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## Cheyenne County Test-Hole Logs: Nebraska Water Survey Test-Hole Report No. 17

Robert F. Diffendal Jr.

*University of Nebraska-Lincoln*, [rfd@unl.edu](mailto:rfd@unl.edu)

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# **CHEYENNE COUNTY Test-Hole Logs**

Written in Part and Revised and Compiled in Part  
from Previous Works

by

**R.F. Diffendal, Jr.**

**Nebraska Water Survey  
Test-Hole Report No. 17**

**Conservation and Survey Division  
Institute of Agriculture and Natural Resources  
University of Nebraska-Lincoln**



April, 1999



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UNIVERSITY OF NEBRASKA-LINCOLN CREDITS

UNIVERSITY OF NEBRASKA-LINCOLN

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CONSERVATION AND SURVEY DIVISION

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The division is authorized to enter into agreements with federal agencies to engage in cooperative surveys and investigations in the state. Publications of the division and the cooperating agencies are available from the Conservation and Survey Division, University of Nebraska, Lincoln, Nebraska 68588-0517.

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Publication and price lists are furnished upon request.

April 1999

## ACKNOWLEDGMENTS

The author and compiler gratefully acknowledges the contributions of the following Conservation and Survey Division personnel for production of this test-hole log book: Duane Mohlman and Rod Vasek for their computer assistance, Melba Stemm for typing the logs, and Jerry Leach for drafting the illustrations.

In addition to the author the following persons performed important field and office tasks in connection with the test drilling: W. Barrash, J. Boellstorff, A. Bryda, H. P. Burleigh, R. C. Cady, H. DeGraw, J. L. Deffenbaugh, V. H. Dreeszen, E. A. Duncan, P. Emery, J. Goeke, D. Gordon, J. Gottula, O. C. Hansen, H. A. Haworth, P. Hegarty, D. L. Hill, C. F. Keech, R. C. Lawrence, A. L. Lugn, G. Muller, J. W. Nelson, H. W. Pinneker, O. J. Scherer, R. L. Schreurs, S. Sibray, F. Smith, V. Souders, G. R. Svoboda, J. Swinehart, D. Uhl, H. S. Unger, H. A. Waite, C. Webber, L. K. Wenzel, and H. Williamson. Many other persons contributed during short periods of time to the test-hole drilling, both in the field and in the office.

Logs of test holes in Cheyenne County published previously in Logs of Test Holes, Cheyenne County, Nebraska (1953) and in Preliminary Groundwater Report, Cheyenne County, Nebraska (1969 by F.A. Smith) by the Conservation and Survey Division are included in modified form in this report.

## INTRODUCTION

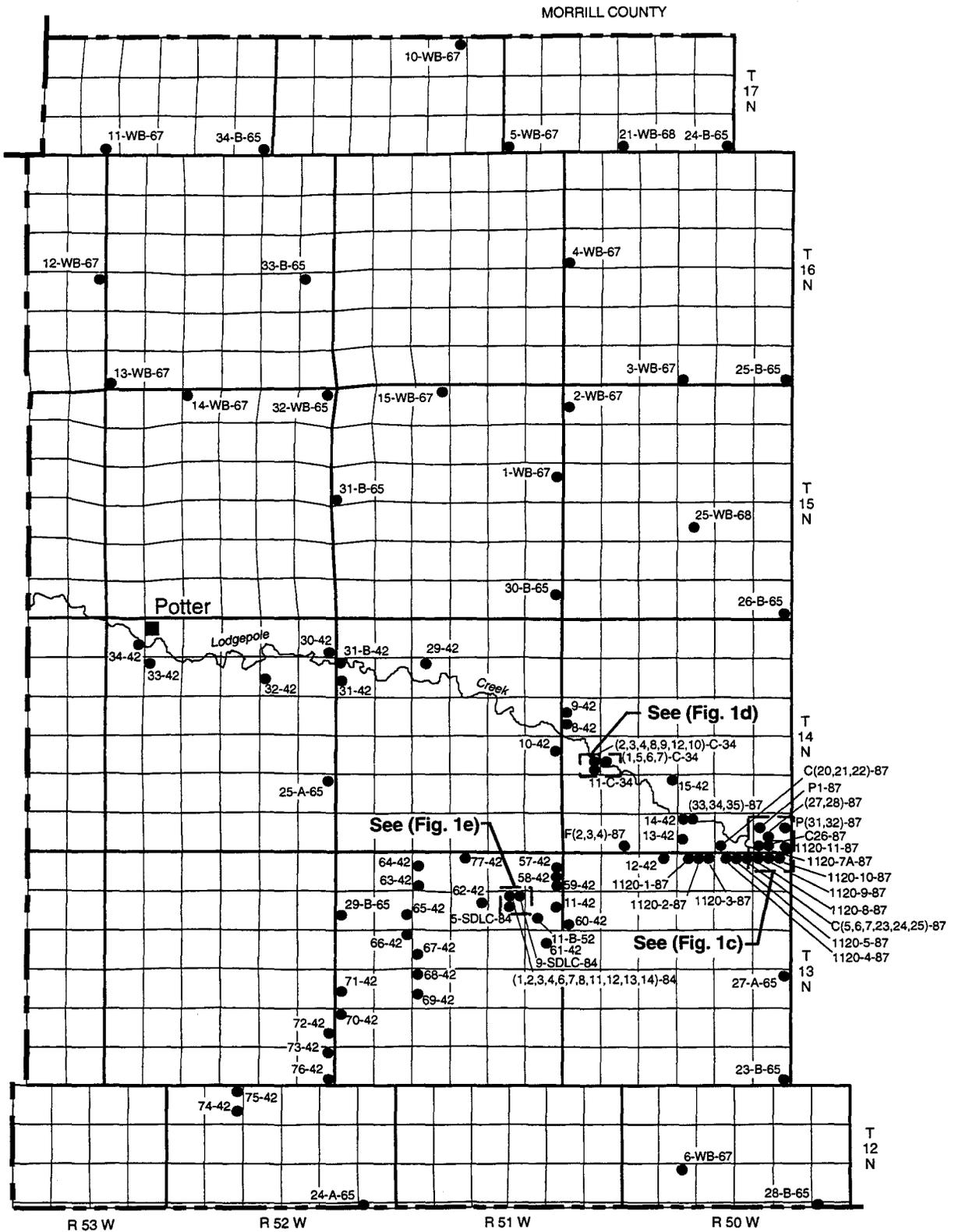
In 1930, the Conservation and Survey Division (CSD) of the University of Nebraska and the U.S. Geological Survey began a program of cooperative groundwater studies in Nebraska. Since then test drilling by use of rotary drilling equipment has been an integral part of that program. This report contains logs of all the test-holes drilled in the county under the program as well as those drilled by the Conservation and Survey Division with financial assistance from other government agencies. Also included are logs of test-holes drilled by cooperators with the South Platte Natural Resources District.

The maps in this report show the location of all test holes drilled in the county since 1934 (Figure 1a-e).

Present techniques of test-hole logging and sampling include use of drilling mud suitable to drilling conditions, timing by stopwatch of the drilling of each 5-foot increment of depth, and removal of all cuttings from the test hole at intervals of 5 feet or less. During the drilling of the hole, cuttings from each interval are examined immediately; samples representing each 5-foot interval and each recognizable change in material are retained. After samples are washed, they are described lithologically and the color is evaluated by comparison with standard color charts. The samples then are dried, stored, and cataloged. All samples are processed and kept on open file in the offices of the Conservation and Survey Division, 113 Nebraska Hall, University of Nebraska-Lincoln, 68588-0517.

Beginning in September 1951, some of the test holes have been logged electrically. Geophysical logs (e-logs) often can be used to determine formation boundaries more precisely than by field sampling, especially where differences in rock types from one formation to another occur at the boundary. Figure 2 is an example of geophysical logs of a test hole from Cheyenne County with formation boundaries shown. Departures of the curves from the center lines generally indicate that the geologic unit is becoming coarser grained. A notation on each test-hole log indicates if geophysical logs are part of the original test-hole data in the CSD office in Lincoln.

This publication is one of a series being issued to make more readily available the record of test holes drilled since 1930. The series of publications is made on a county basis and includes, with some exceptions, logs of all test holes drilled in each of the counties. The logs have not been reviewed for conformance with editorial standards and nomenclature. In the case of Cheyenne County, descriptions of strata done in earlier test-hole reports are included with some revised formation information in this report.



● Test hole description published in this report

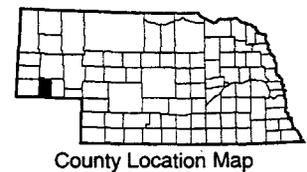


Fig. 1a. Test-hole location map, west half of Cheyenne County.

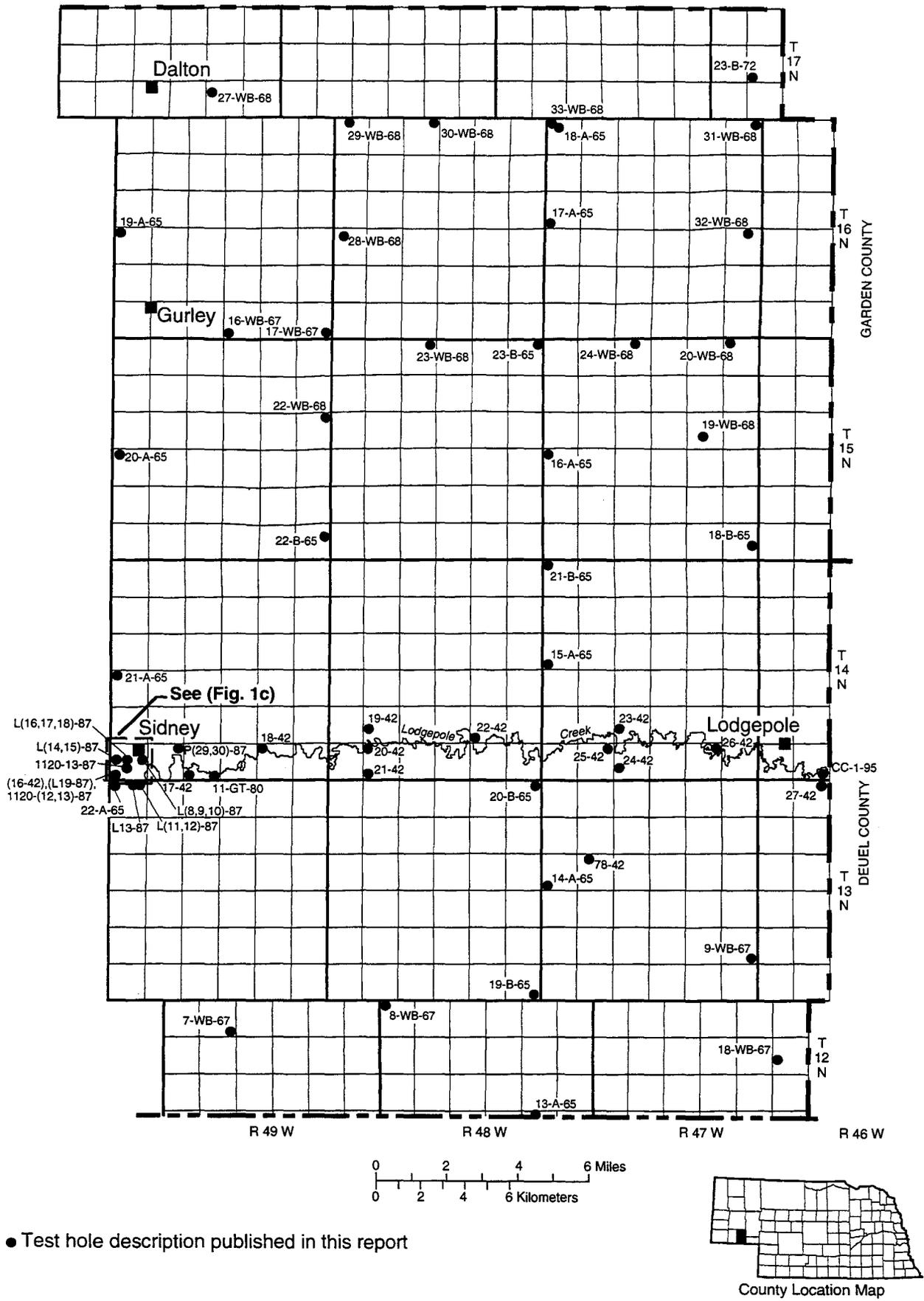


Fig. 1b. Test-hole location map, east half of Cheyenne County.

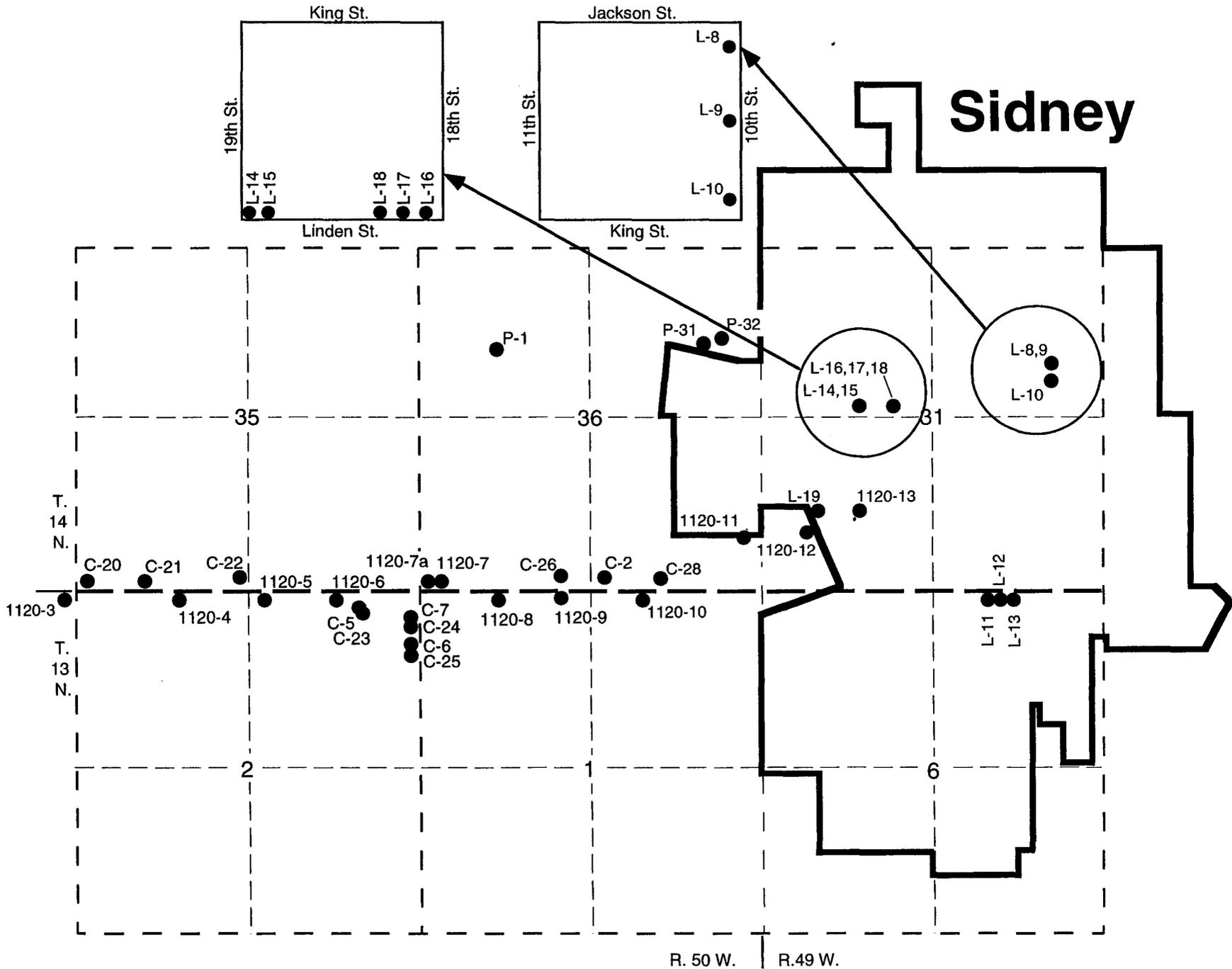


Figure 1c. Test-Holes (1987) in the Sidney, Nebraska, Area.

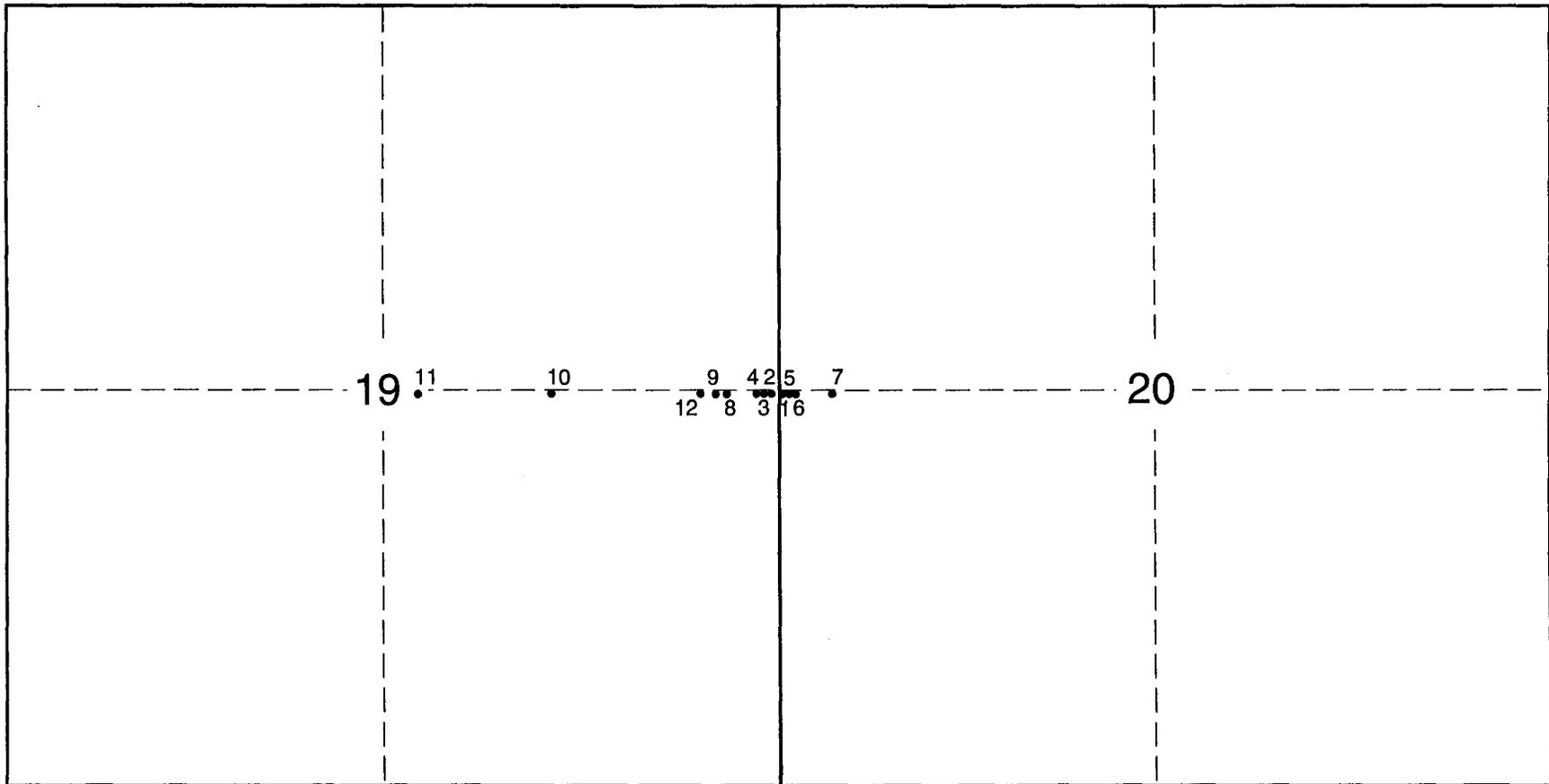


Figure 1d. Test-Holes ( C-34) in Sections 19 and 20, T. 14 N., R. 50 W.

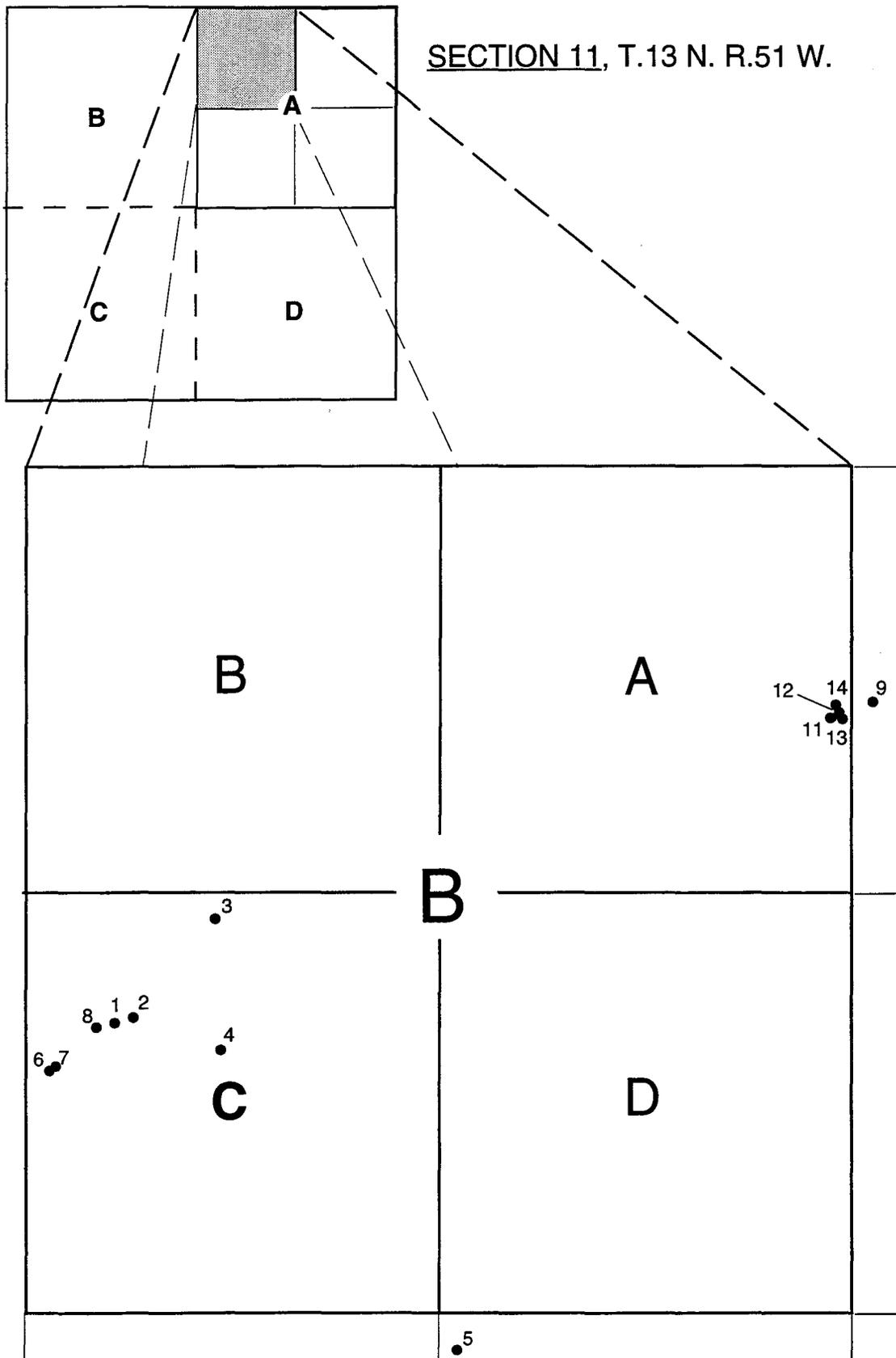
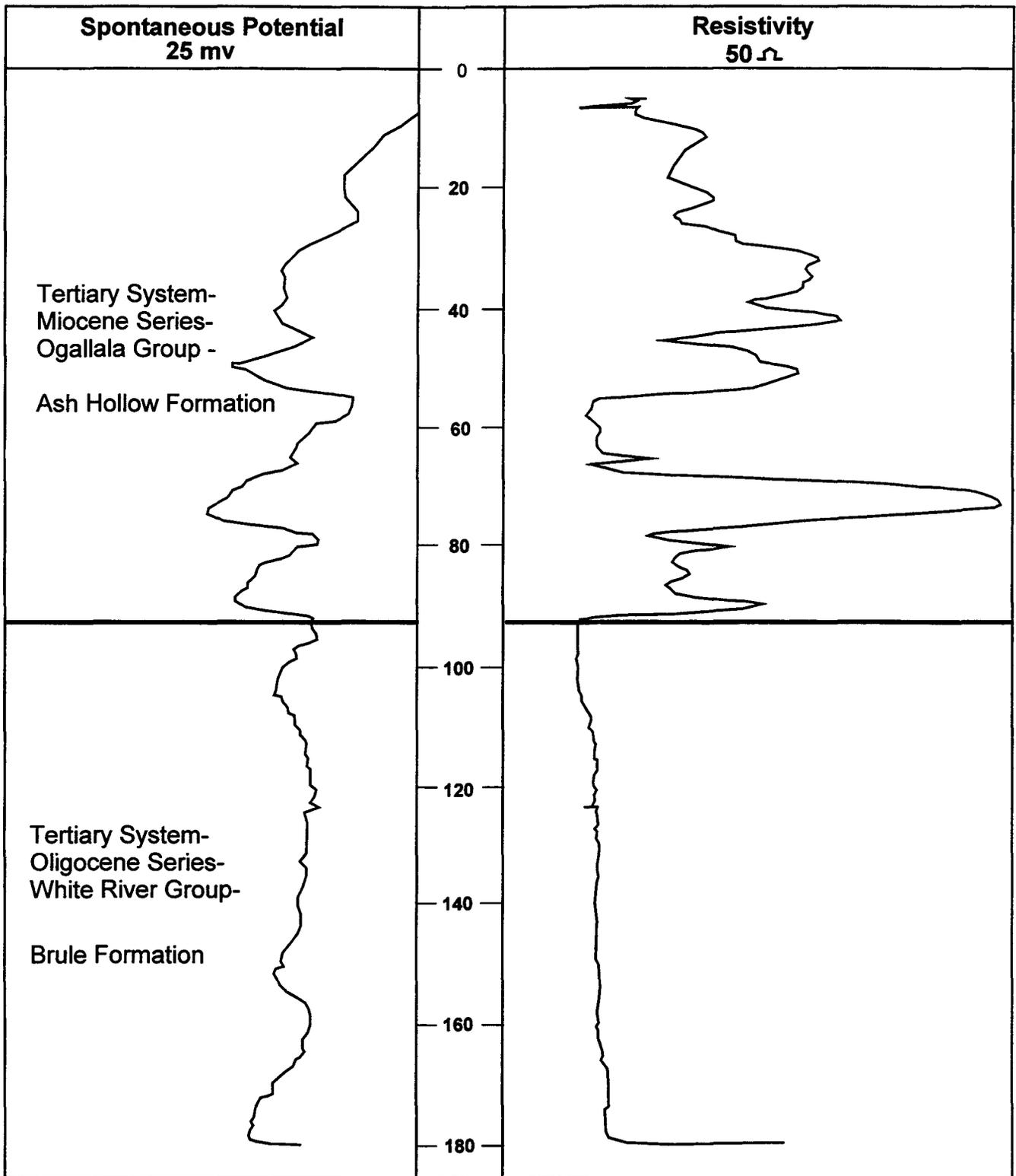


Figure 1e. Test-Holes ( SDLC-84)



**Figure 2. Cheyenne County sample geophysical logs.**

The method whereby the elevation of the land surface at test hole sites was determined is indicated in the heading of each log, as follows: a = altimeter, h = hand leveling, i = spirit leveling, t = estimated from topographic map.

The test-hole records accurately reflect subsurface conditions only at the locations where the test holes were drilled. Interpretive data reflecting probable subsurface conditions between test holes are being compiled for publication in county reports and are available for inspection in the office of the Conservation and Survey Division.

Each test hole is identified by a number assigned in the field (for example #3-B-67, #41-79), and is also identified by a number indicating its location within the land divisions of the U.S. Bureau of Land Management's survey of Nebraska. Location numbers of test holes east of the 6th principal meridian, which passes through Columbus in a north-south direction, are preceded by the capital letter A; those west of the principal meridian have no preceding letter. The first numeral indicates the township, the second the range, and the third the section. As shown in figure 3, the letters that follow the section number indicate the location of the test hole within the section, the first letter indicating the quarter section and the second letter indicating the quarter-quarter section and so on to the quarter-quarter-quarter-quarter section. The letters A, B, C, and D are applied in counterclockwise direction beginning with A in the northeast quadrant. The last numeral is the serial number of the test hole within the quarter-quarter-quarter-quarter section if more than one well is present in that area. Figure 3 also shows the equivalent relationship between this system and the one used more commonly in Nebraska by citizens and many governmental units.

CSD test hole identification  
SW SE NE SW Sec. 15, 5N, 4E

USGS test hole identification  
5N-4E-15CADC

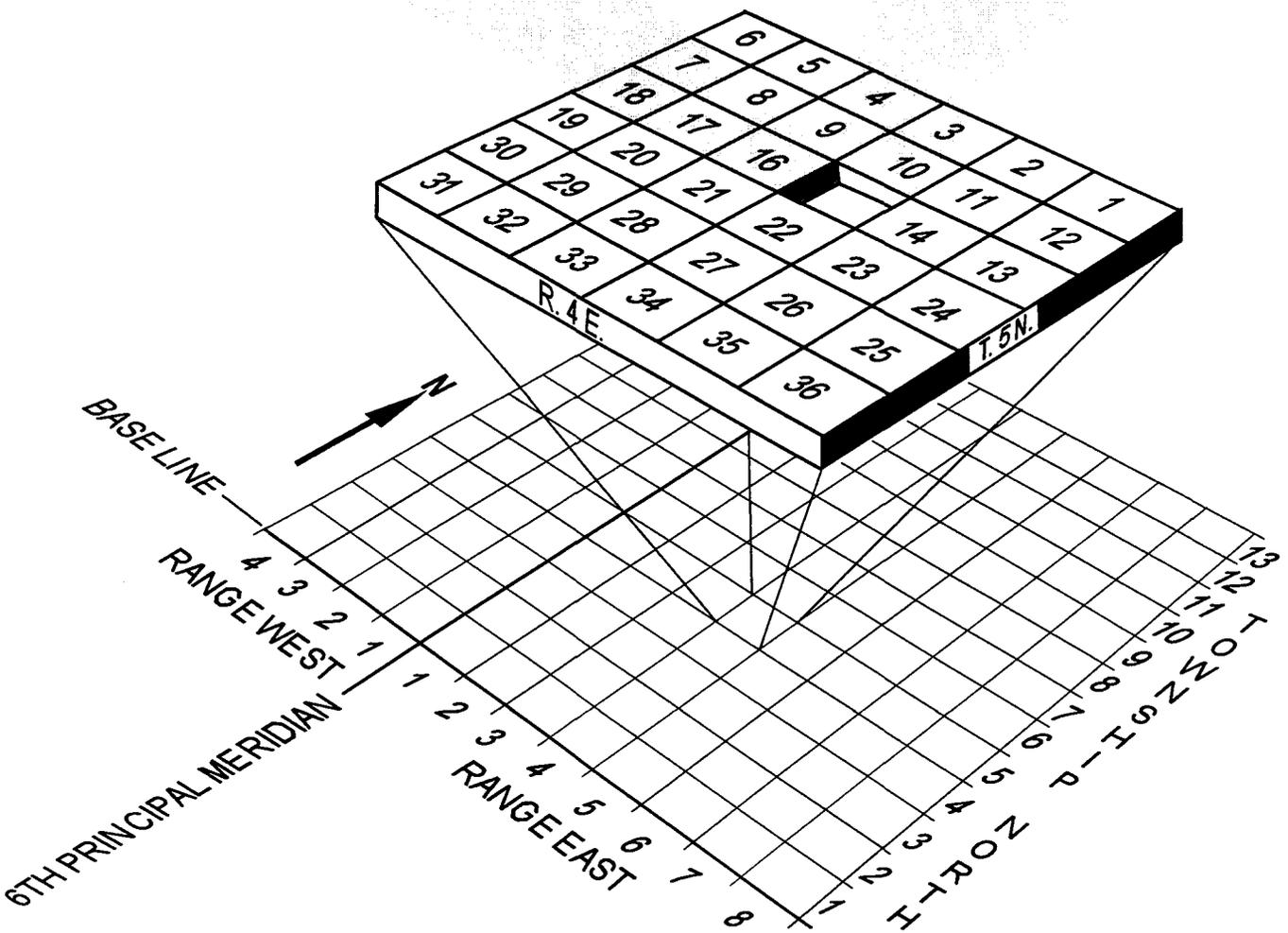
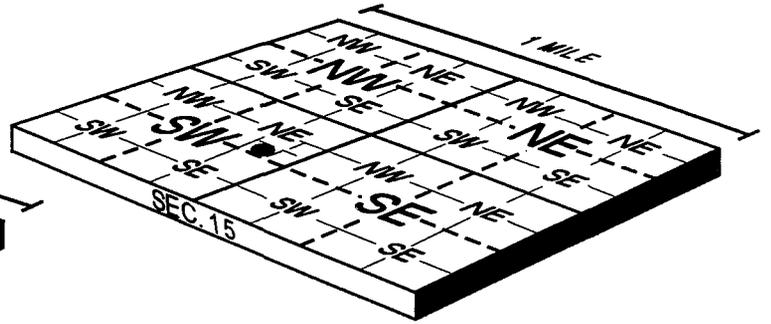
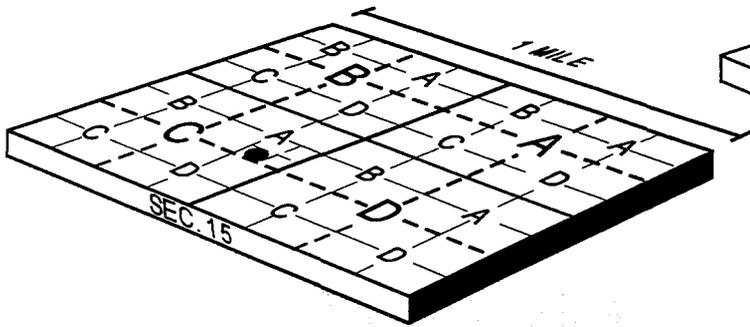


Fig. 3. System for identifying test-hole according to its location

**Cheyenne County  
Selected References**

- Gottula, J.J., 1997, A study of nonpoint source ground water contamination in eastern Cheyenne County: A Ground Water Management Area report: Nebraska Department of Environmental Quality, Water Quality Division, Ground Water Section, 85 p.
- Borchers, G.A., and S. Hartung, 1997, Soil Survey of Cheyenne County, Nebraska: U.S. Department of Agriculture, Natural Resources Conservation Service, 231 p. and 90 maps.
- Swinehart, J.B., and R.F. Diffendal, Jr., 1997, Geological map of the Scottsbluff 1°x2° quadrangle, Nebraska and Colorado: U.S. Geological Survey, Geologic Investigations Map I-2545, one sheet, scale 1:250,000.

**Cheyenne County**  
**Test-Hole Logs Table of Contents**

Legal Descrip Twp Rge Sec	Test-Hole Number	Page
12N 47W 12CBAA	18-WB-67	1
12N 48W 06BBBB	08-WB-67	3
12N 48W 23BABC	13-A-65	5
12N 49W 05DDDD	07-WB-67	6
12N 50W 17ABBB	06-WB-67	8
12N 50W 24BBCB	28-B-65	10
12N 52W 05AAAA	75-42	11
12N 52W 05DAAD	74-42	12
12N 52W 24BBBB	24-A-65	13
13N 46W 05AAAD	27-42	14
13N 47W 18CCCC	14-A-65	15
13N 47W 25DDDA	09-WB-67	16
13N 48W 01AADD	20-B-65	18
13N 48W 36DDCD	19-B-65	19
13N 49W 06ABAA	L12-87	20
13N 49W 06ABAB	L11-87	21
13N 49W 06ABAB	L13-87	22
13N 49W 06BBBB	22-A-65	23
13N 50W 01ABAA	1120-10-87	24
13N 50W 01BAAB	1120-9-87	25
13N 50W 01BBAA	1120-8-87	26
13N 50W 02AAAD	C7-87	27
13N 50W 02AAAD	C24-87	28
13N 50W 02AABA	C5-87	29
13N 50W 02AABA	C23-87	30
13N 50W 02AABB	1120-6-87	31
13N 50W 02AADA	C6-87	32
13N 50W 02AADA	C25-87	33
13N 50W 02ABBB	1120-5-87	34
13N 50W 02BABB	1120-4-87	35
13N 50W 03AAAA	1120-3-87	36
13N 50W 03ABBA	1120-2-87	37
13N 50W 03BABB	1120-1-87	38
13N 50W 04ADAA	12-42	39
13N 50W 07CCCC	60-42	40
13N 50W 24AAAA	27-B-65	41
13N 50W 36DDDD	23-A-65	42
13N 51W 01ADAA	57-42	43
13N 51W 01DAAD	58-42	44
13N 51W 01DDDD	59-42	45
13N 51W 03BAAA	77-42	46
13N 51W 04BCBC	64-42	47
13N 51W 04CCCC	63-42	48

13N 51W 07CBBB 29-B-65 . . . . .	49
13N 51W 08DAAD 65-42 . . . . .	50
13N 51W 10ADDD 62-42 . . . . .	51
13N 51W 11AABC 09SDLC84 . . . . .	52
13N 51W 11ABAD 11SDLC84 . . . . .	53
13N 51W 11ABAD 12SDLC84 . . . . .	54
13N 51W 11ABAD 13SDLC84 . . . . .	55
13N 51W 11ABAD 14SDLC84 . . . . .	56
13N 51W 11ABCA 04SDLC84 . . . . .	57
13N 51W 11ABCB 03SDLC84 . . . . .	58
13N 51W 11ABCB 01SDLC84 . . . . .	59
13N 51W 11ABCB 07SDLC84 . . . . .	60
13N 51W 11ABCB 08SDLC84 . . . . .	61
13N 51W 11ABCB 02SDLC84 . . . . .	62
13N 51W 11ABCC 06SDLC84 . . . . .	63
13N 51W 11ACAB 05SDLC84 . . . . .	64
13N 51W 12ADDD 11-42 . . . . .	65
13N 51W 13ACCD 61-42 . . . . .	66
13N 51W 16CBBB 67-42 . . . . .	67
13N 51W 17AAAA 66-42 . . . . .	68
13N 51W 19CBCB 71-42 . . . . .	69
13N 51W 21BBBC 68-42 . . . . .	70
13N 51W 21CBBB 69-42 . . . . .	71
13N 51W 30BBCB 70-42 . . . . .	72
13N 52W 25DADD 72-42 . . . . .	73
13N 52W 36AADA 73-42 . . . . .	74
13N 52W 36DDAB 76-42 . . . . .	75
14N 46W 32DDDA CC-1-95 . . . . .	76
14N 47W 06BBBB 21-B-65 . . . . .	77
14N 47W 18CCCC 15-A-65 . . . . .	78
14N 47W 28BCCC 23-42 . . . . .	79
14N 47W 32AAAA 25-42 . . . . .	80
14N 47W 33CBBB 24-42 . . . . .	81
14N 47W 35AAAA 26-42 . . . . .	82
14N 48W 26CCCC 22-42 . . . . .	83
14N 48W 29CBBB 19-42 . . . . .	84
14N 48W 32BBCC 20-42 . . . . .	85
14N 48W 32CCBC 21-42 . . . . .	86
14N 49W 19BBBB 21-A-65 . . . . .	87
14N 49W 31ABBD L8-87 . . . . .	88
14N 49W 31ABBD L9-87 . . . . .	89
14N 49W 31ADCA L10-87 . . . . .	90
14N 49W 31BCDD L15-87 . . . . .	91
14N 49W 31BCDD L14-87 . . . . .	92
14N 49w 31BDCC L16-87 . . . . .	93
14N 49W 31BDCC L17-87 . . . . .	94
14N 49W 31BDCC L18-87 . . . . .	95
14N 49W 31CACC 1120-13-87 . . . . .	96
14N 49W 31CCAB L19-87 . . . . .	97
14N 49W 31CCAC 1120-12-87 . . . . .	98
14N 49W 31CCCC 16-42 . . . . .	99

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14N 49W 32AACB P29-87	101
14N 49W 33CCBB 17-42	102
14N 49W 33DDDD 11-GT-80	103
14N 49W 35BBBC 18-42	105
14N 50W 18BCBB 9-42	106
14N 50W 18CBBA 08-42	107
14N 50W 19DAAA 02-C-34	108
14N 50W 19DAAA 03-C-34	109
14N 50W 19DAAA 04-C-34	110
14N 50W 19DAAB 08-C-34	111
14N 50W 19DAAB 09-C-34	112
14N 50W 19DAAB 12-C-34	113
14N 50W 19DABB 10-C-34	114
14N 50W 19DBBB 11-C-34	115
14N 50W 20CBBA 07-C-34	116
14N 50W 20CBBB 01-C-34	117
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14N 50W 28AADD 15-42	120
14N 50W 32DCCC F4-87	121
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14N 50W 35CCDD C21-87	130
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14N 50W 36BCAA P1-87	134
14N 50W 36CCCC 1120-7A-87	135
14N 50W 36CCCC 1120-7-87	136
14N 50W 36CDDD C26-87	137
14N 50W 36DCCC C27-87	138
14N 50W 36DCDD C28-87	139
14N 50W 36DDAD 1120-11-87	140
14N 51W 07BBCC 31B-42	141
14N 51W 07BCCC 31-42	142
14N 51W 09BADD 29-40	143
14N 51W 24ADAA 10-42	144
14N 52W 01DDAA 30-42	145
14N 52W 06DAAA 34-42	146
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15N 47W 04ABBA 24-WB-68	153

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15N 47W 19BBBB	16-A-65	. . . . .	157
15N 47W 36DAAA	18-B-65	. . . . .	159
15N 48W 01AAAD	23-B-65	. . . . .	161
15N 48W 04AAAA	23-WB-68	. . . . .	163
15N 49W 13AADA	22-WB-68	. . . . .	165
15N 49W 19BBBA	20-A-65	. . . . .	167
15N 49W 36DADA	22-B-65	. . . . .	169
15N 50W 06CBBB	02-WB-67	. . . . .	170
15N 50W 22CAAC	25-WB-68	. . . . .	172
15N 50W 36DDCC	26-B-65	. . . . .	174
15N 51W 04AAAA	15-WB-67	. . . . .	176
15N 51W 13ADDD	01-WB-67	. . . . .	179
15N 51W 18CCCC	31-B-65	. . . . .	181
15N 51W 36ADDD	30-B-65	. . . . .	182
15N 52W 01AAAA	32-B-65	. . . . .	183
15N 52W 04BBBB	14-WB-67	. . . . .	185
16N 47W 01ABBA	31-WB-68	. . . . .	188
16N 47W 06BBBB	33-WB-68	. . . . .	190
16N 47W 06BBBB	18-A-65	. . . . .	193
16N 47W 18CCCB	17-A-65	. . . . .	195
16N 47W 24ABBB	32-WB-68	. . . . .	196
16N 48W 04AAAA	30-WB-68	. . . . .	198
16N 48W 06BAAA	29-WB-68	. . . . .	200
16N 48W 19BBBB	28-WB-68	. . . . .	202
16N 49W 19BBBB	19-A-65	. . . . .	204
16N 49W 34CCCC	16-WB-67	. . . . .	206
16N 49W 36DDDD	17-WB-67	. . . . .	208
16N 50W 18CCCC	04-WB-67	. . . . .	211
16N 50W 34CCCC	03-WB-67	. . . . .	213
16N 50W 36DDDD	25-B-65	. . . . .	216
16N 52W 24BBBC	33-B-65	. . . . .	218
16N 52W 31CCCC	13-WB-67	. . . . .	220
16N 53W 24AAAA	12-WB-67	. . . . .	222
17N 46W 29CCCD	23-B-72	. . . . .	224
17N 49W 35BCBB	27-WB-68	. . . . .	226
17N 50W 31CCCC	05-WB-67	. . . . .	229
17N 50W 34CCCC	21-WB-68	. . . . .	231
17N 50W 36DDDD	24-B-65	. . . . .	234
17N 51W 23AAAA	10-WB-67	. . . . .	236
17N 52W 32DCDD	11-WB-67	. . . . .	239
17N 52W 36DDDA	34-B-65	. . . . .	242

Test-hole logs are arranged in this publication by township, range and section.

**Cheyenne County  
Test-Hole Logs Table of Contents**

Arranged by year drilled, test-hole number.

**1934**

14N 50W 20CBBB 01-C-34 . . . . .	117
14N 50W 19DAAA 02-C-34 . . . . .	108
14N 50W 19DAAA 03-C-34 . . . . .	109
14N 50W 19DAAA 04-C-34 . . . . .	110
14N 50W 20CBBB 05-C-34 . . . . .	118
14N 50W 20CBBB 06-C-34 . . . . .	119
14N 50W 20CBBA 07-C-34 . . . . .	116
14N 50W 19DAAB 08-C-34 . . . . .	111
14N 50W 19DAAB 09-C-34 . . . . .	112
14N 50W 19DABB 10-C-34 . . . . .	114
14N 50W 19DBBB 11-C-34 . . . . .	115
14N 50W 19DAAB 12-C-34 . . . . .	113

**1942**

14N 50W 18CBBA 08-42 . . . . .	107
14N 50W 18BCBB 09-42 . . . . .	106
14N 51W 24ADAA 10-42 . . . . .	144
13N 51W 12ADDD 11-42 . . . . .	65
13N 50W 04ADAA 12-42 . . . . .	39
14N 50W 34CBCB 13-42 . . . . .	128
14N 50W 34BBBB 14-42 . . . . .	127
14N 50W 28AADD 15-42 . . . . .	120
14N 49W 31CCCC 16-42 . . . . .	99
14N 49W 33CCBB 17-42 . . . . .	102
14N 49W 35BBBC 18-42 . . . . .	105
14N 48W 29CBBB 19-42 . . . . .	84
14N 48W 32BBCC 20-42 . . . . .	85
14N 48W 32CCBC 21-42 . . . . .	86
14N 48W 26CCCC 22-42 . . . . .	83
14N 47W 28BCCC 23-42 . . . . .	79
14N 47W 33CBBB 24-42 . . . . .	81
14N 47W 32AAAA 25-42 . . . . .	80
14N 47W 35AAAA 26-42 . . . . .	82
13N 46W 05AAAD 27-42 . . . . .	14
14N 51W 09BADD 29-40 . . . . .	143
14N 52W 01DDAA 30-42 . . . . .	145
14N 51W 07BCCC 31-42 . . . . .	142
14N 51W 07BBCC 31B-42 . . . . .	141
14N 52W 11CBAA 32-42 . . . . .	148
14N 52W 08BBCC 33-42 . . . . .	147



15N 51W 18CCCC	31-B-65	. . . . .	181
15N 52W 01AAAA	32-B-65	. . . . .	183
16N 52W 24BBBC	33-B-65	. . . . .	218
17N 52W 36DDDA	34-B-65	. . . . .	242

**1967**

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15N 50W 06CBBB	02-WB-67	. . . . .	170
16N 50W 34CCCC	03-WB-67	. . . . .	213
16N 50W 18CCCC	04-WB-67	. . . . .	211
17N 50W 31CCCC	05-WB-67	. . . . .	229
12N 50W 17ABBB	06-WB-67	. . . . .	8
12N 49W 05DDDD	07-WB-67	. . . . .	6
12N 48W 06BBBB	08-WB-67	. . . . .	3
13N 47W 25DDDA	09-WB-67	. . . . .	16
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**Test Hole #18-WB-67 (No e-log)  
(12N-47W-12cbaa)  
Cheyenne County**

Location: NE NE NW SW sec. 12, T. 12 N., R. 47 W., approximately 2,544 ft north and 1,050 ft east of southwest corner.  
Ground elevation: 4,048 ft. (t). (Lodgepole 7.5 min. quadrangle).  
Depth to water: 155 ft. (11-8-67).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Silt, slightly clayey, dark brownish gray.....	0.0	2.0
Sand, very fine to fine; some medium sand to coarse gravel.....	2.0	5.0
Sand, gravelly; fine sand to fine gravel; some medium gravel.....	5.0	10.0
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Sandstone, very fine to very coarse grained, moderately consolidated.....	10.0	15.0
Sand, gravelly; fine sand to medium gravel.....	15.0	20.0
Gravel, sandy; coarse gravel to fine sand; little very coarse gravel; trace of pebbles below 21 ft..	20.0	38.0
Silt, moderately clayey, very sandy, light brown, slightly calcareous to 41 ft; sand is very fine to fine, some medium.....	38.0	55.0
Gravel, sandy; coarse gravel to fine sand; little very coarse gravel; trace of pebbles.....	55.0	80.0
Sand, gravelly; fine sand to fine gravel; some medium gravel.....	80.0	85.5
Silt, slightly clayey, very sandy, pink; sand is very fine to fine, moderately clayey below 90 ft..	85.5	94.0
Sand, gravelly; fine sand to coarse gravel; some very coarse gravel with few pebbles.....	94.0	108.0
Silt, moderately clayey, very sandy, brown; sand is very fine to medium; micaceous below 113 ft.....	108.0	120.0
Sand, gravelly; fine sand to medium gravel; some coarse to very coarse gravel.....	120.0	124.0
Silt, moderately clayey, very sandy, light brown; sand is very fine to moderate.....	124.0	126.0
Silt, moderately clayey, very sandy, marly, pink, very calcareous; sand is very fine to fine; some interbedded limestone; some brown color below 135 ft.....	126.0	140.0
Clay, silty, sandy, reddish brown; sand is very fine to fine.....	140.0	145.0

Silt, slightly clayey, very sandy, light brown, moderately calcareous; sand is very fine to fine; some medium sand to fine gravel, with interbedded limestone below 147 ft.....	145.0	163.0
Sand, gravelly; fine sand to fine gravel; some medium gravel; in part lime cemented below 166 ft.	163.0	170.0
Clay, silty, sandy, brown; some limy areas.....	170.0	171.0
Sand, very fine to very coarse.....	171.0	175.0
Clay, silty, sandy, brown; sand is very fine to medium.....	175.0	176.0
Sand, very fine to fine.....	176.0	179.0
Silt, very sandy, moderately clayey, light brown, moderately calcareous; sand is very fine to medium, some coarse to very coarse.....	179.0	186.0
Silt, slightly clayey, very sandy to gravelly, pink, moderately calcareous; some interbedded limestone lenses below 190 ft.....	186.0	200.0
Clay, silty, sandy, pinkish-white, very calcareous; sand is very fine to medium; some limy areas and lime cemented sandstone below 205 ft; some medium sand to fine gravel below 206 ft.....	200.0	210.0
Sand, gravelly; fine sand to coarse gravel; some lime cemented sandstone lenses.....	210.0	214.0
Sandstone, very fine to fine grained, well consolidated.....	214.0	220.0
Silt, slightly clayey, very sandy, light brown, slightly calcareous; sand is very fine to fine; some silty sandstone.....	220.0	225.0
Sandstone, very fine to fine grained, in part moderately calcareous, poorly consolidated, some rootlet fragments.....	225.0	230.0
Silt, slightly clayey, sandy, light brown; sand is very fine to fine; some interbedded silty sandstone; some limestone lenses below 235 ft.....	230.0	243.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, clayey, light brown with reddish tint, slightly to moderately calcareous.....	243.0	256.0

**Test Hole #8-WB-67 (No e-log)  
(12N-48W-6bbbb)  
Cheyenne County**

Location: NW NW NW NW sec. 6, T. 12 N., R. 48 W., 52 ft south and 94 ft east of northwest corner.

Ground elevation: 4,230 ft. (t). (Sidney SE 7.5 min. quadrangle).

Depth to water: Unknown; test hole filled.

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Silt, slightly clayey, dark brownish gray.....	0.0	2.0
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Sandstone, very fine to fine grained, some medium to very coarse, well consolidated.....	2.0	5.0
Clay, silty, sandy, light brown, very calcareous; sand is very fine to fine, some coarser grains; marly areas.....	5.0	10.0
Sandstone, very fine to fine grained, moderately calcareous, moderately consolidated.....	10.0	15.0
Sand, gravelly; fine sand to fine gravel; some medium gravel; some interbedded lime cemented sandstone.....	15.0	20.0
Gravel, sandy; fine gravel to fine sand, some medium gravel; slightly finer texture from 25 to 30 ft.....	20.0	35.0
Sand, gravelly; fine sand to fine gravel, some medium gravel; some lime cemented sandstone lenses.....	35.0	40.0
Gravel, sandy; medium gravel to fine sand, some coarse gravel.....	40.0	45.0
Sand, gravelly; fine sand to fine gravel; some medium gravel, in part cemented below 54 ft.....	45.0	55.0
Gravel, sandy; medium gravel to fine sand, slightly cemented; coarse gravel to fine sand below 60 ft; some very coarse gravel below 65 ft.....	55.0	70.0
Sand, gravelly; fine sand to fine gravel; some medium gravel; lime cemented sandstone from 71 to 73 ft.....	70.0	75.0
Gravel, sandy; medium gravel to fine sand; in part lime cemented.....	75.0	78.0
Silt, very sandy, slightly clayey, light brown; sand is very fine to medium with trace of coarse.....	78.0	81.0
Gravel, sandy; coarse gravel to very fine sand; some clay lenses to 85 ft and below 90 ft.....	81.0	95.0

Clay, silty, sandy, light brown; sand is very fine to medium; some marly areas below 101 ft.....	95.0	103.0
Silt, clayey, sandy, light gray to pale yellow.....	103.0	108.0
Sandstone, fine to very coarse grained; in part moderately consolidated.....	108.0	113.0
Silt, clayey, sandy, pinkish gray; sand is very fine to medium.....	113.0	121.0
Gravel, sandy; medium gravel to fine sand, some coarse gravel; finer texture below 126 ft.....	121.0	136.0
Clay, silty, sandy, light gray, moderately calcareous; marly areas.....	136.0	142.0
Sandstone, very fine to medium grained, moderately calcareous, moderately consolidated.....	142.0	143.0
Clay, silty, in part sandy, reddish brown, moderately calcareous; sand is very fine to medium; limy areas; light brown from 148 to 153 ft; light gray below 153 ft.....	143.0	161.0
Clay, silty, sandy, light brown; sand is very fine to fine, some coarser grains; limy areas.....	161.0	169.0
Sand, gravelly; fine sand to medium gravel; clay lenses.....	169.0	174.0
Clay, silty, in part sandy, light brown, light reddish brown; sand is very fine to fine, some coarser grains.....	174.0	185.0
Sand, gravelly; fine sand to fine gravel; some lime cemented sandstone lenses.....	185.0	192.0
Clay, silty, light brown; limy areas; some sandstone lenses below 194 ft.....	192.0	199.0
Sand, slightly gravelly; fine sand to fine gravel; some medium gravel.....	199.0	206.0
Gravel, sandy; medium gravel to fine sand; some coarse gravel; principally limestone, siltstone and quartz.....	206.0	211.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, silty, light gray, very calcareous; some limestone and siltstone fragments below 215 ft....	211.0	217.0
Clay, silty, light brown.....	217.0	221.0
Siltstone, clayey, light brown, moderately calcareous to 239 ft; some light reddish brown to pink color below 239 ft.....	221.0	241.0

**Test Hole #13-A-65 (E-logs)**  
**(12N-48W-23babc)**  
**Cheyenne County**

Location: SW NW NE NW sec. 23, T. 12 N., R. 48 W., approximately 700 ft south and 1,425 ft east of northwest corner; on north side of road, northeast corner.

Ground elevation: 4,185 ft. (t). (Sidney SE 7.5 min. quadrangle).

Depth to water: 149.55 ft. (8-13-65).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
No sample.....	0.0	1.0
Silt, sandy, some gravel, brown.....	1.0	8.5
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Caliche, silty and sandy, pinkish gray.....	8.5	9.7
Sand and gravel, granitic, includes pinkish gray silt at 33 ft.....	9.7	58.0
Silt, sandy to clayey, brown.....	58.0	67.5
Sand and gravel, granitic.....	67.5	80.0
Silt, sandy to clayey, light yellowish brown.....	80.0	93.0
Sand and gravel, granitic.....	93.0	104.0
Silt, sandy and sand, silty, brown, reddish brown, some discontinuous calcareous cement.....	104.0	127.0
Sand and gravel, granitic.....	127.0	145.0
Silt, clayey, pinkish white to brown, upper part calcareous.....	145.0	155.0
Silt, sandy, light brown to brown, calcareous.....	155.0	171.0
Silt, clayey, brown, calcareous.....	171.0	177.0
Sand and gravel, granitic.....	177.0	182.0
Silt, clayey, yellowish brown.....	182.0	190.0
Sand and gravel, granitic.....	190.0	203.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Silt, clayey to sandy, pinkish white to brown, discontinuous calcareous cement, sandier below 265 ft.....	203.0	270.5

**Test Hole #7-WB-67 (E-log)  
(12N-49W-5dddd)  
Cheyenne County**

Location: SW SW SW SW sec. 5, T. 12 N., R. 49 W., 74 ft north and 21 ft west of southeast corner.

Ground elevation: 4,275 ft. (t). (Sidney Muni. Airport 7.5 min. quadrangle).

Depth to water: 123 ft. (10-21-67).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Silt, slightly clayey, dark brownish gray.....	0.0	3.0
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Gravel, sandy; medium gravel to fine sand.....	3.0	10.0
Sandstone, very fine to fine grained, silty; some medium sand to fine gravel grains from 15 to 20 ft; moderately consolidated below 20 ft.....	10.0	21.0
Sand, slightly gravelly; fine sand to fine gravel...	21.0	28.0
Sand, gravelly; fine sand to fine gravel; some medium gravel.....	28.0	45.0
Gravel, sandy; medium gravel to fine sand, some coarse gravel.....	45.0	48.0
Silt, moderately clayey, sandy, micaceous, brown; sand is very fine to medium.....	48.0	52.0
Sand, fine to very coarse; some fine gravel.....	52.0	65.0
Gravel, sandy; fine gravel to fine sand; some medium gravel.....	65.0	70.0
Silt, moderately clayey, sandy, pink; sand is very fine to fine.....	70.0	71.0
Clay, silty, sandy, light brown; sand is very fine to fine.....	71.0	77.0
Gravel, sandy, medium gravel to fine sand; some coarse gravel below 85 ft.....	77.0	90.0
Clay, silty, sandy, light brown; sand is very fine to medium.....	90.0	98.0
Sandstone, fine to very coarse grained, moderately calcareous, moderately consolidated.....	98.0	100.0
Clay, silty, sandy, light brown, moderately calcareous; sand is very fine to fine; some limy areas.....	100.0	105.0
Silt, moderately clayey, sandy, pinkish gray, moderately calcareous; sand is very fine to medium; some limy areas.....	105.0	114.0
Sand, slightly gravelly; fine sand to fine gravel...	114.0	120.0

Silt, clayey, sandy, pinkish white, moderately calcareous; sand is very fine to fine.....	120.0	123.0
Clay, silty, sandy, micaceous, light brown with some light pinkish gray; sand is very fine to fine; some marly areas.....	123.0	130.6
Sand and gravel; fine sand to fine gravel, some medium to very coarse gravel.....	130.6	135.0
Clay, silty, sandy, light brown; sand is very fine to fine; some limy areas; some lime cemented sandstone lenses.....	135.0	140.0
Sandstone, very fine to fine grained, silty, moderately calcareous, moderately consolidated....	140.0	141.0
Clay, silty, sandy, light brown; sand is very fine to fine; some marly areas.....	141.0	160.0
Sand, very slightly gravelly; fine sand to fine gravel.....	160.0	164.0
Clay, silty, sandy, pinkish gray, moderately calcareous; sand is very fine to medium.....	164.0	169.0
Limestone, marly, sandy, white; sand is very fine to fine.....	169.0	177.5
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, silty, light brown, moderately calcareous.....	177.5	181.0
Siltstone, light brown; limy areas from 190 to 195 ft.....	181.0	205.0
Siltstone, light reddish brown, some light brown....	205.0	220.0

**Test Hole #6-WB-67 (E-log)**  
**(12N-50W-17abbb)**  
**Cheyenne County**

Location: NW NW NW NE sec. 17, T. 12 N., R. 50 W., 2,607 ft west and 50 ft south of northeast corner.

Ground elevation: 4,384 ft. (t). (Lorenzo 7.5 min. quadrangle).

Depth to water: 99.0 ft. (10-21-67).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Sand and gravel; fine sand to fine gravel; some medium gravel, silty.....	0.0	5.0
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Gravel, sandy; very coarse gravel to fine sand; some limy fragments.....	5.0	17.0
Silt, very sandy, slightly clayey, light reddish brown; sand is very fine to medium.....	17.0	25.0
Sandstone, very fine to medium grained, some coarse, moderately calcareous, moderately consolidated; some limestone lenses; some very coarse sand from 27 to 30 ft.....	25.0	41.6
Sand, gravelly; very fine sand to medium gravel; some coarse gravel; some interbedded lime cemented sandstone.....	41.6	45.0
Sand, fine to very coarse; some fine gravel.....	45.0	50.0
Sand, gravelly; fine sand to medium gravel, little coarse gravel.....	50.0	55.0
Gravel, sandy; medium gravel to fine sand; some coarse gravel; slightly coarser texture below 57 ft.....	55.0	58.0
Silt, clayey, sandy, light brown; sand is very fine to medium.....	58.0	61.0
Sand, gravelly; fine sand to fine gravel; some medium to coarse gravel; in part lime cemented....	61.0	65.0
Sand, slightly gravelly; fine sand to fine gravel...	65.0	84.0
Gravel, sandy; medium gravel to fine sand; some thin silty clay lenses.....	84.0	92.0
Sandstone, very fine to fine grained, moderately calcareous, moderately consolidated.....	92.0	93.0
Gravel, sandy; coarse gravel to fine sand, in part lime cemented.....	93.0	98.0
Sand, gravelly; fine sand to fine gravel; some medium gravel; some silty clay lenses below 105 ft.....	98.0	108.0

Silt, clayey, sandy, pinkish gray; sand is very fine to fine; some limy areas; pale yellow below 115 ft.....	108.0	120.0
Sand, slightly gravelly; fine sand to fine gravel; in part lime cemented.....	120.0	129.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, silty, coarse texture, light brown; some limy areas; sandy, moderately calcareous below 135 ft; sand is very fine to fine.....	129.0	140.0
Clay, silty, sandy, pinkish gray; sand is very fine to fine.....	140.0	145.0
Silt, very clayey, sandy, light brown; sand is very fine to fine.....	145.0	150.0
Clay, silty, coarse texture, sandy, light brown with pinkish tint; sand is very fine to fine.....	150.0	161.0

**Test Hole #28-B-65 (E-logs)  
(12N-50W-24bbcb)  
Cheyenne County**

Location: NW SW NW NW sec. 24, T. 12 N., R. 50 W., 715 ft south and 184 ft east of northwest corner.

Ground elevation: 4,347 ft. (t). (Sidney Muni. Airport 7.5 min. quadrangle).

Depth to water: 130.8 ft. (9-2-65).

	Depth, in feet	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Silt, sandy, dark grayish brown.....	0.0	3.0
Silt, sandy, dark grayish brown to very pale brown, calcareous cement toward base.....	3.0	7.0
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Sand and gravel, granitic.....	7.0	49.0
Sand, silty to silt, sandy, pale brown.....	49.0	62.0
Sand and gravel, granitic, calcareous cement at base.....	62.0	87.0
Silt, sandy, brown to light reddish brown.....	87.0	110.0
Sand and gravel, granitic.....	110.0	124.0
Sand, silty, pink to brown, discontinuous calcareous cement.....	124.0	134.0
Sand and gravel, granitic.....	134.0	137.0
Silt, sandy to clayey, brown to pink, discontinuous calcareous cement.....	137.0	154.0
Sand and gravel, granitic.....	154.0	165.0
Silt, sandy, pale brown, discontinuous calcareous cement.....	165.0	186.0
Sandstone, silty, white to brown, calcareous cement.	186.0	198.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, light brown to reddish yellow, clay cement, concretions with calcareous cement in some horizons.....	198.0	260.5

**Test Hole #75-42 (No e-logs)  
(12N-52W-5aaaa)  
Cheyenne County**

Location: NE NE NE NE sec. 5, T. 12 N., R. 52 W., 50 ft south and about 100 ft west of northeast corner.  
 Ground elevation: 4,394 ft. (i). (Potter SE 7.5 min. quadrangle).  
 Depth to water: 38.6 ft. (7-28-42).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Silt, clayey, and sand, dark brown gray.....	0.0	5.0
Silt, clayey, and sand and gravel, light brown gray.....	5.0	20.0
Gravel, pink; texture grades from fine to medium....	20.0	21.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, very silty, light pinkish gray.....	21.0	41.0
Clay, pink.....	41.0	51.0
Clay, very silty, light pinkish gray; very hard in lower 3 ft.....	51.0	69.0

**Test Hole #74-42 (No e-logs)  
(12N-52W-5daad)  
Cheyenne County**

Location: SE NE NE SE sec. 5, T. 12 N., R. 52 W., approximately 2,300 ft north and 15 ft west of southeast corner.

Ground elevation: 4,397 ft. (i). (Potter SE 7.5 min. quadrangle)

Depth to water: 52.6 ft. (7-28-52).

	Depth, in feet	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Clay, silty, dark brownish gray; contains some gravel.....	0.0	6.0
Clay, silty to silt, clayey, light brownish gray....	6.0	19.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, silty light pink-gray.....	19.0	39.0
Clay, very silty to sandstone, clayey, light gray to pink.....	39.0	47.0
Clay, pink.....	47.0	54.0
Clay, very silty, light pinkish gray.....	54.0	79.0

**Test Hole #24-A-65 (E-logs)  
(12N-52W-24bbbb)  
Cheyenne County**

Location: NW NW NW NW sec. 24, T. 12 N., R. 52 W., 174 ft south and 12 ft east of northwest corner.

Ground elevation: 4,504 ft. (t). (Easterly Airport 7.5 min. quadrangle)

Depth to water: 37.2 ft. (9-11-65).

	Depth, in feet	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Road fill, brown.....	0.0	1.5
Silt, clayey to sandy, brown to pale brown, calcareous toward base.....	1.5	4.0
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Sand and gravel, granitic.....	4.0	18.5
Caliche, sandy, light brownish gray.....	18.5	19.4
Sand and sandstone; silty, yellowish brown, calcareous at top.....	19.4	22.4
Sandstone, light brownish gray, calcareous cement...	22.4	32.4
Silt and siltstone, sandy in upper part, clayey, very pale brown to yellowish brown, calcareous cement, calcareous concretions.....	32.4	48.4
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, pale brown to yellowish brown, clay cement, some horizons with calcareous concretions.	48.4	150.5

**Test Hole #27-42 (No e-logs)  
 (13N-46W-5aaad)  
 Cheyenne County**

Location: NW NE NE NE sec. 5, T. 13 N., R. 46 W., 550 ft south of northeast corner.

Ground elevation: 3,808 ft. (i). (Mount Vernon 7.5 min. quadrangle).

Depth to water: Unknown.

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Clay, silty, dark brown gray.....	0.0	8.0
Gravel, pink; texture grades from fine to medium; contains coarse sand.....	8.0	24.0
Gravel, pink; texture grades from medium to coarse..	24.0	30.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, silty, indurated, light pinkish gray.....	30.0	70.0
Clay, very silty, light pinkish gray.....	70.0	80.0
Clay, silty, indurated, light pinkish gray.....	80.0	95.0
Clay, indurated, pink.....	95.0	99.0

**Test Hole #14-A-65 (E-logs)**  
**(13N-47W-18cccc)**  
**Cheyenne County**

Location: SW SW SW SW sec. 18, T. 13 N., R. 47 W., 6 ft north and 260 ft east of southwest corner.

Ground elevation: 4,137 ft. (t). (Sidney SE 7.5 min. quadrangle).

Depth to water: 170.0 ft?. (8-6-65).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Silt, clayey to sandy, with some gravel, dark grayish brown.....	0.0	4.5
Silt, sandy, pale brown, calcareous.....	4.5	5.6
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Sand and gravel, granitic, manganese oxide stains grains.....	5.6	25.0
Silt, yellowish brown, calcareous, sandy toward base.....	25.0	32.0
Silt, pink, calcareous, rhizoliths.....	32.0	35.0
Sand and gravel, granitic, manganese and iron oxides stains grains.....	35.0	42.0
Sand, silty to clayey, pale brown.....	42.0	70.0
Sand and gravel, granitic, silty and clayey, interbeds at 75, 80, 95, 108 ft.....	70.0	137.0
Silt, clayey to sandy, brown.....	137.0	152.0
Sand, light yellowish brown, calcareous cement.....	152.0	153.0
Silt, clayey, pale brown to yellow, calcareous.....	153.0	162.0
Sand and gravel, granitic.....	162.0	164.5
Silt, clayey to sandy, yellowish brown, calcareous..	164.5	172.0
Sand and gravel, granitic, iron and manganese oxide stains grains.....	172.0	178.0
Silt, clayey to sandy, yellowish brown, calcareous cement.....	178.0	182.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, clay cement, sandy intervals, discontinuous calcareous concretions.....	182.0	250.5

**Test Hole #9-WB-67 (E-logs)**  
**(13N-47W-25ddda)**  
**Cheyenne County**

Location: NE SE SE SE sec. 25, T. 13 N., R. 47 W., 614 ft north and 14 ft west of southeast corner.

Ground elevation: 4,095 ft. (t). (Lodgepole SW 7.5 min. quadrangle).

Depth to water: 195.0 ft. (11-8-67).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Silt, slightly clayey, dark brownish gray.....	0.0	5.0
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Sandstone, very fine to fine grained, slightly consolidated; some clay lenses; some fine gravel below 10 ft.....	5.0	20.0
Silt, clayey, sandy, brown; sand is very fine to coarse.....	20.0	21.0
Sandstone, very fine to very coarse grained, in part silty, moderately calcareous, moderately consolidated; some limy layers.....	21.0	30.0
Sand, gravelly; fine sand to medium gravel.....	30.0	35.0
Gravel, sandy; medium gravel to fine sand; some coarse to very coarse gravel; coarser texture below 40 ft.....	35.0	45.0
Clay, silty, sandy, light brown; sand is very fine to fine; pink below 50 ft.....	45.0	55.0
Sand and gravel; fine sand to medium gravel; some coarse to very coarse gravel below 60 ft.....	55.0	75.0
Silt, clayey, sandy, brown; sand is very fine to fine, some medium.....	75.0	80.0
Sand, gravelly; fine sand to medium gravel; some clay lenses.....	80.0	85.0
Silt, very sandy, clayey, brown; sand is very fine to medium.....	85.0	90.0
Sand, slightly gravelly, silty; very fine sand to fine gravel; some limy fragments.....	90.0	95.0
Silt, clayey, sandy, brown; sand is very fine to fine; limy layer from 95 to 95.6 ft.....	95.0	100.0
Sand, gravelly; fine sand to fine gravel; some medium to coarse gravel; some clay layers.....	100.0	105.0
Gravel, sandy; fine gravel to fine sand; some medium to very coarse gravel.....	105.0	130.0
Gravel, sandy; medium gravel to fine sand; some coarse gravel; some clay lenses below 150 ft.....	130.0	160.0

**Test Hole #14-A-65 (E-logs)**  
**(13N-47W-18cccc)**  
**Cheyenne County**

Location: SW SW SW SW sec. 18, T. 13 N., R. 47 W., 6 ft north and 260 ft east of southwest corner.

Ground elevation: 4,137 ft. (t). (Sidney SE 7.5 min. quadrangle).

Depth to water: 170.0 ft?. (8-6-65).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Silt, clayey to sandy, with some gravel, dark grayish brown.....	0.0	4.5
Silt, sandy, pale brown, calcareous.....	4.5	5.6
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Sand and gravel, granitic, manganese oxide stains grains.....	5.6	25.0
Silt, yellowish brown, calcareous, sandy toward base.....	25.0	32.0
Silt, pink, calcareous, rhizoliths.....	32.0	35.0
Sand and gravel, granitic, manganese and iron oxides stains grains.....	35.0	42.0
Sand, silty to clayey, pale brown.....	42.0	70.0
Sand and gravel, granitic, silty and clayey, interbeds at 75, 80, 95, 108 ft.....	70.0	137.0
Silt, clayey to sandy, brown.....	137.0	152.0
Sand, light yellowish brown, calcareous cement.....	152.0	153.0
Silt, clayey, pale brown to yellow, calcareous.....	153.0	162.0
Sand and gravel, granitic.....	162.0	164.5
Silt, clayey to sandy, yellowish brown, calcareous..	164.5	172.0
Sand and gravel, granitic, iron and manganese oxide stains grains.....	172.0	178.0
Silt, clayey to sandy, yellowish brown, calcareous cement.....	178.0	182.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, clay cement, sandy intervals, discontinuous calcareous concretions.....	182.0	250.5

**Test Hole #20-B-65 (E-logs)**  
**(13N-48W-1aadd)**  
**Cheyenne County**

Location: SE SE NE NE sec. 1, T. 13 N., R. 48 W., 1,120 ft south and  
 9.6 ft west of northeast corner.  
 Ground elevation: 4,035 ft. (t). (Sunol 7.5 min. quadrangle).  
 Depth to water: 89.3 ft. (8-6-65).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Road fill.....	0.0	2.0
Silt, clayey to sandy, light gray, calcareous.....	2.0	3.0
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Sand and gravel, granitic, iron and manganese oxides stain grain surfaces at some horizons.....	3.0	55.5
Silt, sandy, dark yellowish brown to brown.....	55.5	70.0
Sand and gravel, granitic, some beds cemented.....	70.0	80.0
Sandstone, silty in places, olive, calcareous cement.....	80.0	81.0
Sand and gravel, granitic, calcareous cement.....	81.0	85.0
Sandstone, gravelly, brown, cemented at base.....	85.0	93.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, some horizons sandy siltstone, light yellowish brown, calcareous concretions.....	93.0	180.5

**Test Hole #19-B-65 (E-logs)  
(13N-48W-36ddcd)  
Cheyenne County**

Location: SE SW SE SE sec. 36, T. 13 N., R. 48 W., 5.8 ft north and 913.5 ft west of southeast corner.  
 Ground elevation: 4,138 ft. (t). (Sidney SE 7.5 min. quadrangle).  
 Depth to water: 143.3 ft. (8-6-65).

	Depth, in feet	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Road fill.....	0.0	6.5
Silt, sandy to gravelly, brown to pale brown, calcareous.....	6.5	8.8
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Caliche, silty to sandy, pink, calcareous.....	8.8	10.0
Sandstone, very pale brown to yellowish brown, calcareous cement, rhizoliths.....	10.0	24.3
Sand and gravel, granitic, manganese and iron oxides stain some grains, calcareous cement at some horizons.....	24.3	120.0
Silt, clayey, light yellowish brown.....	120.0	126.8
Sand and gravel, granitic.....	126.8	130.0
Silt, clayey to sandy, pale brown to light brown, calcareous cement.....	130.0	143.0
Sand and gravel, granitic.....	143.0	148.5
Silt, clayey to sandy, white, very pale brown to brown.....	148.5	167.0
Sand, gravelly, interbedded silts.....	167.0	194.0
Silty sand and sandy silt, interbedded, light brown, very pale brown to white, calcareous cement.....	194.0	228.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone and interbedded claystone, yellowish brown, reddish brown, light brown, clay cement, calcareous concretions in most horizons.....	228.0	305.0

**Test Hole #L12-87 (No e-logs)  
(13N-49W-6abaa)  
Cheyenne County**

Location: NE NE NW NE sec. 6, T. 13 N., R. 49 W., 49 ft south and 306 ft east of 13<sup>th</sup> and Toledo intersection.

Ground elevation: 4,090 ft. (t). (Sidney 7.5 min. quadrangle).

Depth to water: Unknown.

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, black, sandy.....	0.0	4.3
Sand, brown, silty.....	4.3	8.0
Sand and gravel, granitic.....	8.0	28.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, clay cement.....	28.0	50.5
Siltstone, red to brown, clay cement.....	50.5	55.5
Siltstone, red, sandy.....	55.5	58.0

**Test Hole #L11-87 (No e-logs)  
(13N-49W-6abab1)  
Cheyenne County**

Location: NW NE NW NE sec. 6, T. 13 N., R. 49 W., 48 ft south and  
178 ft east of 13<sup>th</sup> and Toledo intersection.  
Ground elevation: 4,092 ft. (t). (Sidney 7.5 min. quadrangle).  
Depth to water: Unknown.

	Depth, in feet	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, dark brown, sandy.....	0.0	4.5
Sand, brown, silty.....	4.5	13.0
Sand and gravel, granitic.....	13.0	28.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, clay cement.....	28.0	55.5
Claystone and siltstone, red, clay cement.....	55.5	58.0

**Test Hole #L13-87 (No e-logs)  
(13N-49W-6abab2)  
Cheyenne County**

Location: NW NE NW NE sec. 6, T. 13 N., R. 49 W., 48 ft south and 408 ft east of 13<sup>th</sup> and Toledo intersection.

Ground elevation: 4,088 ft. (t). (Sidney 7.5 min. quadrangle).

Depth to water: Unknown.

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, black, sandy.....	0.0	3.0
Sand, brown, silty.....	3.0	8.0
Sand and gravel, granitic.....	8.0	28.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, clay cement.....	28.0	50.5
Siltstone, red.....	50.5	53.0

**Test Hole #22-A-65 (E-logs)**  
**(13N-49W-6bbbb)**  
**Cheyenne County**

Location: NW NW NW NW sec. 6, T. 13 N., R. 49 W., 289 ft south and 299 ft east of northwest corner, south side of road.  
 Ground elevation: 4,101 ft. (t). (Sidney 7.5 min. quadrangle).  
 Depth to water: 23.23 ft. (9-2-65).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Road fill, dark brown, sandy silt.....	0.0	4.0
Sand and gravel, granitic.....	4.0	5.0
Silt, sandy, dark brown to dark grayish brown, calcareous.....	5.0	10.0
Silt, yellowish brown to dark brown.....	10.0	24.5
Sand and gravel, granitic.....	24.5	27.5
Silt, grayish brown to yellowish brown, calcareous toward base.....	27.5	30.0
Sand and gravel, granitic.....	30.0	33.5
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, light yellowish brown to pale brown, some strata with calcareous concretions, clay cement...	33.5	121.0
Claystone, brown to red.....	121.0	127.0
Siltstone, pale brown, calcareous concretions, clay cement.....	127.0	140.5

**Test Hole #1120-10-87 (E logs)**  
**(13N-50W-1abaa)**  
**Cheyenne County**

Location: NE NE NW NE sec. 1, T. 13 N., R. 50 W., 40 ft south and  
 1,587 ft east of northeast corner.  
 Ground elevation: 4,110 ft. (t). (Sidney 7.5 min. quadrangle).  
 Depth to water: 29.2 ft. (1987).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, brown to black, sandy and silty.....	0.0	4.0
Sand and gravel, granitic, interbedded mud layers from 20 to 40 ft.....	4.0	40.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, clay cement.....	40.0	100.0

**Test Hole #1120-9-87 (E-log)**  
**(13N-50W-1baab)**  
**Cheyenne County**

Location: NW NE NE NW sec. 1, T. 13 N., R. 50 W., 20 ft south and approximately 2,300 ft east of northwest corner.  
 Ground elevation: 4,112 ft. (t). (Brownson 7.5 min. quadrangle)  
 Depth to water: 24.2 ft. (1987).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, brown, sandy and silty.....	0.0	5.0
Sand, brown, silty.....	5.0	14.0
Sand and gravel, granitic, with local reworked sandstone, caliche and siltstone, some siltstone has MnO <sub>2</sub> stain on surface.....	14.0	30.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, clay cement.....	30.0	100.0

**Test Hole #1120-8-87 (E-logs)**  
**(13N-50W-1bbaa)**  
**Cheyenne County**

Location: NE NE NW NW sec. 1, T. 13 N., R. 50 W., 8 ft south and 1,265 ft east of northwest corner.

Ground elevation: 4,115 ft. (t). (Brownson 7.5 min. quadrangle).

Depth to water: 27.5 ft. (1987).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, brown, sandy and silty.....	0.0	5.0
Sand, brown, silty.....	5.0	11.0
Sand and gravel, granitic, interbedded gray clay layers from 25 to 31 ft.....	11.0	31.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, clay cement.....	31.0	100.0

**Test Hole #C7-87 (No e-logs)  
(13N-50W-2aaad1)  
Cheyenne County**

Location: SE NE NE NE sec. 2, T. 13 N., R. 50 W., 409 ft south and 57 ft west of northeast corner.  
 Ground elevation: 4,114 ft. (t). (Brownson 7.5 min. quadrangle).  
 Depth to water: Unknown.

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, dark brown, silty sand.....	0.0	2.5
Silt, brown, sandy.....	2.5	6.5
Sand, brown, silty.....	6.5	8.5
Sand and gravel, granitic.....	8.5	28.5
Sand, brown, silty, with some gravel.....	28.5	31.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, clay cement.....	31.0	48.5

**Test Hole #C24-87 (No e-logs)  
(13N-50W-2aaad2)  
Cheyenne County**

Location: SE NE NE NE sec. 2, T. 13 N., R. 50 W., 415 ft south and 60 ft west of northeast corner near TH#C7-87.  
 Ground elevation: 4,114 ft. (t). (Brownson 7.5 min. quadrangle).  
 Depth to water: Unknown.

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, black, silty sand.....	0.0	3.0
Silt, olive brown, sandy.....	3.0	3.5
Silt, brown, sandy clay.....	3.5	5.0
Silt, olive brown, sandy.....	5.0	9.5
Sand and gravel, granitic, sandier at top.....	9.5	28.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, clay cement.....	28.0	38.5

**Test Hole #C5-87 (No e-logs)  
(13N-50W-2aaba1)  
Cheyenne County**

Location: NE NW NE NE sec. 2, T. 13 N., R. 50 W., 127 ft south and 878 ft west of northeast corner.

Ground elevation: 4,120 ft. (t). (Brownson 7.5 min. quadrangle).

Depth to water: Unknown.

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, black, silt and sand.....	0.0	2.3
Sand, brown to light brown, silty.....	2.3	8.5
Sand, light brown, silty.....	8.5	9.8
Silt, light brown, clayey.....	9.8	11.0
Sand, light brown, silty.....	11.0	14.0
Sand, brown.....	14.0	23.5
Sand and gravel, granitic, siltstone clasts.....	23.5	28.5
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, clay cement.....	28.5	58.5

**Test Hole #C23-87 (No e-logs)  
(13N-50W-2aaba2)  
Cheyenne County**

Location: NE NW NE NE sec. 2, T. 13 N., R. 50 W., 137 ft south and  
878 ft west of northeast corner.  
Ground elevation: 4,120 ft. (t). (Brownson 7.5 min. quadrangle).  
Depth to water: Unknown.

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, black, silty sand.....	0.0	2.3
Silt, black, sandy.....	2.3	3.5
Sand, brown, silty.....	3.5	11.0
Silt, olive brown, sandy.....	11.0	12.0
Silt, brown, sandy clay.....	12.0	13.5
Sand and gravel, granitic.....	13.5	28.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, clay cement.....	28.0	38.5

**Test Hole #1120-6-87 (E-logs)**  
**(13N-50W-2aabb)**  
**Cheyenne County**

Location: NW NW NE NE sec. 2, T. 13 N., R. 50 W., 24 ft south and 1,278 ft west of northeast corner.

Ground elevation: 4,122 ft. (t). (Brownson 7.5 min. quadrangle)

Depth to water: 31.9 ft. (1987).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, brown, silty.....	0.0	5.0
Sandy, brown, silty.....	5.0	13.0
Sand and gravel, granitic, with locally derived sandstone and siltstone clasts below 25 ft.....	13.0	32.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, clay cement.....	32.0	100.0

**Test Hole #C6-87 (No e-logs)  
(13N-50W-2aada1)  
Cheyenne County**

Location: NE SE NE NE sec. 2, T. 13 N., R. 50 W., 737 ft south and 56 ft west of northeast corner.

Ground elevation: 4,115 ft. (t). (Brownson 7.5 min. quadrangle).

Depth to water: Unknown.

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, dark brown to black, silty and sandy.....	0.0	3.5
Sand, brown to dark brown, silty.....	3.5	17.3
Sand and gravel, granitic.....	17.3	27.0
Silt, brown, sandy.....	27.0	28.5
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, clay cement.....	28.5	48.5

**Test Hole #C25-87 (No e-logs)  
(13N-50W-2aada2)  
Cheyenne County**

Location: NE SE NE NE sec. 2, T. 13 N., R. 50 W., 742 ft south and 55 ft west of northeast corner, near TH#C6-87.  
Ground elevation: 4,115 ft. (t). (Brownson 7.5 min. quadrangle).  
Depth to water: Unknown.

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, black, silty sand.....	0.0	3.0
Sand, brown, silty.....	3.0	5.5
Silt, gray, clayey.....	5.5	6.0
Silt, black, sandy.....	6.0	6.3
Sand, olive brown, silty.....	6.3	8.5
Sand, brown, silty to clayey.....	8.5	18.5
Sand and gravel, granitic.....	18.5	26.5
Silt, brown, clayey.....	26.5	26.8
Sand and gravel, granitic.....	26.8	28.5
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, clay cement.....	28.5	38.5

**Test Hole #1120-5-87 (E-logs)  
 (13N-50W-2abbb)  
 Cheyenne County**

Location: NW NW NW NE sec. 2, T. 13 N., R. 50 W., 24 ft south of road center and 33 ft east of irrigation well just east of east half section line.

Ground elevation: 4,125 ft. (t). (Brownson 7.5 min. quadrangle).

Depth to water: 35.5 ft. (1987).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, brown, silty and sandy.....	0.0	3.0
Sand, brown, silty, with some gravel at 13 to 16 ft.	3.0	16.0
Sand and gravel, granitic.....	16.0	28.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, clay cement.....	28.0	98.0

**Test Hole #1120-4-87 (E-logs)  
(13N-50W-2babb)  
Cheyenne County**

Location: NW NW NE NW sec. 2, T. 13 N., R. 50 W., 25 ft south and  
1,515 ft east of northwest corner.

Ground elevation: 4,124 ft. (t). (Brownson 7.5 min. quadrangle).

Depth to water: 36.2 ft. (1987).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, dark brown, silty and sandy.....	0.0	4.0
Sand, brown, silty.....	4.0	19.0
Sand and gravel, granitic, with locally derived sandstone, caliche, and siltstone clasts.....	19.0	31.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, clay cement.....	31.0	99.0

**Test Hole #1120-3-87 (E-logs)**  
**(13N-50W-3aaaa)**  
**Cheyenne County**

Location: NE NE NE NE sec. 3, T. 13 N., R. 50 W., 31 ft south and 133 ft west of northeast corner.  
 Ground elevation: 4,131 ft. (t). (Brownson 7.5 min. quadrangle).  
 Depth to water: 40.6 ft. (1987).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, dark brown to black, silty and sandy.....	0.0	5.0
Silt, dark brown to brown, clayey.....	5.0	18.0
Sand and gravel, granitic, includes local sandstone, caliche, and siltstone clasts.....	18.0	26.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, sandy, clay cement.....	26.0	100.0

**Test Hole #1120-2-87 (E-logs)**  
**(13N-50W-3abba)**  
**Cheyenne County**

Location: NE NW NW NE sec. 3, T. 13 N., R. 50 W., 25 ft south and 865 ft east of BM 4,137 ft.  
 Ground elevation: 4,133 ft. (t). (Brownson 7.5 min. quadrangle).  
 Depth to water: 43.8 ft. (1987).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, black, silty, sandy.....	0.0	5.0
Sand, silty, light brown, includes some gravel below 10 ft.....	5.0	15.0
Sand and gravel, granitic, includes sandstone and caliche fragments.....	15.0	20.0
Sand and gravel, granitic, includes local siltstone clasts.....	20.0	27.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, sandy, clay cement.....	27.0	100.0

**Test Hole #1120-1-87 (E-logs In Webber. 1990)  
 (13N-50W-3babb)  
 Cheyenne County**

Location: NW NW NE NW sec. 3, T. 13 N., R. 50 W., 27 ft south and  
 3,802 ft west of northeast corner.

Ground elevation: 4,139 ft. (t). (Brownson 7.5 min. quadrangle).

Depth to water: 49.5 ft. (1987).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, black, silty and sandy.....	0.0	5.0
Sand and gravel, granitic, caliche fragments.....	5.0	10.0
Sand and gravel, granitic, silstone fragments.....	10.0	12.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, some interbedded claystone toward bottom of hole.....	12.0	100.0

**Test Hole #12-42 (No e-logs)  
(13N-50W-4adaa)  
Cheyenne County**

Location: NE NE SE NE sec. 4, T. 13 N., R. 50 W., approximately 1,600 ft south of northeast corner.

Ground elevation: 4,143 ft. (i). (Brownson 7.5 min. quadrangle).

Depth to water: 30.2 ft. (6-13-42).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Sand, silty, brown.....	0.0	2.0
Sand, pink; texture grades from fine to coarse, contains some fine to medium gravel; contains some reworked sandstone and clay granules.....	2.0	9.0
Gravel, pink; texture grades from fine to coarse; contains much reworked sandstone and clay granules.....	9.0	19.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, silty, light pinkish buff.....	19.0	69.0

**Test Hole #60-42 (No e-logs)  
(13N-50W-7cccc)  
Cheyenne County**

Location: SW SW SW SW sec. 7, T. 13 N., R. 50 W., 100 ft north and  
7 ft east of southwest corner.

Ground elevation: 4,232 ft. (i). (Lorenzo 7.5 min. quadrangle).

Depth to water: Unknown; test hole caved at 38.8 ft (7-28-42).

Depth, in feet

From            To

**Quaternary System, undifferentiated:**

Clay, silty, dark brownish gray; contains sand.....	0.0	5.0
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**Tertiary System - Oligocene Series - White River Group:**

**Brule Formation:**

Clay, silty, light brownish gray to pink.....	5.0	16.0
Clay, silty, light pinkish gray.....	16.0	46.0
Clay, very silty, light pinkish gray.....	46.0	56.0
Clay, very silty, pink.....	56.0	69.0

**Test Hole #27-B-65 (E-logs)  
(13N-50W-24aaaa)  
Cheyenne County**

Location: NE NE NE NE sec. 24, T. 13 N., R. 50 W., 117 ft south and 7.5 ft west of northeast corner.  
 Ground elevation: 4,305 ft. (t). (Sidney Muni. Airport 7.5 min. quadrangle).  
 Depth to water: 74.7 ft. (9-2-65).

	Depth, in feet	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, silt, sandy, dark brown.....	0.0	1.0
Silt, sandy to clayey, very pale brown to pinkish white, calcareous cement.....	1.0	3.0
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Sandstone and caliche, interbedded, pinkish white to brown, calcareous cement.....	3.0	7.2
Sand and gravel, granitic.....	7.2	79.0
Silt, reddish brown to light brown.....	79.0	91.5
Sand and gravel, granitic.....	91.5	97.0
Silt, clayey, light reddish brown.....	97.0	104.0
Silt, sandy, brown, calcareous cement.....	104.0	106.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, pale brown to light brown, clay cement, concretions with calcareous cement in some horizons.....	106.0	180.5

**Test Hole #23-A-65 (E-logs)**  
**(13N-50W-36dddd)**  
**Cheyenne County**

Location: SE SE SE SE sec. 36, T. 13 N., R. 50 W., 245 ft north and 9 ft west of southeast corner.

Ground elevation: 4,309 ft. (t). (Sidney Muni. Airport 7.5 min. quadrangle).

Depth to water: 81.9 ft. (9-2-65).

Depth, in feet  
From            To

**Quaternary System, undifferentiated:**

Top soil, dark grayish brown, clayey silt.....	0.0	1.0
Silt, clayey to sandy, dark grayish brown to grayish brown, calcareous toward base.....	1.0	5.8

**Tertiary System - Miocene Series - Ogallala Group:**

**Ash Hollow Formation:**

Sand and gravel, granitic, rhizoliths.....	5.8	10.0
Sand, sandstone, and silt, interbedded, pale brown to yellowish brown, discontinuous calcareous cement, rhizoliths.....	10.0	26.0
Sand and gravel, granitic, sandstone and silt lenses.....	26.0	70.2
Silt, sandy, yellowish brown to pale brown, calcareous.....	70.2	85.0
Silt and siltstone, sandy, pale gray to pink, calcareous.....	85.0	94.0

**Tertiary System - Oligocene Series - White River Group:**

**Brule Formation:**

Siltstone, sandy, light yellowish brown to brown, clay cement, some horizons with calcareous concretions.....	94.0	160.5
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**Test Hole #57-42 (No e-logs)  
(13N-51W-1adaa)  
Cheyenne County**

Location: NE NE SE NE sec. 1, T. 13 N., R. 51 W., approximately 1,600 ft south and 9 ft west of northeast corner.

Ground elevation: 4,242 ft. (i). (Brownson 7.5 min. quadrangle).

Depth to water: Unknown, test hole caved at 37.9 ft. (7-28-42).

	Depth, in feet	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Clay, silty, and sand, dark brown-gray.....	0.0	5.0
Silt, clayey, light brown-gray.....	5.0	11.0
Gravel, light-gray; texture grades from fine to coarse; contains sandstone pebbles.....	11.0	35.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, silty, light pinkish gray.....	35.0	65.0
Clay, very silty, light pinkish gray.....	65.0	76.0
Clay, indurated, pink.....	76.0	119.0

**Test Hole #58-42 (No e-logs)  
(13N-51W-1daad)  
Cheyenne County**

Location: SE NE NE SE sec. 1, T. 13 N., R. 51 W., approximately 2,100 ft north and 10 ft west of southeast corner.  
 Ground elevation: 4,227 ft. (i). (Brownson 7.5 min. quadrangle).  
 Depth to water: Unknown, test hole caved at 49.1 ft. (7-28-42).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Sand and silt, clayey, dark brownish gray.....	0.0	8.0
Gravel, light gray and pink; texture grades from fine to coarse; contains sandstone pebbles.....	8.0	41.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, silty, light pinkish gray.....	41.0	63.0
Clay, very silty, light gray to pink.....	63.0	78.0
Clay, in part indurated, pink; contains silty clay..	78.0	99.0

**Test Hole #59-42 (No e-logs)**  
**(13N-51W-1ddddd)**  
**Cheyenne County**

Location: SE SE SE SE sec. 1, T. 13 N., R. 51 W., approximately 33 ft north and 50 ft west of southeast corner.

Ground elevation: 4,214 ft. (i). (Lorenzo 7.5 min. quadrangle).

Depth to water: 38.0 ft. (7-22-42).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Silt, clayey, and sand, brownish gray.....	0.0	8.0
Gravel, light gray; texture grades from fine to coarse; contains many pebbles.....	8.0	25.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, silty, light pinkish gray.....	25.0	60.0
Clay, in part silty, pink.....	60.0	79.0

**Test Hole #77-42 (No e-logs)  
(13N-51W-3baaa)  
Cheyenne County**

Location: NE NE NE NW sec. 3, T. 13 N., R. 51 W., approximately 2,600 ft east of northwest corner.  
 Ground elevation: 4,325 ft. (t). (Point of Rocks 7.5 min. quadrangle).  
 Depth to water: 30.1 ft. (7-29-42).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Silt, clayey, and sand, dark brownish gray.....	0.0	2.0
Gravel; texture grades from fine to coarse; contains sandstone pebbles.....	2.0	28.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, very silty, light pinkish gray.....	28.0	69.0
Siltstone, clayey, light pinkish gray.....	69.0	79.0
Clay, silty, light pinkish gray.....	79.0	89.0

**Test Hole #64-42 (No e-logs)  
(13N-51W-4bcbc)  
Cheyenne County**

Location: SW NW SW NW sec. 4, T. 13 N., R. 51 W., approximately 1,850 ft south of northwest corner.  
 Ground elevation: 4,315 ft. (i). (Point of Rocks 7.5 min. quadrangle).  
 Depth to water: Unknown, test hole caved at 41.5 ft. (7-28-42).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Silt, clayey, dark brownish gray; contains gravel...	0.0	2.0
Silt, clayey, light brownish gray.....	2.0	7.0
Gravel, light gray and pink; texture grades from fine to very coarse.....	7.0	19.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, silty, light gray to pink.....	19.0	49.0
Clay, very silty, light gray to pink.....	49.0	69.0

**Test Hole #63-42 (No e-logs)  
(13N-51W-4cccc)  
Cheyenne County**

Location: SW SW SW SW sec. 4, T. 13 N., R. 51 W., approximately 15 ft north and 55 ft east of southwest corner.

Ground elevation: 4,278 ft. (t). (Easterly Airport 7.5 min. quadr angle ).

Depth to water: Unknown, test hole caved at 33.4 ft. (7-28-42).

Depth, in feet  
From To

**Quaternary System, undifferentiated:**

Clay, silty, dark brownish gray.....	0.0	1.0
Silt, clayey, light brownish gray.....	1.0	4.0
Gravel, light gray and pink; texture grades from fine to coarse; contains pebbles.....	4.0	13.0

**Tertiary System - Oligocene Series - White River Group:**

**Brule Formation:**

Clay, silty, light pinkish gray.....	13.0	30.0
Clay, very silty, light pinkish gray and pink.....	30.0	69.0

**Test Hole #29-B-65 (E-logs)  
(13N-51W-7cbbb)  
Cheyenne County**

Location: NW NW NW SW sec. 7, T. 13 N., R. 51 W., 2,380 ft north and 169 ft east of southwest corner.  
Ground elevation: 4,490 ft. (t). (Easterly Airport 7.5 min. quadrangle).  
Depth to water: 100.6 ft. (9-11-65).

	<u>Depth, in feet</u>	
	From	To
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Sandstone, light gray to brown to pale olive, discontinuous calcareous cement.....	0.0	8.0
Silt, sandy, light gray to pale olive, calcareous cement.....	8.0	10.0
Sandstone, silty, light gray to pale olive, calcareous cement.....	10.0	12.5
Silt to siltstone, white to pale brown, calcareous cement.....	12.5	18.8
Siltstone, claystone, sandstone, interbedded, white to brown, calcareous cement.....	18.8	25.0
Sandstone and caliche, interbedded, yellowish brown.	25.0	29.0
Conglomerate and sandstone, pale brown, calcareous cement.....	29.0	34.0
Sand and sandstone, silty, very pale brown to brown, discontinuous calcareous cement, rhizoliths near base.....	34.0	72.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, light yellowish brown to light reddish brown to light brown, clay cement, concretions with calcareous cement in some horizons.....	72.0	261.0

**Test Hole #65-42 (No e-logs)  
(13N-51W-8daad)  
Cheyenne County**

Location: SE NE NE SE sec. 8, T. 13 N., R. 51 W., approximately 2,100 ft north of southwest corner.

Ground elevation: 4,278 ft. (i). (Easterly Airport 7.5 min. quadrangle).

Depth to water: Unknown, test hole caved at 42.2 ft. (7-28-42).

Depth, in feet  
From      To

**Quaternary System, undifferentiated:**

Silt, clayey, dark brown-gray.....	0.0	1.0
Silt, clayey, light brown-gray.....	1.0	10.0
Gravel, light gray; texture grades from fine to coarse; contains sandstone and clay pebbles.....	10.0	14.0

**Tertiary System - Oligocene Series - White River Group:**

**Brule Formation:**

Clay, very silty, light pinkish gray; less silty and pink below 34 ft.....	14.0	69.0
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**Test Hole #62-42 (No e-logs)  
 (13N-51W-10addd)  
 Cheyenne County**

Location: SE SE SE NE sec. 10, T. 13 N., R. 51 W., approximately 2,600 ft south of northeast corner.

Ground elevation: 4,249 ft. (i). (Easterly Airport 7.5 min. quadrangle).

Depth to water: Unknown; test hole caved at 37.3 ft. (7-28-42).

Depth, in feet  
 From To

**Quaternary System, undifferentiated:**

Clay, silty, dark brown-gray; contains some sand and gravel.....	0.0	3.0
Silt, clayey, light brown-gray.....	3.0	6.0
Gravel, light-gray and pink; texture grades from fine to coarse; contains sandstone pebbles in upper part and clay pebbles in lower part.....	6.0	19.0

**Tertiary System - Oligocene Series - White River Group:**

**Brule Formation:**

Clay, moderately to very silty, light-gray to pink; less silty and pink below 29 ft.....	19.0	69.0
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**Test Hole #9-SDLC-84 (E-logs)**  
**(13N-51W-11aabc)**  
**Cheyenne County**

Location: NW SW NW NE NE sec. 11, T. 13 N., R. 51 W., 587 ft south  
 and 1,347 ft east of northwest corner of northeast quarter.  
 Ground elevation: 4,241.5 ft. (i). (Easterly Airport 7.5 min.  
 quadrangle).  
 Depth to water: 45.87 ft. (8-11-84).

Depth, in feet  
 From            To

**Quaternary System, undifferentiated:**

Top soil, dark brown, silty sand with some gravel...	0.0	1.5
Silt, light brown, sandy with some gravel.....	1.5	4.5
Sand and gravel, granitic, with Ash Hollow Formation caliche and Brule siltstone clasts.....	4.5	22.0

**Tertiary System - Oligocene Series - White River Group:**

**Brule Formation:**

Siltstone, brown to red, mottled at 37, 42 and 52 ft, pedotubules throughout.....	22.0	54.0
Claystone, red, soft.....	54.0	56.0
Sandstone, brown, very fine.....	56.0	57.0
Siltstone, red to brown, mottled at top, clayey....	57.0	70.0
Claystone, red, soft.....	70.0	71.0
Siltstone, brown, sandier at 78 ft.....	71.0	95.0
Claystone, red.....	95.0	98.0
Siltstone and clayey siltstone, brown to red, several mottled intervals.....	98.0	137.0
Claystone, red, hard.....	137.0	144.0
Siltstone, brown, pedotubules.....	144.0	147.0
Claystone, red, hard.....	147.0	149.0
Siltstone, brown, mottled at top, pedotubules at top.....	149.0	167.0
Sandstone, brown to red, very fine.....	167.0	169.0
Silty claystone to claystone, reddish brown to brown.....	169.0	177.0
Siltstone, red to brown, mottled at top.....	177.0	182.0
Claystone, red.....	182.0	183.0
Siltstone, red to brown, mottled at top.....	183.0	192.0
Claystone, red to white.....	192.0	194.0
Siltstone, red to brown, mottled at top and base....	194.0	225.0
Claystone, red.....	225.0	228.0
Siltstone, red to brown.....	228.0	230.0

**Test Hole #11-SDLC-84 (E-logs)  
(13N-51W-11abada1)  
Cheyenne County**

Location: NE SE NE NW NE sec. 11, T. 13 N., R. 51 W., 412 ft south and 1,279 ft east of northwest corner of northeast quarter.  
 Ground elevation: 4,241.4 ft. (i). (Easterly Airport 7.5 min. quadrangle).  
 Depth to water: 56.3 ft. (8-14-84).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, dark brown, silty sand.....	0.0	1.5
Silt, light gray, sandy with some gravel.....	1.5	3.5
Sand and gravel, granitic, includes Brule siltstone clasts.....	3.5	17.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Sandstone, brown, very fine.....	17.0	25.0
Siltstone, brown, to claystone.....	25.0	40.0
Sandstone, red to brown, interbedded siltstone and claystone.....	40.0	52.5
Claystone, red.....	52.5	57.5
Sandstone, red, very fine, and siltstone.....	57.5	60.0
Siltstone, red, sandy and claystone.....	60.0	65.5
Siltstone, brown, sandy.....	65.5	80.0
Sandstone, brown, sandy, siltstone and claystone....	80.0	90.0
Sandstone, brown, very fine.....	90.0	91.0

**Test Hole #12-SDLC-84 (E-logs)**  
**(13N-51W-11abada2)**  
**Cheyenne County**

Location: NE SE NE NW NE sec. 11, T. 13 N., R. 51 W., 410 ft south and 1,290 ft east of northwest corner of northeast quarter.

Ground elevation: 4,239 ft. (t). (Easterly Airport 7.5 min. quadrangle).

Depth to water: 56.0 ft. (8-21-84).

Depth, in feet  
From            To

**Quaternary System, undifferentiated:**

Top soil, silty sand, sand and gravel..... 0.0        16.0

**Tertiary System - Oligocene Series - White River Group:**

**Brule Formation:**

Siltstones, sandstones, and claystones, brown to red, interbedded..... 16.0        60.0

**Test Hole #13-SDLC-84 (E-logs)**  
**(13N-51W-11abada3)**  
**Cheyenne County**

Location: NE SE NE NW NE sec. 11, T. 13 N., R. 51 W., 412 ft south and 1,290 ft east of northwest corner of northeast quarter.  
 Ground elevation: 4,239 ft. (t). (Easterly Airport 7.5 min. quadrangle).  
 Depth to water: 56.0 ft. (8-22-84).

	Depth, in feet	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, brown, silty sand with some gravel.....	0.0	3.5
Sand and gravel, granitic, with some clasts of Ash Hollow Formation caliche and Brule siltstone.....	3.5	17.7
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, sandy.....	17.7	28.0
Siltstone and claystone, brown to red.....	28.0	34.0
Siltstone, light brown, interbedded sandstone and claystone.....	34.0	40.0
Sandstone, brown, very fine.....	40.0	45.0
Siltstone to claystone, reddish brown to red.....	45.0	55.0
Siltstone, brown to red, with interbedded thin claystones.....	55.0	90.0

**Test Hole #14-SDLC-84 (E-logs)  
(13N-51W-11abada4)  
Cheyenne County**

Location: NE SE NE NW NE sec. 11, T. 13 N., R. 51 W., 393 ft south and 1,282 ft east of northwest corner of northeast quarter.  
 Ground elevation: 4,239 ft. (t). (Easterly Airport 7.5 min. quadrangle).  
 Depth to water: 56.00 ft. (8-23-84).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, dark brown, silty sand.....	0.0	2.5
Silt, brown, sandy.....	2.5	4.0
Sand and gravel, granitic.....	4.0	18.8
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, sandy to very fine.....	18.8	30.0
Claystone, red, and very fine sandstone.....	30.0	35.0
Siltstone, brown, and sandy siltstone, brown.....	35.0	45.0
Sandstone, brown, and siltstone and claystone.....	45.0	50.0
Claystone, red, and sandy siltstone.....	50.0	56.0
Siltstone, brown, sandy.....	56.0	60.0
Claystone, red, and sandy siltstone.....	60.0	65.0
Siltstone, brown, sandy.....	65.0	68.5

**Test Hole #4-SDLC-84 (E-logs)**  
**(13N-51W-11abcac)**  
**Cheyenne County**

Location: SW NE SW NW NE sec. 11, T. 13 N., R. 51 W., 962 ft south and 348 ft east of northwest corner of northeast quarter.

Ground elevation: 4,235.3 ft. (i). (Easterly Airport 7.5 min. quadrangle).

Depth to water: 52.8 ft. (7-30-84).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, brown, silty sand, with some caliche fragments and gravel.....	0.0	2.5
Silt, brown, sandy, caliche fragments, gravel.....	2.5	4.0
Silt, pale gray, sandy, gravel.....	4.0	7.0
Sand and gravel, granitic, caliche fragments.....	7.0	9.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, massive.....	9.0	40.0
Claystone, red, hard.....	40.0	42.0
Siltstone, brown, massive, pedotubules at top.....	42.0	70.0
Sandstone, brown, very fine to fine.....	70.0	73.0
Siltstone, brown, mottled at base, pedotubules present.....	73.0	82.0
Claystone, red, hard.....	82.0	85.0
Siltstone, brown, massive, pedotubules present.....	85.0	99.0
Claystone, red, hard.....	99.0	100.0

**Test Hole #3-SDLC-84 (E-logs)**  
**(13N-51W-11abcba)**  
**Cheyenne County**

Location: NE NW SW NW NE sec. 11, T. 13 N., R. 51 W., 754 ft south and 317 ft east of northwest corner of northeast quarter.  
 Ground elevation: 4,238.3 ft. (i). (Easterly Airport 7.5 min. quadrangle).  
 Depth to water: 55.8 ft. (7-29-84).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, brown, silty sand.....	0.0	1.0
Silt, brown, sandy.....	1.0	5.0
Sand and gravel, granitic, with Ash Hollow Formation caliche clasts.....	5.0	7.5
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, massive.....	7.5	20.0
Siltstone, brown, massive, pedotubules present.....	20.0	38.0
Siltstone, clayey, red to brown, mottled.....	38.0	42.0
Claystone, red, hard at top.....	42.0	44.0
Siltstone, brown, massive, mottled at 4,180 ft.....	44.0	72.0
Sandstone, brown, very fine to fine.....	72.0	73.0
Siltstone, brown.....	73.0	79.0
Sandstone, brown.....	79.0	81.0
Siltstone, brown to red, mottled.....	81.0	84.0
Claystone, red.....	84.0	88.0
Siltstone, brown, pedotubules present.....	88.0	98.0

**Test Hole #1-SDLC-84 (E-logs)**  
**(13N-51W-11abcbcl)**  
**Cheyenne County**

Location: SW NW SW NW NE sec. 11, T. 13 N., R. 51 W., 922 ft south and 153 ft east of northwest corner of northeast quarter.

Ground elevation: 4,236.4 ft. (i). (Easterly Airport 7.5 min. quadrangle).

Depth to water: 54.3 ft. (7-24-84).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Silt, brown, sandy.....	0.0	2.5
Sand and gravel, granitic, silty, with some Ash Hollow Formation caliche clasts at 6.7 to 10 ft...	2.5	10.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, pink.....	10.0	15.0
Claystone to siltstone, brown to pink, fractured in parts, calcareous cement; pedotubules in some strata.....	15.0	70.0
Sandstone, brown, very fine to fine.....	70.0	71.0
Siltstone, brown, with pedotubules.....	71.0	78.0
Claystone, red.....	78.0	79.0
Siltstone, and clayey siltstone, brown to red, pedotubules.....	79.0	101.0
Claystone, red, soft.....	101.0	101.5
Sandstone, siltstone, claystone, brown to red, interbedded.....	101.5	123.0
Siltstone, brown, massive, some pedotubules.....	123.0	141.0
Siltstone, clayey, to claystone, red to brown.....	141.0	146.0
Siltstone, red to brown, massive.....	146.0	148.0
Siltstone to claystone, red to brown, interbedded...	148.0	160.0
Siltstone, red to brown, massive.....	160.0	184.0
Volcanic ash, brown.....	184.0	186.0
Siltstone, clayey, mottled.....	186.0	194.3

**Test Hole #7-SDLC-84 (E-logs)**  
**(13N-51W-11abcbc2)**  
**Cheyenne County**

Location: SW NW SW NW NE sec. 11, T. 13 N., R. 51 W., 987 ft south and 88 ft east of northwest corner of northeast quarter.  
 Ground elevation: 4,238 ft. (t). (Easterly Airport 7.5 min. quadrangle).  
 Depth to water: 55.1 ft. (8-8-84).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, brown, silty sand and sandy silt.....	0.0	±8.0
Sand and gravel, granitic.....	±8.0	10.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, massive.....	10.0	62.0
Siltstone, brown, sandy.....	62.0	70.0
Siltstone, brown, massive.....	70.0	76.0

**Test Hole #8-SDLC-84 (E-logs)**  
**(13N-51W-11abcbc3)**  
**Cheyenne County**

Location: SW NW SW NW NE sec. 11, T. 15 N., R. 51 W., 924 ft south and 125 ft east of northwest corner of northeast quarter.  
 Ground elevation: 4,236.4 ft. (i). (Easterly Airport 7.5 min. quadrangle).  
 Depth to water: 50.0 ft. (8-10-84).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, brown, silty sand.....	0.0	6.0
Sand and gravel, silty, large local clasts.....	6.0	10.2
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, massive.....	10.2	37.0
Claystone, red, hard.....	37.0	40.0
Siltstone, brown, massive.....	40.0	69.0
Sandstone, brown, very fine to fine.....	69.0	70.0
Siltstone, brown, massive.....	70.0	83.0
Sandstone, brown, very fine to fine, some inter-bedded claystones.....	83.0	90.0
Siltstone, brown, mottled at top, with pedotubules below mottling.....	90.0	100.0
Claystone, red, soft to hard.....	100.0	102.0
Siltstone, brown, clayey.....	102.0	106.0

**Test Hole #2-SDLC-84 (E-logs)**  
**(13N-51W-11abcbd)**  
**Cheyenne County**

Location: SE NW SW NW NE sec. 11, T. 13 N., R. 51 W., 903 ft south and 189 ft east of northwest corner of northeast quarter.

Ground elevation: 4,236.2 ft. (i). (Easterly Airport 7.5 min. quadrangle).

Depth to water: 54.7 ft. (7-28-84).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, brown, silty sand.....	0.0	2.8
Sand, brown, silty.....	2.8	6.0
Sand and gravel, granitic.....	6.0	8.3
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, massive.....	8.3	34.0
Siltstone to clayey siltstone, brown to red, interbedded, some beds with pedotubules.....	34.0	45.0
Siltstone, clayey, brown to red.....	45.0	49.0
Siltstone, brown, massive, with minor clayey siltstone.....	49.0	71.0
Sandstone, brown, very fine to fine.....	71.0	72.0
Siltstone to clayey siltstone, red to brown, mottled near base.....	72.0	84.0
Claystone, red, hard at top.....	84.0	86.0
Siltstone, brown, massive, clayier at top.....	86.0	100.0

**Test Hole #6-SDLC-84 (E-logs)**  
**(13N-51W-11abccb)**  
**Cheyenne County**

Location: NW SW SW NW NE sec. 11, T. 13 N., R. 51 W., 997 ft south and 66 ft east of northwest corner of northeast quarter.

Ground elevation: 4,238 ft. (t). (Easterly Airport 7.5 min. quadrangle).

Depth to water: Unknown. (8-7-84).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, brown, silty to silt brown.....	0.0	4.5
Sand and gravel, granitic.....	4.5	8.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, massive.....	8.0	16.0
Claystone, red, hard.....	16.0	17.0
Siltstone, brown, massive.....	17.0	40.0
Claystone, red.....	40.0	41.0
Siltstone, brown, massive.....	41.0	78.0
Sandstone, brown.....	78.0	80.0
Siltstone, brown.....	80.0	85.0

**Test Hole #5-SDLC-84 (E-logs)  
(13N-51W-11acabb)  
Cheyenne County**

Location: NW NW NE SW NE sec. 11, T. 13 N., R. 51 W., 1,387 ft south and 705 ft east of northwest corner of northeast quarter.  
 Ground elevation: 4,234.8 ft. (i). (Easterly Airport 7.5 min. quadrangle).  
 Depth to water: 52.1 ft. (7-31-84).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, dark brown, sandy silt.....	0.0	1.0
Silt, dark grayish brown, sandy to clayey.....	1.0	2.5
Silt, pale brown to very pale brown, sandy to clayey.....	2.5	5.5
Sand and gravel, granitic, caliche clasts.....	5.5	9.2
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown to yellowish brown, mottled at base, massive.....	9.2	40.0
Claystone, red to brown, hard.....	40.0	42.0
Siltstone, brown, massive, some pedotubules.....	42.0	67.0
Sandstone, brown, very fine to fine.....	67.0	68.0
Siltstone to clayey siltstone, brown to red, mottled near top, pedotubules present.....	68.0	78.0
Sandstone, brown, very fine to fine.....	78.0	79.0
Siltstone to clayey siltstone, brown, mottled at base.....	79.0	83.0
Claystone, red, hard at top.....	83.0	85.0
Siltstone, brown, mottled at top, pedotubules throughout.....	85.0	100.0

**Test Hole #11-42 (No e-logs)  
(13N-51W-12addd)  
Cheyenne County**

Location: SE SE SE NE sec. 12, T. 13 N., R. 51 W., approximately 2,600 ft south of northeast corner.  
 Ground elevation: 4,200 ft. (i). (Lorenzo 7.5 min. quadrangle).  
 Depth to water: 19.0 ft. (6-13-42).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Sand and gravel; texture grades from fine sand to coarse gravel, contains many limy pebbles.....	0.0	2.0
Gravel, pink; texture grades from fine to coarse; contains many limy pebbles.....	2.0	6.0
Sand, pinkish gray; texture grades from fine to coarse; contains a trace of gravel and some limy pebbles.....	6.0	17.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, silty, light pinkish buff.....	17.0	56.0
Clay, very silty, light pinkish buff.....	56.0	89.0

**Test Hole #61-42 (No e-logs)  
(13N-51W-13accd)  
Cheyenne County**

Location: SE SW SW NE sec. 13, T. 13 N., R. 51 W., approximately 500 ft east and 75 ft north of center of section.

Ground elevation: 4,245 ft. (i). (Lorenzo 7.5 min. quadrangle).

Depth to water: Unknown, test hole caved at 55.5 ft. (7-28-42).

	Depth, in feet	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Clay, silty, and sand, dark brown-gray.....	0.0	1.0
Clay, silty, reworked, light pinkish gray.....	1.0	19.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, silty, light pinkish gray.....	19.0	28.0
Clay, moderately to very silty, light pinkish gray..	28.0	48.0
Clay, very silty, light pinkish gray, in part pink and indurated.....	48.0	78.0
Clay, pink; harder below 108 ft.....	78.0	119.0

**Test Hole #67-42 (No e-logs)  
(13N-51W-16cbbb)  
Cheyenne County**

Location: NW NW NW SW sec. 16, T. 13 N., R. 51 W., approximately 2,600 ft north and 18 ft east of southwest corner.

Ground elevation: 4,270 ft (i). (Easterly Airport 7.5 min. quadrangle).

Depth to water: 32.2 ft. (7-28-42).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Silt, clayey, dark brown.....	0.0	6.0
Gravel, pink; texture grades from fine to medium; contains sandstone pebbles.....	6.0	8.0
Clay, reworked.....	8.0	19.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, silty, light pinkish gray to pink.....	19.0	49.0
Siltstone, clayey, to clay, very silty, light pinkish gray.....	49.0	69.0
Sandstone, fine grained, light pinkish gray.....	69.0	78.0
Clay, pink.....	78.0	84.0
Sandstone, fine grained, and clay, pink.....	84.0	94.0
Clay, pink; contains layers of pinkish gray silty clay.....	94.0	116.0

**Test Hole #66-42 (No e-logs)  
(13N-51W-17aaaa)  
Cheyenne County**

Location: NE NE NE NE sec. 17, T. 13 N., R. 51 W., approximately 26 ft west of northeast corner.

Ground elevation: 4,268 ft. (i). (Easterly Airport 7.5 min. quadrangle).

Depth to water: 47.3 ft. (7-28-42).

	Depth, in feet	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Silt, clayey, dark brown-gray.....	0.0	3.0
Silt, clayey, light brown-gray.....	3.0	9.0
Gravel, light gray; coarse texture; contains sand- stone pebbles.....	9.0	11.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, very silty, light pinkish gray to pink.....	11.0	39.0
Clay, very silty to silt, clayey, light pinkish gray.....	39.0	59.0
No sample obtained; probably clayey silt.....	59.0	69.0

**Test Hole #71-42 (No e-logs)  
(13N-51W-19cbcb)  
Cheyenne County**

Location: NW SW NW SW sec. 19, T. 13 N., R. 51 W., approximately 1,850 ft north of southwest corner.

Ground elevation: 4,328 ft. (i). (Easterly Airport 7.5 min. quadrangle).

Depth to water: 33.3 ft. (7-28-42).

	Depth, in feet	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Silt, clayey, and sand, dark brown-gray to light brown-gray.....	0.0	6.0
Clay, reworked.....	6.0	9.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, silty, light pinkish gray.....	9.0	36.0
Clay, pink.....	36.0	43.0
Clay, silty, light pinkish gray.....	43.0	62.0
Clay, pink; interbedded with silty clay.....	62.0	69.0

**Test Hole #68-42 (No e-logs)  
 (13N-51W-21bbbc)  
 Cheyenne County**

Location: SW NW NW NW sec. 21, T. 13 N., R. 51 W., approximately 525 ft south and 18 ft east of northwest corner.

Ground elevation: 4,279 ft. (i). (Easterly Airport 7.5 min. quadrangle).

Depth to water: 18.4 ft. (7-28-42).

Depth, in feet  
 From To

**Quaternary System, undifferentiated:**

Clay, silty, to silt, clayey, brown-gray; contains some sand and gravel.....	0.0	10.0
Gravel, pink; texture grades from fine to medium with some coarse.....	10.0	15.0

**Tertiary System - Oligocene Series - White River Group:**

**Brule Formation:**

Clay, silty, in part very silty, light pinkish gray.	15.0	39.0
Clay, pink.....	39.0	49.0
Clay, silty, light pinkish gray.....	49.0	54.0
Clay pink.....	54.0	64.0
Clay, silty, in part very silty, light pinkish gray.	64.0	69.0

**Test Hole #69-42 (No e-logs)  
 (13N-51W-21cbbb)  
 Cheyenne County**

Location: NW NW NW SW sec. 21, T. 13 N., R. 51 W., approximately 2,400 ft north and 18 ft east of southwest corner.

Ground elevation: 4,295 ft. (i). (Easterly Airport 7.5 min. quadrangle).

Depth to water: 38.4 ft. (7-28-42).

Depth, in feet  
 From To

**Quaternary System, undifferentiated:**

Silt, clayey to clay, silty, dark brown-gray; contains some sand.....	0.0	4.0
Clay, reworked.....	4.0	9.0

**Tertiary System - Oligocene Series - White River Group:**

**Brule Formation:**

Clay, silty, light pinkish gray.....	9.0	29.0
Clay, very silty, light pinkish gray.....	29.0	60.0
Sandstone, clayey, fine grained, pinkish gray.....	60.0	67.0
Clay, pink.....	67.0	69.0

**Test Hole #70-42 (No e-logs)  
 (13N-51W-30bbcb)  
 Cheyenne County**

Location: NW SW NW NW sec. 30, T. 13 N., R. 51 W., approximately 800 ft south of northwest corner.  
 Ground elevation: 4,326 ft. (i). (Easterly Airport 7.5 min. quadrangle).  
 Depth to water: 53.7 ft. (7-28-42).

Depth, in feet  
 From To

**Quaternary System, undifferentiated:**

Clay, silty, dark brown-gray; contains much sand and gravel.....	0.0	4.0
Gravel; texture grades from medium to very coarse; contains sandstone pebbles.....	4.0	18.0

**Tertiary System - Oligocene Series - White River Group:**

**Brule Formation:**

Clay, in part silty, pink.....	18.0	29.0
Clay, silty, light pinkish gray.....	29.0	59.0
No sample obtained; probably silty clay.....	59.0	69.0

**Test Hole #72-42 (No e-logs)  
(13N-52W-25dadd)  
Cheyenne County**

Location: SE SE NE SE sec. 25, T. 13 N., R. 52 W., approximately 1,600 ft north of southeast corner.

Ground elevation: 4,332 ft. (t). (Easterly Airport 7.5 min. quadrangle).

Depth to water: Unknown, test hole caved at 41.8 ft. (7-28-42).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Clay, silty, and sand, brownish gray.....	0.0	17.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, moderately to very silty, light pinkish gray..	17.0	38.0
Clay, pink.....	38.0	43.0
Clay, very silty, to sandstone, clayey, light gray to pink.....	43.0	48.0
Clay, pink.....	48.0	55.0
Clay, moderately to very silty, light pinkish gray..	55.0	95.0
Clay, pink; contains some interbedded silty clay in upper part.....	95.0	119.0

**Test Hole #73-42 (No e-logs)  
 (13N-52W-36aada)  
 Cheyenne County**

Location: NE SE NE NE sec. 36, T. 13 N., R. 52 W., approximately 800 ft south of northeast corner.

Ground elevation: 4,334 ft. (i). (Easterly Airport 7.5 min. quadrangle).

Depth to water: Unknown, test hole caved at 35.2 ft. (7-28-42).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Clay, silty, and sand, dark brown-gray.....	0.0	3.0
Sand and gravel, pinkish gray; texture grades from fine to medium.....	3.0	5.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, silty, light pinkish gray.....	5.0	25.0
Clay, very silty, to sandstone, clayey, light gray to pink.....	25.0	45.0
Clay, pink.....	45.0	55.0
Clay, very silty, light gray to pink.....	55.0	66.0
Clay, pink.....	66.0	69.0

**Test Hole #76-42 (No e-logs)  
 (13N-52W-36ddab)  
 Cheyenne County**

Location: NW NE SE SE sec. 36, T. 13 N., R. 52 W., approximately 1,050 ft north and 525 ft west of southeast corner.

Ground elevation: 4,358 ft. (i). (Easterly Airport 7.5 min. quadrangle).

Depth to water: Unknown, test hole caved at 47.7 ft. (7-28-42).

Depth, in feet  
 From To

**Quaternary System, undifferentiated:**

Silt, clayey, light brown-gray, dark at top..... 0.0 10.0

**Tertiary System - Oligocene Series - White River Group:**

**Brule Formation:**

Clay, moderately to very silty, light pinkish gray.. 10.0 50.0

Clay, pink..... 50.0 60.0

Clay, very silty, pinkish gray..... 60.0 81.0

Clay, pink..... 81.0 87.0

Clay, silty, light pinkish gray..... 87.0 89.0

**Test Hole #CC-1-95 (No e-logs)  
 (14N-46W-32ddda)  
 Cheyenne County**

Location: NE SE SE SE sec. 32, T. 14 N., R. 46 W., approximately 650 ft north and 200 ft west of southeast corner.  
 Ground elevation: 3,797 ft. (t). (Mount Vernon 7.5 min. quadrangle).  
 Depth to water: Unknown. (5-19-95).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, black to brown.....	0.0	5.0
Sand and gravel, granitic, some clay.....	5.0	22.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, clay cement.....	22.0	30.0

**Test Hole #21-B-65 (E-logs)**  
**(14N-47W-6bbbb)**  
**Cheyenne County**

Location: NW NW NW NW sec. 6, T. 14 N., R. 47 W., 1 ft south and 109 ft east of northwest corner.

Ground elevation: 4,105 ft. (t). (Sunol 7.5 min. quadrangle).

Depth to water: Unknown; (hole open to 124 ft.). (8-13-65).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, silty sand, dark grayish brown.....	0.0	2.0
Silt, clayey to sandy, dark grayish brown.....	2.0	3.5
Silt, clayey to sandy, pale brown, slightly calcareous.....	3.5	5.0
Silt, clayey to sandy, weak red, calcareous cement..	5.0	7.5
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Sand and gravel, granitic, calcareous cement at top.	7.5	17.0
Sand, silty, some gravel, light brown to light yellowish brown.....	17.0	25.0
Sand and gravel, granitic.....	25.0	26.0
Silt, sandy, light gray to light brown, some discontinuous calcareous cement.....	26.0	30.0
Sandstone, brown to yellowish brown, some calcareous cement, rhizoliths.....	30.0	36.0
Silt, sandy, reddish yellow.....	36.0	38.5
Sandstone and sand, brown.....	38.5	42.0
Sand and gravel, granitic.....	42.0	43.0
Sandstone, silt and caliche, interbedded, brown to white, discontinuous calcareous cement.....	43.0	56.7
Silt, clayey to clayey silt, pale olive to light gray, calcareous cement.....	56.7	70.0
Sand, silty and silty sand, white and light gray to pale brown, calcareous cement.....	70.0	111.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, sandy in part, pale brown to light yellowish brown, clay cement, some horizons with concretions with calcareous cement.....	111.0	260.5

**Test Hole #15-A-65 (E-logs)**  
**(14N-47W-18cccc)**  
**Cheyenne County**

Location: SW SW SW SW sec. 18, T. 14 N., R. 47 W., 64 ft north and  
 10.5 ft east of southwest corner.  
 Ground elevation: 4,072 ft. (t). (Sunol 7.5 min. quadrangle).  
 Depth to water: 106.3 ft. (9-2-65).

	Depth, in feet	
	From	To
<b>Quaternary System, undifferentiated:</b>		
No sample.....	0.0	3.0
Sand, silty, grayish brown, calcareous.....	3.0	5.0
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Sandstone, light gray, calcareous cement, rhizo- liths.....	5.0	12.0
Sand and gravel, granitic, calcareous cement at top.	12.0	20.0
Sandstone, light gray, discontinuous calcareous cement.....	20.0	28.0
Sand and gravel, granitic.....	28.0	38.0
Sandstone, pale brown, calcareous cement, rhizo- liths, silty and clayey.....	38.0	57.0
Sand and gravel, granitic.....	57.0	64.0
Silt, clayey, brown.....	64.0	65.0
Sand and gravel, granitic, finer grained at 80 ft...	65.0	93.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, yellowish brown to brown, some horizons with discontinuous concretions with calcareous cement.....	93.0	200.5

**Test Hole #23-42 (No e-logs)  
 (14N-47W-28bccc)  
 Cheyenne County**

Location: SW SW SW NW sec. 28, T. 14 N., R. 47 W., approximately 0.15 mile north of railroad.  
 Ground elevation: 3,899 ft. (i). (Lodgepole 7.5 min. quadrangle).  
 Depth to water: 11.7 ft. (6-20-42).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Sand, brownish gray; texture grades from fine to coarse; contains some gravel.....	0.0	5.0
Gravel and sand; texture grades from coarse sand to medium gravel.....	5.0	32.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, silty, light pinkish gray.....	32.0	109.0

**Test Hole #25-42 (No e-logs)  
 (14N-47W-32aaaa)  
 Cheyenne County**

Location: NE NE NE NE sec. 32, T. 14 N., R. 47 W., 0.4 mile south of  
 railroad.

Ground elevation: 3,892 ft. (i). (Lodgepole 7.5 min. quadrangle).

Depth to water: Unknown. (6-20-42).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Clay, silty, medium gray; soil at top.....	0.0	11.0
Gravel and sand, pink; texture grades from coarse sand to medium gravel.....	11.0	29.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, silty, indurated, light pinkish gray.....	29.0	99.0

**Test Hole #24-42 (No e-logs)  
 (14N-47W-33cbbb)  
 Cheyenne County**

Location: NW NW NW SW sec. 33, T. 14 N., R. 47 W., 0.9 mi south of  
 railroad.

Ground elevation: 3,922 ft. (t). (Lodgepole 7.5 min. quadrangle).

Depth to water: Unknown. (6-20-42).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Clay, silty, brownish gray.....	0.0	17.0
Sand and gravel; texture grades from coarse sand to fine gravel.....	17.0	33.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, silty, light pinkish gray.....	33.0	109.0

**Test Hole #26-42 (No e-logs)  
(14N-47W-35aaaa)  
Cheyenne County**

Location: NE NE NE NE sec. 35, T. 14 N., R. 47 W.  
 Ground elevation: 3,852 ft. (t). (Lodgepole 7.5 min. quadrangle).  
 Depth to water: Unknown. (6-22-42).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Clay, silty, dark brownish gray.....	0.0	4.0
Clay, silty, medium light gray.....	4.0	7.0
Sand, gray; texture grades from fine to coarse.....	7.0	9.0
Gravel, and sand, pink and gray; texture grades from medium sand to medium gravel.....	9.0	25.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, silty, light pinkish gray, indurated.....	25.0	93.0
Clay, very silty, light pinkish gray.....	93.0	96.0
Clay, moderately silty, pink.....	96.0	109.0

**Test Hole #22-42 (No e-logs)  
(14N-48W-26cccc)  
Cheyenne County**

Location: SW SW SW SW sec. 26, T. 14 N., R. 48 W., 0.45 mi south of  
railroad.

Ground elevation: 3,952 ft. (t). (Sunol 7.5 min. quadrangle).

Depth to water: Unknown; test hole caved at 13.8 ft. (6-20-42).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Clay, silty, brownish gray.....	0.0	9.0
Sand and gravel, pinkish gray; texture grades from medium sand to medium gravel.....	9.0	18.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, silty, light pinkish gray.....	18.0	99.0

**Test Hole #19-42 (No e-logs)  
(14N-48W-29cbbb)  
Cheyenne County**

Location: NW NW NW SW sec. 29, T. 14 N., R. 48 W., 270 ft north of  
railroad.  
Ground elevation: 4,001 ft. (t). (Sunol 7.5 min. quadrangle).  
Depth to water: 11.7 ft. (6-18-42).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Sand and gavel, silty; texture grades from sand to coarse gravel and pebbles.....	0.0	2.0
Sand, silty, dark brown.....	2.0	7.0
Silt, sandy, light brownish buff.....	7.0	18.0
Sand and gravel, pink; texture grades from medium sand to medium gravel.....	18.0	27.0
Gravel, pink; texture grades from fine to coarse; contains many gray limy pebbles.....	27.0	36.0
Sand and gravel, pinkish gray; texture grades from fine sand to medium gravel; contains many limy pebbles.....	36.0	39.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, silty, light pinkish buff.....	39.0	56.0

**Test Hole #20-42 (No e-logs)  
 (14N-48W-32bbcc)  
 Cheyenne County**

Location: SW SW NW NW sec. 32, T. 14 N., R. 48 W., 0.5 mi south of  
 railroad.

Ground elevation: 3,997 ft. (i). (Sunol 7.5 min. quadrangle).

Depth to water: 5.4 ft. (6-19-42).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Silt, sandy, to sand, brownish gray; texture of sand grades from fine to coarse.....	0.0	6.0
Sand and gravel, pink; texture grades from medium sand to medium gravel; contains some reworked clay.....	6.0	21.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, silty, light pinkish buff.....	21.0	119.0

**Test Hole #21-42 (No e-logs)  
(14N-48W-32ccbc)  
Cheyenne County**

Location: SW NW SW SW sec. 32, T. 14 N., R. 48 W., 1.1 mi south of  
railroad and 42 ft east of section line.

Ground elevation: 4,030 ft. (t). (Sunol 7.5 min. quadrangle).

Depth to water: Unknown; test hole caved at 36.5 ft. (6-19-42).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Sand, silty, brown.....	0.0	2.0
Gravel, and sand, pink; texture grades from medium sand to medium gravel with some coarse gravel; contains some brownish gray sandy silt in lower part.....	2.0	17.0
Gravel and sand, pink; texture grades from medium sand to coarse gravel.....	17.0	50.0
Sand, pinkish gray; texture grades from medium to coarse; contains some reworked Ogallala sandstone in lower part.....	50.0	74.0
Sand and gravel, pink; texture grades from coarse sand to medium gravel; contains some reworked Ogallala sandstone pebbles.....	74.0	80.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, silty, light pinkish buff.....	80.0	99.0

**Test Hole #21-A-65 (one E-log)  
(14N-49W-19bbbb)  
Cheyenne County**

Location: NW NW NW NW sec. 19, T. 14 N., R. 49 W., 5 ft south and 115 ft east of northwest corner.

Ground elevation: 4,311 ft. (t). (Sidney 7.5 min. quadrangle).

Depth to water: 165.1. ft. (9-2-65).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, dark brown, sandy silt.....	0.0	1.5
Silt, sandy, brown to pale brown, calcareous toward base.....	1.5	4.4
Silt, sandy, light brown, calcareous, rhizoliths (reworked).....	4.4	5.0
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Caliche, sandy, light brown.....	5.0	8.3
Sandstone and sandy silts, interbedded, yellowish brown to brown.....	8.3	38.0
Sandstone and silts, interbedded, slightly calcareous.....	38.0	41.8
Silts and silty sands, brown.....	41.8	48.4
Sand and gravel, granitic.....	48.4	78.5
Silt, clayey, brown.....	78.5	78.8
Sand and gravel, granitic, interbedded silt.....	78.8	81.7
Silt, sandy, light yellowish brown to light brown...	81.7	85.0
Sandstone, gravelly to sand and gravel, granitic, brown to white, calcareous cement, rhizoliths.....	85.0	110.0
Siltstone, brown, calcareous.....	110.0	116.0
Sandstone, brown to pinkish gray, calcareous cement.	116.0	122.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, yellowish brown to brown, some strata sandy, concretions with calcareous cement in some horizons.....	122.0	330.5

**Test Hole #L8-87 (No e-logs)  
(14N-49W-31adbd1)  
Cheyenne County**

Location: SE NW SE NE sec. 31, T. 14 N., R. 49 W., approximately 115 ft south and 120 ft west of 10<sup>th</sup> and Jackson intersection.  
 Ground elevation: 4,086 ft. (t). (Sidney 7.5 min. quadrangle).  
 Depth to water: Unknown.

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, black.....	0.0	1.0
Sand, black; silty.....	1.0	2.3
Silt, brown, clayey with some gravel.....	2.3	3.5
Silt, brown, clayey to sand, brown.....	3.5	7.5
Sand, brown.....	7.5	8.5
Sand and gravel, granitic.....	8.5	22.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, clay cement.....	22.0	43.5

**Test Hole #L9-87 (No e-logs)  
(14N-49W-31adbd2)  
Cheyenne County**

Location: SE NW SE NE sec. 31, T. 14 N., R. 49 W., approximately 114 ft south and 48 ft west of 10<sup>th</sup> and Jackson intersection.  
 Ground elevation: 4,086 ft. (t). (Sidney 7.5 min. quadrangle).  
 Depth to water: Unknown.

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, brown, sandy, silty.....	0.0	6.5
Silt, light brown, sandy.....	6.5	7.5
Sand and gravel, granitic.....	7.5	22.5
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, clay cement.....	22.5	47.5
Claystone and siltstone, red, clay cement.....	47.5	50.0
Siltstone, brown, clay cement.....	50.0	67.5

**Test Hole #L10-87 (No e-logs)  
(14N-49W-31adca)  
Cheyenne County**

Location: NE SW SE NE sec. 31, T. 14 N., R. 49 W., approximately 248 ft south and 119 ft west of 10<sup>th</sup> and Jackson intersection.  
Ground elevation: 4,086 ft. (t). (Sidney 7.5 min. quadrangle).  
Depth to water: Unknown.

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, black, silty and sandy.....	0.0	3.5
Sand, black, silty.....	3.5	8.5
Sand and gravel, granitic.....	8.5	18.5
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, clay cement.....	18.5	58.5
Claystone and siltstone, red to brown, clay cement..	58.5	68.5
Siltstone, brown, clay cement.....	68.5	73.5

**Test Hole #L15-87 (No e-logs)  
 (14N-49W-31bcdd1)  
 Cheyenne County**

Location: SE SE SW NW sec. 31, T. 14 N., R. 49 W., approximately 38  
 ft north and 133 ft east of 19<sup>th</sup> and Linden intersection.  
 Ground elevation: 4,095 ft. (t). (Sidney 7.5 min. quadrangle).  
 Depth to water: Unknown.

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, black, sandy.....	0.0	3.0
Sand, gray, silty.....	3.0	6.8
Sand and gravel, granitic.....	6.8	28.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, clay cement.....	28.0	58.0

**Test Hole #L14-87 (No e-logs)  
(14N-49W-31bcdd2)  
Cheyenne County**

Location: SE SE SW NW sec. 31, T. 14 N., R. 49 W., approximately 38 ft north and 86 ft east of 19<sup>th</sup> and Linden intersection.  
Ground elevation: 4,095 ft. (t). (Sidney 7.5 min. quadrangle).  
Depth to water: Unknown.

	Depth, in feet	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, black, sandy.....	0.0	1.5
Sand, brown, silty.....	1.5	3.0
Sand, light gray, silty and clayey.....	3.0	5.5
Silt, brown, sandy with clay.....	5.5	8.0
Sand and gravel, granitic.....	8.0	26.8
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, clay cement, calcite veins at 33 to 35.5 ft.....	26.8	58.0
Siltstone, red, clay cement.....	58.0	70.5
Siltstone, brown, clay cement.....	70.5	78.0

**Test Hole #L16-87 (No e-logs)  
(14N-49W-31bdcc1)  
Cheyenne County**

Location: SW SW SE NW sec. 31, T. 14 N., R. 49 W., approximately 40 ft north and 121 ft west of 18<sup>th</sup> and Linden intersection..  
Ground elevation: 4,095 ft. (t). (Sidney 7.5 min. quadrangle).  
Depth to water: Unknown.

	Depth, in feet	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, sandy and silty.....	0.0	3.0
Silt, black, sandy.....	3.0	7.0
Sand and gravel, granitic.....	7.0	26.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, clay cement.....	26.0	58.0

**Test Hole #L17-87 (No e-logs)  
(14N-49W-31bdcc2)  
Cheyenne County**

Location: SW SW SE NW sec. 31, T. 14 N., R. 49 W., approximately 40 ft north and 124 ft west of 18<sup>th</sup> and Linden intersection.  
Ground elevation: 4,095 ft. (t). (Sidney 7.5 min. quadrangle).  
Depth to water: Unknown.

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, black, sandy and silty.....	0.0	5.0
Silt, gray, sandy.....	5.0	8.5
Sand and gravel, granitic.....	8.5	23.5

**Test Hole #L18-87 (No e-logs)  
(14N-49W-31bdcc3)  
Cheyenne County**

Location: SW SW SE NW sec. 31, T. 14 N., R. 49 W., approximately 39 ft north and 131 ft west of 18<sup>th</sup> and Linden intersection.  
 Ground elevation: 4,095 ft. (t). (Sidney 7.5 min. quadrangle).  
 Depth to water: Unknown.

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, black, sandy and silty.....	0.0	5.5
Sand, brown to olive gray, silty.....	5.5	7.5
Sand and gravel, granitic, some probable MnO <sub>2</sub> stain at 18 to 23 ft.....	7.5	26.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, clay cement.....	26.0	58.0

**Test Hole #1120-13-87 (E-logs)  
(14N-49W-31cacc)  
Cheyenne County**

Location: SW SW NE SW sec. 31, T. 14 N., R. 49 W., approximately 261 ft south and 105 ft east of 19<sup>th</sup> and Osage intersection.  
 Ground elevation: 4,097 ft. (t). (Sidney 7.5 min. quadrangle).  
 Depth to water: 36.0 ft. (1987).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, brown, sandy and silty.....	0.0	5.0
Sand, brown, silty.....	5.0	14.0
Sand and gravel, granitic.....	14.0	21.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, clay cement.....	21.0	100.0

**Test Hole #L19-87 (No e-logs)  
(14N-49W-31ccab)  
Cheyenne County**

Location: NW NE SW SW sec. 31, T. 14 N., R. 49 W., approximately 267 ft south and 77 ft east of intersection of 19<sup>th</sup> and Osage.  
 Ground elevation: 4,094 ft. (t). (Sidney 7.5 min. quadrangle).  
 Depth to water: Unknown.

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, sandy and silty.....	0.0	2.0
Sand, brown, silty.....	2.0	12.0
Sand and gravel, granitic.....	12.0	26.5
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, clay cement.....	26.5	73.0

**Test Hole #1120-12-87 (E-logs)**  
**(14N-49W-31ccac)**  
**Cheyenne County**

Location: SW NE SW SW sec. 31, T. 14 N., R. 49 W., 10 ft east and approximately 900 ft north of southwest corner.  
 Ground elevation: 4,096 ft. (t). (Sidney 7.5 min. quadrangle).  
 Depth to water: 34.0 ft. (1987).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Sand, brown, silty, organic in upper 1 ft.....	0.0	6.0
Sand and gravel, granitic, includes local sandstone, caliche, and siltstone clasts.....	6.0	20.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, clay cement.....	20.0	100.0

**Test Hole #16-42 (No e-logs)  
(14N-49W-31cccc)  
Cheyenne County**

Location: SW SW SW SW sec. 31, T. 14 N., R. 49 W.  
 Ground elevation: 4,091 ft. (i). (Sidney 7.5 min. quadrangle).  
 Depth to water: Unknown; test hole caved at 8.9 ft. (6-17-42).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Sand, pinkish gray; texture grades from fine to coarse; contains some reworked sandstone.....	0.0	4.0
Gravel, pink; texture grades from fine sand to coarse gravel; slightly coarser in lower part.....	4.0	20.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Silt, sandy, light pinkish buff.....	20.0	30.0
Silt, sandy, light gray to grayish buff.....	30.0	50.0
Silt, sandy, light pinkish buff.....	50.0	79.0

**Test Hole #P30-87 (No e-logs)  
(14N-49W-32aacb1)  
Cheyenne County**

Location: NW SW NE NE sec. 32, T. 14 N., R. 49 W., 350 ft south and  
630 ft west of northeast corner, 10 ft east of TH#P29-87.  
Ground elevation: 4,085 ft. (t). (Sidney 7.5 min. quadrangle).  
Depth to water: Unknown.

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, black, silty sand.....	0.0	1.0
Silt, light brown, sandy.....	1.0	2.3
Silt, dark brown, sandy.....	2.3	3.5
Sand, light brown to brown, silty and sandy silt....	3.5	18.5
Sand and gravel, granitic.....	18.5	32.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, clay cement.....	32.0	48.5

Note: Test-hole field log mislocates this well in sec. 29. Revised location is questionable.

**Test Hole #P29-87 (No e-logs)  
(14N-49W-32aacb2)  
Cheyenne County**

Location: NW SW NE NE sec. 32, T. 14 N., R. 49 W., 350 ft south and 640 ft west of northeast corner, north of existing cemetery and 10 ft west of TH#P30-87.

Ground elevation: 4,085 ft. (t). (Sidney 7.5 min. quadrangle).

Depth to water: Unknown.

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, olive brown, silty sand.....	0.0	2.0
Silt, light brown, sandy.....	2.0	13.5
Sand, light brown, silty with some gravel.....	13.5	18.5
Sand and gravel, granitic, with some brown silty sand interbeds.....	18.5	28.5

Note: Test hole field log mislocates this well in sec. 29. Revised location is questionable.

**Test Hole #17-42 (No e-logs)  
(14N-49W-33ccbb)  
Cheyenne County**

Location: NW NW SW SW sec. 33, T. 14 N., R. 49 W., 0.5 mi south of  
U.S. Highway 30.  
Ground elevation: 4,066 ft. (i). (Sidney 7.5 min. quadrangle).  
Depth to water: 11.1 ft. (6-17-42).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Sand, silty, dark brownish gray.....	0.0	3.0
Sand, light pinkish gray; texture grades from fine to medium; contains reworked sandstone and clay...	3.0	8.0
Gravel, and sand; texture grades from fine sand to coarse gravel; contains some reworked sandstone and clay.....	8.0	12.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, silty, light pinkish buff.....	12.0	69.0

**Test Hole #11-GT-80 (E-logs)  
(14N-49W-33dddd)  
Cheyenne County**

Location: SE SE SE SE sec. 33, T. 14 N., R. 49 W., approximately 56 ft north of south section line, and 71 ft west of east section line.

Ground elevation: 4,064 ft. (t). (Sidney 7.5 min. quadrangle).

Depth to water: Unknown.

Depth, in feet  
From            To

**Quaternary System, undifferentiated:**

Sand and gravel, dark grayish brown, sand medium to coarse with small fraction very coarse, gravel fine; contains abundant feldspars; contains organic material; becoming dark brown with less organic material lower 6.0 ft.....	0.0	8.0
Sand, yellowish brown, fine to medium grained with small fraction coarse to very coarse; contains traces of gravel, fine; contains abundant feldspars, yellowish red to pink sand, yellowish brown, medium grained with small fraction fine and coarse to very coarse; contains gravel, fine; contains abundant feldspars, yellowish red to pink...	8.0	12.0
Sand, yellowish brown, medium grained with small fraction fine and coarse to very coarse; contains gravel, fine; contains abundant feldspars, yellowish red to pink.....	12.0	22.0

**Tertiary System - Oligocene Series - White River Group:**

**Brule Formation:**

Siltstone to silt, pinkish brown, slightly clayey...	22.0	40.0
Siltstone, pinkish brown, very slightly clayey.....	40.0	60.0
Siltstone to silt, pinkish brown, slightly to moderately clayey.....	60.0	145.0
Siltstone, pinkish brown, slightly silty, slightly clayey.....	145.0	150.0
Siltstone to silt, pinkish brown, slightly to moderately clayey.....	150.0	233.0
Silt to siltstone, yellowish red, slightly to moderately clayey.....	233.0	240.0
Silt to siltstone, pinkish brown, slightly to moderately clayey.....	240.0	260.0
Silt, light pinkish brown, moderately to very clayey; contains occasional interbedded siltstones.....	260.0	367.0

Silt, light yellowish brown with reddish brown interbedded, moderately to very clayey; contains silt, olive gray at 380 to 392 ft.....	367.0	392.0
Silt, light reddish brown with yellow tint, very clayey; contains silt, greenish gray at 416 to 420 ft.....	392.0	420.0
Silt, greenish gray, very clayey, contains inter- bedded siltstones.....	420.0	470.0
Silt, light greenish gray, very clayey; contains interbedded siltstones, greenish gray.....	470.0	484.0
Silt, greenish gray, very clayey; contains inter- bedded siltstones.....	484.0	525.0
Silt to siltstone, greenish gray, moderately to very clayey.....	525.0	572.0
Silt, light greenish gray to greenish gray, moderately to very clayey; contains interbedded siltstones.....	572.0	600.0

**Test Hole #18-42 (No e-logs)  
(14N-49W-35bbbc)  
Cheyenne County**

Location: SW NW NW NW sec. 35, T. 14 N., R. 49 W., approximately 90 ft south of south rail of railroad.

Ground elevation: 4,050 ft. (t). (Sidney 7.5 min. quadrangle).

Depth to water: 13.9 ft. (6-18-42).

	Depth, in feet	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Silt, sandy, dark brown.....	0.0	3.0
Gravel, and sand, pink; texture grades from medium sand to coarse gravel; contains a few pebbles.....	3.0	30.0
Gravel, pink; coarse texture; contains many pebbles in lower part.....	30.0	39.0
Gravel, pink; texture grades from fine to coarse; contains some sand; coarser in lower part.....	39.0	59.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, silty, light pinkish buff.....	59.0	99.0

**Test Hole #9-42 (No e-logs)  
(14N-50W-18bcbb)  
Cheyenne County**

Location: NW NW SW NW sec. 18, T. 14 N., R. 50 W., approximately 1,580 ft south of northwest corner.

Ground elevation: 4,212 ft. (t). (Brownson 7.5 min. quadrangle).

Depth to water: 32.7 ft. (6-12-42).

Depth, in feet  
From      To

**Quaternary System, undifferentiated:**

Sand and some gravel, brownish gray; texture grades from medium sand to medium gravel; contains some soil at top.....	0.0	2.0
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Gravel, pink; texture grades from fine to medium; coarser in lower part.....	2.0	20.0
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**Tertiary System - Oligocene Series - White River Group:**

**Brule Formation:**

Clay, silty, light pinkish buff; very silty from 40 to 65 ft.....	20.0	65.0
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Clay, pinkish buff.....	65.0	99.0
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**Test Hole #8-42 (No e-logs)  
 (14N-50W-18cbba?)  
 Cheyenne County**

Location: Probably NE NW NW SW sec. 18, T. 14 N., R. 50 W.,  
 approximately 0.3 mile southeast of Brownson and northeast of rail  
 track.

Ground elevation: 4,200 ft (t). (Brownson 7.5 min. quadrangle).

Depth to water: 27.0 ft. (6-10-42).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Soil: clay, silty, dark brownish gray.....	0.0	4.0
Sand and gravel, pink; texture grades from coarse sand to medium gravel.....	4.0	20.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, silty, pinkish buff.....	20.0	99.0
Clay, slightly silty, light pinkish buff.....	99.0	118.0

**Test Hole #2-C-34 (No e-logs)  
 (14N-50W-19daaa1)  
 Cheyenne County**

Location: NE NE NE SE sec. 19, T. 14 N., R. 50 W., 50 ft west of  
 TH#1-C-34.

Ground elevation: 4,174 ft. (t). (Brownson 7.5 min. quadrangle).

Depth to water: Unknown. (9-7-34).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Sand and some clay.....	0.0	5.0
Gravel.....	5.0	7.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, indurated.....	7.0	58.0

**Test Hole #3-C-34 (No e-logs)  
 (14N-50W-19daaa2)  
 Cheyenne County**

Location: NE NE NE SE sec. 19, T. 14 N., R. 50 W., 100 ft west of  
 TH#1-C-34.

Ground elevation: 4,173 ft. (t). (Brownson 7.5 min. quadrangle).

Depth to water: Unknown. (9-8-34).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Silt, sandy.....	0.0	2.0
Gravel.....	2.0	4.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, indurated.....	4.0	71.0

**Test Hole #4-C-34 (No e-logs)  
 (14N-50W-19daaa3)  
 Cheyenne County**

Location: NE NE NE SE sec. 19, T. 14 N., R. 50 W., 150 ft west of  
 TH#1-C-34.

Ground elevation: 4,172 ft. (t). (Brownson 7.5 min. quadrangle).

Depth to water: Unknown. (9-8-34).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Gravel; coarse texture.....	0.0	3.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, indurated.....	3.0	35.0

**Test Hole #8-C-34 (No e-logs)  
 (14N-50W-19daab1)  
 Cheyenne County**

Location: NW NE NE SE sec. 19, T. 14 N., R. 50 W., 350 ft west of TH#1-C-34.

Ground elevation: 4,168 ft. (t). (Brownson 7.5 min. quadrangle).

Depth to water: Unknown. (9-8-34).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Silt, sandy.....	0.0	1.0
Silt, clayey, micaceous.....	1.0	7.0
Gravel.....	7.0	15.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, indurated.....	15.0	90.0

**Test Hole #9-C-34 (No e-logs)  
 (14N-50W-19daab2)  
 Cheyenne County**

Location: NW NE NE SE sec. 19, T. 14 N., R. 50 W., 425 ft west of  
 TH#1-C-34.  
 Ground elevation: 4,168 ft. (t). (Brownson 7.5 min. quadrangle).  
 Depth to water: Unknown. (9-8-34).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Silt, sandy.....	0.0	3.0
Silt, clayey.....	3.0	5.0
Gravel.....	5.0	13.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, indurated.....	13.0	137.0

**Test Hole #12-C-34 (No e-logs)  
 (14N-50W-19daab3)  
 Cheyenne County**

Location: NW NE NE SE sec. 19, T. 14 N., R. 50 W., 525 ft west of  
 TH#1-C-34.

Ground elevation: 4,168 ft. (t). (Brownson 7.5 min. quadrangle).

Depth to water: Unknown. (9-8-34).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Silt, sandy.....	0.0	4.0
Silt, clayey.....	4.0	5.0
Gravel; contains sandstone pebbles.....	5.0	12.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, indurated.....	12.0	50.0

**Test Hole #10-C-34 (No e-logs)  
 (14N-50W-19dabb)  
 Cheyenne County**

Location: NW NW NE SE sec. 19, T. 14 N., R. 50 W., 1,425 ft west  
 of TH#1-C-34.

Ground elevation: 4,174 ft, (t). (Brownson 7.5 min. quadrangle).

Depth to water: Unknown, (9-8-34).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Silt, sandy.....	0.0	4.0
Silt, clayey.....	4.0	8.0
Sand and gravel.....	8.0	13.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, indurated.....	13.0	35.0

**Test Hole #11-C-34 (No e-logs)  
(14N-50W-19dbbb)  
Cheyenne County**

Location: NW NW NW SE sec. 19, T. 14 N., R. 50 W., 2,425 ft west of TH#1-C-34.

Ground elevation: 4,188 ft. (t). (Brownson 7.5 min. quadrangle).

Depth to water: Unknown. (9-8-34).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Silt, sandy; contains reworked sandstone.....	0.0	5.0
Clay, light brown.....	5.0	8.0
Gravel; contains some fragments of sandstone.....	8.0	14.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, indurated.....	14.0	51.0

**Test Hole #7-C-34 (No e-logs)  
 (14N-50W-20cbba)  
 Cheyenne County**

Location: NE NW NW SW sec. 20, T. 14 N., R. 50 W., 350 ft east of  
 TH#1-C-34.

Ground elevation: 4,174 ft. (t). (Brownson 7.5 min. quadrangle).

Depth to water: Unknown. (9-8-34).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Silt, sandy.....	0.0	5.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, indurated.....	5.0	78.0

**Test Hole #1-C-34 (No e-logs)  
(14N-50W-20cbbb1)  
Cheyenne County**

Location: NW NW NW SW sec. 20, T. 14 N., R. 50 W., northwest corner of southwest quarter section.

Ground elevation: 4,175 ft. (t). (Brownson 7.5 min. quadrangle).

Depth to water: Unknown. (9-5-34).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Sand, silty.....	0.0	1.0
Sand and gravel.....	1.0	3.0
Gravel; contains pebbles.....	3.0	6.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, indurated.....	6.0	151.0

**Test Hole #5-C-34 (No e-logs)  
(14N-50W-20cbbb2)  
Cheyenne County**

Location: NW NW NW SW sec. 20, T. 14 N., R. 50 W., 50 ft east of  
TH#1-C-34.  
Ground elevation: 4,175 ft. (t). (Brownson 7.5 min. quadrangle).  
Depth to water: Unknown. (9-8-34).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Silt, sandy.....	0.0	2.0
Sand and gravel.....	2.0	4.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, indurated.....	4.0	75.0

**Test Hole #6-C-34 (No e-logs)  
 (14N-50W-20cbbb3)  
 Cheyenne County**

Location: NW NW NW SW sec. 20, T. 14 N., R. 50 W., 100 ft east of  
 TH#1-C-34.

Ground elevation: 4,175. (t). (Brownson 7.5 min. quadrangle).

Depth to water: Unknown. (9-8-34).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Silt, sandy.....	0.0	1.0
Sand and gravel.....	1.0	5.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, indurated.....	5.0	48.0

**Test Hole #15-42 (No e-logs)  
 (14N-50W-28aadd)  
 Cheyenne County**

Location: SE SE NE NE sec. 28, T. 14 N., R. 50 W., 0.3 mi north of  
 railroad.

Ground elevation: 4,175 ft. (i). (Brownson 7.5 min. quadrangle).

Depth to water: Unknown; test hole caved at 39.9 ft. (6-16-42).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Sand, brownish gray; texture grades from fine to coarse.....	0.0	5.0
Sand, and some gravel, pinkish gray; texture grades from sand to fine gravel; contains many reworked pebbles.....	5.0	9.0
Sand, and gravel, pinkish gray; texture grades from fine sand to medium gravel; contains many reworked sandstone pebbles.....	9.0	29.0
Gravel, and sand, pink; texture grades from fine sand to coarse gravel; contains a trace of reworked sandstone.....	29.0	43.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, silty, light pinkish buff.....	43.0	99.0

**Test Hole #F4-87 (No e-logs)  
 (14N-50W-32dccc)  
 Cheyenne County**

Location: SW SW SW SE sec. 32, T. 14 N., R. 50 W., 249 ft north and  
 318 ft east of intersection of south section line and road to  
 feedlot HQ.

Ground elevation: 4,202 ft. (t). (Brownson 7.5 min. quadrangle).

Depth to water: Unknown.

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, tan, silty.....	0.0	1.0
Sand, light brown, silty.....	1.0	7.3
Sand, dark brown.....	7.3	8.5
Sand, brown, silty.....	8.5	18.5
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, clay cement.....	18.5	43.5

**Test Hole #F3-87 (No e-logs)  
 (14N-50W-32dccd1)  
 Cheyenne County**

Location: SE SW SW SE sec. 32, T. 14 N., R. 50 W., 45 ft east and 9 ft south of TH#F2-87.

Ground elevation: 4,198 ft. (t). (Brownson 7.5 min. quadrangle).

Depth to water: Unknown.

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, light brown, silt and sand.....	0.0	3.0
Sand, brown, silty.....	3.0	8.5
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, clay cement.....	8.5	38.5

**Test Hole #F2-87 (No e-logs)**  
**(14N-50W-32dccd2)**  
**Cheyenne County**

Location: SE SW SW SE sec. 32, T. 14 N., R. 50 W., 157 ft north and  
 2,280 ft west of southeast corner.  
 Ground elevation: 4,199 ft. (t). (Brownson 7.5 min. quadrangle).  
 Depth to water: Unknown.

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, brown.....	0.0	2.3
Silt, brown.....	2.3	13.5
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, clay cement.....	13.5	28.5

**Test Hole #C33-87 (No e-logs)  
(14N-50W-34baba)  
Cheyenne County**

Location: NE NW NE NW sec. 34, T. 14 N., R. 50 W., 135 ft south and 1,700 ft east of northwest corner.

Ground elevation: 4,133 ft. (t). (Brownson 7.5 min. quadrangle).

Depth to water: Unknown.

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, black, silty sand.....	0.0	1.0
Silt, brown to black, sandy with clay.....	1.0	5.0
Silt, olive brown to brown, sandy.....	5.0	6.0
Sand and gravel, granitic.....	6.0	20.5
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, clay cement.....	20.5	23.5

**Test Hole #C34-87 (No e-logs)  
(14N-50W-34babd)  
Cheyenne County**

Location: SE NW NE NW sec. 34, T. 14 N., R. 50 W., 460 ft south and 1,725 east of northwest corner.

Ground elevation: 4,129 ft. (t). (Brownson 7.5 min. quadrangle).

Depth to water: Unknown; may be about 12.5 ft. (10-28-87).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, black, silty sand.....	0.0	2.0
Silt, dark brown, sandy.....	2.0	3.5
Silt, black, clayey.....	3.5	8.5
Sand, dark brown, silty.....	8.5	9.5
Sand and gravel, granitic.....	9.5	17.5
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, clay cement.....	17.5	23.5

**Test Hole #C35-87 (No e-logs)  
(14N-50W-34bacd)  
Cheyenne County**

Location: SE SW NE NW sec. 34, T. 14 N., R. 50 W., 1,050 ft south and 1,735 ft east of northwest corner.

Ground elevation: 4,132 ft. (t). (Brownson 7.5 min. quadrangle).

Depth to water: Unknown; may be about 11 ft. (10-28-87).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, black, silty sand.....	0.0	1.0
Sand, olive brown to light brown, silty.....	1.0	3.5
Sand, brown.....	3.5	8.5
Sand and gravel, granitic, silty.....	8.5	18.5

**Test Hole #14-42 (No e-logs)  
(14N-50W-34bbbb)  
Cheyenne County**

Location: NW NW NW NW sec. 34, T. 14 N., R. 50 W., 200 ft south of northwest corner.

Ground elevation: 4,136 ft. (i). (Brownson 7.5 min. quadrangle).

Depth to water: 5.5 ft. (6-16-42).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Silt, sandy, brownish gray.....	0.0	5.0
Sand and gravel, pink; texture grades from medium sand to medium gravel.....	5.0	18.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, silty, light pinkish buff.....	18.0	79.0

**Test Hole #13-42 (No e-logs)  
(14N-50W-34cbcb)  
Cheyenne County**

Location: NW SW NW SW sec. 34, T. 14 N., R. 50 W., approximately  
1,850 ft north of southwest corner.  
Ground elevation: 4,154 ft. (i). (Brownson 7.5 min. quadrangle).  
Depth to water: 40.6 ft. (6-14-42).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Silt, sandy, brownish gray.....	0.0	2.0
Silt, calcareous, light buff; contains sand.....	2.0	7.0
Sand and gravel; texture grades from fine sand to coarse gravel; contains some limy pebbles.....	7.0	12.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, silty, light pinkish buff.....	12.0	79.0

**Test Hole #C20-87 (No e-logs)  
(14N-50W-35cccc)  
Cheyenne County**

Location: SW SW SW SW sec. 35, T. 14 N., R. 50 W., 150 ft north and 100 ft east of southwest corner.

Ground elevation: 4,125 ft. (t). (Brownson 7.5 min. quadrangle).

Depth to water: Unknown.

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, black, silty sand.....	0.0	1.5
Sand, brown, silty.....	1.5	5.5
Silt, brown, sandy.....	5.5	6.5
Sand, light brown.....	6.5	6.6
Silt, brown, sandy.....	6.6	8.0
Sand, brown.....	8.0	8.3
Silt, olive brown, clayey.....	8.3	9.8
Sand, brown, silty.....	9.8	16.5
Sand and gravel, granitic.....	16.5	17.0
Sand, olive brown, silty.....	17.0	18.5
Sand and gravel, granitic.....	18.5	28.5
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, clay cement.....	28.5	48.5

**Test Hole #C21-87 (No e-logs)  
(14N-50W-35ccdd1)  
Cheyenne County**

Location: SE SE SW SW sec. 35, T. 14 N., R. 50 W., 162 ft north and  
1,100 ft east of southwest corner.

Ground elevation: 4,128 ft. (t). (Brownson 7.5 min. quadrangle).

Depth to water: Unknown.

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, black, silty sand.....	0.0	1.0
Sand, brown, silty.....	1.0	3.5
Sand, olive brown, silty.....	3.5	8.5
Sand, brown, silty.....	8.5	13.5
Sand, olive brown, silty.....	13.5	18.5
Sand and gravel, granitic.....	18.5	27.5
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, clay cement.....	27.5	43.5

**Test Hole #C22-87 (No e-logs)  
(14N-50W-35ccdd2)  
Cheyenne County**

Location: SE SE SW SW sec. 35, T. 14 N., R. 50 W., 200 ft north and  
2,493 ft east of southwest corner.  
Ground elevation: 4,124 ft. (t). (Brownson 7.5 min. quadrangle).  
Depth to water: Unknown.

	Depth, in feet	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, black, silty sand.....	0.0	1.0
Sand, grayish brown, silty.....	1.0	2.3
Sand, brown, silty.....	2.3	11.0
Sand, olive brown, silty.....	11.0	12.5
Sand, brown, silty.....	12.5	13.5
Sand, olive brown, silty.....	13.5	18.0
Sand and gravel, granitic.....	18.0	27.5
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, clay cement.....	27.5	43.5

**Test Hole #P32-87 (No e-logs)  
 (14N-50W-36adab)  
 Cheyenne County**

Location: NW NE SE NE sec. 36, T. 14 N., R. 50 W.  
 Ground elevation: 4,108 ft (t). (Sidney 7.5 min. quadrangle).  
 Depth to water: Unknown.

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, black, silty sand.....	0.0	1.0
Silt, dark brown, sandy.....	1.0	7.0
Sand, light brown, silty.....	7.0	18.5
Sand and gravel, granitic.....	18.5	48.5

**Test Hole #P31-87 (No e-logs)  
(14N-50W-36adba)  
Cheyenne County**

Location: NE NW SE NE sec. 36, T. 14 N., R. 50 W., 170 ft north of  
U.S. highway 30 and 800 ft west of east section line.  
Ground elevation: 4,110 ft. (t). (Sidney 7.5 min. quadrangle).  
Depth to water: Unknown.

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, black, silty sand.....	0.0	2.0
Sand, brown, silty, with some gravel.....	2.0	3.5
Silt, light yellowish brown to yellowish brown, sandy.....	3.5	8.0
Silt, dark brown, with calcite fillings.....	8.0	8.5
Silt, light brown, sandy.....	8.5	18.5
Sand and gravel, granitic.....	18.5	23.5
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, clay cement.....	23.5	48.5

**Test Hole #P1-87 (No e-logs)  
(14N-50W-36bcaa)  
Cheyenne County**

Location: NE NE SW NW sec. 36, T. 14 N., R. 50 W., 57 ft south of center of U.S. 30 and 102 ft west of field road.  
Ground elevation: 4,117 ft. (t). (Brownson 7.5 min. quadrangle).  
Depth to water: Unknown.

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, dark brown.....	0.0	3.5
Sand, brown, silty.....	3.5	7.0
Sand and gravel, granitic.....	7.0	18.5
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, clay cement.....	18.5	36.0

**Test Hole #1120-7A-87 (No e-logs)  
 (14N-50W-36cccc1)  
 Cheyenne County**

Location: SW SW SW SW sec. 36, T. 14 N., R. 50 W., 30 ft north and  
 140 ft east of southwest corner.

Ground elevation: 4,114 ft. (t). (Brownson 7.5 min. quadrangle).

Depth to water: Unknown; well abandoned.

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, brown, sandy.....	0.0	4.0
Sand and gravel, granitic.....	4.0	35.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, clay cement.....	35.0	40.0

**Test Hole #1120-7-87 (E-logs)  
 (14N-50W-36cccc2)  
 Cheyenne County**

Location: SW SW SW SW sec. 36, T. 14 N., R. 50 W., 34 ft north and  
 152 ft east of southwest corner.

Ground elevation: 4,114 ft. (t). (Brownson 7.5 min. quadrangle).

Depth to water: 26.0 ft. (1987).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, brown, sandy.....	0.0	5.0
Sand, brown, silty.....	5.0	10.0
Sand and gravel, granitic.....	10.0	30.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, clay cement.....	30.0	100.0

**Test Hole #C26-87 (No e-logs)  
(14N-50W-36cddd)  
Cheyenne County**

Location: SE SE SE SW sec. 36, T. 14 N., R. 50 W., 170 ft north and  
53 ft east of east dirt road.

Ground elevation: 4,112 ft. (t). (Brownson 7.5 min. quadrangle).

Depth to water: Unknown.

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, dark brown, silty sand.....	0.0	1.5
Sand, olive brown, silty.....	1.5	6.5
Sand, gray brown to olive brown, silty.....	6.5	13.0
Silt, dark gray, clayey.....	13.0	13.5
Sand, medium brown, silty.....	13.5	17.5
Sand and gravel, granitic.....	17.5	20.5
Silt, olive brown to black, clayey.....	20.5	23.0
Silt, greenish brown, sandy.....	23.0	27.5
Sand and gravel, granitic.....	27.5	28.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, clay cement.....	28.0	33.0

**Test Hole #C27-87 (No e-logs)  
(14N-50W-36dccc)  
Cheyenne County**

Location: SW SW SW SE sec. 36, T. 14 N., R. 50 W., 193 ft north and 575 ft east of east dirt road.

Ground elevation: 4,112 ft. (t). (Brownson 7.5 min. quadrangle).

Depth to water: Unknown.

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, black, silty sand.....	0.0	3.0
Sand, brown, silty.....	3.0	5.0
Sand, olive brown, silty.....	5.0	7.0
Sand, brown, silty.....	7.0	8.0
Silt, olive brown, clayey.....	8.0	11.0
Silt, grayish brown, clayey.....	11.0	11.5
Sand and gravel, granitic.....	11.5	11.8
Sand, olive brown, silty.....	11.8	13.5
Sand and gravel, granitic, with three thin clay beds.....	13.5	23.5

**Test Hole #C28-87 (No e-logs)  
(14N-50W-36dcdd)  
Cheyenne County**

Location: SE SE SW SE sec. 36, T. 14 N., R. 50 W., 240 ft north and  
1,600 ft east of east dirt road.

Ground elevation: 4,100 ft. (t). (Sidney 7.5 min. quadrangle).

Depth to water: Unknown; possibly 22.2 ft. (10-26-87).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, black, silty sand.....	0.0	2.5
Silt, olive brown, clayey and sandy.....	2.5	8.5
Sand, brown, silty.....	8.5	18.5
Sand and gravel, granitic, with two thin clay beds..	18.5	25.8

**Test Hole #1120-11-87 (E-logs)  
(14N-50W-36ddad)  
Cheyenne County**

Location: SE NE SE SE sec. 36, T. 14 N., R. 50 W., approximately 900 ft north and 281 ft west of southeast corner.

Ground elevation: 4,096 ft. (t). (Sidney 7.5 min. quadrangle).

Depth to water: 23.2 ft. (1987).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Top soil, brown, sandy with some gravel.....	0.0	5.0
Sand, brown, silty, with some gravel.....	5.0	10.0
Sand and gravel, granitic, with reworked local sandstone, caliche, and siltstone clasts.....	10.0	20.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, clay cement.....	20.0	120.0

**Test Hole #31B-42 (No e-logs)  
(14N-51W-7bbcc?)  
Cheyenne County**

Location: SW SW NW NW sec. 7, T. 14 N., R. 51 W.(?), just south of  
Lodgepole Creek.  
Ground elevation: 4,292 ft. (i). (Point of Rocks 7.5 min. quadrangle).  
Depth to water: Unknown. (6-26-42).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Clay, silty, dark brown gray.....	0.0	5.0
Gravel, pink; texture grades from fine to coarse; contains some sand.....	5.0	23.0
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Siltstone to sandstone, pinkish gray; contains some light gray limy fragments.....	23.0	60.0
Pebbles, composed of calcareous siltstone, light gray.....	60.0	67.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Claystone, silty, light pinkish gray.....	67.0	119.0

**Test Hole #31-42 (No e-logs)  
(14N-51W-7bccc)  
Cheyenne County**

Location: SW SW SW NW sec. 7, T. 14 N., R. 51 W.  
 Ground elevation: 4,302 ft. (t). (Point of Rocks 7.5 min. quadrangle).  
 Depth to water: Unknown. (6-26-42).

Depth, in feet  
 From            To

**Quaternary System, undifferentiated:**

Sand, silty, dark brown gray.....	0.0	1.0
Gravel, and sand, pink; texture grades from coarse sand to fine gravel.....	1.0	11.0
Gravel, pink; texture grades from fine to coarse....	11.0	22.0
Gravel, and sand, pink; texture grades from coarse sand to fine gravel.....	22.0	36.0

**Tertiary System - Miocene Series - Ogallala Group:**

**Ash Hollow Formation:**

Siltstone to sandstone, in part calcareous, pinkish gray and gray.....	36.0	66.0
Siltstone, calcareous, light gray.....	66.0	69.0

**Test Hole #29-40 (No e-logs)  
 (14N-51W-9badd?)  
 Cheyenne County**

Location: SE SE? NE NW sec. 9, T. 14 N., R. 51 W.  
 Ground elevation: 4,270 ft. (t). (Point of Rocks 7.5 min. quadrangle).  
 Depth to water: Unknown. (6-25-42).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Soil, clay, silty, dark brownish gray.....	0.0	4.0
Sand and gravel, gray to pink; texture grades from medium sand to medium gravel.....	4.0	14.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, silty, indurated, light pinkish gray.....	14.0	63.0
Clay, very silty, light pinkish gray.....	63.0	73.0
Clay, silty, indurated, light pinkish gray to pink..	73.0	109.0

**Test Hole #10-42 (No e-logs)  
 (14N-51W-24adaa)  
 Cheyenne County**

Location: NE NE SE NE sec. 24, T. 14 N., R. 51 W., 0.3 mi south of northeast corner.

Ground elevation: 4,180 ft. (t). (Sidney 7.5 min. quadrangle).

Depth to water: 16.5 ft. (6-12-42).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Silt, sandy, light brownish gray.....	0.0	2.0
Sand, pink; texture grades from fine to coarse with some fine to coarse gravel; contains some limy pebbles and a trace of reworked claystone in lower part.....	2.0	13.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, silty, light pinkish buff.....	13.0	49.0

**Test Hole #30-42 (No e-logs)  
(14N-52W-1ddaa)  
Cheyenne County**

Location: NE NE SE SE sec. 1, T. 14 N., R. 52 W., 350 ft north of north track of railroad.

Ground elevation: 4,316 ft. (t). (Point of Rocks 7.5 min. quadrangle).

Depth to water: Unknown. (6-25-42).

	Depth, in feet	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Soil, clay, silty, to sandy, dark brown-gray.....	0.0	4.0
Sand, gray; texture grades from fine to coarse with some gravel.....	4.0	17.0
Gravel, pink; texture grades from fine to medium....	17.0	23.0
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Siltstone and sandstone, light gray and pinkish gray.....	23.0	76.0
Siltstone and sandstone, very calcareous.....	76.0	78.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Claystone, silty, light gray to pink, in part non-silty and pink.....	78.0	109.0

**Test Hole #34-42 (No e-logs)  
(14N-52W-6daaa)  
Cheyenne County**

Location: NE NE NE SE sec. 6, T. 14 N., R. 52 W.  
 Ground elevation: 4,376 ft. (i). (Potter 7.5 min. quadrangle).  
 Depth to water: Unknown. (6-29-42).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Clay, silty, gray.....	0.0	2.0
Sand and gravel, gray to pink; texture grades from coarse sand to medium gravel.....	2.0	18.0
Gravel; texture grades from medium to coarse; contains many sandstone pebbles.....	18.0	31.0
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Sandstone, silty, pinkish gray.....	31.0	60.0
Sandstone, silty, pinkish gray, interbedded with siltstone, calcareous, light gray.....	60.0	76.0
Sandstone, silty, pinkish gray.....	76.0	99.0

**Test Hole #33-42 (No e-logs)  
(14N-52W-8bbcc)  
Cheyenne County**

Location: SW SW NW NW sec. 8, T. 14 N., R. 52 W., 0.25 mi south of cemetery.

Ground elevation: 4,408 ft. (t). (Potter 7.5 min. quadrangle).

Depth to water: Unknown. (6-27-42).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Clay, silty, dark gray.....	0.0	3.0
Sand and gravel, gray; texture grades from coarse sand to medium gravel; contains reworked pink siltstone pebbles.....	3.0	14.0
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Sandstone, silty, pinkish gray.....	14.0	24.0
Claystone, silty, micaceous, pink.....	24.0	26.0
Sandstone, silty, light gray and pinkish gray.....	26.0	33.0
Siltstone, sandy, calcareous, light gray.....	33.0	38.0
Siltstone, calcareous, light gray to white.....	38.0	40.0
Sandstone, silty, pinkish gray.....	40.0	50.0
Siltstone, calcareous, light gray to white.....	50.0	55.0
Sandstone, silty, light gray to pink.....	55.0	94.0
Siltstone, and marl, light gray to white.....	94.0	95.0

**Test Hole #32-42 (No e-logs)  
(14N-52W-11cbaa)  
Cheyenne County**

Location: NE NE NW SW sec. 11, T. 14 N., R. 52 W.  
 Ground elevation: 4,356 ft. (t). (Potter 7.5 min. quadrangle).  
 Depth to water: Unknown. (6-27-42).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Clay, silty to sandy, dark brownish gray to medium gray.....	0.0	18.0
Gravel, composed of siltstone.....	18.0	38.0
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Siltstone, and marl, light gray.....	38.0	44.0
Siltstone, and claystone, calcareous, light gray....	44.0	51.0
Sandstone, silty, medium gray.....	51.0	57.0
Siltstone, and claystone, very calcareous, light gray.....	57.0	60.0
Sandstone, silty, light gray to pink.....	60.0	90.0
Siltstone, and claystone, calcareous, light gray....	90.0	103.0
Sandstone, silty, medium gray.....	103.0	109.0

**Test Hole #25-A-65 (E-logs)  
(14N-52W-24dddd)  
Cheyenne County**

Location: SE SE SE SE sec. 24, T. 14 N., R. 52 W., 11 ft north and 187 ft west of southeast corner.  
 Ground elevation: 4,542 ft. (t). (Point of Rocks 7.5 min. quadrangle).  
 Depth to water: Unknown; well dry to 167 ft.; (9-11-65).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Road fill.....	0.0	0.8
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Caliche, sandy, white to very pale brown.....	0.8	10.5
Sandstone, silty, with some gravel, calcareous cement.....	10.5	15.4
Sandy silt and silty sandstone to caliche, white, very pale brown to pale yellow, calcareous cement.	15.4	26.0
Silt, clayey, pale olive.....	26.0	27.5
Caliche and sandstone, pale olive, white, and dark yellowish brown, calcareous cement.....	27.5	33.3
Sand and gravel, granitic.....	33.3	70.0
Sandstone and caliche, interbedded, white to very pale brown to yellowish brown, calcareous cement..	70.0	178.0
Sand and gravel, granitic, calcareous cement, with interbedded sandstones and silts.....	178.0	202.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, pale brown to light yellowish brown, some strata sandy; some with calcareous concretions.....	202.0	360.5

**Test Hole #20-WB-68 (No e-logs)  
(15N-47W-1bbba)  
Cheyenne County**

Location: NE NW NW NW sec. 1, T. 15 N., R. 47 W., 89 ft south and 490 ft east of northwest corner.

Ground elevation: 3,975 ft. (t). (Lisco SW 7.5 min. quadrangle).

Depth to water: 105 ft. (5-6-68).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
No sample.....	0.0	4.0
Silt, moderately clayey, moderately sandy, pale brown; sand is very fine to fine.....	4.0	6.0
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Limestone (caliche), sandy, white; sand is very fine to fine.....	6.0	8.0
Sandstone, gravelly; very fine sand to fine gravel; some silt lenses.....	8.0	19.0
Sand, gravelly; very fine sand to fine gravel; some silt lenses.....	19.0	27.0
Siltstone, clayey, brown; some very fine to fine sand.....	27.0	33.0
Caliche, sandy, silty, pinkish white; sand is very fine to fine; some interbedded siltstone below 37 ft.....	33.0	40.0
Claystone, silty, sandy, dark brown; sand is very fine to fine.....	40.0	57.0
Silt, very clayey, sandy, brown; sand is very fine to fine; moderately clayey below 62 ft.....	57.0	72.0
Siltstone, clayey, sandy, light brown, slightly calcareous to 77 ft; sand is very fine to fine, trace of medium.....	72.0	82.0
Clay, silty, pinkish gray to light brown; some interbedded claystone to siltstone lenses.....	82.0	87.0
Siltstone, clayey, brown; some very fine to coarse sand.....	87.0	92.0
Silt, slightly clayey, very sandy, light brown; sand is very fine to coarse; trace of gravel.....	92.0	98.0
Sand, gravelly; silty.....	98.0	103.0
Caliche, white; trace of very fine sand.....	103.0	105.0
Siltstone, clayey, sandy, pink; sand is very fine to fine, trace of medium.....	105.0	111.0

Caliche, sandy, pinkish white; sand is very fine to fine.....	111.0	113.0
Siltstone, sandy, brown, slightly calcareous; sand is very fine to fine; some medium to coarse from 120 to 122 ft.....	113.0	123.0
Silt, slightly clayey, very sandy, brown; in part sand is very fine to coarse; trace of gravel to 129 ft.....	123.0	132.0
Siltstone, moderately sandy, slightly clayey, brown; sand is very fine to fine, some medium.....	132.0	139.0
Silt, very sandy, slightly clayey, brown; sand is very fine to fine.....	139.0	142.0
Siltstone, very sandy, clayey, brown; sand is very fine to fine, trace of medium to coarse.....	142.0	152.0
Silt, very sandy, clayey, pale brown, slightly calcareous, sand is very fine to coarse; trace of fine gravel.....	152.0	162.0
Sand, gravelly; very fine sand to fine gravel; silty.....	162.0	177.0
Silt, moderately clayey, sandy, pale brown; sand is very fine to fine.....	177.0	181.0
Caliche, sandy; sand is very fine to fine.....	181.0	182.0
Siltstone, sandy, clayey, pink, moderately calcareous; sand is very fine to fine, some medium; pale brown below 202 ft.....	182.0	232.0
Sandstone, very fine to fine grained; some interbedded siltstone.....	232.0	247.0
Siltstone, clayey, sandy, brown, in part calcareous; sand is very fine to fine, trace of medium; limestone lenses from 266 to 266.8 ft.....	247.0	267.0
Siltstone, clayey, very sandy, pale brown, slightly calcareous; sand is very fine to fine.....	267.0	282.0
Sand, very fine to fine, trace of medium, silty.....	282.0	299.0
Siltstone, slightly clayey, sandy, pale brown, very calcareous; sand is very fine to fine.....	299.0	307.0
Clay, silty, pale brown; some siltstone lenses.....	307.0	327.0
Siltstone, clayey, sandy, brown; sand is very fine to fine, trace of medium.....	327.0	337.0
Sand, very fine to fine; some clay lenses; in part sandy silt below 342 ft.....	337.0	352.0
Silt, moderately clayey, light yellowish brown; some very fine to fine sand; some claystone.....	352.0	362.0
Clay, moderately silty, sandy, light yellowish brown; sand is very fine to fine.....	362.0	382.0
Clay, silty, pale brown.....	382.0	397.0
Silt, moderately clayey, sandy, light yellowish brown; sand is very fine to fine.....	397.0	420.0

Clay, silty, light yellowish brown with reddish  
tint; trace of very fine sand; claystone layer  
from 422 to 427 ft..... 420.0 467.0

**Test Hole #24-WB-68 (E-logs)**  
**(15N-47W-4abba)**  
**Cheyenne County**

Location: NE NW NW NE sec. 4, 15 N., R. 47 W., 2,082 ft west and 59 ft south of northeast corner.  
 Ground elevation: 4,048 ft. (t). (Lisco SW 7.5 min. quadrangle).  
 Depth to water: 177 ft. (5-8-68).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
No sample.....	0.0	4.5
Sand, gravelly; fine sand to fine gravel; some siltstone pebbles and cobbles below 10 ft.....	4.5	15.0
Sand, very fine to fine, silty.....	15.0	19.5
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Limestone caliche, sandy, white.....	19.5	26.5
Clay, moderately silty, sandy, pale yellow, slightly calcareous; sand is very fine to fine.....	26.5	30.0
Sandstone, very fine to fine grained, trace of medium, silty, slightly calcareous to 30 ft, well consolidated; some siltstone.....	30.0	34.0
Siltstone, clayey, sandy, brown; sand is very fine to fine; some limy lenses.....	34.0	50.0
Claystone, silty, sandy, light brown, slightly calcareous; sand is very fine to fine.....	50.0	55.0
Sand, very fine to medium, some coarse, trace of very coarse, silty.....	55.0	60.0
Sand, medium to very coarse; trace of fine gravel; some silt lenses.....	60.0	65.0
Claystone, silty, light brown, slightly calcareous; some interbedded sandstone below 70 ft.....	65.0	75.0
Clay, silty, light brown, slightly calcareous; trace of very fine sand to 85 ft; moderately sandy below 85 ft; sand is very fine to fine, trace of medium.	75.0	91.0
Siltstone, clayey, sandy, brown with some light gray, slightly calcareous; sand is very fine to fine, some medium, trace of coarse.....	91.0	95.0
Sand, fine to medium, some coarse to very coarse, silty; some very coarse to fine gravel below 100 ft.....	95.0	105.0
Caliche, sandy, light gray; sand is very fine to fine.....	105.0	110.0
Sandstone, very fine to fine grained, trace of medium; some siltstone and rare rootlets.....	110.0	120.0

Caliche, light gray; some interbedded siltstone.....	120.0	125.0
Siltstone, clayey, sandy, light brown, very calcareous; sand is very fine to fine; some limy lenses to 135 ft.....	125.0	141.0
Sand, medium to coarse, clayey, silty.....	141.0	145.0
Siltstone, clayey, sandy, pale brown, very calcareous; sand is very fine to fine.....	145.0	150.0
Caliche, sandy, silty, white; sand is very fine to fine.....	150.0	155.0
Sandstone, very fine to fine grained, silty, calcareous.....	155.0	180.0
Siltstone, clayey, sandy, brown, moderately to very calcareous; sand is very fine to fine; limestone lenses from 200 to 205 ft.....	180.0	210.0
Sandstone, very fine grained, silty; some siltstone.....	210.0	225.0
Caliche, sandy, pale brown; sand is very fine to fine.....	225.0	230.0
Clay, silty, sandy, pale brown, in part slightly to moderately calcareous; sand is very fine to fine, in part consolidated.....	230.0	330.0
Clay, silty, sandy, pale brown, some light gray; sand is very fine to fine; some medium sand below 340 ft.....	330.0	350.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, silty, light brown.....	350.0	380.0

**Test Hole #19-WB-68 (No e-logs)  
(15N-47W-14caad)  
Cheyenne County**

Location: SE NE NE SW sec. 14, T. 15 N., R. 47 W., approximately 2,016 ft north and 2,548.5 ft east of southwest corner.  
Ground elevation: 4,010 ft. (i). (Lisco SW 7.5 min. quadrangle).  
Depth to water: Unknown; test hole caved at 213 ft. (5-6-68).

	<u>Depth, in feet</u>	
	From	To
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Gravel, sandy; fine sand to coarse gravel; some limy grains.....	0.0	4.5
Siltstone, clayey, sandy, light brown; some pinkish gray color below 15 ft.....	4.5	18.5
Limestone (caliche), sandy, white; sand is very fine to fine.....	18.5	19.5
Sand, very fine to fine, some medium; silty below 25 ft; medium to coarse, with trace of fine gravel below 40 ft.....	19.5	52.0
Siltstone, clayey, sandy, light brown; sand is very fine to fine.....	52.0	80.0
Sand, very fine to coarse.....	80.0	82.0
Sand, gravelly; fine sand to fine gravel; some coarse gravel below 92 ft; in part silty from 97 to 102 ft.....	82.0	110.0
Siltstone, clayey, sandy, light brown; sand is very fine to fine; trace of medium, volcanic ash shards at 115 ft.....	110.0	121.5
Limestone (caliche), sandy, pale brown; sand is fine to medium.....	121.5	130.0
Siltstone, clayey, sandy, pink to gray, slightly calcareous; sand is very fine to medium; pale brown with limy areas below 133 ft.....	130.0	138.0
Claystone, silty, light brown, slightly calcareous..	138.0	142.0
Sand, very fine to fine, silty.....	142.0	147.0
Siltstone, clayey, sandy, pale brown, slightly calcareous, noncalcareous from 176 to 177 ft; sand is very fine to fine.....	147.0	181.0
Clay, silty, sandy, white, slightly calcareous; sand is very fine to fine.....	181.0	182.0
Clay, silty, sandy, light brown; sand is very fine to fine.....	182.0	200.0

Clay, silty, light brown, some light gray, slightly calcareous; some very fine to fine sand; some siltstone lenses below 247 ft.....	200.0	254.0
Siltstone, sandy, pale brown; sand is very fine to fine.....	254.0	262.0
Clay, silty, sandy, pale brown; sand is very fine to fine; some interbedded siltstone and fossil fragments from 283 to 286 ft.....	262.0	288.0
Siltstone, moderately sandy, light brown; sand is very fine to fine; some clay seams; fossil fragments below 292 ft.....	288.0	307.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Silt, moderately clayey, sandy, pale brown; sand is very fine to fine; some interbedded siltstone lenses.....	307.0	327.0
Clay, moderately silty, sandy, pale brown, slightly calcareous; sand is very fine to fine; some siltstone layers.....	327.0	332.0
Silt, clayey, sandy, brown; sand is very fine to fine; some siltstone layers.....	332.0	342.0
Clay, moderately silty, brown; little siltstone.....	342.0	362.0

**Note:** There are no samples below 115 ft and no electric logs for this hole. Data below 115 ft are suspect.

**Test Hole #16-A-65 (one E-log)**  
**(15N-47W-19bbbb)**  
**Cheyenne County**

Location: NW NW NW NW sec. 19, T. 15 N., R. 47 W., 9 ft south and 107 ft east of northwest corner.

Ground elevation: 4,092 ft. (t). (Dalton SE 7.5 min. quadrangle).

Depth to water: 178.8 ft. (8-13-65).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
No sample.....	0.0	1.0
Silt, sandy to clayey, dark brown to gray brown, calcareous.....	1.0	5.1
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Sandstone, silty, brown, includes some gravel, rhizoliths, discontinuous calcareous cement.....	5.1	27.0
Sand and gravel, granitic.....	27.0	36.6
Sandstone to siltstone, yellowish brown to pale brown, discontinuous calcareous cement, some claystone.....	36.6	50.0
Silt, siltstone, and silty sandstone, pale olive to olive, some clay; discontinuous calcareous cement.	50.0	55.6
Silt, siltstone, and sandstone, yellowish brown to brown; minor calcareous cement near top.....	55.6	65.0
Sandstone, silty, brown to yellowish brown.....	65.0	70.6
Sand and gravel, granitic, rhizoliths.....	70.6	71.0
Silt, siltstone, and sandstone, yellowish brown to pale brown, discontinuous calcareous cement, rhizoliths in some horizons.....	71.0	93.2
Sand and sandstone, light gray to pinkish brown, minor calcareous cement.....	93.2	105.6
Sand, sandstone, and siltstone, pale lemon to light gray.....	105.6	110.8
Silt to siltstone, white, sandy, calcareous cement..	110.8	115.5
Sand and sandstone, light gray to pale brown, calcareous cement.....	115.5	125.0
Silt, sand, and sandstone, brown to gray to olive, discontinuous calcareous cement, interbedded.....	125.0	165.0
Sandstone and silt, pale olive, calcareous cement...	165.0	175.0
Sandstone, silts, pale brown to yellowish brown, discontinuous calcareous cement.....	175.0	205.0
Sandstone and silt, light yellowish brown to pale brown, discontinuous calcareous cement.....	205.0	230.0

Silt and siltstone, pale brown to light yellowish brown, sandy to clayey, some discontinuous calcareous cement.....	230.0	276.5
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone and silt, brown, yellowish brown, pale brown, concretions in some strata with calcareous cement.....	276.5	370.5

**Test Hole #18-B-65 (E-logs)**  
**(15N-47W-36daaa)**  
**Cheyenne County**

Location: NE NE NE SE sec. 36, T. 15 N., R. 47 W., 2,551 ft north and  
 10 ft west of southeast corner.

Ground elevation: 3,956 ft. (t). (Lodgepole 7.5 min. quadrangle).

Depth to water: Unknown. (7-29-65).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Road fill, dark gray, silt, clayey to sandy.....	0.0	3.5
Silt, sandy, pale brown.....	3.5	4.0
<b>Tertiary System - Miocene Series.- Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Silt, sandy, light olive brown, calcareous.....	4.0	5.0
Sand and sandstone, pale olive, calcareous cement, rhizoliths.....	5.0	15.0
Silt, sand, and sandstone, pale olive to olive, calcareous cement in upper part, also rhizoliths..	15.0	45.0
Silty clay, clay, and caliche, pale olive to yellow, discontinuous calcareous cement.....	45.0	72.0
Sandstone, silty and sandy silt, brown to pink, minor calcareous cement.....	72.0	95.0
Sand and sandstone, silty in part, light yellow brown to light brown, calcareous cement, rhizoliths.....	95.0	111.8
Sand and gravel, granitic.....	111.8	121.8
Sandstone, caliche, and silt, light gray to white, calcareous cement, rhizoliths at top.....	121.8	137.8
Sand, olive to white, calcareous, rhizoliths.....	137.8	146.8
Sand and gravel and sandstone, interbedded, gray to olive, calcareous cement.....	146.8	160.0
Sandstone and caliche, interbedded, calcareous cement.....	160.0	174.0
Caliche and sandy silt, light gray to white, cal- careous cement.....	174.0	183.0
Silt and silty sandstone, pale brown, calcareous cement.....	183.0	187.0
Caliche, sandy, white.....	187.0	189.0
Sandstone, white, pale brown, olive brown, calcar- eous cement, rhizoliths.....	189.0	197.0
Sand and sandstone, white to pale brown, calcareous cement.....	197.0	217.0
Siltstone, sandy, white to pale brown, calcareous cement.....	217.0	222.0

**Tertiary System - Oligocene Series - White River Group:**

**Brule Formation:**

Siltstone, brown, yellowish brown to pale brown,  
some horizons with calcareous concretions..... 222.0 380.5

**Test Hole #23-B-65 (E-logs)**  
**(15N-48W-1aaad)**  
**Cheyenne County**

Location: SW NE NE NE sec. 1, T. 15 N., R. 48 W., 373 ft south and 9.5 ft west of northeast corner.

Ground elevation: 4,090 ft. (t). (Dalton SE 7.5 min. quadrangle).

Depth to water: 182.3 ft. (9-2-65).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Road fill.....	0.0	3.0
Silt, sandy, light olive brown.....	3.0	4.8
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Sand and sandstone, silty, interbedded, brown to very pale brown, some light gray to white, discontinuous calcareous cement, rhizoliths common in some horizons.....	4.8	66.7
Sand and gravel, granitic.....	66.7	82.8
Siltstone, brown, calcareous.....	82.8	83.5
Sand and gravel, granitic.....	83.5	88.5
Sand and sandstone, silty, brown to light yellowish brown, discontinuous calcareous cement.....	88.5	95.0
Sand and gravel, granitic.....	95.0	103.0
Silt and sand to sandstone, interbedded, pale brown to brown, discontinuous calcareous cement.....	103.0	112.0
Silt and siltstone, pale olive, calcareous at top...	112.0	114.0
Sand and gravel, granitic.....	114.0	118.0
Silt, sandy, pale olive, calcareous.....	118.0	119.5
Sand and gravel, silty, granitic.....	119.5	125.0
Silt, sandy to clayey, discontinuous calcareous cement, light brown and brown to pink.....	125.0	140.0
Sand, silty and sandstone, light gray and light brown to brown, discontinuous calcareous cement, rhizoliths in some horizons.....	140.0	160.0
Sand and gravel, granitic, calcareous cement.....	160.0	167.0
Sandstone, silty, very light gray, calcareous cement.....	167.0	170.0
Sand and gravel, granitic, discontinuous calcareous cement.....	170.0	176.0
Sandstone, and silty sandstone, interbedded, white and pale brown to brown, discontinuous calcareous cement, some horizons with rhizoliths.....	176.0	225.0
Sandstone and caliche, interbedded, pale brown to white, rhizoliths in some horizons, harder rock...	225.0	240.0

Sandstone, silty, to silty sand, interbedded, white, light gray and pale brown, discontinuous calcareous cement, rhizoliths in some horizons.....	240.0	330.0
Silt, clayey to sandy, very pale brown to brown, discontinuous calcareous cement.....	330.0	380.0
Sand to sandstone, pale brown to very pale brown, minor calcareous cement.....	380.0	400.0
Silt, sandy to silty sand, interbedded, pale brown to brown, discontinuous calcareous cement. gravel clasts in some horizons.....	400.0	546.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Silt and siltstone, clayey to sandy, calcareous, slow drilling.....	546.0	600.5

**Test Hole #23-WB-68 (E-logs)**  
**(15N-48W-4aaaa)**  
**Cheyenne County**

Location: NE NE NE NE sec. 4, T. 15 N., R. 48 W., 6 ft south and 12 ft west of northeast corner.

Ground elevation: 4,122 ft. (t). (Dalton SE 7.5 min. quadrangle).

Depth to water: 179 ft. (5-8-68).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
No sample.....	0.0	5.0
Sand, fine to very coarse; trace of gravel, silty...	5.0	10.0
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Sand and gravel; medium sand to medium gravel.....	10.0	13.0
Siltstone, clayey, sandy, brown; sand is very fine to fine, trace of medium.....	13.0	15.0
Sandstone, very fine to fine grained; trace of medium, silty, slightly calcareous, poorly consolidated.....	15.0	45.0
Siltstone, clayey, sandy, brown, moderately calcareous.....	45.0	53.0
Sand, very fine to fine; trace of medium, silty.....	53.0	55.0
Sandstone, very fine to fine grained, trace of medium, slightly calcareous, moderately consolidated; some rootlets.....	55.0	75.0
Siltstone, clayey, brown, very calcareous; sandy below 80 ft.....	75.0	85.0
Sand, very fine to medium; some coarse, silty.....	85.0	90.0
Sand, gravelly; very fine sand to fine gravel, silty.....	90.0	116.0
Silt, moderately clayey, moderately sandy, pale yellow, some light brownish gray; sand is very fine to fine.....	116.0	120.0
Sand, very fine to fine, some medium, silty; some interbedded siltstone lenses.....	120.0	135.0
Siltstone, clayey, sandy, gray, calcareous; sand is very fine to fine, trace of medium; some interbedded sandstone lenses.....	135.0	150.0
Claystone, silty, light brownish gray, moderately calcareous.....	150.0	155.0
Sand, very fine to medium, some coarse, silty.....	155.0	162.0
Silt, slightly clayey, brown, slightly calcareous, trace of very fine sand.....	162.0	165.0
Sand, very fine to fine; some medium, silty.....	165.0	170.0

Siltstone, clayey, sandy, pink and pale brown; sand is very fine; some interbedded limy lenses.....	170.0	175.0
Limestone, pale brown; some interbedded sandy siltstone lenses.....	175.0	187.5
Sandstone, very fine to fine grained; trace of medium, silty, well consolidated; some interbedded siltstone lenses below 205 ft.....	187.5	210.0
Limestone, sandy, light gray; some clay lenses.....	210.0	215.0
Sand, very fine to fine; some medium, silty.....	215.0	228.5
Clay, moderately silty, slightly sandy, light gray; sand is very fine.....	228.5	230.0
Sand, very fine to fine, silty, pale brown; some clay lenses, in part consolidated below 235 ft....	230.0	240.0
Silt, moderately clayey, moderately sandy, light gray; sand is very fine to fine; interbedded siltstone and sandstone lenses below 245 ft.....	240.0	250.0
Sandstone, very fine to fine grained, silty, poorly consolidated; some interbedded claystone lenses...	250.0	270.0
Sand, very fine to fine, trace of medium, silty; some silty clay lenses; some consolidation below 280 ft.....	270.0	290.0
Claystone, silty, pale brown.....	290.0	291.0
Sand, very fine to fine, silty; some claystone below 315 ft.....	291.0	330.0
Claystone, silty, sandy, pale brown; white below 335 ft; sand is very fine to fine.....	330.0	347.0
Sand, very fine to fine, silty.....	347.0	350.0
Claystone, silty, sandy, pale brown; sand is very fine.....	350.0	365.0
Sand, fine to medium, some very fine, silty; some coarse below 375 ft.....	365.0	381.0
Claystone, silty, sandy, pale brown; sand is fine to coarse, some gravel.....	381.0	397.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Claystone, silty, light yellowish brown, some brownish gray; trace of very fine sand.....	397.0	440.0

**Test Hole #22-WB-68 (E-logs)**  
**(15N-49W-13aada)**  
**Cheyenne County**

Location: NE SE NE NE sec. 13, T. 15 N., R. 49 W., 935 ft south and  
 43 ft west of northeast corner.

Ground elevation: 4,182 ft (t). (Gurley 7.5 min. quadrangle).

Depth to water: 200 ft (5-68).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
No sample.....	0.0	1.0
Silt, slightly clayey, sandy, dark grayish brown....	1.0	5.0
Silt, moderately sandy, slightly clayey, pale brown to yellowish brown; sand is very fine to fine.....	5.0	16.0
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Sand, medium to very coarse; trace of fine sand and fine gravel.....	16.0	36.0
Siltstone, clay, sandy, light yellowish brown, sand is very fine to fine, trace of medium; limestone (caliche) layer from 38 to 40 ft.....	36.0	46.0
Silt, silty sand, slightly clayey, brown; sand is very fine to fine, trace of medium; coarser grained below 50 ft.....	46.0	60.0
Silt, slightly clayey, sandy, brown; sand is very fine to fine; some fine gravel from 68 to 70 ft...	60.0	90.0
Sand, fine to coarse, some very coarse; trace of fine gravel.....	90.0	95.0
Gravel, sandy, fine gravel to very fine sand; trace of fine sand.....	95.0	100.0
Sand, gravelly; medium sand to fine gravel; trace of fine sand.....	100.0	105.0
Sand and gravel; fine sand to fine gravel.....	105.0	110.0
Gravel, sandy; medium gravel to medium sand, silty..	110.0	115.0
Sand, gravelly; medium sand to fine gravel; some fine sand.....	115.0	125.0
Gravel, sandy; medium gravel to medium sand; trace of coarse gravel, finer grained below 130 ft.....	125.0	133.0
Limestone (caliche), silty, clayey; brown.....	133.0	137.5
Sand and gravel; medium sand to fine gravel.....	137.5	154.5
Silt, moderately clayey, sandy, pink; sand is very fine to fine, trace of medium; some limy lenses...	154.5	167.0
Sand, gravelly; fine sand to fine gravel; some interbedded silts below 175 ft.....	167.0	180.0
Gravel, sandy; medium gravel to medium sand.....	180.0	185.0

Clay, silty, light yellowish-brown pinkish-white, slightly calcareous; trace of very fine sand.....	185.0	190.0
Sandstone, very fine to fine grained, silty, brown, poorly consolidated; some interbedded clay lenses.	190.0	200.0
Siltstone, clayey, sandy, brown, slightly calcareous to 210 ft; sand is very fine to fine.....	200.0	215.0
Sandstone, very fine to fine grained, silty, slightly calcareous, moderately consolidated.....	215.0	220.0
Siltstone, clayey, sandy, brown, slightly calcareous; sand is very fine to fine.....	220.0	230.0
Clay, silty, brown, slightly calcareous, moderately calcareous from 240 to 245 ft; interbedded siltstone lenses below 240 ft.....	230.0	265.0
Sand, very fine to fine, trace of medium.....	265.0	279.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, silty, brown; yellowish brown; sand is very fine to fine.....	279.0	285.0
Claystone, silty, sandy, light yellowish brown; sand is very fine to fine.....	285.0	303.0
Clay, silty, light yellowish brown.....	303.0	320.0

**Test Hole #20-A-65 (E-logs)**  
**(15N-49W-19bbba)**  
**Cheyenne County**

Location: NE NW NW NW sec. 19, T. 15 N., R. 49 W., 11 ft south and  
 403 ft east of northwest corner.

Ground elevation: 4,265 ft. (t). (Gurley 7.5 min. quadrangle).

Depth to water: 145.53 ft. (9-2-65).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Road fill, silt to gravel, black.....	0.0	2.5
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Sandstone to siltstone, pinkish brown to brown, calcareous cement, rhizoliths.....	2.5	14.6
Silt, sandy, and sandstone, light brown to brown, discontinuous calcareous cement.....	14.6	32.2
Sand and gravel, granitic.....	32.2	39.6
Siltstone to sandstone, interbedded, light brown to light yellowish brown, discontinuous calcareous cement.....	39.6	85.0
Silt, sandy and sandstone, white to light brown, calcareous cement.....	85.0	92.5
Volcanic ash, white to gray, calcareous cement at top.....	92.5	96.5
Sandstone, silty, and sandy silt, interbedded, white, olive, and brown, calcareous cement and rhizoliths.....	96.5	123.4
Silt and sandstone, interbedded, olive brown to dark brown.....	123.4	170.0
Sandstone and siltstone, interbedded, white, pale olive to light brown, upper parts calcareous, rhizoliths.....	170.0	220.0
Silt and silty sand, pale olive to white calcareous, few rhizoliths.....	220.0	270.0
Silt, sandy and sandy silt, light gray to pale brown, discontinuous calcareous cement and rhizoliths.....	270.0	288.4
Silt and siltstone, sandy, yellowish brown to brown.	288.4	355.2
Sand, silty, yellowish brown to brown, discontinuous calcite cement, rhizoliths.....	355.2	371.0

**Tertiary System - Oligocene Series - White River Group:**

**Brule Formation:**

Siltstone, yellowish brown to brown, clay cement,  
some horizons have concretions with calcareous  
cement..... 371.0 400.5

**Test Hole #22-B-65 (E-logs)**  
**(15N-49W-36dada)**  
**Cheyenne County**

Location: NE SE NE SE sec. 36, T. 15 N., R. 49 W., 1,680 ft north  
and 1.5 ft west of southeast corner.

Ground elevation: 4,198 ft. (t). (Sidney 7.5 min. quadrangle).

Depth to water: Unknown; hole open to 93 ft. (9-2-65).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Road fill.....	0.0	1.2
Silt, sandy, pale brown.....	1.2	3.5
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Caliche, sandy, with some gravel, calcareous.....	3.5	6.5
Sand and gravel, granitic.....	6.5	16.0
Sand and sandstone, gravelly, yellowish brown to light olive brown, rhizoliths in some horizons, slightly calcareous.....	16.0	30.0
Sand and gravel, granitic.....	30.0	37.0
Silt, sandy, brownish yellow.....	37.0	43.0
Sand and gravel, granitic.....	43.0	44.5
Silt, sandy, light olive brown.....	44.5	49.0
Sand and gravel, granitic, rhizoliths.....	49.0	63.0
Sandstone, brown, rhizoliths.....	63.0	68.0
Sand and gravel, granitic.....	68.0	75.0
Sand, silty, brown, few rhizoliths.....	75.0	76.0
Sand and gravel, granitic.....	76.0	84.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone and very fine sandstone, white, light gray to pale brown, calcareous cement and concretions with calcareous cement.....	84.0	155.6
Siltstone, slightly sandy, very pale to light yellowish brown, some horizons with concretions with calcareous cement.....	155.6	400.5

**Test Hole #2-WB-67 (E-logs)**  
**(15N-50W-6cbbb)**  
**Cheyenne County**

Location: NW NW NW SW sec. 6, T. 15 N., R. 50 W., 2,651.3 ft south and 50 ft east of northwest corner.

Ground elevation: 4,381 ft. (t). (Mud Springs SE 7.5 min. quadrangle).

Depth to water: Unknown; test hole caved at 179 ft. (10-2-67).

Depth, in feet  
From            To

**Quaternary System, undifferentiated:**

Silt, sandy, slightly clayey, dark brownish gray;  
sand is very fine to medium..... 0.0            5.0

**Tertiary System - Miocene Series - Ogallala Group:**

**Ash Hollow Formation:**

Sand, gravelly; very fine sand to fine gravel; some  
medium gravel..... 5.0            15.0

Gravel, sandy; medium gravel to fine sand..... 15.0            21.0

Silt, slightly clayey, sandy, marly, light gray to  
pale yellow and brown; sand is very fine to fine;  
some rootlets..... 21.0            41.0

Sandstone, very fine to fine grained, silty, poorly  
to well consolidated; some marly areas; some  
gravel..... 41.0            78.0

Limestone caliche, silty, sandy to gravelly, white  
To light gray..... 78.0            85.0

Sand, gravelly; ver fine sand to fine gravel; some  
medium coarse gravel..... 85.0            119.0

Sandstone, very fine to medium grained, moderately  
consolidated..... 119.0            148.0

Silt, slightly clayey, sandy, pinkish gray to brown;  
sand is very fine; some marly areas; sand is very  
fine to medium below 160 ft..... 148.0            168.0

Gravel, sandy; medium gravel to fine sand; some  
coarse gravel; some interbedded silt below 200 ft. 168.0            204.0

Silt, slightly clayey, sandy, light brown; sand is  
very fine to fine..... 204.0            209.0

Sand and gravel; fine sand to fine gravel; trace of  
medium gravel..... 209.0            227.0

Silt, slightly clayey, sandy, brown; sand is very  
fine to fine; some limy areas and interbedded  
sandstone..... 227.0            242.0

Sand, gravelly; very fine sand to fine gravel,  
silty..... 242.0            251.0

Silt, slightly clayey, sandy, light brown, pinkish gray and brown; sand is very fine to medium; few limy areas.....	251.0	277.0
Sand, gravelly; fine sand to fine gravel; some medium gravel.....	277.0	323.0
Sand, very fine to very coarse; trace of fine gravel, limy layer below 342 ft.....	323.0	343.0
Sand, very fine to coarse, in part very fine to fine with some medium sand.....	343.0	401.0
Sandstone, very fine to fine grained, in part silty and well consolidated.....	401.0	425.0
Sand to sandstone, slightly gravelly; very fine sand to fine gravel; some coarse gravel; some limestone lenses.....	425.0	443.0
Limestone (caliche), light gray.....	443.0	446.0
Silt, slightly clayey, some limy zones.....	446.0	452.0
Sand to sandstone, some gravel, in part lime cemented.....	452.0	475.0
Silt, clayey, sandy, light brown; sand is very fine to medium, some marly areas.....	475.0	495.0
Limestone (caliche), light gray.....	495.0	534.0

**Test Hole #25-WB-68 (E-logs)**  
**(15N-50W-22caac)**  
**Cheyenne County**

Location: Somewhere in SW (probably SW NE NE SW) sec. 22, T. 15 N.,  
 R. 50 W.  
 Ground elevation: 4,302 ft. (t). (Mud Springs SE 7.5 min. quadrangle).  
 Depth to water: 144 ft. (5-26-68).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
No sample.....	0.0	4.5
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Sand, medium to very coarse; some gravel, silty.....	4.5	10.0
Sand and gravel; fine sand to medium gravel; some clay lenses.....	10.0	25.0
Clay, silty, sandy, brown; sand is very fine to medium, trace coarse.....	25.0	35.0
Siltstone, clayey, sandy, pale brown; sand is very fine to fine; limestone lenses below 65 ft.....	35.0	90.0
Sandstone, very fine to fine grained, silty, moderately consolidated.....	90.0	105.0
Siltstone, clayey, sandy, brown; sand is very fine to fine.....	105.0	118.0
Silt, moderately clayey, moderately sandy, brown; sand is very fine to fine.....	118.0	120.0
Siltstone, clayey, sandy, brown; sand is very fine to fine.....	120.0	125.0
Clay, silty, sandy, brown; sand is very fine to fine; some claystone lenses 130 to 135 ft.....	125.0	150.0
Sandstone, very fine to fine grained, silty, well consolidated; some interbedded siltstone lenses below 155 ft.....	150.0	160.0
Clay, moderately silty, brown; some interbedded sand and siltstone lenses.....	160.0	170.0
Siltstone, clayey, sandy, brown; sand is very fine to fine, some medium.....	170.0	181.0
Clay, silty, pink.....	181.0	185.0
Sand, very fine to fine, some medium, silty; some interbedded clay lenses.....	185.0	195.0
Siltstone, clayey, sandy, brown with some pink; sand is very fine.....	195.0	200.0
Sand, very fine to fine, trace of medium, silty; in part consolidated below 205 ft.....	200.0	215.0

Siltstone, clayey, sandy, brown; sand is very fine to fine; some interbedded sandstone lenses.....	215.0	220.0
Sand, very fine to fine, some medium, silty.....	220.0	225.0
Siltstone, clayey, sandy, brown; sand is very fine to fine, some medium.....	225.0	235.0
Sand, fine to medium, some fine.....	235.0	264.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, clayey, sandy, brown, moderately calcareous; sand is very fine to fine; some interbedded sandstone.....	264.0	275.0
Clay, silty, sandy, brown, slightly calcareous; sand is very fine to fine; no sand below 285 ft.....	275.0	320.0

**Test Hole #26-B-65 (E-logs)  
(15N-50W-36ddcc)  
Cheyenne County**

Location: SW SW SE SE sec. 36, T. 15 N., R. 50 W., 5.5 ft north and  
1,208 ft west of southeast corner.  
Ground elevation: 4,310 ft. (t). (Sidney 7.5 min. quadrangle).  
Depth to water: 153.3 ft. (9-2-65).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Road fill.....	0.0	1.5
Silt, clayey, dark grayish brown.....	1.5	2.5
Silt, sandy, pale brown, calcareous.....	2.5	5.5
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Sand and gravel, granitic, calcareous cement at top.	5.5	7.5
Caliche, sandy, very pale brown.....	7.5	8.5
Sand and sandstone, brown to pinkish white, discontinuous calcareous cement.....	8.5	27.0
Sand and gravel, granitic.....	27.0	42.0
Silt, sandy and sandstone, light brown to reddish yellow.....	42.0	54.0
Sand, gravelly, granitic.....	54.0	59.2
Silt, sandy and sand, silty, with gravel, light brown to brown, light gray, discontinuous calcareous cement, rhizoliths in some horizons.....	59.2	87.2
Sand and gravel, granitic.....	87.2	91.8
Silt, sand and sand, silty, with gravel, pink, light brown to brown, discontinuous calcareous cement...	91.8	105.0
Caliche, white, and sandstone, pale brown.....	105.0	110.0
Sand and sandstone, very pale brown.....	110.0	117.5
Caliche, white.....	117.5	117.7
Silt, sandy, pale brown, calcareous cement.....	117.7	120.0
Sandstone and caliche, interbedded, brown to white..	120.0	127.8
Silt, sandy, brown to white, discontinuous calcareous cement.....	127.8	130.0
Sandstone, pale brown to white, discontinuous calcareous cement.....	130.0	135.0
Sand and gravel, granitic, calcareous cement.....	135.0	158.0
Silt, sandy, and sand, silty, and caliche, light brown - light gray to white, calcareous cement....	158.0	230.0

**Tertiary System - Oligocene Series - White River Group:**

**Brule Formation:**

Siltstone, light yellowish brown to brown, clay  
cement, concretions with calcareous cement in some  
horizons..... 230.0 300.5

**Test Hole #15-WB-67 (E-log)**  
**(15N-51W-4aaaa)**  
**Cheyenne County**

Location: NE NE NE NE sec. 4, T. 15 N., R. 51 W., 69 ft south and 50 ft west of northeast corner.  
 Ground elevation: 4,417 ft. (t). (Mud Springs SW 7.5 min. quadrangle).  
 Depth to water: 186 ft. (10-23-67).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Silt, slightly clayey, dark brownish gray.....	0.0	2.0
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Gravel, sandy; medium gavel to fine sand, little coarse gravel, rhizoliths.....	2.0	7.0
Silt, slightly clayey, sandy, light brownish gray; sand is very fine to medium.....	7.0	10.5
Sandstone, very fine to fine grained, silty; poorly consolidated.....	10.5	15.5
Sand, slightly gravelly; very fine sand to fine gravel.....	15.5	21.0
Sandstone, very fine to fine grained, silty; some medium sand below 26 ft; coarser texture below 36.5 ft.....	21.0	42.0
Sand, very fine to very coarse; trace of fine gravel.....	42.0	52.5
Silt, moderately clayey, coarse texture, pinkish white, very calcareous; limestone lenses below 57.5 ft.....	52.5	58.0
Silt, slightly clayey, pale olive, slightly calcareous; few silty sandstone lenses.....	58.0	63.0
Silt, very clayey, light brown.....	63.0	68.0
Limestone (caliche), light gray, marly; sandy from 73.5 to 78.5 and below 84 ft; sand is very fine to medium; pinkish gray below 78.5 ft.....	68.0	94.5
Silt, moderately clayey, sandy, light pinkish gray, moderately calcareous; sand is very fine to fine..	94.5	99.5
Limestone (caliche), light gray, sandy; sand is very fine to fine.....	99.5	120.5
Sandstone, very fine to very coarse grained; trace of fine gravel; moderately calcareous, moderately consolidated; some clay lenses below 131 ft.....	120.5	138.0
Sand, gravelly; very fine sand to fine gravel; trace of fine gravel below 141.5 ft.....	138.0	147.0

Sandstone, very fine to very coarse grained, moderately calcareous, well consolidated.....	147.0	157.5
Silt, clayey, sandy, brown, slightly calcareous; sand is very fine to fine to fine.....	157.5	162.5
Sandstone, very fine to fine grained, some medium to coarse; well consolidated; some siltstone lenses.....	162.5	168.0
Siltstone, clayey, slightly micaceous, brown, slightly calcareous.....	168.0	178.5
Sandstone, very fine to fine grained, silty, moderately calcareous, moderately consolidated, some siltstone lenses.....	178.5	183.5
Sandstone, very fine to coarse grained, silty, moderately consolidated.....	183.5	189.0
Limestone (caliche), gray, sandy; sand is very fine to coarse; some fossil fragments below 189 ft; some gravel grains from 189 to 194 ft.....	189.0	204.5
Sandstone, very fine to very coarse grained, silty, moderately calcareous, moderately consolidated; some marly areas below 220.5 ft.....	204.5	227.0
Gravel, fine to coarse; some very coarse below 236 ft.....	227.0	241.5
Gravel, sandy; fine gravel to fine sand, in part silty to clayey.....	241.5	252.0
Sand, fine to coarse, silty, clayey.....	252.0	278.0
Clay, silty, sandy; sand is very fine to coarse; some gravel grains below 294 ft.....	278.0	299.0
Gravel, sandy; fine gravel to fine sand, silty.....	299.0	304.5
Sand, very fine to medium, silty.....	304.5	320.0
Silt, very sandy, moderately clayey, light brown, moderately calcareous; sand is very fine to fine; some pale olive, noncalcareous below 325.5 ft.....	320.0	339.0
Sand, fine to very coarse.....	339.0	341.0
Sand, gravelly; fine sand to fine gravel; some medium gravel below 346 ft; some coarse to very coarse gravel below 361 ft; some clay lenses below 372 ft.....	341.0	376.0
Silt, moderately clayey, sandy, marly, light brown; sand is very fine to medium.....	376.0	383.0
Sand, gravelly; fine sand to fine gravel; some interbedded marly areas.....	383.0	388.5
Sand, fine to very coarse; some fine gravel below 390 ft; some marly areas and lime cemented sand- stone below 404 ft.....	388.5	409.5
Sand, gravelly; fine sand to fine gravel, some medium gravel.....	409.5	420.0

Sand, very fine to very coarse; some gravel stains below 435 ft.....	420.0	445.5
Gravel, sandy, medium gravel to fine sand, much limestone, sandstone, chert and quartz fragments..	445.5	451.5
Sand, very fine to fine, very silty, slightly clayey.....	451.5	485.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, silty, pink, very slightly calcareous.....	485.0	509.5

**Test Hole #1-WB-67 (E-logs)  
(15N-51W-13addd)  
Cheyenne County**

Location: SE SE SE NE sec. 13, T. 15 N., R. 51 W., 2,579 ft south and 60 ft west of northeast corner.  
Ground elevation: 4,360 ft. (t). (Mud Springs SE 7.5 min. quadrangle).  
Depth to water: 146 ft. (10-2-67).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Silt, slightly clayey, sandy dark brownish gray; sand is very fine to fine.....	0.0	0.5
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Sand, very fine to coarse, some very coarse sand to fine gravel.....	0.5	7.0
Sandstone, very fine to medium grained, some coarse, silty, poorly consolidated.....	7.0	10.0
Siltstone, clayey, in part sandy, marly, pinkish gray; sand is very fine to coarse; some rootlets; moderately calcareous below 27 ft.....	10.0	31.0
Sand, very fine to very coarse, some fine gravel....	31.0	36.0
Sandstone, very fine to medium grained, silty, slightly to moderately consolidated; some marly areas; some rootlets.....	36.0	55.0
Sandstone, very fine to medium grained, well consolidated.....	55.0	59.0
Sandstone, very fine to fine grained, moderately consolidated; some limy areas; some rootlet fragments.....	59.0	70.0
Marl, light gray to light olive gray; some very fine sand.....	70.0	73.5
Sandstone, very fine to fine grained, some medium, poorly consolidated; some marly areas; some gravel grains below 70 ft.....	73.5	84.0
Sand, gravelly; fine sand to fine gravel, in part lime-cemented.....	84.0	94.0
Gravel, sandy; fine gravel to fine sand; some interbedded silty sand layers below 99.5 ft.....	94.0	110.0
Silt, very sandy, reddish brown; sand is very fine to fine.....	110.0	120.0
Sand, fine to very coarse, trace of fine gravel....	120.0	133.0
Silt, moderately clayey, moderately sandy, pinkish gray; sand is very fine to fine; some interbedded silty sandstone.....	133.0	141.0

Sandstone, very fine to medium grained, silty, poorly consolidated.....	141.0	144.0
Sand, very fine to very coarse; little fine gravel; interbedded sandstone.....	144.0	201.0
Silt, moderately sandy, slightly clayey, light pinkish gray; sand is very fine to fine.....	201.0	205.0
Sand, very fine to coarse.....	205.0	235.0
Sand, very fine to medium, silty to 286 ft; very fine to medium, some coarse below 286 ft.....	235.0	295.0
Sandstone, very fine to fine grained, marly, mod- erately consolidated.....	295.0	301.0
Silt, slightly clayey, light olive gray.....	301.0	309.0
Sand, very fine to fine, some medium; some marly areas, in part consolidated.....	309.0	331.0
Silt, moderately sandy, slightly clayey, light brownish gray to pale olive; sand is very fine to fine; marly areas.....	331.0	367.0
Sand, gravelly; very fine sand to medium gravel; some silty areas.....	367.0	400.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, clayey, light reddish brown; some very fine sand.....	400.0	419.0

**Test Hole #31-B-65 (E-logs, poor)**  
**(15N-51W-18cccc)**  
**Cheyenne County**

Location: SW SW SW SW sec. 18, T. 15 N., R. 51 W., 184 ft north and  
 10 ft east of southwest corner.

Ground elevation: 4,506 ft. (a). (Mud Springs SW 7.5 min. quadrangle).

Depth to water: 218 ft. (9-23-65).

Depth, in feet  
 From            To

**Quaternary System, undifferentiated:**

Top soil, silt, sandy, dark grayish brown, calcareous cement..... 0.0            2.0

**Tertiary System - Miocene Series - Ogallala Group:**

**Ash Hollow Formation:**

Caliche, sandy, light gray..... 2.0            3.8

Sand, silty and silt, sandy, light brown, light yellowish brown to brown, discontinuous calcareous cement, some horizons include gravels..... 3.8            50.0

Sand and gravel, granitic..... 50.0            146.0

Sand, silty, and silt, sandy, interbedded light yellowish brown to light brown, discontinuous calcareous cement, rhizoliths in some horizons..... 146.0            199.0

Silt and silty sandstone, very pale brown to brown, light gray, calcareous cement..... 199.0            270.0

Sand and gavel, sand, granitic..... 270.0            295.0

Sand, silty and silt, sandy, interbedded gravels in some horizons, calcareous cement at base..... 295.0            320.0

Sand and gravel, granitic..... 320.0            332.0

Silt, sandy and sand to sandstone, silty, interbedded, discontinuous calcareous cement..... 332.0            351.7

Sand and gravel, granitic..... 351.7            360.0

Sand and sandstone, silty to silt, sandy, interbedded, light gray to brown, discontinuous calcareous cement..... 360.0            420.0

**Tertiary System - Oligocene Series - White River Group:**

**Brule Formation:**

Siltstone, light yellowish brown to brown, clay cement, concretions with calcareous cement at some horizons..... 420.0            491.0

**Test Hole #30-B-65 (E-logs)**  
**(15N-51W-36add)**  
**Cheyenne County**

Location: SE SE SE NE sec. 36, T. 15 N., R. 51 W., 2,528 ft south and  
 8.5 ft west of northeast corner.

Ground elevation: 4,383 ft. (t). (Brownson 7.5 min. quadrangle).

Depth to water: 159.0 ft. (9-23-65).

Depth, in feet  
 From            To

**Quaternary System, undifferentiated:**

Road fill.....	0.0	1.0
Silt, clayey, dark brown.....	1.0	1.5
Silt, clayey, grayish brown.....	1.5	2.0
Silt, sandy, light brownish gray, calcareous cement.	2.0	4.0

**Tertiary System - Miocene Series - Ogallala Group:**

**Ash Hollow Formation:**

Sand and gravel, granitic.....	4.0	15.8
Silt, sandy, brown to yellowish brown.....	15.8	21.7
Sandstone and caliche, interbedded, yellowish brown, pale brown to white, discontinuous calcareous cement, rhizoliths in some horizons.....	21.7	30.2
Silt, sandy, pale brown to light gray, calcareous cement, rhizoliths.....	30.2	41.0
Sand and gravel, granitic.....	41.0	68.0
Sandstone and silt, sandy, white, light gray to light yellowish brown, discontinuous calcareous cement.....	68.0	84.0
Sandstone, pale brown to pale olive, rhizoliths.....	84.0	102.0
Sand, light yellowish brown, rhizoliths.....	102.0	113.2
Sand and gravel, silty, granitic.....	113.2	116.5
Sand and sandstone, very pale brown to brown, dis- continuous calcareous cement.....	116.5	133.5
Silt, sandy, pale brown.....	133.5	137.2
Sand, silty to silt, sandy, very pale brown to brown, discontinuous calcareous cement.....	137.2	196.0

**Tertiary System - Oligocene Series - White River Group:**

**Brule Formation:**

Siltstone, brown to light yellowish brown, clay cement, concretions with calcareous cement in some horizons.....	196.0	290.5
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**Test Hole #32-B-65 (E-logs)**  
**(15N-52W-1aaaa)**  
**Cheyenne County**

Location: NE NE NE NE sec. 1, T. 15 N., R. 52 W., 97 ft south and 1 ft west of northeast corner.

Ground elevation: 4,468 ft. (t). (Mud Springs SW 7.5 min. quadrangle).

Depth to water: 199.4 ft. (9-23-65).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Road fill.....	0.0	3.8
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Sandstone, gravelly, brown.....	3.8	5.0
Sandstone and sand, interbedded, pink, light yellowish brown to brown, discontinuous calcareous cement.....	5.0	25.0
Silt, sandy and sand, silty, interbedded, very pale brown, yellowish brown to brown, discontinuous calcareous cement.....	25.0	32.8
Caliche, pale brown.....	32.8	33.5
Silt, sandy, light brown.....	33.5	36.0
Sandstone, silty, brown, rhizoliths.....	36.0	43.0
Sand and gravel, granitic.....	43.0	49.0
Sand and sandstone, gravelly, very pale brown, calcareous cement.....	49.0	56.0
Silt, sandy to clayey, yellow, brown and pink, discontinuous calcareous cement.....	56.0	72.0
Caliche, sandy, white.....	72.0	83.0
Sand and gravel, granitic, calcareous cement.....	83.0	88.0
Silt, sandy, and sand, silty, interbedded, pink, light brown to light olive gray, discontinuous calcareous cement.....	88.0	108.0
Sand and sandstone, silty, pale brown to yellowish brown, discontinuous calcareous cement.....	108.0	121.0
Sand, silty, and silt, sandy, interbedded, very pale brown to brown to white, discontinuous calcareous cement.....	121.0	161.5
Silt, clayey, brown.....	161.5	162.5
Sand and gravel, granitic.....	162.5	174.0
Sand and sandstone, silty, interbedded white to gray and pale brown to brown, discontinuous calcareous cement.....	174.0	313.0
Sand and gravel, granitic.....	313.0	329.0

Silt, sandy and sand, silty, interbedded , pale brown to brown.....	329.0	347.0
Sand and gravel, granitic.....	347.0	353.0
Sand, silty, gravelly, light yellowish brown to light brown.....	353.0	365.0
Sand and gravel, granitic.....	365.0	392.0
Sandstone, silty, white, calcareous cement.....	392.0	393.0
Sand, gravelly, granitic.....	393.0	395.0
Caliche, white.....	395.0	400.0
Sand and gravel, granitic.....	400.0	404.0
Silt, sandy and sand, silty, interbedded, white to pale brown, discontinuous calcareous cement.....	404.0	415.0
Sand, silty, brown to white, calcareous cement.....	415.0	432.0
Sand, gravelly.....	432.0	434.0
Silt, sandy, pale brown.....	434.0	435.0
Sand, gravelly.....	435.0	436.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, light brown to brown, clay cement, con- cretions with calcareous cement at some horizons..	436.0	470.5

**Test Hole #14-WB-67 (No e-logs)  
(15N-52W-4bbbb)  
Cheyenne County**

Location: NW NW NW NW sec. 4, 15 N., R. 52 W., 41 ft south and 70 ft east of northwest corner.

Ground elevation: 4,553 ft. (t). (Swedish Cementary 7.5 min. quadrangle).

Depth to water: 219 ft. (10-23-67).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Silt, slightly clayey, sandy, dark brownish gray; sand is very fine to fine.....	0.0	2.5
Sandstone, very fine to fine grained, moderately calcareous, poorly consolidated; coarser texture below 10.5 ft; little fine gravel below 15.5 ft...	2.5	21.0
Sand, gravelly; fine sand to fine gravel; some medium gravel below 26 ft.....	21.0	31.5
Sand, gravelly; fine sand to coarse gravel; less coarse gravel 36.5 ft to 42 ft.....	31.5	47.0
Sand, fine to very coarse; little fine gravel to 52.5 ft.....	47.0	57.5
Sand, gravelly; fine sand to fine gravel; little medium gravel.....	57.5	64.5
Silt, moderately clayey, sandy, light brown; sand is very fine to medium.....	64.5	68.0
Silt, moderately clayey, sandy, pink; sand is very fine to fine; some marly areas.....	68.0	78.5
Limestone, sandy, light gray; sand is very fine to fine; marly below 89 ft.....	78.5	89.0
Sandstone, very fine to very coarse grained, moderately calcareous, moderately consolidated, marly.....	89.0	94.0
Sand, gravelly; very fine sand to fine gravel, little medium gravel, in part lime cemented, some marly areas.....	94.0	99.5
Limestone, marly, light gray.....	99.5	105.0
Silt, slightly clayey, sandy, marly, pink; sand is very fine to fine; some sandstone lenses.....	105.0	115.5
Limestone, marly, light gray.....	115.5	120.5
Sandstone, very fine to medium grained, silty, clayey, moderately consolidated.....	120.5	126.0
Silt, very sandy, slightly clayey, marly, pinkish gray; sand is very fine to medium.....	126.0	131.0

Sandstone, very fine to fine grained, marly, very calcareous, moderately consolidated.....	131.0	141.5
Sandstone, ver fine to fine grained, silty, moderately consolidated.....	141.5	152.0
Silt, clayey, sandy, light brown, moderately calcareous; sand is very fine to fine; some sandstone lenses.....	152.0	162.5
Silt, moderately clayey, brown; some mica flakes; sandy below 168 ft; sand is very fine to fine; marly areas below 173 ft.....	162.5	178.0
Sandstone, very fine to fine grained, moderately calcareous, poorly consolidated; some silt lenses.	178.0	183.5
Sandstone, very fine to fine grained, silty, moderately consolidated.....	183.5	204.5
Silt, clayey, sandy, brown; sand is very fine to fine.....	204.5	215.0
Limestone, marly.....	215.0	217.0
Sandstone, very fine to fine grained, silty, moderately calcareous, moderately consolidated....	217.0	220.5
Silt, clayey, sandy, brown, moderately calcareous; some interbedded lime cemented sandstone.....	220.5	225.5
Sandstone, very fine to fine grained, silty, moderately calcareous, moderately consolidated....	225.5	231.0
Silt, clayey, sandy, light gray, moderately calcareous; sand is very fine to fine; some interbedded sandstone lenses.....	231.0	241.5
Silt, clayey, sandy, pinkish gray, slightly calcareous; sand is very fine to fine.....	241.5	246.5
Clay, silty, sandy, brown, some pinkish gray, moderately calcareous; sand is very fine to fine; some marly areas.....	246.5	251.0
Clay, silty, sandy, brown with reddish tint; sand is very fine to fine; some light gray color and marly areas below 257 ft.....	251.0	262.5
Marl, silty, sandy, gray; sand is very fine to fine.	262.5	267.5
Clay, silty, sandy, pinkish gray, moderately calcareous; very fine to fine sand; some marly areas....	267.5	273.0
Clay, silty, sandy, light brown, moderately calcareous; sand is very fine; some limy areas.....	273.0	278.0
Clay, silty, coarse texture, reddish brown; small limy areas.....	278.0	283.5
Sand, gravelly; fine sand to fine gravel; little medium gravel.....	283.5	288.5
Medium gravel to fine sand; little coarse gravel, sandy; fine sand to medium gravel; little coarse gravel.....	288.5	317.0

Clay, silty, coarse texture, pinkish gray; some very fine to fine sand.....	317.0	330.5
Sand, fine to very coarse; little fine gravel.....	330.5	336.0
Sand, gravelly; fine sand to fine gravel; some medium gravel; little coarse gravel.....	336.0	348.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, silty, sandy, light brown; sand is very fine..	348.0	367.5

**Test Hole #31-WB-68 (E-logs)  
(16N-47W-1abba)  
Cheyenne County**

Location: NE NW NW NE sec. 1, T. 16 N., R. 47 W., 2,127 ft west and  
37 ft south of northeast corner.  
Ground elevation: 3,983 ft. (a). (Lisco NW 7.5 min. quadrangle).  
Depth to water: 252 ft. (5-29-68).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
No sample.....	0.0	3.0
Silt, slightly clayey, sandy, light olive brown, slightly calcareous; sand is very fine to fine....	3.0	5.0
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Sandstone, very fine to fine grained, silty, slightly calcareous, poorly consolidated; some rootlets.....	5.0	10.0
Siltstone, clayey, sandy, light olive brown, slightly calcareous; sand is very fine to fine....	10.0	27.0
Sand, gravelly; medium sand to fine gravel.....	27.0	36.0
Siltstone, clayey, pale brown.....	36.0	40.0
Caliche, silty, sandy, white; sand is very fine to fine.....	40.0	45.0
Sandstone, very fine to fine grained, silty, slightly calcareous, poorly consolidated.....	45.0	49.0
Claystone, silty, sandy, light yellowish brown; light brown below 55 ft; sand is very fine.....	49.0	60.0
Clay, silty, sandy, light brown; sand is very fine; some claystone.....	60.0	65.0
Sandstone, very fine to fine grained, silty, poorly consolidated; some rootlets; interbedded silt- stone, claystone and limestone lenses; coarser grained below 110 ft.....	65.0	130.0
Sandstone, fine to coarse grained, silty, poorly consolidated; some very coarse below 135 ft; some clay lenses below 140 ft.....	130.0	145.0
Siltstone, clayey, sandy, pink, very calcareous; sand is very fine to fine, some limy nodules; some clay lenses below 155 ft.....	145.0	160.0
Clay, moderately silty, moderately sandy, pale brown; sand is fine to coarse; interbedded sand lenses below 165 ft.....	160.0	171.0
Sandstone, medium to very coarse grained, some fine, silty, poorly consolidated.....	171.0	180.0

Claystone, silty, sandy, brown; sand is very fine...	180.0	185.0
Sand, fine to medium, some coarse; some interbedded siltstone lenses; finer grained below 190 ft.....	185.0	195.0
Siltstone, clayey, sandy, pale brown, slightly calcareous; sand is very fine to fine.....	195.0	197.0
Sand, very fine to medium silty; coarser grained below 200 ft.....	197.0	203.0
Clay, moderately silty, sandy, light yellowish brown; sand is very fine; some sandy siltstone lenses below 210 ft.....	203.0	219.0
Sand, fine to coarse, some very fine, trace of very coarse, silty.....	219.0	237.0
Clay, silty, sandy, pale brown; sand is very fine to fine; some interbedded sand lenses to 240 ft...	237.0	248.0
Caliche, silty, sandy, pale brown; sand is very fine to fine.....	248.0	255.0
Sandstone, very fine to fine grained, silty, poorly consolidated; some interbedded caliche and claystone lenses.....	255.0	334.0
Caliche, silty, sandy, white; sand is very fine to fine; some clay lenses.....	334.0	345.0
Sand, very fine to fine, silty; some clay and caliche lenses; trace of medium sand below 365 ft.	345.0	378.5
Caliche, silty, light gray; trace of very fine sand.	378.5	380.0
Sand, very fine to fine, silty.....	380.0	387.5
Clay, moderately silty, sandy, light gray, slightly calcareous; sand is very fine to fine.....	387.5	388.5
Sand, very fine to fine, moderately silty.....	388.5	391.0
Clay, silty, light brown.....	391.0	393.0
Sand, very fine to fine; some thin clay lenses.....	393.0	410.0
Clay, very silty, sandy, pale brown; sand is very fine to fine.....	410.0	416.0
Sand, fine to medium, some coarse, trace of very coarse, slightly silty; medium to coarse, trace of very coarse from 420 to 425 ft; more coarse sand with some fine gravel below 425 ft.....	416.0	430.0
Siltstone to claystone, silty, light yellowish brown; some limestone lenses.....	430.0	435.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Claystone, silty, brown; trace of very fine sand....	435.0	440.0
Clay, silty, brown.....	440.0	460.0

**Test Hole #33-WB-68 (E-logs)  
(16N-47W-6bbbb1)  
Cheyenne County**

Location: NW NW NW NW sec. 1, T. 16 N., R. 47 W., 12 ft south and 15 ft east of northwest corner.  
Ground elevation: 4,058 ft. (t). (Fairchild Ranch 7.5 min. quadrangle).  
Depth to water: 212 ft. (5-29-68).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
No sample.....	0.0	7.0
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Sand, medium to very coarse, some fine sand and gravel, silty; some thin clay lenses below 20 ft..	7.0	25.0
Clay, moderately silty, sandy, light brown; sand is very fine to fine.....	25.0	33.0
Sandstone, very fine to fine grained, moderately calcareous, moderately consolidated.....	33.0	40.0
Limestone (caliche), silty, light gray; some interbedded sandstone; some rootlets.....	40.0	45.0
Sandstone, very fine to fine grained, silty, poorly consolidated; some clay lenses below 65 ft.....	45.0	80.0
Clay, moderately silty, slightly sandy, light brown; sand is very fine to fine; slightly calcareous below 90 ft; moderately sandy below 105 ft; sand is very fine to coarse.....	80.0	110.0
Sand, medium to very coarse, some fine sand to fine gravel; some clay lenses; in part lime cemented below 115 ft.....	110.0	120.0
Siltstone, clayey, sandy, pale brown, very calcareous; sand is very fine to fine; some interbedded sandstone lenses below 125 ft; some limy nodules below 135 ft.....	120.0	140.0
Limestone (caliche), sandy, gray; sand is very fine to fine.....	140.0	145.0
Clay, moderately silty, sandy, light gray, slightly calcareous; sand is very fine to fine; some interbedded caliche lenses.....	145.0	150.0
Limestone (caliche), sandy, silty, pale brown; sand is very fine to fine; some thin clay lenses.....	150.0	160.0
Sand, medium to very coarse, moderately silty.....	160.0	167.5
Clay, moderately silty, moderately sandy, gray; sand is very fine to fine.....	167.5	170.0

Sandstone, very fine to fine grained, moderately silty; some clay lenses.....	170.0	180.0
Siltstone, clayey, sandy, white, very calcareous; sand is very fine to fine.....	180.0	185.0
Limestone (caliche), sandy, white; sand is very fine to fine.....	185.0	190.0
Sand, fine to coarse, some very fine and very coarse, silty; fine to medium from 195 to 200 ft; very fine to fine below 200 ft with some interbedded caliche; clay and sandstone lenses.....	190.0	215.0
Sand, very fine to medium, moderately silty; some interbedded clay and caliche lenses; very fine to fine below 230 ft.....	215.0	235.0
Sandstone, very fine to fine grained, moderately silty, poorly consolidated; some medium sand and clay lenses below 240 ft.....	235.0	245.0
Sand, very fine to fine, some medium, very to moderately silty; some sandy clay lenses; some sandstone lenses below 255 ft.....	245.0	261.5
Sand, very fine to fine, trace of medium, moderately silty; some consolidation below 265 ft; principally fine to medium from 270 to 275 ft; slightly more medium sand below 280 ft.....	261.5	301.0
Clay, sandy, moderately silty, pink, slightly calcareous; very fine to fine sand, some interbedded sandstone.....	301.0	310.0
Limestone (caliche), sandy, light gray, very fine to fine sand; some interbedded sandstone.....	310.0	320.0
Siltstone, clayey, very calcareous, pale brown; some interbedded sandstone and caliche lenses; pinkish gray below 325 ft.....	320.0	330.0
Sandstone, very fine to fine grained, moderately consolidated; some interbedded caliche lenses; some interbedded siltstone lenses from 335 to 340 ft; trace of coarse sand below 340 ft.....	330.0	350.0
Claystone, interbedded siltstone, caliche, sandy, gray, moderately calcareous; sand is very fine to fine, some medium trace of coarse.....	350.0	355.0
Sand, very fine to fine, some very coarse, moderately to very silty; some interbedded clay lenses; no coarse sand from 360 to 380 ft.....	355.0	390.0
Siltstone, clayey, pale green to light gray, moderately calcareous; some interbedded claystone and clay lenses.....	390.0	395.0
Clay, silty, sandy, pale green to light gray, slightly calcareous; sand is very fine to fine; some interbedded siltstone and sandstone lenses...	395.0	400.0

Sandstone, very fine to fine grained, moderately to poorly consolidated; some interbedded clay lenses.	400.0	418.0
Limestone (caliche).....	418.0	420.8

**Test Hole #18-A-65 (E-logs)  
(16N-47W-6bbbb2)  
Cheyenne County**

Location: NW NW NW NW sec. 6, T. 16 N., R. 47 W., 8 ft south and 130 ft east of northwest corner.

Ground elevation: 4,059 ft. (t). (Fairchild Ranch 7.5 min. quadrangle).

Depth to water: 206.9 ft. (9-2-65).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Silt, sandy, dark brown.....	0.0	6.0
Silt, sandy to clayey, brownish yellow.....	6.0	7.3
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Sand and gravel, granitic, interbedded silt at 22.8 ft.....	7.3	30.4
Silt, sandy, and sandstone, brownish gray to white, calcareous cement.....	30.4	45.0
Sandstone and sand, light yellowish brown, rhizoliths in some horizons.....	45.0	94.5
Silt, siltstone and sandstone, light brown to brown, some horizons slightly calcareous.....	94.5	105.0
Silt to siltstone, yellowish brown to light brown calcareous.....	105.0	111.6
Sand and gravel, granitic.....	111.6	116.7
Sand and sandstone, white to pale brown, some horizons with calcareous cement.....	116.7	161.0
Siltstone to sandstone, white, pale olive to light gray, much calcareous cement.....	161.0	190.3
Volcanic ash, gray, calcareous cement.....	190.3	192.9
Siltstone and sandstone, olive, light gray, white, and pale yellow, much calcareous cement.....	192.9	237.5
Sand, silty, and sandstone, white to pale olive, calcareous cement.....	237.5	260.0
Sandstone, brown, rhizoliths, minor calcareous cement.....	260.0	297.2
Silt, sandy to clayey, and sandstone, pale brown, calcareous cement, some rhizoliths.....	297.2	310.0
Silt and siltstone, pale yellow, pale olive, calcareous cement.....	310.0	390.0
Sandstone, siltstone and interbedded clay lenses, pale olive to pale yellow, hard drilling.....	390.0	420.5

Sandstone, pale olive, silica cement, very hard		
drilling.....	420.5	422.2

**Test Hole #17-A-65 (one E-log)**  
**(16N-47W-18cccc)**  
**Cheyenne County**

Location: SW SW SW SW sec. 18, T. 16 N., R. 47 W., 472 ft north and  
 5 ft east of southwest corner.  
 Ground elevation: 4,072 ft. (t). (Lisco SW 7.5 min. quadrangle).  
 Depth to water: 184.7 ft. (9-2-65).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Road fill, silt, clayey to gravelly, dark brown.....	0.0	3.5
Silt, clayey to sandy, dark brown.....	3.5	4.5
Silt, clayey to sandy, grayish brown, calcareous....	4.5	7.5
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Sand and gravel, granitic, rhizoliths at base.....	7.5	20.0
Sandstone, light gray, olive, to brown, rhizoliths, discontinuous calcareous cement.....	20.0	45.0
Sandstone and siltstone, calcareous.....	45.0	46.0
Sand and gravel, granitic, rhizoliths.....	46.0	76.5
Volcanic ash, gray.....	76.5	83.2
Sandstone, siltstone, and clay, brown to reddish brown.....	83.2	116.0
Silt and siltstone, sandy, brown, discontinuous calcareous cement.....	116.0	130.0
Sandstone and sandy siltstone, brown, some calcar- eous cement.....	130.0	146.0
Sandstone, pale brown, calcareous cement, rhizo- liths.....	146.0	151.0
Silt and siltstone, brown to reddish brown, dis- continuous calcareous cement.....	151.0	185.8
Sandstone, pale brown to pink, calcareous cement....	185.8	193.0
Silt and siltstone, sandy, brown.....	193.0	198.5
Sandstone, silty, yellowish brown to olive, calcar- eous cement.....	198.5	205.0
Sand, silty, pale olive, calcareous.....	205.0	215.8
Sandstone, very pale brown to yellowish brown, cal- careous cement.....	215.8	225.0
Sand, silty, sandy silt and sandstone, pale brown, light gray, light yellowish brown, discontinuous calcareous cement, interbedded.....	225.0	359.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown to light yellowish brown, concre- tions with calcareous cement in some horizons.....	359.0	430.5

**Test Hole #32-WB-68 (E-logs)**  
**(16N-47W-24abbb)**  
**Cheyenne County**

Location: NW NW NW NE sec. 24, T. 16 N., R. 47 W., 2,618 ft west and 47 ft south of northeast corner.  
 Ground elevation: 3,996 ft. (a). (Lisco SW 7.5 min. quadrangle).  
 Depth to water: 216 ft. (5-29-68).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
No sample.....	0.0	3.0
Silt, slightly clayey, sandy, brown; sand is very fine.....	3.0	6.0
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Sandstone, very fine to fine grained, very silty, slightly calcareous, poorly consolidated.....	6.0	10.0
Siltstone, clayey, sandy, brown, slightly calcareous; sand is very fine to fine.....	10.0	25.0
Sandstone, very fine to fine grained, silty, slightly to moderately calcareous, poorly consolidated; some rootlets; some interbedded siltstone and limestone lenses.....	25.0	45.0
Siltstone, clayey, sandy, brown, slightly calcareous; sand is very fine to fine; some limy areas..	45.0	50.0
Sand, very fine to very coarse, moderately silty; some fine gravel below 55 ft.....	50.0	60.0
Siltstone, clayey, sandy, brown; sand is very fine to fine, some medium to coarse.....	60.0	67.0
Sand, medium to very coarse; some fine gravel, moderately silty; clay lens 74.5 to 75 ft.....	67.0	75.0
Clay, moderately silty, brown; trace of very fine to fine sand.....	75.0	85.0
Sand, very fine to very coarse, very silty; some clay lenses.....	85.0	94.5
Silt, very sandy, slightly clayey, brown; sand is very fine to fine.....	94.5	100.0
Claystone, silty, sandy, greenish gray, slightly calcareous; sand is very fine.....	100.0	108.0
Sand, fine to very coarse, moderately silty.....	108.0	114.0
Clay, moderately silty, sandy, reddish brown; sand is fine to medium; interbedded sand layer from 115.5 to 116.5 ft.....	114.0	120.0
Sand, very fine to very coarse, trace of fine gravel.....	120.0	130.0

Siltstone, clayey, sandy, white, very calcareous....	130.0	135.0
Limestone (caliche), sandy, white; sand is very fine to fine; some interbedded sandstone lenses.....	135.0	147.5
Sand, very fine to fine, moderately silty.....	147.5	150.0
Siltstone, clayey, sandy, brown, moderately calcareous; sand is very fine to fine; some interbedded sandstone lenses.....	150.0	160.0
Sandstone, very fine to fine grained, very silty, slightly to moderately calcareous, poorly consolidated; some rootlets.....	160.0	180.0
Limestone (caliche), sandy, white; sand is very fine to fine.....	180.0	186.5
Clay, moderately silty, sandy, white; sand is very fine to fine.....	186.5	190.0
Clay, moderately silty, moderately sandy, pale olive; sand is very fine to fine; some sandstone lenses below 195 ft.....	190.0	200.0
Clay, moderately silty, sandy, brown; sand is very fine.....	200.0	204.0
Sand, very fine to fine, moderately silty; some clay lenses to 230 ft.....	204.0	232.0
Clay, silty, sandy, brown, slightly calcareous; sand is very fine to fine.....	232.0	235.0
Sand, very fine to fine, moderately silty; some clay lenses to 240 ft and below 250 ft.....	235.0	264.0
Clay, moderately silty, sandy, brown; light yellowish brown below 266 ft; sand is very fine to fine; some sand lenses below 275 ft.....	264.0	280.0
Silt, slightly clayey, very sandy, brown; sand is very fine to fine.....	280.0	285.0
Sand, very fine to fine, very silty; some clay lenses.....	285.0	305.0
Clay, moderately silty, brown.....	305.0	310.0
Sand, fine to medium, silty.....	310.0	315.0
Clay, moderately silty, sandy, light yellowish brown; sand is very fine to fine.....	315.0	320.0
Sand, very fine to fine, very silty.....	320.0	348.5
Clay, silty, brown; trace of very fine sand below 350 ft.....	348.5	356.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, light yellowish brown to brown, clay cement.....	356.0	400.0

**Test Hole #30-WB-68 (E-logs)**  
**(16N-48W-4aaaa)**  
**Cheyenne County**

Location: NE NE NE NE sec. 4, T. 16 N., R. 48 W., 77 ft south and 73 ft west of northeast corner.

Ground elevation: 4,132 ft. (t). (Fairchild Ranch 7.5 min. quadrangle).

Depth to water: Unknown; test hole caved at 142 ft. (5-29-68).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
No sample.....	0.0	3.0
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Sandstone, very fine to fine grained, moderately silty, moderately calcareous, moderately consolidated; some rootlets; limy lens below 25 ft.....	3.0	31.0
Clay, silty, brown; trace of very fine sand.....	31.0	35.5
Sandstone, very fine to fine grained, moderately silty, poorly consolidated; some clay and limestone lenses below 40 ft; coarser grained from 45 to 50 ft.....	35.5	55.0
Clay, moderately silty, sandy, brown, slightly calcareous; trace of very fine sand; some interbedded claystone lenses.....	55.0	60.0
Sandstone, very fine to fine grained, moderately silty, poorly consolidated; siltstone lens below 70 ft.....	60.0	75.0
Limestone (caliche), sandy, white; sand is very fine to fine; some rootlets.....	75.0	85.0
Sandstone, very fine to fine grained, moderately silty, slightly calcareous, poorly consolidated; some rootlets.....	85.0	90.0
Siltstone, clayey, sandy, brown; sand is very fine to fine; interbedded sandstone.....	90.0	95.0
Sandstone, very fine to fine grained, moderately silty, moderately calcareous, moderately consolidated.....	95.0	101.5
Clay, silty, sandy, brown; sand is very fine to fine; interbedded claystone.....	101.5	112.0
Sand, fine to medium, some coarse, moderately silty; coarser texture below 115 ft; some clay lenses....	112.0	130.0
Silt, moderately clayey, sandy, greenish gray; sand is very fine to coarse.....	130.0	135.0

Clay, moderately silty, greenish gray; slightly calcareous below 140 ft; some claystone lenses below 160 ft.....	135.0	180.0
Claystone, silty, greenish gray; limestone (caliche) lens at 182 ft; interbedded sandstone lenses below 185 ft, sand is fine to coarse.....	180.0	225.0
Sand, fine to very coarse; trace of gravel below 235 ft, moderately silty, in part calcareous.....	225.0	238.0
Sand, fine to very coarse, trace of fine gravel, silty; in part moderately consolidated; some clay lenses.....	238.0	250.0
Sandstone, very fine to fine grained, silty, moderately calcareous, moderately consolidated; some clay lenses.....	250.0	255.0
Siltstone, clayey, sandy, brown, very calcareous; sand is very fine to fine.....	255.0	260.0
Claystone, silty, sandy, greenish gray; sand is very fine to fine; some interbedded sandstone.....	260.0	270.0
Sandstone; very fine to fine grained gravel, some medium, moderately silty, moderately calcareous, poorly consolidated; some claystone and limestone pebbles; sand is very fine to medium with a trace of fine gravel below 280 ft.....	270.0	320.0
Sandstone, very fine to fine grained, some medium to very coarse, slightly to moderately calcareous, poorly consolidated; some claystone pebbles.....	320.0	330.0
Claystone, silty, sandy, brown, slightly calcareous; sand is very fine to fine, medium.....	330.0	333.0
Sand, very fine to medium, moderately silty; some claystone pebbles to 340 ft; some clay lenses; trace of coarse sand from 350 to 355 ft.....	333.0	375.0
Sandstone, very fine to fine grained, poorly consolidated; some claystone lenses.....	375.0	380.0
Sand, very fine to fine, silty; some claystone lenses; some medium sand below 385 ft.....	380.0	435.0
Limestone (caliche), sandy, pale yellow; sand is very fine.....	435.0	443.0

**Test Hole #29-WB-68 (E-logs)**  
**(16N-48W-6baaa)**  
**Cheyenne County**

Location: NE NE NE NW sec. 6, T. 16 N., R. 48 W., 2,435 ft east and 57 ft south of northwest corner.  
 Ground elevation: 4,175 ft. (t). (Fairchild Ranch 7.5 min. quadrangle).  
 Depth to water: 243 ft. (5-29-68).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
No sample.....	0.0	3.2
Silt, moderately clayey, sandy, brown, very calcareous; sand is very fine to fine.....	3.2	5.2
Sand, very fine to fine, silty, clayey.....	5.2	8.5
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Sandstone, very fine to fine grained, moderately silty, slightly calcareous, moderately consolidated; rootlet fragments; some claystone lenses...	8.5	95.0
Sand, gravelly; medium sand to fine gravel.....	95.0	100.0
Gravel, sandy, medium sand to medium gravel; silty below 105 ft.....	100.0	111.0
Sand, very fine to fine, trace of medium, moderately silty; some clay lenses.....	111.0	120.0
Sandstone, very fine to fine grained, moderately silty, slightly calcareous, in part moderately calcareous, moderately consolidated, some rootlets.....	120.0	145.0
Clay, moderately silty, brown; trace of very fine sand; some claystone lenses.....	145.0	160.0
Clay, moderately silty, yellow; trace of fine sand; limestone lenses below 180 ft.....	160.0	190.0
Sandstone, very fine to fine grained, trace of medium, very calcareous, moderately consolidated; some limestone lenses; some clay lenses below 200 ft.....	190.0	210.0
Clay, moderately silty, sandy, brown; sand is very fine; some limestone lenses.....	210.0	220.0
Siltstone, clayey, moderately sandy, brown; sand is very fine to fine; some limestone lenses below 225 ft.....	220.0	236.0
Clay, moderately silty, brown; trace of very fine sand.....	236.0	240.0

Sandstone, very fine to fine grained, very silty, moderately consolidated; some clay lenses; moderately calcareous from 260 to 270 ft; some rootlets below 260 ft; some limestone lenses below 270 ft.....	240.0	275.0
Siltstone, clayey, sandy, brown, very calcareous; sand is very fine to fine; some limy areas.....	275.0	278.0
Sand, very fine to medium, trace of coarse, silty, clayey; more medium sand from 290 to 300 ft; finer grained below 300 ft.....	278.0	320.0
Sand, very fine to fine, medium, moderately silty; coarser grained below 350 ft.....	320.0	360.0
Sand, very fine to fine, some medium; silty with some siltstone lenses below 400 ft.....	360.0	440.0
Sand, very fine to fine, trace of medium; some sandstone and siltstone below 458 ft.....	440.0	460.0
Siltstone, clayey, sandy, brown, very calcareous, some limy areas; sand is very fine to fine.....	460.0	480.0
Sandstone, very fine to fine grained, moderately silty, moderately calcareous, moderately consolidated.....	480.0	486.0
Sand, very fine to fine, moderately silty; trace of medium; some rootlets below 490 ft.....	486.0	520.0
Sand, very fine to fine, slightly silty; some consolidation below 525 ft.....	520.0	535.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, clayey, sandy, brown, moderately calcareous; sand is very fine to fine; some limy areas..	535.0	540.0
Siltstone, clayey, sandy, brown; sand is very fine to fine.....	540.0	560.0

**Test Hole #28-WB-68 (E-logs)**  
**(16N-48W-19bbbb)**  
**Cheyenne County**

Location: NW NW NW NW sec. 19, T. 16 N., R. 48 W., northwest corner.  
 Ground elevation: 4,176 ft. (t). (Gurley 7.5 min. quadrangle).  
 Depth to water: 222.0 ft. (5-28-68).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
No sample.....	0.0	2.5
Silt, moderately clayey, sandy, light yellowish brown; sand is very fine to fine.....	2.5	8.0
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Sand, gravelly; medium sand to coarse gravel.....	8.0	11.0
Siltstone, moderately clayey, sandy, white; brown below 15 ft; sand is very fine to fine; some rootlets.....	11.0	25.0
Sandstone, very fine to fine grained, silty, brown, moderately consolidated; some caliche lenses.....	25.0	53.0
Silt, moderately clayey, sandy, brown; sand is very fine to fine.....	53.0	55.0
Siltstone, clayey, sandy, light yellowish brown; sand is very fine to fine.....	55.0	65.0
Sand, gravelly; medium sand to fine gravel; some siltstone lenses.....	65.0	70.0
Sandstone, very fine to fine grained, trace of medium, moderately silty, slightly calcareous, poorly consolidated; some clay lenses.....	70.0	76.0
Sand, gravelly; medium sand to fine gravel, silty...	76.0	95.0
Sandstone, very fine to fine grained, slightly calcareous; poorly consolidated; some siltstone lenses.....	95.0	105.0
Sand, fine to medium; trace of coarse, moderately silty, in part consolidated; some siltstone lenses.....	105.0	165.0
Clay, moderately silty, sandy, brown; sand is very fine; some caliche lenses below 175 ft.....	165.0	180.0
Gravel, fine to medium; trace of coarse sand, silty to clayey.....	180.0	195.0
Sand, gravelly; medium sand to fine gravel, silty...	195.0	205.0
Sand, gravelly; coarse sand to fine gravel, silty...	205.0	219.5
Clay, silty, sandy, brown, slightly calcareous; sand is very fine to fine.....	219.5	228.0
Sand, very fine to medium, silty.....	228.0	234.0

Limestone (caliche), pale brown.....	234.0	250.0
Clay, moderately silty, sandy, brown; sand is very fine; some caliche lenses below 255 ft.....	250.0	260.0
Siltstone, clayey, sandy, pale yellow, moderately calcareous; sand is very fine, trace of fine.....	260.0	270.0
Siltstone, clayey, sandy, pink; sand is very fine to fine, trace of medium.....	270.0	275.0
Clay, moderately silty, moderately sandy, brown; sand is very fine to fine, some medium, some limy areas.....	275.0	285.0
Sandstone, very fine to fine grained, silty, poorly consolidated; rootlet fragments; clay lenses below 290 ft.....	285.0	295.0
Claystone, silty, sandy, greenish gray to 300 ft; brown below 300 ft; sand is very fine to fine.....	295.0	305.0
Siltstone, clayey, sandy, brown, very calcareous; sand is very fine to fine.....	305.0	320.0
Sandstone, very fine to fine grained, silty, poorly consolidated; some clay lenses.....	320.0	382.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, sandy, brown; sand is very fine, clay cement.....	382.0	400.0

**Test Hole #19-A-65 (one E-log)  
(16N-49W-19bbbb)  
Cheyenne County**

Location: NW NW NW NW sec. 19, T. 16 N., R. 49 W., 10.5 ft south and 291 ft east of northwest corner.  
Ground elevation: 4,278 ft. (t). (Gurley 7.5 min. quadrangle).  
Depth to water: 219.5 ft. (9-2-65).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Road fill.....	0.0	2.5
Silt, clayey to sandy, dark grayish brown.....	2.5	5.6
Silt, sandy, light olive brown.....	5.6	7.2
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Sand and gravel, granitic, rhizoliths.....	7.2	9.0
Sandstone, yellowish brown to gray, calcareous cement.....	9.0	20.2
Silt, pale olive to light gray, calcareous.....	20.2	23.0
Sandstone, silty, pale olive, olive brown to yellowish brown, rhizoliths, discontinuous calcareous cement.....	23.0	55.3
Silt and siltstone, sandy, yellowish brown to brown, discontinuous calcareous cement, and rhizoliths.....	55.3	91.7
Sandstone and silt, some caliche, pale brown to white, calcareous cement and rhizoliths.....	91.7	116.0
Silt, sandy, pale brown to white, calcareous cement.	116.0	121.7
Sand, silty, pale olive to pale brown, rhizoliths...	121.7	133.4
Sand and sandstone, silty, light brown to light yellowish brown.....	133.4	140.0
Silt and siltstone, light yellowish brown to very pale brown, calcareous cement.....	140.0	146.0
Sand and sandstone, silty, white to brown, discontinuous calcareous cement, rhizoliths.....	146.0	176.6
Silt and siltstone, clayey to sandy, calcareous cement, light gray to brown.....	176.6	213.6
Sand and sandstone, olive brown to brown, few calcareous horizons.....	213.6	246.5
Silt and siltstone, sandy, pale brown to brown, some horizons with rhizoliths and calcareous cement.....	246.5	298.5
Sand and gravel, granitic, olive brown.....	298.5	328.3
Silt, clayey, brown.....	328.3	334.0
Sand, silty, light brown.....	334.0	348.3

Silt, clay to sandy, very pale brown, calcareous cement.....	348.3	355.0
Sand, silty, light brown, rhizoliths.....	355.0	410.0
Silt, sandy, very pale brown to brown, calcareous cement at top, rhizoliths.....	410.0	420.0
Sand and sandstone, brown to gray, light calcareous cement. rhizoliths.....	420.0	460.0
Caliche, sandy, very pale brown.....	460.0	461.7
Sand and gravel, granitic, greenish gray, discontinuous calcareous cement.....	461.7	475.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Silt and siltstone, light brown to brown, some horizons with concretions with calcareous cement.....	475.0	520.5

**Test Hole #16-WB-67 (No e-log)  
(16N-49W-34cccc)  
Cheyenne County**

Location: SW SW SW SW sec. 34, T. 16 N., R. 49 W., 50 ft north and 36 ft east of southwest corner.  
 Ground elevation: 4,235 ft. (t). (Gurley 7.5 min. quadrangle).  
 Depth to water: 194 ft. (10-23-67).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Silt, slightly clayey, dark brownish gray.....	0.0	1.0
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Limestone (caliche), sandy; sand is very fine to fine.....	1.0	5.0
Sandstone, very fine to fine grained, silty, moderately consolidated; some rootlets and interbedded limestone lenses below 10 ft.....	5.0	47.0
Sandstone, very fine to very coarse grained, silty, moderately calcareous, moderately consolidated; some marly areas and interbedded limestone lenses; some gravel grains below 68 ft.....	47.0	94.5
Sandstone, very fine to fine grained, moderately calcareous, moderately consolidated.....	94.5	99.5
Limestone (caliche), light gray, marly.....	99.5	110.0
Sandstone, very fine to fine grained, moderately calcareous, moderately consolidated; some siltstone lenses below 120.5 ft.....	110.0	126.0
Clay, silty, sandy, light brown, moderately calcareous; sand is very fine; some marly areas; some interbedded sandstone lenses.....	126.0	136.5
Siltstone, clayey, sandy, light brown to pink, moderately calcareous; sand is very fine to fine; some interbedded sandstone lenses.....	136.5	141.5
Sandstone, very fine to fine grained, silty, moderately calcareous, moderately consolidated; some marly areas, few rootlet fragments below 147 ft; some siltstone fragments below 157.5 ft.....	141.5	189.0
Sandstone, very fine to fine grained, silty, moderately calcareous, poorly consolidated; few siltstone fragments below 225.5 ft.....	189.0	241.5
Silt, very clayey, coarse texture, pale olive.....	241.5	251.0
Sand, gravelly; fine sand to fine gravel; some limestone lenses.....	251.0	266.0

Silty, clayey, sandy, light brown to pinkish gray; sand is very fine to fine.....	266.0	267.5
Sand, very fine to fine, silty, slightly clayey.....	267.5	273.0
Sandstone, very fine to fine grained, moderately calcareous, moderately consolidated.....	273.0	278.0
Sand, very fine to fine, silty, slightly clayey; in part lime cemented below 283.5 ft.....	278.0	288.5
Sandstone, very fine to fine grained, moderately calcareous, moderately consolidated; some caliche lenses and marly areas; silty below 299 ft.....	288.5	304.5
Silt, clayey, sandy, light brown; sand is very fine to fine.....	304.5	309.5
Sandstone, very fine to fine grained, some medium; some siltstone with limy areas below 320 ft.....	309.5	325.5
Siltstone, clayey, light brown, slightly calcareous; some limy areas to 330.5 ft.....	325.5	336.0
Sandstone, very fine to fine grained, moderately consolidated; some interbedded siltstone lenses...	336.0	341.0
Siltstone, clayey, sandy, light brown, moderately calcareous, very fine to fine, some coarser grains; some light gray color from 346.5 to 357 ft; some fine gravel grains below 362 ft.....	341.0	378.0
Silt, moderately clayey, coarse texture, pale brown; moderately calcareous.....	378.0	389.0
Clay, silty, light yellowish brown, moderately cal- careous; thin interbedded limestone lenses.....	389.0	394.5
Sand, gravelly; fine sand to medium gravel, little coarse gravel; in part lime cemented; some clay lenses below 399.5 ft.....	394.5	405.0
Silt, clayey, sandy, pale yellow, moderately calcar- eous; sand is very fine to fine.....	405.0	410.0
Silt, clayey, sandy, brown, moderately calcareous; sand is very fine.....	410.0	431.0
Limestone (caliche), sandy; sand is very fine.....	431.0	436.5
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, clayey, light brown, slightly calcareous; some very fine sand below 441.5 ft.....	436.5	457.5

**Test Hole #17-WB-67 (No e-logs)  
(16N-49W-36dddd)  
Cheyenne County**

Location: SE SE SE SE sec. 36, T. 16 N., R. 49 W., 13 ft north and 57 ft west of southeast corner.  
 Ground elevation: 4,181 ft. (t). (Dalton SE 7.5 min. quadrangle).  
 Depth to water: 200 ft. (11-7-67).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Silt, slightly clayey, dark brownish gray.....	0.0	1.5
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Sandstone, very fine to fine grained, some medium, silty, moderately calcareous, poorly consolidated; some limy areas; trace of gravel below 5 ft.....	1.5	10.5
Sandstone, very fine to very coarse grained, silty; some fine gravel grains.....	10.5	15.5
Sand, gravelly; fine sand to fine gravel; some medium gravel below 21 ft.....	15.5	28.0
Sandstone, very fine to fine grained, in part moderately calcareous, moderately consolidated; some rootlet fragments; sand is very fine to coarse below 31.5 ft; some fine gravel below 36.5 ft.....	28.0	42.0
Sandstone, very fine to fine grained, some coarser grains, in part moderately calcareous, moderately consolidated; some limestone lenses; trace coarse gravel below 47 ft; some medium to coarse sand below 52.5 ft.....	42.0	57.5
Silt, very sandy, slightly clayey, reddish brown; sand is very fine to fine; some medium to coarse sand below 63 ft.....	57.5	68.0
Sand, fine to very coarse; some silty sand lenses...	68.0	73.5
Sandstone, very fine to medium grained, few coarser grains, in part moderately calcareous, moderately consolidated; marly below 77 ft.....	73.5	81.0
Silt, clayey, sandy, light brown, moderately calcareous; sand is very fine to fine; some limy areas.....	81.0	85.0
Sand, gravelly; fine sand to fine gravel; little medium gravel from 89 to 94.5 ft; some coarse gravel below 99.5 ft.....	85.0	103.0
Sand, very fine to very coarse, silty.....	103.0	105.0
Silt, very clayey, sandy, light brown; sand is very fine to fine; slightly less clayey below 110 ft...	105.0	115.5

Gravel, sandy; medium gravel to fine sand; some coarse gravel; clay layer from 124 to 125 ft; little very coarse gravel below 126 ft.....	115.5	131.0
Silt, very sandy, slightly clayey, light brown; sand is very fine to fine, little medium; some sandstone lenses.....	131.0	147.0
Sand, gravelly; fine sand to fine gravel; some marly areas.....	147.0	156.0
Sand, fine to very coarse; trace of fine gravel.....	156.0	162.5
Sandstone, gravelly; very fine sand to medium gravel; in part lime cemented.....	162.5	168.0
Siltstone, clayey, light brown pink; some very fine to fine sand; some lime cemented sandstone lenses.	168.0	178.5
Sandstone, fine to very coarse grained; little fine gravel, moderately calcareous, moderately consolidated; marly limestone lenses below 183.5; finer texture from 189 to 194 ft.....	178.5	204.5
Silt, clayey, light brown; some limy lenses and bentonite seams.....	204.5	210.0
Sandstone, very fine to coarse grained; little very coarse sand; moderately calcareous, moderately consolidated; in part lime cemented; some thin clay lenses.....	210.0	215.0
Sandstone, very fine to fine grained, moderately calcareous, moderately consolidated; some rootlet fragments; some marly areas below 225.5 ft; some silty areas below 262.5 ft.....	215.0	273.0
Silt, very sandy, slightly clayey, greenish gray; some limy areas; some sandstone-limestone lenses..	273.0	278.0
Sandstone, very fine to fine grained, very silty, moderately calcareous, poorly consolidated; some marly areas; some interbedded silty clay lenses...	278.0	304.0
Siltstone, clayey, sandy, pale olive, moderately calcareous; sand is very fine to fine; some interbedded sandstone and limestone lenses.....	304.0	320.0
Sandstone, very fine to fine grained, silty, moderately calcareous, poorly consolidated; some interbedded siltstone lenses below 325.5 ft; some coarse sand to fine gravel; principally siltstone grains below 336 ft.....	320.0	346.5
Sandstone, very fine to fine grained, moderately calcareous, poorly consolidated; some siltstone lenses and limy areas; some medium sand to fine gravel; principally siltstone grains below 373 ft.	346.5	399.0
Gravel, sandy; medium gravel to medium sand; principally siltstone grains.....	399.0	415.0

**Tertiary System - Oligocene Series - White River Group:**

**Brule Formation:**

Siltstone, clayey, light brown, moderately calcareous..... 415.0 436.0

**Test Hole #4-WB-67 (E-logs)  
(16N-50W-18cccc)  
Cheyenne County**

Location: SW SW SW SW sec, 18, T. 16 N., R. 50 W., 78 ft north and 77 ft east of southwest corner.  
Ground elevation: 4,390 ft. (t). (Mud Springs SE 7.5 min. quadrangle).  
Depth to water: 230 ft. (10-2-67).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Silt, slightly clayey, very sandy, dark gray; sand is very fine to coarse.....	0.0	5.0
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Gravel, sandy; medium gravel to fine sand; some coarse gravel.....	5.0	15.5
Sand, very fine to very coarse; little fine to coarse gravel; some lime cemented sandstone.....	15.5	36.5
Gravel, sandy; coarse gravel to fine sand; some clay lenses; rootlets and lime cemented sandstone.....	36.5	52.5
Sandstone, very fine to medium grained, moderately calcareous, poorly consolidated; some gravel grains and claystone fragments.....	52.5	62.0
Sand, gravelly; fine sand to fine gravel.....	62.0	69.0
Silt, clayey, sandy, reddish brown; sand is very fine to fine.....	69.0	79.0
Sandstone, very fine to fine grained, little medium, some very coarse, poorly to moderately consolidated; some limestone lenses.....	79.0	206.0
Siltstone, clayey, light reddish brown.....	206.0	212.0
Sandstone, very fine to fine grained, little medium, silty, poorly to moderately consolidated; some limy areas.....	212.0	253.0
Silt, clayey, sandy, light reddish brown; sand is very fine to fine.....	253.0	264.0
Sand, very fine to coarse, little very coarse.....	264.0	272.0
Sandstone, very fine to fine grained, silty, poorly consolidated; some limy areas.....	272.0	289.0
Sand and gravel; fine sand to fine gravel, some medium gravel.....	289.0	313.0
Silt, slightly to moderately clayey, sandy, micaceous, light brown to light reddish brown.....	313.0	359.0
Sand, gravelly; fine sand to fine gravel; some medium gravel, little coarse gravel.....	359.0	379.0

Silt, slightly clayey, sandy, light brown, slightly calcareous; sand is very fine to fine, some limy grains.....	379.0	384.5
Sand, gravelly; fine sand to fine gravel, some medium to coarse gravel; some limy grains.....	384.5	425.0
Silt, clayey, sandy, micaceous, pale yellow; sand is very fine to fine.....	425.0	432.0
Sand, gravelly; fine sand to fine gravel; little medium gravel.....	432.0	455.0
Sand, very fine to fine, some medium, silty; some limy lenses.....	455.0	461.0
Sand, very fine to medium, some coarse, little fine gravel.....	461.0	521.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
`Siltstone, clayey, light reddish brown.....	521.0	532.0

**Test Hole #3-WB-67 (E-logs)**  
**(16N-50W-34cccc)**  
**Cheyenne County**

Location: SW SW SW SW sec. 34, T. 16 N., R. 50 W., 50 ft north and  
 61 ft east of southwest corner.

Ground elevation: 4,335 ft. (t). (Mud Springs SE 7.5 min. quadrangle).

Depth to water: 195 ft. (10-2-67).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Silt, slightly clayey, dark brownish gray.....	0.0	5.0
Silt, marly, light gray.....	5.0	10.0
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Sandstone, very fine to fine grained, silty, moderately calcareous, poorly consolidated; some medium to very coarse sand below 31 ft.....	10.0	36.0
Sand, gravelly; fine sand to fine gravel; some medium gravel; some interbedded sandstone lenses; some interbedded silt lenses below 46.5 ft.....	36.0	52.0
Sandstone, very fine to medium grained, moderately calcareous, moderately consolidated; some interbedded siltstone lenses below 57 ft.....	52.0	78.0
Silt, moderately clayey, light reddish brown, grading to clay below 83.5 ft.....	78.0	94.0
Sandstone, very fine to fine grained, moderately calcareous, moderately consolidated; very fine to medium grained below 99 ft.....	94.0	104.5
Limestone (caliche), sandy, light gray; sand is very fine to fine, some coarser grains; in part marly below 109.5 ft.....	104.5	125.5
Silt, clayey, sandy, pinkish gray, very calcareous; sand is very fine to fine; some medium.....	125.5	136.5
Limestone (caliche), marly, light gray, in part sandy; sand is very fine to fine; some medium to very coarse sand below 147 ft.....	136.5	152.5
Sandstone, very fine to fine grained, moderately calcareous, moderately consolidated.....	152.5	159.0
Clay, silty, coarse textured, light brown; some silty sandstone; some pinkish gray color below 160 ft.....	159.0	168.0
Silt, slightly clayey, sandy, brown; sand is very fine to medium; some silty sandstone lenses.....	168.0	180.0
Clay, silty, coarse texture, pinkish gray; some siltstone grains; reddish brown below 189 ft.....	180.0	199.5

Sandstone, very fine to fine grained, moderately calcareous, moderately consolidated; some siltstone grains from 205 to 210.5 ft; sand is very fine to very coarse below 210.5 ft.....	199.5	213.5
Gravel, sandy; fine sand to fine gravel; some medium gravel.....	213.5	221.0
Sand, fine to very coarse; little fine gravel.....	221.0	226.5
Sand, gravelly; fine sand to fine gravel, some clay lenses.....	226.5	231.5
Silt, very sandy to sandstone silty; very fine to fine grained, some medium, light pinkish gray; light brown; some rootlets below 239 ft.....	231.5	244.0
Siltstone, clayey, sandy, light brown, some pinkish brown; sand is very fine to fine.....	244.0	249.5
Sand, fine to very coarse; some very coarse to fine gravel.....	249.5	270.5
Sand, very fine to medium; some coarse, less coarse sand below 281 ft; much fine sand below 281 ft; silty below 286 ft.....	270.5	291.5
Sand, very fine to fine, some medium; some silt lenses from 291.5 to 296.5 ft; less medium sand below 296.5 ft.....	291.5	317.5
Silt, very sandy, clayey, pinkish gray; sand is very fine to fine, trace of medium; sand is very fine to medium below 323 ft.....	317.5	328.0
Sand, very fine to medium; less medium sand from 333.5 to 338.5 ft; sand is very fine to coarse below 338.5 ft.....	328.0	344.0
Sand, very fine to fine, trace of medium; very fine to fine below 349 ft; in part lime cemented from 349 to 354.5 ft; silty below 354.5 ft.....	344.0	365.0
Sandstone, very fine to fine grained, poorly consolidated; interbedded limestone (caliche) lenses to 370 ft; in part lime cemented with some rootlets below 370 ft.....	365.0	386.0
Sandstone, very fine to fine grained; some rootlets, moderately consolidated; some silt lenses from 407 to 412 ft, and below 417.5 ft.....	386.0	422.5
Silt, slightly clayey, very sandy, light brown; sand is very fine; some pale yellow color below 433 ft; some lime cemented silty sandstone below 438.5 ft.	422.5	443.5
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, clayey, slightly sandy, light brown; sand is very fine; moderately sandy from 499 to 454 ft.	443.5	459.5

Siltstone, clayey, light brown; some pink to 464.5  
ft..... 459.5 470.0

**Test Hole #25-B-65 (E-logs)**  
**(16N-50W-36dddd)**  
**Cheyenne County**

Location: SE SE SE SE sec, 36, T. 16 N., R. 50 W., 8 ft north and  
 229 ft west of southeast corner.

Ground elevation: 4,302 ft. (t). (Gurley 7.5 min. quadrangle).

Depth to water: 209.89 ft. (9-2-65).

	Depth, in feet	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Road fill.....	0.0	1.0
Silt, dark brown.....	1.0	3.5
Silt, sandy, pale brown, calcareous.....	3.5	7.7
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Sandstone, silty with some gravel, pinkish white, calcareous cement, rhizoliths, seeds.....	7.7	14.6
Sand and gravel, granitic.....	14.6	19.2
Silt, pale olive.....	19.2	20.5
Sandstone, pale olive to light greenish gray, dis- continuous calcareous cement, rhizoliths in some horizons.....	20.5	26.1
Sandstone, gravelly, white, pale olive to brown....	26.1	32.0
Silt, light brown, calcareous.....	32.0	33.5
Sand and sandstone, yellowish brown, rhizoliths....	33.5	36.0
Sand and gravel, granitic.....	36.0	61.0
Silt, sandy, reddish yellow to brown.....	61.0	64.0
Sand and sandstone, reddish yellow to brown, dis- continuous calcareous cement.....	64.0	74.0
Sand and gravel, granitic, some calcareous cement...	74.0	86.0
Sandstone and sand, very pale brown to brown, dis- continuous calcareous cement.....	86.0	90.8
Sand and gravel, granitic.....	90.8	96.0
Silt, sandy, brown.....	96.0	97.0
Sand and gravel, granitic.....	97.0	103.0
Silt, light brown to reddish yellow, calcareous cement at top.....	103.0	106.0
Sand and sandstone, white, pinkish gray to light brown, discontinuous calcareous cement.....	106.0	115.3
Caliche, pinkish gray.....	115.3	116.5
Silt and siltstone, light gray, calcareous cement...	116.5	123.0
Sand and gravel, granitic.....	123.0	125.0
Sand, silty, and sandy silt, white to brown, dis- continuous calcareous cement.....	125.0	143.8
Caliche, white.....	143.8	145.0

Sand and sandstone, white to yellowish brown, discontinuous calcareous cement.....	145.0	160.0
Silt, sandy, reddish brown to brown.....	160.0	163.5
Silt, sandy, and sand, silty, interbedded, light brown to brown.....	163.5	195.0
Silt, sandy and silty sand, pale brown to light gray, discontinuous calcareous cement.....	195.0	210.0
Sand and gravel, granitic, pale olive.....	210.0	228.0
Sand, silty, light brown.....	228.0	235.0
Sand and gravel, granitic, pale olive.....	235.0	250.0
Sand, light brown, some finer grained intervals.....	250.0	329.0
Silt, sandy, brown.....	329.0	330.0
Sand, some parts silty, light yellowish brown to light brown.....	330.0	356.8
Silt, sandy and caliche, interbedded, white pinkish gray to very pale brown, calcareous cement.....	356.8	411.5
Sand, silty in part, pale brown to reddish brown....	411.5	426.0
Volcanic ash, sandy to silty.....	426.0	429.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown to light reddish brown, clay cement, concretions with calcareous cement in some horizons.....	429.0	530.5

**Test Hole #33-B-65 (E-logs)**  
**(16N-52W-24bbbc)**  
**Cheyenne County**

Location: SW NW NW NW sec. 24, T. 16 N., R. 52 W., 534 ft south and  
 20 ft east of northwest corner.

Ground elevation: 4,518 ft. (t). (Mud Springs SW 7.5 min. quadrangle).

Depth to water: Unknown. (10-5-65).

Depth, in feet  
 From            To

**Quaternary System, undifferentiated:**

Top soil, silt, clayey, dark gray.....	0.0	3.0
Silt, clayey and sandy, some gravel, light brownish gray, calcareous.....	3.0	6.8

**Tertiary System - Miocene Series - Ogallala Group:**

**Ash Hollow Formation:**

Sandstone, gravelly, brown, calcareous cement.....	6.8	9.0
Sand and gravel, granitic.....	9.0	14.0
Sand, silty, yellowish brown to brown.....	14.0	18.3
Caliche, white.....	18.3	19.6
Volcanic ash, light gray.....	19.6	21.0
Sand and sandstone, silty, yellowish brown to brown, gravelly.....	21.0	50.0
Sand and gravel, granitic.....	50.0	73.0
Silt, sandy, and sand, silty, brown, calcareous cement toward base.....	73.0	89.8
Silt, sandy, brown.....	89.8	90.0
Sandstone, silty brown.....	90.0	93.5
Sand and gravel, granitic.....	93.5	100.0
Caliche, sandy, light gray.....	100.0	103.5
Silt, sandy, and sand, silty, interbedded, brown to light gray, discontinuous calcareous cement, some caliches.....	103.5	180.0
Silt, brown to light gray.....	180.0	197.0
Sand, dark brown.....	197.0	202.0
Sand, silty, and silt, sandy, interbedded, brown, dark brown, reddish brown, discontinuous calcar- eous cement.....	202.0	250.0
Sand and gravel, granitic.....	250.0	262.0
Silt and sandy silt, interbedded, dark brown to brownish gray, discontinuous calcareous cement....	262.0	332.0
Sand, gravelly.....	332.0	349.0
Silt, sandy, brown, discontinuous calcareous cement.	349.0	407.0

**Tertiary System - Oligocene Series - White River Group:**

**Brule Formation:**

Siltstone, light brown to brown, clay cement, concretions with calcareous cement at some horizons.. 407.0 430.5

**Test Hole #13-WB-67 (E-log)**  
**(16N-52W-31cccc)**  
**Cheyenne County**

Location: SW SW SW SW sec. 31, T. 16 N., R. 52 W., 32 ft north and 1 ft east of southwest corner.

Ground elevation: 4,592 ft. (t). (Swedish Cemetary 7.5 min. quadrangle).

Depth to water: 235 ft. (10-21-67).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Silt, very sandy, slightly clayey, dark brownish gray; sand is very fine to fine, some medium.....	0.0	5.0
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Sand, very fine to coarse, silty.....	5.0	10.5
Gravel, sandy; medium gravel to fine sand; a little coarse gravel.....	10.5	15.5
Sandstone, very fine to medium grained; some gravel grains, poorly consolidated.....	15.5	21.0
Gravel, sandy; fine gravel to fine sand, some medium gravel; some coarse gravel below 26 ft.....	21.0	35.5
Silt, very sandy, moderately clayey, brown; sand is very fine to medium.....	35.5	36.5
Gravel, sandy; medium gravel to fine sand, some coarse gravel.....	36.5	45.0
Silt, very sandy, moderately clayey, brown; sand is very fine to medium.....	45.0	52.0
Gravel, sandy; very coarse gravel to fine sand.....	52.0	63.0
Silt, very sandy, slightly clayey, light brown; sand is very fine to fine.....	63.0	68.0
Gravel, sandy; coarse gravel to fine sand; some very coarse gravel.....	68.0	73.5
Sand, gravelly; fine sand to medium gravel; some coarse to very coarse gravel; finer texture below 84 ft.....	73.5	99.5
Sand, gravelly; fine sand to fine gravel; some medium gravel; some coarse gravel below 115.5 ft..	99.5	141.5
Silt, clayey, micaceous, brown, slightly calcareous; sandy below 147 ft; sand is very fine to fine; reddish brown from 147 to 152 ft.....	141.5	157.5
Sand, gravelly; fine sand to fine gravel; in part some medium gravel.....	157.5	172.0

Silt, slightly clayey, sandy, marly, light brown, moderately calcareous; sand is very fine to fine; pink with some light brown from 178.5 to 199.5 ft.	172.0	199.5
Sand, slightly gravelly; fine sand to fine gravel...	199.5	204.5
Sand, very fine to coarse, some very coarse, silty, slightly clayey.....	204.5	210.0
Silt, very sandy, slightly clayey, light brown; moderately calcareous; sand is very fine to medium; some marly areas; some pink below 215 ft; sand is very fine to coarse.....	210.0	220.0
Sand, very fine to coarse; silty below 224.5 ft.....	220.0	225.5
Clay, silty, coarse texture, brown with pinkish tint, slightly calcareous to moderately calcareous; some silty sandstone below 231 ft; sand is very fine to fine.....	225.5	236.0
Sand, gravelly; fine sand to fine gravel; some medium gravel below 241 ft; a little coarse gravel below 246.5 ft.....	236.0	267.5
Gravel, sandy; coarse gravel to fine sand; interbedded clay lenses.....	267.5	273.0
Clay, silty, sandy, micaceous, brown.....	273.0	287.5
Sand, gravelly; fine sand to fine gravel, some medium gravel; thin clay lenses from 209 to 304.5 ft; some clay fragments below 309.5 ft.....	287.5	320.0
Sand, gravelly; fine sand to medium gravel; little coarse gravel.....	320.0	341.0
Sand, gravelly; fine sand to fine gravel; little medium gravel.....	341.0	346.5
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, silty, sandy, pinkish gray; sand is very fine to fine.....	346.5	367.5

**Test Hole #12-WB-67 (E-logs)  
(16N-53W-24aaaa)  
Cheyenne County**

Location: NE NE NE NE sec. 24, T. 16 N., R. 53 W., 64 ft south and 55 ft west of northeast corner.

Ground elevation: 4,626 ft. (t). (Swedish Cemetary 7.5 min. quadrangle).

Depth to water: Unknown; test hole plugged at 190 ft. (10-21-67).

Depth, in feet  
From            To

**Quaternary System, undifferentiated:**

Silt, moderately clayey, slightly sandy, dark brownish gray; sand is very fine to medium.....	0.0	5.0
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**Tertiary System - Miocene Series - Ogallala Group:**

**Ash Hollow Formation:**

Sandstone, gravelly; fine sand to fine gravel, moderately calcareous, moderately consolidated.....	5.0	10.5
Clay, silty, sandy, light gray; sand is very fine to medium; light brown below 15.5 ft.....	10.5	21.0
Sand, gravelly; very fine sand to fine gravel; some medium gravel; in part silty to 26 ft.....	21.0	36.5
Sand, very fine to medium, some coarse.....	36.5	42.0
Silt, clayey, sandy, light brown; sand is very fine to medium, some lime cemented sandstone.....	42.0	47.0
Sandstone, very fine to fine grained; silty to 52.5 ft, poorly consolidated.....	47.0	57.5
Gravel, sandy; medium gravel to fine sand; some coarse gravel.....	57.5	63.0
Sandstone, very fine to very coarse grained, moderately calcareous, moderately consolidated; some silty areas; trace of fine gravel from 73.5 to 78.5 ft.....	63.0	89.0
Silt, very sandy, slightly clayey, pink, moderately calcareous; sand is very fine to very coarse, little fine gravel; very fine to medium sand below 94.5 ft, marly areas.....	89.0	99.5
Sand, gravelly; very fine sand to fine gravel; some medium gravel, in part lime cemented.....	99.5	115.5
Clay, silty, light brown, moderately calcareous; some marly areas, slightly sandy below 120.5 ft; sand is very fine.....	115.5	136.5
Silt, slightly clayey, light pinkish gray, very calcareous; some caliche lenses.....	136.5	141.0
Clay, silty, sandy, marly, pinkish gray to light brown, very calcareous; sand is very fine.....	141.0	147.0

Clay, silty, sandy, in part marly, light brown, some pale olive; sand is very fine.....	147.0	152.0
Clay, silty, light brown; marly areas from 157.5 to 162.5 ft; sandy below 162.5 ft; sand is very fine to fine.....	152.0	189.0
Gravel, sandy; fine gravel to fine sand, little medium gravel.....	189.0	193.0
Sandstone, very fine to fine grained, moderately calcareous, well consolidated; some interbedded silty clay lenses.....	193.0	204.5
Clay, silty, sandy, brown, moderately calcareous; sand is very fine to fine.....	204.5	220.0
Silt, very sandy, clayey, light gray; sand is very fine to fine; some interbedded sandstone lenses...	220.0	231.0
Sandstone, very fine grained, silty, moderately consolidated.....	231.0	235.0
Silt, very sandy, slightly clayey, light brown; sand is very fine to fine; some siltstone fragments....	235.0	241.5
Sand, gravelly; fine gravel to fine sand, some medium; a little coarse gravel.....	241.5	246.5
Gravel, sandy; fine gravel to fine sand, some medium gravel.....	246.5	256.0
Silt, clayey, sandy, light brown; sand is fine to medium.....	256.0	257.0
Sand, gravelly; fine sand to fine gravel, some medium gravel; some coarse gravel below 267.5 ft..	257.0	293.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Clay, silty, brown, moderately calcareous.....	293.0	294.0
Siltstone, clayey, brown, moderately calcareous; some very fine sand below 299 ft; slightly calcareous below 304.5 ft.....	294.0	325.0

**Test Hole #23-B72 (No e-logs)**  
**(17N-46W-29cccd)**  
**Cheyenne County**

Location: SE SW SW SW sec. 29, T. 17 N., R. 46 W., 233 ft north and  
 412 ft east of southwest corner; northeast shoulder of road.  
 Ground elevation: 3,990 ft. (t). (Lisco NW 7.5 min. quadrangle).  
 Depth to water: 295 ft. (7-12-72).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Road fill, sand, silty, dark brown.....	0.0	2.0
Silt, light brown, sandy.....	2.0	4.5
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Sand and gravel, granitic.....	4.5	25.0
Sandstone, brown, rhizoliths, fossil seeds in upper part.....	25.0	31.4
Sandstone, yellowish brown to light gray, inter- bedded caliche, calcareous cement.....	31.4	44.5
Caliche, white, sandy.....	44.5	50.0
Sandstone, brown to yellowish brown, rhizoliths in some strata, discontinuous calcareous cement.....	50.0	68.0
Silt, light brown, sandy, calcareous cement.....	68.0	72.0
Sandstone, pale brown to brown, calcareous cement...	72.0	75.0
Silt, brown, calcareous.....	75.0	76.5
Sandstone, brown, calcareous cement, some gravel clasts.....	76.5	96.1
Silt, brown, calcareous.....	96.1	100.0
Sand and gravel, granitic, rhizoliths.....	100.0	110.0
Sandstone, brown to white, calcareous cement, some gravel.....	110.0	122.5
Sand and gravel, granitic.....	122.5	127.8
Sand and sandstone, brown to white, discontinuous calcareous cement.....	127.8	135.0
Silt sandy, light yellowish brown to white, calcar- eous.....	135.0	143.0
Sand and sandstone, pale brown to light yellowish brown, discontinuous calcareous cement.....	143.0	146.5
Silt, slight yellowish brown, sandy, calcareous cement.....	146.5	159.0
Sandstone and silty sandstone, light yellowish brown, rhizoliths.....	159.0	161.0
Silt, very pale brown to yellowish brown, calcareous cement.....	161.0	167.8
Sandstone, brownish gray, calcareous cement.....	167.8	172.4

Sand and gravel, granitic.....	172.4	181.0
Silt, sandy and sand, silty, brown to pale brown, calcareous.....	181.0	200.0
Sand and gravel, granitic.....	200.0	206.2
Silt and sandstone, pale olive to light brown, calcareous.....	206.2	222.0
Sand and gravel, granitic.....	222.0	229.5
Silt, brown, sandy.....	229.5	245.0
Sand and sandstone, brown to white, discontinuous calcareous cement.....	245.0	345.3
Sandstone, very pale brown to yellow, caliche and opaline silcrete.....	345.3	360.0
Sand silts and sandstones, white, pale yellow to brown, calcareous cement.....	360.0	400.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, brown, clay cement, discontinuous cal- careous-cemented concretions.....	400.0	520.0

**Test Hole #27-WB-68 (E-logs)**  
**(17N-49W-35bcbb)**  
**Cheyenne County**

Location: NW NW SW NW sec. 35, T. 17 N., R. 49 W., 1,458 ft south and 87 ft east of northwest corner.  
 Ground elevation: 4,235 ft. (t). (Dalton 7.5 min. quadrangle).  
 Depth to water: 285 ft. (5-28-68).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
No sample.....	0.0	2.8
Silt, moderately clayey, moderately sandy, brown, moderately calcareous; sand is very fine to medium, trace of coarse; siltstone below 6 ft; some sandstone below 12 ft.....	2.8	17.0
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Sandstone, very fine to fine grained, some medium, very silty, poorly to moderately consolidated; in part some rootlets.....	17.0	36.5
Limestone (caliche), sandy, white; sand is very fine to fine.....	36.5	37.5
Claystone, silty, brown; some thin dark brown lenses.....	37.5	40.0
Clay, moderately silty, sandy, pale yellow with little light yellowish brown; sand is very fine to fine.....	40.0	42.0
Sand, very fine to fine, trace of medium, silty.....	42.0	47.0
Siltstone, clayey, sandy, light gray; sand is very fine to fine.....	47.0	47.5
Clay to claystone, silty, brown with some light yellowish brown; trace of very fine sand.....	47.5	52.5
Sandstone, very fine to fine grained, trace of medium, moderately silty, moderately consolidated; trace of caliche; some rootlets below 57 ft; some siltstone lenses below 82 ft.....	52.5	87.0
Sandstone, very fine to medium grained, trace of coarse, silty, moderately calcareous, poorly consolidated; some claystone; siltstone lenses from 102 to 107 ft.....	87.0	112.0
Siltstone, clayey, sandy, brown, moderately calcareous; sand is very fine.....	112.0	119.0
Sand, medium to coarse, with some fine sand and fine gravel, silty, in part cemented.....	119.0	124.0

Sand and gravel, fine sand to fine gravel; lime cemented; some sandstone.....	124.0	127.0
Siltstone, moderately sandy, brown, very calcareous; sand is very fine to fine; some interbedded limy lenses.....	127.0	137.0
Sand, fine to very coarse; some fine gravel, moderately silty.....	137.0	138.0
Sandstone, very fine to very coarse grained, silty, moderately calcareous, poorly to moderately consolidated; some interbedded limestone (caliche) lenses.....	138.0	155.0
Siltstone to claystone, moderately sandy, brown, moderately calcareous; sand is very fine to fine..	155.0	172.0
Clay, moderately silty, sandy, brown; light yellowish brown below 177 ft; sand is very fine to medium; some siltstone.....	172.0	185.0
Sandstone, very fine to fine grained, trace of medium, slightly calcareous, poorly consolidated; some clay lenses below 192 ft.....	185.0	207.0
Siltstone, clayey, very sandy, brown, slightly calcareous; moderately calcareous below 212 ft; sand is very fine to fine.....	207.0	217.0
Sandstone, very fine to fine grained, very silty, slightly calcareous, poorly consolidated; some interbedded thin siltstone and limestone (caliche) lenses.....	217.0	232.0
Siltstone, clayey, moderately sandy, brown, moderately calcareous; sand is very fine to fine; interbedded claystone and sandstone lenses.....	232.0	242.0
Clay, silty, sandy, brown, slightly calcareous; sand is very fine; some claystone and siltstone lenses.....	242.0	255.0
Siltstone, clayey, moderately sandy, brown, slightly calcareous; sand is very fine to fine; some claystone lenses; sandstone lenses below 262 ft.....	255.0	272.0
Sandstone, very fine to fine grained, very silty, poorly consolidated; some clay lenses.....	272.0	282.0
Sand, fine to very coarse, very silty; moderately silty from 287.5 to 290 ft; sand is very fine to fine from 200 to 292 ft; no very coarse sand below 292 ft; thin clay lens below 297 ft.....	282.0	302.0
Sandstone, very fine to fine grained, moderately silty, poorly consolidated; some interbedded claystone lenses.....	302.0	322.0
Sand, very fine to medium, some coarse, moderately silty.....	322.0	332.0

Siltstone, clayey, sandy, brown, slightly calcareous; very fine to fine sand; some claystone lenses.....	332.0	352.0
Sand, very fine to medium, some coarse, trace of very coarse, moderately silty, less very fine to fine sand; trace of fine gravel below 362 ft; some clay lenses below 372 ft.....	352.0	392.0
Sand, very fine to very coarse with some fine gravel, silty; some clay lenses.....	392.0	402.0
Sand, very fine to medium, some coarse, moderately silty; some clay lenses.....	402.0	412.0
Sand, medium to coarse, trace of very coarse, moderately silty; medium to very coarse with some fine gravel below 418 ft.....	412.0	432.0
Gravel, very sandy; fine gravel to coarse sand, silty; clay lens from 440 to 441 ft.....	432.0	442.0
Sand, gravelly; medium sand to fine gravel; some clay lenses.....	442.0	456.0
Clay, silty, sandy; yellow sand is fine to medium...	456.0	462.0
Sand, medium to coarse, silty; some clay lenses.....	462.0	497.0
Sand, medium to coarse, silty, very clayey, clay greenish gray.....	497.0	510.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, clayey, sandy, light brown; sand is very fine.....	510.0	540.0

**Test Hole #5-WB-67 (E-logs)**  
**(17N-50W-31cccc)**  
**Cheyenne County**

Location: SW SW SW SW sec. 31, T. 17 N., R. 50 W., southwest corner.  
 Ground elevation: 4,408 ft. (t). (Horsehead Ranch 7.5 min. quadrangle).  
 Depth to water: 244 ft. (10-2-67).

	Depth, in feet	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Silt, slightly clayey, slightly sandy, dark brownish gray to light brown; sand is very fine to medium.....	0.0	5.0
Sand, very fine to medium, some coarse, very silty..	5.0	10.5
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Sandstone, very fine to medium grained, poorly consolidated; few rootlets; in part finer texture below 15.5 ft.....	10.5	39.0
Sand and gravel; fine sand to fine gravel; some medium gravel.....	39.0	42.0
Gravel, sandy; medium gravel to fine sand.....	42.0	46.0
Sand, very fine to coarse.....	46.0	52.5
Sandstone, very fine to fine grained, poorly consolidated; interbedded clay lenses and marly areas.....	52.5	57.5
Silt to siltstone, light brown; some interbedded sandstone; sand is very fine to fine; some light reddish brown below 63 ft; in part marly below 73.5 ft.....	57.5	83.0
Sand, gravelly; very fine sand to fine gravel.....	83.0	89.0
Sandstone, very fine to fine grained, marly, well consolidated; some caliche lenses; some medium sand to fine gravel from 94.5 to 99.5 ft; some silt lenses below 105 ft.....	89.0	120.5
Silt, moderately clayey, sandy, light reddish brown; sand is very fine; some lime cemented sandstone below 126 ft.....	120.5	131.0
Sand, gravelly; fine sand to fine gravel; some medium gravel; some thin clay lenses.....	131.0	136.0
Silt, moderately clayey, sandy to gravelly, light brown to light reddish brown; fine sand to fine gravel; no gravel below 141.5 ft.....	136.0	147.0
Limestone (caliche), white, sandy; sand is very fine to fine.....	147.0	152.0

Silt, very sandy, slightly clayey, pink, moderately calcareous; sand is very fine to fine; some interbedded silty sandstone.....	152.0	162.5
Sandstone, very fine to fine grained, marly, moderately calcareous, moderately consolidated; some rootlets.....	162.5	173.0
Silt, very sandy, moderately clayey, pink, moderately calcareous; sand is very fine to fine, some medium, some interbedded silty sandstone.....	173.0	189.0
Sandstone, very fine to medium grained, silty, moderately calcareous, moderately consolidated; some caliche lenses, marly and silty areas.....	189.0	245.0
Silt, clayey, sandy, pink; sand is very fine to fine.....	245.0	250.5
Silt, moderately clayey, in part very clayey, sandy, reddish brown, pale yellow, and pink, in part slightly calcareous; sand is very fine to fine; some limy areas; some interbedded sandstone.....	250.5	271.5
Sandstone, very fine to fine grained, poorly consolidated.....	271.5	293.0
Silt, clayey, sandy, pinkish gray, moderately calcareous; sand is very fine to fine.....	293.0	300.0
Clay, silty, sandy, light reddish brown, pink and light brown; sand is very fine to fine.....	300.0	321.0
Silt, clayey, sandy, light gray; sand is very fine to very coarse with a little fine gravel.....	321.0	326.5
Sand and gravel; fine sand to fine gravel, some medium gravel.....	326.5	331.5
Clay, silty, sandy, micaceous, pinkish gray; sand is very fine to fine.....	331.5	342.0
Gravel, sandy; medium gravel to fine sand.....	342.0	352.0
Sand, gravelly; fine sand to fine gravel, some medium gravel.....	352.0	384.0
Silt, clayey, sandy, light brown; sand is very fine to fine; some interbedded lime cemented sandstone lenses.....	384.0	401.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Silt, clayey, sandy, light brown; moderately to slightly calcareous; sand is very fine.....	401.0	422.5

**Test Hole #21-WB-68 (E-logs)**  
**(17N-50W-34cccc)**  
**Cheyenne County**

Location: SW SW SW SW sec. 34, T. 17 N., R. 50 W., 30 ft north and 74 ft east of southwest corner.

Ground elevation: 4,360 ft. (t). (Dalton 7.5 min. quadrangle).

Depth to water: Unknown; test hole plugged at 246 ft, (4-30-68).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
No sample.....	0.0	2.0
Silt, clayey, sandy, grayish brown, slightly calcareous; sand is very fine to fine.....	2.0	5.0
Sand, medium to coarse, some fine sand; trace of fine gravel, moderately silty.....	5.0	13.0
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Siltstone, moderately clayey, moderately sandy, brown; sand is medium to coarse; trace fine sand and fine gravel.....	13.0	20.0
Sandstone, very fine to fine grained, trace of medium, moderately silty, very calcareous, moderately consolidated.....	20.0	40.0
Sand, very fine to medium, some coarse, slightly calcareous.....	40.0	47.0
Siltstone, clayey, sandy, light brown, moderately calcareous; sand is very fine to fine.....	47.0	50.0
Sand, very fine to fine, some medium.....	50.0	60.0
Sandstone, very fine to fine grained, trace of medium, slightly calcareous, well consolidated; thin limestone lenses.....	60.0	65.0
Clay, silty, brown; some very fine to fine sand.....	65.0	70.0
Sandstone, very fine to medium grained, trace of coarse, silty, very calcareous, moderately consolidated; moderately calcareous below 75 ft.....	70.0	80.0
Sandstone, very fine to fine grained, some medium, trace coarse, silty, poorly consolidated; trace of fine gravel below 85 ft.....	80.0	90.0
Sand, medium to coarse, trace of fine gravel, some very fine to fine sand; limestone lens at 97.1 ft; slightly more fine gravel below 95 ft.....	90.0	100.0
Siltstone, clayey, silty, pale brown, very calcareous, some very fine to fine, trace of medium sand.....	100.0	110.0

Clay, very silty, moderately sandy, light yellowish brown; sand is very fine to fine.....	110.0	115.0
Siltstone, claystone, pink, slightly calcareous; some interbedded sandy layers; light brown below 120 ft.....	115.0	125.0
Clay, moderately silty, moderately sandy, reddish yellow; brown below 130 ft; sand is very fine to fine, some medium; some claystone lenses.....	125.0	135.0
Sandstone, very fine to fine grained, some medium, moderately silty, light gray, moderately calcareous, moderately consolidated.....	135.0	140.0
Clay, moderately silty, moderately sandy, brown; sand is very fine to fine, trace of medium; no sand below 145 ft; some siltstone to claystone lenses below 150 ft.....	140.0	155.0
Siltstone, moderately clayey, sandy, brown, moderately calcareous; sand is very fine to fine; limestone lenses to 160 ft.....	155.0	165.0
Sand to sandstone, very fine to fine grained, trace of medium, silty, very calcareous, moderately consolidated; limestone from 169 to 170 ft.....	165.0	175.0
Siltstone, clayey, sandy, light brownish gray, moderately calcareous; sand is very fine to fine..	175.0	180.0
Clay, very silty, moderate sand, brown, slightly calcareous; sand is very fine to fine; some siltstone lenses.....	180.0	185.0
Siltstone to sandstone; very fine to fine grained sand with trace of medium, pale brown; some green color below 195 ft, very calcareous to moderately calcareous to 195 ft.....	185.0	200.0
Silt, moderately clayey, moderately sandy, brown with light gray mottling; sand is very fine to fine.....	200.0	205.0
Clay, moderately silty, brown; some very fine sand; some limy areas below 215 ft.....	205.0	220.0
Siltstone, clayey, brown; moderately calcareous below 225 ft.....	220.0	236.0
Sand, medium to coarse; trace of gravel.....	236.0	250.0
Silt, clayey, very sandy, light gray; sand is very fine to fine.....	250.0	255.0
Sandstone, very fine to fine grained, trace of medium, very silty, poorly consolidated.....	255.0	265.0
Silt, clayey, sandy, light brownish gray; sand is very fine to fine.....	265.0	322.0
Sand, medium to coarse, some very fine to fine.....	322.0	336.0
Silt, very clayey, sandy, light brown; sand is very fine.....	336.0	360.0

Sand, gravelly; fine sand to medium gravel, some coarse gravel.....	360.0	422.0
Clay, silty, micaceous, light gray to light brownish gray; sand is very fine.....	422.0	432.0
Sand, medium to very coarse; some gravel.....	432.0	540.0
Silt, clayey, very sandy, light gray; sand is very fine to fine.....	540.0	544.0
Sand, very fine to fine, some medium, silty.....	544.0	548.0
Silt, clayey, very sandy, light gray with pink tint; sand is very fine to medium, some poorly consolidated sandstone.....	548.0	554.0
Sand, very fine to fine, some medium, silty; pinkish clay fragments; some interbedded sandstone lenses.	554.0	564.0

**Test Hole #24-B-65 (E-logs)**  
**(17N-50W-36dddd)**  
**Cheyenne County**

Location: SW SW SW SW sec. 36, T. 17 N., R. 50 W., 154 ft north and  
 11 ft west of southeast corner.

Ground elevation: 4,316 ft. (t). (Dalton 7.5 min. quadrangle).

Depth to water: 255.8 ft. (9-2-65).

	<u>Depth, in feet</u>	
	From	To
<b>Quaternary System, undifferentiated:</b>		
Road fill.....	0.0	0.5
Silt, clayey, very dark grayish brown.....	0.5	1.5
Silt, clayey, dark brown.....	1.5	3.5
Silt, sandy, dark grayish brown to pale brown.....	3.5	7.5
Silt, sand, light olive brown, calcareous.....	7.5	8.6
<b>Tertiary System - Miocene Series - Ogallala Group:</b>		
<b>Ash Hollow Formation:</b>		
Sandstone, very pale brown, calcareous cement, rhizoliths.....	8.6	16.5
Sand and sandstone, light gray to olive.....	16.5	20.0
Sand and gravel, granitic.....	20.0	30.0
Sandstone and caliche, interbedded, light gray, olive to brown, rhizoliths.....	30.0	50.0
Sandstone and caliche, interbedded, yellowish brown, brown to white, calcareous cement, rhizoliths in some horizons.....	50.0	100.0
Silt and siltstone, clayey to sandy, interbedded, very pale brown to yellowish brown, calcareous at top.....	100.0	112.0
Sandstone, silty with some gravel, white to light brown, calcareous cement.....	112.0	150.0
Silt, sandy, pink to light brown.....	150.0	160.0
Sand and sandstone, silty, brown to pale brown, calcareous cement, rhizoliths in some horizons....	160.0	174.0
Silt, sandy, and sandy, silt, interbedded, light gray, white, light brown with some gravel, cal- careous cement.....	174.0	188.0
Sand and sandstone, white to light gray, calcareous cement.....	188.0	199.0
Sand and sandstone, olive green.....	199.0	200.0
Sandstone, brown to pale brown, light gray, calcar- eous cement rhizoliths.....	200.0	207.5
Sand, silty, and sandy silt, interbedded, very pale brown to brown and light gray to white, discontin- uous calcareous cement.....	207.5	259.0

Silt, sandy and silty sand, interbedded pale brown to light brown, discontinuous calcareous cement...	259.0	300.0
Sand and gravel, granitic.....	300.0	318.0
Silt, sandy, and silty sand, interbedded light yellowish brown to brown, discontinuous calcareous cement.....	318.0	392.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, sandy in parts, yellowish brown to brown, clay cement, concretions with calcareous cement in some horizons.....	392.0	500.6

**Test Hole #10-WB-67 (E-logs)**  
**(17N-51W-23aaaa)**  
**Cheyenne County**

Location: NE NE NE NE sec. 23, T. 17 N., R. 51 W., 83 ft south and  
 79 ft west of northeast corner.

Ground elevation: 4,445 ft. (t). (Horsehead Ranch 7.5 min.  
 quadrangle).

Depth to water: 332 ft. (10-2-67).

Depth, in feet  
 From            To

**Quaternary System, undifferentiated:**

Silt, very sandy, slightly clayey, dark brownish gray; sand is very fine to fine.....	0.0	5.0
Sand, very fine to fine, some medium, silty.....	5.0	10.0

**Tertiary System - Miocene Series - Ogallala Group:**

**Ash Hollow Formation:**

Sand, gravelly; fine sand to fine gravel, some medium gravel.....	10.0	15.0
Gravel, sandy; medium gravel to fine sand; little coarse gravel.....	15.0	21.0
Sand, gravelly; fine sand to fine gravel, little medium gavel, trace of coarse.....	21.0	26.0
Sandstone, very fine to coarse grained, little very coarse, slightly calcareous, poorly consolidated..	26.0	31.5
Sandstone, very fine to fine grained, moderately calcareous, moderately consolidated; in part lime cemented; few rootlets; very fine to medium below 57.5 ft.....	31.5	73.5
Sandstone, very fine to medium grained, some coarse to very coarse; moderately calcareous, poorly con- solidated; some silty sand lenses to 78.5 ft; few gravel grains below 78.5 ft.....	73.5	89.0
Sand, gravelly; fine sand to fine gravel, little medium gravel; in part lime cemented.....	89.0	105.0
Sandstone, very fine to very coarse grained, mod- erately calcareous, poorly consolidated; some clay lenses.....	105.0	112.0
Silt, very sandy, slightly clayey, light brown; sand is very fine to medium.....	112.0	115.5
Sandstone, very fine to very coarse grained, mod- erately calcareous, moderately consolidated; some siltstone below 12.5 ft.....	115.5	126.0
Siltstone, clayey, light brown, some reddish brown; sandy to slightly gravelly below 131 ft.....	126.0	136.5

Sandstone, very fine to very coarse grained; little fine gravel, moderately calcareous, moderately consolidated; some siltstone.....	136.5	157.5
Silt, very sandy, slightly clayey, pinkish gray, moderately calcareous; and is very fine to very coarse.....	157.5	168.0
Sandstone, very fine to fine grained, some medium to coarse, silty, poorly consolidated.....	168.0	173.0
Silt, sandy, slightly clayey, brown; sand is very fine to medium.....	173.0	178.5
Clay, silty, micaceous, light brown, slightly calcareous; indurated lens 178.5 to 179.5 ft.....	178.5	183.5
Silt, clayey, sandy, light brown, moderately calcareous; sand is very fine to fine, little medium; some interbedded silty sandstone.....	183.5	189.0
Sand, slightly gravelly; very fine sand to fine gravel, silty.....	189.0	194.0
Sandstone, very fine to very coarse grained; trace of fine gravel; many rootlets; limy layer from 204.5 to 206 ft.....	194.0	210.0
Gravel, sandy; fine gravel to fine sand, little medium gravel.....	210.0	220.5
Sand, gravelly; fine sand to fine gravel, little medium gravel.....	220.5	229.5
Silt, slightly clayey, sandy, pink, slightly calcareous; sand is very fine to medium.....	229.5	235.0
Sandstone, very fine to medium grained, little coarse to very coarse, moderately calcareous, moderately consolidated.....	235.0	238.5
Silt, slightly clayey, sandy, pinkish gray, moderately calcareous; sand is very fine to fine, some medium; some lime cemented sandstone.....	238.5	241.5
Siltstone, clayey, pink, moderately calcareous; limestone lens 242 to 243 ft; light brown below 246.5 ft, some very fine sand.....	241.5	252.0
Silt, slightly clayey, micaceous, sandy, brown, moderately calcareous; sand is very fine; slightly calcareous below 257 ft.....	252.0	260.0
Clay, silty, sandy, light reddish brown; sand is very fine.....	260.0	267.5
Silt, moderately clayey, sandy, light reddish brown; sand is very fine; some interbedded lime cemented sandstone.....	267.5	273.0
Clay, silty, light reddish brown; some siltstone....	273.0	283.5
Sand, fine to very coarse, some rootlets; a little fine to medium gravel.....	283.0	288.0

Silt, clay, sandy, pinkish gray, moderately calcareous; sand is very fine to medium.....	288.0	294.0
Sand, gravelly; fine sand to medium gravel, a little coarse gravel.....	294.0	315.0
Sand, gravelly; fine sand to fine gravel, some medium gravel.....	315.0	326.5
Clay, silty, coarse texture, light brown; in part sandy; sand is very fine; some marly areas from 330.5 to 341 ft.....	326.5	351.5
Clay, silty, sandy, pale yellow; sand is very fine..	351.5	357.0
Silt, moderately clayey, coarse texture, reddish brown; sand is very fine to fine.....	357.0	361.5
Sandstone, very fine grained, moderately calcareous, moderately consolidated.....	361.5	366.5
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, clayey, coarse texture, light brown and light reddish brown; some very fine sand; slightly calcareous below 372 ft.....	366.5	393.0

**Test Hole #11-WB-67 (No e-logs)  
(17N-52W-32dcdd)  
Cheyenne County**

Location: SE SE SW SE sec. 32, T. 17 N., R. 52 W., 53 ft north and  
1,344 ft west of southeast corner.  
Ground elevation: 4,603 ft. (t). (Lawrence Fork 7.5 min. quadrangle).  
Depth to water: 268 ft. (10-21-67).

Depth, in feet  
From            To

**Quaternary System, undifferentiated:**

Silt, slightly clayey, sandy, light brownish gray; sand is very fine to medium, a little coarse.....	0.0	5.0
Sand, very fine to coarse, some very coarse, silty..	5.0	10.5

**Tertiary System - Miocene Series - Ogallala Group:**

**Ash Hollow Formation:**

Sand, gravelly; fine sand to fine gravel, some medium gravel; trace of coarse gravel below 15.5 ft.....	10.5	21.0
Gravel, sandy; coarse gravel to fine sand.....	21.0	37.5
Silt, very sandy, slightly clayey, light brown; sand is very fine to fine.....	37.5	42.0
Sand, very fine to coarse, silty.....	42.0	47.0
Sandstone, very fine to medium grained; in part silty; moderately consolidated.....	47.0	52.5
Sandstone, very fine to very coarse grained; some rootlets; poorly consolidated; very fine to medium, moderately consolidated below 68 ft.....	52.5	84.0
Gravel, sandy; very coarse gravel to fine sand.....	84.0	87.5
Silt, moderately clayey, sandy, light brown; sand is very fine to medium; slightly clayey below 89 ft; sand is very fine to coarse, a little very coarse below 94.5 ft.....	87.5	99.5
Sandstone, very fine to medium grained, very calcar- eous, well consolidated.....	99.5	100.5
Gravel, sandy; fine gravel to fine sand, some medium to coarse gravel.....	100.5	105.0
Sand, gravelly, very fine sand to medium gravel, silty.....	105.0	110.0
Silt, sandy, clayey, light brown; sand is very fine to medium; marly areas.....	110.0	115.5
Sandstone, very fine to fine grained, moderately calcareous, well consolidated; some interbedded clay lenses.....	115.5	120.5

Clay, silty, sandy, light pinkish gray; sand is very fine to medium; some lime cemented sandstone lenses.....	120.5	126.0
Sandstone, very fine to medium grained, very calcareous, well consolidated; some marly areas.....	126.0	128.0
Clay, very sandy, silty, pinkish gray, very calcareous; sand is very fine to medium, a little coarse to very coarse.....	128.0	141.5
Sand, gravelly; fine to medium gravel, a little coarse; clay lenses at base.....	141.5	147.0
Sandstone, very fine to very coarse grained; some fine gravel, moderately calcareous, well consolidated.....	147.0	157.5
Sand, gravelly; fine sand to fine gravel, lime cemented; marly areas.....	157.5	162.5
Sandstone, very fine to coarse grained, a little very coarse; trace of fine gravel, in part moderately calcareous, well consolidated; very fine to fine, some medium below 168 ft; some silty areas below 173 ft.....	162.5	178.5
Sandstone, very fine to very coarse grained; a little fine gravel, well consolidated.....	178.5	183.5
Sand, slightly gravelly; fine sand to fine gravel...	183.5	189.0
Clay, very sandy, silty, pink, moderately calcareous; sand is very fine to very coarse.....	189.0	198.0
Sand, very fine to very coarse; trace of fine gravel.....	198.0	199.0
Clay, silty, sandy, light brown; sand is very fine to fine; some limy areas.....	199.0	210.5
Sandstone, very fine to fine grained, moderately calcareous, moderately consolidated; some siltstone.....	210.5	217.5
Sand, slightly gravelly; fine sand to fine gravel...	217.5	221.0
Sand, fine to very coarse; a little fine gravel to 226.5 ft and below 231.5 ft.....	221.0	237.0
Sand, gravelly; fine sand to fine gravel, some medium gravel; slightly gravelly from 247.5 to 252.5 ft.....	237.0	263.5
Sand, very coarse; little fine gravel.....	263.5	269.0
Sand, gravelly; fine sand to medium gravel.....	269.0	274.0
Clay, silty, slightly sandy, pink; sand is very fine to medium; some marly areas.....	274.0	279.5
Clay, silty, coarse texture, light brown, moderately calcareous; marly areas.....	279.5	284.5
Silt, moderately clayey, sandy, pinkish gray; sand is very fine to medium; some bentonite to 290 ft..	284.5	295.0

Sandstone, very fine to medium grained, some coarse, trace of very coarse, poorly consolidated.....	295.0	300.5
Sand, gravelly; fine sand to fine gravel, some medium, a trace of coarse gravel.....	300.5	311.0
Gravel, sandy; fine gravel to fine sand, some medium, a trace of coarse gravel.....	311.0	316.0
Sand, fine to very coarse, some interbedded lime cemented sandstone lenses.....	316.0	326.5
Sand, gravelly; fine sand to fine gravel, a little medium gravel.....	326.5	347.5
Silt, very sandy, slightly clayey, pinkish gray; sand is very fine to medium.....	347.5	353.0
Sand, very fine to medium, silty, slightly clayey...	353.0	363.5
Sand, fine to very coarse; some fine to medium gravel, silty; some clay lenses.....	363.5	384.5
Silt, very sandy, slightly clayey, pale yellow to light gray; sand is very fine to medium; some marly areas and lime cemented sandstone lenses....	384.5	395.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, clayey, light brown; moderately calcareous; brown below 399 ft; slightly calcareous below 405 ft.....	395.0	415.0

**Test Hole #34-B-65 (E-logs)**  
**(17N-52W-36ddda)**  
**Cheyenne County**

Location: NE SE SE SE sec. 36, T. 17 N., R. 52 W., 573 ft north and  
 10 ft west of southeast corner.

Ground elevation: 4,538 ft. (t). (Lawrence Fork 7.5 min. quadrangle).

Depth to water: 289.1 ft. (10-5-65).

Depth, in feet  
 From            To

**Quaternary System, undifferentiated:**

Road fill, silt, sandy, dark gray.....	0.0	1.0
Sand, silty, pale brown to brown, calcareous cement at top.....	1.0	7.0
Silt, sandy, brown.....	7.0	12.5

**Tertiary System - Miocene Series - Ogallala Group:**

**Ash Hollow Formation:**

Sand and gravel, granitic.....	12.5	22.0
Sand and sandstone, light brown to brown, rhizo- liths in some horizons.....	22.0	45.0
Silt, sandy, brown.....	45.0	49.0
Sand, silty, brown.....	49.0	51.0
Silt, light brown, calcareous.....	51.0	56.5
Sand and sandstone, brown.....	56.5	80.0
Sand and gravel, granitic.....	80.0	95.0
Sand and sandstone, pale brown to brown, white, discontinuous calcareous cement.....	95.0	137.0
Silt, clayey to sandy, very pale brown to brown, calcareous cement.....	137.0	145.0
Sand, gravelly, granitic.....	145.0	180.8
Caliche, white.....	180.8	182.0
Silt, sandy and sand, silty, white and very pale brown to brown, discontinuous calcareous cement...	182.0	219.7
Volcanic ash, light gray.....	219.7	220.0
Sand, silty, pale brown to yellowish brown.....	220.0	225.0
Silt, sandy, to sand, silty, white to brown, cal- careous cement at top.....	225.0	231.5
Caliche, white.....	231.5	232.0
Silt, sandy to clayey, brown and pale olive, few calcareous cement horizons.....	232.0	269.8
Sand and gravel, granitic.....	269.8	276.8
Silt, clayey to sandy, brown.....	276.8	282.0
Sand and gravel, granitic.....	282.0	320.5
Silt, clayey to sandy, pale brown to light yellowish brown, calcareous cement at base.....	320.5	328.5
Sand, gravelly, granitic.....	328.5	333.5

Silt, sandy to clayey, pale brown to white, calcareous cement.....	333.5	347.8
Sand, gravelly, granitic.....	347.8	360.0
Sand, silty, and silt, sandy, pale brown to yellowish brown and white, discontinuous calcareous cement.....	360.0	390.0
Clay, silty, pale olive.....	390.0	394.5
Silt, clayey to sandy, and sand, silty, interbedded, very pale brown to light gray, discontinuous calcareous cement.....	394.5	416.0
<b>Tertiary System - Oligocene Series - White River Group:</b>		
<b>Brule Formation:</b>		
Siltstone, sandy, brown, pale brown to yellowish brown, clay cement, concretions with calcareous cement at some horizons.....	416.0	430.5