

SELECTED TEST-WELL DATA FROM THE MX-MISSILE  
SITING STUDY, TOOELE, JUAB, MILLARD,  
BEAVER, AND IRON COUNTIES, UTAH

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

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CONTENTS

|                              | Page |
|------------------------------|------|
| Introduction .....           | 1    |
| Well-numbering system .....  | 3    |
| Additional information ..... | 3    |
| Reference cited .....        | 5    |

ILLUSTRATIONS

[Plate is in pocket]

|                                                                                                                           |   |
|---------------------------------------------------------------------------------------------------------------------------|---|
| Plate 1. Map showing location of test wells for which data are available from the MX-missile siting study in western Utah |   |
| Figure 1. Map showing area of this report .....                                                                           | 2 |
| Figure 2. Diagram showing well-numbering system used in Utah .....                                                        | 4 |

TABLES

|                                                 |   |
|-------------------------------------------------|---|
| Table 1. Records of selected test wells .....   | 6 |
| 2. Selected lithologic logs of test wells ..... | 9 |

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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.

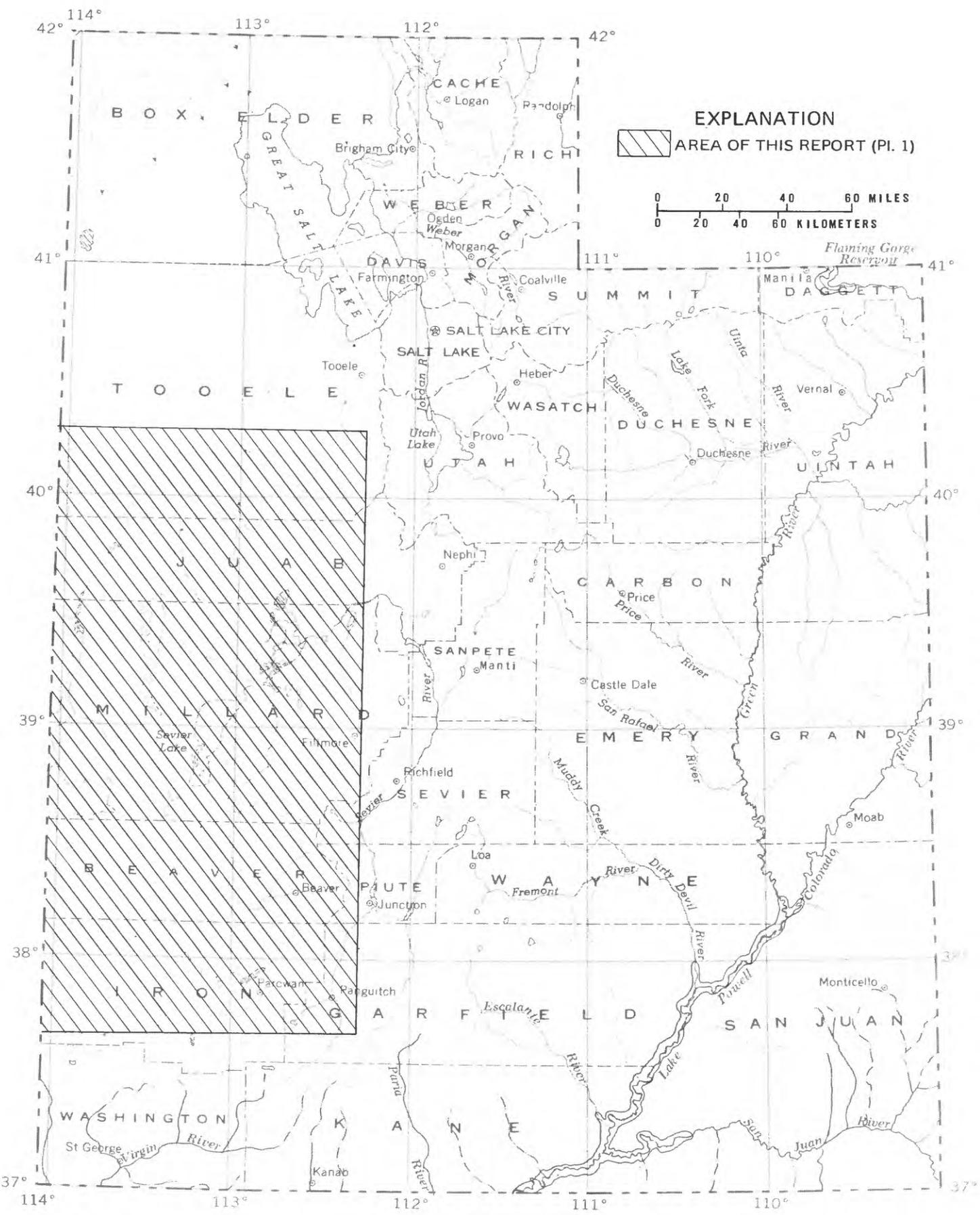


Figure 1.—Area of this report.

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;<sup>1</sup> 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

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<sup>1</sup>Although 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

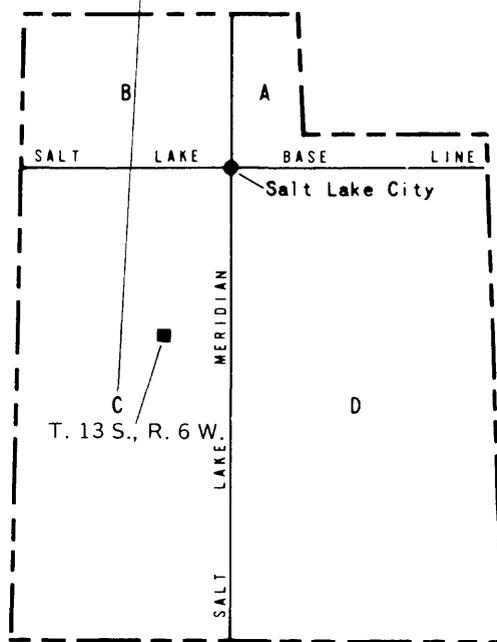
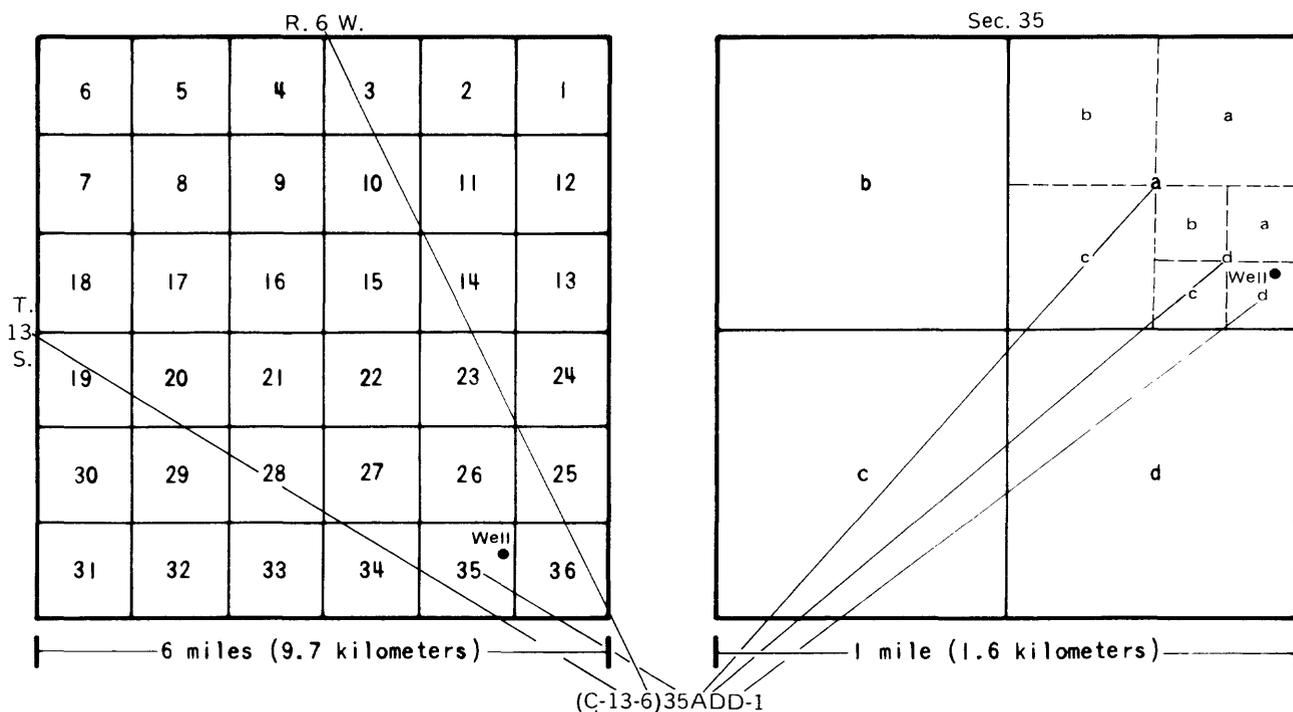


Figure 2.—Well-numbering system used in Utah.

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)21BL- 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                    |
| (C-11-10)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              | 40.0               | S 160.0- 180.0<br>S 200.0- 240.0<br>S 260.0- 280.0 | 5080                            | DRY                       | 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                    |
| (C-12-16)17AAB- 1 | 1980           | 150.0                | 2.0               | 146.0              | P 126.0- 146.0                                     | 4515                            | 12.4r                     | 7/___/80 | D           | 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                    |
| (C-13- 6) 9BCC- 1 | 1980           | 150.0                | 2.0               | 138.0              | P 118.0- 138.0                                     | 4808                            | 93.10                     | 8/23/81  | N           | D                    |
| (C-13- 6)20ACB- 1 | 1980           | 151.0                | 2.0               | 149.0              | P 129.0- 149.0                                     | 4722                            | 107.6                     | 3/02/81  | Z           | C,D                  |
| (C-13- 6)34BCA- 1 | 1980           | 160.0                | 2.0               | 157.0              | P 137.0- 157.0                                     | 4721                            | 64.90                     | 8/08/80  | N           | D                    |
| (C-13- 6)35ADD- 1 | 1980           | 202.0                | 2.0               | 200.0              | P 180.0- 200.0                                     | 4760                            | 59.24                     | 8/08/80  | N           | D                    |
| (C-13- 7)12CDB- 1 | 1980           | 160.0                | 2.0               | 157.0              | P 137.0- 157.0                                     | 4712                            | 58.58                     | 8/08/80  | Z           | C,D                  |
| (C-13- 8)14BCA- 1 | 1980           | 160.0                | 2.0               | 158.0              | P 138.0- 158.0                                     | 4595                            | 70.04                     | 8/08/80  | Z           | C,D                  |
| (C-13-13)10CDA- 1 | 1979           | 200.0                | 2.0               | 195.0              | P 185.0- 195.0                                     | 4430                            | 2.59                      | 3/11/81  | Z           | D                    |
| (C-13-13)14BCC- 1 | 1979           | 200.0                | 2.0               | 195.0              | P 185.0- 195.0                                     | 4510                            | 105.0r                    | 7/___/80 | D           | D                    |
| (C-13-14)25DAC- 1 | 1980           | 200.0                | 2.0               | 197.0              | P 177.0- 197.0                                     | 4465                            | DRYr                      | 1/___/80 | D           | D                    |
| (C-13-17) 1BD     | 1979           | 100.0                | 2.0               | 97.0               | P 77.0- 97.0                                       | 4610                            | 78.3r                     | 7/___/80 | D           | D                    |
| (C-13-18)14BBA- 1 | 1979           | 101.0                | 2.0               | 98.0               | P 78.0- 98.0                                       | 4880                            | 109.1                     | 8/29/81  | N           | D                    |
| (C-14- 9)20CBB- 1 | 1979           | 200.0                | 2.0               | 195.0              | P 190.0- 195.0                                     | 4725                            | 108.6                     | 2/18/83  | Z           | D                    |
| (C-14- 9)27BDB- 1 | 1980           | 160.0                | 2.0               | 159.0              | P 139.0- 159.0                                     | 4660                            | DRY                       | 8/23/81  | Z           | D                    |
| (C-14-13) 7DAA- 1 | 1979           | 200.0                | 2.0               | 195.0              | P 180.0- 195.0                                     | 4590                            | 101.4                     | 8/23/81  | Z           | D                    |
| (C-14-18)18DCC- 1 | 1979           | 101.0                | 2.0               | 98.0               | P 78.0- 98.0                                       | 4870                            | 178.9                     | 8/06/81  | Z           | D                    |
| (C-15- 5)10CDD- 1 | 1980           | 200.0                | 2.0               | 196.0              | P 176.0- 196.0                                     | 4960                            | 103.7                     | 8/06/80  | N           | C,D                  |
| (C-15- 6)29BD     | 1980           | 120.0                | 2.0               | 70.0               | P 50.0- 70.0                                       | 4730                            | 103.6                     | 2/14/83  | Z           | D                    |
| (C-15- 9) 9CBD- 1 | 1979           | 151.0                | 2.0               | 148.0              | P 128.0- 148.0                                     | 4598                            | DRY                       | 8/29/81  | Z           | D                    |
| (C-15-12)19ADD- 1 | 1980           | 1220.0               | 2.0               | 1191.0             | P 960.0- 981.0<br>P1044.0-1086.0<br>P1107.0-1170.0 | 5260                            | 77.86                     | 8/23/81  | Z           | D                    |
| 19ADD- 2          | 1980           | 1033.0               | 22.0              | 67.0               | S 710.0- 730.0<br>S 825.0- 905.0<br>S 925.0-1005.0 | 5260                            | 168.8                     | 8/23/81  | N           | D                    |
| (C-15-15)30BDD- 1 | 1979           | 185.0                | 2.0               | 181.0              | P 161.0- 181.0                                     | 4570                            | 168.4                     | 2/17/83  | Z           | D                    |
|                   |                |                      | 10.0              | 1025.0             |                                                    |                                 | 56.90                     | 8/23/81  | Z           | D                    |
|                   |                |                      |                   |                    |                                                    |                                 | 103.0r                    | 5/___/80 | D           | D                    |
|                   |                |                      |                   |                    |                                                    |                                 | 63.3r                     | 5/___/80 | D           | D                    |
|                   |                |                      |                   |                    |                                                    |                                 | 50.08                     | 8/06/80  | Z           | D                    |
|                   |                |                      |                   |                    |                                                    |                                 | 106.7                     | 8/06/81  | Z           | D                    |
|                   |                |                      |                   |                    |                                                    |                                 | 796.1                     | 12/14/81 | Z           | A, D, G, L           |
|                   |                |                      |                   |                    |                                                    |                                 | 795.8                     | 2/05/82  | Z           | D                    |
|                   |                |                      |                   |                    |                                                    |                                 | 794.6                     | 12/15/81 | Z           | A, D, G              |
|                   |                |                      |                   |                    |                                                    |                                 | 147.2                     | 12/15/81 | N           | D                    |
|                   |                |                      |                   |                    |                                                    |                                 | 146.9                     | 2/11/83  | 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-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)10EAA- 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-17-16)28ADD- 1   | 1979           | 200.0                | 2.0               | 195.0              | P 175.0- 195.0                                     | 4665                            | 147.1                     | 8/06/80  | Z           | D                    |
| 29DBC- 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<br>P 259.7- 279.7<br>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                 |
| 19DCD- 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) 1DDH- 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) 4HDD- 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)27DDH- 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                    |
| 9ECB- 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            |                    |                                                                                                          | ALTIITUDE 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 | 1960           | 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                    |
| 9FAD- 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                    |
| (C-24-13)13AAC- 1 | 1979           | 150.0                | 2.0               | 145.0              | P 127.0- 145.0                                                                                           | 4555.4                           | DRY                       | 2/03/82  |             |                      |
|                   |                |                      |                   |                    |                                                                                                          |                                  | 96.79                     | 8/05/81  | N           | D                    |
| 23CCD- 1          | 1979           | 200.5                | 2.0               | 195.5              | P 177.5- 195.5                                                                                           | 4615                             | 96.96                     | 2/04/82  | N           | D                    |
|                   |                |                      |                   |                    |                                                                                                          |                                  | 177.9                     | 8/04/81  | N           | D                    |
| (C-24-19) 3CAD- 1 | 1980           | 199.5                | 2.0               | 197.0              | P 177.0- 197.0                                                                                           | 5570                             | 178.0                     | 2/03/82  | N           | D                    |
| 4AAB- 1           | 1979           | 100.0                | 2.0               | 95.0               | P 77.0- 95.0                                                                                             | 5520                             | 125.7                     | 8/26/81  | N           | D                    |
|                   |                |                      |                   |                    |                                                                                                          |                                  | 81.75                     | 8/26/81  | Z           | D                    |
| (C-26-14)25AAD- 1 | 1980           | 1250.0               | 2.0               | 1135.0             | P 888.0- 909.0<br>P1020.0-1041.0<br>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<br>S 660.0- 680.0<br>S 710.0- 740.0<br>S 750.0- 770.0<br>S 800.0- 820.0<br>S 830.0- 850.0 |                                  | 436.2                     | 2/04/82  |             |                      |
| 10ABA- 1          | 1980           | 1157.0               | 2.0               | 882.0              | P 640.0- 661.0<br>P 761.0- 802.0<br>P 840.0- 861.0                                                       | 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<br>P 995.0-1015.0<br>P1025.0-1065.0<br>P1090.0-1110.0<br>P1220.0-1300.0<br>P1310.0-1320.0 |                                  |                           |          |             |                      |
| 28DDD- 2          | 1980           | 1399.0               | 12.0              | 40.0               | P 693.0- 987.0                                                                                           | 5085                             | 563.9                     | 12/16/81 | N           | A, D, G              |
|                   |                |                      | 2.0               | 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<br>S 260.0- 340.0                                                                         | 5321                             | 195.3                     | 8/03/81  | N           | A, D, G              |
|                   |                |                      |                   |                    |                                                                                                          |                                  | 185.6                     | 2/15/83  |             |                      |
| 21DDA- 2          | 1980           | 504.0                | 2.0               | 332.0              | S 259.0- 322.0                                                                                           | 5328                             | 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 sub-rounded; 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 sub-rounded; 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 sub-rounded; 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 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 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   | 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, medium to coarse; subangular .....                                                          | 40        | 200   | 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, light gray to medium gray; moderately sorted, very fine to coarse; subangular; silt dark gray less than 10 percent .....                  | 30        | 230   | 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, as above, silt increasing to 10 percent ....                                                                                              | 10        | 240   | 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, light gray to medium gray; moderately sorted, very fine to coarse; subrounded to subangular; silt dark gray less than 20 percent .....    | 10        | 270   | Clay, sandy, black to brown; poorly sorted, sand coarse to fine; angular to sub-rounded; 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, as above, silt increasing to 25 percent ....                                                                                              | 20        | 290   | 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, medium gray to dark gray; well sorted, medium; subangular .....                                                                           | 30        | 320   | Clay, sandy, dark grayish brown to black; poorly sorted, sand coarse to fine; angular to sub-rounded; sand 35 percent ....                             | 140       | 740   | .....                                                                                                                                                            |           | 220   |
| 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, pale brown; moderately sorted, sand fine to medium; angular to subrounded; sand 30 percent .....                                          | 30        | 770   | .....                                                                                                                                                            |           | 288   |
| Sand, as above, silt increasing .....                                                                                                           | 10        | 360   | Clay, sandy, pale brown; moderately sorted, sand fine to medium; angular to subrounded; sand 20 percent .....                                          | 10        | 780   | .....                                                                                                                                                            |           | 392   |
| Sand, as above, silt becoming lighter gray.....                                                                                                 | 42        | 402   | Clay, sandy, pale brown; sand less than 2 percent ....                                                                                                 | 10        | 790   | .....                                                                                                                                                            |           | 402   |
| (C-15-12)19ADD-1. Log by K. Knirsch, L. Zweigart, M. Gemmel, L. D'Angelo, M. Hume. Alt. 5,260 feet.                                             |           |       |                                                                                                                                                        |           |       | (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 sub-rounded .....                               | 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 sub-rounded .....                                | 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) 25AAD-1.--Continued                                                                                                                                                              |           |       | (C-26-14) 25AAD-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) 25AAD-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, as above, sand 2 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, light gray; sand fine to medium; subrounded to subangular; sand 2 percent ..                                                                                                         | 10        | 410   | 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, as above, sand 4 percent ..                                                                                                                                                          | 10        | 420   | 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 1 percent .....                                                                                                                                                       | 20        | 440   | 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, clay 100 percent .....                                                                                                                                                     | 170       | 610   | 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, fine sand 4 percent .....                                                                                                                                                  | 30        | 640   | 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, light gray; sand fine to medium; subangular to subrounded; sand 2 percent ..                                                                                                         | 120       | 760   | 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, as above, multi-colored .....                                                                                                                                                        | 30        | 790   | (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, sand fine to coarse .....                                                                                                                                                  | 20        | 810   | 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 medium; sand 4 percent .....                                                                                                                                  | 10        | 820   | 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 ..                                                                                            | 10        | 150   | Clay, sandy, light gray; sand fine; subangular; sand 20 percent .....                                                                                                                      | 10        | 830   | Sand, reddish brown; fine to coarse; rounded to subangular; silt 10 percent .....                                                                                               | 10        | 30    |
| Clay, as above, trace of angular gravel .....                                                                                                                                   | 10        | 160   | Clay, light olive gray; sand fine to coarse; subangular; sand 5 percent .....                                                                                                              | 10        | 840   | 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, pale brown; sand coarse to fine; subangular to subrounded; sand 10 percent .....                                                                                                     | 10        | 850   | Sand, as above, silt 20 percent, gravel 15 percent ..                                                                                                                           | 10        | 50    |
|                                                                                                                                                                                 |           |       | Clay, as above, sand 5 percent .....                                                                                                                                                       | 10        | 860   | 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, light gray and reddish yellow .....                                                                                                                                        | 10        | 870   | 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, multi-colored .....                                                                                                                                                        | 10        | 880   | Gravel, sandy, brown; sand fine to medium, gravel to 20 millimeters; sand and gravel subrounded to subangular; sand 10 percent .....                                            | 5         | 75    |
|                                                                                                                                                                                 |           |       | Clay, sandy, pale brown; sand fine to coarse; angular to subrounded; sand 30 percent .....                                                                                                 | 10        | 890   | Sand, reddish brown; fine to medium, gravel fine; sand rounded to subangular, gravel subrounded to angular; gravel 5 percent ..                                                 | 15        | 90    |
|                                                                                                                                                                                 |           |       | Clay, as above, sand fine to medium; sand 35 percent .....                                                                                                                                 | 10        | 900   | Sand, as above, sand fine to coarse .....                                                                                                                                       | 20        | 110   |
|                                                                                                                                                                                 |           |       | 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, dark brown; fine to medium; subrounded to subangular; clay 10 percent ....                                                          | 10        | 960   |
| 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, dark grayish brown; fine to coarse; subangular; clay 5 percent .....                                                                | 10        | 970   |
| 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, as above, fine to medium; clay 15 percent .....                                                                                     | 20        | 990   |
| Sand, silty, strong brown; fine to medium; angular to subrounded; silt 20 percent, clay 10 percent .....                                                                                              | 10        | 290   | Sand, silty, light gray; fine to medium; subangular to subrounded .....                                                                             | 10        | 600   | Sand, as above, very dark grayish brown; clay 5 percent .....                                                                             | 10        | 1,000 |
| Sand, as above, sand fine to coarse; silt 15 percent, clay 5 percent .....                                                                                                                            | 10        | 300   | Sand, as above, silt 15 percent, clay 10 percent ....                                                                                               | 10        | 610   | Clay, brown; sand fine; sand subrounded; sand 15 percent .....                                                                            | 10        | 1,010 |
| Sand, clayey, pink; fine to coarse; angular to subrounded; clay 20 percent, silt 10 percent .....                                                                                                     | 10        | 310   | Sand, as above, light reddish brown; silt 10 percent .....                                                                                          | 10        | 620   | Clay, as above, sand fine to medium; sand 35 percent ....                                                                                 | 10        | 1,020 |
| Clay, gravel, very pale brown; gravel to 20 millimeters; gravel subangular to rounded; gravel 50 percent ..                                                                                           | 10        | 320   | Sand, as above, clay 20 percent .....                                                                                                               | 20        | 640   | Clay, as above, sand 45 percent .....                                                                                                     | 10        | 1,030 |
| Clay, sandy, very pale brown; sand fine to medium; sand angular to subrounded; sand 30 percent, silt 5 percent ..                                                                                     | 10        | 330   | Sand, as above, sand 100 percent .....                                                                                                              | 10        | 650   | Sand, clayey, brown; fine to medium; subrounded to subangular; clay 30 percent ....                                                       | 10        | 1,040 |
| Sand, pale brown; fine to coarse; subangular to rounded; silt 10 percent, clay 10 percent .....                                                                                                       | 20        | 350   | Sand, as above, clay 10 percent .....                                                                                                               | 10        | 660   | Sand, as above, clay 20 percent .....                                                                                                     | 20        | 1,060 |
| Sand, as above, fine to medium; sand 90 percent, silt 10 percent .....                                                                                                                                | 10        | 360   | Sand, as above, fine to coarse; sand 100 percent ....                                                                                               | 10        | 670   | Sand, as above, clay 25 percent .....                                                                                                     | 10        | 1,070 |
| Sand, as above, silt 20 percent .....                                                                                                                                                                 | 20        | 380   | Sand, as above, fine to medium; clay 5 percent .....                                                                                                | 20        | 690   | Sand, as above, clay 20 percent .....                                                                                                     | 10        | 1,080 |
| Clay, sandy, silty, light brownish gray; sand fine; sand subrounded to subangular; silt 30 percent, sand 20 percent .....                                                                             | 10        | 390   | Sand, as above, sand 100 percent .....                                                                                                              | 10        | 700   | Clay, sandy, brown; sand fine to medium; sand subrounded; sand 45 percent ....                                                            | 10        | 1,090 |
| Clay, as above, gravel to 15 millimeters; silt 30 percent, sand 20 percent, gravel 10 percent .....                                                                                                   | 10        | 400   | Sand, as above, fine grained .....                                                                                                                  | 20        | 720   | Sand, dark grayish brown; fine to medium; subrounded; clay 10 percent .....                                                               | 10        | 1,100 |
| 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, reddish brown fine to medium; subangular to subrounded .....                                                                                  | 10        | 730   | Clay, as above, sand 45 percent .....                                                                                                     | 10        | 1,110 |
| 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, as above, clay 5 percent .....                                                                                                                | 10        | 740   | Sand, very dark grayish brown; fine to medium; subrounded to subangular; clay 10 percent .....                                            | 10        | 1,120 |
| Sand, clayey, light brownish gray; fine to medium; subrounded to subangular; clay 30 percent, silt 10 percent .....                                                                                   | 10        | 430   | Sand, clay, dark reddish gray; fine to medium; subrounded to subangular; clay 25 percent .....                                                      | 10        | 750   | Sand, as above, dark grayish brown; clay 15 percent .....                                                                                 | 20        | 1,140 |
| Clay, sandy, light brownish gray; sand medium to coarse; sand angular to subrounded; 40 percent sand .....                                                                                            | 10        | 440   | Sand, as above, clay 20 percent .....                                                                                                               | 10        | 760   | Sand, clayey, dark grayish brown; fine to medium; subrounded; clay 45 percent ....                                                        | 10        | 1,150 |
| Sand, silty, reddish brown; fine to coarse; subangular to subrounded; silt 15 percent .....                                                                                                           | 10        | 450   | Sand, as above, clay 25 percent .....                                                                                                               | 10        | 770   | Clay, sandy, grayish brown; sand fine to medium; sand 45 percent .....                                                                    | 7         | 1,157 |
| Clay, sandy, pinkish gray; sand fine to coarse; sand subangular to subrounded; sand 35 percent .....                                                                                                  | 10        | 460   | Sand, as above, clay 25 percent .....                                                                                                               | 10        | 780   | (C-27-14)2800D-1. Log by J. Dahm and M. Hume. Alt. 5,090 feet.                                                                            |           |       |
|                                                                                                                                                                                                       |           |       | Sand, reddish brown; fine to medium; subangular; clay 15 percent .....                                                                              | 10        | 800   | Sand, silt, gravel, light reddish brown; poorly sorted, fine to coarse; sand and gravel subrounded to subangular; gravel 10 percent ..... | 8         | 8     |
|                                                                                                                                                                                                       |           |       | Sand, as above, fine to coarse; clay 5 percent .....                                                                                                | 20        | 815   | Sand, as above, clay 10 percent .....                                                                                                     | 4         | 12    |
|                                                                                                                                                                                                       |           |       | Sand, dark brown; fine to medium; subrounded to subangular; clay 5 percent ..                                                                       | 15        | 820   | Sand, gravel, light reddish brown; poorly sorted, fine to coarse; subangular to subrounded; gravel 20 percent .....                       | 10        | 22    |
|                                                                                                                                                                                                       |           |       | Sand, silty, brown; fine; subrounded to subangular; silt 30 percent, clay 10 percent .....                                                          | 5         | 830   | Sand, clay, dark reddish brown; poorly sorted, fine to coarse; subangular to subrounded; clay 30 percent .....                            | 2         | 24    |
|                                                                                                                                                                                                       |           |       | Clay, sandy, gray; sand fine to medium; sand subrounded to subangular; sand 45 percent .....                                                        | 10        | 840   | Sand, same as 12 to 22 feet ..                                                                                                            | 8         | 32    |
|                                                                                                                                                                                                       |           |       | Sand, clayey, dark reddish brown; fine to medium; subangular; clay 35 percent ....                                                                  | 10        | 844   |                                                                                                                                           |           |       |
|                                                                                                                                                                                                       |           |       | 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        | 670   | 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        | 700   | Sand, as above, gravel 5 percent .....                                                                                                                  | 10        | 1,220 |
| Sand, as above, gravel 30 percent .....                                                                                                                 | 10        | 240   | Sand, clay, dark reddish gray; poorly sorted, fine to coarse; subangular to subrounded; clay 5 percent ..                                               | 20        | 720   | Sand, as above, no gravel, clay 35 percent .....                                                                                                        | 20        | 1,240 |
| Sand, as above, reddish brown; gravel 10 percent .....                                                                                                  | 20        | 260   | Sand, as above, angular to subrounded; clay 10 percent .....                                                                                            | 20        | 740   | Sand, as above, clay 20 percent .....                                                                                                                   | 30        | 1,270 |
| Sand, gravel, dark reddish brown; poorly sorted, fine to coarse; angular to subrounded; gravel 15 percent ..                                            | 20        | 280   | Sand, clay, dark reddish gray; moderately sorted, fine to medium; subangular to subrounded; clay 5 percent .....                                        | 10        | 750   | Sand, brown; poorly sorted, fine to medium; subangular to subrounded; clay 20 percent .....                                                             | 10        | 1,280 |
| Sand, as above, gravel 25 percent, clay 1 percent .....                                                                                                 | 10        | 290   | Sand, gravel, clay, dark reddish gray; poorly sorted, sand fine to coarse, gravel fine; angular to subrounded; gravel 10 percent .....                  | 10        | 300   | Sand, as above, clay 25 percent .....                                                                                                                   | 10        | 1,290 |
| Sand, gravel, dusky red; poorly sorted, sand fine to coarse, gravel fine; angular to subrounded; gravel 10 percent .....                                | 10        | 300   | Sand, as above, gravel 15 percent, clay 5 percent .....                                                                                                 | 20        | 340   | Sand, clay, reddish brown; poorly sorted, angular to subrounded; clay 25 percent .....                                                                  | 10        | 1,300 |
| Sand, as above, clay 10 percent .....                                                                                                                   | 20        | 320   | Sand, as above, gravel 10 percent, clay 5 percent .....                                                                                                 | 10        | 350   | Sand, as above, fine to coarse; fine gravel 5 percent, clay 40 percent .....                                                                            | 10        | 1,310 |
| Sand, as above, gravel 15 percent, clay 5 percent .....                                                                                                 | 20        | 340   | Gravel, as above, sand 35 percent, clay 10 percent .....                                                                                                | 10        | 360   | Sand, as above, subangular to subrounded .....                                                                                                          | 20        | 1,330 |
| Sand, as above, gravel 10 percent, clay 5 percent .....                                                                                                 | 20        | 350   | Sand, dusky red; poorly sorted, fine to coarse; angular to subrounded; clay 5 percent .....                                                             | 10        | 370   | Sand, dark reddish gray; poorly sorted, fine to coarse; subangular to subrounded; clay 40 percent .....                                                 | 30        | 1,360 |
| Sand, as above, gravel 3 percent, clay 8 percent, (record hard to read) .....                                                                           | 20        | 430   | Sand, brown; poorly sorted, fine to coarse; angular to subrounded; gravel 5 percent, clay 5 percent .....                                               | 20        | 390   | 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, as above, clay 5 percent .....                                                                                                                    | 10        | 440   | Sand, dark reddish brown; poorly sorted, fine to coarse; angular to subrounded; gravel 10 percent, clay 5 percent .....                                 | 20        | 410   | Sand, dark reddish gray; poorly sorted, fine to coarse; subangular to subrounded; clay 30 percent .....                                                 | 20        | 1,390 |
| 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, gravel 3 percent, clay 8 percent, (record hard to read) .....                                                                           | 20        | 430   | Sand, as above, subangular to subrounded; clay 40 percent .....                                                                                         | 10        | 1,370 |
| Sand, clay, brown; poorly sorted, fine to coarse; subangular to subrounded; clay 15 percent .....                                                       | 10        | 460   | Sand, as above, clay 5 percent .....                                                                                                                    | 10        | 440   | Sand, as above, reddish brown; clay 15 percent .....                                                                                                    | 10        | 860   |
| Sand, as above, clay 10 percent .....                                                                                                                   | 20        | 470   | 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, subangular to subrounded; clay 40 percent .....                                                                                         | 10        | 870   |
| Sand, clay, weak red; poorly sorted, fine to medium; subangular to subrounded; clay 20 percent .....                                                    | 10        | 490   | Sand, clay, brown; poorly sorted, fine to coarse; angular to subrounded; gravel 5 percent, clay 5 percent .....                                         | 20        | 390   | Sand, as above, reddish gray .....                                                                                                                      | 30        | 900   |
| Sand, clay, brown; poorly sorted, fine to medium; angular to subrounded; clay 15 percent .....                                                          | 10        | 500   | Sand, dark reddish brown; poorly sorted, fine to coarse; angular to subrounded; gravel 10 percent, clay 5 percent .....                                 | 20        | 410   | Sand, as above, fine to medium .....                                                                                                                    | 20        | 920   |
| Sand, clay, brown; poorly sorted, fine to medium; subangular to subrounded; clay 15 percent .....                                                       | 10        | 510   | Sand, as above, gravel 3 percent, clay 8 percent, (record hard to read) .....                                                                           | 20        | 430   | Sand, as above, clay 30 percent .....                                                                                                                   | 20        | 940   |
|                                                                                                                                                         |           |       | Sand, as above, clay 5 percent .....                                                                                                                    | 10        | 440   | Sand, as above, fine to coarse .....                                                                                                                    | 20        | 960   |
|                                                                                                                                                         |           |       | Sand, 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, fine to medium .....                                                                                                                    | 20        | 980   |
|                                                                                                                                                         |           |       | Sand, clay, brown; poorly sorted, fine to coarse; subangular to subrounded; clay 15 percent .....                                                       | 10        | 460   | Sand, as above, clay 40 percent .....                                                                                                                   | 10        | 990   |
|                                                                                                                                                         |           |       | Sand, as above, clay 10 percent .....                                                                                                                   | 20        | 470   | Sand, as above, clay 35 percent .....                                                                                                                   | 10        | 1,000 |
|                                                                                                                                                         |           |       | Sand, clay, weak red; poorly sorted, fine to medium; subangular to subrounded; clay 20 percent .....                                                    | 10        | 490   | Sand, as above, clay 45 percent .....                                                                                                                   | 20        | 1,020 |
|                                                                                                                                                         |           |       | Sand, clay, brown; poorly sorted, fine to medium; angular to subrounded; clay 15 percent .....                                                          | 10        | 500   | Sand, as above, clay 40 percent .....                                                                                                                   | 20        | 1,040 |
|                                                                                                                                                         |           |       | Sand, clay, brown; poorly sorted, fine to medium; subangular to subrounded; clay 15 percent .....                                                       | 10        | 510   | Sand, as above, clay 45 percent .....                                                                                                                   | 10        | 1,050 |
|                                                                                                                                                         |           |       |                                                                                                                                                         |           |       | Sand, as above, brown; clay 50 percent .....                                                                                                            | 10        | 1,060 |
|                                                                                                                                                         |           |       |                                                                                                                                                         |           |       | (C-31-13) 5888-2. Log by B. Cox. Alt. 5,078 feet.                                                                                                       |           |       |
|                                                                                                                                                         |           |       |                                                                                                                                                         |           |       | Clay, silty, very pale brown; silt 25 percent .....                                                                                                     | 20        | 20    |
|                                                                                                                                                         |           |       |                                                                                                                                                         |           |       | Clay, as above, slight color change noted .....                                                                                                         | 30        | 50    |
|                                                                                                                                                         |           |       |                                                                                                                                                         |           |       | Clay, sandy; fine to coarse; subangular to rounded; sand 45 percent .....                                                                               | 10        | 60    |
|                                                                                                                                                         |           |       |                                                                                                                                                         |           |       | Clay, same as 20 to 50 feet ..                                                                                                                          | 20        | 80    |
|                                                                                                                                                         |           |       |                                                                                                                                                         |           |       | Clay, as above, silt 40 percent .....                                                                                                                   | 10        | 90    |
|                                                                                                                                                         |           |       |                                                                                                                                                         |           |       | Clay, silty, sandy; sand fine to medium; sand subangular to rounded; silt 20 percent, sand 20 percent .....                                             | 20        | 110   |
|                                                                                                                                                         |           |       |                                                                                                                                                         |           |       | 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 <sup>1</sup>                                                                      | Thickness | Depth |
|------------------------------------------------------------------------------------------|-----------|-------|-----------------------------------------------------------------------------------------------------------------------|-----------|-------|---------------------------------------------------------------------------------------------------------|-----------|-------|
| (C-31-13) 588B-2.--Continued                                                             |           |       | (C-33-17) 21DDA-2. Log by<br>R. Lazo and D. Williams.<br>Alt. 5,328 feet.                                             |           |       | (C-33-17) 21DDA-2.--Continued                                                                           |           |       |
| Clay, sandy; sand fine to<br>medium; sand subangular to<br>rounded; sand 30 percent .... | 10        | 170   | Sand, reddish brown to light<br>reddish brown; fine to<br>medium; subangular to<br>subrounded; silt 1 percent ..      | 40        | 40    | Sand, dark reddish brown;<br>fine grained; angular to<br>subrounded; silt 10<br>percent .....           | 20        | 260   |
| Clay, as above, sand 40<br>percent .....                                                 | 25        | 195   | Sand, dark reddish gray to<br>reddish gray; fine to<br>coarse; angular to sub-<br>rounded; silt 1 percent .....       | 10        | 50    | Sand, as above, fine to<br>medium; silt 5 percent .....                                                 | 10        | 270   |
| Clay, as above, sand more<br>coarse .....                                                | 25        | 220   | Sand, as above, less coarse ..                                                                                        | 10        | 60    | Sand, as above, silt 1<br>percent .....                                                                 | 20        | 290   |
| Sand, as above, clay 45<br>percent .....                                                 | 10        | 230   | Sand, same as 40 to 50 feet ..                                                                                        | 10        | 70    | Sand, as above, silt 5<br>percent .....                                                                 | 10        | 300   |
| Sand, as above, clay 30<br>percent .....                                                 | 10        | 240   | Sand, reddish brown to light<br>reddish brown; fine to<br>medium; subangular to sub-<br>rounded; silt 1 percent ..... | 10        | 80    | Sand, as above, silt 1<br>percent .....                                                                 | 30        | 330   |
| Clay, sandy; sand fine to<br>medium; sand 40 percent .....                               | 20        | 260   | Sand, dark reddish brown;<br>medium to coarse; sub-<br>angular; silt 1 percent .....                                  | 10        | 90    | Sand, dark brown; fine<br>grained; subrounded; silt<br>10 percent .....                                 | 10        | 340   |
| Sand, as above, clay 40<br>percent .....                                                 | 20        | 280   | Sand, as above, sand finer ...                                                                                        | 20        | 110   | Sand, as above, silt 20<br>percent .....                                                                | 10        | 360   |
| Clay, same as 240 to 260<br>feet .....                                                   | 20        | 300   | Sand, as above, fine to<br>coarse .....                                                                               | 10        | 120   | Sand, dark grayish brown;<br>fine to medium; subrounded<br>to subangular; silt 15<br>percent .....      | 10        | 380   |
| Sand, as above, clay 35<br>percent .....                                                 | 10        | 310   | Sand, as above, fine to<br>medium .....                                                                               | 10        | 130   | Sand, as above, dark brown;<br>silt 10 percent .....                                                    | 30        | 390   |
| Sand, as above, clay 45<br>percent .....                                                 | 10        | 320   | Sand, as above, fine to<br>medium .....                                                                               | 20        | 140   | Sand, as above, fine grained;<br>silt 15 percent .....                                                  | 30        | 400   |
| Clay, sandy; sand fine to<br>medium; sand subangular to<br>rounded; sand 40 percent .... | 20        | 340   | Sand, as above, fine to<br>coarse .....                                                                               | 10        | 160   | Sand, as above, fine grained;<br>silt 15 percent .....                                                  | 30        | 410   |
| Clay, as above, sand 45<br>percent, color change<br>noted .....                          | 20        | 360   | Sand, as above, fine to<br>medium .....                                                                               | 10        | 210   | Sand, silty, dark grayish<br>brown; fine grained;<br>subrounded to subangular;<br>silt 20 percent ..... | 34        | 440   |
| Clay, as above, sand 40<br>percent color change noted ..                                 | 10        | 370   | Sand, as above, fine to<br>medium .....                                                                               | 10        | 220   |                                                                                                         |           | 470   |
| Clay, as above, sand 30<br>percent .....                                                 | 10        | 380   | Sand, as above, fine to<br>medium .....                                                                               | 10        | 230   |                                                                                                         |           |       |
| Clay, as above, gray .....                                                               | 20        | 400   | Sand, as above, sand finer;<br>silt 10 percent .....                                                                  | 10        | 240   |                                                                                                         |           |       |
| Clay, gray; clay 90 percent ..                                                           | 160       | 560   |                                                                                                                       |           |       |                                                                                                         |           |       |
| Clay, as above, sand greater<br>than 10 percent .....                                    | 10        | 570   |                                                                                                                       |           |       |                                                                                                         |           |       |
| Clay, as above, sand fine<br>to medium; sand 2 to 5<br>percent .....                     | 30        | 600   |                                                                                                                       |           |       |                                                                                                         |           |       |