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Water Conservation Commission
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COUNTY GROUND WATER STUDIES 2

GEOLOGY AND GROUND WATER RESOURCES

of Stutsman County, North Dakota

PART II

GROUND WATER BASIC DATA

By

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Prepared by the United States Geological Survey
in cooperation with the North Dakota Geological Survey and the
North Dakota State Water Conservation Commission
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This is one of a series of county reports which will be published cooperatively by the North Dakota Geological Survey and the North Dakota State Water Conservation Commission in three parts. Part I is concerned with geology, Part II, basic data which includes information on existing wells and test drilling, and Part III which will be a study of hydrology in the county. Part III will be published later and will be distributed as soon as possible.

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ILLUSTRATIONS

TABLES

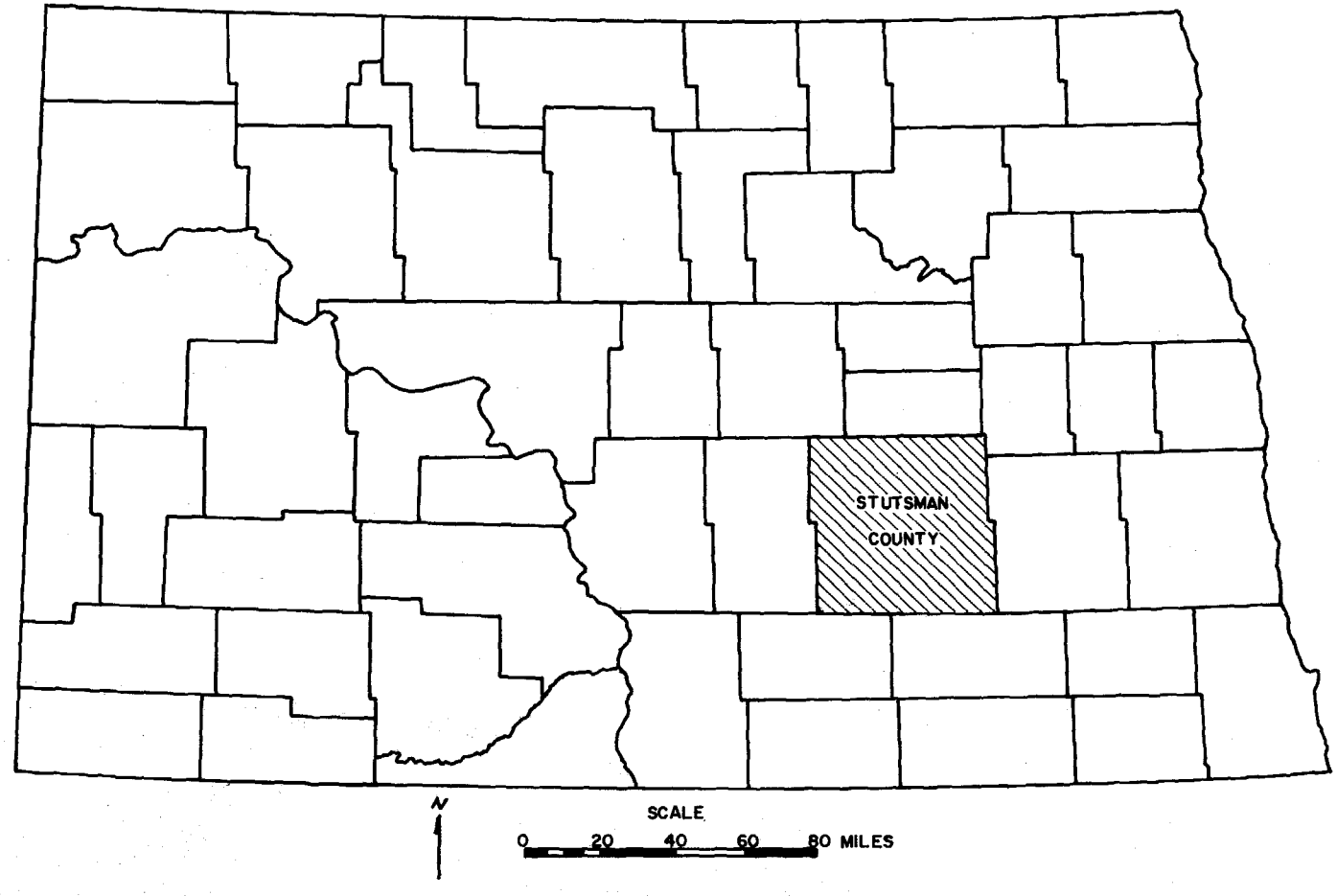

FIGURE 1- MAP OF NORTH DAKOTA SHOWING THE LOCATION OF STUTSMAN COUNTY.

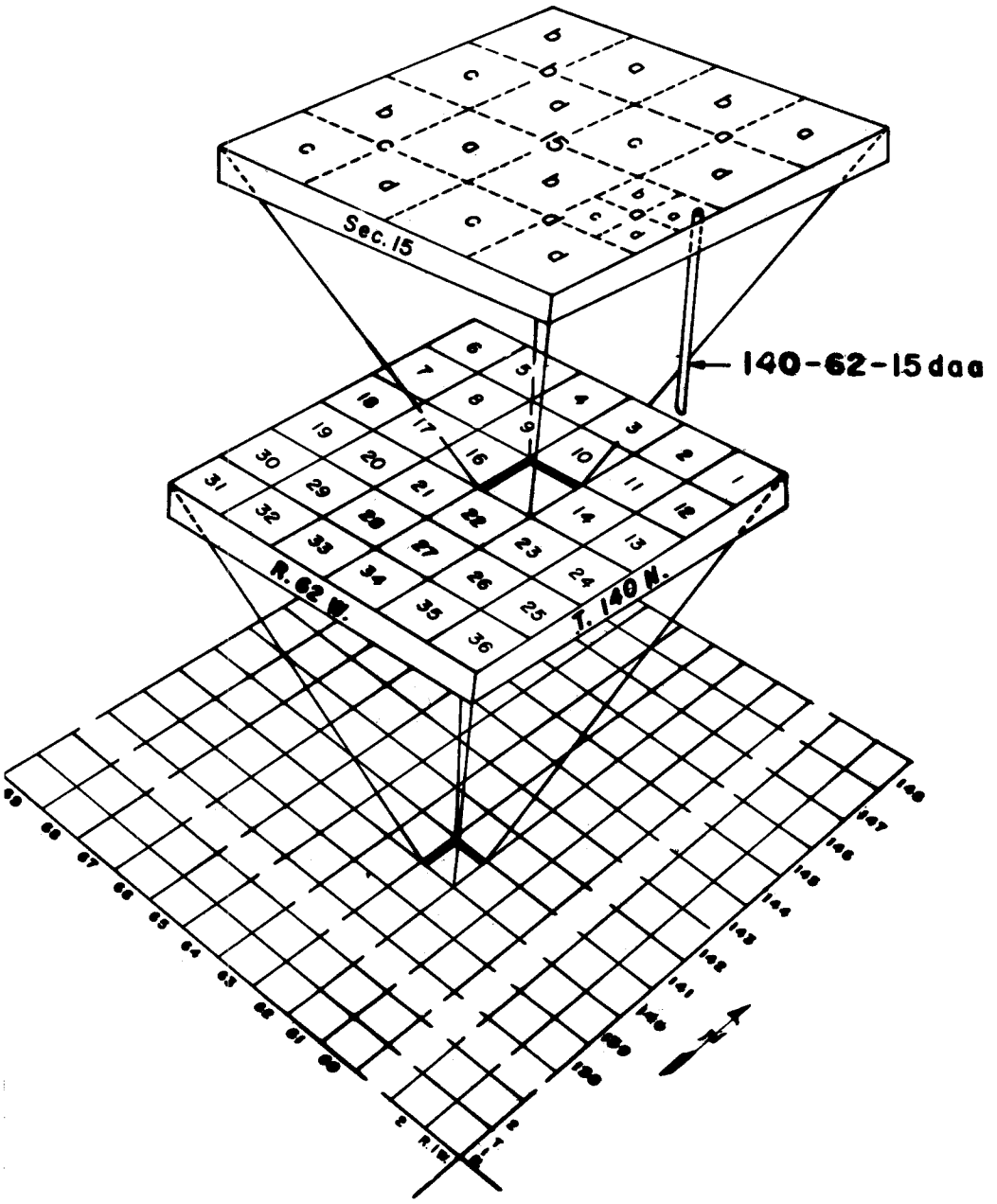

FIGURE 2--SYSTEM OF NUMBERING WELLS, SPRINGS, AND TEST HOLES.

Introduction

The study of the geology and ground-water resources of Stutsman County, North Dakota (fig. 1) has been a cooperative investigation made by the U. S. Geological Survey, the North Dakota State Water Conservation Commission, and the North Dakota Geological Survey. The results of the Stutsman County study are to be published in three parts consisting of Part I, an interpretive report describing the surficial geology of Stutsman County, Part II, ground-water basic data, and Part III, an interpretive report describing the ground-water resources of Stutsman County. The publication of Part II makes available the bulk-basic data collected during the Stutsman County study and functions as a supplemental reference to Parts I and III.

The information in this report, which was collected between 1958 to 1962, is arranged into three categories: (1) data from a comprehensive inventory of existing water wells and springs, (2) logs of test holes, and (3) chemical analyses of water samples from selected wells. Most of the well-inventory data were obtained by P. G. Randich, A. J. Goehring, and L. L. Froelich. The logs of test holes are composite logs from a synthesis of drillers logs, sample-analysis logs, and, where available, electric logs. Most of the nearly 200 test holes in the Stutsman County area were drilled with a rotary-drilling machine owned by the North Dakota State Water Conservation Commission.

Water samples from selected wells were analyzed for chemical quality by the Quality of Water Branch, United States Geological Survey or by other agencies as

indicated in the tables. Most of the samples analyzed were collected by L. R. Petri, P. G. Rosene, and J. B. Sheehan.

The wells, test holes, and springs in the tables are numbered according to a system based on the public land classification of the United States Bureau of Land Management. It is illustrated in figure 2. The first numeral denotes the townships north of the base line, the second numeral the range west of the fifth principal meridian, and the third the section in which the well or test hole is located. The letters a, b, c, and d designate respectively the northeast, northwest, southwest and southeast quarter sections, quarter-quarter sections, and quarter-quarter-quarter sections (10-acre tract). For example, well 137-66-15daa is in the NE1/4NE1/4SE1/4 sec. 15, T. 137 N., R. 66 W. Consecutive terminal numerals are added if more than one well is recorded within a 10-acre tract.

The data collected in this report are useful for predicting subsurface conditions in Stutsman County. The general depth and thickness of water-bearing deposits, and in selected areas, the quality of water may be estimated for a given site by examing the tables of records of nearby wells, springs, and (or) test holes (tables 1, 2, and 3; figs. 3 and 4). The usefulness of the data can be enhanced considerably by examining the interpretive reports on the geology and ground water in Stutsman County (Parts I and III of this bulletin) in conjunction with this report.

Postscripts after the test-hole numbers in table 2 indicate the year in which the test hole was drilled. The years 1958, 1959, 1960, and 1961 are indicated

by the postscripts a, b, c, and d respectively.

Logs for test holes drilled during the years 1958 and 1959 were prepared from samples collected at the drilling sites and analyzed after the field season had ended. Logs for test holes drilled during the 1960 field season were prepared on the basis of drillers logs and a few electric logs, but analyses were not made of the samples. During the 1961 field season samples were analyzed and sample-analysis logs were prepared on the drilling site of each test hole. This included color chart comparisons, visual examination using a binocular microscope, and simple tests such as that for reaction of the material with acid. Thus, the most complete and detailed of the logs are those from test holes drilled during the 1961 field season. Grain-size designations used in all logs refer to the Wentworth size scale (Wentworth, 1922). Color designations for all but the 1958 and 1960 drilling refer to the National Research Council color chart (Goldman, 1928). Samples from the 1958 and 1959 drilling were analyzed dry, and color designations enclosed by parenthesis in the 1959 logs indicate the color of the material when wet. All the 1961 samples were analyzed wet as they came from the hole.

The detailed description of each material recorded in the composite logs is arranged into the following categories:

I. Primary Material

A. Name

B. Dominant texture

C. Secondary (or modifying) texture

D. Color

E. Other Characteristics

1. Sorting

2. Roundness

3. Mineral composition or rock type of detrital particles

4. Bedding characteristics

5. Oxidation

6. Cohesiveness

7. Calcareousness

8. Cementation

II. Secondary and minor materials of silt to cobble size

A. Relative density of occurrence

B. Size range

C. Lithology

III. Depth of occurrence of individual cobbles and boulders penetrated

IV. Other significant characteristics

A. Presence of organic material

B. Presence of interbedded layers of diverse material (e.g., sand and gravel layers in till).

C. Drilling characteristics (where pertinent)

Each category is set off in the description by semicolons. Each characteristic under a particular category is set off by commas. Any of the categories and characteristics listed above may be included in a particular description, but they are seldom all used even in the more detailed logs.

In order to aid the reader in the use of the detailed logs some of the categories and characteristics are defined in more detail below:

1) Material name.--The name that is applied to the material may connote the major size grade of the particles making up the material, the degree of consolidation, and the genesis of the material. Material names such as, gravel, sand, silt, or clay, indicate that the materials are unconsolidated and are made up of particles whose sizes fall within the limits indicated by the name itself. The corresponding terms for materials that are consolidated are conglomerate (not used in this report), sandstone, siltstone, and claystone. The term shale indicates a bedded material, often possessing fissillity, usually indurated, and composed predominantly of clay-sized particles. All materials described as shale in this report are of marine origin. The term till serves as both a descriptive and a genetic term. As a descriptive term it indicates an unsorted, unstratified, cohesive, moderately calcareous agglomeration of particles ranging from clay to boulder size. Material fitting this description is presumed to have been deposited from glacial ice and is called till. The till of Stutsman County consists of approximately equal proportions of clay, silt, and sand with about sixty percent of the sand fraction falling within the very fine to fine range (Winters, 1963). On the average about three to five percent of the till consists of particles of gravel to boulder size.

2) Texture.--The dominant texture of materials consisting of consolidated or unconsolidated sand or gravel is more precisely described by placing it into size grades ranging from very fine to very coarse. In all other materials (clay, silt, till, shale) the dominant texture is indicated in as precise a way as possible in the material name. It is not possible, for example, to define by visual analysis the dominant texture of a clay or silt into the more precise grade size ranges of fine, medium, or coarse.

3) Modifying (or secondary) texture.--A secondary or less pronounced texture than the dominant texture of a material is indicated by a modifying textural term. The modifying terms and the materials which they modify are as follows:

Material modified	Terms
Till	Clayey, sandy, gravelly
Clay	Smooth (used only if the texture of the clay is unusually uniform), silty, sandy
Sand	Clayey, silty
Gravel	Clayey, sandy
Shale	Silty, sandy

The use of a modifying textural term indicates that the material described contains an appreciable but not a dominant amount of the secondary material. Thus, a sandy clay differs from a clayey sand in that the sandy clay contains more clay than sand and the clayey sand more sand than clay.

The basic proportions of the various size grades making up till seem to be fairly uniform: however, when visual analysis indicates that one of the size grades appears to dominate significantly, the appropriate modifying textural term is employed. For example, a till with an unusually large proportion of secondary gravel will be called a gravelly till. Even though the actual proportion of gravel present may not exceed ten percent, it is significantly higher than the average of three to five percent present in most till. Similarly, if the till appears to contain a significantly larger amount of sand in comparison to silt and clay, it is termed sandy till.

4) Other characteristics of the primary material.--a) Cohesiveness.-- The term cohesive is used only in reference to silt, clay, and till. Most of these materials are considered to be moderately cohesive and their cohesiveness is generally not described. In some instances where silt, clay, or till samples possess unusual properties of cohesion they are arbitrarily noted as being weakly cohesive, or very cohesive in the sample description. Distinctions between different degrees of cohesiveness are indicated only in the detailed logs.--b) Calcareousness.-- The degree to which a material is calcareous may be judged by the reaction of the material to ten percent hydrochloric acid. Calcareousness has significance primarily in regard to fine-grained material such as clay, silt, and till. A material may be non-calcareous, weakly calcareous, moderately calcareous, and highly calcareous. All are arbitrary distinctions based on the sample analyst's estimate of the degree of reaction with which a material effervesces in ten percent hydrochloric acid. Almost all Pleistocene drift deposits in

Stutsman County are calcareous in some degree. Till is usually moderately calcareous and unless till samples exhibit some unusual degree of calcareousness, such as weakly or strongly calcareous, their calcareousness is not noted in the composite logs. Any drift material that is not calcareous is labeled in the log as non-calcareous. All bedrock deposits, on the other hand, may be assumed to be non-calcareous unless otherwise noted.

5) Relative density of occurrence of secondary and minor constituents of silt to cobble size.--The terms "scattered" and "numerous" refer to individual particles that can be recognized separately from the primary material, as for example, scattered or numerous lignite fragments in sand and gravel. The term "abundant" refers to particles in such density that they cannot readily be separated from the primary material, as for example, abundant pebbles in till.

In some descriptions the term "sparsely distributed" is used to indicate a marked sparcity of secondary constituents in a material in which they are normally abundant.

TABLE 1.--Records of wells, springs, and test holes, Stutsman County, N. Dak.

Type of well: Dr, drilled; B, Bored; Du, dug; Au, augered; Sp, spring

Depth of well: Reported depths are given in feet; measured depths are in tenths.

Altitude of well bottom and (or) bedrock surface: a prefix of (+) indicates the well is completed in bedrock; a prefix of (-) indicates the well is completed in glacial drift above the bedrock surface; absence of a prefix indicates the figure given is the actual altitude of the bedrock surface.

Geologic unit: Kd, Dakota Sandstone; Kp, Pierre Shale; Qug, undifferentiated sand and gravel deposit; Qvb, buried valley deposit; Qo, undifferentiated outwash deposit; Qice, extensive ice contact deposit; Qicl, local ice contact deposit; Quo, unconfined outwash deposit; Qvo, valley outwash deposit.

Nature of material: Gv, gravel; Sd, sand; St, silt; Cl, clay; Sh, shale; Ti, till.

Depth to water: Reported depths are given in feet; measured depths are in hundredths.

Use: D, domestic; S, stock watering; PS, public supply; Ind, industrial; O, observation; T, test hole; N, not used.

Adequacy: A, adequate; I, inadequate.

Quality: H, hard; Sf, soft; Sl, saline; Al, Alkaline.

Remarks: L, log available; C, chemical analysis given in tables 3 and 4; 5,660, figures indicate specific conductance of water in micromhos/sec.

TABLE 1.--Records of wells, springs, and test holes, Stutsman County, N. Dak.

Location number	Owner	Date completed	Type of well	Depth of well (feet)	Casing diameter or hole size (inches)	Altitude of land surface (feet)	Altitude of well bottom and (or) bedrock surface (feet)	Geologic unit	Reported nature of aquifer material	Depth to water (feet)	Date of measurement	Use of water	Reported adequacy of well	Reported quality of water	Temperature (°F)	Remarks
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
137-62																
1cbb1	A. Schulander	....	B	40	24	.....	.....		Sd	.....	.....	S	A	...	...	....
1cbb2	..do....	....	B	40	24	.....	.....		Sd	.....	.....	S	A	H	...	....
2ad	..do....	....	B	45	24	.....	.....		Sd	.....	.....	D	A	...	...	....
3ad1	W. Langreck	1952	B	64	20	.....	.....		Gv	60	.....	D,S	A	...	...	....
3ad2	..do....	1948	B	50	20	.....	.....		Cl	50	.....	S	I	...	...	....
3ad3	..do....	....	B	61.0	30	.....	.....		..	33.58	4-16-62	O	...	...	...	....
3cdd	Mari Manns	1916	Dr	210	4	.....	.....		Sd	.....	.....	D,S	A	...	...	....
4bbb	Ole Tchanenko	1941	Dr	185	..	.....	.....		..	.....	.....	D,S	A	Sf	...	....
4dcd	Olive Manns	....	Dr	200	4	.....	.....		..	60	.....	D,S	A	...	...	....
5abb	L. Spilde	1955	Du	26	18	1,480	-1,454		Gv	23	.....	D,S	A	H	...	....
5bc	I. Derby	....	Dr	84	5	.....	.....		..	75	.....	D,S	A	...	...	....
5cdd1	L. Dally	....	Dr	85	5	1,460	-1,375		Sd	80	.....	D,S	A	H	...	....
5cdd2	..do....	....	B	20	10	.....	.....		Sd	.....	.....	N	...	...	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
137-62 (Cont.)																
8ab	A. L. Spilde	1911	Dr	94	5	1,480	-1,386		Sd	84	.....	D,S	A	H	...	....
8ddd	Ray Larson	....	Dr	150	6	.....	.....		..	.....	.....	D,S	A	Sf	...	....
9abd	A. Headland, Jr.	....	Du	27	48	.....	.....		Sd	26	.....	S	I	...	...	....
9bc	John Sevik	1916	Dr	100	3	1,490	-1,390		Sd	99	.....	D,S	A	H	...	....
10aba	Mari Manns	....	Dr	180	..	.....	.....		Sd	.....	.....	S	A	...	...	....
10dcc	Frank Hanson	1900	Dr	84	..	.....	.....		Sd	72	.....	D,S	A	H	...	....
11ad	R. Froehlich	1940	Dr	70	..	.....	.....		..	.....	.....	D,S	A	...	...	....
14ddc	Van Brugen	....	B	49.0	30	.....	.....		..	24.80	2-14-62	O	..	...	...	....
16abb	A. Headland	....	Dr	80	5	.....	.....		..	.....	.....	D,S	A	...	...	....
16bba	C. Nagel	1943	..	70	..	1,475	-1,405		Sd	.....	.....	D,S	A	H	...	....
20ccd	Elizabeth Cofell	....	Dr	125	..	1,470	.....		Sd	.....	.....	D,S	A	...	...	....
21aaa	Test hole 1743	1960	Dr	105	5	1,435	-1,330		..	.....	.....	T	...	...	...	L
21cad	T. Schlenker	....	B	100	24	.....	.....		Sd	96	.....	D,S	A	...	...	....
22ad	E. Froehlich	....	Dr	100	..	.....	.....		..	.....	.....	D,S	A	Sf	...	....
22ccc	H. Dahle	....	Dr	200	5	.....	.....		Sd	65	.....	D,S	A	...	...	....
23bbb1	Forelich	....	B	36	16	.....	.....		Sd	.....	.....	D	A	...	...	....
23bbb2	L. Radtke	....	Dr	60	4	.....	.....		Sd	.....	.....	S	A	...	...	....
23cc	W. Monson	....	B	55	24	.....	.....		Sd	53	.....	D,S	A	...	...	....
24aba	R. Monson	....	B	58	24	.....	.....		Sd	38	.....	D,S	A	H	...	....
24dcc	H. Boom	....	Dr	40	..	.....	.....		..	.....	.....	D,S	A	...	...	....
25ab	I. Gjerding	....	Dr	50	6	.....	.....		..	.....	.....	D,S	A	H	...	....
25cdd	Unknown	....	B	61.5	30	.....	.....		..	57.30	6-24-59	N	...	...	...	....
26ccc	Lloyd Nelson	1904	Dr	100	6	.....	.....		..	40	.....	D,S	A	H,Al	...	....
27cd	Art Dally	1938	Dr	80	6	.....	.....		..	70	.....	D,S	A	H	...	....
28bbb	Elroy Schlenker	....	Dr	76	6	.....	.....		..	69	.....	D,S	A	...	...	....
29aba	Leonard Lee	....	Dr	105	..	1,480	.....		Sd	.....	.....	D,S	A	H	...	....
30bba	Henry Rassmussen	1956	Dr	100	..	1,455	.....		Sd	.....	.....	D,S	A	...	...	....
30dda	Matt Rudolph	....	Dr	110	6	1,470	.....		Sd	.....	.....	D,S	A	...	...	....
31cdd1	John Rode	1925	Du	13	36	.....	.....		Sd	10	.....	D,S	A	H	...	....
31cdd2	..do....	1925	Du	200	..	.....	.....		..	125	.....	N	I	...	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
137-62 (Cont.)																
32ab	Schatzmann Bros.	1910	Dr	128	4	.....	.....		..	114	.....	S	A	Al	...	....
32bc1	..do....	1901	Du	23	30	.....	.....		Sd	19	.....	D,S	A	H	...	....
32bc2	..do....	1948	Dr	120.0	5	1,470	.....		fine sd.	112.50	.....	D,S	A	...	...	....
32cdd	Herbert Rode	....	Dr	168	6	.....	.....		..	.....	.....	D,S	A	H	...	....
33aab1	Allen Dale	1919	Dr	110	6	1,460	-1,350		Sd	95	.....	D,S	A	...	...	....
33aab2	..do....	1950	B	68	24	.....	.....		Sd	67	.....	N	I	Sf	...	....
33ccc	Burt Lee	....	Dr	90	4	.....	.....		..	.....	.....	D,S	A	H	...	....
34aad	Oscar Schultz	....	Du	52	30	.....	.....		Gv	50	.....	D,S	A	...	...	....
35ccd1	Henry Pillaert	1946	B	60	24	.....	.....		Sd	53	.....	D	A	...	...	....
35ccd2	..do....	....	B	60	24	.....	.....		Sd	54	.....	S	A	...	...	....
35dbc	Ervin Beyer	1923	Dr	56	6	.....	.....		Sd	48	.....	D,S	A	...	...	....
36dcd	Ward McCleary	1954	B	50	18	.....	.....		Gv	42	.....	D	A	H	...	....
36ddd1	..do....	1905	B	45	18	.....	.....		Gv	39	.....	S	A	H	...	....
36ddd2	..do....	1945	B	45	18	.....	.....		Gv	39	.....	D	A	H	...	....
137-63																
1dcc	Dayton Hatling	....	Dr	40	5	.....	.....		Sd	39	.....	S	I	...	...	....
2cd1	George Dornek, Jr.	1923	Dr	66	3	1,360	+1,294		Sh	17	.....	D	A	...	...	....
2cd2	..do....	1957	B	45	24	1,360	.....		Sh	.....	.....	S	A	...	...	....
6acc	Art Schaffer	1945	B	54.2	36	1,480	-1,426		Sd	51.72	8-15-58	D,S	A	...	...	....
11aaa	E. Hanson	....	Du	21.8	18	1,365	-1,343		Gv	11.79	9- 4-46	D,S	A	H	...	....
11abb1	Roy Snell	1950	B	40	24	1,355	.....		Sd	25	.....	D	A	...	...	....
11abb2	..do....	1949	B	42.8	24	1,355	-1,312		Sd	27.55	8-21-58	S	A	...	...	....
11abb3	..do....	....	Du	15.4	48	1,355	-1,330		Sd	14.70	8-21-58	N	...	...	...	....
12bb1	Roy A. Domek	....	B	60	16	1,380	+1,320		Sh	.....	.....	S	A	...	...	....
12bb2	..do....	....	..	60	12	1,380	.....		Sh	.....	.....	D	A	...	...	....
13aaa1	Edwin Adam	1951	B	110	24	1,440	-1,320		Sd,Gv	98	.....	D	A	...	...	....
13aaa2	..do....	....	Dr	160	3	1,440	.....		..	.....	.....	S	A	...	...	....
13ccc1	Edwin Geigle	1958	Du	22	24	.....	.....		Sd	.....	.....	D	A	...	...	....
13ccc2	..do....	1957	Du	18	24	.....	.....	Qvo	Sd	.....	.....	S	A	...	44	C
13dda	Charles Naze	1918	Dr	200	6	1,460	.....		..	.....	.....	D,S	A	...	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
137-63 (Cont.)																
14abd1	Simon Syverson	....	B	21	27	1,460	.....		Sd,Gv	.....	.....	D,S	A	...	...	....
14abd2	..do....	1956	Dr	22	10	1,360	-1,338		Sd,Gv	20	.....	D	A	...	...	....
14ddd	Con Cumber	1945	Dv	18	2	1,445	-1,427		Sd	.....	.....	D	A	...	...	....
15ddd	Walter Linstoedt	1916	Dr	145	4	1,480	.....		..	.....	.....	D,S	A	Sf	...	....
16bbb	Bert Hagbuk	....	Dr	130	6	1,490	.....		..	.....	.....	D,S	A	Sl	...	....
16ddc	Steve M. Mayes	1946	Dr	285	5	1,470	.....		..	100	.....	D,S	A	...	...	....
17cbc1	Lewis F. DeLair	1956	Dr	60	6	1,490	-1,430		Sd	.....	.....	D	A	...	...	....
17cbc2	..do....	....	Dr	100	4	1,490	.....		..	.....	.....	S	A	Sl	...	....
19ccc	Donald Lee	....	Dr	100	4	1,490	.....		..	.....	.....	D,S	A	Sl	...	....
20bb	Henry Somsen	....	Dr	90	6	1,510	.....		..	.....	.....	D,S	A	...	...	....
27abb	Harry Valenta	....	Dr	84	3	1,440	-1,356		Sd	.....	.....	D,S	A	...	...	....
28ada	Mrs. John Everding	....	Dr	90	..	1,505	-1,415		Sd	.....	.....	D,S	I	...	...	....
28bab	Charles DeLair	....	Dr	150	6	1,510	.....		..	15	.....	D,S	A	...	...	....
30aad1	L. F. DeLair	1940	Dr	140	4	1,490	.....		..	.....	.....	S	A	Sl	...	....
30aad2	..do....	....	B	30	12	1,490	-1,460		Sd	15	.....	D	A	...	...	....
30cbb	Wesley Loven	1957	Dr	120	3	1,490	.....		..	.....	.....	D,S	A	Sf,Sl	...	....
31cb	James Ratts	....	Dr	90	6	1,490	-1,400		Sd	.....	.....	D,S	A	...	...	....
33ad	Harold W. Ratts	....	Dr	90	6	1,490	.....		..	.....	.....	D,S	A	...	...	....
35cdc	Nick DeLair	....	Dr	150	6	1,460	.....		..	50	.....	D,S	A	Sl	...	....
35ddd	Schatzmann Bros.	1910	Dr	83	5	.....	.....		..	33	.....	S	A	Sf	...	....
137-64																
1bbd	Alvin Wibstad	....	B	36	24	1,490	+1,454		Sh	28	.....	D,S	I	H,Al	...	....
2aad1	Walter Hoeckle	1928	Dr	280	4	1,490	+1,210		Sh	180	.....	D,S	I	Sf,Sl	...	....
2aad2	..do....	....	B	57	24	1,490	-1,433		Sd	30	.....	D,S	I	...	...	....
3bba	Henry Marker	....	Dr	80	3	1,500	-1,420		Sd,Gv	6	.....	D,S	A	Sf	...	....
4bcc	Ezra Huebner	1936	Dr	200	2.5	1,520	-1,320		Sd	38	.....	D,S	A	H	...	....
5daa	Unknown	1918	Dr	140	3	1,520	-1,380		Sd	80	.....	D,S	A	H	...	....
6cdd	Test hole 1751	1960	Dr	178	5	1,505	1,336		..	.....	.....	T	...	...	...	L

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
137-64 (Cont.)																
6dad	E. A. Schempp	....	Du	12	48	1,510	.....		Sd	5	.....	D,S	A	H	...	....
7bba	Robert Weixel	....	Du	16	48	1,500	.....		Gv	13	.....	D,S	A	H	...	....
8abb	Test hole 1752	1960	Dr	231	5	1,495	1,270		..	.....	.....	T	..	...	...	L
8ddd	Test hole 1756	1960	Dr	252	5	1,515	1,268		..	.....	.....	T	..	...	...	L
9dad	George Fietzek	....	Dr	100	4	1,480	-1,380		Sd	30	.....	D,S	A	Sf	...	....
10bab	Walter Drueger	1945	Dr	100	4	1,500	-1,400		Sd	40	.....	D,S	A	H	...	....
12bba1	R. J. Pendray	....	Du	27	48	1,495	+1,468		Sh	23	.....	D	I	Sf	...	....
12bba2	..do....	....	Dr	175	3	1,495	.....		Sh	17	.....	S	I	Sl	...	....
12ccd	Wiliam Williamson	....	Dr	160	4	1,490	+1,330		Sh	18	.....	D,S	A	H,Sl	...	....
13bcc	Ralph Baeneu	1943	Dr	115	4	1,500	-1,385		Sd	20	.....	D,S	A	H.Al, Sl	...	....
15ddd	Test hole 1755	1960	Dr	94	5	1,500	1,416		..	.....	.....	T	..	...	...	L
19aab	Test hole 1753	1960	Dr	52	5	1,515	1,468		..	.....	.....	T	..	...	...	L
21acd	E. F. Redmann	....	Dr	400	4	1,500	-1,100		Sd	200	.....	D,S	A	H	...	....
21cc	Ed Huebner	....	Dr	125	..	1,510	-1,385		Sd	29	.....	D,S	A	Sf	...	....
22aba	Floyd Brown	1957	Dr	80	4	1,510	-1,430		Sd	40	.....	D,S	A	H	...	....
22bcc	John Weavers	1951	Dr	80	4	1,506	.....		Sd	38	.....	D,S	A	Sf,Sl	...	....
23cbc	Doug Mickelson	....	Dr	250	4	1,515	+1,265		Sh	90	.....	D,S	A	H,Sl	...	....
27abb	Lola Knudtson	....	Dr	92	4	1,512	+1,420		Sh	20	.....	D,S	A	Sf	...	....
30aba	Darrell Brown	1955	Dr	80	4	1,550	-1,470		Sd	.....	.....	D,S	A	Sf	...	....
30ddd1	Charles Murker	....	Dr	154	..	1,518	-1,364		Sd	10	.....	D,S	A	H,Sl	...	....
30ddd2	..do....	....	Du	11	..	1,518	.....		fine sd.	8	.....	D,S	A	H	...	....
32bab	Everett Burnick	....	Dr	300	3	1,520	+1,220		Sh	70	.....	D,S	I	H,Sl	...	....
137-65																
1cdd	Test hole 1750	1960	Dr	73	5	1,515	1,453		..	.....	.....	T	..	...	...	L
1dcb1	Robert Weixel	....	Du	16	48	1,520	.....		Gv	12	.....	D,S	A	H	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
137-65 (Cont.)																
1dcb2	Robert Weixel	....	Du	20	48	1,520	.....	Qvo	Gv	11	.....	D,S	A	H	...	C
2edd	Nathunial Suko	....	Dr	112	3	1,530	+1,418		Sh	20	.....	D,S	A	Sf,Sl	...	....
2cbd	Jack Schuldheisz	....	Dr	103	4	1,565	+1,462		Sh	50	.....	D,S	A	Sf,Sl	...	....
4ada	Charlie Brown		Dr	250	3	1,635	+1,385		Sh	60	.....	D,S	A	Sf,Sl	...	....
5ddd	Jake Schuldheisz	1958	Dr	200	4	1,660	+1,460		Sh	50	.....	D,S	I	Sf,Sl	...	....
7bcc	Clarence Lang	....	Dr	200	2	1,725	+1,525		Sh	.....	.....	N	A	Sf,Sl	...	....
8bbb1	R. B. Jarrett	1914	Dr	300	4	1,740	.....		Sh	150	.....	D,S	A	Sf,Sl	...	....
8bbb2	..do....	....	Dr	200	4	1,740	+1,540		Sh	180	.....	D,S	A	Sf,Sl	...	....
8bbb3	..do....	....	Dr	33	..	1,740	-1,707		Gv	20	.....	D,S	A	...	...	....
8ddd	Herbert Gahner	....	Dr	170	4	1,670	+1,500		Sh	.....	.....	D,S	A	H,Sl	...	....
13dcc	Test hole 1754	1960	Dr	52	5	1,540	1,497		..	.....	.....	T	...	...	...	L
14cba1	Harry Ebele	....	Dr	225	3	1,625	+1,400		Sh	75	.....	D,S	A	Sf,Sl	...	....
14cba2	..do....	....	Dr	125	3	1,630	-1,505		Sd	30	.....	D,S	A	...	...	....
19abd	John Moldenhauer	....	Dr	100	4	1,725	.....		Sd	6	.....	D,S	A	H	...	....
19add	Nathunial Suko	1951	Dr	75	3	1,710	-1,635		Sd	71	.....	D,S	A	H,Alk	...	....
20dda	Emanuel Suko	....	B	55	24	1,670	-1,615		Sd,Gv	49	.....	D,S	A	H	...	....
23cbb	J. C. Wilkinson	....	Dr	180	3	1,635	+1,455		Sh	70	.....	D,S	A	Sf,Sl	...	....
28add1	Albert Ebele	....	Dr	220	3	1,675	+1,455		Sh	120	.....	D,S	A	Sf,Sl	...	....
28add2	..do....	....	Dr	240	3	1,675	.....		Sh	160	.....	D,S	A	Sf,Sl	...	....
29cbb	Chris Suko	....	B	95	24	1,710	-1,615		Sd	40	.....	D,S	A	H	...	....
31ccc	Herbert Konrad	1919	B	64	24	1,765	-1,701		Sd	24	.....	D,S	A	H,Al	...	....
32add	Ralph Flaig	....	B	74	24	1,690	-1,616		Sd	64	.....	D,S	I	H	...	....
34acb	Adolph Koenig	1910	Dr	182	2.5	1,660	+1,478		Sh	42	.....	D,S	A	Sf	...	....
137-66																
3aac	Edwin Suko	1928	Dr	120	2.5	1,755	.....	Qug	Gv	Flow	.....	D,S	A	H	46	....
7bcc1	Gust Schmierer	1915	Dr	99	3	.....	.....		Gv	49	.....	D,S	A	Sf	46	....
7bcc2	..do....	....	Dr	85	3	.....	.....		Gv	30	.....	S	A	...	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
137-66	(Cont.)															
9acb	G. Suko	....	Dr	350	2	.....	.....		..	25	.....	D,S	A	Sf,Sl	48	....
9daa	Test hole 1913	1961	Dr	325	5	1,773	1,459		..	.....	.....	T	...	...	...	L
10aaal	E. W. Letcher	1914	Dr	337	3	1,765	-1,428		Sd	150	.....	D,S	A	H	47	....
10aaa2	..do....	....	Dr	240	3	1,765	.....		..	150	.....	D,S	A	...	...	....
12acal	Clarence Lang	....	Dr	300	3	1,755	+1,455		Sh	50	.....	D,S	A	H,Sl	...	....
12aca2	..do....	....	Dr	300	3	1,755	.....		Sh	50	.....	D,S	A	H,Sl	...	....
14ccb	Overlander	....	Dr	460	4	1,790	+1,330		Sh	370	.....	D,S	A	H,Sl	...	....
15bcc	Peter Ben	1936	Dr	475	3	1,800	+1,325		Sh	60	.....	D,S	A	H,Sl	48	....
16dbb	Emil Remboldt	....	Du	5	48	.....	.....		Gv	4	.....	D,S	A	H	45	....
17daa	A. F. Lehr	....	Du	4.8	48	.....	.....		Gv	2.10	8- 5-58	S	I	H	...	....
18daa	Joe Kirvida	....	B	40	24	.....	.....		Cl	20	.....	D,S	A	H	47	....
19acc	Lloyd Flaig	1930	B	24	36	.....	.....		Sd	14	.....	D,S	A	H	...	....
19cdc	Test hole 1912	1961	Dr	441	5	1,893	1,483		..	.....	.....	T	...	...	....	L
20cac	Aaron Reich	1933	B	60	24	.....	.....		Sd	44	.....	D,S	A	H	...	....
23cdc	Art Heine	....	B	45.3	24	1,800	-1,755		Gv	15.80	8- 5-58	D,S	A	H	...	....
23dcc	Herbert Krause	....	B	94	24	1,800	-1,706		Sd,Gv	30	.....	D,S	A	H	47	....
24bcb	Myron Moldenhauer	....	B	90.3	24	1,780	-1,690		Gv	51.51	8- 5-58	D,S	A	H	47	....
24dcc	Herbert Krause	....	B	54.1	24	1,735	-1,681		Gv	11.53	8- 6-58	D,S	I	H	47	....
26baa	Art Heine	....	..	26.1	..	1,800	-1,774		Gv	2.5	8- 5-58	N	A	H	...	....
27daa	Christ Wegner	1953	B	40	24	1,825	.....		..	20	.....	D,S	A	H	...	....
30aadl	G. E. Summerfield	1934	..	54	..	.....	.....		Gv	37	.....	D,S	A	H	...	....
30aad2	..do....	1918	Dr	72	3	.....	.....		Sd,Gv	37	.....	D,S	A	H	...	....
35ddd	G. G. Henne	....	B	25.9	24	1,810	-1,784		Gv	12.37	8- 6-58	D,S	A	H	46	....
36bca	Ralph Schlenker	1935	B	36	24	1,790	-1,754		Sd	26	.....	D,S	A	H	...	....
137-67																
2aac	Rueben Rivinius	....	Dr	108	3	.....	.....		Sd	.....	.....	D,S	A	H	47	....
2ccc	John Jerke	....	Dr	110	3	.....	.....		Sd	85	.....	D,S	A	H	47	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10	(11)	(12)	(13)	(14)	(15)	(16)	(17)
137-67 (Cont.)																
3aca	Christ Jerke	....	Dr	115	3	.....	.....		Sd	70	.....	S	A	H	...	....
6abb	Emil Krieger	1940	B	70	24	.....	.....		Cl	4	.....	D,S	A	H	47	....
8cac	August Flang	1911	B	85	36	.....	.....		Cb	45	.....	D,S	A	H	47	....
9daa	Lorenz Schroeder	....	Dr	300	3	.....	.....		Sd	170	.....	D,S	A	H	46	....
10bab	Christ Jerke	....	Dr	450	2	.....	.....		Gv	80	.....	D,S	A	Sf	47	....
10dca	Art Reimbolt	1936	Dr	134	3	.....	.....		Gv	74	.....	D,S	A	H	47	....
11bbc	John Heinrich	1957	Dr	110	4	.....	.....		Gv	60	.....	D,S	A	Sf	47	....
14add	Unknown	....	B	43.7	24	.....	.....		..	40.13	8- 1-58	S	A	H	47	....
19bbd	Jacob Koenig	....	Du	12	..	.....	.....		Gv	2	.....	D,S	A	H	45	....
20abc	Arnold Diede	....	B	42	24	.....	.....		Gv	20	.....	D,S	A	Sf	46	....
20dcd	Fred Schmierer	1958	Du	43	48	.....	.....		Sd	33	.....	D,S	I	H	...	....
21daa	Richard Burkle	....	B	24	36	.....	.....		Gv	10	.....	D,S	A	Sf	46	....
23aba	Emanual Heller	....	Dr	100	3	.....	.....		..	40	.....	D,S	A	H	47	....
24acd	Hurod Zimmerman	1925	Dr	205	2.5	.....	.....		Sd	20	.....	D,S	A	H	46	....
24bba	W. C. Heinrich	....	Dr	130	6	.....	.....		..	60	.....	D,S	A	H	47	....
27cc	Ernest Hehn	1938	Dr	28	6	.....	.....		Sd	10	.....	D,S	A	H	46	....
27dd	Ed. G. Humboldt	....	B	69.7	24	.....	.....		Gv	18.48	8- 1-58	D,S	A	Sf	46	....
30aad	Reubin Rath	....	Du	30	36	.....	.....		Gv	15	.....	D,S	A	H	...	....
32aba	Elroi Fischer	....	Du	21	..	.....	.....		Gv	8.5	.....	D,S	A	Sf	46	....
35acd	Albert Kinzler	....	B	18.3	24	.....	.....		Sd,Gv	9.57	8- 1-58	D,S	A	H	46	....
36dcc1	Emil Schweigert	....	B	50.9	24	.....	.....		Sd	10.74	8- 6-58	D,S	A	H	...	....
36dcc2	..do....	....	B	22.2	24	.....	.....		Gv	16.98	8- 6-58	S	A	H	...	....
137-68																
2add	Unknown	....	B	16.1	24	.....	.....		Gv	14.35	8- 1-58	D,S	...	H	47	....
6acc	Ben Graf	....	B	75	24	.....	.....		..	40	.....	D,S	...	...	...	....
6ddd	Wilbert Adam	1926	B	90	24	.....	.....		..	60	.....	D,S	...	...	...	....
7bdc	Evert Brunner	....	Dr	90	3	.....	.....		..	85	.....	D,S	...	...	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
137-68 (Cont.)																
8aaa	A. J. M. Dockter	....	Dr	200	3	.....	.....		Sh	150	.....	D,S	...	Sl	...	....
9dcd	Christine Peifley	....	Dr	300	3	.....	.....		Sh	.....	.....	N	...	...	...	....
10ccc1	Albert Kerner	1929	Du	14.2	24	.....	.....		..	1.4	.....	D,S	...	...	...	....
10ccc2	..do....	....	Du	14.9	48	.....	.....		..	0.6	.....	N	...	...	...	....
10daa	Art Schopp	....	Du	10.5	48	.....	.....		Gv	6.71	8- 2-58	S	A	H	45	....
12cdc	Art Kienzle	....	Sp	2	36	.....	.....		Gv	Flow	.....	D,S	A	H	45	....
13ccd	Test hole 1909	1961	Dr	252	5	1,985	1,743		..	.....	.....	T	...	...	...	L
14dd	John Grenz	....	Dr	300	3	.....	.....		..	60	.....	D,S	A	Sf,Sl	...	....
17dcd	Wm. Stuckle	....	Du	31.1	32	.....	.....		..	16.3	.....	S	...	...	...	....
19ccd	Edwin Fischer	1933	Dr	80	3	.....	.....	Qug	Gv	.....	.....	D,S	...	...	....	C
20aba	Wm. Stuckle	....	Du	22.1	48	.....	.....		..	7.25	.....	D,S	I	...	...	....
20dbd	Fred Veil	1934	Dr	300	3	.....	.....		Sh	110	.....	D,S	...	...	...	....
21bab	Walter Fischer	1929	Dr	290	3	.....	.....	Kp	Sh	30	.....	D,S	...	...	...	C
24dcb	Edward Schlenker	....	Du	22	48	.....	.....		Gv	6	.....	D,S	A	H	...	....
26dcc	Alvin Grenz	....	Du	12.5	48	.....	.....		Sd,Gv	6.71	8- 2-58	D,S	A	H	46	....
28aaa	John Kubler	....	Dr	100	3	.....	.....		..	.....	.....	D,S	...	...	...	....
30aba	Albert Kubler	....	Dr	200	3	.....	.....		..	.....	.....	...	...	...	...	....
31caa	Harry Wolff	....	Dr	200	3	.....	.....		Gv	20	.....	D,S	...	...	...	....
31cca	George Becker	....	Du	22	36	.....	.....		..	4.1	.....	S	I	...	...	....
34bcb	James Clemmens	....	Dr	300	3	.....	.....		..	275	.....	D,S	...	...	...	....
137-69																
3ddd	E. Dewald	1949	Dr	320	3	.....	.....		Sh	65	.....	D,S	...	...	...	....
4abb	B. L. Hoffer	....	Du	14	42	.....	.....		..	.....	.....	S	...	...	...	....
5dac	Emil Schaver	....	Dr	300	..	.....	.....		Sh	.....	.....	D,S	...	...	...	....
6ccd	Gene Schwecke	1917	Dr	400	2.5	.....	.....		Sh	150	.....	S	...	...	...	....
6cdb	A. Schwecke	1933	Dr	140	2.5	.....	.....		Gv	50	.....	D,S	...	...	...	....
8bca	A. Dewald	....	Dr	70	3	.....	.....		..	55	.....	D,S	...	...	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
137-69 (Cont.)																
8daa	Peter Dewald	....	Du	18.4	48	.....	.....		..	8.2	8- 4-49	D,S	...	...	...	....
9ada	Hubert Williams	1949	Dr	280	3	.....	.....		Sh	.....	.....	D,S	...	...	...	....
10bcc	Jake Engzminger	....	Dr	300	3	.....	.....		Sh	.....	.....	D,S	...	...	...	....
12aaa	Gottlieb Kammerer	....	Dr	90	36	.....	.....		..	70	.....	D,S	...	...	...	....
13acb	Jacob Remmick	1917	Dr	182	3	.....	.....		Sd	160	.....	D,S	...	...	...	....
13acd	..do....	....	Du	15.7	32	.....	.....		..	10.45	8- 8-49	D	...	...	...	....
14dad	Carl Remmick	....	Dr	160	2	.....	.....		Gv	70	.....	D,S	...	...	...	....
15bbd	Jake Wieland	....	Dr	200	..	.....	.....		..	.....	.....	D,S	...	...	...	....
16add	Phillip Dewald	....	Du	14	30	.....	.....		..	.....	.....	D,S	...	...	...	....
18bcb	Edwin Schauer	1940	Dr	107	2	.....	.....		Sd	20	.....	D,S	...	...	...	....
18cab	Herbert Schlecht	1919	Dr	135	3	.....	.....		Sd	20	.....	D,S	...	Sf	...	....
20aab	Otto Dewald	1931	Dr	110	..	.....	.....		Sd	Flow	.....	D,S	...	...	...	....
20cac	John Nelson	1949	Dr	140	3	.....	.....		Sd	Flow	.....	D,S	...	...	...	....
20cdc	Test hole 315	1950	Dr	140	5	.....	.....		..	Flow	.....	T	...	...	...	L 1/
22bcc	Fred Weiland	1938	Dr	320	3	.....	.....		..	.....	.....	D,S	...	...	...	....
22cdd	August Opp	....	B	30	20	.....	.....		..	26	.....	D,S	...	...	...	....
22dbc	Test hole 318	1950	Dr	120	5	.....	.....		..	.....	.....	T	...	...	...	L 1/
23dcc	Test hole 6	1946	Dr	500	5	.....	.....		..	.....	.....	T	...	...	...	....
24ccc	Max Kramer	....	B	18.6	30	.....	.....		..	1.7	8- 5-49	S	...	...	...	....
25adc	Sam Schultes	1931	Dr	90	3	.....	.....		..	24	.....	D,S	...	...	...	....
25bbb	Max Kramer	....	Dr	200	3	.....	.....		..	.....	.....	D,S	...	...	...	....
26aaa	Test hole 306	1950	Dr	220	5	.....	.....		..	.....	.....	T	...	...	...	L 1/
26bbb	Test hole 300	1950	Dr	240	5	.....	.....		..	.....	.....	T	...	...	...	L 1/
26bbc	Test hole 305	1950	Dr	80	5	.....	.....		..	.....	.....	T	...	...	...	L 1/
26bcb1	Test hole 302	1950	Dr	180	5	.....	.....		..	.....	.....	T	...	...	...	L 1/
26bcb2	Test hole 304	1950	Dr	170	5	.....	.....		..	.....	.....	T	...	...	...	L 1/
26bcd	Test hole 317	1950	Dr	50	5	.....	.....		..	.....	.....	T	...	...	...	L 1/

1/ Log in Paulson (1952, p. 63-72).

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
137-69 (Cont.)																
26bdd	Test hole 301	1950	Dr	201	5	.....	.....		..	.....	.....	T	..	...	...	L 1/
27a	City of Streeter	1952	Dr	41	16	.....	.....	Qug	..	.....	.....	PS	..	...	...	C
27acc1	Edward Deutcher	1948	B	27	36	.....	.....		..	22.1	8- 4-49	D,S	..	...	...	....
27acc2	..do....	....	Sp	...	..	.....	.....		..	.....	.....	S	..	...	...	C
27adb	Test hole 316	1950	Dr	50	5	.....	.....		..	.....	.....	T	..	...	...	L 1/
27baa	Test hole 311	1950	Dr	160	5	.....	.....		..	.....	.....	T	..	...	...	L 1/
27dba	Test hole 312	1950	Dr	170	5	.....	.....		..	.....	.....	T	..	...	...	L 1/
27cdb	Rhienhold Rau	....	Dr	380	3	.....	.....		Sh	12	.....	D,S	...	...	...	....
27dda	Test hole 303	1950	Dr	200	5	.....	.....		..	.....	.....	T	..	...	...	L 1/
28abb	Test hole 313	1950	Dr	170	5	.....	.....		..	.....	.....	T	..	...	...	L 1/
28cca1	Anton Ruff	1947	B	55.6	32	.....	.....		..	10.5	8- 9-49	D	..	...	...	....
28cca2	..do....	1948	B	61.4	32	.....	.....		Gv	8.4	8- 9-49	S	..	...	...	....
29abb	Test hole 314	1950	Dr	74	5	.....	.....		..	.....	.....	T	..	...	...	L 1/
30caa	Fred Schulter	....	Sp	...	..	.....	.....		..	.....	.....	D,S	..	...	...	C
31bbd1	August Fischer	1926	Dr	169	6	.....	.....		Sh	10	.....	S	..	...	...	....
31bbd2	..do....	1921	Du	17.9	32	.....	.....		Gv	11.9	8- 9-49	D	..	...	...	....
31cbc	Raymond Fischer	....	Du	38.8	32	.....	.....		Sd,Gv	32.2	8- 9-49	D,S	..	...	...	....
32cbc	Allen Reese	1947	Dr	46.4	32	.....	.....		Sd	31.35	8- 9-49	D,S	A	...	...	....
33ddd	Test hole 310	1950	Dr	170	5	.....	.....		..	.....	.....	T	..	...	...	L 1/
34dad	Gus Dorr	....	..	30	..	.....	.....		..	.....	.....	D,S	..	...	...	....
138-62																
1ccb	George McClean	1953	B	50	24	.....	.....		..	.....	.....	D,S	A	...	...	....
2ddc	Harry Parfit	1944	Dr	130	5	1,420	-1,290	Qvb	Sd	Flow	.....	D,S	A	...	...	896
3ccc1	Ed Strom	1957	Dr	115	1.5	1,455	-1,340	Qvb	Sd	35	.....	D	A	...	...	....
3ccc2	..do....	....	B	60	24	.....	.....		Sd	58	.....	S	I	...	...	....
3ccc3	..do....	1943	F	30	24	.....	.....		Sd	28	.....	S	A	H	...	....
3ccc4	..do....	1953	F	60	24	.....	.....		Sd	.....	.....	S	A	...	...	....
4baa1	Carl Erickson	1954	F	30	24	.....	.....		Sd	.....	.....	D	A	...	...	....
4baa2	..do....	1956	B	25	24	.....	.....		Sd	.....	.....	...	A	...	...	....
4dc1	J. S. Crouch	1920	Dr	408	6	.....	.....		Cl	.....	.....	N	I	...	...	....
4dc2	..do....	1920	Dr	52	6	.....	.....		Sd	18	.....	D,S	A	Sf	...	....
26cbb	Art Bender	....	Dr	300	3	.....	.....		Sh	.....	.....	D,S	..	...	....	....

1/ Log in Paulson (1952, p. 63-72).

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
138-62 (Cont.)																
4dc3	J. S. Crouch	....	Du	19.4	36	.....	.....		Sd	16.50	9- 4-46	N	I	H	...	....
5cdc	Rettich Bros.	1957	Dr	162	4	1,475	-1,313		Sd	50	.....	D	A	Sf	...	....
6ccc1	Art Whitney	1945	B	34	24	.....	.....		Gv	31	.....	D	A	...	...	....
6ccc2	..do....	....	B	32	24	1,395	-1,363		Gv	29	.....	S	A	...	...	....
7cb1	City of Ypsilanti	....	..	38	..	1,395	-1,357		Sd	.....	.....	D	A	...	...	....
7cb2	M. Ukestad	....	Du	37	30	.....	.....		Sd	33.9	9- 4-46	S	I	H	...	....
8bb	Leonard Schultz	1900	Dr	180	2	1,460	.....		..	20	.....	D	A	Sf	...	....
8cc	George Mellum	1919	Dr	180	3	.....	.....		..	.....	.....	D	I	...	...	....
8dc	Elmer Mellum	....	Du	40	48	.....	.....		Sd	.....	.....	D,S	A	H	...	....
10cbb1	Arnold K. Hanson	....	Du	33	36	.....	.....		Sd	.....	.....	S	A	H	...	....
10cbb2	..do....	1957	Dr	194	30	1,460	-1,266	Qvb	Sd	30	.....	D,S	A	Sf	...	....
11cdd	Nolten Parfit	....	..	80	..	.....	.....		Sd	.....	.....	D,S	A	...	...	....
12cda1	Lawrence Kiser	....	B	42	24	.....	.....		Sd	27	.....	S	A	...	...	....
12cda2	..do....	1950	B	28	24	.....	.....		Sd	24	.....	D	I	...	...	....
15bad1	W. A. Janz	1958	B	14	30	.....	.....		Sd	6	.....	D,S	..	H	...	....
15bad2	..do....	1955	B	10	30	.....	.....		Sd	1	.....	D,S	A	H	...	....
15dad	Ray Baker	1939	B	85.2	36	1,420	-1,335	Qvb	..	13.85	8-24-60	D,S	A	Sf	...	75
16bbb	H. A. Schulz	1944	..	150	5	1,477	-1,327		Sd,Gv	75	.....	D,S	A	Sf	...	....
18bba1	A. C. Jeff	1934	Dr	300	..	1,395	-1,095		Sd	30	.....	N	I	Al	...	....
18bba2	..do....	1936	B	40	36	.....	.....		Sd	38	.....	D,S	A	...	...	....
20bc1	Earl Bergie	1938	B	40	30	.....	.....		Sd	28	.....	D,S	A	...	...	....
20bc2	..do....	1911	Du	27	18	.....	.....		Sd	17	.....	S	A	...	...	....
20cdc	Elmer Kurtti	....	B	30	24	.....	.....		Sd	20	.....	D,S	A	...	...	....
22bad1	Oliver Groves	....	B	16	9	.....	.....		Sd	9	.....	D	A	...	...	....
22bad2	..do....	....	B	11	9	.....	.....		Sd	8	.....	S	A	Sf	...	....
23bcd1	Lien Bros.	1949	B	95	24	.....	.....		Sd	.....	.....	D,S	I	...	...	....
23bcd2	..do....	1936	B	27	24	.....	.....		..	15	.....	S	A	...	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
138-62 (Cont.)																
24cbb	Leo Nicholls	1918	Dr	220	6	1,430	.....	Qvb	..	5	.....	D,S	A	H	...	2066
25dab	John Vendenburg	1904	B	45	30	.....	.....		Sd	39	.....	D	A	H	...	....
25ddd	Test hole 1599	1959	Dr	157	5	1,448			..	.....	.....	T	...	...	...	L
27ada	Emil Beyer	1920	Dr	171	6	1,445			..	16	.....	D,S	A	...	...	1781
27dal	Emmer Duven	1959	Dr	155	4	1,450	-1,395		Sd	30	.....	...	A	Sf	...	....
27da2	..do....	....	Dr	85	5	.....	.....		Sd	28	.....	...	I	...	...	....
27da3	..do....	....	Du	24	48	.....	.....		Sd	22	.....	N	I	...	...	....
27ddd	Test hole 1600	1959	Dr	273	5	1,454	1,188		..	.....	.....	T	...	...	...	L
28ca	Chester Lund	....	B	40	36	.....	.....		Sd	8	.....	D,S	A	H	...	....
29ddd	Test hole 1601	1959	Dr	210	5	1,485	1,279		..	.....	.....	T	...	...	...	L
30bbbl	George Wilmart	1944	B	30	9	.....	.....		Sd	20	.....	D	A	...	...	....
30bbb2	..do....	1916	Du	28	24	.....	.....		Sd	22	.....	S	A	...	...	....
30ccd	Dennis Hendrickson	1951	Du	12	24	.....	.....		Sd	6	.....	D,S	A	...	...	....
30daa	Hannah Strommen	1906	B	32	24	.....	.....		Sd,Gv	16	.....	D,S	A	...	...	....
31bab	Dayton Hatling	....	Sp	...	..	.....	.....	Qvo	Gv	Flow	.....	...	...	...	...	C
31ccc	..do....	....	Dr	160	..	.....	.....		..	140	.....	D,S	A	H	...	1329
32bcc	Test hole 1758	1960	Dr	136	5	1,465	1,338		..	.....	.....	T	...	...	...	L
33ccc	Unknown	....	..	60	..	.....	.....		Sd	.....	.....	N	...	...	...	....
34dccl	Lawrence Whipple	1959	B	84	18	.....	.....		Gv	70	.....	D,S	A	H	...	....
34dcc2	..do....	....	B	70	18	.....	.....		Sd	69	.....	N	...	...	...	....
35cccl	Hans Ellefson	1958	B	63	24	.....	.....		Sd	33	.....	D	A	...	...	....
35ccc2	..do....	1909	Dr	68	5	.....	.....		Sd	41	.....	D,S	A	H	...	....
35da	Frank Van Dyke	....	B	40	24	.....	.....		Sd	.....	.....	D,S	A	H	...	....
138-63																
1addl	Sidney Wibstad	1945	B	14	36	1,375	.....		Gv	11	.....	D	A	...	...	....
1add2	..do....	1957	B	19	18	1,375	-1,356	Qvo	Gv	16	.....	S	A	...	49	C

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
138-63 (Cont.)																
2ccd	Jim Davis	1917	Dr	185	5	1,480	+1,295		Sh	70	.....	D,S	A	...	...	....
3bbb	Test hole 1916	1961	Dr	200	5	1,493	1,299		..	.....	.....	T	...	...	...	L
3ddd1	John Collsin	1951	Dr	154	4	1,480	.....		..	.....	.....	D	A	...	...	....
3ddd2	..do....	1918	Dr	154	2.5	1,480	-1,334		Sd	.....	.....	S	A	...	...	....
4ccc	Floyd Orr	1918	Dr	90	4	1,485	.....		..	.....	.....	D,S	A	...	...	....
4dcd1	Walter Beckman	1950	Dr	30	24	1,500	.....		Gv	18	.....	D	A	...	...	....
4dcd2	..do....	....	B	31	36	1,500	-1,469		Gv	31	.....	S	A	...	...	....
5cdc1	Orville Reardon	1949	B	120	30	1,485	.....		..	.....	.....	D	A	Sl	...	....
5cdc2	..do....	1957	Dr	120	4	1,485	.....		..	.....	.....	S	A	Sl	...	....
6aaa	A. B. Erno	1934	Dr	90	4	1,480	.....		..	.....	.....	D,S	A	...	...	....
6bbc	Joe Erno	1925	Dr	80	4	1,480	-1,400		Sd	.....	.....	D,S	A	Sf	...	....
7aaa	Glenn Fowler	1954	B	66.5	36	1,480	.....	Qug	..	9.67	8-20-58	N	A	H	...	....
8aaa1	Clarence Domek	1948	B	45	18	1,480	-1,435		Gv	.....	.....	D	A	...	...	....
8aaa2	..do....	....	Dr	140	6	1,480	+1,340		Sh	40	.....	S	I	...	...	....
9bca	Oscar Amenson	1900	Dr	1350	..	1,480	.....	Kd	Sd	Flow	.....	S	A	Sl	69	C,11,000
10cdc	Peter Skaar	1938	Dr	44	24	1,485	-1,441		Sd	28	.....	D,S	A	...	...	....
11bba1	Ervin Steege	1943	Dr	80	6	1,500	-1,420		Gv	68	.....	D	A	...	...	....
11bba2	..do....	1914	Du	60.0	48	1,500	.....		Gv	57.50	8-20-58	D	A	...	...	....
13aaa	Vernon Whitney	....	Du	18	36	1,365	-1,347		Gv	12	.....	D,S	A	...	...	....
13bac1	Lawrence Jessen	1950	Du	52	24	1,495	-1,443		Gv	50	.....	D,S	A	...	...	....
13bac2	..do....	....	Dr	190	4	1,495	.....		..	90	.....	S	A	Sl	...	....
15bab	Peter Skaar	1953	B	27	24	1,490	-1,466		Sd	20	.....	S	A	...	...	....
15dad	Test hole 1917	1961	Dr	126	5	1,480	1,369		..	.....	.....	T	...	...	...	L
15ddal	Carl Olstad	1951	B	124	19	1,490	.....		Sh	44	.....	D,S	I	...	...	....
15dda2	..do....	1944	Dr	118	5	1,490	+1,372		Sh	18	.....	S	I	...	...	....
15dda3	..do....	1953	B	30	19	1,490	-1,460		Gv	15	.....	S	I	...	...	....
16bal	Harry Kupferschmidt	1916	Dr	50	3	1,493	-1,443		Gv	40	.....	D	A	...	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
138-63 (Cont.)																
16ba2	H. Kupferschmidt	1957	B	45	24	1,493	.....		Gv	35	.....	S	A	Sf	...	....
17aaal	M. D. Orr	1929	B	61	24	1,485	.....		Sh	57	.....	D	I	...	...	....
17aaa2	..do....	1930	B	60	24	1,485	+1,425		Sh	56	.....	S	I	...	...	....
18bcb1	P. Kupferschmidt	1922	Dr	170	4	1,482	.....		Sh	44	.....	S	A	...	...	....
18bcb2	..do....	....	Dr	100	4	1,482	+1,382		Sh	33	.....	D,S	A	H	...	....
19bcb1	L. Entzminger	1903	Dr	99	3	1,511	.....		Sh	.....	.....	D,S	A	Sf	...	....
19bcb2	..do....	1955	B	76	30	1,511	+1,435	Kp	Sh	46	.....	S	A	Sf	44	C
21dcd	Jacob Tesky	....	Dr	68	3	1,492	-1,424		Gv	25	.....	D,S	A	...	...	....
22ddc1	Lloyd Dornek	1955	Dr	80	4	1,497	.....		..	.....	.....	D,S	A	...	...	....
22ddc2	..do....	....	Dr	100	4	1,497	.....		..	.....	.....	S	I	Sl	...	....
23adb1	Ted Gahner	....	Dr	90	6	1,495	.....		..	.....	.....	D,S	A	...	...	....
23adb2	..do....	....	Du	36	40	1,495	-1,459		Sd	18	.....	O	...	...	...	....
24bdb	..do....	1918	Dr	285	3	1,475	-1,190		Sd	.....	.....	S	A	...	...	....
26bab1	Herman Beckman	1945	B	70.6	24	1,500	-1,430		Gv	68.30	9- 4-46	D,S	I	...	...	....
26bab2	..do....	1948	B	72	30	1,500	.....		Gv	72	.....	D	I	...	...	....
26ddc	Test hole 1744	1960	Dr	115	5	1,490	-1,375		..	.....	.....	T	..	...	...	L
28aad	Henry Beckman	1952	Dr	84	2	1,490	-1,406		Gv	78	.....	D,S	A	...	...	....
29dcd	Test hole 1745	1960	Dr	63	5	1,500	-1,437		..	.....	.....	T	..	...	...	L
29ddd1	John Aljoe	1915	Du	10	24	1,448	.....		Sd	8	.....	S	A	...	...	....
29ddd2	..do....	1945	Du	16	..	1,448	.....		Sd	14	.....	D	A	...	...	....
30bba	Dale Peckham	....	Dr	100	4	1,500	.....		Sh	.....	.....	S	A	...	...	....
30ccc	..do....	1918	Dr	100	4	1,515	.....		Sh	40	.....	D,S	A	Al	...	....
31add1	Camiel DeBuck	1953	B	46	24	1,510	-1,466		Sd	20	.....	D,S	A	...	...	....
31add2	..do....	....	B	70	36	1,510	.....		..	68	.....	S	A	...	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
138-63 (Cont.)																
34add1	A. L. Anderson	1955	B	106	24	1,491	.....		..	95	.....	D	A	...	...	....
34add2	..do....	1906	Dr	172	2	1,491	.....		..	106	.....	S	A	Sl	...	....
35cbd1	Lawrence Dornek	1947	B	81	24	1,480	-1,399		Sd	65	.....	D	A	H	...	C
35cbd2	..do....	1934	B	67	18	1,480	.....		Sd	59	.....	S	A	...	...	....
138-64																
1ccd	Joe Klose	....	Dr	46	4	1,465	-1,419	Qug	Gv	Flow	8-28-58	S	A	H	45	C
2bad1	Paul Klose	1940	Du	16	48	1,482	.....		Sd,Gv	10	.....	S	A	H	...	....
2bad2	..do....	1941	Dr	28	4	1,482	-1,454	Qug	Sd,Gv	8	.....	D	A	H	...	....
2ddb	Joe Klose	....	Dr	50	4	.....	.....	Qug	Gv	10	.....	D,S	A	H	...	....
3abc	Harry Klose	1951	Du	42	36	1,517	-1,475		Gv	37	.....	D,S	A	H	46	....
7bb	Fred Hill	....	..	90	..	1,536	-1,446		Gv	88	.....	...	I	Sf,Sl	...	....
8cdc	Mrs. K. Guthmiller	1954	Dr	109	4	1,526	-1,417		Sd	79	.....	D,S	A	Sf	...	....
9add	James Brophy	....	Dr	130	4	1,517	-1,387		Sd	.....	.....	D,S	A	H	...	....
10cbd	Clem Klose	....	Dr	125	..	1,522	-1,397		Sd	42	.....	D,S	A	H	...	....
11ccc	Pete Klose	....	Dr	155	4	1,502	+1,347		Sh	25	.....	D,S	A	Sf	47	....
12bbb1	Palmer Nelson	1955	B	40	24	1,479	-1,439	Qug	Sd	8	.....	D	A	...	...	....
12bbb2	..do....	....	B	24.2	18	1,479	.....	Qug	Sd	0.59	9- 4-46	D,S	A	H	...	....
14aaa	Ben Baener	....	B	32	24	1,481	-1,449		Gv	23	.....	S	A	...	...	....
14ada	Lewis Baener	....	B	54	24	1,489	-1,430		Sd	27	.....	D,S	A	H	...	....
16aa	F. Toay	....	..	170	..	1,530	-1,360		Sd	60	.....	...	A	H	...	....
17dd	John MacKelroy	....	Dr	100	4	1,532	-1,432		Sd	65	.....	D,S	A	H	46	....
19da	Unknown	....	..	170	..	1,510	-1,340		Sd	98	.....	...	A	H	...	....
20baa	John Macklear	....	B	63.2	24	1,521	-1,458		Gv	20.83	8-27-58	D,S	A	H	47	....
20ccc	Don Talley	....	Dr	210	..	1,512	-1,302		Sd	50	.....	D,S	A	H	...	....
22add1	W. A. Timm	....	Du	32	36	1,504	.....		Sd	20	.....	D	A	H	46	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
138-64 (Cont.)																
22add2	W. A. Timm	....	..	33	..	1,504	-1,471		Sd	30	.....	S	A	H	46	....
23bcc	..do....	....	Dr	100	4	1,509	-1,409		Sd	65	.....	S	A	Al	47	....
23dad	Frank Toay	....	..	120	..	1,508	-1,388		Gv	115	.....	D,S	I	H,Al	...	....
24cad	Albert Johnson	1948	Dr	110	3	1,500	+1,390		Sh	.....	.....	D,S	A	Sf	...	....
25ccb	Carl Lee	1952	Dr	147	4	1,500	-1,353		Gv	60	.....	D,S	A	Sf	...	....
26add	Russell Krueger	....	Dr	150	4	1,500	.....		..	.....	.....	D,S	A	Sf,Sl	...	....
26bca	John Huebner	....	Dr	70	5	1,489	+1,419		Sh	.....	.....	D,S	I	H,Al	...	....
27aaa	Test hole 1757	1960	Dr	73	5	1,490	1,444		..	.....	.....	T	...	...	...	L
29cdd	Test hole 1747	1960	Dr	178	5	1,495	-1,317		..	.....	.....	T	...	...	...	L
30add	Howell Sr.	....	Dr	196	3	1,513	-1,317		Sd	45	.....	D,S	A	H	...	....
30ccc	Test hole 1748	1960	Dr	294	5	1,520	1,233		..	.....	.....	T	...	...	...	L
31baa	Larson	....	Dr	220	4	1,520	+1,300		Sh	20	.....	D,S	A	Sf	...	....
32abal	M. F. Patzer	....	Du	15	36	1,495	.....		Gv	5	.....	S	A	H	...	....
32aba2	..do....	....	Du	16	36	1,495	.....		Gv	14	.....	D	A	H	...	....
33bad	Farmers Union	....	Dr	336	3	1,500	+1,264		Sh	50	.....	D	A	H,Sl	...	....
33cbal	Vernon Howell	....	Dr	262	3	1,512	+1,250	Kp	Sh	47	.....	D,S	A	Sl	48	C
33cba2	..do....	....	Dr	352	3	1,512	.....		Sh	47	.....	D	A	Sf,Sl	...	....
33dac	..do....	....	Dr	132	4	1,504	-1,372		Sd	50	.....	S	A	H	...	....
34abc	A. R. Buctow	....	Dr	180	4	1,505	-1,325		Sd	20	.....	D,S	A	Sf,Sl	...	....
36aaa	Test hole 1746	1960	Dr	42	5	1,495	1,459		..	.....	.....	T	...	...	...	L
138-65																
3aaa	Test hole 1919	1961	Dr	136	5	1,535	1,410		..	.....	.....	T	...	...	...	L
3cdd	George Muhl	....	B	60	24	1,560	.....		..	55	.....	D,S	I	H	...	....
3dc	K. E. Dahlay	....	..	14	..	1,550	.....		Gv	4	.....	D,S	A	H	...	....
5ccc	Test hole 1920	1961	Dr	294	5	1,660	1,376		..	.....	.....	T	...	...	...	L
6dd	S. Spangler	....	Dr	327	..	1,560	+1,233		Sh	80	.....	D,S	A	Sf	...	....
8bb	L. Jager	....	Dr	400	2	1,650	+1,250		Sh	50	.....	S	A	Sf,Sl	...	....
8ca	Ray Elemons	....	B	60	24	1,640	-1,580		Sd	30	.....	D,S	A	H,Sl	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
138-65 (Cont.)																
9baa	Test hole 1918	1961	Dr	241	5	1,550	1,329		..	.....	.....	T	...	...	...	L
10dd	Paul Wood	....	..	32	..	1,565	-1,533		Gv	15	.....	D,S	A	Al	...	....
11cdd	Carl Ebes	....	..	80	..	1,563	-1,483		Gv	20	.....	D,S	A	Sf	...	....
12bcc	Unknown	....	B	28.1	24	1,535	.....		..	19.87	8-12-58	N	...	H	...	....
12ddd	A. Hale	....	Du	47	..	1,510	.....		..	25	.....	D,S	...	...	...	....
13aaa	Mrs. L. Guthmiller	....	Du	14	..	1,508	.....		Sd	10	.....	D,S	A	H	...	....
13aab	..do....	1958	B	21	24	1,507	-1,486		Gv	13	.....	D,S	A	H	...	....
15aaa	B. P. Begum	....	B	29.4	24	1,562	-1,533		Gv	17.71	8-12-58	D,S	A	H	...	....
18dcb	A. G. Anderson	1938	Dr	214	2	1,683	.....		Cl	60	.....	D,S	A	Sf	...	....
18dcc	..do....	....	Dr	254	..	1,690	.....		Cl	100	.....	D,S	A	Sf	...	....
19aaa	Clara Roberts	....	Dr	304	2	1,685	+1,381		Sh	40	.....	D,S	A	H,Sl	...	....
20bbc	Loren Roberts	1943	Dr	301	2	1,665	+1,364		Sh	70	.....	D,S	A	H,Sl	...	....
21ccd	Mrs. A. C. Reiswig	....	Dr	72.9	24	1,650	-1,578		Sd	65.23	8-12-58	D,S	A	H	...	....
22acb	John H. Ben, Sr.	....	Du	14.2	48	1,555	.....		..	12.09	8-12-58	D,S	...	H	...	....
22bb	John H. Ben	....	Du	13	..	1,550	.....		Gv	3	.....	D,S	A	H	...	....
24ab	Charles Baenen	....	Dr	185	3	1,525	.....		..	66	.....	D,S	A	Sf	...	....
25dbd	Adam Oberlander	....	..	30	..	1,520	-1,490		Cl	5	.....	D,S	A	H	...	....
26dda	Otto Oberlander	....	B	40	24	1,580	-1,540		Sd	30	.....	D,S	I	H	...	....
27abd	David Wegner	1945	Dr	145	3	1,555	+1,410		Sh	.....	.....	D,S	A	Sf	...	....
30bbb	Arley Heer	1948	Dr	192	4	1,705	+1,513		Sh	40	.....	D,S	A	H	...	....
31bbb	Test hole 1760	1960	Dr	273	5	1,720	1,457		..	.....	.....	T	...	...	...	L
33bbb	Test hole 1759	1960	Dr	189	5	1,660	1,486		..	.....	.....	T	...	...	...	L
35aaa	Alvin Weixel	1951	Dr	70	3	1,588	-1,518	Dug	Gv	50	.....	D,S	A	H	48	C
35bbb	Test hole 1749	1960	Dr	84	5	1,535	1,462		..	.....	.....	T	...	...	...	L
35bcd	Leonard Hoeckle	....	B	30	24	1,540	-1,510		Cl	22	.....	D,S	A	H,Al	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
138-66																
2bcd	George Wenzel	....	Dr	500	3	1,720	+1,220		Sh	.....	.....	N	...	Sf,Sl	48	....
3add	Joe Wenzel	....	Dr	98	4	1,742	-1,644		Gv	.....	.....	S	A	H	47	....
4bbb	Floyd Seckerson	1930	Dr	432	22	1,805	-1,373		Sd	80	.....	D,S	A	Sf	47	....
4dbc	Joe G. Wenzel	....	Dr	400	2	1,782	+1,382		Sh	.....	.....	D,S	I	Sl	...	....
10aaa	Emil Heier	1950	Dr	350	3	1,740	.....		Sh	.....	.....	D,S	A	Sf,Sl	47	....
11ddd	Test hole 1914	1961	Dr	273	5	1,726	1,471		..	.....	.....	T	...	...	...	L
14bb	Joe J. Wenzel	....	Dr	90	24	1,750	-1,640		Gv	14	.....	D,S	A	H	...	....
14da	M. Wenzel	....	Dr	280	3	1,730	.....		..	24	.....	D,S	A	H	...	....
14daa1	Mike WEnzel	....	Du	85	48	1,730	.....		Ti	22	.....	O	...	H	...	....
14daa2	..do....	1955	Dr	300	2	1,730	-1,430		Gv	60	.....	D,S	A	H,Sl	...	....
17cdc	San Suko	....	Dr	400	3	1,822	+1,422		Sh	13	.....	D,S	A	Sf,Sl	47	....
19bcb	Test hole 1763	1960	Dr	388	5	1,855	1,472		..	.....	.....	T	...	...	...	L
20ada	Test hole 1762	1960	Dr	367	5	1,800	1,442		..	.....	.....	T	...	...	...	L
20bac	Melvin Wegner	....	Dr	450	3	1,822	+1,372		Sh	150	.....	D,S	A	Sf,Sl	48	....
20ccb	John Gemke	1941	Dr	140	3	1,850	-1,710		Sd	.....	.....	D,S	A	H	...	....
21abb1	Gottfrad Wegner	1953	Dr	480	3	1,795	+1,315		Sh	150	.....	D,S	A	Sf,Sl	47	....
21abb2	..do....	1956	Dr	270	3	1,795	-1,525		Sd	150	.....	D,S	A	H	...	....
21abb3	..do....	1949	Dr	277	3	1,795	-1,518		Sd	150	.....	D,S	A	H	...	....
22ad	Jake Heier	....	Dr	200	3	1,761	.....		..	.....	.....	D,S	I	H	47	....
24dda	Arvel Glinz	1962	Dr	1,980	5-3-2	.....	.....	Kd	Ss	50	.....	D,S	A	...	57	C
24ddc1	Fay Heasley	....	Dr	248	3	1,712	-1,564		Sd	200	.....	D,S	I	H	...	....
24ddc2	..do....	....	Dr	180	3	1,712	.....		Sd	130	.....	D,S	I	H	...	....
25ddd	Nels Figee	1920	Dr	218	4	1,730	-1,512		Gv	30	.....	D,S	A	H,Sl	...	....
27dcc	Elmer Williams	....	Dr	256	3	1,762	-1,506	Qug	Sd	Flow	.....	D,S	A	H	...	....
31aaa1	Williams Company	....	Du	30	48	.....	.....	Qug	Gv	8	.....	D,S	A	H	43	C
31aaa2	..do....	....	Dr	200	4	.....	.....		Sh	.....	.....	D,S	A	...	...	....
33cbc	John Ammon	1943	Dr	395	3	.....	.....	Qug	Gv	.....	.....	D,S	A	H,Al	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
138-66 (Cont.)																
34aad	Willism Reinke	1955	Dr	270	2	1,750	-1,480	Qug	Sd	.....	.....	D,S	I	Sf	...	....
34ddd	..do....	1945	Dr	310	3	1,745	-1,435	Qug	Sd	Flow	8- 5-58	D,S	A	H	47	....
35bbb	Test hole 1761	1960	Dr	368	5	1,745	1,385		..	.....	.....	T	...	...	...	L
35bcc	Edwin Elhard	1930	Dr	136	3	1,761	-1,625		Gv	80	.....	D,S	A	Sf	46	....
36aaa	N. Figee	....	Dr	200	3	1,730	-1,530		Sd	50	.....	D,S	A	H	...	....
36ddc	..do....	....	Dr	118	3	1,720	-1,602	Qug	Gv	.....	.....	N	...	H,Sl	...	....
138-67																
2bbb1	J. B. Brooks	1947	B	33.6	24	1,832	-1,798		Gv	28.81	8- 5-58	D,S	A	H	45	....
2bbb2	..do....	....	B	30	24	1,832	.....		Gv	26	.....	D,S	A	H	47	....
9adal	Lawrence Schroeder	1927	B	75	24	1,825	-1,750		Gv	35	.....	S	A	H	47	....
9ada2	..do....	1929	B	65	24	1,825	.....		Gv	23	.....	D	A	H	47	....
11bbc	Alfred Zillmer	1954	B	87	24	1,805	-1,718		Sd	20	.....	D,S	A	H	...	....
14cdd	Wilbert Zillmer	1956	B	102	24	1,885	-1,783		Sd	62	.....	D,S	A	H	46	....
15ddd	Test hole 1764	1960	Dr	388	5	1,890	1,506		..	.....	.....	T	...	...	...	L
16aadl	Lawrence Schroeder	1915	Dr	600	3	1,873	+1,273	Kp	Sh	300	.....	D,S	A	Sf,Sl	47	C
16aad2	..do....	1928	B	30	24	1,873	-1,843		Sd	25	.....	D	A	Sf	46	....
16ccc	Test hole 1765	1960	Dr	388	5	1,870	1,493		..	.....	.....	T	...	...	...	L
18ddb	Orlo Sund	....	Dr	300	3	1,845	.....		..	.....	.....	S	A	H	...	....
21cbb	Charles R. Erickson	....	Dr	300	3	1,872	-1,572		Sd	37	.....	D,S	A	H	46	....
22bad	Oliver Sund	1957	Dr	135	2	1,900	-1,765		Gv	76	.....	D,S	A	H	...	....
22cba	Lester Larson	1929	Dr	310	2.5	1,885	-1,575		Sd	120	.....	D,S	A	H	47	....
24ada	Elmer Retzer	....	Dr	300	3	1,875	-1,575		Sd	80	.....	N	A	H,Sl	47	....
24bab	..do....	1941	B	62	24	1,895	-1,833		Sd	51	.....	S	I	H	...	....
25bbb	Ernest Williams	....	Du	10.2	48	.....	.....		Gv	7.83	7-31-58	D,S	A	H	46	....
27ccb	Lynn Olson	1955	Dr	350	3	.....	.....		Sh	200	.....	D,S	A	H	47	....
28ccb	Ervin Wolff	1941	Dr	224	3	.....	.....		Gv	140	.....	D,S	A	H	47	....
30bba	Konrad Lang	....	Du	13	48	.....	.....		Sd	8	.....	D,S	I	H	...	....
31aaa	Alvin Gums	....	B	58.5	24	.....	.....		Sd	32.59	7-30-58	D	A	H	47	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
138-67 (Cont.)																
31bad	J. L. Martin	....	B	32.7	24	.....	.....		Gv	11.43	7-30-58	D,S	A	H	...	....
31ddd	Test hole 1910	1961	Dr	273	5	1,912	1,658		..	.....	.....	T	...	...	...	L
32cbb	Rudolph Krieger	1951	Dr	90	3	.....	.....		Sd	45	.....	D,S	A	Sf	47	....
34acc	Ray Diede	....	Dr	110	3	.....	.....		Cl	80	.....	D,S	A	Sf	...	....
35aba	Carl Sund	....	B	100	24	.....	.....		Gv	60	.....	D,S	A	H,Al	...	....
35bba	John C. Rath	1930	Dr	84	3	.....	.....		Sd	.....	.....	D,S	A	H	47	....
36aaa1	George A. Williams	1948	Dr	300	3	.....	.....		Sd	80	.....	D	A	H	...	....
36aaa2	..do....	1948	Dr	180	3	.....	.....		Sd	1	.....	S	A	H	47	....
138-68																
4dd	Unknown	....	B	75.7	24	1,805	.....		..	11.11	7-29-58	O	...	H	46	....
6adc	Peter M. Hoffman	....	Du	14.3	36	1,860	.....		Sd	8.67	7-29-58	D,S	A	H	46	....
6dda	Raymond Reid	....	B	109.9	30	1,873	-1,763		Sd	90.97	7-29-58	D,S	A	H	...	....
7adb	Walter Morlock	1957	B	42.5	24	1,852	-1,810		Gv	25.61	7-29-58	D,S	A	H	47	....
8aba	Emil Schlecht	....	Dr	140	3	1,855	-1,715		Gv	.....	.....	D,S	A	H	47	....
8cb	Leo F. Schmidt	....	Dr	280	3	1,885	-1,605		Sd	100	.....	D,S	A	...	...	....
10aaa	Edwin Enzminger	....	Du	11	48	1,850	.....		Gv	6.45	7-29-58	D,S	A	H	46	....
11dcc	Alex Schlenker	1957	Du	21	40	.....	.....		Gv	13	.....	D,S	A	Sf	45	....
12cb1	Emil Reich	....	Dr	480	2	1,865	+1,385	Kp	Sh	340	.....	S	A	Sl	46	C
12cb2	..do....	....	Du	10	48	1,865	.....		Sd	4	.....	D	A	...	...	....
13cbc	A. Lechre	....	B	38.8	24	1,900	-1,861		Gv	20.15	7-30-58	S	A	H	47	....
13dcd	Test hole 1766	1960	Dr	325	5	1,890	1,574		..	.....	.....	T	...	...	...	L
14cc	Emanuel KleinKnecht	....	Du	12	48	1,910	-1,862		Gv	6	.....	D,S	A	H	46	....
16add	Norman Gums	....	Dr	238	3	1,841	+1,603		Sh	200	.....	D,S	A	H	48	....
16cad	Elmer Malake	....	Dr	60	3	1,860	-1,800		Sd	45	.....	D,S	A	Sf	...	....
17bbb	Test hole 1578	1959	Dr	210	5	1,880	1,675		..	.....	.....	T	...	...	...	L
17cca	Rueben Hillius	1918	B	48	20	1,862	-1,814		Sd	18	.....	D,S	I	H	47	....
18cac	T. Kischemann	1928	Dr	168	3	1,915	-1,747		Sd	160	.....	D,S	A	Sf	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
138-68 (Cont.)																
18dda	William Kapp	1915	Dr	180	3	1,924	-1,744		Gv	168	.....	D,S	A	Sf	47	....
19abd	T. Kischemann	....	Dr	345	3	1,965	-1,620		Sd	232	.....	S	A	H,Sl	48	....
20cab	O. W. Tode	....	Dr	300	3	1,925	.....		..	.....	.....	N	...	Sl	...	....
21bbb	Test hole 1768	1960	Dr	210	5	1,860	1,661		..	.....	.....	T	...	...	...	L
22aaa	Test hole 1767	1960	Dr	189	5	1,870	1,693		..	.....	.....	T	...	...	...	L
26abb	A. H. Haut	....	Du	24	48	.....	.....		Gv	18	.....	D,S	A	Sf	46	....
26cbb	Alton Deutscher	....	B	22.3	36	.....	.....		Gv	8.93	7-31-58	D,S	A	H	46	....
29bcb	Albert Donat	1916	Dr	68	3	.....	.....		..	.....	.....	D,S	...	...	...	....
29dcc	Herbert Job	....	Du	16.7	48	.....	.....		..	11.7	8-10-49	D,S	...	...	...	....
30aaa	Test hole 1579	1959	Dr	189	5	1,920	1,738		..	.....	.....	T	...	...	...	L
30ddd	Walter T. Dockter	1928	Dr	325	3	.....	.....		..	.....	.....	D,S	...	...	...	....
138-69																
2aa	Albert Mayer	1920	Dr	280	2.5	1,850	.....		..	40	.....	D,S	A	H,Sl	47	....
2cdd	Gottleb Graf	....	Du	20.4	48	1,890	.....		Gv	7.63	7-29-58	D,S	A	H	...	....
2ddb	Unknown	....	Dr	275	3	1,865	-1,590		Sd	35	.....	S	I	H	47	....
4aaa	Fred Siegle	1921	B	80	36	1,872	-1,792		Gv	15	.....	D,S	A	H	48	....
4dcc	Rudolph Dockter	....	B	30	24	1,925	-1,895		Gv	10	.....	D,S	A	H	...	....
5acc	Henry Simmons	1913	B	7.6	30	1,919	.....		Gv	Flow	7-28-58	D,S	A	H	46	....
6dbb	Ray Paul	....	B	61.7	24	1,792	-1,730		Sd	55.53	7-29-58	D,S	A	H	47	....
10bbb	E. M. Timm	....	B	5.4	36	1,945	.....		Gv	2.67	7-28-58	S	A	H	47	....
10ddd1	Jacob G. Dockter	....	Dr	350	3	1,960	.....		..	.....	.....	D,S	I	Sf	48	....
10ddd2	..do....	....	B	124	24	1,960	-1,836		Gv	.....	.....	D,S	I	H	...	....
11add	Mrs. G. Bischke	....	Dr	150	3	1,910	.....		..	.....	.....	D,S	A	H	47	....
12abb	Jake Bier	1940	Dr	300	3	1,884	-1,584		Sd	270	.....	D,S	A	H	47	....
14aba	K. Guthmiller	....	Dr	165	3	1,943	.....		..	.....	.....	D,S	A	H	...	....
14cad	Emanual Strehlle	....	B	16.8	24	1,964	.....		Gv	8.51	7-29-58	S	A	H	46	....
15bbb	Rudolph Dockter	1925	Dr	180	3	1,985	-1,805		Gv	75	.....	D,S	A	H	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
138-69 (Cont.)																
17bba	Adam J. Dockter	1928	Du	5	36	1.915	.....		Gv	Flow	.....	D,S	A	H	46	....
20aad	Test hole 1906	1961	Dr	409	5	2,050	1,860		..	.....	.....	T	..	...	...	L
22add	Unknown	....	B	65.8	24	1,880	-1,814		Gv	33.91	7-29-58	N	..	H	47	....
22bbd1	E. O. Mayer	1957	Du	10	48	1,990	.....		Sd	3.5	7-29-58	D,S	A	H	46	....
22bbd2	..do....	....	Du	14	48	1,990	.....		Gv	5	7-29-58	D,S	A	H	46	....
24bac	Helmath DeWald	....	B	80	24	1,950	.....	Qug	..	25	.....	D,S	A	...	...	C
24bbc	..do....	....	Dr	310	3	1,955	.....		..	50	.....	D,S	A	Sf,Sl	47	....
24bcc	Philip Dockter	1952	Dr	240	4	1,958	+1,718		Sh	60	.....	D,S	A	Sf,Sl	47	....
26ddd	Jacob Dockter	....	Dr	100	3	.....	.....		..	.....	.....	D,S	..	...	...	....
28dad	Wm. Handel	....	Dr	210	3	.....	.....		..	178	.....	D,S	..	...	...	....
32dbc	A. M. Dockter	....	Du	16.1	36	.....	.....		..	6.8	8-10-49	D,S	..	...	...	....
33ccc	Test hole 1907	1961	Dr	126	5	1,963	1,870		..	.....	.....	T	..	...	...	L
33dca	Henry Morlock	....	Dr	100	3	.....	.....		..	.....	.....	D,S	..	...	...	....
34ddd	Jacob F. Hoffer	....	Dr	350	3	.....	.....		Sd,Gv	.....	.....	D,S	..	...	...	....
139-62																
1ccd	Clifford Bellen	1934	Du	8	30	1,460	.....		Gv	6	.....	S	A	H	...	....
1cdc	..do....	1927	Du	22	36	1,465	-1,443		Sd	19	.....	D,S	A	H	...	....
1ddd	Test hole 1598	1959	Dr	178	5	1,468	-1,290		..	.....	.....	T	..	...	...	L
2dcc1	Tom Rappley	1946	Du	35	36	1,470	.....		Sd	31	.....	D	A	H	...	....
2dcc2	..do....	1954	B	50	24	1,470	-1,420		Gv	30	.....	S	..	H	...	....
5ccd	Martin Lund	1927	B	32	36	1,492	-1,460	Qug	Sd	18	.....	D,S	A	H	43	C
7abb1	Francis Simmers	1918	Dr	148	6	1,473	+1,325		Sh	80	.....	D	I	Sf	...	....
7abb2	..do....	1954	Du	40	48	1,473	-1,433		Gv	24	.....	S	I	H	...	....
7c	..do....	....	Du	10	360	1,425	.....		Gv	6	.....	S	A	...	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
139-62	(Cont.)															
7ccd	Bernard Exner	....	Du	6.9	48	1,430	.....		..	2.5	8- 6-58	N	..	...	...	....
7dcc	Bernard Exner	1915	Du	29.0	36	.....	.....		..	18.57	2-13-62	S,O	A	H	...	....
8ccc1	Mrs. C. Simmers	1920	Dr	180	8	1,482	.....		..	.....	.....	D,S	A	Sf	...	....
8ccc2	..do....	1938	Du	30	36	1,482	.....		..	2.5	9-17-58	N	I	H	...	....
8ddd	P. H. Hansted	....	Du	34	..	1,483	-1,449		Sd,Gv	.....	.....	S	A	H	...	....
9aca	F. O. Dally	....	Dr	160	3	1,452	.....		Gv	85	.....	S	..	Sf	...	....
9dcc	..do....	....	Dr	190	5	1,465	-1,275		Gv	.....	.....	S	A	H	...	....
9ddd	Test hole 1347	1958	Dr	157	5	1,445	-1,288		..	.....	.....	T	..	...	...	L
10aaa	Duane Dally	1957	Dr	220	4	1,465	-1,245		Sd	12	.....	D,S	A	Sf	48	1,046
10daa	Raymond McLain	1955	B	56	16	.....	.....		Sd	39	.....	D,S	A	Sf	...	....
12bcc	Byron Sisson	1941	Dr	110	5	1,455	-1,345		Gv	30	.....	D,S	A	H	46	....
12daa	Unknown	....	Du	33.2	48	1,460	.....		..	21.98	7- 5-58	N	..	...	...	....
13aaa	Test hole 1362	1958	Dr	210	5	1,462	-1,252		..	.....	.....	T	..	...	...	L
13bbb1	Test hole 1348	1958	Dr	263	5	1,470	-1,207		..	.....	.....	T	..	...	....	L
13bbb2	S. E. Bear	1905	Dr	160	3	1,475	-1,315		Sd	18	.....	D,S	A	Sf	48	....
14daa	Clifford Belland	....	Du	45	24	1,455	-1,325		Sd	.....	.....	D,S	..	H	...	....
15aaa1	Test hole 1363	1958	Dr	210	5	1,453	-1,247		..	.....	.....	T	..	...	...	L
15aaa2	F. O. Dally	1943	Dr	112	3	1,455	-1,343		Sd	20	.....	D,S	A	Sf	...	....
18aaa	Test hole 1346	1958	Dr	137	5	1,480	1,350		..	.....	.....	T	..	...	...	L
18abb	Bernard Exner	1920	Dr	150	6	1,457	-1,307		Sd	30	.....	D,S	I	Sf	49	....
18aal	Joe Johnson	1918	Du	22	42	1,477	-1,455		Sd	7	.....	S	A	H	47	....
18daa2	..do....	1922	Dr	216	5	1,477	+1,261		Sh	40	.....	D	A	Sf,Sl	48	....
19aaa1	Don Hastings	....	Du	17	24	1,480	.....		Sd	9	.....	D,S	I	...	...	....
19aaa2	..do....	....	Du	20	24	1,480	.....		..	16	.....	S	..	Al	...	....
19aaa3	..do....	....	Dr	40	..	1,480	.....		..	22	.....	N	I	Al	...	....
19aaa4	Don Hastings	....	Du	16	..	.....	.....		Ti	10	.....	N	..	Al	...	....
20bdd	Joe Johnson	1930	Du	20	24	1,475	.....		..	4	.....	S	..	H	...	....
21aaa	Winona Kralle	1930	B	32	24	1,462	-1,430		Sd	30	.....	D,S	A	H	46	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
139-62 (Cont.)																
22cdd	Peter Srozinski	....	Dr	100	6	1,455	.....	Qvb	..	35	.....	D,S	A	Sf	47	....
22dbb	Clyde Wescom	....	Du	25	30	1,460	.....		..	19	.....	D,S	A	H	46	....
24abb	Ivan Carlson	1944	Du	15	36	1,455	.....		Sd	12	.....	S	A	Sf	46	....
24abc	..do....	1955	Du	9	..	1,450	.....		Sd	4	.....	S	A	...	...	....
25bbb	Edwards	....	Dr	175	5	1,445	.....	Qvb	..	15	.....	D,S	A	Sf	48	....
26c	Dakota Aggregate Co.	1959	Dr	150	6	1,440	.....	Qvb	Sd	Flow	.....	Ind	A	...	...	....
26ddal	Charles Scrivens	1944	Du	34	..	1,460	-1,426		Sd	.....	.....	D	I	H,Al	...	....
26dda2	..do....	1948	Du	33	24	1,460	.....		Sd	.....	.....	S	I	H	46	....
27bbc	Dakota Aggregate Co.	1958	Dr	148	6	1,450	.....	Qvb	Gv	22	.....	Ind	A	Sf	46	C
27cdc	Louis J. Hanson	....	Dr	122	6	1,440	-1,318	Qvb	Gv	20	.....	D,S	A	Sf	46	....
27dcd	Mary Scrivens	1939	Dr	147.8	..	1,440	-1,290	Qvb	Gv	24	.....	D,S	A	Sf	46	....
29bad	Unknown	....	Du	...	30	1,475	.....		..	11.8	9-17-58	N	..	...	...	....
31bcc	Carl O. Strommen	1956	B	90	36	1,400	-1,310		Sd	35	.....	D,S	A	Sf	47	....
31daal	Roland Marks	1956	Dr	192	4	1,475	+1,283	Kp	Sh	35	.....	D,S	A	Sf	46	C.1,350
31daa2	..do....	1942	Du	45	36	1,475	-1,430		Cl	.....	.....	N	..	Al	...	....
32ccb	Mrs. F. Mueller	1930	Du	34	30	1,472	-1,438		Sd	15	.....	D,S	A	H	...	....
32dcc	Elmer Kurtz	1938	Dv	190	5	1,472	+1,282		Sh	23	.....	S	A	Sl	46	....
33ccc	Leroy Willey	1925	Dr	140	5	1,458	-1,318		Sd	35	.....	D,S	A	Sf	...	....
34ddd	Leo Schultz	1921	Du	7	24	1,420	.....		Gv	.....	.....	S	A	...	...	....
35aa	Ken Gehlars	1961	Dr	150	4	.....	.....	Qvb	Sd	22	.....	D,S	A	...	...	....
35abb	..do....	1960	Dr	134	4	1,455	.....	Qvb	Gv	11	.....	D,S	A	Sf	...	....
36dac	Ora Anderson	1929	B	60	18	1,470	.....		..	30	.....	D,S	I	H	...	....
139-63																
2abb	Ervin Frey	....	Dr	170	3	1,478	-1,308		Sd	.....	.....	D,S	A	H	...	....
3bad	Charles Vondergust	....	Dr	168	3.5	1,490	-1,322		Sd	80	.....	D,S	A	H	...	....
3cbb	..do....	....	Sp	...	..	1,487	.....		..	Flow	8-27-58	S	A	H	...	....
4bab	City of Jamestown	....	Dr	140	4	1,478	.....		..	.....	.....	D,S	A	...	...	....
4dda	E. A. Bushholtz	....	Dr	56	6	1,400	-1,344		Sd	.....	.....	D,S	A	...	...	....
4ddd	Test hole 1338	1958	Dr	84	5	1,385	1,313		..	.....	.....	T	..	...	...	L

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
139-63	(Cont.)															
5cbb1	Leroy Roeske	1956	Dr	24	6	1,387	-1,363		Sd	.....	.....	D	A	H	...	....
5cbb2	..do....	....	Dr	23	6	1,387	.....		Sd	.....	.....	S	A	...	...	....
5ccc	Test hole 1336	1958	Dr	63	5	1,415	-1,352		..	.....	.....	T	..	...	...	L
6acb1	State Mental Hosp.	....	Du	40	192	.....	.....		Sd	20	.....	N	..	...	...	....
6acb2	..do....	1944	Dr	58	8	1,385	-1,337		Sd	13.62	2-14-62	N	..	...	...	....
6acb3	..do....	1951	Du	50	240	.....	.....		Sd	31.42	2-14-42	PS	A	...	...	....
6cba	..do....		Dr	1524	6-4-3	1,475	.....	Kd	Ss	Flow	.....	N	..	...	...	C
8aba	Test hole 1337	1958	Dr	84	5	1,385	1,316		..	.....	.....	T	..	...	...	L
8bbb	John Scherbenzke	....	Dr	50	..	1,422	-1,372		Sd	.....	.....	D,S	A	...	...	....
10bab1	E. A. Buchholtz	....	Du	14	24	1,378	.....	Qvo	Sd	.....	.....	D	A	...	42	C
10bab2	..do....	....	B	18	36	1,378	.....		Sd	.....	.....	S	A	...	...	....
10bab3	..do....	....	Du	16	48	1,378	.....		Sd	.....	.....	S	A	...	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
139-63 (Cont.)																
11bbb	Test hole 1339	1958	Dr	32	5	1,375	1,353		..	.....	.....	T	...	...	...	L
13bcb1	E. H. Demaroy	1950	B	22	24	1,473	.....		Gv	20.96	2-13-62	O	A	...	...	....
13bcb2	..do....	1952	B	36	24	1,473	-1.437		Gv	28	.....	D,S	A	H	...	....
13ddd	Test hole 1345	1958	Dr	42	5	1,370	1,337		..	.....	.....	T	...	...	...	L
14abb	John Scherbenske	....	B	30	24	1,456	-1,420		Sd	.....	.....	D,S	A	...	...	....
15cbc	Reinhold Klose	....	B	90	24	1,492	.....	Qug	..	.....	.....	D,S	A	H	...	....
15ddc	J. V. Johnson	....	Dr	183	4	1,485	.....		..	100	.....	D,S	A	H	...	....
17ccc	Test hole 1342	1958	Dr	189	5	1,482	1,304		..	.....	.....	T	...	...	...	L
19abal	Henry Erickson	....	Dr	106	4	1,485	+1,379		Sh	.....	.....	S	A	H	...	....
19aba2	..do....	....	Du	12	30	1,485	.....		Sd	4	.....	D,S	A	...	...	....
20cad	Arden Meeker	....	B	23.2	48	1,490	-1,467		Sd	18.52	8-26-58	D,S	A	H	...	....
21bbal	Alfred Carlson	1950	B	16	24	1,485	.....		Sd	.....	.....	D	A	...	...	....
21bba2	..do....	....	Dr	80	4	1,485	.....		..	.....	.....	S	A	...	...	....
21ccc	John Gruhlke	1918	Du	18	36	1,489	.....		Sd	14	.....	D,S	A	...	...	....
22bbb	Test hole 1341	1958	Dr	147	5	1,485	1,348		..	.....	.....	T	...	...	...	L
23aaa	Test hole 1340	1958	Dr	168	5	1,485	1,328		..	.....	.....	T	...	...	...	L
23aba	Emmett Fisher	....	Dr	185	8	1,480	.....	Qug	..	90	.....	D,S	A	H	...	....
24cbd1	Louis Anderberg	1938	Du	10	..	1,460	.....		Sd	.....	.....	D	A	...	...	....
24cbd2	H. W. Anderberg	1910	Du	35.1	26	1,460	-1,425		Sd	22.00	9- 4-46	D,S	I	H	...	....
26cad1	Wally Daeds	....	Du	28	32	1,482	-1,454		Sd	19	.....	S	A	H	...	....
26cad2	..do....	....	Du	9	36	1,482	.....		Sd	6	.....	D	A	Sf	...	....
29ccb	Frank Dockter	....	Dr	131	3	1,480	.....		..	.....	.....	S	A	...	...	....
29dc	Felix Werchau	....	Dr	90	5	1,485	+1,395		Sh	.....	.....	D,S	A	H	...	....
30dd1	Frank Dockter	....	Dr	141	3	1,485	.....		..	.....	.....	D,S	A	...	...	....
30dd2	..do....	....	Dr	139	4	1,485	1,485		..	.....	.....	S	A	...	...	....
31aaa	A. B. Emo	1957	B	47	30	1,477	-1,430		Sd	.....	.....	S	A	...	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
139-63 (Cont.)																
31bba	A. B. Emo	1940	Du	57	40	1,475	-1,418	Qug	Sd	9	.....	D,S	A	...	...	....
32cbc1	Edward Dehne	1948	Dr	121	5	1,480	-1,359		Gv	62	.....	S	A	...	...	....
32cbc2	..do....	1937	Dr	18	6	1,480	.....		Sd	14	.....	D	A	...	...	....
33ad	George Peterson	1908	Du	33	48	1,500	-1,467		Sd	29.5	.....	D,S	A	H	...	....
33bbb	Eston Mathias	....	Dr	180	4	1,485	.....		..	90	.....	D,S	A	Sl	...	....
34babl	Charles B. Davis	1954	Dr	23	6	1,480	-1,457		Sd	21	.....	D	A	...	...	....
34bab2	..do....	....	Du	20	48	1,480	.....		Sd	18	.....	S	A	...	...	....
36ccb1	William Erickson	1953	Dr	280	4	1,475	.....		..	.....	.....	S	A	Sl	...	....
36ccb2	..do....	1946	B	80	24	1,475	.....		..	.....	.....	D,S	A	...	...	....
139-64																
2dda	C. E. Lowry	....	Dr	140	4	1,440	.....		..	.....	.....	D,S	A	H	...	....
2ddd	Test hole 1334	1958	Dr	105	5	1,485	1,392		..	.....	.....	T	...	...	...	L
3ccc	Test hole 1332	1958	Dr	126	5	1,515	1,401		..	.....	.....	T	...	...	...	L
3ddd	Test hole 1333	1958	Dr	168	5	1,495	1,332		..	.....	.....	T	...	...	...	L
4daa	William Rott	1958	Dr	142	4	1,509	-1,367		Sd,Gv	123	.....	D,S	A	H	47	....
7bb	F. R. Hillstrom	....	Du	35	..	1,525	-1,490		Gv	28	.....	D,S	A	H	...	....
8bb	S. Murch	....	Dr	100	..	1,528	.....		..	60	.....	D,S	A	Sf	...	....
8dad	Unknown	....	B	27.7	24	1,515	-1,487		Gv	15.41	8-28-58	S	A	H	46	....
9dab	E. L. Sahr	....	Dr	97	..	1,507	-1,417		Sd	27	.....	D,S	A	Sf	...	....
10daa	Ed Hennings	1914	Dr	200	3	1,500	+1,300		Sh	35	.....	S	A	H,Sl	...	....
12aaa	Test hole 1335	1958	Dr	116	5	1,480	1,375		..	.....	.....	T	...	...	...	L
13ccc	Test hole 1343	1958	Dr	84	5	1,483	1,405		..	.....	.....	T	...	...	...	L
14aab	Rudolph Fox	....	Dr	280	3	1,482	-1,202		Sh	200	.....	D,S	A	Sf,Sl	...	....
14dac	J. A. Michel	....	Du	17.5	36	1,480	.....		Sd	7.85	9- 4-46	N	A	H	...	....
15aabl	Anton Anderson	....	Dr	135	2.5	1,500	+1,365		Sh	30	.....	S	A	Sf,Sl	...	....
15aab2	..do....	....	B	35	24	1,500	-1,465		Cl	30	.....	D	I	H	...	....
15bbl	Jerry Michel	....	Dr	260	3	1,507	.....		..	50	.....	D,S	...	Sl	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
139-64 (Cont.)																
15bb2	Jerry Michel	....	Dr	187	3	1,507	+1,320		Sh	70	.....	D	I	Sf	...	....
16ad	W. C. Wilson	....	Dr	160	3	1,510	.....		..	25	.....	D,S	A	Sf	...	....
18ab	H. Lanser	....	B	30	24	1,522	-1,492		Sd	28	.....	D,S	A	H	...	....
18bba	J. Meddleman	....	B	30	24	1,520	-1,490		Cl	25	.....	D,S	A	H	...	....
20cad	A. Meeker	....	Du	23.4	36	1,505	-1,482		Sd,Gv	19.80	9-14-46	D,S	A	H	...	....
21aaa	Test hole 1344	1958	Dr	73	5	1,510	1,443		..	.....	.....	T	...	...	...	L
21aad	Ripley	1904	Dr	140	6	1,502	-1,362		Sh	29	.....	D,S	A	H,Sl	47	....
21da	Zuber	....	Dr	56	3	1,500	-1,444		Sd	35	.....	D,S	A	H	...	....
21daa	Mrs. Slote	1917	Dr	44	3	1,502	+1,458		Sh	15	.....	D,S	A	H	...	....
22aab	Arnold Swanson	....	Dr	35	3	1,500	-1,465		Sd	9	.....	D,S	A	H	46	....
25ccd	Unknown	....	B	23.6	24	1,480	-1,456	Qug	..	3.23	8-29-58	O	...	...	...	....
26add	J. W. Scott	1918	Dr	40	4	1,481	-1,441		Sd	12	.....	D,S	A	H	...	....
29aa	R. Bowder	....	Dr	80	3	1,513	-1,433		Sd	.....	.....	D,S	...	Sf	...	....
30bb	Tom Dunlap	....	Dr	60	3	1,522	-1,462		Gv	20	.....	D,S	A	H	...	....
32aaa	John Klose	....	Dr	39	4	1,510	-1,471		Gv	21	.....	D,S	A	H	46	....
34db	Anthony Klose	1931	Dr	154	3	1,551	+1,361		Sh	50	.....	D,S	A	Sf	47	....
35aab	Frank Krank	....	Du	25	48	1,500	-1,475		Gv	20	.....	D,S	A	H	...	....
36aal	A. B. Emo	....	..	60	48	1,485	-1,420		Sd	20	.....	S	A	...	...	....
36aa2	..do....	....	B	40	48	1,485	.....	Qug	Sd	3	.....	N	A	...	...	....
139-65																
1bbb	Test hole 1585	1959	Dr	246	5	1,525	-1,279		..	.....	.....	T	...	...	...	L
2aba	Ed Roseman	1958	Dr	148	3	1,520	.....		..	.....	.....	D,S	A	...	...	....
2bad	Wm. Wahl	1958	Dr	137	4	1,530	+1,393		Sh	6	.....	D,S	A	...	...	....
2bbb	Test hole 1588A	1959	Dr	126	5	1,545	1,429		..	.....	.....	T	...	...	...	L
3add	Berten Wahl	....	Dr	150	..	1,545	.....		..	.....	.....	D,S	A	Sl	...	....
4aba	Ed Thompkins	....	Dr	260	6	1,582	.....		..	160	.....	D,S	A	...	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
139-65 (Cont.)																
4add	Harold Weers	1932	Du	22	36	1,575	-1,553		Sd	.....	.....	D,S	A	...	...	....
5bbb	Test hole 1586	1959	Dr	241	5	1,590	1,354		..	.....	.....	T	...	...	...	L
6da	Wm. Adkinson	1938	Du	35	36	1,615	-1,580		Sd	28	.....	D,S	A	H	...	....
7aaa	Darrel Tompkins	1913	Dr	310	3	1,628	.....	Qvb	..	30	.....	D,S	A	Sl	...	....
8cc	N. Williams	....	..	165	..	1,600	+1,435		Sh	75	.....	D,S	A	H	...	....
10aaa	H. E. Wegenke	1915	Dr	315	4	1,556	.....		..	.....	.....	D,S	A	Sf	...	....
10bb	R. G. Lippert	1919	Dr	318	3	1,567	.....		..	45	.....	D,S	A	Sf	...	....
10dac1	E. H. Wolff	1936	Du	40	48	1,565	-1,525		Sd	18	.....	S	A	...	...	....
10dac2	..do....	1919	Du	18	48	1,565	.....		Sd	8	.....	D	A	...	...	....
11ddd	Frank Schwartz	....	Dr	165	3	1,524	-1,359		Gv	25	.....	D,S	A	...	...	....
13aaa	William Ruthwell	1944	Du	52	36	1,525	-1,473		Gv	25	.....	D,S	A	H	...	....
13da	Wayne Gushwa	1956	Dr	99	3	1,527	-1,528		Sd	.....	.....	D,S	A	...	...	....
14ad	Walter Birchow	....	B	46	24	1,532	.....		..	34	.....	D,S	A	H	...	....
14bc	Art Bohnenberger	....	Dr	174	3	1,550	-1,376		Gv	50	.....	D,S	A	Sf	...	....
14dda	Marvin Anderson	....	Dr	190	3	1,522	-1,332		Gv	87	.....	D	A	H	...	....
15ad	A. H. Wolf	....	Dr	178	..	1,560	.....		..	61	.....	D,S	A	Sf	...	....
19aaa	Gust Wiese	1918	Dr	265	3	1,618	-1,353		Sd	40	.....	D,S	A	H	...	....
20cc	E. Gerlier	....	Dr	285	..	1,640	-1,355		Lig. Gv.	50	.....	D,S	A	Sf	...	....
21da	Kunge	....	Dr	260	..	1,591	.....		..	75	.....	D,S	A	Sf	...	....
22bb	Ed. Wiese	....	Dr	60	...	1,572	-1,512		Lig. Gv.	30	.....	D,S	A	H	...	....
24bb	Unknown	....	Dr	160	..	1,535	-1,375		Sd	100	.....	...	A	...	...	....
24da	Eldon Baker	....	Dr	67	..	1,527	-1,460		Gv	35	.....	...	A	Sf	...	....
26aba	Clemens	....	Dr	125	..	1,555	-1,430		Sd	57	.....	D,S	A	H	...	....
26dcb	Bernard Clemens	....	Dr	165	..	1,562	-1,397		Sd	15	.....	N	...	Sf	...	....
28ddd	H. Jinks	....	Dr	300	..	1,563	+1,263		Sh	150	.....	S	A	Sf	...	....
29ab	Koehn	....	Dr	300	..	1,600	+1,300		Sh	285	.....	S	A	Sl	...	....
30aaa	Test hole 1915	1961	Dr	247	5	1,645	1,404		..	.....	.....	T	...	...	...	L

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
139-65 (Cont.)																
30ab	W. Koehn	....	Dr	281	..	1,655	+1,374		Sh	75	.....	D,S	A	Sf	...	....
30bd	E. Weise	....	Dr	286	..	1,643	-1,357		Sd	80	.....	D,S	A	H	...	....
30cdb1	Ernest A. Weise	1952	Dr	286	3	1,650	-1,364		Sd	70	.....	D,S	A	...	...	....
30cdb2	..do....	1908	Dr	286	2	1,650	.....		Sd	70	.....	S	A	...	...	....
32cb	G. Spangler	....	Dr	315	..	1,645	-1,330		Sh	50	.....	D,S	A	H	...	....
34dad	Richard Guthmiller	....	Dr	100	3	1,570	-1,470		Sd	60	.....	D,S	A	Sf	...	....
36ab	Will Harry	....	..	24	..	1,532	-1,508		Gv	15	.....	...	A	H	...	....
139-66																
1aac	Ronald Wanzek	....	Dr	400	4	1,647	.....	Qvb	..	Flow	.....	D,S	A	Sl	...	....
1bbb	Test hole 158	1959	Dr	451	5	1,680	-1,229		..	.....	.....	T	...	...	...	L
2bbc	George Boelke	1938	Dr	285	..	1,730	-1,445	Qvb	Sd	60	.....	D,S	A	H	47	....
2ccb	George Stroh	....	Dr	400	3	1,717	+1,317		Sh	350	.....	D,S	A	H	48	....
3aad	George Boelke	1947	Dr	303	2	1,728	-1,425	Qvb	Sd	60	.....	D,S	A	H	47	....
4cc	Lewis Schielke	1949	Dr	294	4	1,818	-1,524		Sd	169	.....	D,S	A	H	...	....
4ddc	Leonard Boelke	1955	B	50	24	1,770	-1,720		Sd	40	.....	D,S	A	...	...	....
7aad1	Vincent Wanzek	1950	Dr	470	3	1,817	-1,347		Sd	150	.....	S	A	Sf	...	....
7aad2	..do....	1957	Dr	224	3	1,817	.....		Sd	100	.....	D	A	Sf	...	....
8abb	William Mulfinger	1955	Dr	385	4	1,841	+1,456		Sh	225	.....	D,S	A	H	47	....
8cbc	Orr Tranmer	1954	Dr	150	3	1,817	-1,667		Sd	75	.....	D,S	A	H	...	....
9cc	Lewis Schicke	....	Dr	120	..	1,785	-1,665		Sd	25	.....	...	...	...	...	....
10aad	Jacob Schroeder	....	Dr	285	2	1,735	-1,450	Qvb	Sd	20	.....	D,S	A	H	47	....
10ccb	Tavalt Suko	....	B	60	36	1,731	-1,671		Sd	48	.....	D,S	A	H	47	....
11aaa	Fred Schultz	1917	Dr	360	..	1,780	.....	Qvb	..	Flow	.....	D,S	A	...	54	....
11da	W. P. Wishrd	1924	Dr	235	3	1,668	-1,433	Qvb	Lig. Gv	Flow	.....	D,S	A	Sf,Sl	...	....
12ccd	George Boelke	1920	Dr	280	3	1,638	+1,358	Qvb	Sh	Flow	.....	D,S	A	H	...	....
15bcc	James Wanzek	1921	Dr	400	2	1,739	.....		Sh	100	.....	D,S	A	Sl	...	....
20cab	Lawrence Johnson	1947	Dr	450	3	1,840	-1,390		Sd	150	.....	D,S	A	H	48	....
21bcc	Peter Wanzek	1924	Dr	374	3	1,793	-1,419		Sd	120	.....	D,S	A	H,Sl	47	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
139-66 (Cont.)																
22cbc	Marvin Anderson	....	Dr	380	3	1,742	-1,362		Sd	.....	.....	D,S	A	Sf,Sl	47	....
23ab	George Boelke	1950	Dr	280	..	1,660	+1,380	Qvb	Sh	Flow	.....	S	A	H	...	....
27aca	Wm. Bitz	....	Dr	350	6	1,731	.....		..	140	.....	D,S	A	Sf,Sl	47	....
27bab	Edward Beck	....	Dr	420	2.5	1,745	-1,325		Sd	90	.....	D,S	A	H,Sl	...	....
27cbb	Joseph Chichos	....	B	19.2	24	1,740	.....		Gv	7.71	.....	D,S	A	Sf	46	....
29ddc	Fred Schweitzer	1916	Dr	480	..	1,790	+1,310		Sh	50	.....	D,S	A	Sf,Sl	48	....
30bcb	Ernest Haas	1914	Dr	325	3	1,860	-1,535		Sd	150	.....	D,S	A	Sf	48	....
32add	John Linstadt	....	Dr	400	2.5	1,800	-1,400		Sd	.....	.....	D,S	A	Sf,Sl	46	....
33daa	J. A. Schrenk	....	Dr	500	3	1,763	+1,263		Sl	25	.....	D,S	A	Sl	48	....
139-67																
2bcc	Mrs. J. Blaskowski	1958	Dr	255	4	1,863	-1,608		Sd	50	.....	D,S	A	...	...	....
3ab	Cleveland City well	1953	Dr	230	3	1,855	-1,625	Qug	Sd	.....	.....	D	A	Sf	46	C
3bdb	Adam Grusie	1952	Dr	210	2	1,840	-1,630		Sd	15	.....	D,S	A	...	...	....
3dcc	Reinhold Seuess	....	Dr	150	3	1,792	.....		..	.....	.....	N	...	...	...	....
4cbb	Herman Ahlert Jr.	....	Du	15	48	1,815	.....		Sd	5	.....	D,S	A	...	...	....
5bbc	Test hole 1580	1959	Dr	399	5	1,820	1,429		..	.....	.....	T	...	...	...	L
7cdc	Clarence Schlect	1956	Du	18	36	1,850	.....		..	.....	.....	D,S	A	...	...	....
8dab	H. W. Klassy	....	Sp	6	..	1,830	.....		..	Flow	.....	D,S	A	...	...	....
11ddc	Lawrence B. Jaff	1905	B	40	24	1,865	-1,825		Sd	15	.....	D,S	A	...	...	....
17aad	Elmer Michel	....	Dr	400	4	1,808	.....		..	.....	.....	D,S	A	Sl	...	....
18cbc1	Aaron Neukircher	1954	B	22	36	1,830	-1,808		Sd	10	.....	S	A	...	...	....
18cbc2	..do....	1949	B	13	30	1,830	.....		Sd	.....	.....	D	A	...	...	....
19add	Thomas Greer	1945	Dr	340	3	1,845	.....		..	200	.....	D,S	A	H	...	....
20dda	..do....	....	B	40	24	1,830	-1,790		Sd	.....	.....	S	A	...	...	....
21bbd1	Fred Weber	....	Dr	15	8	1,822	.....		Sd	12.5	.....	D	A	...	...	....
21bbd2	..do....	1943	Du	16	60	1,822	.....		Sd	11	.....	S	A	...	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
139-67 (Cont.)																
22ccb1	Otto Weber	1952	Dr	200	2	1,818	-1,618		Sd	.....	.....	D	A	...	...	....
22ccb2	..do....	1954	B	25	24	1,818	.....		Sd	21	.....	S	A	...	...	....
22ccb3	..do....	1954	Dr	30	..	1,818	-1,788		Sd	6	.....	S	A	Sl	...	....
24ddd	George Linsteadt	1928	Dr	400	2	1,860	.....		..	.....	.....	D,S	A	...	...	....
25bcd	Art Bietz	1950	Dr	418	2	1,855	.....		..	.....	.....	D,S	A	...	...	....
25dbd	David Weber	....	Dr	400	2	1,845	.....		..	80	.....	D,S	A	Sl	...	....
27dab1	Orville Olson	1953	B	22	18	1,820	-1,798		Sd	18	.....	D	A	...	...	....
27dab2	..do....	....	Du	22	48	1,820	.....		Sd	18	.....	D	A	...	...	....
27dab3	..do....	....	Dr	425	2	1,820	+1,395		Sh	60	.....	S	A	Sl	...	....
28adc	David Mulfinger	1952	B	27	24	1,817	-1,790		Sd	11	.....	D,S	A	...	...	....
28bcb1	W. A. Trautman	1948	B	35	36	1,838	.....		Sd	8	.....	D	A	...	...	....
28bcb2	..do....	1948	B	37	36	1,838	.....		Sd	9	.....	S	A	...	...	....
28bcb3	..do....	1922	B	38	36	1,838	-1,800		Sd	10	.....	S	A	...	...	....
28cdd	Test hole 1911	1959	Dr	378	5	1,815	1,455		..	.....	.....	T	...	...	...	L
30cdc	Gerhardt Knecht	1950	B	44	18	1,817	-1,773		Gv	24	.....	D,S	A	...	...	....
32cdd1	Walter W. Trautman	1956	B	20	18	1,818	.....		Sd	10	.....	D,S	A	Sf	...	....
32cdd2	..do....	1956	B	35	18	1,818	-1,783		Sd	17	.....	S	A	...	...	....
33add1	Fred Sund	1906	Dr	425	2	1,823	.....		..	18	.....	S	A	Al	...	....
33add2	..do....	1941	Du	32	36	1,823	-1,791		Sd	30	.....	D	A	...	...	....
33bbb1	James Sund	1954	B	14	30	1,785	.....		Sd	10	.....	D	I	...	...	....
33bbb2	..do....	1950	B	14	30	1,785	.....		Sd	9	.....	S	A	...	...	....
33bbb3	..do....	....	B	12	30	1,785	.....		Sd	3	.....	S	A	...	...	....
34aca1	Rueben Schlaht	1945	Du	22	48	1,800	-1,778		Sd	14	.....	D	A	...	...	....
34aca2	..do....	1945	Du	20	48	1,800	.....		Sd	10	.....	S	A	...	...	....
34aca3	..do....	1954	Du	9	48	1,800	.....		Sd	3	.....	S	A	...	...	....
34ccc1	Clarence Thornton	1943	B	40	24	1,817	-1,777		Sd	14	.....	D	A	...	...	....
34ccc2	..do....	1925	B	38	24	1,817	.....		Sd	.....	.....	S	A	...	...	....
36aba	Thimothy Williams	1939	Dr	285	3	1,842	-1,557		Gv	160	.....	D,S	A	...	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
139-68																
1ba	Gideon Schlecht	....	Du	25	26	1,890	-1,865		Gv	21	.....	D,S	A	H	...	....
2abb	Leo Job	1925	Dr	257	3	1,900	-1,643		Sd	50	.....	D,S	A	...	...	....
2bb	Ed Kolstad	1910	Du	30	48	1,910	-1,880		Sd	5	.....	D,S	A	Sf	...	....
3bbb	Test hole 1560	1959	Dr	199	5	1,880	-1,681		..	.....	.....	T	...	...	...	L
4bbb	Albert Hofmann	1910	B	100	24	1,840	-1,740		Sd	50	.....	D,S	A	Al	45	....
5abbl	Gerhardt Reuer	....	Du	16	36	1,808	.....		Sd	12	.....	S	A	...	...	....
5abb2	Test hole 1561	1959	Dr	199	5	1,810	-1,611	Qug	Sd	.....	.....	T	...	...	49	L,C
5cbb	Test hole 1555	1959	Dr	304	5	1,805	1,517	Qug	..	.....	.....	T	...	...	48	L,C
6ba	Max Shelky	....	Du	15	36	1,790	.....		Sd	9	.....	D,S	A	H	...	....
6bba	Test hole 1545	1959	Dr	283	5	1,790	1,517		..	.....	.....	T	...	...	...	L
6dadl	Rudolph Trautman	1947	B	38	24	1,825	.....		Gv	35	.....	D	A	Sf	...	....
6dad2	..do....	....	B	40	12	1,805	-1,785		Gv	40	.....	S	A	...	...	....
6dad3	..do....	1940	Dr	28	8	1,825	-1,797		Sd	28	.....	S	A	Sf	...	....
7ccc	Arthur Opp	....	Dr	250	3	1,843	-1,593		Sd	150	.....	D,S	A	Sl	...	....
8bbc	Rudolph E. Hofmann	1957	Dr	365	..	1,924	.....		..	.....	.....	D,S	A	...	...	....
12bdbl	Rudolph Schlecht	1958	Dr	12	8	1,900	.....		Sd	3	.....	S	A	...	...	....
12bdb2	..do....	....	Dr	200	3	1,900	.....		..	.....	.....	S	I	...	...	....
12bdb3	..do....	....	Dr	200	..	1,900	.....		..	.....	.....	S	I	...	...	....
15aba	Clarence Moos	1953	B	12	36	1,895	.....		..	2	.....	D,S	A	...	...	....
17bbb	Test hole 1556	1959	Dr	346	5	1,890	-1,544		..	.....	.....	T	...	...	...	L
18dadl	Gust Martel	1948	Dr	22	6	1,844	-1,822		Sd	.....	.....	S	A	...	...	....
18dad2	..do....	....	Dr	20	6	1,844	.....		Sd	.....	.....	D	A	...	...	....
19aaa	Test hole 1557	1959	Dr	199	5	1,765	-1,556		..	.....	.....	T	...	...	...	L
19adbl	William Ebel	1941	Dr	30	6	1,748	-1,718		Gv	8	.....	S	A	...	...	....
19adb2	..do....	....	Dr	28	6	1,748	.....		Gv	8	.....	D	A	...	...	....
20baa	Naoh Schlinger	1950	Dr	20	6	1,775	-1,755		Sd	10	.....	D,S	A	Sf	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
139-68 (Cont.)																
20dcc	Gust Deutscher	1940	Du	18	48	1,769	.....		Sd	13	.....	D,S	A	H	...	....
22aaal	Rudolph Kuck	1955	B	60	18	1,850	-1,790		Gv	20	.....	D,S	A	...	...	....
22aaa2	..do....	....	B	40	18	1,850	.....		Gv	30	.....	D	A	...	...	....
22ddal	Charles Schlaht	1943	Du	18	36	1,840	.....		Sd	17	.....	S	A	...	...	....
22dda2	..do....	1946	Dr	18	6	1,840	.....		Sd	16	.....	D	A	H	...	....
26dac	Ted Reister	....	Du	10	..	1,885	.....		Gv	8	.....	D,S	A	H	...	....
27acc1	Earl Schlaht	....	B	20	22	1,823	.....		..	5	.....	D	A	...	...	....
27acc2	..do....	....	Du	18	..	1,823	.....		..	.....	.....	S	A	...	...	....
28dad	Vernon Bader	1932	..	110	4	1,823	.....		..	10	.....	D,S	A	...	...	....
30aaal	Sam Oberlander	1956	B	65	24	1,818	-1,753		Sd	30	.....	D,S	A	H	...	....
30aaa2	..do....	1955	Du	14	48	1,818	.....		Gv	5	.....	N	A	Sf	...	....
30cd	Ewald Kramlich	....	Sp	...	..	1,768	.....		..	Flow	.....	D,S	A	...	...	....
31aaa	Test hole 1558	1959	Dr	199	5	1,780	-1,581	Qug	..	.....	.....	T	..	...	49	L,C
31cad	Elmer Martel	1935	Dr	27	8	1,823	-1,796		Sd	11	.....	D,S	A	H	...	....
31ddd	Test hole 1559	1959	Dr	315	5	1,918	1,609		..	.....	.....	T	..	...	...	L
32aaa	T. E. Hillius Jr.	1930	Dr	140	1.25	1,788	.....		..	.....	.....	D,S	A	Sf	...	....
34bdc	Duane & Christ Ray	1951	Dr	160	3	1,846	-1,686		Sd	40	.....	D,S	A	...	...	....
36cdb1	Richard Neukircher	....	Du	10	36	1,918	.....		Sd	1	.....	S	A	...	...	....
36cdb2	..do....	1957	B	80	24	1,918	-1,838		Sd	78	.....	D	I	Al	...	....
139-69																
2aaa	Test hole 1544	1959	Dr	315	5	1,790	1,491		..	.....	.....	T	..	...	...	L
3aad	Test hole 1543	1959	Dr	252	5	1,790	1,547		..	.....	.....	T	..	...	...	L
3daal	Bill Gross	1946	Dr	80	..	1,776	-1,696		Sd	40	.....	D,S	A	...	...	....
3daa2	..do....	....	Dr	504	..	1,776	.....		..	.....	.....	S	I	Sl	...	....
4caa	Test hole 1542	1959	Dr	178	5	1,750	1,585		..	.....	.....	T	..	...	...	L
6bdd1	John Kapp	1951	Du	13	24	1,753	.....		Sd	8	.....	S	A	...	...	....
6bdd2	..do....	....	Sp	...	72	1,753	.....		..	Flow	.....	D	A	...	...	....
6cb	Baptist Youth Camp	....	B	60	24	1,754	-1,694		Sd	.....	.....	D	A	...	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
139-69 (Cont.)																
8cbc1	S. E. Olson	1929	Dr	206	3	1,780	-1,574		Sd	.....	.....	S	A	Sf	...	....
8cbc2	..do....	1938	Dr	14	6	1,780	.....		Sd	11	.....	D	A	...	...	....
10ada	Otto Schmidt	....	Dr	150	4	1,765	.....		..	.....	.....	D,S	I	Sl	...	....
11ada	Jake W. Hofmann	....	Dr	85	2	1,812	-1,727		Sd	50	.....	D,S	A	H	...	....
13cbb	Karl Kolb	....	B	35	18	1,823	-1,788		Sd	35	.....	D,S	I	Sf	...	....
14add	Dan Kolb	1908	Du	28	36	1,810	-1,782		Sd	20	.....	D,S	A	Sf	...	....
14bda	Unknown	....	Du	11.5	48	1,790	.....		..	8.67	.....	N	...	...	...	....
18bdc	Albert Warnner	....	Dr	180	..	1,782	.....		..	6	.....	D,S	A	...	...	....
20bbb	Clarence Kleven	....	Dr	200	2.5	1,784	.....		..	40	.....	D,S	A	...	...	....
21dbb1	Gottlieb Docktor	1908	B	90	28	1,772	-1,682		Sd	40	.....	S	A	...	...	....
21dbb2	..do....	....	Sp	12	..	1,772	.....		..	Flow	.....	S	A	...	...	....
24ccc	David Schmidt	1940	Dr	33	6	1,790	-1,757		Sd	.....	.....	D,S	A	H	...	....
26aaa	Gust Bitterman	....	Dr	27	6	1,790	-1,763		Sd	10	.....	D,S	A	...	...	....
26bbc	Peter Bentz	....	Du	12	24	1,793	.....		Sd	.....	.....	D,S	A	...	...	....
26dca	Ferdinand Grenz	....	Dr	500	3	1,767	.....		..	.....	.....	D,S	A	Sf,Sl	...	....
27cda	Karl Kolb	1936	Du	22	32	1,830	-1,808		Sd	11	.....	D,S	A	...	...	....
28da1	Gottlieb Docktor	1948	B	24.8	36	1,832	.....		Sd	20.32	1958	D	A	...	...	....
28da2	..do....	1953	B	28	24	1,832	-1,804		Sd	8	.....	S	A	...	...	....
28da3	..do....	1948	B	15	24	1,832	.....		Sd	8	.....	S	A	...	...	....
29ddd1	Arnold Docktor	1943	Dr	200	..	1,850	.....		..	.....	.....	D,S	A	Sl	...	....
29ddd2	..do....	1932	Du	12	36	1,850	.....		Sd	10	.....	N	A	...	...	....
30add1	Raymond Oberlander	1947	Du	13	60	1,812	.....		Sd	1	.....	S	A	...	...	....
30add2	..do....	1950	B	15	6	1,812	.....		Sd	4	.....	D	A	H	...	....
31bab	Minni Fischer	....	Sp	...	..	1,870	.....		..	Flow	.....	S	A	...	...	....
32abb1	Rueben Dammel	1953	Du	20	30	1,830	.....		Sd	16	.....	S	A	...	...	....
32abb2	..do....	1949	B	22	6	1,830	-1,808		Sd	16	.....	D	A	...	...	....
33cbb	Test hole 1905	1961	Dr	430	55	1,840	1,415		..	.....	.....	T	...	...	...	L

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
139-69 (Cont.)																
33dac1	Phillip Guthmiller	....	Sp	8	30	1,882	.....		..	Flow	.....	S	A	...	...	....
33dac2	..do....	1951	B	28	24	1,882	-1,854		Sd	22	.....	D	A	...	...	....
140-62																
2aaa1	Gilmore Alfin	1955	Dr	212	3	1,480	.....		Gv	70	.....	D,S	A	H	...	....
2aaa2	..do....	1909	Du	70	24	.....	.....		Sd	63	.....	S	I	H	...	....
2cdb	Victor VanEvern	1951	B	50	24	.....	.....		..	42	.....	D,S	A	...	...	....
2dd	Howard Meikle	....	Du	50	48	.....	.....		Sd	.....	.....	D,S	A	...	...	....
3abc	Gust Matzek	....	Du	50	24	.....	.....		Sd	.....	.....	D,S	A	...	...	....
4dad1	Walter Scott	1952	B	40	24	.....	.....		Sd	36	.....	D	A	H	...	....
4dad2	..do....	....	Du	40	48	.....	.....		Sd	.....	.....	S	A	...	...	....
6ad1	Frank Weiss	1939	Du	45	45	.....	.....		Gv	29	.....	D,S	A	...	...	....
6ad2	..do....	....	B	60	12	.....	.....		Sd	60	.....	N	I	...	...	....
6cc	George Dunnwell	....	Dr	200	5	.....	.....		..	125	.....	D,S	A	...	...	....
7bdb	K. E. Stoppleworth	....	Dr	180	6	.....	.....		..	.....	.....	D,S	A	...	...	....
10add1	H. R. Meikle	....	Du	40	14	.....	.....		Sd	.....	.....	S	I	...	...	....
10add2	..do....	1936	Du	64	..	.....	.....		Sd	.....	.....	D	A	...	...	....
10dad	Dan Meikle	1941	Du	41	42	.....	.....		Sd	.....	.....	D,S	A	H	...	....
12ccb1	Joe Croft	....	Du	50	48	.....	.....		Sd	36	.....	S	A	H	...	....
12ccb2	..do....	1959	Dr	230	4	1,470	.....	Qvb	Sd	38	.....	...	A	Sf	...	896
12ccb3	..do....	....	Du	50	36	.....	.....		Sd	35	.....	D	A	H	...	....
14dcd	Howard Meikle	....	Du	33	..	.....	.....		Sd	.....	.....	S	A	...	...	....
15cc1	LeRoy Carlson	....	Du	30	36	.....	.....		Sd	18	.....	S	A	...	...	....
15cc2	..do....	1950	B	30	8	.....	.....		Sd	18	.....	D	A	...	...	....
16cbc1	Edwin Batsch	....	Dr	100	6	.....	.....		Sd	.....	.....	D,S	A	...	...	....
16cbc2	..do....	....	Du	8	36	.....	.....		Sd	Flow	.....	S	A	...	...	....
16ddd	LeRoy Carlson	....	Du	36	48	.....	.....		Sd	.....	.....	S	A	...	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
140-62	(Cont.)															
17bddl	Harold Calkins	1954	B	32	24	.....	.....		Sd	.....	.....	D,S	A	H	...	....
17bdd2	..do....	1956	B	42	10	.....	.....		Sd	36	.....	D	A	H	...	....
19aaa	Test hole 1366	1958	Dr	52	5	1,427	1,378		..	.....	.....	T	...	...	...	L
21aaa	Test hole 1365	1958	Dr	232	5	1,477	1,256		..	.....	.....	T	...	...	...	L
21aad	J. L. Bonham	....	B	28	36	.....	.....		Sd	20	.....	D	A	...	...	....
21cbcl	Ray Dolliver	1940	Dr	180	4	.....	.....		Fine sd	20	.....	D,S	A	Sf	...	....
21cbc2	..do....	1950	B	20	24	.....	.....		Gv	18	.....	S	A	...	...	....
21daal	Even Alfin	1936	Du	33	42	.....	.....		Gv	22	.....	S	A	...	...	....
21daa2	..do....	1946	Du	22	48	.....	.....		Gv	21	.....	D	A	...	...	....
21daa3	..do....	1952	Du	8	48	.....	.....		Sd	7	.....	S	A	...	...	....
23aaa	Test hole 1364	1958	Dr	336	5.	1,470	1,134		..	.....	.....	T	...	...	...	L
24aaa	Test hole 1594	1959	Dr	504	5	1,462	- 958		..	.....	.....	T	...	...	...	L
24bba	Graxen Bros.	1930	Dr	216	5	1,470	.....	Qvb	Sd	31	.....	D,S	A	...	42	C
25aba	A. J. X. Land Co.	....	Du	35	48	.....	.....		Sd	.....	.....	N	...	...	...	....
26cbb	Ollie Gray	....	..	...	..	1,485	.....		..	34.01	9-19-58	N	...	H	...	....
26cdc	..do....	1890	Du	40	36	1,480	-1,440		Gv	35.75	2-13-62	O	...	...	...	....
30bb	John Christenson	....	Dr	80	3	.....	.....		Sd	8	.....	D,S	A	...	...	....
33aad	Dale Dean	1951	Dr	236	6	1 473	.....	Qvb	Sd	42	.....	D,S	A	Sf	...	....
34aad	Edward Schlasser	1900	Du	45	48	1,482	.....		..	.....	.....	D	A	H	46	....
34bba	Al Dean	1952	Dr	230	6	1,485	.....	Qvb	..	55	.....	D	A	Sf	...	1206
35aba	Nellie Jones	....	..	36.5	30	1,480	.....		..	31.85	2-13-62	O	...	...	...	....
36bbb	Dale Dean	1930	Du	42	36	.....	.....		Sd	36	.....	D,S	A	H	...	....
140-63																
lcal	R. A. Reinpold	....	Du	40	36	1,472	-1,432		Sd	.....	.....	N	A	Al	...	....
lca2	..do....	....	Dr	275	4	1,472	.....		..	.....	.....	N	A	Sl	...	....
2bbl	Leon Peters	1956	B	40	22	1,500	-1,460		Sd	20	.....	D	A	H	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
140-63 (Cont.)																
2bb2	Leon Peters	1908	Dr	225	2.5	1,500	.....		..	30	.....	S	A	Sl	...	....
5bcb1	F. J. Wagner	1956	Dr	80	4	1,515	+1,435	Kp	Sh	.....	.....	D	A	Sf	48	C
5bcb2	..do....	1956	Dr	80	4	1,515	.....	Kp	Sh	.....	.....	S	A	Sf	44	C
6bbb1	Mars Jeske	1943	Dr	130	4	.....	.....		..	110	.....	S	A	H,Al	...	....
6bbb2	..do....	1947	Dr	120	4	.....	.....		..	100	.....	D	A	...	...	....
6dcc1	Sam Jeske	1946	Dr	140	3	1,512	.....		Sh	115	.....	N	A	Sl	...	....
6dcc2	..do....	1957	Dr	92	4	1,512	+1,420		Sh	13	.....	D	A	...	...	....
6dcc3	..do....	1926	Du	38	30	1.512	+1,474		Sh	20	.....	S	A	H	...	....
7ccc	Test hole 1351	1958	Dr	31	5	1,505	1,478		..	.....	.....	T	...	...	...	L
7dcd	H. E. Werner	1914	Dr	93	5	1,506	.....		..	35	.....	D,S	A	Sf	...	....
8ada	Edwin Schulz	1940	Du	30	..	1,510	-1,480		Sd	26	.....	D,S	A	H	...	....
8cbb1	Roy Wernar	1957	Dr	100	4	1,511	.....		..	.....	.....	D	A	Sf	...	....
8cbb2	..do....	....	Du	33	24	1,511	-1,478		Sd	.....	.....	S	A	H	...	....
8ccc	H. Nannenga	....	Dr	128	..	1,520	+1,392		Sh	19	.....	S	A	...	...	....
8dc1	Mrs. J. Victor	....	Dr	142	3	1,511	.....		..	.....	.....	D	A	...	...	....
8dc2	..do....	....	Du	35	48	1,511	-1,476		Sd	34	.....	S	A	...	...	....
9bcc	Oscar Lueck	....	Dr	35	..	1,508	-1,473		Gv	12	.....	D,S	A	...	...	....
10aad1	Robert Peters	1920	Dr	211	4	1,495	.....		Sh	20	.....	S	A	Sl	...	....
10aad2	..do....	1954	Dr	83	4	1,495	+1,412		Sh	18	.....	D	A	Sf,Al	...	....
10dcd	Herbert Vandergeest	1933	B	25	36	1,512	-1,487		Sd	19	.....	D,S	A	H	...	....
11cca	William Gasal	1954	Dr	83	4	1,490	+1,407		Sh	33	.....	S	A	Al,Sl	...	....
14cdc	Theo Bietz	....	Dr	200	..	1,500	.....		..	.....	.....	D,S	A	Al,Sl	...	....
14daa	J. E. Yager	1928	Dr	100	4	1,495	.....		..	.....	.....	S	A	...	...	....
15ccc	Otto Hertzfeldt	1937	Du	26	..	1,502	-1,476		Gv	12	.....	S	A	...	...	....
16bbd1	Reynold Roeske	1951	Dr	110	3	1,512	.....		..	18	.....	D	A	...	...	....
16bbd2	..do....	1915	Du	60	36	1,512	-1,452		Sd	30	.....	S	A	...	...	....
17bbb1	H. Nannenga	....	Dr	116	4	1,520	+1,404		Sh	.....	.....	D,S	A	...	...	....
17bbb2	..do....	....	Dr	142	..	1,520	.....		Sh	16	.....	D,S	A	...	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
140-63 (Cont.)																
18ccc	Test hole 1350	1958	Dr	52	5	1,500	1,457		..	.....	.....	T	...	...	...	L
19db	Jamestown Airport	....	Dr	80	..	1,492	.....		..	.....	.....	D	A	...	...	....
20ada	Sterling Krone	....	Dr	100	..	1,502	.....		..	.....	.....	D,S	A	...	...	....
20dcb	Walter Fetzer	....	Dr	100	2.5	1,501	-1,401		Sd	.....	.....	S	I	...	...	....
21add	Otto Hertzfeldt	1940	Du	65	42	1,502	-1,437		Gv	30	.....	D,S	A	Al	...	....
21ccc	Earl Haskin	....	Dr	100	3	1,500	.....		..	.....	.....	D,S	A	Sf	...	....
22ddb	Ira & Miles Fandrey	....	Dr	150	4	1,520	.....		..	.....	.....	D,S	A	...	...	....
24bbb1	Hans Vandergust	1956	Dr	130	3	1,490	+1,360	Kp	Sh	.....	.....	D	A	Sf	46	C
24bbb2	..do....	....	Du	30	24	1,490	-1,460		Gv	.....	.....	S	A	H	...	....
25ccd	Don Monek	1948	Dr	110	4	1,482	.....		..	.....	.....	D,S	A	...	...	....
25cdc	M. Monek	....	Dr	115	4	1,480	-1,365		Sd,Gv	90.29	8-30-46	D,S	A	H	...	....
26dcd	Joe Schmitt	....	Du	26	72	1,483	-1,457		Gv	19	.....	D,S	A	H	...	C
27ac	Carl Frey	1933	Du	28	30	1,500	-1,472		Sd	20	.....	D,S	A	H	...	....
27acc	Northern Pacific RR	1952	Dr	97	6	1,505	.....		..	.....	.....	D	A	Sf	...	....
27baa	M. W. Schall	....	Dr	110	3	1,530	.....		..	.....	.....	D,S	A	Sf	...	....
29bc1	Kerrn Berg	1949	Du	100	30	1,490	+1,390		Sh	91	.....	D,S	I	...	...	....
29bc2	..do....	....	Dr	150	2	1,490	.....		..	.....	.....	S	A	...	...	....
30acc	Sorkness & Larson	....	Dr	125	4	1,480	.....		..	.....	.....	S	A	H,Al	...	....
30dba	Harold Strandness	1954	Dr	160	3	1,488	.....		..	130	.....	D	I	Al,Sl	...	....
32dbb	Leroy Gasal	1946	Dr	150	3	1,490	.....		..	.....	.....	D,S	A	...	...	....
33bbb1	C. L. Madsen	....	Dr	152	4	1,500	.....		..	106	.....	S	A	H	...	....
33bbb2	..do....	....	Dr	154	3	1,500	.....		..	112	.....	D	A	H	...	....
34aab	Earl Amundson	....	Dr	150	6	1,501	.....		..	120	.....	D,S	A	...	...	....
34bcc1	Herman Frey estate	1918	Du	20	48	1,495	.....		Sd	15	.....	D	A	Sf	...	....
34bcc2	..do....	1941	Dr	149	3	1,495	-1,346		Sd	120	.....	S	A	...	...	....
35aab	Norman Frey	1916	Dr	143	6	1,481	.....		..	40	.....	D,S	A	...	...	....
36bba	Clarence Horsted	1938	Dr	120	2	1,487	.....		..	.....	.....	D,S	A	...	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
140-64																
1aaa	Test hole 1353	1958	Dr	31	5	1,510	1,493		..	.....	.....	T	..	...	...	L
1ddd	Test hole 1352	1958	Dr	31	5	1,510	1,484		..	.....	.....	T	..	...	...	L
4aa1	Howard Stable	....	Dr	250	4	1,500	+1,250		Sh	190	.....	S	A	Sf	...	....
4aa2	..do....	....	Dr	300	4	1,500	.....		Sh	.....	.....	S	A	H,Sl	...	....
4aa3	..do....	....	Dr	135	4	1,500	-1,365		Sd	.....	.....	D	A	Sf	46	....
5aad	Gordon Hartvikson	....	Dr	200	3	1,510	.....		Sh	160	.....	D,S	A	H,Sl	...	....
6ccc	Test hole 1361	1958	Dr	210	5	1,510	1,308		..	.....	.....	T	..	...	...	L
7ccd	Unknown	....	Du	29.5	48	1,522	.....		..	24.15	9- 3-58	N	..	H	...	....
8ccc	Test hole 1359	1958	Dr	178	5	1,500	1,325		..	.....	.....	T	..	...	...	L
9ccc	Test hole 1358	1958	Dr	199	5	1,510	1,316		..	.....	.....	T	..	...	...	L
9daa	A. Roeszler	....	Du	13.4	36	1,500	.....		Sd	11.05	8-27-46	D	I	H	...	....
9ddd1	Test hole 1357	1958	Dr	21	5	1,420	1,403		..	.....	.....	T	..	...	...	L
9ddd2	Test hole 1356	1958	Dr	21	5	1,420	1,403		..	.....	.....	T	..	...	...	L
10ddd	Test hole 1355	1958	Dr	73	5	1,510	1,444		..	.....	.....	T	..	...	...	L
11ddd	Hintz Bros.	1943	Dr	165	3	1,507	+1,342		Sh	95	.....	D,S	A	H	47	....
12acc	R. D. Joos	....	Dr	55	4	1,510	+1,455		Sh	40	.....	D,S	A	H	...	....
12baa	Test hole 1354	1958	Dr	105	5	1,500	1,478		..	.....	.....	T	..	...	...	L
14adc	C. Christenson	....	Dr	300	3	1,500	-1,200		Sd	39.49	8-27-46	D,S	A	H	...	....
14bbb	Frank Balster	....	Dr	164	3	1,512	+1,348		Sh	110	.....	D,S	A	H	...	....
17aad	Earl Bhrophy	1957	Dr	150	3	1,518	-1,368	Qvb	Gv	90	.....	D,S	A	H	47	....
17dd	Joe Grimes	....	Dr	147	4	1,510	+1,363		Sh	127	.....	D,S	A	H	47	....
18add	Art Perleberg	....	Dr	165	3	1,520	-1,355	Qvb	Sd	75	.....	D,S	A	H	...	....
20dd	Art Reile	1945	Du	25	40	1,517	-1,492		Cl	20	.....	D,S	A	H	...	....
21cdd1	Mrs. D. Jensville	....	Du	20	36	1,502	.....		Gv	10	.....	D,S	A	H	45	....
21cdd2	..do....	....	Du	38	36	1,502	-1,464		Gv	21	.....	D,S	A	...	...	....
23bcd	Henry Tahran	1961	Dr	1,572	4-2	.....	.....	Kd	Ss	Flow	.....	D	A	Sl	68	C
23ccc	Test hole 1592	1959	Dr	84	5	1,425	**1,351**		..	.....	.....	T	..	...	...	L
23ccd	Test hole 1593	1959	Dr	52	5	1,425	1,378		..	.....	.....	T	..	...	...	L
25aaa	Test hole 1349	1958	Dr	63	5	1,485	1,432		..	.....	.....	T	..	...	...	L

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
140-64 (Cont.)																
25bcc1	City of Jamestown	1909	Dr	85	12	1,395	.....		..	12	.....	PS	..	...	...	C
25bcc2	..do....	1909	Dr	87	10	1,395	.....		..	12	.....	PS	..	...	...	C
25bcc3	..do....	1909	Dr	84	10	1,395	.....		..	12	.....	PS	..	...	...	C
25bcc4	..do....	1909	Dr	85	10	1,395	.....		..	12	.....	PS	..	...	...	C
25bcc5	..do....	1925	Dr	80	16	1,395	.....		..	13	.....	PS	..	...	...	C
25bcc6	..do....	1928	Dr	80	16	1,395	.....		..	.....	.....	PS	..	...	...	C
25bcc7	..do....	1929	Du	36	300	1,395	.....		..	.....	.....	PS	..	...	...	C
25bcc8	..do....	1958	Du	57	300	1,395	.....	Qvo	Sd,Gv	14.18	2-12-62	N	..	...	48	C
25ccc	..do....	....	Dr	1,450	..	1,405	.....	Kd	Ss	Flow	.....	D	A	...	73	C
25cdd	Ottertail Power Co.	1949	B	98	16	1,410	.....		Sd,Gv	.....	.....	Ind	A	...	...	....
28abb	Frank Fletcher	....	Dr	29	6	1,494	-1,465		Gv	25	.....	D,S	A	Sf	...	....
29cdd	F. Deuitch	1946	Dr	47	4	1,530	-1,483		Gv	32	.....	D,S	A	H	46	....
30ccb	John Wahl	1953	Dr	240	3	1,531	+1,291	Kp	Sh	200	.....	D,S	A	Sf,Sl	46	C
31aad	B. L. Sagaser	....	Dr	160	3	1,530	-1,370		Sd	80	.....	D,S	A	H	...	....
31ccc	Test hole 1589	1959	Dr	95	5	1,530	1,440		..	.....	.....	T	..	...	...	L
33ccc	Test hole 1590	1959	Dr	84	5	1,525	1,451		..	.....	.....	T	..	...	...	L
33ddc	Odin Aus	1958	Dr	70	3	1,517	-1,447		Sd	37	.....	D,S	A	Sf	46	....
36cdb1	City of Jamestown	1960	Dr	90.0	16	1,390	.....		..	8.57	6- 9-60	PS	..	...	...	....
36cdb2	..do....	1960	Dr	87.2	16	1,390	.....		..	8.74	6-29-60	PS	..	...	...	....
36cdc	..do....	1960	Dr	82.5	16	1,392	.....		..	10.50	6-27-60	PS	..	...	...	....
36dbc	..do....	1960	Dr	104.0	16	1,393	.....		..	12.18	5-17-60	PS	..	...	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
140-65																
2bdb1	Frank Eddy	1953	Dr	160	3	1,517	.....		..	.....	.....	D	A	Sf	...	....
2bdb2	..do....	....	Dr	180	3	1,517	.....		..	.....	.....	S	A	...	...	....
3ab	Bernard Wagner	1947	Dr	169	3	1,541	.....		..	.....	.....	D,S	A	...	...	....
3daa1	W. C. Fairfield	....	Dr	160	3	1,537	-1,377		Sd	20	.....	D,S	A	Sf	...	....
3daa2	..do....	1953	Dr	160	3	1,537	.....		Sd	20	.....	D	A	Sf	...	....
4bb	Mrs. Ella Lang	1938	Du	70	48	1,521	.....		..	.....	.....	D,S	A	...	...	....
6ada	Bill Bennet	....	Dr	150	6	1,567	.....		..	.....	.....	D,S	A	...	...	....
6ccc1	Walter Robyt	1953	Dr	160	3	1,611	.....		..	.....	.....	D	A	...	...	....
6ccc2	..do....	....	Dr	158	3	1,611	.....		..	.....	.....	S	A	...	...	....
6ddd	Test hole 1360	1958	Dr	152	5	1,555	-1,403		..	.....	.....	T	...	...	...	L
9aac	Ed Schmuhl	1935	Du	38.6	48	1,517	.....	Qvo	..	27.82	8-14-58	S	A	...	43	C
10aaa	Test hole 1921	1961	Dr	94	5	1,540	1,468		..	.....	.....	T	...	...	...	L
10add1	Aaron Sornsen	....	Dr	178	2	1,547	.....		..	.....	.....	D	A	...	...	....
10add2	..do....	1884	B	70	24	1,547	-1,477		Sd	62	.....	S	A	...	...	....
12ccc	Walter Perlberg	....	B	55	24	1,537	.....		..	12	.....	D,S	A	...	...	....
13ccc	Mrs. Weber	1957	Dr	120	4	1,539	.....		..	.....	.....	D,S	A	...	...	....
16dcd	Paul Schutt	....	Dr	175	3	1,551	.....		..	.....	.....	D,S	A	...	...	....
21dcc1	Robert Clemens	1958	Dr	160	2.5	1,762	.....		..	.....	.....	D	A	...	...	....
21dcc2	..do....	....	Du	25	48	1,762	.....		..	.....	.....	S	A	...	...	....
22add	George Hoffmann	1908	Dr	165	2	1,547	.....		..	30	.....	D,S	A	...	...	....
22ba	..do....	1955	Dr	153	4	1,556	.....		..	30	.....	D,S	A	...	...	....
23ddd	Art Foesh	....	Dr	150	2.5	1,536	.....		..	60	.....	D,S	A	...	...	....
24dcd	John Mammenea	....	Dr	180	3	1,531	.....		..	15	.....	D,S	A	...	...	....
26cdd	J. R. Fairfield	....	Dr	180	3	1,547	.....		..	.....	.....	D,S	A	Sf	...	....
27dad	Foesh Bros.	1956	Dr	180	4	1,543	.....		..	30	.....	D,S	A	...	...	....
30ad1	Roy Torry	1946	Du	42	48	1,627	.....		Sd	.....	.....	D	A	...	...	....
30ad2	..do....	....	Du	45	48	1,627	-1,582		Sd	.....	.....	S	A	...	...	....
31dbc	R. D. Weatherly	1952	Dr	113	6	1,598	-1,485	Qvb	Sd	Flow	.....	D,S	A	...	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
140-65	(Cont.)															
32baa	Earl Weatherly	1956	B	24	24	1,570	-1,546		Sd	22.5	.....	D,S	A	H	...	....
32ddc	Test hole 1587	1959	Dr	157	5	1,575	1,427		..	.....	.....	T	...	...	...	L
34aaa	Anna Bauer	....	Dr	190	3	1,546	.....		..	80	.....	D,S	A	Sf	...	....
35bda	Melroy Johnson	1955	Dr	160	2	1,545	.....		..	.....	.....	D	A	...	...	....
36cdb	Luella Miller	1922	Du	45	36	1,525	-1,480		Sd	20	.....	D,S	A	H	...	....
36ddc	A. B. Lawrence	1912	Du	32	48	1,527	.....		..	13	.....	D,S	A	H	44	C
140-66																
5cbb1	Merle Allen	1923	Dr	500	2	1,806	.....		..	.....	.....	S	A	Sf	...	....
5cbb2	..do....	1953	B	30	24	1,806	-1,776		Sd	.....	.....	D,S	I	...	...	....
8bb	Arnold Benson	....	Dr	387	2	1,807	.....		..	168	.....	D,S	A	...	...	....
8dbd	James Bair	1941	Dr	205	2	1,792	.....		..	.....	.....	D,S	A	...	...	....
10dc	John Zimmer	1923	Dr	250	2	1,746	.....		..	.....	.....	D,S	A	...	...	....
11dda	Alvin Pfarr	1918	Dr	285	1.75	1,671	.....		..	185	.....	D,S	A	...	...	....
17add	William Pfarr	....	B	50	24	1,752	-1,702		Sd	.....	.....	D,S	A	...	...	....
17bb	Richard Schiely	1946	Dr	357	3	1,793	.....		..	70	.....	D,S	A	...	...	....
17ddd	Jacob Eberhardt	....	Dr	300	2	1,782	.....		..	15	.....	D,S	A	Sf	...	....
19aad	Irene Tarno	....	Dr	440	2	1,824	.....		..	40	.....	D,S	A	Sl	...	....
20bcd1	Ronald Rosemore	1957	Dr	184	4	1,812	-1,628		Sd	75	.....	D,S	A	,,.	...	....
20bcd2	..do....	....	B	15	24	1,812	.....		Gv	2	.....	N	A	...	...	....
21add1	Alden Stickel	....	Dr	400	3	1,741	.....		..	.....	.....	D,S	A	Sl	...	....
21add2	..do....	....	B	18	24	1,741	.....		Sd	.....	.....	N	...	...	...	....
22adc1	L. H. Kiner	1934	Dr	280	2	1,732	+1,452		Sh	120	.....	D,S	A	...	...	....
22adc2	..do....	1948	B	14	36	1,732	.....		Gv	8	.....	S	A	...	...	....
24ad1	Ray Eddy	....	Du	30	48	1,648	.....		Sd	.....	.....	N	...	...	...	....
24ad2	..do....	1957	Dr	47	24	1,648	-1,601		Sd	.....	.....	D	I	...	...	....
24bbc1	J. C. Anderson	1935	Dr	200	2	1,657	+1,457		Sh	94	.....	S	A	...	...	....
24bbc2	..do....	1955	Dr	235	3	1,657	.....		Sh	60	.....	D,S	A	...	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
140-66 (Cont.)																
24ccd	Carl Kunze	1922	Dr	285	3	1,655	+1,370		Sh	100	.....	D,S	A	...	...	....
29dcd	Walter Schielke	1918	Dr	401	2	1,842	-1,441		Sd	140	.....	D,S	A	...	...	....
31add	William Stalock	....	Dr	62	24	1,861	-1,801	Qug	Sd	55	.....	D,S	A	...	44	C
32ccc	Test hole 1583	1959	Dr	399	5	1,850	1,457		..	.....	.....	T	...	...	...	L
33dcc	Paul Wanzek	1937	Dr	350	2	1,815	-1,465		Sd	110	.....	D,S	A	...	...	....
34bcc	..do....	....	Dr	300	2	1,791	-1,491		Sd	130	.....	S	A	...	...	....
34ccc	Test hole 1584	1959	Dr	430	5	1,775	1,349		..	.....	.....	T	...	...	...	L
140-67																
2cca	Henry M. Ganser	1945	B	48	24	1,858	-1,810		Sd,Gv	25	.....	D,S	A	...	...	....
4bba	David Zimmerman	1947	Dr	138	2	1,827	-1,689		Sd	70	.....	D,S	A	...	...	....
6bba	Bernard Hieb	....	B	100	24	1,850	.....		..	35	.....	D,S	A	...	...	....
7ddb	Marvin Strand	1918	B	30	24	1,860	-1,830		Sd	.....	.....	D,S	I	...	...	....
9acd	D. Bietz	....	B	110	24	1,901	-1,791		Sd	.....	.....	D,S	I	...	...	....
10ccc1	Ralph McCarthy	1956	Dr	240	2	1,879	-1,639		Sd	3	.....	D	A	...	...	....
10ccc2	..do....	....	B	40	36	1,880	.....		Sd	25	.....	S	A	...	...	....
10ccc3	..do....	....	B	20	36	1,878	.....		Sd	10	.....	S	A	...	...	....
10ddc1	Sam Schock	1942	B	50	24	1,912	-1,862		Sd	.....	.....	D	I	Al	...	....
10ddc2	..do....	....	Sp	8	..	1,912	.....		..	Flow	.....	S	A	...	...	....
12bbb1	George Ganser	1954	Dr	420	..	1,844	.....	Kp	Sh	.....	.....	D	A	Sf,Sl	48	C
12bbb2	..do....	....	B	20	24	1,844	.....		..	.....	.....	S	A	...	...	....
17da1	John Gross	1955	B	58	24	1,902	.....		Sd	30	.....	D,S	A	...	...	....
17da2	..do....	1955	Dr	64	4	1,902	.....		Sd	32	.....	D,S	A	...	...	....
17da3	..do....	1955	Dr	66	4	1,902	.....		Sd	33	.....	D,S	A	...	...	....
17da4	..do....	1955	Dr	68	4	1,902	-1,834		Sd	34	.....	D,S	A	...	...	....
18aaa1	Nels Strand	1905	Du	15	..	1,850	.....		Sd	10	.....	D,S	A	...	...	....
18aaa2	..do....	1948	Du	20	..	1,850	.....		Sd	7	.....	D	A	...	...	....
18bc	Herb Scherbinski	....	B	65	24	1,875	-1,810		Sd	53	.....	D,S	A	...	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
140-67 (Cont.)																
19bcb	Alfred Odegaard	1932	Du	16	36	1,850	.....		Sd	11	.....	D,S	A	...	...	....
19ddb1	Henry Hockhalter	....	Dr	400	2	1,855	.....		..	50	.....	D,S	A	Sl	...	....
19ddb2	..do....	1954	B	31	24	1,855	-1,824		Sd	20	.....	D,S	A	...	...	....
20bbb	John Gross	1950	Dr	200	3	1,915	.....		..	.....	.....	D,S	I	...	...	....
22dbc	Archie Zimmerman	1943	Dr	400	2	1,885	.....		Sh	.....	.....	D,S	A	...	...	....
23ccc	Casimer Wanzic	....	Dr	400	2	1,870	-1,470		Sd	.....	.....	D,S	A	...	...	....
24baa	Ganser Estate	1952	Dr	420	2	1,855	.....		..	150	.....	D,S	A	Sf	...	....
26dca	James Campbell	....	B	50	24	1,872	.....		..	.....	.....	D,S	A	...	...	....
28aad	Soloman Schroeder	1902	Dr	150	2	1,850	.....		..	.....	.....	D,S	A	H	...	....
30ada	Dodge Guizzetti	1918	B	40	36	1,852	.....		..	.....	.....	D,S	A	...	...	....
31dcd	Daniel Schutz	1958	B	90	24	1,828	-1,738		Sd	3	.....	D,S	A	...	...	....
33daa	Emil Tehran	1947	Dr	159	4	1,900	.....		..	.....	.....	D,S	A	H	...	....
34ccc	Test hole 1581	1959	Dr	441	5	1,850	1,418		..	.....	.....	T	...	...	...	L
34cdc1	Jacob Reich	1952	B	28	36	1,858	-1,830		Sd	.....	.....	S	A	...	...	....
34cdc2	..do....	1948	Du	15	48	1,858	.....		Sd	11	.....	D	A	...	...	....
35bbb1	Paul Trautman	1947	Dr	370	2	1,857	-1,487		Sd	200	.....	D	A	Sf	...	....
35bbb2	..do....	....	Dr	220	2	1,857	.....		Sd	125	.....	S	A	Sf	...	....
35bbb3	..do....	1956	Dr	190	4	1,857	.....		Gv	100	.....	S	A	...	...	....
35ccc	Ed Trautman	....	Dr	100	3	1,885	-1,785		Sd	.....	.....	D,S	A	...	...	....
140-68																
1aba1	K. K. Moser	1957	B	34	24	1,865	-1,831		Gv	.....	.....	D	A	...	...	....
1aba2	..do....	....	Du	30	48	1,865	.....		Gv	.....	.....	S	A	...	...	....
2dcc	Unknown	....	B	29.4	24	1,867	.....		..	12.43	.....	N	...	...	...	....
4dcd1	Art Job	1950	Du	18	24	1,847	.....		Sd	.....	.....	D	A	...	...	....
4dcd2	..do....	1943	Dr	400	2	1,847	.....		..	.....	.....	S	A	Sl	...	....
5bbb	Test hole 1554	1959	Dr	472	5	1,940	-1,468		..	.....	.....	T	...	...	...	L

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
140-68 (Cont.)																
6dddl	Lee Heinrich	....	Dr	75	2	1,845	-1,770		Gv	30	.....	S	A	...	...	....
6ddd2	..do....	1952	Dr	75	2	1,845	.....		Gv	30	.....	D	A	...	...	....
7dad	Morris Sund	1954	B	49	18	1,815	-1,766		Sd,Gv	29	.....	D,S	A	...	...	....
8bbb	Test hole 1553	1959	Dr	189	5	1,830	1,641		..	.....	.....	T	...	...	...	L
8cbb	Ray Heuple	1900	Du	18	36	1,810	.....		Sd	12	.....	D,S	A	...	...	....
9dacl	G. F. Geissler	....	B	72	24	1,822	-1,750		Sd	40	.....	D	A	...	...	....
9dac2	..do....	....	Du	20	48	1,822	.....		..	Flow	.....	S	A	...	...	....
10aab	Paul Moser	....	B	100	24	1,845	-1,745		Sd	40	.....	D,S	A	...	...	....
10dcal	Don Reardon	1953	Dr	190	3	1,848	-1,658		Sd	10	.....	D,S	A	...	...	....
10dca2	..do....	1900	Du	20	36	1,848	.....		Sd	10	.....	S	A	...	...	....
11ddd	August Shoemaker	1916	B	130	24	1,892	-1,762		Cl	100	.....	D,S	A	...	...	....
14cdc	Lester Andres	....	Sp	7	36	1,892	.....		..	Flow	.....	D,S	A	H	...	....
16aadl	Adolph Eissinger	1951	B	40	24	1,825	.....		Gv	32	.....	D	A	...	...	....
16aad2	..do....	1918	B	60	24	1,825	-1,765		Sd	20	.....	S	A	...	...	....
17abcl	Ted Grusie	1953	Dr	379	4	1,833	.....		..	232	.....	N	...	...	...	....
17abc2	..do....	1934	Dr	481	4	1,833	.....		..	120	.....	N	A	...	...	....
18adal	C. F. Gieseke	....	Dr	150	2	1,864	.....		..	70	.....	D,S	A	...	46	....
18ada2	..do....	....	Dr	533	2	1,864	-1,764		Sd	100	.....	S	A	Sl	47	....
19aaa	Test hole 1552	1959	Dr	346	5	1,800	1,462		..	.....	.....	T	....	...	...	L
19babl	Mike Heit	....	Dr	90	..	1,765	.....		..	.....	.....	S	I	...	...	....
19bab2	..do....	1950	Du	18.3	48	1,765	.....		Sd	17.02	8- 4-58	D	A	H	...	....
20cbb	Test hole 1548	1959	Dr	231	5	1,795	-1,563	Cub	..	.....	.....	T	...	...	48	L,C
20dda	Peter H. Trautman	....	B	42	24	1,836	-1,794		Sd	12	.....	D,S	A	...	...	....
22cabl	G. A. Eissinger	1944	Du	24.7	18	1,827	.....		Sd	23.97	8- 1-58	D	I	H	...	....
22cab2	..do....	1936	Dr	32	..	1,827	-1,795		Sd	.....	.....	S	A	...	...	....
22dbc	R. W. Heinrich	1948	B	18	24	1,800	.....		Sd	7	.....	D,S	A	H	...	....
24aac	Ted Weixel	1905	Du	21	48	1,824	-1,803		Gv	17	.....	D,S	A	H	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
140-68	(Cont.)															
24cbb	A. J. Andres	1933	Dr	175	3	1,813	-1,638		Sd	.....	.....	D,S	A	...	...	....
25dbd	J. C. Van Eaton	....	Du	10.9	..	1,900	.....		Sd	3.0	8- 1-58	S	A	...	...	....
28dad1	Leon Moos	....	Du	30	48	1,820	-1,790		Gv	27	.....	D	I	...	...	....
28dad2	..do....	....	B	10	24	1,820	.....		Gv	6	.....	S	A	...	...	....
29bcc	Test hole 1547	1959	Dr	105	5	1,815	-1,710		..	.....	.....	T	..	...	...	L
29cbb	Christ Moser	....	B	64	24	1,822	.....		..	27.25	8- 4-58	S	A	H	...	....
29dad1	Ben Rohrer	....	Dr	30	..	1,771	-1,741		Gv	.....	.....	D	A	...	...	....
29dad2	..do....	....	Du	18	..	1,771	.....		Sd,Gv	.....	.....	S	A	...	...	....
30bba1	Wilbert Staiger	1945	Du	15	32	1,794	.....		Gv	4	.....	D,S	A	...	...	....
30bba2	..do....	1949	Dr	12	6	1,794	.....		Sd	10	.....	S	A	...	...	....
31aaa	Test hole 1549	1959	Dr	273	5	1,765	1,507	Qice	..	.....	.....	T	..	...	46	L,C
31add1	Glenn Reardon	1943	Du	12	..	1,788	.....		Sd	6	.....	D,S	A	...	...	....
31add2	Test hole 1551	1959	Dr	52	5	1,780	-1,728	Qice	..	.....	.....	T	..	...	44	L,C
31dcc1	Rudolph Grut	1942	Dr	13	8	1,791	.....		Gv	9.5	.....	D	A	...	...	....
31dcc2	..do....	....	Dr	13	8	1,791	.....		Sd,Gv	10	.....	D	A	...	...	....
31dcd	City of Medina	....	Du	18	18	1,790	.....		Gv	5	.....	PS	A	...	...	....
31dda	Test hole 1550	1959	Dr	63	5	1,790	-1,727		..	.....	.....	T	..	...	...	L
32bbc	City of Medina	1959	Dr	42.0	16	.....	.....		Sd,Gv	4.99	11-2-59	PS	A	...	...	....
32bdd	Arnes Martel	....	Du	25	32	1,801	-1,776		Sd	19	.....	D,S	A	...	...	....
32ccc1	City of Medina	1957	Dr	129	8	1,835	-1,706	Qug	Gv	.....	.....	PS	A	...	46	C
32ccc2	..do....	1948	Dr	127	6	1,835	.....	Qug	Gv	.....	.....	PS	A	...	47	C
32ccc3	Test hole 1546	1959	Dr	294	5	1,810	1,525		..	.....	.....	T	..	...	...	L
32dcc1	Gerhardt Reuer	....	Du	20	36	1,810	.....		Sd,Gv	.....	.....	S	A	...	...	....
32dcc2	..do....	....	Du	20	36	1,810	.....		Sd	.....	.....	D	A	...	...	....
33bba1	Leon Moos	....	Dr	16	8	1,789	.....		Gv	4	.....	D	A	...	...	....
33bba2	..do....	....	Dr	10	8	1,789	.....		..	6	.....	S	A	...	...	....
33dca	C. P. Eissinger	1922	Dr	140	6	1,845	-1,705		Gv	100	.....	D,S	A	...	...	....
34aac	M. E. Hollund	....	Dr	165	..	1,814	-1,649		Sd	.....	.....	D,S	A	...	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
140-68 (Cont.)																
34dcc	Henry G. Hoffmann	1921	Du	19	36	1,895	.....		Sd	12	.....	D,S	A	Sf	...	....
36ccc	Test hole 1577	1959	Dr	336	5	1,870	1,539		..	.....	.....	T	...	...	...	L
140-69																
1dca1	J. P. Hofmann	1930	Dr	200	1.5	1,860	-1,660		Sd	14	.....	D,S	A	H	...	....
1dca2	..do....	1956	Dr	200	1.5	1,860	.....		Sd	30	.....	D,S	A	H	...	....
2ba	Lester Ochsnes	1953	Sp	5.2	48	1,900	.....		Gv	Flow	7-28-58	D,S	A	...	...	....
3ccb	Albert Moos	1930	Dr	58	3	1,950	-1,892		Sd	31	.....	D,S	A	H	...	....
4bdd	Elmer Heupel	....	B	35	24	1,919	.....		..	.....	.....	N	...	...	...	....
10bcc1	Gallagher Ranch	1956	B	72	24	1,900	.....		..	.....	.....	S	A	...	...	....
10bcc2	..do....	1952	B	50	24	1,900	.....		..	.....	.....	D	A	...	...	....
11ba	Christ Moser	....	Du	17.8	..	1,932	.....		Sd	14.28	7-29-58	D,S	A	H	...	....
11dda1	Elmer Heupel	1952	Dr	200	2	1,822	.....		..	50	.....	D,S	A	A1	...	....
11dda2	..do....	....	Du	13.8	48	1,822	.....		..	5.93	7-28-58	N	...	...	...	....
13bcb	Wilbert Hofmann	....	Du	14.4	48	1,825	.....		Sd	7.91	7-29-58	D,S	A	...	...	....
14dad	Albert Wittmer	1920	B	75	24	1,820	-1,745		Sd	20	.....	D,S	A	H	...	....
17ddd1	J. S. Jablonski	1950	Du	20	48	1,850	.....		Sd	.....	.....	D,S	A	...	...	....
17ddd2	..do....	1903	Du	12	..	1,850	.....		Sd	.....	.....	D	A	...	...	....
18add1	John & Steven Mason	1941	Dr	230	2	1,830	-1,600		Sd	30	.....	D,S	A	...	...	....
18add2	..do....	1946	Du	10	48	1,830	.....		Sd	7	.....	D,S	A	H	...	....
20dad	J. H. Ostermen	....	Du	18	36	1,845	.....		Sd	11	.....	D,S	A	...	...	....
23ccd1	Marie Christianson	....	Dr	105	3	1,784	-1,679		Sd	10	.....	D,S	A	...	...	....
23ccd2	..do....	1928	B	30	36	1,781	.....		..	15	.....	S	A	...	...	....
25ad	Adam Staiger	1946	Du	13	32	1,800	.....		Gv	9	.....	S	A	...	...	....
27ba1	Adolph Pfahl	1938	Du	30	30	1,786	.....	Qug	Cl	22	.....	S	A	...	...	C
27ba2	..do....	1938	Du	40	40	1,786	-1,746		Sd	28	.....	D,S	A	A1	46	....
28ba	Unknown	....	Du	9.2	48	1,795	.....		..	2.69	7-29-58	N	...	...	...	....
29cbd	George Kleven	1955	Dr	150	3	1,818	.....		..	30	.....	D,S	A	H	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
140-69 (Cont.)																
30bdc	Mrs. N. Brodzinski	....	B	40	24	1,832	.....		Sd	37	.....	D,S	I	...	...	....
32dac1	Otto Wolfe	1953	Dr	80	4	1,765	-1,685		Sd	.....	.....	D,S	A	...	...	....
32dac2	..do....	1942	B	83	24	1,765	.....		..	.....	.....	N	..	...	...	....
35ddd1	Bill Gross	1931	Du	48	48	1,795	.....	Qug	..	18	.....	D,S	A	...	43	C
35ddd2	..do....	1932	Dr	419	..	1,795	.....		..	47.90	2-16-62	O	..	...	...	....
141-62																
1add	Henry Mutschlar	....	Dr	125	4	.....	.....		Sd	49.00	2-15-62	O	..	Sf	...	....
1ddd	Fred Karn	1955	B	36	18	.....	.....		Sd,Gv	15	.....	D,S	A	H	...	....
2ccb	Freddie Mutschlar	1929	Dr	160	3	1,480	.....		..	7	.....	D,S	A	Sf	...	....
4baa1	Henry Engels	1949	Dr	164	5	1,510	+1,346		Sh	90	.....	D	A	...	...	....
4baa2	..do....	1919	Dr	164	5	1,510	.....		..	.....	.....	S	A	...	...	....
4dcc1	George Howe	1929	Dr	200	3	1,500	-1,300		Sd	30	.....	D,S	A	Sf	...	....
4dcc2	..do....	1934	Dr	250	3	1,500	-1,250		Sd	250	.....	N	I	...	...	....
8acc	Unknown	....	Sp	...	..	.....	.....	Qvo	..	1.19	.....	D	..	...	48	C
8bdb	Unknown	....	Dr	100	4	1,495	.....		..	.....	.....	D,S	A	Sf	...	....
9abb	William Howe	....	Dr	170	3	1,495	.....		..	.....	.....	D,S	A	Sf	...	....
10caa	W. P. Ames	....	Du	9	48	.....	.....		Sd	4	.....	S	A	...	...	....
10cda	..do....	1942	B	40	36	1,475	-1,435		Sd	28	.....	D,S	A	...	...	....
11daa	Alfred Williams	1941	Du	35	36	.....	.....		Sd	20	.....	S	A	...	...	....
11dcc1	Clementsville Coop.	1961	B	41	24	.....	.....		Sd	25.98	2-15-62	D	A	...	...	....
11dcc2	..do....	1958	Dr	225	5	.....	.....		Sh	30	.....	N	..	Sf,Sl	...	....
11ddc1	Alfred Williams	....	Du	35	30	.....	.....		Sd	20	.....	D,S	A	...	...	....
11ddc2	Clementsville Coop.	1961	B	42	24	.....	.....		Gv	20.99	2-15-62	D	A	H	...	....
13cbb1	Francis Scott	1955	B	37	24	.....	.....		Sd	29	.....	D	A	...	...	....
13cbb2	..do....	....	B	90	24	.....	.....		..	60	.....	S	A	...	...	....
14ccc	Harold Blianski	....	B	40	24	1,505	-1,465		Sd	.....	.....	D,S	A	...	...	....
15aaa	Albertina Ackerman	....	Du	40	48	1,505	-1,465		Sd	.....	.....	D,S	A	...	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
141-62 (Cont.)																
15ccc	Steve Hayes	....	B	45	24	1,505	-1,460		Sd	27	.....	D,S	A	H	...	....
17ddd	Ed. A. Wajick	1932	Dr	147	..	1,510	.....		..	.....	.....	D,S	A	Sf	...	....
18cbb	Jack Martin	1919	Dr	300	3	1,490	.....		..	60	.....	D,S	A	Sf	...	....
20ada	John J. Joos	1950	Dr	120	5	.....	.....		..	.....	.....	S	A	H	...	....
21aac	Jerry Carlson	1957	Dr	120	4	.....	.....		..	.....	.....	D,S	A	Sf	...	....
22acc	Donald Thoms	....	Dr	160	6	1,505	.....		..	40	.....	D,S	A	Sf	...	....
24aaa	Test hole 1728	1960	Dr	220	5	1,492	1,286		..	.....	.....	T	...	...	...	L
24bba	Test hole 1725	1960	Dr	231	5	1,477	1,257		..	.....	.....	T	...	...	...	L
24cba	Ordean Stamnes	1938	Du	31	50	.....	.....		Sd	25	.....	D,S	A	H	...	....
24ccc	Test hole 1729	1960	Dr	115	5	1,493	-1,378		..	.....	.....	T	...	...	...	L
25ccd	Jess Stabenow	....	Dr	40	6	.....	.....		Sd	.....	.....	D,S	A	H	...	....
26bbb1	Elmer Lveck	1949	Dr	180	4	.....	.....		..	.....	.....	D	A	Sl	...	....
26bbb2	..do....	1924	B	40	36	1,490	-1,450		Sd	.....	.....	D,S	A	...	...	....
26ccd	Norman Johnson	1930	Du	40	30	1,500	-1,460		Sd	25	.....	D,S	A	H	...	....
27bab	Melvin Roemmick	....	Du	40	24	1,515	-1,475		Sd	.....	.....	D,S	A	H	...	....
28aad	Henry Eastman	1949	Dr	208	3	1,515	-1,307		..	60	.....	D,S	A	Sf,Sl	...	....
28daa	Clarence Ackerman	1919	B	90	18	1,510	-1,420		..	64	.....	D,S	A	H	...	....
29adb	Emil Mahlke	....	B	65	36	1,505	.....		..	40	.....	S	A	...	...	....
30aaa1	Elmer Roemmick	....	Du	40	36	1,500	-1,460		Sd	16	.....	S	A	...	...	....
30aaa2	..do....	....	Du	44	36	1,500	-1,456		Sd	20	.....	D	A	...	...	....
30ddd1	Mrs. R. Lorenz	1915	Dr	86	6	1,475	-1,389		Sd	74	.....	D,S	A	Sf	...	....
30ddd2	..do....	1954	Dr	130	3	1,475	-1,345		Sd	110	.....	D	A	Sf	...	....
32bbb	Test hole 1732	1960	Dr	84	5	1,475	1,402		..	.....	.....	T	...	...	...	L
32bcc1	Rudolph Reinpold	1946	B	29	24	1,485	-1,456		Sd	.....	.....	S	A	H	...	....
32bcc2	..do....	1948	Du	30	48	1,485	-1,455		Sd	.....	.....	D	A	H	...	....
33aaa1	Test hole 1724	1960	Dr	136	5	1,505	1,377		..	.....	.....	T	...	...	...	L
33aaa2	Chlarence Ackerman	1938	Du	41	36	1,505	-1,464		Sd	32	.....	S	A	...	...	....
35aaa	Test hole 1730	1960	Dr	189	..	1,496	1,320		..	.....	.....	T	...	...	...	L

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
141-62 (Cont.)																
35aab	John Lveck	1926	Du	42	36	.....	.....		Sd	30	.....	D,S	...	...	...	....
35bcc	Adwalt Scott	1959	B	40	24	1,510	-1,470		Sd	.....	.....	D,S	A	...	...	....
35cc	George Scott	1889	Du	42	48	1,500	-1,458		Sd	34	.....	D	A	...	...	....
141-63																
2dcc	Adrian Schwartz	1920	Dr	165	3.5	1,510	.....		..	65	.....	D,S	A	Al	...	....
4aadl	Ralph Boutch	1948	Dr	145	4	1,520	-1,375		Sd	.....	.....	D	A	...	...	....
4aad2	..do....	1934	Du	14	48	1,520	-1,506		Sd	.....	.....	S	A	...	...	....
4bca	Frank Cebula	....	Du	30	30	1,530	-1,500		..	26	.....	D,S	A	H	...	....
6ddd	Adolph Greshik	....	Dr	180	4.8	1,560	+1,380		Sh	.....	.....	D,S	A	...	...	....
7aab	..do....	....	Dr	180	4.5	1,560	+1,380		Sh	.....	.....	S	A	...	...	....
8cbbl	W. A. Eagleson	1945	Dr	120	3	1,535	+1,415		Sh	20	.....	D,S	A	Sf	...	....
8cbb2	..do....	....	Du	40	36	1,535	-1,495		Gv	36	.....	N	A	H	...	....
9add	R. E. Sarkowski	1950	Dr	90	3	1,515	.....		..	8	.....	D	A	Sf	...	....
9cbd	B. C. Hamkins	....	Dr	140	3	1,540	.....		..	30	.....	D,S	A	Sf	...	....
10cdd	John Gengler	1957	Dr	150	4	1,510	.....		..	18	.....	D,S	A	Sf	...	....
12bcb	Paul Szarkowski	....	Dr	150	3	1,500	-1,350		Sd	.....	.....	D,S	A	Sf	...	....
14bab	Ben Stout	....	Dr	130	4	1,505	-1,375		Sd	.....	.....	D,S	A	Sf,Sl	...	....
14cbb	Orville Karn	....	Du	35	48	.....	.....		..	.....	.....	D,S	A	Sl	...	....
15bbcl	Paul Szarkowski	1954	Dr	150	2	1,515	-1,365		Sd	.....	.....	S	A	Sf	...	....
15bbc2	..do....	1954	Dr	150	2	1,515	-1,365		Sd	.....	.....	D	A	Sf	...	....
15cbc	Donald Fowle	....	Du	40	24	1,510	.....		..	13	.....	D,S	A	...	...	....
17aab	George Genglee	1947	Dr	160	3	1,540	+1,380		Sh	28	.....	D,S	A	...	...	....
17cdd	E. A. Stempka	....	Dr	125	3	1,510	.....		..	10	.....	D,S	A	Sf	...	....
18adal	Frank Yatskis	1939	Du	35	48	1,510	-1,475		Sd	.....	.....	D	I	H	...	....
18ada2	..do....	....	Du	30	..	1,510	-1,480		Sd	.....	.....	S	A	H	...	....
20dad	Max Rudmick	....	Dr	80	4	1,520	.....		..	18	.....	D,S	A	...	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
141-63 (Cont.)																
22abb1	Lawrence Kropp, Jr.	1957	Dr	92	4	1,510	-1,418		Sd	60	.....	D	A	...	...	....
22abb2	..do....	....	Du	47	48	1,510	-1,463		Gv	27	.....	S	A	...	...	....
25bcb	Barney Peterson	....	Dr	90	4	1,490	-1,400		Sd	7	.....	D,S	A	...	...	....
26ccb1	Art Gray	1955	Dr	96	4	1,510	+1,414		Sh	81	.....	D,S	I	Al	...	....
26ccb2	..do....	....	Dr	73	3	1,510	.....		..	13	.....	S	A	Al	...	....
28dcc1	Lawrence Kropp	....	Dr	65	4	.....	.....		..	.....	.....	D,S	A	Al	...	....
28dcc2	..do....	1955	Dr	72	4	.....	.....		..	.....	.....	S	A	Al	...	....
29dcc	Mars Jeske	1952	Dr	130	4	1,510	.....		..	30	.....	D,S	A	H	...	....
33abb	Lawrence Kropp	1953	Dr	75	4	.....	.....		..	.....	.....	S	A	Al	...	....
34bca1	Ronald Legler	1910	Dr	50	3	.....	.....		..	.....	.....	S	A	H	...	....
34bca2	..do....	1955	Dr	78	4	1,515	.....		..	63	.....	D	A	Sf,Al	...	....
141-64																
4baa1	James Sorenson	1950	Dr	200	3	1,540	+1,340		Sh	80	.....	D,S	A	Sf	47	....
4baa2	..do....	....	Du	30	36	1,540	-1,510		Sd	25	.....	D	A	H	...	....
6aad	Unknown	....	Dr	145	3	1,545	-1,400		Sd	60	.....	D	A	Sf	...	....
6daa	Schaff Bros.	....	Dr	72	4	1,565	-1,493		Sd	54	.....	D,S	A	H	...	....
8baa	Peter & Alice Miller	....	Dr	205	3	1,565	+1,360		Sh	125	.....	D,S	A	Sf	...	....
9bbc	Ernest Sorenson	....	Dr	160	3	1,570	+1,410		Sh	70	.....	D,S	A	Sf	...	....
12add	Otto Skattum	....	Dr	120	4	1,520	+1,400		Sh	.....	.....	D,S	A	Sf	...	....
15cbb1	Robert Dunwoodie	....	Dr	125	3	1,525	+1,400		Sh	60	.....	D,S	A	Sf	...	....
15cbb2	..do....	....	Dr	130	..	1,525	+1,395		Sh	65	.....	S	A	Sf	...	....
16ccc	Neil Falck	....	Dr	180	2.5	1,540	.....		..	90	.....	D,S	A	Sf	...	....
17ccc1	Samuel E. Harr	....	Dr	245	3	1,540	-1,295		Sd	140	.....	D,S	A	H	...	....
17ccc2	..do....	....	Dr	245	3	1,540	1,270		Sh	140	.....	S	A	Sf	47	....
18bac	Harry Hulzworth	....	Dr	160	..	1,575	-1,415		Sd	.....	.....	D,S	A	H	46	....
19ddd	R. R. Paaft	....	Dr	320	3	1,530	-1,210		Sd	170	.....	D,S	A	H	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
14-64 (Cont.)																
21adb	Ed Kehl	....	Dr	187	3	1,530	+1,343		Sh	150	.....	...	A	Sf	47	....
25dcc1	Frank Solva	....	Dr	180	3	1,495	+1,315		Sh	60	.....	D,S	A	Sf	...	....
25dcc2	..do....	....	Du	30	36	1,500	-1,470		Sd	6	.....	S	A	H	45	....
27baa1	Norman Jeske	....	Dr	185	3	1,515	-1,330		Sd	90	.....	D,S	A	Sf	...	....
27baa2	..do....	1957	Dr	140	3	1,515	-1,375		Sd	80	.....	D,S	A	Sf	...	....
27baa3	Mrs. Jeske	....	Dr	175	3	1,515	-1,340		Sd	90	.....	D,S	A	Sf	47	....
28aad	Allen C. Green	....	Dr	...	3	1,520	+1,420		Sh	100	.....	...	A	...	...	....
30aaa	Loyd Kostelecky	....	Dr	340	3	1,530	-1,190		Sd	140	.....	D,S	A	H	...	....
32ccc	Walter Maas	....	Dr	60	5	1,490	-1,430		Sd	30	.....	D,S	A	Sf	...	....
35aad	Allen C. Green	....	Dr	200	3	1,510	+1,310		Sh	100	.....	D,S	A	Sf	...	....
14-65																
2caa1	Limesand	....	..	30	..	1,560	.....		..	16	.....	S	A	H	46	....
2caa2	..do....	....	Dr	130	3	1,560	+1,430		Sh	90	.....	D	A	Sf	47	....
4bbb	Stanley Powell	1920	Dr	290	4	1,570	+1,280		Sh	80	.....	S	A	Sf	45	....
4ddd	Art L. Miller	1913	Dr	125	3	1,525	+1,400		Sh	60	.....	D,S	A	Sf	46	....
5aaa	H. Boyle	1940	Dr	118	4	1,570	+1,452		Sh	50	.....	D,S	A	Sf	46	....
6aaa	Gene Smith	....	Dr	170	4	1,600	+1,430		Sh	150	.....	D,S	A	H	46	....
6ccd	Floyd Frederick	1949	Dr	200	..	1,650	+1,450		Sh	140	.....	D,S	A	Sf	...	....
8baa	Carl Smith	....	Dr	150	..	1,610	-1,460		Sd	.....	.....	D,S	A	H	47	....
10aa	Limesand	1957	Dr	185	3	.....	.....		Sd	100	.....	S	A	H	...	....
12cbb1	John Scheaffer	....	Dr	165	..	1,575	-1,410		Sd	.....	.....	D,S	A	H	...	....
12cbb2	..do....	....	Dr	165	3	1,575	-1,410		Sd	.....	.....	S	A	H	...	....
21ada	Martin Krueger, Jr.	....	B	44	24	1,515	-1,471		Sd	32	.....	D,S	A	H	46	....
21cdd	Unknown	....	Du	30	24	1,520	-1,490		Gv	25	.....	D,S	A	H	...	....
22ccb1	Martin Krueger	....	Du	30	36	1,525	-1,495		Sd	27	.....	D,S	A	H	47	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
11-65 (Cont.)																
22ccb2	Martin Krueger	....	Du	24	36	1,520	-1,496		Sd	21	.....	D,S	I	H	47	....
22ccb3	..do....	....	Du	21	38	1,520	-1,499		Gv	18	.....	D,S	A	H	47	....
23aaa	Paul Krapp	....	..	12	..	1,530	-1,518		Gv	6	.....	D,S	A	H	46	....
24aad	Reinhart Paaft	....	Dr	210	..	1,530	-1,320		Sd	160	.....	D,S	A	H	...	....
24bbbl	John Krapp	....	..	130	..	1,530	+1,400		Sh	100	.....	S	A	Sf	47	....
24bbb2	..do....	....	Du	20	..	1,530	-1,510		Gv	15	.....	D	A	H	45	....
25abdl	S. E. Bear	....	..	113	..	1,520	-1,407		Sd	60	.....	...	A	H	...	....
25abd2	..do....	....	..	180	..	1,520	-1,340		Sd	60	.....	S	A	H	47	....
26acc1	Midwest Land Co.	....	B	110	18	1,520	+1,410		Sh	100	.....	...	I	H	...	....
26acc2	..do....	1909	Dv	150	3	1,520	-1,370		Sd	.....	.....	D,S	A	H	46	....
26bbb	Test hole 1899	1960	Dr	73	..	1,530	1,473		..	.....	.....	T	..	...	...	L
27add	Herman Prahl	1914	Du	28	36	1,520	-1,492		Sd	20	.....	D,S	A	H	47	....
27bcd	Rudy Perleberg	....	Du	28	36	1,535	-1,507		Sd	20	.....	D,S	A	H	...	....
35ccd	Ralph Wagner	1915	Dr	158	..	1,540	1,382		Sh	118	.....	D,S	A	Sf	...	....
11-66																
laaal	Boyle Bros.	....	Dr	200	2-3	1,660	+1,460		Sh	100	.....	D,S	A	Sf	...	....
laaa2	..do....	....	Dr	386	3	1,660	+1,274		Sh	140	.....	S	A	Sf	46	....
2cdd	C. O. Olson	1958	Dr	275	..	1,740	-1,465		Gv	165	.....	D,S	A	H	...	....
2dcc	..do....	....	Dr	270	..	1,690	-1,420		Gv	170	.....	S	A	H	...	....
4abd	Test hole D-8	1961	B	38	2	.....	.....		Ti	25	12-6-61	T,O	..	...	...	....
4bdd	Test hole D-10	1961	B	22.5	1.25	.....	.....		Gv	2.89	12-6-61	T,O	..	...	...	....
6dca	Vernon Seibold	1958	B	22	30	1,785	-1,763		Sd	20	.....	D,S	I	H	...	....
8cba	J. E. Roundie	1937	Dr	450	2	1,800	+1,350		Sh	.....	.....	D,S	A	Sf	...	....
10aac	Victor Krakk	....	Dr	320	3	1,730	+1,410		Sh	240	.....	D,S	A	Sf	...	....
10dda	Bernard Krusell	....	Dr	270	4	1,760	-1,490		Gv	250	.....	D,S	A	...	...	....
16caa	E. Volkman	1961	Dr	194	4	1,790	.....	Qug	Sd	175	.....	S	A	...	...	....
16ccc	..do....	1961	Dr	209	4	1,760	.....	Qug	Gv	Flow	.....	S	A	...	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
141-66 (Cont.)																
17bcc	Test hole 1904	1961	Dr	399	5	1,775	1,391		..	.....	.....	T	...	...	...	L
17dcc	O. B. Olson	....	Dr	95	3	1,780	-1,685	Qug	Sd	.....	.....	D,S	A	H	...	....
17ddd	Test hole 1902	1961	Dr	348	5	1,760	1,424		..	.....	.....	T	...	...	...	L
18bcc	George Leyering	....	B	31	30	1,790	-1,759		Sd	22	.....	D,S	A	H	...	....
18cad	Arthur Roe	1951	Dr	175	3	1,810	-1,635	Qug	Sd	80	.....	D,S	A	Al	...	....
21aaa	Test hole 1903	1961	Dr	325	5	1,740	1,430		..	.....	.....	T	...	...	...	L
21bcb	Arnold Volkman	1941	Dr	90	3	1,765	-1,675	Qug	Fine sd.	40	.....	D,S	A	Sf	...	....
21cbc	Ewald Volkman	1941	Dr	60	3	1,765	-1,705	Qug	Coarse gv.	.....	.....	D,S	A	...	...	....
22add1	Richard Davis	....	B	16	24	1,715	-1,699		Gv	10	.....	D,S	A	H	...	....
22add2	..do....	....	Du	9	48	1,715	-1,706		Gv	6	.....	D	A	H	47	....
22cb	E. H. Stauffer	....	Du	10	24	1,730	-1,720		Sd	2	.....	S	A	H	...	....
26aaa	A. Schulz	....	Dr	140	..	1,720	-1,580		Sd	93	.....	D,S	A	H	...	....
26cab1	Wilmer Trout	....	Dr	80	3	1,710	-1,630		Gv	60	.....	D,S	A	H	47	....
26cab2	..do....	....	Dr	215	3	1,690	-1,475		Sd	110	.....	D	A	Sf	47	....
28abb	Unknown	....	Dr	90	3	1,765	-1,675	Qug	Sd	48	.....	D,S	A	H	...	....
28ccb1	E. H. Stauffer	1942	Dr	231	4	1,770	-1,539	Qug	Cb	61	.....	...	A	Sf	...	....
28ccb2	..do....	1938	Dr	472	4	1,770	+1,298		Sh	1520	.....	D,S	A	Sf	...	....
29add	Alva Perleberg	1918	Dr	180	3	1,795	-1,615	Qug	Gv	15	.....	D,S	A	Sf	...	....
32add	Edward Anderson	....	Dr	245	4	1,800	-1,555	Qug	Sd	100	.....	...	A	H	...	....
32ddd1	Augusta Anderson	....	Dr	378	4	1,820	-1,442	Qug	Sd	87	.....	D,S	...	H	...	....
32ddd2	Anderson Bros.	1922	Dr	395	2	1,820	.....		Sh	37.06	4-17-62	0	...	...	...	....
33ccd	Test hole 1898	1961	Dr	399	5	1,800	1,410		..	.....	.....	T	...	...	...	L
141-67																
3aac	Arthur Gienger	1938	Dr	300	2	1,870	-1,570		Sd	200	.....	D,S	A	H	...	....
4bba	G. Huzer	....	Du	14	36	1,835	-1,821		Gv	Flow	.....	S	A	H	...	....
7daa	Sam Hieb	....	Dr	60	2	1,865	-1,805		Sd	10	.....	D,S	A	H,Al	...	....
8add	Robert Jaff	....	Dr	300	3	.....	.....		..	.....	.....	...	A	...	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
141-67 (Cont.)																
8bcdl	Ben Hieb	1956	B	70	30	1,890	-1,820		Gv	20	.....	S	A	H	...	....
8bcd2	..do....	1959	Dr	107	3	1,890	-1,783	Aug	Sd	30	.....	D,S	A	Sf	44	C
11ddc	Gorman King	1956	B	100	22	1,785	-1,685		Sd	30	.....	D,S	A	...	...	....
12acb	V. L. Williams	....	Dr	78	4	1,775	-1,697		Sd	39	.....	D,S	A	H	...	....
12daa	Wallace Carlson	1948	Dr	315	..	1,790	-1,475		Gv	20	.....	D,S	A	H	...	....
13aadl	Test hole 1896	1961	Dr	148	5	1,810	-1,662		..	.....	.....	T	...	...	...	L
13aad2	Test hole 1897	1961	Dr	141	5	1,810	1,376		..	.....	.....	T	...	...	...	L
15aba	Archie Hieb	1959	Dr	190	2	1,845	-1,650		Gv	40	.....	D,S	A	...	...	....
17bbc	Unknown	....	Dr	65	3	1,830	-1,765		Sd	.....	.....	D,S	A	H	...	....
19add	Vernon Schelske	....	Dr	100	3	1,830	-1,730		Sd	.....	.....	D,S	A	H	...	....
21cbb	Unknown	....	B	24.7	24	.....	.....		..	18.49	6-22-60	S	A	...	...	....
24acb	Gidean C. Lang	....	Dr	190	3	1,780	-1,590		Sd	.....	.....	D,S	A	H	...	....
25dbc	Herbert Knopp	1953	B	60	24	1,810	-1,750		..	25	.....	D,S	A	H	...	....
27ccc	Andy Iszler	....	B	60	30	1,820	-1,760		Sd	.....	.....	...	A	H,Al	...	....
28ddd	E. H. Troutman	....	B	80	30	1,820	-1,740		Gv	48	.....	D,S	A	H	...	....
30bdd	Wilbert Moser	....	B	80	30	1,820	-1,740		Gv	16	.....	D,S	A	H	...	....
32bcc	Earl Hieb	....	Dr	80	4	1,830	-1,750		Sd	70	.....	D,S	I	H	...	....
34baa	Sam Lang	1927	Dr	95	24	1,810	-1,715		Gv	10	.....	D,S	A	H,Al	...	....
141-68																
2ccd	Ben Hochalter	1954	Dr	102	4	.....	.....	Aug	Sd	51.65	5- 8-60	D,S	A	H	43	C
4baa	Lawrence Beck	1958	Dv	150	2	.....	.....		Sd	85	.....	D,S	I	H	...	....
13ccb	Walt Moser	....	B	24	36	.....	.....		Sd,Gv	12	.....	D,S	A	H	...	....
18acal	Herman Klundt	1958	B	24	24	.....	.....		Sd,Gv	20	.....	D,S	A	Sf	...	....
18aca2	Walt Moser	....	Du	13	..	.....	.....		..	9	.....	...	...	...	...	....
22bad	Unknown	....	..	19.8	..	.....	.....		..	14.47	8- 8-58	S	A	H	...	....
26bddl	Russell Johnson	....	B	60	24	.....	.....		..	40	.....	D,S	A	H	...	....
26bdd2	..do....	....	B	40	24	.....	.....		..	36	.....	...	A	...	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
14S-68 (Cont.)																
26dbb	Graves	1926	B	32	24	.....	.....		Gv	29	.....	D,S	A	H	...	....
32aad	Benny Hofmann	1943	Du	8	3	.....	.....		Gv	4	.....	D,S	A	H	...	....
32daa	Edwin D. Hofmann	....	B	60	24	1,855	-1,795		..	46	.....	D,S	A	H	...	....
14S-69																
1ccc	Test hole 1893	1960	Dr	52	5	1,865	1,850		..	.....	.....	T	...	...	...	L
2adc1	Roth Bros.	....	B	30	24	.....	.....		Sd	14	.....	D,S	A	H	...	....
2adc2	..do....	....	B	21.8	24	.....	.....		Gv	14.79	8- 7-58	D	A	H	...	....
3bbb	Test hole 1901	1961	Dr	336	5	1,809	1,478		..	.....	.....	T	...	...	...	L
8dac	B & H Ranch	....	B	78	48	.....	.....		Gv	48	.....	S	A	H	...	....
14dddl	Franck Schumacher	1949	B	84	26	.....	.....		Fine sd.	72	.....	D	I	...	...	....
14ddd2	..do....	....	B	84	26	.....	.....		Sd	66	.....	D,S	I	H	...	....
16ddd	Test hole 1895	1961	Dr	336		1,745	1,420		....	.....	.....	T	...	...	...	L
18add	Gordon Reed	1955	..	30	..	.....	.....		Gv	15	.....	D,S	A	Sf	...	....
24bad	Carl Heinle	....	Du	9	48	.....	.....		Gv	5	.....	D,S	A	H	...	....
14S-62																
1aab	Edwin Weisz	....	Dr	65	4	.....	.....		..	.....	.....	D,S	A	H	...	....
2aaa	Adolph Liegman	....	Dr	164	4	.....	.....		..	.....	.....	D,S	A	Sf	...	....
2bbc1	Philip Altringer	1943	Du	21	32	1,520	-1,499		Sd	15	.....	S	A	H,Al	...	....
2bbc2	..do....	1954	Dr	40	6	1,520	-1,480		Sd	10	.....	D	A	H	...	....
4aaa	Harlon Michaelson	....	Du	50	36	1,535	.....		..	25	.....	D,S	A	H	...	....
5dcc	Test hole 1883	1961	Dr	189	5	1,545	1,360		..	.....	.....	T	...	...	...	L
6aac	Frank Scharf	....	Dr	250	6	1,545	+1,295		Sh	.....	.....	D,S	A	H	...	....
7adc	Robert LuLay	1909	Dr	195	6	1,575	-1,380		Sd,Gv	12	.....	D,S	A	Sf	...	....
7bba	Henry Reimers	1958	B	35	24	1,535	-1,500	Cug	Sd	20	.....	D,S	A	H	44	C
8bad	Charlie Reeck	1951	Dr	95	6	1,545	-1,450		Gv	40	.....	D,S	A	Sf	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
42-62 (Cont.)																
9ddd	W. M. Reimers	1949	Dr	243	4.5	1,560	-1,317		Gv	50	.....	D,S	A	Sf	...	....
12bbb	Albert Nutt	....	Dr	140	6	.....	.....		..	30	.....	D,S	A	...	...	....
17acb	Joe Cyscivski	1916	Du	26	36	1,530	-1,504		Sd	6	.....	S	I	H,Al	...	....
17dbd1	..do....	1906	Dr	168	4	1,525	+1,357		Sh	28	.....	D,S	A	Sf,Sl	...	....
17dbd2	..do....	1948	Dr	168	5	1,525	+1,357		Sh	28	.....	D,S	A	Sl	...	....
19dda	Adolph Krubeck	1954	Dr	180	4	1,545	1,365		..	.....	.....	D	A	Sf	...	....
21bcd1	L. P. Skrock	1918	Dr	85	5.5	1,540	-1,455		Sd	60	.....	S	A	H	...	....
21bcd2	..do....	1952	Dr	197	..	1,545	+1,348		Sh	98	.....	D	A	Sf	...	....
21ddc	Test hole 1802A	1960	Dr	73	5	1,458	1,405		..	.....	.....	T	...	...	...	L
21ddd	Test hole 1802	1960	Dr	52	5	1,453	-1,401		..	.....	.....	T	...	...	...	L
22bab1	Roy Genzel	1945	Dr	189	6	.....	.....		..	30	.....	S	A	Sl	...	....
22bab2	..do....	1952	B	40	24	.....	.....		Sd	30	.....	N	...	...	...	....
22bab3	..do....	....	Sp	4	48 x 144	1,465	-1,461		Sd	Flow	.....	D,S	A	H	...	....
22cdd1	Milton Genzel	1955	Dr	150	3	1,495	+1,345		Sh	15	.....	S	A	Sf	...	....
22cdd2	..do....	1955	Dr	150	3	1,495	+1,345		Sh	17	.....	D	A	Sf	...	....
24bbb	Andy Ketelson	1915	Dr	125	3	.....	.....		..	.....	.....	D,S	A	...	...	....
24dcc1	Don Osborne	1929	B	32	8	.....	.....		Gv	10	.....	D	A	H	...	....
24dcc2	..do....	1956	B	32	18	.....	.....		Gv	20	.....	D	A	H	...	....
24dcc3	..do....	....	Dr	90	4	.....	.....		Gv	20	.....	S	A	H	...	....
25aaa	Test hole 1801	1960	Dr	220	5	1,502	1,291		..	.....	.....	T	...	...	...	L
25abc	Adolph Krechik	....	Du	32	30	.....	.....		..	27	.....	D,S	A	H	...	....
28abd	B. J. Hopkins	....	Du	30	36	1,465	-1,435	Cu	Sd	.....	.....	D,S	A	H	44	C
28dad	Ernest Paasch	....	Dr	120	5	1,505	.....		..	35	.....	D,S	A	Sf	...	....
30aad	Ernest Anderson	1933	Dr	208	3	1,560	1,352		..	.....	.....	D,S	A	Sf,Al	...	....
30cbb	M. J. Albrecht	1929	Dr	88	6	1,515	+1,427		Sh	.....	.....	D,S	A	Sf	...	....
32bcd1	L. W. Reimers	....	Dr	90	6	.....	.....		..	.....	.....	D,S	A	H	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
142-62 (Cont.)																
32bcd2	L. W. Reimers	1953	B	48	18	1,465	-1,417		Gv	18	.....	D,S	A	Sf	...	....
34bac1	Francis Engels	1949	Dr	200	6	1,510	-1,310		Sd	100	.....	D,S	A	H	...	....
34bac2	..do....	....	Dr	150	..	1,510	-1,360		Sd	100	.....	D,S	A	H	...	....
34bac3	..do....	1930	Du	30	30	1,510	-1,480		Sd	.....	.....	N	...	...	...	....
34dad1	Henry Mutschlar	1903	Dr	55	2-2.5	1,490	-1,435		Gv	20	.....	S	A	H,Al	...	....
34dad2	..do....	1895	Dr	55	2-2.5	1,490	-1,435		Gv	20	.....	S	A	H,Al	...	....
34dad3	..do....	1954	Dr	180	4	1,490	+1,310		Sh	20	.....	D	A	Sf	...	....
35bcd	Harold Osborne	....	Dr	100	4	1,495	.....		..	25	.....	D,S	A	Sf	...	....
142-63																
1cbb	Ed Weener	1910	Dr	123	6	1,550	+1,427		Sh	30	.....	D,S	A	Sf	...	....
2bca	Emily Johnson	....	Dr	100	4	1,550	1,450		..	.....	.....	D,S	A	Sf	...	....
2cbc	Waren Demarcy	....	Dr	100	4	1,560	1,440		..	.....	.....	D,S	A	Sf	...	....
3aad	Dan Stuckle	....	Dr	60	6	1,545	.....		..	25	.....	D,S	A	H	...	....
4dad	Harold Leheke	1930	Dr	180	4	1,580	.....		..	30	.....	D,S	A	Sf	...	....
6bbc	Stanley Prodzinski	1919	Dr	170	3.5	1,515	+1,345		Sh	40	.....	D,S	A	Sf	...	....
7cbd1	Alex Prodzinski	1955	Dr	180	4	1,540	+1,360		Sh	.....	.....	D	I	Sf	...	....
7cbd2	..do....	....	Dr	180	4	1,540	+1,360		Sh	.....	.....	S	A	Sf	...	....
8cbc	Peter Koushkovski	1953	Dr	93	4	1,525	+1,432		Sh	48	.....	D,S	A	Sf	...	....
10aaa1	Gilbert Sodawasser	1924	Dr	117	6	1,570	+1,453		Sh	60	.....	D,S	A	Sf	...	....
10aaa2	..do....	1948	B	32	24	1,570	-1,538		Sd	28	.....	N	I	H	...	....
10dac	..do....	....	B	48	36	1,535	.....		..	32	.....	N	...	Sf	...	....
14bbb	Erwin Mueller	....	Dr	90	4	1,557	1,467		..	.....	.....	D,S	A	Sf,Sl	...	....
14cdd	Paul Albriecht	....	Dr	100	3	1,550	.....		..	80	.....	D,S	A	Sf,Sl	...	....
15bba	Lloyd Sodawasser	1950	Dr	90	6	1,555	1.465		..	.....	.....	D,S	A	Sf	...	....
16cda	Lena Lang	....	Dr	100	4	1,555	-1,455		..	.....	.....	S	I	...	...	....
18aaa	Leo Plodzinski	1945	Dr	65	5	1,535	-1,470		Sd	.....	.....	D,S	A	Al	44	C
19cba1	Joe LuLay	1957	Dr	110	4	1,590	+1,480		Sh	.....	.....	D	A	Sf	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
142-63 (Cont.)																
19cba2	Joe LuLay	....	Du	12	48	1,580	-1,568		Sd	6	.....	S	A	H	...	....
19ddd	Test hole 1805	1960	Dr	31	5	1,490	1,468		..	.....	.....	T	..	...	...	L
20acb	Roy Waltman	....	B	60	24	1,540	.....		..	.....	.....	D,S	A	...	...	....
22bdb1	Alex Poplinski	....	B	45	16	.....	.....		Sd	35	.....	S	I	H,Sl	...	....
22bdb2	..do....	....	Dr	98	6	1,560	+1,462		Sh	90	.....	D,S	A	Sf	...	....
22bdb3	..do....	1948	Dr	120	6	.....	.....		Sh	90	.....	S	A	Sf	...	....
22cdd	Test hole 1804	1960	Dr	94	5	1,448	1,363		..	.....	.....	T	..	...	...	L
24aad	Oscar Roeck	1949	Dr	153	6	1,535	-1,382		Gv	24	.....	D,S	A	Sf	...	....
24cdd	Adolph Stuff	1915	Dr	81	5	1,530	+1,449		Sh	27	.....	D,S	A	Sf	...	....
24ddc	M. J. Albrecht	1919	Dr	125	6	1,530	+1,405		Sh	50	.....	D,S	A	Sf	...	....
25aaa	Test hole 1803	1960	Dr	73	5	1,515	1.450		..	.....	.....	T	..	...	...	L
25cadl	John Krubeck	....	Dr	85	3	1,520	+1,435		Sh	.....	.....	D	A	Sf	...	....
25cad2	..do....	1947	B	65	12	1,520	+1,455		Sh	.....	.....	D	A	H,Al	...	....
25dadl	Joe Yunck	1947	Dr	110	5	1,510	+1,400		Sh	40	.....	D	A	Sf	...	....
25dad2	..do....	1910	Dr	100	3	1,510	-1,410		Sd	97	.....	S	I	Sf,Sl	...	....
28bca	Martin Albrecht	1954	Dr	83	4	1,490	-1,407		Sd	30	.....	D,S	A	Sf	...	....
28ddd	Peter Gruchalla	1949	Dr	152	4	1,550	+1,398		Sh	36	.....	D,S	A	Sf	...	....
30adal	Louis Kaiser	1919	Dr	190	3	1,530	+1,340		Sh	40	.....	S	A	Sf	...	....
30ada2	..do....	1955	Dr	170	4	1,430	+1,360		Sh	40	.....	D	A	Sf	...	....
30ccc1	Ray Readel	1957	Dr	127	3	1,510	+1,383		Sh	97	.....	D	A	Sf	...	....
30ccc2	..do....	1915	Dr	180	3	1,510	+1,330		Sh	135	.....	S	A	Sl	...	....
30ddd	Louis Kaiser	1920	Dr	208	4	1,540	+1,332		Sh	30	.....	D,S	A	Sf	...	....
31cdd1	Joe Gendler	....	Du	30	36	1,530	-1,500		Sd	28	.....	D,S	A	H	...	....
31cdd2	..do....	1959	Dr	200	4	1,530	+1,330		Sh	25	.....	D,S	A	Sf	...	....
31da	D. Wogciechowski	1912	Du	44	30	1,545	+1,501		Sh	32	.....	D,S	A	H	...	....
33ccc	Edward LuLui	1947	B	50	18	1,560	-1,510		Sd	30	.....	D,S	A	H	...	....
35dac	Christ Schack	1919	Dr	64	5	1,465	+1,401		Sh	.....	.....	D,S	A	...	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
142-64																
1bcc	A. E. Waychik	1959	Du	20	48	.....	.....		Sd	.....	.....	S	A	H,Al	...	....
2add1	..do....	....	Dr	180	4	.....	.....		..	.....	.....	D	A	Sf	...	....
2add2	..do....	....	Du	40	48	.....	.....		..	.....	.....	S	A	H,Al	...	....
2bdd1	C. D. Waychik	1945	Dr	125	4	1,510	.....		..	20	.....	D,S	A	Sf,Sl	...	....
2bdd2	..do....	....	Du	60	36	.....	.....		..	.....	.....	S	A	Al	...	....
2dad1	John Rudnick	....	Du	32	48	1,510	-1,478		Sd	29	.....	D,S	I	...	...	....
2dad2	..do....	....	Du	10	36	.....	.....		Sd	7	.....	D,S	I	...	...	....
6ccc	Adolph Neys	....	Du	30	36	1,535	-1,505		Gv	15	.....	...	A	H	...	....
7aad	John Meyer	....	Dr	125	3	1,535	+1,410		Sh	80	.....	S	A	Sf	...	....
7cbb	Ova	....	Dr	160	3	1,535	+1,375		Sh	.....	.....	D,S	A	Sf	...	....
8bbb	John Meyer	....	Dr	150	3	1,540	+1,390		Sh	90	.....	D,S	I	Sf	...	....
12bcc1	John J. Sabinosh	....	B	18	30	1,510	-1,492		Sd	.....	.....	D	A	H,Al	...	....
12bcc2	..do....	1953	Dr	125	4	1,510	+1,385		Sh	.....	.....	S	A	Sl	...	....
18ccc1	Rosenbaum	1957	Dr	135	4	1,550	-1,415	Qug	Sd	115	.....	D	A	Sl	47	C
18ccc2	..do....	....	Dr	150	..	1,550	+1,400		Sh	135	.....	D,S	A	Sl	...	....
18ccc3	..do....	1952	Dr	200	5	1,550	+1,350	Kp	Sh	180	.....	S	A	Sl	45	C
18ddd1	Lewis Neys	....	Dr	180	3	1,535	+1,355		Sh	80	.....	D,S	A	Sl	...	....
18ddd2	..do....	....	B	18	24	1,535	.....		Sd	6	.....	...	A	H	46	....
19aab	..do....	....	Dr	100	3	1,535	+1,435		Sh	.....	.....	S	A	H	...	....
20bbb	Test hole 1806	....	..	42	5	1,535	1,513		..	.....	.....	T	...	...	...	L
23aca1	Frankico Rudnick	1950	Dr	150	5	1,570	+1,370		Sh	90	.....	D,S	A	Sf	...	....
23aca2	..do....	1934	Du	20	36	1,520	-1,500		Gv	12	.....	S	A	H,Al	...	....
26ddb1	William Lees	1909	Dr	200	3	1,525	.....		Sh	100	.....	S	A	Sf	...	....
26ddb2	..do....	1947	Dr	150	5	1,525	+1,370		Sh	75	.....	D	A	Sf	...	....
28bdd	Art Pitts	....	Dr	150	3	1,530	+1,380		Sh	30	.....	S	A	Sf	...	....
28ccd	..do....	....	Dr	125	3	1,535	+1,410		Sh	50	.....	D,S	A	Sf	47	....
30cdd	B. B. Russell	....	B	160	..	1,555	-1,395		Sd	70	.....	...	A	Sf	46	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
142-64	(Cont.)															
31cdd	T. B. Fakk	....	Dr	280	..	1,555	+1,275		Sh	80	.....	D	A	H	...	....
32add1	Ed Rutgerson	....	Dr	130	3	1,560	+1,430		Sh	75	.....	D,S	A	Sf	47	....
32add2	..do....	....	Dr	180	3	1,560	+1,380		Sh	90	.....	S	A	Sf	...	....
33cdc	William Bitterman	1949	Dr	180	3	1,540	+1,360		Sh	.....	.....	D,S	A	Sf	...	....
34cac1	Christ Schuler	....	Dr	150	3	1,525	+1,375		Sh	46	.....	D	A	Sf,Al	...	....
34cac2	..do....	....	Dr	150	3	1,525	+1,375		Sh	46	.....	S	A	Sf,Al	...	....
35dac	J. C. Lees	1915	Dr	212	6	.....	.....		Sh	70	.....	D,S	A	Sf	...	....
142-65																
1bcb	Ray Tompkins	1940	Du	30	1.25	1,550	.....		..	20	.....	D	A	H	...	....
1ccb	Gene Tompkins	1920	Dr	500	2	1,555	.....		..	20	.....	D,S	A	Sf	49	....
2caa	Harry Larson	....	Dr	100	4	1,555	+1,455		Sh	.....	.....	D,S	A	Sf	47	....
3bbb	Oscar Knutson	1920	Dr	265	..	.....	.....		..	7.30	7-12-60	D,S	A	Sf,Sl	47	....
4daa1	Ernest Nohrenberg	1918	B	38	1.25	1,555	-1,517		Sd,Gv	15	.....	..	A	H	...	....
4daa2	..do....	1948	B	41	..	1,555	-1,514		Sd,Gv	15	.....	D	A	H	...	....
6aaa	C. E. Brady	....	Du	30	..	1,540	-1,510		Sd	22	.....	D,S	I	H,Al	...	....
6aab	..do....	....	Du	30	40	.....	.....		Gv	Flow	.....	D,S	A	H,Sl	...	....
10bbc	Bernard Steele	....	B	30	36	1,545	-1,515		Gv	25	.....	D,S	A	H,Al	45	....
12ccd	Art McKenzie	....	Dr	200	3	1,555	+1,355		Sh	70	.....	D,S	A	Sf	...	....
16daa	Mrs. B. Nohrenberg	....	Dr	100	..	1,535	+1,435		Sh	.....	.....	D,S	A	Sf	...	....
17aaa	H. Kulink	....	Du	18	36	1,525	-1,507		..	12	.....	D,S	A	H	...	....
17dcd	Test hole 1808	....	..	94	5	1,490	1,405		..	.....	.....	T	...	...	...	L
20baa1	Norman Oster	....	Dr	90	3	1,510	+1,420	Kp	Sh	60	.....	S	A	Sf, Sl	45	C
20baa2	..do....	....	Du	15	48	1,510	-1,462		Sd	10	.....	S	A	H	45	....
22cdd	Harold Andres	....	Dr	100	3	1,540	-1,440		Sd	70	.....	D,S	A	H	47	....
23bbb	Test hole 1807	....	Dr	105	5	1,545	1,450		..	.....	.....	T	...	...	...	L
24add	Sylvester Belskowski	....	B	30.5	24	1,555	-1,525		Sd	20.15	8-13-59	D,S	A	H	...	....
25ddd1	O. C. Russell	....	Du	25	36	1,560	-1,535		Sd	21	.....	S	A	H	45	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
142-65	(Cont.)															
25ddd2	O. C. Russell	....	B	150	12	1,565	-1,415		Sd	90	.....	D,S	A	Sf	47	....
26ddd	H. L. Andres	....	Dr	141	4	1,560	-1,419		Sd	51	.....	D,S	A	H	45	....
30ddd	Mrs. Ida Smith	....	Dr	100	4	1,595	+1,495		Sh	90	.....	D,S	A	H	47	....
32bbc	Ralph Smith	....	Dr	150	4	1,595	+1,445		Sh	140	.....	D,S	A	Sf	...	....
32daa	Ida Jokumson	....	Dr	120	4	1,575	+1,455		Sh	90	.....	D,S	A	Sf	46	....
35cddl	Edwin Dangs	....	Du	32	36	1,555	-1,523		Gv	25	.....	S	A	H	46	....
35cdd2	..do....	....	Dr	185	3	1,555	-1,370		Sd	95	.....	D,S	...	H	47	....
36daal	H. T. Falk	....	Dr	220	..	1,560	+1,340		Sh	150	.....	D,S	A	Sf	47	....
36daa2	..do....	....	Du	30	36	1,560	-1,530		Sd	22	.....	D	A	H	46	....
142-66																
laaa	Wayne Manley	....	Du	32	36	1,515	-1,485		Gv	20	.....	D,S	A	H,Al	...	....
8daa	Norbert Schulz	....	Dr	250	4	1,920	-1,670		Sd	.....	.....	D,S	A	H	...	....
11cd	Sherman Zink	1957	B	40	1.25	.....	.....		Sd,Gv	30	.....	S	A	H	...	....
13cbb	Ben Devine	....	Du	30	36	1,630	-1,594		Gv	20	.....	D,S	A	H	...	....
13cdd	Test hole 1809	1960	Dr	157	5	1,625	1,473		..	.....	.....	T	...	...	...	L
14acdl	Deitsch	....	Du	12	36	1,650	-1,638		Gv	5	.....	D,S	A	H	...	....
14acd2	..do....	....	Du	16	36	1,650	-1,634		Gv	4	.....	D,S	A	H	...	....
16ddd	Test hole 1810	1960	Dr	399	5	1,825	1,438		..	.....	.....	T	...	...	...	L
17cdbl	Charles Chadduck	....	Dr	35	2	1,875	-1,840		Gv	17	.....	D,S	A	H	...	....
17cdb2	..do....	....	Du	19	..	1,875	-1,856		Sd	4	.....	D,S	A	H	...	....
18dda	Easoph Harr	....	Dr	185	3	1,875	-1,690		Gv	105	.....	D,S	A	H	...	....
19abb	Test hole 1811	1960	Dr	451	5	1,850	1,406		..	.....	.....	T	...	...	...	L
22cca	Bgrden McGregor	....	Sp	18	..	1,800	.....	Qug	Fine sd.	Flow	.....	D,S	A	H	51	C
26aab	Arnold Krapp	....	Du	9	48	1,730	.....		Sd,Gv	Flow	.....	D,S	A	Sf	45	....
28bdbl	Raymond Homuth	....	Du	70	48	1,900	-1,830		Gv	65	.....	D,S	I	H	...	....
28bdb2	..do....	1958	Du	30	30	1,860	-1,830		Gv	18	.....	D,S	A	H	...	....
32aabl	Ronald Carlson	1958	Dr	75	2	1,825	-1,750		Sd	Flow	.....	D	A	...	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
32aab2	Ronald Carlson	....	Dr	70	3	1,825	-1,755		Sd	10	.....	D,S	A	H	...	....
32aba	Test hole D-6	1961	Au	21.4	1.25	.....	.....		Coarse sd.	3.75	10-6-61	T,O	..	...	...	....
32cac	Test hole D-1	1961	Au	19.3	1.25	.....	.....		Sd,Gv	14.60	1-12-61	T,O	..	...	...	....
32cbd	Test hole D-2	1961	Au	23.5	1	.....	.....		Sd,Gv	6.70	1-12-61	T,O	..	...	...	....
32daa	John Dunphy	1925	Dr	80	2	1,820	-1,740		Sd	42	.....	D,S	A	H	...	....
32dab	Test hole D-5	1961	Au	46.5	2	.....	.....		Ti	11.13	12-6-61	T,O	..	...	...	....
32dbc	Test hole D-3	1961	Au	44.0	2	.....	.....		Ti	25.98	1-12-62	T,O	..	...	...	....
142-67																
2bca	Daryl Heimann	....	Dr	20	4	1,800	-1,780		Gv	5	.....	D,S	A	H	...	....
3ddd	G. Sukut	....	B	40	30	1,870	-1,830		Sd,Gv	.....	.....	D,S	A	H,Sl	...	....
4abb	Arnold Pieske	....	Du	13	36	1,830	.....		Gv	Flow	.....	D,S	A	H	...	....
5cba	Leander Harr	....	B	15	20	1,835	-1,820	Qice	Coarse gv.	3	1959	D,S	A	...	46	C
8aaa	Richard Liberota	1959	Du	22	..	1,875	-1,853		Gv	20	.....	D,S	A	H	...	....
12cbb	Adam Kazak	....	Du	10	48	1,835	.....		Gv	Flow	.....	D,S	A	H,Al	...	....
14ccc	Test hole 1812	1960	Dr	462	5	1,790	1,335		..	.....	.....	T	..	...	...	L
17ddd	Test hole 1813	1960	Dr	420	5	1,825	1,411		..	.....	.....	T	..	...	...	L
20acc	Schelske	....	Du	28	48	1,800	-1,772		Gv	12	.....	D,S	A	H	...	....
21bcc	Donald Odenbach	1953	Dr	280	..	1,825	-1,545	Qug	Sd	40	.....	D,S	A	H	...	....
22abb	Fred Schuler	1906	..	49	..	1,820	.....		..	.....	.....	N	..	...	...	....
22baa1	..do....	1957	B	45	22	1,810	-1,765		Fine sd.	35	.....	D,S	A	H	...	....
22baa2	..do....	....	B	50	16	1,810	.....		..	.....	.....	S	A	...	...	....
23baa1	Art Moos	1959	Dr	260	..	1,830	-1,570	Qug	Sd	.....	.....	...	..	...	...	....
23baa2	..do....	1960	Dr	75	2	1,830	.....		..	.....	.....	D,S	A	H	...	....
28aa	A. Hazer	....	Dr	152	4	1,790	-1,638	Qug	Sd	20	.....	S	A	H	...	....
28ccb	..do....	....	Du	23	30	1,810	-1,787		Gv	10	.....	D,S	A	H	...	....
29acd	Elden Redlin	....	Du	14	36	1,825	-1,811		Gv	Flow	.....	S	A	H	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
14S2-67 (Cont.)																
32cdb	Conrad Redlin	....	Dr	160	3	1,875	-1,715		Sd	70	.....	D,S	A	H	...	....
33cbd	G. Hazer	....	Du	16	30	.....	.....		Gv	Flow	.....	D,S	A	H	...	....
14S2-68																
2aab	Kermit Rickford	....	Dr	212	4	.....	.....		Sd	30	.....	D,S	A	H	...	1,302
2ccc	L. J. Hotchkiss	....	B	40	24	.....	.....		Sd	.....	.....	D	I	H	...	....
5bdd	Martin Hauf	....	Du	12	36	.....	.....		Fine sd.	6	.....	D,S	A	H,Al	...	....
6add	Don Williams	....	Dr	100	3	.....	.....		Sd	95	.....	D,S	A	H	...	....
6dddl	Eugene Carter	....	B	70	24	.....	.....		Fine sd.	60	.....	D,S	A	H	...	....
6ddd2	..do....	1959	Dr	18	4	.....	.....		Gv	8	.....	S	A	H	...	....
6ddd3	..do....	....	Du	38	48	.....	.....		Gv	24	.....	S	A	H	...	....
6ddd4	Test hole 1819	1960	Dr	472	5	1,955	1,489		..	.....	.....	T	..	...	...	L
7abb	Richard Kutz	1920	Dr	180	4	.....	.....		Gv	160	.....	D,S	A	H	...	....
8add	O. Solheim	1958	Dr	404	3	.....	.....		Sd	300	.....	D,S	A	H	...	....
8dddl	Art Loose	1960	Dr	445	2	.....	.....	Kp	Fine sd.	225	.....	D,S	A	Sf	43	C
8ddd2	..do....	1928	Dr	442	4	.....	.....		Sd	.....	.....	N	I	...	...	....
8ddd3	..do....	1935	B	80	22	.....	.....		Cly.,gv	.....	.....	N	I	...	...	....
9bbb	H. Clark	....	B	18	24	.....	.....		Ti	.....	.....	S	I	...	...	....
10add	N. B. Martin	....	B	20	24	.....	.....		Sd	6	.....	D	A	H	...	....
10baa	C. B. Sargent	....	B	96	22	.....	.....		Sd	84	.....	D,S	..	H	...	....
10bbb	Test hole 1815	1960	Dr	525	5	1,999	1,480		..	.....	.....	T	..	...	...	L
11bbb	C. Hotchkiss	....	B	20	24	.....	.....		Sd	.....	.....	D,S	A	H	...	....
12abd	L. L. Fish	....	B	40	24	1,900	-1,860		Gv	28	.....	D,S	A	H,Al	...	....
12bba	Louis Bespflug	....	Du	8.61	48	1,910	.....		Gv	Flow	.....	D,S	A	H	44	670
12cdd	Test hole 1814	1960	Dr	399	5	1,919	1,534		..	.....	.....	T	..	...	...	L
14ccd	Lawrence Loose	1949	B	50	24	.....	.....		Sd	40	.....	D,S	I	H	...	....
15aad	Harry Krenz	1956	Dr	205	2	.....	.....		Sd	120	.....	D,S	A	H	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
14N-68 (Cont.)																
15bba1	Alvin Beck	....	B	30.7	18	.....	.....		Gv	19.01	6-28-60	D,S	A	...	...	....
15bba2	..do....	1953	B	22.9	18	.....	.....		Gv	8.61	6-28-60	S	A	H	...	....
17ccb	Unknown	1960	B	18.3	30	.....	.....		Gv	8.42	6-29-60	S	A	...	...	....
17daa	Franklin Hieg	....	B	50	18	.....	.....		Gv	4.01	.....	D,S	A	...	...	....
18aad	Les Mariner	1960	Dr	100.6	4	.....	.....		Sd	20.59	6-29-60	D,S	A	H	...	....
18ccc1	Mrs. Albert Deede	....	Dr	110	4	.....	.....		Sd	.....	.....	S	I	H	...	....
18ccc2	..do....	....	..	28	..	.....	.....		Gv	.....	.....	D	A	...	...	....
21bbb1	J. L. Hauff	....	Du	16.4	36	.....	.....		Gv	14.63	6-28-60	D	A	H	...	....
21bbb2	..do....	....	Du	18	30	.....	.....		Gv	.....	.....	S	I	...	...	....
27bba	M. Kuhn	....	B	30	30	.....	.....		Gv	26	.....	D,S	A	H	...	....
28dbd	Rudolph Veen	....	Du	12	..	.....	.....		Gv	4	.....	D,S	A	H	...	....
29aad	F. Hochhalter	....	B	20	24	.....	.....		Gv	5	.....	D,S	A	Sf	...	....
30aab	Unknown	....	B	21.1	24	.....	.....		Gv	12.35	6-29-60	D,S	A	H	...	....
34bbb	Marvin Fisher	1956	Dr	255	2	.....	.....		Gv	.....	.....	D,S	A	H	...	....
34cc	Kelly Beck	1935	B	40	24	.....	.....		Gv	5	.....	D,S	A	H	...	....
34dcc	Paul Beck	1954	B	30	36-24	.....	.....		Gv	20	.....	D,S	I	H	...	....
14N-69																
1ccc	Test hole 1816	1960	Dr	84	5	1,923	-1,839		..	.....	.....	T	...	...	...	L
1ccd	Test hole 1816A	1960	Dr	63	5	1,907	-1,844		..	.....	.....	T	...	...	...	L
2ddc	Test hole 1923	1961	Dr	400	5	1,928	1,543		...	.....	.....	T	...	...	...	L
3bba1	Unver Zagg	....	B	16	24	.....	.....		Gv	.....	.....	D	A	H	...	....
3bba2	..do....	....	B	20	24	.....	.....		Gv	15	.....	S	A	H	...	....
5cdd	Unknown	....	B	28.7	30	.....	.....		Gv	10.48	6-29-60	O	...	...	43	C
6dad	Merrill Peterson	1925	B	52	20	.....	.....	Qug	Coarse Gv	31.42	5- 8-60					
6ddd	Test hole 1819	1960	Dr	472	5	1,955	1,489		..	.....	.....	T	...	...	...	L
9ddc	Test hole 1924	1961	Dr	340	5	1,902	1,572		..	.....	.....	T	...	...	...	L
10aaa	Leonard Monson	....	Du	8.2	48	.....	.....		Gv	1.00	6-29-60	S	A	...	...	....
11bbb1	..do....	....	B	11.6	18	.....	.....		Gv	3.48	6-29-60	D,S	A	H	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
142-69	(Cont.)															
11bbb2	Leonard Monson	....	B	10.2	..	.....	.....		Gv	Flow	6-29-60	D,S	A	H	42	1,189
12dba	Ray Deede	1955	B	17	30	.....	.....		Gv	8	.....	D,S	A	...	...	....
15bbc	Test hole 1818	1960	Dr	63	5	1,886	-1,823		..	.....	.....	T	..	...	...	L
18adc	Unknown	....	Du	15.0	36	.....	.....		..	7.81	6-29-60	S	A	H	...	....
18bbb	Test hole 1817	1959	Dr	315	5	1,857	-1,549		..	.....	.....	T	..	...	....	L
18ccc1	Ole Sandvik	....	..	92	..	.....	.....		Gv	.....	.....	S	A	...	...	....
18ccc2	..do....	....	..	76	..	.....	.....		Gv	.....	.....	D,S	A	...	...	....
20baa	Test hole 1925	1961	Dr	353	5	1,889	-1,619		..	.....	.....	T	..	...	...	L
20ddd	Unknown	....	Dr	90	4	.....	.....		Gv	45	.....	D,S	A	...	...	....
24ccb	Ray Sabinash	1958	..	55	..	.....	.....		Gv	.....	.....	D,S	A	...	...	....
28daa	James Danphy	....	B	23	24	.....	.....		Gv	7	.....	D,S	A	...	...	....
28dad	Test hole 1894	1960	Dr	73	5	1,832	-1,759		..	.....	.....	T	..	...	...	L
30caa	Nathan Fields	....	Dr	40	4	.....	.....		..	.....	.....	D,S	A	...	...	....
32ccc	Peter Guthmiller	1948	Dr	90	4	.....	.....		Sd	.....	.....	D,S	A	H	...	....
33ddc	B & H Ranch	....	B	60	24	.....	.....		Fine sd	20	.....	D,S	A	H	...	....
34bbc	Leno Schulz	1949	B	43.2	24	.....	.....	Qp	Gv	18.58	8- 7-58	S	A	...	44	C
34cbc	Ernhold Hintz	....	B	63	24	.....	.....		Fine sd	30	.....	D,S	A	...	...	....
143-62																
1bcc	Test hole 1928d	1961	Dr	40	1.25	1,499	1,452		Sd,Sh	11.96	10-7-61	T,O	..	...	...	....
1ddd	Test hole 1872	1961	Dr	304	5	1,488	1,204		..	.....	.....	T	..	...	...	L
2cdc	Test hole 1928b	1961	Dr	60	5	1,504	1,470		..	.....	.....	T	..	...	...	L
2dcc1	Nick Clemons	....	B	60	24	.....	.....		Gv	8	.....	D,S	A	H,Al	...	....
2dcc2	Test hole 1928c	1961	Dr	75	1.25	1,503	-1,303		Sd,Gv	18.50	.....	T,O	..	...	...	L
2ddb	Test hole 1928a	1961	Dr	70	1.25	1,506	1,444		Sh	20.95	1-12-62	T,O	..	...	...	L
2ddc	Test hole E-2	1961	Au	39	1	.....	.....		Sd	15.65	1-12-62	T,O	..	...	...	....
2ddd	Test hole E-8	1961	Au	18	1	.....	.....		Gv	11.66	10-7-61	T,O	..	...	...	....
3cdc	Test hole 1873	1961	Dr	63	5	1,515	1,462		..	.....	.....	T	..	...	...	L
5caa	Palmer Syverson	....	Du	42	36	1,520	-1,478		Sd	22	.....	D	A	H	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
143-62 (Cont.)																
6baa1	Obert Somsen	1929	Du	40	36	1,525	-1,485		Sd	24	.....	D,S	A	H	...	....
6baa2	..do....	1957	Du	25	36	1,525	-1,500		Sd	22	.....	S	I	H,Al	...	....
6dcc	Test hole 1885	1961	Dr	105	5	1,527	1,432		..	.....	.....	T	..	...	...	L
7aba1	George Nelson	1944	Dr	183	6	1,525	+1,342		Sh	10	.....	D,S	A	Sf	...	....
7aba2	..do....	1919	Du	35	48 x 60	1,525	-1,490		Sd	20	.....	S	A	H,Al	...	....
7ccd1	Rose Stachlowski	1943	Dr	170	4	.....	.....		..	.....	.....	D,S	A	Sf	...	....
7ccd2	..do....	1914	Du	34	48	1,530	-1,496		Sd	.....	.....	S	A	H	...	....
8dbc	H. C. Chidley	1944	Dr	62	5	1,540	-1,478		Sd	40	.....	D,S	A	H	...	....
9abb	William Stachlowski....		Dr	85	6	1,530	-1,445		Gv	.....	.....	D,S	A	H	...	....
9bbb	Laudia Cherney	....	Dr	90	6	1,525	.....		..	.....	.....	D,S	A	Sf	...	....
10dad	Test hole 1928f	1961	Dr	310	5	1,503	-1,193		..	.....	.....	T	..	...	...	L
11aba	Test hole 1874	1961	Dr	530	5	1,501	1,033		..	.....	.....	T	..	...	...	L
12ada	John Wenzel	....	Du	35	48	.....	.....		Sd	29	.....	D,S	A	H,Al	...	....
12bbb	Test hole E-5	1961	Au	55	1	.....	.....		Gv	11.47	1-12-62	T,O	..	...	...	....
12bbc1	John Hockert	....	B	36	36	.....	.....		Sd	.....	.....	D,S	A	...	...	....
12bbc2	..do....	....	B	48	36	.....	.....		Gv	.....	.....	S	A	H	...	....
12bbc3	..do....	....	Dr	50	4	.....	.....		Sd	.....	.....	S	A	...	...	....
13bbb	Test hole 1928e	1961	Dr	220	5	1,482	-1,262		..	.....	.....	T	..	...	...	....
13dcb	H. O. Calgren	....	Du	35	36	.....	.....		Sd	.....	.....	D,S	A	H,Al	...	....
14aaa	B. J. Smith	1908	Du	40	30	.....	.....		Gv	32	.....	D,S	A	H	...	....
14bba	Mc Elroy Land Co.	1957	Dr	70	6	.....	.....		..	.....	.....	D,S	A	H	...	....
15bab	Alfred Backler	1932	Dr	180	5	1,525	-1,345		Sd	20	.....	D,S	A	Sf	...	....
16bba	Allan Schoelar	....	Dr	60	5	1,540	-1,480		Sd	.....	.....	D,S	A	H	...	....
18bcd1	Mrs. P. Bartkowski	....	Du	30	36	1,530	-1,500		Sd	.....	.....	S	A	H	47	....
18bcd2	..do....	....	B	30	36	1,530	.....		Sd	.....	.....	D	A	H	...	....
18cbc	Unknown	....	B	25.8	36	1,535	.....		..	15.86	8-11-59	O	..	...	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
143-62 (Cont.)																
20cdd1	Frank Soufir	1949	Dr	94	5	1,550	-1,456		Gv	47	.....	D,S	A	H	...	....
20cdd2	..do....	....	Dr	110	5	1,550	.....		..	70	.....	S	A	Sf	...	....
22abb	Richard Offner	1900	Du	45	36	1,525	-1,480		Gv	33	.....	D,S	A	H	...	....
28bbb	Fred Paasch	1940	Dr	86	4	1,530	.....		..	22	.....	D,S	A	H	...	....
29abb	Charles Dick	1949	Dr	196	4.5	1,565	+1,369		Sh	25	.....	D,S	A	Sf	...	....
29baa	Robert E. Dick	....	Dr	80	4.5	1,565	-1,485		Sd	65	.....	D,S	A	...	...	....
31aaa	Herman Kallgren	....	B	27.6	36	1,540	-1,512		Sd	10.45	8-11-59	D,S	A	H	...	....
32bda	Carl Palmer	....	Du	38	48	1,545	-1,507		Sd	8	.....	D,S	A	H	48	....
33abb	Irwin Larson	1916	Dr	40	6	1,534	-1,494		Sd	.....	.....	D,S	A	H	...	....
34aaa	Mrs. Podhosky	....	Du	65	48	.....	.....		..	.....	.....	D,S	A	H	...	....
34ccd	Merle Michaelson	....	Du	34	48	1,530	-1,496		Sd	.....	.....	D,S	A	H	...	....
36ccd	Frank Sheerer	1929	Du	30	36	.....	.....		Sd	25	.....	D,S	A	H	...	....
143-63																
1add1	Frank Kouschkowski	1925	Du	35	36	1,525	-1,490		Cl	15	.....	S	A	H,Al	...	....
1add2	..do....	....	Dr	92	4	1,525	-1,433		Fine sd	23	.....	D	A	H	...	....
1ccd	Mrs. E. Baumgartner	....	Du	43	36	1,535	-1,492		Gv	6	.....	D,S	A	H	...	....
2bdb	Fred Faulk	....	Dr	97	6	1,530	-1,433		Sd	25	.....	D,S	A	H	...	....
3cdc	Test hole 1875	1961	Dr	178	5	1,510	1,341		..	.....	.....	T	...	...	...	L
4adb	Peter Tanata	1921	Dr	98	4	1,530	-1,432		Sd	18	.....	D,S	A	...	...	....
5acb	Max & Ed Nogosek	1920	Dr	125	..	1,540	+1,415		Sh	25	.....	D,S	A	Sf	...	....
6ccc	Mrs. Irownfelter	1947	Dr	95	6	1,530	-1,435		Sd	.....	.....	D,S	A	Sf	...	....
7baa	Kenneth DeVillers	1949	Dr	114	..	1,535	.....		..	35	.....	D,S	A	H	...	....
8dad	Albert Siebert	1918	Dr	195	4	1,535	-1,340		Gv	15	.....	D,S	A	H	...	....
9bcb	Ray Neva	....	Dr	210	3.5	1,560	-1,350		Sd	.....	.....	...	A	H	...	....
10add	Joe Falk	....	Du	25	..	1,530	1,505		..	.....	.....	D,S	A	H	...	....
11bbb	Tony Bartkowski	....	Dr	160	6	1,560	1,400		..	.....	.....	D,S	A	...	...	....
11daa	Mrs. Jacob Bartkowski	...	Du	40	36	1,540	-1,500		Sd	35	.....	D,S	A	...	42	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
14-3-63 (Cont.)																
12ccd	Anton Falk	....	Du	36	36	1,540	-1,504		Sd	7	.....	D,S	A	H	...	....
14abc	Albert Falk	1917	Du	64	36	1,555	.....		..	54	.....	D,S	A	H	...	....
14baa	Harold Falk	1930	Dr	150	6	1,555	.....		..	40	.....	D,S	A	Sf	...	....
16baa	Louis Schwalk	1946	Dr	119	6	1,535	1,410		..	.....	.....	D,S	A	H	...	....
17dac	Paul Marsolek	....	Dr	160	..	1,570	-1,410		Sd	50	.....	D,S	A	Sf	...	....
19abal	Albert Marsolek	....	Du	18.5	36	1,500	.....		Sh	13.65	8-11-59	D	A	Sf	...	....
19aba2	..do....	....	Du	30	36	1,500	+1,470		Sh	.....	.....	..	A	Sf	...	....
21cdd	Ben Walsh	1946	Dr	190	6	1,555	+1,365		Sh	23	.....	D,S	A	Sf	...	....
22ccb	Peter Falk, Sr.	....	Dr	154	6	1,550	-1,401		Coarse gv	20	.....	D,S	A	...	...	....
23cbc	John J. Falk	1944	Dr	104	6	1,560	+1,456		Sh	16	.....	D,S	A	Sf	...	....
23cdd	Test hole 1884	1961	Dr	52	5	1,537	1,491		..	.....	.....	T	...	...	...	L
24dbd	A. W. Baumgarterner	1944	Dr	97	8	1,565	-1,468		Sd	20	.....	D,S	A	H	...	....
26bbd	Jacob Falk	1949	Dr	113	6	1,535	+1,422		Sh	25	.....	D,S	A	H	...	....
26cba	Mrs. M. Hooper	....	Du	47	36	1,550	+1,503		Sh	9	.....	D,S	A	H	...	....
26daa	Allen Van Winkle	1926	B	40	30	1,540	-1,500		Sd	20	.....	D,S	A	...	...	....
28aaa	Peter Falk, Jr.	1915	Dr	180	6	1,570	-1,390		Sd	80	.....	D,S	A	Sf	...	....
28cdd	Norman Vigesaa	1910	Dr	127	..	1,555	+1,428		Sh	30	.....	D,S	A	Sf	...	....
29acc	Ben Walsh	1947	Dr	79	6	.....	.....		..	.....	.....	D,S	A	Sf	...	....
30baa	Alex Prodgenaski	1942	Dr	85	6	1,530	-1,445		Sd	.....	.....	D,S	A	H	...	....
33abb	Walter Vigesaa	....	Du	40	..	1,560	-1,520		Cl	.....	.....	D,S	A	H	...	....
34abb	Peter Tanata	1910	Dr	190	6	1,560	-1,370		Gv	30	.....	D,S	A	Sf	...	....
36aaa	Clarence Bischoff	1920	Dr	287	6	1,545	-1,258		Sd,Gv	20	.....	D,S	A	Sf	...	....
14-364																
1bdb	Duane Neva	....	Dr	96	4	1,505	-1,409		Sd	30	.....	D,S	A	H	...	....
2add	Test hole 1876	1961	Dr	178	5	1,480	1,306		Sh	.....	.....	T	...	...	...	L
2cdb	John Hoeckle	....	Dr	100	4	1,505	-1,405		..	15	.....	D,S	A	H	...	....
3add	Leonard White	....	Dr	150	3	1,510	+1,360		Sh	50	.....	D,S	A	Sf	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
14 3-64	(Cont.)															
4dacl	L. D. White	....	B	30	36	1,470	-1,440	Oug	Sd	.....	.....	D	A	...	44	C
4dac2	..do....	1916	Dr	180	4	1,470	+1,290		Sh	.....	.....	S	A	Sf,Sl	...	....
4dbb	Edward Schlasser	1935	Du	13	36	1,530	-1,517		Gv	7	.....	D,S	A	H	...	....
7dbcl	Art Guenther	1926	Dr	160	4	1,500	+1,340		..	.....	.....	D,S	A	Sf,Sl	...	....
7dbc2	..do....	1920	Du	20	48	1,500	-1,480		Sd	16	.....	S	A	H	...	....
8cdc	Unknown	....	Dr	50	5	1,515	-1,460		Gv	.....	.....	D,S	A	H	...	....
8ddd	C. C. Kern	....	B	40	36	1,510	-1,470		Sd	.....	.....	D,S	A	H	...	....
10bbb	Test hole 1878	1961	Dr	52	5	1,465	1,424		..	.....	.....	T	..	...	...	L
12ccbl	A. B. Schwalk	1954	Dr	115	6	1,525	-1,410		Gv	50	.....	D,S	A	Sf	...	....
12ccb2	..do....	1945	Dr	70	6	1,525	-1,455		Gv	20	.....	D,S	A	Sf	...	....
13bba	Melvin Burleson	....	Dr	90	6	1,520	-1,430		Gv	.....	.....	D,S	A	H	...	....
14abbl	Frank Neva	1944	Dr	110	4	1,530	-1,420		Sd	40	.....	D	A	Sf,Sl	...	....
14abb2	..do....	1938	Dr	108	4	1,530	-1,422		Sd	.....	.....	S	A	Sf	...	....
14dad	Ernest Burleson	....	Du	60	48	1,525	-1,460		Gv	.....	.....	D,S	A	H,Al	...	....
16abbl	Orrie Hastings	1946	Dr	115	6	1,515	+1,400		Sh	113	.....	...	A	Sf	...	....
16abb2	..do....	1959	Du	15	48	.....	.....		Sd,Gv	11	.....	S	A	H	...	....
17aaal	Oscar Forsberg	1932	B	20	24	1,505	.....		Sd	15	.....	D	A	H	...	....
17aaa2	..do....	....	Dr	165	5	1,505	-1,340		Sd	.....	.....	S	A	Sf,Sl	...	....
24dcc	Vern Schrade	1954	Dr	125	4	1,540	+1,415		Sh	.....	.....	D,S	A	Sf	...	....
26bcb	Thomas Vigorson	1953	Dr	120	2	1,515	-1,395		Gv	50	.....	D,S	A	Sf	...	....
31ada	Lawson Posey	....	Dr	150	3	.....	.....		Gv	80	.....	S	A	Sf	...	....
14 3-65																
2bbbl	Paul F. Baker	1941	Du	50	30	1,575	-1,525		Sd	18	.....	D	A	H	...	....
2bbb2	..do....	1935	Du	30	30	1,575	-1,545		Sd	18	.....	D	A	H	...	....
2cccl	Grover C. Riebe	1926	Dr	260	4	1,615	-1,355		Sd	60	.....	S	A	H,Sl	44	....
2ccc2	..do....	1952	B	35	24	1,615	-1,580		Sd,Gv	8	.....	D	A	H	49	....
4ddd	Grover Steele	....	B	56	36	1,580	-1,524		Gv	29.80	7-14-60	D,S	A	H	...	....
6aba	Ed Brown	....	B	38.4	24	1,600	-1,562		..	19.90	7-13-60	...	A	...	...	....
6bad	Fred J. Wegman	....	B	35	36	1,615	-1,580		Gv	27	.....	D,S	A	H	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
14-65 (Cont.)																
7bbb	Test hole 1880	1961	Dr	178	5	1,585	1,412		..	.....	.....	T	..	...	...	L
7cbc	Lawson Posey	....	B	30	30	1,550	-1,520		Sd	20	.....	S	A	H	...	....
8bbd	James Bennett	....	B	50	36	1,605	-1,555		Sd,Gv	25	.....	D,S	A	H	...	....
8cda	Lawson Posey	1925	B	60	36	1,630	-1,570		Gv	40	.....	D,S	I	H	...	....
8dca	..do....	1950	B	60	36	.....	.....		Gv	40	.....	S	A	H	...	....
9daa	Test hole 1882	1961	Dr	262	5	1,600	1,344		..	.....	.....	T	..	...	...	L
10ccc	Viola Berg	1950	B	60	24	1,605	-1,545		Gv	40	.....	D,S	A	...	...	....
13aaa	Test hole 1877	1961	Dr	84	5	1,470	-1,386		..	.....	.....	T	..	...	...	L
13ada	Test hole 1877A	1961	Dr	136	5	1,465	1,333		..	.....	.....	T	..	...	...	L
14bcb	Don Wanner	....	B	38	24	1,570	-1,532		Sd,Gv	25	.....	D,S	A	Sf	46	....
15adb	G. H. Riden	1885	Dr	70	30	1,605	-1,535		Sd	57.05	7-12-60	S	..	H	...	....
16aad	Burns Hopewell	....	Dr	70	3	1,605	-1,535		Fine sd	50	.....	D,S	A	H	...	....
16dda	David Wilson	....	Du	32	18	1,565	-1,533		Gv	22	.....	D,S	A	...	43	....
17acc	Lawson Posey	1952	B	40	36	.....	.....		Gv	20	.....	S	A	H	...	....
18cbc1	Myron Hoeckle	1945	B	54	4	1,550	-1,496		Gv	50	.....	D	A	H	49	....
18cbc2	..do....	1914	Du	18	36	1,540	-1,522		Gv	14	.....	S	A	H	45	....
18ddd	B. I. Quade	1920	Du	12	36	1,550	-1,538		Gv	10	.....	D,S	A	H,Al	...	....
19dcd1	Ray Nordene	1955	Du	8	..	1,550	-1,542		Sd	6	.....	D	A	Sf	...	....
19dcd2	..do....	1956	B	45	24	1,550	-1,505		Sd	10	.....	S	A	Sf	...	....
21ddd	Bernie Allan	....	Du	50	36	1,570	-1,520		..	30	.....	D,S	A	...	...	....
22cdc1	Harry Van Erem	1948	Du	21	36	1,560	-1,539		Gv	17	.....	D	A	H	47	....
22cdc2	..do....	....	Du	25	24	1,560	-1,535		Gv	17	.....	S	A	H	45	....
23ccc	Unknown	....	..	24.3	24	1,550	-1,525		..	18.25	7-13-60	...	..	...	...	....
24ccc	Leo McCleery	1950	B	25	24	1,535	-1,510		Gv	13	.....	D,S	A	H	...	....
26cdc1	M. G. Andres	1935	Dr	118	5	1,555	+1,437		Sh	18	.....	S	A	H,Sl	45	....
26cdc2	..do....	1896	Du	22	30	1,555	-1,533		Sd	20	.....	D	A	H	...	....
27cdc	Paul Krapp	....	Du	20.5	36	1,555	-1,535		Sd	18.45	7-14-60	D,S	A	...	...	....
28bcd1	M. E. Dunwoodie	1955	B	50	30	1,550	-1,500		Cl	43	.....	D	I	H	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
143-65	(Cont.)															
28bcd2	M. E. Dunwoodie	....	Dr	75	4	1,550	.....		..	25	.....	S	A	Sf,Sl	...	....
28dac	Ole Peterson	1957	B	30	24	1,555	-1,525		Sd	21	.....	D	A	H,Al	...	....
29ddd1	Joe & Mary Horegsi	1950	Dr	140	3	1,555	-1,415		Coarse gv	30	.....	S	A	Sf,Sl	43	....
29ddd2	..do....	....	B	38	..	.....	.....		..	16	.....	N	...	Al	43	....
30bca	Roy Moran	....	..	200	..	1,530	+1,330		Sh	80	.....	D,S	A	Sf,Sl	...	....
32bba1	Orville Karn	....	B	25	36	1,540	-1,515		Sd	8	.....	S	I	H	...	....
32bba2	..do....	....	Du	20	36	1,540	-1,520		Sd	4	.....	D	I	H	...	....
32cdc	Unknown	....	..	22	24	1,545	-1,523		..	7.95	7-12-60	N	...	...	...	....
33dda	Clarence Knutson	1946	B	99	21	1,560	+1,461		Sh	40	.....	D	A	Sf,Sl	53	....
143-66																
4aaa	Test hole 1881	1961	Dr	147	5	1,570	1,519		..	.....	.....	T	...	...	...	L
10cdd	Clayton Kuderling	....	B	18	30	1,600	.....		Gv	9	.....	D,S	A	H	...	....
12aaa	Ed Braun	1950	B	33	..	1,585	-1,552		Gv	20	.....	D,S	...	H	...	....
12cbc	David McCleery	1940	B	75	..	.....	.....		..	.....	.....	S	A	H	...	....
18cdd	Test hole 1900	1961	Dr	231	5	1,650	1,432		..	.....	.....	T	...	...	...	L
19daa	Arnold Boomgaarden	....	B	37.4	30	1,670	-1,633		Sd	12.37	9-10-59	N	...	...	...	....
19dab	..do....	....	Du	31.8	30	1,670	-1,638		Sd	2.14	9-10-59	S	I	H	...	....
20ccc	Nyle Galdagher	....	Dr	68	6	1,700	-1,632		Gv	49	.....	D,S	A	H	...	....
22bbc	Clifford Johaenson	....	B	35	30	1,585	-1,550		Gv	15	.....	D,S	A	H	46	....
23dcc1	Mrs. Harry Wescom	....	Du	30	36	1,560	-1,530		Sd	21	.....	D,S	A	Sf	...	....
23dcc2	..do....	....	Du	30	36	.....	.....		Sd	16	.....	D,S	A	H	...	....
24bba1	Wilson McClaery	1956	B	72	24	1,590	-1,518		Sd	70	.....	D,S	I	H	45	....
24bba2	..do....	1941	Du	18	48	.....	.....		Gv	2	.....	S	A	Sf	41	....
25add	H. G. Paulson	....	B	20	36	1,520	-1,500		Sd,Gv	16	.....	D,S	A	Sf	...	....
25ddd	Sherman Zink	1957	B	15	36	.....	.....		Sd,Gv	5	.....	S	A	H	...	....
26abb	Mrs. Harry Wescom	....	Du	28	30	1,550	-1,522		Sd	19	.....	D,S	A	Sf	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
143-66 (Cont.)																
28bad1	John J. Diede	....	Dr	120	3	1,610	-1,490		Sd	100	.....	D,S	A	H	...	....
28bad2	..do....	....	B	39	24	1,610	.....		Sd	26	.....	D	A	H	...	....
30aad	John Johanson	....	Dr	128	3	1,740	-1,512		Sd	16	.....	D,S	A	H	...	....
30baa	Arnold Boomgaarden	....	B	30	30	.....	.....		..	20	.....	D,S	A	H	...	....
31abb1	Emma Dewey	....	B	60	24	1,750	-1,690		Sd	Flow	.....	D,S	A	H	...	....
31abb2	..do....	....	B	20	24	1,750	-1,730		Sd	15	.....	S	I	H	...	....
32baa	Wallace Deide	....	Du	15	40	1,750	-1,710		Sd	8	.....	...	I	H	...	....
34bcc	Unknown	....	Dr	15	24	1,650	-1,635		Sd	8	.....	D,S	A	H	...	....
36baa1	Sherman Zinke	....	..	30	36	1,545	-1,515		Fine sd	25	.....	D	A	H	...	....
36baa2	..do....	1958	B	40	30	1,545	-1,505		Sd	35	.....	S	I	H	...	....
143-67																
5ccb	Lars Hill	....	Dr	300	2	2,080	-1,780		Fine sd	.....	.....	D,S	A	H,Al	...	....
8acc	Alvin Zinke	1956	Dr	105	4	1,970	-1,865		Sd	.....	.....	D,S	A	H	...	....
11cca	Hesch & Altringer	1956	B	47	30	1,785	-1,738	Qmg	Gv	15	.....	D,S	A	...	43	C
14cbb	Clayton Jones	....	Du	16.2	48	1,760	-1,744		Gv	5.73	7-12-60	D	A	H,Al	...	....
14cdd	Ronald Muller	....	Du	18	..	1,720	-1,702		Gv	5	.....	D,S	A	H	42	....
15add	Clayton Jones	....	B	55.5	24	1,760	-1,705		Gv	2.10	7-12-60	S	A	H,Al	...	....
16ccd	Joe Anderson	....	Du	8	48	1,900	-1,892		Gv	Flow	.....	D,S	A	H	...	....
20ccb	Roy Hall, Jr.	1953	B	30	22	1,940	-1,910		Sd,Gv	11	.....	D,S	A	H	...	....
28bbd	Roy Hall, Sr.	1924	B	32	18	1,870	-1,838		Gv	25	.....	D,S	A	H	...	....
28dcc	Tom Dugan	....	B	48.8	24	1,850	-1,801		..	31.39	7-12-60	D,S	I	H,Al	...	....
30aad	W. A. Goodman	....	Du	11	48	1,935	-1,924		Gv	6	.....	D,S	A	H	...	....
30cca	Unknown	....	B	25.9	24	1,950	-1,924		..	19.76	7-12-60	S	...	...	...	....
32bac	Ed. D. Trautman	1930	Du	20	18	1,940	-1,920		Sd	6	.....	D,S	A	H,Al	...	....
33bdc	Walter E. Branning	....	Du	20	36	1,830	-1,810		Gv	Flow	.....	D,S	A	H	42	....
34bdc	Melhoff	....	Dr	80	4	1,820	-1,740		Gv	5	.....	D,S	A	H	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
143-68																
2cba	Al Hanson	1934	Dr	130	3	.....	.....		Gv	30	.....	D,S	A	H	...	....
4ccc	Otto Struxness	1920	B	96	24	.....	.....	Qug	..	.....	.....	D,S	A	...	43	C
5bcc	Vernon Struxness	....	B	60	18	.....	.....		..	30	.....	D,S	A	H,Al	...	....
6bcc	Ed Brunsch	....	B	18.8	..	.....	.....		Gv	13.70	7- 8-60	D,S	A	H	...	....
7aac	William Gust	....	B	26.2	24	.....	.....		Gv	21.13	7- 8-60	D,S	A	H	...	....
9aaa	Norman Uule	....	Dr	365	3	.....	.....		Sd	.....	.....	D,S	A	H	43	1260
11ada	G. Ley	1958	B	40	24	.....	.....		Fine sd	30	.....	D,S	A	H	...	....
15cba	Dorel H. Knuth	1930	Dr	80	4	.....	.....		Sd	66	.....	D,S	A	H	...	....
18aaa	Test hole 1892	1961	Dr	441	5	1,884	1,449		..	.....	.....	T	...	...	...	L
18ddd	Joe Johnston	1954	B	50	24	.....	.....		Gv	30	.....	D,S	A	H,Al	...	....
20aad	Paul Goter	1955	Dr	115	3	.....	.....		Fine sd	.....	.....	D,S	A	Sf,Al	...	....
20ccc	Kautzman	....	Dr	180	2	.....	.....		Gv	15	.....	D,S	A	H	...	....
21ddd	V. L. Cook	1947	Dr	200	3	.....	.....		Sd	35	.....	D,S	A	H	...	....
23cdd	George Bohl	1958	B	75	24	.....	.....		..	.....	.....	D,S	A	H,Al	...	....
24bcb	Ole Bohl	....	B	56	18	1,950	-1,894		Sd	49	.....	D,S	A	H	...	....
24cdd	Ivan Lage	....	B	41.4	24	1,930	-1,889		Gv	25.01	7- 7-60	D,S	A	H	...	....
26bdc	Jake Bohl, Jr.	1958	Dr	90	4	.....	.....		..	.....	.....	D,S	A	H,Al	...	....
29adc	Alfred Peda	....	Du	8	48	.....	.....		Gv	Flow	.....	D,S	A	H	44	....
32daa	Adam Hust	....	B	79.7	24	.....	.....		..	73.71	7- 8-60	D,S	I	H,Al	...	....
33bdd	Leonard Schultz	....	Dr	100	3	.....	.....		Fine sd	97	.....	D,S	A	H,Al	...	....
34aab	Stanley Johnson	1930	B	70	22	.....	.....		Sd	44	.....	D,S	A	H	...	....
143-69																
2abc	Albert C. Benson	....	B	28	24	.....	.....		Fine sd	14	.....	S	A	Sf	...	....
2add	..do....	....	B	68	16	.....	.....		Sd	38	.....	D,S	A	H,Al	...	....
3acb	Louise Leapaldt	....	B	35.5	..	.....	.....		Gv	17.18	6-30-60	D,S	A	H,Al	...	....
6aaa	Ferd. Zimmer	1959	B	53	24	.....	.....		Gv	15	.....	D,S	A	H,Al	...	....
6dba	R. D. Mariner	....	B	35	30	.....	.....		Gv	27	.....	D,S	A	H	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
43-69 (Cont.)																
10bb	Arnold Leapaldt	....	Dr	245	4	.....	.....		Sd	180	.....	D,S	A	H	...	....
10ddd	August A. Weber	1932	B	15.8	48	.....	.....		Gv	12.34	6-30-60	S	A	H	...	....
12ccd	Otto Hauf	....	Du	16	36	.....	.....		Gv	8	.....	D,S	A	H	...	....
14bbb	J. Hauf	....	B	18	48	.....	.....		Gv	17	.....	D,S	I	H	...	....
17aad	Howard Wagner	....	B	16.7	30	.....	.....		Gv	6.72	6-30-60	D,S	A	H,Al	...	....
18add	Unknown	....	..	48.6	36	.....	.....		..	23.65	6-30-60	O	...	...	...	....
18dbb	Summers	....	Dr	80	2.5	.....	.....		Sd	.....	.....	D,S	A	Sf	...	....
21dddl	Alvin Clark	....	B	16	22	.....	.....		Gv	8	.....	D,S	A	H	...	....
21ddd2	..do....	....	Sp	7	..	.....	.....		..	Flow	.....	S	...	...	...	....
24bdd	Bill Peda	....	B	68	30	.....	.....		Gv	25	.....	D,S	A	Sf,Al	...	....
24dda	..do....	....	Du	8.4	..	.....	.....		..	7.31	6-30-60	N	...	...	...	....
32dd	Unknown	....	B	24.8	30	.....	.....		Gv	14.10	6-29-60	S	A	H	39	....
44-62																
1bcc	John Krzoski	....	Du	43	24	.....	.....		Sd	28	.....	D,S	A	H	...	....
2bbbl	Jack Bannes	1939	Dr	109	6	1,500	-1,391		Sd	.....	.....	D,S	A	H	...	....
2bbb2	..do....	1963	Du	65	24	1,500	-1,435		Sd	65	.....	N	I	...	...	....
4bba	Joe Miklas	1949	Dr	91	6	1,520	-1,429		Sd	.....	.....	D,S	A	H	...	....
5daa	John Bond	....	Du	40	30	1,530	-1,490		Gv	30	.....	D,S	A	H,Al	...	....
6bad	Byron & Eribe Hop-wood	1938	B	40	30	1,520	-1,480		Sd	26	.....	D,S	A	H,Al	...	....
8aaa	Harold Tucker	1956	Dr	177	4	1,530	-1,353		Sd,Gv	40	.....	D	A	Sf	...	....
8ddd	Ralph Walker	1928	Du	28	36	1,520	-1,492		Sd	14	.....	D,S	A	H,Al	...	....
10dcbl	Mrs. T. Walker	1955	Dr	100	4	1,520	-1,420		Gv	5	.....	D,S	A	H	...	....
10dcb2	..do....	....	Du	35	36	1,520	-1,485		Sd	15	.....	N	...	...	...	....
14ddd	Ernest Wroalstad	1941	Du	48	36	.....	.....		Cl	18	.....	S	A	H,Al	...	....
15bbbl	Mrs. Myra Briss	1947	Dr	150	5	1,530	-1,380		Sd	55	.....	D	A	Sf	...	....
15bbb2	..do....	....	B	60	24	1,530	-1,470		Sd	.....	.....	S	A	H	...	....
16ccbl	Thorval Thorsgard	1956	Du	35	36	1,530	-1,495	Oug	Sd,Gv	30	.....	S	I	H,Al	43	C

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
144-62 (Cont.)																
16ccb2	Thorval Thorsgard	1909	Dr	118	6	1,525	-1,407		..	100	.....	D,S	I	H	...	....
16ccb3	..do....	1909	Du	45	..	1,525	-1,480		Cl	40	.....	D,S	I	Sf	...	....
17dc	John H. Backer	....	Dr	180	6	1,525	.....		..	.....	.....	D,S	A	Sf,Sl	...	....
18aab	Floyd Walker	1939	Dr	185	..	1,515	.....		..	20	.....	D,S	A	Sf	...	....
18dcc	Elmer Backer	....	Dr	65	4	1,515	.....		..	.....	.....	D,S	A	H	...	....
19bcb	Joe Walker	1949	Dr	187	6	1,510	-1,323		Gv	130	.....	D,S	A	Sf	...	....
19ddb	Robert Clark	1937	Du	30	36	1,510	-1,480		Gv	15	.....	D,S	A	H	...	....
20aaa	Donald Hoyt	1956	Dr	74	4.25	1,520	-1,446		Sd,Gv	16	.....	D,S	A	H	...	....
20ddb	Ben Hogarth	....	B	45	21	1,515	-1,470		Gv	40	.....	S	I	Sf	...	....
21daa	Test hole 1886	1961	Dr	42	5	1,512	1,479		..	.....	.....	T	...	...	...	L
22bcb	Allan Fletcher	1953	Dr	80	4	1,520	-1,440		Sd	70	.....	D,S	A	H	...	....
22ccb	Albert Schoelar	....	Du	30	36	1,515	-1,485		Sd	10	.....	D,S	A	H	...	....
23bcc	Arvid McKenzie	1954	Dr	175	5	1,505	.....		..	17	.....	S	A	Sf	...	....
26bbb	John Schoeler	1950	Dr	230	4	1,510	.....		..	.....	.....	D,S	A	Sf	...	....
26dcc	George Hamilton	1910	Du	42	48	.....	.....		Sd	32	.....	S	A	H	...	....
27bbb1	Lester Backer	1915	Dr	83	..	1,510	.....		..	.....	.....	D,S	I	Sf	...	....
27bbb2	..do....	1939	Du	30	48	1,510	-1,480		Sd	.....	.....	S	I	H	...	....
28aaa	Art Fletcher	....	Du	38	36	1,510	-1,472		Sd	.....	.....	D,S	A	H	...	....
29dda	Ben Hogarth	1954	Du	35	24	1,520	-1,485		Gv	29	.....	S	A	H	...	....
30add	Charles Lochow	....	B	40	36	1,520	-1,480		Sd	.....	.....	D,S	A	H	...	....
30ccb	Milton Lochow	1942	Dr	120	4	1,520	.....		..	.....	.....	D,S	A	Sf,Sl	...	....
32bbd	Glenn Hoyt	....	Du	40	36	1,515	-1,475		Gv	22	.....	D,S	A	H,Al	...	....
32ddd	Melius Lenning	....	Du	30	48	1,525	-1,495		Sd	15	.....	D,S	A	H,Al	...	....
33cbc	August Nelson	....	Dr	72	6	1,540	-1,468		Sd	50	.....	S	A	...	...	....
35bab	William Fletcher	....	Du	40	36	1,510	-1,470		Gv	.....	.....	S	A	H	...	....
36ccd1	Joseph Clarys	1959	B	35	24	.....	.....		Sd	20	.....	D	A	H	...	....
36ccd2	..do....	....	Du	35	48	.....	.....		Sd	.....	.....	S	A	H	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
144-63																
4ccb	P. J. Flochaug	....	Dr	110	6	1,535	.....		..	25	.....	D,S	A	Sf	...	....
5cddl	Gordon Bredahl	1919	Dr	180	6	1,510	.....		..	10	.....	S	A	Sl	...	....
5cdd2	..do....	1956	Dr	135	6	1,510	.....		..	10	.....	D	A	Sl	...	....
5cdd3	..do....	1934	Du	25	48	1,510	-1,485		Sd	13	.....	S	A	H,Al	...	....
8baa	..do....	....	B	35	24	1,510	-1,475		Sd	25	.....	S	A	H	...	....
10abbl	William Walker	1954	Dr	113	4	1,510	-1,397		Gv	.....	.....	D,S	A	Sf	...	....
10abb2	..do....	....	Du	45	36	1,505	-1,460		Sd	15	.....	S	A	H,Al	...	....
14adcl	Merle Anderson	....	Dr	110	4	1,510	-1,400		Sd	10	.....	D	A	H	...	....
14adc2	..do....	1911	Dr	80	4	1,510	-1,430		Sd	20	.....	D,S	A	Sf	...	....
18bba	Gilbert Holms	1955	Dr	187	6	1,540	+1,353		Sh	125	.....	D,S	A	H	...	....
18bcd	..do....	....	Du	45	36	1,535	-1,490		Sd	40	.....	S	I	H,Al	...	....
18daa	Ralph Norden	1949	Dr	133	4	1,535	+1,402		Sh	60	.....	D,S	A	Sf	...	....
21daa	Marvin Parson	1934	Dr	80	5	1,520	-1,440		..	.....	.....	D,S	A	H	...	....
24ada1	H. C. Helmstetler	....	B	50	24	1,520	-1,470		Sd,Gv	48	.....	S	A	H,Al	...	....
24ada2	..do....	....	B	50	24	1,520	-1,470		Sd,Gv	48	.....	S	A	H,Al	...	....
24ada3	..do....	1945	Dr	150	6	1,520	-1,370		Sd,Gv	.....	.....	D	A	H	...	....
26dcdl	Walter E. Johnson	1919	Dr	105	5	1,520	-1,415		Gv	18	.....	D,S	A	H,Al	...	....
26dcd2	..do....	1944	Dr	100	5	1,520	-1,420		Gv	18	.....	S	A	H,Al	...	....
27bdd	..do....	1949	Dr	105	5	1,510	-1,405		Gv	20	.....	S	A	H	...	....
28cdd	Jerome Lonki	1937	Dr	101	4	1,530	-1,429		Gv	22	.....	D,S	A	Sf	...	....
29dcc	George B. Neva	....	Du	38	36	1,540	-1,502		Sd,Gv	34	.....	D,S	I	H	...	....
30bbc	Lawrence Spitzer	1953	Dr	162	5	1,545	-1,383		Sd	40	.....	D,S	A	H	...	....
30ccd	Anthony Neva	....	Dr	50	6	1,520	-1,470		..	.....	.....	D,S	A	H	...	....
31bbb	Louis Nogosek	1953	Dr	127	4	1,520	+1,393		Sh	.....	.....	D,S	A	Sf	...	....
32aaa	Orville F. Karn	....	Du	13	36	1,535	-1,522		Sd	.....	.....	D,S	A	H	...	....
33ddb	Ted Jacobs	1912	Dr	90	5.5	1,545	-1,455		Sd	40	.....	D	A	Sf	...	....
34cdb	Alfred Schwalk	1955	Du	28	..	1,530	-1,502		Sd	.....	.....	D,S	A	H	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
144-64																
1ccd	Robert Sherlock	....	Dr	80	6	1,540	-1,460		Gv	20	.....	D,S	A	...	...	....
4adc	Mencher Stenslie	....	Du	16	36	1,503	-1,487		Sd	10	.....	D,S	A	H	...	....
4ddc	Edwin Walsky	....	B	45	30	1,535	-1,490		Sd	40	.....	D,S	A	H	...	....
10bcb	LaDell Kollman	....	B	32	42	1,530	-1,498		Gv	25	.....	D,S	A	Sf	...	....
11dcc	A. S. Ekren	1924	Dr	165	5	1,535	.....		..	30	.....	D,S	A	Sf	...	....
11ddc	L. J. Holm	1956	Dr	120	4	1,540	.....		..	24	.....	D,S	A	...	47	....
12dda	Test hole 1887	1961	Dr	115	5	1,540	1,431		..	.....	.....	T	...	...	...	L
12ddc1	Carl Simonson	1949	Dr	75	4	1,550	-1,475		Sd	10	.....	S	A	H	...	....
12ddc2	..do....	1949	Dr	85	4	1,550	-1,465		Sd	20	.....	S	A	H	...	....
12ddc3	..do....	1949	Dr	101	4	1,550	-1,449		Sd	20	.....	D	A	H	...	....
12ddc4	..do....	1919	Du	40	48	1,550	-1,510		Sd	20	.....	S	I	H,Al	...	....
13bba	Carl O. Carlson	1943	B	50	36	1,550	-1,500		Sd,Gv	44	.....	S	A	H	...	....
13bda	L. M. Berg	1947	Du	44	24	1,535	-1,491		Cl	20	.....	D,S	A	H	...	....
14dad	Carl Holm	....	B	48.6	36	1,570	-1,521		Sd	45.20	9- 2-59	D,S	A	H	...	....
15aaa	Julius Wolsky	1951	Dr	73	6	1,545	-1,472		Sd	48	.....	D,S	A	...	...	....
15cbb1	Mrs. A. Spitzer	....	Dr	120	4	1,510	.....		..	80	.....	D,S	A	Sf	...	....
15cbb2	..do....	....	Dr	90	4	1,510	.....		..	45	.....	S	A	Sf	...	....
16abb	H. M. Ekren, Jr.	1928	Dr	165	5	1,510	.....		..	30	.....	D,S	A	Sf	...	....
21aaa1	August Spitzer	....	Du	45	24	1,500	-1,455		Sd	23	.....	S	A	H	...	....
21aaa2	..do....	1943	Dr	170	5	1,500	.....		..	.....	.....	D	A	Sf	...	....
22cab1	Ted Fredrickson	1957	Dr	130	4	1,515	-1,385		Gv	8	.....	D	A	H	...	....
22cab2	..do....	....	Dr	100	4	1,515	-1,415		Gv	14	.....	S	A	H	...	....
23dcb	H. M. Ekren	1908	Dr	200	5	1,570	+1,370		Sh	35	.....	D,S	A	Sf	...	....
26ab	..do....	1928	Dr	165	6	1,565	.....		..	28	.....	S	A	Sf	...	....
26cbc	Arthur Spitzer	1905	Dr	115	6	1,520	-1,405		Gv	60	.....	D,S	A	H	...	....
27abb	Kenneth Kramer	....	Dr	58	5	1,505	-1,447		Gv	20	.....	D,S	A	H	...	....
28dbb	Annie Holm	1947	Dr	108	5	1,480	-1,372		Gv	60	.....	S	A	H	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
14N-6W (Cont.)																
33aaa	Andy Holm	1953	Dr	200	5	1,530	+1,330		Sh	.....	.....	S	A	Sf,Sl	...	....
34bbb	Annie Holm	1948	Dr	185	5	1,525	+1,340		Sh	100	.....	D,S	A	Sf,Sl	...	....
35daa1	Mrs. Alma Nelson	1915	Dr	143	4	1,530	-1,387		Sd	50	.....	N	I	Sf	...	....
35daa2	..do....	1957	Dr	163	3	1,530	-1,367		Sd	50	.....	D,S	A	Sf	...	....
36bcc1	Leo Timm	1943	Dr	130	6	1,540	.....		..	30	.....	D	A	Sf	...	....
36bcc2	..do....	1947	Dr	150	6	1,540	.....		..	30	.....	S	A	Sf	...	....
14N-6E																
2ccd1	Leo Nogosek	1935	B	120	36	1,540	-1,420		Cl	60	.....	S	A	H	...	....
2ccd2	..do....	1900	Du	30	30	1,540	-1,510		Cl	27	.....	D	A	H	...	....
2ddd	Mrs. L. H. Kollman	1945	B	34	24	1,535	-1,501		Sd	24	7-14-60	D,S	A	H,Al	...	....
4bbb	Robert Turner	....	B	22	36	1,540	.....		..	15.40	7-14-60	D,S	A	H	...	....
6bba	Fred Reimers	1951	B	30.5	30	1,575	-1,545		Sd,Cl	16.90	7-14-60	D	A	H,Al	...	....
6cdd1	H. L. Bickett	....	Du	18.8	48	1,560	-1,541		Sd	13.05	7-21-60	S	A	H	...	....
6cdd2	..do....	....	Du	15	24	1,560	-1,545		Sd	12	.....	D	A	H	...	....
7bab1	Derry Fredrickson	1957	Du	40	18	1,570	-1,530		Sd,Gv	20	.....	S	A	...	...	....
7bab2	..do....	1957	B	30	24	1,570	-1,540		Sd,Gv	20	.....	D	A	...	...	....
9ddc	Lawson Posey	....	Dr	200	4	1,540	-1,340		..	50	.....	S	A	Sf,Sl	...	....
12bbb	Lawrence Kollman	1918	Du	30	36	1,535	-1,505		Sd	24	.....	D,S	A	Al	...	....
18aab1	Orville Harrisson	1926	B	56	30	1,555	-1,499		Sd	6	.....	D,S	A	H	...	....
18aab2	..do....	1936	B	13	30	1,555	-1,542		Sd	6	.....	S	A	H,Al	...	....
18ccd	Leslie Leikolt	....	Du	18	48	1,575	-1,557		Gv	9	.....	D	A	H	...	....
18cdd	Lawson Posey	1954	B	18	30	.....	.....		Gv	12	.....	S	A	H	...	....
21daa	Test hole 1879	1961	Dr	178	5	1,530	1,357		..	.....	.....	T	...	...	...	L
22ccc1	Arnold Ginsbach	1922	Dr	250	4	1,555	+1,305		Sh	25	.....	D,S	A	Sf,Sl	...	....
22ccc2	..do....	1954	B	32	30	1,555	-1,523		Gv,Sd	28	.....	D,S	A	H	...	....
22ddc	Chester Danielson	1949	Du	28	24	1,545	-1,517	ug	Sd	16	.....	D,S	A	Sf	43	C
23dcd	Rodger Nieland	1953	B	23	24	1,530	-1,507		Sd	20	.....	D,S	I	H,Al	...	....
26ccc1	Howard Baker	1906	B	18	18	.....	.....		Gv	14	.....	S	A	H	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
144-65 (Cont.)																
26ccc2	Howard Baker	1936	B	29	30	1,550	-1,521		Sd	15	.....	D,S	A	H	...	....
27bcd	Marvin Wanamaker	1956	B	19	30	.....	.....		Gv	3	.....	S	A	H	...	....
27cdd	..do....	....	B	28	30	1,560	-1,532		Gv	16	.....	D	A	H	...	....
29abb	Arnold Ginsbach	1952	B	25	24	.....	.....		Gv	18	.....	S	A	H	...	....
30dcc1	Roy Siebert	....	B	30	20	1,575	-1,545		Sd	28	.....	S	I	Sf	...	....
30dcc2	..do....	1953	B	20	32	1,575	-1,555		Sd	17	.....	D	I	Sf	...	....
32bbb	..do....	....	B	30	36	1,565	-1,535		Sd	27	.....	S	I	...	...	....
32dcc1	William H. Siebert	....	B	23	36	1,555	-1,532		Sd	14	.....	D,S	A	H	...	....
32dcc2	..do....	....	B	30	30	1,555	-1,525		Sd	28	.....	S	I	H	...	....
32dcc3	..do....	....	B	23	30	1,555	-1,532		Sd	3	.....	S	A	H	...	....
35bbb	Howard Baner	1955	B	30	30	1,550	-1,520		Gv	20	.....	S	A	H	...	....
35bcc	..do....	1957	B	24	30	.....	.....		..	8	.....	S	...	...	...	....
144-66																
2abb	R. F. Reimer	1959	Dr	1,934	5-3-2	1,590	.....	Kj	Ss	4	.....	D,S	A	Sf	48	C
3bcd	Howard Wede	1954	B	38	18	1,600	-1,562		Gv	20	.....	D,S	A	...	...	....
4adc1	B. B. Dunwoody	1957	B	24	24	1,595	-1,571		Fine sd	14	.....	D	A	Sf	...	....
4adc2	..do....	....	B	24	30	1,595	-1,571		Gv	18	.....	D,S	A	Sf	...	....
6dcd	Percy Pepple	1944	Du	30	30	1,555	-1,518		Gv	25	.....	D,S	A	H	...	....
7abb	Elvin Gedrose	....	B	31.4	24	1,550	-1,519		Sd	25.20	.....	D,S	A	...	...	....
9aaa	William Revle	....	B	30	..	.....	.....		..	22	.....	...	...	H,Al	...	....
11bbc	M. J. Trekker	....	B	30	36	1,605	-1,575		Sd	28	.....	D	I	H	...	....
11bbd	..do....	1930	B	30	36	1,605	-1,575		Sd,Gv	15	.....	S	A	H	...	....
12bab	H. L. Bickett	....	Du	30.3	36	1,590	-1,560		Sd,Gv	25.60	7-14-60	D,S	A	H	...	....
13ddd	Lawson Posey	1910	Du	20	36	1,575	-1,555		Gv	7	.....	S	A	Sf	...	....
14adb	Tod Van Ray	....	B	30	24	1,610	-1,580		Sd	14	.....	D	A	H	...	....
15bcc	Elton Galt	1941	B	26	30	1,595	-1,569		Sd	15	.....	D,S	A	H	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
1¼4-66 (Cont.)																
15dda	William Galt	1954	B	30	18	1,605	-1,575		Fine sd	19	.....	D,S	A	H	...	....
16abb	Norman L. Hansen	....	B	32	36	1,595	-1,563		Cl	.....	.....	S	I	H,Al	...	....
16daa	..do....	1951	B	18	36	.....	.....		Sd	10	7-19-60	S	A	H	...	....
19cba	Richard Anwiler	1956	Du	8	36	1,610	.....		..	6	.....	S	A	H	...	....
21bda	Ben Schuster	1910	B	60	..	1,590	-1,530		Sd	40	.....	D,S	A	H	...	....
22ccc	Mrs. P. Saunders	1939	Du	36.6	24	1,585	.....	Qug	..	33.10	9-30-59	N	..	...	44	C
23ccd	Donald Bennett	1958	B	31.3	24	1,605	-1,574		Sd	20.50	7-14-60	D	A	...	...	....
24daa	Ralph Ehlens	....	B	30	36	1,580	-1,550		Sd	20	.....	D,S	A	H	...	....
26add	Ted Van Ray, Jr.	1956	B	30	30	1,600	-1,570		Gv	12	.....	D,S	A	...	48	....
27dad	Walter McIlonie	....	B	20	30	1,605	-1,585		Sd	15	.....	D,S	I	H	...	....
30aad	John Mehring	....	B	57.2	36	1,640	-1,583		Fine sd,gv	52.20	7-15-60	D,S	A	H	...	....
31dca	Arnold Reule	1948	B	36	36	1,720	-1,684		Sd,gv	25	.....	D,S	A	H	...	....
32abb	Herman Mehring	....	B	90	36	1,610	-1,520		Gv	48	.....	S	A	H	...	....
34aad	Albert McIlonie	1933	B	40	36	1,595	-1,555		Sd,gv	23	.....	D,S	A	H	...	....
34ddc1	Dan Reich	1944	B	20	24	1,565	-1,545		Sd	10	.....	D,S	A	Sf	...	....
34ddc2	..do....	1959	Du	16	24	1,565	-1,549		Sd	6	.....	D	A	Sf	...	....
35ccd	Sherman Zinke	....	B	54.6	24	1.600	.....		..	42.25	7-15-60	...	..	...	...	....
1¼4-67																
1accl	Edwin Hansen	1946	B	24	30	1,550	.....		Sd	2	.....	D,S	A	...	...	....
1acc2	..do....	1946	B	32	30	1,550	-1,518		Sd	12	.....	D,S	A	...	...	....
2daal	Dan Hertel	....	Dv	30	..	1,540	-1,510		Sd,gv	11	.....	D,S	A	...	...	....
2daa2	..do....	1959	B	30	30	1,540	-1,510		Gv	11	.....	S	A	...	...	....
3aadl	John Schock	....	B	35	24	1,575	-1,540		Sd	25	.....	S	A	H,Al	...	....
3aad2	..do....	1955	B	41	30	1,575	-1,534		Sd	15	.....	D,S	A	H	...	....
3bab	Henry L. Neumiller	....	Du	38.9	36	1,610	-1,571		Sd	26.60	7-18-60	D,S	A	H	...	....
4cdd	Alec Seitz	....	B	52	36	1,705	-1,653		Gv	48	.....	D,S	A	H	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
14-67 (Cont.)																
8ddd	Abe Puterbaugh	1954	B	56	24	1,770	-1,714		Gv	6	.....	D	A	Sf	...	....
10acd	Julius Edinger	1937	Du	23	36	1,625	-1,602		Fine sd	5	.....	D,S	A	H	...	....
10bbc	C. F. Hertel	1935	B	40	18	1,665	-1,625		Fine sd	22	.....	D,S	A	H	...	....
11dba1	William Hertel	....	B	27.8	18	1,585	-1,557		Sd	Flow	.....	D	A	H	46	....
11dba2	..do....	1945	B	18	20	1,585	-1,567		Sd	2	.....	S	A	H	...	....
11dba3	..do....	1955	B	26	20	1,585	-1,559		Sd	22	.....	S	I	H	...	....
14bcb	John Scheck	....	B	70	36	1,650	-1,580		Sd	50	.....	D,S	A	H	...	....
14ccc	Rueben Edinger	1959	B	80	24	1,685	-1,605		Sd	48.90	7-18-60	D,S	A	...	43	....
19adc	Herb Reule	....	B	13.4	36	.....	.....		Sd,gv	10.80	7-18-60	D	..	Sf	...	....
19cdd	Test hole 1922	1961	Dr	515	5	1,900	1,402		..	.....	.....	T	..	...	...	L
21ddd	Test hole 1889	1961	Dr	199	5	1,830	1,646		..	.....	.....	T	..	...	...	L
22bba	Dan Kaiser	....	B	40	24	1,715	-1,675		..	18.40	7-18-60	D,S	A	...	...	....
23bcb	William Schaeffer	....	B	35	30	1,680	-1,645		Gv	13	.....	S	A	H,Al	...	....
24cdc	Charles Mehring	1918	B	28	36	1,670	-1,642		Gv	20	.....	D,S	A	H	...	....
24dab	Richard Anwiler	....	B	40	24	1,630	-1,590		..	35	.....	D	A	...	...	....
25ddd	Test hole 1888	1961	Dr	105	5	1,680	1,579		..	.....	.....	T	..	...	...	L
26bdb	Leonard Geske	1957	B	31.3	36	1,735	-1,704		..	10.20	7-15-60	D	A	H,Al	...	....
26dca	Robert Anwiler	1958	B	13	..	1,745	-1,732		Sd	10	.....	D,S	A	H	...	....
29abc	Leonard Geske	1945	B	34.1	30	1,855	-1,825	Qug	..	16.47	5- 9-60	D,S	A	...	42	C
30bba1	Test hole 1822	1961	Dr	199	5	1,920	-1,721		..	.....	.....	T	..	...	...	L
30dcc	Mrs. Lois Steele	....	..	...	6	1,935	.....		Sd,gv	22	.....	D,S	A	...	44	....
14-68																
2bdb	Hagen Biloff	....	B	25	36	.....	.....		Sd	8	.....	D,S	A	H	...	....
5acb	Les Hallwachs	....	B	24	24	.....	.....		Gv	10	.....	D,S	A	Sf	...	....
6dda	W. Hallwachs	....	B	18	24	.....	.....		Gv	10	.....	D,S	I	H	...	....
8cc	P. R. Hielponaede	....	B	35.7	24	.....	.....		Gv	21.64	7-12-60	D,S	..	...	...	....
14bda	Unknown	....	B	25.8	36	.....	.....		Gv	13.74	7-13-60	N	..	...	...	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
144-68	(Cont.)															
17daa	Alma Worden	1958	B	24	24	.....	.....		Sd	10	.....	D,S	A	H	...	....
23ccc	Test hole 1890	1961	Dr	420	5	1,827	1,417		..	.....	.....	T	...	...	...	L
28bbb	Test hole 1927	1961	Dr	480	5	1,836	1,396		..	.....	.....	T	...	...	...	L
28daa	J. J. Harrington	1919	Dr	335	3-2.5	.....	.....	Qug	Sd	50	1959	D,S	A	...	46	C
29ccc	R. J. Gofer	....	B	17.0	30	.....	.....		Gv	5.62	7-12-60	S	A	H,Al	...	....
30bcc	Unknown	....	Du	15.8	48	.....	.....		Gv	4.95	7-13-60	S	...	H	...	....
32bbb	Emil Unruh	....	B	25	36	.....	.....		Gv	7	.....	D,S	A	H	...	....
34cbb	David Cook	1953	Dr	400	3	.....	.....		Sd	6	.....	S	I	Al	...	....
34dca	Marvin Kienzle	....	B	30	24	.....	.....		Gv	4	.....	D,S	A	H	...	....
35bb	Cliff Larson	....	Du	10	36	.....	.....		Gv	Flow	.....	D,S	A	...	...	....
144-69																
1ddd	Willis Suckut	....	B	40	24	.....	.....		Gv	20	.....	D,S	A	H	...	....
2ddd	Adam Malinski	....	B	35	24	.....	.....		Gv	14	.....	D,S	A	H,Al	...	....
3daa	C. R. Luewen	....	B	30	18	.....	.....		Sd,Gv	25	.....	D,S	I	H,Al	...	....
4bad	Gust Flemmer	....	Du	18	48	.....	.....		Gv	9	.....	D,S	A	H	...	....
6aad	Wm. Goter	1900	B	27	24	.....	.....		..	7	.....	D,S	A	...	...	....
7aa	Duane Malstad	....	B	32.2	30	.....	.....		Gv	21.92	7-13-60	D,S	A	H	...	....
7daa	Arthur Johnson	....	B	35	30	.....	.....		Gv	22	.....	D,S	A	H	...	....
10bab	Willis Seibold	1935	B	25	24	.....	.....	Qug	Fine sd	12	.....	D	A	...	43	C
11add1	Otto Stebner	1947	B	56	24	.....	.....		Gv	7	.....	S	A	Al	...	....
11add2	..do....	1928	B	28	24	.....	.....		Sd,Gv	7	.....	D	A	H	...	....
12bbc	Willis Suckut	....	Dr	280	2	.....	.....	Qug	..	.....	.....	D,S	A	...	41	C
13bcb	Eugene Garrett	....	B	44.4	18	.....	.....		Gv	20.25	7-13-60	D,S	I	H,Al	44	....
13cbb	L. Stalz	1928	B	29.0	18	.....	.....		Sd	12.48	7-13-60	D,S	A	H,Al	...	....
14cdb	Wilbur Huenergard	....	B	25	30	.....	.....		Fine sd	5	.....	D,S	A	H	...	....
15bbb	Dan Thiesen	1937	B	22	24	.....	.....		Sd	18	.....	D,S	I	H	...	....
19dda	Stanley Przybycien	....	B	22.7	30	.....	.....		Sd,Gv	11.23	7-13-60	D,S	A	H	44	....

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
144-69 (Cont.)																
21dcc	A. G. Schmidt	....	B	24	24	.....	.....		Sd,gv	11	.....	D,S	A	H	43	....
24cbb	Unknown	....	Du	13.4	48	.....	.....		Gv	7.15	7-13-60	N	..	...	...	....
24ccd	Emil Goter	....	Du	15	..	.....	.....		Sd	7	.....	D,S	A	H,Al	...	....
24ddd	Test hole 1821	1960	Dr	451	5	1,842	1,403		..	.....	.....	T	..	...	...	L
26bdc	Virgil Huenergardt	1953	B	60	22	.....	.....		..	40	.....	S	A	Al	...	....
27daa	Ed Wutzke	....	Du	27	36	.....	.....		Gv	.....	.....	D,S	A	H	...	....
28adc1	August Weber	....	B	60	18	.....	.....		Sd	35	.....	S	A	H	...	....
28adc2	..do....	1959	B	40	30	.....	.....		Fine sd	20	.....	D	A	H	...	....
28bbb	Albert Goter	....	B	30	..	.....	.....		Sd	15	.....	D,S	I	H	...	....
28ddb	Edward Leapaldt	....	Dr	535	2.5	.....	.....		Fine sd	.....	.....	N	..	Sf	...	....
30abb1	Test hole 1820	1960	Dr	178	5	1,849	-1,671		..	.....	.....	T	..	...	...	L
30abb2	Test hole 1926	1961	Dr	410	5	1,849	1,459		..	.....	.....	T	..	...	...	L
30bba	Ted Worleski	....	..	13	..	.....	.....		Sd	6	.....	S	A	H	...	....
32acb	Randolph Schulz	....	Dr	55.2	8	.....	.....		Sd	28.43	7-13-60	D,S	A	H,Al	44	....
34bbb	Test hole 1823	1960	Dr	462	5	1,941	1,491		..	.....	.....	T	..	...	...	L
34bda	Unknown	....	B	64.9	24	.....	.....		..	30.71	7-13-60	N	..	...	...	....
34dad	Nathalie Hauf	....	B	67	30	.....	.....		Sd	24	.....	D,S	A	H	...	....

TABLE 2.--Logs of test holes

137-62-21aaa
Test hole 1743 c/
Altitude 1,435 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Till, yellow, oxidized----------	17	19
	Till, gray; numerous cobbles; hard drilling----------	45	64
	Sand, fine to coarse----------	19	83
	Gravel, fine to medium; numerous cobbles----------	11	94
	Till----------	11	105

TABLE 2.--Logs of test holes -- Continued

137-64-6cdd
Test hole 1751 c/
Altitude 1,505 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	4	4
	Sand, coarse; numerous cobbles---	12	16
	Till, gray----------	153	169
Pierre Shale:			
	Shale----------	9	178

TABLE 2.--Logs of test holes -- Continued

137-64-8abb
Test hole 1752 c/
Altitude 1,495 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	3	3
	Clay, light-gray----------	2	5
	Sand, medium----------	2	7
	Till, yellow, oxidized----------	4	11
	Till, gray----------	32	43
	Gravel, medium to coarse---------	9	52
	Till, gray----------	116	168
	Sand, coarse and fine gravel-----	42	210
	Sand, coarse; abundant lignite grains----------	5	215
	Till, gray----------	10	225
Pierre Shale:			
	Shale----------	6	231

TABLE 2.--Logs of test holes -- Continued

137-64-8ddd
Test hole 1756 c/
Altitude 1,515 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Clay, smooth, yellow, oxidized---	4	6
	Till, yellow, oxidized----------	17	23
	Till, gray; scattered cobbles and lignite fragments; concentration of limestone cobbles from 95 to 106 feet----	200	223
	Gravel, fine to medium----------	13	236
	Till, gray----------	11	247
Pierre Shale:			
	Shale, gray----------	5	252

TABLE 2.--Logs of test holes -- Continued

137-64-15ddd
Test hole 1755 c/
Altitude 1,500 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Till, yellow, oxidized----------	15	16
	Till, gray----------	68	84
Pierre Shale:			
	Shale, gray----------	10	94

TABLE 2.--Logs of test holes -- Continued

137-64-19aab
Test hole 1753 c/
Altitude 1,515 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Till, yellow, oxidized----------	12	14
	Till, gray----------	33	47
Pierre Shale:			
	Shale, gray----------	5	52

TABLE 2.--Logs of test holes -- Continued

137-65-1cdd
Test hole 1750 c/
Altitude 1,515 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Gravel, fine to medium----------	9	11
	Till, gray; boulder at 53 feet----	51	62
Pierre Shale:			
	Shale----------	11	73

TABLE 2.--Logs of test holes -- Continued

137-65-13dcc
Test hole 1754 c/
Altitude 1,540 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Sand, medium----------	4	6
	Gravel, fine to medium----------	7	13
	Till, gray----------	30	43
Pierre Shale:			
	Shale, gray----------	9	52

TABLE 2.--Logs of test holes -- Continued

137-66-9daa
Test hole 1913 d/
Altitude 1,773 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Till, dark-yellowish-orange to moderate-yellowish-brown, oxidized; numerous sand grains and granules with scattered lignite fragments----------	28	29
	Till, olive-gray; numerous sand grains and scattered shale pebbles and lignite fragments; interbedded from 156-167 feet with layers of fine to coarse, sandy, rounded gravel consisting of shale and limestone pebbles----------	241	270
	Gravel, fine to coarse, cemented; abundant shale and limestone pebbles----------	1	271
	Till, medium-olive-gray, very cohesive; abundant shale grains and numerous shale bounders-----	43	314
Pierre Shale:			
	Shale, dark-greenish-gray, dense. finely laminated----------	11	325

TABLE 2.--Logs of test holes -- Continued

137-66-19cdc
Test hole 1912 d/
Altitude 1,893 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black	1	1
	Clay, silty, light-olive-gray, highly calcareous, numerous gypsum crystals	5	6
	Clay, silty, moderate-yellowish-brown, highly calcareous	16	22
	Clay, silty, olive-gray, highly calcareous	13	35
	Till, olive-gray, highly calcareous; numerous sand grains with scattered fine to medium shale and limestone pebbles and lignite fragments	6	41
	Clay, slightly silty to very silty, olive gray, plastic, highly calcareous; scattered silt-size lignite particles	36	77
	Till, olive-gray, highly calcareous; numerous shale grains with scattered shale and limestone pebbles and lignite fragments	17	94

TABLE 2.--Logs of test holes -- Continued

137-66-19cdc
Test hole 1912 d/ (Continued)
Altitude 1,893 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:	(Cont.)		
	Clay, slightly silty to very silty, olive-gray, plastic, highly calcareous; scattered silt-size lignite particles-----	10	104
	Till, olive-gray, highly calcareous; numerous shale grains and scattered shale and limestone pebbles and lignite fragments----------	206	310
	Till, silty, olive-gray, very cohesive; numerous shale grains and scattered shale pebbles and lignite fragments---	100	410
Pierre Shale:			
	Shale, dark-greenish-gray, dense, fissile, fractured (?); interbedded with a light-greenish-gray, dense, limestone----------	31	441

TABLE 2.--Logs of test holes -- Continued

137-68-13ccd
Test hole 1909 d/
Altitude 1,985 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black	1	1
	Clay, silty, moderate to dark-yellowish-brown, weakly cohesive, highly calcareous to non-calcareous; abundant sand and gravel with scattered lignite fragments; organic materials present	14	15
	Gravel, fine to medium very sandy to clayey, oxidized; abundant shale pebbles	7	22
	Clay, silty, dark-yellowish-orange, oxidized, highly calcareous	8	30
	Sand, gravelly, oxidized; abundant fine to medium gravel and scattered lignite fragments; included silty, moderate-yellowish-brown to olive-gray, cohesive, highly calcareous clay-	7	37
	Clay, silty, olive-gray, calcareous; very fine sand	19	56

TABLE 2.--Logs of test holes -- Continued

137-68-13cdd
Test hole 1909 d/ (Continued)
Altitude 1,985 ft

Formation	Material	Thickness (feet)	Depth (feet)
	Till, olive-gray, highly calcareous; abundant sand with shale grains predominating and scattered shale granules and lignite fragments	111	167
	Till, olive-gray, highly calcareous; abundant sand with shale grains predominating and scattered shale granules and lignite fragments; interbedded with layers of coarse sand to medium gravel-sized limestone and shale particles	26	193
	Gravel, sandy, medium to coarse, very angular to rounded, cemented	16	209
	Till, dark-greenish-gray, very cohesive, highly calcareous; numerous shale grains and scattered shale granules and lignite fragments	33	242
Pierre Shale:			
	Shale, silty, dark-greenish-gray, dense, laminated	10	252

TABLE 2.--Logs of test holes -- Continued

138-62-25ddd
Test hole 1599 b/
Altitude 1,448 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Till, sandy, mottled light-gray and yellow, oxidized; scattered shale pebbles----------	13	15
	Till, light-olive-gray; scattered shale pebbles and lignite fragments----------	17	32
	Sand, fine; scattered coarse shale grains----------	10	42
	Sand, medium; abundant coarse shale grains----------	12	54
	Till, medium-light-gray; scattered shale pebbles and lignite fragments; boulder at 112 feet----------	77	131
	Till, light-olive-gray----------	21	152
Pierre Shale:			
	Shale, medium-gray, dense, brittle----------	5	157

TABLE 2.--Logs of test holes -- Continued

138-62-27ddd
Test hole 1600 b/
Altitude 1,454 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, silty, brown----------	3	3
	Till, sandy, mottled buff, orange, and gray, oxidized----------	8	11
	Till, light-olive-gray; scattered shale pebbles and lignite fragments----------	31	42
	Sand, fine to coarse, clayey, predominantly shale grains-------	5	47
	Till, medium-light-gray to olive-gray; scattered to abundant shale pebbles and lignite fragments; boulders at 34, 60, 232, and 236 feet; hard drilling from 84 feet to 253 feet----------	206	253
	Gravel, fine, angular to subrounded, cemented----------	13	266
Pierre Shale:			
	Shale, bluish-gray, weakly indurated----------	7	273

TABLE 2.--Logs of test holes -- Continued

138-62-29ddd
Test hole 1601 b/
Altitude 1,485 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	3	3
	Till, sandy, yellow to mottled gray and orange, oxidized; sparse fraction of fine gravel--	21	24
	Till, light-olive-gray; scattered lignite fragments---------	34	58
	Till, medium-light-gray; scattered shale pebbles and lignite fragments----------	109	167
	Clay, medium-dark-gray, calcareous----------	2	169
	Sand, very coarse, subrounded, cemented; abundant fine to medium gravel; boulder at 205 feet----------	37	206
Pierre Shale:			
	Shale, gray, soft----------	4	210

TABLE 2.--Logs of test holes -- Continued

138-62-32bcc
Test hole 1758 c/
Altitude 1,465 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Clay, smooth, yellow, oxidized----	4	6
	Till, yellow, oxidized----------	15	21
	Till, gray----------	11	32
	Sand, medium to coarse----------	4	36
	Till, gray----------	17	53
	Gravel, fine to medium----------	11	64
	Till, gray; boulders at 88 feet and 125 feet----------	63	127
Pierre Shale:			
	Shale, gray----------	9	136

TABLE 2.--Logs of test holes -- Continued

138-63-3bbb
Test hole 1916 d/
Altitude 1,493 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Clay, silty, dark-yellowish-orange to moderate-yellowish-brown, weakly cohesive, oxidized, highly calcareous numerous sand grains and scattered particles of organic material--------	9	10
	Clay, dark-yellowish-orange to moderate-yellowish-brown, weakly cohesive, oxidized, highly calcareous; abundant fine to medium, sandy, oxidized limestone gravel----------	10	20
	Sand, fine to very coarse, slightly oxidized to unoxidized; scattered shale granules and lignite fragments-	21	41
	Gravel, fine to coarse, rounded, predominantly shale and limestone pebbles--	6	47
	Till, light-olive-gray, highly calcareous; scattered shale granules and lignite fragments----------	58	105

TABLE 2.--Logs of test holes -- Continued

138-63-3bbb
Test hole 1916 d/ (Continued)
Altitude 1,493 ft

Formation	Material	Thickness (feet)	Depth (feet)
	Till, light-olive-gray, highly calcareous; scattered shale granules and lignite fragments; interbedded with layers or zones of cemented (?) sand and gravel consisting of abundant limestone particles from 105 to 157 feet and shale particles from 157 to 194 feet----------	89	194
Pierre Shale:			
	Shale, dark-greenish-gray, dense, finely laminated----------	6	200

TABLE 2.--Logs of test holes -- Continued

138-63-15dad
Test hole 1917 d/
Altitude 1,480 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black	1	1
	Till, dark-yellowish-orange to moderate-yellowish-brown, oxidized; scattered lignite traces	15	16
	Till, olive-gray, highly calcareous; numerous shale grains with scattered shale granules and lignite fragments	42	58
	Sand, medium to very coarse; gravelly, predominantly shale; fine to medium shale pebbles and scattered lignite fragments	4	62
	Till, olive-gray, highly calcareous; abundant shale pebbles	49	111
Pierre Shale:			
	Shale, dark-greenish-gray, dense, brittle, laminated	15	126

TABLE 2.--Logs of test holes -- Continued

138-63-26ddc
Test hole 1744 c/
Altitude 1,490 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black	1	1
	Till, yellow, oxidized; scattered cobbles	31	32
	Gravel, fine to coarse; sparse fraction of coarse sand	43	75
	Gravel, fine to coarse, predominantly shale pebbles and scattered lignite fragments	19	94
	Gravel, coarse; numerous cobbles	16	110
	Till, gray; scattered cobbles	5	115

TABLE 2.--Logs of test holes -- Continued

138-63-29dcd
Test hole 1745 c/
Altitude 1,500 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, brown----------	1	1
	Clay, silty, yellow----------	32	33
	Sand, fine; boulder at 59 feet-----	27	60
	Till, numerous boulders----------	3	63

TABLE 2.--Logs of test holes -- Continued

138-64-27aaa
Test hole 1757 c/
Altitude 1,490 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Clay, smooth, gray----------	4	6
	Till, yellow, oxidized----------	14	20
	Till, gray; numerous cobbles-------	26	46
Pierre Shale:			
	Shale, gray----------	27	73

TABLE 2.--Logs of test holes -- Continued

138-64-29cdd
Test hole 1747 c/
Altitude 1,495 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Clay, light-gray----------	2	2
	Sand, fine to medium----------	14	16
	Till, gray; scattered lignite fragments----------	92	108
	Gravel, fine----------	2	110
	Till, gray; scattered lignite fragments; boulder at 113 feet---	59	169
	Gravel, cemented; numerous cobbles----------	5	174
	Till----------	4	178

TABLE 2.--Logs of test holes -- Continued

138-64-30ccc
Test hole 1748 c/
Altitude 1,520 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Clay, light-gray----------	4	5
	Till, yellow to brown, oxidized---	26	31
	Till, gray, scattered lignite fragments----------	19	50
	Gravel, medium----------	2	52
	Till, gray, scattered lignite fragments----------	21	73
	Till, gray; numerous shale pebbles; boulder at 119 feet and 122 feet----------	67	140
	Till, gray; hard drilling from 140 to 287 feet----------	147	287
Pierre Shale:			
	Shale----------	7	294

TABLE 2.--Logs of test holes -- Continued

138-64-36aaa
Test hole 1746 c/
Altitude 1,495 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Clay, light-gray----------	4	5
	Sand, fine to medium----------	6	11
	Till, yellow, oxidized----------	6	17
	Till, gray----------	19	36
Pierre Shale:			
	Shale----------	6	42

TABLE 2.--Logs of test holes -- Continued

138-65-3aaa
Test hole 1919 d/
Altitude 1,535 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Clay, dark-yellowish-orange, oxidized, calcareous----------	1	1
	Gravel, medium to coarse, sandy, oxidized----------	3	4
	Till, gravelly, dark-yellowish-orange, oxidized; scattered lignite fragments----------	8	12
	Till, olive-gray; scattered shale pebbles and lignite fragments, scattered cobbles or layers of gravel----------	113	125
Pierre Shale:			
	Shale, greenish-black, dense, fissile----------	11	136

TABLE 2.--Logs of test holes -- Continued

138-65-5ccc
Test hole 1920 d/
Altitude 1,660 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Till, moderate-yellowish-brown to olive-brown, oxidized; scattered fine to medium pebbles and lignite fragments	31	31
	Till, olive-gray, highly calcareous; scattered shale and carbonate pebbles and lignite fragments	59	90
	Gravel, fine to coarse, sandy; scattered lignite fragments	10	100
	Till, olive-gray, highly calcareous; scattered shale and carbonate pebbles and lignite fragments; interbedded with layers of fine to coarse, gravelly, predominantly shale sand from 106 to 116 feet	16	116
	Clay, very silty, olive-gray, highly calcareous; scattered silt and fine sand-sized lignite grains and scattered shale grains	8	124

TABLE 2.--Logs of test holes -- Continued

138-65-5ccc
Test hole 1920 d/ (Continued)
Altitude 1,660 ft

Formation	Material	Thickness (feet)	Depth (feet)
	Till, olive-gray; numerous sand grains and scattered shale pebbles and lignite fragments---	70	194
	Till, olive-gray, very cohesive; numerous sand grains, scattered shale and lignite fragments-----	29	223
	Gravel, fine to medium, sandy, predominantly limestone with abundant shale----------	7	230
	Gravel, fine to medium, sandy, predominantly shale----------	9	239
	Till, olive-gray, very cohesive, highly calcareous; numerous shale grains and scattered shale pebbles and lignite fragments----------	45	284
Pierre Shale:			
	Shale, dark-greenish-gray, dense, fissile----------	10	294

TABLE 2.--Logs of test holes -- Continued

138-65-9baa
Test hole 1918 d/
Altitude 1,550 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black	1	1
	Till, moderate-yellowish-brown, oxidized, highly calcareous; scattered shale granules and lignite fragments	30	31
	Till, olive-gray, highly calcareous; scattered shale granules and lignite fragments and zones of greenish-gray, friable, calcareous silt	11	42
	Till, olive-gray, highly calcareous; scattered fine to medium pebbles and lignite fragments; interbedded with layers of very fine to medium sand	10	52
	Till, olive-gray, highly calcareous; scattered fine to medium pebbles and lignite fragments	29	81
	Gravel, fine to coarse, cemented	3	84
	Till, olive-gray, highly calcareous; scattered fine to medium pebbles and lignite fragments	10	94

TABLE 2.--Logs of test holes -- Continued

138-65-9baa
Test hole 1918 d/ (Continued)
Altitude 1,550 ft

Formation	Material	Thickness (feet)	Depth (feet)
	Till, dark-greenish-gray, highly calcareous; abundant shale grains and scattered lignite fragments and shale granules-----	10	104
	Silt, clayey, greenish-gray, friable, highly calcareous; scattered shale grains----------	17	121
	Gravel, fine, sandy, predominantely shale; scattered lignite fragments; wood fragments--------	4	125
	Till, olive-gray, highly calcareous; abundant shale sand and scattered shale pebbles and lignite fragments scattered cobbles or gravel layers---	96	221
Pierre Shale:			
	Shale, dark to light-greenish-gray, dense, laminated----------	20	241

TABLE 2.--Logs of test holes -- Continued

138-65-31bbb
Test hole 1760 c/
Altitude 1,720 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Till, yellow, oxidized; boulder at 22 feet----------	30	32
	Till, gray; scattered cobbles from 32 to 47 feet----------	116	148
	Sand, fine to coarse, cemented---	9	157
	Gravel, fine to medium, cemented-	6	163
	Clay, silty, gray----------	6	169
	Till, gray; numerous cobbles; boulder at 176 feet----------	70	239
	Gravel, fine to coarse----------	2	241
	Till, gray, numerous cobbles-----	22	263
Pierre Shale:			
	Shale, gray----------	10	273

TABLE 2.--Logs of test holes -- Continued

138-65-33bbb
Test hole 1759 c/
Altitude 1,660 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Clay, light-gray; scattered granules----------	3	5
	Clay, smooth, light-gray---------	5	10
	Clay, smooth, yellow----------	11	21
	Till, gray----------	153	174
Pierre Shale:			
	Shale, gray----------	15	189

TABLE 2.--Logs of test holes -- Continued

138-65-35bbb
Test hole 1749 c/
Altitude 1,535 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	4	4
	Till, yellow, oxidized----------	7	11
	Gravel, fine to coarse----------	15	26
	Till, gray----------	47	73
Pierre Shale:			
	Shale----------	11	84

TABLE 2.--Logs of test holes -- Continued

138-66-11ddd
Test hole 1914 d/
Altitude 1,726 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Till, moderate-yellowish-brown, oxidized, highly calcareous; scattered lignite fragments----------	39	40
	Till, olive-gray; numerous shale grains and scattered lignite fragments and shale pebbles----------	215	255
Pierre Shale:			
	Shale, greenish-black, dense, laminated----------	18	273

TABLE 2.--Logs of test holes -- Continued

138-66-19bcb
Test hole 1763 c/
Altitude 1,855 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Till, yellow, oxidized----------	29	31
	Till, gray----------	11	42
	Till, gray; numerous cobbles------	43	85
	Till, gray----------	199	284
	Gravel, medium----------	4	288
	Till, gray----------	7	295
	Gravel, fine to medium----------	15	310
	Till, gray; boulder at 344 feet---	73	383
Pierre Shale:			
	Shale, gray----------	5	388

TABLE 2.--Logs of test holes -- Continued

138-66-20ada
Test hole 1762 c/
Altitude 1,800 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Clay, silty, yellow, oxidized-----	29	31
	Till, gray; boulder at 43 feet----	124	155
	Gravel, fine to medium, cemented--	12	167
	Till, gray; numerous cobbles; boulders at 242, 279, 316, and 319 feet----------	191	358
Pierre Shale:			
	Shale, gray----------	9	367

TABLE 2.--Logs of test holes -- Continued

138-67-16ccc
Test hole 1765 c/
Altitude 1,870 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Clay, light-gray----------	3	5
	Till, yellow, oxidized----------	11	16
	Till, gray----------	5	21
	Gravel, fine----------	6	27
	Till, gray; boulder at 139 feet---	112	139
	Till, gray; numerous cobbles; boulder at 156 feet----------	82	221
	Sand, fine to coarse, clayey------	31	252
	Till, gray; boulder at 314 feet---	125	377
Pierre Shale:			
	Shale, gray----------	11	388

TABLE 2.--Logs of test holes -- Continued

138-66-35bbb
Test hole 1761 c/
Altitude 1,745 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Till, yellow, oxidized----------	22	24
	Till, gray; scattered cobbles from 210 to 231 feet; boulders at 55 feet and 159 feet---------	228	252
	Gravel, fine, predominately shale pebbles----------	5	257
	Till, gray----------	59	316
	Gravel, fine, cemented----------	12	328
	Till, gray----------	9	337
	Gravel, fine to medium----------	23	360
Pierre Shale:			
	Shale, gray----------	8	368

TABLE 2.--Logs of test holes -- Continued

138-67-15ddd
Test hole 1764 c/
Altitude 1,890 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black	2	2
	Clay, light-gray	3	5
	Till, yellow, oxidized	19	24
	Till, gray	218	242
	Gravel, fine to coarse	21	263
	Gravel, fine, predominately shale pebbles	9	272
	Till, gray; numerous cobbles	42	314
	Clay, silty, gray	64	378
	Gravel, fine, clayey	6	384
Pierre Shale:			
	Shale, gray	4	388

TABLE 2.--Logs of test holes -- Continued

138-67-31ddd
Test hole 1910 d/
Altitude 1,912 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Clay, silty, color ranges from moderate-yellowish-brown to mottled dark-yellowish-orange and olive-gray, moderately to very cohesive, oxidized, highly calcareous; fine to very fine sand grains and scattered lignite particles----------	44	45
	Clay, dark-greenish-gray, very cohesive and plastic; highly calcareous; fine to very fine sand----------	17	62
	Till, greenish-gray to dark-greenish-gray, highly calcareous; abundant shale grains and numerous pebbles----------	94	156
	Clay, silty, greenish-gray to olive-gray, cohesive, calcareous; numerous fine to very fine sand grains and scattered lignite fragments--	9	165
	Till, olive-gray; abundant sand and scattered fine to medium shale pebbles and lignite fragments----	89	254

TABLE 2.--Logs of test holes -- Continued

138-67-31ddd
Test hole 1910 d/ (Continued)
Altitude 1,912 ft

Formation	Material	Thickness (feet)	Depth (feet)
Pierre Shale:			
	Shale, dark-greenish-gray, dense, brittle, laminated----------	19	273

TABLE 2.--Logs of test holes -- Continued

138-68-13dcd
Test hole 1766 c/
Altitude 1,890 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Till, yellow, oxidized----------	12	14
	Till, gray; boulders at 72 feet and 253 feet----------	302	316
Pierre Shale:			
	Shale, gray----------	9	325

TABLE 2.--Logs of test holes -- Continued

138-68-17bbb
Test hole 1578 b/
Altitude 1,880 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	3	3
	Till, mottled yellow and gray, highly oxidized; scattered shale pebbles and lignite fragments----------	29	32
	Till, light-olive-gray (olive-gray when wet), very cohesive; scattered cobbles, shale pebbles and lignite fragments------	113	145
	Clay, light-gray (medium-gray when wet), well indurated-------	13	158
	Till, light-olive-gray (olive-gray when wet), cohesive; scattered cobbles, shale pebbles and lignite fragments; boulder at 158 feet----------	45	203
	Gravel, fine, cemented----------	2	205
Pierre Shale:			
	Shale, greenish-gray, dense-------	5	210

TABLE 2.--Logs of test holes -- Continued

138-68-21bbb
Test hole 1768 c/
Altitude 1,860 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Till, yellow, oxidized; abundant cobble concentration from 5 feet to 16 feet----------	15	17
	Till, gray; boulder at 46 feet----	99	116
	Clay, silty, gray----------	11	127
	Till, gray----------	72	199
Pierre Shale:			
	Shale, gray----------	11	210

TABLE 2.--Logs of test holes -- Continued

138-68-22aaa
Test hole 1767 c/
Altitude 1,870 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Clay, silty, yellow, oxidized------	20	21
	Clay, silty, gray----------	32	53
	Till, gray; boulders at 87 feet and 138 feet----------	124	177
Pierre Shale:			
	Shale, gray----------	12	189

TABLE 2.--Logs of test holes -- Continued

138-68-30aaa
Test hole 1579 b/
Altitude 1,920 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Till, sandy, yellow, gray, oxidized----------	21	22
	Till, light-gray; scattered shale pebbles----------	62	84
	Sand, medium to coarse; numerous shale pebbles----------	5	89
	Till, light-gray; scattered shale pebbles; boulder at 181 feet----------	93	182
Pierre Shale:			
	Shale, blue-gray, brittle--------	7	189

TABLE 2.--Logs of test holes -- Continued

138-69-20aad
Test hole 1906
Altitude 2,050 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Till, moderate-yellowish-brown, weakly cohesive, oxidized; numerous fine to coarse shale grains and scattered lignite fragments; interbedded with fine to medium gravel from 11 to 19 feet--------	18	19
	Till, dark-yellowish-brown, oxidized; numerous shale grains and scattered lignite fragments--	22	41
	Till, dark-yellowish-brown, oxidized; numerous shale grains and scattered lignite fragments; interbedded with layers of olive-gray till and with layers of silty, dusky-yellowish-brown, oxidized, calcareous clay--------	10	51
	Till, olive-gray; shale granules and scattered lignite fragments--	3	54

TABLE 2.--Logs of test holes -- Continued

138-69-20aad
Test hole 1906 (Continued)
Altitude 2,050 ft

Formation	Material	Thickness (feet)	Depth (feet)
	Gravel, fine to medium, sandy, rounded with numerous shards and freshly broken surfaces, cemented; scattered pyrite grains----------	8	62
	Clay, silty, light-olive-gray, calcareous; scattered sand grains, shale granules and lignite fragments----------	5	67
	Sand, fine to coarse; abundant shale grains and granules-------	5	72
	Till, olive-gray; scattered lignite and shale granules------	14	86
	Boulder, limestone----------	2	88
	Clay, silty, greenish-gray, calcareous; silt-sized lignite particles----------	16	104
	Clay, silty, light-olive-gray, slightly oxidized, calcareous; scattered segregations of very fine to fine sand and dark-yellowish-orange to light-brown limonitic smears----------	28	132

TABLE 2.--Logs of test holes -- Continued

138-69-20aad
Test hole 1906 (Cont.)
Altitude 2,050 ft

Formation	Material	Thickness (feet)	Depth (feet)
	Clay, silty, greenish-gray, slightly oxidized, calcareous; scattered very fine to medium sand grains	35	167
	Clay, silty, greenish-gray, calcareous; scattered very fine to medium sand grains; interbedded with layers of silty to clayey, weakly cohesive sand of varying shades of greenish-gray and light-greenish-gray	23	190
Fox Hills Sandstone:			
	Shale, silty, greenish-gray, weakly calcareous; interbedded with layers of very fine to fine, silty, greenish-gray, weakly calcareous sandstone	20	210
	Siltstone, clayey, greenish-gray, calcareous; scattered concentrations of fine sand	63	273
	Siltstone, dark-greenish-gray, noncalcareous	17	290
	Siltstone, clayey, olive-gray, calcareous to non-calcareous	46	336

TABLE 2.--Logs of test holes -- Continued

138-69-20aad
Test hole 1906 (Continued)
Altitude 2,050 ft

Formation	Material	Thickness (feet)	Depth (feet)
	Shale, sandy, dark-greenish-gray, non-calcareous; abundant very fine to medium, greenish sand grains----------	62	398
Pierre Shale:			
	Shale, dark-greenish-gray, laminated----------	11	409

TABLE 2.--Logs of test holes -- Continued

138-69-33ccc
Test hole 1907 d/
Altitude 1,963 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Clay, silty, yellowish-gray, highly calcareous; medium quartz sand grains----------	8	9
	Till, moderate yellowish-brown, oxidized; abundant sand and scattered pebbles----------	8	17
	Till, olive-gray; numerous sand and shale and limestone pebbles and scattered lignite fragments----------	25	42
	Till, dark-greenish-gray; abundant shale sand and scattered shale pebbles----------	21	63
	Clay, silty, light-olive-gray, highly calcareous; scattered lignite particles----------	4	67
	Till, dark-greenish-gray, highly calcareous; abundant sand and scattered shale pebbles and lignite fragments----------	12	79

TABLE 2.--Logs of test holes -- Continued

138-69-33ccc
Test hole 1907 d/ (Continued)
Altitude 1,963 ft

Formation	Material	Thickness (feet)	Depth (feet)
	Clay, silty, light-olive-gray with scattered yellowish-orange spots, slightly oxidized; very fine to medium sand grains; light-brown, highly oxidized sandstone weakly cemented with calcareous material from 83 to 84 feet----------	14	93
Fox Hills Sandstone:			
	Sandstone, very fine to fine, silty to clayey, greenish-gray to bluish-gray with light-olive-brown spots, angular, weakly indurated, weakly calcareous----------	22	115
	Siltstone, greenish-gray, weakly indurated----------	11	126

TABLE 2.--Logs of test holes -- Continued

139-62-1ddd
Test hole 1598 b/
Altitude 1,468 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black	3	3
	Till, mottled light-gray, buff, and orange, oxidized; scattered shale grains	29	32
	Till, medium-light-gray; scattered shale pebbles and lignite fragments	32	64
	Till, medium-light-gray; scattered shale pebbles and lignite fragments; numerous cobbles	36	105
	Gravel, fine to medium, clean, subrounded; abundant coarse sand and scattered lignite fragments	53	158
	Sand, coarse, clayey; scattered lignite fragments; coarse gravel and cobbles at 178 feet	20	178

TABLE 2.--Logs of test holes -- Continued

139-62-9ddd
Test hole 1347 a/
Altitude 1,445 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Clay, light-gray, calcareous------	3	4
	Clay, yellow, oxidized; scattered granule size gravel----------	7	11
	Till, gray; scattered shale pebbles----------	146	157
	Boulder, granite----------	0	157

TABLE 2.--Logs of test holes -- Continued

139-62-13aaa
Test hole 1362 a/
Altitude 1,462 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Till, yellow, oxidized----------	19	21
	Till, gray; scattered shale pebbles----------	9	30
	Sand, coarse----------	2	32
	Till, gray; scattered shale pebbles----------	12	44
	Sand, fine to coarse; scattered shale and lignite fragments-----	20	64
	Till, gray; scattered shale pebbles----------	29	93
	Gravel, fine, sandy; scattered shale pebbles and lignite fragments----------	27	120
	Gravel, fine to medium, cemented; scattered coarse shale pebbles--	17	137
	Gravel, fine to medium, partially cemented; shale fraction and scattered coarse pebbles and cobbles----------	73	210

TABLE 2.--Logs of test holes -- Continued

139-62-13bbb1
Test hole 1348 a/
Altitude 1,470 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black	1	1
	Till, light-brown to light-gray, slightly oxidized	30	31
	Till, gray; scattered shale pebbles	71	102
	Gravel, fine to medium; abundant shale pebbles	5	107
	Till, gray	14	121
	Till, gray; numerous cobbles	15	136
	Till, gray	22	158
	Gravel, fine; shale pebbles and abundant lignite fragments	11	169
	Gravel, fine to medium; cemented; shale pebbles and lignite fragments	41	210
	Lignite gravel concentration	9	219
	Gravel, fine; scattered medium shale pebbles	13	232
	Gravel, fine to coarse; shale pebbles	8	240
	Gravel, fine, clayey; numerous cobbles and lignite fragments	23	263

TABLE 2.--Logs of test holes -- Continued

139-62-15aaal
Test hole 1363 a/
Altitude 1,453 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Sand, fine to medium; scattered shale pebbles	12	12
	Clay, brown; scattered coarse sand grains	5	17
	Till, gray; scattered shale pebbles and cobbles; boulder at 101 feet	89	106
	Gravel, fine, predominantly lignite fragments and shale pebbles	10	116
	Gravel, fine; abundant lignite fragments and shale pebbles; partially cemented from 116 to 136 feet	60	176
	Lignite gravel concentration	13	189
	Gravel, fine; abundant lignite fraction; cemented from 194 to 206 feet	17	206
Pierre Shale:			
	Shale, grayish-blue	4	210

TABLE 2.--Logs of test holes -- Continued

139-62-18aaa
Test hole 1346 a/
Altitude 1,480 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Clay, yellow, oxidized, calcareous; fine gravel----------	5	6
	Gravel, fine----------	5	11
	Clay, light-brown, calcareous----	7	18
	Till, gray----------	12	30
	Till, gray; shale pebbles--------	100	130
Pierre Shale:			
	Shale, gray-blue----------	7	137

TABLE 2.--Logs of test holes -- Continued

139-63-4ddd
Test hole 1338 a/
Altitude 1,385 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	4	4
	Sand, fine to medium----------	7	11
	Sand, medium to very coarse; abundant granules and pebbles of shale, lignite fragments from 32 to 42 feet----------	35	46
	Till, gray; numerous lignite fragments----------	26	72
Pierre Shale:			
	Shale----------	12	84

TABLE 2.--Logs of test holes -- Continued

139-63-5ccc
Test hole 1336 a/
Altitude 1,415 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Gravel, fine to medium, clayey----	2	3
	Gravel, fine, coarse; scattered shale pebbles----------	25	28
	Gravel, fine to medium, predominantly shale----------	15	43
	Till----------	20	63

TABLE 2.--Logs of test holes -- Continued

139-63-8aba
Test hole 1337 a/
Altitude 1,385 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Clay, brown----------	10	12
	Gravel, fine to coarse; lignite and shale pebbles----------	29	41
	Till, gray; numerous shale pebbles-	12	53
	Sand, fine to coarse, silty; shale pebbles----------	16	69
Pierre Shale:			
	Shale, gray-blue, very dense-------	15	84

TABLE 2.--Logs of test holes -- Continued

139-63-11bbb
Test hole 1339 a/
Altitude 1,375 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Clay, silty, gray-brown, calcareous----------	10	12
	Gravel, fine to medium; shale pebbles; Pelecypod shells------	10	22
Pierre Shale:			
	Shale, gray-blue----------	10	32

TABLE 2.--Logs of test holes -- Continued

139-63-13ddd
Test hole 1345 a/
Altitude 1,370 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Clay, yellow----------	2	4
	Gravel, fine to medium; shale pebbles----------	6	10
	Gravel, coarse; numerous cobbles and abundant shale pebbles------	23	33
Pierre Shale:			
	Shale----------	9	42

TABLE 2.--Logs of test holes -- Continued

139-63-17ccc
Test hole 1342 a/
Altitude 1,482 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Gravel, fine, sandy to clayey-----	9	11
	Till, gravelly, yellowish-gray, oxidized; numerous cobbles------	21	32
	Till, gravelly, gray; numerous cobbles----------	10	42
	Till, gray; scattered shale pebbles----------	64	106
	Gravel, fine to medium; abundant shale pebbles and lignite fragments and some included clay----	28	134
	Clay, sandy, gray----------	24	158
	Sand, fine to coarse, clayey------	20	178
Pierre Shale:			
	Shale----------	11	189

TABLE 2.--Logs of test holes -- Continued

139-63-22bbb
Test hole 1341 a/
Altitude 1,485 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Topsoil, black----------	1	1
	Till, yellowish-gray, oxidized; scattered cobbles; boulder at 11 feet----------	21	22
	Till, gray; scattered shale pebbles----------	15	37
	Gravel, fine, sandy; abundant shale pebbles----------	5	42
	Till, gray; numerous shale pebbles; boulder at 49 feet---------	33	75
	Cobbles, very dense concentration--	8	83
	Gravel, fine; abundant lignite fragments and some included gray sandy clay----------	47	130
	Till, gray; scattered shale pebbles; boulder at 133 feet--------	7	137
Pierre Shale:			
	Shale----------	10	147

TABLE 2.--Logs of test holes -- Continued

139-63-23aaa
Test hole 1340 a/
Altitude 1,485 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Till, sandy, yellow, oxidized-----	25	26
	Till, gravelly, yellow; abundant medium to coarse gravel; boulder at 30 feet----------	5	31
	Till, gray; scattered shale pebbles----------	46	77
	Till, gray; numerous cobbles------	54	131
	Clay, smooth, light-gray, calcareous; scattered shale pebbles---	6	137
	Gravel, fine to medium, very clayey----------	11	148
	Gravel, fine to coarse, abundant shale pebbles----------	9	157
Pierre Shale:			
	Shale, gray-blue----------	11	168

TABLE 2.--Logs of test holes -- Continued

139-64-2ddd
Test hole 1334 a/
Altitude 1,485 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	4	4
	Till, light-yellow to brown, oxidized; scattered shale pebbles----------	25	29
	Till, gray; scattered shale pebbles; boulder at 63 feet--------	57	86
	Till, gravelly----------	7	93
Pierre Shale:			
	Shale, gray----------	12	105

TABLE 2.--Logs of test holes -- Continued

139-64-3ccc
Test hole 1332 a/
Altitude 1,515 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	4	4
	Clay, brown----------	3	7
	Till, light-yellow, oxidized-------	14	21
	Till, gray; numerous cobbles; boulder at 68 feet----------	68	89
	Till, gravelly, gray; fine to coarse gravel----------	9	98
	Gravel, fine to medium----------	3	101
	Till, gravelly, gray; fine to coarse gravel----------	3	104
	Till, gray; numerous cobbles; cobble concentration from 105 to 107 feet----------	10	114
Pierre Shale:			
	Shale, blue-gray----------	12	126

TABLE 2.--Logs of test holes -- Continued

139-64-3ddd
Test hole 1333 a/
Altitude 1,495 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black	2	2
	Till, light-yellow, oxidized	20	22
	Till, gray; scattered shale pebbles	51	73
	Till, gravelly, gray; abundant fine to coarse gravel and scattered shale pebbles	7	80
	Boulder and cobble concentration	5	85
	Till, gravelly, gray; abundant fine to coarse gravel and scattered shale pebbles	11	96
	Gravel, fine; scattered lignite and wood fragments	2	98
	Till, gravelly, gray; abundant fine to coarse gravel and scattered shale pebbles	37	135
	Gravel, fine, predominantly shale and lignite fragments	9	144
	Till, gravelly, gray; abundant fine to medium gravel, shale pebbles and lignite fragments	19	163
Pierre Shale:			
	Shale, gray	5	168

TABLE 2.--Logs of test holes -- Continued

139-64-12aaa
Test hole 1335 a/
Altitude 1,480 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black	2	2
	Till, light-brown to grayish-brown, slightly oxidized; numerous cobbles and scattered shale pebbles	51	53
	Till, gray; numerous cobbles with scattered shale pebbles	35	88
	Gravel, fine to medium, clayey; scattered lignite fragments and shale pebbles	2	90
	Till, gray; numerous cobbles with scattered shale and lignite pebbles	15	105
Pierre Shale:			
	Shale, gray-blue	11	116

TABLE 2.--Logs of test holes -- Continued

139-64-13ccc
Test hole 1343 a/
Altitude 1,483 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Till, light-brown, slightly oxidized----------	14	15
	Till, gray; shale pebbles----------	47	62
	Lignite gravel concentration-------	2	64
	Sand, coarse, slightly clayey------	14	78
Pierre Shale:			
	Shale, gray-blue----------	6	84

TABLE 2.--Logs of test holes -- Continued

139-64-21aaa
Test hole 1344 a/
Altitude 1,510 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Till, light-brown, oxidized-------	15	17
	Till, brownish-gray, slightly oxidized (?); scattered shale pebbles----------	9	26
	Till, gray; scattered shale pebbles----------	27	53
	Sand, coarse, clean----------	14	67
Pierre Shale:			
	Shale, blue-gray----------	6	73

TABLE 2.-- Logs of test holes -- Continued

139-65-1bbb
Test hole 1585 b/
Altitude 1,525 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black	4	4
	Till (?), mottled yellowish-gray, oxidized	11	15
	Till, mottled olive-gray and gray, slightly oxidized; scattered shale pebbles and lignite fragments; boulder at 17 feet	6	21
	Till, mottled buff and orange, oxidized; scattered shale pebbles and lignite fragments	5	26
	Till, medium-light-gray; shale pebbles and lignite fragments	132	158
	Till, medium-light-gray; scattered shale pebbles and lignite fragments; interbedded with layers of fine to medium cemented (?) gravel	21	179
	Till, medium-light-gray; scattered shale pebbles and lignite fragments	36	215
	Boulder concentration	6	221
	Till, medium-light-gray; scattered shale pebbles and lignite fragments; boulder at 246 feet	25	246

TABLE 2.--Logs of test holes -- Continued

139-65-2bbb
Test hole 1588 A b/
Altitude 1,545 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, brown----------	2	2
	Till, buff to yellow, oxidized----	19	21
	Sand, fine to medium, clean, slightly oxidized; some coarse shale grains----------	4	25
	Till, mottled orange and gray, oxidized; scattered shale pebbles and lignite fragments---	6	31
	Till, medium-light-gray; scattered shale pebbles and lignite fragments; interbedded with layers of grayish-yellow clay from 63 to 74 feet----------	43	74
	Clay, light-gray, calcareous------	11	85
	Sand, fine to medium, clean; abundant lignite fragments------	31	116
Pierre Shale:			
	Shale, medium-gray, dense, brittle----------	10	126

TABLE 2.--Logs of test holes -- Continued

139-65-5bbb
Test hole 1586 b/
Altitude 1,590 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black	3	3
	Sand, fine to coarse, clean	9	12
	Till, mottled yellow and gray, oxidized	4	16
	Till, medium-light-gray to light-olive-gray; scattered shale pebbles and lignite fragments, numerous cobbles	80	96
	Gravel, fine to medium, clean, subrounded	20	116
	Till, medium-light-gray, highly calcareous; scattered shale pebbles and lignite fragments; boulder at 117 feet	25	141
	Till, medium-light-gray, highly calcareous; scattered shale pebbles and lignite fragments, numerous cobbles	27	168
	Till, medium-light-gray, highly calcareous; scattered shale pebbles and lignite fragments	21	189
	Till, medium-light-gray, highly calcareous; scattered shale pebbles and lignite fragments, numerous cobbles	42	231

TABLE 2.--Logs of test holes -- Continued

139-65-5bbb
Test hole 1586 b/ (Continued)
Altitude 1,590 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift	(Cont.):		
	Gravel, fine to medium, predominantly shale----------	5	236
Pierre Shale:			
	Shale, medium-gray, dense, brittle----------	5	241

TABLE 2.--Logs of test holes -- Continued

139-65-30aaa
Test hole 1915 d/
Altitude 1,645 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Till, moderate-yellowish-brown, oxidized, highly calcareous; numerous sand grains and scattered lignite fragments------	28	29
	Till, light-olive-gray; numerous sand grains and scattered shale granules and lignite fragments---	17	46
	Gravel, fine to coarse, sandy, cemented; abundant limestone pebbles----------	2	48
	Till, light-olive-gray; numerous sand grains and scattered shale granules and lignite fragments---120		168
	Till, olive-gray, very cohesive; abundant fine to medium quartz sand and medium to coarse shale sand, scattered granules and lignite fragments; interbedded with layers of fine to coarse, cemented(?), shale and limestone gravel consisting of abundant angular shards; granite boulders from 176 to 177 feet and from 204 to 205 feet----------	42	210

TABLE 2.--Logs of test holes -- Continued

139-65-30aaa
Test hole 1915 d/ (Continued)
Altitude 1,645 ft

Formation	Material	Thickness (feet)	Depth (feet)
	Till, olive-gray, very cohesive; abundant fine to medium quartz sand and medium to coarse shale sand, scattered granules and lignite fragments----------	31	241
Pierre Shale:			
	Shale, dark-greenish-gray, dense, finely laminated----------	6	247

TABLE 2.--Logs of test holes -- Continued

139-66-1bbb
Test hole 1582 b/
Altitude 1,680 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black	4	4
	Till, mottled white and gray, highly calcareous	7	11
	Till, mottled yellow and gray, oxidized	11	22
	Till, light-gray to medium-light-gray, very cohesive; lignite fragments becoming numerous from 231 to 315 feet, scattered cobbles from 270 to 315 feet	293	315
	Till, medium-light-gray, very coheisve; abundant fine gravel and numerous shale pebbles from 367 to 400 feet, numerous lignite fragments, and scattered to numerous cobbles or gravel layers	85	400
	Boulder concentration	10	410
	Gravel, fine to medium, subangular; scattered shale and lignite grains	22	432
	Sand, coarse, predominantly shale grains and lignite fragments	19	451

TABLE 2.--Logs of test holes -- Continued

139-67-5bbc
Test hole 1580 b/
Altitude 1,820 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Clay, sandy, very light-gray, friable, calcareous----------	4	5
	Till, mottled yellow and gray, highly oxidized; shale pebbles and lignite fragments----------	16	21
	Till, medium-light-gray to light-olive-gray, slightly oxidized from 21 to 31 feet; scattered shale pebbles and lignite fragments----------	42	63
	Gravel, fine to medium----------	2	65
	Till, medium-light-gray; abundant fine to coarse gravel and numerous shale pebbles and scattered lignite traces-------	103	168

TABLE 2.--Logs of test holes -- Continued

139-67-5bbc
Test hole 1580 b/ (Continued)
Altitude 1,820 ft

Formation	Material	Thickness (feet)	Depth (feet)
	Till, gravelly, mottled buff and gray, (from 168 feet to 183 feet) to medium-light-gray, slightly oxidized (168 feet to 183 feet), friable; very abundant fine to medium gravel of predominantly shale composition, scattered lignite traces----------	179	347
	Gravel, fine to medium, cemented; abundant limestone and igneous pebbles----------	11	358
	Till, gravelly, medium-light-gray; abundant fine gravel and coarse sand of predominantly shale composition, lignite traces---	33	391
Pierre Shale:			
	Shale, medium-gray, dense, brittle----------	8	399

TABLE 2.--Logs of test holes -- Continued

139-67-28cdd
Test hole 1911 d/
Altitude 1,815 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black	1	1
	Till, moderate-yellowish-brown, oxidized, highly calcareous; numerous sand grains and scattered lignite fragments and fine to medium shale pebbles	23	24
	Till, olive-gray, highly calcareous; fine to coarse sand and granules and scattered lignite fragments and shale pebbles	212	236
	Till(?), olive-gray, highly calcareous; fine to coarse sand and granules and scattered lignite fragments and shale pebbles; interbedded with scattered layers of fine, sandy gravel consisting of abundant shale pebbles and lignite fragments	16	252
	Till, olive-gray, highly calcareous; fine to coarse sand and granules and scattered lignite fragments and shale pebbles	108	360
Pierre Shale:			
	Shale, medium-bluish-gray, dense	18	378

TABLE 2.--Logs of test holes -- Continued

139-68-3bbb
Test hole 1560 b/
Altitude 1,880 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, sandy, brown----------	5	5
	Clay, sandy, yellowish-gray, oxidized; scattered granules---	5	10
	Sand, fine to medium, clayey (31 to 42 feet) to clean; abundant coarse shale grains and lignite fragments----------	43	53
	Clay, very silty, light-gray, calcareous; numerous lignite fragments----------	53	106
	Till, greenish-gray; scattered shale pebbles and lignite fragments----------	93	199

TABLE 2.--Logs of test holes -- Continued

139-68-5abb2
Test hole 1561 b/
Altitude 1,810 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, sandy, black----------	4	4
	Sand, medium to coarse, clean-----	7	11
	Gravel, fine to coarse, sub-rounded, clean----------	7	18
	Till, light-olive-gray; scattered shale pebbles and lignite fragments----------	105	123
	Sand, coarse----------	2	125
	Till, light-olive-gray; scattered shale pebbles and lignite fragments----------	12	137
	Sand, fine to coarse, clayey; scattered shale grains and lignite fragments----------	11	148
	Sand, fine to coarse; abundant shale grains and scattered lignite fragments----------	11	159
	Sand, fine to coarse, clayey; scattered shale grains and lignite fragments----------	5	164
	Till, light-olive-gray; scattered shale pebbles and lignite fragments----------	35	199

TABLE 2.--Logs of test holes -- Continued

139-68-5cbb
Test hole 1555 b/
Altitude 1,805 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, sandy, brown----------	4	4
	Gravel, fine to medium and medium to coarse sand, clean, subrounded to angular----------	24	28
	Till, light-olive-gray; scattered shale pebbles and lignite fragments----------	104	132
	Gravel, fine to coarse and medium to coarse sand----------	16	148
	Till, light-olive-gray; scattered shale pebbles and lignite fragments----------	140	288
Pierre Shale:			
	Shale, medium-gray, dense--------	16	304

TABLE 2.--Logs of test holes -- Continued

139-68-6bba
Test hole 1545 b/
Altitude 1,790 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	3	3
	Clay, light-gray; scattered granules----------	8	11
	Till, yellowish-gray (light-olive-gray when wet), oxidized-------	4	15
	Till, medium-gray to light-olive-gray (dark-greenish-gray when wet); abundant shale and lignite traces----------	259	274
Pierre Shale:			
	Shale, medium-bluish-gray, dense, brittle----------	9	283

TABLE 2.--Logs of test holes -- Continued

139-68-6bba
Test hole 1545 b/
Altitude 1,790 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	3	3
	Clay, light-gray; scattered granules----------	8	11
	Till, yellowish-gray (light-olive-gray), oxidized----------	4	15
	Till, medium-gray to light-olive-gray (dark-greenish-gray to dark-olive-gray); abundant shale grains and traces of lignite----------	259	274
Pierre Shale:			
	Shale, medium-bluish-gray, dense, brittle----------	9	283

TABLE 2.--Logs of test holes -- Continued

139-68-17bbb
Test hole 1556 b/
Altitude 1,890 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	3	3
	Sand, fine to medium clean------	18	21
	Sand, fine, clayey; abundant lignite grains----------	5	26
	Clay, silty, light-gray, cohesive, calcareous----------	59	85
	Till, medium-light-gray, very cohesive; abundant fine gravel (252 to 346 feet) and scattered shale pebbles and lignite fragments; boulder at 253 feet----	261	346

TABLE 2.--Logs of test holes -- Continued

139-68-19aaa
Test hole 1557 b/
Altitude 1,765 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Clay, light-gray, calcareous-----	3	5
	Sand, fine to medium----------	7	12
	Till, light-olive-gray; scattered shale pebbles and lignite fragments----------	187	199

TABLE 2.--Logs of test holes -- Continued

139-68-31aaa
Test hole 1558 b/
Altitude 1,780 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Till, yellowish-gray (dark-yellowish-brown when wet), highly oxidized; scattered shale pebbles and lignite traces----------	12	14
	Till, light-gray to medium-light-gray, cohesive----------	17	31
	Gravel, fine to coarse, subangular to subrounded, clean; some coarse sand----------	22	53
	Till, medium-light-gray (olive-gray when wet), very cohesive; scattered shale pebbles and lignite traces----------	51	104
	Clay, silty, light-gray (olive-gray when wet), calcareous----------	54	158
	Till, medium-light-gray; abundant fine to medium gravel and scattered shale pebbles and lignite traces; boulder at 159 feet-----	41	199

TABLE 2.--Logs of test holes -- Continued

139-68-31ddd
Test hole 1559 b/
Altitude 1,918 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	4	4
	Clay, sandy to silty, mottled yellow and gray, oxidized, calcareous----------	10	14
	Clay, silty, light-gray, calcareous----------	27	41
	Till, medium-light-gray; scattered shale pebbles and lignite fragments----------	268	309
Pierre Shale:			
	Shale, greenish-gray, dense-------	6	315

TABLE 2.--Logs of test holes -- Continued

139-69-2aaa
Test hole 1544 b/
Altitude 1,790 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Topsoil, black----------	1	1
	Till, buff to yellow-gray (olive-when wet), friable, oxidized; scattered shale pebbles and lignite fragments----------	14	15
	Till, gray (brownish-gray when wet), slightly oxidized; scattered shale and lignite fragments----------	11	26
	Gravel, fine to medium and coarse sand----------	2	28
	Till, gray (dark-olive-gray when wet); abundant shale pebbles----	15	43
	Gravel, fine to coarse, clayey----	3	46
	Till, light-olive-gray to gray (dark-olive-gray when wet), very cohesive; abundant shale pebbles and scattered lignite fragments-	132	178
	Till(?), clayey, light-buff-gray (olive-gray when wet), very cohesive, smooth fracture; very scattered medium to coarse sand grains, abundant shale pebbles and scattered lignite fragments-	58	236

TABLE 2.--Logs of test holes -- Continued

139-69-2aaa
Test hole 1544 b/ (Continued)
Altitude 1,790 ft

Formation	Material	Thickness (feet)	Depth (feet)
	Till, gray (dark-gray when wet), abundant shale pebbles and scattered lignite fragments---	63	299
Pierre Shale:			
	Shale, greenish-gray (dark-greenish-gray when wet), dense, brittle----------	16	315

TABLE 2.--Logs of test holes -- Continued

139-69-3aad
Test hole 1543 b/
Altitude 1,790 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Topsoil, black----------	2	2
	Clay, silty, yellow (light-brown when wet), smooth fracture, highly calcareous; scattered granules-	18	20
	Till(?), very clayey, gray (dark-gray when wet), very cohesive, smooth fracture, highly calcareous; scattered granules and coarse sand grains of shale, lignite traces; concentration of included grains and granules greatest from 20 to 40 feet and from 198 to 243 feet----------	223	243
Pierre Shale:			
	Shale, gray-blue (dark-greenish-gray when wet), very dense, brittle----------	9	252

TABLE 2.--Logs of test holes -- Continued

139-69-4caa
Test hole 1542 b/
Altitude 1,750 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Topsoil, black----------	2	2
	Clay, sandy, light-gray----------	3	5
	Gravel, fine, clayey----------	2	7
	Till, sandy, buff (light-brown when wet), highly oxidized------	5	12
	Till, gray (olive-gray when wet); scattered shale granules--	61	73
	Clay, slightly silty, bluish-gray (dark-gray when wet), very cohesive, smooth fracture, calcareous; scattered coarse shale grains----------	11	84
	Clay, silty, gray (dark-brownish-gray when wet), very cohesive; smooth fracture, calcareous; very scattered sand grains------	81	165
Pierre Shale:			
	Shale, blue, very dense, brittle--	13	178

TABLE 2.--Logs of test holes -- Continued

139-69-33cbb
Test hole 1905 d/
Altitude 1,840 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Clay, silty, pale-yellowish-brown, very cohesive, oxidized, calcareous----------	10	11
	Clay, greenish-gray, very cohesive, calcareous----------	62	73
	Till, light-olive-gray; abundant fraction of sand and granules with shale and carbonates, limestone particles predominating from 168 to 188 feet, scattered lignite fragments----------	115	188
	Sand, medium to very coarse-------	2	190
	Till, light-olive-gray; abundant sand and numerous granules------	83	273
	Gravel, fine to medium sandy------	7	280
	Till, light-olive-gray; abundant sand and numerous granules------	13	293
	Till, silty to very sandy, light-olive-gray; interbedded with layers of fine to very coarse; gravelly sand with abundant shale grains and scattered lignite fragments-	31	324

TABLE 2.--Logs of test holes -- Continued

139-69-33cbb
Test hole 1905 d/ (Continued)
Altitude 1,840 ft

Formation	Material	Thickness (feet)	Depth (feet)
	Gravel, fine to medium, sandy------	7	331
	Till, olive-gray; scattered shale granules and lignite fragments---	36	367
	Gravel, fine to medium, sandy; scattered lignite fragments------	52	419
	Till, olive-gray; scattered shale granules and lignite fragments---	6	425
Pierre Shale:			
	Shale, dark-greenish-gray, dense, laminated----------	5	430

TABLE 2.--Logs of test holes -- Continued

140-62-19aaa
Test hole 1366a/
Altitude 1,427 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Gravel, fine to coarse; abundant medium to coarse sand, some included brown clay, and scattered shale pebbles----------	11	12
	Sand, fine to coarse; abundant shale grains----------	10	22
	Gravel, fine to very coarse; abundant shale grains----------	27	49
Pierre Shale:			
	Shale, grayish-blue----------	3	52

TABLE 2.--Logs of test holes -- Continued

140-62-21aaa
Test hole 1365 a/
Altitude 1,477 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Clay, brown----------	5	7
	Clay, yellow; some fine to medium gravel----------	9	16
	Till, gray; scattered shale pebbles and cobbles----------	89	105
	Till, gray; scattered shale pebbles and numerous cobbles from 105 to 185 feet----------	95	200
	Gravel, fine; abundant shale pebbles and lignite fragments------	21	221
Pierre Shale:			
	Shale, bluish-gray----------	11	232

TABLE 2.--Logs of test holes -- Continued

140-62-23aaa
Test hole 1364 a/
Altitude 1,470 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Till, yellow, oxidized----------	15	16
	Till, gray----------	60	76
	Gravel, medium to coarse;		
	numerous cobbles----------	7	83
	Till, gray----------	126	209
	Gravel, fine to medium; scattered		
	lignite fragments----------	117	326
Pierre Shale:			
	Shale, gray----------	10	336

TABLE 2.--Logs of test holes -- Continued

140-62-24aaa
Test hole 1594 b/
Altitude 1,462 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, sandy, brown----------	3	3
	Till, yellowish-gray, oxidized---	19	22
	Till, light-olive-gray; scattered shale pebbles and lignite fragments----------	21	43
	Sand, medium to very coarse, clean; abundant lignite fragments----------	20	63
	Till, light-olive-gray; scattered shale pebbles and lignite fragments; boulders at 74 feet and 139 feet----------	85	148
	Clay, silty, gray----------	272	420
	Clay, silty to sandy, gray-------	64	484
	Clay, sandy, gray; scattered lignite grains----------	20	504

TABLE 2.--Logs of test holes -- Continued

140-63-7ccc
Test hole 1351 a/
Altitude 1,505 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	4	4
	Clay, light-grayish-green, calcareous----------	6	10
	Clay, light-gray to yellow, calcareous----------	5	15
	Clay, gray, sandy, calcareous; boulder at 23 feet----------	8	23
	Clay, green, calcareous----------	4	27
Pierre Shale:			
	Shale, gray----------	4	31

TABLE 2.--Logs of test holes -- Continued

140-63-18ccc
Test hole 1350 a/
Altitude 1,500 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil----------	1	1
	Clay, yellowish-gray, sandy, calcareous----------	3	4
	Till, yellowish-gray, sandy, oxidized; boulder at 11 feet----	11	15
	Gravel, fine to medium----------	8	23
	Till, gray----------	15	38
	Sand, coarse----------	5	43
Pierre Shale:			
	Shale, gray----------	9	52

TABLE 2.--Logs of test holes -- Continued

140-64-1aaa
Test hole 1353 a/
Altitude 1,510 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Till, yellowish-gray, oxidized----	5	6
	Till, brownish-gray; abundant shale pebbles----------	11	17
Pierre Shale:			
	Shale, gray----------	14	31

TABLE 2.--Logs of test holes -- Continued

140-64-1ddd
Test hole 1352 a/
Altitude 1,510 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Till, yellow, oxidized----------	6	6
	Till, brown; abundant shale pebbles----------	18	24
	Clay, gray, sandy----------	2	26
Pierre Shale:			
	Shale, gray-blue----------	5	31

TABLE 2.--Logs of test holes -- Continued

140-64-6ccc
Test hole 1361 a/
Altitude 1,510 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black	2	2
	Clay, sandy, yellow, calcareous	3	5
	Gravel, fine to coarse	7	12
	Sand, coarse	5	17
	Gravel, fine; scattered coarse pebbles	14	31
	Sand, coarse	5	36
	Sand, coarse; numerous granules	3	39
	Till, gray; scattered shale pebbles	66	105
	Clay, sandy, gray; scattered lignite grains	47	152
	Gravel, fine to medium, cemented; abundant shale pebbles	12	164
	Clay, smooth, gray	6	170
	Gravel, fine to medium, partially cemented	32	202
Pierre Shale:			
	Shale, grayish-blue	8	210

TABLE 2.--Logs of test holes -- Continued

140-64-8ccc
Test hole 1359 a/
Altitude 1,500 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Till, yellow to brown, oxidized--	10	12
	Till, gray; scattered shale pebbles----------	71	83
	Gravel, fine to medium; scattered shale pebbles and some included clay----------	6	89
	Clay, sandy, gray, calcareous; fine to coarse sand and scattered pebbles and shale granules-----	25	114
	Sand, fine to coarse; scattered granules and lignite and shale pebbles----------	33	147
	Gravel, fine; medium to coarse shale pebbles----------	7	154
	Gravel, medium to coarse; scattered cobbles and included sandy, gray clay----------	21	175
Pierre Shale:			
	Shale, blue----------	3	178

TABLE 2.--Logs of test holes -- Continued

140-64-9ccc
Test hole 1358 a/
Altitude 1,510 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black	2	2
	Till, yellow, oxidized	15	17
	Till, light-gray to gray; scattered shale pebbles	95	112
	Till(?), gray, gravelly(?)	18	130
	Gravel, fine to coarse, cemented(?)	19	149
	Gravel, fine to medium, predominantly lignite and shale fragments	20	169
	Gravel, fine; abundant shale pebbles and lignite fragments	25	194
Pierre Shale:			
	Shale, gray	5	199

TABLE 2.--Logs of test holes -- Continued

140-64-9ddd1
Test hole 1357 a/
Altitude 1,420 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Sand, medium; scattered shale granules----------	4	6
	Gravel, fine to medium; abundant shale pebbles----------	11	17
Pierre Shale:			
	Shale, gray----------	4	21

TABLE 2.--Logs of test holes -- Continued

140-64-9ddd2
Test hole 1356 a/
Altitude 1,420 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	4	4
	Sand, very silty----------	8	12
	Gravel, fine to coarse----------	5	17
Pierre Shale:			
	Shale, gray----------	4	21

TABLE 2.--Logs of test holes -- Continued

140-64-10ddd
Test hole 1355 a/
Altitude 1,510 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Till, yellowish-gray, oxidized; cobble at 22 feet----------	21	22
	Till, brownish-gray----------	15	37
	Sand, fine to coarse; shale and lignite fragments----------	17	54
	Clay, gray, silty; scattered shale and lignite fragments-----	12	66
Pierre Shale:			
	Shale, gray-blue----------	7	73

TABLE 2.--Logs of test holes -- Continued

140-64-12baa
Test hole 1354 a/
Altitude 1,500 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Till, light-yellowish-gray, oxidized; abundant shale pebbles; cobbles at 7 feet and 19 feet---	21	22
Pierre Shale:			
	Shale, gray----------	83	105

TABLE 2.--Logs of test holes -- Continued

140-64-23ccc
Test hole 1592 b/
Altitude 1,425 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Topsoil, black----------	1	1
	Gravel, fine to medium, clean, oxidized; scattered shale pebbles----------	19	20
	Clay, light-buff, calcareous; abundant fine gravel----------	13	33
	Sand, coarse and fine gravel; abundant shale grains and lignite fragments; shale boulder from 68 to 71 feet----------	41	74
Pierre Shale:			
	Shale, medium-gray, dense, brittle-	10	84

TABLE 2.--Logs of test holes -- Continued

140-64-23cdd
Test hole 1593 b/
Altitude 1,425 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	4	4
	Clay, sandy, brown, friable, calcareous----------	6	10
	Gravel, fine and coarse sand------	12	22
	Gravel, fine; numerous coarse shale pebbles----------	25	47
Pierre Shale:			
	Shale, medium-light-gray, dense, brittle----------	5	52

TABLE 2.--Logs of test holes -- Continued

140-64-25aaa
Test hole 1349 a/
Altitude 1,485 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black	1	1
	Till, yellowish-gray to brownish-gray oxidized; cobbles from 10 to 31 feet	38	39
	Gravel, fine to medium, cemented	14	53
Pierre Shale:			
	Shale	10	63

TABLE 2.--Logs of test holes -- Continued

140-64-31ccc
Test hole 1589 b/
Altitude 1,530 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	4	4
	Till(?), very sandy, yellow, friable, oxidized----------	17	21
	Till, medium-light-gray; scattered shale pebbles and lignite fragments----------	11	32
	Till, medium-light-gray; scattered shale pebbles and lignite fragments, numerous cobbles from 32 to 41 feet----------	9	41
	Gravel, fine to coarse, clean, subrounded----------	22	63
	Sand, medium to coarse, clean; scattered shale grains and pebbles and lignite fragments--	27	90
Pierre Shale:			
	Shale, medium-gray, dense, brittle----------	5	95

TABLE 2.--Logs of test holes -- Continued

140-64-33ccc
Test hole 1590 b/
Altitude 1,525 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black	3	3
	Till, yellow, oxidized	19	22
	Sand, fine to coarse, clean; scattered shale grains and pebbles	21	43
	Gravel, fine to coarse, clean, subrounded	9	52
	Till, medium-light-gray; scattered shale pebbles and lignite fragments	22	74
Pierre Shale:			
	Shale, medium gray, dense, brittle	10	84

TABLE 2.--Logs of test holes -- Continued

140-65-6ddd
Test hole 1360 a/
Altitude 1,555 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	3	3
	Till, yellow, oxidized----------	21	24
	Gravel, fine to medium----------	42	66
	Till, gray; scattered shale pebbles----------	58	124
	Gravel, fine to medium, cemented; interbedded with layers of gray clay----------	28	152

TABLE 2.--Logs of test holes -- Continued

140-65-10aaa
Test hole 1921 d/
Altitude 1,540 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Till, dark-yellowish-orange, weakly cohesive, oxidized; scattered lignite fragments---------	12	13
	Till, dark-greenish-gray, highly calcareous; abundant shale sand and scattered lignite fragments-	33	46
	Till, dark-greenish-gray, highly calcareous; abundant shale sand and scattered lignite fragments; interbedded with layers of very fine to medium, silty, angular quartz sand----------	20	66
	Sand, medium to very coarse, gravelly; abundant shale pebbles and scattered lignite fragments-	6	72
Pierre Shale:			
	Shale, greenish-black, dense, brittle, laminated----------	22	94

TABLE 2.--Logs of test holes -- Continued

140-65-32ddc
Test hole 1587 b/
Altitude 1,575 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Clay, sandy, gray, calcareous-----	3	5
	Sand, very fine to medium; some coarse shale grains----------	21	26
	Sand, medium to coarse and fine to medium gravel; shale grains and lignite fragments----------	14	40
	Till, light-olive-gray; scattered shale pebbles, lignite fragments and cobbles----------	50	90
	Till, medium-light-gray, highly calcareous; scattered shale pebbles, and lignite fragments; boulder at 112 feet----------	58	148
Pierre Shale:			
	Shale, medium-gray, brittle-------	9	157

TABLE 2.--Logs of test holes -- Continued

140-66-32ccc
Test hole 1583 b/
Altitude 1,850 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black	4	4
	Clay, sandy, mottled gray, yellow, and white, calcareous	7	11
	Till, buff to grayish-yellow, oxidized	5	16
	Till, light-olive-gray to medium-light-gray; scattered shale pebbles and lignite fragments	47	63
	Till, sandy, light-gray, very cohesive; scattered shale pebbles and lignite fragments	10	73
	Till, medium-gray; abundant fraction of shale pebbles and lignite fragments; boulder at 294 feet	253	326
	Gravel, fine to medium, very clayey	18	344
	Till, medium-gray; abundant shale pebbles and lignite fragments; boulder at 392 feet	49	393
Pierre Shale:			
	Shale, medium-bluish-gray, dense, brittle	6	399

TABLE 2.--Logs of test holes -- Continued

140-66-34ccc
Test hole 1584 b/
Altitude 1,775 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	3	3
	Till, mottled yellow and gray, oxidized----------	19	22
	Till, medium-gray; scattered shale pebbles and lignite fragments---	20	42
	Till, light-olive-gray; abundant fine to medium gravel and scattered shale pebbles and lignite fragments; boulder at 44 feet---	14	56
	Gravel, fine to medium; scattered lignite fragments----------	2	58
	Till, light-olive-gray; abundant fine to medium gravel and scattered shale pebbles and lignite fragments----------	5	63
	Till, sandy, medium-light-gray; scattered shale pebbles and lignite fragments----------	10	73
	Till, light-olive-gray; numerous shale pebbles and lignite fragments, scattered cobbles; boulders at 119 feet and 155 feet----------	105	178

TABLE 2.--Logs of test holes -- Continued

140-66-34ccc
Test hole 1584 b/ (Continued)
Altitude 1,775 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:	(Cont.)		
	Till, medium-light-gray to medium-gray; abundant fine to medium gravel, numerous shale pebbles and scattered lignite fragments, scattered cobbles from 178 to 325 feet	147	325
	Till, medium-light-gray to medium-gray; abundant fine to medium gravel, numerous shale pebbles and scattered lignite fragments, numerous cobbles; boulder at 325 feet	33	358
	Gravel, fine to coarse, subrounded to subangular, cemented; scattered shale pebbles and scattered to numerous lignite fragments; interbedded with thin clay layers from 358 to 378 feet	68	426
Pierre Shale:			
	Shale, bluish-gray, dense, brittle	4	430

TABLE 2.--Logs of test holes -- Continued

140-67-34ccc
Test hole 1581 b/
Altitude 1,850 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	4	4
	Clay, light-gray to light-olive-gray, slightly oxidized----------	18	22
	Till, mottled yellow and gray, oxidized; scattered shale pebbles----------	9	31
	Till, light-olive-gray to medium-light-gray, scattered shale pebbles and lignite fragments-------	169	200
	Sand, fine to medium, clayey; scattered lignite fragments------	19	219
	Till, medium-light-gray (slightly lighter in tone from 219 to 432 feet), very cohesive; abundant granules and coarse sand fraction of predominantly shale composition, scattered lignite fragments; (slower drilling from 315 to 388 feet)---	169	388
	Till, medium-light-gray, abundant shale pebbles, numerous cobbles(?) and boulders----------	44	432
Pierre Shale:			
	Shale, medium-gray, dense, brittle-	9	441

TABLE 2.--Logs of test holes -- Continued

140-68-5bbb
Test hole 1554 b/
Altitude 1,940 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Till, yellowish-gray, oxidized; lignite traces----------	21	22
	Till, light-olive-gray, very cohesive; scattered shale pebbles and lignite fragments--	167	189
	Clay, silty, light-gray, friable, calcareous; abundant lignite grains----------	10	199
	Till, light-olive-gray, very cohesive; scattered shale pebbles and lignite fragments----------	10	209
	Clay, silty to sandy, light-gray, friable, calcareous; abundant lignite grains from 241 to 305 feet; clay becomes sandier and darker below 305 feet and lignite fraction decreases----------	138	347
	Till, light-olive-gray, slightly oxidized(?) from 347 to 355 feet; scattered lignite fragments and shale pebbles----------	125	472

TABLE 2.--Logs of Test holes -- Continued

140-68-8bbb
Test hole 1553 b/
Altitude 1,830 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Clay, very sandy, gray----------	3	5
	Till sandy, light-yellowish-gray to gray, oxidized; scattered lignite fragments----------	26	31
	Clay, gray, calcareous----------	5	36
	Till, gray, very cohesive; scattered shale pebbles and lignite fragments----------	48	84
	Till, dark-gray, very cohesive; abundant fine to medium gravel and scattered shale pebbles and lignite fragments; boulder at 186 feet----------	105	189

TABLE 2.--Logs of test holes -- Continued

140-68-19aaa
Test hole 1552 b/
Altitude 1,800 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	4	4
	Clay, light-gray, oxidized; scattered fine to medium pebbles and shale pebbles----------	22	26
	Till, light-gray to olive-gray; abundant shale pebbles and scattered lignite fragments-----	84	110
	Till, gray, very cohesive; shale and lignite pebbles; interbedded with thin layers of dense gray clay----------	16	126
	Till, yellowish-gray to gray, slightly oxidized(?); abundant shale pebbles and lignite fragments, numerous cobbles from 131 to 150 feet; boulder at 149 feet----------	24	150
	Till, gray; abundant shale pebbles and lignite fragments----------	75	225
	Gravel, fine to coarse, clayey, cemented----------	12	237
	Till, gray, very cohesive; abundant fine gravel, coarse sand and shale pebbles----------	68	305

TABLE 2.--Logs of test holes -- Continued

140-68-19aaa
Test hole 1552 b/ (Continued)
Altitude 1,800 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:	(Cont.)		
	Till, gray, very cohesive; abundant fine gravel, coarse sand and shale pebbles; hard drilling-	33	338
Pierre Shale:			
	Shale, bluish-gray, dense----------	8	346

TABLE 2.--Logs of test holes -- Continued

140-68-20cbb
Test hole 1548 b/
Altitude 1,795 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	3	3
	Till, yellowish-gray, highly oxidized; some coarse sand---------	12	15
	Till, light-olive-gray (olive-gray when wet); scattered shale granules and lignite fragments--	197	212
	Gravel, fine to coarse, clean, rounded----------	16	228
	Till----------	3	231

TABLE 2.--Logs of test holes -- Continued

140-68-29bcc
Test hole 1547 b/
Altitude 1,815 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Topsoil, black	1	1
	Clay, light-gray	4	5
	Gravel, fine to medium	6	11
	Till, yellowish-gray (moderate-olive-brown when wet), oxidized, friable	5	16
	Sand, medium and ranging to coarse gravel	8	24
	Till, light-gray (medium-dark-gray when wet), slightly oxidized; scattered shale pebbles	7	31
	Till, light-gray (light-olive-gray when wet); scattered shale grains	21	52
	Clay, light-greenish-gray (light-olive-gray when wet), very cohesive, smooth fracture, slightly calcareous	11	63
	Till, light-gray (light-olive-gray when wet); scattered shale grains, cobble at 84 feet	42	105

TABLE 2.--Logs of test holes -- Continued

140-68-31aaa
Test hole 1549 b/
Altitude 1,765 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Clay, very sandy, gray to pinkish-gray (dark-yellowish-brown when wet)----------	6	6
	Sand, fine to coarse and fine gravel----------	6	12
	Sand, medium, clean; scattered shale granules----------	9	21
	Gravel, fine and coarse sand, clean, well sorted, subangular; scattered shale pebbles----------	12	33
	Clay, sandy, light-bluish-gray (olive-gray when wet), calcareous; coarse sand grains----------	4	37
	Sand, fine to coarse, clayey; abundant shale pebbles and lignite fragments----------	7	44
	Till, clayey, light-gray (olive-gray when wet); abundant shale pebbles and scattered lignite fragments-	156	200

TABLE 2.--Logs of test holes -- Continued

140-68-31aaa
Test hole 1549 b/ (Continued)
Altitude 1,765 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:	(Continued)		
	Till, light-gray (olive-gray when wet); abundant coarse sand, fine gravel, shale pebbles and scattered lignite fragments----------	58	258
Pierre Shale:			
	Shale, medium-gray (medium-dark-gray when wet), dense----------	15	273

TABLE 2.--Logs of test holes -- Continued

140-68-31add2
Test hole 1551 b/
Altitude 1,780 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Topsoil, black----------	1	1
	Clay, silty, light-gray, calcareous----------	4	5
	Sand, fine to coarse, clayey; fine gravel and scattered lignite fragments----------	16	21
	Till, light-gray; scattered lignite and shale pebbles----------	31	52

TABLE 2.--Logs of test holes -- Continued

140-68-31dda
Test hole 1550 b/
Altitude 1,790 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Topsoil, black----------	1	1
	Till, mottled yellow to buff, oxidized----------	9	10
	Till, yellow to light-gray; slightly oxidized; scattered shale pebbles----------	26	31
	Till, light-gray; scattered shale pebbles----------	32	63

TABLE 2.--Logs of test holes -- Continued

140-68-32ccc3
Test hole 1546 b/
Altitude 1,810 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, sandy, brown----------	1	1
	Gravel, fine----------	2	3
	Till, light-olive-gray (olive-gray when wet); abundant shale pebbles and scattered lignite fragments, cobbles from 157 to 168 feet; boulder at 65 feet, 110 feet, and 124 feet----------	165	168
	Gravel, fine, gray-blue, well rounded, predominantly shale; scattered medium to coarse pebbles and lignite fragments------	21	189
	Till, light-olive-gray (olive-gray when wet); abundant shale pebbles and scattered lignite fragments-	96	285
Pierre Shale:			
	Shale, medium-light-gray (dark-greenish-gray when wet), dense--	9	294

TABLE 2.--Logs of test holes -- Continued

140-68-36ccc
Test hole 1577 b/
Altitude 1,870 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, sandy, black----------	4	4
	Sand, fine to coarse, silty and clayey----------	7	11
	Sand, fine to coarse----------	10	21
	Gravel, fine to medium, clayey----	4	25
	Till, light-gray; scattered cobbles, shale pebbles and lignite fragments----------	102	127
	Sand, fine to coarse, very silty; numerous shale pebbles----------	19	146
	Till, light-gray; scattered cobbles, shale pebbles and lignite fragments; hard drilling from 283 to 315 feet----------	169	315
	Clay, very sandy; numerous shale pebbles----------	16	331
Pierre Shale:			
	Shale, bluish-gray, dense----------	5	336

TABLE 2.--Logs of test holes -- Continued

141-62-24aaa
Test hole 1728
Altitude 1,492 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Till, yellow, oxidized----------	17	19
	Till----------	37	56
	Sand, fine to coarse----------	20	76
	Till----------	5	81
	Sand, fine to medium----------	7	88
	Till, gray----------	17	105
	Till, gray; hard drilling from 105 to 206 feet----------	11	206
Pierre Shale:			
	Shale----------	14	220

TABLE 2.--Logs of test holes -- Continued

141-62-24bba
Test hole 1725
Altitude 1,477 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Clay, yellow----------	14	16
	Till----------	16	32
	Sand, fine----------	19	51
	Sand, fine to coarse----------	21	72
	Clay, smooth, blue----------	18	90
	Sand, coarse and fine gravel------	16	106
	Till, gray----------	29	135
	Sand, fine to coarse, very clayey; some fine gravel----------	85	220
Pierre Shale:			
	Shale----------	11	231

TABLE 2.--Logs of test holes -- Continued

141-62-24ccc
Test hole 1729
Altitude 1,493 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black	2	2
	Clay, light-gray	3	5
	Till, yellow, oxidized	26	31
	Till, gray	12	42
	Gravel, fine to coarse	29	72
	Till, dark-gray; numerous cobbles	43	115

TABLE 2.--Logs of test holes -- Continued

141-62-32bbb
Test hole 1732
Altitude 1,475 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Clay, light-gray----------	9	11
	Till, yellow, oxidized----------	18	29
	Till, gray, boulder at 56 feet----	34	73
Pierre Shale:			
	Shale----------	11	84

TABLE 2.--Logs of test holes -- Continued

141-62-33aaal
Test hole 1724
Altitude 1,505 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Till, yellow, oxidized----------	30	32
	Till, gray----------	2	34
	Sand, fine to coarse----------	9	43
	Till, gray; scattered shale pebbles and lignite fragments; boulder at 127 feet----------	85	128
Pierre Shale:			
	Shale----------	8	136

TABLE 2.--Logs of test holes -- Continued

141-62-35aaa
Test hole 1730
Altitude 1,496 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Clay, light-gray----------	3	5
	Clay, yellow, oxidized----------	19	24
	Till, gray----------	29	53
	Gravel, medium to coarse---------	11	64
	Gravel, fine----------	5	69
	Till, gray----------	25	94
	Till, gray, cobbles(?); boulders at 127 feet and 139 feet; hard drilling----------	82	176
Pierre Shale:			
	Shale----------	13	189

TABLE 2.--Logs of test holes -- Continued

141-65-26bbb
Test hole 1899 d/
Altitude 1,530 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Sand, silty, oxidized; scattered granules	3	3
	Till, silty, dark-yellowish-orange to dark-yellowish-brown, weakly cohesive, oxidized	13	16
	Till, dark-greenish-gray, weakly cohesive; scattered shale granules; interbedded with very thin cemented layers of fine gravel	25	41
	Sand, fine to medium, quartz; numerous shale granules and scattered lignite fragments	11	52
	Sand, fine to very coarse; numerous shale granules and coarse grains; interbedded with thin layers of rounded lignite gravel	4	56
	Till, greenish-gray, weakly cohesive; scattered lignite and shale granules	1	57
Pierre Shale:			
	Shale, slightly silty, dark-greenish-gray, dense, brittle, laminated	16	73

TABLE 2.--Logs of test holes -- Continued

141-66-17bcc
Test hole 1904 d/
Altitude 1,775 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Sand, fine to very coarse, gravelly; interbedded with layers of silty, moderate-yellowish-brown, slightly cohesive, oxidized till--------	8	9
	Till, olive-gray; scattered lignite fragments and shale and limestone granules----------	69	78
	Gravel, fine, sandy; abundant shale grains and scattered lignite fragments----------	5	83
	Gravel, fine, clayey; included silty, greenish-gray, slightly cohesive clay----------	47	130
	Till, olive-gray; scattered lignite fragments and shale and limestone granules----------	243	373
	Gravel, fine to medium; abundant shale pebbles and scattered lignite fragments----------	7	380

TABLE 2.--Logs of test holes -- Continued

141-66-17bcc
Test hole 1904 d/ (Continued)
Altitude 1,775 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:	(Continued)		
	Till, olive-gray; scattered lignite fragments and shale granules	4	384
Pierre Shale:			
	Shale, dark-greenish-gray, dense, laminated	15	399

TABLE 2.--Logs of test holes -- Continued

141-66-17ddd
Test hole 1902 d/
Altitude 1,760 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Gravel, fine to coarse, sandy, oxidized; interbedded with layers of silty, moderate-yellowish-brown, non-cohesive, oxidized till----------	11	12
	Till, moderate-yellowish-brown, oxidized; interbedded with layers of fine to coarse gravel----------	4	16
	Till, greenish-gray, scattered lignite fragments; interbedded with layers of medium to coarse gravelly sand----------	25	41
	Gravel, fine, sandy; abundant limestone and shale granules, scattered lignite fragments----------	5	46
	Till, olive-gray, scattered lignite fragments; interbedded with layers of fine to medium sandy gravel with abundant limestone pebbles------	12	58

TABLE 2.--Logs of test holes -- Continued

141-66-17ddd
Test hole 1902 d/ (Continued)
Altitude 1,760 ft

Formation	Material	Thickness (feet)	Depth (feet)
	Till, olive-gray; scattered lignite fragments----------	5	63
	Till, olive-gray, abundant coarse shale grains and scattered lignite fragments; interbedded with layers of fine to medium gravel----------	10	73
	Till, olive-gray, abundant coarse shale grains and scattered lignite fragments----------	106	179
	Gravel, medium to coarse, very sandy, cemented(?)----------	16	195
	Gravel, medium to coarse, very sandy, cemented(?); interbedded with layers of olive-gray till--	35	230
	Till, olive-gray, abundant coarse shale grains and scattered lignite fragments; interbedded with layers of gravelly sand which may be cemented----------	65	295

TABLE 2.--Logs of test holes -- Continued

141-66-17ddd
Test hole 1902 d/ (Continued)
Altitude 1,760 ft

Formation	Material	Thickness (feet)	Depth (feet)
	Till, olive-gray, abundant coarse shale grains and scattered lignite fragments---------	19	314
	Sand, coarse to very coarse, gravelly, angular, cemented; abundant shale grains and scattered lignite fragments---------	22	336
Pierre Shale:			
	Shale, medium-bluish-gray, dense, brittle, laminated----------	12	348

TABLE 2.--Logs of test holes -- Continued

141-66-21aaa
Test hole 1903 d/
Altitude 1,740 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Till, moderate-yellowish-brown, oxidized; limestone boulder at 29 feet----------	29	30
	Till, olive-gray; coarse shale grains and scattered lignite fragments----------	21	51
	Gravel, fine to medium----------	2	53
	Clay, silty, olive-gray, calcareous; sparsely distributed fine white sand inclusions and silt-sized lignite(?) particles----------	9	62
	Gravel, fine to coarse, sandy; abundant shale pebbles and scattered lignite grains; wood fragments from 68 feet to 73 feet (Radio-carbon date: greater than 38,000 years B.P.)----------	50	112
	Till, dark-greenish-gray to light-olive-gray; numerous shale grains and scattered shale pebbles and lignite fragments----------	38	150

TABLE 2.--Logs of test holes -- Continued

141-66-21aaa
Test hole 1903 d/ (Continued)
Altitude 1,740 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:	(Cont.)		
	Till, dark-greenish-gray to light-olive-gray; numerous shale grains and scattered shale pebbles and lignite fragments; interbedded with layers of medium to coarse subrounded to very angular (shards), cemented, predominantly limestone gravel----------	42	192
	Till, dark-greenish-gray to light-olive-gray; numerous shale grains and scattered shale pebbles and lignite fragments----------	87	279
	Gravel, fine to medium, sandy, rounded with some shards and freshly broken surfaces, cemented; abundant limestone pebbles and scattered lignite fragments----	31	310
Pierre Shale:			
	Shale, dark-greenish-gray, dense, fissile----------	15	325

TABLE 2.--Logs of test holes -- Continued

141-66-33ccd
Test hole 1898 d/
Altitude 1,800 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Till, moderate-yellowish-brown to light-olive-gray, oxidized; scattered lignite fragments---------	38	39
	Till, olive-gray; shale grains and scattered lignite fragments-	34	73
	Sand, coarse to very coarse, gravelly----------	1	74
	Till, olive-gray; shale grains and scattered lignite fragments-	98	172
	Gravel, fine to medium, sandy; shale gravel increases to become predominant at 215 feet then decreases to become sparse, gravel becomes very sandy from 240 to 250 feet, scattered lignite fragments and oxidized sand grains are distributed throughout; interbedded with layers of included bodies of silty, light-greenish-gray clay-	78	250
	Clay, silty, greenish-gray, calcareous; very sparsely scattered shale grains----------	52	302

TABLE 2.--Logs of test holes -- Continued

141-66-33cdd
Test hole 1898 d/ (Continued)
Altitude 1,800 ft

Formation	Material	Thickness (feet)	Depth (feet)
	Till, olive-gray; shale grains numerous in sand fraction; scattered shale and carbonate pebbles and pebble sized bodies of fine, silty, oxidized sand---	88	390
Pierre Shale:			
	Shale, dark-greenish-gray, dense, finely laminated----------	9	399

TABLE 2.--Logs of test holes -- Continued

141-67-13aadl
Test hole 1896 d/
Altitude 1,810 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Till, moderate to dark-yellowish-brown, oxidized; abundant sand and scattered lignite fragments-	35	36
	Till, olive-gray; abundant sand fraction and medium to coarse shale grains, scattered lignite grains----------	29	65
	Clay, very silty to sandy, light-olive-gray, calcareous very fine sand; scattered very fine to fine lignite grains----------	14	79
	Till, very silty, light-olive-gray; scattered shale, lignite and limestone grains and granules----------	46	125
	Clay, very silty to sandy, light-olive-gray, calcareous very fine sand; scattered very fine to fine lignite grains----------	10	135

TABLE 2.--Logs of test holes -- Continued

141-67-13aad1
Test hole 1896 d/ (Continued)
Altitude 1,810 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:	(Cont.)		
	Gravel, fine to medium----------	1	136
	Till, olive-gray; abundant sand and medium to coarse shale grains, scattered lignite grains; boulder at 148 feet----------	12	148

TABLE 2.--Logs of test holes -- Continued

Formation	Material	141-67-13 aad2 Test hole 1897 d/ Altitude 1,810 ft	Thickness (feet)	Depth (feet)
Glacial drift:				
	Soil, black		1	1
	Till, moderate-yellowish to dark-yellowish-brown, oxidized; abundnat quartz sand and scattered lignite grains		38	29
	Till, olive-gray; scattered shale pebbles and lignite fragments		25	64
	Gravel, fine to medium, sandy		2	66
	Till, olive-gray; scattered shale pebbles and lignite fragments		18	84
	Gravel, fine to coarse, limestone pebbles predominate; numerous pyrite grains		3	87
	Till, olive-gray; scattered shale and limestone pebbles, lignite grains		28	115
	Sand, medium to very coarse, and fine gravel, shale predominating in coarse sand and fine gravel fraction; abundant limestone gravel		2	117
	Till, light-olive-gray; scattered fine to medium pebbles and lignite fragments		14	131
	Gravel, fine to medium, sandy, limestone pebbles and grains predominate; interbedded with layers of clay		11	142

TABLE 2.--Logs of test holes -- Continued

141-67-13aad2
Test hole 1897 d/ (Continued)
Altitude 1,810 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:	(Cont.)		
	Till, light-olive-gray; scattered fine to medium pebbles, lignite fragments	109	251
	Gravel, fine to coarse, partially cemented; abundant limestone and shale pebbles, scattered oxidized grains in upper portion, scattered angular fragments and shards in lower portion, and scattered lignite fragments throughout	42	293
	Till, light-olive-gray; numerous limestone and shale grains and granules and scattered lignite fragments	16	309
	Gravel, fine to medium, sandy; abundant limestone and shale pebbles, scattered shards and angular fragments	4	313
	Till, light-olive-gray; numerous limestone and shale grains and granules and scattered lignite fragments	15	328
	Gravel, fine to medium, sandy; cemented; abundant limestone and shale pebbles, scattered shards and angular fragments	1	329

TABLE 2.--Logs of test holes -- Continued

141-67-13aad2
Test hole 1897 d/ (Continued)
Altitude 1,810 ft

Formation	Material	Thickness (feet)	Depth (feet)
	Till, light-olive-gray; numerous limestone and shale grains and granules and scattered lignite fragments----------	16	345
	Till, light-olive-gray; numerous limestone and shale grains and granules and scattered lignite fragments; interbedded with layers of medium to very coarse partially cemented gravelly sand with abundant shale and limestone grains and scattered lignite grains-------	33	378
	Till, light-olive-gray; numerous limestone and shale grains and granules and scattered lignite fragments----------	41	419
	Till, light-olive-gray; numerous limestone and shale grains and granules and scattered lignite fragments; interbedded with layers of fine cemented gravel containing numerous shale pebbles and scattered lignite fragments----------	15	434
Pierre Shale:			
	Shale, medium-bluish-gray, dense, brittle, finely laminated------	7	441

TABLE 2.--Logs of test holes -- Continued

141-69-1ccc
Test hole 1893 d/
Altitude 1,865 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Sand, fine to coarse; scattered shale granules from 10 to 12 feet----------	11	12
	Gravel, fine to coarse---------	3	15
Pierre Shale:			
	Clay, light-olive-gray to greenish-black, moderately dense, slightly oxidized from 15 to 17 feet, non-calcareous----------	37	52

TABLE 2.--Logs of test holes -- Continued

141-69-3bbb
Test hole 1901 d/
Altitude 1,809 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Gravel, fine to coarse, sandy, oxidized----------	18	19
	Till, olive-gray; scattered lignite fragments----------	10	29
	Sand, very fine to medium, slightly clayey, quartz grains predominant with smaller fraction of shale grains; scattered lignite fragments----------	13	42
	Clay, light-olive-gray, very cohesive, calcareous; scattered lignite grains----------	159	201
	Gravel, fine to medium, sandy, subrounded to well-rounded; scattered lignite fragments; interbedded with scattered thin clay layers----	22	223
	Till, olive-gray; abundant shale pebbles and scattered lignite fragments----------	108	331
Pierre Shale:			
	Shale, dark-greenish-gray, dense, laminated----------	5	336

TABLE 2.--Logs of test holes -- Continued

141-69-16ddd
Test hole 1895 d/
Altitude 1,745 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Gravel, fine to medium, sandy, slightly oxidized; medium to coarse sand grains----------	8	9
	Sand, fine to very coarse, slightly oxidized----------	13	22
	Sand, fine to very coarse, gravelly; abundant coarse shale grains and granules and scattered lignite fragments----------	19	41
	Gravel, coarse; abundant fine to medium gravel----------	13	54
	Till, greenish-gray; scattered shale granules and lignite grains; limestone boulder or cobble from 294 to 295 feet----------	271	325
Pierre Shale:			
	Shale, dark-greenish-gray, dense-	11	336

TABLE 2.--Logs of test holes -- Continued

142-62-5dcc
Test hole 1883 d/
Altitude 1,545 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Till, yellowish-brown, oxidized; scattered shale grains; interbedded with layers of fine to coarse, oxidized sand containing abundant shale grains and granules----------	10	11
	Till, yellowish-brown, oxidized; scattered shale grains----------	9	20
	Till, olive-gray, weakly cohesive to cohesive; numerous shale pebbles and scattered lignite grains------	33	53
	Sand, fine to coarse----------	11	64
	Till, silty, olive-gray; scattered shale granules and lignite grains-	42	106
	Till, olive-gray; numerous limestone and shale granules and scattered lignite grains and granules; interbedded with layers of partially cemented coarse sand to fine gravel containing abundant lignite fragments and numerous coarse shards--	10	116

TABLE 2.--Logs of test holes -- Continued

142-62-5dcc
Test hole 1883 d/ (Continued)
Altitude 1,545 ft

Formation	Material	Thickness (feet)	Depth (feet)
	Sand, coarse and fine gravel, cemented----------	5	121
	Till, olive-gray; numerous limestone and shale granules and scattered lignite grains and granules----	64	185
Pierre Shale:			
	Shale, medium-bluish-gray, dense, brittle, finely laminated------	4	189

TABLE 2.--Logs of test holes -- Continued

142-62-21ddc
Test hole 1802 A c/
Altitude 1,458 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Gravel, fine to medium----------	5	6
	Clay, silty, yellow, slightly oxidized----------	4	10
	Till, gray----------	22	32
	Sand, coarse----------	10	42
	Till, gray; abundant concentration of boulders and cobbles--------	11	53
Pierre Shale:			
	Shale, gray----------	20	73

TABLE 2.--Logs of test holes -- Continued

142-62-21ddd
Test hole 1802 c/
Altitude 1,453 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	3	3
	Clay, silty, yellow, oxidized-----	8	11
	Gravel, fine and coarse sand------	9	20
	Till, gray; abundant concentration of boulders and cobbles from 36 feet to 52 feet; isolated boulders at 22 and 33 feet----------	32	52

TABLE 2.--Logs of test holes -- Continued

142-62-25aaa
Test hole 1801 c/
Altitude 1,502 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Till, yellow, oxidized----------	14	16
	Till, gray----------	26	42
	Till, gray; numerous cobbles; boulders at 107 feet and 116 feet----------	85	127
	Clay, sandy, gray; abundant lignite fragments----------	21	148
	Gravel, medium to coarse---------	6	154
	Till, gray; scattered cobbles----	15	169
	Gravel, fine to coarse, cemented (?)----------	42	211
Pierre Shale:			
	Shale, gray----------	9	220

TABLE 2.--Logs of test holes -- Continued

142-63-19ddd
Test hole 1805 c/
Altitude 1,490 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Till, yellow, oxidized----------	4	6
	Gravel, fine to coarse----------	16	22
Pierre Shale:			
	Shale, gray----------	9	31

TABLE 2.--Logs of test holes -- Continued

142-63-22cdd
Test hole 1804 c/
Altitude 1,448 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Clay, smooth, yellow----------	8	10
	Till, gray----------	75	85
Pierre Shale:			
	Shale, gray----------	9	94

TABLE 2.--Logs of test holes -- Continued

142-63-25aaa
Test hole 1803 c/
Altitude 1,515 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Till, yellow, oxidized----------	9	11
	Till, gray; abundant concentration of cobbles----------	54	65
Pierre Shale:			
	Shale, gray----------	8	73

TABLE 2.--Logs of test holes -- Continued

142-64-20bbb
Test hole 1806 c/
Altitude 1,535 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Till, yellow, oxidized----------	12	14
	Till, gray----------	8	22
Pierre Shale:			
	Shale, gray----------	20	42

TABLE 2.--Logs of test holes -- Continued

142-65-17dcd
Test hole 1808 c/
Altitude 1,490 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Gravel, fine to coarse----------	11	12
	Sand, medium to coarse; abundant lignite grains----------	20	32
	Gravel, fine and coarse sand; scattered lignite fragments-----	37	69
	Till, gray----------	16	85
Pierre Shale:			
	Shale, gray----------	9	94

TABLE 2.--Logs of test holes -- Continued

142-65-23bbb
Test hole 1807 c/
Altitude 1,545 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Clay, light-gray----------	3	5
	Gravel, fine to medium----------	6	11
	Till, gray; numerous cobbles------	62	73
	Till, gray; scattered cobbles-----	15	88
	Gravel, fine to medium----------	7	95
Pierre Shale:			
	Shale, gray----------	10	105

TABLE 2.--Logs of test holes -- Continued

142-66-13cdd
Test hole 1809 c/
Altitude 1,625 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Till, brown, oxidized----------	3	5
	Till, yellow, oxidized----------	38	43
	Clay, smooth, brown----------	5	48
	Clay, smooth, blue----------	16	64
	Till, gray----------	9	73
	Till, gray; numerous cobbles------	37	110
	Sand, fine to coarse----------	27	137
	Till, gray----------	15	152
Pierre Shale:			
	Shale, gray----------	5	157

TABLE 2.--Logs of test holes -- Continued

142-66-16ddd
Test hole 1810 c/
Altitude 1,825 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Sand, medium to coarse----------	3	5
	Till, yellow, oxidized----------	16	21
	Till, gray----------	11	32
	Clay, silty, gray----------	75	107
	Till, gray; boulders at 263 and 323 feet; hard drilling from 260 to 340 feet----------	233	340
	Sand, medium to coarse----------	6	346
	Clay, sandy, grayish-green to brown----------	11	357
	Till, gray----------	11	368
	Gravel, medium and coarse sand---	19	387
Pierre Shale:			
	Shale, gray----------	12	399

TABLE 2.--Logs of test holes -- Continued

142-66-19abb
Test hole 1811 c/
Altitude 1,850 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Till, yellow, oxidized----------	20	22
	Till, gray; numerous cobbles-----	24	46
	Sand, coarse; and fine gravel----	7	53
	Gravel, fine to coarse----------	25	78
	Clay, silty, gray----------	6	84
	Sand, medium to coarse----------	22	106
	Till, gray----------	19	125
	Clay, silty, gray----------	73	198
	Till, gray; scattered cobbles----	38	236
	Gravel, fine to medium----------	5	241
	Till, gray; boulders at 268 feet, 348 feet, and 414 feet---------	203	444
Pierre Shale:			
	Shale, gray----------	7	451

TABLE 2.--Logs of test holes -- Continued

142-67-14ccc
Test hole 1812 c/
Altitude 1,790 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Clay, light-gray----------	4	5
	Till, yellow, oxidized----------	9	14
	Till, gray----------	101	115
	Clay, silty, gray----------	21	136
	Sand, fine, clayey----------	19	155
	Till, gray; scattered limestone cobbles from 234 to 246 feet---	91	246
	Gravel, fine to medium----------	46	292
	Clay, silty, gray----------	12	304
	Gravel, fine to medium----------	10	314
	Till, gray----------	141	455
Pierre Shale:			
	Shale, gray----------	7	462

TABLE 2.--Logs of test holes -- Continued

142-67-17ddd
Test hole 1813 c/
Altitude 1,825 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Till, yellow, oxidized----------	40	41
	Till, gray----------	41	82
	Gravel, medium to coarse---------	28	110
	Till, gray----------	101	211
	Gravel, fine to coarse----------	9	220
	Gravel, fine to coarse; abundant to predominate shale pebble fraction----------	33	253
	Gravel, coarse----------	19	272
	Gravel, fine, clayey----------	21	293
	Clay, silty, gray----------	45	338
	Till, gray----------	76	414
Pierre Shale:			
	Shale, gray----------	6	420

TABLE 2.--Logs of test holes -- Continued

142-68-6ddd4
Test hole 1819 c/
Altitude 1,955 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Sand, medium to coarse----------	4	5
	Gravel, fine to coarse; numerous cobbles----------	6	11
	Till, gray; scattered cobbles; boulder at 31 feet----------	137	148
	Clay, silty, gray----------	31	179
	Till, gray----------	266	445
	Till, gray; numerous cobbles-----	21	466
Pierre Shale:			
	Shale, gray----------	6	472

TABLE 2.--Logs of test holes -- Continued

142-68-10bbb
Test hole 1815 c/
Altitude 1,999 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	3	3
	Till, yellow, oxidized----------	11	14
	Till, gray----------	96	110
	Gravel, fine to medium----------	5	115
	Till, gray; scattered cobbles; boulder at 183 feet----------	83	198
	Clay, silty, gray----------	33	231
	Till, gray; boulder at 306 feet--	147	378
	Sand, medium to coarse----------	5	383
	Till, gray----------	101	484
	Sand, fine to medium----------	9	493
	Till, gray----------	26	519
Pierre Shale:			
	Shale, gray----------	6	525

TABLE 2.--Logs of test holes -- Continued

142-68-12cdd
Test hole 1814 c/
Altitude 1,919 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Gravel, medium to coarse--------	9	11
	Gravel, medium and coarse sand; scattered cobbles----------	15	26
	Clay, smooth, gray----------	161	187
	Till, gray----------	55	242
	Gravel, fine to medium----------	11	253
	Gravel, fine to medium, clayey--	7	260
	Till, gray----------	35	295
	Gravel, fine to medium, partially cemented----------	52	347
	Till, gray----------	38	385
Pierre Shale:			
	Shale, gray----------	14	399

TABLE 2.--Logs of test holes -- Continued

142-69-1ccc
Test hole 1816 c/
Altitude 1,923 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Till, yellow, oxidized----------	9	11
	Gravel, fine to coarse----------	8	19
	Gravel, fine to medium; abundant coarse sand----------	13	32
	Till, gray; boulder at 34 feet----	11	43
	Gravel, medium to coarse----------	9	52
	Gravel, coarse; numerous cobbles--	9	61
	Till, gray; numerous cobbles------	23	84

TABLE 2.--Logs of test holes -- Continued

142-69-1ccd
Test hole 1816 A c/
Altitude 1,907 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Clay, smooth, yellow----------	9	11
	Till, gray----------	8	20
	Gravel, coarse; numerous cobbles; boulder at 26 feet----------	43	63

TABLE 2.--Logs of test holes -- Continued

142-69-2ddc
Test hole 1923 d/
Altitude 1,928 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	3	3
	Till, yellowish-brown, oxidized--	12	15
	Till, olive-gray; scattered shale and lignite fragments----------	74	89
	Gravel, fine to medium; abundant fine to medium sand and numerous shale pebbles----------	5	94
	Clay, sandy, olive-gray, calcareous----------	34	128
	Till, olive-gray; scattered shale pebbles----------	26	154
	Gravel, fine to coarse----------	1	155
	Till, olive-gray; scattered shale pebbles----------	16	171
	Gravel, fine to medium; scattered shale pebbles----------	6	177
	Till, olive-gray; numerous shale pebbles; boulder at 200 feet---	53	230
	Clay, smooth, gray; scattered shale fragments----------	18	248

TABLE 2.--Logs of test holes -- Continued

142-69-2ddc
Test hole 1923 d/ (Continued)
Altitude 1,928 ft

Formation	Material	Thickness (feet)	Depth (feet)
	Gravel, fine to medium----------	2	250
	Clay, smooth, gray; scattered shale fragments----------	18	268
	Gravel, fine to medium, sandy; numerous shale fragments------	2	270
	Clay, sandy; numerous shale granules----------	10	280
	Sand, medium to coarse, very clayey, predominantly shale grains; abundant fine gravel and scattered to numerous lignite fragments----------	105	385
Pierre Shale:			
	Shale, blue-gray, dense, laminated----------	15	400

TABLE 2.--Logs of test holes -- Continued

142-69-9ddc
Test hole 1924 d/
Altitude 1,902 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, reddish-brown----------	4	4
	Gravel, medium to very coarse; abundant coarse sand and cobbles----------	17	21
	Clay, sandy, reddish-brown------	2	23
	Clay, sandy, gray----------	32	55
	Clay, smooth, gray----------	5	60
	Clay, sandy, gray; scattered shale fragments----------	27	87
	Till, olive-gray; numerous shale pebbles and scattered lignite fragments----------	27	114
	Sand, medium to coarse----------	6	120
	Till, olive-gray; numerous shale pebbles and lignite fragments-	28	148
	Sand, fine to medium; numerous shale pebbles----------	2	150
	Till, olive-gray; scattered to numerous shale pebbles and lignite fragments; sand layers 1 foot thick at 235 feet, 240 feet, 254 feet, 274 feet and 285 feet----------	180	330

TABLE 2.--Logs of test holes -- Continued

142-69-9ddc
Test hole 1924 d/ (Continued)
Altitude 1,902 ft

Formation	Material	Thickness (feet)	Depth (feet)
Pierre Shale:			
	Shale, dark-greenish-gray, dense--	10	340

TABLE 2.--Logs of test holes -- Continued

142-69-15bbc
Test hole 1818 c/
Altitude 1,886 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Gravel, fine to medium----------	9	11
	Sand, coarse----------	10	21
	Clay, sandy, gray----------	5	26
	Gravel, fine to medium----------	9	35
	Gravel, medium to coarse; numerous cobbles----------	28	63

TABLE 2.--Logs of test holes -- Continued

142-69-18bbb
Test hole 1817 c/
Altitude 1,857 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Sand, coarse and fine gravel-----	11	11
	Gravel, coarse; numerous cobbles-	10	21
	Gravel, fine to medium----------	11	32
	Clay, yellow----------	3	35
	Till, gray----------	13	48
	Gravel, coarse; numerous cobbles-	9	57
	Gravel, fine to medium----------	11	68
	Gravel, fine and coarse sand-----	16	84
	Sand, fine to coarse----------	52	136
	Clay, silty, gray; scattered lignite grains----------	94	230
	Till, gray----------	78	308
Pierre Shale:			
	Shale, gray----------	7	315

TABLE 2.--Logs of test holes -- Continued

142-69-20baa
Test hole 1925 d/
Altitude 1,889 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Gravel, fine to coarse, sandy, oxidized; boulder at 46 feet---	46	46
	Gravel, fine to coarse, sandy, oxidized; abundant fine shale pebbles; interbedded with thin layers of silty, dark-yellowish-orange to olive-gray clay------	34	80
	Silt, olive-gray, clayey to sandy, weakly cohesive, calcareous; scattered lignite grains-------	134	214
	Gravel, fine to coarse, sandy; abundant shale sand and gravel-	2	216
	Till, olive-gray; abundant boulder and cobble fraction----------	18	234
	Till, olive-gray, highly calcareous; scattered shale granules and lignite fragments----------	36	270

TABLE 2.--Logs of test holes -- Continued

142-69-20baa
Test hole 1925 d/ (Continued)
Altitude 1,889 ft

Formation	Material	Thickness (feet)	Depth (feet)
	Shale, silty, medium-bluish-gray to light-olive-gray, dense, calcareous to non-calcareous; scattered lignite specks--------	8	278
	Shale to siltstone, sandy, light-olive-gray, slightly to well indurated, calcareous; scattered lignite specks----------	75	353
	Rock(?)----------	0	353

TABLE 2.--Logs of test holes -- Continued

142-69-28dad
Test hole 1894 d/
Altitude 1,832 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black	1	1
	Gravel, fine to medium, sandy; scattered shale granules and grains	21	22
	Sand, fine to coarse	9	31
	Gravel, fine to medium; abundant shale pebbles cemented from 52 to 53 feet	22	53
	Clay, silty, light-gray, weakly cohesive, calcareous	2	55
	Sand, fine to very coarse, gravelly	18	73

TABLE 2.--Logs of test holes -- Continued

143-62-1bcc
Test hole 1928d d/
Altitude 1,499 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Till, brown, oxidized----------	14	14
	Sand, fine, clean----------	11	25
	Till, olive-gray----------	7	32
	Gravel, medium to coarse----------	2	34
	Till, olive-gray----------	5	39
	Sand, fine to medium; abundant fine gravel and medium to coarse, angular shale fragments-	8	47
Pierre Shale:			
	Shale, bluish-gray----------	13	60

TABLE 2.--Logs of test holes -- Continued

143-62-1ddd
Test hole 1872 d/
Altitude 1,488 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Clay, sandy to gravelly, brown to gray----------	5	6
	Till, yellowish-brown, oxidized--	6	12
	Sand, very fine to fine, pale-yellow, sorted, slightly oxidized, calcareous----------	11	23
	Till, olive-gray; numerous to scattered shale and lignite fragments----------	20	43
	Till, olive-gray; interbedded with layers of medium to coarse gravel----------	10	53
	Till, olive-gray; medium gravel and numerous shale pebbles-----	43	96
	Gravel, fine to medium, predominantly shale pebbles----------	1	97
	Till, olive-gray; medium gravel and numerous shale pebbles-----	69	166
	Gravel, fine to medium, poorly sorted, predominantly shale----	7	173
	Clay, smooth, dark-gray, plastic, slightly calcareous----------	10	183
	Clay, dark-greenish-gray to mottled light and dark-gray, slightly calcareous; abundant shale granules from 190 to 210 feet----------	27	210

TABLE 2.--Logs of test holes -- Continued

143-62-1ddd
Test hole 1872 d/ (Continued)
Altitude 1,488 ft

Formation	Material	Thickness (feet)	Depth (feet)
	Clay, greenish-black, plastic, slightly calcareous; abundant shale sand and granules, scattered grains of igneous and limestone sand----------	21	231
	Gravel, fine to medium, angular, cemented----------	1	232
	Clay, smooth, greenish-black to olive-black, soft and plastic to dense and very cohesive, slightly calcareous; scattered lenses of shale granules--------	52	284
Pierre Shale:			
	Clay, smooth, greenish-black, platy, cohesive----------	20	304

TABLE 2.--Logs of test holes -- Continued

143-62-2cdc
Test hole 1928b d/
Altitude 1,504 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Till, brown, oxidized, granite boulder at 17 feet----------	17	17
	Till, olive-gray----------	7	24
	Sand, very fine to coarse, clean--	5	29
	Gravel, fine to medium, clean; abundant shale pebbles----------	5	34
Pierre Shale:			
	Shale, bluish-gray----------	26	60

TABLE 2.--Logs of test holes -- Continued

143-62-2dcc2
Test hole 1928c d/
Altitude 1,503 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Till, brown, oxidized----------	16	17
	Till, brownish-gray to light-olive-gray, slightly oxidized; granite boulder from 17 to 18 feet------	11	28
	Till, olive-gray----------	3	31
	Gravel, fine to coarse, predominantly limestone pebbles----------	5	36
	Till, olive-gray; numerous shale grains----------	9	45
	Sand, very fine to medium, clayey-	10	55
	Sand, fine to coarse, clayey; abundant fine gravel and numerous medium to coarse shale pebbles and rounded lignite fragments-------	5	60
	Sand, fine to coarse, clean-------	10	70
	Gravel, fine, clean----------	5	75
	Sand, medium to coarse, clean; abundant fine gravel----------	10	85
	Gravel, fine to coarse, clean-----	13	98
	Gravel, fine, well sorted, clean--	15	113
	Clay, gray, calcareous----------	87	200

TABLE 2.--Logs of test holes -- Continued

143-62-2ddb
Test hole 1928a d/
Altitude 1,506 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Till, yellowish-brown, oxidized---	4	5
	Gravel, fine to medium----------	4	9
	Till, brown, slightly oxidized; granite boulder from 20 to 23 feet----------	19	28
	Clay, very silty, gray, calcareous----------	22	50
	Clay, very silty, gray, calcareous; scattered medium, angular shale fragments----------	12	62
Pierre Shale:			
	Shale, bluish-gray----------	18	80

TABLE 2.--Logs of test holes -- Continued

143-62-3cdc
Test hole 1873 d/
Altitude 1,515 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Till, olive-brown, oxidized; interbedded with layers of fine to medium gravel from 6 to 22 feet----------	22	22
	Till, olive-gray; scattered shale granules----------	11	33
	Gravel, fine and coarse sand, unsorted, clean----------	4	37
	Till, olive-gray; fine sand to granules and sparsely distributed shale grains and granules-------	6	43
	Gravel, medium to coarse sand, unsorted, clean----------	4	47
	Clay, dark-greenish-gray, soft; numerous shale granules---------	6	53
Pierre Shale:			
	Shale, dark-greenish-gray, dense, brittle----------	10	63

TABLE 2.--Logs of test holes -- Continued

143-62-6dcc
Test hole 1885 d/
Altitude 1,527 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Till, yellowish-brown, oxidized; scattered shale granules and lignite grains----------	22	22
	Till, olive-gray; abundant shale grains and scattered lignite fragments----------	4	26
	Till, olive-gray; abundant shale grains and scattered lignite fragments; interbedded with layers of fine, sandy, shale gravel----	5	31
	Sand, fine to very coarse, quartz; interbedded from 43 to 63 feet with 1 to 2 inch layers of flat, rounded lignite particles ranging in size from fine sand to coarse gravel----------	32	63
	Sand, very coarse, gravelly, quartz----------	32	95
Pierre Shale:			
	Shale, greenish-black, dense, brittle, laminated----------	10	105

TABLE 2.--Logs of test holes -- Continued

143-62-10dad
Test hole 1928f d/
Altitude 1,503 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Till, brown, oxidized----------	20	20
	Till, olive-gray; abundant shale pebbles and numerous lignite fragments----------	65	85
	Clay, silty to silt, gray, cohesive, calcareous; scattered fine sandy zones and silt-size lignite particles----------	165	250
	Clay, silty to silt, gray, cohesive, calcareous; scattered fine sandy zones and silt-size lignite particles, scattered flat shale granules, scattered concentrations of white, soapy material from 280 to 310 feet---	60	310

TABLE 2.--Logs of test holes -- Continued

143-62-11aba
Test hole 1874 d/
Altitude 1,501 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Till, sandy, moderate-yellowish-brown, oxidized; numerous granules and scattered shale grains------	16	16
	Till, sandy, moderate-yellowish-brown, oxidized; interbedded with 3-inch gravel layers-------	6	22
	Gravel, fine to coarse, unsorted, subrounded to angular, oxidized-	5	27
	Till, olive-gray to olive-black; numerous granules and pebbles---	5	32
	Till, olive-gray to olive-black; interbedded with 5-inch layers of gravel----------	10	42
	Till, olive-black, highly calcareous; scattered fine to medium pebbles----------	22	64

TABLE 2.--Logs of test holes -- Continued

143-62-11aba
Test hole 1874 d/ (Continued)
Altitude 1,501 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift	(Continued)		
	Sand, fine to very coarse, fairly well sorted, subrounded to rounded, clean, predominantly quartz; scattered lignite and peat fragments----------	15	79
	Gravel, fine and coarse sand, unsorted, subrounded; scattered shale pebbles----------	5	84
	Sand, coarse to very coarse, well sorted, subrounded to rounded, clean, predominantly quartz; scattered shale pebbles and lignite fragments----------	15	99
	Gravel, fine to medium, unsorted, subrounded, clean; abundant sand----------	6	105

TABLE 2.--Logs of test holes -- Continued

143-62-11aba
Test hole 1874 d/ (Continued)
Altitude 1,501 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:	(Continued)		
	Sand, medium to coarse, unsorted, clean, predominantly quartz----	12	117
	Clay, smooth, olive-gray to dark-greenish-gray, very plastic, weakly calcareous; becomes slightly silty from 226 to 252 feet; interbedded with slightly sandy layers from 252 to 272 feet----------	155	272
	Clay, sandy, greenish-black, weakly calcareous; scattered fine to medium quartz grains and medium to coarse shale grains; smooth clay and sand in interbedded layers from 292 to 309 feet----------	37	309
	Sand, fine to very coarse, clayey, unsorted, subrounded, varied composition; very coarse grains to granules of shale----------	28	337
	Sand, coarse and fine gravel, clayey, unsorted, subrounded, predominantly quartz; coarse grains to granules of shale----	36	373

TABLE 2.--Logs of test holes -- Continued

143-62-11aba
Test hole 1874 d/ (Continued)
Altitude 1,501 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift	(Continued)		
	Sand, medium to very coarse and fine gravel, clayey, unsorted, angular to very angular, predominantly shale; interbedded with clay layers----------	15	388
	Gravel, fine and medium to very coarse sand, clayey, unsorted, angular to well rounded, predominantly shale and igneous pebbles----------	53	441
	Gravel, fine, poorly sorted; abundant coarse to very coarse sand-	22	463
	Gravel, fine, unsorted, angular to subrounded, partially cemented; abundant coarse to very coarse sand----------	5	468
Niobrara(?) Shale:			
	Clay, silty, dark-greenish-gray, cohesive; scattered inclusions of pyrite; interbedded with smooth, dark-greenish-gray, strongly calcareous clay which fractures smoothly; scattered particles of pearly shell material from 477 to 483 feet----------	62	530

TABLE 2.--Logs of test holes -- Continued

143-62-13bbb
Test hole 1928e d/
Altitude 1,482 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Silt, sandy, yellowish-gray, soft-	10	10
	Till, brown, oxidized----------	6	16
	Till, olive-gray; scattered medium pebbles and shale fragments; cobbles at 44 feet, 50 feet, and 60 feet----------	59	75
	Gravel, medium to coarse, predominantly limestone pebbles----	5	80
	Till, olive-gray; interbedded with layers or lenses of fine to coarse gravel----------	95	175
	Gravel, fine to coarse, clayey, predominantly shale pebbles; included very fine sandy clay matrix throughout----------	45	220

TABLE 2.--Logs of test holes -- Continued

143-63-3cdc
Test hole 1875 d/
Altitude 1,510 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Gravel, fine to medium, unsorted, rounded	6	6
	Clay, silty, yellowish-gray, oxidized, calcareous; scattered shale granules	2	8
	Sand, medium to very coarse, unsorted	4	12
	Silt, clayey, light-olive-gray, slightly oxidized, highly calcareous	7	19
	Sand, very fine to coarse	6	25
	Silt (till?), clayey, light-olive-gray, non-cohesive, highly calcareous; scattered lignite grains; thin gravel layers from 25 to 40 feet	40	65
	Till, olive-gray, very cohesive; scattered lignite and shale granules; layers of fine to medium cemented gravel from 71 to 73 feet, 87 to 89 feet and 163 to 167 feet	104	169
Pierre Shale:	Shale, bluish-gray, dense, brittle	9	178

TABLE 2.--Logs of test holes -- Continued

143-63-23cdd
Test hole 1884 d/
Altitude 1,537 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Till, yellowish-brown, oxidized; abundant shale grains and scattered granules and lignite fragments----------	14	15
	Till, olive-gray; abundant shale grains and granules and scattered lignite fragments; interbedded with fine to very coarse quartz sand----------	15	30
	Sand, fine to very coarse, quartz; interbedded with thin layers of silty, olive-gray clay---------	16	46
Pierre Shale:			
	Shale, smooth, dark-greenish-gray, dense, brittle----------	6	52

TABLE 2.--Logs of test holes -- Continued

143-64-2add
Test hole 1876 d/
Altitude 1,480 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	2	2
	Clay, slightly silty, yellowish-gray, oxidized, highly calcareous; abundant snail shells, 1 to 3 mm. diameter----------	4	6
	Sand, fine to very coarse, quartz and shale grains; scattered shale pebbles and lignite grains---	21	27
	Till, silty, olive-gray; scattered shale and lignite grains-----	12	39
	Gravel, fine to medium, cemented; scattered shale pebbles------	2	41
	Till, silty, olive-gray; numerous shale pebbles and lignite grains; layer of fine to medium sand from 65 to 67 feet----------	133	174
Pierre Shale:			
	Shale, dark-greenish-gray, dense, brittle----------	4	178

TABLE 2.--Logs of test holes -- Continued

143-64-10bbb
Test hole 1878 d/
Altitude 1,465 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Sand, very fine to coarse, predominantly shale; abundant fine to medium shale gravel; interbedded with 5 to 7 inch layers of yellowish-brown, calcareous clay---------	10	11
	Till, dark-yellowish-orange, oxidized, highly calcareous; scattered lignite grains----------	5	16
	Till, olive-gray; scattered coarse shale and lignite grains-------	5	21
	Till, olive-gray; interbedded with 5 inch layers of very fine to very coarse sand----------	20	41
Pierre Shale:			
	Shale, greenish-black, dense-----	11	52

TABLE 2.--Logs of test holes -- Continued

143-65-7bbb
Test hole 1880
Altitude 1,585 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black	1	1
	Till, yellowish-brown, oxidized; scattered shale granules and lignite grains----------	21	22
	Gravel, fine to medium; numerous lignite pebbles----------	2	24
	Till, light-olive-gray; abundant medium sand and scattered shale granules and lignite grains---	1	25
	Sand, medium to very coarse, gravelly, oxidized----------	5	30
	Till, light-olive-gray; abundant medium sand and scattered shale granules and lignite grains---	54	84
	Till, olive-gray, very cohesive; abundant medium sand and scattered shale granules and lignite fragments----------	32	116
	Till, olive-gray; scattered shale granules and lignite fragments; interbedded with layers of fine to very coarse sand from 116 to 142 feet and fine to medium gravel from 142 to 153 feet----------	37	153

TABLE 2.--Logs of test holes -- Continued

143-65-7bbb
Test hole 1880 (Continued)
Altitude 1,585 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:	(Cont.)		
	Till, olive-gray; scattered coarse shale pebbles----------	15	168
	Clay, slightly silty, dark-greenish-gray----------	5	173
Pierre Shale:			
	Shale, greenish-gray, dense, laminated, brittle----------	5	178

TABLE 2.--Logs of test holes -- Continued

143-65-9daa
Test hole 1882 d/
Altitude 1,600 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Till, very silty, light-olive-gray, weakly cohesive, oxidized, calcareous----------	11	11
	Till, very silty to sandy, dark-yellowish-orange, oxidized-----	6	17
	Till, silty to sandy, greenish-gray, slightly oxidized, highly calcareous----------	8	25
	Till, silty to sandy, light to dark tones of olive-gray; scattered shale granules----------	70	95
	Till, silty to sandy, olive-gray; interbedded with layers of fine sandy gravel of quartz and shale pebble composition----------	21	116
	Till, olive-gray; numerous shale and limestone granules and scattered lignite grains----------	140	256
Pierre Shale:			
	Shale, greenish-black, dense, finely laminated, brittle----------	6	262

TABLE 2.--Logs of test holes -- Continued

143-65-13aaa
Test hole 1877 d/
Altitude 1,470 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Sand, very fine to coarse, silty--	5	6
	Gravel, fine and coarse to very coarse sand; scattered medium to coarse pebbles, cobbles from 11 to 13 feet----------	11	17
	Till, silty to sandy, mottled yellowish-orange and gray, oxidized, calcareous; scattered lignite grains----------	4	21
	Till, olive-gray; scattered lignite grains; interbedded with layers of fine to very coarse, angular sand----------	22	43
	Till, olive-gray; scattered lignite grains and shale granules-------	41	84

TABLE 2.--Logs of test holes -- Continued

143-65-13ada
Test hole 1877 A d/
Altitude 1,465 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Sand, fine to very coarse; interbedded with fine to coarse gravel layers from 1 to 11 feet----------	20	21
	Gravel, fine, clayey, shale; abundant medium to coarse sand-------	2	23
	Gravel, fine, cemented----------	2	25
	Till, olive-gray; scattered shale and lignite grains and granules--	28	53
	Gravel, medium to coarse, cemented-	1	54
	Till, olive-gray; scattered shale and lignite grains and granules--	51	105
	Till, olive-gray; interbedded with 4 to 5 inch layers of fine to medium gravel----------	11	116
	Till, olive-gray; numerous shale pebbles and scattered lignite grains----------	16	132
Pierre Shale:			
	Shale, greenish-black, dense-------	4	136

TABLE 2.--Logs of test holes -- Continued

143-66-4aaa
Test hole 1881 d/
Altitude 1,570 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black	1	1
	Sand, very fine to medium, clayey	5	6
	Clay, silty to sandy, yellowish-brown, oxidized, highly calcareous	21	27
	Sand, fine to very coarse, gravelly, oxidized	4	31
	Till, olive-gray to dark-greenish-gray; abundant sand grains and scattered lignite grains	6	37
	Sand, fine to very coarse, gravelly; numerous limestone granules	4	41
	Till, greenish-black; abundant shale grains and scattered shale and limestone granules	8	49
	Gravel, fine to medium, sandy, predominantly limestone pebbles	2	51
Pierre Shale:			
	Clay, greenish-black, cohesive	96	147

TABLE 2.--Logs of test holes -- Continued

143-66-18cdd
Test hole 1900 d/
Altitude 1,650 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Till, dark-yellowish-brown to light-olive-gray, oxidized; scattered shale granules----------	28	29
	Gravel, fine, sandy----------	2	31
	Till, greenish-gray; scattered lignite and shale granules------	27	58
	Gravel, fine to medium, cemented--	3	61
	Clay, silty, greenish-gray with scattered mottlings of light-greenish-gray silt, fine to very fine sand and scattered lignite grains----------	39	100
	Till, olive-gray; scattered shale and lignite granules; shale boulder from 104 to 105 feet----	21	121
	Sand, very fine to coarse, silty--	3	124
	Till, olive-gray; scattered shale and lignite granules----------	7	131
	Sand, fine to medium, silty-------	8	139

TABLE 2.--Logs of test holes -- Continued

143-66-18cdd
Test hole 1900 d/ (Continued)
Altitude 1,650 ft

Formation	Material	Thickness (feet)	Depth (feet)
	Till, olive-gray; scattered shale and lignite granules-----	11	150
	Till, olive-gray; scattered shale and lignite granules; interbedded with layers of cemented(?) gravelly sand with numerous shale grains and some lignite fragments-----	68	218
Pierre Shale:			
	Shale, slightly silty, dark-greenish-gray, dense, laminated----------	13	231

TABLE 2.--Logs of test holes -- Continued

143-68-18aaa
Test hole 1892 d/
Altitude 1,884 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Clay, silty, yellowish-brown, oxidized, calcareous; sand grains and scattered lignite grains----	15	15
	Till, dark-yellowish-brown (15 to 32 feet) to greenish-gray (32 to 63 feet) to light-olive-gray (63 to 114 feet), non-calcareous from 105 to 114 feet, shale grains and granules and scattered lignite fragments----------	99	114
	Till, light-olive-gray, interbedded with 3 to 4 inch layers of fine to very coarse, gravelly, quartz and shale sand with scattered lignite grains----------	21	135
	Clay, silty, olive-gray, very cohesive, calcareous; fine sand and scattered lignite particles----------	37	172
	Till, olive-gray; shale grains and scattered lignite fragments-----	38	210

TABLE 2.--Logs of test holes -- Continued

143-68-18aaa
Test hole 1892 d/ (Continued)
Altitude 1,884 ft

Formation	Material	Thickness (feet)	Depth (feet)
	Till, olive-gray; interbedded with a silty, yellowish-orange, dense till with abundant quartz and shale grains and scattered lignite fragments----------	32	242
	Clay, silty to smooth, olive-gray, very cohesive, calcareous; interbedded with very fine, silty, sand and containing lignite grains and granules----------	30	272
	Till, olive-gray; sand grains and scattered granules; interbedded with layers of silty, yellowish-orange, dense, oxidized, calcareous till----------	22	294
	Till, olive-gray----------	43	337
	Till, olive-gray; shale grains and scattered lignite fragments; interbedded with layers of silty, yellowish-orange, dense, oxidized, calcareous till and layers of fine, sandy, gravel with an abundant shale pebble fraction----------	30	367

TABLE 2.--Logs of test holes -- Continued

143-68-18aaa
Test hole 1892 d/ (Continued)
Altitude 1,884 ft

Formation	Material	Thickness (feet)	Depth (feet)
	Clay, (till?), silty, olive-gray	31	398
	Gravel, fine and coarse sand; shale and lignite grains and granules	37	435
Pierre Shale:			
	Shale, greenish-gray	6	441

TABLE 2.--Logs of test holes -- Continued

144-62-21daa
Test hole 1886
Altitude 1,512 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Till, yellowish-brown to light-olive-gray, oxidized; abundant fine to coarse sand----------	8	9
	Sand, medium to very coarse, gravelly; numerous shale granules and scattered lignite grains, numerous cobbles---	2	11
	Till, olive-gray; abundant sand and scattered lignite grains----	9	20
	Sand, fine to coarse, silty to clayey; numerous coarse shale grains and scattered cobbles----	6	26
	Boulder, limestone----------	2	28
	Clay, silty, greenish-gray; scattered cobbles; interbedded with fine to very coarse sand--------	5	33
Pierre Shale:			
	Shale, medium-bluish-gray, dense, brittle, laminated----------	9	42

TABLE 2.--Logs of test holes -- Continued

144-64-12dda
Test hole 1887 d/
Altitude 1,540 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Till, silty to sandy, dark-brownish-yellow to yellowish-brown, oxidized; numerous shale grains and granules----------	19	20
	Till, silty, olive-gray; numerous shale grains and scattered lignite and limestone granules----	52	72
	Sand, fine to medium, quartz; numerous granules; interbedded with scattered layers of lignite fragments----------	21	93
	Gravel, fine, sandy, quartz; scattered lignite fragments----	16	109
Pierre Shale:			
	Shale, dark-greenish-gray, dense, laminated----------	6	115

TABLE 2.--Logs of test holes -- Continued

144-65-21daa
Test hole 1879 d/
Altitude 1,530 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black	1	1
	Till, yellowish-brown, oxidized	8	9
	Till, olive-gray; numerous shale and lignite granules	7	16
	Gravel, fine, sandy	5	21
	Till, olive-gray; numerous shale granules and scattered lignite grains	7	28
	Sand, medium to very coarse	2	30
	Till, olive-gray; shale granules and scattered lignite fragments	23	53
	Till, olive-gray; interbedded with 3 to 5 inch layers of fine to coarse gravel	17	70
	Sand, medium to very coarse	2	72
	Till, olive-gray; interbedded with 3 to 5 inch layers of fine to coarse sand	18	90
	Sand, very fine to medium	5	95
	Till, olive-gray; interbedded with 1 to 3 inch layers of fine to medium sand	11	106
	Sand, very fine to medium	5	111
	Till, olive-gray; interbedded with 3 to 5 inch layers of fine to medium gravel	5	116

TABLE 2.--Logs of test holes -- Continued

144-65-21daa
Test hole 1879 d/ (Continued)
Altitude 1,530 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:	(Cont.)		
	Till, dark-greenish-gray; numerous shale granules and lignite grains----------	57	173
Pierre Shale:			
	Shale, greenish-black----------	5	178

TABLE 2.--Logs of test holes -- Continued

144-67-19cdd
Test hole 1922 d/
Altitude 1,900 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Gravel, fine	9	9
	Till, yellowish-brown, oxidized	22	31
	Gravel, fine	1	32
	Till, olive-gray; sparsely distributed shale pebbles and lignite fragments	43	75
	Gravel, fine to coarse	2	77
	Till, olive-gray; numerous shale pebbles and lignite fragments; becomes sandy to silty from 90 to 110 feet	83	160
	Gravel, medium	12	172
	Cobbles and boulders	3	175
	Gravel, fine and coarse sand, angular, cemented; numerous lignite fragments	5	180
	Gravel, fine to medium; abundant coarse sand and numerous shale and lignite fragments; interbedded with scattered 6 inch silt layers	15	195
	Cobbles	5	200
	Gravel, fine to cobbles; abundant coarse sand; interbedded with 3 inch to 1 foot layers of orange oxidized silt layers	55	255

TABLE 2.--Logs of test holes -- Continued

144-67-19cdd
Test hole 1922 d/ (Continued)
Altitude 1,900 ft

Formation	Material	Thickness (feet)	Depth (feet)
	Clay, silty to sandy, non-cohesive----------	35	290
	Gravel, fine to medium, angular; abundant coarse sand; interbedded with layers of orange, yellow, and gray, oxidized(?) silt----------	40	330
	Sand, coarse, angular; numerous shale and lignite grains-------	10	340
	Silt, brown; scattered concentrations of sand----------	10	350
	Sand, medium, clean, well sorted----------	55	405
	Till(?), orange and yellow to bluish-gray, oxidized from about 405 to 415 feet; cobbles or gravel at 440 feet, 458 feet, 465 feet and 473 feet----------	93	498
Pierre Shale:			
	Shale----------	17	515

TABLE 2.--Logs of test holes -- Continued

144-67-21ddd
Test hole 1889 d/
Altitude 1,830 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Till, silty, yellowish-brown to light-olive-brown, oxidized; abundant sand and fine gravel and scattered lignite grains and limonitic concentrations-----	19	19
	Till, olive-gray; shale granules and scattered lignite grains---------	88	107
	Gravel, fine to medium, limestone pebbles; scattered shale pebbles----------	1	108
	Till, olive-gray; shale granules and scattered lignite grains; boulder at 124 feet----------	23	131
	Till, greenish-gray to light-olive-gray, slightly oxidized; scattered limonitic concentration; interbedded with layers of fine to very coarse, gravelly, oxidized sand containing scattered lignite grains----------	42	173
	Sand, fine to very coarse, gravelly; interbedded with 2 to 4 mm. thick laminated layers of black to brown carbonaceous material, concentrations of very fine quartz sand, and thin layers of noncalcareous clay-	3	176

TABLE 2.--Logs of test holes -- Continued

144-67-21ddd
Test hole 1889 d/ (Continued)
Altitude 1,830 ft

Formation	Material	Thickness (feet)	Depth (feet)
	Gravel, fine to medium, sandy-----	8	184
Pierre Shale:			
	Shale, silty, dark-greenish-gray, weakly indurated----------	15	199

TABLE 2.--Logs of test holes -- Continued

144-67-25ddd
Test hole 1888 d/
Altitude 1,680 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Clay, silty, yellowish-brown, weakly cohesive, oxidized, highly calcareous; scattered limonitic concentrations----------	9	10
	Till, pale-yellowish-brown, oxidized, highly calcareous; scattered lignite grains and limonitic concentrations----------	9	19
	Sand, very fine to medium, silty; scattered lignite grains---------	6	25
	Till, olive-gray; abundant coarse shale sand and fine oxidized shale gravel, scattered lignite grains and oxidized clay concentrations-	43	68
	Till, olive-gray; numerous shale granules and grains and scattered lignite grains----------	33	101
Pierre Shale:			
	Shale, smooth, dark-greenish-gray, dense, laminated----------	4	105

TABLE 2.--Logs of test holes -- Continued

144-67-30bbal
Test hole 1822 c/
Altitude 1,920 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Clay, light-gray----------	4	5
	Till, yellow, oxidized----------	15	20
	Till, gray; numerous cobbles from 45 to 49 feet; boulder at 118 feet----------	159	179
	Gravel, fine to medium, cemented----------	20	199

TABLE 2.--Logs of test holes -- Continued

144-68-23ccc
Test hole 1890 d/
Altitude 1,827 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Till, dark-yellowish-brown, oxidized; shale granules and scattered lignite grains------	19	19
	Till, olive-gray; shale grains and scattered lignite particles---	10	29
	Clay, dark-greenish-gray, very cohesive; silt-sized lignite(?) grains----------	43	72
	Till, olive-gray; shale grains and granules and scattered lignite fragments----------	205	277
	Gravel, fine to coarse, limestone and shale pebbles, cemented; abundant coarse to very coarse sand grains----------	18	295
	Sand, fine to medium, silty, shale grains; scattered lignite grains; interbedded with layers of silty, light-olive-gray, calcareous clay (till?)----------	10	305

TABLE 2.--Logs of test holes -- Continued

144-68-23ccc
Test hole 1890 d/ (Continued)
Altitude 1,827 ft

Formation	Material	Thickness (feet)	Depth (feet)
	Clay, silty, light-olive-gray, calcareous; shale grains and scattered lignite grains-------	11	316
	Clay, silty, light-olive-gray, calcareous; shale grains and scattered lignite grains; interbedded with 1 to 6 inch layers of fine to coarse shale and limestone sand which appear to be about 2 to 6 inches apart and are cemented----------	82	398
	Till, silty, olive-gray, very cohesive; numerous shale and limestone grains and scattered lignite grains----------	12	410
Pierre Shale:			
	Clay, silty, dark-greenish-gray, weakly cohesive; scattered pyrite grains----------	10	420

TABLE 2.--Logs of test holes -- Continued

144-68-28bbb
Test hole 1927 d/
Altitude 1,836 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Till, light-brown, oxidized; scattered shale and lignite fragments	15	15
	Till, olive-gray; scattered shale pebbles and numerous lignite fragments; limestone boulder at 90 feet and lignite pebble concentrations at 55 feet and 105 to 110 feet	126	141
	Gravel, fine and coarse sand	2	143
	Till, olive-gray	52	195
	Silt, gray, laminated in alternating light and dark layers of .05 inch thickness	80	275
	Till, olive-gray, very cohesive; numerous fine to medium shale and lignite pebbles	22	297
	Gravel, fine	3	300
	Till, olive-gray	10	310
	Sand, fine to coarse	10	320

TABLE 2.--Logs of test holes -- Continued

144-68-28bbb
Test hole 1927 d/ (Continued)
Altitude 1,836 ft

Formation	Material	Thickness (feet)	Depth (feet)
	Till, olive-gray; interbedded with layers of sand, gravel and cobbles	45	365
	Gravel, fine to medium; interbedded with layers of till	20	385
	Till, yellowish-brown, oxidized	10	395
	Till, olive-gray	45	440
Pierre(?) Shale:			
	Clay, grayish-green, very cohesive	40	480

TABLE 2.--Logs of test holes -- Continued

144-69-24ddd
Test hole 1821 c/
Altitude 1,842 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Clay, silty, yellow----------	5	6
	Till, yellow, oxidized----------	20	26
	Till, gray----------	49	75
	Clay, sandy, gray----------	14	89
	Till, gray; boulders at 96 feet and 125 feet----------	69	158
	Gravel, fine, clayey----------	9	167
	Clay, sandy, gray----------	11	178
	Till, gray----------	201	379
	Sand, fine to coarse----------	21	400
	Sand, medium to coarse; abundant lignite grains and pebbles------	11	411
	Gravel, lignite fragments---------	28	439
Pierre Shale:			
	Shale, gray----------	12	451

TABLE 2.--Logs of test holes -- Continued

144-69-30abb1
Test hole 1820 c/
Altitude 1,849 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black----------	1	1
	Sand, coarse----------	6	7
	Till, yellow, oxidized----------	14	21
	Till, gray----------	58	79
	Gravel, fine to medium and coarse sand----------	6	85
	Till, gray----------	9	94
	Sand, fine to medium; scattered lignite grains----------	23	117
	Till, gray----------	53	170
	Limestone boulders and cobbles---	8	178

TABLE 2.--Logs of test holes -- Continued

144-69-30abb2
Test hole 1926 d/
Altitude 1,849 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Till, brown to gray; scattered shale and lignite pebbles-------	35	35
	Silt, clayey, gray----------	5	40
	Till, olive-gray----------	10	50
	Clay, gray, laminated----------	25	75
	Till, olive-gray----------	15	90
	Gravel----------	1	91
	Till, olive-gray; abundant coarse shale and lignite grains from 163 to 170 feet----------	79	170
	Sand, coarse, predominantly shale and lignite grains; scattered fine wood fragments----------	35	205
	Gravel, fine to coarse, subrounded to angular; abundant limestone, shale, and lignite pebbles------	15	220
	Sand, coarse and fine gravel; some included clay----------	25	245
	Clay, smooth to silty; scattered shale and lignite grains--------	25	270

TABLE 2.--Logs of test holes -- Continued

144-69-30abb2
Test hole 1926 d/ (Continued)
Altitude 1,849 ft

Formation	Material	Thickness (feet)	Depth (feet)
	Clay, smooth, light-olive-gray, very cohesive, calcareous; interbedded with oxidized till layers----------	20	290
	Till, olive-gray, very cohesive; numerous shale pebbles and lignite fragments----------	100	390
Pierre Shale:			
	Shale, grayish-blue, dense------	20	410

TABLE 2.--Logs of test holes -- Continued

144-69-34bbb
Test hole 1823 c/
Altitude 1,941 ft

Formation	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Soil, black	3	3
	Clay, light-gray	2	5
	Till, yellow, oxidized	6	11
	Gravel, medium to coarse	4	15
	Till, yellow, oxidized	28	43
	Clay, silty, gray	21	64
	Till, gray	146	210
	Clay, sandy, gray	11	221
	Clay, smooth, brownish-gray	19	240
	Clay, smooth, brownish-gray	39	279
	Clay, smooth, gray	46	325
	Gravel, fine	5	330
	Till, gray	49	379
	Gravel, fine to medium	8	387
	Till, gray	63	450
Pierre Shale:			
	Shale, gray	12	462

Table 3.--Chemical analyses of ground water, Stutsman County, from U.S. Geological Survey

[Geohydrologic unit: Kd, Dakota Sandstone; Kp, Pierre Shale; Qag, undifferentiated sand and gravel deposits; Qvb, buried valley deposits; Qids, ice-contact deposits, extensive; Qme, unconfined outwash deposits; Qvo, valley outwash deposits. Results in parts per million except as indicated]

Analysis no.	Location	Depth (ft)	Geohydrologic unit	Date of collection	Temperature (° F)	Silica (SiO_2)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids: Calculated	Dissolved solids: Residue on evaporation at 180° C	Hardness as $CaCO_3$	Noncarbonate hardness as $CaCO_3$	Percent sodium	Sodium-adsorption-ratio	Specific conductance (micromhos per cm at 25° C)	pH	Color	Turbidity as SiO_2
1	137-63-13ccc2...	18	Qvo	6- 3-59	44	26	0.16	1.2	193	46	39	6.1	574	133	50	0.2	92	0.27	.....	929	672	201	11	0.7	1,350	7.1	....	....
2	137-65-14cbb2...	20	Qvo	6- 3-59	48	24	1.6	.33	72	41	50	6.4	323	153	24	.1	2.2	.07	.....	560	349	84	23	1.2	845	7.4	....	....
3	137-69-27a.....	41	Qag	6- 4-59	45	27	.73	.49	169	80	58	9.2	396	423	73	.3	.1	.18	1,040	1,150	750	425	14	.9	1,500	7.1	2	2
4	138-62-31bab....	Spring	Qvo	10- 6-60	39	31	3.5	.69	148	38	94	9.8	552	255	13	.3	2.7	.53	.....	871	524	71	28	1.8	1,250	7.1	....	....
5	138-63-1add2....	19	Qvo	6- 3-59	49	28	.01	.00	62	27	23	3.3	270	62	2.9	.2	33	.28	.....	377	267	46	16	.6	585	7.6	....	....
6	9bca.....	1,380	Kd	6- 3-59	69	11	.13	.02	21	19	2,360	18	523	.3	3,500	1.2	1.6	5.6	6,190	6,150	130	0	97	98	11,000	7.5	....	....
7	19bcb2...	76	Kp	6- 3-59	44	27	.15	.04	23	10	523	5.8	800	474	28	.6	14	2.2	1,500	1,530	100	0	91	23	2,220	7.7	....	....
8	35cbd1...	81	Qag	6- 3-59	.....	26	1.1	.02	308	83	8.7	8.1	250	711	132	.4	1.1	.07	1,400	1,750	1,110	905	2	.1	1,850	7.3	....	....
9	138-64-33cbal...	262	Kp	10- 5-60	48	28	.48	.00	36	9.0	965	11	781	3.8	1,140	.3	.8	3.4	2,580	2,560	127	0	94	37	4,510	7.6	....	....
10	138-65-35aaa....	70	Qag	6- 3-59	48	31	2.4	.74	210	63	74	12	476	500	11	.3	3.2	.20	1,140	1,220	783	393	17	1.1	1,540	6.9	....	....
11	138-66-24dda....	1,980	Kd	6-14-62	57	12	6.0	.00	293	102	375	24	202	1,430	262	3.0	.4	.94	2,610	2,710	1,150	986	41	4.8	3,390	7.3	....	....
12	31aaal...	38	Qag	6- 3-59	43	28	.20	.10	287	244	494	13	736	1,880	78	.5	168	.55	3,560	3,840	1,720	1,120	38	5.2	4,210	7.4	....	....
13	138-69-24bac....	80	Qag	6- 4-59	.....	24	.05	2.0	304	134	252	16	354	1,410	52	.3	4.0	.77	2,370	2,630	1,310	1,020	29	3.0	2,880	7.3	....	....
14	139-62-5ced.....	32	Qag	6- 2-59	43	27	1.3	1.3	393	156	190	16	488	1,450	103	.3	56	.38	2,630	2,850	1,620	1,220	20	2.1	3,140	7.2	....	....
15	31daaal...	192	Kp	6- 3-59	46	28	.07	.00	8.3	3.5	307	4.1	647	114	48	.5	.6	2.6	.....	867	35	0	94	23	1,350	8.0	....	....
16	139-63-6cba.....	1,524	Kd	6-15-62	57	9.1	.11	.03	50	23	700	12	327	1,110	258	2.7	.4	3.1	2,330	2,300	221	0	87	21	3,420	8.0	....	....
17	10bab1...	14	Qvo	6- 2-59	42	32	2.6	1.5	146	53	23	2.7	407	259	17	.2	.1	.09	.....	788	584	250	8	.4	1,080	7.3	....	....
18	139-64-12a 1/...	100	Qag	6-14-21	.....	28	.46	....	97	21	45		405	85	2.0	.....	.....	.....	.....	476	329	0	23	1.1	.....	...	....	....
19	139-67-3ab.....	230	Qag	6- 4-59	46	29	.10	.37	57	12	62	6.8	332	23	27	.4	1.3	.31	.....	390	192	0	40	1.9	633	7.5	5	1
20	139-68-5abb2....	164	Qag	7-24-59	49	29	.81	.83	89	20	35	8.6	372	75	2.9	.3	3.2	.22	.....	448	305	0	19	.9	702	7.3	....	....
21	5cbb.....	148	Qag	7-17-59	48	29	.15	.90	58	16	37	7.6	304	51	2.3	.4	.2	.22	.....	352	212	0	27	1.1	557	7.4	....	....
22	31aaa....	53	Qag	7-21-59	49	28	.52	1.2	137	52	71	11	521	267	18	.3	1.9	.22	.....	854	557	130	21	1.3	1,240	7.2	2	15
23	140-62-24bba....	216	Qvb	10- 6-60	42	31	1.8	.00	74	22	164	9.8	494	181	37	.1	5.3	.30	.....	766	274	0	55	4.3	1,160	7.6	....	....
24	140-63-5bcb1....	80	Kp	6- 2-59	48	29	.01	.13	30	11	709	9.8	680	950	87	.4	9.0	4.1	2,170	2,220	120	0	92	28	3,150	7.6	....	....
25	5bcb2....	80	Kp	6- 2-59	44	29	.00	....	24	9.2	692	8.7	686	928	63	.4	8.0	3.5	2,100	2,160	98	0	93	30	3,070	7.9	....	....
26	24bbb1...	130	Kp	6- 2-59	46	29	.06	.05	15	3.8	425	5.5	760	320	11	.6	3.1	2.7	1,190	1,220	53	0	94	25	1,800	7.8	....	....
27	140-64-23bcd....	1,572	Kd	4-17-62	68	11	2.7	.20	79	32	637	14	284	1,140	213	2.3	.6	2.3	2,270	2,240	329	96	80	15	3,250	7.6	....	....
28	25 1/....	30	Qvo	6-14-21	.....	32	.97	....	94	34	123		476	212	26	.....	.7	.....	.....	740	374	0	4	2.8	.....	...	....	....
29	25bcc1-7 2/	36-87	Qvo	6- 2-59	45	28	4.3	1.1	109	40	115	6.4	462	222	52	.2	3.3	.43	.....	813	435	56	36	2.4	1,240	7.2	3	....
30	25bcc8...	57	Qvo	6- 2-59	48	27	4.6	1.0	103	35	94	6.9	450	191	31	.2	2.6	.32	.....	716	400	31	33	2.0	1,100	7.2	2	....
31	25ccc....	1,450	Kd	6-15-62	73	11	.85	.23	48	19	705	12	344	1,090	247	2.4	.4	3.3	2,310	2,280	197	0	88	28	3,380	7.8	....	....
32	25a 1,3/	1,487	Kd	6-14-21	.....	19	1.5	....	57	23	707		378	1,050	276	.....	.....	.....	2,330	2,370	237	0	87	20	.....	...	....	....
33	30ca.....	240	Kp	6- 2-59	46	28	.29	.01	32	11	1,130	11	835	.8	1,420	.2	.7	4.1	3,050	3,160	125	0	95	44	5,440	7.7	....	....
34	140-65-[illegible]aac.....	38.6	Qvo	6- 2-59	43	27	.23	.11	119	64	174	7.0	420	406	73	.4	87	.44	1,170	1,190	562	218	40	3.2	1,680	7.6	....	....
35	36ddc....	32	Qag	6- 2-59	44	28	.89	.16	261	160	75	10	479	861	74	.5	89	.33	1,790	2,010	1,310	917	11	.9	2,300	7.5	....	....
36	140-66-31add....	62	Qag	6- 4-59	44	28	2.2	.64	132	38	430	12	680	839	19	.4	5.4	.79	1,840	1,880	484	0	65	8.5	2,550	7.2	....	....
37	140-68-20cbb....	231	Qag	6-27-59	48	27	.50	.59	126	33	169	11	572	251	88	.3	3.4	.86	992	1,000	449	0	44	3.5	1,510	7.3	4	20
38	31aaa....	33	Qlce	6-30-59	46	26	.15	.70	73	28	11	3.8	270	67	21	.2	.3	.05	.....	394	296	75	7	.3	589	7.6	....	....
39	31add2...	21	Qlce	7- 1-59	44	28	8.4	.81	103	44	29	6.0	459	123	7.4	.2	.9	.07	.....	596	438	62	12	.6	908	7.4	5	50
40	32aael...	129	Qag	6- 1-59	46	29	.08	.63	53	12	87	7.6	360	79	2.2	.4	1.9	.51	.....	461	183	0	50	2.8	708	7.4	2	1
41	32cce2...	127	Qag	6- 1-59	47	29	.25	1.0	80	20	49	8.4	366	85	2.7	.3	.2	.32	.....	460	280	0	27	1.3	720	7.3	3	.7
42	140-69-35dd4....	48	Qag	6- 4-59	43	25	.16	.55	241	182	89	8.4	548	787	160	.5	29	.16	1,790	2,180	1,350	901	12	1.1	2,430	7.1	....	....
43	141-62-8acc.....	Spring	Qvo	9-29-59	48	27	.03	.00	144	52	32	6.6	462	247	9.2	.3	.2	.10	.....	787	574	195	11	.6	1,090	7.4	....	....
44	141-67-8bcd2....	107	Qag	9-30-59	44	28	1.9	2.8	341	95	41	9.2	833	628	4.1	.2	.0	.24	1,560	1,630	1,240	557	7	.5	2,020	6.9	....	....
45	141-68-2ced.....	102	Qag	5- 8-60	43	28	1.3	1.4	173	47	119	9.8	629	299	48	.2	3.2	.55	1,040	1,050	626	110	29	2.1	1,530	7.1	....	....

1 No recent well records available; well may be abandoned.
2 Blend of water from 7 wells.
3 Formerly published as 140-64-28d in Table 3, p. 20-21, Robinove, Langford, and Brookhart (1958).

Table 3.--Chemical analyses of ground water, Stutsman County, from U.S. Geological Survey--Continued

Analysis no.	Location	Depth (ft)	Geohydrologic unit	Date of collection	Temperature (° F)	Silica (SiO_2)	Iron (Fe)	Manganese (Mn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids: Calculated	Dissolved solids: Residue on evaporation at 180° C	Hardness as $CaCO_3$	Noncarbonate hardness as $CaCO_3$	Percent sodium	Sodium-adsorption-ratio	Specific conductance (micromhos per cm at 25° C)	pH	Color	Turbidity as SiO_2
46	142-62-7bba.....	35	Qag	9-28-59	44	27	0.47	2.5	259	164	81	18	452	1,030	21	0.2	5.4	0.22	1,820	1,980	1,320	949	12	1.0	2,230	7.3	....	....
47	28abd....	30	Qag	9-28-59	44	22	.02	.02	183	116	71	5.4	404	455	150	.2	93	.24	1,290	1,430	935	604	14	1.0	1,870	7.5	....	....
48	142-63-18aaa....	65	Qag	9-28-59	44	28	.23	.54	103	21	75	4.7	420	156	10	.5	.8	.17	.....	613	345	1	32	1.8	922	7.5	....	....
49	142-64-18ccc1...	135	Qag	9-28-59	47	28	4.8	2.1	192	55	277	11	755	385	200	.2	6.0	.70	1,530	1,560	704	85	46	4.5	2,300	7.2	....	....
50	18ccc3...	200	Kp	9-28-59	45	26	6.0	.42	89	31	1,460	18	764	39	2,070	.3	.9	2.8	4,120	4,130	350	0	89	34	7,240	7.7	....	....
51	142-65-20baa ...	90	Kp	9-29-59	45	26	4.6	.24	119	43	2,520	26	604	18	3,860	.2	.9	4.4	6,920	6,970	474	0	92	50	12,000	7.9	....	....
52	142-66-22cca....	Spring	Qag	9-29-59	51	27	6.1	1.1	128	43	10	6.0	478	123	.4	.2	.1	.17	.....	592	496	104	4	.2	896	7.1	....	....
53	142-67-5eba.....	15	Qtse	9-30-59	46	22	.44	.13	93	36	8.2	4.7	396	57	7.3	.1	15	.15	.....	438	378	53	4	.2	720	7.3	....	....
54	142-68-8ddd1....	445	Kp	5- 9-60	43	26	.61	.77	84	25	357	12	677	340	163	.2	.3	1.2	1,340	1,360	312	0	70	8.8	2,060	7.4	....	....
55	142-69-6dad.....	52	Qag	5- 8-60	43	27	.07	.00	169	100	14	5.0	477	101	55	.2	379	.50	1,090	1,200	833	442	4	.2	1,590	7.4	....	....
56	34bbc....	43.2	Qao	5- 8-60	44	23	.04	.29	79	27	4.8	2.5	267	81	13	.1	2.9	.01	.....	417	310	91	3	.1	591	7.1	....	....
57	143-64-4daa1....	30	Qag	9-28-59	44	26	.03	.00	190	80	127	6.0	347	361	167	.2	210	.47	1,340	1,450	803	518	25	1.9	1,960	7.5	....	....
58	143-67-11cca....	47	Qag	9-30-59	43	28	.22	1.1	163	46	166	12	498	507	17	.2	4.1	.58	1,190	1,220	595	187	37	3.0	1,630	7.3	....	....
59	143-68-4ccc.....	96	Qag	5- 9-60	43	27	11	.74	219	55	174	11	829	437	13	.1	2.9	.47	1,360	1,370	771	91	33	2.7	1,890	6.9	....	....
60	144-62-16ccb1...	35	Qag	9-28-59	43	27	.08	.00	469	340	168	15	400	2,120	110	.4	195	.24	3,640	4,030	2,570	2,240	12	1.4	4,010	7.3	....	....
61	144-65-22ddc....	28	Qag	9-28-59	43	26	1.3	.30	87	29	17	5.6	397	45	7.1	.2	1.0	.06	.....	406	338	12	10	.4	678	7.4	....	....
62	144-66-2abb.....	1,934	Kd	5-23-62	48	12	1.2	.16	26	9.7	1,000	9.6	450	1,210	444	3.9	16	3.3	2,960	2,980	105	0	95	42	4,440	7.4	....	....
63	22ccc....	36.6	Qag	9-30-59	44	27	.04	.00	518	444	250	19	577	2,600	122	.4	355	.43	4,620	5,020	3,120	2,650	15	1.9	4,920	7.5	....	....
64	144-67-29abc....	34.1	Qag	5- 9-60	42	25	1.0	.96	215	94	51	9.2	623	482	14	.3	7.2	.15	1,210	1,280	924	413	11	.7	1,640	7.2	....	....
65	144-68-28daa....	335	Qag	9-30-59	46	29	3.5	.36	146	44	190	13	687	252	121	.3	2.4	.64	1,140	1,150	545	0	42	3.5	1,750	7.4	....	....
66	144-69-10bab....	25	Qag	5- 9-60	43	21	1.1	.85	132	74	63	14	705	185	7.0	.2	1.2	.02	.....	855	633	55	17	1.1	1,290	7.0	....	....
67	12bbc....	280	Qag	5- 9-60	41	25	.82	.25	55	16	343	10	585	270	139	.4	2.5	.77	1,150	1,160	202	0	78	11	1,790	7.3	....	....

TABLE 8.--Chemical analyses of ground water, Stutsman County, from North Dakota State Laboratories Department and North Dakota State Department of Health
(Results in parts per million except as indicated)

Location	Depth (ft)	Source of data	Silica (SiO_2)	Alumina (Al_2O_3)	Iron (Fe)	Manganese (Mn)	Zinc (Zn)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Total dissolved solids	Total hardness as $CaCO_3$	Total alkalinity as $CaCO_3$	pH
137-68-19ccd	80	(1)	..	...	1.75	..	...	88.0	28.5	312.0	....	376.0	Absent	632.0	46.0	Absent	2.1	.....	1,476.4	337.2	308.0	7.7
21bab	290	(1)	..	...	1.3	..	...	22.8	10.3	531.0	....	578.0	44.9	240.0	340.0	Absent	8.6	.....	1,776.9	99.6	535.5	8.6
137-69-27acc2	Spring	(1)	..	...	1.2	..	...	82.5	85.0	17.3	....	170.0	Absent	359.0	48.0	Absent	Trace	.....	755.0	561.0	139.8	7.9
30cca	Spring	(1)	..	...	.36	..	..	39.2	16.6	21.0	....	249.6	Absent	Trace	[illegible]	Absent	Absent	.....	332.3	176.4	204.6	8.0
138-64-1cad	46	(2)	..	...	1.0	..	..	5/ 112	5/ 98	115	7.0	5/ 388	5/16	99	86	.2	.48	0.5	680	210	.....	8.0
138-67-16aad	600	(2)	..	...	7	..	..	5/ 150	5/ 88	1,224	22.5	5/ 560	None	13	1,548	.2	1.88	3.1	3,192	238	.....	8.6
138-68-12ab	480	(2)	..	...	9.8	..	..	5/ 210	5/ 160	2,408	38.5	5/ 535	None	11	3,256	.1	5.15	3.3	6,056	370	.....	8.2
139-62-27bbc	148	(2)	..	...	.9	..	..	5/ 59	5/ 59	132.5	5.5	5/ 354	None	53	40	.4	None	.3	512	118	.....	7.8
139-63-6aba	1,524	(4)	..	...	...	..	..	58	18	870		250	.....	1,098	222	.....	.....	.....	.....	.....	.....	...
140-63-26dcd	86	(2)	..	...	.16	..	..	5/ 868	5/ 698	90.4	13.8	5/ 336	None	434	126	.2	22.75	Trace	1,696	1,080	.....	8.0
140-64-25bac	6/	(3)	28	2.4	4.6	.8	.2	118	48	187	....	492	.....	218	31	.8	0	.....	805	488	404	...
140-67-12bbb	420	(2)	..	...	1.6	..	..	5/ 139	5/ 105	480	13.8	5/ 560	5/40	82	405	.5	1.95	1.0	1,486	844	.....	8.1
140-69-27ba	30	(2)	..	...	.16	..	..	5/ 691	5/ 991	105	14.2	5/ 493	None	771	96	.2	44.5	.4	2,046	1,282	.....	7.6

(1) Paulson, Q. F., 1952, Geology and occurrence of ground water in the Streeter area, Stutsman, Logan, and Kidder Counties, North Dakota: North Dakota Ground Water Studies No. 20.
(2) State Laboratories Department, Bismarck, N. Dak.
(3) Abbott, G. A., Vondisch, F. W., 1938, The municipal ground water supplies of North Dakota: North Dakota Geol. Survey Bull. 11.
(4) Willard, D. E., 1909, Jamestown-Tower folio: U.S. Geol. Survey Geologic Atlas 168.
4/ As $CaCO_3$
5/ Sample is a mixture of water from six drilled wells (depth, 86 ft) and one dug well (depth, 37 ft).

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