

SELECTED TEST-WELL DATA FROM THE MX-MISSILE

SITING STUDY, TOOEELE, JUAB, MILLARD,

BEAVER, AND IRON COUNTIES, UTAH

By James L. Mason, John W. Atwood, and Priscilla S. Buettner

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[Plate is in pocket]

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INTRODUCTION

This report contains well data collected from 1979 to 1983 in a part of the Great Basin in western Utah (fig. 1). The area is characterized by a series of generally north-trending mountain ranges separated by alluvium-filled basins that are partially filled with sedimentary deposits eroded from the adjacent mountains and lacustrine sediments deposited by Lake Bonneville. Most of the intermountain basins are elongated in the northward direction, but some are almost equidimensional.

This report was prepared as part of the Great Basin Regional Aquifer-System Analysis (RASA) program. The report is intended to make well data from the MX-missile siting study readily available to water-resource managers and the general public. It includes well data obtained in areas for which little or no such data have been published previously.

Well-drilling and well-completion data were compiled by Ertec, Inc. (formerly Fugro National, Inc.) under contract with the U. S. Air Force. Those data along with aquifer test data, geophysical logs, and drillers' or geologists' logs were obtained from Ertec, Inc. under an agreement with the U.S. Air Force. The authors thank the officials of both Ertec, Inc. and the U.S. Air Force for their helpful cooperation.

The U.S. Geological Survey obtained accurate locations of the test wells (pl. 1) and accurate water-level measurements in those wells (table 1). Chemical analyses of water samples collected from several of the test wells drilled in the Sevier Desert have been published in a report by Enright and Holmes (1982, table 5).

Test drilling for the MX-missile siting study consisted of two parts, the verification phase and the water-resources phase. The verification phase was designed to obtain information necessary for the design and construction of the MX-basing system. Numerous small diameter wells were bored with depths ranging from 92 to 205 feet. Two-inch diameter PVC casing with the bottom 20 feet perforated was installed in each borehole. The water-resources phase was designed to determine ground-water availability and to estimate the effects of ground-water withdrawals required for the construction of the MX-basing system. Six large-diameter production test wells were drilled along with associated small-diameter observation wells. Depths ranged from 310 to 1,399 feet. Lithologic logs for selected production test wells or associated observation wells are listed in table 2. Geophysical logs and aquifer test data are available in the files of the U. S. Geological Survey, as indicated in table 1.

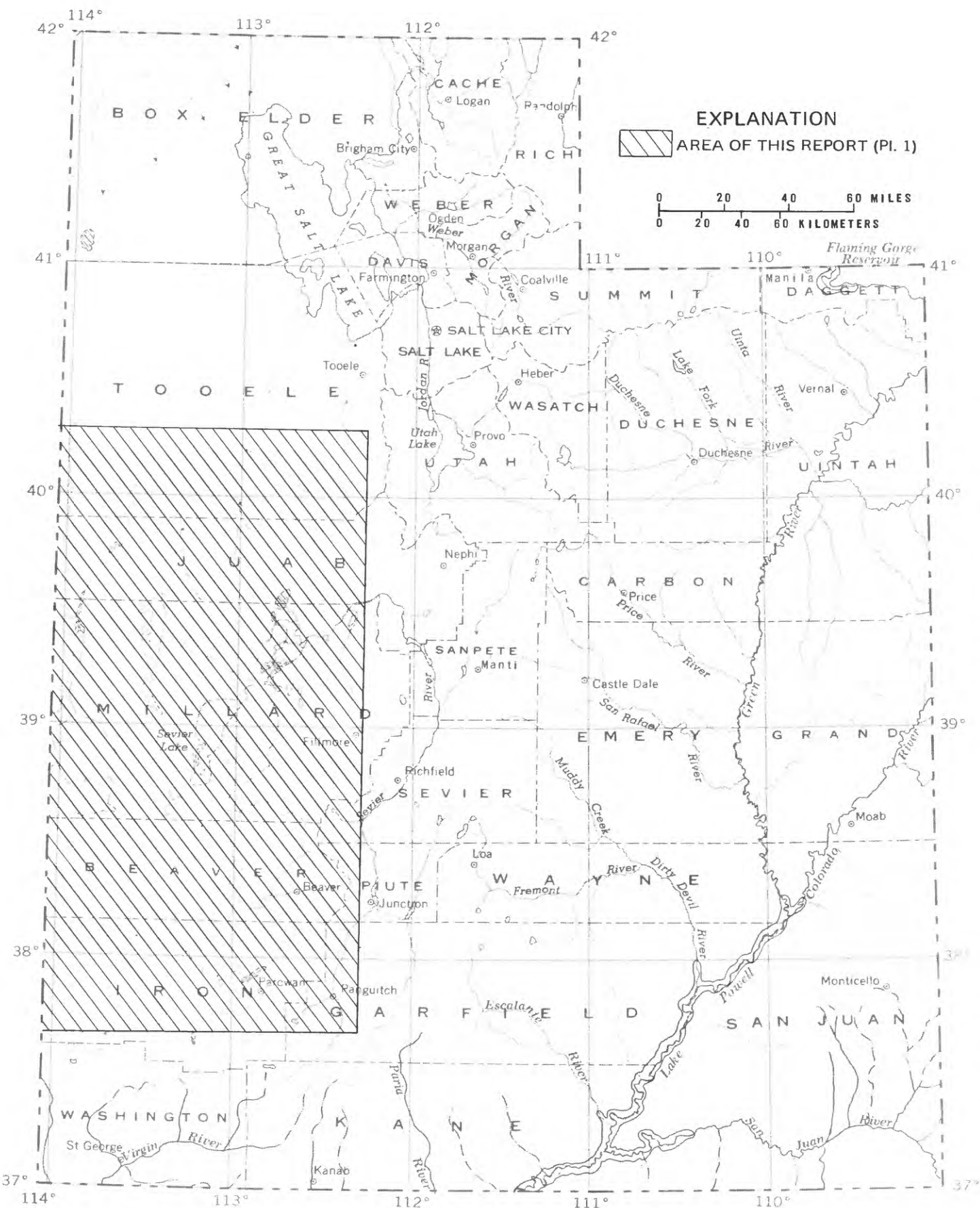


Figure 1.—Area of this report.

Upon completion of the drilling program, the U.S. Air Force relinquished control of all test wells. The U.S. Bureau of Land Management retained control of four production wells as noted in table 1. The U.S. Geological Survey retained control of 28 shallow test wells and nine production or observation wells, all of which have been incorporated into the Survey's state-wide observation-well network. In June 1983, the State of Utah under an agreement with the U.S. Air Force plugged all remaining test wells.

WELL-NUMBERING SYSTEM

The system of numbering wells in Utah is based on the cadastral land-survey system of the U.S. Government. The number, in addition to designating the well, describes its position in the land net. By the land-survey system, the State is divided into four quadrants by the Salt Lake base line and meridian, and these quadrants are designated by the upper case letters A, B, C, and D, indicating respectively, the northeast, northwest, southwest, and southeast quadrants. Numbers designating the township and range (in that order) follow the quadrant letter, and the three are enclosed in parentheses. The number after the parentheses indicates the section, and is followed by three letters indicating the quarter section, the quarter-quarter section, and the quarter-quarter-quarter section--generally 10 acres;¹ the letters a, b, c, and d indicate, respectively, the northeast, northwest, southwest, and southeast quarters of each subdivision. In tables 1 and 2 (which are direct computer printouts) uppercase letters are used to designate both the quadrants of Utah and the subdivisions of each section. The number after the section subdivisions is the serial number of the well within the smallest (10-acre) subdivision. Thus, (C-13-6)35ADD-1 designates the first well constructed or visited in the SE1/4 SE1/4 NE1/4 Sec. 35, T. 13 S., R. 6 W. The numbering system is illustrated in figure 2.

ADDITIONAL INFORMATION

Ten test wells were drilled in the Escalante Desert at a later date and were not included in the U. S. Geological Survey's original inventory. These test wells, identified by the above-described numbering system, are listed below:

(C-29-11)17bd
(C-29-12)35cc
(C-30-13) 8dc
(C-30-13)11bb
(C-32-14) 5ac
(C-32-14)10cb
(C-32-15)31cd
(C-33-17)11cb
(C-33-17)21dd
(C-33-18)25aa

¹Although the basic land unit, the section, is theoretically 1 square mile, many sections are irregular. Such sections are subdivided into 10-acre tracts, generally beginning at the southeast corner, and the surplus or shortage is taken up in tracts along the north and west sides of the section.

Sections within a township

Tracts within a section

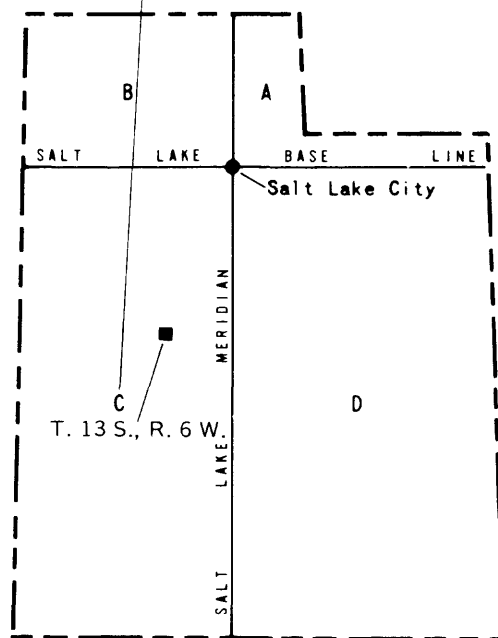
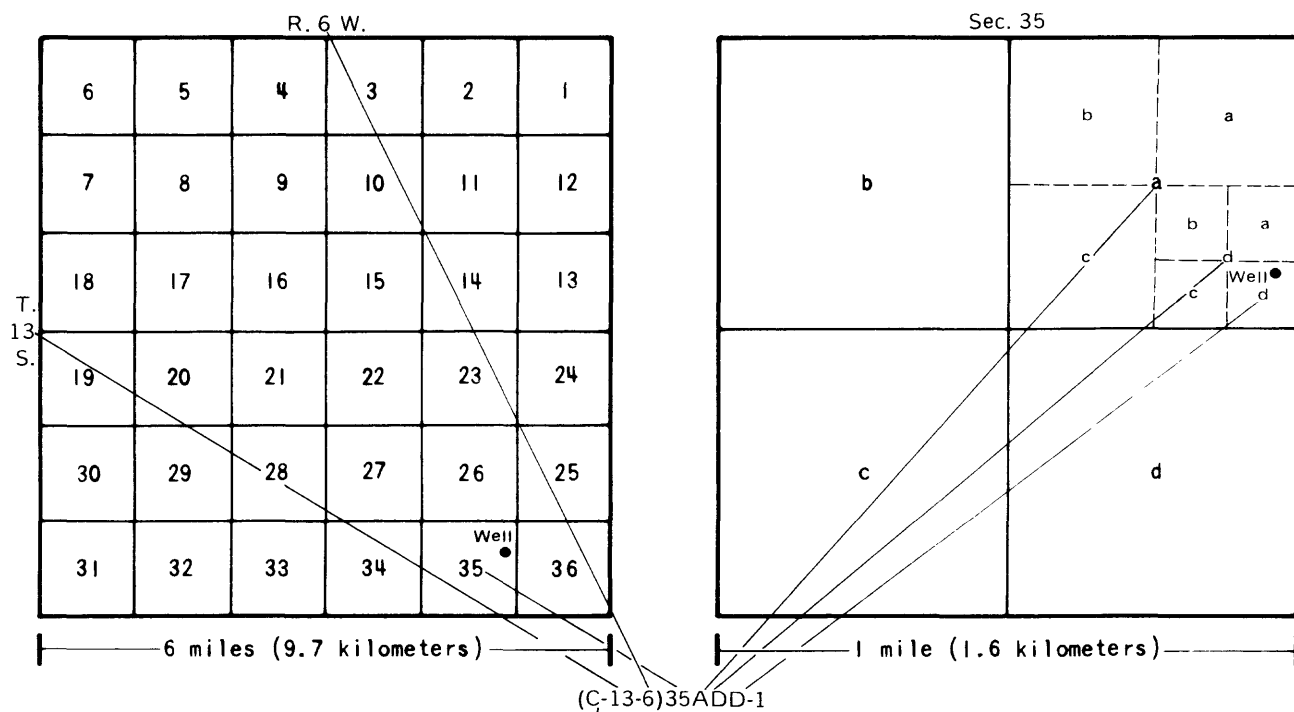


Figure 2.—Well-numbering system used in Utah.

Although no well-completion data were obtained for these wells, well (C-29-11)17bd has been added to the U.S. Geological Survey's state-wide observation-well network; it is assigned number (C-29-11)17aac-1 in Table 1.

All values in this report are in inch-pound units. To convert them to metric units, multiply as follows:

<u>Inch-pound</u>	<u>By</u>	<u>To obtain</u>
Acre	0.4047	Square hectometer
Foot	0.3048	Meter
Inch	2.540	Centimeter
Mile	1.609	Kilometer

REFERENCES CITED

Enright, M., and Holmes, W. F., 1982, Selected ground-water data, Sevier Desert, Utah, 1935-1982: Utah Hydrologic-data Report 37, 59 p.

Table 1.--Records of selected test wells

Location: See well-numbering system in text.

Casing: Letter before finish; O, open hole (uncased); F, perforated casing; S, screened.

Altitude of land surface: Surveyed altitudes, given in feet and decimal fractions; altitudes interpolated from U.S. Geological Survey topographic maps given in full feet.

Water level: Measured by U.S. Geological Survey or reported as indicated by r.

Use of well: B, control of U.S. Bureau of Land Management; D, could not locate during field inventory, probably destroyed; N, control of U.S. Geological Survey and maintained as part of state-wide observation well network; Z, plugged by the State of Utah.

Other data available: A, aquifer test; C, chemical analyses reported in Enright and Holmes (1982, table 5); D, drillers' log in the files of the U. S. Geological Survey; G, geophysical logs in the files of the U. S. Geological Survey; L, lithologic log in table 2.

LOCATION	YEAR COMPLETED	DEPTH OF HOLE (feet)	CASING			ALTITUDE OF LAND SURFACE (feet)	WATER LEVEL		USE OF WELL	OTHER DATA AVAILABLE
			DIAMETER (inches)	TOTAL DEPTH (feet)	FINISH (feet)		BELOW LAND SURFACE (feet)	DATE		
(C- 9- 9)34BDD- 1	1980	200.0	2.0	197.0	P 177.0- 197.0	4540	DRY	8/29/81	Z	D
(C- 9-11)19ACC- 1	1979	200.0	2.0	195.0	P 190.0- 195.0	4337	32.3	2/18/83	N	D
(C-10-10)23CAD- 1	1979	180.0	2.0	175.0	P 170.0- 175.0	4515	DRY	8/29/81	Z	D
(C-11- 8)21BLK- 1	1980	200.0	2.0	197.0	P 177.0- 197.0	4680	105.6	8/29/81	N	D
(C-11-10)19BBB- 1	1980	178.0	2.5	174.0	P 110.0- 174.0	4715	DRY	12/14/81	Z	D, G
(C-11-12) 4CCB- 1	1980	160.0	2.0	157.0	P 137.0- 157.0	4460	139.2	2/18/83	N	D
(C-11-13) 1ACB- 1	1979	150.0	2.0	145.0	P 135.0- 145.0	4332	10.2r	7/___/80	D	D
(C-11-15)26AAB- 1	1979	202.0	2.0	197.0	P 177.0- 197.0	4360	26.0r	7/___/80	D	D
(C-11-16)24CAD- 1	1979	201.0	2.0	196.0	P 176.0- 196.0	4336	5.79	2/17/83	Z	D
36CDB- 1	1980	150.0	2.0	147.0	P 127.0- 147.0	4415	3.17	8/23/81	N	D
(C-11-17)21CCA- 1	1980	200.0	2.0	195.0	P 175.0- 195.0	4815	181.9	8/23/81	Z	D
(C-12- 6)26AAA- 1	1980	200.0	2.0	196.1	P 176.1- 196.1	5055	44.61	8/08/80	Z	D
(C-12- 7) 8CAD- 1	1980	200.0	2.0	194.7	P 174.7- 194.7	4816	77.88	3/02/81	Z	D
(C-12- 8)26BCA- 1	1980	160.0	2.0	157.0	P 137.0- 157.0	4640	49.70	6/18/80	Z	D
(C-12-10)31CCC- 1	1980	402.0	22.0 10.0	40.0 402.0	S 160.0- 180.0 S 200.0- 240.0 S 260.0- 280.0	5080	49.83 DRY	3/02/81 8/29/81	Z	D, G, L
(C-12-13)14DDB- 1	1979	200.0	2.0	195.0	P 185.0- 195.0	4440	76.8r	7/___/80	D	D
15DCC- 1	1979	150.0	2.0	145.0	P 135.0- 145.0	4344	12.4r	7/___/80	D	D
(C-12-16)17AAB- 1	1980	150.0	2.0	146.0	P 126.0- 146.0	4515	DRY	8/23/81	Z	D
(C-12-17) 1ABC- 1	1980	160.0	2.0	157.0	P 137.0- 157.0	4620	DRY	8/23/81	Z	D
35CAC- 1	1979	100.0	2.0	97.0	P 77.0- 97.0	4570	93.10	8/23/81	N	D
(C-13- 6) 9BCC- 1	1980	150.0	2.0	138.0	P 118.0- 138.0	4808	107.6	3/02/81	Z	C, D
20ACB- 1	1980	151.0	2.0	149.0	P 129.0- 149.0	4722	64.90	8/08/80	N	D
34BCA- 1	1980	160.0	2.0	157.0	P 137.0- 157.0	4721	59.24	8/08/80	N	D
35ADD- 1	1980	202.0	2.0	200.0	P 180.0- 200.0	4760	58.58	8/08/80	Z	C, D
(C-13- 7)12CDB- 1	1980	160.0	2.0	157.0	P 137.0- 157.0	4712	70.04	8/08/80	Z	C, D
(C-13- 8)14BCA- 1	1980	160.0	2.0	158.0	P 138.0- 158.0	4595	2.59	3/11/81	Z	D
(C-13-13)10CDA- 1	1979	200.0	2.0	195.0	P 185.0- 195.0	4430	105.0r	7/___/80	D	D
14BCC- 1	1979	200.0	2.0	195.0	P 185.0- 195.0	4510	DRYr	1/___/80	D	D
18CBA- 1	1979	200.0	2.0	195.0	P 190.0- 195.0	4420	78.3r	7/___/80	D	D
(C-13-14)25DAC- 1	1980	200.0	2.0	197.0	P 177.0- 197.0	4465	109.1 108.6	8/29/81 2/18/83	N	D
(C-13-17) 1BD	1979	100.0	2.0	97.0	P 77.0- 97.0	4610	DRY	8/23/81	Z	D
(C-13-18)14BBA- 1	1979	101.0	2.0	98.0	P 78.0- 98.0	4880	DRY	8/23/81	Z	D
25DDD- 1	1980	200.0	2.0	197.0	P 177.0- 197.0	4800	101.4	8/23/81	Z	D
(C-14- 9)20CBB- 1	1979	200.0	2.0	195.0	P 190.0- 195.0	4725	178.9	8/06/81	Z	D
27BDB- 1	1980	160.0	2.0	159.0	P 139.0- 159.0	4660	103.7 103.6	8/06/80 2/14/83	N	C, D
(C-14-13) 7DAA- 1	1979	200.0	2.0	195.0	P 180.0- 195.0	4590	DRY	8/29/81	Z	D
(C-14-18)18DCC- 1	1979	101.0	2.0	98.0	P 78.0- 98.0	4870	77.86	8/23/81	Z	D
26DBC- 1	1980	200.0	2.0	196.0	P 176.0- 196.0	4960	168.8	8/23/81	N	D
27AAA- 1	1979	101.0	2.0	98.0	P 78.0- 98.0	4840	168.4	2/17/83	Z	D
(C-15- 5)10CDD- 1	1980	200.0	2.0	197.0	P 177.0- 197.0	4780	56.90 103.0r	8/23/81 5/___/80	Z	D
(C-15- 6)29BD	1980	120.0	2.0	70.0	P 50.0- 70.0	4730	63.3r	5/___/80	D	D
(C-15- 9) 9CBD- 1	1979	151.0	2.0	148.0	P 128.0- 148.0	4598	50.08	8/06/80	Z	D
29DEA- 1	1980	200.0	2.0	194.0	P 174.0- 194.0	4650	106.7	8/06/81	Z	D
(C-15-12)19ADD- 1	1980	1220.0	2.0	1191.0	P 960.0- 981.0 P1044.0-1086.0 P1107.0-1170.0	5260	796.1 795.8	12/14/81 2/05/82	Z	A, D, G, L
19ADD- 2	1980	1033.0	22.0 10.0	67.0 1025.0	S 710.0- 730.0 S 825.0- 905.0 S 925.0-1005.0	5260	794.6	12/15/81	Z	A, D, G
(C-15-15)30BDD- 1	1979	185.0	2.0	181.0	P 161.0- 181.0	4570	147.2 146.9	12/15/81 2/11/83	N	D

Table 1.--Records of selected test wells--Continued

LOCATION	YEAR COMPLETED	DEPTH OF HOLE (feet)	CASING			ALTITUDE OF LAND SURFACE (feet)	WATER LEVEL		USE OF WELL	OTHER DATA AVAILABLE
			DIAMETER (inches)	TOTAL DEPTH (feet)	FINISH (feet)		BELOW LAND SURFACE (feet)	DATE		
(C-15-19)11BCC- 1	1979	101.0	2.0	96.0	P 76.0- 96.0	4970	89.39	8/23/81	N	D
12BDC- 1	1979	101.0	2.0	98.0	P 78.0- 98.0	4870	50.39	8/23/81	Z	D
(C-151/2-15)33DAC-1	1979	92.0	2.0	92.0	P 72.0- 92.0	4530	DRY	8/28/81	Z	D
(C-16- 9)19ACD- 1	1979	180.0	2.0	175.0	P 165.0- 175.0	4710	176.2	8/06/80	Z	D
31CBC- 1	1979	201.7	2.0	196.7	P 176.7- 196.7	4660	120.6	8/06/80	N	D
							120.7	2/16/83		
(C-16-10) 1ADD- 1	1979	202.2	2.0	197.2	P 177.2- 197.2	4808	DRYr	1/___/80	D	D
(C-16-14)15ADB- 1	1979	201.5	2.0	196.5	P 176.5- 196.5	4495	78.65	8/28/81	Z	D
(C-16-16)34BCD- 1	1979	200.0	2.0	195.0	P 175.0- 195.0	4790	146.1	8/28/81	Z	D
(C-16-18)10BA- 1	1980	200.0	2.0	197.0	P 177.0- 197.0	4970	164.8	8/24/81	Z	D
26CBA- 1	1979	101.0	2.0	98.0	P 78.0- 98.0	4880	41.80	8/24/81	N	D
							41.93	2/17/83		
(C-16-19) 4BBA- 1	1979	101.0	2.0	98.0	P 77.0- 97.0	5000	71.79	8/27/81	N	D
17DBA- 1	1980	150.0	2.0	147.0	P 127.0- 147.0	5010	122.0	8/27/81	Z	D
29CB	1980	200.0	2.0	197.0	P 177.0- 197.0	5000	81.99	8/27/81	Z	D
(C-17- 9) 5ADB- 1	1980	155.0	2.0	153.0	P 133.0- 153.0	4565	23.37	8/09/80	Z	C, D
7CDD- 1	1979	150.0	2.0	145.0	P 140.0- 145.0	4558	20.30	8/06/81	Z	D
30AAB- 1	1980	160.0	2.0	158.0	P 138.0- 158.0	4560	24.66	8/06/80	Z	C, D
(C-17-10)28ADD- 1	1979	200.0	2.0	195.0	P 175.0- 195.0	4665	147.1	8/06/80	Z	D
29BEC- 1	1979	200.0	2.0	195.0	P 177.0- 195.0	4719	DRYr	1/___/80	D	D
(C-17-14) 7BCC- 1	1979	150.0	2.0	145.0	P 125.0- 145.0	4411	4.85	8/28/81	N	D
							4.67	2/11/83		
8DBA- 1	1979	200.0	2.0	195.0	P 175.0- 195.0	4430	7.20	8/28/81	Z	D
9ACD- 1	1979	200.0	2.0	195.0	P 175.0- 195.0	4506	78.65	8/28/81	Z	D
(C-17-15)17ACC- 1	1980	430.0	22.0	40.0		4479	46.63	12/15/81	B	D, C, L
			10.0	399.7	P 100.0- 180.0					
					P 259.7- 279.7					
					P 359.7- 379.7					
17ACC- 2	1980	310.0	2.5	296.0	P 56.0- 276.0	4474	52.53	12/15/81	N	D, G
19DC- 1	1979	190.0	2.0	190.0	P 170.0- 190.0	4640	DRY	8/07/81	Z	D
29ACC- 1	1979	200.0	2.0	195.0	P 175.0- 195.0	4590	169.5	8/07/81	Z	D
34CAC- 1	1979	201.0	2.0	197.0	P 177.0- 197.0	4455	29.29	8/07/81	N	D
							28.89	2/11/83		
(C-17-16) 1BBB- 1	1979	150.0	2.0	145.0	P 125.0- 145.0	4620	DRY	8/28/81	Z	D
(C-17-18) 1DD- 1	1980	160.0	2.0	158.0	P 138.0- 158.0	5020	DRY	8/24/81	Z	D
26AB	1979	101.0	2.0	98.0	P 78.0- 98.0	4870	40.6r	7/___/80	D	D
(C-17-19) 4BDD- 1	1979	101.0	2.0	98.0	P 78.0- 98.0	4910	76.74	8/27/81	Z	D
5DC	1979	100.0	2.0	97.0	P 77.0- 97.0	5020	50.46	8/27/81	Z	D
19DD	1980	200.0	2.0	197.5	P 177.5- 197.5	5060	121.7	8/27/81	Z	D
(C-18-10)20CBD- 1	1979	200.0	2.0	198.0	P 178.0- 198.0	4689	171.8	8/07/80	Z	D
25CAD- 1	1980	112.0	2.0	76.0	P 56.0- 76.0	4558	23.13	8/07/80	N	C, D
(C-18-14) 8DCB- 1	1979	200.0	2.0	197.0	P 177.0- 197.0	4700	DRY	8/07/81	Z	D
30CBA- 1	1980	200.0	2.0	193.8	P 173.8- 193.8	4490	81.27	8/07/81	Z	D
(C-18-15) 1DDC- 1	1979	160.0	2.0	157.0	P 137.0- 157.0	4432	13.60	8/07/81	Z	D
36CDD- 1	1979	200.0	2.0	197.0	P 177.0- 197.0	4530	105.5	8/07/81	N	D
							103.6	2/11/83		
(C-18-18)10ADB- 1	1979	51.0	2.0	51.0	P 11.0- 51.0	4940	50.21	8/24/81	Z	D
31ADB- 1	1979	100.0	2.0	97.0	P 77.0- 97.0	4970	79.86	8/24/81	N	D
(C-18-19)20CA	1979	100.0	2.0	97.0	P 77.0- 97.0	5050	34.55	8/26/81	Z	D
(C-19-10) 4CAD- 1	1979	156.0	2.0	152.0	P 132.0- 152.0	4624	68.85	8/07/80	Z	D
6BCD- 1	1980	205.0	2.0	202.0	P 182.0- 202.0	4742	DRYr	7/___/80	D	D
26DB	1980	150.0	2.0	147.0	P 127.0- 147.0	4545	31.0r	7/___/80	D	D
(C-19-11)26AAB- 1	1979	150.0	2.0	150.0	P 130.0- 150.0	4615	30.28	8/07/80	Z	D
(C-19-12)27DDB- 1	1980	200.0	2.0	195.0	P 177.0- 195.0	4695	DRY	2/03/82	Z	D
36BCA- 1	1979	200.0	2.0	195.0	P 177.0- 195.0	4607	180.4	8/07/80	N	D
							180.7	2/03/82		
							180.3	7/22/82		
(C-19-15)11BDC- 1	1980	200.0	2.0	194.1	P 174.1- 194.1	4470	36.70	8/07/81	Z	D
							38.08	2/05/82		
(C-19-18) 5ABB- 1	1980	200.0	2.0	195.5	P 175.5- 195.5	5100	DRY	8/24/81	Z	D
(C-19-19)36CDA- 1	1979	100.0	2.0	97.0	P 77.0- 97.0	5020	72.49	8/24/81	N	D
							71.08	2/17/83		
(C-20-12) 1AAC- 1	1979	150.0	2.0	145.0	P 127.0- 145.0	4543.8	56.67	8/07/80	N	C, D
							56.79	7/22/82		
17ADC- 1	1979	200.0	2.0	195.0	P 180.0- 195.0	4655	DRY	8/05/81	Z	D
								2/03/82		
(C-20-14) 6DDA- 1	1980	620.0	2.5	620.0	P 500.0- 600.0	4520	88.52	8/07/81	N	A, D, G
							88.48	2/05/82		
6DDA- 2	1980	624.0	22.0	40.0		4520	86.16	12/15/81	B	A, D, G, L
			10.0	620.0	P 500.0- 600.0		86.16	2/05/82		
(C-20-18)21BAB- 1	1980	168.0	2.0	159.0	P 139.0- 159.0	5120	52.75	8/24/81	Z	D
21BCA- 1	1979	100.0	2.0	97.0	P 77.0- 97.0	5085	DRY	8/24/81	Z	D
32ABD- 1	1979	100.0	2.0	97.0	P 77.0- 97.0	5019	37.08	8/24/81	N	D
							36.92	2/17/83		
(C-20-19) 6BC	1979	101.0	2.0	98.0	P 78.0- 98.0	5080	4.65	8/26/81	Z	D
12AAB- 1	1980	150.0	2.0	148.0	P 128.0- 148.0	5035	20.39	8/24/81	Z	D
							21.52	2/04/82		
(C-21-18)17DAC- 1	1979	100.0	2.0	97.0	P 77.0- 97.0	5060	79.24	8/24/81	Z	D
20DBD- 1	1980	200.0	2.0	194.3	P 174.3- 194.3	5240	DRY	8/24/81	Z	D
(C-21-19)16CBD- 1	1979	100.0	2.0	97.0	P 77.0- 97.0	5120	88.53	8/25/81	Z	D
21DAA- 1	1979	100.0	2.0	97.0	P 77.0- 97.0	5125	91.54	8/25/81	Z	D
(C-22-12) 8BCB- 1	1979	201.3	2.0	196.3	P 178.3- 196.3	4680	DRY	2/04/82	Z	D
9BCB- 1	1979	150.0	2.0	145.0	P 127.0- 145.0	4615	58.71	8/05/81	Z	D

Table 1.--Records of selected test wells--Continued

LOCATION	YEAR COMPLETED	DEPTH OF HOLE (feet)	CASING			ALTITUDE OF LAND SURFACE (feet)	WATER LEVEL		USE OF WELL	OTHER DATA AVAILABLE
			DIAMETER (inches)	TOTAL DEPTH (feet)	FINISH (feet)		BELOW LAND SURFACE (feet)	DATE		
(C-22-19)31CBD- 1	1980	199.5	2.0	196.6	P 176.6- 196.6	5560	DRY	8/25/81	Z	D
(C-22-20)24DAD- 1	1979	101.0	2.0	97.2	P 77.2- 97.2	5560	DRY	8/25/81	Z	D
(C-23-19) 7CD	1979	101.0	2.0	97.0	P 77.0- 97.0	5480	DRYr	7/___/80	D	D
9DAD- 1	1979	100.0	2.0	95.0	P 80.0- 95.0	5480	68.47	8/26/81	Z	D
10DDA- 1	1980	200.0	2.0	190.0	P 70.0- 90.0	5600	163.6	8/26/81	Z	D
22BCD- 1	1979	50.0	2.0	50.0	P 0.0- 50.0	5460	48.89	8/26/81	Z	D
28CBB- 1	1979	100.0	2.0	95.0	P 77.0- 95.0	5440	39.95	8/26/81	Z	D
(C-24-11)18CAC- 1	1980	150.0	2.0	147.0	P 127.0- 147.0	4650	142.4	8/05/81	Z	D
							143.6	2/10/83		
							146.1	7/29/83		
(C-24-12)15CC	1980	150.0	2.0	150.0	P 130.0- 150.0	4570	DRY	8/05/81	Z	D
							DRY	2/03/82		
(C-24-13)13AAC- 1	1979	150.0	2.0	145.0	P 127.0- 145.0	4555.4	96.79	8/05/81	N	D
							96.96	2/04/82		
23CCD- 1	1979	200.5	2.0	195.5	P 177.5- 195.5	4615	177.9	8/04/81	N	D
							178.0	2/03/82		
(C-24-19) 3CAD- 1	1980	199.5	2.0	197.0	P 177.0- 197.0	5570	125.7	8/26/81	N	D
4AAB- 1	1979	100.0	2.0	95.0	P 77.0- 95.0	5520	81.75	8/26/81	Z	D
(C-26-14)25AAD- 1	1980	1250.0	2.0	1135.0	P 888.0- 909.0 P1020.0-1041.0 P1056.0-1077.0	4760	235.4	8/04/81	N	D, G, L
(C-26-17)10AAC- 1	1980	951.0	22.0	40.0		5222	436.2	12/16/81	B	A, D, G, L
			10.0	870.0	S 560.0- 630.0 S 660.0- 680.0 S 710.0- 740.0 S 750.0- 770.0 S 800.0- 820.0 S 830.0- 850.0		436.2	2/04/82		
					P 640.0- 661.0 P 761.0- 802.0 P 840.0- 861.0					
10ABA- 1	1980	1157.0	2.0	882.0		5225	443.0r	8/___/80	N	A, D, G
(C-27-14)28DDD- 1	1980	1399.0	22.0	40.0		5090	569.3	12/14/81	B	A, D, G, L
			10.0	1340.0	P 905.0- 945.0 P 995.0-1015.0 P1025.0-1065.0 P1090.0-1110.0 P1220.0-1300.0 P1310.0-1320.0					
28DDD- 2	1980	1399.0	12.0	40.0		5085	563.9	12/16/81	N	A, D, G
			2.0	987.0	P 693.0- 987.0					
(C-29-11)17AAC-1	---	---	2.0	---	---	5015	36.58	2/10/83	N	---
(C-31-13) 5BBB- 1	1980	342.0	2.5	342.0	P 300.0- 342.0	5078	27.92	8/03/81	N	A, D, G
							27.97	2/15/83		
5BBB- 2	1980	600.0	2.0	296.0	O 296.0- 600.0	5078	28.39	8/03/81	N	A, D, L
							28.37	2/15/83		
(C-33-17)21DDA- 1	1980	353.0	9.0	353.0	S 180.0- 240.0 S 260.0- 340.0	5321	195.3	8/03/81	N	A, D, G
					S 259.0- 322.0	5328	185.6	2/15/83		
21DDA- 2	1980	504.0	2.0	332.0			192.9	2/15/83	N	A, D, G, L

Table 2.--Selected lithologic logs of test wells

Location and material: See data-site numbering system in text. Altitude (Alt.) is land surface interpolated from U.S. Geological Survey topographical maps and is given in feet.

Thickness: Thickness of unit in feet.

Depth: Depth to base of unit in feet below land surface datum.

Location and Material	Thickness	Depth	Location and material	Thickness	Depth	Location and material	Thickness	Depth
(C-12-10)310CC-1. Log by W. Norris, T. Smith, and D. Boylan. Alt. 5,080 feet.			(C-15-12)19ADD-1.--Continued			(C-15-12)19ADD-1.--Continued		
Top soil	5	5	Gravel, dark gray to black to dark brown; poorly sorted, fine to 20 millimeters; angular to subrounded; trace of sand and clay	40	150	Clay, sandy, pale brown; moderately sorted, sand fine to medium; subangular to subrounded; sand 10 percent	10	800
Sand, silty, light gray; poorly sorted, very coarse to very fine; subangular	25	30	Gravel, dark gray to black to dark brown; poorly sorted, fine to 10 millimeters; angular to subrounded; trace of sand and clay	10	160	Clay, sandy, pale brown; moderately sorted, sand fine to medium; subangular to subrounded; sand 20 percent	27	827
Sand, light gray to medium gray; well sorted, very coarse; subangular	10	40	Gravel, as above, gravel size decreasing	10	170	Clay, sandy, pale brown; moderately sorted, sand fine to medium; subangular to subrounded; sand 20 percent; noted as change in formation	53	880
Sand, as above, grain size decreasing to medium	10	50	Gravel, and sand, dark gray to black to dark brown; poorly sorted, gravel up to 10 millimeters; angular to subrounded	10	180	Clay, sandy, pale brown; moderately sorted, sand fine to medium; subangular to subrounded; sand 20 percent	10	890
Sand, as above, grain size increasing to very coarse ...	10	60	Gravel, and sand, dark gray to black to dark brown; poorly sorted, sand medium to coarse; angular to subrounded; clay 5 percent	20	200	Clay, sandy, pale brown; well sorted, sand medium; subangular to subrounded; sand 40 percent	10	900
Sand, as above, angularity increasing	20	80	Gravel, and sand, dark gray to black to dark brown; poorly sorted, gravel fine to 8 millimeters, sand coarse; angular to subrounded	10	210	Clay, sandy, pale brown to black; moderately sorted, sand fine to medium; angular to subrounded; sand less than 10 percent ...	60	960
Sand, light gray to medium gray; well sorted, very coarse; subangular	10	90	Gravel, and sand, dark gray to black to dark brown; poorly sorted, gravel fine to 10 millimeters, sand coarse; angular to subrounded	10	220	Clay, sandy, pale brown to black; poorly sorted, sand fine to medium; angular to subrounded; sand 25 percent	10	970
Sand, as above, silt less than 10 percent	10	100	Sand, and gravel, dark gray to dark brown; poorly sorted, sand medium to coarse, gravel fine; angular to subrounded	10	230	Sand, black to reddish brown; poorly sorted, fine to coarse; subangular to angular; clay, silty, 10 percent	10	980
Sand, light gray to medium gray; moderately sorted, very fine to medium; subangular; silt dark gray less than 10 percent	10	110	Sand, and gravel, dark gray to black to dark brown; poorly sorted, sand coarse, gravel fine; angular to subrounded; clay and fine sand 5 percent	20	250	Sand, silty, clay, black to reddish brown; poorly sorted, fine to medium; subrounded to subangular; silt and clay 30 percent	10	990
Sand, as above, silt increasing to 10 percent	10	120	Sand, and gravel, black to strong brown; sand coarse to fine, gravel fine to 8 millimeters; angular to subrounded; clay 10 percent	20	270	Sand, silty, black to reddish yellow; poorly sorted, medium to fine; subangular to subrounded; silt and clay 20 percent	20	1,010
Sand, as above, very fine to very coarse; silt decreasing to less than 10 percent	40	160	Sand, black to brown; poorly sorted, fine to coarse; angular to subrounded; trace of gravel and clay	30	300	and, silty, black to reddish yellow; poorly sorted, medium to fine; subrounded to angular; silt and clay 30 percent	20	1,030
Sand, light gray to medium gray; moderately sorted, medium to coarse; subangular	40	200	Sand, black to brown; poorly sorted, fine to coarse; angular to subrounded; clay 10 percent	30	330	Sand, silty, black to reddish yellow; poorly sorted, coarse to fine; subangular to subrounded; silt and clay 25 percent	10	1,040
Sand, light gray to medium gray; moderately sorted, very fine to coarse; subangular; silt dark gray less than 10 percent	30	230	Sand, black to brown; poorly sorted, fine to coarse; angular to subrounded; clay 30 percent	20	350	Sand, and gravel, black to reddish yellow; poorly sorted, fine to coarse, gravel fine; subangular to subrounded; gravel 5 percent; silt and clay 5 percent	10	1,050
Sand, as above, silt increasing to 10 percent	10	240	Sand, and clay, black to brown; poorly sorted, fine to coarse; angular to subrounded; clay 50 percent	170	520	no data	170	1,220
Sand, light gray to medium gray; moderately sorted, very fine to coarse; subangular; silt dark gray less than 10 percent	20	260	Clay, sandy, black to brown; poorly sorted; angular to subrounded; sand 40 percent	20	540	(C-17-15)17ACC-1. Log by (names not given) Alt. 4,479 feet.		
Sand, as above, silt increasing to 25 percent	20	270	Clay, sandy, black to brown; poorly sorted, sand coarse to fine; angular to subrounded; sand 40 percent	20	560	Gravel, sandy, silty, light gray to dark gray, matrix yellow; poorly sorted; subangular to subrounded; matrix 70 percent	430	430
Sand, medium gray to dark gray; well sorted, medium; subangular	30	320	Clay, sandy, black to brown; poorly sorted; angular to subrounded; sand 40 percent	40	600	Boulders and clay layers at or near following depths:.....		60
Sand, silty, light gray to medium gray; poorly sorted, very fine to coarse; subrounded to subangular; silt dark gray less than 20 percent	30	350	Clay, sandy, dark grayish brown to black; poorly sorted, sand coarse to fine; angular to subrounded; sand 35 percent	140	740		220
Sand, as above, silt increasing	10	360	Clay, sandy, pale brown; moderately sorted, sand fine to medium; angular to subrounded; sand 30 percent	30	770		288
Sand, as above, silt becoming lighter gray.....	42	402	Clay, sandy, pale brown; moderately sorted, sand fine to medium; angular to subrounded; sand 20 percent	10	780		392
(C-15-12)19ADD-1. Log by K. Knirsch, L. Zweigart, M. Gemmel, L. D'Angelo, M. Hume. Alt. 5,260 feet.			Clay, sandy, pale brown; sand less than 2 percent	10	790	(C-20-14)6DDA-2. Log by D. Boylan, and R. Whitworth. Alt. 4,520 feet.		
Gravel, dark gray to dark brown; poorly sorted, fine to 10 millimeters; angular to subrounded	10	10				Sand, silty, white to gray; moderately sorted, fine to medium; subangular to subrounded; silt 25 percent	50	50
Gravel, dark gray to dark brown; poorly sorted, fine to 20 millimeters; very angular to subrounded ..	10	20				Sand, gray; moderately sorted, fine to medium; subangular to subrounded; clay 10 percent	50	100
Gravel, dark gray to black to dark brown; moderately sorted, fine to 20 millimeters; angular to subrounded	20	40						
Gravel, dark gray to black to dark brown; moderately sorted, fine to 10 millimeters; angular to subrounded	20	60						
Gravel, dark gray to black to dark brown; moderately sorted, fine to 5 millimeters; angular to subrounded	50	110						

Table 2.--Selected lithologic logs of test wells--Continued

Location and Material	Thickness	Depth	Location and material	Thickness	Depth	Location and material	Thickness	Depth
(C-20-14) 6IDA-2.--Continued			(C-26-14) 25AND-1.--Continued			(C-26-14) 25AND-1.--Continued		
Clay, sandy, white to gray; moderately sorted, sand fine to coarse; subangular to subrounded; sand 20 percent	20	120	Clay, sandy, light gray; sand fine; subangular to subrounded; sand 35 percent	30	190	Clay, sandy, silty, light brown; sand fine to coarse; subangular to subrounded; sand 25 percent, silt 25 percent	10	1,010
Clay, sandy, calcareous, white to gray; poorly sorted, sand fine to coarse; subangular; sand 40 percent	80	200	Clay, as above, sand 15 percent	40	230	Clay, as above, reddish brown	20	1,030
Clay, sandy, calcareous, white to gray; poorly sorted, sand fine to medium; subangular to subrounded; sand 20 percent	100	300	Clay, as above, sand 35 percent	10	240	Sand, silty, clay, reddish brown; fine to medium; rounded to subangular; clay 20 percent, silt 20 percent	10	1,040
Clay, sandy, calcareous, pale brown to white to gray; moderately sorted, sand silt to coarse; angular to subrounded; sand 20 percent	100	400	Clay, white; sand fine to medium; subangular to subrounded; sand 30 percent	10	250	Sand, silty, clay, reddish brown; fine to coarse; subrounded to subangular; silt 20 percent, clay 10 percent	10	1,050
Clay, sandy, calcareous, pale brown; moderately sorted, sand silt to medium; subangular to subrounded; sand 15 percent	200	600	Clay, light gray; sand fine to coarse; subangular to subrounded; sand 15 percent	60	310	Sand, as above, silt 20 percent, clay 15 percent	40	1,090
Clay, sandy, calcareous, pale brown; moderately sorted, sand silt to medium; subangular to subrounded; sand 10 percent	24	624	Clay, as above, sand 10 percent	10	320	Clay, as above, sand 30 percent, silt 20 percent	10	1,100
(C-26-14) 25AND-1. Log by S. Magarian and M. Gemmel. Alt. 4,760 feet.			Clay, sandy, pale olive; sand fine to medium; rounded to subrounded; sand 20 percent	10	330	Sand, as above, silt 20 percent, clay 15 percent	10	1,110
Sand, gravel, dark gray; sand fine to coarse, gravel fine to 20 millimeters; sand subrounded to subangular, gravel angular to subrounded; gravel 25 percent	10	10	Clay, as above, sand 5 percent	10	340	Clay, as above, sand 30 percent; silt 20 percent	10	1,120
Sand, gravel, brown; sand fine to medium, gravel to 10 millimeters; sand subrounded to subangular, gravel rounded to subangular; gravel 5 percent ...	10	20	Clay, light gray; sand fine to medium; subrounded; sand 5 percent	20	360	Sand, silty, reddish brown; fine to medium; subrounded to subangular; silt 15 percent, clay 10 percent	50	1,170
Clay, sandy, silty, light gray; sand fine to 0.05 millimeter; subrounded to subangular; clay 60 percent, silt 20 percent	20	40	Clay, as above, sand 2 percent	20	400	Sand, as above, silt 35 percent, clay 10 percent	20	1,190
Sand, gravel, brown; sand fine to medium, gravel to 5 millimeters; sand subangular to subrounded, gravel angular to rounded; gravel 15 percent	10	50	Clay, light gray; sand fine to medium; subrounded to subangular; sand 2 percent ..	10	410	Sand, as above, silt 40 percent, clay 10 percent	10	1,200
Sand, as above, silt 10 percent, gravel 10 percent ..	10	60	Clay, as above, sand 4 percent	10	420	Sand, silty, light brown; fine to coarse; subangular to subrounded; silt 35 percent	10	1,210
Sand, gravel, reddish brown; fine to coarse; sand subangular to subrounded, gravel angular to subrounded; gravel 5 percent ...	10	70	Clay, as above, sand 1 percent	20	440	Sand, as above, silt 30 percent, clay 10 percent	10	1,220
Sand, silty, reddish gray; fine to medium; subangular to subrounded; silt 40 percent	5	75	Clay, as above, clay 100 percent	170	610	Sand, clay, light brown; fine to medium; subangular to subrounded; clay 50 percent	10	1,230
Sand, reddish brown; fine to coarse; subangular to subrounded	5	80	Clay, as above, fine sand 4 percent	30	640	Sand, as above, clay 40 percent	20	1,250
Sand, gravel, dark reddish brown; sand fine to medium, gravel to 20 millimeters; sand rounded to subangular, gravel rounded to angular; gravel 30 percent	5	85	Clay, light gray; sand fine to medium; subangular; sand 20 percent	120	760	(C-26-17) 10ABA-1. Log by K. Blose, M. Gemmel, D. Blaine, and D. Boylan. Alt. 5,225 feet.		
Sand, clay, reddish gray; fine to coarse; rounded to angular; clay 20 percent	5	90	Clay, as above, multi-colored	30	790	Silt, sandy, gravel, dark brown; sand fine to medium, gravel fine; sand and gravel subangular to subrounded; sand 35 percent, gravel 5 percent	10	10
Sand, clay, gravel, light gray; sand fine to coarse, gravel to 5 millimeters; sand subangular to subrounded, gravel angular to rounded; clay 30 percent, gravel 5 percent	10	100	Clay, as above, sand fine to coarse	20	810	Sand, silty, dark brown; fine to coarse; angular to subrounded; silt 30 percent	10	20
Clay, light gray; sand fine to medium; sand angular to subangular; sand 2 percent	50	150	Clay, as above, sand fine to medium; sand 4 percent	10	820	Sand, reddish brown; fine to coarse; rounded to subangular; silt 10 percent	10	30
Clay, as above, trace of angular gravel	10	160	Clay, sandy, light gray; sand fine to medium; subangular; sand 5 percent	10	830	Silt, sandy, gravel, brown; sand medium to coarse, gravel to 13 millimeters; sand subrounded to subangular, gravel angular to subrounded; sand 25 percent, gravel 15 percent ..	10	40
			Clay, light olive gray; sand fine to coarse; subangular; sand 5 percent	10	840	Sand, as above, silt 20 percent, gravel 15 percent ..	10	50
			Clay, pale brown; sand coarse to fine; subangular to subrounded; sand 10 percent	10	850	Sand, silty, gravel, reddish brown; fine to coarse; sand and gravel angular to subrounded; silt 15 percent, gravel 15 percent	10	60
			Clay, as above, sand 5 percent	10	860	Sand, gravel, reddish brown; sand fine to medium, gravel to 10 millimeters; sand subrounded to subangular, gravel angular to rounded; gravel 40 percent	10	70
			Clay, as above, light gray and reddish yellow	10	870	Gravel, sandy, brown; sand fine to medium, gravel to 20 millimeters; sand and gravel subrounded to subangular; sand 10 percent	5	75
			Clay, as above, multi-colored	10	880	Sand, reddish brown; fine to medium, gravel fine; sand rounded to subangular, gravel subrounded to angular; gravel 5 percent ...	15	90
			Clay, sandy, pale brown; sand fine to coarse; angular to subrounded; sand 30 percent	10	890	Sand, as above, sand fine to coarse	20	110
			Clay, as above, sand fine to medium; sand 35 percent	10	900			
			Clay, sandy, gravel, grayish brown; sand medium to coarse, gravel to 15 millimeters; sand subangular to subrounded, gravel rounded to subrounded; sand 15 percent gravel 10 percent	10	910			
			Clay, as above, sand 20 percent, no gravel	10	920			
			Clay, pale brown; sand fine to coarse; subrounded to subangular; sand 15 percent	20	940			
			Clay, as above, dark yellowish brown	10	950			
			Clay, as above, sand 20 percent	10	960			
			Clay, sandy, silty, light brown; sand fine to medium; subangular to subrounded; sand 25 percent, silt 25 percent	10	970			
			Clay, as above, silt 35 percent, sand 15 percent	20	990			
			Clay, as above, sand 40 percent, silt 10 percent	10	1,000			

Table 2.--Selected lithologic logs of test wells--Continued

Location and Material	Thickness	Depth	Location and material	Thickness	Depth	Location and material	Thickness	Depth
(C-26-17)10ABA-1.--Continued			(C-26-17)10ABA-1.--Continued			(C-26-17)10ABA-1.--Continued		
Sand, reddish brown; fine to medium; rounded to subangular; silt 20 percent, clay 10 percent	20	130	Sand, silty, clay, reddish brown; fine to coarse; rounded to subangular; silt 15 percent, clay 15 percent	10	470	Clay, sandy, gray; sand fine to medium; sand subrounded; sand 30 percent	16	860
Sand, as above, sand fine to coarse	10	140	Sand, as above, silt 30 percent, clay 10 percent	10	480	Sand, dark yellowish brown; fine; subrounded to subangular; clay 15 percent	10	870
Sand, silty, reddish brown; coarse to fine; subangular to subrounded; silt 15 percent	20	160	Clay, sandy, silty, reddish brown; sand fine to medium; sand rounded to subangular; silt 30 percent, sand 20 percent	10	490	Sand, clayey, dark grayish brown; fine to medium; subrounded; clay 20 percent	10	880
Sand, reddish brown; fine to coarse; angular to subrounded; silt 10 percent	20	180	Clay, as above, silt 20 percent, sand 15 percent	10	500	Sand, as above, clay 15 percent	10	890
Sand, as above, silt 20 percent, clay 10 percent	20	200	Sand, silty, clay, reddish brown; fine to coarse; rounded to subangular; silt 15 percent, clay 15 percent	30	530	Sand, as above, clay 5 percent	10	900
Sand, as above, sand 90 percent, silt 10 percent	20	220	Sand, gravel, reddish brown; sand coarse, gravel fine; sand and gravel angular to rounded; sand 45 percent, gravel 45 percent, clay 5 percent	10	540	Sand, clayey, gray; fine to medium; subangular; clay 30 percent	20	920
Sand, as above, silt 15 percent, clay 15 percent	10	230	Clay, sandy, silty, reddish brown; sand fine to medium; sand rounded to subangular; silt 30 percent, sand 20 percent	20	560	Clay, sandy, light gray; sand fine to medium; sand subangular; sand 25 percent	10	930
Sand, as above, sand 90 percent, silt 10 percent	10	240	Sand, light gray; fine to coarse; rounded to subangular	10	570	Sand, clayey, dark gray; fine to medium; subangular; clay 20 percent	10	940
Sand, reddish brown; fine to medium; angular to subrounded; silt 10 percent, clay 10 percent	10	250	Sand, as above, fine 80 percent, medium 20 percent ..	10	580	Sand, clayey, gray; fine to coarse; subangular; clay 25 percent	10	950
Sand, as above, sand fine to coarse	30	280	Sand, silty, clay, reddish brown; fine to coarse; rounded to subangular; silt 15 percent, clay 15 percent	10	590	Sand, dark brown; fine to medium; subrounded to subangular; clay 10 percent	10	960
Sand, silty, strong brown; fine to medium; angular to subrounded; silt 20 percent, clay 10 percent	10	290	Sand, as above, silt 15 percent, clay 5 percent	10	600	Sand, dark grayish brown; fine to coarse; subangular; clay 5 percent	10	970
Sand, as above, sand fine to coarse; silt 15 percent, clay 5 percent	10	300	Sand, as above, very dark grayish brown; clay 5 percent	10	610	Sand, as above, fine to medium; clay 15 percent	20	990
Sand, clayey, pink; fine to coarse; angular to subrounded; clay 20 percent, silt 10 percent	10	310	Sand, as above, very dark grayish brown; clay 5 percent	10	620	Sand, as above, very dark grayish brown; clay 5 percent	10	1,000
Clay, gravel, very pale brown; gravel to 20 millimeters; gravel subangular to rounded; gravel 50 percent ..	10	320	Sand, silty, light gray; fine to medium; subangular to subrounded	10	640	Clay, brown; sand fine; sand subrounded; sand 15 percent	10	1,010
Clay, sandy, very pale brown; sand fine to medium; sand angular to subrounded; sand 30 percent, silt 5 percent ..	10	330	Sand, as above, silt 15 percent, clay 10 percent	10	660	Clay, as above, sand fine to medium; sand 35 percent	10	1,020
Sand, pale brown; fine to coarse; subangular to rounded; silt 10 percent, clay 10 percent	20	350	Sand, as above, light reddish brown; silt 10 percent	10	670	Clay, as above, sand 45 percent	10	1,030
Sand, as above, fine to medium; sand 90 percent, silt 10 percent	10	360	Sand, as above, clay 20 percent	20	680	Sand, clayey, brown; fine to medium; subrounded to subangular; clay 30 percent	10	1,040
Sand, as above, silt 20 percent	20	380	Sand, as above, sand 100 percent	10	690	Sand, as above, clay 20 percent	20	1,060
Clay, sandy, silty, light brownish gray; sand fine; sand subrounded to subangular; silt 30 percent, sand 20 percent	10	390	Sand, as above, clay 10 percent	10	700	Sand, as above, clay 25 percent	10	1,070
Clay, as above, gravel to 15 millimeters; silt 30 percent, sand 20 percent, gravel 10 percent	10	400	Sand, as above, fine to coarse; sand 100 percent	10	710	Sand, as above, clay 20 percent	10	1,080
Sand, silty, clay, gravel, brown; sand medium to coarse, gravel to 5 millimeters; sand rounded to subangular, gravel subrounded to subangular; clay 20 percent, silt 15 percent, gravel 5 percent ...	10	410	Sand, as above, fine to medium; clay 5 percent	10	720	Clay, sandy, brown; sand fine to medium; sand subrounded; sand 45 percent	10	1,090
Sand, silty, gravel, brown; sand medium to coarse, gravel to 10 millimeters; sand angular to subrounded, gravel angular to rounded; silt 35 percent, gravel 10 percent ..	10	420	Sand, clay, dark reddish gray; fine to medium; subrounded to subangular; clay 25 percent	10	730	Sand, dark grayish brown; fine to medium; subrounded; clay 10 percent	10	1,100
Sand, clayey, light brownish gray; fine to medium; subrounded to subangular; clay 30 percent, silt 10 percent	10	430	Sand, as above, sand 100 percent	10	740	Clay, as above, sand 45 percent	10	1,110
Clay, sandy, light brownish gray; sand medium to coarse; sand angular to subrounded; 40 percent sand	10	440	Sand, reddish brown fine to medium; subangular to subrounded	10	750	Sand, very dark grayish brown; fine to medium; subrounded to subangular; clay 10 percent	10	1,120
Sand, silty, reddish brown; fine to coarse; subangular to subrounded; silt 15 percent	10	450	Sand, as above, clay 5 percent	10	760	Sand, as above, dark grayish brown; clay 15 percent	20	1,140
Clay, sandy, pinkish gray; sand fine to coarse; sand subangular to subrounded; sand 35 percent	10	460	Sand, clay, dark reddish gray; fine to medium; subrounded to subangular; clay 25 percent	10	770	Sand, clayey, dark grayish brown; fine to medium; subrounded; clay 45 percent	10	1,150
			Sand, as above, clay 20 percent	10	780	Clay, sandy, grayish brown; sand fine to medium; sand 45 percent	7	1,157
			Sand, as above, clay 25 percent	10	790			
			Sand, reddish brown; fine to medium; subangular; clay 15 percent	10	800	(C-27-14)2800D-1. Log by J. Dahm and M. Hume. Alt. 5,090 feet.		
			Sand, as above, fine to coarse; clay 5 percent	20	815	Sand, silt, gravel, light reddish brown; poorly sorted, fine to coarse; sand and gravel subrounded to subangular; gravel 10 percent	8	8
			Sand, dark brown; fine to medium; subrounded to subangular; clay 5 percent ..	15	820	Sand, as above, clay 10 percent	4	12
			Sand, silty, brown; fine; subrounded to subangular; silt 30 percent, clay 10 percent	5	830	Sand, gravel, light reddish brown; poorly sorted, fine to coarse; subangular to subrounded; gravel 20 percent	10	22
			Clay, sandy, gray; sand fine to medium; sand subrounded to subangular; sand 45 percent	10	840	Sand, clay, dark reddish brown; poorly sorted, fine to coarse; subangular to subrounded; clay 30 percent	2	24
			Sand, clayey, dark reddish brown; fine to medium; subangular; clay 35 percent	10	844	Sand, same as 12 to 22 feet ..	8	32
			Sand, as above, clay 20 percent	4				

Table 2.—Selected lithologic logs of test wells—continued

Location and Material	Thickness	Depth	Location and material	Thickness	Depth	Location and material	Thickness	Depth
(C-27-14) 28000-1.—Continued			(C-27-14) 28000-1.—Continued			(C-27-14) 28000-1.—Continued		
Sand, reddish brown; poorly sorted, fine to coarse; subangular to subrounded; clay 10 percent	2	34	Sand, clay, dark brown; poorly sorted, fine to coarse; angular to subrounded; clay 10 percent	10	520	Sand, clay, reddish brown; poorly sorted, fine to coarse; angular to subrounded; clay 35 percent	10	1,070
Sand, same as 12 to 22 feet ..	6	40	Sand, clay, dark brown; moderately sorted, fine to medium; subangular to subrounded; clay 10 percent	10	530	Clay, sand, brown; poorly sorted, fine to medium; sand subangular to subrounded; sand 40 percent	10	1,080
Sand, dark reddish gray; moderately sorted, fine to medium; angular to subrounded	30	70	Sand, clay, dark brown; poorly sorted, fine to coarse; angular to subrounded; clay 10 percent	10	540	Sand, as above, clay 50 percent	10	1,090
Sand, as above, subangular to subrounded	40	110	Sand, clay, dark brown; poorly sorted, fine to coarse; angular to subrounded; clay 10 percent	10	550	Sand, as above, reddish brown; clay 35 percent	10	1,100
Sand, as above, fine to coarse	10	120	Sand, clay, dark brown; poorly sorted, fine to medium; subangular to subrounded; clay 15 percent	10	560	Sand, as above, brown; clay 40 percent	10	1,110
Sand, clay, dark reddish gray; poorly sorted, fine to coarse; subangular to subrounded; clay 10 percent	20	140	Sand, as above, fine to coarse	10	570	Sand, as above, clay 35 percent	20	1,130
Sand, as above, no clay	30	170	Sand, as above, angular to subrounded	10	600	Sand, as above, clay 50 percent	20	1,150
Sand, dark reddish brown; moderately sorted, fine to coarse; subangular to subrounded	10	180	Sand, as above, clay 5 percent	30	620	Sand, gravel, clay, brown; poorly sorted, sand fine to coarse, gravel fine; subangular to subrounded; gravel 25 percent, clay 35 percent	20	1,170
Sand, dark reddish brown; poorly sorted, angular to subrounded; gravel 10 percent	20	200	Sand, clay, dark reddish brown; poorly sorted, fine to coarse; angular to subrounded; clay 20 percent	20	640	Sand, as above, angular to subrounded; gravel 20 percent	10	1,180
Sand, as above, brown; gravel 5 percent	20	220	Sand, as above, clay 5 percent	20	660	Sand, as above, gravel 25 percent, clay 30 percent	10	1,190
Sand, as above, gravel 25 percent	10	230	Sand, as above, clay 10 percent	30	670	Sand, as above, gravel 5 percent	10	1,200
Sand, as above, gravel 30 percent	10	240	Sand, as above, clay 15 percent	30	700	Sand, as above, gravel 10 percent, clay 30 percent	10	1,210
Sand, as above, reddish brown; gravel 10 percent	20	260	Sand, clay, dark reddish gray; poorly sorted, fine to coarse; subangular to subrounded; clay 5 percent ..	20	720	Sand, as above, gravel 5 percent	10	1,220
Sand, gravel, dark reddish brown; poorly sorted, fine to coarse; angular to subrounded; gravel 15 percent ..	20	280	Sand, as above, angular to subrounded; clay 10 percent	20	740	Sand, as above, no gravel, clay 35 percent	20	1,240
Sand, as above, gravel 25 percent, clay 1 percent	10	290	Sand, clay, dark reddish gray; moderately sorted, fine to medium; subangular to subrounded; clay 5 percent	10	750	Sand, as above, clay 20 percent	30	1,270
Sand, gravel, dusky red; poorly sorted, sand fine to coarse, gravel fine; angular to subrounded; gravel 10 percent	10	300	Sand, clay, dark reddish gray; moderately sorted, fine to medium; subangular to subrounded; clay 5 percent	10	770	Sand, brown; poorly sorted, fine to medium; subangular to subrounded; clay 20 percent	10	1,280
Sand, as above, clay 10 percent	20	320	Sand, gravel, clay, dark reddish gray; poorly sorted, sand fine to coarse, gravel fine; angular to subrounded; gravel 25 percent, clay 10 percent	20	790	Sand, as above, clay 25 percent	10	1,290
Sand, as above, gravel 15 percent, clay 5 percent	20	340	Sand, as above, clay 20 percent	10	800	Sand, clay, reddish brown; poorly sorted, angular to subrounded; clay 25 percent	10	1,300
Sand, as above, gravel 10 percent, clay 5 percent	10	350	Sand, as above, reddish brown; clay 15 percent	10	820	Sand, as above, fine to coarse; fine gravel 5 percent, clay 40 percent	10	1,310
Gravel, as above, sand 35 percent, clay 10 percent	10	360	Sand, as above, subangular to subrounded; clay 40 percent	10	830	Sand, as above, subangular to subrounded	20	1,330
Sand, dusky red; poorly sorted, fine to coarse; angular to subrounded; clay 5 percent	10	370	Sand, reddish brown; poorly sorted, fine to medium; angular to subrounded; clay 15 percent	20	850	Sand, dark reddish gray; poorly sorted, fine to coarse; subangular to subrounded; clay 40 percent	30	1,360
Sand, brown; poorly sorted, fine to coarse; angular to subrounded; gravel 5 percent, clay 5 percent	20	390	Sand, as above, fine to coarse	10	870	Sand, gravel, clay, dark reddish gray; poorly sorted, sand fine to coarse, gravel fine; angular to subrounded; gravel 15 percent, clay 25 percent	10	1,370
Sand, dark reddish brown; poorly sorted, fine to coarse; angular to subrounded; gravel 10 percent, clay 5 percent	20	410	Sand, clay, dark brown; poorly sorted, fine to coarse; subangular to subrounded; clay 40 percent	20	880	Sand, dark reddish gray; poorly sorted, fine to coarse; subangular to subrounded; clay 30 percent	20	1,390
Sand, as above, gravel 3 percent, clay 8 percent, (record hard to read)	20	430	Sand, as above, angular to subrounded; clay 30 percent	10	900	Sand, clay, brown; poorly sorted, fine to coarse; angular to subrounded; clay 30 percent	9	1,399
Sand, as above, clay 5 percent	10	440	Sand, as above, clay 20 percent	20	920	(C-31-13) 5888-2. Log by B. Cox. Alt. 5,078 feet.		
Sand, gravel, clay, dark reddish gray; poorly sorted, sand fine to coarse, gravel fine; angular to subrounded; gravel 20 percent, clay 10 percent	10	450	Sand, as above, reddish brown; clay 15 percent	10	940	Clay, silty, very pale brown; silt 25 percent	20	20
Sand, clay, brown; poorly sorted, fine to coarse; subangular to subrounded; clay 15 percent	10	460	Sand, as above, subangular to subrounded; clay 40 percent	10	960	Clay, as above, slight color change noted	30	50
Sand, as above, clay 10 percent	20	470	Sand, as above, clay 30 percent	20	980	Clay, sandy; fine to coarse; subangular to rounded; sand 45 percent	10	60
Sand, clay, weak red; poorly sorted, fine to medium; subangular to subrounded; clay 20 percent	10	490	Sand, as above, clay 40 percent	10	990	Clay, same as 20 to 50 feet ..	20	80
Sand, clay, brown; poorly sorted, fine to medium; angular to subrounded; clay 15 percent	10	500	Sand, as above, clay 45 percent	10	1,000	Clay, as above, silt 40 percent	10	90
Sand, clay, brown; poorly sorted, fine to medium; subangular to subrounded; clay 15 percent	10	510	Sand, as above, clay 50 percent	10	1,020	Clay, silty, sandy; sand fine to medium; sand subangular to rounded; silt 20 percent, sand 20 percent	20	110
					1,050	Sand, clayey; fine to medium; subangular to rounded; clay 30 percent, color change noted	50	160

Table 2.--Selected lithologic logs of test wells--Continued

Location and Material	Thickness	Depth	Location and material	Thickness	Depth	Location and material ¹	Thickness	Depth
(C-31-13) 588B-2.--Continued			(C-33-17) 21DDA-2. Log by R. Lazo and D. Williams. Alt. 5,328 feet.			(C-33-17) 21DDA-2.--Continued		
Clay, sandy; sand fine to medium; sand subangular to rounded; sand 30 percent	10	170	Sand, reddish brown to light reddish brown; fine to medium; subangular to subrounded; silt 1 percent ..	40	40	Sand, dark reddish brown; fine grained; angular to subrounded; silt 10 percent	20	260
Clay, as above, sand 40 percent	25	195	Sand, dark reddish gray to reddish gray; fine to coarse; angular to sub- rounded; silt 1 percent	10	50	Sand, as above, fine to medium; silt 5 percent	10	270
Clay, as above, sand more coarse	25	220	Sand, as above, less coarse ..	10	60	Sand, as above, silt 1 percent	20	290
Sand, as above, clay 45 percent	10	230	Sand, same as 40 to 50 feet ..	10	70	Sand, as above, silt 5 percent	10	300
Sand, as above, clay 30 percent	10	240	Sand, reddish brown to light reddish brown; fine to medium; subangular to sub- rounded; silt 1 percent	10	80	Sand, as above, silt 1 percent	20	360
Clay, sandy; sand fine to medium; sand 40 percent	20	260	Sand, dark reddish brown; medium to coarse; sub- angular; silt 1 percent	10	90	Sand, as above, silt 5 percent	20	380
Sand, as above, clay 40 percent	20	280	Sand, reddish brown; fine to medium; subrounded to subangular; silt 1 percent ..	20	110	Sand, dark brown; fine grained; subrounded; silt 10 percent	10	390
Clay, same as 240 to 260 feet	20	300	Sand, as above, sand finer ...	10	120	Sand, as above, silt 20 percent	10	400
Sand, as above, clay 35 percent	10	310	Sand, as above, fine to coarse	10	130	Sand, dark grayish brown; fine to medium; subrounded to subangular; silt 15 percent	10	410
Sand, as above, clay 45 percent	10	320	Sand, as above, fine to medium	10	140	Sand, as above, dark brown; silt 10 percent	30	440
Clay, sandy; sand fine to medium; sand subangular to rounded; sand 40 percent	20	340	Sand, as above, fine to coarse	20	160	Sand, as above, fine grained; silt 15 percent	30	470
Clay, as above, sand 45 percent, color change noted	20	360	Sand, as above, fine to medium	50	210	Sand, silty, dark grayish brown; fine grained; subrounded to subangular; silt 20 percent	34	504
Clay, as above, sand 40 percent color change noted ..	10	370	Sand, as above, fine to coarse	10	220			
Clay, as above, sand 30 percent	10	380	Sand, as above, fine to medium	10	230			
Clay, as above, gray	20	400	Sand, as above, sand finer; silt 10 percent	10	240			
Clay, gray; clay 90 percent ..	160	560						
Clay, as above, sand greater than 10 percent	10	570						
Clay, as above, sand fine to medium; sand 2 to 5 percent	30	600						