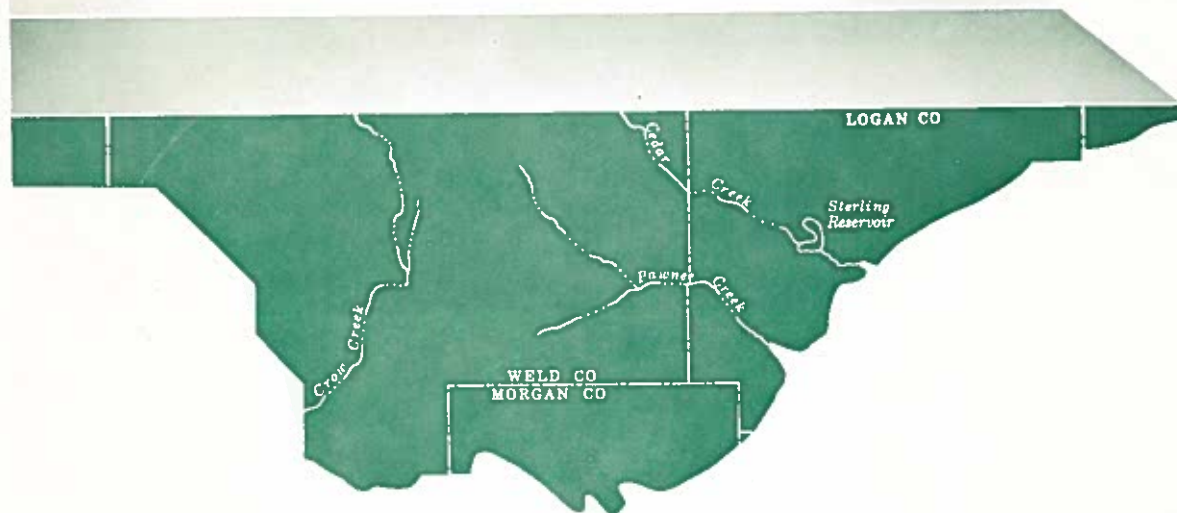


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Colorado

GROUND WATER

BASIC DATA REPORT NO. 16



HYDROGEOLOGIC DATA FROM PARTS OF
LARIMER, LOGAN, MORGAN, SEDGWICK,
AND WELD COUNTIES, COLORADO

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Colorado Ground Water Basic Data
Release No. 16 - Hydrogeologic Data
from Parts of Larimer, Logan...
USDOI/USGS 1964

1964

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U.S. Geological Survey

In charge of cooperative ground-water investigations in Colorado

BASIC-DATA REPORTS: The reports contain water records collected and compiled by the Survey during the course of investigations of the water resources of the State. They contain records that pertain chiefly to ground-water studies and consist of well records, logs of wells and test holes, water-level measurements, and chemical analyses of ground-water samples. Pending publication of a companion interpretive report, generally as a Geological Survey Water-Supply Paper, much use can be made of the basic-data by the public, other government agencies, and contractors in planning the development and management of water supplies.

COLORADO WATER CONSERVATION BOARD
BASIC-DATA REPORT NO. 16

HYDROGEOLOGIC DATA FROM PARTS OF LARIMER, LOGAN, MORGAN,
SEDGWICK, AND WELD COUNTIES, COLORADO

BY
WILLIAM G. WEIST, JR.
U.S. GEOLOGICAL SURVEY

PREPARED BY
THE UNITED STATES GEOLOGICAL SURVEY
IN COOPERATION WITH
THE COLORADO WATER CONSERVATION BOARD
DENVER, COLORADO
1964

HYDROLOGIC DATA FOR THE
SOUTHERN APPALACHIAN MOUNTAINS

BY

WILLIAM E. BRIDGES
U. S. GEOLOGICAL SURVEY

PREPARED BY
THE GEOLOGICAL SURVEY OF THE ARMY
IN COOPERATION WITH
THE JOINT CHIEFS OF STAFF
WASHINGTON, D. C.

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Introduction

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

The records were collected during a reconnaissance of the ground-water resources in parts of Larimer, Logan, Morgan, Sedgwick, and Weld Counties, Colo., made by the U.S. Geological Survey, 1962-63, in cooperation with the Colorado Water Conservation Board.

The well and test-hole numbers in the tables indicate their locations, as shown on plate 1. The numbering system is based on the U.S. Bureau of Land Management's system of land subdivision. The number shows the location of the well or test hole by quadrant, township, range, section, and position within the section. A graphic illustration of this method of well location is given in figure 1. The capital letter at the beginning of the location number indicates the quadrant in which the well is located. Four quadrants are formed by the intersection of the base line and the principal meridian--A indicates the northeast quadrant, B the northwest, C the southwest, and D the southeast. The first numeral indicates the township, the second the range, and the third the section in which the well is located. Lowercase letters following the section number locate the well within the section. The first letter denotes the quarter section, the second the quarter-quarter section, and the third the quarter-quarter-quarter section. The letters are assigned within the section in a counter-clockwise direction, beginning with (a) in the northeast quarter of the section. Letters are assigned within each quarter section and within each quarter-quarter section in the same manner. Where two or more locations are within the smallest subdivision, consecutive numbers beginning with 2 are added to the letters in the order in which the wells or test holes were inventoried. For example B11-48-22dab indicates a well in the northwest quarter of the northeast quarter of the southeast quarter of sec. 22, T. 11 N., R. 48 W. The capital letter B indicates the township is north of the base line and that the range is west of the principal meridian.

This report should be most useful in predicting conditions likely to be encountered when drilling a new well. The proposed drilling site can be located on plate 1, and the records of nearby wells can be examined. Other significant factors can be determined from tables 1 through 4, respectively, as follows: whether it is practical to drill deeper in search of water; the success or failure of nearby wells; type of materials likely to be penetrated by the proposed well; and quality of water in relation to its intended use. These and other uses of the report will be facilitated upon release of the interpretive report.

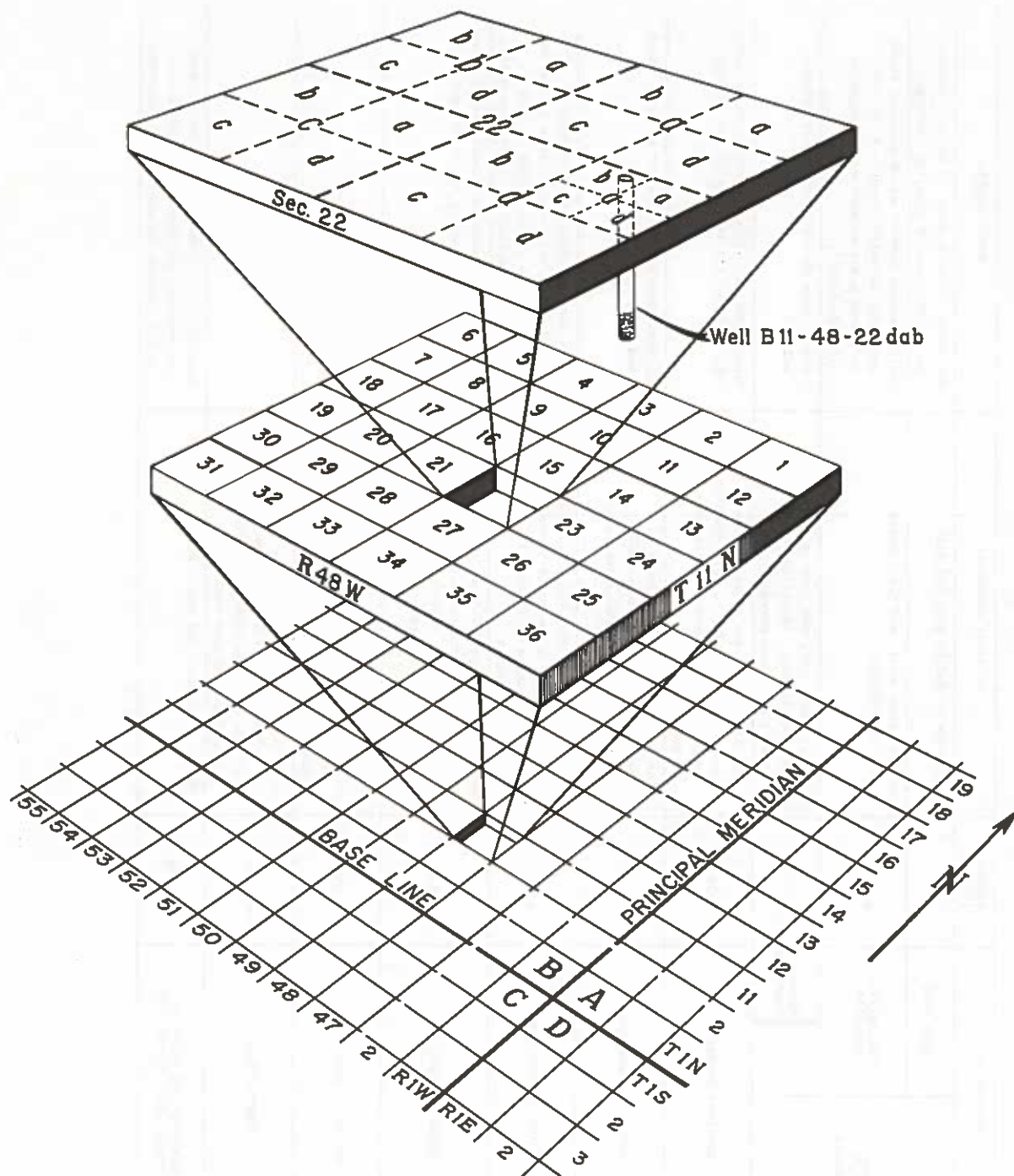


Figure 1.- System of numbering wells and test holes in Colorado.

Table 1.--Generalized section of the geologic units

System	Series	Geologic unit		Thickness (feet)	Physical character	Water supply
Quaternary	Recent and Pleistocene	Unconsolidated deposits	Dune sand	0-50±	Very fine to medium sand and silt.	Not known to yield water to wells. Serves as an infiltration area for recharge.
			Valley-fill deposits	0-100±	Gravel, sand, silt, and clay; mixed and interbedded.	Yield adequate quantities of water to stock and domestic wells in most of the area. In places yield as much as 1,500 gpm to irrigation wells.
			Terrace deposits	0-120±	Gravel, sand, silt, and clay; mixed and interbedded. Identified only in a small area near Hereford.	Yield as much as 1,200 gpm to irrigation wells.
Tertiary	Pliocene	Ogallala Formation		0-180±	Clay, silt, sand, and gravel; contains some caliche; poorly to well cemented. In places has a coarse conglomerate at the base.	Yields small to moderate quantities of water to domestic and stock wells and springs.
	Miocene	Arikaree Formation		0-80±	Fine- to medium-grained, loose to moderately cemented sandstone; contains hard calcareous lenses and pipings.	May yield small quantities of water to stock and domestic wells.
	Oligocene	White River Group		0-600±	Blocky variegated clay and siltstone; contains loose to moderately cemented sand. In places contains hard channel sandstone.	Yields adequate quantities of water to stock and domestic wells and springs in most of the area. In places yields as much as 1,400 gpm (reported) to irrigation wells.
Cretaceous	Upper Cretaceous	Laramie Formation		0-600±	Silty to sandy, yellow-brown and gray to olive-gray carbonaceous shale; limonite stained; interbedded with shaly sandstone; contains lignite and coal.	Yields small to moderate quantities of water to stock and domestic wells and springs.
		Fox Hills Sandstone		0-400±	Fine to medium-grained, yellow-brown sandstone; contains beds of dark-gray to black sandy shale and white massive sandstone.	Do.
		Pierre Shale		0-7,000±	Dark-gray to black shale; in places has weathered zone of yellow-brown clay at top; contains lenses and beds of yellow-brown clayey sandstone.	Do.
		Mesozoic and Paleozoic rocks, undifferentiated		2,000±	Shale, limestone, and sandstone.	Some units yield small quantities of water to domestic and stock wells and springs in the extreme western part of the area.

Table 2.--Records of selected wells and springs

Location number: See text for description of well-numbering system.									
Type of well: DD, dug and drilled; Dr, drilled; Du, dug; Sp, spring.									
Depth of well: Measured depths of wells less than 100 feet are given in feet and tenths below land-surface datum. R, reported depth.									
Type of casing: C, concrete; MI, metal; N, none; PI, plastic.									
Type of completion: OH, open hole; PF, perforated, type not known; Sc, screened; SI, slotted; TC, torch cut.									
Geologic source: 1/ Kp, Pierre Shale; Kc, Fox Hills Sandstone; Kl, Laramie Formation; Tv, White River Group; To, Ogallala Formation; Qc, Terrace deposits; Qv, Valley-fill deposits; Qu, Unconsolidated deposits.									
Method of lift and type of power: Cyl, cylinder; Cf, centrifugal; J, jet; N, none; T, turbine; DI, diesel engine; E, electric motor; G, gasoline engine; LPG, liquefied petroleum gas engine; Tr, tractor; W, wind.									
Yield: Est, estimated; F, flowing; M, measured; R, reported; all quantities are in gpm (gallons per minute).									
Drawdown: Measured drawdowns are given in feet and tenths; reported drawdowns are given in feet.									
Altitude: Altitudes were estimated from topographic maps, or reported (R).									
Depth to water: Measured depths to water are given in feet and tenths below land surface; reported depths are given in feet below land surface.									
P, pumping level.									
Use of water: D, domestic; I, irrigation; Ind, industrial; N, none; PS, public supply; S, stock.									
Field determinations, quality of water data: Op, temperature of water in degrees Fahrenheit; Cond, specific conductance in micromhos at 25 centigrade; Fe, iron in parts per million; pH, hydrogen ion concentration; H, hardness in grains per gallon.									
Remarks: Bkt-2, battery of 2 wells (or number shown); L, log of well given in Table 3; WS, chemical analysis of water given in Table 4.									

1/ For the description of the physical character of principal water-bearing formations see generalized section of the geologic units (table 1).

Location number	Owner or user	Year completed	Type of well	Depth of well (feet)	Diameter (inches)	Casing		Depth to bed-rock (feet)	Method of lift, (gpm) and power	Drawdown (feet) (hours)	Altitude of land surface (feet) (above m.s.l.)	Depth to water measurement (feet)	Date of measurement	Use of water	Field determinations						
						Type	Type of completion								(°F)	Cond. (pH)					
Laramie County																					
B11-68-13cac	Floyd Shaw	1952	Sp	41.5	36	MI	..	..	TW	..	..	..	8-6-62	D, S, I	52	390	0.0	7.5	9		
13ccd	do.	1956	Dr	50.2	72	C	..	..	QV	..	..	23.2	8-6-62	I	..	..	..	..	..		
14daa	do.	1957	Dr	..	..	..	..	..	QV	..	..	27.2	8-6-62	I	..	..	..	..	Btt-2, WS		
35cad	B. Couch	1958	Dr	250R	6	MI	Pf 100-231	..	Kl Cyl, W	7R	25	85	5-26-58	S	..	..	..	..	L		
Logan County																					
B6-54-6aad	Roy Good	1952	Dr	101R	18	MI	..	101	QV	..	..	4,280	4-26-63	I	..	..	..	..	L		
6aba	do.	1956	Dr	116R	18	MI	..	..	QV	..	..	4,285	4-26-63	I	..	..	..	..	..		
6dbb	Clyde Polles	1957	Dr	101R	18	MI	..	..	QV	..	..	4,280	4-26-63	I	..	..	..	..	..		
29bcd	Cecil Nickelson	1962	Dr	345R	6	MI	OH 58-345	56	Np	5R	120	4,230	10-19-62	D	..	..	..	..	L		
B7-53-4cbc	American Land and Cattle Co.	1954	Dr	120R	18	MI	Pf 80-120	..	QV	..	..	4,090	4-25-63	I	..	..	..	..	..		
4dcb	W. F. Fletcher	1959	Dr	86R	18	MI	Pf 45-85	84	QV	..	..	4,060	12-19-59	I	..	55	1,900	..	7.3	38	L
8bbb	Woodrow Ogley	1959	Dr	335R	6	MI	OH 70-335	40	QV	..	..	4,180	6-59	D	..	61	1,650	..	8.0	3	L, WS
B7-54-7bbb	Vern Hnizdil	1959	Dr	67R	6	MI	Pf 55-67	61	QV	..	..	4,320	3-59	S	..	..	..	..	..	L	
30ba	Glen Bamford	1961	Dr	455R	5 1/2	MI	Pf 430-455	22	Kp	..	..	4,290	5-61	D, S	..	..	..	..	..	..	
B7-55-7add	E. Pivonka	1962	Dr	88R	5	PI	Pf 40-80	..	TW, Kp Cyl, W	6R	30	46	4-19-62	S	..	..	..	..	..	L	
B8-52-5bbb	Leslie Beaver	1961	Dr	260R	6 1/2	MI	OH 85-260	64	Kp	..	..	4,090	88	D	68	1,000	..	7.5	7	L	
B8-53-3aba	Burt Tetsel	..	Sp	..	..	..	..	..	QV	..	..	4,060	..	S	..	..	..	..	..	..	
3abc	Shell Oil Co.	1960	Dr	651R	10 3/4	MI	Sc 348-651	10	Kp	..	..	4,115	135	Ind	..	..	..	..	..	L	
3adb	do.	1962	Dr	651R	10 3/4	MI	Sc 349-651	7	Kp	..	..	4,150	165	Ind	..	..	..	..	..	..	

Table 2.--Records of selected wells and springs--Continued

Location number	Owner or user	Year completed	Type of well	Depth of well (feet)	Diameter (inches)	Casing		Depth to bed-rock (feet)	Method of log lift and power	Yield (gpm)	Drawdown (feet) (hours)	Altitude of land surface (above m.s.l.)	Depth to water (feet)	Date of measurement	Use of water	Field determinations	
						Type	Type of completion									(°P)	(pH) H
Logan County--Continued																	
B8-53-6bba	British-American Oil Producing Co.	1960	Dr	700R	9 5/8	M1	Pf	220-700	Kp	T.D1 300R	260	4,235	240	5-30-60	Ind		
7abb	do.	1961	Dr	700R	9 5/8	M1	Sl	260-700	Kp	T.D1 126R	202	4,230	314	5-5-61	Ind		
10bca	Shell Oil Co.	1961	Dr	710R					Kp	T.E 60R		4,170			Ind		
11abc	Perry Jackson	1955	Dr	104R	18	M1	Pf	84-104	Qv	T.E 630M	9	4,140	83	5-6-55	I	55	500 0.1 7.5 10 L
17bdc	Shell Oil Co.	1959	Dr	650R	10 3/4	M1	Sc	364-650	Kp	T.E 162R	263	4,180	200	10-20-59	Ind		
17dca	do.	1958	Dr	585R		M1	Sc	145-582	Kp	T.E 127R	128	4,165	136	7-31-58	Ind		8.3 L, WS
20bba	do.	1958	Dr	614R	8 5/8	M1	Tc	150-600	Kp	T.E 70R	124	4,177R	155	6-6-62	Ind		
23aba	Murray Haywood	1957	Dr	260R	4 1/2	M1	Pf	107-151, 173-195, 216-260	Kp	T.E 10R		4,070			D		L
29add	Verlie Hansen	1957	Dr	310R	6	M1	OH	53-310	Kp	T.E 10R		4,165	155	5-57	D.S		
B8-54-1bdb	British-American Oil Producing Co.	1960	Dr	710R	9 5/8	M1	Pf	227-707	Kp	T.D1 115R	131	4,270	277	6-12-60	Ind		
lcce	do.	1962	Dr	705R	9 5/8	M1	Pf	225-705	Kp	T.D1 300R	272	4,233R	288	7-8-60	Ind		
ldab	do.	1957	Dr	916R	9 5/8	M1	Sl	230-911	Kp	T.D1 119R	150	4,258R	242	4-21-62	Ind		
3cdd	School District																
7ccc	No. 3	1956	Dr	670R	6-4 1/2	M1	Pf	318-670	Kp	T.E 3R	114	4,365	276	9-14-56	D	67	1,290 .3 8.0 2 L
7dcd	John Suacina	1959	Dr	550R	5 1/2	M1	Pf	500-550	Kp	T.E 20R	60	4,335	235	7-29	D		
	John Nelson	1949	Dr	87.1	6	M1			Tv	Cyl.W		4,425	76.2	7-12-62	S		610 .7 7.5 11 L
21ccc	O. J. Farrell		Dr	156	6	M1			Kp	Cyl.W		4,235	89.2	7-13-62	N		
24dcd	George Tompkins		Dr	38.9	7	M1			Kp	Cyl.W		4,185	11.4	7-13-62	S	52	2,300 .3 7.5 56 WS
31asa	Colo. Highway Dept.		Du	10R		N			Qv	N		4,160	3.5	7-23-53	N		7.2 WS
B8-55-24dd	George Tompkins	1957	Dr	38.9	6	M1			Qv	Cyl.W		4,185	11.4	7-13-62	S	52	2,300 .3 7.5 56 WS
33ddd	J. Frasca	1961	Dr	590R	5 1/2	M1	Pf	550-590	Kp	T.E 15R			345	5-61	D		
B9-51-6ddd	John Gertge	1961	Dr	245R	5 1/2	M1	OH	55-245	Kp	T.E		3,915	8	9-61	D		
B9-52-4ddc	G. M. Klee	1957	Dr	230R	6 1/2	M1	OH	76-230	Kp		114	4,000	36	3-15-57	D		
B9-53-3ddc	T. Brown	1960	Dr	360R	6 1/2-5	M1			Kp	T.E	106		52	8-20-60	D	56	1,100 .1 7.5 4 L, WS
19bcb	Shell Oil Co.	1962	Dr	698R	10 3/4	M1	Sl	298-698	Kp	T.E 117R	151	4,220	260	9-19-62	Ind		
19cbb	do.	1962	Dr	702R	10 3/4	M1	Sl	300-700	Kp	T.E 128R	111	4,190	275	8-31-62	Ind		
19cbb	do.	1962	Dr	700R	10 3/4	M1	Sl	260-700	Kp	T.E 116R	125	4,190	259	8-1-62	Ind		
30baa	do.	1962	Dr	704R	10 3/4	M1	Pf	304-702	Kp	T.E 125R	186	4,180	254	9-27-62	Ind		
B9-54-22add	Harold Wilson	1963	Dr	113R	5 1/2	M1	Pf	93-113	Kp	Cyl.E	55	4,325R	45	1-63	S		
B9-55-9abd	Ralph Cole	1961	Dr	70R	5 1/2	M1	Pf	50-70	Tv	Cyl.W			60	8-61	S		
21asa	D. Lowen	1959	Dr	760R	5	M1	Pf	720-760	Kp	Cyl.E	20R		400	10-59	D		
36cca	U.S. Air Force	1962	Dr	764R	10 3/4-6 5/8	M1	Sl	640-740	Kp	N	30R	4,383R	300	7-18-62	N		
B10-50-8baa	Ronald R. Ament	1956	Dr	141R	32	M1	OH	12-141	Tv	T.E	74	3,950	26.3	4-23-63	I		
10ddc	E. J. Barnes	1962	Dr	380R	5 1/2	M1	OH	234-380	Kp	T.E 15R	180	3,830	200	9-62	D		
B10-51-10bcc	Donald Smith	1961	Dr	154R		M1	OH	61-154	Tv		20	4,005	15	3-61	D		
14dcd	John McBride		Dr	65R	6	M1			Qv				12	9-24-62	D	56	
15abb	Albert Zink	1960	Dr	26.3	24	M1	Pf	12-26	T.G	400R	8	3,960	13.1	4-23-63	I		

Table 2.--Records of selected wells and springs--Continued

Location number	Owner or user	Year completed well	Depth of well (feet)	Diameter (inches)	Casing type	Inter-val (feet)	Depth to bed-rock (feet)	Geo-logic source	Method of lift, (gpm) and power	Yield (gpm)	Drawdown (feet) (hours)	Altitude of land surface (above m.s.l.)	Depth to water measurement	Date of measurement	Use of water	Field determinations (pH) (Fe) (pH) H	Remarks
Logan County--Continued																	
B10-51-19ccc 24aa	M. B. Herbrick. School District .	1962 ..	278R 28R	4 1/2 8	M1 M1	PF ..	62-232 ..	Tv, Kp Qv	T, E ..	6R ..	124 ..	3,955 ..	56 13	10-25-62 9-20-49	D, S D	56 1,600 ..	2.0 7.5 30 L ..
B10-52-19ead	Ralph Leckler .	1962 Dr	180R	..	M1	81, OH	40-80, 80-180	..	Tv Cyl, W	5R ..	40 ..	4,175 ..	40	4-16-62	D	..	..
B10-53-35ccc	Robert Tiedgen..	1959 Dr	350R	..	..	..	..	Kp	T, E ..	20R ..	60 ..	..	175	10- -59	D	..	..
B10-54-4cca	Chauncey T. Nelson	1958 Dr	45R	6	M1	PF	30-45	5 Tv	Cyl, W ..	10R ..	..	..	24.4	4-25-63	S	..	..
B10-55-3dccc	Lawrence Sheldon.	1960 Dr	560R	6	M1	PF	530-560	45 Kp	Cyl, W ..	20R ..	50 ..	..	120	2- -60	S	56 1,000	.1 7.5 2 L
B11-48-4aca	D. Dickinson and Sons .	1952 Dr	110R	..	..	..	..	To	Cyl, W ..	..	..	3,965 ..	..	..	S	55 440	.0 7.5 10
12aac	Donald Weinheim.	1962 Dr	92R	6	M1	PF	52-92	20 Tv	J, E ..	15R ..	10 ..	3,780 ..	30	1-17-62	D	66 400	.0 8.0 12 L
17aba	D. Dickinson and Sons..	..	..	..	..	..	..	To	..	F5H ..	..	3,815 ..	..	..	S	76 810	.0 7.5 12
20baa	.. do. .	1947 Dr	300R	..	..	..	..	Tv	T, E ..	..	..	3,790 ..	..	..	D	68 1,010	.6 7.5 3
22aaa	Carl Freese. .	1946 Dr	80R	..	..	..	..	Tv	Cyl, E ..	..	..	3,735 ..	35	7-25-62	D, S	57 440	.1 8.0 10
22dab	William Freese .	1946 Dr	400R	6	..	OH	222-400	..	Tv Cyl, E	..	..	3,710 ..	..	..	D, S	55 2,500	.0 8.0 15
31cad	Gordon Dunn .	1962 Dr	556R	5 1/2	M1	OH	150-556	20 Kp	N ..	10R ..	230 ..	3,705 ..	..	..	D	62 3,000	.6 8.0 5 L
B11-49-4dad	Clara Workman .	..	170R	..	..	..	..	To	Cyl, E ..	..	..	4,070 ..	40	8-4-62	D, S	57 400	..
6adc	Walter Harris .	..	63.9	6	M1	..	..	To	Cyl, W ..	..	..	4,050 ..	26.1	8-9-62	S	57 365	..
12bad	Rex Lentfer .	..	85.7	..	..	..	..	To	Cyl, E ..	..	..	3,940 ..	49.8	8-9-62	D, S	60 370	..
12dbb	Victor Hein .	1956 Dr	153R	18	M1	OH	27-153	..	Tv J, E	1,000R ..	30 23 ..	3,900 ..	35	4-23-63	I	..	..
22ccc	Cleo Clevenger..	1961 Dr	65R	5 1/2	M1	PF	45-57	..	Tv J, E	15R ..	8 ..	3,835 ..	32	11- -61	D	59 2,050	..
24aaa	Andrew Aasen .	1960 Dr	60R	5	M1	PF	40-60	..	Tv Cyl, W	10R ..	2 ..	3,820 ..	18.9	8-4-62	S	57 2,150	..
26dccc	William Narg. .	1959 Dr	410R	5 1/2	M1	OH	230-410	..	Kp T, E	10R ..	200 ..	3,800 ..	150	6-1-59	D	64 1,650	.0 8.0 2 L
27bbb	Walter Gall .	1956 Dr	90R	16	M1	OH	23-90	..	Tv T, E	600Eat ..	27 14 ..	3,830 ..	27	3-5-56	I	..	..
32cbc	Dorothy S. Laun .	..	37.3	..	..	..	..	Qv	Cyl, E ..	..	..	3,800 ..	26.2	8-9-62	D, S	55 1,950	.7 7.2 45
B11-50-2bcc	Harry Louderback.	1911 Dr	720R	..	..	..	..	Kp(?)	Cyl, W, E ..	..	..	4,315 ..	256.3	8-17-62	D, S	59 430	4.0 8.0 6
8baa	Jay Peters .	..	..	6	M1	..	..	To	Cyl, W ..	..	..	4,330 ..	101.9	8-19-62	D, S	60 560	..
9bad	Not known .	..	..	..	..	..	..	To	N ..	FIH ..	..	4,170 ..	..	8-19-62	S	67	..
22aab	Mildred Sutter. .	1961 Dr	31.9	5 1/2	M1	PF	20-32	..	Qv Cyl, W	10R ..	..	3,955 ..	9.9	8-9-62	S	56 435	..
28ccc	Otto Folladori. .	..	430R	5 1/2	M1	OH	325-430	..	Kp J, E	..	9 ..	3,980 ..	..	..	D, S	65 1,100	.5 8.0 4
32dda	.. do. .	1958 Dr	84R	5 1/2	M1	PF	59-83	..	Tv J, E	20R ..	..	3,975 ..	..	..	D	58 1,400	.0 7.5 34 L
B11-51-3aba	Merle Gillham .	..	180R	5	M1	..	105-145	..	To Cyl, W, E	..	..	4,400 ..	156.7	8-20-62	D, S	57 410	1.5 7.5 9
6bba	Town of Peetz .	1960 Dr	240R	12-10	M1	PF	..	To	T, E ..	45R ..	57 ..	4,435 ..	111.2	4-27-60	PS	..	..
6bba2	.. do. .	1952 Dr	145R	10	M1	..	..	To	T, E ..	15R ..	20 ..	4,430 ..	120	4-27-60	PS	..	..
6bbc	.. do. .	1942 Dr	145R	10	M1	..	..	To	T, E ..	11R ..	20 ..	4,430 ..	120	4-27-60	PS	..	..
6bbd	.. do. .	1905 Dr	550R	8	M1	..	..	To, Tv	T, E ..	50R ..	10 ..	4,430 ..	100	7- -53	PS	60 450	..
24abb	C. G. Hume. .	..	127R	..	..	..	..	To(?)	Cyl, W ..	..	..	4,240 ..	..	..	D, S	57 365	..
Back filled to 375 feet																	

Table 2.--Records of selected wells and springs--Continued

Location number	Owner or user	Year completed	Type of well	Depth of well (feet)	Diameter (inches)	Casing		Depth to bed-rock (feet)	Geo-logic source	Method of lift, and power	Yield (gpm)	Drawdown (feet)(hours)	Altitude of land surface (above m.s.l.)	Depth to water (feet)	Date of measurement	Use of water	Field determinations		
						Type	Completion										(°P)	Cond. (Pc) (pH)	H
Logan County--Continued																			
B11-52-5abc	U.S. Air Force.	1962	Dr	150R	6	M1	S1	103-134	To	T,E	18R	39	4,535R	66.5	4-24-63	N			
7cbb	British-American Oil Producing Co.	1960	Dr	452R	9 5/8	M1	S1	52-452	Tv	Cyl,D1	71R	280	4,565	70	10-26-60	Ind		L	
32ccd	W. B. Baldwin	1950	Dr	350R	6	M1			Kp	Cyl,W	5R	120	4,342R	40.8	4-24-63	S			
British-American Oil Producing Co. 1955																			
B11-53-12dcd	do.	1960	Dr	1,210R	9 5/8	M1			Tv,Kp	T,D	87R		4,575	75	2-23-55	Ind			
13aaa	do.	1959	Dr	398R	5 1/2	M1	Pf	20-398	Tv	T,D	120R	155	4,575	225	5-11-60	Ind			
13aab	do.	1959	Dr	1,186R	9 5/8	M1	S1	240-1,186	Tv,Kp	Cyl,D1	43R	450	4,579R	75	4-15-59	Ind			
13ada	do.	1959	Dr	1,241R	9 5/8	M1	S1	240-1,240	Tv,Kp	T,D	17R	490	4,580	75	4-15-59	Ind			
24ccb	do.	1960	Dr	421R	9 5/8	M1	S1	61-421	Tv	Tv	73R	273	4,590	95.9	8-20-62	N			
J. Casement																			
B11-34-4ccc	do.	1960	Dr	112R	5 1/2	M1	Pf	90-112	Tv	Cyl,E	2R			75	8- -60	S			
9dcd	Fred Griffith	1910	Dr	160R	6	M1			Tv	Cyl,W	3R	90		60	7-24-53	S	58	680 0.1 7.8 4 WS	
Thomas Hatch																			
B11-55-2add	do.	1959	Dr	590R	6	M1	OH	350-590	Kp	Cyl,G	20R			175	7-24-53	D,S			
32add	Elmer Rasmussen		Dr	100R	5 1/2	M1	Pf	88-100	Tv	Cyl,W,G				45	5- -59	S			
Frank Sparks																			
B12-48-27bba	do.		Sp						To	N	P5OM		3,900		7-26-62	S	64	350 .0 8.0 10 Bolick	
10ccc	Ivan Cook	1961	Dr	200R	5 1/2	M1	Pf	175-200	To	N	15R		4,155	157.6	8-3-62	N			
35cac	Arthur Kaachke		Sp						To	N	F16M		3,815		8-2-62	S	65	480 .0 7.5 12 L	
35dcd	do.		Dr	21.0	7	M1			Qv	J,E			3,815	6.3	8-9-62	D	69	540 WS	
Raymond Tilghman																			
B12-49-22cbc	do.		Dr		5	M1			Tv	Cyl,E			4,215	231.8	8-9-62	D,S	75	390 6.4 8.0 8	
30bbb	Martha E. Simpson	1908	Dr	165R	5	M1			To	Cyl,W			4,245	137.1	8-18-62	D	67	380 .0 8.0 9 WS	
Herman Reker																			
B12-50-22ccc	do.	1952	Dr	250R					To	Cyl,W	5R		4,300	165	8-18-62	D,S	64	285	
30bbc	William Roelle		Dr	180R		M1			To	Cyl,W			4,380	148.2	8-18-62	D,S	55	330	
D. Mayers																			
B12-52-22aca	do.	1953	Dr	500R	18	M1			To,Tv	Cyl,E				81.8	7-24-53	S			
City of Fort Morgan																			
B4-57-7bdc	do.	1957	Dr	540R	6 1/2-5 1/2	M1	S1	280-540	Kp	T,E	8R		4,490			D		L, Air-port well	
Arnold Gerkin																			
B5-58-15dab	do.	1956	Dr	61R	5	M1	Pf	26-38	Qu	T,E	2R	12 1 1/2	4,400R	27	9-8-56	D,S			
20cda	Conrad Kemel	1962	Dr	73R	5	P1	Pf	57-69	Qu	J,E	20R	4	4,345	42	5-11-62	D		L	
George P. Werthoff																			
B4-58-10daa	do.	1962	Dr	60R	5 1/2	M1	Pf	39-60	Qu	T,E	5R	21	4,500	38	4-7-62	D		L	
Galen L. Hendley																			
B5-55-20cda	do.	1963	Dr	71R	18	M1	Pf	30-71	Qv	T,E	1,200R	34	4,235	36	3-21-63	I			
20dcd	do.	1960	Dr	154R	5	P1	OH	53-154	Kp	J,E	4R	90	4,200	40	6-23-60	D,S	57	1,500 .0 7.5 28 L	
Charles Berry																			
B5-56-10cbc	do.	1959	Dr	40R	4 1/2	M1	Pf	30-40	Qv	Cyl,W	4R	11	4,435	29	5-17-59	S		L	
20cda	Harry Spencer	1956	Dr	45R	4 1/2	M1	Pf	33-45	Qu	Cyl,W	5R	9	4,475	34	6-11-56	S	57	3,100 .1 7.5 62	
24cda	James R. ..	1956	Dr	72R	18	M1	Pf	47-72	Qu	T,E	900R	22	4,355	39.0	4-26-63	I			
27abc	Dean Christensen	1956	Dr	55R	18	M1	Pf	16-55	Qv	T,E	650R	43	4,300	11	6-23-56	I		L	
27dcb	J. R. Whitlow	1956	Dr	55R	18	M1	Pf	18-55	Qv	T,E	650R	45	4,295	9.4	4-26-63	I			

Table 2.--Records of selected wells and springs--Continued

Location number	Owner or user	Year completed well	Type of well	Depth of well (feet)	Diameter (inches)	Casing		Depth to bed-rock (feet)	Geo-logic source	Method of lift, and power	Yield (gpm)	Drawdown (feet) (hours)	Altitude of land surface (above m.s.l.)	Depth to water measurement (feet)	Date of measurement	Use of water	Field determinations			
						Type	Type of completion										(%) Cond. (Fe) pH	H Remarks		
Morgan County--Continued																				
B5-57-4aaa 20cbb	Murray L. McConnell Tony Bettale. . .	1958 1958	Dr Dr	75R 41R	4 1/2 6	M1 M1	Pf Pf	63-75 29-41	Qv Qv	Cyl.W Cyl.W	5R 10R	10		4,700 4,400	63.3 25.3	4-30-63 4-27-63	S S			L L
B5-58-2dcd	Paul Whittington.	1958	Dr	25R	6	M1	Pf	15-25	Qv	Cyl.G	7R	. .	. .	4,460R	14.2	4-27-63	S	. .	. .	.
B5-59-17ccd	R. J. Hiller. . .	1956	Dr	43R	6	M1	Pf	34-43	Kp	Cyl.W	. .	. .	. .	4,460	18	5-26-56	S	. .	. .	.
B5-60-1aab 9cab 12dda	H. J. Willard . . E. L. Ohlsen . . H. J. Willard . .	1958 1956 . .	Dr Dr Dr	50R 59OR 50R	5 6 . .	M1 M1 . .	Pf OH . .	37-49 80-590 . .	Qv T.E. Qv	Cyl.W T.E. J.E.	12R 1R J.E.	6 305 . .		4,540 6 4,540 . .	29 285 . .	8-1-58 10-1-56 . .	S D,S I	60 4,300 62 1,350 59 8,000	0.3 .1 . .	7.5 93 L 8.1 1 L . . WS
B6-55-31ddd	Fred Anderson . . Phil Vondy. . .	1960 1962	Dr Dr	34R 85R	6 6	P1 P1	S1 S1	20-34 60-85	Qu Qu	J.E T.E.	10R 8R	5 45		4,330 4,415	18 20	11-21-60 4-20-62	D,S D,S	54 1,300 . .	.0 . .	7.7 19 L . . WS
B6-56-1cdd	Walter Carlson. .	1960	Dr	50R	6	P1	S1	40-50	Qu	Cyl.W	10R	2	. .	. .	30	8-15-60	S	55 1,500	.0	7.5 24 L
B6-57-7dcd	Ellery Woods. . .	1958	Dr	24R	5	M1	Pf	12-24	Qu, Kf(?)	J.E	6R	11	. .	4,680	10	5-6-58	D,S	52	. .	. . L, WS
B6-58-17daa	William Farnik. .	1960	Dr	260R	5	M1	Pf	112-252	8	Kf	Cyl.W	10R	4	. .	4,855	116	5-25-60	S	. .	. . L
B6-59-5bad libcc libcc libba libbb	Not known . . . Rigby Bros. . . do. . . do. . . do. . .	. . 1960 1960 1960 1960	Dr Dr Dr Dr Dr	21.B 18R 20R 19R 18R	6 18 18 18 18	M1 M1 M1 M1 M1	Pf Pf Pf Pf Pf	5-18 6-20 6-19 5-18 5-18	Qv Qv Qv Qv Qv	Cyl.W T.E. Qv T.E. T.E.	20R 30R 20R 20R 20R	14 16 15 14 14			17.2 2 3 3 4	4-30-63 6-23-60 7-3-60 6-28-60 6-28-60	S Ind Ind Ind Ind	54 1,800	.2	7.3 31 WS
B6-60-4bcc	do. . . Edward Rigaby . .	1960 1962	Dr Dr	20R 72R	18 5	M1 P1	Pf Pf	7-20 56-72	Qv Qu	T.E Cyl.W	20R 1R	15 17		4,740	55	7-2-60 9-19-62	Ind S			. . L
B11-47-4cdd	Fred Schmidt. . .	1962	Dr	395R	6	M1	OH	5B 1/2-395	2	M1	T.E	3R	. .	. .	145	11-17-62	D,S	61 1,500	.0	8.1 2 L
B12-46-22ccc 26caa 30bbb	Rood Menter . . . Mervin Carlson. Donald Hayes. . . Clyde Hein. . .	. . . 1960	Dr Dr Dr Dr	100R 200R 65R 55.3	6 5 1/2 6 6	M1 . . M1 M1	Pf	40-100	Tv Tv To To	Cyl.W Cyl.W Cyl.W Cyl.W	4R 5R	20		3,740 3,645 3,750	48.6 22.3 45.9	7-22-62 8-6-62 7-20-62 7-20-62	S D D,S D	56 500 59 2,050 61 440	.7	8.0 10 8.0 11 WS
B12-47-22cac 25cab 25bac 25bcb	Rood Menter . . . do. . . do. . . do. . .	. . . 1962	Dr Dr Dr Dr	60R 60R 94.0 60R	. . 6 6 6	M1 M1 M1 M1	Pf Pf Pf Pf	26-60	To To To To	Cyl.W Cyl.W Cyl.W Cyl.W	5R 5R	10		3,790 3,925 3,855 3,700	23.9 8-7-62 43.2 40.8	8-7-62 8-5-62 8-6-62 8-6-62	S S D D	60 130 56 360 61 540 56 390	.1	8.0 9 8.0 6

Table 2.--Records of selected wells and springs--Continued

Location number	Owner or user	Year completed	Type of well	Depth of well (feet)	Diameter of casing (inches)	Casing		Depth to bedrock (feet)	Geo-logic source	Method of lift, power	Yield (gpm)	Drawdown (feet) (hours)	Altitude of land surface (above M.S.L.)	Depth to water (feet)	Date of measurement	Use of water	Field determinations				
						Type	Type										(°F)	Cond.	(Fe)	(pH)	H
Weid County																					
B5-61-24cdc	J. B. Bain	1959	Dr	1,490R	4 1/2	M1	Pf	943-1,415	Kf	Cyl, E	7R	70	4,560	170	5-1-59	S	68	..	0.5	8.1	2
35cbc	do.	1960	Dr	30R	5	M1	Pf	12-30	Qv	Cyl, E	10R	12	4,500	6	5-17-60	D, S	53	..	.2	7.3	41 L
B6-61-1aad	Royal McFlood	1962	Dr	203R	5	M1	OH	84-203	Kf	Cyl, W	5R	50	..	99.1	5-4-63	S	..	..	..	..	L
5bad	Gordon Robinson	1961	Dr	85R	5	M1	OH	43-85	Kf	Cyl, W	12R	42	..	4.8	5-4-63	S	..	..	..	..	L
15cdd	Fred Carlson	1962	Dr	228R	5	M1	OH	69-228	Kf	Cyl, W	3R	170	4,730	50	12-8-62	S	59	4,700	.1	7.3	43 WS
19ddd	Glen Ankeny	1959	Dr	108R	5	M1	OH	24-108	Kf	Cyl, E	3R	..	4,640	21	6-27-59	S	..	..	..	..	L
B6-62-1	Mr. Butler	..	..	..	..	..	..	..	Kf	..	..	..	..	..	..	..	..	..	..	..	WS
B6-63-1bdc	Mike Guttersen	1962	Dr	235R	6	M1	Pf	203-235	K1	Cyl, W	10R	50	4,710R	174.0	5-4-63	S	..	..	..	..	L
2ccc	Oscar Shirk	1953	Dr	105R	5	M1	OH	66-105	K1	..	20R	..	..	20	5-5-60	..	..	..	..	..	..
9ccb	Neil Jackson	1958	Dr	50R	6 5/8	M1	S1	30-50	K1	T, E	10R	13	4,685	22	2-3-58	D	56	900	.1	7.6	17 L
16baa	Charles Cantrell	..	Dr	..	24	..	..	..	Qv	T, E	330M	..	4,680	38.2	8-13-62	I	..	..	..	..	..
16baa2	do.	..	Dr	..	..	..	..	..	Qv	CF, E	570M	..	4,680	..	8-13-62	I	..	..	..	..	..
16baa3	do.	..	Dr	9R	..	..	..	..	Qv	CF, E	470M	..	4,680	..	8-13-62	I	52	1,250	..	7.5	..
16bcb	do.	..	Dr	36	..	..	..	..	Qv	T, E	425M	..	4,670	38.1	8-13-62	I	57	..	..	..	..
16bcb2	do.	..	Dr	40R	36	M1	..	..	Qv	T, E	365M	..	4,670	35.7	8-13-62	I	55	1,300	.0	7.5	27
16bdc	do.	..	Dr	39.1	24	M1	..	..	Qv	T, E	460M	..	4,680	19.7	8-13-62	I	..	..	..	..	..
17adc	Jean Nix	1955	Dr	50R	24	..	..	..	Qv	T, E	460M	..	4,680	33.8	8-14-62	I	..	..	..	..	..
17adc2	do.	..	Dr	50R	40	..	..	..	Qv	T, E	410M	..	4,680	39.8	8-14-62	I	55	..	..	7.3	..
17cab	John Kerba	..	Dr	..	40	M1	..	..	Qv	T, E	400M	..	4,660	27.1	8-15-62	I	53	1,200	..	7.5	19
17cda	do.	..	Dr	..	40	M1	..	..	Qv	T, E	400M	..	4,660	22.5	8-15-62	I	..	..	..	..	..
17cda2	do.	..	Dr	..	..	..	..	..	Qv	T, E	300M	..	4,660	20.1	8-15-62	I	55	..	..	..	..
17cdd	do.	..	Dr	48R	40	..	..	..	Qv	T, E	515M	..	4,670	28.8	8-14-62	I	54	..	..	..	..
18ccc	Elmer Bruntz	..	Dr	47R	36	M1	..	..	Qv	T, E	360M	..	4,655	28.0	8-13-62	I	55	2,200	..	7.5	35 WS
18cdd	do.	..	Dr	45R	36	M1	..	..	Qv	T, E	450M	..	4,660	25.2	8-13-62	I	52	..	..	..	..
18ddd	John Kerba	..	Dr	48R	24	..	..	..	Qv	T, E	520M	..	4,660	26.2	8-15-62	I	..	..	..	..	..
19aaa	J. Wells	..	Dr	45.4	40	M1	..	..	Qv	T, E	440M	..	4,660	28.1	8-14-62	I	..	..	..	..	..
19aaa2	do.	..	Dr	..	40	M1	..	..	Qv	T, E	440M	15.5	4,660	14.4	8-14-62	I, S	..	..	..	..	..
19ada	do.	..	Dr	..	40	M1	..	..	Qv	T, E	910M	..	4,660	11.8	8-14-62	I	55	1,410	..	7.2	28
19bad	Jake Ehrlich	..	Dr	..	20	M1	..	..	Qv	T, E	340M	..	4,655	32.8	8-21-62	I	..	..	..	..	..
19bca	D. Dorn	..	Dr	..	36	..	..	..	Qv	T, E	150gpm	..	4,650	21.6	8-21-62	I	..	..	..	..	..
19caa	G. N. Page, Jr.	..	Dr	..	..	..	..	..	Qv	T, E	280M	..	4,650	24.8	8-21-62	I	..	..	..	..	..
19cad	do.	..	Dr	..	18	..	..	..	Qv	T, E	760M	..	4,650	14.0	8-21-62	I	..	..	..	..	..
19cad2	do.	..	Dr	47.4	18	..	..	..	Qv	T, E	550M	..	4,650	..	8-21-62	I	..	..	..	..	..
19cda	do.	..	Dr	..	18	..	..	..	Qv	T, E	..	..	..	..	..	..	..	..	..	..	..
19daa	J. Wells	..	Dr	..	..	..	..	..	Qv	T, E	570M	..	4,660	31.6	8-17-62	I	..	..	..	..	..
19daa2	do.	..	Dr	..	40	..	..	..	Qv	T, E	240M	..	4,660	18.5	8-17-62	I	..	..	..	..	..
19ddd	do.	..	Dr	48.3	24	..	..	..	Qv	T, E	440M	..	4,655	9.6	8-20-62	I, S	..	..	..	..	..
20aaa	Roy Bishop	..	Dr	..	40	..	..	..	Qv	T, E	440M	..	4,670	30.1	8-14-62	I	..	..	..	..	..
20aab	do.	..	Dr	..	..	..	..	..	Qv	T, E	410M	..	4,670	32.0	8-14-62	I	55	1,400	..	7.3	27
20bba	J. Wells	..	Dr	..	40	..	..	..	Qv	T, E	520M	..	4,660	32.2	8-14-62	I	..	..	..	..	..
20bbb	do.	..	Dr	..	24	..	..	..	Qv	T, E	465M	..	4,660	31.0	8-14-62	I	54	1,400	..	7.5	27
20bbd	do.	..	Dr	..	24	M1	..	..	Qv	T, E	320gpm	..	4,665	11.9	8-14-62	I	..	..	..	..	..
20caa	do.	..	Dr	..	..	..	..	..	Qv	T, E	170M	..	4,670	18.5	8-16-62	I	..	..	..	..	..

Table 2.--Records of selected wells and springs--Continued

Location number	Owner or user	Year completed	Type of well	Depth of well (feet)	Diam-eter (inches)	Casing		Inter-val (feet)	Depth to bed-logic rock (feet)	Method of Geo-logic source and power	Yield (gpm)	Drawdown (feet)(hours)	Altitude of land surface (above m.s.l.)	Depth to water measurement (feet)	Date of measurement	Use of water	Field determinations	
						Type	Type										Cond. (ppm)	Remarks
Weld County--Continued																		
B6-63-20cba	J. Wells.	.	Dr	.	.	.	.	.	.	Qv	550M	.	4,660	P22.2	8-16-62	I	.	.
20cbb	do.	.	Dr	.	24	.	.	.	.	T,E	340M	.	4,660	P21.1	8-16-62	I	.	.
20ccc	do.	.	Dr	.	40	.	.	.	.	T,E	.	.	4,655	.	8-20-62	I	.	.
20dab	J. Cook.	.	Dr	40R	36	.	.	.	.	Qv	470M	.	4,670	P22.4	8-17-62	I	.	.
20dbb	J. Wells.	.	Dr	.	30	.	.	.	.	Qv	210M	.	4,670	P30.6	8-16-62	I	.	.
20dbb2	do.	.	Dr	.	48	.	.	.	.	Qv	660M	.	4,670	P23.3	8-16-62	I	.	.
20dbb3	do.	.	Dr	.	24	.	.	.	.	T,E	180Est	.	4,670	P19.0	8-16-62	I	55	1,750
21bba	C. E. Bishop.	1945	Dr	41.0	.	.	.	.	.	Qv	300Est	10.4	1/3	4,675	18.5	I	.	7.5 39
21bbb	do.	.	Dr	40R	.	.	.	.	.	Qv	360M	6.8	1/2	4,675	14.7	I	.	.
29bbb	Jackson Wells	.	Dr	32.9	40	.	.	.	.	Qv	T,E	.	4,655	8.1	8-20-62	I	.	Btt-5
30abd	Carl Wood	1937	Dr	.	36	.	.	.	.	Qv	350M	.	4,650	P30.2	8-20-62	I	.	.
30abd2	do.	1955	Dr	50R	18	.	.	.	.	Qv	400M	.	4,650	P27.1	8-20-62	I	55	1,750
30baa	R. Rasmussen.	1948	Dr	.	24	.	.	.	.	Qv	530M	14.6	1/3	4,650	16.3	I	.	7.5 38
30baa2	do.	1937	Dr	.	36	.	.	.	.	Qv	755M	.	4,650	P37.3	8-21-62	I	.	.
30caa	Fairmeadows Land Co.	1954	Dr	51R	24	M1	S1	37-51	51	Qv	580M	14	3	4,645	28	I	.	Btt-3, L
30caa2	do.	.	Dr	.	24	M1	.	.	.	Qv	370M	.	4,645	P32.8	8-22-62	I	.	.
30cbb	do.	.	Dr	.	24	.	.	.	.	T,E	480M	.	4,640	P32.2	8-22-62	I	.	.
30dbc	do.	.	Dr	.	.	.	.	.	.	Qv	N	.	4,645	15.7	8-22-62	N	.	.
31bab	Mae Miller.	.	Dr	.	.	.	.	.	.	T,E	400M	.	4,640	P44.3	8-22-62	I	.	.
31bab2	do.	.	Dr	.	.	.	.	.	.	Qv	300M	.	4,640	.	8-22-62	I	.	.
31cab	do.	.	Dr	.	18	M1	.	.	.	Qv	980M	.	4,630	P32.2	8-24-62	I	54	1,850
B6-64-25daa	Fairmeadows Land Co.	.	Dr	.	24	.	.	.	.	Qv	390M	.	4,645	.	8-22-62	I	53	2,400
25dab	do.	.	Dr	.	30	.	.	.	.	Qv	300M	.	4,640	.	8-22-62	I	.	7.2 50
36bba	Milford Peterson.	1958	Dr	43R	.	.	.	.	.	Qv	T,E	.	4,630	.	8-23-62	I	.	.
B7-56-20aaa	Aloysius Piel	1959	Dr	60R	5	P1	S1	20-60	.	Tw	N	.	.	15	11-16-59	N	.	.
B7-57-2bba	K. H. Rothrock.	1958	Dr	60R	18	M1	Pf	21-60	.	Tw	Cy1,G	.	.	16.6	5-1-63	S	.	.
B7-58-lacc	Homer Northup	1962	Dr	168R	5	P1	Pf	25-85, 105-165	5	Kf	Cy1,W	115	.	25	9-29-62	S	.	.
3aac	Kenneth Thompson.	1958	Dr	105R	6	M1	Pf	67-105	.	Kf	.	.	.	69	5-5-60	D	.	WS
3aca	Chicago Burlington and Quincy RR.	1910	Du	70R	108	C	.	.	.	Kf	T,E	.	.	67.7	5-7-63	Ind, D,S	.	WS
28ccd	Raymond Mertens	1959	Dr	190R	5	M1	Pf	71-190	16	K1	Cy1,E	40	.	80	9-12-59	D,S	.	.
B7-59-3cbc	George Doll	1958	Dr	223R	4 1/2	M1	Pf	158-223	16	K1	Cy1,W	55	.	145	10-20-58	S	.	.
B7-60-8cbb	P. W. Waitzel	1959	Dr	507R	5	M1	DR	326-507	.	K1	T,E	.	.	250	7-19-59	D,S	61	950
B7-62-9bcc	G. W. Cass.	1960	Dr	147R	5 1/2	M1	Tc	80-114	10	K1	Cy1,W	.	.	46.2	7-10-62	S	.	.
28ccb	do.	1960	Dr	26.8	6	M1	.	.	.	Qv	J,E	.	.	9.1	7-26-62	S	52	.
29bdc	Robert T. Hill.	1960	Dr	140R	5	M1	Pf	125-140	0	K1	Cy1,W	4	.	81.8	7-10-62	S	.	.

Table 2.--Records of selected wells and springs--Continued

Location number	Owner or user	Year completed	Type of well	Depth of well (feet)	Diameter (inches)	Casing		Inter-val (feet)	Depth to bed-rock (feet)	Geo-logic rock source	Method of lift, (gpm) and power	Drawdown (feet) (hours)	Altitude of land surface (above m.s.l.)	Depth to water measurement	Date of measurement	Use of water	Field determinations		Remarks
						Type	Type completion										(°F)	Cond. (Fe) (pH)	
Weld County--Continued																			
B7-63-25db	William E. May.	..	DD	28R	30	M1	..	..	..	Qv	N 75R	..	..	22.8	12-10-52	N	..	..	Btt-4, WS
25dbc	.. do.	..	Dr	39R	24	M1	..	..	39	Qv	T.E 75R	11	..	23.6	12-10-52	I	56 1,080	0.4 7.3 18	
25dbd	.. do.	..	Dr	41R	24	M1	..	..	41	Qv	T.E 308st	..	..	22	10-15-52	I	53 1,650	..	
25dec	.. do.	..	Dr	40R	12	M1	..	..	40	Qv	T.E 325R	17	..	20.0	12-10-52	I	..	..	Btt-4
35dab	Mike Guttersen.	..	Dr	32R	36	M1	..	..	32	Qv	T.E 300R	8	..	21.3	10-10-52	I	..	..	L
35dac	.. do.	..	Dr	125R	30	M1	..	..	28	Kf	T.E 300R	90	..	18.4	5-10-63	I	..	..	L
B8-56-6bad	H. H. Craig	1920	Du	17.0	10	M1	..	..	..	Qv	N	..	..	16.3	5-1-63	N	..	..	WS
B8-58-26cba	U.S. Air Force.	1962	Dr	1,188R	6 5/8	M1	S1	922-944, 958-980, 1,033-1,083	..	Kp	T.E 43R	60	..	..	557	7-17-62	D	..	..
B8-59-10ccc	Harry Bowman.	1962	Dr	65R	5 1/2	M1	Pf	49-65	33	Tv	Cyl.W 3R	..	..	..	46	6- -62	S	..	L
B8-60-9abb	Pavnee Grazing Assoc.	1961	Dr	170R	5	M1	Pf	120-170	..	K1	Cyl.W 15R	20	..	..	120	5-30-61	S	..	L
24bca	.. do.	1961	Dr	200R	5	M1	Pf	150-200	..	K1	Cyl.W 20R	20	..	..	150	5-27-61	S	..	L
B8-61-27ddd	George Speaker, Jr.	1957	Dr	420R	5	M1	OH	240 1/2-420	8	K1	T.E 10R	43	..	..	235	10- -2-57	D, S	56 1,800	1 7.5 6 L
B8-62-9baa	Harold Magnuson	..	Dr	25R	20	M1	..	..	25	Qv	T.E 100R	12	..	..	4.8	5- -8-63	I	..	L
9bab	.. do.	1960	Dr	274R	..	M1	OH	206-274	50	K1	Cyl.E 5R	75	..	..	105	9-10-62	D	61 610	2 8.0 1 L
17dbb	.. do.	1960	Dr	27R	18	M1	Pf	11-27	25	Qv	T.E	..	..	..	6.1	5- -8-63	I	..	L
20dac	U.S. Dept. of Agriculture	..	Du	..	44	M1	..	..	..	Qv	T.Tr	..	..	..	10.3	5-10-63	I	..	Btt-4
21dcc	Carl Mays	..	Dr	265R	6	M1	..	..	..	K1	Cyl.E	..	..	..	5-10-63 D.P.S	64 770	3.0 8.1 2 WS	..	WS
29aba	F. R. Donovan	..	Du	23R	54	C	..	..	..	Qv	Cf.E 200R	7	..	..	13.1	5-10-63 S.I	..	..	WS
B8-63-24ba	U.S. Air Force.	1959	Dr	446R	7-6	M1	S1	174-446	5	K1	T.E 15R	60	72	4,970R	165	8-10-59	D	..	L, WS
24bdb	.. do.	1959	Dr	459R	..	M1	S1	100-459	5	K1	T.E 15R	102	72	4,962R	158	8-18-59	D	..	WS
B8-64-18da	Bradford Marlin	1960	Dr	177R	4 1/2	M1	Tc	60-152	8	K1	Cyl.W 6R	..	..	..	25	10-60	S	..	2 8.5 2 L
23cbb	Crow Valley Livestock Assoc.	1962	Dr	400R	6 5/8	M1	OH	314-400	13	K1	Cyl.W 6R	..	..	5,040	233.3	7- -9-62	S	..	L
29ccb	Dolly Groves.	..	Dr	250	6	M1	..	..	..	K1	N	..	..	4,995	140.4	7- -9-62	N	..	L
B9-56-7bba	Guy D. Chapel	1961	Dr	108R	5 1/2	M1	OH	17-108	12	Tv	Cyl.E 10R	..	..	..	12	6- -61	D, S	52 1,100	1 7.6 4
8bad	.. do.	..	Dr	307R	6	M1	..	..	..	Kp	Cyl.E 4R	200	..	..	100	7- -53	D.S	..	L
14daa	John Nicklas.	1962	Dr	625R	5	M1	Pf	60-625	43	Kp	T.E 6R	225	4	..	40	12-22-62	S	56 1,450	0 7.5 3 L
18ccc	Richard Mann.	1917	Du	10R	10	M1	..	..	..	Qv	Cyl.W	..	..	..	5.6	7-23-53	S	..	L
340cd	William Eller	1960	Dr	36R	5 1/2	M1	Pf	21-36	30	Qv	J.E 15R	..	..	..	14	9- -60	D	54 2,200	0 9 7.3 43 L
B9-57-6bcd	Rudolph Motis	1958	Dr	125R	6	M1	OH	84-125	..	Kf	Cyl.W 3R	70	..	..	35	7- -50	S	53 700	2 7.5 14
18dbb	.. do.	1959	Dr	52R	5 1/2	M1	..	..	43	Qv	Cyl.W 6R	15	..	..	30	11- -59	S	..	1 7.3 30
32cbb	Archle E. Box	1961	Dr	21R	5 1/2	M1	Pf	13-21	..	Qv	Cyl.W 5R	..	..	..	9	12- -61	S	56 2,300	..
B9-58-10baa	William Rohn	1961	Dr	28R	5 1/2	M1	Pf	16-28	19	Qv	Cyl.W 5R	5	..	..	17	8-18-61	S	52 1,100	0 5 7.3 20

Table 2.--Records of selected wells and springs--Continued

Location number	Owner or user	Year completed well	Depth of well (feet)	Casing		Depth to bedrock (feet)	Geo-logic source	Method of lift, (gpm) and power	Yield (gpm)	Drawdown (feet) (hours)	Altitude of land surface (above m.s.l.)	Depth to water measurement (feet)	Date of measurement	Field determinations			Remarks
				Type	Type of completion									Cond. (μm) (pH)	H	W	
Weld County--Continued																	
B9-59-1bdc	David E. Uhl.	1961	215R	M1	Pf 150-215	..	Tv	Cyl.W 5R	..	..	..	60	3-13-61	58	..	..	WS
14ccc	Pawnee Grazing Assoc.	1959	300R	M1	Sl 240-300	..	Tv	T.E 13R	35	..	..	145	11-23-59	..	..	..	L
20bcc	James Hickman	1941	65R	M1	..	..	Tv	T.N 300R	..	..	..	32.3	5-8-63	..	..	..	WS
25dcd	Francis McCaffrey	1961	155R	M1	Pf 100-155	..	Tv	Cyl.W 4R	..	..	..	90	3-9-61	62	930	0.0	7.5
31bcc	D. J. Shull	1960	150R	M1	Pf 50-150	..	Tv	Cyl.W 10R	20	1	..	40	7-60	56	1,020	.1	7.5
B9-60-14add	William Rohh.	1941	92R	M1	..	..	Tv	T.Tr 4002st	..	..	..	63.1	12-10-52	58	345	.0	7.3
17cdc	George Owens	1958	60R	M1	Pf 48-60	..	Tv	Cyl.E 2R	22	..	..	38	8-27-58	..	..	..	L
23aac	William Benner	1941	75R	M1	..	..	Tv	T.G 850R	..	..	..	48.3	5-8-63	..	..	..	WS
34adc	Town of Keota	1919	100R	M1	..	..	Tv	T.E 40R	..	..	..	40	..	56	..	..	WS
34dcb	Chicago, Burlington and Quincy RR.	1910	100R	C	..	..	Tv	T.E	..	..	..	73	5-63	..	..	..	..
B9-61-8dda	D. P. Gillette.	..	190R	M1	..	24	Kf(?)	T.Tr 350R	65	..	..	33	12-10-52	..	..	..	L, WS
34add	Daniel C. Kennison	1957	215R	M1	Pf 179-215	..	Tv	Cyl.G 5R	6	..	..	101.6	5-8-63	..	..	..	L
B9-62-17dbd	Harold Magnuson	1960	102R	M1	Pf 66-102	14	K1	Cyl.W 8R	68	..	..	22	8-27-60	56	2,900	5.0	7.3
25ccb	Graefe and Graefe, Inc.	1962	175R	M1	Pf 100-130, OH 130-175	2	K1	Cyl.W 12R	90	..	..	70	6-62	..	..	..	L
30ccc	Harold Magnuson	1960	68R	M1	Pf 50-68	..	K1	Cyl.W 12R	5	..	..	14	8-25-60	57	1,200	.7	7.3
B9-64-10dcd	Alex Werner	..	128	..	..	..	K1(?)	Cyl.W	..	..	..	92.1	7-20-62	..	..	..	..
30cdd	Crow Valley Livestock Assoc.	1962	200R	M1	OH 164 1/2-200	2	K1	Cyl.W 6R	..	..	5,180	87.2	7-17-62	56	720	.4	7.3
34dab	M. H. Moffat.	1926	141	M1	OH 65-141	..	K1	N	..	..	5,120	83.7	7-18-62	..	..	..	L
35caa	.. do.	1948	154R	M1	..	..	K1	T.E 10R	..	..	5,100	48	7-18-62	61	605	.2	7.5
B9-65-1dba	Crow Valley Livestock Assoc.	1946	124	M1	..	..	K1	Cyl.W	..	..	..	51.7	7-19-62	55	460	.1	7.5
6dcb	Russel Peterson	..	51.4	M1	..	..	Qu	Cyl.W	..	..	..	17.6	7-20-62	..	..	..	WS
22ccb	Ruth Macy	1926	40R	..	..	..	K1	J.E	..	..	5,120R	30	7-20-62	..	..	..	..
B10-56-7bad	Pawnee Grazing Assoc.	1958	640R	M1	Pf 610-640	8	Kp	Cyl.W 10R	..	..	..	171.0	5-1-63	..	..	..	L
B10-57-11ccb	William Toedtli	1950	75R	M1	..	..	Tv	Cyl.W	..	..	..	21.3	7-23-53	55	..	..	WS
B10-58-27aca	Allan Bros.	1942	90R	M1	..	..	Tv	Cyl.Tr 85R	17	..	..	27.8	5-2-63	..	..	..	WS
32cda	D. Larkins	1959	150R	M1	Pf 130-150	37	K1	Cyl.W 10R	25	..	..	110	8-59	..	..	..	..
B10-59-8aba	Elmer Ehmke	1939	90.0	M1	..	..	Tv	T.N 300R	..	..	..	50.1	5-2-63	..	..	..	..
14bbb	Edna Nelson	1941	65R	M1	..	..	Tv	T.G 1,400R	2	..	..	22.9	7-17-53	..	..	..	..
B10-60-26cad	Pawnee Grazing Assoc.	1961	275R	M1	Pf 140-275	..	Tv	Cyl.W 4R	135	..	..	140	6-8-61	..	..	..	..
B10-61-5ada	Town of Grover	1919	250R	..	..	..	K1(?)	T.E 30R	..	..	..	20	12-10-52	..	..	..	Standby well
5ada2	.. do.	1956	220R	M1	..	..	K1(?)	T.E 55R	..	..	..	..	..	..	..	..	WS

Table 2.--Records of selected wells and springs--Continued

Location number	Owner or user	Year completed	Type of well	Depth of well (feet)	Diameter of casing (inches)	Casing		Depth to bedrock (feet)	Geo-logic source	Method of lift, and power	Yield (gpm)	Drawdown (feet)(hours)	Altitude of land surface (above m.s.l.)	Depth to water (feet)	Date of measurement	Use of water	Field determinations			
						Type	Inter-connection										(°F)	Cond. (Pc)	(pH)	H
Weld County--Continued																				
B10-61-11ddd	C. C. Berger	..	Dr	42.5	12	M1	..	..	Tw	Cyl, W	..	..	..	32.7	5-7-63	S	..	..	..	
B10-61-14aaa	Thomas Fry	..	Dr	50R	18	M1	..	..	Tw	T, N	550R	..	..	30	12-9-52	N	..	..	..	
B10-61-17dcc	W. L. Basher and Sons	1962	Dr	192R	5 1/2	M1	OH	128-192	4	K1	Cyl, W	..	..	35	7-10-62	S	..	..	L	
B10-62-1abb	W. Tenney	..	Dr	34R	18	M1	..	32	OV	T, E	500R	20	..	9.4	5-9-63	I	..	..	L	
B10-62-2bab	A. Werner	..	Dr	35.0	18	M1	..	..	OV	J, E	..	..	..	6.2	5-9-63	S	..	..	..	
B10-62-2bab2	.. do.	..	Dr	21.5	18	M1	..	..	OV	T, E	450H	..	..	4.5	12-3-52	I	51	770	0.0	
B10-62-6baa	W. H. Bailey	..	Dr	54R	12	M1	..	..	..	T, W	200R	13	..	32	12-4-52	I	..	..	..	
B10-62-33bdc	Wilson Bailey	1958	Dr	132R	5	M1	OH	79-132	4	K1	Cyl, W	40	..	..	..	..	..	..	L	
B10-63-35aba	Crow Valley Livestock Assoc.	1962	Dr	350R	5	M1	OH	212 1/2-350	2	K1	Cyl, W	6R	..	..	54	3-62	S	57	460	
B10-64-5cdd	Mr. Smith	..	Dr	81.0	8	M1	..	..	K1	Cyl, W	..	..	..	42.3	8-2-62	S	..	..	..	
B10-64-14dd	Crow Valley Livestock Assoc.	..	Dr	205	5	M1	..	..	K1	Cyl, W	..	..	..	110.2	7-30-62	S	56	380	2	
B10-64-19cad	.. do.	1946	Dr	205R	6	M1	..	..	K1	Cyl, W	..	..	..	126.8	7-31-62	S	57	390	..	
B10-65-4cdd	A. T. DePorter	..	Dr	104	3 1/2	M1	..	..	K1	Cyl, W	..	..	..	71.6	7-24-62	S	55	460	4	
B10-65-22daa	Not known	..	Dr	134	5 1/2	M1	..	..	K1	N	..	..	..	129.8	8-2-62	N	..	..	..	
B10-66-12ddd	U.S. Dept. of Agriculture	..	Dr	47.1	3 1/2	M1	..	..	K1(?)	Cyl, W	..	..	..	26.7	7-24-62	S	54	545	2	
B10-66-22ccc	.. do.	1959	Dr	44.7	..	M1	..	115-240, 280-300, 340-360, 410-430, 430-465	..	K1	N	..	..	36.4	7-23-62	N	..	..	..	
B10-66-36dda	U.S. Air Force	..	Dr	465R	7 5/8	M1	..	210-380, 400-440	0	K1	T, E	15R	87	72	5,390R	120	11-21-59	D	..	..
B10-66-36ddd	.. do.	1959	Dr	440R	7 5/8	M1	..	..	0	K1	T, E	15R	130	72	5,377R	120	12-7-59	D	..	..
B11-56-15cca	J. T. Moyer	1945	Dr	83R	18	M1	..	..	Tw	Cyl, W	500R	..	..	32.6	5-1-63	S	..	..	..	
B11-56-15cca	Shell Oil Co.	1960	Dr	140R	10	M1	..	80-140	..	T, E	75R	35	..	65	11-10-60	Ind	..	..	L	
B11-57-2ada	Robert Biggs	1961	Dr	365R	5 1/2	M1	PF	..	Tw	T, E	20R	200	..	110	12-6-62	D, S	52	800	0	
B11-57-13dda	U.S. Air Force	1962	Dr	419R	6 5/8	M1	SL	344-365, 353-395	84	Tw	20R	52	..	4,993R	121	6-16-62	D	..	..	
B11-57-26cac	Warnecke and Pauling	1962	Dr	38R	5 1/2	M1	PF	22-38	..	Tw	10R	..	..	12	5-62	D, S	..	..	..	
B11-58-2abb	Gust Kindvall	1940	Dr	100R	18	M1	..	..	Tw	T, W	750R	50	..	29.0	5-2-63	I	..	..	..	
B11-58-9ccc	Elmer K. Anderson	1963	Dr	150R	14	N	..	..	Tw	N	50R	2	1/2	59.1	5-2-63	N	..	..	..	
B11-59-13dac	Pawnee Grazing Assoc.	1962	Dr	260R	5	M1	PF	210-260	..	Tw	30R	..	..	200	5-22-62	S	..	..	..	
B11-59-32baa	U.S. Air Force	1962	Dr	240R	6 5/8	M1	SL	187-220, 220-240	..	Tw	20R	13	..	5,416R	190	6-30-62	D	..	..	
B11-60-1abd	Pawnee Grazing Assoc.	1962	Dr	355R	5	M1	PF	305-355	..	Tw	30R	40	..	256.1	5-8-63	S	59	370	0	
B11-60-1abd	Pawnee Grazing Assoc.	1962	Dr	355R	5	M1	PF	305-355	..	Tw	30R	40	..	256.1	5-8-63	S	59	370	0	

Table 2.--Records of selected wells and springs--Continued

Location number	Owner or user	Year completed	Type of well	Depth of well (feet)	Diameter of well (inches)	Casing		Depth to bedrock (feet)	Geologic source	Method of lift, and power	Yield (gpm)	Drawdown (feet) (hours)	Altitude of land surface (above m.s.l.)	Depth to water (feet)	Date of measurement	Use of water	Field determinations			Remarks
						Type	Type of completion										(°F)	Cond. (Fe)	(pH)	
Weld County--Continued																				
B11-60-26bab	Warren Hopka. . .	1959	Dr	305R	4 1/2	M1	Pf	110-130, 205-225	47	Tv	Cyl,W	10R	110		100	5- 3-59	S	56	445 0.0 7.5 10 L	
B11-61-4cca	U.S. Air Force. .	1959	Dr	561R	7	M1	SI	219-561	10	Tv,K1	T,E	15R	54	72 5,261R	110	8-29-59	D		. L, WS	
B11-61-4cbb	. do.	1959	Dr	415R	7	M1	SI	162-415	. .	Tv,K1	T,E	15R	116	72 5,257R	129	8-26-59	D		. WS	
B11-61-13bdb	John Bauman. . .	. . .	Dr	80R	12	M1	. .		. .	Tv	N	600R			35.3	5- 8-63	N			
B11-61-32ccc	Ralph J. Ardourel	1962	Dr	158R	5 1/2	M1	OH	67-158	23	Tv	Cyl,E	. .			20	7-31-62	S		. L	
B11-62-18bac	Robert J. Burbach	1962	Dr	132R	6-5	M1	Pf	118-130	3	Tv	Cyl,W	15R	70		46	9-25-62	S	58	420 .0 7.4 5 L	
B11-62-27aaa	W. Lawrence. . .	. . .	Dr	32R	120	M1	. .		. .	Qv	T,E	150Est			8.6	12- 5-52	I	50	610	L, WS
B11-62-35bca	W. Tenny.	. . .	Dr	60R	18	M1	. .		55	Qv	T,E	1,025R	23		11.0	5- 9-63	I	51		. L, WS
B11-63-21bba	Not known	. . .	Du	26.6	84	C	. .		. .	Tv	N	. .			26.2	8- 1-62	N			
B11-64-22ada	George Sauer. . .	1958	Dr	238R	5 1/2	M1	Tc	218-238	2	Tv	T,E	15R	120		69	8- 1-62	D,S			L
B11-65-18ccc	D. Horton	. . .	Dr	180R	. .	. .	. .		. .	Tv	Cyl,W	. .					D,S	58	400 .3 8.0 8	
B11-65-21dbb	Crow Valley Livestock Assoc. 1960	. . .	Dr	235R	5	M1	Pf	189-214	. .	Tv	Cyl,W	12R					S	54	360	L
B11-65-31dbd	Henry Prange. . .	. . .	Dr	300R	12	M1	. .	214-235	2	Tv	Cyl,W	300R	39.0		26.4	8- 6-62	I			L
B11-65-31dca	. do.	. . .	Dr	260R	12	M1	. .		. .	K1	T,E	200R	22.3		26.4	8- 6-62	I	52	550 .0 7.5 12 WS	
B11-65-36dcc	A. T. DePorter. . .	. . .	. .	17.4	4 1/2	M1	. .		. .	Tv	Cyl,W	. .			10.4	8- 1-62	S			
B11-66-10cdc	Dave Horton . . .	. . .	Dr	50R	4	M1	. .		. .	Tv	Cyl,W	. .			30.2	7-11-62	D,S	54	345 .1 8.0 8 WS	
B11-66-20baa	A. T. DePorter. . .	. . .	Du	45R	. .	. .	. .		. .	K1	Cyl,W	. .			27.7	8- 6-62	S			
B11-67-1add	Warren Livestock Co. . .	. . .	Dr	264	6	M1	. .		. .	Tv	Cyl,W	. .			219.6	8- 7-62	S			
B11-67-2add	. do.	. . .	Sp	. .	. .	. .	. .		. .	To	N	FLM					S	66	275 .1 7.5 9	
B11-67-19bcc	Industrial Pipe Lines, Inc. . .	1962	Dr	51R	24	M1	Pf	20-51	48	Qv	T,G	480M	22		6	8-10-62	Ind	56	390	L
B11-67-22dcc	Union Pacific Railroad Co. . .	. . .	Dr	300R	. .	M1	. .		. .	K1	T,E	F5Est				5- 3-63	D,Ind			
B11-67-34baa	M. W. Diehl	. . .	Dr	38.1	. .	M1	. .		. .	K1	J,E	. .			27.0	8- 3-62	D,S	58	645	
B12-57-20ddb	John Hillman. . .	1959	Dr	147R	6	M1	. .		. .	To	T,E	25R	10		122	1-15-59	S			L, WS
B12-57-31ccc	Stanley King Smith	1961	Dr	72R	5 1/2	M1	Pf	60-72	. .	To	N	15R			26.0	5- 2-63	N	51		
B12-58-34bcc	A. R. Bourlier. . .	1950	Dr	100R	18	M1	. .		. .	To	T,LFG	525R	30		64.9	5- 2-63	I			
B12-59-25caa	Pavnee Grazing Assoc.	1960	Dr	400R	5	M1	Pf	290-400	. .	Tv	Cyl,W	6R	85		300	3-30-60	S	58	480 .4 7.5 6	
B12-61-19abb	Bauman Bros. . . .	. . .	Dr	152R	18	M1	. .		120	Qc	T,E	1,020R	54		17.1	12- 3-52	I	56	425 .0 7.4 10 L	
B12-61-31ada	Walter J. Peters	1963	Dr	93R	7	M1	Pf	30-60	. .	Qc	N	130R	2		29.7	5- 9-62	N			
B12-62-20bbb	B. Blake.	. . .	Dr	234R	18	M1	. .		. .	Tv	T,E	250Est	90		18	12- 8-52	I	54	550 .0 7.3 14	
B12-62-20dda	. do.	. . .	Dr	100R	16	M1	. .		. .	Qv,Tv	T,E	150Est			16.3	12- 8-52	I	55	580	
B12-62-20ddd	. do.	. . .	Dr	100R	18	M1	. .		. .	Qv,Tv	T,E	400Est	24		16	12- 8-52	I	55	550	

Table 2.--Records of selected wells and springs--Continued

Location number	Owner or user	Year completed	Type of well	Depth of well (feet)	Diam-ster (inches)	Casing		Depth to bed-rock (feet)	Geo-logic rock source	Method of lift, and power	Yield (gpm)	Drawdown (feet) (hours)	Altitude of land surface (above m.s.l.)	Depth to water measurement (feet)	Date of measurement	Use of water	Field determinations		
						Type	Type of completion										(%) Cond. (Fe)	(pH) H	Remarks
Weld County--Continued																			
B12-62-24bcc	E. Lesh	1960	Dr	157R	18	M1	Pf	49-51, 76-98, 113-148	Qt, Tw	T, E	800Est			30	10-14-52	I			
24cbc	do.		Dr	148R	18	M1													
25bbb	Dwight G. Walthey	1953	Dr	140R	18	M1	Pf	70-134	Qt, Tw	T, E	750Est			29	7- -60	I	55	415	
26bbb	R. W. Baakett		Dr	96R	18	M1			Qt, Tw	T, E	1,250R	45	6	33.6	5- 9-63	I			L
26ccc	do.		Dr	110R	18	M1			Qt, Tw	T, E	300Est	35		33.1	12- 2-52	I			
27baa	L. Lambert.		Dr	110R	18	M1			Qt, Tw	T, E	600Est	50		36.2	12- 2-52	I	55	560	
27bad	do.		Dr	110R	18	M1			Qt, Tw	T, E	550Est	50		39.4	12- 2-52	I	56	395	
28acd	B. Blake.		Dr	29R	12	M1			Qv	N	300R	20		5.2	5- 9-63	N			
34aba	Charles Alden		Dr	60R	12	M1			Qv	T, E	350R			21.8	5- 9-63	I			
34aba2	do.		Dr	60R	12	M1			Qv	T, E	400R			18.8	12- 5-52	I			
34abb	do.		Dr	60R	18	M1			Qv	T, E	400R			6	12- 5-52	I			
34bab	do.		Dr	60R	18	M1			Qv	T, E	1,250R			7.9	5- 9-63	I			
34bdb	do.		Dr	57R	18	M1	Pf	30-42	Qv	T, E	300R	34	3	5.2	5- 9-63	I			L
35caa	do.		Dr	54R	18	M1			Qv	T, E	800R			18.5	5- 9-63	I			
B12-64-26bbb	M. T. Cox		Dr	25R	24	M1			Tw	T, G				3.2	1-13-53	I			Btt-3
26dcb	do.		Du	25R					Tw	T, G	300R	20		2.1	5- 9-63	I			
B12-65-32bbb	Floyd Cushman	1916	Dr	176	4 1/2	M1			To	T, E				153.0	7-25-62	D, S	56	365	0.1 7.5 10 WS
B12-67-24caa	Warren Livestock Co.		Dr		6	M1			To	N				214.4	8- 7-62	N	62	390	.1 7.5 9 WS

Formational names have been added to the logs by the author, but drillers' terms have been retained where possible. Altitudes shown are for land surface at the well or test-hole site. Thickness in feet. Depth in feet below land surface.

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Table 3.--Selected drillers' logs of wells and test holes--Continued

Thick- ness	Depth	Thick- ness	Depth	Thick- ness	Depth
Logan County--Continued		Logan County--Continued		Logan County--Continued	
B8-55-17abb.--Continued		B9-54-2cbb.--Continued		B10-51-6bcc.--Continued	
Shale, dark-gray, sandy, silty, laminated, moderately hard to moderately soft; con- tains thin lenses of sand.		Pierre Shale: Shale, gray, yellow-brown limonite-stain, sandy, silty, partly clayey, laminated, moderately soft (water at 52 feet).		contains scattered medium quartz grains; very sandy from 46 to 47 and 55.5 to 57 feet (water at 37 feet)	
16.5	90	51.5	87.5	61.5	64.5
Sandstone, gray, fine- grained, calcareous, well-cemented, hard		Shale, dark-gray, red- brown iron-stain, clayey, partly silty, micaceous, moderately soft to moderately hard		Siltstone, buff, shaly, moderately cemented, hard; contains numerous fragments of red shale.	
3	93	42.5	130	30	94.5
Shale, dark-gray, sandy, silty, laminated, moderately hard; con- tains numerous thin lenses of fine sand		B9-55-3bcc. White River Group: Clay, tan, silty		Shale, gray-green, yellow- brown limonite-stain, very sandy, laminated, moderately hard; contains numerous thin laminae of fine sand	
37	130	3	3	27	121.5
B9-51-6ddd. Alt. 3,915 ft. Unconsolidated deposits: Sand.		Silt, tan, sandy, slightly clayey, loose to medium dense.		Shale, gray-green, yellow- brown limonite-stain, very sandy, laminated, moderately hard; contains numerous thin laminae of fine sand	
47	47	5	8	8.5	130
Pierre Shale: Clay.		Siltstone, and shale, interbedded; yellow- tan mottled pale-green, clayey, thin-bedded, slightly cemented, crumbly, moderately soft, highly weathered		B10-51-10bcc. Alt. 4,005 ft. Ogallala Formation: Topsoil	
198	245	56	64	7	7
Shale at 245 feet		Shale and siltstone, interbedded; yellow- tan mottled, lavender and green, clayey, slightly to moderately cemented, moderately soft to moderately hard, moderately to slightly weathered		Sand and gravel	
		13	77	41	48
B9-52-4ddc. Alt. 4,000 ft. Unconsolidated deposits: Topsoil		Pierre Shale: Shale, gray, iron-oxide stain along bedding planes, silty, thin- bedded, slightly weathered, moderately hard		White River Group: Shale	
5	5	7		106	
Sand and clay	12	84		154	
7	12	87			
White River Group: Clay.		Shale, dark-gray, slight iron-oxide stain, thin- bedded, moderately hard.		B10-51-19dcc. Alt. 3,955 ft. White River Group: Topsoil	
18	30	3		3	
Clay, soft.	49	3		8	
19	49	3		11	
Rock.	50	3		15	
1	50	3		36	
Clay, blue, soft.	68	3		51	
18	68	3		90	
Pierre Shale: Shale, blue; contains rock from 71 to 71.5, 90 to 90.5, 103 to 103.5, 115 to 116, and 150 to 151 feet.		Shale and siltstone, interbedded; shale, dark-gray, moderately hard to hard; siltstone, light-gray, thin- bedded, moderately to slightly cemented, friable, moderately soft to moderately hard (water at 93 feet).		Clay and thin strips of rock	
87	155	47		40	
12	167	134		130.5	
Shale and some shale-sand	167.5	B9-55-21aaa. Pierre Shale: Topsoil.		Rock.	
Rock.	180	1		.5	
12.5	180	79		141	
180	190	80		176	
Shale and some shale-sand	190	680		35	
Shale; contains rock from	202	760		28	
198 to 199 feet.	202	B10-50-8baa. Alt. 3,950 ft. Unconsolidated deposits: Topsoil.		Shale and thin strips of rock	
Shale and some shale-sand	223	4		204	
Rock.	224.5	7		206	
Shale	230	11		2	
5.5	230	72.5		14	
B9-53-3ddc. White River Group: Topsoil		80.5		26	
3	3	84		246	
Clay.	12	97		264	
Sandstone and clay.	17	101		276	
5	17	141		278	
Pierre Shale: Shale, weathered.		B10-51-21ddd. White River Group: Silt, tan, sandy, clayey.		Shale and thin strips of shale-sand.	
27	44	3		18	
Sandstone	47	3		12	
Shale, soft	61	5		2	
14	61	3		264	
Rock.	64	3		276	
Shale	82	3		278	
18	82	3			
2	84	3			
Shale, blue, and some sand; contains rock from 104 to 105, 123 to 124, and 140 to 141 feet	141	3			
57	141	3			
Shale and thin strips of rock	182	3			
41	182	3			
Shale and some shale-sand	256	3			
Rock.	258	3			
2	258	3			
Shale and shale-sand.	282	3			
24	282	3			
Shale-sand and some rock.	324	3			
42	324	3			
Shale, rock, and sand	360	3			
36	360	3			
B9-53-19bcb. Alt. 4,220 ft. White River Group: Sand, fine.		B10-50-10ddc. Alt. 3,830 ft. Valley-fill deposits: Topsoil.		B10-54-16aaa. White River Group: Silt, dark-brown, clayey, sandy, organic.	
23	23	4		1	
Clay, gray.	62	24		1	
39	62	38		24	
Pierre Shale: Shale, blue; contains streaks of sandstone from 232 to 698 feet.		White River Group: Rock and clay.		Silt, brown, clayey, sandy, medium dense	
636	698	14		23	
		58			
		96			
		218			
		380			
		B10-51-6bcc. Alt. 4,045 ft. White River Group: Silt, brown, sandy, slightly organic		Pierre Shale: Shale, yellow-brown and gray, moderately soft; contains numerous thin laminae of silt	
		3		3	
		3		27	
		3		37	
		3		45	

Table 3.--Selected drillers' logs of wells and test holes--Continued

Thick- ness	Depth	Thick- ness	Depth	Thick- ness	Depth
Logan County--Continued		Logan County--Continued		Logan County--Continued	
B10-54-16aaa.--Continued		B11-52-31ccc.--Continued		B11-55-15add.--Continued	
Shale, dark-gray, partly sandy, moderately hard; contains occasional horizontal laminae of siltstone.	85 130	Sand, gray-brown, medium to coarse, very dense; contains a little silt and gravel	13 16	Silt, buff, clayey, sandy, dense to very dense. . .	4.5 58
B10-55-3ddc.		Sand, tan, fine, silty, slightly clayey, micaceous, very dense. .	4 20	Shale, blue-gray, yellow- brown iron-stain, clayey, silty, laminated, moderately soft	10 68
Unconsolidated deposits: Clay, sandy; contains streaks of sand.	45 45	Sand, gray-brown, fine to medium, slightly silty, dense to very dense; contains hard nodules of sandstone from 23 to 27 feet.	7 27	Siltstone, blue-gray, shaly, slightly cemented, moderately soft	9 77
Pierre Shale:		Sand, gray, fine, silty, very dense	3.5 30.5	Pierre Shale:	
Shale.	455 500	Sand, gray, fine, clayey, silty, very dense. . .	7 37.5	Shale, blue-gray, very silty, micaceous, laminated, moderately hard; contains thin laminae of light-gray silt	53 130
Shale; contains streaks of sand	60 560	Sand, red-brown, medium to coarse, slightly silty, very dense; con- tains gravel (water at 52 feet)	16.5 54	B12-48-30dgc. Alt. 4,155 ft.	
B11-48-12aac. Alt. 3,780 ft.		Conglomerate, gray-brown, well-cemented, hard; subrounded limestone pebbles in a fine- to medium-grained sandstone matrix; contains scattered pebbles of red-brown siltstone. .	64 118	Ogallala Formation:	
Ogallala Formation:		Siltstone, red-brown, partly clayey, smooth, slightly to moderately cemented, moderately hard	12 130	Soil	3 3
Soil	6 6	B11-53-3ccc.		Sand and gravel.	47 50
Sand and gravel.	14 20	Ogallala Formation:		Clay	110 160
Clay (water from 65 to 75 feet)	72 92	Clay, dark-brown, silty, sandy, organic. . . .	1 1	Sand	8 168
B11-48-31cad. Alt. 3,705 ft.		Sand, brown and white, fine, silty, clayey, very dense; contains calcareous lenses. . .	7 8	Clay	7 175
Valley-fill deposits:		Sand, gray-brown, medium to coarse, and fine gravel, slightly silty, calcareous, very dense	4.5 12.5	No record	25 200
Soil	2 2	Sand, white, fine, silty, very dense; contains calcareous nodules. .	2.5 15	B12-50-26ddd. Alt. 4,275 ft.	
Sand	18 20	Sand, tan, fine, silty, very dense; contains calcareous lenses and seams	2.5 17.5	Ogallala Formation:	
Pierre Shale:		White River Group:		Clay, brown, silty, sandy, slightly organic. . . .	3 3
Soapstone	125 145	Siltstone, brown, clayey, partly sandy, moderately cemented, moderately hard (water at 121 feet)	112.5 130	Sand, pale-red-brown, fine to medium, medium dense; contains some silt and gravel	6 9
Shale, blue; contains streaks of sand.	411 556	B11-53-30ccc.		Sand, pale-red-brown, fine to medium, silty, dense	6 15
B11-49-12dbb. Alt. 3,900 ft.		White River Group:		Sand, pale-red-brown, fine to coarse, very dense; contains small amount of silt and gravel	39 54
White River Group:		Silt, light-brown, sandy, partly cemented, very dense; contains scattered calcareous nodules.	7.5 7.5	Sand, red-brown, fine to medium, clayey, silty, very dense	19 73
Topsoil.	24 24	Siltstone, red-brown, clayey, moderately cemented, moderately hard to moderately soft (water at 109.5 feet). .	122.5 130	Sand, pale-red-brown, fine to coarse, very dense; contains small amount of silt and gravel	15 88
Hole	.5 24.5	B11-54-2bbb.		Silt, red-brown, sandy, slightly clayey, very dense	10 98
Clay, blue	1.5 26	Ogallala Formation:		Sand, brown, fine, silty, very dense	11 109
Clay	32 58	Silt, dark-brown, sandy, organic.	1 1	Clay, brown, silty, very stiff	3.5 112.5
Rock	4 62	Siltstone, brown, clayey, moderately hard to hard, moderately cemented; contains gray-white, highly calcareous, very hard siltstone from 12 to 14.5 feet.	129 130	Silt, red-brown, clayey, sandy, very dense . . .	4.5 117
Clay and rock.	23 85	B11-55-15add.		Sand, pale-red-brown, fine to medium, silty, calcareous, very dense; contains some gravel . .	7 124
Rock	3 88	White River Group:		Silt, brown, sandy, very dense	3 127
Clay	27 115	Silt, light-brown, sandy, partly cemented, very dense; contains scattered calcareous nodules.	7.5 7.5	Sand, pale-red-brown, fine, silty, very dense	3 130
Clay and rock.	3 118	B12-51-36daa. Alt. 4,330 ft.		Ogallala Formation:	
Gravel	7 125	Ogallala Formation:		Sand, brown, fine to medium, silty, organic	3 3
Sandstone	10 135	Silt, dark-brown, sandy, organic.	1 1	Silt, pale-red-brown, sandy, calcareous, very dense	5 8
Clay, hard	18 153	Siltstone, brown, clayey, moderately hard to hard, moderately cemented; contains gray-white, highly calcareous, very hard siltstone from 12 to 14.5 feet.	129 130	Sand, tan, fine, silty, calcareous, partly cemented, very dense . .	10 18
B11-49-26dgc. Alt. 3,800 ft.		B11-52-7cbb. Alt. 4,565 ft.		Sand, pale-red-brown, fine to coarse, very dense; contains gravel .	6 24
White River Group:		Ogallala Formation:		Sand, red-brown, fine to medium, silty, very dense; contains a little gravel	3 27
Clay, sandy.	10 10	Loam	5 5	Sand, tan, fine, slightly silty, very dense. . . .	5.5 32.5
Sand	2 12	Sand, gravel, and clay, mixed	20 25	Sand, pale-red-brown, fine to coarse, slightly silty, very dense; contains a little gravel	25.5 58
Hardpan.	143 155	Clay	40 65	Shale, red-brown, sandy, silty, moderately hard; contains scattered medium quartz grains . .	19.5 77.5
Pierre Shale:		White River Group:		Sand, red-brown, fine, silty, clayey, very dense.	4.5 82
Shale, variegated.	55 210	Clay	235 300	Shale, red-brown, clayey, silty; contains scattered medium quartz grains . .	2.5 84.5
Shale, gray.	200 410	Clay and hardpan	152 452	Sand, red-brown, fine, silty, very dense. . . .	3.5 88
B11-50-32dda. Alt. 3,975 ft.		B11-52-31ccc. Alt. 4,440 ft.			
White River Group:		Ogallala Formation:			
Loam	6 6	Sand, dark-gray, fine to medium, silty, slightly organic.	3 3		
Gravel, sand, and clay . .	8.5 14.5				
Clay	2.5 17				
Clay, hard	28 45				
Clay, contains small holes	6 51				
Clay, hard	11 62				
Sandstone, soft.	5 67				
Gravel, fine, and sand . .	6 73				
Sandstone, clay, and some sand	10 83				
Clay	1 84				
B11-51-6bba. Alt. 4,435 ft.					
Ogallala Formation:					
Soil	3 3				
Gravel	24 27				
Clay	3 30				
Gravel	18 48				
Clay	4 52				
Gravel	6 58				
Clay	12 70				
Gravel	3 73				
Clay	7 80				
Gravel	20 100				
Sand and gravel.	22 122				
White River Group:					
Clay, white.	8 130				
Hardpan	110 240				

Table 3.--Selected drillers' logs of wells and test holes--Continued

Thick- ness	Depth	Thick- ness	Depth	Thick- ness	Depth
Logan County--Continued		Logan County--Continued		Morgan County--Continued	
B12-51-36daa. --Continued		B12-55-24cdd. --Continued		B5-56-27abc. --Continued	
Shale, red-brown, clayey, silty; contains scattered medium quartz grains.	5.5 93.5	Siltstone, red-brown, sandy, calcareous, well-cemented, hard.	20 302.5	Gravel, fine, sand, and clay, dirty.	12 22
Sand, pale-red-brown, fine, silty, clayey, very dense.	9.5 103	Siltstone, red-brown, sandy, shaly, calcareous, moderately cemented, moderately hard.	100 402.5	Clay.	4 26
Clay, pale-red-brown, sandy, silty, hard.	5 108			Clay and sand (water).	2 28
Sand, tan, fine to coarse, very dense; contains a little silt and gravel.	17 125	Morgan County		Sand and fine gravel.	7 35
Sand, red-brown, fine, silty, clayey, very dense.	2.5 127.5	B4-57-7bdc. Alt. 4,490 ft.		Gravel and sand; becomes coarser from 39 to 53 feet.	18 53
Sand, tan, fine to coarse, silty, very dense; con- tains a little gravel.	2.5 130	Unconsolidated deposits:		Pierre Shale:	
B12-55-24cdd.		Topsoil.		Shale.	2 55
Ogallala Formation:		Clay and some sand.			
Sand, brown, fine to medium, silty, slightly organic.	1.5 1.5	Quicksand and fine sand.		B5-57-4aaa. Alt. 4,700 ft.	
Sand, pale-red-brown, fine, silty, very dense; contains numerous cal- careous nodules.	4 5.5	Clay and magnesia.		Unconsolidated deposits:	
Sand, red-brown, fine to medium, silty, slightly cemented, very dense.	10.5 16	Sand, fine, and some clay.		Sand.	4 4
Sand, red-brown, fine, silty, calcareous, very dense.	8.5 24.5	Sand, fine.		Sand, fine.	7 11
Sand, red-brown, medium, slightly silty, very dense.	2.5 27	Clay.		Clay, sand, and gravel.	6 17
Sand, brown, fine to medium, slightly silty, very dense.	10 37	Pierre Shale:		Sand and gravel.	32 49
Sand, gray-tan, fine, silty, very dense.	11 48	Shale blossom; grading to blue at 62 feet.		Clay.	3 52
Sand, red-brown, fine to medium, silty, slightly cemented, very dense.	15.5 63.5	Shale, blue; contains gypsum from 76 to 82 feet and rock from 110 to 111 and 150 to 152 feet.		Sand, gravel, and rocks.	12 64
Sand, red-brown, fine, clayey, slightly cemented, very dense; contains thin stringers of red-brown shale.	10 73.5	Shale, gritty.		Clay.	5 69
Sand, red-brown, fine, silty, very dense.	9 82.5	Rock.		Fox Hills Sandstone:	
Sand, tan, fine, silty, calcareous, very dense.	2.5 85	Shale, blue.		Shale.	6 75
Sand, tan, fine to medium, slightly silty, very dense.	3 88	Rock.			
Silt, red-brown, sandy, calcareous, moderately cemented, very dense.	4.5 92.5	Shale; contains some sand of rock from 308 to 540 feet, and thin lenses of sand from 369 to 540 feet.		B5-57-20cba. Alt. 4,400 ft.	
Sand, red-brown, fine, silty, calcareous, moderately cemented, very dense.	11.5 104	B4-57-15dab. Alt. 4,400 ft.		Unconsolidated deposits:	
Sand, red-brown, fine to medium, clayey, silty, partly cemented, very dense (water at 123 feet).	23 127	Unconsolidated deposits:		Topsoil.	4 4
Sand, light-brown and white, fine to medium, silty, calcareous, very dense; contains numerous cemented nodules.	3 130	Topsoil.		Clay.	2 6
Silt, red-brown, sandy, clayey, very dense.	1 131	Sand.		Quicksand and clay.	12 18
Silt, pale-red-brown, sandy, calcareous, very dense; contains numerous cemented nodules and lenses.	3 134	Sand, fine, and clay.		Quicksand and fine sand.	17 35
Sand, red-brown, fine, silty, very dense; grades to tan from 140 to 145 feet.	22 156	Quicksand, sand, and clay.		Sand and gravel, fine.	3 38
Sand, fine, and silt, pale-red-brown, slightly clayey, very dense; con- tains scattered hard cemented nodules.	7.5 163.5	Pierre Shale:		Sand, fine (water).	9 47
Sand, gray-tan, slightly clayey, very dense, partly cemented; contains hard cemented nodules.	10 173.5	Shale.		Pierre Shale:	
Silt, pale-red-brown, sandy, clayey, very dense.	9 182.5	B4-57-20cda. Alt. 4,345 ft.		Shale, blue.	3 50
White River(?) Group:		Unconsolidated deposits:			
Siltstone, red-brown, sandy, shaly, calcareous, moderately cemented, moderately hard.	100 282.5	Topsoil.		B5-60-1aab. Alt. 4,540 ft.	
		Loam, sandy.		Unconsolidated deposits:	
		Sand, a little gravel, and soft sandstone.		Topsoil.	4 4
		Gravel.		Clay.	2 6
		Gravel, sand, and rocks.		Quicksand and clay.	12 18
		Gravel, sand, rocks, and some clay.		Quicksand and fine sand.	17 35
		Gravel and sand.		Sand and gravel, fine.	3 38
		Pierre Shale: Coal blossom		Sand, fine (water).	9 47
		B4-58-10daa. Alt. 4,500 ft.		Pierre Shale:	
		Unconsolidated deposits:		Shale, blue.	3 50
		Topsoil.			
		Sand.		B5-60-9cdd. Alt. 4,540 ft.	
		Clay and some sand.		Valley-fill deposits:	
		Clay.		Topsoil.	4 4
		Clay and some fine sand.		Sand.	5 9
		Sand and clay.		Clay.	4 13
		Sand.		Pierre Shale:	
		Clay, jointed.		Shale blossom; contains rock from 30 to 31 feet; grading to blue from 69 to 73 feet.	60 73
		Pierre Shale:		Shale, blue; contains some bentonite from 136 to 296 feet.	223 296
		Shale, jointed.		Shale and some shale- sand.	25 321
		B5-55-20cdd. Alt. 4,200 ft.		Sand and shale.	7 328
		Valley-fill deposits:		Shale and some shale- sand.	24 352
		Soil, sandy.		Shale; contains shale- sand from 369 to 376, 391 to 396, 418 to 423, 454 to 458, 481 to 496, and 513 to 560 feet; contains rock from 416 to 418 feet.	238 590
		Gravel and rock.		B6-55-15add. Alt. 4,330 ft.	
		Clay.		Unconsolidated deposits:	
		Pierre Shale:		Soil, black, sandy.	6 6
		Shale, yellow.		Sand, yellow, fine.	12 18
		Shale, blue.		Gravel, medium to coarse.	14 32
		B5-56-10cbc. Alt. 4,435 ft.		Pierre Shale:	
		Valley-fill deposits:		Shale, yellow.	1 33
		Topsoil.		Shale, blue.	1 34
		Gravel and sand.		B6-56-1cdd.	
		Clay.		Unconsolidated deposits:	
		Gravel and sand.		Topsoil.	2 2
		Clay, sand, and gravel.		Sand.	16 18
		Sand, clay, and fine gravel.		Clay.	6 24
		Gravel.		Sand.	3 27
		Clay.		Clay.	3 30
		Pierre Shale:		Gravel and clay.	3 33
		Shale.		Gravel.	10 43
		B5-56-27abc. Alt. 4,300 ft.		Clay.	3 46
		Valley-fill deposits:		Pierre Shale:	
		Topsoil.		Shale, yellow.	4 50
		Sand and fine gravel.		Shale, blue, at 50 feet.	
				B6-57-7dcd. Alt. 4,680 ft.	
				Unconsolidated deposits:	
				Topsoil.	9.5 9.5
				Sand and gravel.	1.5 11
				Gravel and some clay.	5.5 16.5
				Fox Hills Sandstone:	
				Shale, weathered.	3.5 20
				Shale, blue.	4 24

Table 3.--Selected drillers' logs of wells and test holes--Continued

Thick- ness	Depth	Thick- ness	Depth	Thick- ness	Depth
Morgan County--Continued		Weld County--Continued		Weld County--Continued	
B6-58-17daa. Alt. 4,855 ft.		B6-61-5bcd. --Continued		B7-58-lacc. --Continued	
Unconsolidated deposits:		Sandstone 21 78		Shale; contains thin streaks of rock. 42 96	
Topsoil. 2 2		Shale 7 85		Shale and sandy shale 13 109	
Sand 2 4		B6-61-19ddd. Alt. 4,640 ft.		Rock 1 110	
Clay 4 8		Unconsolidated deposits:		Shale-sand and shale 18 128	
Laramie Formation:		Soil 1 1		Shale and some sand. 28 156	
Rock 1 9		Clay, sandy 2 3		Shale. 12 168	
Clay 23 32		Sand and clay 3 6		B7-58-8bcc.	
Rock 1 33		Gravel, fine 1 7		Laramie Formation:	
Sandstone, yellow, and clay 27 60		Sand 3 10		Sand, brown, fine to medium, silty, slightly organic. 3 3	
Clay 5 65		Gravel, fine. 2 12		Shale, pale-green, iron-oxide stain, clayey, thin-bedded, moderately soft, highly weathered; interbedded with moderately soft friable yellow-tan slightly sandy siltstone. 34 37	
Sandstone, yellow. 7 72		Clay. 1 13		Shale, dark-gray, silty, micaceous, thin-bedded, moderately hard (water at 54 feet). 26 63	
Sandstone, hard 4 76		Sand and fine gravel. 2 15		Siltstone, gray, sandy, thin-bedded, slightly to moderately cemented, moderately soft. 15 78	
Clay 8 84		Clay. 2 17		Shale, dark-gray, silty, sandy, thin-bedded, moderately hard. 10 88	
Fox Hills Sandstone:		Fox Hills Sandstone:		Sandstone, dark-gray, fine-grained, silty, moderately cemented, moderately hard. 16 104	
Shale. 4 88		Shale, soft 1 18		Shale, dark-gray, carbonaceous, thin-bedded, moderately hard. 8.5 112.5	
Sandstone. 13 101		Rock. 1 19		Sandstone, gray, sandy, fine-grained, silty, friable, moderately soft to moderately hard. 17.5 130	
Shale. 5 106		Shale. 9 28		B7-58-28ccd.	
Shale and rock 14 120		Sandstone, hard 2 30		Unconsolidated deposits:	
Shale. 10 130		Sandstone, good 21 51		Topsoil 2 2	
Sandstone and shale. 10 140		Shale 10 61		Loam 2 4	
Shale. 14 154		Sandstone 27 88		Sand 6 10	
Sandstone and shale. 5 159		Shale 3 91		Gravel, sand, and some rocks. 6 16	
Shale. 3 162		Sandstone 5 96		Laramie Formation:	
Rock 5 162.5		Shale 12 108		Clay. 8 24	
Shale. 13.5 176		B6-63-1bbdd.		Shale, yellow; contains sandstone from 45 to 49 feet. 25 49	
Shale and shale-sand 15 191		Laramie Formation:		Shale, blue. 22 71	
Shale. 9 200		Topsoil 5 5		Shale and sandstone. 14 75	
Shale, sandy shale, and thin strips of shale-sand 60 260		Shale; contains clam shells. 60 65		Shale. 14 89	
B6-59-21bcc. Alt. 4,740		Rock; contains clam shells. 1 66		Shale and sandy shale. 12 101	
Unconsolidated deposits:		Shale 5 71		Shale-sand and shale 4 105	
Sand 5 5		Sandstone, gray, coarse 2 73		Shale-sand 12 127	
Sand, fine 5 10		Shale 2 75		Shale, sandy shale, and some sand. 33 160	
Clay, quicksand, and fine sand. 19 29		Shale and streaks of coal. 10 85		Sandstone and shale. 17 177	
Sand, fine, quicksand, and clay 12 41		Shale and streaks of sandstone 9 94		Shale. 13 190	
Clay and some fine sand. 12 53		Rock 1 95		B7-59-3bcc.	
Sand, fine, and quicksand; contains some clay 4 57		Coal, hard 2 97		Unconsolidated deposits:	
Sand, fine, fine gravel, clay, and sandstone. 3 60		Shale 31 128		Topsoil 3 3	
Fox Hills Sandstone:		Sandstone, heavy. 31 159		Loam 6 9	
Shale. 12 72		Coal. 4 163		Gravel, fine, and sand 7 16	
B6-60-4bcc.		Sandstone 62 225		Laramie Formation:	
Laramie Formation:		Sandstone, gray; contains streaks of shale 10 235		Shale, dark- and light-blue 12 172	
Topsoil 2 2		B6-63-9ccb. Alt. 4,685 ft.		Shale, black 21 193	
Shale blossom. 4 6		Valley-fill deposits:		Rock 5 193.5	
Shale. 13 19		Topsoil 12 12		Shale. 17.5 211	
Sand, fine 1 20		Sand, fine. 5 17		Rock 1 212	
Rock, hard 3 23		Gravel 7 24		Shale-sand and shale 8 220	
Shale; contains sand from 120 to 139 feet 124 147		Laramie Formation:		Shale. 1 221	
Rock 5 147.5		Rock, hard. 1.5 25.5		Shale and some sand. 2 223	
Sand and some shale. 6.5 154		Sandstone 6.5 32		B7-59-22bcc.	
Rock 1 155		Shale 18 50		White River Group:	
Shale and sand 18 173		B6-63-30caa. Alt. 4,645 ft.		Clay, light-brown, sandy, silty, slightly organic 3 3	
Shale and strips of sand 67 240		Valley-fill deposits:		Sand, tan, fine, silty, medium dense 5 8	
Shale; contains rock from 294 to 297 and 383 to 384 feet. 155 395		Soil 3 3		B7-58-lacc.	
Weld County		Clay. 7 10		Fox Hills Sandstone:	
B5-61-35cbc. Alt. 4,500 ft.		Gravel. 17 27		Topsoil 2 2	
Valley-fill deposits:		Clay. 3 30		Loam 1.5 3.5	
Sand 4 4		Laramie Formation:		Gravel and sand 1.5 5	
Clay and sand. 12 16		Sandstone 1.5 25.5		Clay. 7.5 12.5	
Clay 3.5 19.5		Shale 18 50		Rock, hard. 4.5 17	
Sand 7.5 27		B7-57-2bbb.		Sandstone, soft 1 18	
Pierre Shale:		White River Group:		Rock, hard. 3 21	
Shale, weathered 3 30		Soil, sandy 6 6		Sandstone, soft 3 24	
B6-61-1aad.		Clay. 9 15		Rock, hard. 3 27	
Unconsolidated deposits:		Sand, fine. 10 25		Clay, gray and blue 27 54	
Topsoil. 6 6		Clay, hard, and rock. 35 60		B7-58-lacc.	
Clay; contains some gravel 10 16		B7-57-2bbb.		Fox Hills Sandstone:	
Laramie Formation:		White River Group:		Topsoil 2 2	
Shale. 74 90		Topsoil 3 3		Loam 1.5 3.5	
Sandstone, heavy 18 108		Sand and clay 5 8		Gravel and sand 1.5 5	
Shale. 3 111		Clay 5 13		Clay. 7.5 12.5	
Fox Hills Sandstone:		Sand, fine, gravel, and clay. 7 20		Rock, hard. 4.5 17	
Sandstone, good. 30 141		Clay. 3 23		Sandstone, soft 1 18	
Shale. 5 160		Sand, fine, and clay. 4 27		Rock, hard. 3 21	
Sandstone, fair. 5 165		Clay. 10 37		Sandstone, soft 3 24	
Shale. 11 176		Clay, hard. 4 41		Rock, hard. 3 27	
Sandstone, heavy, good 22 198		Clay. 19 60		B7-58-lacc.	
Shale, sandy 5 203		Fox Hills Sandstone:		Fox Hills Sandstone:	
B6-61-3bcd.		Topsoil 2 2		Topsoil 2 2	
Fox Hills Sandstone:		Loam 1.5 3.5		Loam 1.5 3.5	
Soil 6 6		Gravel and sand 1.5 5		Gravel and sand 1.5 5	
Clay 12 18		Clay. 7.5 12.5		Clay. 7.5 12.5	
Shale, blue. 25 43		Rock, hard. 4.5 17		Rock, hard. 4.5 17	
Rock 3 46		Sandstone, soft 1 18		Sandstone, soft 1 18	
Sandstone. 10 56		Rock, hard. 3 21		Rock, hard. 3 21	
Rock 1 57		Sandstone, soft 3 24		Rock, hard. 3 27	
		Clay, gray and blue 27 54		Clay, gray and blue 27 54	

Table 3.--Selected drillers' logs of wells and test holes--Continued

Thick- ness	Depth	Thick- ness	Depth	Thick- ness	Depth
Weld County--Continued		Weld County--Continued		Weld County--Continued	
B7-59-22bcb.--Continued		B8-56-20ccb.--Continued		B8-61-27ddd.--Continued	
Sand, pale-red-brown, fine to medium, silty, clayey, dense to very dense	6 14	clayey, silty, slightly organic.	3 3	Sandstone.	5 132
Sand, pale-red-brown, fine to medium, silty, clayey, calcareous, slightly cemented . . .	17.5 31.5	Sand, tan, fine, silty, medium dense to dense.	5 8	Shale.	11 143
Siltstone, red-brown, shaly, moderately cemented, moderately hard.	10 41.5	Clay, gray-white, tuf- faceous, crumbly, very stiff; contains angular fragments of shale.	5 13	Coal	1 144
Siltstone, pale-green, shaly, moderately cemented, moderately hard.	6 47.5	Shale, variegated gray- green, red-brown, and yellow-brown, clayey, silty, waxy lustrous, moderately soft. . . .	31.5 44.5	Sandstone.	3 147
Shale, pale-gray-green, waxy, moderately hard; contains numerous small black specks.	16 63.5	Pierre Shale:		Shale.	3 150
Shale, variegated, silty, slightly clayey, moderately soft . . .	24.5 88	Shale, gray-green, yellow-brown; iron- stain, laminated, moder- ately hard; contains numerous numerous thin irregular lenses of fine- grained sandstone. . .	50.5 95	Rock, soft	2 152
Sandstone, yellow-brown, fine-grained, silty, shaly, slightly cemented, moderately soft.	4.5 92.5	Shale, dark-gray, lamin- ated, moderately hard; contains numerous thin irregular lenses of fine-grained sandstone (water at 110 feet). .	35 130	Shale.	5 157
Shale, variegated, slightly silty, laminated, moderately soft . . .	11 103.5	B8-58-4aaa.		Coal, soft	3 160
Sand, light-gray, fine, silty, slightly cemented, very dense. .	4.5 108	White River Group:		Shale and coal	10 170
Shale, variegated, clayey, slightly silty, laminated, moderately soft	22 130	Silt, light-tan, sandy, calcareous	7.5 7.5	Shale; contains coal from 175 to 180, 198 to 200, 215 to 216, and 220 to 223 feet; sand- stone from 200 to 210 feet	56 226
B7-60-8cbb.		Sand, pale-red-brown, fine to coarse, silty, gravelly, medium dense	6.5 14	Rock	1 227
Laramie Formation:		Sand, pale-red-brown, medium to coarse, silty, gravelly, very dense.	5 19	Shale, hard.	25 252
Topsoil	2 2	Silt, tan, sandy, dense	3.5 22.5	Sandstone, coarse. . .	28 280
Clay, buff, rust, and gray.	38 40	Sand, pale-red-brown, fine to coarse, silty, gravelly, very dense	12.5 35	Shale.	3 283
Shale, dark-gray, and coal.	35 75	Clay, light-gray-green, sandy, silty, very stiff.	2 37	Sandstone, fine. . . .	12 295
Sand, light-gray, soft, coarse.	61 136	Sand, yellow-gray, fine, clayey, silty, very dense.	5 42	Shale.	23 318
Shale, light-gray, tough	11 147	Shale, gray-green to green, slightly silty, micaceous, laminated, moderately hard to hard; contains occasional slickensides	84 126	Sandstone.	2 320
Sandstone, light-gray, soft.	1 148	Sand, gray, fine to coarse, clayey, very dense.	4 130	Shale, hard.	20 340
Sand, blue, soft, medium	62 210	B8-59-10ccc.		Sandstone.	10 350
Shale, gray, sandy; con- tains streaks of tough dark-gray shale	35 245	Valley-fill deposits:		Shale.	40 390
Sandstone, gray, hard . .	1 246	Topsoil.	5 5	Sandstone.	28 418
Shale, dark-gray; con- tains streaks of fine sand	28 274	Sand and clay.	14 19	Shale.	2 420
Shale, gray, sandy; con- tains streaks of benton- ite	38 312	Gravel	14 33	B8-62-9bba.	
Shale, light-gray, sandy	22 334	White River Group:		Valley-fill deposits:	
Sandstone, hard	.5 334.5	Clay	28 61	Soil	1 1
Sand, light-gray, fine, shaly	78.5 413	Shale.	4 65	Gravel	4 5
Sandstone, gray, hard . .	2 415	B8-60-9abb.		Clay	43 48
Shale, dark-gray, tough, sticky.	92 507	White River Group:		Sand	2 50
B7-62-9bcc.		Clay		Laramie Formation:	
Unconsolidated deposits:		Shale.		Coal	2 52
Topsoil	2 2	B8-61-27ddd.		Shale.	9 61
Clay, brown	6 8	Unconsolidated deposits:		Coal	1 62
Sandstone, broken, and dirty gravel.	2 10	Clay, sandy.	8 8	Shale.	3 65
Laramie Formation:		Laramie Formation:		Rock	2 67
Clay, rust, gray, and brown	5 15	Shale, blue.	100 120	Shale.	35.5 102.5
Shale, gray, tough (lost circulation).	13 28	Rock	20 140	Rock	.5 103
Shale light-gray; con- tains streaks of fine sand.	12 40	Sand interbedded with layers of rock	15 155	Shale.	3 106
Shale, dark-gray; con- tains shells and coal	60 100	Shale, blue.	15 170	Rock	1 107
Sand, light- and dark- gray, coarse.	30 130	B8-60-24bca.		Shale.	5 112
Shale, dark-gray, sandy	17 147	White River Group:		Coal	2 114
B7-61-35dac.		Clay	10 10	Shale.	16 130
Valley-fill deposits:		Sand	20 30	Sand	2 132
Soil.	5 5	Clay, red.	35 65	Rock	2 134
Clay.	15 20	Laramie Formation:		Shale.	34 168
Gravel.	8 28	Shale, blue.	85 150	Coal	2 170
Fox Hills Sandstone:		Sand and rocks	30 180	Shale.	34.5 204.5
Sandstone	62 90	Shale, blue.	20 200	Rock	2.5 207
Shale	3 93	B8-61-27ddd.		Shale.	23 230
Sandstone	32 125	Unconsolidated deposits:		Sandstone.	2 232
B8-56-20ccb.		Clay, sandy.	8 8	Shale.	16 250
White River Group:		Laramie Formation:		Shale.	6 256
Sand, brown, fine to medium.		Clay	37 45	Sandstone.	8 264
		Sandstone.	12 57	Coal	10 274
		Clay	9 66	B8-62-17dbb.	
		Coal	1 67	Valley-fill deposits:	
		Shale; contains coal from 69 to 71, 79 to 80, 84 to 86, 97 to 103, 118 to 120, and 121 to 124 feet	60 127	Soil and clay.	13 13
				Gravel	12 25
				Laramie Formation:	
				Shale	2 27
				B8-63-24bda. Alt. 4,970 ft.	
				Laramie Formation:	
				Sand and silt.	5 5
				Sandstone, gray to dark- gray, limonite-stain .	15 20
				Siltstone, gray to black, limonite-stain; con- tains a thin bed of carbonaceous silt at 30 feet and some selenite	20 40
				Siltstone, gray, contains fine to very fine quartz sand.	10 50
				Siltstone, black, carbon- aceous, sandy	80 130
				Siltstone, light-gray limonite stain, sandy, fine to very fine, medium hard; contains thin dark-gray mudstones	10 140
				Siltstone, medium-gray, slightly carbonaceous and clayey	25 165
				Siltstone, gray, sandy, slightly carbonaceous.	20 185
				Coal, black, soft; con- tains black carbonaceous siltstone	10 195
				Sandstone, light-gray, fine to very fine, silty	10 205
				Siltstone, medium-gray, sandy, slightly clayey.	10 215

Table 3.--Selected drillers' logs of wells and test holes--Continued

Thick- ness	Depth	Thick- ness	Depth	Thick- ness	Depth
Weld County--Continued		Weld County--Continued		Weld County--Continued	
B8-63-24bda. --Continued		B9-56-34dcd. --Continued		B9-61-8dda.	
Sandstone, light-gray, fine to very fine,	15	Clay, sandy.	10	Soil and sand.	24
slightly clayey	230	Sand	4	Laramie Formation:	
Siltstone, medium-gray, sandy, slightly clayey	30	Pierre Shale:	6	Shale, brown	25.5
Sandstone, light-gray, fine to very fine,		Shale.	36	Sand	1.5
slightly clayey; con- tains brown to tan, limonite-stained clay nodules	60	B9-57-29ddc.		Shale, cream-colored	9
Siltstone, light- to medium-gray, sandy, carbonaceous.	20	White River Group:		Shale, gray	2
Sandstone, light- to medium-gray, silty, slightly carbonaceous	35	Clay, brown, sandy, slightly organic	3	Gravel, cemented	1
Siltstone, medium-gray, limonite-stain, sandy, slightly clayey	15	Sand, light-tan, fine, silty, calcareous, partly cemented, dense	5	Shale, yellow.	3
Sandstone, light- to medium-gray, limonite- stain, fine to very fine, silty	40	Shale, pale-green, slightly silty, bentonitic, waxy, moderately soft to moderately hard; grading to pale-red-brown from 18 to 45 feet.	40	Shale.	34
Siltstone, dark-gray, slightly sandy, slightly clayey, car- bonaceous	16	Siltstone, pale-green, sandy, bentonitic, moderately soft to moderately hard; con- tains scattered calcar- eous nodules from 48 to 53 feet; turns lavender from 62 to 65 feet	23	Fox Hills(?) Sandstone:	
	446	Shale, pale-green, clayey, silty, thin-bedded, moderately soft.	4	Sandstone.	40
B8-64-1ddda.		Shale, pale-green, mottled yellow and maroon, silty, thin- bedded, moderately soft. . . .	24	Sandstone, fine.	50
Unconsolidated deposits:		Fox Hills Sandstone:			
Topsoil	2	Siltstone, dark-gray, thin-bedded, moderately cemented, moderately soft to moderately hard; interbedded with thin- bedded silty dark-gray shale (water at 113 feet).	31	B9-61-34add.	
Gravel and clay	6		130	White River Group:	
Laramie Formation:				Clay and magnesia.	40
Shale, light-gray and brown	7	B9-58-3bbcc.		Clay, sandy	25
Shale, light- and dark- gray; contains streaks of brown shale.	32	Fox Hills Sandstone:		Clay and soapstone	110
Shale, light- and dark- gray, sandy; contains carbonaceous shale and coal.	8	Clay, yellow-brown, silty, sandy, organic	1.5	Rock	10
Limestone, light-gray, hard.	4	Shale, brown and blue, clayey, silty, thin- bedded, very stiff	6.5	Clay, jointed.	15
Sand, light- and dark- gray, fine.	5	Shale, variegated, laminated, moderately hard; contains numerous thin laminae of fine- grained sandstone. . . .	17	Rock	15
Sand, light- and dark- gray, shale, and coal shaly	48	Sandstone, gray-green, fine-grained, slightly cemented, moderately hard; interbedded with moderately hard dark- gray-green shale (water at 52 feet).	39		
Shale, light- and dark- gray, sandy	60	Shale, gray, silty, sandy, thin-bedded, moderately hard; contains numerous irregular streaks of fine-grained sandstone	31	B9-62-17dbd.	
B8-64-23ccb. Alt. 5,040 ft.		Sandstone, gray, fine- grained, shaly, silty, thin-bedded, slightly cemented, moderately soft to moderately hard; contains numerous thin laminae of dark-gray shale.	35	Laramie Formation:	
Unconsolidated deposits:			130	Soil	14
Topsoil	2	B9-59-14ccc.		Clay, blue	24
Clay, buff.	9	White River Group:		Sandstone	2
Gravel, fine to medium (dry)	2	Clay	30	Clay, blue	14
Laramie Formation:		Shale and rock	80	Sandstone	6
Shale, variegated	58	Shale.	130	Coal	1
Sandstone, rust	9	Shale, blue sand, and sandstone.	60	Clay, blue	14
Shale, black, tough; contains streaks of sandy shale	31		300	Rock	1
Sandstone, light-gray, hard	5	B9-60-17cdd.		Clay, blue	9
Shale, light-gray	31.5	White River Group:		Shale, blue	3
Shale, dark- and light- gray; contains streaks of carbonaceous shale and coal	47	Topsoil	4		
Shale, dark-gray; con- tains thin streaks of sand and coal	90	Clay	11	B9-62-25cbb.	
Shale, light- and dark- gray; contains shells	30	Sand and gravel.	2	Laramie Formation:	
Rock, light-gray.	1	Clay, hard	17	Topsoil	2
Shale, light- and dark- gray; contains thin streaks of sandy shale. . . .	15	Sand and gravel.	1	Clay, variegated	63
Sand, light-gray, medium.	54	Clay	4	Shale, dark-gray, tough	38
Shale, medium-gray. . . .	20	Sand, fine, and gravel	1	Clay, dark-gray; contains streaks of coarse sand	11
B9-56-14daa.		Clay	4	Shale, dark-gray; contains streaks of coal	44
Unconsolidated deposits:		Sand, fine	1	Sand, dark-gray, coarse	22
Topsoil	5	Clay	3	Shale, dark-gray; contains streaks of coarse sand	20
Gravel.	20	Sand, fine, and fine gravel	2		
Clay.	18	Clay	7	B10-56-7bad.	
Pierre Shale:		Sand, fine, and fine gravel	57	White River Group:	
Shale; contains rock from 50 to 51, at 55, from 70 to 72, 101 to 102, 123 to 124, and 144 to 147 feet.	130	Clay	1	Loam, sandy	8
Rock and shale in thin strips.	452	Clay	60	Clay	32
B9-56-34dcd.				Clay and yellow shale. . . .	120
Valley-fill deposits:				Pierre Shale:	
Topsoil	6			Shale; contains streaks of sand from 600 to 640 feet	480
Clay.	10				640

Table 3.--Selected drillers' logs of wells and test holes--Continued

Thick- ness	Depth	Thick- ness	Depth	Thick- ness	Depth
Weld County--Continued		Weld County--Continued		Weld County--Continued	
B10-56-27daa.--Continued		B10-60-5aaa.--Continued		B10-60-23add.--Continued	
Shale, pale-green, yellow iron-stains, clayey, silty, sandy, thin-bedded, weathered . . .	17.5 112.5	Siltstone, light-tan, buff, and dark-red bands, sandy, calcareous, moderately hard to hard, cross-bedded; contains numerous contorted laminae of dark-red clayey shale, occasional beds of fine-grained sandstone, and irregular fractures (water at 113 feet)	49 121	Sand, brown, fine, silty, micaceous, slightly cemented, very dense. .	27 130
Sandstone, pale-green mottled yellow and lavender, fine-grained, shaly, silty, slightly to moderately cemented, moderately hard	13 125.5	Sandstone, buff and red-brown, fine-grained, silty, calcareous, slightly to moderately cemented, friable, moderately hard . . .	9 130	B10-61-17dgc.	
Shale, pale-green and gray, clayey, silty, thin-bedded; contains scattered calcareous nodules	4.5 130	B10-60-23add.		White River Group:	
B10-57-36ddd.		Ogallala Formation:		Topsoil	4 4
White River Group:		Silt, brown, clayey, sandy, organic . . .	1.5 1.5	Shale, yellow, sandy. . .	14 18
Clay, brown, silty, sandy, slightly organic. . .	1.5 1.5	Sand, brown, fine to medium, clayey, silty, dense; contains scattered calcareous nodules	7.5 9	Shale, red and blue . . .	7 25
Sand, light-tan, fine, silty, loose to medium dense	12.5 14	Sand, gray-brown, fine to medium, slightly silty, dense; contains some gravel and becomes very dense below 15 feet	10 19	Shale, yellow and red, soft	40 65
Shale, brown, clayey, waxy, moderately soft .	23 37	Silt, brown, sandy, clayey, dense	8 27	Laramie Formation:	
Shale, variegated, clayey, silty, moderately soft, slightly plastic. . . .	56.5 93.5	Sand, red-brown, fine, silty, slightly cemented, very dense. .	4.5 31.5	Shale, variegated	30 95
Fox Hills Sandstone:		Tuff, white, silty, clayey, slightly cemented, moderately soft.	5.5 37	Sand, fine (dry)	3 98
Shale, dark-gray, sandy, laminated, moderately hard; contains numerous laminae of fine light-gray sand (water at 110 feet)	36.5 130	Sand, gray-brown, fine to medium, slightly silty, micaceous, very dense	4.5 41.5	Shale, yellow, blue, and red	30 128
B10-58-13ada.		Siltstone, brown, clayey, thin-bedded, slightly cemented, moderately soft; contains seams of clay.	4.5 46	Rock, hard.	3 131
White River Group:		Silt, light-brown, sandy, calcareous, slightly micaceous, slightly cemented, dense . . .	3.5 55.5	Shale, yellow, blue, and red	5 136
Sand, dark-brown, fine to medium, silty, slightly organic	3 3	Silt, green-gray, clayey, sandy, micaceous, dense. . .	2.5 58	Sandstone, hard	4 140
Sand, brown, fine to medium, silty, loose	7.5 10.5	Silt, tan, sandy, slightly clayey, calcareous, cemented, dense	6 64	Shale, blue and green, coal.	31 171
Siltstone, buff to brown, shaly, calcareous, micaceous, moderately soft to hard; contains scattered gypsum and calcite-filled vugs (water at 118 feet)	119.5 130	Sand, tan, fine, silty, calcareous, very dense	3 67	Sandstone, gray, fine . .	20 191
B10-59-34ccc.		Sandstone, brown, fine-grained, silty, calcareous, thin-bedded, moderately cemented, moderately hard to hard.	7 74	Shale, black, hard. . . .	1 192
White River Group:		Silt, brown, sandy, slightly clayey, calcareous, micaceous, very dense.	5 79	B10-62-1abb.	
Clay, light-brown, silty, sandy, organic	1.5 1.5	Sand brown, fine, silty, calcareous, very dense; contains thin lenses of clay .	3 82	Valley-fill deposits:	
Silt, brown, sandy, slightly clayey, very dense	6 7.5	Sand, red-brown, fine, silty, very dense . .	2.5 84.5	Soil	2 2
Siltstone, brown to red-brown, sandy, clayey, moderately cemented, moderately hard; contains numerous inclusions of red-brown clay from 56 to 59 feet (water at 68.5 feet)	122.5 130	Sandstone, light-gray, calcareous, thin-bedded, well-cemented, very hard	5.5 90	Gravel.	12 14
B10-60-5aaa.		Sandstone, gray-brown, fine-grained, silty, calcareous, moderately cemented, hard to moderately cemented, moderately hard, cross-bedded in part; becomes fine-grained below 61.5 feet	15 72	Clay	2 16
White River Group:				Gravel.	15 31
Clay, brown, silty, calcareous, organic, stiff	1.5 1.5			Sand, fine.	1 32
Sand, brown, fine, silty, slightly clayey, calcareous, medium dense .	6.5 8			White River Group:	
Sand, brown, fine to medium, silty, slightly clayey, medium dense. .	4.5 12.5			Soapstone	2 34
Shale, buff to red-brown, sandy, clayey, laminated, moderately hard	5.5 18			B10-62-33bdc.	
Sandstone, red-brown, fine to medium-grained, calcareous, thin-bedded, slightly to moderately cemented, friable, porous, moderately soft to moderately hard. . .	21 39			Unconsolidated deposits:	
Shale, red-brown, clayey, silty, sandy in part, moderately hard to hard; occasional irregular fractures	18 57			Sand and gravel	3 3
Sandstone, buff and red-brown, medium-grained, calcareous, moderately cemented, friable, moderately hard, cross-bedded in part; becomes fine-grained below 61.5 feet	15 72			Clay	1 4
				Laramie Formation:	
				Shale, blue	5 9
				Shale, yellow	7 16
				Shale, blue	4 20
				Sandstone, blue	3 23
				Shale; contains streaks of sandstone.	2 25
				Shale, blue, hard	8 33
				Sandstone	2 35
				Shale	3 38
				Magnesia	1 39
				Shale, blue	21 60
				Coal	1 61
				Shale, blue	15 76
				Sandstone	1 77
				Shale, blue	3 80
				Sandstone	5 85
				Rock	2 87
				Sandstone, good	45 132
				Shale, blue, at 132 feet	
				B10-63-15aba.	
				Laramie Formation:	
				Topsoil	2 2
				Shale, medium-gray, brittle; contains rust-colored streaks	27 29
				Shale, dark-brown, gray, and rusty	10 39
				Shale, gray; contains rust-colored streaks and carbonaceous shale. .	24 63
				Shale, light-gray and blue	12 75
				Sand, light-gray, coarse	25 100
				Shale, light-gray	29 129
				Sand, light-gray, coarse (dry)	31 160
				Shale, light-gray, sandy.	31 191
				Shale, light- and dark-gray; contains streaks of dry medium sand. .	12 203
				Shale, brownish-gray, hard	3 206
				Shale, light- and dark-gray, sandy	18 224
				Sand, blue, medium. . . .	28 252
				Shale, gray; contains streaks of sand	98 350
				B10-66-36dda. Alt. 5,390 ft.	
				Laramie Formation:	
				Mudstone, rust to gray, thin-bedded	10 10
				Mudstone, dark-gray, limonite-stain, soft; contains some selenite.	5 15
				Mudstone, greenish-gray, limonite-stain; contains small amounts of muscovite and selenite.	5 20
				Sand, white, medium, loose	35 55
				Sand, white, medium, slightly cemented . . .	5 60

Table 3.--Selected drillers' logs of wells and test holes--Continued

Thick- ness	Depth	Thick- ness	Depth	Thick- ness	Depth
Weld County--Continued		Weld County--Continued		Weld County--Continued	
<u>B10-66-36ddd</u> --Continued		<u>B11-56-25ddd</u> --Continued		<u>B11-58-28ccb</u> --Continued	
Mudstone, rust to yellow, soft.	5 65	Fox Hills Sandstone:		cemented, moderately soft.	24 107.5
Mudstone, dark-gray, limonite-stain, slightly sandy, soft.	5 70	Shale, dark-gray, yellow- brown iron-stain, silty, laminated, highly weathered, moderately hard.	12.5 47.5	Sand, tan, fine to medium, silty, very dense; contains scattered cemented nodules below 113 feet (water at 115 feet). . . .	9 116.5
Shale, black, limonite- stain, slightly friable, soft; contains small amount of fine selenite	35 105	Shale, dark-gray, sandy, hard; contains laminae of siltstone.	58 105.5	Siltstone, olive-green, sandy, calcareous, slightly cemented, moderately hard.	13.5 130
Mudstone, medium-gray, silty; contains limonite	5 110	Siltstone, light- to dark- gray, sandy, calcareous, well-cemented, hard. . . .	4.5 110		
Sandstone, brown to gray, fine-grained, slightly hard; contains limonite and clay.	10 120	Shale, dark-gray, very silty and sandy, hard; contains numerous irregu- lar laminae of siltstone (water at 120.6 feet). . .	20 130		
Siltstone, medium-gray, sandy; contains thin streaks of soft gray to black clay.	5 125	<u>B11-57-2ada</u> .		<u>B11-59-32baa</u> .	
Sand, medium-gray, silty, slightly cemented; contains thin streaks of soft light-gray clay	15 140	Ogallala Formation: Clay, sand, and gravel . .	84 84	Ogallala Formation: Sand, tan, fine to medium, silty, slightly organic.	3 3
Mudstone, dark-gray, silty, soft; contains small amounts of limonite, sand and purple clay.	15 155	White River Group: Clay.	281 365	Sand, tan, fine, silty, dense to very dense; slightly cemented below 11 feet.	9.5 12.5
Shale, dark-gray, sandy, carbonaceous; contains scattered selenite and limonite.	5 160	<u>B11-57-20bbb</u> .		Silt, pale-red-brown, sandy, slightly cemented, dense to very dense. . . .	2.5 15
Sand, dark-gray, fine- grained, slightly cemented; contains coal from 165 to 170 feet. . .	20 180	Ogallala Formation: Sand, dark-brown, fine to medium, silty, organic; contains scattered calcareous nodules.	1.5 1.5	Sandstone, red-brown, fine- grained, silty, clayey, partly calcareous, moderately cemented, moderately hard.	5.5 20.5
Sand, medium-gray, fine- grained, slightly cemented; becomes stained with limonite below 190 feet.	20 200	Sand, tan, fine, silty, medium dense; contains scattered calcareous nodules.	12.5 14	Silt, red-brown, sandy, calcareous, very dense; contains scattered cemented nodules.	10.5 31
Sand, light-gray, medium- to fine-grained; con- tains thin streaks of light-gray bentonitic clay, magnetite, hematite, and limonite . .	40 240	Sand, red-brown, fine to medium, slightly silty, dense.	13 27	Sandstone, red-brown, fine-grained, silty, moderately cemented, moderately hard.	3 34
Shale, dark-gray, slightly friable, soft.	15 255	Sand, brown, fine, silty, very dense; contains calcareous nodules. . . .	4 31	Sand, red-brown, fine, silty, very dense.	3 37
Clay, medium-gray, very soft.	20 275	Sand, brown, fine, silty, very dense.	6 37	Sandstone, red-brown, coarse-grained, calcareous, well-cemented, hard	3.5 40.5
Mudstone, dark-gray, sandy, soft.	10 285	Siltstone, buff to red- brown, sandy, porous, moderately cemented, moderately hard.	5 42	Sand, red-brown, fine, silty, slightly cemented, very dense.	8.5 49
Sand, dark-gray, fine- grained, cemented; contains magnetite. . . .	5 290	Sand, red-brown, fine, silty, very dense.	3 45	Sand, brown, fine, silty, slightly clayey, very dense; moderately cemented, hard from 49 to 51 feet.	5 54
Mudstone, dark-gray, carbonaceous, soft. . . .	50 340	Sand, red-brown, fine to medium, slightly silty, very dense; contains a little fine gravel.	4 49	Sand, tan-gray, fine to medium, silty, very dense.	14 68
Shale, black, medium hard, friable; contains dark-gray mudstone and limonite.	5 345	Sand, brown, fine to medium, slightly silty, very dense.	10 59	Sand, tan, fine, silty, partly cemented, very dense.	4 72
Sand, dark-gray, fine- grained, shaly; contains magnetite and layers of limonite.	30 375	Sand, red-brown, fine, silty, very dense.	5 64	Sandstone, red-brown, medium-grained, calcareous, well-cemented, hard.	13.5 85.5
Shale, black to dark-gray, soft; contains limonite and scattered sand particles.	35 410	Sand, gray-brown, fine, silty, micaceous, very dense.	7 71	Sand, red-brown, fine, silty, very dense; con- tains scattered cemented nodules.	6 91.5
Mudstone, dark-gray, sandy, slightly carbona- ceous.	15 425	Sand, gray-brown, fine to coarse, slightly silty, very dense; contains a little fine gravel.	37 108	Siltstone, brown, shaly, laminated, moderately soft.	5.5 97
Shale, black, limonite- stain, carbonaceous, soft.	40 465	White River Group: Siltstone, buff to red- brown, clayey, moderately cemented, moderately hard.	22 130	Silt, red-brown, sandy, clayey, very dense; contains scattered cemented nodules.	3 100
<u>B11-56-15cca</u> .		<u>B11-58-28ccb</u> .		<u>B11-60-14bbb</u> .	
Ogallala Formation:		Ogallala Formation:		Ogallala Formation:	
Sand, gravel, and clay. . .	15 15	Clay, brown, sandy, silty, slightly organic.	2.5 2.5	Silt, brown, sandy, clayey, organic.	2.5 2.5
Sandstone.	12 27	Sand, gray-tan, fine to medium, slightly silty, medium dense to very dense; contains scattered cemented nodules.	21.5 24	Sand, brown, fine, clayey, silty, calcareous, very dense; contains a little gravel.	5.5 8
Shale, brown.	4 31	White River Group:		White River Group:	
Sandstone.	9 40	Siltstone, dark-gray- brown, clayey, micaceous, slightly cemented, moderately soft.	10.5 34.5	Siltstone, brown, sandy, very calcareous, well- cemented, hard.	10 18
Clay.	56 96	Sand, gray-green, fine, slightly silty, very dense.	3.5 38	Siltstone, brown, clayey, partly sandy, moderately cemented, moderately hard; contains fractures from 77.5 to 78.5 and 87.5 to 88.5 feet.	11.2 130
Sand, sandstone, and brown clay.	23 119	Shale, light-brown, silty, laminated, moderately soft.	3.5 41.5	<u>B11-60-26bab</u> .	
Sand; contains some clay.	10 129	Sand, gray-brown, fine, silty, very dense.	6.5 48	Ogallala Formation:	
Clay.	11 140	Siltstone, gray-brown, shaly, micaceous, slightly cemented, moderately soft	13.5 61.5	Topsoil.	2 2
<u>B11-56-25ddd</u> .		Shale, gray-green, sandy, partly laminated, moder- ately soft.	22 83.5	Clay, brown.	2 4
White River Group:		Sandstone, red-brown, fine- grained, silty, partly calcareous, slightly		Gravel, fine, and medium sand.	23 27
Sand, dark-brown, fine to medium, clayey, silty, slightly organic	1.5 1.5			Clay, buff and light-green, and sand.	8 35
Sand, fine and light-brown calcareous medium dense silt.	12.5 14			Gravel, fine and sand, tight.	4 39
Shale, variegated, clayey, silty, lamin- ated, moderately soft. . .	21 35				

Table 3.--Selected drillers' logs of wells and test holes--Continued

Thick- ness	Depth	Thick- ness	Depth	Thick- ness	Depth
Weld County--Continued		Weld County--Continued		Weld County--Continued	
B11-60-26bab. --Continued		B11-65-21dbb.		B12-57-20bcc. --Continued	
Clay, brown and buff, tough	4	White River Group:		Sand, gray-brown, fine	
Clay, brown and light-		Topsoil.	2	to coarse, slightly	
green, tough; contains		Clay, brown, hard,	128	silty, very dense. . .	5
streaks of tight sand		brittle.	130	Silt, brown, clayey,	
and fine gravel. . . .	4	Clay; contains streaks		sandy, very dense;	
White River Group:		of gray and black clay	54	contains scattered	
Clay, brown and red,		Clay, variegated; con-		small cemented nodules	5
brittle, fractured; con-		tains streaks of buff	29	Sand, red-brown, fine	
tains some limestone and		coarse sand.	213	to medium, slightly	
sandstone.	258	Clay, variegated, tough.	22	silty, very dense. . .	5
			235	Sand, gray-brown, fine,	
				silty, micaceous, very	
B11-61-4cca. Alt. 5,261 ft.		B11-67-19bcc.		dense.	5
White River Group:		Valley-fill deposits:		Sand, gray-brown, fine	
Soil, brown to buff,		Soil.	2	to coarse, slightly	
sandy, silty; contains		Gravel.	46	silty, very dense; con-	
some gravel.	10	Laramie Formation:		tains some fine gravel	18.5
Siltstone, brown to buff,		Shale.	3	Sand, brown, fine,	82.5
sandy, calcareous;				silty, slightly cemented,	
contains some gravel. .	50	B12-56-19dda.		very dense.	11.5
Siltstone, buff; contains		Ogallala Formation:		Siltstone, red-brown,	94
thin beds of sandy		Clay, brown, sandy, silty,	4	clayey, sandy, moder-	
siltstone and a thin bed		slightly organic. . .	4	ately cemented,	
of silty fine-grained		Sandstone, light-gray to		moderately hard. . . .	4.5
sand at 140 feet. . . .	130	white, fine-grained,		Sand, brown, fine,	98.5
Sandstone, brown to		silty, moderately		silty, micaceous, very	
buff, fine-grained,		cemented, hard to moder-	10	dense.	14.5
silty (water).	15	ately hard.	14	Sandstone, red-brown,	113
Mudstone, variegated,		Sand, tan, fine, silty,		fine-grained, silty,	
limonite stain. . . .	15	very dense; contains		clayey, moderately	
Sandstone, buff to brown,		scattered calcareous	4.5	cemented, moderately	
fine-grained, silty. .	50	nodules.	18.5	hard.	4.5
Mudstone and siltstone,		Siltstone, brown, clayey,		Sand, brown, fine, silty,	117.5
variegated.	90	slightly cemented,	5.5	very dense.	4.5
Laramie Formation:		moderately soft. . .	24	Sand, gray-brown, fine	122
Siltstone, gray to black,		Sand, red-brown, fine,		to coarse, slightly	
shaly, soft; contains		clayey, silty, very	3.5	silty, very dense. . .	10.5
some coal and mudstone	50	dense.	27.5		132.5
Siltstone, dark-gray,		Sand, gray-brown, fine,		B12-57-31ccc.	
shaly; contains some		silty, very dense. . .	5	Ogallala Formation:	
coal and mudstone. . .	35	Silt, red-brown, clayey,	32.5	Loam, sandy.	2
Sandstone, light-gray,		sandy, partly cemented,		Clay.	2
fine-grained; contains		very dense.	5	Sand and gravel; contains	20
some gray siltstone		Sand, red-gray, fine,	37.5	streaks of clay from	
(water-bearing). . . .	45	silty, very dense; con-	45	64 to 72 feet.	52
Siltstone, dark-gray,		tains some gravel. . .			72
sandy; contains soft		Sand, pale-red-brown,		B12-58-33cbd.	
black coal.	71	fine to coarse, slightly		Ogallala Formation:	
		silty, very dense; con-	15.5	Silt, dark-brown, sandy,	
B11-61-32ccc.		tains some gravel. . .	60.5	slightly organic. . . .	3
Unconsolidated deposits:		Sand, red-brown, fine,		Clay, brown, silty, stiff	5
Topsoil, sandy.	3	silty, very dense. . .	9.5	Siltstone, pale-red-brown,	8
Sand, fine.	20	Sand, pale-red-brown,	70	sandy, micaceous, cal-	
White River Group:		fine to coarse, slightly		careous, moderately	
Shale, light-cream. . .	30	silty, very dense; con-	5	cemented, moderately	
Gravel, cemented. . . .	1	tains some gravel. . .	75	hard.	16
Shale, light-cream. . .	11	Sand, gray-red-brown,		Silt, brown, sandy, very	24
Clay, blue.	1	fine to coarse, slightly		dense.	5
Shale, light-cream. . .	10	silty, very dense; con-	15	Sand, brown, fine to	29
Shale, light-blue, soft. .	4	tains some gravel. . .	90	medium, very dense; con-	
Shale, blue and red. . .	34	Sand, gray-brown, fine		tains scattered gravel	
Shale, red.	15	to coarse, silty, very		and calcareous nodules	5
Sandstone, brown. . . .	7	dense; contains some		Silt, pale-red-brown,	34
Shale, red and blue. . .	12	gravel.	22	sandy, calcareous, dense	3
Shale, red.	10	Siltstone, red-brown,	112	Sand, pale-red-brown, fine,	
		clayey, micaceous		silty, very dense. . .	3
B11-62-18bac.		moderately cemented,			40
White River Group:		moderately hard. . .	7	White River Group:	
Topsoil.	3	Sand, buff to red-brown,	119	Siltstone, pale-red-brown,	
Clay.	115	fine to medium, silty,		calcareous, partly thin-	
Clay, red, soft (water). .	9	very dense.	14	bedded, slightly to	
Clay.	5		133	moderately cemented,	
				moderately soft to	
B11-62-35bca.		B12-57-20bcc.		moderately hard. . .	9
Valley-fill deposits:		Ogallala Formation:		Sandstone, pale-red-brown,	49
Soil.	3	Sand, dark-brown, fine		fine-grained, silty,	
Gravel.	11	to medium, clayey,		calcareous, moderately	
Clay.	1.5	silty, calcareous,	1.5	cemented, friable,	
Gravel.	22.5	organic.	1.5	moderately hard. . .	9
Sand, fine.	11	Sand, tan, fine, silty,		Siltstone, pale-red-brown,	58
Gravel, fine.	6	calcareous, very dense;		calcareous, partly thin-	
White River Group:		contains scattered		bedded, moderately	
Shale.	5	cemented nodules. . .	6.5	cemented, moderately hard	30
		Sand, brown, fine, silty,	8	Sandstone, pale-red-brown,	88
B11-64-22ada.		calcareous, very dense;		fine-grained, silty,	
White River Group:		contains thin lenses of		micaceous, calcareous,	
Topsoil.	2	clay.	10	moderately cemented,	
Clay.	2	Caliche, light-tan to	18	moderately hard. . .	6
Clay, green, brittle. . .	16	buff, very sandy,		Siltstone, pale-red-brown,	94
Clay, brown, sandy, soft	12	granular, hard. . . .	7	micaceous, calcareous	
Clay, buff and brown,		Sandstone, red-brown,	25	partly thin-bedded,	
brittle; contains		fine- to medium-grained,		moderately cemented,	
streaks of hard brown		calcareous, slightly		moderately hard; sand	
sand from 138 to 140		cemented, moderately		from 110 to 113 feet	
feet.	163	soft.	8	(water at 107 feet). .	36
Clay, light-buff, sticky,		Silt, brown, sandy,	33		130
tough.	23	clayey, calcareous,		B12-59-33ddd.	
Gravel, fine, and fine to		very dense.	4	Ogallala Formation:	
medium sand.	12	Sand, red-brown, fine,	37	Sand, dark-brown, fine	
Clay, buff, sandy; con-		silty, very dense; con-		to medium, silty, slightly	1.5
tains hard streaks. . .	8	tains scattered cemented	7	clayey, organic. . . .	1.5
		nodules.	44		

Table 3.--Selected drillers' logs of wells and test holes--Continued

	Thick- ness	Depth		Thick- ness	Depth		Thick- ness	Depth
Weld County--Continued								
<u>B12-59-33ddd.--Continued</u>								
Sand, tan, fine, silty, calcareous, very dense	6.5	8						
Sand, brown, fine, silty, partly cemented, very dense; contains scattered nodules . . .	6	14						
Sand, brown, fine, silty, clayey, calcareous, slightly cemented, medium dense	4	18						
Sand, brown, fine to coarse, slightly silty, calcareous, very dense; contains some gravel. .	9	27						
Sand, tan, fine, silty, very dense.	3	30						
Sand, brown, fine, silty, very dense.	2	32						
Sand, brown, fine to coarse, slightly silty, calcareous, very dense; contains some fine gravel.	5	37						
Sand, brown, fine, silty, slightly calcareous, very dense; contains scattered nodules . . .	7	44						
Caliche, light-gray, sandy, shaly, granular, hard.	5.5	49.5						
White River Group:								
Sandstone, buff and red- brown, fine-grained, silty, partly calcareous, moderately to slightly cemented, hard to moderately hard; well- cemented, hard from 58 to 61.5 feet and 72.5 to 74 feet; fractured from 98 to 99.4 feet	80.5	130						
<u>B12-61-19abb.</u>								
Terrace deposits:								
Clay and gravel	19	19						
Clay.	4	23						
Sand and gravel	3	26						
Clay.	4	30						
Sand and gravel	13	43						
Clay.	10	53						
Sand, fine.	17	70						
Clay, sandy.	16	86						
Sand and gravel	25	111						
Clay.	6	117						
Sand.	3	120						
White River Group:								
Clay.	7	27						
Siltstone	25	152						
<u>B12-62-25bbb.</u>								
Terrace deposits:								
Topsoil and clay.	2	2						
Sand, gravel, and clay. .	13	15						
Sand, fine, dirty, and clay.	33	48						
Sand and gravel	6	54						
Sand, fine, dirty, and clay.	27	81						
White River Group:								
Clay.	21	102						
Clay, sand, and gravel in streaks.	10	112						
Clay.	10	122						
Sand and gravel; contains streaks of clay	13	135						
Clay.	5	140						
<u>B12-62-34bdb.</u>								
Valley-fill deposits:								
Soil.	5	5						
Gravel, loose	7	12						
Clay, white	15	27						
Gravel, hard.	13	40						
White River Group:								
Clay, brown, hard	17	57						

Table 4.--Chemical analyses of ground water
(Concentrations of dissolved constituents, dissolved solids, and hardness given in parts per million)

Location number	Depth of well source collection (feet) 1/	Geo-logic	Date of collection	Temperature (°F)	Silica (SiO ₂)	Total iron (Fe)	Total manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Boron (B)	Dissolved solids (calculated)	Hardness as CaCO ₃	Non-carbonate hardness as CaCO ₃	Percent sodium sulfate as ratio	Specific conductance (micro-mhos/cm at 25°C)	pH	
Larimer County																								
B11-68-14daa	50.2	Qv	5-3-63	54	..	..	..	..	..	10	..	221	10	..	..	..	..	..	174	0	11	0.3	376	7.6
B7-53-8bbb	335	Kp	8-22-62	61	8.5	..	..	13	7.1	359	4.1	418	426	51	2.2	1.5	1.9	1,080	62	0	92	20	1,650	7.8
B8-53-17dca2/	585	Kp	7-11-58	..	..	..	..	36	15	515	5	3/656	22	508	..	..	..	1,750	152	0	88	18	..	8.3
B8-54-31aaa	10	Qv	8-21-53	..	26	..	..	119	35	82	15	204	428	12	.4	1.2	.2	820	440	273	28	1.7	1,160	7.2
B8-55-24dcd	38.9	Qv	8-22-62	52	31	..	..	255	60	138	19	323	882	20	.3	.5	.2	1,560	880	615	25	2.0	1,940	7.5
B9-53-3ddc	360	Kp	5-1-63	56	..	..	..	..	..	225	..	514	64	..	..	..	..	..	59	0	89	13	1,010	7.7
B10-51-14dcd	65	Qv	9-24-62	56	50	..	..	291	44	110	18	251	774	95	.4	8.2	.2	1,510	905	699	20	1.6	1,910	7.4
B10-51-24aa	28	Qv	9-20-49	56	48	0.04	..	200	40	164	20	272	710	57	1.2	4.2	..	1,380	664	441	34	2.8	1,830	7.3
B11-51-6bbd	550	To, Tw	4-27-60	60	63	.01	0.15	23	6.4	65	8.8	211	42	10	1.2	8.0	..	312	84	0	60	3.1	464	8.0
B11-54-9ddc	160	Tw	5-1-63	58	..	..	..	..	..	118	..	250	35	..	..	..	..	..	63	0	80	6.5	640	7.6
B12-48-35bdc	21.0	Qv	5-1-63	50	..	..	..	..	..	12	..	222	21	..	..	..	..	..	185	3	12	.4	420	7.3
B12-49-30bbb	165	To	5-1-63	50	..	..	..	..	..	11	..	178	11	..	..	..	..	..	140	0	15	.4	319	7.6
Morgan County																								
B5-60-9cdd	590	Kp	5-4-63	62	..	..	..	..	..	327	..	788	2.7	..	..	..	.6	..	10	0	99	45	1,260	7.9
B5-60-12dda	50	Qv	5-7-63	59	..	..	..	..	..	1,300	..	269	5,250	90	..	..	..	..	2,860	2,640	50	11	8,240	7.2
B6-55-15add	34	Qu	4-30-63	54	..	..	..	..	..	129	..	352	212	..	..	..	..	..	296	7	49	3.5	1,150	7.4
B6-57-7dcd	24	Qu, Kf(?)	4-30-63	52	..	..	..	..	..	454	..	411	1,140	..	..	..	..	..	574	237	63	8.2	2,850	7.3
B6-59-5bad	21.8	Qv	4-30-63	54	..	..	..	..	..	150	..	243	591	..	..	..	..	..	564	365	37	2.7	1,640	7.2
B12-46-30-bdb	59.3	To	5-1-63	55	..	..	..	..	..	14	..	184	15	..	..	..	..	..	155	4	16	.5	381	7.4
Weld County																								
B6-61-15cdd	228	Kf	5-7-63	59	..	..	..	..	..	662	..	466	1,260	165	..	..	..	..	455	73	76	14	3,520	7.4
B6-62-4/1	..	Kf	11-28-30	..	..	..	..	12	7	154	..	3/360	66	19	..	..	..	..	60	0	84	8.5	..	..
B6-63-18dcd	47	Qv	5-4-63	55	..	..	..	..	..	435	..	460	1,240	..	..	..	..	..	816	439	54	6.6	3,000	7.3

See footnotes at end of table.

See footnotes at end of table.

Table 4.--Chemical analyses of ground water--Continued

Location number	Depth of well source (feet)	Geo-logic source	Date of collection	Temperature (°F)	Total silica (SiO ₂) (P)	Total iron (Fe)	Total manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃) (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃) (B)	Dissolved solids (calculated) (B)	Hardness as CaCO ₃	Non-carbonate hardness as CaCO ₃	Percent sodium sulfate	Sodium-sulfate ratio	Specific conductance (micro-mhos/cm at 25°C)	pH		
Weid County--Continued																								
B7-58-3aca	70	Kf	8-21-53	55	13	0.02	54	27	376	23	540	545	46	0.7	2.4	0.3	1,350	244	0	75	10	2,030	7.4	
	105	Kf	10-7-60		9.1	.10	5/104	37	593	25	529	1,120	93	.1	.2	. .	2,250	414	0	74	13	3,060	7.7	
B7-62-28ccb	26.8	Qv	7-26-62	52	27	. .	. .	533	175	224	15	270	2,220	33	.8	.3	2	3,360	2,050	1,830	19	2.2	3,710	7.6
B7-63-25db	28	Qv	4-15-53	. .	. .	. .	. .	108	11	86	. .	359	201	32	. .	. .	. .	314	20	37	2.1	1,050	7.6	
B8-56-6bad	17.0	Qv	8-21-53	. .	36	.10	. .	125	39	124	13	313	450	17	.5	2.3	2	961	472	215	36	2.5	1,360	7.2
B8-62-21dcc	265	Kl	1-26-53	58	10	.82	. .	4.2	.2	158	1.4	3/282	55	46	.8	1.2	.1	416	12	0	96	20	688	8.5
B8-62-29aba	23	Qv	1-23-53	48	39	.64	. .	180	42	206	12	477	605	55	.9	.7	.2	1,380	620	229	41	3.6	1,860	7.6
B8-63-6/24bda	446	Kl	8-24-59	. .	9.5	.35	.02	4	4	160	1.9	3/352	44	7	. .	.1	. .	405	29	0	92	14	. .	8.5
B8-63-6/24bda	459	Kl	8-24-59	. .	9.5	.40	.02	6	5	160	1.9	3/341	50	7	. .	.1	. .	408	36	0	90	12	. .	8.6
B9-59-1bdc	215	Tw	5-2-63	58	. .	. .	. .	36	. .	80	. .	181	80	. .	. .	. .	. .	65	0	73	4.3	488	7.7	
B9-59-20bcc	65	Tw	8-21-53	. .	55	.05	. .	36	8.5	28	4.4	174	24	9.5	.5	1.3	.2	267	130	0	31	1.1	383	7.5
B9-60-34adc	100	Tw	5-8-63	56	. .	. .	. .	94	. .	158	. .	232	437	13	. .	. .	. .	296	106	54	4.0	1,240	7.4	
B9-60-34adc	100	Tw	8-21-53	. .	17	. .	. .	94	17	163	9.4	218	448	12	.1	.1	.2	868	306	127	53	4.1	1,280	7.2
B9-61-8dda	190	Kf(?)	4-15-53	. .	. .	. .	. .	8.5	2.2	85	. .	3/202	40	9.5	. .	. .	. .	30	0	86	6.8	425	8.4	
B9-62-17dbd	102	Kl	5-10-63	56	. .	. .	. .	. .	. .	577	. .	594	955	60	. .	. .	. .	305	0	80	14	2,850	7.4	
B9-64-35caa	154	Kl	5-3-63	58	. .	. .	. .	. .	. .	98	. .	251	95	. .	. .	. .	. .	96	0	69	4.3	601	7.3	
B9-65-1dba	124	Kl	7-25-62	55	20	. .	. .	59	11	24	5.8	239	37	7.0	1.1	5.7	.1	289	191	0	21	.7	471	7.8
B10-57-1lec	75	Tw	5-1-63	55	. .	. .	. .	. .	. .	44	. .	296	43	. .	. .	. .	. .	232	0	29	1.3	639	7.4	
B10-58-27aca	90	Tw	8-21-53	. .	56	.01	. .	94	16	107	14	193	323	32	.2	8.3	.0	746	300	142	42	2.7	1,080	7.4
B10-61-5ada2	220	Kl(?)	10-7-60	. .	8.0	.00	.10	3.2	2.9	94	2.8	3/192	48	10	.7	.0	. .	264	20	0	90	9.2	414	8.5
B10-63-35aba	350	Kl	5-9-63	57	. .	. .	. .	. .	. .	85	. .	211	33	10	. .	. .	. .	. .	32	0	85	6.5	426	7.7
B10-66-36dda	465	Kl	11-23-59	. .	14	.35	.02	35	9	29	4.4	193	25	5	. .	1.6	. .	218	124	0	33	1.1	. .	8.0
B10-66-36dda	440	Kl	12-10-59	. .	12	.05	.02	15	5.5	64	3	3/215	27	2	. .	.3	. .	235	60	0	69	3.6	. .	8.3
B11-60-labd	355	Tw	5-8-63	59	. .	. .	. .	. .	. .	20	. .	181	16	3.0	. .	. .	. .	. .	124	0	26	.8	344	7.7

See footnotes at end of table.

Table 4.--Chemical analyses of ground water--Continued

Location number	Depth of well (feet)	Geo-logic source	Date of collection	Temperature (°F)	Total iron (Fe)	Total manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved iron (B) (mg/l)	Hardness as CaCO ₃	Non-carbonate hardness as CaCO ₃	Percent sodium sorption ratio	Specific conductance (micro-mhos/cm at 25°C)	pH			
Weid County--Continued																								
B11-61-6/4cca/	561	Tv, Kl	8- -59	..	12	.15	0.00	12	6	86	4.8	187	53	..	2.9	..	290	53	0	76	5.1	8.2		
4cda/	415	Tv, Kl	8-24-59	..	11	.18	.00	14	6	86	4.8	187	69	..	..	..	..	60	0	74	4.8	..		
B11-62-35bca	60	Qu	1-26-53	51	37	.14	..	69	12	33	6.8	250	51	20	1.0	19	0.1	372	221	15	24	1.0	7.8	
B11-65-31dca	260	Kl	4-14-53	52	..	..	..	51	8.3	27	..	231	22	7.0	..	..	..	161	0	27	.9	426	7.7	
B11-66-10cdc	50	Tv	7-25-62	54	56	..	..	42	6.1	12	4.1	162	9.3	5.0	.5	11	.0	226	130	0	16	.5	307	7.6
B12-57-31ccc	72	To	5- 2-63	51	..	..	..	..	..	16	..	237	17	..	..	..	..	184	0	16	.5	438	7.3	
B12-65-32bbb	176	To	7-25-62	56	52	..	..	45	13	9.4	5.4	193	8.6	6.0	.7	17	.0	252	167	9	11	.3	370	7.4
B12-67-24caa	..	To	5- 3-63	66	..	..	..	..	..	23	..	233	17	..	..	..	..	169	0	23	.8	421	7.7	

1/ Kp, Pierre Shale; Kf, Fox Hills Sandstone; Kl, Laramie Formation; Tv, White River Group; To, Ogallala Formation; Qv, Valley-fill deposits; Qu, Unconsolidated deposits.

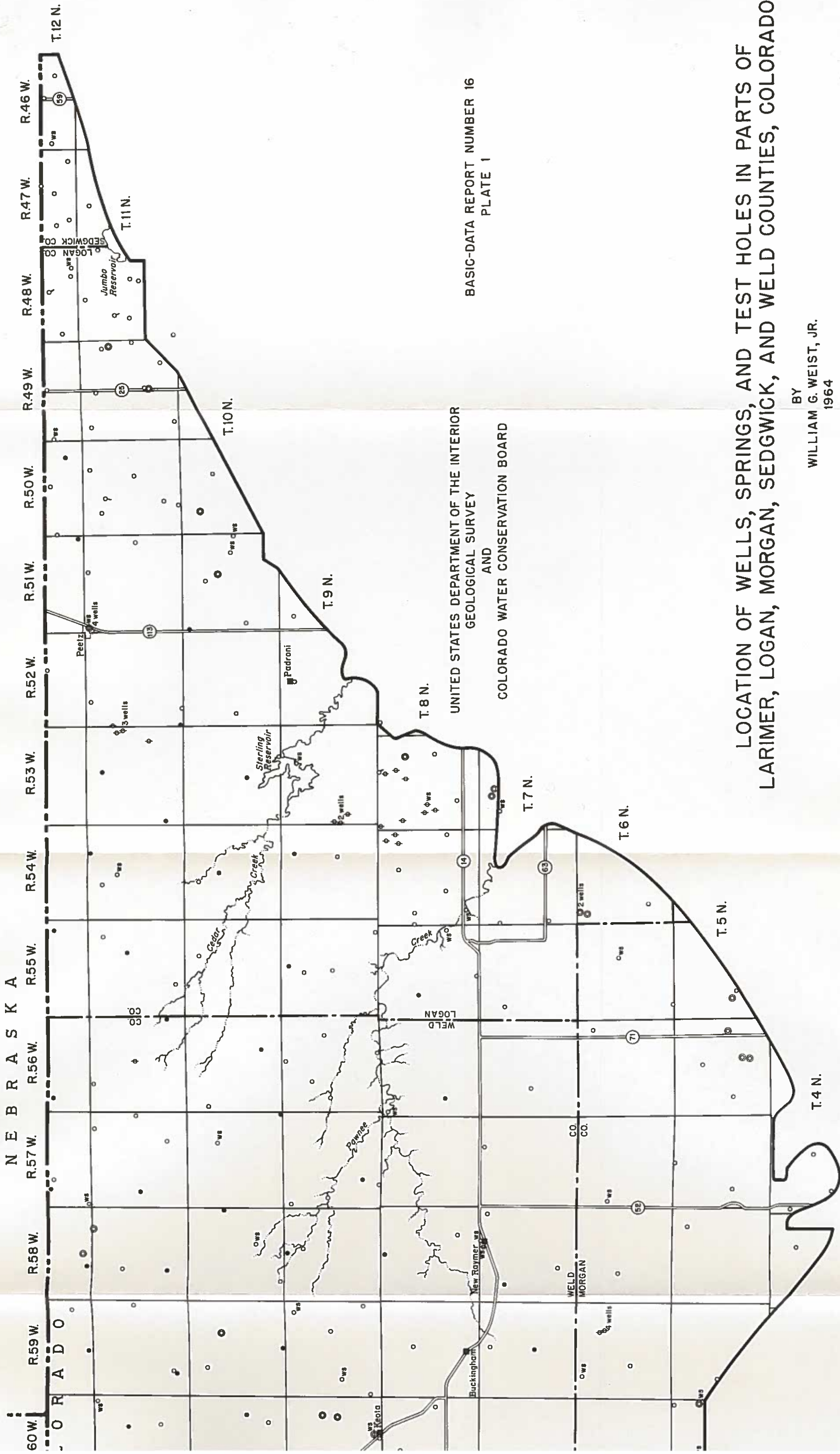
2/ Analysis furnished by the Shell Oil Company.

3/ Includes CO₃ as HCO₃.

4/ Analysis furnished by the Midwest Refining Company.

5/ In solution at time of analysis.

6/ Analysis furnished by the Wyoming Department of Agriculture.



UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
AND
COLORADO WATER CONSERVATION BOARD

BASIC-DATA REPORT NUMBER 16
PLATE 1

LOCATION OF WELLS, SPRINGS, AND TEST HOLES IN PARTS OF
LARIMER, LOGAN, MORGAN, SEDGWICK, AND WELD COUNTIES, COLORADO

BY
WILLIAM G. WEIST, JR.
1964

-W Y O M I N G

N E B R A S K A

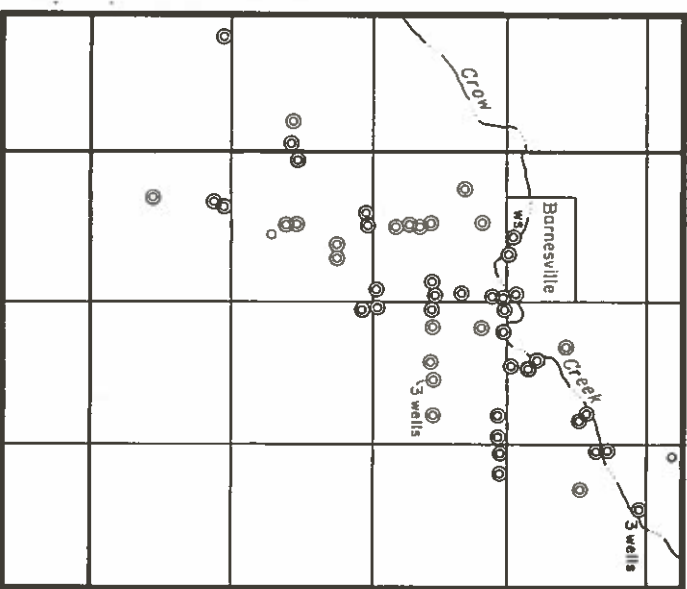
R.69 W. R.68 W. R.67 W. R.66 W. R.65 W. R.64 W. R.63 W. R.62 W. R.61 W. R.60 W. R.59 W. R.58 W. R.57 W. R.56 W.

EXPLANATION

- Domestic or stock well
- Industrial well
- Irrigation well
- Spring
- Public supply well
- Test hole
- Water sample collected for chemical analysis



R.64 W. R.63 W.



T.6 N.
T.5 N.

T.4 N.

C O L O R A D O

WELD MORGAN CO. CO.

WELD LOGAN

Riverside Reservoir

Briggsdale

Buckingham

New Roymer

GROVER

Hereford

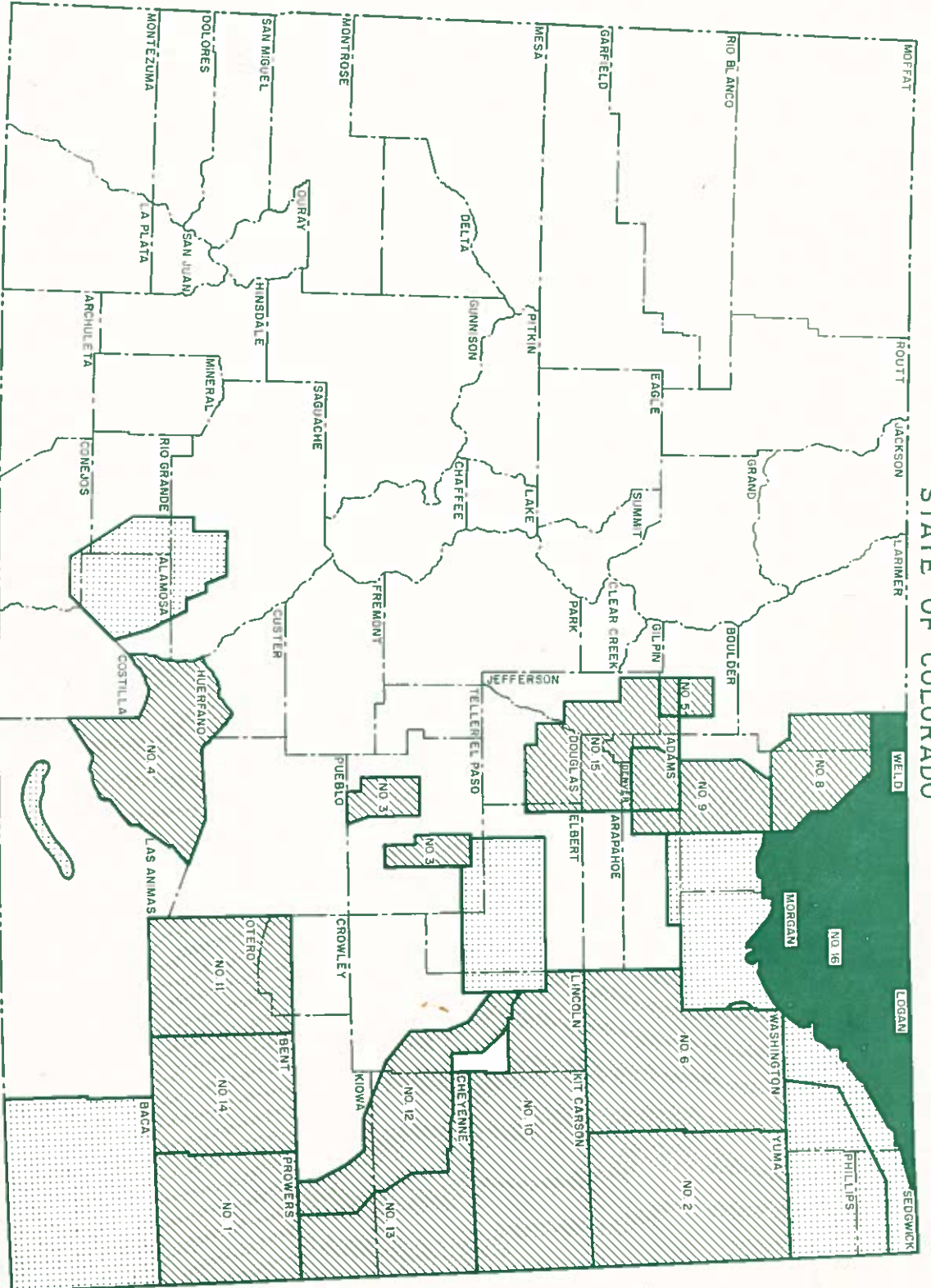
LARIMER WELD

Powder River

Cornish

Creek

STATE OF COLORADO



REPORTS NOT SHOWN THAT CONTAIN BASIC DATA

BASIC DATA REPORT NO. 7 IS STATE WIDE AND SHOWS RADIOCHEMICAL ANALYSES OF GROUND AND SURFACE WATER IN COLORADO, 1954-1961

PUBLIC WATER SUPPLIES OF COLORADO, 1959-1960

NO. 16

THIS REPORT

NO. 1

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