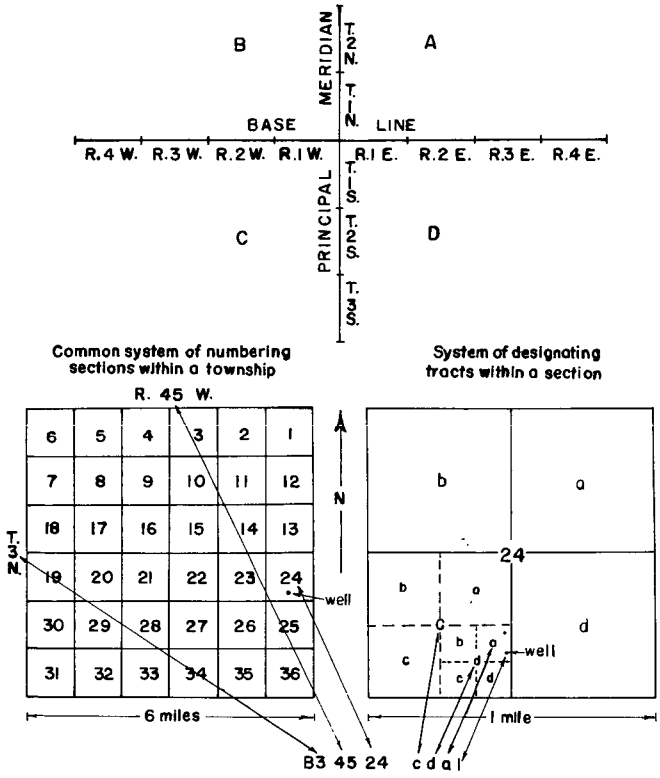

Figure 1 —— System of numbering wells and test holes in Colorado.

Table 1.--Generalized section of the geologic formations in Yuma County.

System	Series	Subdivision	Thickness (feet)	Physical Character	Water Supply
Quaternary	Recent and Pleistocene	Alluvium	0-75±	Unconsolidated gravel, sand, silt, and clay, both intermixed and as alternating layers	Yields adequate quantities of water for stock and domestic supplies. Alluvium in the valley of the North Fork of the Republican River yields a small quantity for irrigation. Alluvium in the Arikaree River valley yields moderate quantities for irrigation. Alluvium in the valley of the South Fork of the Republican River yields moderate to large quantities for irrigation
		Dune sand	0-100±	Tan unconsolidated very fine to coarse quartz sand, wind-deposited	Generally lies above the water table and, hence, yields no water to wells. May yield amounts adequate for stock or domestic purposes where saturated. The dunes are important catchment areas for recharge from precipitation, owing to the relatively high permeability of the sand
		Unconformity			
	Pleistocene	Peorian loess	0-120±	Yellowish-gray silt and clay containing scattered sand grains and calcareous concretions; wind-deposited	Lies above the water table and, hence, yields no water to wells. Most precipitation runs off. Many intermittent lakes form on the surface
		Unconformity			
	Pleistocene	Sappa(?) formation	0-10±	Light-gray fossiliferous sand and silty marl overlain by thin soil zone	Generally lies above the water table and, hence, yields no water to wells
		Grand Island(?) formation	0-30±	Loosely consolidated calcareous reddish-brown to light-gray sand and gravel, stream-deposited	Do
		Unconformity			
Tertiary	Pliocene	Ogallala formation	0-460	Gravel, sand, silt, and clay containing beds of limy sandstone, opaline quartzite, and volcanic ash; "algal" limestone at top; stream-deposited	The principal aquifer in the county. Yields adequate quantities of water for stock and domestic supplies throughout most of area of its occurrence. In many places yields moderate to large quantities for irrigation.
		Unconformity			
Cretaceous	Upper Cretaceous	Pierre shale	1,300-2,500	Gray to black marine shale containing gypsum, bentonite, and calcareous concretions; weathered zone of yellow clay usually present at top	Not known to yield water to wells in the area

Table 2.--Records of wells in Yuma County, Colo.

Well number: See text for description of well-numbering system.

Type of well: Du, dug; Dr, drilled; DD, dug and drilled.

Depth of well: Measured depths are given in feet and tenths below measuring point; reported depths are given in feet below land surface.

Type of casing: C, concrete; G, galvanized steel (most small-diameter wells); P, iron pipe; S, steel (all large-diameter wells).

Character of material: G, gravel; S, sand.

Geologic sources: O, Ogallala formation; A, alluvium; D, dune sand.

Method of lift (first letter) and type of power (second letter); C, cylinder; Cf, centrifugal; J, jet; N, none; T, turbine; D, diesel engine; E, electric motor; G, gasoline engine; H, hand operated; Lp, low-pressure gas engine; N, none; Ng, natural-gas engine; W, windmill.

Use of water: D, domestic; I, irrigation; M, municipal; N, none; P, public supply; S, stock.

Measuring point: Bpb, bottom of pump base; Cpb, cutout in pump base; Hc, hole in casing; Hpb, hole in pump base; Pf, pipe in floor; Tc, top of casing; Tf, top of flooring; Tms, top of metal support; Tpb, top of pump base.

Depth to water: Measured depths to water level are given in feet and hundredths; reported depths are given in feet and tenths below land surface.

Remarks: A60, 60 acres irrigated; AqT, aquifer test made on well; Dd17, drawdown 17 feet; R = reported value; L, log available for well; OW, observation well; Ps 320, Pierre shale at 320 feet; Sca, sample of water collected for analysis; Ss, sprinkler system used at least in part; Y 1,000, yield 1,000 gpm; R = reported value, E = estimated value.

Location	Owner or tenant	Year drilled	Type of well	Depth of well (feet)	Diameter of well (inches)	Type of casing	Principal water-bearing bed: Character of material	Principal water-bearing bed: Geologic source	Method of lift	Use of water	Measuring point: Description	Measuring point: Distance above or below (-) land surface (feet)	Measuring point: Height above mean sea level (feet)	Distance to water level below measuring point (feet)	Date of measurement	Remarks
B1-42-5 dbb	L. R. Crews		Dr	28.0	5	G	S, G	A	C, W	D, S	Tc	0.5	3,396.3	20.00	7-25-56	
-6 bda	A. Schroeder		Dr		5¼	G	S, G	A	N	N	Tc	.4	3,418.1	17.14	7-14-56	OW
-9 cca	E. R. Andrews		Dr	24	6	G	S, G	A	C, W	D, S	Tc	.0	3,423.5	16.0	6-8-57	
-21cbb	J. D. Haptonstall		Dr	82.0	5	G	S, G	O	C, W	S	Tf	.8	3,600.5	60.00	8-7-56	
-29aad	Bertha Sample		Dr	77.8	5	G	S, G	O	N	N	Tf	.0	3,596.1	65.30	8-11-56	
-30ccb	C. D. Whomble		Dr	94.9	4½	G	S, G	O	C, N	N	Tc	.1	3,682.8	84.10	8-11-56	
B1-43-5 bcd	H. E. Christiansen	1956	Dr	23.1	5	G	S	A	J, E	S	Tc	-5.5	3,506.9	.78	6-19-58	L; Ps20
-6 bcd	Town of Wray	1922	Dr	75	16	C	S	O	T, E	M	Cpb	1.4	3,549.6	34.98	8-7-58	L; Ps74; Y125R; used only in emergencies
-6 bda	. . do	1929	Dr	75	16	S	S, G	O	T, E	M	Cpb	1.7	3,536.0	28.49	8-5-58	Y140R; used only in emergencies
-6 bdb	. . do	1948	Dr	75	16	S	S, G	O	T, E	M	Cpb	1.7	3,559.2	50.59	8-7-58	Y90R; used only in emergencies
-6 bdc	. . do	1929	Dr	75	16	S	S, G	O	T, E	M	Cpb	2.0	3,542.7	30.0	8-7-58	Y140R; used only in emergencies
-6 bdd	. . do	1920	Dr	75	16	S	S, G	O	T, E	M	Bpb	2.3	3,543.1	40.0	10-8-56	Y250R; used only in emergencies
-7 cdd	Marvin Reavis		Dr	74.0	5	G	S, G	O	C, W	D	Tf	.4	3,639.1	26.00	8-7-56	
-12daa	Lester Goings		Dr	25.0	6	G	S, G	O	C, H	D, S	Tc	.3	3,562.0	22.05	6-8-57	
-14ccc	Raymond Cleavenger		Dr	91.0	6	G	S, G	O	N	N	Tc	.8	3,691.0	83.50	8-7-56	
-16ada	C. H. Witte Estate		Dr	125.0	5	G	S, G	O	C, N	N	Tc	.6	3,704.0	105.12	6-8-57	
-20bbb	Esther Edward		Dr	150.0	. .	G	S, G	O	C, N	N	Tc	.0	3,763.9	145.02	6-10-57	
-21ccc	Keith Prentice		Dr	. . . .	. .	G	S, G	O	N	N	Tc	.9	3,755.5	123.68	7-19-56	OW
-26bcc	Lawrence Conrad		Dr	113.0	5	G	S, G	O	C, W	S	Tc	.0	3,712.9	99.34	6-8-57	

Table 2.--Records of wells in Yuma County, Colo.--Continued

Location	Owner or tenant	Year drilled	Type of well	Depth of well (feet)	Diameter of well (inches)	Type of casing	Principal water-bearing bed: Character of material	Principal water-bearing bed: Geologic source	Method of lift	Use of water	Measuring point: Description	Measuring point: Distance above or below (-) land surface (feet)	Measuring point: Height above mean sea level (feet)	Distance to water level below measuring point (feet)	Date of measurement	Remarks
B1-43-28ddc	Lawrence Whomble		Dr	142	4½	G	S, G	O	C, E	D	Tc	0.0	3,752.1	128.0	6-8-57	
-31bcb	Albert Fix		Dr	170.0		G	S, G	O	C, W	S	Tc	.3	3,806.6	148.48	6-10-57	
-32ddd	Dale Whomble		Dr	188.1	5	G	S, G	O	N	N	Tf	.1	3,817.8	172.30	8-11-56	
B1-44-2 ccd	Henry Wiltfang	1956	Dr	62.0	16	S	S, G	A	Cf, E	I	Tc	1.1	3,555.4	5.21	8-15-56	L; Ps63; Dd20; Y130; A20; Ss
-3 cdc	William Pyle		Dr	32.5	5	G	S, G	O	C, W	D, S	Tf	.2	3,592.0	19.00	7-23-56	
-4 ddd	do		Dr	49.5	3½	G	S, G	O	N	N	Tc	.0	3,628.5	44.70	7-14-56	OW
-5 dcc	Carl Peterson		Dr	50.5	6	G	S, G	O	N	N	Tc	2.0	3,654.0	43.86	7-12-56	
-6 ddc	T. B. Groves & Co.		Dr	53.0	5	G	S, G	O	C, W	S	Tc	.1	3,687.7	39.95	6-7-57	
-10bbb	Roy Donovan	1956	Dr	56.0	16	S	S, G	A	T, E	I	Hpb	.4	3,596.3	16.80	9-6-57	L; Ps55; Y200; Dd34; A5; AqT; Sca
-13dcc	Lorin Selby		Dr				S, G	O	C, W	S	Tc	.3	3,800.3	168.70	6-13-57	
-14dcc	Robert Fonte		Dr	260.0	6	G	S, G	O	C, W	D, S	Tc	.9	3,884.7	243.02	6-14-57	
-18ada	Samuel Shafer		Dr	74.0			S, G	O	C, W	S	Tc	.3	3,699.3	56.67	6-10-57	
-20adc	Bertha Edens		Dr	156.0	4½	G	S, G	O	C, W	S	Tf	.2	3,809.0	143.50	7-20-56	
-21aaa	William Menke	1900	Dr	185	5	G	S, G	O	C, W	D, S	Tc	1.0	3,823.5	170.0	6-14-57	
-23ddd	Maggie Donovan		Dr	211.0	5½	G	S, G	O	C, W	S	Tms	.4	3,842.2	200.00	7-20-56	
-29cdd	Henry Renzelman, Jr.		Dr	200.0	6	G	S, G	O	C, W	D, S	Tc	.5	3,907.4	190.12	6-10-57	
-35aab	Mary Alterburn		Dr	190.0	5	G	S, G	O	C, W	S	Tc	.7	3,840.2	175.11	6-14-57	
B1-45-5 cbc	Norman Riffle	1954	Dr	74.0	5	G	S	O	C, W	S	Tc	.3	3,869.1	55.87	6-11-57	
-9 bba	Delmar Scofield		Dr	48.5	5	G	S	O	C, W	S	Tf	.8	3,843.7	38.50	7-21-56	
-10bbb	John Clark	1954	Dr	75.0	5	G	S	O	C, W	S	Tc	.6	3,828.2	50.92	6-10-57	
-12aad	T. B. Groves & Co.		Dr	90.0	5½	G	S	O	C, W	S	Tf	.1	3,744.3	70.50	7-23-56	
-18bbc	Clara Witte	1957	Dr	61.0	5	G	S	O	C, G	D, S	Tc	.5	3,878.4	39.91	6-11-57	
-20bba	D. D. Godsey		Dr	75.0	4½	G	S	O	C, W	S	Tc	.4	3,874.6	52.07	6-10-57	
-21bbb	do		Dr		4	G	S	O	C, W	D, S	Tc	-5.1	3,874.0	75.12	6-10-57	
-22aaa	Harry Fonte		Dr	131.5	4½	G	S, G	O	C, W	D, S	Tf	.4	3,846.0	106.50	7-23-56	
-24baa	Cramer Brothers		Dr		5	G	S	O	C, W	D, S	Tc	.6	3,758.2	44.52	6-10-57	
-27bbb	Harry Fonte	1954	Dr	260	16	S	S, G	O	T, E	I	Cpb	1.0	3,857.5	87.10	9-10-57	L; Ps250; Y1,050; Dd10; A65+; AqT; Sca
-28dbd	Gustave Jesse	1954	Dr	260	16	S	S, G	O	T, E	I	Hc	.8	3,869.5	91.0	6-20-54	L; Ps253; Y1,400R; Dd17R; A83; Ss
-31cac	Glen Pitman		Dr		4½	G	S	O	C, W	S	Tc	.4	3,870.0	20.28	6-11-57	
-32aa	Melvin Stults	1949	Dr	145	18	S	S, G	O	T, E	I	Hpb	.0	3,854.2	43.30	8-14-56	Y450; Dd16; A50; Ss
-32dad	Clarence Stults		Dr	38.5	6	G	S	O	N	N	Tc	.5	3,837.1	28.00	7-20-56	
-35cbb	Harry Fonte		Dr	35.5	5	G	S	A	C, W	S	Tf	.9	3,785.9	30.00	7-20-56	
B1-46-2aaa	E. E. Rawson		Dr	71.0	5	G	S	O	C, W	S	Tf	.3	3,897.8	53.00	7-21-56	
-12aad	John Maurice		Dr	71.0	4	G	S	O	N	N	Tc	.2	3,898.8	65.94	6-11-57	

Table 2.--Records of wells in Yuma County, Colo.--Continued

Location	Owner or tenant	Year drilled	Type of well	Depth of well (feet)	Diameter of well (inches)	Type of casing	Principal water-bearing bed: Character of material	Principal water-bearing bed: Geologic source	Method of lift	Use of water	Measuring point: Description	Measuring point: Distance above or below (-) land surface (feet)	Measuring point: Height above mean sea level (feet)	Distance to water level below measuring point (feet)	Date of measurement	Remarks
B1-46-13bba	Edward Stillahn		Dr	61.0	4½	G	S	O	C, W	S	Tc	0.0	3,889.6	39.00	7-21-56	
-15aad	Daisy Chick		Dr		5	G	S, G	O	C, W	D, S	Tc	1.6	3,923.7	55.79	6-11-57	
-17dcc	Roland White		Dr	95.0	4½	G	S, G	O	N	N	Tf	.0	3,979.7	71.00	8-4-56	
-20aaa	Millard Pletcher		Dr				S, G	O	N	N	Hpb	.1	3,958.0	57.07	7-20-56	OW
-22ddc	Roy Maple		Dr	67.5	5	G	S, G	O	C, W	D, S	Tf	2.2	3,929.9	44.50	7-21-56	
-33ccc	do		Dr	104.0	4½	G	S, G	O	C, W	D, S	Tf	1.3	3,994.9	67.50	8-4-56	
B1-47-4 cad	Melvin Pletcher	1954	Dr	314	16	S	S, G	O	T, Lp	I	Hpb	.1	4,055.7	101.90	9-20-57	L; Ps311; Y1,450; Dd17; A80; AqT; Ss
-8 abb	Lincoln Wise		Dr	147.2	4½	G	S, G	O	C, W	D, S	Tf	.9	4,079.3	115.40	8-25-56	
-11bbb	C. M. Weeks		Dr		5	G	S, G	O	C, W	D, S	Tc	.2	4,033.3	89.75	6-11-57	
-22daa	A. E. Brown		Dr	151.7	4½	G	S, G	O	C, W	D, S	Tf	1.1	4,070.8	113.80	8-27-56	
-25cbc	Harvey Pletcher		Dr	119.0	5	G	S, G	O	C, W	S	Tc	.7	4,049.3	93.96	6-11-57	
-29bbb	Henry Gummer		Dr	169.6	4½	G	S, G	O	C, W	S	Tf	1.8	4,111.0	118.40	8-27-56	
B1-48-4 aaa	Alfred Goeglein		Dr			G	S, G	O	C, W	N	Tc	.7	4,153.2	157.36	6-11-57	
-13dcd	Robert Smith	1958	Dr	276	16	S	S, G	O	T, Lp	I	Hpb	.7	4,111.5	120.84	7-14-58	Y1,100E; Dd23; A200; Ss
-14abb	Elmo Hobson		Dr	126.4	4	G	S, G	O	N	N	Tc	.0	4,146.3	125.60	8-25-56	
-19baa	Clyde Dunafon		Dr	250.1	4½	G	S, G	O	C, W	S	Tf	1.1	4,246.6	198.90	8-24-56	
-20dcc	Nita Williams		Dr	184.2	4	G	S, G	O	C, W	N	Tc	1.0	4,211.9	168.28	7-20-56	OW
-26ada	Not known		Dr	156.9	5	G	S, G	O	C, W	D, S	Tc	.0	4,152.1	131.70	8-29-56	
-27abb	J. E. Ambrose		Dr			G	S, G	O	C, W	D, S	Tc	.5	4,196.1	167.30	6-11-57	
-36bbb	Not known		Dr	157.0	5	G	S, G	O	C, W	S	Tc	.7	4,154.3	122.31	6-11-57	
B2-42-4abc	John Nicklas		Dr	19.0	6	G	S	D	C, W	S	Tf	.7	3,578.1	13.00	7-25-56	
-18dbb	Willard Relph		Dr	24.0	5	G	S	D	C, W	S	Tc	1.3	3,592.6	9.00	7-25-56	
-27bbc	Jack Carson	1955	Dr	140	18	S	S, G	O	T, E	I	Cpb	2.6	3,544.7	31.70	9-3-57	L; Ps140; Y480; Dd36; A80; AqT; Sca; Ss
-27cbc	M. W. Seward		Dr	63.0	4½	G	S, G	O	C, W	S	Tc	.8	3,550.9	52.50	7-25-56	
-34ccc	E. H. Kinnie	1949	Dr	64.6	18	S	S, G	O	T, D	I	Hpb	.2	3,473.9	27.72	8-17-56	L; Ps65; Y750R; Dd20; A90; Ss
B2-43-8 cac	C. E. Hamilton		Dr	38.5	4	G	S	O	C, W	S	Tc	1.5	3,668.5	27.50	7-26-56	
-12bdb	John Nicklas		Dr		5½	G	S	O	N	N	Tc	.7	3,614.7	20.52	7-14-56	
-15acc	Marvin Kneise	1955	Dr	47.0	5	G	S, G	O	C, W	S	Tc	.8	3,629.6	30.32	6-7-57	
-17cac	Charles Steiner		Dr				S, G	O	N	N	Hpb	1.7	3,685.3	58.16	7-16-56	OW
-19cbd	R. H. Barritt		Dr	54.5	6	G	S, G	O	C, W	D, S	Tc	.6	3,671.1	46.50	7-23-56	
-20abb	Charles Steiner		Dr	83.1	5	G	S, G	O	C, N	N	Tc	1.4	3,676.6	62.22	6-7-57	
-34acd	Sadie Long		Dr	39.5	4	G	S	O	C, W	D, S	Tf	.9	3,508.2	21.00	7-25-56	
B2-44-2 cac	Carl and John Peterson		Dr	89.0	4½	G	S, G	O	N	N	Tc	.0	3,745.5	61.00	7-26-56	
-5 abb	G. E. Lasher		Dr	60.0	4	G	S, G	O	C, W	S	Tc	1.5	3,772.9	55.34	6-6-57	
-7 bca	Roy Donovan		Dr	80.0	5	G	S, G	O	C, W	S	Tf	.0	3,791.3	61.00	8-3-56	

Table 2.--Records of wells in Yuma County, Colo.--Continued

Location	Owner or tenant	Year drilled	Type of well	Depth of well (feet)	Diameter of well (inches)	Type of casing	Principal water-bearing bed: Character of material	Principal water-bearing bed: Geologic source	Method of lift	Use of water	Measuring point: Description	Measuring point: Distance above or below (-) land surface (feet)	Measuring point: Height above mean sea level (feet)	Distance to water level below measuring point (feet)	Date of measurement	Remarks
B2-44-13bbc	Theo Crouse	1944	Dr	53.0	5	G	S	0	C, W	S	Tc	0.5	3,696.5	30.60	6-7-57	
-19cdc	Henry Burkart		Dr	55.0	6	G	S	0	N	N	Tc	.2	3,752.2	41.98	6-6-57	
-22cda	Carl Peterson		Dr				S, G	0	N	N	Tcb	1.4	3,732.6	67.33	7-17-56	
-24aaa	William Peters		Dr	42.2	4	G	S	0	N	N	Tc	.3	3,689.7	41.67	9-22-53	
-28acb	Phillip and Fred Hahn		Du	47.5	5	G	S	0	C, W	D, S	Tf	.3	3,712.3	36.00	7-23-56	
-36bbb1	Town of Wray	1954	Dr	182	16	S	S, G	0	T, E	M	Cpb	1.3	3,662.0	40.0	10-8-56	L; Ps180; Y500R
-36bbb2	do	1952	Dr	180	16	S	S, G	0	T, E	M	Cpb	1.1	3,666.2	40.0	10-8-56	Y700R; Sca
B2-45-5 ccc	David Deschamps		Dr	100.5	4½	G	S, G	0	C, W	S	Tf	.9	3,875.1	79.50	8-4-56	
-15cdd	James Graves		Dr	66.6	5	G	S, G	0	N	N	Tc	.1	3,817.0	50.72	9-22-53	
-20bbb	Leon Riggs		Dr	65.5	4½	G	S	0	C, W	S	Tf	.0	3,853.5	56.00	7-24-56	
-23cbb	J. J. Deschamps		Dr	66.0	5	G	S	0	C, W	D, S	Tf	.8	3,814.5	56.50	7-24-56	
-26acd	Joseph Deschamps		Dr	50.5	4	G	S	0	C, W	D, S	Tc	1.2	3,774.8	39.67	9-22-53	
-29cbc	R. F. Reynolds		Dr	59.0	5	G	S, G	A	C, W	S	Tc	.1	3,811.6	9.84	7-2-57	
-31bdc	Glen Pitman		Dr	68.0		G	S, G	0	C, W	S	Tc	.0	3,860.5	43.06	6-13-57	
-34dcc	H. A. Speirs		Dr			G	S, G	0	N	N	Tc	.0	3,852.9	88.83	7-19-56	OW
-35bbb	Leon Riggs	1954	Dr	40	5	G	S	0	C, E	D, S	Tc	.3	3,753.6	17.79	6-7-57	
B2-46-6 ada	Gordon Sipple		Dr	118.0	5	G	S, G	0	N	N	Tc	1.1	3,965.6	107.69	6-24-57	
-8 cbc	L. and J. Dennis		Dr	84.5	4½	G	S, G	0	C, W	D, S	Tf	.6	3,942.7	76.00	8-9-56	
-13dcd	H. H. Blach		Dr	95.2	4	G	S, G	0	C, W	S	Tc	-.5	3,876.5	65.60	3-23-53	
-22ada	Frank Herman		Dr	62.5	4½	G	S, G	0	C, W	S	Tc	1.5	3,903.6	57.50	7-24-56	
-26bcc	Town of Eckley	1921	DD	317	6	S	S, G	0	T, E	M	Tc	.0	3,894.0	45.0	9-11-50	Y200R; Dd2R; Sca
-29ccd	Merle Collins		Dr	71.0	4½	G	S, G	0	C, W	D, S	Tf	.4	3,953.0	63.50	8-4-56	
-30ddb	Albert Allen	1957	Dr	382	16	S	S, G	0	T, Ng	I	Cpb	1.8	3,961.4	67.77	1-13-58	L; Ps375; Y590; Dd5; A30; Ss
B2-47-15ccc	George Haver		Dr	112.0	5	G	S, G	0	C, W	S	Tf	.9	4,014.2	92.26	2-19-58	
-16ddd	Myron Probasco		Dr	127.3	4	G	S, G	0	C, H	N	Tc	.0	4,023.7	102.00	9-21-53	
-17dda	Frank Herman	1954	Dr	420	16	S	S, G	0	T, Lp	I	Hpb	.5	4,029.2	101.74	8-15-56	L; Ps416; Y800; Dd18; A160; Sca; Ss
-24dad	Edward Stillahn		Dr	85.5	5	G	S, G	0	C, W	S	Hpb	.8	3,970.0	73.13	6-18-57	
-26cbb	do		Dr	130.0	5½	G	S, G	0	C, W	S	Tf	.0	4,025.8	104.00	8-8-56	
-29dcd	Pearl Tulles		Dr				S, G	0	N	N	Tc	.5	4,068.6	120.69	7-20-56	
-30bab	Elmo Hobson		Dr	149.0	4½	G	S, G	0	C, W	D, S	Tf	.9	4,085.9	133.50	8-8-56	
B2-48-5 cdd	Elmer Yost		Dr	216.0	4	G	S, G	0	C, W	D, S	Bpb	.2	4,177.9	205.88	6-18-57	
-13acc	Lloyd Korf		Dr	133.0		G	S, G	0	C, W	D, S	Tc	.2	4,070.4	126.34	6-14-57	
-14bbd	Albert Allen	1957	Dr	461	16	S	S, G	0	T, Lp	I	Cpb	1.5	4,099.6	143.00	10-25-57	L; Ps455; Y1,350; Dd24; A116
-15adc	Patrick Killelea		Dr	188.0	4½	G	S, G	0	C, W	S	Tf	.2	4,125.3	164.50	8-9-56	
-21bbb	J. Riley		Dr	195	4	G	S, G	0	C, W	N	Tc	.3	4,169.2	187.95	9-17-53	

Table 2.--Records of wells in Yuma County, Colo.--Continued

Location	Owner or tenant	Year drilled	Type of well	Depth of well (feet)	Diameter of well (inches)	Type of casing	Principal water-bearing bed: Character of material	Principal water-bearing bed: Geologic source	Method of lift	Use of water	Measuring point: Description	Measuring point: Distance above or below (-) land surface (feet)	Measuring point: Height above mean sea level (feet)	Distance to water level below measuring point (feet)	Date of measurement	Remarks
B2-48-21dca	Ray Seedorf	1956	Dr	323	16	S	S, G	0	T, Ng	I	Cpb	1.3	4,156.4	176.0	5-26-56	L; Ps323; Y1,200, Dd24R; Al60
-22acc1	Town of Yuma	1920	DD	320	96-6	C, S	S, G	0	T, E	M	Pf	1.3	4,134.7	168.30	10-8-56	Y250R; Dd9R
-22acc2	do.	1942	Dr	310	18	S	S, G	0	T, E	M	Cpb	1.4	4,133.3	167.65	10-8-56	Y400R; Dd12R
-22bad	do.	1948	Dr	312	18	S	S, G	0	T, E	M	Cpb	1.1	4,136.0	169.0	10-8-56	Y400R; Sca
-22cdc	do.	1955	Dr	375	16	S	S, G	0	T, E	M	Cpb	1.0	4,150.9	168.57	10-8-56	L; Ps360; Y650R; Dd14R
-25cdb	Harper Dairy	1957	Dr	361	16	S	S, G	0	T, Ng	I	Cpb	1.0	4,106.8	141.31	7-2-57	Y1,150; Dd26; Al60
-28abd	Harold Chrismer.	1956	Dr	316	16	S	S, G	0	T, Ng	I	Cpb	1.0	4,146.9	162.50	6-12-57	L; Ps312; Y1,400R; Dd24; Al60; Sca
-30aab	Loren Gardner.		Dr	192.3	5	G	S, G	0	C, W	D, S	Tf	2.0	4,176.3	170.30	8-24-56	
-32aaa	H. J. Jewell		Dr	201.7	5	G	S, G	0	C, W	D, S	Tc	1.1	4,175.3	178.80	8-24-56	
-32daa	Mrs. S. Hoops.		Dr	187.4	4	G	S, G	0	C, H	N	Tc	.0	4,171.5	171.49	9-17-53	
-34bca	Francis Rogers	1957	Dr	421	16	S	S, G	0	T, Ng	I	Cpb	.9	4,168.0	180.60	10-8-57	Y900; Dd17; Al40; AqT
-35bbb	Fred Salzman		Dr				S, G	0	J, E	D, S	Tc	-5.0	4,130.8	156.60	6-14-57	
B2-49-13dda	Not known.		Dr	202.0	5	G	S, G	0	C, W	N	Tc	.2	4,180.1	183.11	6-18-57	In Washington County
B3-42-4 ccc	U. S. Geol. Survey	1952	Dr	41.1	1¼	P	S	D, 0	N	N	Tc	3.3	3,589.9	7.53	10-24-57	L; Ps341; OW
-17dbb	C. L. Kempton.			26.0	8		S	D, 0	C, W	S	Tf	1.4	3,606.3	17.50	7-25-56	
-31bdd	U. S. Geol. Survey	1952	Dr	91.8	1¼	P	S	D, 0	N	N	Tc	2.0	3,615.8	28.14	10-24-57	L; Ps263; OW
-32acb	Ross Gross				3½		S	D	N	N	Tf	1.5	3,583.7	14.43	7-17-56	
B3-43-11aad	William McKinney		Dr	40.5	5	G	S	D	C, W	S	Tf	.0	3,642.9	16.00	7-26-56	
-23acd	Gerald Ethridge.		Dr	46.1	4	G	S	D	C, W	D, S	Tc	.7	3,649.8	9.94	8-7-52	
-29ddd	Emmett Chartier.				5		S	D	N	N	Tf	.2	3,674.5	27.90	7-17-56	OW
-33cda	H. E. Jackson.	1955	Dr	118	12	S	S, G	0	T, Lp	I	Hpb	.3	3,653.1	27.00	8-30-57	Y300; Dd23; A52; AqT, Sca; Ss
-33dba	do.	1955	Dr	54	12	S	S	0	T, Lp	I	Tc	.1	3,667.1	17.10	8-24-56	Y150E; A38; Ss
-34bcb	Verna Neal		Dr	33.7	4	G	S	D	C, W	D, S	Tc	.9	3,644.6	10.10	8-7-52	
-35abd	Glenn Ethridge		Dr	44.0	5	G	S	D	C, W	S	Tc	.0	3,620.3	11.50	7-28-56	
-36bad	School district.		Dr		4	G	S	D	N	N	Tc	1.4	3,611.0	6.74	3-25-53	
B3-44-3 ccc	Laurence Conrad.		Dr	61.0		G	S	0	C, W	S	Tc	.6	3,745.1	44.18	6-6-57	
-12bcd	Henry Bledsoe.		Dr	48.5	4½	G	S	D	C, W	S	Tc	.0	3,716.0	34.20	7-26-56	
-20cca	R. and P. Mullison		Dr	86.0	6	G	S	0	C, W	D, S	Tf	.9	3,771.2	47.00	8-3-56	
-23dcb	E. Wiltfang.		Dr	53.5	4½	G	S	D	C, W	D, S	Tf	1.3	3,730.7	40.89	2-19-58	
-26aac	do		Dr	57.6			S	D	C, W	S	Tc	.1	3,711.2	30.54	8-7-52	
-31bcd	J. F. Wilson		Dr	82.3	4	G	S	0	N	N	Tc	.1	3,786.7	51.90	8-8-52	
-33ddd	G. E. Lasher		Dr	71.5	5	G	S	0	C, H	D	Tf	.7	3,749.5	44.00	8-3-56	
B3-45-5 ccc	Kenneth Conrad.		Dr	115.0		G	S	0	C, W	S	Tc	.3	3,848.0	83.97	6-24-57	
-11dcc	Edna Kitzmiller		Dr				S	0	N	N	Hpb	.9	3,800.2	67.44	7-16-56	OW
-14bda	do		Dr	76.4	5	G	S	0	C, W	S	Tc	.8	3,813.1	69.82	8-8-52	

Table 2.--Records of wells in Yuma County, Colo.--Continued

Location	Owner or tenant	Year drilled	Type of well	Depth of well (feet)	Diameter of well (inches)	Type of casing	Principal water-bearing bed: Character of material	Principal water-bearing bed: Geologic source	Method of lift	Use of water	Measuring point: Description	Measuring point: Distance above or below (-) land surface (feet)	Measuring point: Height above mean sea level (feet)	Distance to water level below measuring point (feet)	Date of measurement	Remarks
B3-45-19ada	Kenneth Conrad		Dr	97.0	5	G	S	0	C, W	S	Tf	0.0	3,874.2	88.06	2-19-58	
-23ddd	Robert Brody		Dr	89.0	5	G	S	0	C, W	S	Tf	1.0	3,807.4	60.00	8-3-56	
-30dda	M. S. Newbanks		Dr	94.1	4	G	S	0	N	N	Tc	.2	3,862.0	72.62	8-11-52	
-35bcd	Joseph Larreau		Dr	170	4½	G	S	0	N	N	Tc	.7	3,819.0	66.07	7-14-56	OW
B3-46-3 aad	William Tuell		Dr	136.5	4	G	S	0	C, W	S	Tf	.3	3,904.2	119.50	8-6-56	
-5 bca	Paul Brophy	1957	Dr	314	16	S	S, G	0	T, Lp	I	Pf	.8	3,938.5	133.82	9-10-57	Y1,060; Dd21; Al40; AqT
-6 add	Bert Henderson		Dr	155.4	5	G	S, G	0	C, W	D, S	Tc	.8	3,939.4	128.30	8-13-56	
-7 aa	M. M. Neuschwanger	1956	Dr	378	12	S	S, G	0	T, Lp	I	Tc	.6	3,930.7	110.47	9-21-57	L; Ps361; Y1,120; A90; Sca; Dd59R
-15cdc	M. McCalla		Dr	129.5	5	G	S	0	N	N	Tf	.1	3,911.1	99.50	7-24-56	
-17adb	Wenzel Blach		Dr	142.8	4	G	S	0	C, W	S	Tc	1.5	3,936.9	122.80	8-6-52	
-22abb	Sherman McCalla		Dr	126.1	4½	G	S	0	N	N	Tc	.3	3,909.9	99.82	7-19-56	OW
-34ddd	James Gardner		Dr	112.0	5	G	S	0	C, W	D, S	Tc	.2	3,904.9	82.00	7-24-56	
B3-47-4 cdd	Stanley Rutledge		Dr	179	6	G	S, G	0	C, W	S	Tc	.7	4,011.5	162.59	8-5-52	
-13ccc	William Wenger		Dr	139.0	. .	. .	S, G	0	C, W	N	Tc	.5	3,958.1	123.23	8-5-52	
-16aba	S. J. Warren		Dr	173.1	4½	G	S, G	0	C, W	D, S	Tf	.0	4,007.2	150.20	8-10-56	
-25ccc	Carl Goeglein, Jr.		Dr	152.0	5	G	S, G	0	C, W	D, S	Tf	.3	3,982.7	122.00	8-9-56	
-30abb	August Pagel		Dr	171.7	4	G	S, G	0	N	N	Tpb	.3	4,040.8	142.82	6-14-57	
-32ccc	Roy Richardson		Dr	139.0	5	G	S, G	0	C, W	D, S	Tf	.6	4,046.7	132.00	8-9-56	
-33bcb	R. A. Powell		Dr	149.6	4	G	S, G	0	C, W	N	Tc	.6	4,038.3	147.06	8-5-52	
-35aad	Adolph Neuhaus		Dr	. . .	5	G	S, G	0	N	N	Tc	.9	3,982.4	120.58	7-21-56	OW
-36dda	Eva Blake		Dr	129.2	. .	. .	S	0	C, W	N	Tc	.7	3,968.9	109.60	8-5-52	
B3-48-2 ada	Sherman Blach	1956	Dr	325	16	S	S, G	0	T, E	I	Cpb	1.0	4,057.6	176.49	8-2-57	L; Ps322; Y1,200; Dd17; Al50
-10bcc	Ralph Cannon		Dr	216.2	4	G	S, G	0	C, W	S	Tc	.4	4,093.9	185.38	8-4-52	
-12ada	A. A. Blach		Dr	193.8	5	G	S, G	0	C, W	D, S	Tf	.0	4,057.7	164.70	8-10-56	
-12ccc	Carl Pagel		Dr	183.9	4	G	S, G	0	N	N	Hpb	.1	4,068.2	178.13	7-20-56	OW
-14ccc	F. A. Rinne		Dr	185	5	G	S, G	0	C, W	D, S	Tc	.0	4,102.3	170.0	1-19-53	
-18add	F. J. Schmidt		Dr	226.2	4½	G	S, G	0	C, N	N	Tf	.3	4,137.3	198.60	8-23-56	
-20ddb	Carl J. Hoch	1956	Dr	350	16	S	S, G	0	T, E	I	Cpb	1.1	4,138.0	192.68	6-12-57	L; Ps342; Y1,300; Dd19; Al20
-22ada	Fred Geweke		Dr	192.5	4	G	S, G	0	C, W	S	Tc	.2	4,100.6	179.60	8-4-56	
-27ccc	Leland Peters		Dr	179.9	5	G	S, G	0	C, W	S	Tf	.4	4,118.1	175.90	8-19-56	
-31daa	John Nau		Dr	210.1	4	G	S, G	0	N	N	Tc	.0	4,169.5	200.39	7-21-56	OW
-32add	Mary Wolff		Dr	202.1	5	G	S, G	0	C, N	N	Tc	.6	4,141.0	184.30	8-24-56	
-36dcd	Henry Lohmeyer		Dr	157.0	. .	G	S, G	0	C, W	D, S	Tc	.3	4,071.2	145.48	6-4-57	
B3-49-24ada	Not known	1950	Dr	215.0	. .		S, G	0	C, W	S	Tc	.7	4,167.8	213.70	6-18-57	In Washington County
B4-42-4 bcc	Ray Anderson	1955	Dr	204	16	S	S, G	0	N	N	Tc	.6	3,606.2	24.17	8-3-56	
-8 dda	S. S. Turner		Dr	31.0	6	G	S	0	C, W	D, S	Tc	1.4	3,610.2	23.50	7-27-56	
-17ddb	W. B. Doyle		Dr	61.4	6	G	S	0	C, W	S	Tc	.7	3,591.8	8.10	11-6-52	

Table 2.--Records of wells in Yuma County, Colo.--Continued

Location	Owner or tenant	Year drilled	Type of well	Depth of well (feet)	Diameter of well (inches)	Type of casing	Principal water-bearing bed: Character of material	Principal water-bearing bed: Geologic source	Method of lift	Use of water	Measuring point: Description	Measuring point: Distance above or below (-) land surface (feet)	Measuring point: Height above mean sea level (feet)	Distance to water level below measuring point (feet)	Date of measurement	Remarks
B4-42-18ccd	Ray Anderson		Dr	49.4	4	G	S	0	N	N	Tc	0.2	3,633.7	30.64	3-18-57	OW
-19aad	T. E. Brophy		Dr	53.3	6	G	S	0	N	N	Tc	.5	3,609.6	11.83	8-21-52	
-33bca	James D. Brown		Dr	42.0	4½	G	S	0	C, W	S	Tc	2.1	3,606.4	21.00	7-27-56	
B4-43-4 aaa	G. A. Voges		Dr	60.0	5½	G	S	0	N	N	Tc	.4	3,654.1	28.00	7-30-56	
-6 bab	Mrs. David Williams		Dr		5	G	S	0	N	N	Tc	.6	3,696.4	46.87	7-18-56	OW
-14dbb	O. D. Naugle		Dr	62.0	5	G	S	0	C, W	S	Tc	1.0	3,646.7	24.50	7-27-56	
-20aaa	Warren Dodge		Dr	65.0	5	G	S	0	C, H	D	Tf	.8	3,676.0	29.50	7-27-56	
-23acb	do.		Dr				S	0	N	N	Tf	.7	3,644.5	21.61	7-17-56	
B4-44-6 bcb	Millage Farm, Inc.		Dr	117.0	4	G	S	0	C, W	N	Tf	.0	3,798.0	109.00	8-1-56	
-8 abb	Millage Brothers		Dr	125.0	5	G	S	0	C, W	S	Tc	1.5	3,804.8	116.00	8-11-52	
-14bcb	Flora Sheridan		Dr	59.5	6	G	S	0	C, W	S	Tc	1.3	3,727.5	52.14	6-5-57	Sca
-16ccc	School district		Dr	62.0	4¼	G	S	0	C, W	S	Tc	1.0	3,746.2	51.50	8-2-56	
-18cdb	Fred Oestman	1954	Dr	115.8	5	G	G	0	C, W	S	Tc	.5	3,794.8	85.55	6-5-57	Y3R; Dd2R
-24bdb	William Pyle		Dr	86.0	4½	G	S	0	C, W	S	Tc	.7	3,720.4	50.50	7-27-56	
-26abb	Wauneta Community	1955	Dr	53.0	5	G	G	0	C, H	P	Tc	.6	3,719.4	38.90	6-5-57	Y3R; Dd0R
-31dbb	P. C. Groves		Dr	59.0	5	G	S, G	0	C, E	D, S	Tf	.9	3,780.1	55.00	8-2-56	
-34ddd	Byrkit and Firme	1956	Dr	67	5	G	S, G	0	C, W	S	Hpb	.5	3,731.0	40.24	6-6-57	Y3R; Dd5R
-36cbb	Henry Bledsoe	1949	Dr	98	18	S	S, G	0	C, W	S	Hpb	.6	3,713.2	34.60	8-14-56	OW
B4-45-6 ada	William Pyle		Dr	140.0	5	S	S, G	0	C, W	S	Tf	1.7	3,836.5	133.00	8-6-56	
-14dcd	Lee A. Tombaugh		Dr	114.0	5	G	S	0	C, W	D, S	Tf	.6	3,799.3	84.50	8-2-56	
-16cdd	Ed Gilstrap		Dr	116.0			S	0	C, W	D, S	Hpb	1.3	3,834.1	99.50	6-6-57	
-23ccc	Edna Kitzmiller		Dr				S	0	N	N	Tc	.6	3,817.9	93.09	7-16-56	OW
-28 ab	do.		Dr	105.0			S	0	C, W	S	Tc	1.2	3,837.4	100.58	6-6-57	
-33ccc	do.		Dr				S	0	N	N	Tc	1.0	3,848.0	101.59	7-16-56	OW
B4-46-4 dcc	Dallas A. Monk		Dr	152.0		G	S, G	0	C, W	D, S	Tc	.3	3,889.5	144.89	6-17-57	
-7add	G. D. Monk		Dr	165.5	5	G	S, G	0	N	N	Tc	.2	3,906.4	148.78	7-20-56	OW
-7bbb	Marion Rodgers	1945	Dr	177.0		G	S, G	0	C, W	D, S	Hpb	1.0	3,927.0	171.73	6-17-57	
-11bbb	A. E. Klingmann		Dr	173	5	G	S, G	0	N	N	Tc	.0	3,878.6	143.70	8-11-52	
-21abb	William Pyle		Dr	151.0			S, G	0	C, W	S	Tc	.9	3,893.1	126.59	6-17-57	
-23bab	Albert McCalla		Dr	171.0	5	G	S, G	0	C, W	D, S	Tf	.4	3,883.4	144.00	8-6-56	
-26acc	Paul Brophy		Dr	160.3	4	G	S, G	0	C, W	S	Tc	.0	3,884.4	134.37	11-7-52	
-27bbc	Rolland Brown		Dr		5½	G	S, G	0	N	N	Tc	.1	3,907.5	141.26	7-19-56	OW
-29add	Frank Rowe		Dr	193.0	5	G	S, G	0	C, W	D, S	Tc	.0	3,943.0	166.13	8-14-52	
-29baa	Ed Rowe		Dr	181.1	5	G	S, G	0	C, W	D, S	Tc	.0	3,943.5	164.70	8-13-56	
-34dcd	Nora Brophy		Dr	140	4	G	S, G	0	C, W	N	Bpb	.5	3,900.3	121.85	10-15-52	
B4-47-1 aac	Harold Peterson		Dr	193.0		G	S, G	0	C, W	N	Tc	-1.0	3,948.2	174.52	6-17-57	
-1 cca	Myrtle Johnston		Dr	169.0		G	S, G	0	C, W	D, S	Hpb	.5	3,931.3	160.56	6-17-57	

Table 2.--Records of wells in Yuma County, Colo.--Continued

Location	Owner or tenant	Year drilled	Type of well	Depth of well (feet)	Diameter of well (inches)	Type of casing	Principal water-bearing bed: Character of material	Principal water-bearing bed: Geologic source	Method of lift	Use of water	Measuring point: Description	Measuring point: Distance above or below (-) land surface (feet)	Measuring point: Height above mean sea level (feet)	Distance to water level below measuring point (feet)	Date of measurement	Remarks
B4-47 -4 ada	Paul Wilson		Dr	191.8	5	G	S, G	0	C, W	D, S	Tf	0.0	3,958.8	171.90	8-20-56	
-5 ccc	L. R. Heiserman		Dr	199.4	6	G	S, G	0	C, W	D, S	Tc	2.0	3,982.9	182.93	8-15-52	
-9 dcb	Robert Korf	1956	Dr	407	16	S	S, G	0	T, Lp	I	Cpb	2.0	3,975.6	179.20	7-2-57	Y700; A120
-12ada	Lora Hakanson		Dr	162.1	5	G	S, G	0	C, W	S	Tf	.6	3,915.4	145.90	8-14-56	
-14dcd	Thomas E. Brophy		Dr	188.0	5	G	S, G	0	C, W	N	Tc	.4	3,961.4	176.69	6-17-57	
-20adb	Joe Mathies		Dr	195.3	5	G	S, G	0	C, W	D, S	Tc	.6	3,990.0	170.92	8-15-52	
-23abc	L. A. Hoskins	1957	Dr	302	16	S	S, G	0	T, Lp	I	Cpb	1.0	3,968.7	179.23	7-14-58	L; Ps294; Y1250R; Dd47R; A170
-26aba	do	1951	Dr	300	18	S	S, G	0	T, Lp	I	Tc	.4	3,984.7	188.88	8-15-56	L; Ps295; Y440; Dd24; A180; AqT
-27cbb	Thomas E. Brophy		Dr	163.8	5	G	S, G	0	C, W	D, S	Tf	.2	3,985.5	161.70	8-13-56	
-27ddd	L. A. Hoskins		Dr	193.0	6	G	S, G	0	C, W	D, S	Tc	.2	3,989.8	176.92	8-13-52	
-31daa	Herman Blach		Dr	197.0	..	..	S, G	0	C, W	S	Tc	1.0	4,020.4	170.55	8-9-58	
-32cbb	Perry Blach	1956	Dr	292	16	S	S, G	0	T, Lp	I	Pf	.5	4,019.3	170.95	8-22-56	L; Ps289; Y1,260; Dd12, A 200; AqT; Sca
-36bbc	Not known		Dr	182.0	5	G	S, G	0	C, W	N	Tc	.2	3,977.2	163.70	6-14-57	
B4-48-1bcc	Russell Korf	1956	Dr	386	16	S	S, G	0	T, Lp	I	Cpb	1.3	4,010.6	191.13	10-10-56	L; Ps384; Y1,100, Dd65R; A70; Ss
-2 aad	Louis Korf		Dr	223.0	6	G	S, G	0	C, W	D, S	Tc	.0	4,023.3	196.81	8-13-52	
-8 ddd	William Schlake		Dr	235.0	4	G	S, G	0	C, W	D, S	Tc	.4	4,098.9	232.20	6-19-57	
-9 ada	Otto Bushnen		Dr	206.8	5	G	S, G	0	C, W	D, S	Tf	.2	4,054.6	204.90	8-21-56	
-12cab	R. F. Stengel		Dr	199.1	5	G	S, G	0	C, W	D, S	Tf	.3	4,010.5	181.30	8-23-56	
-14ddd	Lillian Baldeicton		Dr	175.0	..	..	S, G	0	N	N	Hpb	.1	4,010.7	157.73	7-20-56	OW
-22aaa	Carl Pagel		Dr	193.0	5	G	S, G	0	C, W	S	Hpb	.3	4,038.1	184.57	6-19-57	
-25bcc	L. H. Ernst		Dr	180.9	5	G	S, G	0	C, W	D, S	Tf	.0	4,036.5	174.30	8-13-56	
-31add	D. D. Mountain		Dr	238.0	5	G	S, G	0	C, W	N	Tc	.2	4,128.1	227.32	8-21-52	
-32aad	Virgil Gorman		Dr	203.4	5	G	S, G	0	C, W	D, S	Tf	.5	4,092.8	197.40	8-20-56	
B4-49-1 ddd	Mr. Chandler		Dr	226.0	5	G	S, G	0	C, N	N	Tc	.4	4,168.7	202.22	6-19-56	In Washington County
B5-42-7 ccd	Ivan Leach		Dr	...	6	G	S	0	N	N	Tc	3.2	3,591.3	25.86	7-18-56	
-17aaa	E. A. Rowe		Dr	24	4	G	S	D	C, W	D, S	Tc	.1	3,561.3	4.53	11-9-51	
-17ccc	Lloyd Hodges		Dr	16.0	5	G	S	D	C, W	S	Tc	2.3	3,580.1	13.00	7-31-56	
-18bcb	Ivan Leach	1947	Dr	65.0	24	S	S, G	0	T, E	I	Tc	-6.0	3,584.9	7.99	9-6-56	Y500R; A20; Ss; Not used, 1956-1958
-30bcb	Ella P. Williams		Dr	30.4	4	G	S	D	C, W	S	Tc	1.3	3,602.2	13.72	11-8-51	
-31aaa	Ivan Leach	1953	Dr	325	20	S	S, G	0	Cf, Lp	I	Tc	-4.0	3,582.2	4.22	8-6-56	Y610; Dd10; Ss
-31bdc	John A. Williams		Dr	214	12	S	S, G	0	T, Lp	I	Hpb	1.3	3,603.7	17.95	9-20-56	Y350; Dd12; A60; Ss
-31cca	Lloyd Hodges	1955	Dr	216	18	S	S, G	0	T, E	I	Hpb	.5	3,601.4	16.55	8-14-56	Y600; Dd11; A260; Ss
B5-43-5 bba	Grace Walcott	1950	Dr	99.0	5	G	S, G	0	C, W	S	Tf	.5	3,681.4	67.50	7-31-56	
-9 adc	G. D. Bradford	1949	Dr	68.8	5	G	S	0	C, W	N	Tc	.7	3,645.2	37.30	6-4-57	

Table 2.--Records of wells in Yuma County, Colo.--Continued

Location	Owner or tenant	Year drilled	Type of well	Depth of well (feet)	Diameter of well (inches)	Type of casing	Principal water-bearing bed: Character of material	Principal water-bearing bed: Geologic source	Method of lift	Use of water	Measuring point: Description	Measuring point: Distance above or below (-) land surface (feet)	Measuring point: Height above mean sea level (feet)	Distance to water level below measuring point (feet)	Date of measurement	Remarks
B5-43-11ccc	W. L. Hayes		Dr	40.6	4	G	S	D	C, H	N	Tc	0.5	3,624.6	22.80	11-13-51	
-12aaa	Harold Walgren		Dr	30.0	5	G	S	D	C, W	S	Tc	.5	3,597.3	18.00	7-31-56	
-15bbb	G. D. Bradford		Dr	44.5	4	G	S	D	C, W	S	Tf	1.1	3,640.0	33.50	7-31-56	
-24abb	E. H. Kinnie	1947	Dr	260	18	S	S, G	O	T, D	I	Hpb	3.4	3,605.9	21.20	8-27-57	Yl,800; Dd27, Al20; AqT; Sca
-24dda	Ivan Leach	1953	Dr	340	20	S	S, G	O	Cf, E	I	Tc	-10.0	3,591.4	2.91	8-6-56	Y450; Dd4; Ps340; A240; Ss
-27c	John Williams	1955	Dr	215	16	S	S, G	O	N	N	Tc	1.6	3,636.2	24.00	8-14-56	OW
-29bba	G. Voges		Dr	51.0	5	G	S	O	C, W	S	Tc	.5	3,673.3	36.50	6-4-57	
-29ddd	. do		Dr	47.3	3	S	S	O	N	N	Tc	1.3	3,652.2	24.69	11-8-53	
-34bca	Laverne Sheldon	1955	Dr	150	5	G	S, G	O	Cf, G	I	Tc	-10.0	3,629.4	16.48	10-10-56	Y230; A80; Ss
-35add	John A. Williams		Dr	50.5	6	G	S	O	C, W	D, S	Tf	.3	3,632.4	32.50	7-31-56	
-36ddd	U. S. Geol. Survey	1952	Dr	77.9	1¼	P	S	O	N	N	Tc	1.7	3,607.6	15.52	8-14-52	L; Ps 332; OW
B5-44-3 bba	John Ewegen		Dr	107.0	5	G	S	O	N	N	Tf	1.3	3,732.3	92.50	7-30-56	OW
-8 cdc	C. R. Sheridan		Dr	105.9	4½	G	S	O	C, W	S	Tc	2.0	3,739.6	87.50	6-4-57	
-10bdb	Henry Brinkema		Dr	123.6	5	G	S	O	C, W	S	Tc	.7	3,742.3	97.46	11-15-51	
-15dcd	. . . do		Dr	87.0	5½	G	S	O	C, H	D	Tf	.6	3,720.4	68.50	7-30-56	
-22daa	Carl Jung		Dr	62.0	4	S	S	O	C, W	S	Tc	1.0	3,708.7	60.32	6-4-57	
-24baa	Jess Kettley		Dr	80.3	5	G	S	O	C, W	S	Tc	.5	3,697.7	49.56	6-4-57	
-32bdb	P. W. Brophy	1909	Dr	97.8	5	G	S	O	C, W	S	Tc	.5	3,761.5	90.42	6-5-57	
-33ddb	Harry Merritt		Dr	88.0	5½	G	S	O	C, W	D, S	Tf	.0	3,730.8	69.00	7-30-56	
-34bcc	B. L. Faist		Dr	94.4	3	S	S	O	N	N	Tc	3.6	3,737.3	72.54	11-15-51	
-35aad	. . .do		Dr	61.0	4	G	S	O	C, W	S	Tf	.5	3,697.9	45.00	7-30-56	
B5-45-2dad	C. R. Sheridan		Dr	144.4	3½	G	S	O	C, W	S	Tc	1.0	3,766.3	108.70	6-5-57	
-8 aad	A. S. Ferguson		Dr		4½	G	S, G	O	N	N	Tc	-1.0	3,809.0	133.53	7-19-56	
-15bcb	Carl E. Ferguson		Dr	160.9			S, G	O	C, W	N	Tc	.2	3,809.2	135.63	11-16-51	
-19bbb	H. E. Salvador		Dr	115.0	5	G	S	O	C, W	D, S	Tf	.7	3,858.5	102.00	8-6-56	
-22bba	Carl G. Millage		Dr	174.0	4½	G	S, G	O	C, W	S	Tc	.0	3,815.5	139.00	8-1-56	
-25cbb	Wayne Ellis		Dr	143.2			S, G	O	C, W	S	Tc	.3	3,786.1	104.56	6-5-57	
-35dcc	Carl G. Millage		Dr	115.5	4½	G	S, G	O	N	N	Tc	.5	3,793.5	101.45	7-18-56	OW
B5-46-2aba	Doyle Neiman		Dr	198.0	4	G	S, G	O	N	N	Bpb	.1	3,874.2	189.04	10-17-51	
-10aba	H. E. Salvador		Dr	224.0	4½	S	S, G	O	C, W	D, S	Tf	.6	3,888.2	195.50	8-1-56	
-10ddd	. . . .do		Dr	194.4	5	G	S, G	O	N	N	Tc	.5	3,876.1	183.40	11-16-51	
-11dda	William Salvador		Dr	170.5	4	G	S, G	O	C, W	D, S	Tc	2.5	3,859.3	167.62	6-17-57	
-17aaa	Ralph Gale		Dr	176.0	5	G	S, G	O	C, W	D, S	Tc	.2	3,879.2	165.16	6-17-57	
-18bab	C. L. Salvador		Dr	230.0	5	G	S, G	O	C, W	D, S	Tc	.3	3,946.7	224.00	8-12-52	
-32aba	C. A. Bates		Dr	186.0	5	G	S, G	O	C, W	D, S	Tc	.2	3,907.0	181.71	8-12-52	
-33bbb	E. P. Salvador		Dr	170.1	5	G	S, G	O	N	N	Tf	.3	3,892.2	165.30	8-14-56	
-35dcc	Andrew Schmidt		Dr	143.0	5	G	S, G	O	C, W	S	Tc	.2	3,853.6	131.90	11-16-51	

Table 2.--Records of wells in Yuma County, Colo.--Continued

Location	Owner or tenant	Year drilled	Type of well	Depth of well (feet)	Diameter of well (inches)	Type of casing	Principal water-bearing bed: Character of material	Principal water-bearing bed: Geologic source	Method of lift	Use of water	Measuring point: Description	Measuring point: Distance above or below (-) land surface (feet)	Measuring point: Height above mean sea level (feet)	Distance to water level below measuring point (feet)	Date of measurement	Remarks
B5-47-1baa	S. H. Wengert.		Dr	257.7	5	G	S, G	0	C, W	S	Tc	0.5	3,949.0	238.33	8-8-52	. . . . .
-1dcc	Iliff School of Theology		Dr	. . .	. .	. .	S, G	0	N	N	Hpb	.2	3,959.8	229.42	7-21-56	. . . . .
-3ccc	John B. Eggleston. . . .		Dr	263.1	5	G	S, G	0	C, W	D, S	Tf	.0	3,997.2	249.80	8-14-56	. . . . .
-8daa	Vernon Myers		Dr	256.4	5	G	S, G	0	C, W	D, S	Tc	.0	4,008.1	249.62	8-11-52	. . . . .
-20aaa	Clarkville Store		Dr	264.9	5	G	S, G	0	C, W	D, S	Tf	.3	4,009.8	240.70	8-14-56	. . . . .
-22bdb	Gordon R. Sipple .	1956	Dr	368	16	S	S, G	0	T, D	I	Cpb	1.4	3,980.5	225.22	6-12-57	L; Ps368; Y1,300, Dd10; A70; Sca
-23baa	Clarence Goodman		Dr	248.4	6	G	S, G	0	C, W	D, S	Tf	.0	3,973.2	239.50	8-20-56	. . . . .
-25ada	Robert Korf.		Dr	199.1	5	G	S, G	0	C, W	S	Tc	.3	3,930.0	196.95	8-12-52	. . . . .
-27dad	W. Felderman		Dr	211.0	. .	. .	S, G	0	N	N	Tc	.4	3,957.9	204.23	8-12-52	. . . . .
B5-48-1ccc	G. E. Wengert.		Dr	233.6	. .	. .	S, G	0	N	N	Tc	.5	4,061.2	206.59	7-20-56	. . . . .
-2bbc	Glen Imahof.		Dr	. . .	4½	S	S, G	0	C, W	D, S	Tf	.1	4,132.0	226.00	8-21-56	. . . . .
-5ddc	Edith M. Ramey		Dr	193.1	5	G	S, G	0	C, G	D, S	Tf	.0	4,146.1	183.60	8-21-56	. . . . .
-16bba	Alvin Korf		Dr	214.0	4	G	S, G	0	C, W	D, S	Hpb	.2	4,142.8	207.40	6-19-57	. . . . .
-24aba	Donald M. Wisdom		Dr	249.9	4	G	S, G	0	C, W	D, S	Tc	.4	4,025.2	234.40	6-19-57	. . . . .
-26bbc	Lester C. Bird		Dr	239.6	5	G	S, G	0	C, W	D, S	Tf	.0	4,064.7	228.20	8-21-56	. . . . .
-29bcc	Carl J. Hoch		Dr	179.9	5	G	S, G	0	C, W	S	Tc	.1	4,119.3	167.30	8-21-56	. . . . .
-29daa	. . . do.		Dr	230.0	5	G	S, G	0	C, W	D, S	Tc	.0	4,103.7	209.15	8-11-52	. . . . .
-34dcd	Henry Berg	1957	Dr	357	18	S	S, G	0	T, Lp	I	Hpb	.1	4,041.6	207.92	7-18-57	Y750; Dd14; A76; Sca
B5-49-36adc	Not known		Dr	192.7	5	G	S, G	0	C, W	S	Tc	1.3	4,145.1	154.46	6-19-57	In Washington County
B6-43-36ddd	U. S. Geol. Survey	1952	Dr	37.2	1¼	P	S, G	0	N	N	Tc	1.5	3,589.0	15.82	8-14-52	L; Ps357; OW; in Phillips County
C1-42-8 bbb	Ralph Bowman		Dr	96.1	4½	G	S, G	0	C, W	D, S	Tc	.0	3,646.4	85.90	9-7-56	. . . . .
-15aaa	Robert Bannister .	1953	Dr	78.3	18	S	S, G	A	T, Lp	I	Hpb	.7	. . . .	10.85	8-7-58	Ps80; Y800; Dd21; A120; Sca
-17ddb	Robert Jones		Dr	40.1	5	G	S	0	C, W	S	Tc	1.6	3,477.9	28.90	6-18-57	. . . . .
-18cdd	. . . do.		Dr	134.2	5	G	S, G	0	C, W	D, S	Tc	.0	3,654.9	131.50	7-22-57	. . . . .
-30bbb	Owney Fisher		Dr	36.6	6	G	S	0	C, W	D, S	Tf	.1	3,472.0	22.80	9-7-56	. . . . .
-31cac	Troil Welton		Dr	29.8	4½	G	S	0	C, W	S	Tf	.3	3,555.0	23.00	9-7-56	. . . . .
-33dbb	R. B. Jones.		Dr	42.6	5	G	S, G	A	C, W	D, S	Tf	.8	3,420.2	29.30	6-18-57	. . . . .
C1-43-10bcb	Harold Bowman.		Dr	179.5	6	G	S, G	0	C, W	D, S	Tc	.3	3,792.7	156.50	7-22-57	. . . . .
-11aba	Ray Wells.		Dr	120.7	5	G	S, G	0	C, W	D, S	Tc	.5	3,712.8	99.80	7-22-57	. . . . .
-17bbb	Harry Schmidt.		Dr	202.9	5	G	S, G	0	C, W	S	Tc	.2	3,814.6	141.70	7-23-57	. . . . .
-19cbb	Ralph Bowman		Dr	138.2	5	G	S, G	0	C, W	D, S	Tc	.7	3,818.4	123.80	7-22-57	. . . . .
-20daa	Harold Bowman.		Dr	134.3	5	G	S, G	0	C, W	S	Tf	.8	3,787.1	118.50	8-28-56	. . . . .
-21aba	John Osmus		Dr	146.0	. .	. .	S, G	0	N	N	Tf	.5	3,792.1	144.49	8-1-56	OW
-34cba	John Brown		Dr	26.9	5	G	S	0	N	N	Tc	2.2	3,598.7	26.30	8-28-56	. . . . .
-35dcc	Troil Welton		Dr	168.0	5	G	S, G	0	C, W	D, S	Tc	.4	3,705.1	164.10	7-23-57	. . . . .

Table 2.--Records of wells in Yuma County, Colo.--Continued

Location	Owner or tenant	Year drilled	Type of well	Depth of well (feet)	Diameter of well (inches)	Type of casing	Principal water-bearing bed: Character of material	Principal water-bearing bed: Geologic source	Method of lift	Use of water	Measuring point: Description	Measuring point: Distance above or below (-) land surface (feet)	Measuring point: Height above mean sea level (feet)	Distance to water level below measuring point (feet)	Date of measurement	Remarks
C1-44-3 ccc	Pauline Stults		Dr	166.0			S, G	0	N	N	Hc	0.2	3,882.9	152.84	7-30-56	OW
-4 ccc	H. A. Schafer Estate		Dr	221.0	5	G	S, G	0	C, W	S	Tf	.9	3,944.9	201.50	7-19-56	
-10acc	Albert Welp	1957	Dr	318		S	S, G	0	T, Lp	I	Cpb	1.1	3,881.6	158.10	9-11-57	Y650; Dd42; Al20; AqT
-12cbb	T. B. Groves Co.		Dr	151.0	5½	G	S, G	0	C, W	S	Tc	.0	3,824.7	134.50	7-23-56	
-18ada	Edwin Deterding		Dr	190.2	5	G	S, G	0	C, W	D, S	Tf	.5	3,955.6	180.30	6-19-57	
-21aab	Emmett Deterding		Dr	158.1	5½	G	S, G	0	C, W	D, S	Tc	.7	3,906.0	152.90	7-23-57	
-23acc	Dale Brueggeman	1958	Dr	437		S	S, G	0	T, E	I	Cpb	1.5	3,869.2	154.78	6-20-58	Y1,300R; Dd54R; Al60
-26abb	Fred Brueggeman	1954	Dr	240	5	G	S, G	0	C, N	S	Tc	.6	3,867.9	150.20	7-22-57	
-27bbb	Henry Wiltfang	1956	Dr	263	16	S	S, G	0	T, E	I	Hpb	.7	3,863.0	114.00	8-23-57	L; Ps257; Y1,300; Dd28; A240; AqT; Sca
-28bcb	Methodist Church		Dr	169.5	6	G	S, G	0	C, W	D	Tf	.2	3,934.4	166.00	7-18-56	
-28ddc	George Wiltfang		Dr	138.0			S	0	N	N	Tc	.0	3,861.0	117.27	8-1-56	OW
-30bcb	Dina Peters		Dr	150.5	6	G	S	0	C, W	D, S	Tf	2.2	3,943.8	134.50	7-19-56	
-34bcc	Mrs. Esther Miller		Dr	141.5	6	G	S	0	C, W	S	Tf	.8	3,862.3	121.00	7-18-56	
-35daa	Ralph Bowman		Dr	162.0	5	G	S, G	0	C, W	S	Tf	.0	3,859.1	151.00	7-18-56	
C1-45-7 cbd	Clem Rockwell		Dr	71.5	5	G	S	0	C, W	S	Tf	1.6	3,938.1	46.50	7-21-56	
-12bbd	F. W. Foltmer		Dr	129.5	5	G	S	0	C, W	S	Tf	.7	3,893.8	108.50	7-19-56	
-26cdc	Lee Dickson		Dr	89.0	4½	G	S	0	C, W	S	Tc	1.5	3,913.4	58.00	7-19-56	
-27bab	Chris Wilte Estate		Dr	65.4			S	0	N	N	Tpc	1.0	3,917.8	50.80	7-12-56	OW
-28dcb	Art Shaeder		Dr	71.6	5	G	S	0	N	N	Tf	1.2	3,943.3	54.70	6-20-57	
-34bbb	O. T. Weaver Estate		Dr	73.5	5	G	S	0	C, W	S	Tc	.8	3,932.3	49.50	7-19-56	
-35bad	Herbert Dickson	1957	Dr	197	16	S	S, G	0	T, Lp	I	Hpb	.5	3,906.5	54.40	8-29-57	Ps197; Y850; Dd21; A80; AqT; Ss
C1-46-8ddd	Bert Henderson		Dr	82.0	4½	G	S	0	C, W	S	Tf	.1	4,020.9	64.20	6-27-57	
-14baa	W. Halstead		Dr	62.9	4½	G	S	0	C, W	D, S	Tf	.6	3,958.3	35.10	6-20-57	
-25aac	L.F. Dickson		Dr	76.5	4½	G	S	0	C, W	S	Tf	1.6	3,968.5	51.0(	7-28-56	
-29aaa	Marvin Tuell		Dr	74.5	4½	G	S	0	C, E	D, S	Tf	.4	4,043.1	57.00	7-28-56	
-35abb	Kenneth Dunning		Dr	85.9	5	G	S	0	C, W	S	Tc	.0	4,004.6	58.30	6-20-57	
C1-47-1 cba	Stanley Rutledge		Dr	117.3	5	G	S, G	0	C, W	S	Tc	.0	4,069.4	92.70	8-21-57	
-3 aab	Oscar L. Nelson		Dr	143.7	4½	G	S, G	0	C, W	D, S	Tc	2.0	4,103.7	109.60	8-25-56	
-4 bbb	Chester Blomstrom		Dr	145.0	4½	G	S, G	0	N	N	Tc	1.5	4,132.1	118.52	8-3-56	OW
-22bbc	Ralph Anderson		Dr	119.0	5	G	S	0	C, W	D, S	Tc	.9	4,127.4	96.80	8-21-57	
-23dad	Charles Harouff		Dr	98.6	4	G	S	0	C, N	N	Tf	.0	4,086.4	72.20	8-15-56	
C1-48-6 bac	A. E. Davis		Dr	203.2	5	G	S, G	0	C, E	D, S	Tc	2.1	4,264.4	182.80	8-20-57	
-9 ccb	Arnold B. Hoch		Dr	185.0			S, G	0	C, W	N	Hpb	.4	4,240.8	150.43	8-3-56	OW
-13bcb	A. A. Blach		Dr	157.1	4	G	S, G	0	C, W	D, S	Tf	.2	4,190.0	121.80	8-31-56	
-16baa	Nita Williams		Dr	166.2	4½	G	S, G	0	C, W	S	Tc	1.3	4,230.2	140.10	8-29-56	
-18dbb	Oscar Strom		Dr	219.3	5	G	S, G	0	C, W	S	Tf	.8	4,280.5	185.20	8-27-56	
-21bbb	Nita Williams		Dr	166.3	4½	G	S, G	0	C, N	N	Tf	.7	4,243.5	137.20	8-20-57	

Table 2.--Records of wells in Yuma County, Colo.--Continued

Location	Owner or tenant	Year drilled	Type of well	Depth of well (feet)	Diameter of well (inches)	Type of casing	Principal water-bearing bed: Character of material	Principal water-bearing bed: Geologic source	Method of lift	Use of water	Measuring point: Description	Measuring point: Distance above or below (-) land surface (feet)	Measuring point: Height above mean sea level (feet)	Distance to water level below measuring point (feet)	Date of measurement	Remarks
C2-42-7 adc	R. Briggs		Dr	49.5	4½	G	S, G	A	C, E	D, S	Tc	2.7	3,470.4	37.20	7-24-57	
-9 dbb	Not known		Dr	65.6	5	G	S, G	A	C, W	S	Tc	2.1	3,487.6	42.50	7-24-57	
-21dca	R. S. Stamm		Dr	220.3	5	G	S, G	0	C, W	D, S	Tc	.7	3,748.5	217.90	7-24-57	
-32bcd	Eva Rogers		Dr	221.9	5	G	S, G	0	C, W	D, S	Tc	.4	3,782.0	206.10	7-25-57	
-34ccc	Maxon E. Brown		Dr	245.2	5	G	S, G	0	C, W	D, S	Tc	.4	3,774.4	236.30	7-25-57	
C2-43-5 bab	Melvin Putnam		Dr	96.2	5	G	S, G	0	C, W	D, S	Tf	.5	3,803.8	91.10	6-19-57	
-6 bbb	Charles Cook		Dr	161.3	4½	G	S, G	0	C, W	D, S	Tc	1.8	3,840.5	148.90	7-27-57	
-9 bad	Harry Ekberg		Dr	36.9	4½	G	S	A	C, W	S	Tc	.7	3,592.0	28.10	7-5-57	
-14aca	Ernest Smith Estate	1956	Dr	84	18	S	S, G	A	T, Lp	I	Cpb	2.2	3,473.1	13.45	10-1-56	L; Ps78; Y600; Dd20; A110; Ss
-17bbb	Caleb Ekberg		Dr	29.9	6	G	S	A	C, W	S	Tc	1.8	3,587.2	21.00	7-23-57	
-21ada	Beecher Island Mem. Assn.	1954	Dr	25.8	5	G	S, G	A	C, H	P	Tf	.7	3,508.0	5.10	8-28-56	
-22adb	John Ekberg	1954	Dr	57	16	S	S, G	A	T, E	I	Hpb	1.2	3,496.0	8.44	8-16-56	L; Ps56; Y675; Dd14; A60; Sca; Ss
-22ccb1	do	1950	Dr	43	16	S	S, G	A	T, E	I	Cpb	1.7	3,522.7	20.70	8-16-56	Y150; Dd13; A65; Ss
-22ccb2	do	1954	Dr	45	16	S	S, G	A	T, E	I	Hpb	2.0	3,523.4	22.55	8-16-56	Ps43; Y70; Dd17; A65; Ss
-30adc	D, A. Simmons		Dr	78.8	5	G	S, G	A	C, W	D, S	Tc	1.4	3,595.9	23.90	7-5-57	
-34bbb	John Ekberg		Dr	24.4	6	G	S	0	C, W	S	Tf	.3	3,576.6	21.40	6-21-57	
C2-44-7 bba	Arch Wakefield		Dr	81.5	6	G	S	0	C, E	D, S	Tf	1.0	3,890.2	66.50	7-18-56	
-9 abb	Fred Crites, Jr.		Dr	107.1	6	G	S, G	0	C, W	D, S	Tc	1.2	3,845.9	84.20	7-6-57	
-15aab	J. C. Akey		Dr	71.2	6	G	S, G	0	C, W	S	Tc	.6	3,744.5	30.40	7-6-57	
-19bba	B. H. Yount		Dr	109.0	4½	G	S, G	0	C, W	D, S	Tf	1.5	3,899.0	66.50	8-8-56	
-19ddd	Elbert Zion		Dr	88.2	5	G	S, G	0	C, W	D, S	Tc	-.3	3,861.2	45.90	8-16-57	
-23baa	Lavern Stults		Dr	178.8	4½	G	S, G	0	C, W	D, S	Tc	.8	3,867.6	172.60	7-15-57	
-27adb	Ted Zion		Dr	124.2	5	G	S, G	0	C, W	D, S	Tc	1.8	3,790.3	109.50	7-15-57	
-36acc	Not known		Dr				S, G	0	N	N	Hc	1.5	3,617.7	33.14	7-13-56	OW
C2-45-5 dba	Loren Dickson		Dr	89.4	5	G	S, G	0	C, W	S	Tf	.4	3,965.9	54.30	8-29-56	
-6 caa	do		Dr	57.1	5	G	S, G	0	C, W	D, S	Tf	.6	3,974.4	48.20	8-29-56	
-10bba	do	1955	Dr	135	16	S	S, G	0	T, Lp	I	Bpb	.5	3,932.8	42.56	8-3-57	L; Ps128; Y800; Dd15; A640; Sca; Ss
-25bba	Anna Hallock		Dr	81.1	5½	G	S, G	0	C, N	D, S	Tc	.8	3,909.6	35.70	8-16-57	
-27baa	Mona Wingfield		Dr	45.0	5	G	S	0	C, W	S	Tf	.5	3,954.2	37.50	8-8-56	
-28bab	do		Dr	96.2	5	G	S, G	0	C, W	S	Tc	.6	3,986.1	57.90	8-15-57	L; Ps64
-33abb	Fred Critchfield		Dr	50.7	6½	G	S	0	C, W	D, S	Tc	1.1	3,974.8	37.10	8-16-57	
C2-46-5 bcb	Perry Taylor		Dr	99.8	4½	G	S, G	0	C, W	S	Tf	1.8	4,087.5	74.90	9-1-56	
-6 ccc	Roy W. Brown		Dr	95.0	5	G	S, G	0	N	N	Tc	.0	4,100.4	74.10	8-3-56	
-12add	A. W. Bagley		Dr	81.9	5	G	S, G	0	C, W	S	Tf	.9	4,003.8	51.10	6-20-57	
-13ccc	S. R. Allison		Dr	67.9	4½	G	S, G	0	C, W	D, S	Tf	.5	4,030.3	57.80	6-24-57	

Table 2.--Records of wells in Yuma County, Colo.--Continued

Location	Owner or tenant	Year drilled	Type of well	Depth of well (feet)	Diameter of well (inches)	Type of casing	Principal water-bearing bed: Character of material	Principal water-bearing bed: Geologic source	Method of lift	Use of water	Measuring point: Description	Measuring point: Distance above or below (-) land surface (feet)	Measuring point: Height above mean sea level (feet)	Distance to water level below measuring point (feet)	Date of measurement	Remarks
C2-46-20abb	Sidney Beach	1956	Dr	98.9	5	G	S, G	0	C, W	D, S	Tc	0.6	4,083.9	68.00	8-22-57	
-22cdd	Hugh J. McCauley		Dr	70.2	4½	G	S, G	0	C, W	D, S	Tf	.9	4,060.3	59.90	8-30-56	
-24ddd	Kenneth Dunning		Dr	73.0	4½	G	S, G	0	N	N	Tc	.3	4,019.8	50.40	8-1-56	OW
-25dac	R. M. Wingfield		Dr	62.8	4½	G	S, G	0	C, W	S	Tf	.4	4,028.2	47.50	8-30-56	
-30bdc	J. A. Wingfield		Dr	139.0	5	G	S, G	0	C, W	S	Tf	.0	4,123.3	99.90	6-28-57	
C2-47-4 dbd	Dr. L. H. Graham		Dr	118.1	4½	G	S, G	0	C, W	S	Tc	.3	4,153.3	95.40	9-1-56	
-7 ccd	do		Dr	125.9	5	G	S, G	0	C, W	S	Tc	.3	4,199.0	112.00	6-27-57	
-10dab	Joseph Morrison		Dr	119.9	5	G	S, G	0	C, W	D, S	Tc	1.9	4,138.9	91.50	6-28-57	
-12aac	Not known		Dr	100.0	4½	G	S, G	0	N	N	Tc	.7	4,105.9	77.22	6-27-57	OW
-13aaa	Roy W. Brown		Dr	105.1	4½	G	S, G	0	C, W	S	Tf	1.4	4,105.9	74.20	8-30-56	
-22bbb	Stanley Rutledge		Dr	114.4	4½	G	S, G	0	C, W	S	Tf	.6	4,151.7	89.90	8-30-56	
-29acd	Harry Higgins		Dr	137.4	5	G	S, G	0	C, W	S	Tc	.0	4,195.7	114.10	8-23-57	
-33ccc	Harry Smith		Dr	140.2	4½	G	S, G	0	C, W	D, S	Tf	.3	4,213.4	130.10	8-31-56	
C2-48-2 ada	A. A. Blach		Dr	177.2	5	G	S, G	0	C, W	D, S	Tf	.6	4,232.6	140.10	8-31-56	
-5 add	Ray A. Seedorf		Dr	191.8	5	G	S, G	0	C, W	D, S	Tc	.9	4,281.3	155.90	6-26-57	
-7 bad	Albert Allen		Dr	168.9	4½	G	S, G	0	C, W	D, S	Tf	1.2	4,300.0	158.90	9-4-56	
-17ddd	Lee Newport		Dr	159.0			S, G	0	N	N	Tc	.5	4,285.7	146.91	8-3-56	OW
-21bab	Nita Williams		Dr	167.2	4	G	S, G	0	C, W	S	Tc	.4	4,283.0	147.30	9-4-56	Sca
-25cbb	Silas E. Hoffman		Dr	120.6	5	G	S, G	0	N	N	Tc	1.7	4,234.5	107.70	8-31-56	
-30ddd	Garfield Danenhower		Dr	131.0	5	G	S, G	0	C, W	S	Tc	.0	4,315.1	125.90	6-27-57	
C3-42-3 cca	William Hilt, Jr.		Dr	237.0	5	G	S, G	0	C, W	D, S	Hpb	.6	3,759.5	230.65	7-12-57	OW
-4 ddd	Noah Vandike		Dr	234.0	5	G	S, G	0	N	N	Tc	.8	3,771.5	226.57	7-31-56	
-8 ccc	Walter J. Shaver	1956	Dr	242.8	5	G	S, G	0	C, W	D, S	Tf	.5	3,797.7	220.80	6-18-57	L; Ps247
-16ddd	Elmer Schuricht		Dr	218.0	3½	G	S, G	0	C, W	S	Tc	.3	3,758.1	209.60	7-26-57	
-19ccc	H. E. Flick		Dr	169.2	4½	G	S, G	0	C, W	D, S	Tc	.4	3,761.8	148.50	7-2-57	
-31ccc	Carl Busby	1952	Dr	236	18	S	S, G	0	T, D	I	Hpb	.4	3,775.9	173.60	9-12-57	Y350; Dd43; A96; AqT, Sca
-32aad	August Abraham		Dr	179.6	4½	G	S, G	0	C, W	D, S	Tc	.3	3,738.3	154.40	7-26-57	
-34cbb	Wilmot Klie	1955	Dr	276	16	S	S, G	0	T, Lp	I	Tf	.2	3,755.4	212.57	8-16-56	L; Ps272; Y650; Dd35; Al50
C3-43-1 bdd	Dwight McKinney		Dr	230.8	4½	G	S, G	0	N	N	Tc	.0	3,823.8	226.10	7-25-57	
-3 bda	Charles Steiner		Dr	196.2	5	G	S, G	0	C, N	D, S	Tf	1.1	3,817.1	185.60	6-21-57	
-14bab	Carl McKinney		Dr				S, G	0	C, W	N	Hpb	.8	3,802.3	175.59	7-30-56	OW
-19ccd	George Wingfield		Dr	203.4	4½	G	S, G	0	C, W	D, S	Tc	.0	3,875.7	190.60	7-2-57	
-20aaa	Berl Allen		Dr	217.0	5½	G	S, G	0	C, W	S	Tf	.0	3,864.6	197.10	6-21-57	
-23bbb	Edna Kitzmiller		Dr	164.8	4½	G	S, G	0	C, H	D, S	Tc	.6	3,793.5	157.70	7-2-57	
-28adc	Dale Soehner	1955	Dr	290	16	S	S, G	0	T, Lp	I	Bpb	.3	3,867.1	204.16	4-24-58	L; Ps278; Y360; Dd38; A320; Ss
-34ccc	Not known		Dr	243.4	5	G	S, G	0	C, W	S	Tc	.2	3,880.5	219.30	7-26-57	

Table 2.--Records of wells in Yuma County, Colo.--Continued

Location	Owner or tenant	Year drilled	Type of well	Depth of well (feet)	Diameter of well (inches)	Type of casing	Principal water-bearing bed: Character of material	Principal water-bearing bed: Geologic source	Method of lift	Use of water	Measuring point: Description	Measuring point: Distance above or below (-) land surface (feet)	Measuring point: Height above mean sea level (feet)	Distance to water level below measuring point (feet)	Date of measurement	Remarks
C3-44-4 ada	B. H.Yount . . .	. . .	Dr	46.8	5	G	S, G	A	C, W	D, S	Tc	0.5	3,662.2	18.90	8-26-57	. . . . .
-5 dcb	Bill McCoy . . .	. . .	Dr	52.2	6	G	S, G	0	N	N	Tc	.3	3,739.3	30.10	9-11-56	. . . . .
-7 aab	Charles Zion . .	. . .	Dr	26.0	. .	. .	S, G	0	C, W	N	Tc	1.1	3,739.1	18.16	8-1-56	OW
-12cdc	Berl Allen . . .	. . .	Dr	178.9	5	G	S, G	0	C, W	D, S	Tc	.0	3,849.1	170.80	8-22-57	. . . . .
-20aba	Claude McCoy . .	. . .	Dr	31.1	5	G	S, G	A	C, W	D, S	Tf	.3	3,716.8	17.00	8-17-57	. . . . .
-26add	C. V. Shaffer. .	1954	Dr	211.7	5	G	G	0	C, W	S	Tc	.3	3,913.2	199.50	8-10-57	. . . . .
28dcd	William Gerber .	. . .	Dr	247.1	5	G	S, G	0	C, W	D, S	Tf	.5	3,983.3	228.80	9-11-56	. . . . .
C3-45-2 aac	Leo G. McCoy . .	1957	Dr	45.0	5	G	S	0	C, W	S	Tc	.0	3,895.2	17.29	6-19-58	L; Ps50
-7 abd	. . do	1957	Dr	52.3	5	G	S	0	C, W	S	Tc	.6	3,987.9	27.20	7-1-57	. . . . .
-14cdd	Vica Thomas. . .	. . .	Dr	17.0	5	G	S	A	C, H	D, S	Tc	1.3	3,860.3	11.90	8-24-57	. . . . .
-15ccb	Claude McCoy Estate	. . .	Dr	82.1	4½	G	S	0	N	N	Tf	.3	3,974.4	71.40	9-3-56	. . . . .
-31bcb	Fox Brothers Ranch . . .		Dr	20.6	5½	G	S, G	A	C, W	D, S	Tf	2.1	3,898.2	8.60	6-25-57	. . . . .
-33caa1	. . . . do . . .	1955	Dr	53	16	S	G	A, 0	Cf, E	I	Tc	-14.0	3,830.8	1.59	7-25-57	Dd22; L; Ps50; combined Y175; A50; Ss
-33caa2	. . . . do . . .	1956	Dr	50	16	S	G	A, 0	Cf, E	I	Tc	-14.0	3,830.8	1.68	7-25-57	Dd20; L; Ps50; combined Y175; A50; Ss
C3-46-3 cbc	Amer Lehman. . .	. . .	Dr	56.5	5	G	S	0	C, W	S	Tc	.0	4,077.8	52.20	8-22-57	. . . . .
-11aba	C. R. Saar . . .	1956	Dr	58.8	5	G	S, G	0	C, W	S	Tc	.7	4,041.5	44.90	8-12-57	. . . . .
-13aaa	W. R. Murrow . .	1954	Dr	52	5	G	S	0	C, W	S	Tf	.5	4,005.1	28.50	6-24-57	. . . . .
-32adb	Charles Leuch. .	. . .	Dr	90.3	5	G	S	0	C, W	D, S	Tc	1.1	4,056.0	69.30	7-1-57	. . . . .
C3-47-2 baa	C. C. Wingfield.	. . .	Dr	110.2	4½	G	S	0	C, W	S	Tf	.8	4,163.5	104.10	9-8-56	. . . . .
-6 aaa	W. C. Mumm . . .	1956	Dr	130.0	5	G	S, G	0	C, W	D, S	Tc	.2	4,241.2	109.39	7-15-58	L; Ps116
-8 ddd	Ray Smith. . . .	. . .	Dr	15.4	4½	G	S	D	N	N	Tc	1.0	4,192.3	12.80	9-8-56	. . . . .
-10cab	Edward Mekelburg	1956	Dr	32.0	5	G	S, G	0	C, W	S	Tc	.8	4,152.8	16.42	7-15-58	L; Ps 22
-14cac	Mary Lauerman. .	. . .	Dr	96.8	4½	G	S	0	C, W	S	Tc	.8	4,173.5	50.20	6-20-57	. . . . .
-15cbc	P. E. Grauel . .	. . .	Dr	24.6	. .	G	S	D	N	N	Tc	.1	4,191.8	23.54	8-3-56	OW
-23cbc	Mary Lauerman. .	. . .	Dr	93.4	5	G	S	0	C, W	S	Tc	.4	4,164.3	21.00	7-1-57	. . . . .
-25dad	Donald Thompson.	. . .	Dr	45.9	5	G	S	0	C, W	S	Tc	4.2	4,111.3	25.90	7-1-57	. . . . .
-28bcc	L. E. Grauel . .	. . .	Dr	29.4	5	G	S	0	C, E	D, S	Tc	-3.8	4,203.5	21.00	8-20-57	. . . . .
-31bbd	Arthur Larson. .	. . .	Dr	38.4	4½	G	S	0	C, W	D, S	Tc	1.2	4,252.9	31.30	9-5-56	. . . . .
C3-48-9 cbc	Walter Smith . .	. . .	Dr	113.9	5	G	S	0	C, W	S	Tf	.7	4,314.4	93.10	9-4-56	. . . . .
-11dcb	Leo A. Bennett .	. . .	Dr	118.8	4½	G	S	0	C, W	D, S	Tc	.4	4,286.8	95.90	9-5-56	. . . . .
-30dba	M. C. Crocker. .	1954	Dr	34.8	5	G	S, G	0	C, W	S	Tc	1.0	4,342.7	23.30	8-23-57	. . . . .
-33bcc	Mrs. Anna Wolf .	. . .	Dr	35.1	5	G	S	0	N	N	Tc	.7	4,327.0	33.00	9-5-56	. . . . .
-36bbb	Not known. . . .	. . .	Dr	. . .	. .	.	S	0	N	N	Tc	.5	4,277.1	34.50	7-28-56	OW
C4-42-3 bbb	Wilmot Klie. . .	1956	Dr	280	16	S	S, G	0	T, Lp	I	Tf	.4	3,751.4	206.20	9-10-57	L; Ps270; Y265; Dd60; A75; AqT
-5 dcc	William Pyle . .	. . .	Dr	145.8	5	G	S, G	0	C, W	S	Tc	.3	3,762.7	130.90	7-30-57	. . . . .

Table 2.-- Records of wells in Yuma County, Colo.--Continued

Location	Owner or tenant	Year drilled	Type of well	Depth of well (feet)	Diameter of well (inches)	Type of casing	Principal water-bearing bed: Character of material	Principal water-bearing bed: Geologic source	Method of lift	Use of water	Measuring point: Description	Measuring point: Distance above or below (-) land surface (feet)	Measuring point: Height above mean sea level (feet)	Distance to water level below measuring point (feet)	Date of measurement	Remarks
C4-42-6 ccc	Roy Busby. . . .	. . .	Dr	223.0	5	G	S, G	O	N	N	Tc	1.4	3,800.0	194.40	7-30-56	OW
-10ccd	Dean R. Blume. .	. . .	Dr	42.9	5	G	S	O	C, W	D, S	Tc	.4	3,578.6	36.70	7-30-57	. . . . .
-18add	Veda Thompson. .	. . .	Dr	224.2	4½	G	S, G	O	C, W	D, S	Tc	.0	3,794.3	209.20	7-30-57	. . . . .
-20ccc	Henry Burr . . .	. . .	Dr	102.1	5	G	S, G	O	C, W	S	Tc	1.6	3,658.4	91.70	7-29-57	. . . . .
-27cdd	Ernest Wiley . .	. . .	Dr	49.9	5	G	S	O	C, G	S	Tc	.8	3,565.3	45.20	7-29-57	. . . . .
-32dac	Walter Wiley . .	1949	Dr	90	.	S	S, G	O	T, Lp	I	Bpb	.5	3,576.8	29.67	7-1-57	Ps87; Y390; Dd20; A70; Ss
C4-43-6 ada	Kenneth Conrad .	. . .	Dr	207.1	5	G	S, G	O	C, W	D, S	Tc	.3	3,899.3	199.80	7-26-57	. . . . .
-8 dad	Carl F. Helling.	. . .	Dr	242.1	5	G	S, G	O	C, W	S	Tc	.0	3,890.3	208.90	7-27-57	. . . . .
-13aba	Roy Busby. . . .	1954	Dr	265	16	S	S, G	O	T, Lp	I	Tf	.3	3,791.7	181.59	8-17-56	L; Ps254; Y360; Dd44; A170; Ss
-15acc	A. B. Nash . . .	. . .	Dr	201.1	3½	S	S, G	O	C, W	D, S	Tc	-2.3	3,841.0	191.20	7-27-57	. . . . .
-21ddd	B. Leo Devlin. .	. . .	Dr	190.2	4½	G	S, G	O	C, W	D, S	Tc	1.2	3,841.5	180.30	7-30-57	. . . . .
-24cab	Harry Peters . .	1955	Dr	160	14	S	G	O	T, Lp	I	Cpb	1.2	3,696.9	89.75	8-25-56	L; Ps152; Y350; Dd44; A35
-25cdd	. . .do	. . .	Dr	181.9	5	G	S, G	O	C, W	D, S	Tc	.3	3,770.1	169.60	7-29-57	. . . . .
-26cbb	Ray Wiley. . . .	1956	Dr	275	16	S	S, G	O	T, E	I	Cpb	1.0	3,824.5	186.90	9-16-57	L; Ps269; Y1,100; Dd70; A180; AqT
-31cdd	August Moellenberg	. . .	Dr	180.3	5	G	S, G	O	C, W	S	Tc	.5	3,862.0	173.20	8-8-57	. . . . .
-32abb	B. Leo Devlin. .	. . .	Dr	222.1	5	G	S, G	O	C, W	S	Tc	.9	3,859.7	175.30	7-27-57	. . . . .
-34cbc	. . . do.	. . .	Dr	134.9	4½	G	S, G	O	C, W	S	Tc	.3	3,758.1	107.20	7-29-57	. . . . .
-35caa	Herman Reitmeyer	1955	Dr	260	5	G	S, G	O	Cf, E	S	Hpb	-6.0	3,778.2	154.00	8-25-56	L; Ps257
C4-44-4 bdc	Gottlieb Lippert, Jr.	1955	Dr	314	16	S	S, G	O	T, Lp	I	Hpb	.6	3,992.5	219.75	10-1-56	L; Ps309; Y775; Dd22; A100
-5 ddc	Gerald Zion. . .	1950	Dr	325	16	S	S, G	O	T, E	I	Tc	1.0	4,019.4	231.24	10-21-50	L; Ps332; Y1,700R; Dd17R; A170
-10ddd	Charles Sheverbush	1950	Dr	326	18	S	S, G	O	T, E	I	Hpb	.1	3,960.7	207.55	7-13-56	L; Ps341; Y1,050; Dd38; A200
-13daa	E. J. Brunswig .	. . .	Dr	207.1	4½	G	S, G	O	C, W	D, S	Tc	.3	3,912.3	195.00	7-2-57	. . . . .
-18aaa	Lawrence Conrad.	. . .	Dr	233.4	5	G	S, G	O	C, W	D, S	Tf	.2	4,011.9	207.50	6-25-57	. . . . .
-19ddc	William Moellenberg.	. . .	Dr	212.9	5	G	S, G	O	C, W	S	Tc	.4	4,001.8	191.70	8-8-57	. . . . .
-21ddc	Clarence Brenner	. . .	Dr	200.0	. .	. .	S, G	O	C, W	N	Tf	.3	3,965.3	196.55	8-3-56	OW
-25abb	E. J. Brunswig .	1955	Dr	302	16	S	G	O	T, E	I	Cpb	1.0	3,918.1	198.59	8-17-56	L; Ps300; Y1,000; Dd45; A320
-27bbc	Amer Lehman. . .	1955	Dr	329	16	S	S, G	O	T, E	I	Tf	.5	3,968.5	203.23	8-17-56	L; Ps308; Y850; Dd75R; A170; Sca
-31cbd	John Clark, Jr .	1956	Dr	300	16	S	S, G	O	T, Lp	I	Pf	.2	4,009.9	187.20	10-2-57	L; Ps298; Y540; Dd14; A150; AqT; Sca; Ss
-35bbb	Harold Helling .	. . .	Dr	295	16	S	S, G	O	T, Lp	I	Cpb	.7	3,945.9	196.60	9-18-57	Y750; Dd40; A160; AqT
C4-45-7 aad	Not known. . . .	. . .	Dr	151.0	5	G	S, G	O	C, W	N	Tpc	.5	4,053.0	144.94	2-8-57	OW
-8 bdc	Otto Lidke . . .	. . .	Dr	193.1	5	G	S, G	O	C, W	S	Tf	.3	4,063.1	161.20	6-24-57	. . . . .
-13baa	John Downing . .	. . .	Dr	222.4	5	G	S, G	O	C, W	S	Tc	.8	4,039.5	214.50	7-3-57	. . . . .
-19bbc	Alice Pearce . .	. . .	Dr	191.2	5	G	S, G	O	C, W	D, S	Tf	.5	4,118.3	180.60	6-25-57	. . . . .

Table 2.--Records of wells in Yuma County, Colo.--Continued

Location	Owner or tenant	Year drilled	Type of well	Depth of well (feet)	Diameter of well (inches)	Type of casing	Principal water-bearing bed: Character of material	Principal water-bearing bed: Geologic source	Method of lift	Use of water	Measuring point: Description	Measuring point: Distance above or below (-) land surface (feet)	Measuring point: Height above mean sea level (feet)	Distance to water level below measuring point (feet)	Date of measurement	Remarks
C4-45-20aab	Donald Weaver. .	. . .	Dr	115.1	5	S	S, G	0	C, W	S	Tc	0.3	3,976.4	75.50	8-10-57	. . . . .
-21ddd	Arthur Lohman. .	. . .	Dr	. . .	. .	. .	S, G	0	N	N	Tc	.0	4,071.4	195.73	8-2-56	. . . . .
-23dad	Richard Conrad .	. . .	Dr	203.3	4	S	S, G	0	C, W	D, S	Tc	.6	4,037.8	192.60	8-10-57	. . . . .
-30ddd	Fred Holtman . .	. . .	Dr	190.1	5½	G	S, G	0	C, W	D, S	Tc	.7	4,101.0	178.40	7-3-57	. . . . .
-33abb	Dallas Ingals. .	1955	Dr	340	16	S	S, G	0	T, E	I	Cpb	1.4	4,082.7	193.54	10-3-56	L; Ps320; Y1,600; Dd45R; A200
C4-46-8 cdd	J. R. Conrad . .	. . .	Dr	125.2	5	G	S, G	0	C, W	S	Tc	.0	4,133.5	107.30	6-26-57	. . . . .
-12cdd	Charles A. Floerke . . .		Dr	180.4	5	G	S, G	0	C, W	D, S	Tc	.4	4,107.7	164.50	6-26-57	. . . . .
-20dcc	Ernest Doddridge	. . .	Dr	126.3	6	G	S, G	0	C, W	D, S	Tc	1.3	4,151.9	115.30	7-3-57	. . . . .
-27bba	Charles Helsel .	. . .	Dr	194.6	5	G	S, G	0	C, W	D, S	Tc	.6	4,176.1	173.80	7-3-57	. . . . .
-31cad	David Idler . . .	1952	Dr	286	14	S	S, G	0	T, Lp	I	Tc	1.0	4,157.1	100.45	8-31-56	Y1,700; Dd30; A115
C4-47-4 dad	David Shaw . . .	1953	Dr	68.9	5	G	S	0	C, W	S	Tc	.6	4,162.9	34.80	8-20-57	. . . . .
-16abb	. . do.	. . .	Dr	73.8	5	G	S	0	C, W	S	Tc	.4	4,174.5	51.70	8-27-57	. . . . .
-23aaa	Charles Richard .	. . .	Dr.	100.0	. .	. .	S	0	C, H	N	Tc	.3	4,161.2	84.75	8-2-56	OW
-25ddb	David Idler . . .	1951	Dr	292	10	S	S, G	0	T, Lp	I	Pf	.6	4,171.7	105.21	10-4-56	L; Ps265; Y525; Dd19; A60; Ss
-27ddb	W. S. Stallsworth	1954	Dr	260	16	S	S, G	0	T, E	I	Tf	.2	4,194.5	91.31	8-31-56	L; Ps255; Y800; Dd22; A45; Ss
-31aba	Edgar H. Fadenrecht. . .	1949	Dr	178.6	16	S	S, G	0	T, E	I	Bpb	1.5	4,267.9	88.92	8-30-56	Ps178; Y1,000; Dd22; A90; Ss
C4-48-5 dcc	Ray Smith	. . .	Dr	38.9	5	G	S	0	C, G	S	Tf	.5	4,345.1	34.70	9-4-56	. . . . .
-13bdc	Henry Bledsoe . .	1956	Dr	75	5	G	G	A, 0	C, W	S	Tc	.7	4,201.1	9.70	8-17-57	L; Ps73
-17ddd	H. L. Cecil . . .	1954	Dr	27	18	S	S, G	A, 0	T, E	I	Hpb	.5	4,278.4	6.60	7-27-56	Y475; A80; Ss
-19ada	Jack Cecil . . .	1953	Dr	50.1	18	S	S, G	A, 0	T, E	N	Hpb	.6	4,316.1	23.55	7-27-56	. . . . .
-19cbb	Ed Galbreath . .	1950	Dr	38.8	24	S	S, G	A, 0	T, E	I	Cpb	1.5	4,333.1	27.63	8-31-56	Y500; Dd7; A75; Ss
-20bac	Jack Cecil . . .	1948	Dr	26.8	24	S	S, G	A, 0	T, E	I	Hpb	1.2	4,290.5	16.00	7-27-56	Y400; Dd5; A120; AqT; Sca; Ss
-21aaa	Charles Henry. .	. . .	Dr	16.6	5	G	S, G	A	C, W	D, S	Tc	.4	4,259.1	8.80	9-6-56	. . . . .
-25ccd	Robert Benton. .	. . .	Dr	. . .	. .	. .	S	0	N	N	Tf	.6	4,288.8	91.43	7-28-56	OW
-31bbc	James Mason. . .	. . .	Dr	56.0	5	G	S	0	C, W	S	Tf	.5	4,383.8	53.90	9-6-56	. . . . .
-35dab	Glen Blank . . .	1952	Dr	260	18	S	S, G	0	T, E	I	Hpb	.5	4,298.1	98.20	10-3-57	L; Ps260; Y1,160; Dd14; A85; AqT
C5-42-4 cba	Ernest Wiley . .	1948	Dr	68	18	S	S, G	A, 0	T, Lp	I	Hpb	1.2	3,560.0	29.47	10-6-56	Ps 65; Y100; Dd26; A25
-4 cca	. . do.	1948	Dr	68	18	S	S, G	A, 0	T, E	I	Cpb	.7	3,559.6	30.22	8-27-56	Ps68; Y250; Dd8; A50; Ss
-4 cda	. . do.	1954	Dr	53	18	S	S, G	A, 0	T, E	I	Hpb	1.6	3,539.3	13.50	9-17-57	L; Ps52; Y420; Dd17; A90; AqT; Ss
-6 bcb	Mrs. Angie Ekberg		Dr	157.4	4½	G	S, G	0	C, W	D, S	Tc	1.1	3,720.0	147.60	8-7-57	. . . . .
-8 dcd	Ted Yenter . . .	1947	Dr	59.5	18	S	S, G	A	N	N	Tc	.5	3,570.1	11.30	8-23-56	Ps63; Y500R; Dd37R
-9 caa	. . do	1954	Dr	53	18	S	S, G	A	T, D	I	Tc	.7	3,542.2	14.46	8-23-56	L; Ps49; Y1,000R; Dd20; A110; Ss
-9 bbc	Not known . . .	. . .	Dr	94.3	5	G	S, G	0	C, W	S	Tc	1.0	3,614.8	84.60	8-7-57	In Cheyenne County, Kansas

Table 2.--Records of wells in Yuma County, Colo.--Continued

Location	Owner or tenant	Year drilled	Type of well	Type of well (feet)	Diameter of well (inches)	Type of casing	Principal water-bearing bed: Character of material	Principal water-bearing bed: Geologic source	Method of lift	Use of water	Measuring point: Description	Measuring point: Distance above or below (-) land surface (feet)	Measuring point: Height above mean sea level (feet)	Distance to water level below measuring point (feet)	Date of measurement	Remarks
C5-42-17ab	Ted Yenter . . .	1947	Dr	73	8	S	S, G	O	T, G	I	Tc	0.3	3,582.5	18.86	8-23-56	Ps73; Y125R; Dd37R; A5
-29aad	Orley Lebow. . .	. . .	Dr	131.2	5	G	S, G	U	C, W	D, S	Tc	.3	3,718.8	118.30	8-7-57	. . . . .
-31ada	E. W. VanMeter .	1936	Dr	84	6	G	S, G	A, O	Cf, E	I	Tc	-5.0	3,636.5	2.70	8-5-57	Y350R; A20; Ss
-33aad	John Rueb. . . .	. . .	Dr	160.2	5	G	S, G	O	C, W	D, S	Tc	.3	3,746.7	140.90	8-7-57	. . . . .
C5-43-8 aaa	August Moellenberg . . .		Dr	116.3	5	G	S	O	C, W	S	Tc	.9	3,769.8	98.70	8-8-57	. . . . .
-12bda	Roscoe Hutton. .	1940	Du	70	36	S	S, G	O	T, E	I	Hpb	2.2	3,595.9	14.00	8-23-56	Ps70; Y400; Dd17; A40; Ss
-14acc	Alfred Schnase .	1945	Dr	101	18	S	S, G	A, O	T, G	I	Cpb	.5	3,634.5	22.44	10-6-56	Ps98; Y580; Dd8; A90; Sca; Ss
-14ccb	Carl Proehl. . .	. . .	Dr	63.3	. .	. .	S, G	A, O	N	N	Tpb	3.2	3,654.0	35.83	7-30-56	OW
-18cbb	Fred Weyerman. .	1956	Dr	112	18	S	S, G	O	T, E	I	Hpb	1.1	3,714.5	35.09	7-13-57	L; Ps108; Y320; Dd10; A150; Ss
-24aab	Albred Schnase .	. . .	Dr	77.7	5	G	S, G	O	C, W	D, S	Hc	1.3	3,680.9	66.40	8-6-57	. . . . .
-25bbb	A. B. Nash . . .	. . .	Dr	114.9	5	G	S, G	O	C, W	D, S	Tc	.6	3,734.4	95.50	8-6-57	. . . . .
-29aaa	Mr. Brinkoff . .	. . .	Dr	113.2	5	G	S, G	O	N	N	Tc	.4	3,754.8	76.70	8-6-57	. . . . .
-32cdd	Douglas Hillman.	. . .	Dr	125.1	5	G	S, G	O	C, W	S	Tc	.2	3,825.5	121.90	8-5-57	. . . . .
-33bbb	Albert Schlichenmayer. .		Dr	113.9	4½	G	S, G	O	C, W	D, S	Tc	.7	3,779.5	92.90	8-6-57	. . . . .
-35dda	Robert O'Brien .	. . .	Dr	146.2	4½	G	S, G	O	C, W	D, S	Tc	.4	3,803.8	133.40	8-6-57	. . . . .
C5-44-1 bcb	Joseph Pfeiler .	. . .	Dr	155.4	5	G	S, G	O	C, W	D, S	Tc	1.2	3,865.7	146.60	8-5-57	. . . . .
-3 ddb	Clifford Like. .	. . .	Dr	151.2	5	G	S, G	O	C, W	D, S	Tc	.8	3,887.7	142.10	8-8-57	. . . . .
-5 abb	Herman Boden . .	1955	Dr	302	16	S	G	O	T, E	I	Cpb	1.7	3,981.3	187.21	8-17-56	L; Ps289; Y1,050; Dd62; A100
-9bab	Charles Floerka.	1956	Dr	260	16	S	S, G	O	T, E	I	Pf	.0	3,932.6	158.50	7-13-57	L; Ps252; Y990E; Dd28; A200
-13ccb	Mr. Collins . . .	. . .	Dr	. .	. .	. .	S, G	O	N	N	Tc	.2	3,722.2	29.65	8-21-56	OW
-14caa	Cyral Hoag . . .	1954	Dr	70	18	S	G	O	T, E	I	Hpb	.5	3,726.7	21.00	7-11-56	L; Ps65; Y360; Dd44; A60
-16abc	Fred Boden . . .	1957	Dr	223	16	S	S, G	O	T, E	I	Pf	.2	3,890.3	125.73	7-13-57	L; Ps215; Y600; Dd42; A75
-17bbc	Chester V. Davis	1957	Dr	131	16	S	S, G	O	T, E	I	Pf	1.0	3,834.8	40.0	4-18-57	L; Ps123; Y600; Dd8R; A80; Ss
-18bcc	Marvin Walters .	. . .	Dr	26.6	. .	G	S, G	A	C, W	N	Tc	.4	3,843.1	22.54	8-2-56	OW
-21cbc	Arnold Fleer . .	1956	Dr	73.0	18	S	S, G	A, O	T, E	I	Hpb	1.9	3,754.6	10.09	8-29-56	L; Ps59; Y600; Dd51; A100
-22dca	J. C. Lengal . .	1956	Dr	74	18	S	S, G	A, O	T, E	I	Hpb	1.1	3,734.8	20.90	9-18-57	L; Ps64; Y470; Dd10; A125; AqT; Ss
-23dcd	. . . do.	1950	Dr	80	18	S	S, G	A, O	T, E	I	Bpb	.8	3,729.3	28.54	7-13-56	L; Ps75; Y900; Dd28; A200 OW
-29bdc	Ralph Klewenо. .	1951	Dr	74	18	S	S, G	A, O	T, E	I	Hpb	1.0	3,774.0	12.79	7-24-56	L; Ps67; Y700; Dd14; A30;
-30bcb	. . do.	1948	Dr	85.6	18	S	G	A, O	T, E	I	Tf	.6	3,813.3	26.06	7-25-56	L; Ps85; Y775; Dd20; A85; AqT; Sca; Ss
-33bcd	George Lengal. .	. . .	Dr	122.7	5	G	S, G	O	C, W	D, S	Tc	.7	3,864.8	93.10	8-9-57	. . . . .
-36bca	Donald Knapp . .	. . .	Dr	94.1	5	G	S, G	O	C, W	D, S	Tc	.3	3,743.0	56.20	8-5-57	. . . . .
C5-45-2 bcc	Guy Schafer. . .	. . .	Dr	121.4	5	G	S, G	O	C, W	S	Tc	1.1	3,978.7	112.30	8-9-57	. . . . .
-4 bab	Robert Romke . .	1937	Dr	208	12	S	S, G	O	T, D	I	Tf	.2	4,076.9	179.51	10-4-56	Y260; Dd21; A51

Table 2.--Records of wells in Yuma County, Colo.--Continued

Location	Owner or tenant	Year drilled	Type of well	Depth of well (feet)	Diameter of well (inches)	Type of casing	Principal water-bearing bed: Character of material	Principal water-bearing bed: Geologic source	Method of lift	Use of water	Measuring point: Description	Measuring point: Distance above or below (-) land surface (feet)	Measuring point: Height above mean sea level (feet)	Distance to water level below measuring point (feet)	Date of measurement	Remarks
C5-45-7 bbc	Richard Brenner. . . .		Dr	185.4	5	G	S, G	0	C, G	D, S	Tc	1.2	4,121.1	180.30	7-11-57	
-8 aba	Jay Clark. . . .	1955	Dr	295	16	S	G	0	T, Lp	I	Cpb	1.6	4,074.7	183.46	10-4-56	Y775; Dd58R; A160; Ss
-21ddd	Howard Homm.		Dr	185.1	5	G	S, G	0	C, N	N	Tc	.4	4,042.9	172.00	7-11-57	
-23bba	Chester Wieser		Dr	166.4	5	G	S, G	0	C, W	D, S	Tc	.9	4,000.7	151.60	8-9-57	
-29bba	William J. Scheerer. . .		Dr	93.6	5	G	S	0	C, W	S	Tc	1.0	3,991.4	82.50	8-12-57	
-30bab	Ira Dietz.		Dr	149.9	6	G	S, G	0	C, W	D, S	Tc	.5	4,070.1	137.40	7-11-57	
-35acc	John Homm.		Dr	62.9	5	G	S	0	C, W	D, S	Tc	1.0	3,854.4	34.20	8-9-57	
C5-46-3 aaa	Ora Street		Dr	188.1	5	G	S, G	0	C, G	D, S	Tc	.9	4,160.3	170.50	8-13-57	
-4 dcd	. . do		Dr	118.7	5	G	S, G	0	C, W	D, S	Tc	1.0	4,129.0	106.80	8-13-57	
-8 bcc	Merle Scheible		Dr	121.40	5	G	S, G	0	C, W	D, S	Tc	1.0	4,151.5	94.80	8-15-57	
-14bcb	Joseph Strick.		Dr	153.0	5	G	S, G	0	N	N	Tc	.6	4,114.3	126.14	8-2-56	
-17cdd	Ralph Collete.		Dr	123.1	5	G	S, G	0	C, W	D, S	Tc	.7	4,162.0	105.60	8-15-57	
-27aab	F. E. Clark.		Dr	104.6	4½	G	S, G	0	C, W	D, S	Tc	1.0	4,097.8	96.70	8-13-57	
-31abb	George Burkard, Sr. . .		Dr	97.9	4½	G	S, G	0	N	N	Tc	1.0	4,161.3	84.10	8-14-57	
-33daa	W. H. Holstine		Dr	96.2	5	G	S, G	0	C, W	D, S	Tc	.8	4,100.4	85.80	8-14-57	
-35dcc	O. E. Shade.		Dr	160.1	5	G	S, G	0	C, W	D, S	Tc	1.7	4,117.9	138.70	8-13-57	
C5-47-2 acc	H. A. Pruss. . .	1954	Dr	297	16	S	S, G	0	T, Lp	I	Cpb	.9	4,201.1	102.25	10-4-56	L; Ps289; Y2,100; Dd32; A190; Ss
-4 bca	Oscar Cox. . . .	1950	Dr	176	24-16	S	G	0	T, E	I	Tc	.0	4,237.5	100.0	7-18-50	L; Ps173; Y400; Dd20R; A28; Ss
-7 baa	Mrs. Henry Klassen . . .		Dr	109.1	5	G	G	0	C, W	D, S	Tc	.7	4,275.3	92.40	8-19-57	
-9 cbb	V. L. Davis.		Dr	. . .	5	G	S	0	N	N	Tc	1.4	4,252.5	106.59	7-28-56	OW
-14dcb	Elmer O. Boone .	1953	Dr	240	16	S	S, G	0	T, E	I	Tf	.2	4,209.7	97.90	10-4-57	L; Ps235; Y1,300; Dd14; A85; AqT
-15cdb	C. R. Darling. .	1937	DD	285	30-14	C, S	S, G	0	T, E	I	Tf	.0	4,234.8	107.05	8-29-56	Y365; Dd12; A65; Ss
-16adb	O. E. Gurss. . .	1949	Dr	215	18	S	S, G	0	T, D	I	Hpb	.1	4,240.9	109.12	8-30-56	L; Ps214; Y1,350R; Dd32; A120; Ss
-20bab	Wesley Heinrichs	1952	Dr	281	16	S	S, G	0	T, E	I	Tf	.2	4,274.3	114.40	9-24-57	Ps281; Y870; Dd29; A100; AqT; Sca
-27aab	Corinne Peterson . . .		Dr	120.2	5	G	S, G	0	C, W.	N	Tc	.0	4,239.2	109.60	8-15-57	
-31bad	Stanley Pluecheck . . .		Dr	121.8	4½	G	S, G	0	C, W	D, S	Tf	.7	4,297.8	117.00	9-10-56	
-33cbb	Alma Idler.		Dr	116.4	5	G	S, G	0	C, W	S	Tc	1.2	4,259.4	101.10	8-19-57	
-35ccc	J. E. Weckman		Dr	122.7	5	G	S, G	0	C, W	D, S	Tc	.5	4,236.0	107.00	8-14-57	
C5-48-3 dad	Edith Whitney		Dr	124.8	4½	G	S, G	0	C, W	D, S	Tf	.3	4,327.0	109.90	9-6-56	
-13cdc	Bertha Rose		Dr	139.4	5	G	S, G	0	C, W	D, S	Tc	1.2	4,317.2	111.30	8-19-57	
-16bbc	Anna Jackman Estate.		Dr	. . .	. .	. .	S, G	0	C, W	N	Hpb	.5	4,375.4	121.77	7-28-56	OW
-18dbc	D. J. Hutchins		Dr	132.4	5½	G	S, G	0	C, W	D, S	Tf	1.3	4,402.8	122.50	9-6-56	
-25abd	Albert Packer . .	1940	Dr	159.5	14	S	S, G	0	T, E	I	Bpb	.3	4,311.8	119.67	10-4-56	Ps160; Y525; Dd26; A40; Ss
-31ccd	Mary C. Watmore. . . .		Dr	156.6	5	G	S, G	0	N	N	Tc	.0	4,430.2	136.70	9-10-56	

Table 3.--Sample logs of test holes in Yuma County.

Samples from U.S. Geological Survey test holes were described by the author. The code number after the color of the sample refers to the rock-color chart distributed by the Geological Society of America. Samples from the other test holes were described by other geologists. Altitudes shown are for land surface at the test hole site. Thickness in feet. Depth in feet below land surface.

	Thickness	Depth
B1-43-36ddd.[1] Alt. 3,664.2 ft.		
Peorian loess:		
Sand, very fine, silty, calcareous, slightly bentonitic, loosely cemented, light-brownish-gray (5YR6/1)	14	14
Sand, very fine, silty, calcareous, bentonitic, loosely cemented, pale-orange (10YR7/2)	19	33
Ogallala formation:		
Mortar beds, fine, very calcareous, slightly bentonitic, firm, very-pale-orange (10YR8/2)	10	43
Limestone, very hard, very-pale-orange (10YR8/2)	3	46
Mortar beds, fine, calcareous, slightly bentonitic, firm to soft, pinkish-gray (5YR8/1)	28	74
Clay, sandy, calcareous, bentonitic, firm to soft, light-greenish-gray (5G8/1)	14	88
Mortar beds, fine, calcareous, bentonitic, firm to soft, pinkish-gray (5YR8/1)	11	99
Pierre shale:		
Clay, calcareous, slightly bentonitic, firm, dusky-yellow (5Y6/4) with limonite streaks.	31	130
Shale, calcareous, slightly bentonitic, firm, medium-gray (N5)	6	136
B1-44-8aca. Alt. 3,650.7 ft.		
Dune sand:		
Top soil, loam, sandy, dark-brown.	4.5	4.5
Sand, fine, loose, brown	40.5	45
Sand, medium, compact, brown	12	57
Ogallala formation:		
Clay, plastic, brown.	15	72
Sand, medium, compact, clean	10	82
Pierre shale:		
Shale, soft, brown, limonite streaks.	7	89
Shale, firm, black.	6.5	95.5
B1-44-8adb. Alt. 3,631.5 ft.		
Dune sand:		
Sand, fine, loose, brown	17	17
Sand, fine, compact, brown	39	56
Pierre shale:		
Shale, plastic, yellow; limonite streaks.	7	63
Shale, firm, black.	4.5	67.5
B1-44-8adc. Alt. 3,614.6 ft.		
Alluvium:		
Sand, fine, loose, brown	8	8
Sand, fine, soft, black	13	21
Sand, fine, compact, brown	15	36
Sand, medium, compact, clean	12	48
Sand, coarse, compact, clean	2	50
Pierre shale:		
Shale, firm, black.	6	56
B1-44-8daa. Alt. 3,604.0 ft.		
Alluvium:		
Loam, sandy, loose, dark-brown.	5	5
Sand, fine, compact, dark-brown.	10	15
Sand, medium, compact, brown	30	45
Pierre shale:		
Shale, firm, black.	7	52

	Thickness	Depth
B1-44-8dad. Alt. 3,614.7 ft.		
Alluvium:		
Loam, sandy, soft, black	3	3
Sand, fine, compact, brown.	19	22
Clay, plastic, black	3	25
Sand, fine, compact, brown.	5	30
Sand, fine, silty, plastic, black	2	32
Sand, medium, compact, brown.	23	55
Pierre shale:		
Shale, firm, black	8	63
B1-44-9ccb. Alt. 3,623.2 ft.		
Alluvium:		
Loam, sandy, soft, dark-gray	1.5	1.5
Sand, fine, soft, brown.	7.5	9
Sand, fine, compact, brown.	29	38
Pierre shale:		
Shale, weathered, plastic, gray	1	39
Shale, firm, black	9	48
B1-44-9ccd. Alt. 3,672.0 ft.		
Ogallala formation:		
Loam, sandy, compact, brown.	2	2
Sand, fine, silty, compact, brown.	11	13
Sand, fine, silty, compact, brown.	13	26
Sand, fine, silty, compact, brown.	4	30
Silt, compact, buff.	11	41
Silt, concretionary, buff	13	54
Sand, fine, silty, compact, brown.	6	60
Sand, medium, compact, clean.	10	70
Pierre shale:		
Shale, plastic, brown, weathered.	14	84
Shale, firm, black	15	99
B1-44-16bdb. Alt. 3,682.8 ft.		
Ogallala formation:		
Sand, fine, compact, brown.	5	5
Sandstone, poorly cemented, brown.	1	6
Sand, medium, brown, slightly cemented.	6	12
Sand, fine, silty, brown	2	14
Sandstone, poorly cemented, brown.	1	15
Sand, fine, silty, brown	4	19
Sandstone, poorly cemented, brown.	1	20
Sand, fine, silty, slightly cemented, brown.	8	28
Silt, sandy, soft, brown	4	32
Sand, medium, loose, brown.	5	37
Silt, loamy, soft, gray.	3	40
Clay, loamy, soft, brown	12	52
Sand, fine, silty, compact, brown.	7	59
Clay, loamy, soft, brown	4	63
Sand, medium, silty, compact, partly cemented, brown.	12	75
Sand, coarse, silty, partly cemented, clean	12	87
Pierre shale:		
Shale, clayey, gray, weathered; contains streaks of firm black shale with limonite seams.	8	95
Shale, firm, black, with limonite seams	5	100
Shale, firm, black	5	105

	Thickness	Depth
B1-44-36ddd.[1] Alt. 3,813.1 ft.		
Peorian loess:		
Silt, calcareous, bentonitic, loosely cemented, light-olive-gray (5Y6/1).	30	30
Sand, very fine, silty, calcareous, bentonitic, loosely cemented, yellowish-gray (5Y7/2); becomes sandier toward the bottom	94	124
Ogallala formation:		
Clay, sandy, calcareous, very bentonitic, soft to firm, light-greenish-gray (5GY8/1) to pale-orange (10YR7/2)	34	158
Mortar beds, very clayey, very calcareous, bentonitic, firm, grayish-orange (10YR7/4)	54	212
Clay, calcareous, bentonitic, firm, pale-olive (10Y6/2); contains streaks of sand and gravel	20	232
Gravel, fine, to coarse sand; loose with thin cemented zones, rounded to subangular.	42	274
Clay, slightly calcareous, very bentonitic, firm, very-pale-orange (10YR8/2); contains some sand and gravel	32	306
Mortar bed, very calcareous, firm, white (N9)	4	310
Clay, sandy, very calcareous, slightly bentonitic, firm, grayish-orange (10YR7/4).	16	326
Gravel, fine, to coarse sand; loose, subrounded to subangular.	11	337
Clay, sandy, calcareous, slightly bentonitic, firm, pale-orange (10YR7/2).	10	347
Gravel, fine, to coarse sand; loose, subrounded to subangular.	11	358
Pierre shale:		
Clay, calcareous, slightly bentonitic, firm, dark-yellowish-gray (5Y6/2)	6	364
Shale, calcareous, slightly bentonitic, firm, medium-gray (N5)	6	370
B1-45-1aaa.[1] Alt. 3,737.3 ft.		
Ogallala formation:		
Sand, very coarse to very fine, and some fine gravel; loose to slightly cemented, subrounded to subangular, light-olive-gray (5Y6/1)	10	10
Mortar beds, calcareous, bentonitic, hard to firm, pinkish-gray (5YR8/1); contains some loose fine gravel	8	18
Clay, sandy, calcareous, slightly bentonitic, firm to soft, yellowish-gray (5Y8/1)	13	31
Gravel, fine, to coarse sand; loose, subrounded to subangular.	12	43
Mortar beds, calcareous, slightly bentonitic, firm, very-pale-orange (10YR8/2).	27	70
Limestone, slightly sandy, hard, pale-orange (10YR7/2).	2	72
Clay, sandy, calcareous, bentonitic, firm, very-pale-orange (10YR8/2).	44	116
Sand, very coarse, and very fine gravel; calcareous, loosely cemented		

[1] See footnote at end of table.

Table 3.--Sample logs of test holes in Yuma County.--Continued

	Thickness	Depth
B1-45-1aaa.--Continued		
rounded to subangular	4	120
Clay, sandy, calcareous, bentonitic, firm to soft, yellowish-gray (5Y7/2)	31	151
Gravel, fine to coarse sand; loose, rounded to subrounded; contains thin streaks of clay.	19	170
Clay, sandy, calcareous, firm, yellowish-gray (5Y7/2)	27	197
Gravel, fine to coarse sand; clayey, calcareous, loosely cemented, rounded to subrounded	13	210
Pierre shale:		
Clay, calcareous, bentonitic, firm, dusky-yellow (5Y6/4)	10	220
Shale, calcareous, bentonitic, firm, medium-gray (N5) with limonite streaks	12	232
B2-45-5bbb.1/ Alt. 3,859.9 ft.		
Dune sand:		
Sand, very fine, silty, loose, subrounded to subangular, pale-yellowish-gray (5Y8/2)	17	17
Sappa(?) formation:		
Clay, silty, calcareous, slightly bentonitic, soft, olive-gray (5Y4/1); contains streaks of caliche.	5	22
Grand Island(?) formation:		
Gravel, fine to coarse sand; calcareous, firm to loose, subrounded to subangular.	12	34
Ogallala formation:		
Mortar beds, slightly calcareous, slightly bentonitic, firm to soft, moderate-brown (5YR5/4); contains streaks of very fine gravel and clay.	23	57
Gravel, fine, to coarse sand; slightly calcareous, loosely cemented, subrounded to subangular; contains streaks of slightly bentonitic clay.	17	74
Clay, very sandy, calcareous, slightly bentonitic, soft, pale-olive (10Y6/2) turning grayish-orange (10YR7/4)	7	81
Mortar beds, calcareous, slightly bentonitic, firm, dark-yellowish gray (5Y7/1); contains thin clay streaks	6	87
Gravel, fine to coarse sand; loose, subrounded to subangular	5	92
Mortar bed, calcareous, slightly bentonitic, firm, light-brown (5YR5/6)	4	96
Gravel, very fine, to medium sand; loose to slightly cemented, subrounded to subangular.	15	111
Mortar beds, calcareous, slightly bentonitic, firm, dark-pinkish-gray (5YR7/1)	9	120
Gravel, medium, to coarse sand; loose, subrounded to subangular	10	130
Mortar beds, calcareous, bentonitic, firm, pinkish-gray (5YR8/1); contains thin clay streaks	5	135
Clay, sandy, very calcareous, bentonitic, firm, pinkish-gray (5YR8/1)	7	142
Gravel, medium to very fine, loose, rounded to subangular; contains some coarse sand and streaks of clay	33	175
Clay, sandy, very calcareous, bentonitic, soft, dark-pinkish-gray (5YR7/1); contains thin streaks of gravel.	9	184
B2-45-5bbb.--Continued		
Gravel, medium to coarse sand; loose, rounded to subrounded; contains thin clay streaks	33	217
Mortar beds, calcareous, slightly bentonitic, soft, grayish-orange (10YR7/4); contains streaks of clay and gravel	23	240
Clay, sandy, calcareous, very bentonitic, firm, white (N9)	8	248
Mortar beds, very calcareous, bentonitic, soft, pinkish-gray (5YR8/1)	8	256
Clay, very sandy, calcareous, bentonitic, soft, pinkish-gray (5YR8/1)	34	290
Gravel, medium, to coarse sand; loose, rounded to subangular.	60	350
Clay, sandy, calcareous, bentonitic, firm, pale-greenish-yellow (10Y8/2) with limonite streaks.	6	356
Pierre shale:		
Shale, calcareous, bentonitic, firm, medium-gray (N5).	9	365
B2-45-31ccc.1/ Alt. 3,876.9 ft.		
Ogallala formation:		
Sand, very coarse to very fine, silty, loose to slightly cemented, subrounded to subangular, light olive-gray (5Y6/1); contains some very fine gravel.	7	7
Clay, sandy, bentonitic, soft, light-brown (5YR6/4); contains streaks of sand and fine gravel.	23	30
Gravel, fine, to coarse sand; loose, subrounded to subangular; contains clay streaks	24	54
Sand, very coarse to very fine, silty, slightly calcareous, loosely cemented, subrounded to subangular; contains some fine gravel	12	66
Mortar beds, coarse, calcareous, slightly bentonitic, firm, very-pale-orange (10YR8/2).	13	79
Silt, very sandy, clayey, slightly calcareous, bentonitic, soft, greenish-gray (5GY7/1).	17	96
Silt, very sandy, clayey, calcareous, bentonitic, soft to firm, grayish-orange-pink (5YR7/2)	27	123
Clay, sandy, calcareous, soft, pinkish-gray (5YR8/1)	4	127
Gravel, fine to coarse sand; clayey, calcareous, slightly cemented, rounded to subrounded	8	135
Clay, silty, slightly calcareous, soft, pale-orange (10YR7/2)	12	147
Mortar beds, calcareous, slightly bentonitic, firm, very-pale-orange (10YR8/2); contains streaks of sand and gravel	29	176
Gravel, medium, to very coarse sand; loose, rounded to subrounded; contains thin streaks of clay.	28	204
Silt, very sandy, clayey, bentonitic, soft, very-pale-orange (10YR8/2).	26	230
B2-45-31ccc.--Continued		
Mortar beds, fine, calcareous, firm, pinkish-gray (5YR8/1); contains streaks of gravel	12	242
Gravel, medium, to coarse sand; loose, rounded to subangular	32	274
Silt, very sandy, very calcareous, slightly bentonitic, firm, very-pale-orange (10YR8/2).	17	291
Clay, silty, calcareous, bentonitic, firm, yellowish-gray (5Y7/2)	23	314
Gravel, medium, to coarse sand; slightly cemented, rounded to subrounded; contains some clay	7	321
Pierre shale:		
Clay, calcareous, firm, dark-grayish-yellow (5Y7/4).	26	347
Shale, calcareous, slightly bentonitic, firm, medium-gray (N5)	8	355
B3-42-4ccc. Alt. 3,587.0 ft.		
Pleistocene and Recent deposits, undifferentiated:		
Soil, sandy, dark brown.	1	1
Clay, sandy, fossiliferous, gray to green.	8	9
Sand, very fine to very coarse, silty.	6	15
Ogallala formation:		
Clay, soft, light-gray	10	25
Clay, sandy; contains caliche.	6.8	31.8
Sand, very fine to very coarse; contains some caliche.	20.2	52
Sand, very fine to coarse, silty, calcareous.	14	66
Sand, very fine to coarse, silty, calcareous; contains streaks of clay	3	69
Sand, very fine to coarse, silty, calcareous.	6	75
Caliche, sandy, white.	19	94
Caliche, sandy; clayey, cemented, buff to brown	11	105
Sand, very fine to medium, calcareous	10	115
Caliche, sandy, clayey, white to buff.	20	135
Sand, very fine to coarse	2	137
Sand and caliche; slightly cemented; interbedded with thin streaks of brown dense clay	15	152
Sand, very fine, to gravel, fine, loose; contains caliche.	12	164
Sand, very fine, to gravel, fine; well cemented; contains caliche.	5	169
Sand, very fine, to gravel, fine; loose; contains caliche	6	175
Siltstone, calcareous, dark-brown	9	184
Sand, silty; contains caliche.	5.5	189.5
Clay, silty, dense, dark-brown.	2.5	192
Sand, silty, calcareous.	8	200
Sand, very fine, to gravel, fine; contains caliche.	9.5	209.5
Sand, very fine, to gravel, fine; partly cemented; contains caliche.	2.5	212
Sand, very fine, to gravel, fine; contains caliche.	1	213
Caliche, hard.	1	214
Sand, very fine, to gravel, medium; contains some thin layers of clay	26	240
Clay, silty, sandy, soft, light-brown.	11	251
Sand, very fine to very coarse	11	262
Silt, sandy, clayey, soft, tan to green	10	272
Sand, fine to medium, loose; contains coarse sand to fine gravel.	14	286

see footnote at end of table.

Table 3.--Sample logs of test holes in Yuma County.--Continued

	Thickness	Depth
B3-42-4ccc.--Continued		
Clay, silty, sandy; contains thin layers of sandstone.	8.5	294.5
Clay, sandy, soft, tan; contains thin layers of caliche and streaks of dense hard clay. . .	22.5	317
Sand, fine, to gravel, very fine	4.5	321.5
Clay, hard, tan	7.5	329
Sand, very fine, to gravel, fine.	8.5	337.5
Sand, very fine, to gravel, fine; contains streaks of clay	3.9	341.4
Pierre shale:		
Clay, hard, plastic, yellow.	8.5	349.9
Clay, hard, plastic, dark-gray	4.5	354.4
B3-42-31bdd. Alt. 3,614.0 ft.		
Dune sand:		
Sand, very fine to coarse	12	12
Sand, very fine to coarse; contains some very coarse sand to fine gravel.	9	21
Ogallala formation:		
Clay, hard, buff to brown with limonitic stain; contains sand, gravel, and caliche	9	30
Caliche, hard, buff . . .	12	42
Caliche, hard, buff; contains streaks of sand.	8	50
Clay, silty, hard, medium-brown	5	55
Sand, very fine, to gravel, fine, and caliche; partly cemented	6.5	61.5
Caliche, hard, buff . . .	.5	62
Clay, silty, soft, and caliche; buff	6	68
Caliche, sandy, hard, buff.	15	83
Caliche, cherty, hard, white	3	86
Sand, fine to coarse, calcareous; contains very fine sand to fine gravel.	6.5	92.5
Clay, silty, hard, medium-brown.	5.5	98
Sand, very fine to very coarse, calcareous; contains thin layers of clay	14	112
Sand, very fine to very coarse, calcareous; contains some very fine to medium gravel and thin layers of clay . .	14	126
Clay; interbedded with sand and caliche. . . .	6	132
Clay and caliche; contains very fine to coarse sand.	21	153
Sand, very fine to very coarse; contains buff caliche	9	162
Sand, very fine to very coarse, cemented. . . .	10	172
Sand, very fine to medium, loose; contains coarse to very coarse sand . .	38.5	210.5
Clay, soft.	.5	211
Sand, very fine to medium, loose; contains coarse to very coarse sand . .	6	217
Clay, sandy, soft, white to gray; contains some caliche and thin layers of chert.	9	226
Clay, sandy, soft, gray to buff.	16	242
Clay, silty, soft, gray to buff.	16	258
Caliche and sand, very fine to very coarse . .	5	263
Pierre shale:		
Clay, hard, plastic, greenish-yellow to gray	11	274
Clay, hard, plastic, dark-gray	5	279

	Thickness	Depth
B3-44-1aaa.[1] Alt. 3,700.7 ft.		
Dune sand:		
Sand, medium to very fine, clayey, loose to loosely cemented, subrounded to subangular, yellowish-gray (5Y7/2)	24	24
Ogallala formation:		
Clay, very sandy, calcareous, very bentonitic, soft, yellowish-gray (5Y8/1).	12	36
Mortar bed, calcareous, bentonitic, firm to soft, pale-orange (10YR7/2).	4	40
Gravel, fine, to coarse sand; loose, rounded to subrounded; contains streaks of clay. . .	25	65
Sand, coarse to medium, and some very fine gravel; clayey, loosely cemented, light-brown (5YR6/4)	17	82
Clay, silty, very calcareous, bentonitic, firm to soft, very-pale-orange (10YR8/2)	8	90
Sand, very coarse to medium, loose, subrounded.	13	103
Clay, sandy, calcareous, bentonitic, firm to soft, greenish-gray (5GY7/1)	5	108
Mortar bed, calcareous, bentonitic, firm, grayish-orange-pink (5YR7/2)	2	110
Clay, very sandy, slightly calcareous, bentonitic, firm, pale-olive (10Y6/2)	6	116
Mortar beds, calcareous, slightly bentonitic, firm, very-pale-orange (10YR8/2); contains streaks of fine gravel	31	147
Clay, sandy, calcareous, slightly bentonitic, firm, pale-yellowish-brown (10YR6/2). . .	6	153
Gravel, medium, to coarse sand; loose, rounded to subrounded; contains clayey, cemented streaks.	59	212
Clay, sandy, calcareous, slightly bentonitic, firm to soft, pale-orange (10YR7/2) . .	14	226
Gravel, fine, to coarse sand; loose, rounded to subangular; contains streaks of clay	12	238
Clay, calcareous, slightly bentonitic, firm to soft, pinkish-gray (5YR8/1); contains streaks of sand and gravel	78	316
Gravel, fine, to coarse sand; loose, rounded to subrounded; contains streaks of clay. . .	42	358
Pierre shale:		
Clay, calcareous, slightly bentonitic, firm, dusky-yellow (5Y6/4)	7	365
Shale, calcareous, slightly bentonitic, firm, medium-gray (N5)	13	378
B3-44-31ccc.[1] Alt. 3,781.7 ft.		
Dune sand:		
Sand, very coarse to very fine, silty, loose, subrounded to subangular, very-pale-orange (10YR7/2).	11	11
Silt, sandy, clayey, calcareous, bentonitic, soft, very-pale-orange (10YR8/2).	27	38
Ogallala formation:		
Clay, silty, calcareous, slightly bentonitic, firm, light-brown (5YR6/4) with lighter streaks.	4	42

	Thickness	Depth
B3-44-31ccc.--Continued		
Mortar beds, very calcareous, bentonitic, firm, pale-orange (10YR7/2).	26	68
Clay, sandy, calcareous, slightly bentonitic, firm, very-pale-orange (10YR8/2).	6	74
Gravel, medium, to coarse sand; loose, with thin cemented streaks, rounded to subrounded	16	90
Mortar beds, very calcareous, bentonitic, hard, very-pale-orange (10YR8/2); contains streaks of loose gravel	33	123
Clay, very sandy, calcareous, slightly bentonitic, firm, pale-orange (10YR7/2) . .	29	152
Mortar beds, calcareous, bentonitic, firm, very-pale-orange (10YR8/2); contains streaks of clay. . .	16	168
Mortar beds, calcareous, bentonitic, firm to hard, light-brown (5YR6/4); contains streaks of clay. . .	18	186
Clay, very sandy, calcareous, bentonitic, firm to soft, very-light-greenish-gray (5GY9/1)	16	202
Gravel, medium, to coarse sand; loose, rounded to subrounded; contains thin clay streaks.	10	212
Mortar beds, calcareous, bentonitic, firm, white (N9); contains thin streaks of gravel	18	230
Clay, sandy, calcareous, bentonitic, firm, yellowish-gray (5Y8/1); contains thin hard ledges	14	244
Gravel, medium, to coarse sand; loose, rounded to subangular. . . .	16	260
Clay, sandy, calcareous, slightly bentonitic, firm, pale-orange (10YR7/2).	10	270
Mortar beds, calcareous, slightly bentonitic, firm, white (N9) . .	3	273
Clay, sandy, calcareous, bentonitic, firm to soft, yellowish-gray (5Y8/1); contains streaks of loose gravel	18	291
Gravel, medium, to coarse sand; loose, rounded to subrounded.	9	300
Mortar beds, very calcareous, bentonitic, hard to firm, very-pale-orange (10YR8/2); contains streaks of very fine gravel . . .	8	308
Clay, sandy, calcareous, slightly bentonitic, firm, dark-yellowish-gray (5Y7/1)	18	326
Gravel, fine to coarse sand; loose, rounded to subangular.	3	329
Pierre shale:		
Clay, calcareous, slightly bentonitic, firm, dusky-yellow (5Y6/4) .	13	342
Shale, calcareous, bentonitic, firm, medium-gray (N5).	8	350
B3-44-36ccc.[1] Alt. 3,718.6 ft.		
Dune sand:		
Sand, very coarse to fine, loose, subrounded to subangular	25	25
Sappa(?) formation:		
Clay, sandy, calcareous, bentonitic, soft, very-pale-orange (10YR8/2).	10	35
Grand Island(?) formation:		
Gravel, medium, to coarse sand; clayey, loose to weakly cemented, rounded to subrounded.	10	45

See footnote at end of table.

Table 3.--Sample logs of test holes in Yuma County.--Continued

	Thickness	Depth
B3-44-36ccc.--Continued		
Ogallala formation:		
Clay, sandy, calcareous, bentonitic, firm to soft, very-pale-orange (10YR8/2). . . .	6	51
Gravel, medium, to coarse sand; loose, rounded to subrounded	17	68
Mortar bed, very calcareous, slightly bentonitic, hard to firm, very-pale-orange (10YR8/2)	3	71
Gravel, fine, to coarse sand; loose, rounded to subrounded; contains streaks of clay . . .	9	80
Mortar beds, fine, very calcareous, bentonitic, hard, pale-orange (10YR7/2)	6	86
Clay, sandy, calcareous, bentonitic, firm, grayish-orange (10YR7/4)	8	94
Gravel, medium, to coarse sand; loose, rounded to subrounded; contains streaks of clay . . .	16	110
Clay, sandy, calcareous, bentonitic, firm, white (N9).	6	116
Gravel, medium,to coarse sand; loose, rounded to subrounded	6	122
Mortar bed, calcareous, slightly bentonitic, firm, very-pale-orange (10YR8/2)	4	126
Clay, very sandy, calcareous, firm, pale-orange (10YR7/2). . .	4	130
Gravel, medium, to coarse sand; loose, rounded to subrounded	18	148
Mortar bed, calcareous, slightly bentonitic, firm, white (N9). . .	5	153
Gravel, fine, to coarse sand; loose, rounded to subangular; contains streaks of clay . . .	13	166
Mortar beds, fine, calcareous, bentonitic, firm, white (N9). . .	19	185
Clay, sandy, calcareous, slightly bentonitic, firm, grayish-orange (10YR7/4)	13	198
Sand, very coarse to medium, loose, subrounded to subangular; contains streaks of clay.	32	230
Clay, sandy, calcareous, slightly bentonitic, firm, grayish-orange (10YR7/4)	13	243
Gravel, medium, to coarse sand; loose, rounded to subrounded; contains streaks of clay.	16	259
Clay, very sandy, calcareous, bentonitic, firm, pale-orange (10YR7/2)	21	280
Clay, very sandy, calcareous, bentonitic, firm, grayish-orange (10YR7/4); contains some fine gravel, and thin hard ledges. . .	22	302
Gravel, medium, to coarse sand; loose, rounded to subrounded	19	321
Pierre shale:		
Clay, calcareous, slightly bentonitic, firm, dusky-yellow (5Y6/4).	11	332
Shale, calcareous, bentonitic, firm, medium-gray (N5)	8	340
B3-47-36ddd.[1] Alt. 3,962.9 ft.		
Ogallala formation:		
Sand, fine to very fine, loose, subrounded to subangular, olive-gray (5Y4/1)	5	5
Sand, fine to very fine, silty, calcareous,		

see footnote at end of table.

	Thickness	Depth
B3-47-36ddd.--Continued		
loosely cemented, subrounded to subangular, yellowish-gray (5Y7/2). . . .	4	9
Sand, very coarse to very fine, silty, clayey, calcareous, firm, subrounded to subangular, light-brown (5YR6/4); contains some very fine gravel.	22	31
Gravel, fine, to coarse sand; loose, rounded to subrounded	8	39
Sand, very coarse to very fine, silty, calcareous, firm to loosely cemented, subrounded to subangular, light-brown (5YR6/4); contains some fine gravel.	25	64
Gravel, medium, to coarse sand; loose, rounded to subrounded; contains streaks of clay . . .	26	90
Mortar beds, calcareous, slightly bentonitic, firm, pinkish-gray (5YR8/1); contains streaks of clay and of gravel	18	108
Silt, sandy, calcareous, bentonitic, firm, grayish-orange (10YR7/4); contains streaks of gravel . .	4	112
Clay, sandy, calcareous, bentonitic, firm, very-pale-orange (10YR8/2)	23	135
Gravel, medium, to coarse sand; loose, rounded to subrounded; contains streaks of clay . . .	39	174
Sand, medium to very fine, silty, and some gravel; calcareous, slightly bentonitic, firm, rounded to subangular, light-brown (5YR6/4).	11	185
Gravel, medium, to very coarse sand; loose, rounded to subrounded	33	218
Clay, sandy, calcareous, bentonitic, firm, pinkish-gray (5YR8/1); contains streaks of gravel, and hard ledges.	24	242
Clay, sandy, calcareous, bentonitic, firm, very-pale-orange (10YR8/2); contains hard ledges	19	261
Gravel, medium, to coarse sand; loose, rounded to subrounded; interbedded with very-pale-orange (10YR8/2) clay. . . .	163	424
Pierre shale:		
Clay, calcareous, bentonitic, firm, grayish-yellow (5Y8/4). . . .	7	431
Shale, calcareous, bentonitic, firm, medium-gray (N5)	4	435
B4-44-31ddd.[1] Alt. 3,775.3 ft.		
Dune sand:		
Sand, medium to very fine, loose to weakly cemented, subrounded to subangular, yellowish-brown (10YR5/2)	12	12
Ogallala formation:		
Sand, very coarse to coarse, loose, rounded to subrounded	4	16
Clay, sandy, calcareous, bentonitic, firm to soft, pale-orange (10YR7/2)	31	47
Gravel, medium, to coarse sand; loose, subrounded to subangular	12	59
Clay, sandy, calcareous, firm, very-pale-orange (10YR8/2)	9	68
Gravel, coarse, to coarse sand; loose, rounded		

	Thickness	Depth
B4-44-31ddd.--Continued		
to subrounded.	22	90
Clay, sandy, calcareous, slightly bentonitic, firm to soft, light-brown (5YR6/4); contains streaks of caliche.	11	101
Gravel, medium, to coarse sand; loose, with thin cemented streaks, rounded to subrounded.	108	209
Clay, sandy, calcareous, bentonitic, firm to soft, grayish-orange (10YR7/4).	8	217
Gravel, fine, to coarse sand; loose, subrounded to subangular.	12	229
Clay, sandy, calcareous, slightly bentonitic, firm to soft, very-pale-orange (10YR8/2) . . .	13	242
Gravel, medium, to coarse sand; loose, rounded to subrounded; contains streaks of clay. . . .	36	278
Clay, very sandy, calcareous, bentonitic, firm to soft, pale-orange (10YR7/2) . . .	29	307
Gravel, fine, to coarse sand; loose, subrounded to subangular.	11	318
Clay, sandy, calcareous, bentonitic, firm to soft, very-pale-orange (10YR8/2).	23	341
Clay, calcareous, bentonitic, firm to soft, very-pale-orange (10YR8/2); interbedded with loose coarse sand and fine gravel. . . .	111	452
Pierre shale:		
Clay, calcareous, slightly bentonitic, firm, dusky-yellow (5Y6/4) .	11	463
Shale, calcareous, slightly bentonitic, firm, medium-gray (N5) . . .	10	473
B4-45-1aaa.[1] Alt. 3,803.5 ft.		
Dune sand:		
Sand, very coarse to very fine, silty, loose, rounded to subangular.	33	33
Ogallala formation:		
Silt, slightly sandy, clayey, calcareous, bentonitic, loosely cemented, pale-orange (10YR7/2); contains streaks of caliche . .	10	43
Clay, sandy, calcareous, bentonitic, firm, pale-orange (10YR7/2); contains streaks of caliche.	13	56
Mortar beds, fine, very calcareous, slightly bentonitic, firm, light-brown (5YR6/4) .	6	62
Gravel, coarse to very fine, sandy, loose, rounded to subangular; contains streaks of clay	12	74
Sand, coarse to very fine, clayey, slightly calcareous, slightly bentonitic, loosely cemented, rounded to subangular, light-brown (5YR6/4); contains streaks of loose gravel	12	86
Clay, sandy, bentonitic, soft, grayish-orange-pink (5YR7/2).	2	88
Gravel, coarse to very fine, loose, rounded to subangular.	4	92
Clay, very sandy, very calcareous, bentonitic, soft to firm, very-pale-orange (10YR8/2); contains hard ledges .	18	110
Gravel, coarse, to coarse sand; loose, with thin cemented zones, rounded to subangular.	43	153

Table 3.--Sample logs of test holes in Yuma County.--Continued

	Thickness	Depth
B4-45-1aaa.--Continued		
Mortar beds, very calcareous, bentonitic, firm to soft, grayish-orange-pink (5YR7/2); contains streaks of fine gravel	21	174
Clay, sandy, calcareous, bentonitic, firm; grayish-orange-pink (5YR7/2); contains streaks of fine gravel	36	210
Gravel, fine, to coarse sand; loose, with thin cemented zones, rounded to subrounded	27	237
Clay, calcareous, slightly bentonitic, firm, pinkish-gray (5YR8/1); interbedded with thin, hard mortar beds	33	270
Gravel, medium, to coarse sand; loose, rounded to subangular; contains thin cemented clayey zones	71	341
Mortar beds, very calcareous, bentonitic, firm to soft, pinkish-gray (5YR8/1)	14	355
Gravel, very fine, to coarse sand; loose, subrounded to subangular	23	378
Pierre shale:		
Clay, sandy, calcareous, slightly bentonitic, firm, dusky-yellow (5Y6/4)	14	392
Shale, calcareous, slightly bentonitic, firm, medium-gray (N5)	8	400
B4-46-6bbb.[1] Alt. 3,940.6 ft.		
Ogallala formation:		
Sand, medium to very fine, silty, calcareous, loosely cemented, very-pale-orange (10YR8/2)	10	10
Silt, sandy, clayey, some gravel, very slightly bentonitic, loosely cemented, light-brown (5YR6/4)	26	36
Gravel, medium, to coarse sand; loose, rounded to subrounded; contains light-brown sandy clay from 53 to 59 feet, hard ledges from 66-72 feet, and from 81-88 feet	58	94
Silt, sandy, calcareous, bentonitic, firm, grayish-orange (5YR7/2); contains streaks of gravel from 110-114 feet and from 168-171 feet	97	191
Sand, fine to very fine, silty, slightly calcareous, bentonitic, loosely cemented, subrounded to subangular, light-brown (5YR6/4); contains streaks of gravel	19	210
Gravel, medium, to coarse sand; loose, with thin cemented zones, rounded to subrounded	42	252
Clay, sandy, calcareous, bentonitic, firm, pale-greenish-yellow (10Y8/2)	20	272
Gravel, fine, to coarse sand; loose, rounded to subrounded; contains thin streaks of clay.	40	312
Silt, sandy, calcareous, bentonitic, firm, pinkish-gray (5Y8/1); contains streaks of gravel	41	353
Mortar beds, very calcareous, bentonitic, firm, white (N-9) to very-pale-orange (10YR8/2)	23	376
Clay, sandy, calcareous, bentonitic, firm,		

See footnote end of table.

	Thickness	Depth
B4-46-6bbb.--Continued		
pale-orange (10YR7/2)	7	383
Pierre shale:		
Clay, calcareous, bentonitic, firm, light-greenish-gray (5GY8/1), turning to medium-gray (N5) calcareous shale; contains limonite streaks	2	385
B4-46-13ba.		
Dune sand:		
Sand, very fine to coarse	40	40
Ogallala formation:		
Caliche, clayey, sandy, soft, white-brown	4	44
Sand, very fine, to gravel, medium; loose	3	47
Clay and caliche; sandy; soft; whitish-brown	11	58
Sand, very fine, to gravel, fine; loose; contains streaks of soft brown clay	6	64
Clay, medium soft, red-brown; contains stringers of sand and gravel	46	110
Caliche, medium-soft, greenish-white	4	114
Sand, medium, to gravel, fine; loose	4	118
Caliche, medium-soft, white-brown	4	122
Clay and caliche; contains stringers of sand	9	131
Sand and clay; contains thin hard streaks	8	139
Clay, sandy, soft, brown	10	149
Sand, coarse, to gravel, fine; clean; loose	10	159
Sand, coarse, to gravel, fine; contains thin streaks of brown clay	2	161
Sand, coarse, to gravel, fine; clean; loose	8	169
Clay, soft, brown, and sand, coarse, to gravel, fine	2	171
Caliche, clayey, sandy, soft, white-brown	8	179
Sand, coarse, to gravel, fine; contains thin layers of brown clay	16	195
Clay and caliche; soft, white-brown	14	209
Sand, coarse, to gravel, fine; clean; loose	34	243
Clay, sandy, soft, brown	3	246
Sand, coarse, to gravel, very fine; clean; loose	12	258
Clay, sandy, soft, brown; contains streaks of hard, white caliche.	15.5	273.5
Sand, very coarse, to gravel, medium; clean; loose	3.5	277
Clay and caliche; soft, white-brown	1	278
Sand, very coarse, to gravel, medium; clean; loose	3.5	281.5
Caliche and clay; sandy; white to brown; contains very hard streak	16.5	298
Gravel, very fine to medium, clean; loose; contains very coarse sand	19	317
Caliche, sandy, hard, white-brown, and clay, green-brown to brown; contains very hard streaks	17	334
Gravel, very fine to fine; contains very coarse sand; clean; loose	21	355
Sand, medium; clean; loose; partly cemented in very fine streaks	6	361
Clay, soft, greenish-brown	1	362
Sand, coarse, to gravel, very fine; contains very fine sand to fine, gravel; clean; loose	15	377
Clay, red-brown, and caliche, green-white; medium soft; contains very hard layers	28	405
Gravel, fine to sand, very coarse; clean; loose	7	412

	Thickness	Depth
B4-46-13ba.--Continued		
Sandstone, fine-grained, very hard	1	413
Sand, coarse, to gravel, fine; clean; loose; contains fine to medium sand	6.5	419.5
Clay, soft, light-brown.	2.5	422
Sand, medium to very coarse, clean, loose	3	425
Pierre shale:		
Clay, medium-hard, yellow (weathered Pierre)	6	431
B5-43-5bbb.[1] Alt. 3,697.2 ft.		
Dune sand:		
Sand, coarse to very fine, loose, rounded to subrounded	26	26
Ogallala formation:		
Clay, sandy, calcareous, bentonitic, firm, pale-orange (10YR7/2).	15	41
Sand, very coarse to very fine, clayey, slightly calcareous, bentonitic, loosely cemented, rounded to subrounded, very-pale-orange (10YR8/2)	7	48
Clay, sandy, calcareous, bentonitic, firm, light-pinkish-gray (5YR9/1); contains streaks of caliche	18	66
Gravel, fine to coarse sand; loose, rounded to subrounded.	12	78
Clay, sandy, calcareous, bentonitic, soft, yellowish-gray (5Y7/2)	10	88
Sand, very coarse to fine, some very fine gravel; loose, with thin cemented streaks, rounded to subangular	24	112
Clay, sandy, very calcareous, very bentonitic, firm, very-pale-orange (10YR8/2)	9	121
Gravel, fine, to coarse sand; loose, with thin cemented streaks, rounded to subrounded.	61	182
Mortar beds, very calcareous, slightly bentonitic, firm to soft, grayish-orange-pink (5YR7/2); contains some loose sand and gravel	22	204
Sand, coarse to very fine, loose, subrounded to subangular	10	214
Mortar beds, calcareous, slightly bentonitic, firm, pale-orange (10YR7/2)	9	223
Gravel, medium, to coarse sand; loose, with cemented streaks, rounded to subangular	42	265
Clay, sandy, calcareous, slightly bentonitic, firm, very-pale-orange (10YR8/2)	23	288
Gravel, very fine, to coarse sand; loose, with thin cemented streaks, rounded to subrounded	21	309
Clay, sandy, calcareous, firm, grayish-orange (10YR7/4)	28	337
Sand, very coarse to medium, loose, subrounded to subangular; contains thin clayey, cemented streaks	80	417
Pierre shale:		
Clay, calcareous, slightly bentonitic, firm, greenish-gray (5G6/1).	8	425
B5-43-36ddd. Alt. 3,605.9 ft.		
Pleistocene and Recent deposits, undifferentiated:		
Sand, very fine to medium, silty, compact	2	2
Silt, clayey, fossilliferous, gray	10	12
Clay, silty, limonitic, gray	12	24

Table 3.--Sample logs of test holes in Yuma County.--Continued

	Thickness	Depth
B5-43-36ddd.--Continued		
Clay, silty, sandy, gray	7	31
Sand, very fine, to gravel, fine; silty	1	32
Caliche, hard, buff; contains sand	3	35
Ogallala formation:		
Limestone, sandy, white to gray	1	36
Caliche, clayey, sandy, hard, gray	2	38
Caliche, sandy, hard, gray-green	30	68
Clay, silty, calcareous, hard, plastic, gray	8	76
Sand, fine, to gravel, medium; loose	12	88
Caliche, sandy, cherty, hard, white to buff	11	99
Clay, dense, dark-brown; contains some sand and caliche	6	105
Sandstone, very fine- to very coarse-grained, calcareous	20	125
Sand, fine, to gravel, medium	7	132
Clay, sandy; interbedded with sandy caliche	14	146
Siltstone and caliche; sandy	2	148
Clay, silty, soft	4	152
Sand, very fine, to gravel, medium	14	166
Clay, silty, calcareous; contains streaks of caliche and sand	15.5	181.5
Clay, sandy, hard, light-brown	9	190.5
Caliche, sandy, white	1.5	192
Caliche and sand, very fine to very coarse; contains streaks of clay at 198.5 feet.	13	205
Caliche, hard and soft streaks, white	3	208
Clay, silty, sandy, soft.	4	212
Silt and sand; consolidated	3	215
Sand, very fine, to gravel, fine; slightly cemented; greenish stain	9.5	224.5
Clay, sandy, calcareous	8.5	233
Caliche, buff to brown.	11	244
Sand, very fine, to gravel, medium; contains streaks of clay at 255 feet.	22	266
Caliche, sandy, hard, white	7	273
Sandstone, very fine- to medium-grained, silty; contains thin beds of clay.	14	287
Clay, sandy, calcareous, soft, buff.	17	304
Clay, sandy, soft, buff	5.5	309.5
Sand, very fine to very coarse; interbedded with clay and sandy clay.	12.5	322
Sand, very fine to very coarse, clayey, calcareous	10	332
Pierre shale:		
Clay, hard, plastic, yellow to light-blue-gray	10.5	342.5
Clay, hard plastic, dark-gray	4.5	347
B5-44-5bbb.[1] Alt. 3,766.1 ft.		
Dune sand:		
Sand, very coarse to very fine, and some gravel, loose, rounded to subangular, pale-yellowish-brown (10YR6/2)	34	34
Sappa(?) formation:		
Clay, silty, slightly calcareous, very bentonitic, soft to firm, yellowish-gray (5Y7/2).	9	43
Grand Island(?) formation:		
Gravel, fine, to coarse sand; loosely cemented, rounded to subrounded	4	47

See footnote at end of table.

	Thickness	Depth
B5-44-5bbb.--Continued		
Ogallala formation:		
Clay, very sandy, calcareous, very bentonitic, firm, pale-yellowish-brown (10YR6/2); capped by thin "algal" limestone	15	62
Clay, very sandy, calcareous, bentonitic, soft to firm, grayish-orange-pink (5YR7/2); contains streaks of very fine gravel	34	96
Gravel, fine, to coarse sand; loose, rounded to subangular; contains thin clay beds	18	114
Mortar beds, calcareous, bentonitic, firm to hard, very-pale-orange (10YR8/2).	22	136
Gravel, medium, to coarse sand; loose, rounded to subrounded; contains thin cemented, clayey zones.	44	180
Clay, very sandy, calcareous, bentonitic, firm, very-pale-orange (10YR8/2).	14	194
Sand, very coarse to very fine, loose, rounded to subangular; contains streaks of gravel and clay	16	210
Gravel, medium to coarse sand; loose, with thin cemented zones, rounded to subrounded	75	285
Clay, very sandy, slightly calcareous, soft, grayish-orange-pink (5YR7/2)	6	291
Gravel, medium, to coarse sand; loose, rounded to subangular; contains thin clayey, cemented zones.	36	327
Clay, very calcareous, bentonitic, firm, light-grayish-orange (10YR8/4)	13	340
Sand, very coarse to very fine, clayey, calcareous, slightly bentonitic, firm to soft, rounded to subrounded, grayish-orange (10YR7/4).	11	351
Mortar beds, calcareous, slightly bentonitic, firm, pinkish-gray (5YR8/1)	11	362
Gravel, medium, to coarse sand; loose, rounded to subrounded; contains streaks of clay.	17	379
Pierre shale:		
Clay, calcareous, slightly bentonitic, firm, dusky-yellow (5Y6/4)	11	390
Shale, calcareous, slightly bentonitic, firm, medium-gray (N5).	30	420
B5-44-36ccc.[1] Alt. 3,695.2 ft.		
Dune sand:		
Sand, very clayey, calcareous, very bentonitic, soft, subrounded to subangular, yellowish-gray (5Y7/2).	18	18
Ogallala formation:		
Mortar bed, very fine, very calcareous, slightly bentonitic, soft white (N9) to very-light-gray (N8)	6	24
Clay, very sandy, calcareous, bentonitic, firm to soft, pale-orange (10YR7/2); contains streaks of caliche.	14	38
Sand, very coarse to very fine, clayey, calcareous, slightly bentonitic, loosely cemented, subrounded to subangular, light-brown (5YR6/4)	15	53
Mortar beds, very calcareous, bentonitic, hard to firm, yellowish-gray (5Y8/1); contains some loose coarse sand	10	63

	Thickness	Depth
B5-44-36ccc.--Continued		
Gravel, medium, to very coarse sand; loose, rounded to subrounded; contains thin streaks of clay.	14	77
Sand, clayey, slightly calcareous, slightly bentonitic, loosely cemented, subrounded to subangular, grayish-orange-pink (5YR7/2)	3	80
Gravel, medium, to very coarse sand; loose, rounded to subrounded; contains clayey cemented streaks	59	139
Mortar beds, fine, very calcareous, bentonitic, firm to soft, very-pale-orange (10YR8/2)	18	157
Clay, sandy, calcareous, bentonitic, firm, pale-orange (10YR7/2)	7	164
Gravel, medium, to coarse sand; loose, with thin cemented streaks, subrounded to subangular	107	271
Mortar beds, calcareous, bentonitic, firm to soft, pale-orange (10YR7/2); contains thin streaks of sand and gravel	52	323
Sand, very coarse to very fine, clayey, loose, subrounded to subangular	14	337
Pierre shale:		
Clay, calcareous, slightly bentonitic, firm, grayish-dusky-yellow (5Y7/4).	9	346
Shale, calcareous, bentonitic, firm, medium-gray (N5).	9	355
B5-46-1aaa.[1] Alt. 3,838.8 ft.		
Ogallala formation:		
Sand, very coarse to very fine, loose, subrounded to subangular.	9	9
Gravel, fine, to coarse sand, some clay, slightly calcareous, loosely cemented, light-brown (5YR6/4)	12	21
Clay, very sandy, soft, light-brown (5YR6/4)	23	44
Gravel, coarse, to coarse sand; clayey, loose, rounded to subangular.	40	84
Silt, sandy, slightly calcareous, slightly bentonitic, soft, light-brown (5YR6/4)	11	95
Gravel, medium, to coarse sand; loose, rounded to subangular.	11	106
Silt, sandy, clayey, slightly calcareous, slightly bentonitic, soft, grayish-orange-pink (5YR7/2); contains streaks of sand	34	140
Gravel, medium, to very coarse sand; loose, rounded to subrounded.	16	156
Silt, sandy, clayey, slightly calcareous, bentonitic, soft, light-brown (5YR6/4)	8	164
Gravel, medium, to coarse sand; loose, rounded to subrounded.	13	177
Clay, very sandy, calcareous, very bentonitic, firm, dark-pinkish-gray (5YR7/1)	13	190
Gravel, medium, to very coarse sand; loose, rounded to subangular.	8	198
Mortar beds, fine, very calcareous, hard,		

Table 3.--Sample logs of test holes in Yuma County.--Continued

	Thickness	Depth
B5-46-1aaa.--Continued		
white (N9)	3	201
Clay, very sandy, calcareous, bentonitic, firm, yellowish-brown (10YR5/2)	9	210
Gravel, fine, to coarse sand; loose, rounded to subrounded	10	220
Clay, very sandy, slightly calcareous, bentonitic, firm, dark-pinkish-gray (5YR7/1); contains hard ledges	20	240
Gravel, coarse,to coarse sand; loose, rounded to subrounded; contains thin clay streaks	22	262
Clay, sandy, slightly calcareous, slightly bentonitic, firm, grayish-orange-pink (5YR7/2); contains streaks of gravel	40	302
Gravel, fine to coarse sand; loose, rounded to subrounded	10	312
Clay, very sandy, very calcareous, bentonitic, firm, very-pale-orange (10YR8/2)	26	338
Pierre shale:		
Clay, calcareous, very bentonitic, firm, light-greenish-gray (5G8/1) to greenish-gray (5GY6/1) with yellow streaks.	4	342
Shale, calcareous, slightly bentonitic, firm to hard, medium-gray (N5) with limonite streaks	8	350
B5-46-35ccc.[1] Alt. 3,849.2 ft.		
Ogallala formation:		
Sand, very coarse to very fine, silty, calcareous, slightly bentonitic, loosely cemented, pale-yellowish-brown (10YR6/2)	7	7
Mortar beds, calcareous, bentonitic, firm, pinkish-gray (5YR8/1)	33	40
Gravel, fine, to coarse sand; loose, with thin cemented zones, rounded to subrounded	20	60
Clay, silty, calcareous, slightly bentonitic, firm, pale-orange (10YR7/2); contains thin streaks of gravel and of caliche.	56	116
Mortar beds, very calcareous, slightly bentonitic, firm, grayish-orange-pink (5YR7/2); contains some loose fine gravel	20	136
Gravel, medium, to very coarse sand; loose, with thin cemented zones, rounded to subrounded	58	194
Mortar beds, very calcareous, firm, grayish-orange-pink (5YR7/2); contains streaks of loose gravel.	38	232
Clay and gravel, mixed, slightly bentonitic, loose	15	247
Mortar beds, calcareous, slightly bentonitic, firm, light-brown (5YR6/4)	30	277
Gravel, medium, to very coarse sand; loose, rounded to subangular	41	318
Mortar beds, calcareous, slightly argillaceous, firm, yellowish-gray (5Y8/1); interbedded with streaks of very fine gravel and coarse sand	36	354
Gravel, fine, to medium sand; loose with thin cemented zones, subrounded to subangular	94	448

	Thickness	Depth
B5-46-35ccc.--Continued		
Pierre shale:		
Clay, calcareous, slightly bentonitic, firm, dusky-yellow (5Y6/4)	27	475
B5-47-1aaa.[1] Alt. 3,944.1 ft.		
Ogallala formation:		
Sand, coarse to very fine, loose to weakly cemented, subrounded to subangular, dark-yellowish-brown (10YR4/2)	5	5
Clay, very sandy, calcareous, slightly bentonitic, firm, light-brown (5YR6/4)	12	17
Gravel, medium, to coarse sand; loose, rounded to subangular.	13	30
Clay, slightly bentonitic, firm to soft, light-brown (5YR6/4); interbedded with loose, medium to very fine gravel	78	108
Gravel, medium, to coarse sand; loose, with cemented streaks, rounded to subrounded.	33	141
Clay, very sandy, slightly calcareous, firm to soft, light-brown (5YR6/4)	10	151
Gravel, medium, to coarse sand; loose, with thin cemented streaks, rounded to subangular; becomes sandier below 250 feet	144	295
Clay, calcareous, very bentonitic, firm, greenish-gray (5G6/1) with white streaks, and streaks of limonite	30	325
Pierre shale:		
Shale, calcareous, bentonitic, firm, medium-gray (N5) with limonite streaks.	5	330
B6-43-36ddd. Alt. 3,589.0 feet		
Dune sand:		
Soil, dark-brown; contains very fine to medium sand	1	1
Sand, very fine to medium buff; contains silt, some caliche, and clay	17	18
Sand, very fine to coarse; contains very coarse sand and very fine gravel	14	32
Sand, very fine, to gravel, very fine; contains streaks of gray clay	2	34
Sand, fine, to gravel, medium; well rounded; loose; stained green	3.5	37.5
Ogallala formation:		
Clay, silty, soft, gray.	2	39.5
Caliche, hard, white	4	43.5
Clay, silty, plastic, gray	3.5	47
Sand, very fine, to gravel, fine; loose.	4.5	51.5
Caliche, hard to soft, white to buff.	17.5	69
Sand, very fine, to gravel, very fine; calcareous	3	72
Sand, very fine, to gravel, very fine; calcareous, cherty.	3	75
Sand, very fine, to gravel, very fine; calcareous; cherty; loose.	2	77
Sand, very fine, to gravel, very fine; cherty	3	80
Caliche, hard. white to buff.	3.5	83.5
Clay, soft, brown to buff	6.5	90
Sand, very fine, to gravel, very fine; slightly cemented.	2	92
Sand, very fine, to gravel, very fine; slightly cemented; contains thin streaks of clay.	10	102

	Thickness	Depth
B6-43-36ddd.--Continued		
Sand, very fine, to gravel, medium; slightly cemented	4	106
Clay, silty, hard, brown.	2	108
Silt and sand; cemented.	6	114
Clay, silty, soft, brown.	5	119
Silt and sand; cemented.	6	125
Sand, clayey, slightly cemented	11	136
Clay, soft, brown; contains some caliche.	19	155
Clay, soft, brown; contains some very fine to coarse sand.	10	165
Sand, very fine, to gravel, very fine; contains clay.	3	168
Caliche, clayey, sandy, buff	7	175
Sand, very fine, to gravel, medium; contains thin streaks of clay.	5	180
Clay, silty, brown; contains very fine to coarse sand.	4.5	184.5
Sand, very fine, to gravel, fine	11.5	196
Caliche, buff; contains very fine to coarse sand	12	208
Clay, silty, soft, tan; contains very fine to very coarse sand	6	214
Sand, fine to coarse, loose; contains very fine to fine gravel and a streak of clay at 224 feet.	14	228
Clay, silty, soft, tan to green	6	234
Caliche, sandy, white to buff.	5	239
Sand, very fine, to gravel, fine; partly cemented	7.5	246.5
Clay, silty, plastic, light-brown.	4.5	251
Sand, very fine, to gravel, very fine; silty; clayey.	12.5	263.5
Clay, silty, sandy, soft, tan.	12.5	276
Sand, very fine to coarse; interbedded with clay and caliche.	10	286
Sand, very fine, to gravel, very fine; partly cemented.	7	293
Clay, sandy, soft, tan	5	298
Sand, very fine, to gravel, very fine.	5	303
Clay, sandy, soft, tan	10	313
Caliche; interbedded with sand and silt	9	322
Sand, very fine to very coarse, silty.	3	325
Sand, very fine to very coarse, silty; interbedded with clay	3	328
Sand, very fine to very coarse, silty.	6	334
Caliche, hard, white	2	336
Sand, very fine to very coarse; contains some caliche.	4	340
Clay, soft, yellow to tan	6	346
Sand, very fine to very coarse, calcareous	2	348
Caliche, hard, buff.	1	349
Sand, very fine, to gravel, fine	8	357
Pierre shale:		
Clay, hard, yellow to light blue-gray, stained with limonite.	7.5	364.5
Clay, hard, plastic, dark-gray.	2.5	367
C1-44-5bbb.[1] Alt. 3,872.7 ft.		
Peorian loess:		
Silt, clayey, calcareous, slightly bentonitic, loosely cemented, yellowish-gray (5Y7/2)	48	48
Ogallala formation:		
Mortar beds (algal limestone?), fine, very calcareous, hard, white, (N9) to very-pale-orange (10YR8/2)	6	54

See footnote at end of table.

Table 3.--Sample logs of test holes in Yuma County.--Continued

	Thickness	Depth
C1-44-5bbb.--Continued		
Clay, sandy, very calcareous, slightly bentonitic, soft, very-pale-orange (10YR8/2)	8	62
Gravel, fine, to coarse sand; loose with thin cemented zones, subrounded to subangular	49	111
Clay, sandy, calcareous, bentonitic, firm, pinkish-gray (5YR8/1)	5	116
Mortar beds, fine, calcareous, slightly bentonitic, firm, light-pinkish-gray (5YR9/1)	24	140
Clay, sandy, very calcareous, bentonitic, firm, very-pale-orange (10YR8/2)	10	150
Mortar beds, very calcareous, slightly bentonitic, firm, grayish-orange-pink (5YR7/2)	12	162
Mortar beds, coarse, calcareous, bentonitic, firm, white (N9)	9	171
Clay, sandy, calcareous, slightly bentonitic, firm, very-pale-orange (10YR8/2); contains thin, hard ledges	33	204
Mortar beds, very calcareous, bentonitic, hard, very-pale-orange (10YR8/2)	19	223
Gravel, fine, to coarse sand; loose, subrounded to subangular	6	229
Clay, sandy, calcareous, bentonitic, firm to soft, yellowish-gray (5Y7/2)	3	232
Gravel, fine, to coarse sand; clayey, loose, subrounded to subangular	4	236
Pierre shale:		
Clay, calcareous, slightly bentonitic, firm, yellowish-gray (5Y7/2) turning to medium-gray (N5) shale	22	258
C1-44-36ddd.[1] Alt. 3,828.7 ft.		
Peorian loess:		
Silt, slightly sandy, clayey, calcareous, bentonitic, soft, dark-yellowish-gray (5Y7/1); contains streaks of caliche.	65	65
Ogallala formation:		
Sand, fine to very fine, silty, clayey, calcareous, slightly bentonitic, subangular, soft, pale-orange (10YR7/2)	28	93
Mortar beds, calcareous, bentonitic, soft, pinkish-gray (5YR8/1)	9	102
Gravel, fine, to coarse sand; loose, subrounded to subangular; contains thin, hard, cemented streaks	39	141
Mortar beds, calcareous, bentonitic, firm, yellowish-gray (5Y7/2); contains clay streaks	17	158
Gravel, medium, to coarse sand; loose, rounded to subangular; contains very thin streaks of clay	21	179
Clay, very sandy, calcareous, soft to firm, dark-yellowish-gray (5Y7/1) with light streaks; contains streaks of gravel	31	210
Mortar beds, calcareous, bentonitic, soft to firm, very-pale-orange (10YR8/1)	5	215
C1-44-36ddd.--Continued		
Pierre shale:		
Clay, calcareous, slightly bentonitic, firm, dark-grayish-yellow (5Y7/4) turning gray	25	240
C2-43-1baa.[1] Alt. 3,690.2 ft.		
Peorian loess:		
Silt, calcareous, bentonitic, slightly cemented, yellowish-olive-gray (5Y7/1); contains a small amount of coarse sand; a foot or two of dark-brown soil at the top.	40	40
Silt, calcareous, bentonitic, slightly cemented, very-pale-yellowish-brown (10YR7/2)	20	60
Silt, calcareous, bentonitic, slightly cemented, yellowish-olive-gray (5Y7/1)	14	74
Ogallala formation:		
Clay, sandy, calcareous, slightly bentonitic, firm, pinkish-gray (5YR8/1)	6	80
Mortar beds, calcareous, slightly bentonitic, hard, pale-orangish-brown (10YR7/2); contains some very fine gravel; interbedded with dark, bentonitic clays.	19	99
Gravel, very fine, to coarse sand; loose, subrounded to subangular.	6	105
Mortar beds, calcareous, bentonitic, firm to hard, light-grayish-brown (5YR7/4); interbedded with thin clay streaks.	5	110
Gravel, fine, to coarse sand; loose to slightly cemented; contains thin streaks of bentonitic clay	17	127
Mortar beds, calcareous, slightly bentonitic, hard, light-grayish-brown (5YR7/4); contains streaks of very fine gravel, and thin clay strips.	45	172
Clay, calcareous, bentonitic, firm, light-greenish-gray (5G8/1) with streaks of grayish-yellow (5Y8/4) and light-brown (5YR6/4) clay; contains thin streaks of grayish-blue (5PB5/2) limestone	24	196
Pierre shale:		
Shale, calcareous, slightly bentonitic, firm, medium-gray (N5)	10	206
C2-43-36ddd.[1] Alt. 3,816.9 ft.		
Peorian loess:		
Silt, sandy, calcareous, bentonitic, slightly cemented, yellowish-olive-gray (5Y7/1)	70	70
Silt, calcareous, bentonitic, slightly cemented, yellowish-olive-gray (5Y7/1) with white streaks.	30	100
Ogallala formation:		
Clay, calcareous, slightly bentonitic, firm, light-brown (5YR5/6) with white streaks.	30	130
Gravel, fine, to coarse sand; loose, subrounded to subangular; contains thin clay streaks.	13	143
Mortar beds, calcareous, firm, very-pale-orange (10YR8/2); contains streaks of bentonitic clay	6	149
Clay, calcareous, firm, light-pinkish-gray (5YR9/1)	3	152
C2-43-36ddd.--Continued		
Mortar beds, calcareous, slightly bentonitic; firm to hard, dark-pinkish-gray (5YR7/1) with white streaks	14	166
Clay, calcareous, bentonitic, firm, white (N9); contains thin hard ledges	4	170
Gravel, very fine, to very coarse sand; loose, subrounded to subangular.	15	185
Silt, very sandy, calcareous, weakly cemented, very-light-brown (5YR6/6)	11	196
Clay, sandy, calcareous, bentonitic, firm, very-pale-orange (10YR8/2).	5	201
Clay, very sandy, calcareous, bentonitic, firm, grayish-orange (10YR7/4)	14	215
Clay, very sandy, calcareous, bentonitic, firm, dark-pinkish-gray (5YR7/1); contains streaks of gravel	11	226
Sand, medium to very coarse, silty, loose, subrounded to subangular; contains some very fine gravel.	6	232
Mortar beds, very calcareous, bentonitic, hard, white (N9); contains thin beds of clay. Lost circulation	11	243
Pierre shale:		
Clay, silty, calcareous, slightly bentonitic, firm, dark-grayish-yellow (5Y7/4) turning grayish-black.	14	257
C2-44-6bbb.[1] Alt. 3,910.6 ft.		
Dune sand:		
Sand, fine to very fine, silty, loose, subrounded to subangular, light-olive-gray (5Y6/1); contains a small amount of coarser material.	18	18
Grand Island(?) formation:		
Gravel, fine, to coarse sand; calcareous, slightly cemented, subrounded to subangular.	12	30
Ogallala formation:		
Sand, fine to very fine, silty, calcareous, slightly cemented, subrounded to subangular, grayish-orange (10YR7/4); contains some very coarse sand, and some streaks of caliche.	23	53
Sand, coarse to very fine, silty, calcareous, slightly cemented, rounded to subangular, light-brown (5YR6/4)	19	72
Mortar beds, calcareous, slightly bentonitic, firm to hard, pinkish-gray (5YR8/1).	19	91
Mortar beds, calcareous, bentonitic, soft to firm, very-light-brown (5YR7/4); contains gravel streaks	26	117
Mortar beds, very calcareous, slightly bentonitic, firm, white (N9)	11	128
Gravel, fine, to coarse sand; loose to slightly cemented, rounded to subangular; contains thin clay streaks.	23	151
Clay, sandy, slightly calcareous, bentonitic, soft, yellowish-gray (5Y8/1).	17	168
Mortar beds, calcareous, firm, very-pale-orange (10YR8/2).	13	181
Gravel, medium, to coarse sand; loose, rounded to subangular; contains streaks of clay.	19	200

See footnote at end of table.

Table 3.--Sample logs of test holes in Yuma County.--Continued

	Thickness	Depth
C2-44-6bbb.--Continued		
Pierre shale:		
Clay, calcareous, slightly bentonitic, firm, dusky-yellow (5Y6/4) turning to gray	17	217
C2-44-31bbb.[1] Alt. 3,888.5 ft.		
Dune sand:		
Sand, medium to very fine, silty, loose, subrounded to subangular, dark-yellowish-brown (10YR4/2)	16	16
Ogallala formation:		
Sand, very coarse to medium, clayey, calcareous, loose, with thin cemented zones, subrounded to subangular	6	22
Sand, fine to very fine, very clayey, calcareous, slightly bentonitic, loosely cemented, subrounded to subangular	11	33
Mortar beds, very calcareous, slightly bentonitic, firm, pale-orange (10YR7/2); contains some loose very fine gravel	36	69
Pierre shale:		
Clay, calcareous, bentonitic, hard to firm, dusky-yellow (5Y6/4) turning blue-gray	31	100
C2-46-1aaa.[1] Alt. 3,976.7 ft.		
Dune sand:		
Sand, very coarse to very fine, silty, loose, rounded to subangular	13	13
Clay, very sandy, very calcareous, slightly bentonitic, firm, white (N9); contains some fine gravel	4	17
Sappa(?) formation:		
Sand, medium to very fine, silty, very calcareous, slightly cemented, pale-yellowish-brown (10YR6/2)	14	31
Grand Island(?) formation:		
Gravel, medium, to coarse sand; calcareous, firm to loosely cemented, rounded to subrounded	11	42
Ogallala formation:		
Sand, very coarse to very fine, slightly calcareous, loose, with cemented zones, light-brown (5YR6/4)	23	65
Mortar beds, very calcareous, slightly bentonitic, firm, very-pale-orange (10YR8/2)	21	86
Mortar beds, coarse, very calcareous, slightly bentonitic, firm, pinkish-gray (5YR8/1); contains streaks of clay and gravel	22	108
Mortar beds, fine, very calcareous, slightly bentonitic, firm to soft, very-pale-orange (10YR8/2); contains clay streaks.	58	166
Clay, sandy, calcareous, slightly bentonitic, firm, pinkish-gray (5YR8/1); contains gravel streaks.	21	187
Gravel, fine, to coarse sand; loose, rounded to subrounded; contains thin streaks of clay.	7	194
Mortar beds, coarse, very calcareous, slightly bentonitic, firm, white (N9).	3	197
Clay, very sandy, calcareous, firm, dark-grayish-yellowish (5Y7/4)	26	223
Mortar beds, calcareous, slightly bentonitic, firm, dark-pinkish-gray (5YR7/1).	10	233

See footnote at end of table.

	Thickness	Depth
C2-46-1aaa.--Continued		
Clay, sandy, calcareous, firm, yellowish-gray (5Y7/2).	5	238
Gravel, medium, to coarse sand; getting coarser toward the bottom, loose, rounded to subangular; contains streaks of clay between 278 and 290 feet	62	300
Pierre shale:		
Shale, calcareous, slightly bentonitic, medium-gray (N5)	14	314
C3-42-3aab.[1] Alt. 3,750.6 ft.		
Peorian loess:		
Top soil, silt, calcareous, bentonitic, slightly cemented, light-olive-gray (5Y6/1).	5	5
Silt, sandy, clayey, calcareous, bentonitic, slightly cemented, light-yellowish-gray (5Y8/2)	94	99
Ogallala formation:		
Mortar beds, calcareous, bentonitic, firm to hard, pinkish-gray (5YR8/1); contains streaks of white clay. Lost circulation at about 112 feet	48	147
Gravel, very fine, to very coarse sand; loose, subrounded to subangular; contains clay streaks.	11	158
Mortar beds, very coarse, calcareous, bentonitic, firm, yellowish-gray (5Y8/1); contains streaks of sandy clay.	6	164
Gravel, very fine, to very coarse sand; subrounded to subangular, loose; contains thin cemented streaks.	17	181
Clay, slightly calcareous, slightly bentonitic, loosely cemented, very-pale-yellowish-brown (10YR7/1); contains sandy streaks.	14	195
Gravel, fine, to very coarse sand; loose, subrounded to subangular; contains thin clay streaks.	47	242
Clay, calcareous, bentonitic, firm, grayish-orange (10YR7/4); contains thin streaks of sand and gravel	5	247
Gravel, medium, to coarse sand; rounded to subangular, loose	11	258
Clay, sandy, calcareous, bentonitic, firm, white (N9)	9	267
Pierre shale:		
Shale, calcareous, slightly bentonitic, medium-gray (N5); yellow weathered zone on top.	8	275
C3-42-31ccc.[1] Alt. 3,773.6 ft.		
Peorian loess:		
Sand, very fine, silty, slightly calcareous, loosely cemented, subrounded to subangular, pale-yellowish-brown (10YR6/2).	4	4
Sand, very fine, silty calcareous, bentonitic, loosely cemented, rounded to subangular, yellowish-gray (5Y7/2)	24	28
Ogallala formation:		
Clay, sandy, calcareous, slightly bentonitic, soft, pale-yellowish-brown (10YR6/2) with streak of white caliche	15	43
Gravel, fine, to coarse sand; loose, rounded to subrounded	4	47
Mortar beds, calcareous, bentonitic, firm, pinkish-gray (5YR8/1).	6	53
Clay, sandy, calcareous, slightly bentonitic,		

	Thickness	Depth
C3-42-31ccc.--Continued		
firm to soft, very-pale-orange (10YR8/2); contains hard ledges and streaks of gravel	31	84
Gravel, medium, to very coarse sand; loose, rounded to subrounded; contains a few thin cemented zones, and fragments of bones	30	114
Sand, fine to very fine, silty, slightly calcareous, loosely cemented, light-brown (5YR6/4)	11	125
Mortar beds, very fine, calcareous, slightly bentonitic, firm, very-pale-orange (10YR8/2).	21	146
Gravel, medium to very fine, loose, rounded to subrounded; contains thin streaks of clay.	23	169
Mortar beds, coarse, calcareous, slightly bentonitic, firm, pinkish-gray (5YR8/1).	14	183
Clay, slightly silty, calcareous, very bentonitic, firm, yellowish-gray (5Y8/1).	9	192
Gravel, medium, to coarse sand; clayey, loose, subrounded to subangular	8	200
Clay, sandy, calcareous, slightly bentonitic, firm, yellowish-gray (5Y7/1).	21	221
Gravel, fine, to coarse sand; loose with thin cemented zones, subrounded to subangular.	14	235
Clay, very sandy, calcareous, bentonitic, firm to soft, yellowish-gray (5Y7/2)	10	245
Pierre shale:		
Shale, calcareous, slightly bentonitic, medium-gray (N5)	12	257
C3-44-36ddd.[1] Alt. 3,905.8 ft.		
Peorian loess:		
Sand, silty, calcareous, bentonitic, loosely cemented, pale-yellowish-brown (10YR6/2).	4	4
Silt, clayey, calcareous, bentonitic, loosely cemented, yellowish-gray (5Y7/2).	56	60
Ogallala formation:		
Sand, fine to very fine, silty, very calcareous, slightly bentonitic, firm, subrounded to subangular, light-brown (5YR6/4)	30	90
Gravel, fine, to coarse sand; loose, rounded to subangular	5	95
Mortar beds, very calcareous, firm, very-pale-orange (10YR8/2); contains streaks of very fine gravel	29	124
Gravel, fine, to coarse sand; loose, rounded to subangular.	4	128
Clay, sandy, slightly bentonitic, firm, light-greenish-gray (5GY8/1)	10	138
Gravel, medium, to coarse sand; loose, rounded to subrounded; contains streaks of clay.	19	157
Clay, silty, calcareous, firm, pale-orange (10YR7/2).	10	167
Gravel, very fine, to coarse sand; loose, subrounded to subangular.	4	171
Clay, silty, calcareous, slightly bentonitic, firm, pale-orange (10YR7/2).	7	178
Mortar beds, very calcareous, firm, very-pale-orange (10YR8/2).	21	199
Mortar beds, coarse, very		

Table 3.--Sample logs of test holes in Yuma County.--Continued

	Thick-ness	Depth
C3-44-36ddd.--Continued		
calcareous, slightly bentonitic, firm, pinkish-gray (5YR8/1)	6	205
Clay, sandy, calcareous, slightly bentonitic, firm, very-pale-orange (10YR8/2)	7	212
Gravel, medium, to coarse sand; loose, rounded to subrounded; contains streaks of clay	16	228
Mortar bed, very calcareous, bentonitic, firm, pinkish-gray (5YR8/1)	3	231
Mortar beds, calcareous, firm, dark-yellowish-gray (5Y7/1); contains streaks of very fine gravel	44	275
Pierre shale:		
Clay, calcareous, slightly bentonitic, firm, dusky-yellow (5Y6/4)	15	290
C3-46-1aaa.[1] Alt. 4,014.6 ft.		
Ogallala formation:		
Sand, very coarse to very fine, loose, to weakly cemented, subrounded to subangular, dark-yellowish-brown (10YR4/2)	6	6
Clay, very sandy, calcareous, bentonitic, firm, to soft, pale-orange (10YR7/2)	20	26
Gravel, medium, to coarse sand; loose, rounded to subrounded	15	41
Mortar beds, calcareous, bentonitic, firm, grayish-orange (10YR7/4); contains some loose gravel	33	74
Pierre shale:		
Clay, slightly sandy, calcareous, bentonitic, firm, dusky-yellow (5Y6/4)	19	93
Shale, calcareous, bentonitic, firm, medium-gray (N5) with streaks of limonite	7	100
C3-46-31ddd.[1] Alt. 4,008.7 ft.		
Alluvium:		
Sand, very coarse to medium, and fine gravel; loose, rounded to subangular	7	7
Clay, calcareous, bentonitic, firm, light-olive gray (5Y6/1); contains some loose gravel	13	20
Sand, very coarse to medium, and fine gravel; loose, subrounded to subangular	5	25
Gravel, medium, to coarse sand; loose, rounded to subangular	32	57
Ogallala formation:		
Mortar bed, very calcareous, bentonitic, hard to firm, yellowish-gray (5Y8/1); contains some loose gravel	2	59
Pierre shale:		
Clay, calcareous, bentonitic, firm, dusky-yellow (5Y6/4), turning to dark-gray shale	21	80
C4-45-6bbb.[1] Alt. 4,024.8 ft.		
Ogallala formation:		
Sand, fine to very fine, silty, loose to weakly cemented, subrounded to subangular, dark-yellowish-brown (10YR4/2)	11	11
Sand, very coarse to coarse, loose, subrounded to subangular	5	16
Clay, sandy, calcareous, bentonitic, soft, grayish-orange (10YR7/4)	18	34
Mortar beds, very calcareous, firm,		
See footnote at end of table.		

	Thick-ness	Depth
C4-45-6bbb.--Continued		
pale-orange (10YR7/2); contains streaks of loose sand and gravel	76	110
Mortar beds, very calcareous, firm to soft, pinkish-gray (5YR8/1); contains streaks of loose sand and gravel	21	131
Gravel, medium to very fine, loose, rounded to subrounded; contains streaks of clay	36	167
Mortar beds, very calcareous, bentonitic, firm, pinkish-gray (5YR8/1)	12	179
Pierre shale:		
Clay, calcareous, bentonitic, firm, dusky-yellow (5Y6/4) turning dark-gray; contains streaks of limonite	36	215
C4-48-31ccc.[1] Alt. 4,394.9 ft		
Ogallala formation:		
Top soil, sand, very coarse to very fine, and some very fine gravel; silty, clayey, slightly cemented, dark-olive gray (5Y3/1)	4	4
Gravel, very fine, to coarse sand; loose, subangular	12	16
Clay, sandy, slightly calcareous, slightly bentonitic, soft, pinkish-gray (5YR8/1)	13	29
Gravel, fine, to coarse sand; loose, subrounded to subangular	9	38
Clay, very sandy, calcareous, slightly bentonitic, firm, moderate-yellowish-brown (10YR5/4) with white streaks	2	40
Gravel, fine, to coarse sand; loose, subrounded to subangular	5	45
Clay, very sandy, calcareous, slightly bentonitic, soft, very-pale-orange (10YR8/2)	13	58
Gravel, medium, to coarse sand; loose, rounded to subangular; contains thin, light-brown clay streaks	15	73
Clay, very sandy, calcareous, soft, very-pale-orange (10YR8/2)	15	88
Gravel, medium, to coarse sand; loose, rounded to subangular; contains thin streaks of bentonitic clay	48	136
Clay, sandy, calcareous, slightly bentonitic, firm, light-grayish-orange (10YR8/4); contains thin streaks of sand and gravel	5	141
Gravel, fine, to coarse sand; loose, subrounded to subangular; contains thin clay streaks	8	149
Pierre shale:		
Shale, calcareous, slightly bentonitic, firm, dark-grayish-yellow (5Y7/4) turning gray-blue	24	173
C5-43-9ddd. Alt. 3,716.9 ft.		
Peorian loess:		
Sand, fine, silty, compact, light-brown	16	16
Ogallala formation:		
Sand, silty, compact, buff	4	20
Sand, medium, compact, clean	4	24
Sandstone, hard, gray.	24.3	48.3
Sand, coarse, compact, lightly cemented, gray	2.2	50.5
Sand, fine, silty, lightly cemented, buff	19.5	70
Sand, fine, compact, lightly cemented, buff	22	92
Sand, fine, silty, lightly cemented, buff	10.5	102.5

	Thick-ness	Depth
C5-43-9ddd.--Continued		
Sand, coarse, loose, clean	11.5	114
Silt, concretionary, buff	6.5	120.5
Sand, medium, compact, clean	1	121.5
Sand, fine, lightly cemented; becomes coarser at the bottom	18.5	140
C5-43-10ccc. Alt. 3,646.4 ft.		
Peorian loess:		
Loess, fine, silty, brown	16	16
Sand, fine, compact, brown	10	26
Sand, coarse, compact, brown	2	28
Sand, fine, brown	3	31
Silt, organic, brown	4	35
Sand, coarse, compact, clean	9	44
Ogallala formation:		
Sand, fine, silty, lightly cemented, gray	3	47
Sand, fine, compact, greenish-gray	19	66
Sand, medium to coarse, compact, gray	28	94
Pierre shale:		
Shale, weathered, brown.	2	96
C5-43-15cba. Alt. 3,622.6 ft.		
Alluvium:		
Sand, fine, silty, black	5.5	5.5
Sand, coarse, clean.	14.8	20.3
Sand, fine, silty, buff.	2.7	23
Sand, coarse, compact, clean	11.3	34.3
Sand, fine, compact, clean	6.2	40.5
Ogallala formation:		
Silt, gray	2	42.5
Sand, coarse, clean.	1.5	44
Gravel, clean.	1	45
Clay, buff	3	48
Sand, fine, buff	2	50
Sand, medium, clean.	10.5	60.5
Gravel, fine, clean.	.5	61
Pierre shale:		
Shale, weathered, brown.	5.5	66.5
Shale, firm, black	28.1	94.6
C5-43-15cdb. Alt. 3,635.6 ft.		
Alluvium:		
Sand, silty, soft, dark-brown	7	7
Sand, fine, soft, buff	2	9
Sand, medium, soft, buff	4.5	13.5
Sand, coarse, clean.	6.5	20
Gravel, fine, clean.	6.5	26.5
Ogallala formation:		
Sand, fine, silty, firm, buff	10	36.5
Sand, medium, firm, buff	4	40.5
Sand, fine, silty, firm, buff	8.5	49
Sand, coarse, firm, clean	26	75
Pierre shale:		
Shale, weathered, brown.	5	80
Shale, firm, black	11.7	91.7
C5-43-16aaa. Alt. 3,675.5 ft.		
Ogallala formation:		
Loam, sandy, soft, light-brown	6.5	6.5
Sand, medium, compact, cross-bedded, clean.	3.5	10
Sand, fine, medium cemented, gray	10	20
Sand, fine, medium cemented, buff	2.5	22.5
Sand, fine, lightly cemented, buff	26.5	49
Sand, fine, medium cemented, gray	4	53
Sand, fine, lightly cemented, buff	12	65
Sand, fine, silty, compact, buff	4	69
Sand, fine, compact, buff	14.5	83.5
Sand, medium, very lightly cemented, gray	8.5	92
Sand, medium, loose, clean	3	95
Clay, bentonitic, greenish	3	98
Sand, fine, gray	4	102
Sand, medium, loose, clean	3	105

Table 3.--Sample logs of test holes in Yuma County.--Continued

	Thickness	Depth
C5-43-16aaa.--Continued		
Sand, fine, compact, clean	6.5	111.5
Sand, medium, clean	1.2	112.7
Sand, coarse, and gravel, loose	2.3	115
Pierre shale:		
Shale, soft, weathered, brown	6	121
Shale, firm, weathered, gray	2.5	123.5
Shale, hard, black	8.2	131.7
C5-43-22bab. Alt. 3,681.5 ft.		
Peorian loess:		
Loam, silty, soft, light-brown	32.5	32.5
Ogallala formation:		
Sand, fine, silty, compact, buff	6.3	38.8
Sand, coarse, compact, buff	10.7	49.5
Sand, fine, silty, compact, buff	2	51.5
Sand, coarse, compact, clean	8	59.5
Silt, compact, buff	1.5	61
Sand, medium, compact, buff	9	70
Sand, fine, compact, gray	8.5	78.5
Sand, fine, silty, compact, buff	7.2	85.7
Sand, medium, compact, buff	11	96.7
Sand, fine, silty, compact, buff	22.3	119
Pierre shale:		
Shale, weathered, brown	4	123
Shale, firm, black	3	126
C5-43-22bda. Alt. 3,725.1 ft.		
Peorian loess:		
Sand, fine, silty, compact, light-brown	24	24
Ogallala formation:		
Sand, fine, silty, lightly cemented, buff	14	38
Sandstone, medium hard, gray	2.5	40.5
Sand, fine to medium, loose, clean	6	46.5
Limestone, hard, gray	1.5	48
Sand, fine, silty, brown	1.5	49.5
Sandstone, hard, gray	1.5	51
Sand, fine, loose, buff	8	59
Sandstone, medium hard, gray	2	61
Silt, red	5.5	66.5
Sand, fine, loose, green	8	74.5
Sand, coarse, loose, clean	9.5	84
Sandstone, coarse, medium hard	2	86
Sand, fine, silty, buff	1	87
Sand, medium, loose, brown	10.5	97.5
Sand, fine, loose, brown	4	101.5
Sandstone, medium hard, gray	1	102.5
Sand, fine, silty, loose, brown	31	133.5
Silt, brown	2.5	136
Sand, fine, loose, gray	9.5	145.5
Sand, coarse, compact, clean	16	161.5
Pierre shale:		
Shale, weathered, brown	1.5	163
C5-45-6bbb.[1] Alt. 4,122.9 ft.		
Peorian loess:		
Top soil, sand, very fine, silty, calcareous, slightly bentonitic, loosely cemented, pale-yellowish-brown (10YR6/2)	3	3
Sand, very fine, silty, calcareous, slightly bentonitic, loosely cemented, yellowish-gray (5Y7/2); contains some caliche near the base	70	73
Ogallala formation:		
Gravel, medium, to coarse sand; calcareous, loose with thin cemented zones, rounded to subangular	29	102
C5-45-6bbb.--Continued		
Mortar beds, calcareous, firm to soft, light-brown (5YR6/4)	23	125
Gravel, medium, to coarse sand; loose, rounded to subrounded; contains hard, very-pale-orange (10YR8/2) mortar beds at 129, 138, 161, and 193 feet	77	202
Mortar beds, calcareous, slightly bentonitic, firm, very-pale-orange (10YR8/2); contains very fine gravel from 221-231 feet	58	260
Gravel, very fine, to very coarse sand; loose, rounded to subangular.	9	269
Mortar beds, calcareous, slightly bentonitic, firm, yellowish-gray (5Y7/2); contains thin streaks of gravel.	42	311
Gravel, medium, to coarse sand; loose, rounded to subrounded	13	324
Pierre shale:		
Clay, calcareous, bentonitic, firm, dusky-yellow (5Y6/4)	12	336
Shale, calcareous, slightly bentonitic, firm, medium-gray (N5)	12	348
C5-46-35ddd.[1] Alt. 4,091.2 ft.		
Ogallala formation:		
Sand, very coarse to fine, and very fine gravel; loose, subrounded to subangular	3	3
Mortar beds, very calcareous, slightly bentonitic, firm, pale-orange (10YR7/2)	5	8
Clay, calcareous, bentonitic, firm to soft, light-greenish-gray (5GY8/1)	5	13
Gravel, medium, to coarse sand; loose, rounded to subangular; interbedded with light-brown calcareous clay, some caliche	16	29
Gravel, medium, to coarse sand; clayey, loose, rounded to subangular.	20	49
Mortar beds, very calcareous, slightly bentonitic, firm, pinkish-gray (5YR8/1).	16	65
Gravel, medium, to coarse sand; loose, rounded to subrounded	22	87
Mortar beds, calcareous, slightly bentonitic, firm, grayish-orange-pink (5YR7/2); contains streaks of loose gravel	16	103
Gravel, medium, to coarse sand; loose, rounded to subrounded	16	119
Mortar beds, very calcareous, slightly bentonitic, hard, very-pale-orange (10YR8/2); contains streaks of sand, and thin limestone stringers.	17	136
Gravel, fine, to coarse sand; loose, rounded to subrounded	15	151
Mortar beds, calcareous, bentonitic, firm, very-pale-orange (10YR8/2); contains streaks of clay and gravel.	44	195
Gravel, medium, to coarse sand; loose, rounded to subrounded	38	233
Pierre shale:		
Clay, calcareous, slightly bentonitic, firm, yellowish-gray (5Y7/2) to light-greenish-gray (5GY8/1); contains limonite streaks.	15	248
Shale, calcareous, slightly bentonitic, firm, medium-gray (N5); contains limonite streaks.	5	253

1/ U. S. Geological Survey test hole.

Table 4.--Drillers' logs of seismograph shotholes, test holes, and wells in Yuma County.

Formational names have been added to the logs by the author. Altitudes shown are for land surface at well or test hole site. Thickness in feet. Depth in feet below land surface.

	Thickness	Depth
B1-43-5bcd. Alt. 3,512.4 ft.		
Alluvium:		
Top soil	3	3
Clay, yellow	2	5
Sand, fine	5	10
Sandstone	1	11
Sand, fine	1	12
Mud, gray	1	13
Mud, blue	7	20
Pierre shale:		
Shale, blue	10	30
B1-43-6bcd. Alt. 3,547.2 ft.		
Soil and sand	12	12
Ogallala formation:		
Sand, fine	40	52
Shale	1	53
Sand, fine	21	74
Pierre shale:		
Shale	2	76
B1-44-2ccd. Alt. 3,554.3 ft.		
Alluvium:		
Top soil	2	2
Sand, dirty, and gravel	6	8
Sand and gravel	22	30
Clay and gravel, dirty, and in strips	22	52
Gravel and washed in shale	11	63
Pierre shale:		
Shale	2	65
B1-44-10bbb. Alt. 3,595.9 ft.		
Alluvium:		
Top soil	2	2
Quicksand, clay, and dirty gravel strips	32	34
Gravel with washed-in shale	21	55
Pierre shale:		
Shale	1	56
B1-45-27bbb. Alt. 3,856.5 ft.		
Top soil	2.5	2.5
Ogallala formation:		
Clay, sand, and gravel; mixed	13.5	16
Sandrock, hard and soft	5	21
Sand and soft sandrock	72	93
Sandrock, hard	2	95
Clay	5	100
Sand, fine	7	107
Sandrock	1	108
Clay	2	110
Sand	14	124
Clay and sand	8	132
Sand, some coarse	12	144
Clay	3	147
Sand and gravel	1	148
Sandrock	1	149
Clay	2	151
Sandrock	4	155
Sand and clay strips	41	196
Gravel	54	250
Clay	8	258
Pierre shale:		
Shale	2	260
B1-45-28dbd. Alt. 3,868.7 ft.		
Top	11	11
Ogallala formation:		
Sand and some clay	10	21
Magnesium	10	31
Gravel	5	36
Clay, sandy	14	50
Sandrock	1.5	51.5
Clay, sandy	6.5	58
Sand	2	60
Sandrock, soft	2	62
Clay	14	76
Sandrock, soft	1	77
Clay	8	85
Sandrock	5	90
Gravel	6	96
Sandrock, hard	3	99
Clay	12	111
Sand, fine	15	126
Clay	2	128
Sand, fine	3	131
Sandrock, hard	8	139
Clay	11	150
B1-45-28dbd.--Continued		
Gravel	4	154
Clay	7	161
Sand	2	163
Sandrock	3	166
Clay	9	175
Sand	5	180
Clay	2	182
Sand, fine	8	190
Sandrock	3	193
Clay	5	198
Gravel	42	240
Clay	2	242
Gravel	11	253
Pierre shale:		
Shale	7	260
B1-47-4cad. Alt. 4,055.6 ft.		
Top	6	6
Ogallala formation:		
Magnesium clay	11	17
Gravel	1	18
Clay, firm, white	8	26
Gravel, sand, and clay running in strips	22	48
Magnesium clay, hard	4	52
Gravel, sand, and clay strips	17	69
Gravel, sand, clay, and thin, hard strips	25	94
Sand, tight, clay, and sandstone	10	104
Gravel, fine, sand, and clay	7	111
Gravel, fine	7	118
Clay, hard clay, and some sandstone	12	130
Clay, sandstone, and gravel strips	5	135
Gravel	2	137
Sand, drills tight, clean	6	143
Sandstone, clean	3	146
Magnesium clay, and sandstone in hard strips	10	156
Limestone, hard, and clay	6	162
Sandstone, clay, and thin gravel strips	11	173
Magnesium clay and some thin sandstone	21	194
Magnesium clay and some thin clean sand	5	199
Sand and some sandstone, clean	7	206
Sand and thin gravel strips	12	218
Clay	3	221
Sand and some clay, some sandstone	4	225
Clay	3	228
Clay	9	237
Sand and some clay. Hard limestone	1	238
Gravel and sand, clean	16	254
Sand, coarse, clean	4	258
Gravel and sand, clean	6	264
Clay, sandstone, and clean sand strips	10	274
Gravel and sand, clean	37	311
Pierre shale:		
Clay, turning to shale blossom to shale	3	314
B1-48-5aaa. Alt. 4,175 ft.		
Ogallala formation:		
Sand	20	20
Sand, coarse	160	180
Sandstone	140	320
Pierre shale:		
Shale, blue	30	350
B1-48-8acc. Alt. 4,193 ft.		
Ogallala formation:		
Sand, gravel, and sandstone	293	293
Clay	11	304
Sandstone	21	325
Pierre shale:		
Clay, blue	25	350
B2-42-27bbc. Alt. 3,542.1 ft.		
Dune sand:		
Sand	16	16
B2-42-27bbc.--Continued		
Ogallala formation:		
Mortar bed	12	28
Gravel, water-bearing	4	32
Mortar bed	48	80
Gravel, water-bearing	14	94
Mortar bed	18	112
Gravel and sand, water-bearing	12	124
Gravel and mortar beds, mixed	16	140
Pierre shale:		
Shale		140
B2-42-34ccc. Alt. 3,473.9 ft.		
Dune sand:		
Sand	11	11
Ogallala formation:		
Hardpan	7	18
Clay	16	34
Sand, fine	7	41
Clay	6	47
Gravel and sand	9	56
Gravel and clay	4	60
Gravel, hard, thinly bedded	5	65
Pierre shale:		
Shale, yellow	4	69
Shale, black	11	80
B2-44-36bbb1. Alt. 3,660.7 ft.		
Dune sand:		
Top sand	8	8
Ogallala formation:		
Sand and thin layers of soft sandstone	11	19
Sandrock	15	34
Sand, fine	2	36
Sandrock	1	37
Magnesium and sandrock strips, some fine sand	18	55
Magnesium and fine sand strips	10	65
Sandrock	2	67
Magnesium and fine sand	8	75
Clay	1	76
Sand, fine, and some magnesium	2	78
Sandrock, hard	4	82
Sand, fine	2	84
Sandrock	4	88
Sand, fine	7	95
Sandrock	1	96
Sand and magnesium strips	2	98
Sand	8	106
Magnesium and clay	5	111
Sand	2	113
Magnesium	1	114
Clay	4	118
Sandrock	1	119
Clay	1	120
Sand and clay strips	10	130
Clay	24	154
Clay and sand strips	4	158
Sand, gravel, and occasional clay strips	22	180
Pierre shale:		
Shale blossom		180
B2-46-30ddb. Alt. 3,959.6 ft.		
Top soil	21	21
Ogallala formation:		
Sand	9	30
Sand and gravel	2	32
Clay	3	35
Sand and clay	2	37
Clay	7	44
Sand, fine, and clay	6	50
Sand, gravel, and some clay	9	59
Sandrock	1	60
Clay	14	74
Sandrock and clay	19	93
Sandrock and some gravel strips	4	97
Sandrock and clay	28	125
Sand and gravel	8	133
Sandrock and clay	5	138
Sand and gravel	2	140
Sandrock and clay	28	168
Sand and gravel	14	182
Sandrock and clay	12	194

Table. 4.--Drillers' logs of seismograph shotholes, test holes, and wells in Yuma County.--Continued

	Thick-ness	Depth
B2-46-30ddb.--Continued		
Sand and gravel, tight.	9	203
Sandrock and clay	4	207
Sand.	3	210
Sandrock and clay	5	215
Sand.	51	266
Clay.	4	270
Sand.	8	278
Clay.	12	290
Sand.	4	294
Clay.	6	300
Sand and gravel	2	302
Clay.	2	304
Gravel.	6	310
Clay.	6	316
Gravel.	9	325
Clay.	9	334
Gravel.	1	335
Sandrock and clay	7	342
Gravel.	3	345
Clay and sandrock	20	365
Gravel.	5	370
Pierre shale:		
Clay.	5	375
Shale blossom	7	382
B2-47-17dda. Alt. 4,028.7 ft.		
Dune sand:		
Top sand.	6	6
Grand Island(?) formation:		
Sand and gravel	29	35
Ogallala formation:		
Clay, sandy	16	51
Sand and gravel	6	57
Clay, sandy	24	81
Sand and gravel	7	88
Clay, sandy, and occasional strips of sandrock.	24	112
Sandrock, hard.	2	114
Clay, sandy	2	116
Sand.	2	118
Clay, sandy	4	122
Sandrock, soft, and sandy clay.	7	129
Sand, solid	4	133
Clay, sandy, and soft sandrock.	5	138
Sand and gravel	3	141
Sandrock.	1	142
Sand and gravel with binder.	11	153
Sandrock, hard, and soft sand and clay strips.	10	163
Sand, fine, and clay strips.	28	191
Sandrock, soft.	2	193
Sand, clay and soft sandrock.	7	200
Sandrock, hard.	4	204
Clay and sand strips.	6	210
Sandrock, hard and soft	6	216
Clay, sandy	6	222
Sand.	6	228
Sandrock.	2	230
Clay, sandy	10	240
Sandrock.	3	243
Clay and sandrock	13	256
Gravel.	32	288
Sandrock.	1	289
Clay, hard, and sandrock strips.	47	336
Sand.	8	344
Sandrock.	2	346
Clay.	11	357
Sand.	9	366
Sandrock and clay	4	370
Sand and gravel	10	380
Clay and gravel strips.	36	416
Pierre shale:		
Shale	4	420
B2-48-14bbd. Alt. 4,098.1 ft.		
Top soil.	4	4
Loam.	13	17
Ogallala formation:		
Sand.	4	21
Gravel and sand	7	28
Clay.	26	54
Clay, some gravel, and sand.	8	62
Clay.	25	87
Gravel and sand	9	96
Gravel, sand, and clay.	8	104
Sand and gravel	8	112
Sand, gravel, and clay.	13	125
Clay, fine sand, and some gravel	16	141
Clay.	3	144
Sand and some clay.	12	156
Sandstone	1	157
Sandstone and clay.	7	164
Sand and some clay; tight	10	174

	Thick-ness	Depth
B2-48-14bbd.--Continued		
Sandrock	1	175
Sand, some tight	5	180
Sand, some clay, some sandstone.	3	183
Sand, some fine, drills good	8	191
Sand, good	6	197
Sand and some clay	13	210
Clay and hard strips	2	212
Gravel and sand.	7	219
Sand and clay.	5	224
Gravel, some clay, and sand	7	231
Gravel and sand, dirty	6	237
Sandstone.	2	239
Sand, clay, and hard strips	14	253
Sandrock	2	255
Sand, clay, and hard strips	28	283
Sandstone, soft, clay, and hard strips.	22	305
Sand	6	311
Sandstone, soft, clay, and sand	17	328
Sandstone, soft, and clay.	12	340
Rock, hard	1	341
Gravel and sand, fair.	7	348
Clay and sandstone	4	352
Sand and fine gravel	3	355
Clay, sandstone, and fine sand	6	361
Gravel, sand, and some thin clay.	15	376
Clay, sand, and gravel	8	384
Clay, sandstone, sand, and fine gravel in thin strips	21	405
Gravel and sand, good.	11	416
Sandrock	2	418
Clay and some sand	6	424
Sand, clay, and some sandstone.	11	435
Gravel, fine, and sand, fairly good.	19	454
Rock	1	455
Pierre shale:		
Shale blossom.	5	460
Turning blue	1	461
B2-48-21dca. Alt. 4,155.1 ft.		
Ogallala formation:		
Top soil	1	1
Sand	29	30
Gravel	20	50
Clay	8	58
Gravel	6	64
Clay	4	68
Gravel	12	80
Sandrock	2	82
Clay, sandy, and sand strips	11	93
Gravel	3	96
Clay, sandy, and sand strips	34	130
Sandrock, soft	8	138
Clay, sandy, and sand strips	12	150
Sandrock, soft	13	163
Sand, tight.	8	171
Sandrock	1	172
Clay, with thin layers of soft sandrock.	9	181
Sandrock	1	182
Clay, sandy.	2	184
Sand	2	186
Sandrock	1	187
Clay, sandy, with thin sandrock strips.	4	191
Sandrock, with layers of clay	5	196
Sand and gravel.	8	204
Sandrock, soft	1	205
Clay, sandy.	7	212
Sandrock and clay.	6	218
Sand and gravel.	2	220
Sandrock	1	221
Sand and gravel.	7	228
Clay	4	232
Sand and gravel.	11	243
Sandrock	6	249
Clay	9	258
Sandrock	4	262
Clay, sandy.	4	266
Sandrock, soft, and clay strips	14	280
Sandrock, hard	.5	280.5
Clay, sandy.	2.5	283
Sand and gravel.	13	296
Clay, sandy.	1	297
Sand and gravel.	3	300
Clay, sandy.	4	304

	Thick-ness	Depth
B2-48-21dca.--Continued		
Sand and gravel, with some thin clay strips	19	323
Pierre shale:		
Clay		323
B2-48-22cdc. Alt. 4,149.9 ft.		
Top.	4	4
Loam	12	16
Ogallala formation:		
Sand and clay..	11	27
Gravel and sand.	9	36
Sand and clay.	15	51
Clay	10	61
Gravel and sand.	8	69
Clay	5	74
Gravel and sand.	7	81
Clay	11	92
Gravel and sand.	11	103
Gravel, sand, and clay	7	110
Clay	16	126
Clay, and a few thin hard strips	17	143
Gravel and sand.	4	147
Clay and hard sandstone strips	20	167
Clay, hard strips, and some gravel and sand; not good	11	178
Clay, hard	2	180
Magnesium clay, hard to soft	11	191
Sand and sandstone	4	195
Sandrock, hard, and clay	6	201
Sandstone and magnesium clay	10	211
Sand, some gravel, and clay	4	215
Sandstone, thin gravel, and cement gravel.	3	218
Sandstone and hard magnesium clay	15	233
Sandrock	1	234
Sandstone and magnesium clay	8	242
Sandrock	2	244
Sandstone and magnesium clay	19	263
Rock	1	264
Sandstone and hard magnesium clay	6	270
Rock	1	271
Gravel and sand.	4	275
Rock	1	276
Clay	2	278
Rock	1	279
Clay	5	284
Rock	2	286
Clay and sand.	2	288
Gravel, fine, and sand	8	296
Gravel, sand, and thin clay	6	302
Gravel, sand, cement gravel, and some clay.	4	306
Clay, some sand, and some fine gravel.	12	318
Clay, sand, and fine gravel	4	322
Gravel and sand, good.	15	337
Clay and gravel.	4	341
Sand and gravel in hard strips	12	353
Gravel, clay, and hard strips	7	360
Pierre shale:		
Shale blossom.	15	375
B2-48-28abd. Alt. 4,145.9 ft.		
Top.	6	6
Ogallala formation:		
Sand, coarse	12	18
Sand	4	22
Clay	6	28
Sand	6	34
Clay	23	57
Sand	4	61
Sand, coarse	3	64
Sand	14	78
Sand, coarse	5	83
Sandrock, hard	3	86
Sand	11	97
Gravel	3	100
Sand, coarse	9	109
Clay, sandy.	12	121
Sand, coarse	7	128
Sandrock, soft	13	141
Gravel	9	150
Sandrock, hard	4	154
Sand and sandy clay.	4	158
Sandrock	3	161
Sand and clay.	10	171
Sandrock	5	176
Sandrock, hard	2	178

Table 4.--Drillers' logs of seismograph shotholes, test holes, and wells in Yuma County.--Continued

	Thickness	Depth
B2-48-28abd.--Continued		
Sand and clay	2	180
Sandrock	3	183
Clay, sandy	1	184
Sandrock, hard	2	186
Clay, sandy	4	190
Sandrock	1	191
Clay, sandy	10	201
Sandrock	9	210
Gravel	14	224
Sandrock, hard	8	232
Clay, sandy	6	238
Sandrock, hard	4	242
Clay, sandy	8	250
Sandrock	9	259
Gravel	15	274
Clay, sandy	7	281
Sand, fine, and clay	13	294
Clay	3	297
Sand	1	298
Gravel	10	308
Sand and gravel	4	312
Pierre shale:		
Shale blossom	8	320
B3-46-7aa. Alt. 3,930.1 ft.		
Ogallala formation:		
Top	4	4
Clay and sand	4	8
Magnesium clay	8	16
Sand	2	18
Clay	4	22
Gravel and sand	9	31
Clay	2	33
Sand and some clay	13	46
Caliche	13	59
Magnesium clay, hard	22	81
Clay	9	90
Gravel, sand, and some clay	9	99
Clay and sand	7	106
Sand, fine gravel, and clay	14	120
Rock, hard	1	121
Caliche, hard	8	129
Clay and hard strips	14	143
Clay and some rock	11	154
Rock	3	157
Gravel, sand, caliche, and clay	9	166
Clay and hard strips	5	171
Gravel and sand	6	177
Sand, some gravel, some clay, and some hard strips	6	183
Sand, drills tight, and clay	13	196
Gravel and sand	3	199
Clay and some sand	7	206
Rock, hard	1	207
Sand, fine gravel, and some clay	3	210
Sand and clay	7	217
Rock	1	218
Sand and some clay	4	222
Sand and some hard strips	11	233
Sand and hard sandstone	4	237
Clay and some sand	9	246
Sand, clay, and hard strips	9	255
Rock	3	258
Rock, sand, and clay	5	263
Clay, very little fine sand, and hard strips	14	277
Sand	13	290
Sandstone and clay	3	293
Rock	1.5	294.5
Clay, fine sand, and hard strips	6.5	301
Sand, hard, and rock	7	308
Sand, clay, and some sandstone	11	319
Clay	5	324
Sand, fine gravel, and some clay	6	330
Clay and some hard strips	6	336
Gravel and sand	4	340
Clay, sand, and gravel	6	346
Clay	4	350
Gravel, sand, and a little clay	11	361
Pierre shale:		
Clay	6	367
Shale blossom	7	374
Shale	4	378

	Thickness	Depth
B3-48-2ada. Alt. 4,056.6 ft.		
Ogallala formation:		
Top soil	9	9
Clay, sandy	11	20
Sand	11	31
Clay, sandy	9	40
Sand	20	60
Clay, sandy	10	70
Sand and gravel	10	80
Clay	20	100
Sandy	10	110
Clay	10	120
Sand	20	140
Gravel	20	160
Clay and gravel strips	10	170
Clay	10	180
Clay and sand strips	22	202
Gravel, coarse	32	234
Clay	9	243
Clay, sandy	17	260
Sandrock	7	267
Sand and sandrock strips	8	275
Gravel, coarse	47.5	322.5
Pierre shale:		
Shale blossom	8.5	331
Shale, blue	9	340
B3-48-13abb. Alt. 4,061 ft.		
Ogallala formation:		
Clay	30	30
Sand and gravel	40	70
Sand and sandstone	190	260
Pierre shale:		
Clay	15	275
Shale	35	310
B3-48-20ddb. Alt. 4,136.9 ft.		
Ogallala formation:		
Top	4	4
Sand	9	13
Clay	2	15
Sand and gravel	9	24
Clay	8	32
Sand and gravel	20	52
Clay, sandy	9	61
Sandrock	7	68
Clay and sand	24	92
Clay	6	98
Gravel	13	111
Sandrock	15	126
Sand	6	132
Clay	4	136
Sandrock, soft	10	146
Clay, sandy	4	150
Sandrock	2	152
Clay, sandy	9	161
Sandrock	9	170
Sandrock, hard	10	180
Sandrock	20	200
Sand	14	214
Sandrock	3	217
Clay, sandy	12	229
Gravel	11	240
Sand, coarse	30	270
Gravel	32	302
Gravel, coarse	8	310
Gravel	13	323
Clay	11	334
Sand and gravel	8	342
Pierre shale:		
Shale blossom	8	350
B4-47-23abc. Alt. 3,967.7 ft.		
Top soil	4	4
Ogallala formation:		
Sand	17	21
Clay	6	27
Clay and sand	9	36
Sand and some clay	7	43
Gravel and sand	5	48
Clay and sand	13	61
Sand and gravel	15	76
Sand, gravel, clay, and hard strips	3	79
Sand, coarse, gravel, and some rocks	17	96
Clay and sand	4	100
Sand and gravel	24	124
Sandrock	1	125
Sandrock, soft, clay, sand, and gravel strips	12	137
Sand and gravel	31	168
Sandrock, soft, sand and gravel strips	9	177
Sand and gravel	9	186
Sandrock, soft	4	190
Sand	3	193
Clay and soft sandrock	6	199
Sand	8	207
Clay	3	210
Sand and gravel	2	212
Sandrock	2	214
Sand and gravel	2	216

	Thickness	Depth
B4-47-23abc.--Continued		
Clay	5	221
Sandrock and clay	3	224
Clay and some sand	10	234
Sand	5	239
Sandrock	2	241
Sand	5	246
Clay	4	250
Sand and gravel	3	253
Clay	2	255
Sandrock, hard	2	257
Clay	2	259
Sandrock, soft, and clay	20	279
Sand and gravel	13	292
Sandrock	2	294
Pierre shale:		
Shale blossom	8	302
B4-47-26aba. Alt. 3,984.3 ft.		
Ogallala formation:		
Soil	4	4
Clay	6	10
Caliche, clayey, hard, white	7	17
Gravel and rocks	19	36
Clay	8	44
Clay and sand	13	57
Sandstone and clay	4	61
Sand	5	66
Sandstone, sand, and clay	7	73
Clay and sand	8	81
Sand to gravel, fine, loose	13	94
Clay interbedded with sandstone	7	101
Sand and clay interbedded with thin strips of sandstone	12	113
Gravel and sand, loose	15	128
Clay and sand interbedded with thin strips of sandstone	20	148
Sand, gravel, and clay; contains some sandstone	17	165
Gravel and sand	5	170
Sandstone, sand, and clay	11	181
Sand and clay	5	186
Gravel and sand	4	190
Sandstone	6	196
Gravel	3	199
Gravel and clay	2	201
Clay and sand	4	205
Sand	5	210
Sandstone	2.5	212.5
Gravel and sand; contains water	10	222.5
Clay interbedded with thin strips of gravel and sand	6.5	229
Sandstone, hard	2	231
Clay interbedded with thin strips of gravel and sand	3	234
Sandstone, soft	6	240
Sand, loose	9	249
Sandstone, hard	2	251
Sandstone, hard to soft	6	257
Sandstone, soft, and sand; contains pebbles	6	263
Clay, soft	10.5	273.5
Clay; contains some gravel and sand	1.5	275
Gravel, coarse, loose	4	279
Sandstone; contains a little gravel and sand	2	281
Clay and sandstone	4	285
Gravel and sand; fairly loose	10	295
Pierre shale:		
Clay, yellow	5	300
B4-47-32cbb. Alt. 4,018.8 ft.		
Ogallala formation:		
Top soil	4	4
Clay, sand, and gravel strips	151	155
Gravel, tight, and loose strips	14	169
Sandstone, soft	2	171
Gravel	7	178
Sandstone	8	186
Gravel	8	194
Clay, sandy	17	211
Gravel, thin sandy clay strips	9	220
Clay	3	223
Sandstone	1	224
Clay, sandy	16	240
Sandstone	3	243
Clay	3	246
Gravel	39	285
Clay	2	287

Table 4.--Drillers' logs of seismograph shotholes, test holes, and wells in Yuma County.--Continued

	Thickness	Depth
B4-47-32cbb.--Continued		
Gravel.	2	289
Pierre shale:		
Clay.		289
B4-48-1bcc. Alt. 4,009.3 ft.		
Ogallala formation:		
Top	4	4
Gravel and sand	5	9
Clay.	12	21
Gravel, coarse, loose	5	26
Clay.	9	35
Clay and some sand.	6	41
Clay.	8	49
Sand and gravel	5	54
Clay.	35	89
Gravel, sand, and clay.	13	102
Gravel and sand	15	117
Gravel, sand, and clay.	27	144
Gravel and sand	8	152
Clay and thin hard strips	15	167
Gravel and sand	10	177
Clay.	11	188
Clay, gravel, and sand.	6	194
Gravel, sand, and clay.	5	199
Gravel and sand	16	215
Gravel, sand, and clay.	5	220
Clay.	4	224
Gravel, sand, and clay.	10	234
Gravel, sand, and clay in strips (50-50)	12	246
Rock.	1	247
Gravel and sand	11	258
Clay and gravel	1	259
Gravel and sand	2	261
Rock.	1	262
Gravel and sand	4	266
Rock.	1	267
Gravel and sand	3	270
Rock.	.5	270.5
Gravel and sand	1.5	272
Clay.	4	276
Rock and clay	1	277
Clay and sand	7	284
Sand, fine, sand, and clay.	8	292
Clay and some sand.	9	301
Gravel, good.	4	305
Clay, sand, and gravel.	3	308
Sand and gravel	10	318
Clay and sand	3	321
Rock.	1	322
Sand and gravel	4	326
Gravel and sand, good	15	341
Clay.	1	342
Gravel and sand	6	348
Clay and sand	7	355
Gravel and sand	5	360
Clay.	1	361
Gravel and sand	7	368
Clay and sand	6	374
Rock.	1	375
Clay and rock	1	376
Gravel and sand	8	384
Pierre shale:		
Shale, blossom.	2	386
Shale, blue		386
B4-48-7cdd. Alt. 4,160 ft.		
Ogallala formation:		
Sand and clay	50	50
Sand and gravel	80	130
Sandstone	55	185
Sand and gravel	85	270
Pierre shale:		
Clay.	10	280
Shale	20	300
B4-48-19cdd. Alt. 4,162 ft.		
Ogallala formation:		
Sand and gravel	140	140
Sandstone	70	210
Gravel.	30	240
Pierre shale:		
Shale	60	300
B4-48-31aaa. Alt. 4,118 ft.		
Ogallala formation:		
Sand and gravel	80	80
Rock hard	5	85
Sand and gravel	190	275
Pierre shale:		
Clay.	5	280
Shale	20	300
B5-47-22bdb. Alt. 3,979.1 ft.		
Ogallala formation:		
Top	3	3
Sand, gravel, and sandy clay strips	155	158
Sandrock, hard.	4	162
Sand, gravel, and sandy clay strips	38	200
Sand, tight	8	208
B5-47-22bdb.--Continued		
Clay, sandy	10	218
Gravel.	6	224
Clay, sandy	18	242
Sandrock.	1	243
Clay, sandy	2	245
Gravel and some clay strips	29	274
Gravel.	26	300
Clay, sandy	22	322
Sandrock and clay	2	324
Sand and some gravel.	2	326
Sandrock and clay	4	330
Sandrock.	2	332
Clay, sandy	2	334
Gravel.	6	340
Clay.	2	342
Gravel.	16	358
Clay, sandy	1	359
Gravel.	9	368
Pierre shale:		
Shale		368
C1-44-27bbb. Alt. 3,862.3 ft.		
Ogallala formation:		
Top soil.	2	2
Clay.	117	119
Sandrock.	1	120
Gravel.	3	123
Clay.	4	127
Gravel.	3	130
Sandrock.	1	131
Clay.	8	139
Sand.	3	142
Sand, coarse.	3	145
Clay.	9	154
Gravel.	3	157
Clay.	1	158
Gravel.	2	160
Clay.	50	210
Gravel.	4	214
Clay.	2	216
Gravel.	24	240
Clay.	1	241
Gravel.	4	245
Clay.	10	255
Gravel.	2	257
Pierre shale:		
Clay, yellow.	61	318
C1-47-30aad. Alt. 4,163 ft.		
Dune sand:		
Sand.	12	12
Ogallala formation:		
Clay, sandy	58	70
Sand, with sandstone.	110	180
Clay, sandy	35	215
Sand.	43	258
Pierre shale:		
Clay, yellow.	32	290
Clay, blue.	20	310
C1-48-34dda. Alt. 4,232.9 ft.		
Dune sand:		
Sand.	25	25
Ogallala formation:		
Clay, sandy	65	90
Sand and gravel	300	390
Pierre shale:		
Shale	60	450
C2-43-14aca. Alt. 3,470.9 ft.		
Alluvium:		
Top soil.	4	4
Clay.	8	12
Sand and gravel	7	19
Sand.	8	27
Sand and gravel	11	38
Clay.	2	40
Sand.	12	52
Sand and gravel	26	78
Pierre shale:		
Shale	6	84
C2-43-22adb. Alt. 3,494.8 ft.		
Alluvium:		
Sand.	6	6
Sand and gravel, loose.	3	9
Sand and gravel, cemented	4	13
Sand and gravel, loose.	5	18
Clay, sticky, and yellow shale with sand and gravel.	3	21
Sand and gravel, loose.	3	24
Shale, sticky, with sand and gravel.	3	27
Sand and gravel, loose.	2	29
Shale, sticky, with trace of sand	6	35
Shale, blue, hard	2	37
Sand and gravel, very loose	11	48
Shale, blue	1	49
Sand and gravel, very loose	7.5	56.5
Pierre shale:		
Shale, blue		56.5
C2-45-10bba. Alt. 3,932.3 ft.		
Peorian loess:		
Clay.	26	26
Ogallala formation:		
Gravel.	4	30
Clay.	30	60
Sand.	24	84
Gravel.	3	87
Clay.	11	98
Gravel.	27	125
Rock.	3	128
Pierre shale:		
Rock and shale.	7	135
C2-45-28bab. Alt. 3,985.5 ft.		
Ogallala formation:		
Soil, sandy	8	8
Clay, magnesium	17	25
Gravel, dry	5	30
Sandstone	30	60
Gravel, water-bearing	4	64
Pierre shale:		
Clay turning to shale	8	72
C2-47-7ddd. Alt. 4,181 ft.		
Dune sand:		
Sand.	18	18
Ogallala formation:		
Clay, sandy	17	35
Sand with sandstone	213	248
Sandstone, hard	5	253
Sand.	12	265
Pierre shale:		
Clay, yellow.	25	290
Clay, blue.	40	330
C2-47-15bca. Alt. 4,160 ft.		
Dune sand:		
Sand, loose	8	8
Ogallala formation:		
Sand and clay	78	86
Sand.	156	242
Shale, gray	8	250
Sand.	11	261
Pierre shale:		
Shale, blue	49	310
C3-42-8ccc. Alt. 3,797.2 ft.		
Peorian loess:		
Top soil.	3	3
Clay, yellow.	83	86
Ogallala formation:		
Sandstone, hard	.5	86.5
Clay, sandy, white.	4.5	91
Clay, sandy	28	119
Sand.	1	120
Clay, sandy	15	135
Sandstone, brown.	3	138
Clay, sandy	2	140
Sand.	18	158
Sandstone, brown.	2	160
Sand and gravel	8	168
Clay, sandy, hard	3	171
Sandstone	5	176
Sand and gravel	3	179
Clay, hard, brown, with thin layers of rock	24	203
Sandstone	4	207
Clay, hard, sandy	18	225
Rock, brown	2	227
Clay, soft, sandy	4	231
Rock, hard.	3	234
Sand and gravel, cemented	7	241
Sand and gravel	6	247
Pierre shale:		
Shale, gray	1	248
C3-42-34cbb. Alt. 3,755.2 ft.		
Peorian loess:		
Top soil.	79	79
Ogallala formation:		
Clay, sandy	16	95
Gravel.	46	141
Sand, clay, and rock.	14	155
Rock.	2	157
Sand and rock	21	178
Rock, sandy	7	185
Sand and gravel	12	197
Sand and rock	4	201
Rock, hard.	2	203
Sand.	2	205
Rock, hard.	2	207
Sand and gravel	20	227
Rock.	1	228
Gravel and rock	7	235
Sand and clay	7	242
Sand.	4	246
Sand and gravel	10	256
Sand, clay, and gravel.	6	262
Gravel.	8	270
Sand.	2	272
Pierre shale:		
Shale	4	276

Table 4.--Drillers' logs of seismograph shotholes, test holes, and wells in Yuma County.--Continued

	Thickness	Depth
C3-43-28adc. Alt. 3,866.8 ft.		
Peorian loess:		
Clay and top soil	95	95
Ogallala formation:		
Clay, sandy	29	124
Gravel, rocky	4	128
Clay, sandy	6	134
Gravel, rocky	6	140
Gravel	10	150
Clay	5	155
Gravel	8	163
Rock	2	165
Clay	12	177
Rock	1	178
Clay	5	183
Rock	2	185
Gravel	13	198
Rock	2	200
Gravel	2	202
Clay	6	208
Gravel	4	212
Clay and rock	3	215
Gravel	9	224
Clay and gravel	6	230
Gravel, clean	14	244
Clay	6	250
Clay, sandy	28	278
Pierre shale:		
Shale	12	290
C3-45-2aac. Alt. 3,895.2 ft.		
Ogallala formation:		
Magnesia	16	16
Sand, water-bearing	2	18
Clay	17	35
Sandstone	10	45
Sand, water-bearing	5	50
Pierre shale:		
Shale	2	52
C3-45-33caa. Alt. 3,844.8 ft.		
Alluvium:		
Top	2	2
Gravel	33	35
Clay and gravel	15	50
Pierre shale:		
Shale	3	53
C3-47-6aaa. Alt. 4,241.0 ft.		
Ogallala formation:		
Top	4	4
Sand and rock	46	50
Clay and rock	57	107
Gravel	2	109
Rock	7	116
Pierre shale:		
Clay	8	124
Shale	6	130
C3-47-10cab. Alt. 4,152.0 ft.		
Ogallala formation:		
Sand	13	13
Clay	6	19
Sand and gravel	3	22
Pierre shale:		
Shale	14	36
C4-42-3bbb. Alt. 3,751.0 ft.		
Peorian loess:		
Clay	69	69
Ogallala formation:		
Gravel	67	136
Clay, gravel, and rock	21	157
Rock, soft and sand	19	176
Rock and sand	15	191
Gravel	25	216
Clay, sand, and gravel	7	223
Gravel	9	232
Gravel and sand	6	238
Shale, yellow	4	242
Sand and clay	10	252
Sand and gravel	15	267
Sand and shale	3	270
Pierre shale:		
Shale	10	280
C4-42-33caa. Alt. 3,649 ft.		
Peorian loess:		
Surface	3	3
Clay, sandy	37	40
Ogallala formation:		
Sand and sandy clay	97	137
Sand and gravel	33	170
Pierre shale:		
Clay, yellow	8	178
Shale, blue	7	185
C4-43-13aba. Alt. 3,791.4 ft.		
Peorian loess:		
Top soil	6	6
Clay	49	55
Ogallala formation:		
Gravel	49	104
C4-43-13aba.--Continued		
Clay	4	108
Gravel	17	125
Clay	30	155
Gravel	17	172
Rock	35	207
Sand	6	213
Clay	11	224
Gravel, fine	30	254
Pierre shale:		
Shale	11	265
C4-43-24cab. Alt. 3,695.7 ft.		
Ogallala formation:		
Clay and sand	20	20
Sandstone, clay, and rock	40	60
Gravel	10	70
Clay, sandy	10	80
Clay, sandy, and rock	14	94
Rock and gravel	6	100
Clay, sandy	20	120
Rock, and sandy clay	18	138
Gravel	14	152
Pierre shale:		
Shale	8	160
C4-43-26cbb. Alt. 3,823.5 ft.		
Peorian loess:		
Top soil	3	3
Clay	61	64
Ogallala formation:		
Clay and gravel strips	4	68
Gravel	9	77
Clay	7	84
Gravel	10	94
Sandrock and gravel strips	3	97
Sandrock and clay strips	3	100
Sand	4	104
Clay and gravel strips	4	108
Clay and sand strips	15	123
Sand and clay	14	137
Gravel	7	144
Clay and gravel, mixed	11	155
Gravel and sand strips	18	173
Clay	3	176
Sandrock, hard	9	185
Clay	30	215
Sand, coarse, and some gravel	13	228
Clay	3	231
Sandrock, soft, and clay	8	239
Gravel	3	242
Sandrock, soft	1	243
Gravel	26	269
Pierre shale:		
Clay	10	279
Shale	2	281
C4-43-33cdd. Alt. 3,826 ft.		
Ogallala formation:		
Sand and sandy clay	120	120
Sand	50	170
Clay	50	220
Sand and gravel	35	255
Pierre shale:		
Clay, yellow, and shale	25	280
C4-43-35caa. Alt. 3,784.2 ft.		
Peorian loess:		
Clay	37	37
Ogallala formation:		
Clay and gravel	3	40
Gravel	10	50
Clay	4	54
Clay and gravel	6	60
Sand, fine	25	85
Clay	5	90
Sand, hard, and clay	20	110
Sand and gravel	8	118
Clay	6	124
Sand, fine	6	130
Clay	2	132
Rock, white	5	137
Clay, white	8	145
Rock, white	11	156
Clay	9	165
Sand and gravel	6	171
Clay and white rock	13	184
Sand, fine	2	186
Clay and rock	1	187
Gravel	13	200
Clay, sandy	8	208
Gravel	8	216
Clay, sandy	9	225
Sand, fine, and gravel	15	240
Gravel	17	257
Pierre shale:		
Shale	3	260
C4-44-4bdc. Alt. 3,991.9 ft.		
Peorian loess:		
Clay	95	95
Ogallala formation:		
Gravel	50	145
Clay	5	150
Sand and rock	90	240
Rock and gravel	20	260
Gravel	18	278
Clay	23	301
Gravel	8	309
Pierre shale:		
Shale	5	314
C4-44-5ddc. Alt. 4,018.4 ft.		
No samples	224	224
Ogallala formation:		
Gravel, good	23	247
Clay	1	248
Gravel, good, containing small strips of clay	7	255
Clay, sandy, with some sand	18	273
Clay, containing strips of rock	12	285
Sand	2	287
Clay, containing strips of sand	7	294
Sandstone, interbedded with clay	8	302
Sand and gravel, loose	13	315
Clay, sandy	5	320
Sand, containing small strips of clay	12	332
Pierre shale:		
Shale	4	336
C4-44-10ddd. Alt. 3,960.6 ft.		
Peorian loess:		
Soil	4	4
Clay	52	56
Ogallala formation:		
Caliche, soft	20	76
Caliche, hard	10	86
Gravel	5	91
Clay	5	96
Clay and gravel	12	108
Gravel	4	112
Clay, sandy	14	126
Gravel	11	137
Caliche and clay	4	141
Caliche, hard	2	143
Caliche, hard, and clay	11	154
Caliche	2	156
Clay, sandy	2	158
Caliche, hard	1	159
Sandstone and clay	4	163
Gravel and strips of rock	5	168
Clay, sandy	2	170
Gravel	4	174
Clay and gravel	4	178
Gravel	6	184
Caliche	5	189
Gravel	5	194
Rock	2	196
Clay, sandy	2	198
Rock and hard caliche	6	204
Rock, very hard	9	213
Clay	3	216
Gravel, coarse, very loose	15	231
Sand and clay	5	236
Conglomerate and strips of clay	27	263
Conglomerate, hard	1	264
Clay	1	265
Sandstone	5	270
Clay, sandy	9	279
Gravel	3	282
Clay, sandy	4	286
Gravel	4	290
Clay, sandy	2	292
Gravel, loose, and strips of clay	19	311
Clay	2	313
Gravel, medium, loose	13	326
Pierre(?) shale:		
Clay		326
C4-44-25abb. Alt. 3,917.1 ft.		
Peorian loess:		
Top sand	2	2
Clay	71	73
Ogallala formation:		
Gravel	9	82
Clay and gravel	10	92
Sandstone	2	94
Clay and sandstone strips	6	100
Clay	4	104
Rock	1	105
Clay and sandstone strips	11	116
Gravel	30	146
Clay	13	159
Gravel	10	169

Table 4.--Drillers' logs of seismograph shotholes, test holes, and wells in Yuma County.--Continued

	Thickness	Depth
C4-44-25abb.--Continued		
Clay with gravel.	13	182
Gravel.	26	208
Clay and sandstone.	16	224
Clay and sandstone with some gravel	35	259
Gravel and clay strips.	21	280
Gravel, coarse, with thin clay strips	20	300
Pierre shale:		
Shale blossom	4	304
Shale, blue	1	305
C4-44-27bbc. Alt. 3,968.0 ft.		
Peorian loess:		
Top soil.	5	5
Clay.	75	80
Ogallala formation:		
Gravel.	14	94
Clay.	6	100
Rock.	20	120
Clay.	5	125
Gravel.	5	130
Rock, hard.	20	150
Gravel, clean	5	155
Gravel.	52	207
Rock.	3	210
Gravel.	5	215
Rock.	6	221
Gravel.	9	230
Sand, fine.	7	237
Clay and rock	8	245
Sand, fine.	10	255
Rock.	4	259
Sand, fine.	1	260
Rock.	2	262
Sand.	6	268
Rock.	8	276
Sand.	12	288
Gravel.	20	308
Pierre shale:		
Shale, yellow	21	329
Shale, blue		329
C4-44-31cbd. Alt. 4,009.7 ft.		
Peorian loess:		
Top soil.	3	3
Clay.	48	51
Ogallala formation:		
Magnesium clay.	19	70
Clay, sandy, and some sandrock.	18	88
Gravel.	6	94
Clay, sandy	12	106
Rock and some clay.	14	120
Clay, sandy, and some gravel.	13	133
Rock and some clay.	4	137
Clay, sandy	36	173
Gravel.	11	184
Clay, sandy	8	192
Rock.	1	193
Clay, sandy	3	196
Gravel.	23	219
Clay, sandy	31	250
Gravel.	6	256
Clay, sandy, and some sandrock.	16	272
Gravel.	4	276
Clay, sandy	16	292
Gravel.	6	298
Pierre shale:		
Shale	2	300
C4-45-33abb. Alt. 4,081.3 ft		
Peorian loess:		
Top sand.	7	7
Clay and brule.	4	11
Loam.	16	27
Clay.	52	79
Ogallala formation:		
Gravel, sand, and clay.	4	83
Gravel and sand	8	91
Sand, gravel, and dirty clay.	9	100
Clay.	12	112
Magnesium clay, hard; drills fair	37	149
Gravel, sand, and some clay.	8	157
Clay, thin hard strips.	13	170
Gravel and sand	5	175
Clay and some sandstone	5	180
Gravel and sand	6	186
Clay, sand, and gravel (no good)	7	193
Gravel, sand, and clay, dirty	2	195
Gravel, sand, sandstone, and caliche, not good	6	201
Gravel and sand	2	203
Clay.	5	208
Clay, gravel, and sand.	4	212
Gravel, dirty sand, and clay.	12	224

	Thickness	Depth
C4-45-33abb.--Continued		
Clay and some sandstone	11	235
Clay and sand, dirty.	5	240
Clay.	6	246
Gravel, sand, and caliche, dirty	5	251
Clay, caliche, and sandstone	17	268
Gravel and sand, fair	5.5	273.5
Clay and sand, fine and dirty	4.5	278
Clay.	4	282
Clay, sand, and fine gravel.	3	285
Gravel and a little thin clay.	4	289
Gravel, good.	9	298
Rock.	1	299
Clay and hard sandstone	2	301
Clay and sand	2	303
Sand, fine gravel, and some clay	2	305
Gravel, good.	15	320
Pierre shale:		
Clay turning to shale	20	340
C4-47-25ddb. Alt. 4,171.1 ft.		
Ogallala formation:		
Soil.	5	5
Clay and sand	4	9
Caliche and clay.	8	17
Gravel and sand	19	36
Caliche and gravel.	9	45
Clay.	10	55
Clay and gravel, solid.	6	61
Clay and sandstone, thin.	12	73
Caliche and sandstone	5	78
Clay.	4	82
Clay and sandstone.	14	96
Clay and sandstone; contains a little gravel	4	100
Clay and sandstone.	2	102
Rock.	3	105
Clay.	1	106
Clay, thin sandstone, and gravel.	6	112
Gravel and sand, solid.	3	115
Clay, sandstone, and gravel.	3	118
Sandstone, solid.	2	120
Gravel and sand	4	124
Sandstone, solid.	3	127
Sandstone, soft, and clay	6	133
Sandstone, soft and hard, and clay.	8	141
Clay, containing thin strips of soil and hard sandstone	16	157
Clay and sand	1	158
Clay and soft sandstone	14	172
Clay, sandstone, and sand; interbedded	10	182
Gravel and sand, loose and tight	15	197
Clay.	4	201
Clay and dirty fine sand.	3	204
Clay.	5	209
Clay, containing thin strips of sand.	7	216
Clay, sand, and gravel.	4	220
Clay.	5	225
Gravel, coarse, and fairly loose sand	16	241
Clay, containing thin strips of fine sand	14	255
Gravel, coarse, tight, and sand; contains a little clay	10	265
Pierre shale:		
Shale, yellow	9	274
Shale, yellow to blue	13	287
Shale, blue	1	288
C4-47-27ddb. Alt. 4,194.3 ft.		
Ogallala formation:		
Top	1	1
Clay.	2	3
Sand, gravel, and clay.	3	6
Clay, magnesia, and soft sandstone	11	17
Sand and gravel	14.5	31.5
Sandstone, soft	.5	32
Clay, sandy, sand and gravel strips	51	83
Sand, dirty	10	93
Clay, sandy.	3.5	96.5
Sandstone	1.5	98
Sandstone, soft	5	103
Sand and gravel, dirty.	10	113
Clay, and sandy gravel.	5	118
Sandstone, soft, and sandy clay.	9	127
Sand, dirty	5	132
Sand.	6	138

	Thickness	Depth
C4-47-27ddb.--Continued		
Sandstone.	1	139
Clay	5	144
Sand, fine, and small clay strips	14	158
Clay and sand.	27	185
Clay	8	193
Sand	5	198
Clay	2	200
Sand	3	203
Clay	3	206
Sandstone, soft.	1	207
Sand and gravel.	10	217
Sandstone.	3	220
Clay, jointed.	20	240
Gravel	5	245
Clay	3	248
Sand and gravel.	7	255
Pierre shale:		
Clay	5	260
C4-48-13bdc. Alt. 4,200.4 ft.		
Alluvium:		
Top.	3	3
Gravel	32	35
Clay	13	48
Ogallala(?) formation:		
Gravel, rocky.	25	73
Pierre shale:		
Shale.	2	75
C4-48-35dab. Alt. 4,297.6 ft.		
Ogallala formation:		
Top soil	3	3
Gravel, sandstone, clay, and clay sand.	77	80
Gravel, coarse	8	88
Sandstone.	2	90
Gravel, coarse	14	104
Clay and sand, mixed	12	116
Gravel, tight.	4	120
Clay	4	124
Gravel, coarse	4	128
Clay and gravel, mixed	12	140
Sandstone, soft.	10	150
Gravel	20	170
Clay	14	184
Gravel	21	205
Clay and sandstone	55	260
Pierre shale:		
Shale.		260
C5-42-4cda. Alt. 3,537.7 ft.		
Alluvium:		
Top soil	6	6
Clay	1	7
Mud, black	6	13
Sand and gravel.	25	38
Ogallala formation:		
Sandrock, soft	2	40
Sandrock, hard	6	46
Sand and gravel.	6	52
Pierre shale:		
Shale, yellow.	1	53
C5-42-9caa. Alt. 3,541.5 ft.		
Alluvium:		
Top soil	4	4
Clay, sandy.	8	12
Ogallala formation:		
Sand and gravel, cemented.	10	22
Sandrock	5	27
Sand and gravel.	8	35
Sand and gravel with layers of shale	10	45
Shale with sand and gravel	4	49
Pierre shale:		
Shale, gray.	4	53
C5-42-15dba. Alt. 3,644 ft.		
Ogallala formation:		
Surface.	3	3
Sand	9	12
Clay, sandy.	63	75
Sand and gravel.	83	158
Pierre shale:		
Clay, yellow	6	164
Shale, blue.	11	175
C5-42-34acd. Alt. 3,712 ft.		
Peorian loess:		
Clay, sandy.	30	30
Ogallala formation:		
Sand and gravel.	35	65
Sand	35	100
Clay, sandy.	50	150
Sand	20	170
Sand and gravel.	15	185
Pierre shale:		
Clay and shale	15	200

Table 4.--Drillers' logs of seismograph shotholes, test holes, and wells in Yuma County.--Continued

	Thickness	Depth
C5-43-18cbb. Alt. 3,713.4 ft.		
Ogallala formation:		
Top soil	4	4
Sand and clay	14	18
Sand and gravel	9	27
Sand and clay	7	34
Clay	7	41
Sand and gravel	53	94
Clay	4	98
Sand and gravel	10	108
Pierre shale:		
Shale	4	112
C5-43-23bcd. Alt. 3,721 ft.		
Ogallala formation:		
Surface	3	3
Sand and sandy clay	77	80
Gravel	25	105
Clay, sandy	35	140
Sand and gravel	22	162
Pierre shale:		
Clay, yellow	8	170
Shale, blue	15	185
C5-43-32cdc. Alt. 3,838 ft.		
Peorian loess:		
Surface	3	3
Clay, sandy	37	40
Ogallala formation:		
Gravel	25	65
Clay, sandy	25	90
Sand	75	165
Clay, sandy	42	207
Sand and gravel	26	233
Pierre shale:		
Clay, yellow	6	239
Shale, blue	6	245
C5-44-5abb. Alt. 3,979.6 ft.		
Peorian loess:		
Top loam	2	2
Clay with fine sand	50	52
Ogallala formation:		
Clay and sandrock	12	64
Gravel	21	85
Rock	2	87
Clay	5	92
Rock	8	100
Gravel	27	127
Sandrock	5	132
Clay, sandrock, some sandy clay	5	137
Clay and sandrock	13	150
Gravel	11	161
Clay and sandrock; with some gravel	21	182
Rock	1	183
Clay and sandrock	16	199
Gravel	18	217
Clay, sandrock, and some gravel	8	225
Gravel	4	229
Rock	1	230
Gravel strips	2	232
Clay with some gravel	9	241
Gravel	6	247
Clay strips	1	248
Gravel and clay	9	257
Clay	5	262
Clay and sandrock	18	280
Gravel	9	289
Pierre shale:		
Shale, blossom	8	297
Shale, blue	5	302
C5-44-9bab. Alt. 3,932.6 ft.		
Peorian loess:		
Top soil	3	3
Clay	4	47
Ogallala formation:		
Clay, sandy	14	61
Sand and gravel	14	75
Clay, sandy, and rock	19	94
Sand and gravel	3	97
Clay, sandy, and gravel	17	114
Gravel and some clay	11	125
Clay, sandy	8	133
Clay, sandy, and sandrock	6	139
Sand and gravel	6	145
Clay, sandy	11	156
Clay, sandy, and sandrock	20	176
Gravel	8	184
Clay, sandy, and sandrock	20	204
Gravel, sand, and clay	48	252
Pierre shale:		
Shale	8	260
C5-44-14caa. Alt. 3,726.2 ft.		
Ogallala formation:		
Top soil	1	1
Gravel	4	5
Clay and sand	6	11
Gravel	11	22
Clay	3	25
Sand, loose, not clean	9	34
Sandrock	2	36
Clay, sand, and gravel strips	2	38
Clay	2	40
Sand and gravel	1	41
Clay	6	47
Gravel	7	54
Clay	1	55
Gravel	3	58
Sandrock and clay	1	59
Gravel	6	65
Pierre shale:		
Clay and shale	5	70
C5-44-16abc. Alt. 3,890.1 ft.		
Peorian loess:		
Top soil	3	3
Clay	15	18
Ogallala formation:		
Clay, sandy	31	49
Sand and gravel	7	56
Clay, sandy	11	67
Gravel	12	79
Clay, sandy	12	91
Rock and clay	16	107
Gravel and sand	8	115
Sand, clay, and rock	23	138
Sand and gravel	6	144
Clay, sandy	15	159
Sand and gravel	7	166
Sand and sandrock	12	178
Clay, sandy	3	181
Rock	2	183
Clay, sandy	3	186
Sand and sandrock	11	197
Rock	4	201
Sand and gravel	5	206
Clay, sandy	2	208
Gravel	7	215
Pierre shale:		
Shale	8	223
C5-44-17bbc. Alt. 3,833.8 ft.		
Ogallala formation:		
Top soil	2	2
Clay	2	4
Sand and gravel	13	17
Clay	14	31
Sand and gravel	17	48
Sandrock	3	51
Sand and gravel	5	56
Rock	1	57
Clay	2	59
Gravel	2	61
Clay and sandrock	3	64
Sand and gravel	16	80
Sandrock	4	84
Sand and gravel	9	93
Rock	1	94
Clay	6	100
Sand and gravel	23	123
Pierre shale:		
Shale	8	131
C5-44-21cbc. Alt. 3,752.7 ft.		
Alluvium:		
Top soil	3	3
Sand and gravel	12	15
Clay	9	24
Sand and some clay	7	31
Sand	5	36
Rock	1	37
Clay	6	43
Sand and gravel	16	59
Pierre shale:		
Shale	13	72
C5-44-22dca. Alt. 3,733.7 ft.		
Alluvium:		
Top soil	5	5
Sand, fine	10	15
Sand and gravel	49	64
Pierre shale:		
Shale	10	74
C5-44-23dcd. Alt. 3,728.5 ft.		
Soil	5	5
Ogallala formation:		
Clay and gravel; contains soft rock	2	7
Clay, containing strips of gravel and rock	14	21
Clay and gravel	9	30
Gravel, coarse, very loose	11	41
Clay	1	42
Gravel, coarse, very loose	5	47
Sand and gravel, loose; contains strips of clay	5	52
Gravel, very loose; contains strips of clay	23	75
Pierre shale:		
Shale, yellow	5	80
Shale, blue	5	85
C5-44-29bdc. Alt. 3,773.0 ft.		
Top soil	16	16
Alluvium:		
Sand and gravel	38	54
Rock	4	58
Gravel	9	67
Pierre shale:		
Shale	7	74
C5-44-30bcb. Alt. 3,812.7 ft.		
Ogallala formation:		
Clay	21	21
Gravel	10	31
Caliche	6	37
Clay	6	43
Gravel, coarse	10.5	53.5
Caliche, soft	4.5	58
Clay	2	60
Gravel	3	63
Sandstone	1	64
Gravel	21	85
Pierre shale:		
Shale		85
C5-47-2acc. Alt. 4,200.2 ft.		
Ogallala formation:		
Top soil	2	2
Sand	8	10
Clay	9	19
Gravel	18	37
Clay, sandy	16	53
Sand and gravel	4	57
Soft sandrock	1	58
Clay, sand, and gravel strips	7	65
Clay, sandy	10	75
Sand and gravel	25	100
Clay and sand	11	111
Sand and gravel	8	119
Sandrock, soft	6	125
Sand and gravel	2	127
Sandrock, soft	2	129
Clay	11	140
Sand and gravel	17	157
Sand	2	159
Clay and fine sand	16	175
Sandrock, soft	1	176
Sand and gravel	4	180
Clay	5	185
Sand	3	188
Sandrock, soft	1	189
Clay	4	193
Sand	7	200
Clay	2	202
Sand and gravel	7	209
Sandrock, soft, and clay	1	210
Sand and gravel	17	227
Clay	2	229
Sand and gravel	7	236
Clay	11	247
Sand and gravel	2	249
Sandrock, soft	6	255
Sand and gravel	6	261
Clay	9	270
Sand and gravel	19	289
Pierre shale:		
Clay and shale	8	297
C5-47-4bca. Alt. 4,237.5 ft.		
Ogallala formation:		
Soil	10	10
Caliche	4	14
Gravel, clay, and strips of soft sandstone	92	106
Gravel	12	118
Gravel and sandstone	43	161
Gravel	12	173
Pierre shale:		
Shale, clayey, blue	3	176
C5-47-14dcb. Alt. 4,209.5 ft.		
Ogallala formation:		
Top soil	5	5
Clay, sandy	8	13
Gravel	8	21
Clay	2	23
Gravel	11	34
Clay	3	37
Gravel	3	40
Clay	10	50
Gravel	11	61
Clay	13	74
Gravel	13	87
Clay	10	97
Gravel, sand, some clay	14	111
Clay	19	130
Sandstone, soft	7	137
Clay	41	178

Table 4.--Drillers' logs of seismograph shotholes, test holes, and wells in Yuma County.--Continued

	Thickness	Depth
C5-47-14dcb.--Continued		
Sand and gravel	4	182
Gravel	28	210
Sandstone	1	211
Gravel	8	219
Clay	4	223
Gravel	12	235
Pierre shale:		
Clay	5	240

	Thickness	Depth
C5-47-16adb. Alt. 4,240.8 ft.		
Ogallala formation:		
Soil	3	3
Clay, yellow	15	18
Clay	5	23
Gravel	13	36
Clay	7	43
Caliche	14	57
Sandstone, soft	5	62
Conglomerate	2	64
sand and gravel	13	77
Sandstone	6	83
Sand; contains strips of rock	4	87
Sandstone	7	94
Sand and gravel	13	107
Gravel	7	114

	Thickness	Depth
C5-47-16adb.--Continued		
Clay, sandy	3	117
Gravel	12	129
Clay, jointed	28	157
Clay	3	160
Sand, fine; contains strips of clay and rock	8	168
Clay, sandy	1	169
Sandstone	1	170
Sand, fine; contains strips of sandy clay	7	177
Clay, sandy	7	184
Sand and gravel, loose	14	198
Clay, sandy, and gravel	1	199
Sand and gravel, loose	15	214
Pierre(?) shale:		
Clay	1	215

Table 5.--Analyses of water from selected wells in Yuma County.

[Analyzed by U.S. Geological Survey. Results in parts per million except as indicated. Geologic source. O, Ogallala formation, A, alluvium]

Location	Depth (feet)	Geologic source	Date of collection	Temperature (°F)	pH	Specific conductance (micromhos at 25°C)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium and potassium (Na + K)		Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (sum)	Hardness as $CaCO_3$	
																				Total	Noncarbonate
B1-44-10bbb	56	A	8-22-57	55	7.7	649			66	19.0	43.0	14.0	325	71.0	8.0	1.6	0.4		383	243	0
B1-45-27bbb	260	O	9- 4-57	58	7.8	314			32	13.0	12.0	8.0	181	11.0	3.0	1.2	2.6		172	133	0
B2-42-27bbc	140	O	8- 3-57	57	7.6	354			43	8.8	13.0	9.6	199	9.7	4.5	.8	8.0		195	144	0
B2-44-36bbb2	180	O	1-12-57	58	7.6	337	68	0.03	35	11.0	17.0	8.2	186	13.0	6.0	.9	5.6		256	133	0
B2-46-26bcc	317	O	8-22-57	60	7.7	328	60	.04	40	9.7	9.1	8.2	183	7.8	4.5	1.0	7.3		238	140	0
B2-47-17dda	420	O	8-22-57	59	7.7	338			38	9.7	15.0	8.2	182	16.0	5.5	.9	5.4		188	135	0
B2-48-22bad	312	O	1-12-57	56	7.6	341	62	.02	37	10.0	17.0	8.2	182	16.0	6.0	.9	6.9		253	133	0
B2-48-28abd	316	O	8-22-57	60	7.8	340			37	11.0	15.0	8.2	182	15.0	5.5	.9	4.7		186	138	0
B3-43-33cda	118	O	8-22-57	57	7.6	322			45	7.8	7.6	7.8	188	7.2	2.5	.7	5.8		176	144	0
B3-46-7aa	378	O	8-22-57	60	7.8	348			34	12.0	17.0	9.4	182	15.0	5.0	1.0	6.9		189	134	0
B4-44-14bcb	60	O	9-26-57	56	7.7	413			61	8.8	6.3	9.6	224	8.4	6.0	.3	20.0		230	188	5
B4-47-32cbb	292	O	9- 4-57	59	7.8	308			32	11.0	14.0	8.0	167	13.0	4.0	1.0	5.9		171	125	0
B5-43-24abb	260	O	8-22-57	57	7.8	362			42	14.0	9.1	8.6	176	33.0	3.5	.7	6.4		204	162	18
B5-47-22bdb	368	O	9- 4-57	59	7.9	328			29	9.7	22.0	7.2	166	16.0	6.5	1.3	6.1		180	112	0
B5-48-34dcd	357	O	9- 4-57	58	7.9	297			31	7.3	17.0	6.8	156	13.0	5.0	1.1	5.0		163	107	0
C1-42-15aaa	78	A	8- 7-58	52	7.5	635			62	20.0	40.0	13.0	274	93.0	9.0	1.4	.0	0.12	373	236	12
C1-44-27bbb	263	O	8-22-57	58	7.7	368			37	15.0	16.0	9.0	210	11.0	4.5	1.5	5.8		203	154	0
C2-43-22adb	57	A	10- 1-56	55	7.4	627			66	18.0	49		336	47.0	10.5	1.8	.0		358	238	0
C2-45-10bba	135	O	9-26-57	58	7.5	384			38	16.0	17.0	9.2	213	15.0	8.0	1.2	6.9		216	161	0
C2-48-21bab	167	O	10- 9-57	56	7.8	350			38	13.0	13.0	7.0	193	13.0	4.0	.9	11.0		195	148	0
C3-42-31ccc	236	O	9-23-57	60	7.8	348			32	11.0	22.0	6.2	184	16.0	4.5	1.2	9.0		192	125	0
C4-44-27bbc	329	O	9- 6-57	58	7.8	305			31	10.0	16.0	4.6	166	10.0	5.5	.9	5.5		166	118	0
C4-44-31cbd	300	O	10- 2-57	59	7.9	297			34	8.8	13.0	4.6	164	11.0	2.5	.8	5.5		161	121	0
C4-48-20bac	27	A, O	8-12-58	57	7.5	514			53	14.0	33.0	6.8	243	30.0	10.0	1.0	23.0	.1	290	190	0
C5-43-14acc	101	A, O	8-12-58	56	7.6	391			45	11.0	14.0	5.6	198	17.0	4.0	1.0	11.0	.22	206	158	0
C5-44-30bcb	86	A, O	8-12-58	58	7.7	330			37	11.0	14.0	5.4	181	11.0	3.0	1.1	6.9	.1	178	138	0
C5-47-20bab	281	O	9-24-57	58	7.8	295			35	6.8	17.0	4.0	164	11.0	4.0	.6	6.6		166	115	0

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