GROUND-WATER BASIC DATA

for

ADAMS and BOWMAN COUNTIES, NORTH DAKOTA

by

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U. S. Geological Survey

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INTRODUCTION

The investigation (fig. 1) was made cooperatively by the U.S. Geological Survey, North Dakota State Water Commission, North Dakota Geological Survey, and Adams and Bowman Counties Water Management Districts. The results of the investigation will be published in three separate parts. Part 1 is an interpretive report describing the geology of the study area; part 2 is a compilation of the ground-water basic data; and part 3 is an interpretive report describing the ground-water resources. Part 2 makes available geological and hydrologic data collected during the county investigations and functions as a reference for the other reports.

The stratigraphic nomenclature used in this report is that of the North Dakota Geological Survey and does not necessarily follow the usage of the U.S. Geological Survey.

The following table may be used to convert English units to metric units.

Multiply English units	by	To obtain metric units
Inches (in)	25.4	millimeters (mm)
	.254	meters (m)
Feet (ft)	.3048	meters (m)
Miles (mi)	1.609	kilometers (km)
Square miles (mi^2)	2.590	square kilometers (km^2)
Acres	4,047	square meters (m^2)
	.4047	hectares (ha)
Gallons (gal)	3.785	liters (l)
	3.785×10^{-3}	cubic meters (m^3)
Gallons per minute	.06309	liters per second (l/s)
(gal/min)	6.309	cubic meters per second (m^3/s)
Cubic feet (ft^3)	28.32	cubic decimeters (dm^3)
	.02832	cubic meters (m^3)

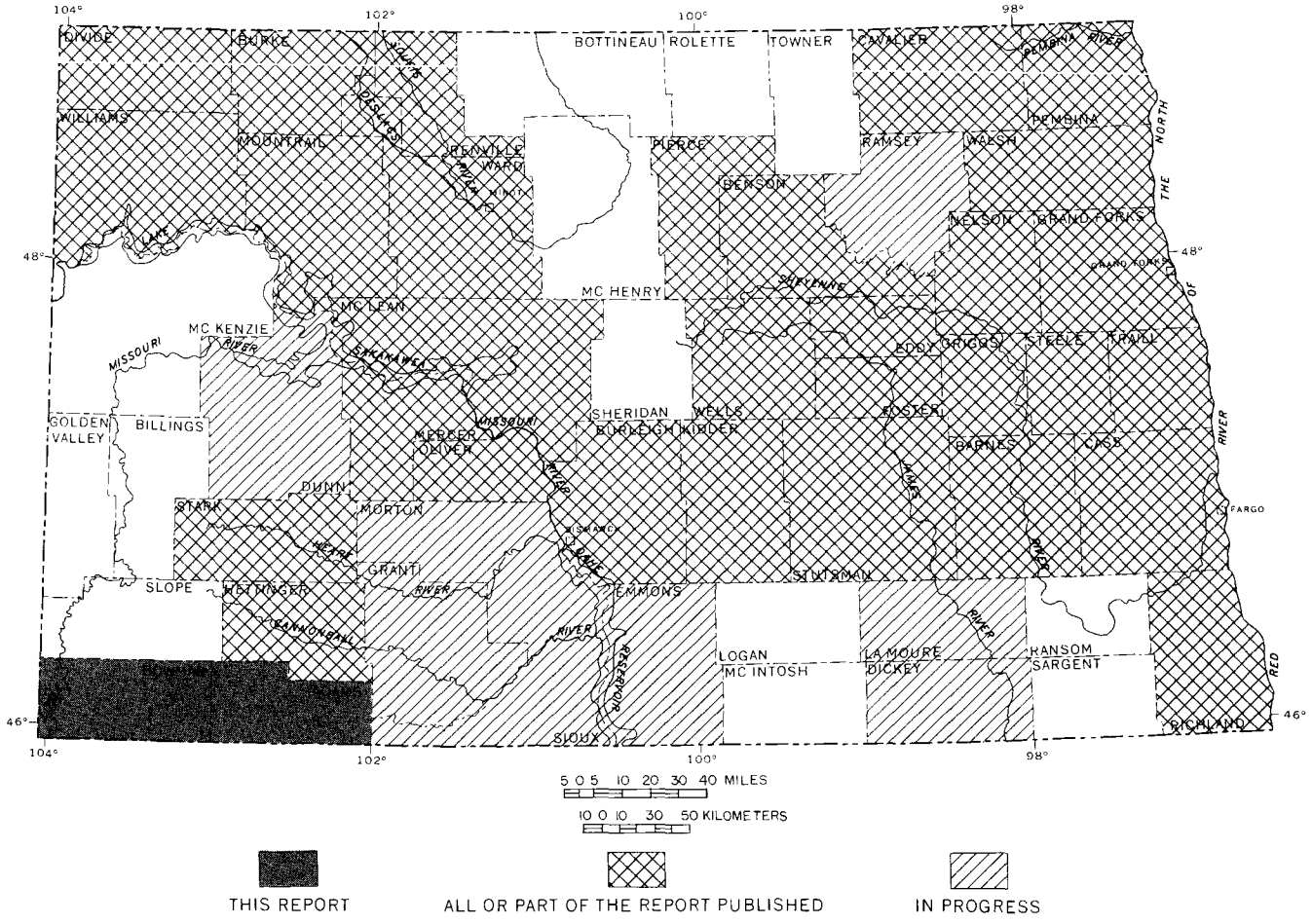

FIGURE 1.—County ground-water studies in North Dakota.

Purpose and Objectives

The purpose of the investigation is to provide detailed geologic and hydrologic information needed for the orderly development of water supplies for municipal, domestic, livestock, irrigation, and industrial uses. Specifically the objectives were to: (1) determine the location, extent, and nature of the major aquifers and confining beds; (2) evaluate the occurrence and movement of ground water, including the sources of recharge and discharge; (3) estimate the transmissivity of the aquifers and the potential yields of wells; (4) determine the chemical quality of the ground water; and (5) estimate water use.

Well- and Station-Numbering System

The wells and test holes in the tables are numbered according to a system of land survey in use by the U.S. Bureau of Land Management and the U.S. Geological Survey. The U.S. Bureau of Land Management system is illustrated in figure 2. The first numeral denotes the township north of a base line, the second numeral denotes the range west of the fifth principal meridian, and the third numeral denotes the section in which the well is located. The letters A, B, C, and D designate, respectively, the northeast, northwest, southwest, and southeast quarter section, quarter-quarter section, and quarter-quarter-quarter section (10-acre (4-ha) tract). For example, well 132-096-15DAA is in the NE¼NE¼SE¼ sec. 15, T. 132 N., R. 096 W. Consecutive terminal numerals are added if more than one well or test hole is recorded within a 10-acre tract. The location of each well and test hole in the tables is shown on plates 1 and 2 (in pocket).

A U.S. Geological Survey well number consists of 15 digits, and the number for well 132-096-15DAA is 461521N1023953.1. The first seven digits denote the degrees, minutes, and seconds of north latitude. The next seven digits denote the degrees, minutes, and seconds of longitude. The final digit is a sequence number used to distinguish between wells within the same second of latitude and longitude.

Chemical analyses collected from streams and reservoirs are tabulated according to the "downstream" order of the stations involved. In determining downstream order, stations on tributaries are listed between stations on the main stream in the order in which the tributaries enter. Stations

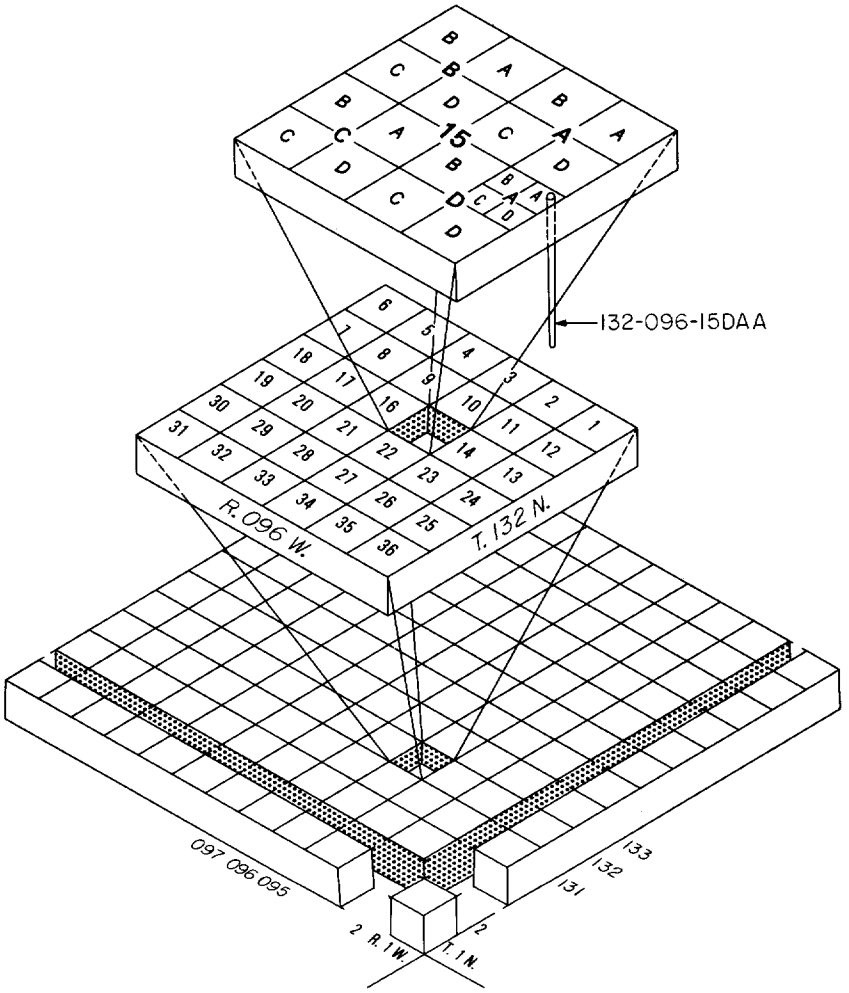

FIGURE 2.—System of numbering wells and test holes

on tributaries entering above all main-stem stations are listed before the first main-stem station. Each station for which records have been included in this report has been assigned an eight-digit station identification number. This number is the same regardless of the type of record involved. The downstream numbers increase in magnitude in the downstream direction within a major drainage basin, such as the Missouri River basin. The first two digits in the eight-digit identification number indicate the part of the country in which the station is located, and the remaining six digits indicate the individual station.

Acknowledgments

The author is indebted to the residents and officials of Adams and Bowman Counties who furnished essential information on wells and permitted measurements to be made and samples to be taken. Particular recognition is due to the following North Dakota State Water Commission personnel: L. L. Froelich and C. E. Naplin for logging of test holes, G. O. Muri for chemical analyses of water samples, and M. O. Lindvig for scheduling of drilling activities. Thanks are due Knutson Drilling Co., Dependable Drilling Co., H & H Service Co., Frederickson's, Inc., Moe's Well Drilling, Sander Drilling Co., and Alfred Jacobson for furnishing drillers logs and other information published in this report.

EXPLANATION OF TABLES AND METHODS OF DATA COLLECTION

The data in this report, which were collected chiefly between 1970 and 1973, are listed in tables 1-8 and the points of collection are shown on plates 1 and 2. Wells are listed according to the U.S. Bureau of Land Management system, and the corresponding U.S. Geological Survey number is listed in table 9. The data consist of the following: (1) Geologic and hydrologic records for 910 wells and test holes; (2) water-level measurements in 54 observation wells; (3) lithologic and geophysical logs of 521 test holes and wells; (4) 232 chemical analyses of ground water; (5) 68 chemical analyses of water from streams and reservoirs; (6) five analyses of minor elements in water from wells and streams; (7) three particle-size distribution graphs of sand from an aquifer; and (8) 11 hydraulic conductivity and porosity values determined by laboratory tests. The data are useful for evaluating geologic and ground-water conditions in Adams and

Bowman Counties. For example, a person considering the construction of a new well can locate the proposed site on plates 1 or 2. Depth, water quality, lithology, and water level of nearby wells and test holes tapping the different aquifers can be determined from the tables. However, use of the data as a guide to conditions at different sites should be made with caution because of the lenticular character of the sandstone and varying water quality in some aquifers.

Records of Wells and Test Holes

Records of test holes and selected wells are given in table 1. Well depth is the depth of casing for open-bottom wells or the base of the well screen. Most test holes were converted to observation wells for periodic water-level measurements and water-quality sampling. At some sites two or three observation wells were drilled in order to obtain water levels and water samples from several aquifers. The observation wells generally were constructed of 1¼-inch (31-mm) plastic casing with 6- or 12-foot (1.8- or 3.6 meter) screens or 2-inch (51-mm) steel casing with 6- or 12-foot screens. The observation wells were developed by backwashing with trisodium phosphate and were pumped a minimum of 10 hours for development before collection of water samples for analysis. The locations of the test holes and observation wells are shown on plates 1 and 2.

Water Levels in Selected Wells

Table 2 gives monthly and intermittent water levels in selected wells, in feet below land surface, that tap the major aquifers in Adams and Bowman Counties. Water-level measurements were made beginning in the fall of 1971 and extending through the fall of 1973. Measurements will continue to be made in several wells as part of the statewide observation-well network to monitor changes in water levels as the ground-water resources of the area are developed.

Logs of Wells and Test Holes

Logs of test holes drilled as part of this project and logs collected from water-well drillers and other sources are included in table 3. Minor changes in word order have been made on some of the drillers logs. Logs from test holes drilled during a previous investigation (Robinove, 1956)

are numbered between 995 and 1011. Logs of test holes drilled as part of this project begin with number 4308. Most test holes drilled during this project and some municipal and industrial wells have a graphic, electric, and gamma-ray log in addition to a description of the materials penetrated. Temperature logs were made of wells 132-097-07CAB2, 07CAB4, and 131-102-07DDD1. The electric logs are extremely useful for correlation purposes.

Water-Quality Data

The mineral constituents and physical properties of water are reported in the tables of analyses (tables 4, 5, and 6). The water samples were collected in polyethylene bottles. For those metals considered unstable, a separate sample was filtered and acidified before transport to the laboratory. Most of the samples were analyzed by the North Dakota State Water Commission, Bismarck, N. Dak. The 1973 analyses were made by the U.S. Geological Survey, Salt Lake City, Utah. Methods of analyses were generally those described by Brown and others (1970). The results are expressed in milligrams per liter (mg/l) or micrograms per liter (µg/l). A microgram per liter is one-thousandth of a milligram per liter.

Drinking-water standards were established for interstate carriers by the U.S. Public Health Service (1962) and are generally accepted as applicable to public water supplies. The Federal Water Quality Act of 1965 provided for the establishment of water-quality standards for all interstate waters. Water-quality criteria for public supplies, farmsteads, industrial, and agricultural uses were established by the U.S. Federal Water Pollution Control Administration (1968). The State of North Dakota (1970) adopted a set of water-quality standards within the framework of the national guidelines for interstate streams. The following summation for public supplies is from the U.S. Public Health Service (1962, p. 7-8) and the Federal Water Pollution Control Administration (1968).

According to the 1962 standards, the following substances in excess of the concentrations listed shall constitute rejection of the supply:

Substance	Concentration (mg/l)
Arsenic (As)	0.05
Barium (Ba)	1.0
Cadmium (Cd)	.01
Chromium (hexavalent, as Cr)	.05
Cyanide (CN)	.2
Lead (Pb)	.05
Selenium (Se)	.01
Silver (Ag)	.05

The following chemical substances should not be present in a water supply in excess of the listed concentrations where, in the judgment of the Reporting Agency and Certifying Authority, other more suitable supplies are or can be made available.

Substance	Concentration (mg/l)
Arsenic (As)	0.01
Chloride (Cl)	250
Copper (Cu)	1
Cyanide (CN)	.01
Iron (Fe)	.3
Manganese (Mn)	.05
Nitrate (NO_3)	45
Sulfate (SO_4)	250
Total dissolved solids	500
Zinc (Zn)	5

The differences between mandatory and desirable standards can be illustrated by the discussion on page 33 of the 1962 U.S. Public Health Standards. It is as follows:

"It should be emphasized that there may be a great difference between a detectable concentration and an objectionable concentration of the neutral salts. The factor of acclimatization is particularly important. More than 100 public supplies in the United States provide water with more than 2,000 mg/l of dissolved solids. Newcomers and casual visitors would certainly find these waters almost intolerable and, although some of the residents use other supplies for drinking, many are able to tolerate if not enjoy these highly mineralized waters.

"Relatively little information is available on consumer attitudes toward mineralized water. In this connection, the findings of a survey made by the California State Department of Public Health...showed that in five communities where the public supplies were highly mineralized, about 40 percent of the families surveyed purchased bottled water and about 50 percent stated they were dissatisfied with the water. These supplies had dissolved solids contents in the range of 500 to 1,750 mg/l. Calcium, sulfate, and magnesium were the dominant ions present, with sulfate concentrations in the range of 300 to 700 mg/l.

"The taste threshold for magnesium is said to be 400-600 mg/l...."

The following sections on the origin and practical significance are adopted largely from Hem (1970) and Durfor and Becker (1964).

Mineral Constituents in Solution

Silica (SiO_2)

Weathering processes dissolve silica from practically all rocks. Silica affects the usefulness of water because it can contribute to the formation of scale in pipes, water heaters, and boilers in the presence of calcium and magnesium.

Iron (Fe)

The element iron is a widespread constituent in sedimentary rocks as pyrite or marcasite and is easily leached by ground water. Water that contains more than 100 µg/l of iron, after exposure to air, cuases turbidity. Reddish-brown stains on porcelain or enamelware and fixtures and on fabrics washed in the water result from the iron-imparted turbidity.

Manganese (Mn)

Small quantities of manganese in water may constitute an objectionable impurity because concentrations as low as 200 µg/l may cause a dark-brown or black stain on fabrics and porcelain fixtures. Ground water that contains objectionable concentrations of iron may also have considerable amounts of manganese.

Calcium and Magnesium (Ca and Mg)

Calcium is the principal cation in most natural fresh water. Most limestone contains moderate amounts of magnesium and is many times the

major source of magnesium in natural water. Calcium and magnesium are the principal causes of the property of hardness. They, with anions and silica form scale on utensils and in water heaters, boilers, and pipes.

Sodium and Potassium (Na and K)

Sodium is the most abundant member of the alkali-metal group. When brought into solution it tends to remain in solution. Potassium is present in sedimentary rocks, in unaltered feldspar or mica particles, or in illite or clay minerals. Potassium is liberated with great difficulty from silicate minerals and exhibits a strong tendency to be reincorporated into solid weathering products, especially clay minerals. In most natural water the concentration of potassium is much lower than the concentration of sodium. Moderate quantities of sodium and potassium generally have little effect on the usefulness of water. Water that contains a large proportion of sodium salts may be unsatisfactory for irrigation of certain types of poorly drained soils. The presence of several hundred milligrams per liter of sodium in water can make it unsuitable for use in sodium-restricted diets (North Dakota State Department of Health, 1962).

Bicarbonate and Carbonate (HCO_3 and CO_3)

The carbon dioxide that is dissolved in naturally circulating water is the most common of the weak acids in natural water. The ability of the weak acids in natural water to neutralize acid is defined as alkalinity. Equivalent concentrations of bicarbonate and carbonate ions to specified pH's of the weak acids in a sample are expressed in this publication. High concentrations of these ions precipitate with available calcium and magnesium on the heating of the water. This scale-forming characteristic is considered undesirable.

Alkalinity can be calculated from the analyses by using the formula:

$$\text{Alkalinity (as } CaCO_3) = 0.82\ (HCO_3) + 1.67\ (CO_3)$$

Sulfate (SO_4)

Sulfate, an oxidation product of sulfur, is not a major constituent of the earth's crust but is widely distributed in sedimentary rocks as metallic sulfide. Pyrite is associated with deposits such as coal. Upon weathering or with bacterial action, metallic sulfide deposits yield

sulfates to ground water. Large quantities of sulfate may also be dissolved from beds of gypsum and deposits of sodium sulfate. The laxative effects commonly experienced with water having sulfate concentrations exceeding 600 mg/l, particularly if much magnesium or sodium is present, make high concentrations undesirable.

Chloride (Cl)

The salty taste imparted by concentrations in excess of 250 mg/l impairs the water's usefulness for some purposes.

Fluoride (F)

Fluoride in the ground water is probably derived from solution of fluorite, apatite, and hornblende. The concentration in natural water can have a beneficial effect on reducing dental caries, and in excessive concentrations, can cause mottling and disfiguration of teeth.

Nitrate (NO_3)

The occurrence of high nitrate concentrations in shallow ground water has been attributed to leaching in feedlots or to fertilizer from irrigated fields where nitrogen has been applied. High nitrate content is undesirable in drinking water because of its bitter taste and it has been reported to cause methemoglobinemia in infants.

Boron (B)

Boron in small quantities is essential for plant growth. Excessive concentrations of boron in soil and in irrigation water are harmful for some plants.

Dissolved solids

The reported quantity of dissolved solids (residue on evaporation at 180°C) consists mainly of the dissolved mineral constituents in the water. It may also include some organic matter and water of crystallization. The effect of salinity, or dissolved solids, on the osmotic pressure of the soil solution is one of the most important water-quality considerations. Water containing excessive dissolved solids is less successfully used for irrigation.

Minor elements

Five water samples from two aquifers and two streams were analyzed for minor elements. Minor elements are those substances that typically occur in concentrations of less than 1.0 mg/l.

Properties and Characteristics of Water

Hardness

Hardness is the characteristic of water that receives much attention in industrial and domestic use. As hardness increases, so does the quantity of soap required to produce a lather. Hard water is also objectionable because it contributes to the formation of scale in boilers, water heaters, radiators, and pipes, with a resultant decrease in the rate of water flow and heat transfer. Calcium and magnesium in natural water are the principal cause of hardness.

The hardness that is equivalent to the alkalinity is called carbonate hardness, and any excess is called noncarbonate hardness. The carbonate hardness is the quantity that will form scale on heating and the noncarbonate hardness is the quantity of hardness that will remain after heating. The adjectives "hard" and "soft" as applied to water are inexact, and the following classification of water hardness is used in this publication.

Calcium and magnesium hardness as $CaCO_3$ (milligrams per liter)	Hardness description
0-60	Soft
61-120	Moderately hard
121-180	Hard
More than 180	Very hard

Percent sodium and sodium-adsorption ratio (SAR)

The percent sodium is the ratio, expressed as a percentage, of sodium to all cations, in milliequivalents per liter. The displacement of calcium and magnesium by sodium in soils is slight unless the percent sodium is considerably higher than 50.

The term sodium-adsorption ratio (SAR) was introduced by the U.S. Salinity Laboratory Staff (1954). The experiments cited by the Salinity Laboratory show that the SAR predicts reasonably well the degree to which irrigation water tends to enter into cation-exchange reactions with soil.

Sodium-adsorption ratio is expressed by the equation:

$$SAR = \frac{Na^{+}}{\sqrt{\frac{Ca^{++}+Mg^{++}}{2}}}$$

where the concentrations of the ions are expressed in milliequivalents per liter. The U.S. Salinity Laboratory Staff (1954) divided water into sixteen classes, depending upon the SAR and specific conductance. The classifications indicate the usefulness of water for irrigation of different crops on different types of soil.

Specific conductance (micromhos per centimeter at 25°C)

Specific conductance is the measure of the ability of water to conduct an electric current. Commonly 0.65 to 0.70 of the specific conductance is used to estimate the amount of dissolved solids in water.

Hydrogen-ion concentration (pH)

Hydrogen-ion concentration (activity) is expressed in terms of pH units. The values of pH often are used as a measure of the solvent power of water or as an indicator of the chemical behavior certain solutions may have toward rock minerals.

The degree of acidity or alkalinity of water, as indicated by the hydrogen-ion activity, affects the corrosive properties of water, and partly determines the proper treatment that may be necessary at water-treatment plants. A pH of 7.0 indicates that the water is neither acid nor alkaline. Readings progressively lower than 7.0 denote increasing acidity, and those progressively higher than 7.0 denote increasing alkalinity.

Temperature

Temperature is an important factor in evaluating the usefulness of water. This is evident for such a direct use as an industrial coolant. Temperature is also important, but perhaps not so evident, for its influence upon concentrations of dissolved gases and mineral matter in ground water. Water temperatures in this report were measured with a thermometer (tables 1, 4, and 5) and are expressed in degrees Celsius (Centigrade). Degrees Celsius and the equivalent temperature in degrees Fahrenheit are given in the following table.

Degrees Celsius (°C)	Degrees Fahrenheit (°F)	Degrees Celsius (°C)	Degrees Fahrenheit (°F)
3.0	38	13.5	56
4.0	39	14.0	57
4.5	40	14.5	58
5.0	41	15.0	59
5.5	42	15.5	60
6.0	43	16.0	61
6.5	44	16.5	62
7.0	45	17.0	63
7.5	46	17.5	64
8.5	47	18.5	65
9.0	48	19.0	66
9.5	49	19.5	67
10.0	50	20.0	68
10.5	51	20.5	69
11.0	52	21.0	70
11.5	53	21.5	71
12.0	54	22.0	72
12.5	55	22.5	73

The temperature of ground water increases about 1.2°C (2.2°F) for each 100 feet (30.5 meters) of depth below the land surface. Many values for well-head temperatures in table 4 are lower than true aquifer temperatures.

Particle-Size Distribution Graphs and Hydraulic-Conductivity and Porosity Values

Three particle-size distribution curves obtained from a core from test hole 129-104-34ADA are in table 7. The diagrams show the percent of clay, silt, and sand in the samples. The graphs may be used to estimate hydraulic conductivity (Johnson, 1963). Values for hydraulic conductivity and porosity determined in the laboratory are listed in table 8.

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TABLE 1.--Records of wells and test holes

EXPLANATION

Owner

NDGS, North Dakota Geological Survey auger hole

NDSWC 4383, North Dakota State Water Commission test-hole number 4383

USGS LM-38, U.S. Geological Survey auger-hole number LM-38

Water level (feet)

Water level, in feet below (+ above) land surface
F, well flows

Use of water

C, commercial
H, domestic
K, domestic and livestock
N, industrial
P, public supply
S, livestock
U, unused

Major aquifer

125, Paleocene
211, Upper Cretaceous

CNBL, Cannonball Formation
HCFH, Hell Creek-Fox Hills, undifferentiated
LDLW, Ludlow Formation
LHCK, Ludlow-Hell Creek, undifferentiated
TRVL, Tongue River-Ludlow, undifferentiated

Water-bearing material

Modifiers

1, very fine grained
2, fine grained
3, medium grained
8, sandy

Major lithology

1, lignite
B, sedimentary rock, unclassified
F, shale
G, gravel
L, limestone
P, clay
Q, silt or loess
R, sand and gravel
S, sand
V, sandstone

LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT.)	WELL DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAM-ETER (IN.)	DATE DRILLED (YEAR)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	USE OF WATER	MAJOR AQUIFER	WATER BEARING MATERIAL	SPECIFIC CONDUCT-ANCE (μMHOS/CM AT 25°C)	TEM-PER-ATURE (°C)	ALTI-TUDE OF LSD (FT.)
129-091-06ACA	W.LEMKE		170	160	6	1962	25	--	K	125LDLW	1	1200	--	--
129-091-07AAA1	NDSWC 4383	520	348	336	2	1971	147	11-71	U	125LHCK	S	1770	10.0	2422
129-091-07AAA2	NDSWC 4383A		186	180	1	1971	94	11-71	U	125LDLW	S	2270	9.5	2422
129-091-07BB	ELMO CAIN 1	2400	--	--	--	1963	--	--	U	--	--	--	--	2476
129-091-08CCC	A.MOLITOR	263	261	235	4	1967	141	6-71	S	125LDLW	S	1790	10.0	2450
129-091-19BAA	P.GINTHER	80	80	60	4	--	40	--	S	125TRVL	S	935	10.0	--
129-091-21BBB	D.CAMPBELL		200	--	5	1965	--	--	K	125LDLW	--	1200	--	--
129-091-23BBD1	C.GIBBONS		90	--	--	1930	20	--	K	--	--	3900	--	--
129-091-23BBD2	C.GIBBONS	242	242	221	4	1972	140	--	H	125LDLW	S	1510	--	--
129-091-27DDB	C.UMBACK		220	--	4	1914	80	--	K	125LDLW	S	1300	--	--
129-091-29BBB	C.PETERSON	200	200	170	6	1968	130	--	K	125LDLW	S	2700	--	--
129-092-02AAB	R.SCHACKOW		108	90	6	1957	23	--	H	125LDLW	S	1300	--	--
129-092-06DCA	M.MILLER		80	50	6	1966	F	--	H	--	--	2800	--	--
129-092-06DDB	M.MILLER		76	--	4	1941	F	--	S	125TRVL	--	--	--	--
129-092-06DDC	M.MILLER		80	40	4	1966	+5	--	K	125CNBL	B	3190	9.0	--
129-092-10BCB	D.THOM	102	102	80	5	1965	75	--	K	--	S	450	--	--
129-092-22ADD	A.SONN	170	170	140	--	1968	20	--	S	125LDLW	S	1730	--	2573
129-092-26CCB	E.SCHACKOW	222	222	216	4	1962	--	--	H	125LDLW	S	3660	--	2642
129-092-26CCC	R.WALTER		149	--	6	1955	--	--	H	--	B	4000	--	--
129-092-27BBB	NDSWC 4382	220	144	138	1	1971	126	11-71	U	125CNBL	S	--	--	2797
129-092-30CBB	E.SALZIEDER		170	--	6	1964	140	--	K	--	S	1400	--	--
129-092-32CAB	O.BERG		140	--	6	--	20	--	K	--	--	1120	--	--
129-093-08CBB1	NDSWC 8347	420	363	357	2	1972	90	7-72	U	125LHCK	S	1870	11.0	2460
129-093-08CBB2	NDSWC 8347A	220	207	213	1	1972	66	7-72	U	125LDLW	S	1760	10.0	2460
129-093-08DCC	W.EVANS		230	200	4	1952	30	--	K	--	--	1400	--	--
129-093-11CDD	A.CHRISTMAN		80	--	4	1957	--	--	K	--	G	2300	--	--
129-093-11DCB	A.CHRISTMAN	64	64	39	4	1972	20	--	S	--	S	1520	--	--
129-093-12CCB	J.MILLER		265	--	6	--	--	--	S	125LDLW	--	1900	--	--
129-093-12CCC	F.STEELE	192	182	--	4	1963	--	--	H	125LDLW	S	1670	--	--
129-093-17BAA	C.EVANS	189	189	--	4	1961	--	--	S	--	S	2720	10.0	--
129-093-18ADA	W.EVANS	168	--	--	4	1961	--	--	S	125LDLW	S	--	--	--
129-093-20DAD	L.HERSRUD	125	125	--	6	1967	--	--	U	--	S	--	--	--
129-093-21ADD	E.QUALLEY	84	84	--	4	1961	--	--	S	--	S	1680	9.0	--
129-093-27BBA	J.QUALLEY	168	168	--	4	1962	--	--	S	125LDLW	S	1050	10.0	--
129-093-27BDD	E.QUALLEY	95	95	--	5	1965	--	--	S	--	S	825	9.5	--
129-093-28ABB1	L.QUALLEY		65	45	5	1944	40	--	H	--	--	--	--	--
129-093-28ABB2	L.QUALLEY		65	--	5	1944	30	--	H	125TRVL	S	1950	--	--
129-093-28ABB3	L.QUALLEY	242	240	215	4	1966	--	--	S	125LDLW	S	1670	9.0	--
129-093-32BDC	E.QUALLEY	91	91	71	5	1961	--	--	S	125LDLW	S	--	--	--
129-093-35ADD	L.HERSRUD	181	180	144	6	1969	--	--	H	125LDLW	S	3000	--	--

LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT.)	WELL DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAM-ETER (IN.)	DATE DRILLED (YEAR)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	USE OF WATER	MAJOR AQUIFER	WATER BEARING MATERIAL	SPECIFIC CONDUCT-ANCE (MMHOS/CM AT 25°C)	TEM-PER-ATURE (°C)	ALTI-TUDE OF LSD (FT.)
129-094-01CCC	M.MERWIN		195	155	5	1965	40	--	K	125LDLW	S	2300	--	--
129-094-04BCB	J.MISCHEL		110	90	6	1953	25	--	H	--	R	1600	--	--
129-094-07DCD	M.MILLER		100	--	4	--	70	--	K	--	S	2300	--	--
129-094-17BBC1	NDSWC 4385	600	474	462	2	1971	165	11-71	U	125LHCK	--	2270	9.5	2583
129-094-17BBC2	NDSWC 4385A	290	290	284	1	1971	148	11-71	U	125LDLW	--	1610	10.0	2582
129-094-17CBB	S.SCHJELDAHL	200	200	--	4	1963	--	--	S	125LDLW	S	2050	10.0	--
129-094-22AAA	D.MERWIN		200	180	6	--	--	--	K	125LDLW	S	2900	--	--
129-094-22CAA	H.WAMRE	221	198	--	1	1961	--	--	U	125LDLW	S	--	--	--
129-094-24ABD	W.EVANS	80	80	57	4	1969	--	--	S	--	S	--	--	--
129-094-26DDD	NDSWC 4451	1020	948	938	--	1972	195	6-72	U	211HCFH	S	2470	14.0	2495
129-094-28DA	NDSWC 4384	120	--	--	--	1971	--	--	U	--	--	--	--	2530
129-094-29BBA		136	136	--	4	1960	--	--	H	125LDLW	S	--	--	--
129-094-29BBB	HAYNES EQUITY	135	135	--	5	1950	--	--	H	125LDLW	S	2750	11.0	--
129-094-31AAB	J.FORDAHL	153	153	--	4	1962	--	--	U	--	--	--	--	--
129-094-32CCB	R.BROWN	147	147	--	5	1961	--	--	U	--	S	--	--	--
129-094-33ABB	D.PAPKA		280	220	6	1969	100	--	K	125LDLW	S	1500	--	--
129-094-33DCC	J.HUMPHREY	73	73	--	4	1965	--	--	S	--	Q	1600	9.0	--
129-095-02DAD	G.OLSON	306	306	--	4	1964	225	6-71	H	125LDLW	2S	2140	--	2707
129-095-03ADA	L.VOLK		45	--	6	--	12	--	K	--	S	700	--	--
129-095-06ABB	V.REINER	309	166	--	4	1972	56	--	H	--	--	1750	--	--
129-095-06BBB	NDSWC 996	200	--	--	--	1955	--	--	U	--	--	--	--	2758
129-095-06BCC	R.QUAIL	306	304	264	4	1966	185	--	H	125LDLW	S	1620	--	2700
129-095-07BBB	NDSWC 995	200	--	--	--	1955	--	--	U	--	--	--	--	2703
129-095-07CCC	E.ENEBERG	105	99	60	4	1967	--	--	H	--	S	1280	--	--
129-095-08BCC	J.MASSAD	126	126	116	5	1943	--	--	C	125TRVL	S	1050	12.0	--
129-095-10DCA	E.WIELAND	185	185	--	4	1960	125	6-71	H	125LDLW	--	300	--	2634
129-095-11CCC1	G.KNANVIG	295	287	--	4	1965	--	--	H	125LDLW	2S	1600	--	--
129-095-11CCC2	G.KNANVIG	189	182	--	4	1966	--	--	H	125LDLW	8P	2650	9.0	--
129-095-11CCC3	G.KNANVIG	158	152	63	4	1967	--	--	H	--	S	2620	--	--
129-095-12AAB	L.NOTTVEIT		90	70	6	1950	--	--	H	--	1	3200	--	--
129-095-12DDD	NDSWC 1011	200	--	--	--	1955	--	--	U	--	--	--	--	2756
129-095-13BBD	R.STEINBACH		42	--	6	1948	17	--	H	125TRVL	--	1830	--	--
129-095-13BCD	J.GUSTIN	221	221	--	3	1960	110	6-71	H	125LDLW	S	3420	--	2602
129-095-14BBB	NDSWC 1010	200	--	--	--	--	--	--	U	--	--	--	--	2728
129-095-15CCA	R.ANDERSON	125	125	--	4	1961	--	--	S	--	S	--	--	--
129-095-16CBC	E.EVENSON	206	--	--	4	1961	--	--	S	125LDLW	S	--	--	--
129-095-17AAA	NDSWC 1009	200	--	--	--	1955	--	--	U	--	--	--	--	2746
129-095-18AAA	NDSWC 1008	200	--	--	--	1955	--	--	U	--	--	--	--	2783
129-095-18AAB	B.MERWIN	296	286	--	4	1963	--	--	N	125LDLW	S	--	--	--
129-095-18BAA	C.REMINGTON	116	116	--	5	1960	--	--	S	125TRVL	S	1300	--	--

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129-095-18RBA1	V.STIPPICK	70	20	--	4	1961	--	--	N	125TRVL	S	1120	--	--
129-095-18BBA2	V.STIPPICK		100	--	4	1970	--	--	H	125TRVL	--	1150	--	--
129-095-18BBB	NDSWC 994	200	--	--	--	1955	--	--	U	--	--	--	--	2727
129-095-18BCC	E.EVENSON	275	275	--	4	1963	--	--	H	125LDLW	--	--	--	--
129-095-19BAA	J.CLEMENT	80	80	40	4	1969	--	--	S	--	S	2500	8.0	--
129-095-19DAC	E.STENBERG	232	--	--	4	1961	--	--	S	--	--	--	--	--
129-095-20BBB	B.MERWIN	222	--	--	4	1962	--	--	S	125LDLW	--	--	--	--
129-095-23DBA	J.MAIER		140	--	5	1955	--	--	K	--	P	3000	--	--
129-095-24ADD	R.BRAUN		120	--	4	1935	--	--	K	--	--	2900	--	--
129-095-26ADD	V.MILLER	200	200	50	4	1969	--	--	H	--	S	1500	--	--
129-095-27ADB	C.ZIMMERMANN	150	150	85	4	1968	--	--	S	--	S	--	--	--
129-095-27BAB	C.ZIMMERMANN	63	63	--	4	1968	--	--	S	--	--	1450	8.5	--
129-095-28BDB	W.BENTSON		80	--	4	--	--	--	K	--	S	1400	--	--
129-095-29ADA	P.GORDON	95	95	--	4	1965	--	--	S	--	--	1600	9.0	--
129-095-29BCB	P.GORDON	60	60	--	4	1968	20	--	H	--	S	4000	--	--
129-095-29CCB	P.GORDON	60	60	--	10	1968	--	--	S	--	--	1650	--	--
129-095-30AAB	H.CORNELLA	240	240	192	4	1968	141	--	S	125LDLW	BP	2070	9.5	2668
129-095-30CBC	H.CORNELLA		160	120	6	1947	50	--	K	125TRVL	P	1060	--	--
129-095-31AAA	COUNTRY CLUB		80	50	5	1967	12	--	H	--	S	1400	--	--
129-095-31AAC	J.MANNING	84	77	20	4	1966	--	--	H	--	S	1750	--	--
129-095-31CBD	J.MANNING	100	100	--	4	1970	--	--	S	--	--	--	--	--
129-095-31DBD	J.MANNING		60	40	5	1947	20	--	H	--	S	450	--	--
129-095-32CBA	J.MANNING	80	80	--	4	1961	--	--	S	--	--	875	9.5	--
129-095-33ACC	O.NOTTVIET	160	160	79	4	1970	--	--	S	--	S	1100	12.0	--
129-095-34ADD	B.EVENSON	148	148	60	4	1966	--	--	S	--	S	1250	9.0	--
129-095-35CBB	P.GORDON	93	--	--	4	--	--	--	H	--	--	--	--	--
129-096-01ABC	H.ZIMMERMAN	158	158	105	4	1965	--	--	S	--	S	2700	10.5	--
129-096-01DAD1	H.ZIMMERMAN	84	77	34	4	1963	--	--	S	--	S	1220	--	--
129-096-01DAD2	H.ZIMMERMAN	95	94	32	4	1967	--	--	H	125CNBL	S	2690	--	--
129-096-02DCC1	T.UECKER	122	122	--	4	1960	--	--	H	--	--	--	--	2730
129-096-02DCC2	UECKER STOCK CO		500	--	4	1966	250	7-71	U	125LHCK	S	--	--	2730
129-096-02DCC3	UECKER STOCK CO	460	420	400	4	1968	--	--	S	125LHCK	--	1610	12.0	2730
129-096-02DDC1	WEST RIVER VET	378	378	328	3	1966	226	7-71	H	125LHCK	S	1560	--	2734
129-096-02DDC2	C.UECKER		165	--	4	1970	60	7-71	H	125TRVL	--	1840	--	--
129-096-03BAD	G.MUELLER	73	73	21	4	1963	8	--	H	--	S	2200	--	--
129-096-04DCB	A.ROSE	880	880	800	4	1971	274	6-71	H	211HCFH	S	1580	--	2711
129-096-06DAA	M.BRATTVET	306	300	--	4	1966	--	--	H	125LDLW	--	1660	--	2726
129-096-08AAB	U.TORLE		--	--	6	--	--	--	H	--	--	1650	--	--
129-096-10BBB	NDSWC 1001	200	--	--	--	--	--	--	U	--	--	--	--	2689
129-096-10CAA1	E.STREHLOW	158	158	--	6	1960	--	--	H	--	--	1550	--	--

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129-096-10CAA2	E.STREHLOW	295	270	170	4	1967	--	--	S	125LDLW	1	1400	--	--
129-096-11CAD	R.QUAIL	56	56	15	4	1969	--	--	H	--	S	2100	--	--
129-096-11CBC	NDSWC 1000	200	--	--	--	1955	--	--	U	--	--	--	--	2679
129-096-12BBC	C.MUCK	306	298	--	4	1964	--	--	H	125LDLW	--	1300	--	--
129-096-12BCC	D.SAUNDERS	179	179	--	5	1962	--	--	S	--	--	1400	--	--
129-096-12CAD	DR.SAILOR	147	145	--	4	1966	--	--	H	--	--	300	--	--
129-096-12DBB	HETTINGER	1354	1314	1010	10	1965	670	6-71	P	211HCFH	S	1840	21.0	2812
129-096-12DCD1	J.CLEMENT	164	163	--	5	1963	--	--	S	--	--	950	9.0	--
129-096-12DCD2	B.CLEMENT		142	--	6	1945	92	--	H	125TRVL	--	909	--	--
129-096-13AAD	NDSWC 4388	580	463	451	2	1971	261	12-71	U	125LHCK	S	1720	8.8	2724
129-096-13ABD	HETTINGER HOSP.	126	120	--	4	1959	--	--	H	--	--	2080	--	--
129-096-13ACA	HETTINGER	1363	1140	940	10	1965	--	--	P	211HCFH	--	1890	19.5	2719
129-096-13ADD	HETTINGER		1050	--	--	1940	359	--	P	211HCFH	--	1550	17.0	2670
129-096-13BBBL	HETTINGER		1180	--	--	1948	397	--	P	211HCFH	--	1590	17.5	2658
129-096-13BBB2	NDSWC 993	200	--	--	--	1955	--	--	U	--	--	--	--	2672
129-096-13BBB3	KNOTTY PINE INN		23	--	4	1959	--	--	C	125TRVL	--	1480	--	--
129-096-13BCD	NDSWC 1004	20	20	--	--	1955	--	--	U	--	--	--	--	2672
129-096-13BDB	KNOTTY PINE INN	120	120	--	4	1970	--	--	H	125TRVL	--	683	10.0	--
129-096-13BDD1	HETTINGER		1182	--	12	1935	386	--	P	211HCFH	--	1530	18.5	2681
129-096-13BDD2	HETTINGER	1192	1171	--	12	1936	--	--	P	--	S	--	--	2664
129-096-13BDD3	HETTINGER	1190	1190	--	--	1936	--	4-70	U	211HCFH	--	--	--	2665
129-096-13BDD4	C.STUART	80	80	--	5	1961	8	--	H	125TRVL	--	2310	--	--
129-096-13CCC1	T.FETCH		100	--	4	1962	--	--	K	--	--	1300	--	--
129-096-13CCC2	A.GUNDERSON	58	58	--	5	1964	7	7-71	H	--	--	1550	9.0	--
129-096-13DDA	C.COOK	53	53	--	4	1960	--	--	S	--	--	1250	--	--
129-096-14ACD	A.NORBY	340	340	300	4	1972	250	--	H	--	--	1980	--	--
129-096-14CBD	C.MELBY	65	65	--	5	1960	--	--	H	--	--	1800	--	--
129-096-14DAD1	K.KNUTSON	52	46	--	4	1966	--	--	H	--	--	1650	--	--
129-096-14DAD2	K.KNUTSON	80	80	20	5	1969	15	--	H	--	S	1550	--	--
129-096-14DBB	D.KNUTSON	84	84	--	4	1964	40	--	H	--	--	840	11.0	--
129-096-14DDA	F.FORTUNE	60	60	--	5	1960	--	--	H	--	--	1720	--	--
129-096-14DDD1	D.HEWSON	63	63	--	5	1963	--	--	H	--	--	1500	--	--
129-096-14DDD2	K.NORBY	70	70	40	5	1972	20	--	H	125LDLW	S	--	--	--
129-096-15BAA	B.STREHLOW	148	148	80	4	1966	80	--	S	--	BP	--	--	2722
129-096-15BAC	B.STREHLOW	175	--	--	4	1962	--	--	S	--	--	600	10.0	--
129-096-15DDB	B.STREHLOW	330	182	--	4	1967	--	--	S	--	S	975	11.0	--
129-096-16CCC	O.OLSON	120	120	30	4	1969	--	--	S	--	S	1650	9.5	--
129-096-18AAA	B.STREHLOW	80	80	--	4	1968	--	--	S	--	--	--	--	--
129-096-18CDD	P.CARLIN	327	318	301	4	1967	--	--	H	125LDLW	S	3320	--	2816
129-096-18DCC	D.HOWE		327	--	4	1968	--	--	K	125LDLW	--	2900	--	--

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129-096-19BCB	O.HOWE	179	--	--	4	1963	--	--	S	--	--	--	--	--
129-096-20AAA	E.STREHLOW	331	231	--	4	1970	--	--	S	125LDLW	--	1830	10.0	--
129-096-22ABB	D.OLSON	115	115	--	5	1962	--	--	U	--	--	--	--	--
129-096-22CCC	M.KOCK		100	--	6	1946	40	--	K	--	S	600	--	--
129-096-23AAA	NDSWC 1005	200	--	--	--	1955	--	--	U	--	--	--	--	2692
129-096-23ABB	O.OLSON	350	--	--	--	1960	--	--	S	--	--	1700	--	--
129-096-23DDB1	C.ZIMMERMANN	94	94	--	4	1961	--	--	--	--	--	750	--	--
129-096-23DDB2	C.ZIMMERMANN	84	84	--	4	1961	17	7-71	U	--	--	--	--	--
129-096-24BBB	E.BERGLUND	70	70	--	6	--	24	10-54	H	--	--	--	--	--
129-096-24BCC	D.ECHMAN	330	330	290	4	1972	240	--	H	--	--	1700	--	--
129-096-24CBD	F.CHALCRAFT	80	80	--	4	1960	--	--	H	--	--	1800	--	--
129-096-24CCC	NDSWC 1006	200	--	--	--	1955	--	--	U	--	--	--	--	2694
129-096-25BAD	E.STENBERG	275	275	50	4	1963	--	--	S	125LDLW	S	1350	9.0	--
129-096-26AAB	L.GUSTIN	142	142	120	6	1943	50	--	S	125TRVL	S	1710	10.0	--
129-096-26CAA	R.KETTERLING	335	335	--	4	1962	--	--	H	125LDLW	--	2050	12.0	--
129-096-26CAD	R.KETTERLING	100	100	80	6	1945	--	--	K	125TRVL	S	1620	10.0	--
129-096-29BDD	R.THOMPSON	210	210	--	4	1958	--	--	S	125LDLW	--	--	--	--
129-096-32BDC	D.ROSE	200	200	175	4	1965	--	--	S	--	S	--	--	--
129-096-32DDA	ELLINGSON	65	--	--	--	1967	--	--	U	--	--	--	--	--
129-096-33AAA1	A.THOMPSON	242	242	--	4	1964	--	--	H	125LDLW	--	2350	11.0	--
129-096-33AAA2	R.THOMPSON	264	264	240	4	1964	140	--	K	125LDLW	S	1700	--	2728
129-096-35DCC	NDSWC 1007	200	--	--	--	1955	--	--	U	--	--	--	--	2642
129-097-01DDD	H.ERICKSON		21	--	36	--	8	--	K	--	S	2300	--	--
129-097-06ABA	O.OPHEIM		160	150	6	1940	--	--	K	125LDLW	S	2500	--	2740
129-097-08AAC	G.HOLDEN	148	148	--	4	1964	--	--	S	--	--	3500	9.5	2707
129-097-11DAC	B.SIPMA	300	294	--	4	1969	--	--	H	125LDLW	--	2750	--	--
129-097-11DDB	S.HOLLAND	115	115	--	--	1942	--	--	H	--	--	--	--	--
129-097-12AAC	D.ROSE	84	84	--	4	1964	--	--	H	--	--	2250	--	--
129-097-14CBB	E.HALVORSON		--	--	6	--	--	--	K	--	--	3100	--	--
129-097-15AAB	J.OLSON	270	240	--	4	1960	150	7-71	S	125LDLW	--	2180	--	2764
129-097-18AAA	G.HOLDEN		130	110	6	1946	--	--	K	125LDLW	S	1900	--	2687
129-097-28ABB	W.STEEN		114	--	5	1950	50	--	H	--	--	2900	--	--
129-097-29CBC	H.JEFFERS	72	70	--	--	--	22	10-54	H	--	--	--	--	--
129-097-29CCB	H.JEFFERS		75	65	5	1949	--	--	H	--	1	1000	--	--
129-097-30DAC	H.JEFFERS	63	63	--	4	1961	--	--	S	--	--	2400	9.0	--
129-097-31AAC	F.HOWE	152	152	100	4	1968	--	--	S	125LDLW	S	2050	9.5	--
129-097-31CAD	ELLINGSON	60	--	--	--	1967	--	--	U	--	--	--	--	--
129-097-32AAA	ELLINGSON	80	--	--	--	1967	--	--	U	--	--	--	--	--
129-097-32BBA	ELLINGSON	65	--	--	--	1967	--	--	U	--	--	--	--	--
129-097-33AAA	ELLINGSON	65	--	--	--	1967	--	--	U	--	--	--	--	--

LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT.)	WELL DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAM-ETER (IN.)	DATE DRILLED (YEAR)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	USE OF WATER	MAJOR AQUIFER	WATER BEARING MATERIAL	SPECIFIC CONDUCT-ANCE (µMHOS/CM AT 25°C)	TEM-PER-ATURE (°C)	ALTI-TUDE OF LSD (FT.)
129-097-34AAA	ELLINGSON	90	--	--	--	1967	--	--	U	--	--	--	--	--
129-097-34DCC	ELLINGSON	100	--	--	--	1941	--	--	U	--	--	--	--	--
129-097-34DDB	O.ENERSON	84	84	--	4	1961	--	--	S	--	--	--	--	--
129-097-35BCC	H.EVENSON	111	111	--	4	1969	30	--	H	--	--	1150	--	--
129-097-35CBB	O.ENERSON	95	89	--	4	1966	--	--	H	--	--	1650	--	--
129-097-36AAB	ELLINGSON	80	--	--	--	1967	--	--	U	--	--	--	--	--
129-098-01ABB	M.ZAHN		200	--	5	1958	100	--	K	125LDLW	S	2500	--	2750
129-098-04BCD	M.HERTZ	168	144	--	4	1959	--	--	S	125LDLW	--	1750	--	--
129-098-07DDA	W.LUTZ	300	300	208	4	1969	--	--	H	125LDLW	--	1520	--	--
129-098-09BDD	A.RONNING		706	--	4	1957	50	--	K	125LHCK	B	1580	14.0	2665
129-098-09CAA	C.BOE	200	--	--	--	1960	--	--	U	125LDLW	--	--	--	--
129-098-11CCC	V.OSTLUND	40	40	--	5	1970	--	--	S	--	--	795	6.0	--
129-098-14DDD	B.DAVIDSON		65	--	6	1946	--	--	H	--	S	1700	--	--
129-098-15CDD	B.DAVIDSON	54	54	--	4	1961	--	--	S	--	--	--	--	--
129-098-23AAA	B.DAVIDSON	100	100	--	4	1968	--	--	S	--	--	--	--	--
129-098-27CCB	M.BOE		109	100	4	1947	39	--	K	--	B	700	--	--
129-098-29AAD	C.NELSON		130	--	4	1939	37	--	K	125LDLW	S	2700	--	2652
129-098-30DCC	E.HOLMQUIST	200	194	177	4	1967	--	--	H	125LDLW	S	3550	--	--
129-098-31ABB	F.SMYLE		800	--	6	1963	50	--	K	211HCFH	B	1540	17.0	2690
129-098-32ADB	NDSWC 4453	420	250	238	2	1972	14	7-72	U	125LHCK	S	1570	11.5	2640
129-098-32DDB	L.SCHEUNEMAN		40	35	6	1949	15	--	K	--	S	2000	--	--
129-098-35ABA	O.STADHEIM		186	150	3	1910	--	--	K	125LDLW	S	1800	--	--
129-098-35ABC	O.STADHEIM		170	--	4	1959	--	--	S	125LDLW	--	1825	9.5	--
129-098-35BBC	O.STADHEIM	178	178	--	4	1960	--	--	S	125LDLW	--	3080	10.0	--
129-099-04ABA1	V.CZYWCZYNSKI		40	36	3	1935	--	--	S	--	--	--	--	2760
129-099-04ABA2	V.CZYWCZYNSKI	940	940	--	--	1970	125	9-70	K	211HCFH	--	1620	--	2765
129-099-04CBB	W.KRALICEK	925	925	--	6	1960	--	--	K	211HCFH	S	1630	13.5	2730
129-099-08BBB	W.TESKE		160	--	4	--	--	--	K	125LDLW	--	1600	--	2735
129-099-11CCB	A.FISHER		60	--	24	1953	17	--	H	--	S	5900	--	2690
129-099-18BAA	I.JOHNSON	158	126	120	4	1961	65	--	S	--	P	2200	--	--
129-099-18CCB	O.SABE		130	118	4	1923	96	--	K	--	B	1700	--	2790
129-099-21AAB	E.WARD		32	--	4	1965	--	--	H	--	1	2300	--	2715
129-099-22BCC	E.WARD	160	131	131	--	1964	110	--	U	--	S	--	--	--
129-099-24BBB	W.KRALICEK		30	--	24	--	11	8-70	H	--	S	2000	--	2665
129-099-26CA	A.ROBENSON	690	--	--	--	1964	119	5-71	U	--	--	--	--	2770
129-099-30CBB	NDGS	19	--	--	--	1971	--	--	U	--	--	--	--	2685
129-099-30CCB	NDGS	24	--	--	--	1971	15	--	U	--	--	--	--	2680
129-099-30CCC	E.KRINKE	84	67	--	--	1964	30	--	H	--	--	1500	--	--
129-099-31BBC	NDGS	19	--	--	--	1971	7	--	U	--	--	--	--	2670
129-099-31BCB	NDGS	14	--	--	--	1971	--	--	U	--	--	--	--	2671

LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT)	WELL DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAM-ETER (IN.)	DATE DRILLED (YEAR)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	USE OF WATER	MAJOR AQUIFER	WATER BEARING MATERIAL	SPECIFIC CONDUCT-ANCE (μMHOS/CM AT 25°C)	TEM-PER-ATURE (°C)	ALTI-TUDE OF LSD (FT.)
129-099-31CBC	E.KRINKE		20	--	--	--	--	--	S	--	--	1800	--	2690
129-099-32BCC	J.NELSON	176	33	33	4	1960	19	--	H	125LDLW	S	2200	--	--
129-099-33BCA	E.WARD		60	--	2	1953	30	--	K	--	G	1500	--	2678
129-099-35BCD	R.PALCZEWSKI		16	12	6	--	8	--	K	--	I	1200	--	2675
129-100-01BDC	R.KACYMAREK		92	--	8	1948	--	--	H	--	--	1150	--	--
129-100-03CCC	J.KROMAREK		97	20	4	1942	--	--	K	--	S	1550	--	--
129-100-07DAA	E.MAYCHRZAK	232	206	--	5	1959	--	--	K	125LHCK	S	2570	12.0	2820
129-100-20DAA	P.KROMAREK		22	--	6	1950	16	--	H	125LDLW	S	900	--	2715
129-100-13DDA	J.SABE	242	159	159	4	1961	115	--	H	125LHCK	S	2950	--	2794
129-100-14AD8	A.MAYCHRZAK		150	--	6	1929	60	--	K	125LDLW	P	1350	--	2810
129-100-19AAA	NDSWC 4456	440	271	259	2	1972	51	8-72	U	125LHCK	S	1770	11.0	2780
129-100-19ABB	F.KROMAREK		12	--	6	1943	10	--	H	--	G	2500	--	2725
129-100-20DBD	P.KROMAREK	123	82	82	4	1967	55	--	H	--	S	--	--	--
129-100-21D8A.	S.PALCZEWSKI	84	56	--	4	1968	44	--	S	125TRVL	S	2550	--	--
129-100-24DD	HAYNES 1-2-3Y	5044	--	--	--	1968	--	--	U	--	--	--	--	2767
129-100-25DAA1	NDSWC 4390	640	530	518	2	1971	+2	--	U	125LHCK	--	1650	11.0	2688
129-100-25DAA2	NDSWC 4390A	290	290	284	1	1971	1	--	U	125LHCK	--	1710	10.0	2688
129-100-26ADA	D.HANES	578	517	--	6	1961	22	--	K	125LHCK	S	1630	14.0	2715
129-100-26ADD	D.HANES		192	--	6	1918	30	--	S	--	I	2200	--	2705
129-100-26BDC	L.DAHL		70	--	6	1960	50	--	H	--	S	2000	--	2725
129-100-28DDD	F.PALCZEWSKI		156	136	6	1954	F	--	S	125LDLW	--	3500	10.5	2701
129-100-29DCC	F.PALCZEWSKI		108	--	6	1958	--	--	K	--	--	1650	--	2770
129-100-35CDD	F.GRUBER	132	94	94	4	1961	89	--	S	--	S	--	--	--
129-101-02CCC	R.LUTES	90	71	--	6	1959	54	--	S	125LDLW	S	2600	12.0	--
129-101-04BCC1	L.LEWISON		13	--	48	1967	8	8-70	H	125LDLW	--	3100	--	--
129-101-04BCC2	L.LEWISON		160	--	6	1920	--	--	K	125LDLW	S	2300	--	--
129-101-06DCC	E.HANSEN		50	--	18	1960	40	--	H	125LDLW	S	750	--	--
129-101-07CCC	J.ABRAHAMSON	390	333	--	6	1964	28	--	K	125LHCK	S	1580	--	2800
129-101-10B8B	G.DAVIS	78	78	--	4	1965	50	--	S	125TRVL	--	4690	9.5	--
129-101-10B8D	G.DAVIS	474	--	--	--	--	--	--	U	--	--	--	--	--
129-101-12DCA	G.REIGER	160	87	--	4	1961	60	--	S	--	--	--	--	--
129-101-13AAA1	G.REIGER		230	--	4	1946	--	--	H	--	S	2200	--	--
129-101-13AAA2	G.REIGER	287	269	--	4	1968	140	--	S	125LHCK	--	--	--	2864
129-101-13AC	C.OF ENGINEERS	206	152	--	--	1968	--	--	H	--	--	--	--	2770
129-101-13DDD	C.OF ENGINEERS	527	501	--	6	1968	--	--	H	--	--	--	--	2800
129-101-27B8B	V.HANSEN		747	--	6	1965	--	--	K	125TRVL	S	1600	--	2821
129-101-31AC	A.ABRAHAMSON	289	254	--	4	1961	F	--	S	--	--	--	--	2802
129-101-32BCD	A.ABRAHAMSON	490	438	--	4	1960	2	--	K	125LHCK	S	1660	13.0	2808
129-102-01ADD	K.ABRAHAMSON		632	40	6	1969	180	--	S	125LHCK	--	1550	16.0	2900
129-102-11CAA	H.BAGLEY		460	--	4	--	20	--	K	125LHCK	S	1550	--	2825

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129-102-14CDD	G.LODER		714	--	4	1970	34	4-71	S	211HCFH	F	1590	11.0	2840
129-102-20CCC	J.MAYCHRZAK	208	195	--	6	1960	9	--	K	125LHCK	S	2400	13.0	2865
129-102-24CCD	E.STORDAHL		50	--	18	1958	36	--	K	125LDLW	S	2500	--	--
129-102-27AAA	NDSWC 4457	480	390	378	2	1972	32	8-72	U	125LHCK	S	1590	12.0	2845
129-102-28BAD	A.FANDRICK	220	176	--	6	1960	15	--	H	125LHCK	S	2240	--	2851
129-102-29CCA	J.MAYCHRZAK	327	--	--	--	1964	--	--	U	--	--	--	--	--
129-102-35BBB	P.WHITE	461	454	442	4	1972	30	--	K	--	S	1600	--	--
129-103-10DCC	M.OLSEN	309	242	242	4	1968	55	--	H	125LHCK	S	1590	--	2960
129-103-13ADA	R.GERMANN	289	249	249	6	1958	--	--	H	125LHCK	S	2360	--	2890
129-103-23BDD	R.HUGHES	478	440	--	4	1961	--	--	S	--	--	300	11.0	2950
129-103-35BBB	O.GRENI		430	--	6	1969	--	--	K	125LHCK	--	1600	--	2950
129-104-03DDD	NDSWC 4464	500	432	420	2	1972	201	2-73	U	125LHCK	S	--	--	3130
129-104-08DDD	C.HOLECEK		390	--	4	1969	--	--	S	125LHCK	--	2060	11.5	3133
129-104-16BB	STATE 1	10006	--	--	--	1954	--	--	U	--	--	--	--	3200
129-104-17ADD1	C.HOLECEK	146	125	125	4	1961	100	--	U	125LHCK	S	--	--	3165
129-104-17ADD2	C.HOLECEK		325	--	4	1964	--	--	K	--	S	1550	12.0	3156
129-104-23BCC	R.SIVERSON	184	184	184	4	1961	92	--	S	125LHCK	F	2450	10.0	--
129-104-29BA	C.HOLECEK		407	--	4	1970	165	--	S	125LHCK	--	--	--	3250
129-104-34ADA	NDSWC 4309	595	543	525	2	1971	58	9-71	U	211HCFH	--	1650	13.5	3013
129-104-34ADD1	E.ARITHSON	120	97	--	4	1958	37	--	S	125LHCK	--	3700	--	3025
129-104-34ADD2	E.ARITHSON	128	99	--	4	1958	38	--	S	125LHCK	--	3500	10.0	--
129-104-34ADD3	E.ARITHSON	413	377	--	4	1966	63	--	H	211HCFH	--	2030	12.0	3020
129-104-34DAD	E.ARITHSON	154	154	126	4	1961	32	--	S	125LHCK	S	1975	9.5	--
129-105-02CAA	NDSWC 4465	420	334	322	2	1972	168	8-72	U	211HCFH	S	1290	12.5	3083
129-105-17DDD	I.MCGEE SR.		25	--	36	1928	13	--	K	211HCFH	S	900	--	--
129-105-20ABC	I.MCGEE JR.	144	105	--	4	1964	60	--	K	211HCFH	S	2200	13.0	--
129-105-25BCC1	C.OLSON		96	--	18	1960	66	--	H	211HCFH	S	2050	--	--
129-105-25BCC2	C.OLSON		105	20	5	1969	--	--	S	211HCFH	S	--	--	--
129-105-31DDD	S.& E.HANSON		29	--	14	1960	16	--	S	211HCFH	F	650	--	--
129-106-04CA	YOUNG 33-4	1400	--	--	--	1963	--	--	U	--	--	--	--	2860
129-106-09ADC	USGS LM-38	23	--	--	--	1956	--	--	--	--	--	--	--	2857
129-106-14AAA	D.LOWE		35	--	24	1965	25	--	H	211HCFH	S	1700	--	--
129-106-16AD8	USGS LM-39	18	--	--	--	1956	--	--	--	--	--	--	--	2875
129-106-26DDB	C.MILLER		60	--	18	--	25	--	H	211HCFH	--	4100	10.0	--
130-091-04DDD	W.HINTZ		260	180	6	1933	--	--	H	125LHCK	--	1550	--	--
130-091-08ADD	S.HINTZ		270	150	4	1951	--	--	K	--	P	1400	--	--
130-091-09BAB	D.HINTZ		340	300	4	1970	150	--	H	125LHCK	S	1890	--	2405
130-091-19ADA	H.TEXLEY JR		200	180	6	1944	125	--	K	125LHCK	1	1600	--	2395
130-091-24BBA	H.HEDGER		95	75	6	1958	45	--	K	--	P	1050	--	--
130-091-26CBD	L.KNUTSON		65	--	6	1955	--	--	H	--	G	1700	--	--

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130-091-29ADB	S.ENGLE		85	--	6	--	0	--	K	--	--	1500	--	--
130-091-30CCD	N.PETERSON		124	94	5	1968	4	--	S	--	S	1500	--	--
130-091-30DCB	N.PETERSON		88	--	5	--	20	--	K	--	S	1400	--	--
130-091-33CCD	J.STEVENS		300	20	6	--	--	--	K	--	--	1350	--	--
130-091-34ABB	S.STEVENS		60	--	6	1962	--	--	K	--	S	1600	--	--
130-092-02DCC	J.LARSON		126	--	6	1966	--	--	K	--	S	1000	--	--
130-092-04AAD	H.PETERSON		90	--	4	1968	--	--	K	--	--	3600	--	--
130-092-07CCD	M.SCHREINER		255	220	5	1960	100	--	K	125LHCK	S	1700	--	2445
130-092-08ADA	A.NYBERG		58	--	4	--	13	--	K	--	S	1600	--	--
130-092-09BBC	J.HELLAND		64	--	6	1947	14	--	H	--	S	1800	--	--
130-092-10CDC	I.ANDERSON		150	--	4	1946	--	--	K	--	--	2200	--	--
130-092-15CCB	A.DAYTON		150	--	4	1944	--	--	K	--	S	1500	--	--
130-092-17CBC	G.BARNES		205	180	5	1948	120	--	K	125LHCK	S	2500	--	2463
130-092-18ADD	W.BARNES	230	230	--	4	1970	114	6-71	S	125LHCK	--	--	--	--
130-092-18DB	BARNES 1	4310	--	--	--	1969	--	--	U	--	--	--	--	2474
130-092-22CBB	NDSWC 4310	155	31	31	--	1971	+17	7-71	U	125CNBL	--	1780	9.5	2330
130-092-22CCC	NDSWC 4311	955	959	918	--	1971	178	7-71	U	211HCFH	--	2200	--	2385
130-092-27AAB	R.YOUNG	121	119	--	4	1963	20	--	K	125CNBL	1	1500	--	--
130-092-27BBA1	NDSWC 4381	380	--	--	1	1971	--	--	U	--	--	--	--	2383
130-092-27BBA2	NDSWC 4380	210	204	198	1	1971	31	11-71	U	125LDLW	--	1820	10.0	2383
130-092-27BBA3	NDSWC 8344	400	374	368	2	1972	50	7-72	U	125LHCK	S	1670	--	2383
130-092-31ABB	B.SCHNELL		120	100	4	1961	F	--	S	125CNBL	--	--	--	--
130-092-34BBB	B.KLEIN		150	--	4	1929	70	--	K	125CNBL	S	2500	--	--
130-093-01AAA	J.OSTENBERG		125	95	4	1940	50	--	K	--	S	700	--	--
130-093-01CCD	L.NELSON		255	--	4	1964	--	--	K	125LHCK	S	1600	--	2510
130-093-05CBB	L.HOKSTAD		130	--	4	1957	--	--	K	--	S	1900	--	--
130-093-06AAA	Z.OBERG	150	150	--	6	1943	--	--	K	--	S	1450	--	--
130-093-20CAA	A.BECKER	95	95	--	--	1961	30	--	S	--	S	900	9.5	--
130-093-20DAA	A.BECKER	52	--	--	6	1961	20	--	S	--	S	2250	--	--
130-093-25BAC	B.SCHNELL		120	100	4	1961	F	--	H	125CNBL	--	2250	9.5	--
130-093-25BDB	R.SCHNELL		120	--	4	1960	0	--	K	125CNBL	S	2000	--	--
130-093-25BDD	B.SCHNELL		120	100	4	1952	F	--	H	125CNBL	--	1750	9.5	--
130-093-27AAC	J.DAVISON		85	--	6	1959	3	--	K	125CNBL	S	2200	--	--
130-093-28BCC	J.DAVISON		172	--	6	1917	--	--	H	--	B	1650	--	--
130-093-30DBB	J.BECKER		75	--	6	1949	--	--	K	--	--	400	--	--
130-093-31ADD	C.CHRISTMAN	95	95	--	5	1961	--	--	S	--	--	--	--	--
130-093-32ACD	C.CHRISTMAN		40	--	6	1947	10	--	H	125TRVL	S	750	--	--
130-093-32CDD	C.ANDERSON		60	40	5	1960	40	--	K	125TRVL	S	600	--	--
130-093-34DAA	A.MEIDINGER		115	--	4	1941	15	--	K	125CNBL	--	1800	--	--
130-094-03CDD	M.LEE	116	116	46	4	1965	45	--	K	--	S	1600	--	--

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130-094-05BDC	E.PAGEL		41	--	6	1948	6	--	K	--	S	1850	--	--
130-094-06BCA	P.SLATER	80	80	--	4	1968	--	--	U	--	--	--	--	--
130-094-07CBC	H.SEIFERT	64	64	44	6	1964	17	--	K	--	S	900	--	2575
130-094-07DDD1	NDSWC 8348	520	390	378	2	1972	130	7-72	U	125TRVL	S	1670	11.5	2570
130-094-07DDD2	NDSWC 8348A	260	253	247	1	1972	133	7-72	U	125TRVL	S	2100	--	2570
130-094-10DAC	J.LEE	143	143	115	4	1967	--	--	S	--	S	2400	8.5	--
130-094-12ADD	R.EGLAND		34	--	4	1962	15	--	H	125TRVL	S	2300	--	--
130-094-12CAA	B.EGLAND	112	112	85	4	1969	--	--	S	--	S	--	--	--
130-094-15DCC	A.BECKER		130	--	6	1945	30	--	K	--	S	1000	--	--
130-094-19DCD	W.NAGEL	73	67	--	6	1964	11	7-70	K	--	S	1700	--	--
130-094-20CDD	J.SEIFERT	294	285	260	4	1967	--	--	K	--	S	1200	--	--
130-094-22BCC	C.HEIDT		140	--	6	1948	80	--	K	--	S	1200	--	--
130-094-23ADD	E.SCHNEIDER		60	--	5	--	--	--	K	--	S	700	--	--
130-094-25DBA	G.DAVISON		280	--	5	1969	--	--	K	--	S	1600	--	--
130-094-29CCC	A.WANDLER		130	110	6	1946	60	--	K	--	B	3000	--	--
130-094-30BCC	G.SWENSON		100	90	2	1908	60	--	K	--	S	1200	--	--
130-094-31BCC	G.SWENSON	116	116	--	4	1966	--	--	S	125TRVL	--	6490	9.5	--
130-094-36CAD	SCHNEIDER BROS.	105	105	--	4	1966	--	--	S	--	--	800	9.0	--
130-095-01CDC	M.SEIFERT	100	100	--	4	1968	--	--	S	--	--	800	9.0	--
130-095-04BBB	E.OLSON	100	100	--	6	--	21	5-54	H	--	--	--	--	--
130-095-06BBB	NDSWC 999	200	--	--	--	--	--	--	U	--	--	--	--	2765
130-095-06DDD	A.BECKMAN	95	95	--	--	--	--	--	H	--	--	--	--	--
130-095-07CCB	D.MELLING	126	120	103	6	1966	50	--	K	--	P	1500	--	--
130-095-07CCC	NDSWC 998	200	--	--	--	--	--	--	U	--	--	--	--	2749
130-095-08DDD	C.ZIMMERMAN	105	105	--	4	1966	79	7-71	S	--	--	2000	11.0	2718
130-095-09BBB	F.ZIMMERMAN	73	73	--	4	1965	--	--	S	--	--	1500	9.0	--
130-095-09DDC	F.ZIMMERMAN		63	--	4	1953	16	--	K	--	S	1100	--	--
130-095-11DCC1	M.SCHMALTZ	110	110	--	6	1958	16	6-71	H	--	--	1800	--	--
130-095-11DCC2	M.SCHMALTZ		110	--	5	1965	20	--	K	--	S	1600	--	--
130-095-12BCA	P.SLATER	83	83	--	4	1963	40	--	S	--	--	700	9.0	--
130-095-12BCC	P.SLATER		65	--	6	1943	--	--	K	--	S	700	12.0	--
130-095-16CBB	F.ZIMMERMAN	105	--	--	4	1961	--	--	U	--	--	--	--	--
130-095-19DAD	C.BECKMAN		175	--	4	1932	--	--	K	--	S	2400	--	--
130-095-23ABB	C.SCHMALTZ	116	116	--	4	1966	--	--	S	--	--	950	--	--
130-095-25DAC	G.SWANSON	95	95	--	4	1964	--	--	S	--	--	2200	8.5	--
130-095-28AAA	J.CHRISTMAN	263	257	--	4	1964	--	--	H	125TRVL	--	3190	--	--
130-095-30ACD	H.OLSON	84	84	--	4	1966	--	--	S	--	--	--	--	--
130-095-30BBB	NDSWC 997	200	--	--	--	1955	--	--	U	--	--	--	--	2742
130-095-31BBA	H.LUNDAHL		110	--	6	1960	40	--	H	--	S	2450	--	--
130-095-31DDB	H.LUNDAHL	95	95	--	4	1966	--	--	S	--	--	--	--	--

LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT.)	WELL DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAM-ETER (IN.)	DATE DRILLED (YEAR)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	USE OF WATER	MAJOR AQUIFER	WATER BEARING MATERIAL	SPECIFIC CONDUCT-ANCE (UMHOS/CM AT 25°C)	TEM-PER-ATURE (°C)	ALTI-TUDE OF LSD (FT.)
130-095-32CCD	J.LARSON		100	--	4	1956	--	--	K	--	--	800	--	--
130-096-01BBB	F.EHLERS	73	73	--	--	1964	8	--	S	--	--	--	--	--
130-096-03BCB	V.CARROLL	148	142	120	6	1967	10	--	K	--	S	1050	--	--
130-096-06BAB	C.LARSON		24	20	6	1948	--	--	S	--	S	2100	8.5	--
130-096-07ABA	P.MELLING	62	62	--	--	--	9	--	H	--	--	--	--	--
130-096-07BBB	O.LARSON	70	70	--	5	--	--	--	S	--	--	--	--	--
130-096-09ACD	H.STENBERG	126	126	--	6	1967	--	--	S	--	--	1000	9.5	--
130-096-10BBC	H.STENBERG		62	--	5	1949	--	--	H	--	S	1050	--	--
130-096-10BCC	H.STENBERG	62	62	--	6	--	--	--	H	--	--	--	--	--
130-096-11DDD	H.SKOGEN	155	155	125	4	--	50	--	K	--	S	1400	--	--
130-096-12AAA	J.FUGLESTEN		30	15	4	1952	12	--	H	--	S	2200	--	--
130-096-12DDC	D.SKOGEN	140	140	--	4	1968	--	--	S	--	--	2100	8.0	--
130-096-14AAB	E.SKOGEN	200	198	132	4	1970	--	--	H	125TRVL	S	1840	--	--
130-096-15BCC	D.MERWIN		135	115	4	1950	95	--	K	125TRVL	S	1430	--	--
130-096-17CDD	TORGERSON BROS.	175	175	--	4	1961	--	--	--	--	--	--	--	--
130-096-21DDD	D.MERWIN	84	84	--	4	1966	27	7-71	S	--	--	550	9.5	--
130-096-22DAD	E.FINK	226	180	--	4	1968	--	--	H	--	S	2900	--	--
130-096-32AAB	A.HOKENSON	155	155	--	4	1963	--	--	S	--	--	7000	8.0	--
130-096-32CCC	NDSWC 1002	200	--	--	--	--	--	--	U	--	--	--	--	2723
130-096-33BAB	H.ARNDORFER		95	75	6	1954	30	--	H	--	S	2600	--	--
130-096-33DCC	D.SIEWERT	282	282	220	4	1969	--	--	H	125TRVL	S	1260	--	--
130-096-34BBA	I.RIEDL	46	46	--	4	1961	--	--	S	--	--	--	--	--
130-096-34CDD	I.REIDL	80	80	40	4	1970	--	--	H	125TRVL	S	2410	--	--
130-096-35ACD	G.MC NEIL		30	20	5	1949	9	--	H	--	G	1400	--	--
130-097-02CCC	S.SWENSON	137	137	100	4	1963	30	--	K	--	S	550	--	--
130-097-04AAC	H.STREHLOW	126	126	--	4	1964	--	--	S	--	--	--	--	--
130-097-05ADD	J.UHLER		100	--	6	1926	18	--	K	--	S	800	--	--
130-097-14BCB	C.STRIKER		50	--	6	1910	--	--	S	--	--	550	--	--
130-097-14DDC	E.HOFFMAN		130	--	6	1916	60	--	K	--	S	800	--	--
130-097-17DDA	M.OMODT		110	--	4	1958	--	--	H	--	--	450	--	--
130-097-19AAA	E.SOLSETH	180	180	50	4	1968	--	--	S	--	S	400	9.0	--
130-097-20AAA	S.MOEN	116	116	--	4	1965	--	--	S	--	--	525	10.0	--
130-097-22ADD	A.OLSON	78	68	45	6	1967	15	--	K	--	S	650	--	--
130-097-22CCC	ERLANDSON		84	--	4	1963	--	--	U	--	--	--	--	--
130-097-22DDD1	B.THORSON	95	83	60	4	1962	--	--	H	--	S	--	--	--
130-097-22DDD2	B.HALVORSON	90	84	50	4	1963	--	--	H	--	S	--	--	--
130-097-22DDD3	LUTHERAN CHURCH	84	78	48	4	1967	--	--	H	--	S	--	--	--
130-097-22DDD4	S.BARNES	77	53	--	4	1968	--	--	H	--	--	1700	--	--
130-097-22DDD5	J.HOUSER	90	84	--	4	1968	--	--	H	--	--	1775	--	--
130-097-23CBB	A.OLSON		65	--	6	1950	10	--	H	--	G	800	--	--
130-097-23CCC1	S.BARNES	75	75	--	4	1960	19	--	H	--	--	3800	--	2778

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130-097-23CCC2	L.NELSON	95	86	50	4	1968	--	--	H	--	--	4050	--	--
130-097-24CCC	B.THOMPSON	80	80	45	4	1967	--	--	H	--	S	1020	--	--
130-097-25CBC1	A.THOMPSON		20	--	48	1908	8	--	K	--	S	350	--	--
130-097-25CBC2	A.THOMPSON	313	310	270	4	1959	--	--	S	--	S	1400	--	--
130-097-26ADD	NDSWC 1003	200	--	--	--	--	--	--	U	--	--	--	--	2780
130-097-29DCB	E.KENITZER	211	211	--	4	1964	--	--	S	125TRVL	--	741	10.5	2946
130-097-30DDA	M.WALCH		80	--	4	1924	30	--	K	--	--	450	--	--
130-097-31CBC	E.SOLSETH		280	--	4	1958	--	--	K	--	S	800	--	--
130-097-32ADC	L.HONEYMAN	189	--	--	4	1964	--	--	S	--	--	570	--	--
130-097-34AAD	C.STUART		118	--	6	--	20	--	H	--	1	1100	11.0	--
130-097-35BCB1	NDSWC 4452	500	411	399	2	1972	263	8-72	U	125LHCK	S	1670	11.0	2825
130-097-35BCB2	NDSWC 4452A	75	72	66	1	1972	42	7-72	U	125TRVL	S	1710	10.0	2825
130-097-35CCD	M.ANDERSON		60	--	6	1962	--	--	K	--	1	700	--	--
130-098-01CDD	V.WOTHE		115	--	4	1950	--	--	K	--	S	700	--	2865
130-098-03DAD1	A.KENITZER	179	179	--	4	1962	--	--	H	--	--	1130	--	--
130-098-03DAD2	J.KENITZER		170	--	--	1962	--	--	K	--	S	1400	--	2898
130-098-04CBB	L.DONNER	95	95	--	4	1970	--	--	H	125TRVL	--	1140	--	--
130-098-04DBB	REEDER	1340	1274	1204	8	1971	306	9-71	P	211HCFH	S	1730	22.0	2850
130-098-04DCC	REEDER		1200	--	--	1950	--	--	P	211HCFH	--	1760	19.5	2825
130-098-07BDD	V.ANDERSON	70	--	--	4	1959	60	--	S	--	--	--	--	--
130-098-14DBB	A.ANDERSON	250	250	--	4	1959	--	--	S	--	--	1400	9.5	--
130-098-17DAA	R.WOTHE	296	296	265	4	1963	--	--	S	125LDLW	S	1940	10.0	--
130-098-19CDD	R.BOHNE		90	80	4	1948	7	--	H	125TRVL	R	2400	--	2690
130-098-21CCC1	NDSWC 4389	660	411	399	2	1971	131	11-71	U	125LHCK	--	1760	10.0	2750
130-098-21CCC2	NDSWC 4389A		196	190	1	1971	107	11-71	U	125LDLW	--	1590	8.5	2750
130-098-24ACA	A.ANDERSON		87	--	6	1948	45	--	K	--	--	700	--	2820
130-098-26BAC	D.BUGNER	232	232	--	4	1962	--	--	H	125LDLW	--	1580	--	--
130-098-27ABD	G.SANFORD		189	--	5	1920	--	--	K	125LDLW	--	1200	--	2740
130-098-28BBD	R.BOHNE	167	167	--	4	1961	55	6-71	S	125LDLW	--	--	--	2700
130-098-34BBA	R.BOHNE	168	168	--	4	1963	--	--	S	--	--	--	--	--
130-098-35DDA	C.SOLSETH		60	--	4	--	15	--	K	--	S	1400	--	2760
130-099-03ABC	R.PERKINS	63	56	44	4	1972	18	--	S	--	S	--	--	--
130-099-03CDD	DRESSER MIN.		125	--	--	1964	--	--	H	--	--	1400	--	--
130-099-04BBB	H.WOLF	63	56	56	4	1962	--	--	H	--	P	3500	--	--
130-099-12CCB	R.HIRSCH		163	35	5	1953	--	--	K	125LDLW	S	2600	--	2760
130-099-15BCC	B.CZYWCZYNSKI		--	--	--	--	+2	--	S	--	--	712	11.0	2750
130-099-17AAA1	NDSWC 4454	410	346	334	2	1972	87	9-72	U	125LHCK	S	1610	11.0	2775
130-099-17AAA2	NDSWC 4454A	200	198	192	1	1972	43	8-72	U	125LDLW	S	2280	--	2775
130-099-18ADA	C.PAPKA		150	--	--	1930	--	--	H	--	--	1550	--	2790
130-099-19AAA	C.PAPKA	387	296	296	4	1960	125	--	S	125LDLW	3S	--	--	2800

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130-099-20ADD	O.PETERSON	42	31	31	4	--	14	5-71	H	--	S	--	--	--
130-099-21DBD	D.PETERSON	84	40	40	4	1967	21	5-71	S	--	S	--	--	--
130-099-23AAD	L.KUBISTA		28	--	18	1950	12	--	K	--	G	3100	--	--
130-099-23BCC	L.KROMAREK	412	412	--	--	1962	--	--	U	125LHCK	--	--	--	2770
130-099-28BBA	L.PETERSON		50	6	6	1958	45	--	S	--	V	1100	--	2845
130-100-02AAA	NDSWC 4455	600	418	406	2	1972	112	2-73	U	125LHCK	S	1580	11.5	2805
130-100-02BCC	C.ENSIGN	103	76	--	4	1969	42	--	H	--	--	1480	--	--
130-100-02DDA1	D.BROWN	107	107	--	6	1958	--	--	U	--	--	--	--	--
130-100-02DDA2	D.BROWN	135	129	100	6	1970	0	--	K	125TRVL	S	2810	10.0	--
130-100-06DAA	N.MAURUD		85	--	6	1945	30	--	K	--	S	530	10.0	--
130-100-10BDD	C.ENSIGN	103	60	--	4	1969	36	--	H	--	--	--	--	--
130-100-21DAA	F.MAYCHRZAK		120	20	5	1940	27	--	K	--	S	3100	9.0	--
130-100-23ABA	J.TORPEN		180	100	5	1941	60	--	K	--	--	--	--	--
130-100-24DAB	J.TORPEN	270	270	200	4	1959	10	--	S	125LDLW	P	960	9.0	2820
130-100-29DDD	I.BLISS		147	40	5	1944	20	--	K	--	--	2000	10.0	--
130-100-31CBC	I.STOEN		160	--	4	1963	100	--	K	--	--	1200	--	--
130-101-03BBB	J.MC KITRICK		240	--	6	1961	90	--	K	125LDLW	S	2050	11.0	--
130-101-06CBC1	B.ISZLER		32	--	24	1965	10	--	S	--	S	--	--	--
130-101-06CBC2	B.ISZLER		29	--	24	1965	10	--	H	--	S	1250	12.0	--
130-101-12BAA	G.LODER		225	--	4	1935	100	--	K	--	S	1100	--	--
130-101-14BAA	K.ELLINGSON		150	--	6	1940	--	--	K	125LDLW	P	--	--	--
130-101-17BBA	R.HEUPEL		40	--	4	--	10	--	S	--	P	1300	10.0	--
130-101-17BBD	R.HEUPEL		40	--	36	1947	10	--	H	--	F	--	--	--
130-101-21CCB	P.PAULSON		10	--	24	1964	12	--	H	--	--	--	--	--
130-101-24DDD	D.LAMBOURN	165	127	127	4	1961	99	--	S	125LDLW	S	4040	9.0	--
130-101-25AAA	D.LAMBOURN	930	893	893	4	1970	390	--	H	211HCFH	S	1610	--	2934
130-101-25ADD	J.AASE	200	200	100	4	1969	100	--	H	125LDLW	BP	3740	--	2933
130-101-26DAA	C.HEMMAH		110	--	6	1955	40	--	K	--	S	--	10.0	--
130-102-05DAD	I.MOSBRUCKER	409	384	--	4	1958	120	--	K	125LHCK	L	--	--	2922
130-102-11AAA1	W.MRNAK		60	10	18	1934	50	--	S	--	S	--	--	--
130-102-11AAA2	W.MRNAK		60	10	18	1948	50	--	K	--	S	2300	--	--
130-102-13CC	PAULSON 1-26-4	5004	--	--	--	1968	--	--	U	--	--	--	--	2906
130-102-13DCD	O.PAULSON	80	60	30	4	1965	--	--	K	125TRVL	S	2930	9.0	--
130-102-15DDD1	F.PAULSON	370	--	--	4	--	135	--	U	--	--	--	--	--
130-102-15DDD2	NDSWC 4458	580	537	525	2	1972	82	8-72	U	125LHCK	S	--	--	2870
130-102-23CDA	L.FARIS		500	--	5	1961	60	--	K	125LHCK	S	1590	10.0	2850
130-102-24BBB1	F.PAULSON	174	169	--	--	1948	--	--	U	--	--	--	--	--
130-102-24BBB2	F.PAULSON	370	298	--	4	1961	135	--	K	125LHCK	--	1780	--	2922
130-102-24BBB3	F.PAULSON		300	--	4	--	135	--	S	125LHCK	--	--	--	2922
130-103-01BCC1	A.WERRE		--	--	--	--	--	--	H	--	--	1200	--	--

LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT.)	WELL DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAM-ETER (IN.)	DATE DRILLED (YEAR)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	USE OF WATER	MAJOR AQUIFER	WATER BEARING MATERIAL	SPECIFIC CONDUCT-ANCE (μMHOS/CM AT 25°C)	TEM-PER-ATURE (°C)	ALTI-TUDE OF LSD (FT.)
130-103-01BCC2	A.WERRE		57	--	24	--	26	--	S	--	--	--	--	--
130-103-02DAA	A.WERRE	121	85	85	4	1960	17	5-71	U	--	P	--	--	--
130-103-03AAA	NDSWC 4463	500	207	189	2	1972	29	8-72	U	125LHCK	S	3130	10.0	2995
130-103-06CCB	M.ANDERSON		50	--	--	1952	--	--	S	--	--	--	--	--
130-103-06CCC1	M.ANDERSON		53	--	32	1928	--	--	S	--	--	1950	9.0	--
130-103-06CCC2	M.ANDERSON		51	--	36	1950	18	--	K	--	--	--	--	--
130-103-09BBC	W.ANDERSON	122	102	102	4	1961	40	--	S	125LDLW	F	2130	10.0	--
130-103-11CCC	H.DAVIS	687	651	--	4	1964	190	--	K	211HCFH	S	1650	14.0	3090
130-103-14CCB	G.EHRMANTROUT		76	--	8	1944	18	--	K	--	1	4100	9.0	--
130-103-14CCD	G.EHRMANTROUT		35	--	18	--	0	--	U	--	--	2700	--	--
130-103-15ADA	C.DOMAGALA	635	563	--	6	1968	200	--	K	125LHCK	S	1500	--	3100
130-103-24AAA1	J.SUSA		75	--	24	--	--	--	S	--	--	1850	--	--
130-103-24AAA2	J.SUSA		80	--	18	--	--	--	H	--	--	1750	--	--
130-103-28ALD	D.DOMAGALA	453	422	422	4	1961	--	--	S	125LHCK	S	1720	10.0	2993
130-103-29CBB	M.NYGAARD	495	454	--	--	--	--	--	H	125LHCK	S	2120	14.0	3108
130-103-31AAA	T.NYGAARD	350	328	--	4	1958	140	--	H	125LHCK	S	2280	14.0	3105
130-103-34CD	M.MORRISON 1	9551	--	--	--	1957	--	--	U	--	--	--	--	3016
130-103-34DDD	F.SCHWARTZ	492	490	--	6	1964	160	--	K	125LHCK	--	1590	14.0	3098
130-103-35DAA	C.ERICKSON		380	40	4	1950	200	--	K	125LHCK	V	1610	13.0	3093
130-104-03ABB1	M.BRAATEN		32	--	24	1960	14	--	S	--	1	1100	--	--
130-104-03ABB2	M.BRAATEN		32	--	6	1960	16	--	H	--	1	800	11.0	--
130-104-03DDD1	O.OAKLAND		700	--	4	1965	--	--	K	125LHCK	S	1850	11.0	3138
130-104-03DDD2	O.OAKLAND		--	--	24	1969	--	--	H	125LHCK	--	900	--	--
130-104-07DBA	C.WALLMAN		50	--	24	--	--	--	K	125LHCK	R	1900	--	--
130-104-13DCD	E.FOSSUM		300	--	4	--	--	--	S	125LHCK	S	750	11.0	--
130-104-13DDC	E.FOSSUM	124	84	--	4	--	18	--	H	125LHCK	S	<500	11.0	--
130-104-15ABD	HESTEKIN 1	9730	--	--	--	1966	--	--	U	--	--	--	--	3168
130-104-15CAC	E.SUSAG		500	--	4	1965	--	--	K	125LHCK	--	1660	12.0	--
130-104-18DBA	M.EGELAND		310	--	5	1966	178	--	K	125LHCK	S	2090	--	3087
130-104-21BBA	M.SUSAG	406	406	--	--	1969	--	--	S	211HCFH	S	1930	13.0	3128
130-104-23ADA1	A.FOSSUM		50	--	36	1912	--	--	K	125LHCK	--	1500	9.0	--
130-104-23ADA2	A.FOSSUM		450	--	5	1934	300	--	K	211HCFH	--	1700	14.0	3125
130-104-26DCD	S.NJOS		600	--	4	1964	290	--	K	211HCFH	S	1480	13.0	3123
130-104-32BBD	F.STRICHERZ		7	--	36	1940	0	--	K	125LHCK	1S	1000	--	--
130-104-33DCC	J.NJOS		--	--	36	--	--	--	H	--	--	2200	--	--
130-105-01CCD1	H.BUCHHOLZ		100	--	4	1948	35	--	H	--	S	1950	10.0	--
130-105-01CCD2	H.BUCHHOLZ		100	--	36	--	--	--	S	--	--	3400	8.0	--
130-105-13BAD	M.OAKLAND		144	40	4	1950	120	--	K	--	S	1550	11.0	--
130-105-22AAA	C.EGELAND	103	87	20	4	1961	--	--	K	--	S	600	12.0	--
130-105-25BBB	R.VATNE		90	--	4	1930	20	--	K	--	1S	1600	--	--

LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT.)	WELL DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAM-ETER (IN.)	DATE DRILLED (YEAR)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	USE OF WATER	MAJOR AQUIFER	WATER BEARING MATERIAL	SPECIFIC CONDUCT-ANCE (UMHOS/CM AT 25°C)	TEM-PER-ATURE (°C)	ALTI-TUDE OF LSD (FT.)
130-106-03DCD	USGS LM-35	18	--	--	--	1956	--	--	--	--	--	--	--	2813
130-106-03DCA	USGS LM-36	23	--	--	--	1956	--	--	--	--	--	--	--	2816
130-106-03DDA	USGS LM-37	33	--	--	--	1956	--	--	--	--	--	--	--	2817
130-106-29CDD	NDGS	24	--	--	--	1971	17	--	U	--	--	--	--	2840
130-106-29DCC	NDGS	24	--	--	--	1971	18	--	U	--	--	--	--	2837
130-106-29DCD	NDGS	24	23	21	1	1971	14	8-71	U	--	S	--	--	2835
130-106-29DDC	NDGS	19	--	--	--	1971	--	--	U	--	--	--	--	2832
130-106-29DDD	NDGS	16	--	--	--	1971	12	--	U	--	--	--	--	2846
131-091-07DAD	A.FRIEZ	91	90	--	5	1962	--	--	K	125TRVL	P	1500	--	--
131-091-10CBC	T.FRIEZ	100	100	--	4	1926	--	--	S	125TRVL	S	1500	--	--
131-091-10CCC	NDSWC 4379	480	408	399	2	1971	124	11-71	U	125LDLW	--	1780	10.0	2450
131-091-12CCC	T.HOCHHALTER		110	80	5	1955	35	--	K	--	S	1200	--	--
131-091-13CCB	A.HOHERZ		345	--	4	1965	100	--	K	125LDLW	1	1870	13.0	2489
131-091-15BB	MOEN 1	4304	--	--	--	1970	--	--	--	--	--	--	--	2468
131-091-15CCC	NDSWC 8345	560	537	527	2	1972	115	7-72	U	125LHCK	S	1860	10.5	2360
131-091-18AAA	M.HUBER		300	--	5	1962	--	--	K	125LDLW	B	2500	--	--
131-091-22CDC	E.MOEN		280	--	6	1950	--	--	K	125LDLW	--	1500	--	--
131-091-26AAA	E.EID	250	250	230	4	1972	90	--	S	--	S	1420	--	--
131-091-27BBD	J.KIRSCHMANN		--	--	5	--	--	--	H	--	--	2200	--	--
131-092-08BBA	M.WINDMUELLER	202	202	180	5	1963	140	--	K	125TRVL	S	3080	11.0	--
131-092-10BBC	A.HUETHER	91	91	--	4	1969	40	--	K	125TRVL	S	2100	--	--
131-092-11ABC	R.ZENT	125	125	117	5	1966	60	--	K	125TRVL	S	2600	--	2465
131-092-11BBC	W.ZENT	160	160	133	6	1966	60	--	K	--	S	2500	--	--
131-092-12DAA	G.HUBER		130	--	6	1930	--	--	K	--	S	2300	--	--
131-092-14DAD1	P.GUPMAN		17	6	36	1947	--	--	S	125TRVL	P	400	--	--
131-092-14DAD2	P.GUPMAN		46	25	24	1967	28	7-70	H	125TRVL	1	600	--	--
131-092-20DAD	V.BALES		109	--	4	1968	70	--	K	--	S	2000	--	--
131-092-26CBC	C.HOLGARD		230	215	6	1968	180	--	S	--	S	2200	--	--
131-092-32AAA	O.SWENSON		130	--	6	1951	90	--	H	--	S	3200	--	--
131-092-35BCC	D.HOLGARD		180	--	6	--	--	--	K	--	S	2500	--	--
131-093-07AAA1	P.BADER		105	--	5	1960	--	--	K	125TRVL	--	1500	--	--
131-093-07AAA2	P.BADER	95	95	--	4	1963	--	--	S	125TRVL	S	1950	8.0	--
131-093-10AAA	J.HELLAND	126	122	91	4	1964	--	--	S	125TRVL	G	2020	--	--
131-093-12DCD	J.HELLAND		244	224	5	1963	170	--	S	--	S	1500	--	--
131-093-21AAA1	NDSWC 8346	475	334	322	02	1972	163	7-72	U	125LDLW	S	1600	11.5	2549
131-093-21AAA2	NDSWC 8346A		253	247	1	1972	174	7-72	U	125LDLW	S	1630	10.5	2552
131-093-21AAA3	NDSWC 8346B		143	137	1	1972	72	7-72	U	125TRVL	S	3500	11.0	2549
131-094-06CDC	B.QUAMME		60	--	6	1916	28	--	K	125TRVL	S	1600	--	--
131-094-07DAA	F.WEST	101	101	--	5	1964	48	--	S	--	B	1430	--	--
131-094-13CCD	J.ULLMAN		40	--	6	--	--	--	K	125TRVL	S	--	--	--

LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT.)	WELL DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAM-ETER (IN.)	DATE DRILLED (YEAR)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	USE OF WATER	MAJOR AQUIFER	WATER BEARING MATERIAL	SPECIFIC CONDUCT-ANCE (µMHOS/CM AT 25°C)	TEM-PER-ATURE (°C)	ALTI-TUDE OF LSD (FT.)
131-094-20CBC1	NDSWC 4312	1280	1045	--	--	1971	201	7-71	U	211HCFH	--	1930	19.0	2500
131-094-20CBC2	NDSWC 4386	540	537	525	2	1971	82	11-71	U	125LHCK	--	2020	9.5	2500
131-094-20CBC3	NDSWC 4386A	240	224	208	1	1971	62	11-71	U	125LDLW	--	1590	9.5	2500
131-094-20CCB	A.ROSE JR.		--	--	6	--	--	--	K	--	--	900	--	--
131-094-24ADD	G.GREENE	95	95	63	6	1968	--	--	K	--	S	3900	--	--
131-094-32BBB	L.BELLWOOD		50	--	6	1930	12	--	S	125TRVL	S	1100	--	--
131-095-02BBB	L.ERICKSON	90	90	23	4	1972	40	--	S	--	S	1760	--	--
131-095-02DBB	L.ERICKSON	120	120	80	--	1972	65	--	S	--	S	1180	--	--
131-095-04BBB	P.SCHMALTZ		135	--	3	1948	50	--	H	125TRVL	S	2200	--	--
131-095-10ABB	A.FORDAHL	101	101	--	5	1963	--	--	H	125TRVL	P	2900	--	--
131-095-10D8A	N.FORDAHL		80	70	6	1948	40	--	K	125TRVL	S	800	--	--
131-095-12BAB1	O.HALLEN		56	--	6	1925	--	--	K	125TRVL	S	800	--	--
131-095-12BAB2	O.HALLEN		50	--	6	1932	--	--	H	125TRVL	S	900	--	--
131-095-15DCC	E.TRUNKHILL	63	63	--	4	1961	--	--	S	125TRVL	--	1140	9.0	--
131-095-22BAA	E.TRUNKHILL		31	20	6	1947	18	--	H	125TRVL	--	2160	--	--
131-095-24CBC	A.ERICKSON	102	102	--	6	1945	60	--	K	125TRVL	S	1400	--	--
131-095-27CCB	M.DAVIDSON	125	125	100	6	1945	--	--	K	125TRVL	S	1640	12.0	--
131-095-28BBC1	O.THORMODSGARD	125	--	--	6	1944	--	--	S	125TRVL	S	1050	--	--
131-095-28BBC2	O.THORMODSGARD	120	120	--	6	1945	--	--	K	125TRVL	S	1600	--	--
131-095-30DAD	M.KOMENDA		42	--	6	1929	9	--	H	125TRVL	B	1400	--	--
131-096-02DBD	E.KRAMBEER	73	73	--	4	1961	--	--	S	125TRVL	--	1370	8.0	--
131-096-04DDD	W.DAVIDSON		150	--	6	1964	90	--	K	125TRVL	S	1300	--	--
131-096-05AAD	E.UNDERLAND	125	--	--	6	1944	60	--	H	125TRVL	S	1500	--	--
131-096-14ADD1	F.EHLERS		125	100	3	1943	40	--	K	125TRVL	P	1900	--	--
131-096-14ADD2	F.EHLERS	42	42	--	4	1964	--	--	S	125TRVL	--	2600	--	--
131-096-14ADD3	F.EHLERS	121	116	80	6	1969	40	--	K	125TRVL	P	1400	--	--
131-096-15AAD	G.EHLERS	52	52	41	4	1967	--	--	S	125TRVL	S	1800	8.0	--
131-096-15CCC1	G.EHLERS	60	60	30	4	1969	29	--	S	125TRVL	S	1240	--	--
131-096-15CCC2	NDSWC 8349	500	390	378	2	1972	14	8-72	U	125LDLW	S	1350	9.5	2665
131-096-18ADD	O.THORSON	202	202	--	6	1967	110	--	S	125TRVL	--	803	10.0	--
131-096-21DDA	J.STEINBACH	100	100	80	4	1964	--	--	S	125TRVL	S	1760	8.5	--
131-096-26AAA	F.EHLERS	124	124	107	4	1967	--	--	S	125TRVL	S	--	--	--
131-096-27BCC1	C.NELSON		130	--	6	1952	--	--	S	--	P	1950	--	--
131-096-27BCC2	C.NELSON	170	140	--	6	1958	--	--	H	125TRVL	P	2920	--	--
131-096-30DCD	A.STENBERG	122	122	110	--	1953	65	--	K	125TRVL	S	1330	--	--
131-096-32ACA	E.OLSON	180	180	150	4	1972	70	--	--	--	S	1250	--	--
131-097-07CCC	W.NORDAHL	245	245	198	--	1972	80	--	--	--	S	1950	--	--
131-097-10AAA	J.KOLTAS	247	247	--	4	1972	55	5-73	U	--	S	--	--	--
131-097-10BBB	J.KOLTES	150	150	90	4	1969	74	7-71	H	--	S	1700	--	--
131-097-10DDD	M.ENGRAF		50	--	4	1959	18	--	K	125TRVL	P	700	--	--

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131-097-14CCB	R.STECHER	132	132	100	4	1969	60	6-71	H	125TRVL	S	11500	--	--
131-097-15CBD	M.ENGRAF		52	--	5	--	18	--	S	125TRVL	P	--	--	--
131-097-17BCC	O.JOHNSON	305	--	--	--	1965	--	--	U	--	--	--	--	--
131-097-19DCC1	V.NESTER		116	--	4	1947	110	--	H	125TRVL	S	1400	--	--
131-097-19DCC2	V.NESTER	289	--	--	--	1959	--	--	S	--	--	--	--	--
131-097-19DCC3	V.NESTER	235	235	115	6	1970	--	--	H	--	--	1000	--	--
131-097-19DCC4	V.NESTER	295	--	--	--	--	--	--	U	--	--	--	--	--
131-097-20ADD	J.MOLBERT	198	190	--	6	1960	--	--	S	--	--	--	--	--
131-097-20DAD	O.NESTER	330	--	--	--	1963	--	--	U	--	--	--	--	--
131-097-26BBC1	J.MARKEGARD		90	--	6	1950	--	--	K	--	S	900	--	--
131-097-26BBC2	C.MARKEGARD	150	150	125	4	1972	75	--	--	--	S	840	--	--
131-097-26DDD	C.MARKEGARD	143	92	--	6	1964	60	--	K	--	--	700	--	--
131-098-01BCC1	P.HAGEN	112	112	--	6	1951	--	--	H	125TRVL	S	900	--	--
131-098-01BCC2	P.HAGEN	110	110	--	--	1968	--	--	U	125TRVL	--	--	--	--
131-098-01BCC3	P.HAGEN	190	151	90	4	1970	14	6-71	U	125TRVL	S	--	--	--
131-098-01BCC4	P.HAGEN	89	81	69	4	1970	50	--	H	125TRVL	S	1580	--	--
131-098-07BCC	D.HOFLAND	387	352	--	4	1963	180	--	S	125CNBL	--	1440	9.5	2959
131-098-08CDD	F.BAUMAN		170	--	4	1910	154	--	K	125TRVL	1	2030	--	--
131-098-11ACC	P.HAGEN	95	95	22	4	1963	--	--	S	125TRVL	S	930	9.0	--
131-098-12BCC	A.HAGEN		75	--	6	1955	--	--	K	125TRVL	S	2100	12.0	--
131-098-23CCC	O.HONEYMAN		140	140	6	--	--	--	K	--	S	1850	--	--
131-098-23DAD1	NDSWC 8352	500	356	344	2	1972	123	7-72	U	125CNBL	S	1760	10.5	2882
131-098-23DAD2	NDSWC 8352A	250	248	242	1	1972	108	7-72	U	125TRVL	S	1610	9.5	2882
131-098-26CCD	M.CONRAD		100	90	6	1960	76	--	S	125TRVL	S	500	--	--
131-098-31DDA	M.WANEK		60	60	6	1959	45	--	K	--	1	2150	--	--
131-098-36DAA	P.HAGEN	76	38	--	4	1964	18	--	S	125TRVL	--	--	--	--
131-099-04DAA	D.SCHUMACHER		390	--	6	1961	--	--	K	125TRVL	1	1450	--	2955
131-099-07BBC	D.SCHUMACHER	51	33	--	4	1972	15	--	S	--	S	1450	--	--
131-099-10CCC	E.PECINOVSKY		80	--	4	1910	60	--	K	125TRVL	--	1600	--	2935
131-099-12BCB	D.DEUTSCHER		60	45	4	1947	40	--	H	125TRVL	--	1200	--	2880
131-099-18AAA	M.HENDERSON		375	315	--	1950	80	--	H	125LDLW	S	1500	--	2845
131-099-22CCC1	J.WEBER	112	112	--	--	--	50	--	S	125TRVL	1	2260	10.0	2845
131-099-22CCC2	J.WEBER	390	336	--	4	--	--	--	H	125LDLW	S	1880	13.0	2845
131-099-34DAA	MDU	1363	1254	--	4	1973	166	--	N	211HCFH	S	--	--	2760
131-100-09CCD	A.FREITAG	1068	1068	--	4	1964	235	--	H	211HCFH	--	1730	14.0	2845
131-100-12BBB	D.FREYMILLER		90	--	6	--	--	--	S	125TRVL	1	2350	--	--
131-100-22DDA	K.FISHER		160	--	4	--	20	--	S	--	S	1400	--	2800
131-100-23DAD	F.PAULSON	123	--	--	4	1966	30	--	H	--	--	--	--	--
131-100-23DBA	SCRANTON		1180	--	--	1936	--	--	P	211HCFH	--	1660	19.5	--
131-100-23DBB	R.REIGER	124	--	--	4	1960	--	--	U	--	--	--	--	--

LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT.)	WELL DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAM-ETER (IN.)	DATE DRILLED (YEAR)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	USE OF WATER	MAJOR AQUIFER	WATER BEARING MATERIAL	SPECIFIC CONDUCT-ANCE (µMHOS/CM AT 25°C)	TEM-PER-ATURE (°C)	ALTI-TUDE OF LSD (FT.)
131-100-24ABB	J.CARON	100	71	--	4	1958	50	--	K	125TRVL	1	1050	--	--
131-100-26ABA	SCRANTON	1205	1193	1030	--	1969	--	--	P	211HCFH	S	1860	16.0	2774
131-100-29AAA	L.STEINER	193	176	--	4	1972	40	--	K	--	S	1650	--	--
131-100-29BBB1	NDSWC 4459	440	376	364	2	1972	128	8-72	U	125LDLW	S	1680	11.0	2950
131-100-29BBB2	NDSWC 4459A	230	228	222	1	1972	18	8-72	U	125TRVL	S	2030	10.0	2950
131-100-31BBB	G.BROWN		550	45	4	1947	125	--	K	125LDLW	S	922	--	2940
131-101-08CCC	J.SIVHOEC	104	85	--	4	1972	30	--	N	--	S	--	--	--
131-101-18BCC1	P.LEWTON		900	--	6	1961	200	--	K	211HCFH	--	2080	12.0	--
131-101-18BCC2	P.LEWTON		200	--	--	--	100	--	S	125TRVL	1	--	--	--
131-101-19CCA	LEWTON 1-5-8	5300	--	--	--	1968	--	--	U	--	--	--	--	2932
131-101-26BBB	D.HANSEY		260	--	1	1952	80	--	U	--	S	--	--	--
131-101-26CBC	D.HANSEY		100	--	1.	1960	--	--	H	--	S	1200	--	--
131-101-26CCC	D.HANSEY		118	40	1	1940	--	--	U	--	S	--	--	--
131-101-28BDB	O.GOODNAUGH		--	--	5	--	--	--	K	--	--	1750	10.0	--
131-101-30CCB	D.STEWART	120	81	--	4	1957	30	--	K	125TRVL	S	1900	11.0	--
131-101-30CCC1	D.STEWART	120	80	--	5	1950	30	--	S	125TRVL	S	2100	9.0	--
131-101-30CCC2	P.PAULSON	120	81	81	4	1960	--	--	H	125TRVL	--	2100	--	--
131-101-36CD	NO.DAK.1-4-5	5300	--	--	--	1968	--	--	U	--	--	--	--	2924
131-102-01DBB	L.ROEN	903	865	--	4	1972	323	--	S	211HCFH	S	1650	--	3005
131-102-01DDD	R.THEURER	161	140	100	--	1972	22	--	S	--	S	1650	--	--
131-102-02DDA	BOWMAN	1075	1067	965	8	1961	359	5-71	P	211HCFH	--	1710	19.0	3023
131-102-03DDD	L.STEIN	63	36	--	4	1972	16	5-73	U	--	--	--	--	--
131-102-07DDD1	NDSWC 4462	1240	963	951	2	1972	201	8-72	U	211HCFH	S	1890	14.0	2945
131-102-07DDD2	NDSWC 4462A	632	632	620	2	1972	198	--	U	211HCFH	S	--	--	2945
131-102-07DDD3	NDSWC 4462B	140	138	132	1	1972	5	8-72	U	125TRVL	S	1810	10.5	2945
131-102-09BCC	N.GERMANN	227	--	--	--	1961	--	--	U	--	--	--	--	--
131-102-11BDC	J.WHALEN	56	56	36	4	1966	--	--	H	125TRVL	S	752	13.0	--
131-102-11BDD	L.GROSZ	50	50	40	4	1961	--	--	U	125TRVL	S	--	--	--
131-102-11CAA	E.PETERS	50	50	40	4	1966	--	--	H	125TRVL	1	--	--	--
131-102-11CAB	BOWMAN		1042	962	--	1930	--	--	P	211HCFH	--	1660	19.0	2977
131-102-11CAD1	A.PAULSON	30	30	25	4	1966	--	--	U	125TRVL	1	--	--	--
131-102-11CAD2	D.NORDGREN	35	35	25	2	1966	--	--	H	125TRVL	S	--	--	--
131-102-11CAD3	A.PAULSON		190	--	4	1967	18	--	H	125TRVL	--	1500	10.0	--
131-102-11CBA	J.FRANKLIN	50	50	30	4	1966	--	--	H	125TRVL	S	872	--	--
131-102-11CDB	C.PRICE	164	121	--	4	1964	74	6-71	H	125TRVL	--	1380	--	--
131-102-11DAB	D.SMITH	52	52	32	4	1966	--	--	H	125TRVL	S	1500	10.0	--
131-102-11DAD	BOWMAN	1050	1050	969	10	1943	--	--	P	211HCFH	S	1670	21.0	2959
131-102-11DBD1	A.AMMODT	50	50	30	4	1966	--	--	H	125TRVL	S	1910	--	--
131-102-11DBD2	M.CARTER	45	45	35	4	1966	--	--	H	125TRVL	S	1720	--	--
131-102-11DBD3	L.FISHER	56	56	46	4	1966	--	--	U	125TRVL	S	--	--	--

LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT.)	WELL DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	USE OF WATER	MAJOR AQUIFER	WATER BEARING MATERIAL	SPECIFIC CONDUCTANCE (µMHOS/CM AT 25°C)	TEMPERATURE (°C)	ALTITUDE OF LSD (FT.)
131-102-11DCA1	N.CHASE	38	38	28	4	1966	--	--	H	125TRVL	S	1300	--	--
131-102-11DCA2	W.MAUER	45	45	35	4	1966	--	--	H	125TRVL	S	1240	11.0	--
131-102-11DDA	R.HORA	45	45	35	4	1966	--	--	H	125TRVL	1	1520	--	--
131-102-11DDC	L.FLADOS	50	50	30	4	1966	22	6-71	H	125TRVL	S	1900	--	--
131-102-12ABA	O.GRENI		200	--	6	--	--	--	K	125TRVL	--	1900	11.0	--
131-102-13CCC1	NDSWC 4393	500	432	420	2	1971	78	--	U	125LHCK	--	2120	10.0	2930
131-102-13CCC2	NDSWC 4393A	190	184	178	1	1971	53	--	U	125LDLW	--	2470	9.0	2930
131-102-14AAB	BOWMAN	1147	1096	887	12	1968	305	5-71	P	211HCFH	--	1660	19.0	2948
131-103-08AB	LUTZ 1-6-21	5310	--	--	--	1968	--	--	U	--	--	--	--	3092
131-103-08CAC1	J.LUTZ	949	927	907	4	1964	--	--	H	211HCFH	--	1740	16.5	3141
131-103-08CAC2	J.LUTZ		920	--	--	--	359	7-71	U	211HCFH	--	--	--	3142
131-103-14CCD	H.WHITE	265	265	245	--	1972	140	--	--	--	S	1700	--	--
131-103-20CBA	G.NJOS	187	60	34	5	1961	--	--	U	--	1	--	--	--
131-103-20DBA	O.NJOS	259	218	218	4	1961	95	--	S	--	--	--	--	3156
131-103-21DBC	R.FISCHER	139	99	99	4	1961	80	--	S	125TRVL	S	1980	9.0	--
131-103-25AB	R.WERRE 1-27-18	5150	--	--	--	--	--	--	U	--	--	--	--	3036
131-103-35CCD	W.ANDERSON	173	122	122	4	1961	80	--	S	125TRVL	S	2230	8.0	--
131-104-09AA	FISCHER 1-7-19	5200	--	--	--	1968	--	--	U	--	--	--	--	3096
131-104-10AAA	A.OSENDORF		45	--	24	1955	20	--	H	--	1	3600	--	--
131-104-10ADA	A.OSENDORF		35	--	24	1944	17	--	K	--	--	2500	--	--
131-104-14BAC	A.TOLLEFSRUD		50	--	24	1960	--	--	H	--	S	1200	--	--
131-104-20DBC	P.KRAUSE		30	--	5	1960	14	--	K	--	1	1400	--	--
131-104-26CCC	NDSWC 4394	620	495	483	2	1971	--	--	U	125LHCK	--	--	--	3157
131-104-27DD	BELER 1-31-22		--	--	--	1968	--	--	U	--	--	--	--	3204
131-104-28AAA1	M.MILLER		1100	--	--	--	262	2-71	U	211HCFH	--	--	--	3120
131-104-28AAA2	M.MILLER	765	700	--	4	1962	--	--	K	211HCFH	--	1490	16.0	3140
131-104-33BBB	K.BRAATEN	405	342	342	4	1960	240	--	U	125LHCK	S	--	--	3118
131-105-18DCC	G.LARKIN	126	80	80	4	1961	24	5-71	H	211HCFH	S	1820	--	--
131-105-21ACC	G.LARKIN	287	287	--	4	--	--	--	S	211HCFH	--	1740	9.0	--
131-105-23CDD	NDSWC 4466	620	495	483	2	1972	166	8-72	U	211HCFH	S	1760	13.5	2995
131-105-33BDB	D.EGELAND	151	104	104	4	1962	84	--	S	211HCFH	S	--	--	--
131-105-33DCC	D.EGELAND	130	121	121	4	1962	96	--	S	211HCFH	S	1150	9.0	--
131-106-03DAA	L.MILLER		96	76	6	1961	22	--	S	211HCFH	--	2500	9.0	--
131-106-04DCC	L.MILLER	67	66	56	24	1965	55	--	H	211HCFH	F	869	--	--
131-106-10AAB	USGS LM-34	30	--	--	--	1956	--	--	--	--	S	--	--	2773
131-106-11AAC	USGS LM-30	18	--	--	--	1956	--	--	--	--	--	--	--	--
131-106-11BBC	USGS LM-26	33	--	--	--	1956	--	--	--	--	--	--	--	2768
131-106-11BBD	USGS LM-27	48	--	--	--	1956	--	--	--	--	--	--	--	2768
131-106-13CBB	USGS LM-33	61	--	--	--	1956	--	--	--	--	--	--	--	2780
131-106-14ACD	USGS LM-32	33	--	--	--	1956	--	--	--	--	--	--	--	2800

LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT.)	WELL DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	USE OF WATER	MAJOR AQUIFER	WATER BEARING MATERIAL	SPECIFIC CONDUCTANCE (µMHOS/CM AT 25°C)	TEMPERATURE (°C)	ALTITUDE OF LSD (FT.)
131-106-14BAB	E.MICHEL		110	--	3	1931	100	--	H	211HCFH	--	1250	--	--
131-106-14BDD	USGS LM-31	18	--	--	--	1956	--	--	--	--	--	--	--	2780
132-095-03CCC	E.ANDERSON		142	--	--	1915	40	--	K	--	S	2700	--	--
132-095-08AAC	L.STRAND		100	--	6	1915	--	--	K	--	S	2300	--	--
132-095-12DCD	L.SVIHOVEC		140	--	6	1931	--	--	K	125TRVL	S	2550	--	--
132-095-17AAA	S.STRAND	501	501	454	5	1969	--	--	K	125TRVL	BP	1850	--	--
132-095-20AAD	S.UNDERLAND	210	210	--	4	1964	--	--	H	125TRVL	--	2830	--	2686
132-095-28DCC	R.NELSON	200	200	164	4	1969	38	--	K	125TRVL	S	1400	--	--
132-095-31CBB	E.NORDNESS	95	89	40	4	1967	32	7-70	H	125TRVL	S	--	--	--
132-095-33CCD	P.SCHMALTZ	121	121	100	5	1961	--	--	S	125TRVL	S	1200	--	--
132-096-08CAD	F.KORANG		21	21	36	1949	17	--	H	125TRVL	1	1000	11.0	--
132-096-15DAA	J.LAUFER		88	88	6	1952	35	--	H	125TRVL	--	3000	--	--
132-096-16DDA	J.LAMPL		30	--	6	--	--	--	H	125TRVL	G	1500	--	--
132-096-18BAA	E.HONEYMAN	132	120	--	5	1961	55	--	U	125TRVL	--	--	--	--
132-096-22ABC1	NDSWC 8350	580	377	371	2	1972	52	7-72	U	125LDLW	S	2040	9.5	2585
132-096-22ABC2	NDSWC 8350A	200	188	182	1	1972	19	7-72	U	125TRVL	S	1550	9.0	2585
132-096-22BBD	E.LAUFER	33	33	12	6	1967	12	--	H	125TRVL	P	--	--	--
132-096-22DDA	T.GRAVNING		--	--	--	--	--	--	H	125TRVL	--	2000	--	--
132-096-23BBC	J.LAUFER		90	80	6	--	--	--	S	125TRVL	S	1050	--	--
132-096-23BBD	M.OLSON	158	158	--	4	1965	--	--	U	125TRVL	--	404	10.0	--
132-096-24ADA	T.GRAVNING	75	75	45	4	1972	35	--	S	--	S	600	--	--
132-096-26BBA1	V.SANDAL		86	86	6	1948	--	--	H	125TRVL	--	1450	9.0	--
132-096-26BBA2	V.SANDAL	115	115	93	4	1966	--	--	S	125TRVL	S	1540	8.0	--
132-096-28AAD	E.VOGEL		170	--	6	--	--	--	H	125TRVL	--	1500	--	--
132-096-34ADD	O.WARNE	158	--	--	6	1963	--	--	H	125TRVL	S	1620	--	--
132-097-07CAB1	NDSWC 4313	1300	1080	--	--	1971	145	7-71	U	211HCFH	--	1790	20.0	2665
132-097-07CAB2	NDSWC 4387	620	590	578	2	1971	87	8-71	U	125LHCK	--	2110	9.5	2665
132-097-07CAB3	NDSWC 4387A	230	229	217	1	1971	16	8-71	U	125LDLW	--	1500	7.5	2665
132-097-07CAB4	NDSWC 8351	360	335	329	2	1972	7	7-72	U	125LDLW	S	2050	11.0	2665
132-097-08DAA1	D.SCHOEDER		100	80	6	1971	--	--	K	125TRVL	S	988	9.0	--
132-097-08DAA2	D.SCHOEDER		90	--	5	--	--	--	K	125TRVL	G	1200	10.5	--
132-097-09CCB	L.SCHOEDER		70	60	4	1949	--	--	K	125TRVL	S	1600	10.0	--
132-097-15CBC	E.ENGRAF	100	100	80	4	1968	45	--	K	125TRVL	P	982	13.0	--
132-097-17ADD	S.SWENSON		73	--	4	1963	--	--	H	125TRVL	--	1100	--	--
132-097-18CDD	R.EARSLEY	180	180	150	4	1972	90	--	S	--	S	1600	--	--
132-097-20AAA	L.SCHOEDER	244	223	--	4	1964	--	--	S	--	--	--	32.0	2712
132-097-23BAA	R.MELLMER	70	70	70	6	1962	--	--	S	125TRVL	S	994	12.0	--
132-097-30AAD	E.ROSENOW	77	--	--	6	--	--	--	S	125TRVL	S	2700	7.5	--
132-097-32CBC	M.RUUD	101	--	--	6	1951	--	--	H	125TRVL	S	800	--	--
132-097-34BCB	S.OLSON	90	90	65	4	--	30	--	K	125TRVL	S	2700	--	--

LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT.)	WELL DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAM-ETER (IN.)	DATE DRILLED (YEAR)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	USE OF WATER	MAJOR AQUIFER	WATER BEARING MATERIAL	SPECIFIC CONDUCT-ANCE (μMHOS/CM AT 25°C)	TEM-PER-ATURE (°C)	ALTI-TUDE OF LSD (FT.)
132-098-04DCB1	H.HAGEN		160	150	5	1951	20	--	H	125TRVL	S	1650	--	--
132-098-04DCB2	H.HAGEN		190	155	5	1955	3	--	S	125TRVL	B	1650	9.0	--
132-098-09BAA	A.HAGEN		86	76	6	1947	--	--	H	125TRVL	--	1900	--	--
132-098-09B8A	A.HAGEN		2168	160	6	1964	+5	--	S	125TRVL	--	1650	10.0	--
132-098-11DAA	F.DONNER		60	--	6	1948	--	--	H	125TRVL	1	1650	--	--
132-098-15CBC	G.SCHWARTZ	52	51	50	6	1962	15	--	K	125TRVL	S	1700	--	--
132-098-21CCB	O.SCHWARTZ		24	--	6	--	--	--	H	125TRVL	S	1200	--	--
132-098-23CDD	J.WEGNER	150	150	--	4	--	--	--	K	125TRVL	S	2340	14.0	--
132-098-27CBA	B.JOHNSON	115	115	80	5	1960	--	--	S	125TRVL	S	--	--	--
132-098-34DDD	E.HAGEN	86	--	--	6	1968	--	--	H	125TRVL	S	1300	--	--
132-099-08DAA	A.NORDBY		70	--	2	--	--	--	K	125TRVL	S	2100	--	--
132-099-10BCB	J.SIPMA		96	--	4	1969	+3	--	K	125TRVL	S	2000	--	--
132-099-18DCC	N.NORDBY		70	--	24	1957	20	--	K	125TRVL	S	2950	--	--
132-099-28ACB	W.JOHNSON	309	--	--	--	--	--	--	U	125LDLW	--	--	--	--
132-099-31CDD	N.GOODHUE		100	--	6	1955	75	--	H	125TRVL	--	1100	--	2914
132-099-32DD	FREITAG 1-8-7	5370	--	--	--	1968	--	--	U	--	--	--	--	2896
132-099-32DDC1	NDSWC 4391	660	572	560	2	1971	245	10-71	U	125LHCK	--	2600	11.0	2900
132-099-32DDC2	NDSWC 4391A	110	110	104	1	1971	73	10-71	U	125TRVL	--	1130	8.5	2900
132-099-34DBC	J.SIPMA		112	--	6	1958	70	--	K	125TRVL	S	2550	12.0	2880
132-100-09B8B	F.DEMOTTE		50	--	4	1912	--	--	K	125TRVL	--	1200	--	--
132-100-10CDD	O.PIERCE		130	--	6	1952	60	--	H	125TRVL	S	2300	--	--
132-100-14ADB	R.PIERCE	60	51	--	4	1958	20	--	S	125TRVL	--	2280	9.0	--
132-100-18DDC	W.MOOR		83	73	6	1948	40	--	H	125TRVL	S	2300	--	--
132-100-22CBB1	K.PIERCE		30	--	6	--	--	--	S	125TRVL	--	4000	--	--
132-100-22CBB2	K.PIERCE		90	--	6	--	10	--	H	125TRVL	--	--	--	--
132-100-32CCD	M.FREYMILLER		67	--	6	1960	--	--	K	125TRVL	S	1350	--	2880
132-100-35DDD	K.FREITAG		1200	1050	--	1955	281	9-70	H	211HCFH	S	1810	12.0	2904
132-101-08CAA	P.SCHOBER	44	44	44	18	1940	36	--	S	125TRVL	--	1800	9.0	--
132-101-10DDD	NDSWC 4460	360	264	252	2	1972	74	8-72	U	125TRVL	S	1750	10.0	2925
132-101-12BB	WEGNER 1-32	5450	--	--	--	1968	--	--	U	--	--	--	--	2932
132-101-12CCC	NDSWC 4392	600	411	399	2	1971	53	10-71	U	125LDLW	--	1450	10.5	2886
132-101-12DDD	G.WEGNER	45	45	45	18	1951	--	--	H	125TRVL	--	2200	12.0	--
132-101-14AAA	C.DINGFELDER		30	30	12	1968	--	--	H	125TRVL	1	1900	7.0	--
132-101-15DA	M.FREITAG		36	36	12	1951	24	--	S	125TRVL	1	1700	--	--
132-101-28BDC	R.SILHA	240	230	220	5	1970	103	5-71	H	125LDLW	--	2200	--	2951
132-101-30DDD	R.ROEN		280	280	5	1967	143	5-71	H	125LDLW	--	1780	10.0	2995
132-101-32BB	L.ROEN 1-48		--	--	--	1968	--	--	U	--	--	--	--	2950
132-101-35AA	BREWER 1-9-9	5297	--	--	--	1968	--	--	U	--	--	--	--	2990
132-102-07BC	OIEN 1-1-2-X	5385	--	--	--	1968	--	--	U	--	--	--	--	2971
132-102-09AA	MOSBRUCKER 1-47		--	--	--	1968	--	--	U	--	--	--	--	2935

LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT.)	WELL DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	USE OF WATER	MAJOR AQUIFER	WATER BEARING MATERIAL	SPECIFIC CONDUCTANCE (μMHOS/CM AT 25°C)	TEMPERATURE (°C)	ALTITUDE OF LSD (FT.)
132-102-09DDD1	O.OVERLAND	300	300	300	6	1952	75	--	H	125LDLW	--	2080	--	2949
132-102-09DDD2	O.OVERLAND	200	200	200	5	1954	75	--	S	125LDLW	S	1700	6.0	2949
132-102-10BBB	E.SCHADE		425	--	4	1950	140	--	H	125LHCK	--	2600	--	2985
132-102-12AAA	R.ANDREWS	60	42	50	--	1970	28	--	S	125TRVL	--	--	--	--
132-102-12CCC	E.KERR		40	40	24	1942	28	--	S	125TRVL	--	4120	7.5	--
132-102-13CA	TRUAX-TRAER 1	6188	--	--	--	1954	--	--	U	--	--	--	--	3061
132-102-13CDD	L.KERR	150	150	146	4	1968	90	--	S	--	S	3300	10.0	--
132-102-18ADD	A.OVERLAND	126	84	84	11	1961	70	--	S	--	--	--	--	--
132-102-18BAA	G.SCHADE	332	261	261	5	1961	60	--	H	125LDLW	B	2430	--	2961
132-102-20BDD	O.SOREIDE	230	160	160	6	1960	140	--	S	--	S	1550	--	--
132-102-21DAA	W.RUGGLES	63	18	--	11	1960	11	--	S	125TRVL	--	2100	6.0	--
132-102-22CBB	J.SCHADE	61	46	--	4	--	--	--	U	125TRVL	--	--	--	--
132-102-22DBB	D.SCHADE		60	48	4	1970	35	--	H	125TRVL	S	1100	--	--
132-102-23AD	CONSOL. COAL 1	4875	--	--	--	1968	--	--	U	--	--	--	--	2984
132-102-24BBB1	NDSWC 4461	580	565	553	2	1972	198	8-72	U	125LDLW	S	1620	12.0	3040
132-102-24BBB2	NDSWC 4461A	380	376	364	2	1972	196	8-72	--	125LDLW	S	1650	12.0	3040
132-102-24BBB3	NDSWC 4461B	120	117	102	1	1972	80	8-72	U	125TRVL	1	562	9.5	3040
132-102-26DDD	R.BURDETTE		75	75	18	1961	25	--	S	--	--	750	7.0	--
132-102-28AAA	D.ELDRINGHOFF		55	55	24	1946	20	--	S	125TRVL	1	1500	10.0	--
132-102-29CAA	J.SOREIDE	313	--	274	6	1959	150	--	S	125LDLW	S	--	--	3031
132-102-32DBB	J.SOREIDE		280	280	6	1948	110	--	S	125LDLW	--	1860	8.0	3000
132-102-34CCC	P.HYKE	60	55	55	--	--	47	--	H	--	--	1700	--	--
132-102-34DCC	P.MOSBRUCKER	45	45	15	6	1955	20	--	H	--	--	750	--	--
132-103-15AD	BENNETT 1-41		--	--	--	1968	--	--	U	--	--	--	--	3037
132-103-19ACD	T.ROLFNESS		64	64	18	1943	32	--	S	125TRVL	S	2700	8.5	--
132-103-20BBB	R.BEYER	361	297	297	4	1961	235	--	H	125LDLW	S	2230	--	3175
132-103-21CCA	O.ROLFSNESS		80	80	8	1969	--	--	S	--	--	550	9.0	--
132-103-22BDD	D.BEYER		96	--	18	--	--	--	H	--	--	2300	--	--
132-103-25DD	SCHADE 1-10-17	3037	--	--	--	1968	--	--	U	--	--	--	--	3039
132-103-26DCC	E.SODERSTROM	98	57	--	--	--	36	--	U	--	--	--	--	--
132-103-27BDD	O.ROLFSNESS		30	30	18	1952	15	--	H	--	--	2700	--	--
132-103-35BCC	S.SODERSTROM	412	--	--	--	1963	--	--	S	--	--	--	--	--
132-104-09CDD	L.TIMM		268	--	4	1955	15	--	H	125TRVL	--	3330	9.5	3150
132-104-12BCC	NDSWC 4395	520	453	441	2	1971	40	--	U	--	--	--	--	3100
132-104-12CC	EVANS 1-46	5375	--	--	--	1968	--	--	U	--	--	--	--	3122
132-104-12CCC	W.STEGNER		40	40	10	1970	10	--	H	--	--	1700	--	--
132-104-13AA	NOREM 1-49	5343	--	--	--	1968	--	--	U	--	--	--	--	3174
132-104-14CCC	H.LONG		160	160	4	1951	113	--	H	--	--	1225	10.0	--
132-104-15CDD	R.ERICKSON		50	50	18	1940	--	--	H	--	--	1550	--	--
132-104-17CCC	R.IDLER		600	630	4	1967	265	--	H	211HCFH	--	1740	--	3037

LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT.)	WELL DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAM-ETER (IN.)	DATE DRILLED (YEAR)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	USE OF WATER	MAJOR AQUIFER	WATER BEARING MATERIAL	SPECIFIC CONDUCT-ANCE (µMHOS/CM AT 25°C)	TEM-PER-ATURE (°C)	ALTI-TUDE OF LSD (FT.)
132-104-21AAA	D.MEGGERS		750	750	4	1970	--	--	H	211HCFH	--	1790	--	3190
132-104-21CA	GUNVALDSEN 1-11	5245	--	--	--	1968	--	--	U	--	--	--	--	3100
132-104-24DBB	R.WIFFLER	220	200	--	6	1945	160	--	H	--	--	1900	--	3240
132-104-27ADA	RHAME		31	--	144	1936	--	--	P	125TRVL	--	2010	8.0	--
132-104-32DAA	L.FISCHER		60	60	24	1940	45	--	H	--	S	1700	9.0	--
132-104-34BAA	R.FISCHER		80	80	5	1963	60	--	H	--	F	1475	8.0	--
132-104-35BBB	A.BOWMAN		80	75	4	1970	--	--	H	--	--	3350	--	--
132-105-08BBD	ND HIGHWAY DEPT.	220	190	--	--	--	132	--	H	125LHCK	--	3390	12.0	--
132-105-15AA	HANNA 1-25	4966	--	--	--	--	--	--	U	--	--	--	--	2980
132-105-16BDB	NDSWC 4308	475	459	441	2	1971	271	9-71	U	211HCFH	--	1720	13.0	3010
132-105-17AAA	R.SWANKE		430	430	4	1961	350	--	S	211HCFH	S	--	--	3010
132-105-21ACC	R.SWANKE		246	246	3	1949	190	--	H	211HCFH	--	4200	--	3027
132-105-24CCC	A.WEISZ	40	30	--	24	1954	25	--	H	--	1	1725	--	--
132-105-25DCC	G.LAMB		12	3	4	1950	8	--	H	125LHCK	--	1700	--	--
132-106-15CAA	USGS LM-20	23	--	--	--	1956	--	--	--	--	--	--	--	2730
132-106-15CAB	USGS LM-19	28	--	--	--	1956	--	--	--	--	--	--	--	2750
132-106-15CBA1	USGS LM-17	48	--	--	--	1956	--	--	--	--	--	--	--	2800
132-106-15CBA2	USGS LM-18	38	--	--	--	1956	--	--	--	--	--	--	--	2780
132-106-15DAB	USGS LM-23	23	--	--	--	1956	14	3-56	--	--	--	--	--	2710
132-106-15DBA	USGS LM-22	28	--	--	--	1956	--	--	--	--	--	--	--	2720
132-106-15DBB	USGS LM-21	28	--	--	--	1956	--	--	--	--	--	--	--	2720
132-106-20AAA	F.BRADAC		200	--	6	1934	40	--	S	211HCFH	--	--	--	--
132-106-24CAD	R.GILMORE	210	--	--	4	1910	--	--	H	211HCFH	--	1850	--	--
132-106-24CCC	R.GILLMORE		76	70	10	1954	50	--	S	211HCFH	--	650	10.0	--
132-106-26BDC	J.PETERSON		229	229	6	1936	--	--	H	211HCFH	S	2530	--	2881
132-106-27CD	PETERSON 1-12-20	4806	--	--	--	1968	--	--	U	--	--	--	--	2912
132-106-35D8A	USGS LM-24	13	--	--	--	1956	--	--	--	--	--	--	--	2730
132-106-35DBB	USGS LM-25	18	--	--	--	1956	--	--	--	--	--	--	--	2750
023-016-05D	LEMMON NO. 9	975	913	813	--	1970	414	9-70	P	211HCFH	--	2070	15.0	2562

TABLE 2.--Water levels in selected wells

EXPLANATION

MP, measuring point lsd, land surface datum

Depth to water, in feet below or (+) above land surface

129-091-07AAA1 MP is top of 2-inch steel pipe 3.6 feet above lsd.

Date	Water level	Date	Water level	Date	Water level
Sept. 11, 1971..	150.47	June 13.....	149.70	Mar. 22.....	150.32
Dec. 13.....	149.43	July 13.....	150.91	Apr. 18.....	149.75
Jan. 12, 1972..	150.21	Aug. 9.....	150.01	May 24.....	148.72
Feb. 22.....	150.30	Sept. 6.....	150.15	June 27.....	149.87
Mar. 23.....	150.32	Oct. 10.....	150.00	July 25.....	150.05
Apr. 19.....	150.25	Nov. 1.....	150.13	Aug. 14.....	149.99
May 18.....	150.05	Feb. 24, 1973..	150.02	Sept. 23.....	149.96

129-091-07AAA2 MP is top of 1¼-inch plastic pipe 1.85 feet above lsd.

Sept. 11, 1971..	94.06	June 13.....	93.15	Mar. 22.....	93.55
Dec. 13.....	93.73	July 13.....	93.50	Apr. 18.....	93.48
Jan. 12, 1972..	93.61	Aug. 9.....	93.62	May 24.....	93.63
Feb. 22.....	94.22	Sept. 6.....	93.55	June 27.....	93.64
Mar. 23.....	93.85	Oct. 10.....	93.62	July 25.....	94.08
Apr. 19.....	93.80	Nov. 1.....	93.65	Aug. 14.....	94.09
May 18.....	93.45	Feb. 24, 1973..	93.40	Sept. 23.....	93.94

129-093-08CBB1 MP is top of 2-inch steel pipe 3.0 feet above lsd.

July 13, 1972..	89.64	Feb. 24, 1973..	90.25	July 25.....	90.81
Aug. 9.....	90.77	Mar. 22.....	90.35	Aug. 15.....	90.88
Sept. 6.....	90.72	Apr. 18.....	90.38	Sept. 23.....	90.64
Oct. 10.....	90.60	May 24.....	90.68		
Nov. 1.....	90.62	June 27.....	90.61		

129-093-08CBB2 MP is top of 1¼-inch plastic pipe 3.2 feet above lsd.

July 13, 1972..	66.20	Feb. 24, 1973..	66.04	July 25.....	66.21
Aug. 9.....	66.40	Mar. 22.....	66.25	Aug. 15.....	66.35
Sept. 6.....	66.41	Apr. 18.....	65.90	Sept. 23.....	66.15
Oct. 10.....	66.31	May 24.....	66.00		
Nov. 1.....	66.32	June 27.....	66.02		

129-094-17BBC1 MP is top of 2-inch steel pipe 3.2 feet above lsd.

Nov. 11, 1971..	168.15	June 14.....	170.15	Mar. 22.....	170.55
Dec. 13.....	169.84	July 13.....	170.20	Apr. 18.....	170.30
Jan. 12, 1972..	169.93	Aug. 9.....	170.47	May 24.....	170.55
Feb. 23.....	170.27	Sept. 6.....	170.45	June 25.....	170.46
Mar. 23.....	170.45	Oct. 10.....	170.48	July 25.....	170.54
Apr. 19.....	170.35	Nov. 7.....	170.49	Aug. 14.....	170.68
May 15.....	170.07	Feb. 24, 1973..	170.50	Sept. 23.....	170.53

Depth to water, in feet below or (+) above land surface

129-094-17BBC2 MP is top of 1½-inch plastic pipe 1.9 feet above lsd.

Date	Water level	Date	Water level	Date	Water level
Nov. 11, 1971..	149.34	June 14.....	148.98	Mar. 22.....	149.15
Dec. 13.....	149.48	July 13.....	149.08	Apr. 18.....	148.90
Jan. 12, 1972..	149.25	Aug. 9.....	149.20	May 24.....	149.00
Feb. 23.....	149.36	Sept. 6.....	149.35	June 25.....	148.86
Mar. 23.....	149.17	Oct. 10.....	149.30	July 25.....	149.12
Apr. 19.....	149.25	Nov. 7.....	149.20	Aug. 14.....	149.08
May 15.....	148.95	Feb. 24, 1973..	149.01	Sept. 23.....	149.13

129-096-13AAD MP is top of 2-inch steel pipe 3.2 feet above lsd.

Dec. 13, 1971..	261.18	June 21.....	260.32	Mar. 22.....	260.56
Jan. 12, 1972..	260.90	July 13.....	259.60	Apr. 18.....	261.10
Feb. 2.....	261.82	Aug. 9.....	260.93	May 24.....	260.09
Feb. 23.....	260.54	Sept. 6.....	260.85	June 25.....	260.2
Mar. 23.....	260.22	Oct. 10.....	260.98	July 25.....	260.69
Apr. 17.....	260.25	Nov. 7.....	261.01	Aug. 15.....	260.89
May 15.....	260.02	Feb. 24, 1973..	260.39	Sept. 23.....	260.97

129-098-32ADB MP is top of 2-inch steel pipe 3.2 feet above lsd.

July 26, 1972..	13.55	Jan. 30, 1973..	13.33	June 25.....	13.63
Aug. 9.....	13.56	Feb. 24.....	13.52	July 24.....	13.42
Sept. 6.....	13.52	Mar. 22.....	13.45	Aug. 14.....	13.54
Oct. 10.....	13.57	Apr. 18.....	13.40	Sept. 23.....	13.55
Nov. 8.....	13.54	May 24.....	13.42		

129-100-19AAA MP is top of 2-inch steel pipe 3.5 feet above lsd.

Aug. 9, 1972..	50.88	Feb. 25.....	50.26	July 24.....	50.75
Sept. 7.....	51.04	Mar. 22.....	50.35	Aug. 14.....	50.93
Oct. 10.....	50.97	Apr. 30.....	50.51	Sept. 22.....	50.87
Nov. 8.....	50.95	May 24.....	50.78		
Jan. 30, 1973..	50.77	June 22.....	50.61		

129-100-25DAA1 MP is top of 2-inch steel pipe 3.2 feet above lsd.

Dec. 15, 1971..	+1.52	Aug. 9.....	+2.28	Apr. 30.....	+2.10
Jan. 11, 1972..	+1.54	Sept. 6.....	+2.37	May 24.....	+2.65
Feb. 22.....	+1.60	Oct. 10.....	+2.31	June 22.....	+2.79
Mar. 17.....	+1.35	Nov. 8.....	+2.40	July 24.....	+2.75
Apr. 17.....	+2.52	Jan. 30, 1973..	+1.96	Aug. 14.....	+2.67
May 16.....	+2.38	Feb. 25.....	+1.99	Sept. 22.....	+2.70
June 26.....	+2.20	Mar. 22.....	+2.03		

Depth to water, in feet below or (+) above land surface

129-100-25DAA2 MP is top of 1¼-inch plastic pipe 1.9 feet above lsd.

Date	Water level	Date	Water level	Date	Water level
Dec. 13, 1971..	0.40	Sept. 6.....	0.68	May 24.....	0.63
Jan. 11, 1972..	.41	Oct. 10.....	.68	June 22.....	.50
Mar. 17.....	.42	Nov. 8.....	.64	July 24.....	.69
Apr. 17.....	.53	Jan. 30, 1973..	.51	Aug. 14.....	.74
May 16.....	.38	Feb. 25.....	.58	Sept. 22.....	.63
June 26.....	.48	Mar. 22.....	.55		
Aug. 9.....	.67	Apr. 30.....	.61		

129-102-27AAA MP is top of 2-inch steel pipe 2.6 feet above lsd.

Aug. 10, 1972..	31.80	Feb. 25.....	31.65	July 24.....	31.97
Sept. 7.....	31.88	Mar. 23.....	31.86	Aug. 14.....	31.94
Oct. 11.....	31.98	Apr. 30.....	31.72	Sept. 22.....	31.96
Nov. 1.....	31.84	May 25.....	31.74		
Jan. 31, 1973..	31.71	June 21.....	31.77		

129-104-34ADA MP is top of 2-inch steel pipe 4.0 feet above lsd.

Sept. 8, 1971..	58.05	July 11.....	57.70	Apr. 30.....	57.57
Dec. 16.....	57.64	Aug. 10.....	57.71	May 25.....	57.60
Jan. 11, 1972..	57.33	Sept. 7.....	57.91	June 21.....	58.10
Feb. 22.....	57.41	Oct. 11.....	57.90	July 23.....	57.70
Mar. 16.....	57.72	Nov. 1.....	57.70	Aug. 14.....	57.76
Apr. 18.....	57.68	Jan. 30, 1973..	57.51	Sept. 22.....	57.69
May 17.....	57.49	Feb. 25.....	57.62		
June 23.....	57.61	Mar. 26.....	57.42		

129-105-02CAA MP is top of 2-inch steel pipe 2.5 feet above lsd.

Aug. 16, 1972..	167.59	Jan. 30, 1973..	167.15	June 21.....	167.25
Sept. 7.....	166.10	Mar. 26.....	167.55	July 23.....	167.08
Oct. 11.....	167.90	Apr. 30.....	167.10	Aug. 15.....	167.29
Nov. 1.....	167.34	May 25.....	166.00	Sept. 22.....	167.23

130-092-27BBA2 MP is top of 1¼-inch plastic pipe 2.2 feet above lsd.

Sept. 11, 1971..	31.45	June 13.....	34.02	Mar. 23.....	36.96
Dec. 14.....	31.36	July 13.....	35.90	Apr. 18.....	37.77
Jan. 12, 1972..	31.30	Aug. 9.....	36.15	May 24.....	36.91
Feb. 22.....	35.42	Sept. 6.....	36.45	July 25.....	39.95
Mar. 23.....	34.37	Oct. 10.....	36.00	Aug. 15.....	36.97
Apr. 18.....	33.21	Nov. 1.....	36.80	Sept. 23.....	36.96
May 18.....	33.25	Feb. 24, 1973..	37.02		

Depth to water, in feet below or (+) above land surface

130-092-27BBA3 MP is top of 2-inch steel pipe 3.1 feet above lsd.

Date	Water level	Date	Water level	Date	Water level
July 13, 1972..	50.20	Nov. 1.....	50.01	May 24.....	49.95
Aug. 9.....	50.10	Feb. 24, 1973..	50.03	July 25.....	50.04
Sept. 6.....	50.04	Mar. 22.....	50.20	Aug. 15.....	50.11
Oct. 10.....	49.95	Apr. 18.....	50.01	Sept. 23.....	50.02

130-094-07DDD1 MP is top of 2-inch steel pipe 3.2 feet above lsd.

July 13, 1972..	130.40	Feb. 24, 1973..	130.50	July 25.....	130.58
Aug. 9.....	130.56	Mar. 22.....	130.45	Aug. 15.....	130.64
Sept. 9.....	130.50	Apr. 30.....	130.85	Sept. 23.....	130.44
Oct. 10.....	130.19	May 24.....	130.14		
Nov. 7.....	130.57	June 25.....	130.29		

130-094-07DDD2 MP is top of 1¼-inch plastic pipe 2.2 feet above lsd.

July 13, 1972..	132.95	Feb. 24, 1973..	133.21	July 25.....	133.01
Aug. 9.....	133.05	Mar. 23.....	133.30	Aug. 15.....	133.07
Sept. 6.....	133.02	Apr. 30.....	133.29	Sept. 23.....	133.02
Oct. 10.....	132.99	May 24.....	132.91		
Nov. 7.....	133.00	June 25.....	132.71		

130-097-35BCB1 MP is top of 2-inch steel pipe 3.2 feet above lsd.

Aug. 10, 1972..	262.80	Feb. 24, 1973..	263.15	July 24.....	263.08
Sept. 6.....	263.02	Mar. 22.....	263.10	Aug. 15.....	263.15
Oct. 10.....	263.00	Apr. 20.....	262.85	Sept. 23.....	262.86
Nov. 7.....	263.09	June 25.....	263.00		

130-097-35BCB2 MP is top of 1¼-inch plastic pipe 3.0 feet above lsd.

July 13, 1972..	42.40	Nov. 7.....	40.48	June 25.....	39.02
Aug. 10.....	41.87	Feb. 24, 1973..	39.75	July 24.....	39.18
Sept. 6.....	41.53	Mar. 22.....	40.05	Aug. 15.....	39.19
Oct. 10.....	40.77	Apr. 20.....	39.39	Sept. 23.....	38.51

130-098-21CCC1 MP is top of 2-inch steel pipe 3.2 feet above lsd.

Nov. 19, 1971..	131.32	June 26.....	130.78	May 24.....	130.90
Dec. 14.....	131.12	Aug. 9.....	131.02	June 25.....	130.68
Jan. 12, 1972..	130.98	Sept. 6.....	131.05	July 24.....	130.90
Feb. 22.....	131.62	Oct. 10.....	131.34	Aug. 14.....	130.98
Mar. 17.....	130.91	Nov. 8.....	131.00	Sept. 23.....	130.97
Apr. 17.....	131.00	Feb. 24, 1973..	130.95		
May 16.....	130.60	Mar. 22.....	130.99		

Depth to water, in feet below or (+) above land surface

130-098-21CCC2 MP is top of 2-inch steel pipe 3.2 feet above lsd.

Date	Water level	Date	Water level	Date	Water level
Nov. 19, 1971..	106.82	June 26.....	106.30	May 24.....	106.34
Dec. 14.....	107.89	Aug. 9.....	106.50	June 25.....	106.54
Jan. 12, 1972..	106.55	Sept. 6.....	106.57	July 24.....	106.39
Feb. 22.....	106.62	Oct. 10.....	106.81	Aug. 14.....	106.33
Mar. 17.....	105.74	Nov. 8.....	106.60	Sept. 23.....	106.35
Apr. 17.....	106.73	Feb. 24, 1973..	106.10		
May 16.....	106.37	Mar. 22.....	106.20		

130-099-17AAA2 MP is top of 1¼-inch plastic pipe 1.9 feet above lsd.

Aug. 10, 1972..	42.50	Feb. 25, 1973..	40.50	June 22.....	39.12
Sept. 7.....	42.21	Mar. 23.....	40.65	July 24.....	39.09
Oct. 10.....	41.64	Apr. 30.....	40.20	Aug. 13.....	39.09
Nov. 1.....	41.27	May 24.....	39.40	Sept. 22.....	39.00

130-100-02AAA MP is top of 2-inch steel pipe 3.5 feet above lsd.

Aug. 9, 1972..	48.35	Mar. 23.....	111.2	July 24.....	111.94
Aug. 15.....	52.45	Apr. 30.....	111.08	Aug. 15.....	112.01
Sept. 6.....	60.60	May 24.....	111.90	Sept. 22.....	111.90
Feb. 24, 1973..	111.9	June 22.....	111.72		

130-103-03AAA MP is top of 2-inch steel pipe 2.7 feet above lsd.

Aug. 16, 1972..	28.87	Jan. 31, 1973..	28.44	May 25.....	28.70
Sept. 7.....	28.89	Feb. 25.....	28.80	July 23.....	28.64
Oct. 11.....	28.92	Mar. 23.....	28.72	Aug. 15.....	28.59
Nov. 1.....	28.77	Apr. 30.....	28.50	Sept. 22.....	28.62

131-091-10CCC MP is top of 2-inch steel pipe 3.0 feet above lsd.

Nov. 19, 1971..	124.01	June 13.....	123.69	Mar. 22.....	123.85
Dec. 15.....	124.53	July 13.....	123.87	Apr. 18.....	123.89
Jan. 12, 1972..	123.97	Aug. 9.....	124.00	May 24.....	123.88
Feb. 22.....	124.8	Sept. 6.....	124.21	June 27.....	123.93
Mar. 23.....	124.02	Oct. 10.....	123.89	July 25.....	124.06
Apr. 19.....	124.06	Nov. 1.....	123.97	Aug. 15.....	124.10
May 18.....	123.75	Feb. 24, 1973..	123.90	Sept. 23.....	123.89

131-091-15CCC MP is top of 2-inch steel pipe 3.2 feet above lsd.

July 13, 1972..	114.60	Feb. 24, 1973..	115.41	July 25.....	115.78
Aug. 9.....	115.70	Mar. 22.....	115.52	Aug. 15.....	115.81
Sept. 6.....	115.53	Apr. 18.....	115.40	Sept. 23.....	115.48
Oct. 10.....	115.58	May 24.....	115.56		
Nov. 1.....	115.77	June 27.....	115.61		

Depth to water, in feet below or (+) above land surface

131-093-21AAA1 (south well) MP is top of 2-inch steel pipe 2.5 feet lsd.

Date	Water level	Date	Water level	Date	Water level
July 13, 1972..	162.75	Feb. 24, 1973..	163.03	July 25.....	163.35
Aug. 9.....	162.96	Mar. 22.....	162.95	Aug. 15.....	163.42
Sept. 6.....	162.85	Apr. 18.....	162.87	Sept. 22.....	163.10
Oct. 10.....	162.90	May 24.....	163.10		
Nov. 1.....	163.00	June 25.....	162.06		

131-093-21AAA2 (north well) MP is top of 1¼-inch plastic pipe 3.6 feet above lsd.

July 13, 1972..	174.07	Feb. 24, 1973..	174.40	July 25.....	174.75
Aug. 9.....	174.22	Mar. 22.....	174.60	Aug. 15.....	174.80
Sept. 6.....	174.11	Apr. 18.....	174.37	Sept. 23.....	174.62
Oct. 10.....	174.18	May 24.....	174.50		
Nov. 1.....	174.25	June 25.....	174.24		

131-093-21AAA3 (northwest well) MP is top of 1¼-inch plastic pipe 2.9 feet above lsd.

July 13, 1972..	71.68	Feb. 24, 1973..	71.69	July 25.....	71.57
Aug. 9.....	71.92	Mar. 22.....	71.55	Aug. 15.....	71.40
Sept. 6.....	71.37	Apr. 18.....	71.17	Sept. 23.....	71.17
Oct. 10.....	71.57	May 24.....	71.31		
Nov. 1.....	71.93	June 25.....	71.21		

131-094-20CBC2 MP is top of 2-inch steel pipe 3.4 feet above lsd.

Sept. 11, 1971..	85.62	June 13.....	85.19	Mar. 22.....	85.70
Dec. 16.....	85.37	July 13.....	85.97	May 24.....	85.30
Jan. 12, 1972..	85.41	Aug. 9.....	85.42	June 25.....	85.18
Feb. 22.....	85.35	Sept. 6.....	85.35	July 25.....	85.45
Mar. 23.....	85.44	Oct. 10.....	85.31	Aug. 14.....	85.47
Apr. 17.....	85.38	Nov. 7.....	85.37	Sept. 23.....	85.29
May 15.....	85.10	Feb. 24, 1973..	85.50		

131-094-20CBC3 MP is top of 1¼-inch plastic pipe 1.9 feet above lsd.

Sept. 11, 1971..	62.08	June 13.....	63.77	Mar. 22.....	64.09
Dec. 16.....	64.19	July 13.....	63.90	May 24.....	64.04
Jan. 12, 1972..	65.84	Aug. 9.....	64.04	June 25.....	63.86
Feb. 22.....	63.93	Sept. 9.....	63.95	July 25.....	64.23
Mar. 23.....	64.01	Oct. 10.....	63.90	Aug. 14.....	64.30
Apr. 17.....	64.05	Nov. 7.....	63.99	Sept. 23.....	64.25
May 15.....	63.65	Feb. 24, 1973..	63.89		

Depth to water, in feet below or (+) above land surface

131-098-23DAD1 MP is top of 2-inch steel pipe 3.1 feet above lsd.

Date	Water level	Date	Water level	Date	Water level
July 26, 1972..	123.12	Feb. 24.....	122.25	July 24.....	122.85
Aug. 9.....	123.10	Mar. 22.....	122.60	Aug. 14.....	122.30
Sept. 6.....	123.17	Apr. 20.....	122.70	Sept. 23.....	122.86
Oct. 10.....	123.12	May 24.....	122.82		
Jan. 30, 1973..	122.87	June 25.....	123.1		

131-098-23DAD2 MP is top of 1¼-inch plastic pipe 2.2 feet above lsd.

July 26, 1972..	107.99	Nov. 8.....	107.78	May 23.....	107.45
Aug. 9.....	108.00	Jan. 30, 1973..	107.67	June 25.....	107.18
Sept. 6.....	107.98	Feb. 24.....	106.32	July 24.....	107.40
Oct. 10.....	107.90	Mar. 22.....	106.88	Aug. 14.....	107.44
Nov. 7.....	107.15	Apr. 20.....	107.30	Sept. 23.....	107.23

131-100-29BBB1 MP is top of 2-inch steel pipe 3.5 feet above lsd.

Aug. 10, 1972..	127.73	Feb. 25.....	127.52	July 24.....	127.57
Sept. 7.....	127.70	Mar. 23.....	127.61	Aug. 15.....	127.64
Oct. 10.....	127.60	Apr. 30.....	127.40	Sept. 22.....	127.50
Nov. 1.....	127.49	May 24.....	127.48		
Jan. 30, 1973..	127.41	June 22.....	127.33		

131-100-29BBB2 MP is top of 1¼-inch plastic pipe 3.2 feet above lsd.

Aug. 10, 1972..	18.01	Feb. 25.....	17.24	July 24.....	17.19
Sept. 7.....	17.50	Mar. 23.....	17.45	Aug. 15.....	17.27
Oct. 10.....	17.51	Apr. 30.....	17.04	Sept. 22.....	17.21
Nov. 1.....	17.45	May 24.....	17.06		
Jan. 30, 1973..	17.15	June 22.....	16.93		

131-102-07DDD1 (south well) MP is top of 2-inch steel pipe 3.2 feet above lsd.

Aug. 16, 1972..	200.95	Feb. 25.....	201.38	July 23.....	200.39
Sept. 7.....	201.05	Mar. 23.....	201.30	Aug. 13.....	200.35
Oct. 11.....	201.20	Apr. 30.....	201.32	Sept. 22.....	201.91
Nov. 1.....	201.31	May 25.....	201.40		
Jan. 30, 1973..	201.17	June 21.....	200.35		

131-102-07DDD3 (middle well) MP is top of 1¼-inch plastic pipe 1.9 feet above lsd.

Aug. 16, 1972..	4.50	Feb. 25.....	4.20	July 23.....	4.26
Sept. 7.....	4.62	Mar. 23.....	4.30	Aug. 13.....	4.45
Oct. 11.....	4.59	Apr. 30.....	4.08	Sept. 22.....	4.61
Nov. 1.....	4.44	May 25.....	4.23		
Jan. 30, 1973..	4.23	June 21.....	3.88		

Depth to water, in feet below or (+) above land surface

131-102-13CCC1 MP is top of 2-inch steel pipe 3.3 feet above lsd.

Date	Water level	Date	Water level	Date	Water level
Dec. 13, 1971..	77.54	July 13.....	76.70	Mar. 23.....	76.80
Jan. 11, 1972..	78.13	Aug. 10.....	77.29	Apr. 30.....	76.94
Feb. 22.....	77.38	Sept. 7.....	77.26	May 25.....	77.02
Mar. 16.....	77.27	Oct. 11.....	76.77	June 22.....	76.70
Apr. 17.....	75.35	Nov. 8.....	77.19	July 24.....	77.13
May 17.....	77.09	Jan. 31, 1973..	76.55	Aug. 13.....	77.27
June 23.....	76.87	Feb. 25.....	76.75	Sept. 22.....	76.97

131-102-13CCC2 MP is top of 1¼-inch plastic pipe 1.9 feet above lsd.

Dec. 13, 1971..	53.34	July 13.....	52.61	Mar. 23.....	52.80
Jan. 11, 1972..	52.62	Aug. 10.....	52.90	Apr. 30.....	52.50
Feb. 22.....	53.15	Sept. 7.....	52.91	May 25.....	52.45
Mar. 16.....	52.95	Oct. 11.....	52.92	June 22.....	52.36
Apr. 17.....	53.12	Nov. 8.....	52.79	July 24.....	52.38
May 16.....	52.85	Jan. 31, 1973..	52.98	Aug. 13.....	52.10
June 23.....	52.78	Feb. 25.....	52.85	Sept. 22.....	52.66

131-105-23CDD MP is top of 2-inch steel pipe 3.6 feet above lsd.

Aug. 16, 1972..	165.50	Feb. 25.....	165.05	July 23.....	165.27
Sept. 7.....	165.51	Mar. 26.....	165.10	Aug. 15.....	165.36
Oct. 11.....	165.61	Apr. 30.....	165.01	Sept. 22.....	165.20
Nov. 1.....	165.33	May 25.....	164.90		
Jan. 30, 1973..	165.51	June 21.....	166.93		

132-096-22ABC1 MP is top of 2-inch steel pipe 3.1 feet above lsd.

July 26, 1972..	52.23	Feb. 24, 1973..	52.21	July 24.....	50.94
Aug. 9.....	51.95	Mar. 22.....	52.28	Aug. 15.....	50.97
Sept. 6.....	51.90	Apr. 20.....	50.89	Sept. 23.....	50.81
Oct. 10.....	51.75	May 24.....	51.02		
Nov. 7.....	51.65	June 25.....	50.77		

132-096-22ABC2 MP is top of 1¼-inch plastic pipe 2.7 feet above lsd.

July 26, 1972..	18.58	Feb. 24, 1973..	18.52	July 24.....	18.51
Aug. 9.....	18.65	Mar. 22.....	18.42	Aug. 15.....	18.62
Sept. 6.....	18.64	Apr. 20.....	18.30	Sept. 23.....	18.60
Oct. 10.....	18.60	May 24.....	18.49		
Nov. 7.....	18.53	June 25.....	18.36		

Depth to water, in feet below or (+) above land surface

132-097-07CAB2 MP is top of 2-inch steel pipe 3.6 feet above lsd.

Date	Water level	Date	Water level	Date	Water level
Aug. 11, 1971..	87.23	July 14.....	86.84	Apr. 20.....	85.70
Dec. 14.....	87.25	Aug. 9.....	85.99	May 24.....	86.80
Jan. 12, 1972..	86.64	Sept. 6.....	86.90	June 25.....	86.68
Feb. 22.....	86.87	Oct. 10.....	86.23	July 24.....	86.18
Mar. 17.....	86.99	Nov. 8.....	86.52	Aug. 14.....	87.03
Apr. 17.....	86.95	Jan. 30, 1973..	86.61	Sept. 23.....	86.89
May 16.....	86.70	Feb. 24.....	86.59		
June 15.....	86.85	Mar. 22.....	86.80		

132-097-07CAB3 MP is top of 1½-inch plastic pipe 1.9 feet above lsd.

Aug. 11, 1971..	15.83	July 14.....	15.50	Apr. 20.....	15.20
Dec. 14.....	15.74	Aug. 9.....	15.55	May 23.....	15.33
Jan. 12, 1972..	15.82	Sept. 6.....	15.57	June 25.....	15.11
Feb. 22.....	15.88	Oct. 10.....	15.55	July 24.....	15.54
Mar. 17.....	15.55	Nov. 8.....	15.48	Aug. 14.....	15.44
Apr. 17.....	15.65	Jan. 30, 1973..	15.49	Sept. 23.....	15.56
May 16.....	15.31	Feb. 24.....	15.31		
June 15.....	15.42	Mar. 22.....	15.42		

132-097-07CAB4 (westernmost well) MP is top of 2-inch steel pipe 3.2 feet above lsd.

July 14, 1972..	7.30	Jan. 30, 1973..	7.16	June 25.....	7.14
Aug. 9.....	7.40	Feb. 24.....	7.27	July 24.....	7.35
Sept. 6.....	7.34	Mar. 22.....	7.35	Aug. 14.....	7.44
Oct. 10.....	7.37	Apr. 20.....	7.10	Sept. 23.....	7.34
Nov. 8.....	7.32	May 24.....	7.32		

132-099-32DDC1 MP is top of 2-inch steel pipe 3.2 feet above lsd.

Dec. 13, 1971..	245.47	July 13.....	244.94	Mar. 26.....	244.90
Jan. 11, 1972..	242.71	Aug. 10.....	244.50	May 24.....	245.05
Feb. 22.....	245.18	Sept. 7.....	245.10	June 22.....	244.89
Mar. 17.....	245.02	Oct. 11.....	245.17	July 24.....	245.17
Apr. 17.....	246.07	Nov. 8.....	245.25	Aug. 15.....	245.16
May 16.....	244.80	Jan. 30, 1973..	244.86	Sept. 23.....	245.13
June 18.....	244.82	Feb. 24.....	244.95		

132-099-32DDC2 MP is top of 1½-inch plastic pipe 4.1 feet above lsd.

Dec. 13, 1971..	72.71	July 13.....	71.99	Mar. 26.....	71.50
Jan. 11, 1972..	70.62	Aug. 10.....	71.90	May 24.....	71.55
Feb. 22.....	72.18	Sept. 7.....	72.21	June 22.....	71.70
Mar. 17.....	72.25	Oct. 11.....	72.54	July 24.....	71.60
Apr. 17.....	72.35	Nov. 8.....	71.85	Aug. 15.....	71.50
May 16.....	72.15	Jan. 30, 1973..	71.29	Sept. 23.....	71.25
June 18.....	72.06	Feb. 24.....	71.89		

Depth to water, in feet below or (+) above land surface

132-101-10DDD MP is top of 2-inch steel pipe 3.6 feet above lsd.

Date	Water level	Date	Water level	Date	Water level
Aug. 10, 1972..	73.50	Feb. 24.....	71.85	July 23.....	72.40
Sept. 7.....	70.60	Mar. 22.....	71.50	Aug. 15.....	72.53
Oct. 11.....	70.04	Apr. 30.....	70.00	Sept. 22.....	72.61
Nov. 8.....	67.05	May 24.....	72.43		
Jan. 30, 1973..	72.50	June 22.....	72.22		

132-101-12CCC MP is top of 2-inch steel pipe 2.9 feet above lsd.

Dec. 13, 1971..	52.95	July 7.....	51.07	Mar. 22.....	52.20
Jan. 11, 1972..	50.94	Aug. 10.....	51.10	Apr. 30.....	50.10
Feb. 22.....	51.17	Sept. 7.....	51.21	May 24.....	50.98
Mar. 16.....	51.12	Oct. 11.....	51.28	June 22.....	50.85
Apr. 17.....	51.15	Nov. 8.....	51.05	July 23.....	50.69
May 16.....	50.85	Jan. 30, 1973..	52.05	Aug. 15.....	51.11
June 18.....	50.92	Feb. 24.....	51.95	Sept. 22.....	51.21

132-102-24BBB1 (middle well) MP is top of 2-inch steel pipe 3.7 feet above lsd.

Aug. 10, 1972..	197.95	Feb. 25, 1973..	197.95	July 23.....	196.90
Aug. 16.....	199.07	Mar. 23.....	196.50	Aug. 13.....	196.9
Sept. 7.....	198.70	Apr. 30.....	196.70	Sept. 22.....	198.67
Oct. 11.....	198.72	May 25.....	198.64		
Nov. 8.....	198.74	June 21.....	197.88		

132-102-24BBB2 (south well) MP is top of 2-inch steel pipe 3.5 feet above lsd.

Aug. 10, 1972..	195.50	Feb. 25, 1973..	194.55	July 23.....	194.86
Aug. 16.....	194.42	Mar. 23.....	194.60	Aug. 13.....	195.09
Sept. 7.....	195.40	Apr. 30.....	195.10	Sept. 22.....	195.26
Oct. 11.....	194.85	May 25.....	195.20		
Nov. 8.....	194.90	June 21.....	194.80		

132-102-24BBB3 (north well) MP is top of 1½-inch plastic pipe 1.9 feet above lsd.

Aug. 10, 1972..	79.50	Feb. 25, 1973..	79.95	June 21.....	80.70
Sept. 7.....	79.74	Mar. 23.....	80.30	July 23.....	80.64
Oct. 11.....	78.72	Apr. 30.....	80.32	Aug. 12.....	80.61
Nov. 8.....	80.16	May 25.....	80.60	Sept. 22.....	80.89

132-105-16BDB MP is top of 2-inch steel pipe 3.4 feet above lsd.

Sept. 8, 1971..	271.51	June 23.....	271.20	Feb. 25.....	270.15
Dec. 16.....	271.14	July 8.....	271.22	Mar. 23.....	270.97
Jan. 11, 1972..	271.73	Aug. 10.....	271.30	May 25.....	270.95
Feb. 22.....	271.12	Sept. 7.....	271.31	June 21.....	270.97
Mar. 16.....	271.36	Oct. 11.....	270.68	July 24.....	271.13
Apr. 18.....	271.60	Nov. 8.....	270.97	Aug. 15.....	271.13
May 16.....	271.10	Jan. 30, 1973..	270.78	Sept. 22.....	270.92

TABLE 3.--Logs of wells and test holes

EXPLANATION


Sand and gravel


Claystone


Sandstone


Shale


Silty clayey sandstone


Lignite


Sandy clayey siltstone

Unconformity

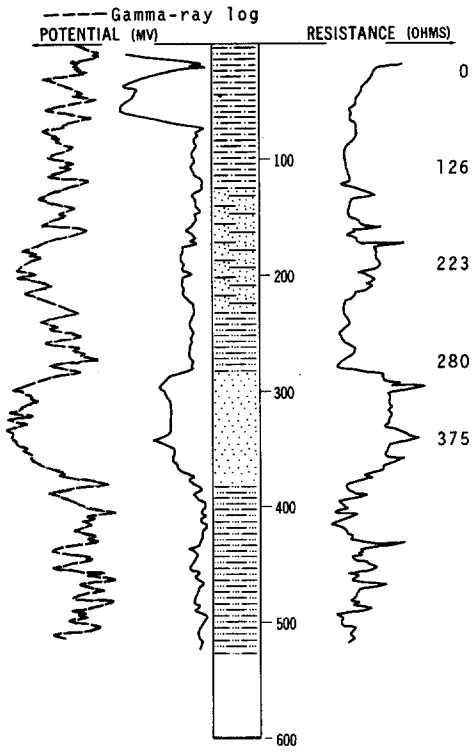
NDSWC 4383 and 4383A

LOCATION: 129-091-07AAA1, 2

DATE DRILLED: September 1971

ALTITUDE: 2422
(FT, MSL)

DEPTH: 520
(FT)



DESCRIPTION OF DEPOSITS

0-126	Cannonball Formation Claystone and siltstone, sandy, carbonaceous, light-olive-gray.
126-223	Ludlow Formation Sandstone and siltstone, clayey, fine-grained, carbonaceous.
223-280	Cannonball Formation Siltstone and claystone, carbonaceous, variegated gray, green, and brown.
280-375	Ludlow Formation Sandstone, silty, fine-grained, light-olive-gray.
375-520	Siltstone and claystone, lignitic, fossiliferous.

129-091-08CCC
(Log from Knutson Drilling Co.)

Altitude: 2450 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Quicksand	25	25
	Shale	15	40
	Clay	30	70
	Rock	1	71
	Clay	55	126
	Clay, sandy	12	138
	Hard rock	1	139
	Clay	6	145
	Clay, dark	25	170
	Rock	1	171
	Clay	14	185
	Clay, sandy	3	188
	Rock	1	189
	Clay	20	209
	Clay, sandy	4	213
	Rock	1	214
	Clay	12	226
	Clay, sandy	9	235
	Sandy	28	263

129-091-19BAA
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sandy	20	20
	Hard rock	3	23
	Sand	52	75
	Shale	5	80

129-091-23BBD2
(Log from Main and Ellison Drilling Co.)

Altitude:

	Sand, brown	30	30
	Rock	2	32
	Shale, gray	30	62
	Sand	4	66
	Shale, gray	80	146
	Rock	2	148
	Shale, gray	80	228
	Sand	14	242

129-091-29BBB
(Log from Knutson Drilling Co.)

Altitude:

	Sandy	7	7
	Shale	41	48
	Clay, sandy, coarse	22	70
	Hard rock	1	71
	Clay	15	86
	Hard rock	2	88
	Clay, hard	7	95
	Clay, sandy	19	114
	Clay, dark	6	120
	Clay	30	150
	Clay, sandy	17	167
	Sandy	13	180
	Rock	2	182
	Sandy	8	190
	Clay	10	200

129-092-10BCB
(Log from Knutson Drilling Co.)

Altitude:

	Silt	15	15
	Rock	2	17
	Clay, sandy	63	80
	Sand	20	100
	Clay	2	102

129-092-22ADD
(Log from Knutson Drilling Co.)

Altitude: 2573 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Rocky	2	2
	Shale	18	20
	Sandy	10	30
	Clay	22	52
	Hard rock	2	54
	Clay	64	118
	Rock	1	119
	Clay, sandy	2	121
	Rock	1	122
	Clay, sandy	18	140
	Sandy	20	160
	Clay, sandy	10	170

129-092-26CCB
(Log from Knutson Drilling Co.)

Altitude: 2642 ft

	Clay	25	25
	Sand	5	30
	Soft rock	1	31
	Clay	29	60
	Thin rock	1	61
	Sand	2	63
	Rock	1	64
	Sand	6	70
	Clay, sandy	14	84
	Rock	1	85
	Sand	5	90
	Rock	1	91
	Clay, sandy, dark	10	101
	Hard rock	1	102
	Clay, sandy, dark	8	110
	Clay, dark	20	130
	Hard rock	1	131
	Clay, dark	11	142
	Thin rock	1	143
	Clay, dark	2	145
	Clay, sandy, green	3	148
	Clay, sandy, fine, dark	12	160
	Thin rock	1	161
	Clay, sandy, fine, dark	26	187
	Hard rock	1	188
	Sand	.5	188.5
	Hard rock	.5	189
	Sand	11	200
	Hard rock	1	201
	Sand, coarse	19	220
	Clay, sandy	2	222

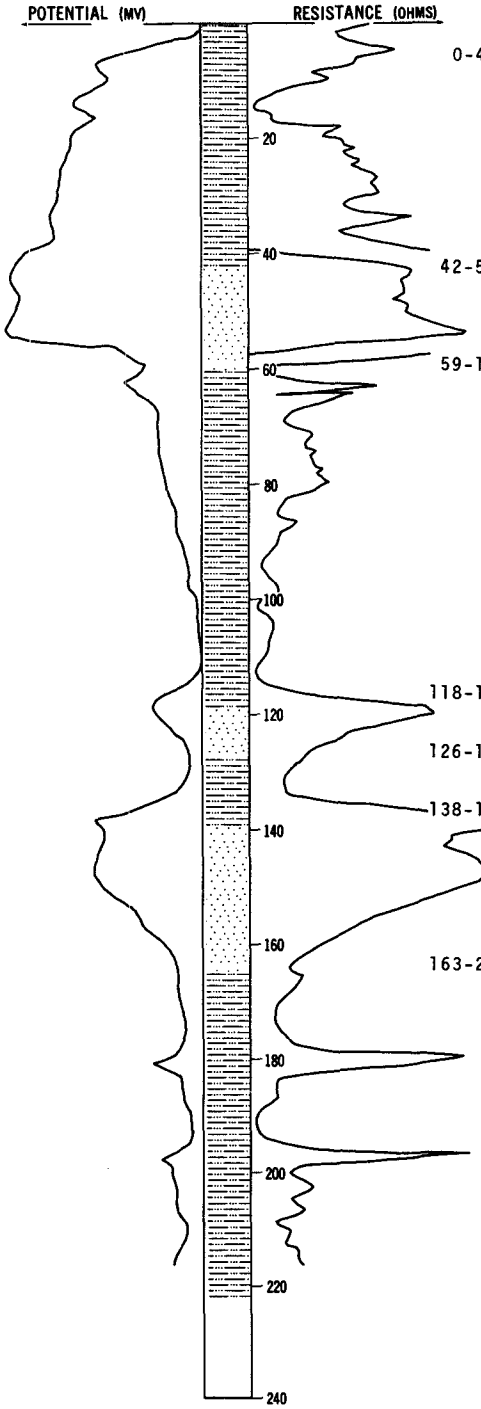
NDSWC 4382

LOCATION: 129-092-27BBB

DATE DRILLED: September 1971

ALTITUDE: 2797
(FT, MSL)

DEPTH: 220
(FT)



DESCRIPTION OF DEPOSITS

	Ludlow Formation
0-42	Siltstone and claystone, sandy, brown, carbonaceous; light colored in the lower part.
42-59	Sandstone, very fine to fine-grained, light-olive-gray.
	Cannonball Formation
59-118	Siltstone and claystone, sandy, bentonitic, light-olive-gray.
	Ludlow Formation
118-126	Sandstone, fine, friable, dark-greenish-gray.
126-138	Siltstone, clayey, sandy, carbonaceous.
138-163	Sandstone, very fine to fine-grained, loose.
163-220	Siltstone and claystone, carbonaceous, dark-brown to gray; a few thin beds of sandstone.

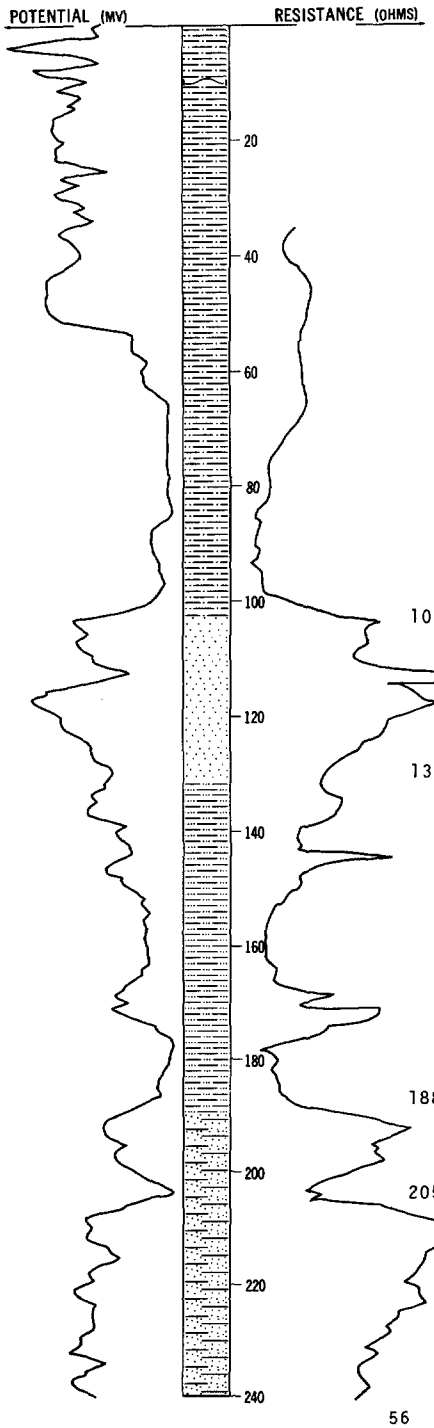
NDSWC 8347 and 8347A

LOCATION: 129-093-08CBB1, 2

DATE DRILLED: June 1972

ALTITUDE: 2460
(FT, MSL)

DEPTH: 420
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-9 Clay, silty, sandy, gravelly, yellowish-brown.

Cannonball Formation

9-102 Claystone, silty, calcareous, olive-gray.

Ludlow Formation

102-130 Sandstone, silty, lignitic, fine- to medium-grained, carbonaceous.

130-188 Siltstone and claystone, sandy, olive-gray, carbonaceous.

188-205 Sandstone and siltstone, clayey, carbonaceous.

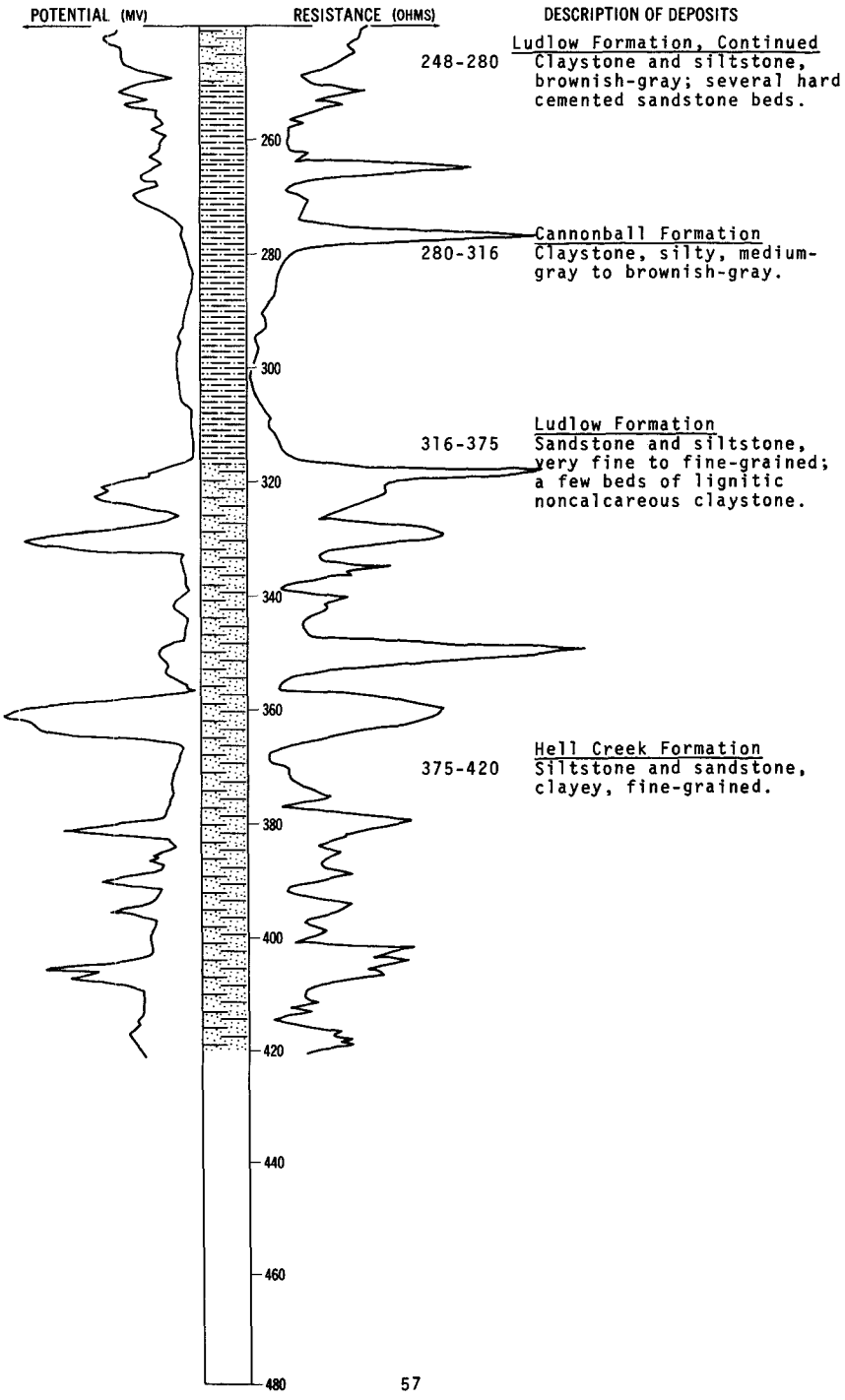
205-248 Sandstone, silty, fine-grained; a few carbonaceous beds.

LOCATION: 129-093-8CBB1, 2

DATE DRILLED: June 1972

ALTITUDE: 2460
(FT, MSL)

DEPTH: 420
(FT)



DESCRIPTION OF DEPOSITS

248-280 Ludlow Formation, Continued
Claystone and siltstone, brownish-gray; several hard cemented sandstone beds.

Cannonball Formation
280-316 Claystone, silty, medium-gray to brownish-gray.

Ludlow Formation
316-375 Sandstone and siltstone, very fine to fine-grained; a few beds of lignitic noncalcareous claystone.

Hell Creek Formation
375-420 Siltstone and sandstone, clayey, fine-grained.

129-093-11DCB
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Gravel	6	6
	Rock	1	7
	Clay	23	30
	Clay, sandy, rock at bottom	2	32
	Clay, sandy	8	40
	Rock, hard	2	42
	Sand	22	64

129-093-12CCC
(Log from Knutson Drilling Co.)

Altitude:

	No record	58	58
	Clay, sandy	5	63
	Clay, sandy, coarse	7	70
	Sand, coarse	15	85
	Sand, medium	15	100
	Clay, dark	11	111
	Hard rock	2	113
	Clay	3	116
	Thin rock	1	117
	Clay	17	134
	Sand, coarse	3	137
	Clay, dark, soft	12	149
	Coal, hard	1	150
	Clay, dark, hard	6	156
	Sand, medium	14	170
	Sand, fine	15	185
	Clay	7	192

129-093-17BAA
(Log from Knutson Drilling Co.)

Altitude:

	Sand	10	10
	Rock	1	11
	Sandy	19	30
	Rock	1	31
	Clay	79	110
	Hard rock	3	113
	Clay	42	155
	Sandy	10	165
	Hard rock	3	168
	Sand	12	180
	Clay, sandy	9	189

129-093-18ADA
(Log from Knutson Drilling Co.)

Altitude:

	Shale	75	75
	Clay, sand	1	76
	Thin rock	1	77
	Clay, sandy	20	97
	Clay	38	135
	Clay, sandy	6	141
	Hard rock	2	143
	Sand, coarse	25	168

129-093-20DAD
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Silt	8	8
	Shale	7	15
	Sandy	4	19
	Coal	1	20
	Clay	34	54
	Rock	1	55
	Clay	7	62
	Clay	11	73
	Rock	1	74
	Sand, coarse	3	77
	Hard rock	3.5	80.5
	Clay, sandy	22.5	103
	Thin rock	1	104
	Clay	9	113
	Sand	12	125

129-093-21ADD
(Log from Knutson Drilling Co.)

Altitude:

	Clay	12	12
	Rock	.5	12.5
	Sand and rocks, yellow	9.5	22
	Rock	1	23
	Sand, blue	9	32
	Hard rock	2	34
	Sand	6	40
	Clay	9	49
	Hard rock	1	50
	Clay	1	51
	Soft rock	2	53
	Sand, coarse	27	80
	Clay	4	84

129-093-27BBA
(Log from Knutson Drilling Co.)

Altitude:

	Sandy	20	20
	Clay	10	30
	Sand	3	33
	Clay	18	51
	Rock	1	52
	Clay	4	56
	Hard rock	1	57
	Sand	8	65
	Clay	19	84
	Clay	8	92
	Sandy	4	96
	Rock	1	97
	Sandy	1	98
	Rock	1	99
	Sandy	6	105
	Clay	23	128
	Clay, sandy	17	145
	Sand	20	165
	Clay	3	168

129-093-27BDD
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand	20	20
	Soft rock	1	21
	Sandy	24	45
	Coal	1	46
	Sand, blue	9	55
	Clay	21	76
	Sand, coarse	1	77
	Rock	1	78
	Clay, sandy	17	95

129-093-28ABB3
(Log from Knutson Drilling Co.)

Altitude:

	Shale	12	12
	Clay, sandy, yellow	9	21
	Clay	24	45
	Sand, coarse	9	54
	Hard rock	1	55
	Sandy	15	70
	Hard rock	2	72
	Clay	14	86
	Clay, sandy	14	100
	Hard rock	1	101
	Clay	11	112
	Clay, sandy	5	117
	Sand	14	131
	Hard rock	2	133
	Clay, sandy	15	148
	Sand	24	172
	Clay, dark	4	176
	Rock	1	177
	Clay	8	185
	Rock	1	186
	Clay	19	205
	Sandy	37	242

129-093-32BDC
(Log from Knutson Drilling Co.)

Altitude:

	Sandy	20	20
	Clay	33	53
	Hard rock	2	55
	Clay	5	60
	Sand	25	85
	Clay, sandy	6	91

129-093-35ADD
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sandy	16	16
	Rock	3	19
	Sandy	11	30
	Hard rock	1	31
	Shale	19	50
	Clay, sandy	63	113
	Clay, dark	3	116
	Clay	1	117
	Hard rock	1.5	118.5
	Clay	1.5	120
	Rock	4	124
	Clay, tan	11	135
	Sandy	46	181

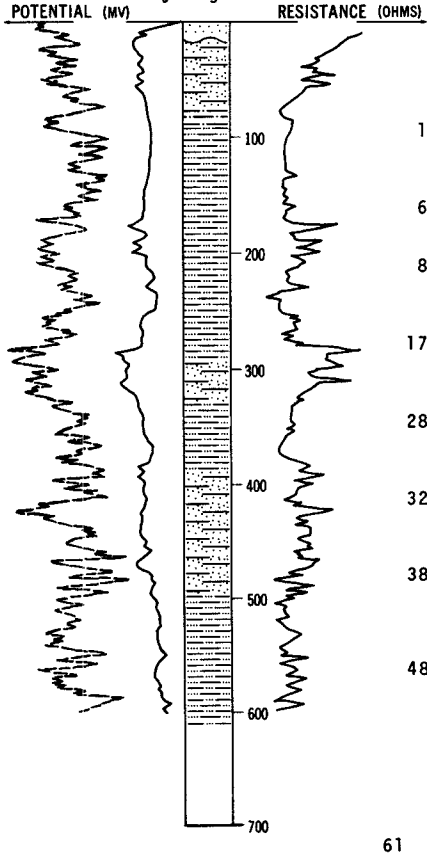
NDSWC 4385 and 4385A

LOCATION: 129-094-17BBC1, 2

DATE DRILLED: September 1971

ALTITUDE: 2583 (FT, MSL)

DEPTH: 600 (FT)



	DESCRIPTION OF DEPOSITS
	Alluvium
0-12	Sand, fine- to medium-grained, yellowish-brown.
	Ludlow Formation
12-69	Sandstone and siltstone, clayey, friable.
	Cannonball Formation
69-84	Claystone, silty, hard, dark.
84-170	Siltstone, sandy, very fine grained.
	Ludlow Formation
170-283	Siltstone and sandstone, clayey, very fine grained, carbonaceous, fossiliferous.
283-320	Sandstone, silty, very fine grained, greenish-gray.
	Cannonball Formation
320-380	Siltstone, clayey, light-olive-gray.
	Ludlow Formation
380-485	Sandstone, silty, fine-grained, carbonaceous, light-olive-gray.
	Hell Creek Formation
485-600	Siltstone, shaly, sandy, lignitic, light-olive-gray.

129-094-17CBB
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay	24	24
	Rock	1	25
	Clay, blue	4	29
	Clay, rock at bottom	5	34
	Hard rock	1	35
	Clay	118	153
	Hard rock	2	155
	Clay	5	160
	Sand, coarse	8	168
	Clay	17	185
	Sand	15	200

129-094-22CAA
(Log from Knutson Drilling Co.)

Altitude:

	Clay	15	15
	Rock	1	16
	Sand	14	30
	Rock	1	31
	Clay	128	159
	Hard rock	1	160
	Clay	25	185
	Clay, sandy	12	197
	Hard rock	2	199
	Clay	3	202
	Hard rock	2	204
	Sand	17	221

129-094-24ABD
(Log from Knutson Drilling Co.)

Altitude:

	Sand	48	48
	Shale	3	51
	Sand	8	59
	Coal	1	60
	Clay	9	69
	Rock	1	70
	Sand	5	75
	Clay	5	80

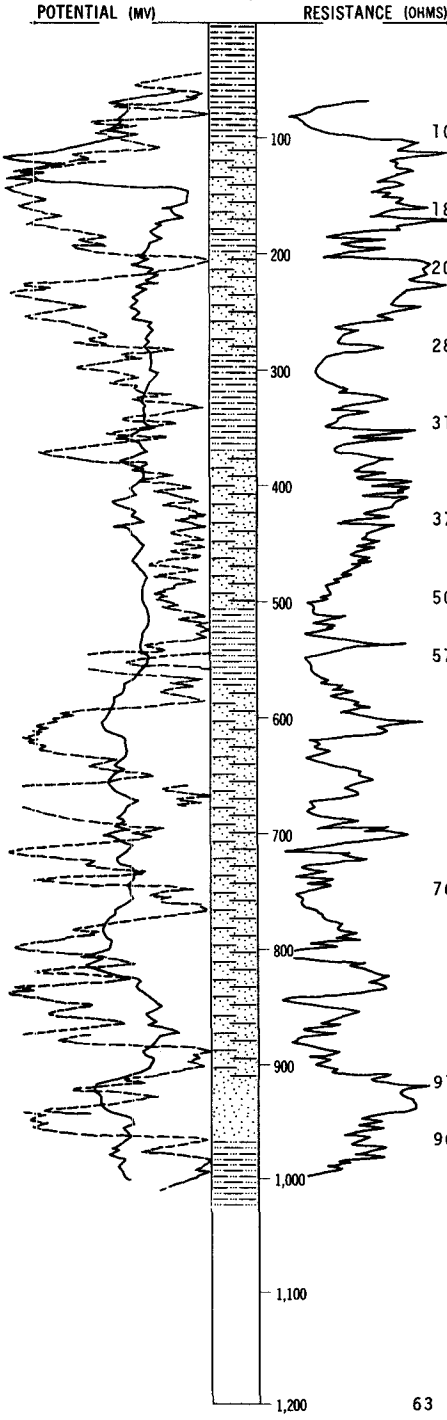
NDSWC 4451

LOCATION: 129-094-26DDD

DATE DRILLED: June 1972

ALTITUDE: 2495
(FT, MSL)

DEPTH: 1020
(FT)



DESCRIPTION OF DEPOSITS

0-100	Cannonball Formation Claystone and siltstone, sandy, olive-gray.
100-180	Ludlow Formation Sandstone, silty, clayey, carbonaceous, olive-gray.
180-200	Siltstone and claystone, carbonaceous.
200-285	Sandstone and siltstone, carbonaceous, olive-gray.
285-315	Cannonball Formation Claystone, silty, sandy, olive-gray.
315-370	Ludlow Formation Siltstone and claystone, sandy, lignitic, olive-gray.
370-500	Hell Creek Formation Siltstone and sandstone, clayey, fine-grained, carbonaceous, olive-gray.
500-570	Siltstone and claystone, sandy, olive-gray.
570-760	Sandstone and siltstone, clayey, carbonaceous, olive-gray.
760-910	Fox Hills Formation Sandstone and siltstone, clayey, fine- to medium-grained, olive-gray.
910-960	Sandstone, fine- to medium-grained.
960-1020	Siltstone and claystone, sandy, tight, dark-green.

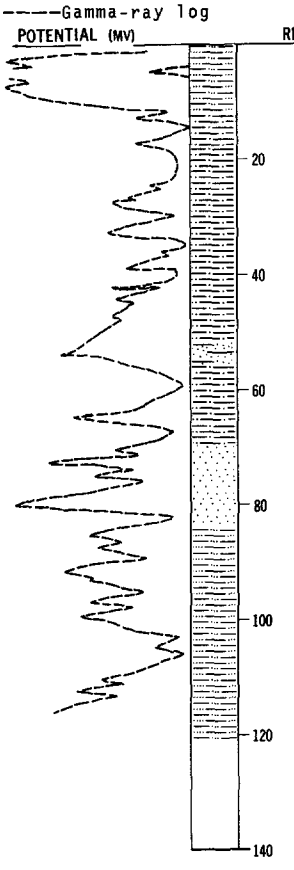
NDSWC 4384

LOCATION: 129-094-28DA

DATE DRILLED: September 1971

ALTITUDE: 2530
(FT, MSL)

DEPTH: 120
(FT)



	DESCRIPTION OF DEPOSITS
	Cannonball Formation
0-11	Siltstone, sandy, clayey, yellow.
11-42	Claystone, silty, yellowish-gray.
42-51	Claystone, sandy, silty, carbonaceous, gray.
	Ludlow Formation
51-55	Sandstone, silty, dark-brown.
55-69	Claystone, silty, carbonaceous, dark-brown.
69-83	Sandstone, very fine grained, carbonaceous.
83-120	Siltstone and claystone, light-olive-gray; lost circulation.

129-094-29BBA
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sandy	8	8
	Gravel	14	22
	Clay	28	50
	Clay, sandy	4	54
	Clay, hard	24	78
	Clay, sandy	6	84
	Hard rock	1	85
	Sandy	7	92
	Coal	.5	92.5
	Sand	.5	93
	Clay, sandy	2	95
	Clay, dark	8	103
	Clay, dark	2	105
	Sand, clayey	3	108
	Clay, soft	7	115
	Clay, sandy	7	122
	Sandy	14	136

129-094-29BBB
(Log from Alfred Jacobson)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Gumbo	5	5
	Rock and gravel	7	12
	Clay	13	25
	Gumbo	23	48
	Stone	4	52
	Gumbo	56	108
	Sand	7	115
	Stone	2	117
	Water sand and clay	18	135

129-094-31AAB
(Log from Knutson Drilling Co.)

Altitude:

	Pit	6	6
	Sandy	3	9
	Rocky	1	10
	Clay	17	27
	Rock	1	28
	Clay	7	35
	Rock	1	36
	Sandy	4	40
	Clay	17	57
	Rock	1	58
	Clay	4	62
	Rock	1	63
	Clay	5	68
	Rock	1	69
	Clay	83	152
	Hard rock	1	153

129-094-32CCB
(Log from Knutson Drilling Co.)

Altitude:

	Sand	20	20
	Clay	10	30
	Rock	1	31
	Clay	53	84
	Thin rock	1	85
	Clay, sandy	10	95
	Clay	10	105
	Sandy	10	115
	Rock	1	116
	Clay	2	118
	Sandy	22	140
	Clay	7	147

129-094-33DCC
(Log from Knutson Drilling Co.)

Altitude:

	Silt	15	15
	Clay	23	38
	Rock	1	39
	Clay	21	60
	Rock	3	63
	Clay	10	73

129-095-02DAD
(Log from Knutson Drilling Co.)

Altitude: 2707 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sandy	6	6
	Clay	19	25
	Coal and sand	3	28
	Clay	8	36
	Coal	2	38
	Clay, dark	1	39
	Coal	1	40
	Clay, dark	1	41
	Rock, soft	2	43
	Clay, dark	7	50
	Sand	10	60
	Clay	10	70
	Rock	1	71
	Clay	9	80
	Sand, fine	17	97
	Rock	1	98
	Sand	7	105
	Clay and sand, fine	21	126
	Clay, hard	3	129
	Sand, fine	12	141
	Clay	1	142
	Sand, fine	2	144
	Clay	1	145
	Sand	3	148
	Thin rock	5	153
	Clay	3	156
	Sand, fine	6	162
	Clay	8	170
	Clay, sandy, green	22	192
	Clay, dark	28	220
	Rock	1	221
	Clay, dark	39	260
	Sand, coarse	6	266
	Clay	10	276
	Rock	2	278
	Clay	4	282
	Rock	1	283
	Clay	7	290
	Sand, fine	16	306

129-095-06ABB
(Log from Dependable Drilling Co.)

Altitude:

	Surface sand	2	2
	Sand	24	26
	Clay, buff	18	44
	Sand, fine, blue	4	48
	Clay, gray	7	55
	Rock	1	56
	Clay, sandy, blue	41	97
	Clay, gray; rock ledge at bottom	47	144
	Clay, gray; rock ledge at bottom	10	154
	Clay, sandy, gray	43	197
	Rock	4	201
	Clay, gray	56	257
	Sand, black and white	5	262
	Rock ledge	1	263
	Clay, sandy, gray	21	284
	Rock	1	285
	Clay, sandy, gray	24	309

129-095-06BBB
NDSWC 996
(Log from Robinove, 1956)

Altitude: 2758 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay, light-gray	8	8
	Clay, gray	10	18
	Clay, dark-gray	6	24
	Lignite	3	27
	Clay, gray; some lignite	5	32
	Lignite	2	34
	Clay, gray	9	43
	Lignite	2	45
	Sand, fine; gray clay; more clay in lower part	76	121
	Clay, sandy, gray	42	163
	Clay, gray	37	200

129-095-06BCC
(Log from Knutson Drilling Co.)

Altitude: 2700 ft

	Clay	6	6
	Sand	11	17
	Rock	1	18
	Sand	12	30
	Clay, blue	4	34
	Clay, sandy	26	60
	Clay	2	62
	Sand	2	64
	Rock	5	69
	Clay, sandy	9	78
	Rock	1	79
	Clay, sandy	14	93
	Rock	3	96
	Clay, sandy	12	108
	Clay	26	134
	Rock	1	135
	Clay	30	165
	Clay, sandy, coarse	5	170
	Clay	13	183
	Rock	1	184
	Clay	6	190
	Clay, soft	17	207
	Rock	1	208
	Clay	12	220
	Hard rock	2	222
	Clay	8	230
	Clay, sandy, fine	10	240
	Clay, dark	21	261
	Rock, thin	1	262
	Clay	17	279
	Sand	11	290
	Sand, fine	16	306

129-095-07BBB
NDSWC 995
(Log from Robinove, 1956)

Altitude: 2703 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay, sandy, brown----------	3	3
	Sand, fine, silty, gravelly----------	5	8
	Clay, sandy, yellow----------	17	25
	Clay, sandy, partly calcareous, light-gray. Hard rock at 51, 73, 124, 170, 191-196 ft; lost circulation of drilling mud between 110 and 120 feet----------	175	200

129-095-07CCC
(Log from Knutson Drilling Co.)

Altitude:

	Sand----------	25	25
	Sandrock----------	2	27
	Shale----------	36	63
	Clay, sandy----------	17	80
	Rock----------	2	82
	Clay, sandy----------	23	105

129-095-08BCC
(Log from Jacobson Drilling Co.)

Altitude:

	Clay and sand----------	15	15
	Sand, white----------	20	35
	Sand, brown----------	35	70
	Sandstone----------	2	72
	Sand, gray----------	18	90
	Sand----------	25	115
	Clay, blue----------	11	126

129-095-10DCA
(Log from Knutson Drilling Co.)

Altitude: 2634 ft

	Sand----------	30	30
	Clay----------	27	57
	Hard rock----------	2	59
	Clay, sandy, fine----------	16	75
	Clay----------	30	105
	Rock----------	.5	105.5
	Clay----------	31.5	137
	Rock----------	1	138
	Sand----------	1	139
	Rock----------	1	140
	Sand, coarse----------	10	150
	Hard rock----------	3	153
	Clay, sandy, coarse----------	20	173
	Hard rock----------	1	174
	Clay----------	2	176
	Sand----------	2	178
	Thin rock----------	1	179
	Clay----------	6	185

129-095-11CCC1
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Silt	10	10
	Clay	30	40
	Sand	15	55
	Clay	43	98
	Rock	1	99
	Sand, coarse	3	102
	Clay, coarse, sandy	2	104
	Hard rock	3	107
	Clay, sandy	14	121
	Rock	1	122
	Clay	12	134
	Rock	1	135
	Clay	23	158
	Clay, sandy	5	163
	Clay, dark	4	167
	Thin rock	1	168
	Clay, dark	10	178
	Clay	12	190
	Clay, sandy	5	195
	Clay	17	212
	Rock	1	213
	Clay, sandy, fine	6	219
	Rock	1	220
	Clay, dark	27	247
	Coal	2	249
	Sand, fine	42	291
	Clay	4	295

129-095-11CCC2
(Log from Knutson Drilling Co.)

Altitude:

	Gravel and silt	5	5
	Sand	7	12
	Shale	18	30
	Clay, sandy	15	45
	Shale	63	108
	Sand, coarse, rock at bottom	3	111
	Sand, coarse; rock hard	2.5	113.5
	Sand, coarse	3.5	117
	Rock, hard	2	119
	Sand, coarse	7	126
	Clay, sandy	5	131
	Rock	1	132
	Clay, sandy	3	135
	Rock, hard	1	136
	Clay	5	141
	Clay, sandy, fine	4	145
	Clay	7	152
	Clay, sandy, fine	14	166
	Sand, gray	2	168
	Clay, sandy	2	170
	Clay	7	177
	Clay, sandy	5	182
	Clay	7	189

129-095-11CCC3
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand	8	8
	Clay	12	20
	Clay, blue	6	26
	Clay, sandy	12	38
	Clay	25	63
	Clay	41	104
	Rock	1	105
	Sand, coarse	6	111
	Rock, hard	2	113
	Clay, sandy	7	120
	Rock	1	121
	Clay, sandy	5	126
	Clay	24	150
	Rock, hard	2	152
	Clay, sandy	6	158

129-095-12DDD
NDSWC 1011
(Log from Robinove, 1956)

Altitude: 2756 ft

	Clay, sandy, dark-brown	4	4
	Lignite, brown	1	5
	Clay, sandy, light-brown	6	11
	Clay, sandy, very light brown	23	34
	Clay, sandy, light-green	27	61
	Clay, gray; some sand	139	200

129-095-13BCD
(Log from Knutson Drilling Co.)

Altitude: 2602 ft

	No record	150	150
	Clay	3	153
	Rock, hard	4	157
	Sand	3	160
	Clay	15	175
	Sand	2	177
	Clay	13	190
	Sand	5	195
	Clay	26	221

129-095-14BBB
NDSWC 1010
(Log from Robinove, 1956)

Altitude: 2728 ft

	Clay, sandy, brown	4	4
	Clay, sandy, yellow	5	9
	Clay, yellow	7	16
	Clay, brown	9	25
	Clay, sandy, light-gray	45	70
	Clay, gray, calcareous from 125 to 135 ft	51	121
	Clay, gray; some sand	79	200

129-095-15CCA
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand, rock at bottom----------	35	35
	Sand----------	5	40
	Clay----------	50	90
	Sand----------	3	93
	Rock, hard----------	2	95
	Sand, coarse----------	5	100
	Rock----------	1	101
	Sand----------	9	110
	Rock----------	1	111
	Sand, rock at bottom----------	9	120
	Clay, sandy, rock at bottom----------	5	125

129-095-16CBC
(Log from Knutson Drilling Co.)

Altitude:

	Sand----------	35	35
	Clay----------	13	48
	Rock----------	1	49
	Clay----------	41	90
	Sand----------	3	93
	Rock, hard----------	1	94
	Clay----------	11	105
	Clay, sandy----------	34	139
	Rock, hard----------	1	140
	Clay, sandy----------	10	150
	Clay----------	40	190
	Sand----------	3	193
	Rock, hard----------	1	194
	Sand----------	11	205
	Rock, hard----------	1	206

129-095-17AAA
NDSWC 1009
(Log from Robinove, 1956)

Altitude: 2746 ft

	Clay, sandy, yellow----------	6	6
	Clay, sandy, yellow; fine gravel----------	3	9
	Clay, sandy, yellow----------	7	16
	Clay, yellow----------	9	25
	Limestone, gray----------	2	27
	Clay, gray; some sand----------	133	160
	Limestone, gray----------	2	162
	Clay, gray; some sand----------	38	200

129-095-18AAA
NDSWC 1008
(Log from Robinove, 1956)

Altitude: 2783 ft

	Clay, sandy, brown----------	12	12
	Clay, sandy, yellow----------	8	20
	Clay, yellow----------	3	23
	Limestone, gray----------	2	25
	Clay, sandy, yellow----------	21	46
	Clay, light-gray; some sand----------	154	200

129-095-18AAB
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand	17	17
	Rock	1	18
	Clay	42	60
	Rock, hard	1	61
	Clay, sandy, blue	9	70
	Clay	12	82
	Rock, thin	1	83
	Sand	7	90
	Clay	50	140
	Rock, thin	2	142
	Clay, dark	11	153
	Rock, thin	1	154
	Clay	40	194
	Rock, hard	3	197
	Clay	11	208
	Sand, fine	7	215
	Clay, dark	9	224
	Rock	1	225
	Clay	20	245
	Clay, sandy	7	252
	Sandstone, brown	3	255
	Rock, hard	2	257
	Sand, fine	5	262
	Clay	22	284
	Sand	2	286
	Clay	10	296

129-095-18BAA
(Log from Knutson Drilling Co.)

Altitude:

	Sand	8	8
	Rocky	5	13
	Sand	13	26
	Rock, hard	1	27
	Sandy	6	33
	Rock	1	34
	Sand	9	43
	Rock	1	44
	Sand	6	50
	Clay, soft	34	84
	Rock, hard	1	85
	Sand	25	110
	Clay	6	116

129-095-18BBA1
(Log from Knutson Drilling Co.)

Altitude:

	Sand	35	35
	Rock, hard	1	36
	Sand	4	40
	Rock	1	41
	Sand	19	60
	Rock, hard	.5	60.5
	Sand	7.5	68
	Clay, rock at bottom	2	70

129-095-18BBB
NDSWC 994
(Log from Robinove, 1956)

Altitude: 2727 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay, gray; fine to medium gravel----------	11	11
	Sand, fine to coarse, very silty----------	7	18
	Sand, fine to coarse, yellowish-brown; fine gravel----------	12	30
	Clay, sandy, yellow; shale gravel----------	9	39
	Clay, sandy, gray----------	13	52
	Clay, sandy, gray, calcareous. Clay thickens drilling mud. Clay harder and drilling more difficult below 155 ft------	148	200

129-095-18BCC
(Log from Knutson Drilling Co.)

Altitude:

	Sand----------	40	40
	Rock----------	1	41
	Sand----------	19	60
	Clay, rock at 80 ft----------	50	110
	Sand, coarse----------	2	112
	Clay----------	28	140
	Sand----------	5	145
	Clay----------	5	150
	Rock----------	1	151
	Clay----------	14	165
	Rock, hard----------	3	168
	Clay----------	17	185
	Sand----------	5	190
	Clay, dark----------	5	195
	Sand----------	5	200
	Clay, dark----------	25	225
	Sand, fine, white----------	30	255
	Clay----------	15	270
	Coal----------	3	273
	Clay, dark----------	2	275

129-095-19BAA
(Log from Knutson Drilling Co.)

Altitude:

	Shale----------	24	24
	Rock, sandy----------	3	27
	Sand----------	43	70
	Clay----------	10	80

129-095-19DAC
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand	15	15
	Rock	2	17
	Sand	28	45
	Clay	50	95
	Sand, coarse	5	100
	Clay	10	110
	Sand	5	115
	Rock, hard	1	116
	Clay	34	150
	Rock, hard	6	156
	Clay, rock at bottom	29	185
	Clay	15	200
	Sand	20	220
	Clay	12	232

129-095-20BBB
(Log from Knutson Drilling Co.)

Altitude:

	No record	158	158
	Clay	17	175
	Sand	5	180
	Rock, hard	1	181
	Sand	2	183
	Rock, hard	1	184
	Sand, fine	6	190
	Clay	24	214
	Sand	6	220
	Clay, tan	2	222

129-095-26ADD
(Log from Knutson Drilling Co.)

Altitude:

	Sand	45	45
	Sand and clay, fine, blue	30	75
	Rock	1	76
	Clay, sandy, fine	9	85
	Clay	10	95
	Clay, sandy, fine	25	120
	Clay	45	165
	Clay, sandy, coarse	6	171
	Rock, hard	1	172
	Clay, sandy, coarse	4	176
	Rock, hard	.5	176.5
	Sand and clay, coarse	5.5	182
	Rock, hard	.5	182.5
	Clay, sandy, coarse	12.5	195
	Clay	5	200

129-095-27ADB
(Log from Knutson Drilling Co.)

Altitude:

	Sand	30	30
	Shale	3	33
	Sand	87	120
	Clay	30	150

129-095-27BAB
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay, yellow	8	8
	Sand, yellow	4	12
	Sand	12	24
	Rock	1	25
	Clay, sandy, blue	25	50
	Shale, blue	13	63

129-095-29ADA
(Log from Knutson Drilling Co.)

Altitude:

	Sand	25	25
	Clay	25	50
	Clay, sandy	7	57
	Clay	3	60
	Clay, sandy	20	80
	Clay	15	95

129-095-29BCB
(Log from Knutson Drilling Co.)

Altitude:

	Sand	10	10
	Shale	10	20
	Sand; water	10	30
	Clay	30	60

129-095-29CCB
(Log from Knutson Drilling Co.)

Altitude:

	Sand	20	20
	Sand; water	4	24
	Clay	11	35
	Sand; water	5	40
	Clay	20	60

129-095-30AAB
(Log from Knutson Drilling Co.)

Altitude: 2668 ft

	Gravel	4	4
	Sand	12	16
	Clay	72	88
	Clay, sandy	5	93
	Clay	9	102
	Rock	1	103
	Clay	2	105
	Clay, sandy	6	111
	Clay	11	122
	Rock, hard	2	124
	Clay, sandy	11	135
	Clay	7	142
	Rock	1	143
	Clay, sandy	17	160
	Clay, dark	35	195
	Clay, sandy, coarse	13	208
	Clay, sandy	32	240

129-095-31AAC
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Shale	20	20
	Sand	10	30
	Clay, sandy	15	45
	Rock	1	46
	Clay	2	48
	Rock	1	49
	Clay, sandy	26	75
	Clay	9	84

129-095-31CBD
(Log from Knutson Drilling Co.)

Altitude:

	Sand	40	40
	Quicksand	6	46
	Sand	49	95
	Clay	5	100

129-095-32CBA
(Log from Knutson Drilling Co.)

Altitude:

	Sand	18	18
	Rock	2	20
	Clay	5	25
	Sand; water	5	30
	Rock	1	31
	Clay, sandy	5	36
	Rock	2	38
	Clay, soft	32	70
	Clay, sandy, fine	10	80

129-095-33ACC
(Log from Knutson Drilling Co.)

Altitude:

	Sand and clay	55	55
	Rock	1	56
	Sand	4	60
	Coal	1	61
	Sand	9	70
	Clay	1	71
	Sand	7	78
	Rock	1	79
	Sand	31	110
	Rock, hard	1	111
	Sand	39	150
	Clay	10	160

129-095-34ADD
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay, white	15	15
	Silt	10	25
	Sand	21	46
	Coal	1	47
	Clay	3	50
	Sand	5	55
	Sand, blue	8	63
	Rock, hard	.5	63.5
	Clay, sandy	11.5	75
	Clay	10	85
	Rock	3	88
	Clay	17	105
	Clay, sandy, fine	13	118
	Rock	3	121
	Clay	27	148

129-095-35CBB
(Log from Alfred Jacobson)

Altitude:

	Clay, white	22	22
	Sand, dry	26	48
	Quicksand	12	60
	Sand	15	75
	Stone	1	76
	Sand	3	79
	Stone	2	81
	Sand	3	84
	No description	9	93

129-096-01ABC
(Log from Knutson Drilling Co.)

Altitude:

	Clay	7	7
	Rock	1	8
	Clay	18	26
	Coal	1	27
	Clay	23	50
	Clay, sandy	8	58
	Coal	2	60
	Sand	30	90
	Clay, sandy	15	105
	Rock, soft	1	106
	Sand	14	120
	Clay, sandy	6	126
	Sand	24	150
	Clay, sandy	8	158

129-096-01DAD1
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Topsoil and rock	4	4
	Sand	21	25
	Rock	2	27
	Sand	33	60
	Clay	10	70
	Sand	14	84

129-096-01DAD2
(Log from Knutson Drilling Co.)

Altitude:

	Shale	7	7
	Rock	1	8
	Sand	18	26
	Rock	3	29
	Sand	26	55
	Rock	1	56
	Sand	24	80
	Clay, sandy	15	95

129-096-02DCC1
(Log from Knutson Drilling Co.)

Altitude: 2730 ft

	Clay, soft	7	7
	Rock, soft	1	8
	Clay, soft	3	11
	Coal, soft	1	12
	Clay	8	20
	Sand, rocky	3	23
	Clay	9	32
	Clay, soft, white	2	34
	Coal, hard	2	36
	Clay	1	37
	Coal, hard	1	38
	Sand	.5	38.5
	Clay	1.5	40
	Sand, green	35	75
	Sand, gray	45	120
	Rock, hard	2	122

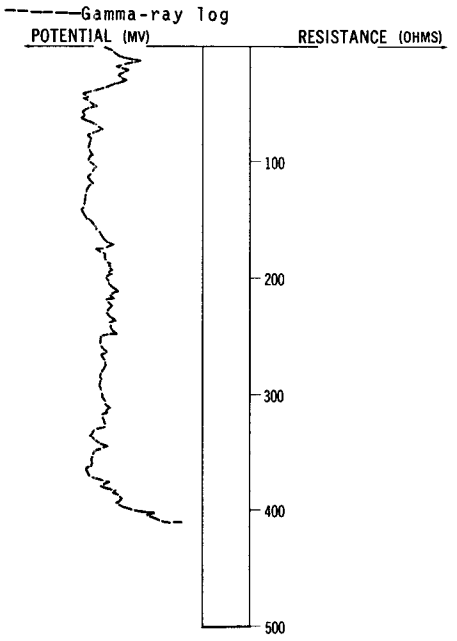
Log from Dependable Drilling Company

LOCATION: 129-096-02DCC3

DATE DRILLED: October 1968

ALTITUDE: 2730
(FT, MSL)

DEPTH: 460
(FT)



129-096-02DDC1
(Log from Knutson Drilling Co.)

Altitude: 2734 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Silt	10	10
	Clay	22	32
	Coal	2	34
	Clay, dark	4	38
	Coal	1	39
	Sand	51	90
	Rock, soft	1	91
	Clay, sandy	31	122
	Rock, soft	1	123
	Clay, sandy	27	150
	Clay	28	178
	Clay	37	215
	Clay, sandy, coarse	10	225
	Clay	5	230
	Rock	1	231
	Clay	39	270
	Rock, hard	2	272
	Sand	38	310
	Clay, dark	25	335
	Sand	10	345
	Clay, dark	15	360
	Sand	18	378

129-096-03BAD
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand	22	22
	Rock	2	24
	Sand	21	45
	Rock	1	46
	Sand	14	60
	Clay	13	73

129-096-04DCB
(Log from Knutson Drilling Co.)

Altitude: 2711 ft

	Clay, rocky	5	5
	Clay, soft	20	25
	Clay, sandy, blue	2	27
	Rock	1.5	28.5
	Clay, sandy, blue	26.5	55
	Clay	35	90
	Rock	1	91
	Clay	9	100
	Shale	15	115
	Clay, sandy, coarse	10	125
	Clay, hard rock at bottom	6	131
	Clay, sandy	26	157
	Rock, hard	1	158
	Clay	26	184
	Rock, hard	2.5	186.5
	Clay, sandy, fine	13.5	200
	Clay, sandy	15	215
	Clay	31	246
	Rock, hard	4	250
	Clay, sandy	56	306
	Coal	2	308
	Clay, sandy	24	332
	Rock	1	333
	Clay, sandy	7	340
	Clay, sandy, fine	56	396
	Clay, sandy, blue	4	400
	Rock	2	402
	Clay, sandy, dark	65	467
	Rock	1	468
	Clay, sandy, coarse	4	472
	Coal	1	473
	Clay	39	512
	Rock	1	513
	Clay, sandy, green	11	524
	Rock	1	525
	Clay, sandy	7	532
	Coal	2	534
	Clay, sandy	19	553
	Rock	1	554
	Sand and clay, green	20	574
	Rock	1	575
	Clay, green	5	580
	Coal	1	581
	Clay, sandy	10	591
	Rock	1	592
	Sand, coarse	28	620
	Clay, green	15	635
	Clay and rock, sandy	80	715
	Clay, green	15	730
	Clay, gray	5	735

129-096-04DCB, Continued
(Log from Knutson Drilling Co.)

Altitude: 2711 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay, sandy, gray	9	744
	Clay, brown	6	750
	Clay, green	3	753
	Sandstone, coarse	7	760
	Clay, green, dark	38	798
	Sand	7	805
	Sand, coarse	3	808
	Clay, tan	5	813
	Rock, hard	2	815
	Clay, sandy	13	828
	Rock, hard, light-green	.5	828.5
	Sand	11.5	840
	Sandstone, hard; a few beds of sandy clay	40	880

129-096-06DAA
(Log from Knutson Drilling Co.)

Altitude: 2726 ft

	Gravel	6	6
	Sand	6	12
	Clay, sandy	33	45
	Clay	5	50
	Clay, sandy	4	54
	Clay	42	96
	Clay, sandy, coarse	7	103
	Rock	.5	103.5
	Clay	4.5	108
	Rock	1	109
	Clay	23	132
	Clay, sandy	15	147
	Rock, hard	2	149
	Clay, sandy	24	173
	Rock	3	176
	Clay, sandy	14	190
	Rock	1	191
	Clay, sandy	7	198
	Rock	1	199
	Clay, sandy	13	212
	Clay	8	220
	Clay, sandy	7	227
	Clay, hard	12	239
	Rock	1	240
	Clay, sandy	30	270
	Rock	1	271
	Sand	19	290
	Clay, dark	10	300
	Coal	2	302
	Sand	4	306

129-096-10BBB
NDSWC 1001
(Log from Robinove, 1956)

Altitude: 2689 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay, sandy, yellow; fine gravel	2	2
	Clay, sandy, yellow	10	12
	Clay, sandy, gray	23	35
	Sandstone, hard, red	2.5	37.5
	Clay, gray	71.5	109
	Clay, sandy, greenish-gray	11	120
	Clay, gray	54	174
	Clay, sandy, light-gray	18	192
	Clay, gray	8	200

129-096-10CAA1
(Log from Knutson Drilling Co.)

Altitude:

	Sand	4	4
	Gravel	1	5
	Sand	72	77
	Clay	18	95
	Rock	.5	95.5
	Clay, hard	1.5	97
	Clay, soft	3	100
	Rock, soft	1	101
	Clay	4	105
	Rock, soft	.5	105.5
	Clay	21.5	127
	Rock, soft	.5	127.5
	Soft sandy clay	3.5	131
	Rock, hard	1.5	132.5
	Sand	17.5	150
	Clay	8	158

129-096-10CAA2
(Log from Knutson Drilling Co.)

Altitude:

	Gravel	8	8
	Sand	20	28
	Clay	10	38
	Clay, sandy	22	60
	Clay	65	125
	Sand, coarse	3	128
	Rock, hard	3	131
	Clay, sandy	13	144
	Clay	7	151
	Clay	24	175
	Clay, sandy	10	185
	Clay	9	194
	Rock	1	195
	Clay, sandy, white	20	215
	Clay, dark	30	245
	Sand and clay	15	260
	Clay, sandy	17	277
	Coal	2	279
	Clay, sandy	6	285
	Clay	10	295

129-096-11CAD
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Gravel	8	8
	Sand	37	45
	Clay	11	56

129-096-11CBC
NDSWC 1000
(Log from Robinove, 1956)

Altitude: 2679 ft

	Clay, yellow	3	3
	Gravel, fine to medium, silty	5	8
	Clay, sandy, yellow	5	13
	Clay, sandy, greenish-gray. Cored from 30 to 40 ft	20	33
	Clay, gray	73	106
	Limestone, gray, with calcite veins. Cored from 99 to 110 ft	3	109
	Clay, sandy, dark-gray. Cored from 110 to 120 ft	62	171
	Clay, gray; gray shaly limestone. Cored from 172 to 180 ft	9	180
	Clay, gray	20	200

129-096-12BBC
(Log from Knutson Drilling Co.)

Altitude:

	Sand	15	15
	Clay, soft	15	30
	Sand	20	50
	Sand, blue	13	63
	Rock	1	64
	Sand, blue	13	77
	Rock, hard	1	78
	Clay, sandy	27	105
	Clay	56	161
	Rock, hard	1	162
	Clay, sandy, coarse	10	172
	Clay	43	215
	Clay, sandy	5	220
	Rock, hard	3	223
	Sand, fine	12	235
	Clay	35	270
	Clay, sandy	5	275
	Rock	1	276
	Sand, gray	19	295
	Sand	11	306

129-096-12BCC
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Topsoil, rocky	5	5
	Clay	6	11
	Coal, soft	1	12
	Pocket, lost drilling water	1	13
	Clay	27	40
	Clay, sandy	16	56
	Rock	1	57
	Clay	15	72
	Coal	1	73
	Clay	2	75
	Coal	1	76
	Rock	.5	76.5
	Coal	1.5	78
	Sand	32	110
	Clay, sandy	14	124
	Sandy, blue	20	144
	Rock, hard	.5	144.5
	Sand	34.5	179

129-096-12CAD
(Log from Knutson Drilling Co.)

Altitude:

	Sand	25	25
	Rock	1	26
	Shale	9	35
	Coal	2	37
	Sand, white, takes water	58	95
	Sand, blue	15	110
	Rock	1	111
	Sand, blue	36	147

Log from Frederickson's, Inc.

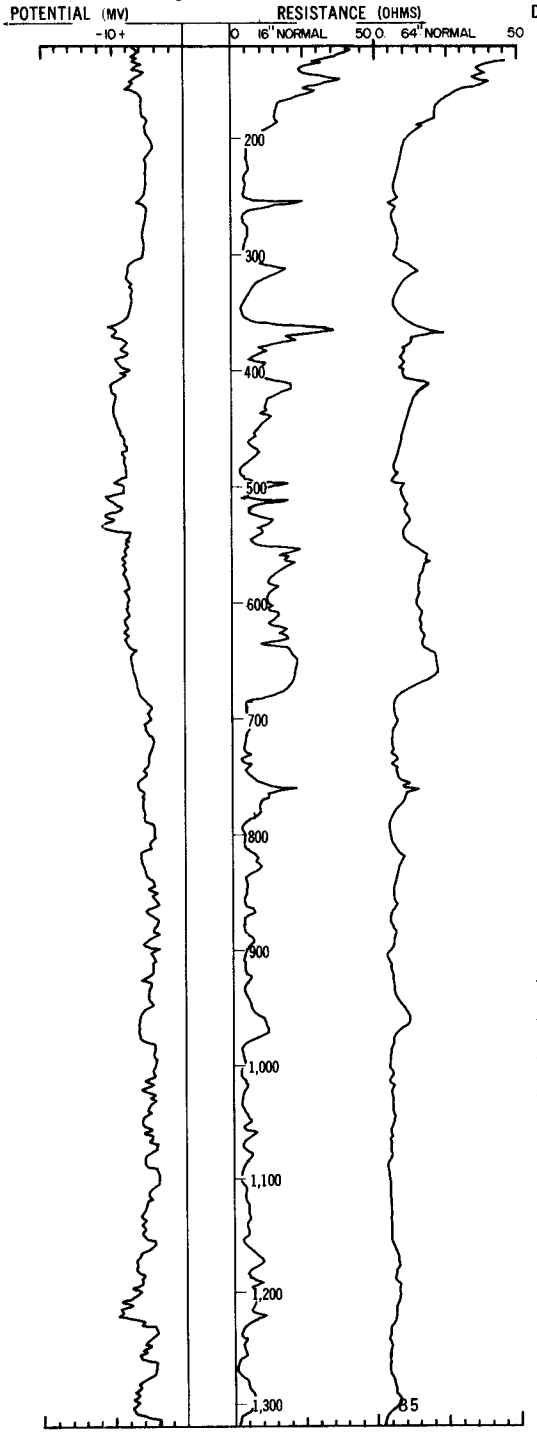
LOCATION: 129-096-12DBB

DATE DRILLED: 1965

ALTITUDE: 2812
(FT, MSL)

DEPTH: 1354
(FT)

Schlumberger electric log



DESCRIPTION OF DEPOSITS

0-10	Topsoil.
10-60	Clay.
60-80	Shale, soft, black.
80-480	Shale, soft, blue.
480-490	Shale, sandy, soft, gray.
490-510	Sand.
510-520	Shale, sticky, gray.
520-680	Shale, soft, blue.
680-763	Shale, blue.
763-765	Boulder.
765-780	Shale, blue.
780-829	Shale, gray and white.
829-865	Shale, gray.
865-900	Clay, sandy, soft.
900-921	Shale, gray.
921-957	Shale, sandy, soft.
957-1140	Shale and sand.
1140-1213	Shale.
1213-1260	Shale, hard.
1260-1290	Shale, soft.
1290-1320	Shale, sandy, hard.
1320-1354	Shale, gray and black.

Natural drilling mud.

Rm 5.2 @ 68°F

Rmf 5.17 @ 69°F

129-096-12DCD1
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand----------	30	30
	Clay----------	20	50
	Jointed coal, takes water----------	1	51
	Shale, sandy, yellow----------	59	110
	Rock, hard----------	2	112
	Clay, sandy, fine----------	30	142
	Rock, hard----------	2	144
	Sand----------	8	152
	Rock, hard----------	1	153
	Sandy----------	11	164

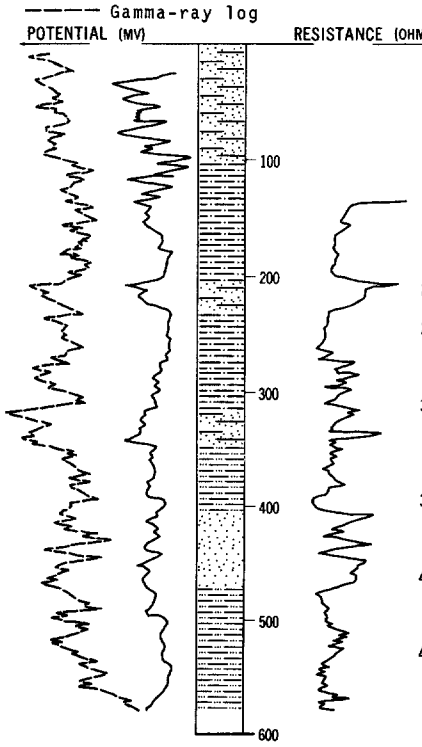
NDSWC 4388

LOCATION: 129-096-13AAD

DATE DRILLED: October 1971

ALTITUDE: 2724 (FT, MSL)

DEPTH: 580 (FT)



DESCRIPTION OF DEPOSITS

0-100	Ludlow Formation Sandstone and siltstone, clayey, fine-grained; yellow in upper part.
100-204	Cannonball Formation Claystone, silty, sandy, bentonitic.
204-228	Ludlow Formation Sandstone, silty, very fine.
228-314	Claystone and siltstone, carbonaceous, light-olive-gray and brown.
314-347	Sandstone and siltstone, clayey, fine-grained; lignite 316-318 ft.
347-407	Cannonball Formation Siltstone and claystone, sandy, carbonaceous.
407-473	Ludlow Formation Sandstone, lignitic, very fine grained, light-olive-gray.
473-580	Siltstone and claystone, lignitic.

129-096-13ABD
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand	29	29
	Rock	.5	29.5
	Sand	50.5	80
	Shale	4	84
	Sand	13	97
	Rock	.5	97.5
	Sand	22.5	120
	Shale	6	126

Log from Layne-Minnesota Co.

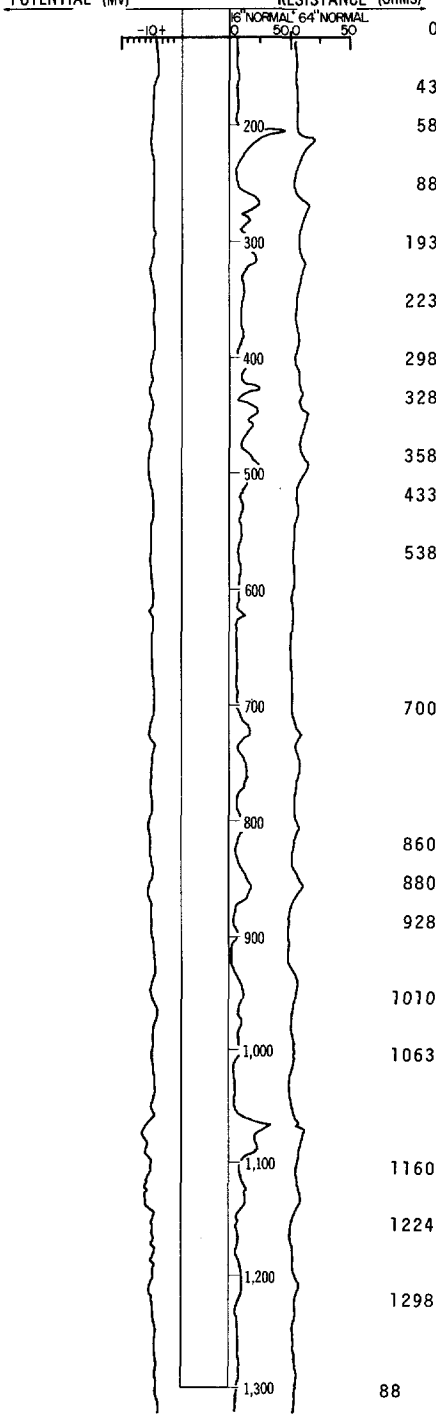
LOCATION: 129-096-13ACA

DATE DRILLED: March 1965

ALTITUDE: 2719
(FT, MSL)

DEPTH: 1363
(FT)

Schlumberger electric log



	DESCRIPTION OF DEPOSITS
0-43	Sandstone, very fine to fine-grained, brown.
43-58	Claystone, sandy, olive-gray.
58-88	Sandstone, clayey, fine-grained.
88-193	Claystone, calcareous, olive-gray.
193-223	Sandstone, very fine grained, light-greenish-gray.
223-298	Claystone, sandy, light-olive-gray.
298-328	Claystone and lignite.
328-358	Sandstone, very fine to fine-grained.
358-433	Claystone, silty, olive-gray.
433-538	Claystone and siltstone, sandy, light-olive-gray.
538-700	Claystone and siltstone, light-olive-gray.
700-860	Siltstone and sandstone, clayey.
860-880	Sandstone.
880-928	Claystone and siltstone.
928-1010	Sandstone, very fine to fine-grained; a few thin beds of siltstone.
1010-1063	Claystone, sandy, light-olive-gray.
1063-1160	Sandstone and claystone.
1160-1224	Siltstone and claystone, sandy, light-olive-gray.
1224-1298	Shale, dark-greenish-gray to olive-black.
	Pierre Formation
1298-1363	Shale, dark-greenish-gray to olive-black.

129-096-13BBB2
NDSWC 993
(Log from Robinove, 1956)

Altitude: 2672 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Earth fill	3	3
	Sand, fine to coarse, silty, yellow	6	9
	Sand, fine, silty	11	20
	Clay, light-gray; thickens drilling mud; thinned mud at 80 ft	127	147
	Clay, hard, light-gray; difficult drilling	6	153
	Clay, light-gray	11	164
	Clay, brownish-gray, slightly calcareous; some rounded chert fragments	36	200

129-096-13BCD
NDSWC 1004
(Log from Robinove, 1956)

Altitude: 2672 ft

	Clay, brown	3	3
	Sand, fine to coarse; gravel; clay	8	11
	Clay, brown; fine to medium gravel	3	14
	Clay, sandy, gray	6	20

129-096-13BDB
(Log from Knutson Drilling Co.)

Altitude:

	Sand	25	25
	Rock	1	26
	Sand	18	44
	Clay, sandy	2	46
	Rock	1	47
	Sand	12	59
	Sand, blue	6	65
	Rock	1	66
	Sand, blue	14	80
	Rock	1	81
	Sand	19	100
	Clay	20	120

129-096-13BDD2
(Log from Norbeck Drilling Co.)

Altitude: 2664 ft

	Clay, yellow	14	14
	Sand, fine	13	27
	Clay, yellow	1	28
	Clay, yellow	12	40
	Clay, blue	40	80
	Clay, gray	29	109
	Clay, gray and rock	26	135
	Clay, blue	11	146
	Clay, blue, and sandrock	15	161
	Rock	5	166
	Clay, blue	56	222
	"Lime rock"	2	224
	Clay, blue	10	234
	Clay, blue	52	286
	Sand	12	298

129-096-13BDD2, Continued
(Log from Norbeck Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay, blue	58	356
	Clay, sandy	22	378
	Clay, blue	116	494
	Sand; 2 gpm (water)	4	498
	Clay, blue	2	500
	Sand; 2 gpm (water)	4	504
	Clay, hard, blue	18	522
	Clay, soft, blue	18	540
	Clay, sandy	4	544
	Clay, gray	64	608
	Clay, gray, and rock	42	650
	"Sandrock," hard	3	653
	Clay, blue, and rock	122	775
	Clay, blue	23	798
	Sand; 16 gpm (water)	32	830
	Clay, blue	38	868
	Clay, blue; and "shell"	4	872
	Sand; and hard "sandrock	4	876
	Sand; 6 gpm (water)	4	880
	Clay, blue	25	905
	Sand	6	911
	Sand, and "hard rock"; 9 gpm (water)	17	928
	Clay, blue	10	938
	Clay, sandy, hard	5	943
	Clay, blue	8	951
	Sand and clay	6	957
	Clay, red	5	962
	Clay, gray	46	1008
	"Sandrock," hard	1	1009
	Clay, gray	28	1037
	Sand; 6 gpm (water)	8	1045
	Clay, sandy	16	1061
	Sand; 9 gpm (water)	11	1072
	Clay, blue	86	1158
	Sand	13	1171
	"Hard shell"	21	1192

129-096-13BDD3
(Log from Norbeck Drilling Co.)

Altitude: 2665 ft

	Sand, and clay, yellow	16	16
	Gravel	3	19
	Clay, blue	56	75
	Clay, gray	35	110
	"Lime rock"	2	112
	Clay, blue	47	159
	"Lime rock"	4	163
	Clay, blue	59	222
	Clay, sandy	13	235
	Clay, blue	35	270
	Clay, brown	18	288
	Sand "streaks"; gray clay	11	299
	Clay, gray	53	352
	"Lime rock"	1	353
	Sand "streaks"; gray clay	25	378
	Clay, gray	18	396
	Sand	3	399
	Rock	1	400
	Clay, gray	29	429
	"Lime rock"	4	433
	Clay, gray	43	476

129-096-13BDD3, Continued
(Log from Norbeck Drilling Co.)

Altitude: 2665 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	"Lime rock"	2	478
	Clay, gray	14	492
	Sand	2	494
	Clay, gray	55	549
	Clay, and "hard shells"	65	614
	"Lime rock"	3	617
	Clay, gray	12	629
	Clay, hard, gray	21	650
	"Lime rock"	1	651
	Clay, hard, blue	14	665
	Clay, sandy	2	667
	Clay, gray	52	719
	"Lime rock"	2	721
	Clay, blue	8	729
	Clay, sandy	15	744
	Sand	20	764
	Clay, sandy	12	776
	Clay, sandy	58	834
	Coal	5	839
	Clay	16	855
	Sand	15	870
	Clay	30	900
	Sand	34	934
	Clay	8	942
	"Lime rock"	2	944
	Clay	33	977
	"Sand streaks"	4	981
	Clay, brown	11	992
	"Sand streaks"	7	999
	Clay, sandy	33	1032
	Sand	4	1036
	"Lime rock"	2	1038
	"Sand streaks"	8	1046
	Sand	11	1057
	Clay, sandy	21	1078
	Sand	14	1092
	"Sand streaks"	15	1107
	Clay	45	1152
	"Lime rock"	2	1154
	Clay	2	1156
	Sand	14	1170
	Clay	20	1190

129-096-13BDD4
(Log from Knutson Drilling Co.)

Altitude:

	Sand	63	63
	Clay	11	74
	Soft drilling	2	76
	Clay	4	80

129-096-13CCC2
(Log from Knutson Drilling Co.)

Altitude:

	Soil	4	4
	Rock	2	6
	Sand	39	45
	Clay	13	58

129-096-13DDA
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand	5	5
	Rock	.5	5.5
	Sand	2.5	8
	Rock	.5	8.5
	Gravel	1.5	10
	Clay, sandy	30	40
	Clay	6	46
	Sand	2	48
	Clay	5	53

129-096-14ACD
(Log from Knutson Drilling Co.)

Altitude:

	Sand, yellow	30	30
	Rock	3	33
	Sand	17	50
	Clay	5	55
	Sand, blue	15	70
	Rock	2	72
	Sand	4	76
	Rock	1	77
	Sand	13	90
	Clay	104	194
	Rock, hard	1	195
	Clay, sandy	7	202
	Rock, hard	4	206
	Clay, sandy	4	210
	Clay	16	226
	Clay, hard	24	250
	Clay, sandy	5	255
	Rock, hard	1	256
	Clay, sandy, rock at bottom	41	297
	Sand	25	322
	Rock, hard	3	325
	Sand	15	340

129-096-14CBD
(Log from Knutson Drilling Co.)

Altitude:

	Sand	4	4
	Rock	2	6
	Sand	19	25
	Rock	1	26
	Sand	34	60
	Clay	5	65

129-096-14DAD1
(Log from Knutson Drilling Co.)

Altitude:

	Sand	45	45
	Clay	7	52

129-096-14DAD2
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Topsoil	2	2
	Clay, sandy	11	13
	Rock	1	14
	Clay	8	22
	Sandy	35	57
	Rock	1	58
	Clay	22	80

129-096-14DBB
(Log from Knutson Drilling Co.)

Altitude:

	Sand	35	35
	Clay	13	48
	Sand	2	50
	Rock, soft	1	51
	Sand	12	63
	Rock, soft	1	64
	Sand	14	78
	Clay	6	84

129-096-14DDA
(Log from Knutson Drilling Co.)

Altitude:

	Sand	8	8
	Rock	1	9
	Sand	5	14
	Rock	.5	14.5
	Sand	3.5	18
	Rock, hard	.5	18.5
	Sand	4.5	23
	Rock, hard	.5	23.5
	Sand	2.5	26
	Rock, hard	3	29
	Sand	16	45
	Clay, hard	15	60

129-096-14DDD1
(Log from Knutson Drilling Co.)

Altitude:

	Clay	14	14
	Rock, hard	1	15
	Sand	27	42
	Rock	1	43
	Sand	7	50
	Clay	13	63

129-096-14DDD2
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand	8	8
	Clay	8	16
	Rock	1	17
	Clay	8	25
	Clay, sandy	5	30
	Sand	20	50
	Clay	10	60
	Clay, sandy	5	65
	Clay	5	70

129-096-15BAA
(Log from Knutson Drilling Co.)

Altitude: 2722 ft

	Sand and rock	1	1
	Shale	5	6
	Coal	2	8
	Sand, yellow	55	63
	Rock, soft	1	64
	Clay, sandy, yellow	11	75
	Clay, blue	1	76
	Rock	1	77
	Clay, sandy	16	93
	Rock	2	95
	Clay, sandy	20	115
	Clay	33	148

129-096-15BAC
(Log from Knutson Drilling Co.)

Altitude:

	Sand	65	65
	Rock	1	66
	Sand	5	71
	Rock	2	73
	Sand	30	103
	Clay, soft	7	110
	Clay	10	120
	Rock	1	121
	Clay	11	132
	Rock	1	133
	Clay	22	155
	Sand, coarse	2	157
	Rock, hard	3	160
	Clay, sandy	10	170
	Clay	5	175

129-096-15DDB
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	No record	148	148
	Clay	24	172
	Rock	1	173
	Sand, coarse	12	185
	Rock	1	186
	Clay	19	205
	Clay, sandy	7	212
	Clay	13	225
	Clay	7	232
	Rock	4	236
	Sand	14	250
	Clay	30	280
	Sand	40	320
	Clay	10	330

129-096-16CCC
(Log from Knutson Drilling Co.)

Altitude:

	Sand	62	62
	Clay, dark	8	70
	Clay	50	120

129-096-18AAA
(Log from Knutson Drilling Co.)

Altitude:

	Gravel	5	5
	Sand	60	65
	Clay	15	80

129-096-18CDD
(Log from Knutson Drilling Co.)

Altitude: 2816 ft

	Shale	8	8
	Coal	1	9
	Sand	41	50
	Rock	2	52
	Clay, sandy	7	59
	Rock, hard	2	61
	Clay, sandy	39	100
	Rock	2	102
	Clay, sandy	28	130
	Clay	40	170
	Clay, sandy	14	184
	Rock, hard	2	186
	Clay	20	206
	Rock	1	207
	Clay, sandy, coarse	18	225
	Rock, hard	2	227
	Sand, coarse	13	240
	Coal	1	241
	Clay, sandy	4	245
	Rock	3	248
	Clay, sandy, fine	12	260
	Clay	40	300
	Sand	25	325
	Clay, dark	2	327

129-096-19BCB
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Rock	4	4
	Sand	33	37
	Rock, soft	1	38
	Sand	12	50
	Clay	57	107
	Rock, thin	1	108
	Clay, sandy	13	121
	Rock, hard	.5	121.5
	Clay, sandy	8.5	130
	Clay	10	140
	Rock	1	141
	Clay	17	158
	Rock	1	159
	Sand, coarse	20	179

129-096-20AAA
(Log from Knutson Drilling Co.)

Altitude:

	Sand	26	26
	Rock, hard	3	29
	Sand	31	60
	Clay	60	120
	Clay, sandy, rock at bottom	6	126
	Clay	3	129
	Rock, thin	4	133
	Clay	12	145
	Clay, sandy, coarse	10	155
	Rock, hard	1	156
	Clay, sandy, medium	17	173
	Clay	5	178
	Rock, hard	2	180
	Clay, sandy, fine, tan	17	197
	Clay	36	233
	Sand, coarse	4	237
	Rock, hard	2	239
	Clay, sandy	6	245
	Rock, hard	2	247
	Clay, sandy	5	252
	Sand, coarse	15	267
	Coal, hard	1	268
	Clay	5	273
	Sand, fine	12	285
	Clay, dark	10	295
	Coal	2	297
	Sand, fine	26	323
	Rock, hard	1	324
	Sand, fine	7	331

129-096-22ABB
(Log from Knutson Drilling Co.)

Altitude:

	Sand	52	52
	Clay	13	65
	Rock	1	66
	Sand	14	80
	Rock, hard	2	82
	Sand	28	110
	Clay	5	115

129-096-23AAA
NDSWC 1005
(Log from Robinove, 1956)

Altitude: 2692 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay, yellow; fine to coarse sand; coarse gravel	4	4
	Sand, fine, silty, yellow	19	23
	Clay, yellow	4	27
	Clay, sandy, gray	5	32
	Clay, sandy, gray; some hard spots. Lost circulation of drilling mud at 150 ft	140	172
	Clay, sandy, light-gray	28	200

129-096-23ABB
(Log from Knutson Drilling Co.)

Altitude:

	Rock	6	6
	Sand	39	45
	Rock	2	47
	Sand	14	61
	Rock, hard	1	62
	Sand	11	73
	Rock, hard	1	74
	Sand	21	95
	Clay, thin rock at bottom	13	108
	Clay	2	110
	Rock, soft	1	111
	Clay	32	143
	Rock, hard	1	144
	Sand; water	6	150
	Clay	27	177
	Rock, hard, rough	2	179
	Sand	1	180
	Clay	20	200
	Rock, hard, rough	3	203
	Clay, sandy, fine	5	208
	Clay, dark	49	257
	Sand	1	258
	Rock	1	259
	Clay	9	268
	Sand	3	271
	Rock, soft	2	273
	Sand	24	297
	Coal, soft	3	300
	Sand	46	346
	Clay	4	350

129-096-23DDB1
(Log from Knutson Drilling Co.)

Altitude:

	Sand	25	25
	Rock, soft	2	27
	Sand	25	52
	Rock	1	53
	Clay	7	60
	Rock, hard	1	61
	Sand	29	90
	Clay	4	94

129-096-23DDB2
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Rock	2	2
	Sand	24	26
	Rock	.5	26.5
	Sand, thin rock at bottom	7.5	34
	Sand, blue	2	36
	Rock, hard	1	37
	Sand	9	46
	Rock, hard	1	47
	Sand	23	70
	Clay	14	84

129-096-24BBB
(Log from Alfred Jacobson)

Altitude:

	Clay, brown	20	20
	Sand, blue; water	35	55
	Sand and clay	7	62
	Clay, blue	8	70

129-096-24BCC
(Log from Knutson Drilling Co.)

Altitude:

	Sand, yellow	13	13
	Rock	4	17
	Sand	38	55
	Clay	4	59
	Clay, sandy, blue	7	66
	Clay	2	68
	Clay, sandy, blue	13	81
	Clay, soft, rock at bottom	6	87
	Clay	33	120
	Rock, hard	.5	120.5
	Clay	4.5	125
	Clay, hard	76	201
	Clay, sandy	3	204
	Rock, hard	2	206
	Clay, sandy, fine	19	225
	Clay, dark, rock at bottom	9	234
	Clay, dark	26	260
	Sand	5	265
	Clay, dark	5	270
	Sand and clay, fine	60	330

129-096-24CBD
(Log from Knutson Drilling Co.)

Altitude:

	Sand	31	31
	Rock	1	32
	Sand	23	55
	Clay, sandy	15	70
	Clay	10	80

129-096-24CCC
NDSWC 1006
(Log from Robinove, 1956)

Altitude: 2694 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay, sandy, yellow----------	11	11
	Gravel, fine; yellow clay----------	4	15
	Silt, sandy, gray----------	4	19
	Clay, sandy, gray----------	37	56
	Clay, gray; some sand. Lost circulation of drilling mud at 150 ft----------	144	200

129-096-25BAD
(Log from Knutson Drilling Co.)

Altitude:

	Sand----------	15	15
	Rock----------	1	16
	Sand----------	34	50
	Rock----------	2	52
	Sand----------	8	60
	Clay----------	50	110
	Rock, hard----------	3	113
	Clay----------	29	142
	Clay----------	5	147
	Clay----------	13	160
	Sand, coarse----------	4	164
	Rock, hard----------	1	165
	Clay, sandy, white----------	10	175
	Clay----------	51	226
	Rock, hard----------	2	228
	Clay----------	12	240
	Sand----------	30	270
	Coal----------	3	273
	Clay, sandy----------	2	275

129-096-26AAB
(Log from Alfred Jacobson)

Altitude:

	No record----------	20	20
	Gravel----------	7	27
	Sand, fine, blue----------	23	50
	Clay, blue----------	60	110
	Sand and clay, black----------	4	114
	Blackjack----------	23	137
	Sand; water----------	5	142

129-096-26CAA
(Log from Knutson Drilling Co.)

Altitude:

	Sand----------	40	40
	Sand, blue----------	31	71
	Rock----------	1	72
	Sand, blue----------	13	85
	Clay----------	58	143
	Rock----------	1	144
	Sand, coarse----------	6	150
	Clay, sandy----------	4	154
	Clay----------	8	162
	Rock, hard----------	1	163

129-096-26CAA, Continued
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay	34	197
	Rock, hard	4	201
	Clay, sandy, fine	19	220
	Clay	41	261
	Rock, hard	1	262
	Clay	11	273
	Sand	3	276
	Coal	1	277
	Sand	28	305
	Coal, hard	2	307
	Clay	9	316
	Rock	3	319
	Sand	15	334
	Rock	1	335

129-096-26CAD
(Log from Alfred Jacobson)

Altitude:

	Sand, hard	19	19
	Sandstone, hard	4	23
	Sand, some water	27	50
	Sandstone	1	51
	Sand and water	9	60
	Sandstone	1	61
	Sand; water	9	70
	Sandstone	1	71
	Sand; water	14	85
	Sand and clay	5	90
	Clay, hard	10	100

129-096-29BDD
(Log from Knutson Drilling Co.)

Altitude:

	Sand	45	45
	Sand; water	15	60
	Clay	72	132
	Rock	1	133
	Clay, sand	2	135
	Rock	1	136
	Clay	34	170
	Clay, sandy	4	174
	Rock	4	178
	Clay, sandy	2	180
	Clay	5	185
	Sandrock	10	195
	Clay	15	210

129-096-32BDC
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Silt	15	15
	Clay	38	53
	Clay, sandy	5	58
	Rock	1	59
	Clay	31	90
	Coal	1	91
	Clay, sandy	9	100
	Clay	46	146
	Sand	7	153
	Clay	4	157
	Rock	2	159
	Clay	3	162
	Clay, sandy	6	168
	Sand	18	186
	Coal	2	188
	Sand	12	200

129-096-32DDA
(Ellingson Prospect No. 98)

Altitude:

	Clay, yellow	28	28
	Shale, blue	37	65

129-096-33AAA1
(Log from Knutson Drilling Co.)

Altitude:

	Sand	11	11
	Rock	1	12
	Sand	3	15
	Rock	1	16
	Sand	2	18
	Rock	1	19
	Sand	6	25
	Rock, hard	2	27
	Clay	33	60
	Rock, soft	1	61
	Clay	24	85
	Clay, sandy, coarse	5	90
	Clay	9	99
	Rock, hard	1	100
	Clay	14	114
	Rock, thin	1	115
	Clay	1	116
	Rock, hard	1	117
	Clay	28	145
	Rock, hard	2	147
	Sand, fine	19	166
	Clay	3	169
	Clay	46	215
	Sand	12	227
	Clay, sandy	5	232
	Sand	10	242

129-096-33AAA2
(Log from Knutson Drilling Co.)

Altitude: 2728 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Silt	15	15
	Rock, hard	2	17
	Clay	90	107
	Rock, hard	1	108
	Clay	49	157
	Rock, hard	3	160
	Clay	4	164
	Clay, sandy	21	185
	Clay	25	210
	Rock, hard	2	212
	Sand	43	255
	Clay, sandy	9	264

129-096-35DCC
NDSWC 1007
(Log from Robinove, 1956)

Altitude: 2642 ft

	Clay, sandy, yellowish-brown	26	26
	Clay, gray to white	95	121
	Clay, sandy, light-gray	12	133
	Clay, gray	2	135
	Lignite	2	137
	Clay, gray to brown	20	157
	Lignite, and shaly lignite	10	167
	Clay, sandy, gray	33	200

129-097-08AAC
(Log from Knutson Drilling Co.)

Altitude: 2707 ft

	Clay	10	10
	Rock	1	11
	Clay	44	55
	Clay, sandy	5	60
	Clay	54	114
	Coal	2	116
	Clay	2	118
	Sand	15	133
	Rock	1	134
	Sand	6	140
	Clay, sandy	8	148

129-097-11DAC
(Log from Knutson Drilling Co.)

Altitude:

	Clay	36	36
	Coal	1	37
	Clay	17	54
	Coal, hard	1	55
	Sand	15	70
	Rock	2	72
	Sand	28	100
	Clay, sandy, green	20	120
	Clay	10	130
	Clay	5	135
	Rock	1	136

129-097-11DAC, Continued
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay, sandy, fine	22	158
	Clay, soft	17	175
	Clay	10	185
	Clay, sandy, coarse	15	200
	Clay	15	215
	Rock	1	216
	Clay, sandy	40	256
	Sand, fine	10	266
	Rock	4	270
	Sand, fine	26	296
	Rock and clay	4	300

129-097-11DDB
(Log from Alfred Jacobson)

Altitude:

	Clay	40	40
	Sand, gray	30	70
	Sand; water	38	108
	Sand and clay	7	115

129-097-12AAC
(Log from Knutson Drilling Co.)

Altitude:

	Clay	12	12
	Clay, sandy	15	27
	Coal	2	29
	Clay	31	60
	Sand, coarse	21	81
	Rock	1	82
	Clay	2	84

129-097-15AAB
(Log from Dependable Drilling Co.)

Altitude: 2764 ft

	Sand, brown	14	14
	Sandstone rock	1	15
	Sand, brown	1	16
	Sandstone rock	1	17
	Clay, brown	7	24
	Clay, sandy, blue	10	34
	Rock	2	36
	Clay, blue	64	100
	Clay, sandy, blue	17	117
	Rock	1	118
	Clay, blue	21	139
	Clay, sandy, blue	21	160
	Coal	1	161
	Sand, firm, blue-gray	24	185
	Clay, sandy, gray	22	207
	Rock	1	208
	Clay, blue	31	239
	Sand, blue	4	243
	Rock	1	244
	Sand, blue, coarse	12	256
	Rock	1	257
	Sand, blue, coarse	13	270

129-097-29CBC
(Log from Alfred Jacobson)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay	4	4
	"Hardpan"	10	14
	Sand, brown	16	30
	Sandstone	2	32
	Sand, blue	4	36
	Sand and clay	36	72

129-097-30DAC
(Log from Knutson Drilling Co.)

Altitude:

	Sand	16	16
	Rock	3	19
	Sand	17	36
	Clay	4	40
	Sand, thin rock at bottom	1	41
	Clay	5	46
	Rock, hard	4	50
	Clay	13	63

129-097-31AAC
(Log from Knutson Drilling Co.)

Altitude:

	Sand	20	20
	Shale	45	65
	Coal	1	66
	Sand	8	74
	Rock	1	75
	Shale	35	110
	Coal	1	111
	Sand	14	125
	Rock, hard	3	128
	Sand	22	150
	Clay	2	152

129-097-31CAD
(Ellingson Prospect No. 118)

Altitude:

	Clay	6	6
	Gravel	6	12
	Clay, yellow	6	18
	Clay, gray and blue	27	45
	Ledge, hard	2	47
	Clay, blue	13	60

129-097-32AAA
(Ellingson Prospect No. 116)

Altitude:

	Clay, sandy with sandstone ledges	8	8
	Coal	2	10
	Sand, yellow	12	22
	Sandstone, hard	4	26
	Clay, blue	54	80

129-097-32BBA
(Ellingson Prospect No. 117)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand	25	25
	Shale, blue	40	65

129-097-33AAA
(Ellingson Prospect No. 115)

Altitude:

	Gravel	18	18
	Shale, blue	47	65

129-097-34AAA
(Ellingson Prospect No. 104)

Altitude:

	Clay, sandy, yellow	19	19
	Sandstone, hard	3	22
	Clay, sandy, yellow	14	36
	Sand; lost water	1	37
	Clay, sandy, yellow	31	68
	Clay and shale, blue and gray	22	90

129-097-34DCC
(Ellingson Prospect No. 1)

Altitude:

	Clay, sandy	10	10
	Sandstone ledges, hard, broken	4	14
	Sandstone, medium	38	52
	Very hard	1	53
	Clay, blue and gray	27	80
	Clay and coal, sandy	20	100

129-097-34DDB
(Log from Knutson Drilling Co.)

Altitude:

	Clay	15	15
	Gravel	1	16
	Sand	54	70
	Clay	5	75
	Sand, fine	5	80
	Clay	4	84

129-097-35BCC
(Log from Knutson Drilling Co.)

Altitude:

	Sand and clay	37	37
	Clay, dark	3	40
	Clay, sandy	4	44
	Clay	2	46
	Clay, sandy	7	53
	Clay	27	80
	Rock	1	81
	Sandy	8	89

129-097-35BCC, Continued
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Rock	2	91
	Sand and clay	18	109
	Clay, dark	2	111

129-097-35CBB
(Log from Knutson Drilling Co.)

Altitude:

	Sand	8	8
	Clay	54	62
	Sand, coarse	7	69
	Rock, hard	1	70
	Sand	3	73
	Rock, hard	1	74
	Sand	21	95

129-097-36AAB
(Ellingson Prospect No. 106)

Altitude:

	Clay, sandy	15	15
	Sandstone, hard	7	22
	Clay, sandy, yellow	20	42
	Sandstone, hard	2	44
	Clay, blue	36	80

129-098-04BCD
(Log from Knutson Drilling Co.)

Altitude:

	Shale	26	26
	Clay, sandy	3	29
	Shale	9	38
	Rock	1	39
	Shale, rock at bottom	32	71
	Shale, sandy	4	75
	Sand	15	90
	Shale, sandy, thin rock at bottom	26	116
	Clay, thin rock at bottom	4	120
	Clay, dark	12	132
	Rock, soft	1	133
	Clay	12	145
	Rock, very hard and rough	2	147
	Sand	8	155
	Sandstone	13	168

129-098-09CAA
(Log from Knutson Drilling Co.)

Altitude:

	Clay, hard	37	37
	Rock, soft	1	38
	Sand, coarse	4	42
	Rock, soft	1	43
	Sand	1	44
	Rock, hard	1	45
	Sand	5	50

129-098-09CAA, Continued
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay, sandy	24	74
	Coal	2	76
	Sand, fine	21	97
	Coal	1	98
	Rock, hard	1	99
	Sand, fine	11	110
	Clay, hard, thin rock at bottom	4	114
	Clay	3	117
	Rock, thin	1	118
	Clay	1	119
	Rock, thin	1	120
	Clay, thin rock at bottom	3	123
	Clay	4	127
	Rock, thin	1	128
	Clay, interbedded with thin rock	29.5	157.5
	Clay	2.5	160
	Coal	1	161
	Clay	9	170
	Sand	12	182
	Rock	.5	182.5
	Clay, sandy, thin rocks at bottom	11.5	194
	Clay	6	200

129-098-11CCC
(Log from Knutson Drilling Co.)

Altitude:

	Silt and sand	10	10
	Gravel	6	16
	Sand	20	36
	Clay, sandy	4	40

129-098-15CDD
(Log from Knutson Drilling Co.)

Altitude:

	Sand	6	6
	Gravel	6	12
	Sand	13	25
	Clay	8	33
	Coal	1	34
	Sand	20	54

129-098-23AAA
(Log from Knutson Drilling Co.)

Altitude:

	Shale	12	12
	Sand	4	16
	Rock, hard	1	17
	Clay, sandy	31	48
	Coal, soft	2	50
	Sand	28	78
	Rock	3	81
	Sand	9	90
	Clay	10	100

129-098-30DCC
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Shale	12	12
	Sand	7	19
	Rock, soft	1	20
	Clay, sandy	30	50
	Coal	3	53
	Clay	4	57
	Rock	.5	57.5
	Sand	10.5	68
	Clay	47	115
	Rock	1	116
	Clay, sandy	6	122
	Clay	8	130
	Coal, hard	1	131
	Clay, sandy	5	136
	Rock	2	138
	Clay	33	171
	Coal, hard	9	180
	Sand	20	200

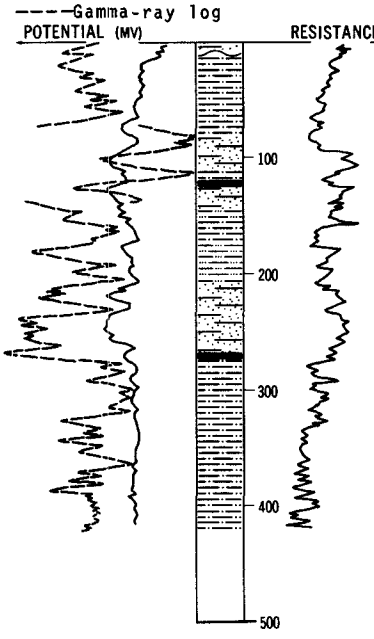
NDSWC 4453

LOCATION: 129-098-32ADB

DATE DRILLED: June 1972

ALTITUDE: 2640
(FT, MSL)

DEPTH: 420
(FT)



	DESCRIPTION OF DEPOSITS
	Alluvium
0-8	Sand, clayey, yellowish-brown.
	Ludlow Formation
8-40	Claystone, silty, sandy, brownish-gray.
	Cannonball Formation
40-80	Claystone, silty, sandy.
	Ludlow Formation
80-111	Sandstone, silty, lignitic.
111-120	Claystone, silty, carbonaceous, brownish-gray.
120-124	Lignite.
124-147	Sandstone, silty, light-olive-gray.
147-157	Siltstone, carbonaceous, gray.
	Cannonball Formation
157-176	Claystone, silty, greenish-gray.
	Ludlow Formation
176-209	Siltstone and sandstone, fine-grained, carbonaceous, olive-gray.
209-267	Sandstone, silty, very fine to medium-grained, greenish-gray.
267-275	Lignite and claystone.
275-321	Claystone, silty, sandy, carbonaceous, olive-gray.
321-420	Claystone, silty, lignitic, greenish-gray.

129-098-35ABC
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand----------	40	40
	Shale----------	73	113
	Coal----------	2	115
	Sand----------	25	140
	Shale----------	7	147
	Coal----------	10	157
	No record----------	13	170

129-098-35BBC
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Topsoil	3	3
	Rock	1	4
	Sand	4	8
	Clay	7	15
	Sand	13	28
	Coal	1	29
	Clay	6	35
	Rock, thin	1	36
	Clay, thin rock at bottom	3	39
	Clay	4	43
	Sand	2	45
	Clay	2	47
	Sand	16	63
	Coal	1	64
	Clay	4	68
	Rock	1	69
	Clay	44	113
	Coal	1	114
	Clay, sandy	6	120
	Clay, dark	20	140
	Coal	2	142
	Sand	18	160
	Clay	8	168
	Coal	3	171
	Sand	7	178

129-099-04CBB
(Log from H & H Service Co.)

Altitude: 2730 ft

	Shale	43	43
	Rock	2	45
	Shale	115	160
	Rock	3	163
	Sand	37	200
	Rock	3	203
	Shale, sandy	15	218
	Rock	4	222
	Sand	40	262
	Coal	4	266
	Sand and shale	29	295
	Rock	5	300
	Coal	4	304
	Sand	36	340
	Rock	2	342
	Coal	18	360
	Rock	3	363
	Coal	2	365
	Shale	41	406
	Coal	4	410
	Shale	125	535
	Rock	2	537
	Shale	108	645
	Sandstone	47	692
	Shale, hard	99	791
	Shale, sandy	21	812
	Shale	61	873
	Sand	52	925

129-099-18BAA
(Log from Dependable Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay, sandy, brown	15	15
	Sand, brown	3	18
	Clay, gray	64	82
	Rock	2	84
	Clay, gray	6	90
	Rock	1	91
	Clay, sandy, blue	5	96
	Clay, gray	11	107
	Coal	2	109
	Clay, gray	10	119
	Rock	1	120
	Clay, gray	7	127
	Rock	1	128
	Clay, gray	1	129
	Coal	1	130
	Sand, gray	28	158

129-099-22BCC
(Log from Dependable Drilling Co.)

Altitude:

	Sandy surface	6	6
	Rock, soft	2	8
	Quicksand, brown	7	15
	Clay, buff	11	26
	Clay, gray	54	80
	Clay, sandy, coarse	6	86
	Clay, gray	18	104
	Clay, sandy, coarse	19	123
	Coal	2	125
	Sand, fairly regular with black specks	21	146
	Sand, better, blue with black specks, rock at bottom	14	160

129-099-26CA
(Log from Dependable Drilling Co.)

Altitude: 2770 ft

	Surface	2	2
	Surface, sandy	13	15
	Clay, yellow	6	21
	Clay, gray	16	37
	Rock	4	41
	Clay, gray	27	68
	Clay, sandy, coarse, green, black	23	91
	Rock	1	92
	Clay, sandy, coarse, green, black	23	115
	Coal	6	121
	Clay, dark, with coal streaks	7	128
	Sand, fine to medium, gray; with mica and black specks	35	163
	Rock	2	165
	Sand, coarse, gray, with clay streaks	10	175
	Clay, sandy, gray, with streaks of sand	16	191
	Clay, gray	2	193
	Clay, hard, with sand and shale specks	6	199
	Coal, loosing water	7	206
	Clay, gray, with coal streaks	16	222
	Rock	2	224
	Sand, fine, gray	6	230

129-099-26CA, Continued
(Log from Dependable Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay, sandy, blue, lost circulation---------	24	254
	Coal----------	13	267
	Clay, gray----------	5	272
	Sand, fine, gray----------	3	275
	Clay, gray----------	2	277
	Rock----------	1	278
	Clay, gray----------	19	297
	Rock----------	1	298
	Clay, gray----------	31	329
	Sand, white, with black specks and streaks of clay and coal----------	58	387
	Coal----------	17	404
	Clay, gray----------	9	413
	Rock----------	1	414
	Sand, gray, fine, with rock ledge----------	6	420
	Clay, sandy, gray----------	10	430
	Sand, white, with black specks and streaks of clay and coal----------	21	451
	Clay, gray----------	37	488
	Clay, sandy, gray, with streaks of coal-----	5	493
	Rock ledge----------	40	533
	Rock----------	61	594
	Clay, sandy, blue----------	18	612
	Clay, sandy, gray----------	5	617
	Clay, sandy, light-gray----------	23	640
	Sand----------	50	690

129-099-30CBB
Auger hole

Altitude: 2685 ft

Alluvium:			
	Silt and clay, sandy, yellowish-brown-------	7	7
	Sand and gravel, clayey, yellowish-brown----	5	12
Ludlow Formation:			
	Sandstone, fine- to medium-grained, gray- and brown-mottled----------	7	19

129-099-30CCB
Auger hole

Altitude: 2680 ft

Alluvium:			
	Sand, silty, clayey, yellowish-brown--------	3	3
	Sand, fine to medium, yellowish-brown-------	4	7
	Clay, silty, sandy, weathered, mottled yellow and brown----------	2	9
	Sand, clayey, fine to medium; a few thin beds of yellowish-brown gravel----------	6	15
	Gravel, clayey----------	7	22
Ludlow Formation:			
	Claystone and sandstone, gray----------	2	24

129-099-30CCC
(Log from Dependable Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Surface	3	3
	Clay, yellow	5	8
	Sand, coarse, yellow	2	10
	Gravel	3	13
	Sand, coarse, white	2	15
	Sand and gravel, rusty	2	17
	Sand, yellow	2	19
	Sand, fine, gray, soft	11	30
	Sand, yellow	2	32
	Clay, gray	13	45
	Sand, blue	4	49
	Clay, blue	6	55
	Clay, brown	9	64
	Clay, brown with sandy streaks	20	84

129-099-31BBC
Auger hole

Altitude: 2670 ft

Alluvium:			
	Sand, fine to medium, yellowish-brown	6	6
	Gravel and sand, brown	9	15
Ludlow Formation:			
	Sandstone, gray	4	19

129-099-31BCB
Auger hole

Altitude: 2671 ft

Alluvium:			
	Silt and sand, brown	2	2
	Sand, fine to medium, pebbly, brown	10	12
Ludlow Formation:			
	Sandstone, gray	2	14

129-099-32BCC
(Log from Dependable Drilling Co.)

Altitude:

	Sand, brown	20	20
	Sand and gravel, blue	19	39
	Clay, blue	19	58
	Coal	4	62
	Clay, blue	26	88
	Sand, fine, blue	1	89
	Clay, blue	4	93
	Sand, fine, blue	1	94
	Clay, sandy, blue	26	120
	Coal, hard	8	128
	Sand, gray, blue	9	137
	Clay, blue	23	160
	Sand, fine, gray	6	166
	Rock, hard	1	167
	Sand, fine, gray	3	170
	Clay, brown	6	176

129-100-07DAA
(Log from Sander Drilling Co.)

Altitude: 2820 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand	12	12
	Rock, hard	6	18
	Sand	5	23
	Clay	36	59
	Rock, white	1	60
	Clay, hard	28	88
	Rock ledge	.5	88.5
	Sand	16.5	105
	Clay	5	110
	Rock ledge	.5	110.5
	Clay	9.5	120
	Coal	6	126
	Clay and coal ledges	28	154
	Clay and sand, green	8	162
	Clay and coal ledges	28	190
	Clay and sand, soft	13	203
	Clay	2	205
	Sand (vein)	20	225
	Coal	5	230
	Clay	2	232

129-100-13DDA
(Log from Dependable Drilling Co.)

Altitude: 2794 ft

	Sand, brown	14	14
	Clay, brown	33	47
	Clay, sandy, blue	6	53
	Clay, gray	21	74
	Rock	2	76
	Clay, gray	15	91
	Rock	2	93
	Clay, gray	34	127
	Clay, gray, with sand streaks	9	136
	Rock	2	138
	Sand, blue	12	150
	Clay, blue	15	165
	Coal	6	171
	Sand, gray	43	214
	Rock, hard	5	219
	Sand, gray	20	239
	Clay, gray, with coal streaks	3	242

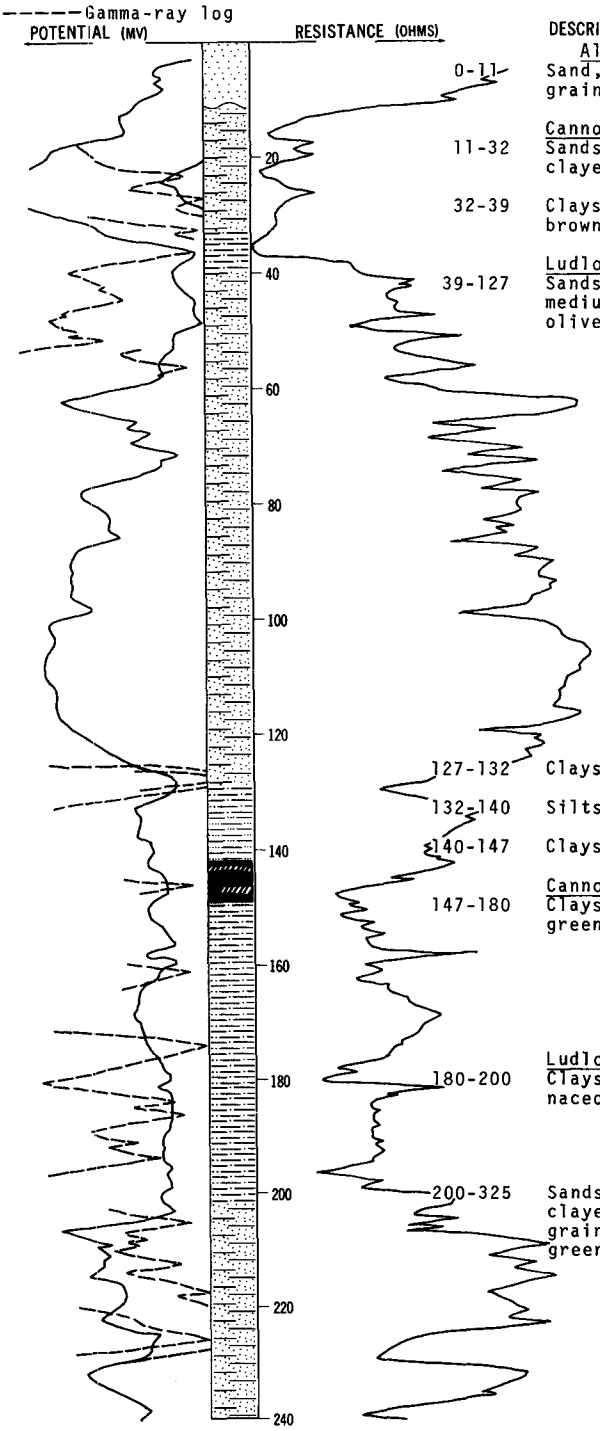
NDSWC 4456

LOCATION: 129-100-19AAA

DATE DRILLED: June 1972

ALTITUDE: 2780
(FT, MSL)

DEPTH: 440
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-11 Sand, fine- to medium-grained, brown.

Cannonball Formation

11-32 Sandstone and siltstone, clayey, brown.

32-39 Claystone, silty, yellowish-brown.

Ludlow Formation

39-127 Sandstone, silty, fine- to medium-grained, carbonaceous, olive-gray.

127-132 Claystone, silty.

132-140 Siltstone, carbonaceous.

140-147 Claystone and lignite.

Cannonball Formation

147-180 Claystone, silty, sandy, greenish-gray.

Ludlow Formation

180-200 Claystone, silty, carbonaceous, gray and black.

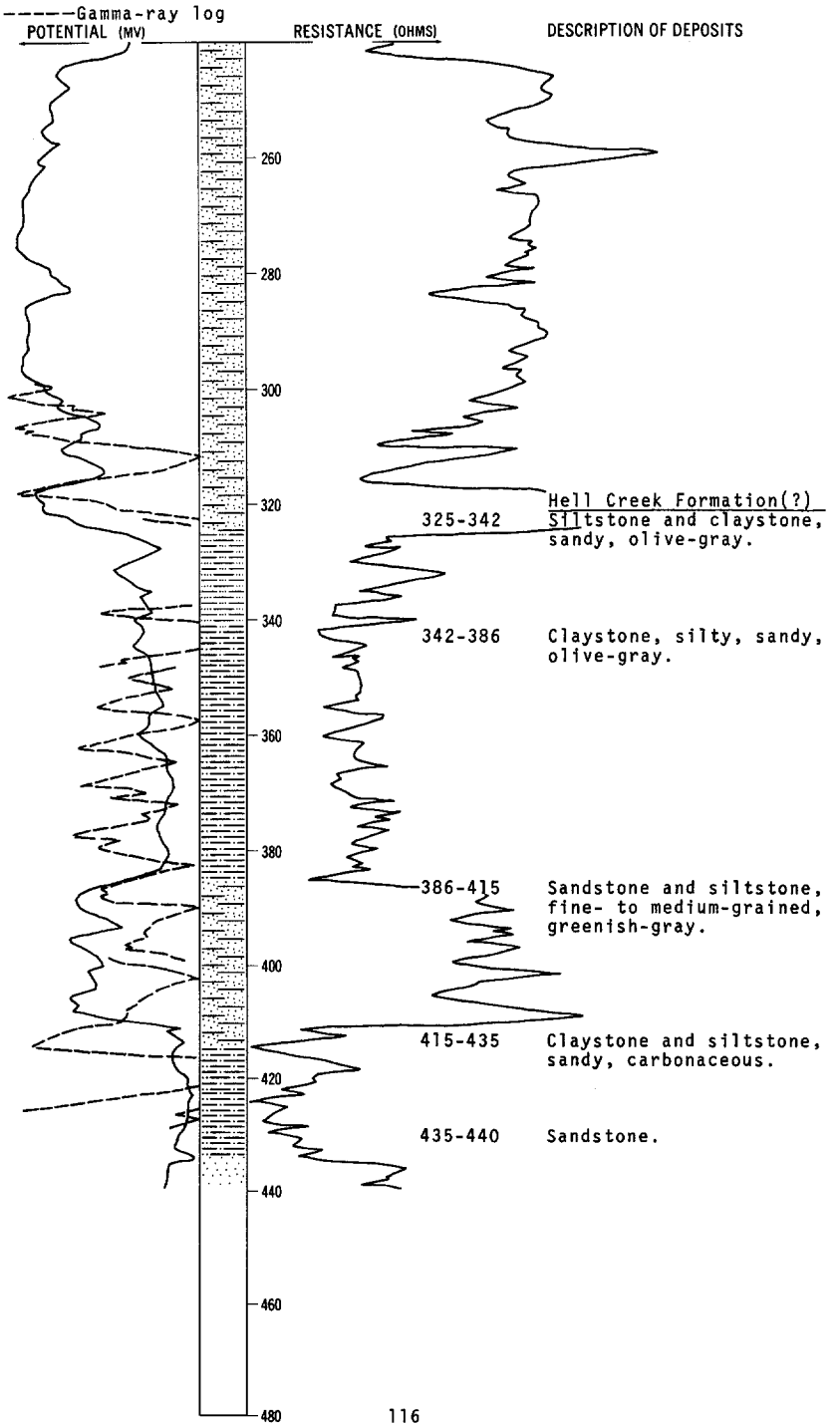
200-325 Sandstone and siltstone, clayey, fine- to medium-grained, carbonaceous, greenish-gray.

LOCATION: 129-100-19AAA

DATE DRILLED: June 1972

ALTITUDE: 2780
(FT, MSL)

DEPTH: 440
(FT)



DESCRIPTION OF DEPOSITS

Hell Creek Formation(?)

325-342 Siltstone and claystone, sandy, olive-gray.

342-386 Claystone, silty, sandy, olive-gray.

386-415 Sandstone and siltstone, fine- to medium-grained, greenish-gray.

415-435 Claystone and siltstone, sandy, carbonaceous.

435-440 Sandstone.

129-100-20DBD
(Log from Dependable Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Surface sand	9	9
	Rock	2	11
	Sand, buff	4	15
	Rock	3	18
	Sand, brown	27	45
	Sand, blue	39	84
	Sand, gray	3	87
	Clay, sandy	7	94
	Coal	5	99
	Sand, blue	17	116
	Clay, brown	7	123

129-100-21DBA
(Log from Dependable Drilling Co.)

Altitude:

	Surface clay	21	21
	Sand, brown	2	23
	Clay, sandy, with coal streaks	11	34
	Sandstone, soft	2	36
	Clay, with rock ledge at bottom	9	45
	Clay, brown	8	53
	Sand, brown and blue, with sandy clay streaks	27	80
	Sand	4	84

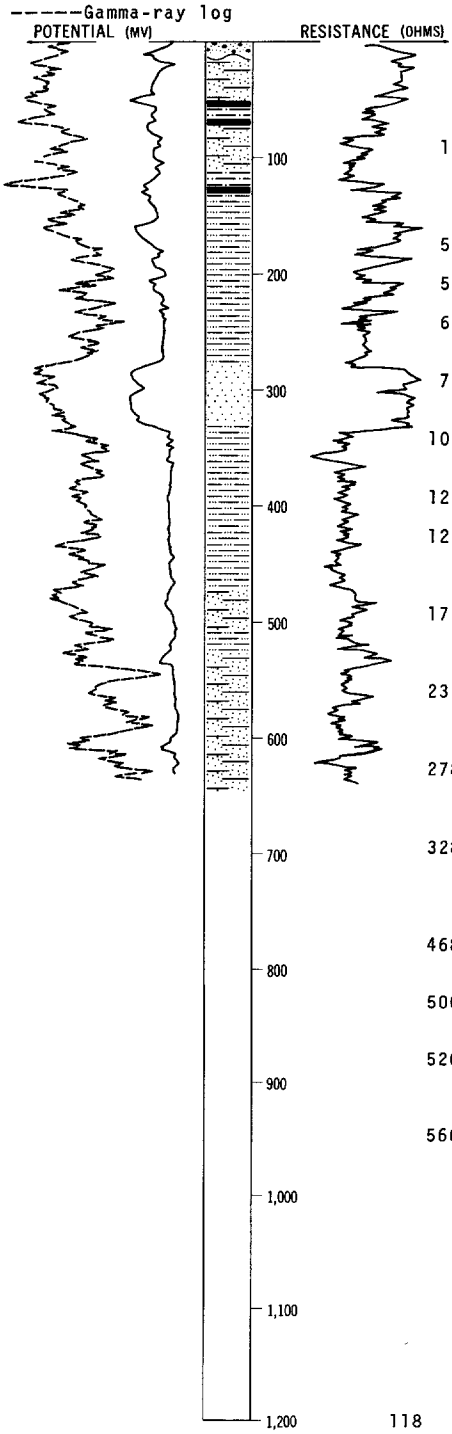
NDSWC 4390 and 4390A

LOCATION: 129-100-25DAA1, 2

DATE DRILLED: October 1971

ALTITUDE: 2688
(FT, MSL)

DEPTH: 640
(FT)



	DESCRIPTION OF DEPOSITS
	Alluvium
0-18	Sand and gravel, clayey, yellowish-gray.
	Ludlow Formation
18-50	Sandstone and siltstone, very fine to fine-grained, carbonaceous, yellowish-gray.
50-55	Lignite.
55-66	Claystone, silty.
66-70	Lignite.
	Cannonball Formation
70-105	Sandstone, silty, very fine grained, carbonaceous.
105-120	Claystone, silty.
	Ludlow Formation
120-127	Lignite.
127-177	Siltstone and sandstone, very fine grained, light-olive-gray.
177-235	Siltstone and claystone, sandy, lignitic, bentonitic.
	Cannonball Formation
235-278	Siltstone and claystone, olive-gray.
	Ludlow Formation
278-328	Sandstone, very fine to medium-grained, loose, carbonaceous.
328-468	Siltstone and claystone, sandy, lignitic, very fine grained, carbonaceous.
	Hell Creek Formation
468-500	Sandstone, silty, very fine grained, greenish-gray.
500-520	Siltstone, sandy, carbonaceous.
520-566	Sandstone, silty, fine-grained, dark-greenish-gray.
566-640	Sandstone and siltstone, clayey, carbonaceous, variegated green and gray.

129-100-26ADA
(Log from Dependable Drilling Co.)

Altitude: 2715 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand, fine, brown	30	30
	Sand, blue, with soft brown rock stringers	13	43
	Clay, sandy, blue	7	50
	Clay, blue	2	52
	Coal	1	53
	Clay, brown	3	56
	Coal	5	61
	Clay, gray	14	75
	Rock, limestone	1	76
	Clay, blue	8	84
	Shale, gray	3	87
	Coal	4	91
	Clay, blue	17	108
	Coal	7	115
	Clay, sandy, blue	11	126
	Rock	4	130
	Clay, brown	4	134
	Clay, gray	22	156
	Clay, gray, with coal stringers	20	176
	Clay, gray	115	291
	Sand	20	311
	Rock, limestone	2	313
	Shale, gray	19	332
	Clay, sandy, gray	21	353
	Clay, gray	16	369
	Sand	6	375
	Rock	1	376
	Clay, sandy, gray	18	394
	Sand	20	414
	Clay, brown	21	435
	Clay, gray	13	448
	Rock	1	449
	Clay, sandy, gray	27	476
	Shale, blue	21	497
	Clay, sandy, gray	21	518
	Sand	59	577
	Rock	1	578

129-100-35CDD
(Log from Dependable Drilling Co.)

Altitude:

	Surface	4	4
	Shale rock	2	6
	Shale, gray, rock at bottom	27	33
	Sand, blue	17	50
	Shale	17	67
	Coal	2	69
	Shale	7	76
	Shale, sandy	7	83
	Rock, hard	1	84
	Coal	7	91
	Sand	41	132

129-101-02CCC
(Log from Sander Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay	22	22
	Rock	2	24
	Clay	6	30
	Coal	6	36
	Clay and sand	.5	36.5
	Clay	35.5	72
	Water sand	18	90

129-101-07CCC
(Log from Dependable Drilling Co.)

Altitude: 2800 ft

	Surface	1	1
	Clay	7	8
	Gravel	4	12
	Sand, fine, buff, loose	2	14
	Clay, buff	8	22
	Clay, blue	3	25
	Clay, dark gray	3	28
	Coal	2	30
	Clay, gray	14	44
	Sand, fine, gray	12	56
	Clay, gray	32	88
	Ledge of rock and sand	9	97
	Clay, gray	49	146
	Clay and coal, brown	8	154
	Clay, gray	25	179
	Rock	1	180
	Clay, sandy, coarse, black	9	189
	Clay, gray	18	207
	Clay, brown	7	214
	Clay, gray	28	242
	Clay, sandy, gray	16	258
	Clay, brown, green	24	282
	Clay, sandy, blue	15	297
	Shale, green, soft	10	307
	Clay and shale, sandy, gray	5	312
	Clay, green	19	331
	Clay, sandy, green	7	338
	Clay, sandy, gray	10	348
	Sand	17	365
	Rock	2	367
	Sand, blue, black, white	23	390

129-101-10BBB
(Log from Dependable Drilling Co.)

Altitude:

	Surface	1	1
	Clay, sandy	7	8
	Rock	1	9
	Sand, blue, black	1	10
	Rock	1	11
	Sand, blue, black, brown	10	21
	Clay, sandy, buff	10	31
	Clay, sandy, blue, rock ledge at bottom	5	36
	Clay, sandy, blue	4	40
	Coal	5	45
	Sand, powdery	6	51
	Clay, gray	11	62

129-101-10BBB, Continued
(Log from Dependable Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Coal	2	64
	Clay and coal, gray	6	70
	Rock	2	72
	Clay, sandy, gray	6	78

129-101-10BBD
(Log from Dependable Drilling Co.)

Altitude:

	Surface	1	1
	Clay, sandy, buff	6	7
	Clay	2	9
	Sand, brown	2	11
	Sand, blue, black	11	22
	Clay, sandy	8	30
	Rock, soft	1	31
	Clay, sandy	9	40
	Coal	6	46
	Clay, with rock ledge at bottom	13	59
	Clay, gray	6	65
	Coal	2	67
	Clay, blue	9	76
	Clay, brown, rock ledge at bottom	10	86
	Clay, gray	8	94
	Clay, sandy, blue	22	116
	Coal	10	126
	Clay, gray	44	170
	Shale, brown	26	196
	Coal	1	197
	Clay, brown	3	200
	Coal	1	201
	Clay	5	206
	Clay, light	26	232
	Sand	5	237
	Clay, gray	17	254
	Sand, white	6	260
	Clay, gray	6	266
	Coal	2	268
	Clay, gray	9	277
	Sand, fine, gray	27	304
	Clay, gray, with rock ledge at bottom	17	321
	Clay, gray	20	341
	Rock, hard	3	344
	Clay, hard, gray, with rock ledge at bottom	43	387
	Clay, gray, with rock ledge at bottom	6	393
	Clay, sandy, hard, blue	17	410
	Coal	5	415
	Clay, sandy, hard, blue	10	425
	Rock	1	426
	Clay, gray, with rock ledge at bottom	19	445
	Clay, brown, hard	9	454
	Rock	2	456
	Clay, gray, with coal streaks	18	474

129-101-12DCA
(Log from Dependable Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Surface	2	2
	Shale, ledge at bottom	52	54
	Sand, blue	6	60
	Sand, hard	2	62
	Sand, ledge at bottom	3	65
	Sand, ledge at 67 ft	5	70
	Ledge, hard	1	71
	Shale, sandy, brown	17	88
	Coal	3	91
	Shale, sandy, brown	15	106
	Shale, white	5	111
	Coal	4	115
	Shale, green	20	135
	Coal	2	137
	Shale, sandy	23	160

129-101-13AAA2
(Log from Dependable Drilling Co.)

Altitude: 2864 ft

	Surface	2	2
	Sand, brown, with clay	22	24
	Rock, hard	4	28
	Sand, fine, brown	12	40
	Clay, gray	5	45
	Sand, fine, gray	5	50
	Clay, gray, rock ledge at bottom	53	103
	Clay, sandy, black and white	15	118
	Rock, hard	1	119
	Clay, blue	18	137
	Coal	4	141
	Clay, gray	31	172
	Rock	1	173
	Sand, soft, fine, black and white	23	196
	Coal	4	200
	Clay, gray	34	234
	Rock	1	235
	Clay	15	250
	Rock	1	251
	Clay, gray	15	266
	Rock	1	267
	Clay, gray, rock ledge at bottom	10	277
	Clay, gray, with coal	10	287

129-101-13AC
(Log from Dependable Drilling Co.)

Altitude: 2770 ft

	Surface	3	3
	Gravel	16	19
	Sand and clay, blue	11	30
	Clay, blue	45	75
	Coal	2	77
	Sand and clay, fine, gray	7	84
	Clay, gray	23	107
	Coal and clay	8	115
	Clay, sandy, blue	18	133
	Clay and sand, gray	18	151
	Sand, fine, gray	15	166
	Clay, gray	7	173
	Sand, medium, gray	14	187
	Clay, sandy, gray	9	196
	Clay, gray	10	206

129-101-31AC
(Log from Dependable Drilling Co.)

Altitude: 2802 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay, sandy, brown	10	10
	Sand, brown	24	34
	Sand, blue	17	51
	Clay, blue, sandy	8	59
	Coal	1	60
	Clay, brown	8	68
	Sand, gray	1	69
	Clay, gray	13	82
	Rock	1	83
	Clay, gray	14	97
	Clay, sandy, blue	15	112
	Clay, brown, coal ledge at bottom	1	113
	Clay, sandy, gray	7	120
	Sand, loose	3	123
	Shale	9	132
	Coal	2	134
	Shale, gray	9	143
	Rock	1	144
	Shale, sandy	9	153
	Coal	2	155
	Shale, brown	10	165
	Shale, sandy, ledge at bottom	15	180
	Sand	6	186
	Shale	7	193
	Shale, sandy	4	197
	Coal	1	198
	Shale, sandy	37	235
	Shale, sandy	18	253
	Sand, sharp, blue, rock at bottom	36	289

129-101-32BCD
(Log from H & H Service Co.)

Altitude: 2808 ft

	Shale	35	35
	Coal	10	45
	Shale	37	82
	Rock	2	84
	Coal	14	98
	Coal	2	100
	Shale	15	115
	Coal	5	120
	Shale	50	170
	Sand	10	180
	Shale	15	195
	Shale	20	215
	Sand	3	218
	Coal	17	235
	Shale	10	245
	Coal and sand	12	257
	Shale	41	298
	Coal and sandy shale	7	305
	Sandy shale	15	320
	Sand	25	345
	Shale, hard, blue	14	359
	Rock, hard	1	360
	Shale, blue with brown streaks	12	372
	Rock, soft	3	375
	Shale, blue, hard	60	435
	Sandstone, hard	3	438
	Shale streak	10	448

129-101-32BCD, Continued
(Log from H & H Service Co.)

Altitude: 2808 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand, firm	22	470
	Sand, soft	4	474
	Sand, firm	16	490

129-102-20CCC
(Log from Dependable Drilling Co.)

Altitude: 2865 ft

	Clay, brown	13	13
	Gravel, with water	4	17
	Clay, blue	13	30
	Clay, sandy, blue	5	35
	Coal	1	36
	Clay, blue	3	39
	Clay, brown	1	40
	Coal	9	49
	Clay, brown	3	52
	Clay, blue	8	60
	Clay, sandy, blue, dry	2	62
	Clay, blue	2	64
	Sand, blue	22	86
	Clay, brown	3	89
	Clay, sandy, blue	5	94
	Rock, limestone	1	95
	Clay, blue	3	98
	Clay, brown	2	100
	Clay, blue	38	138
	Rock ledge	1	139
	Clay, blue	2	141
	Clay, brown	3	144
	Coal	2	146
	Clay, brown	3	149
	Clay, soft, blue	31	180
	Clay, sandy, blue	4	184
	Sand, blue	7	191
	Rock	3	194
	Sand, blue	3	197
	Rock	2	199
	Sand, blue	9	208

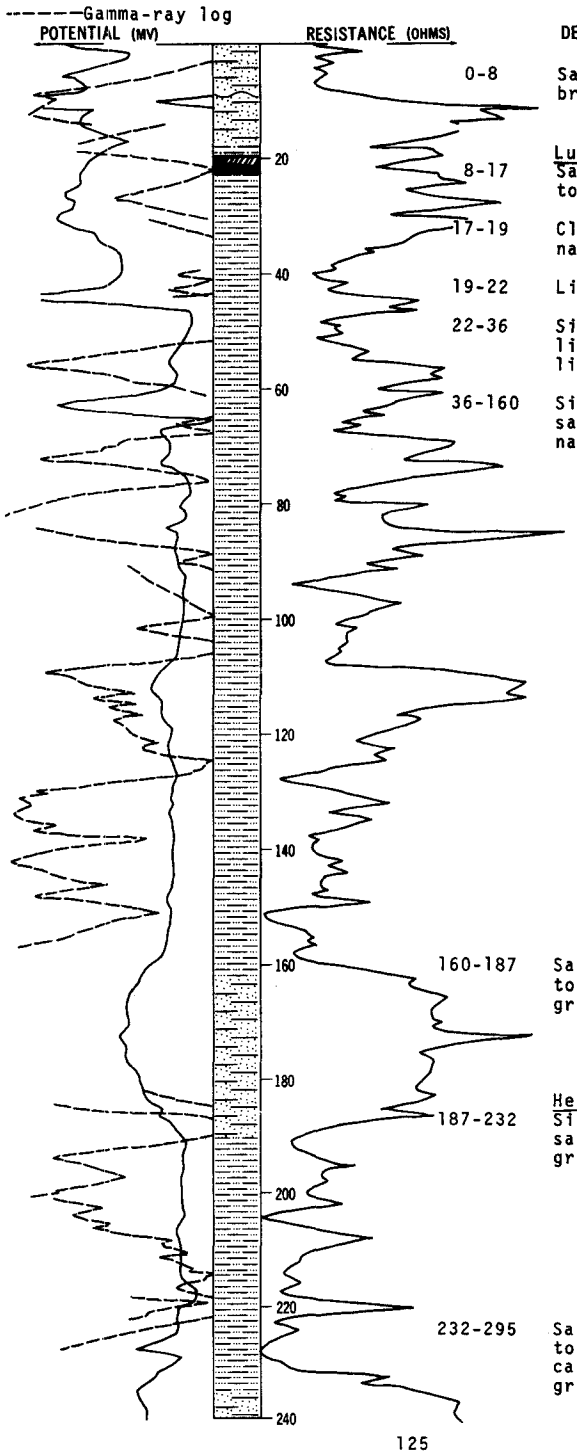
NDSWC 4457

LOCATION: 129-102-27AAA

DATE DRILLED: June 1972

ALTITUDE: 2845
(FT, MSL)

DEPTH: 480
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-8 Sand, clayey, yellowish-brown.

Ludlow Formation

8-17 Sandstone, silty, very fine to medium-grained.

17-19 Claystone, silty, carbonaceous.

19-22 Lignite.

22-36 Siltstone and sandstone, lignitic, fine-grained, light-olive-gray.

36-160 Siltstone and claystone, sandy, lignitic, carbonaceous, greenish-gray.

160-187 Sandstone, silty, very fine to fine-grained, carbonaceous, greenish-gray.

Hell Creek Formation

187-232 Siltstone and claystone, sandy, carbonaceous, greenish-gray.

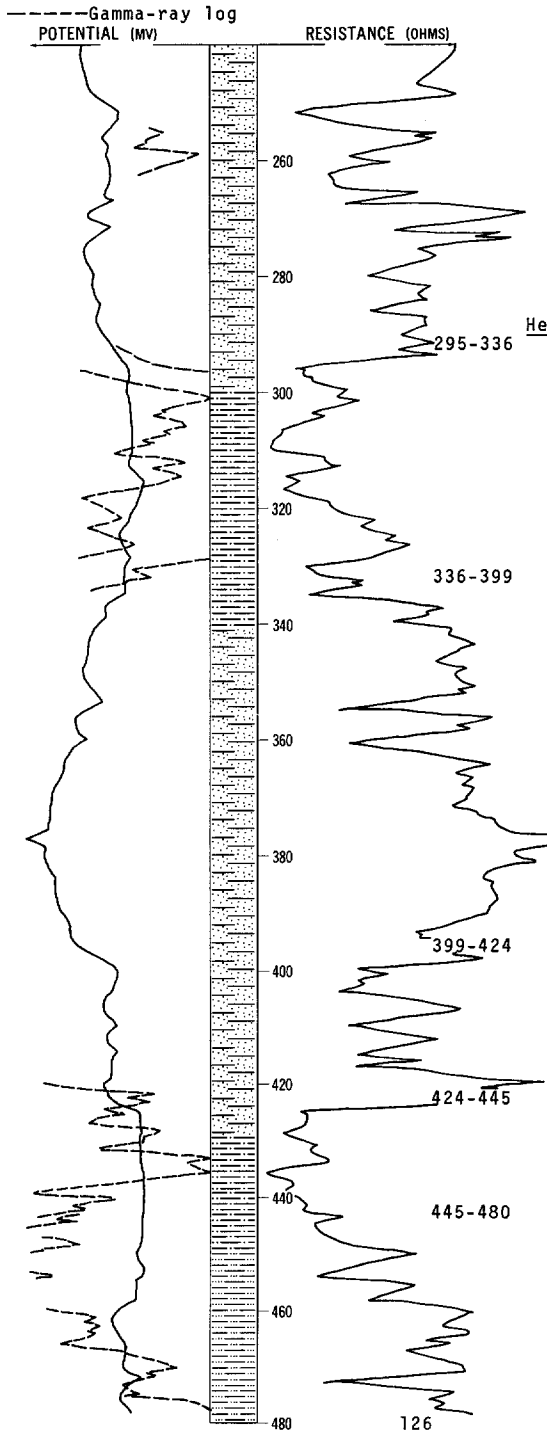
232-295 Sandstone, silty, very fine to fine-grained, friable, carbonaceous, light-olive-gray.

LOCATION: 129-102-27AAA

DATE DRILLED: June 1972

ALTITUDE: 2845
(FT, MSL)

DEPTH: 480
(FT)



DESCRIPTION OF DEPOSITS

Hell Creek Formation, Continued

295-336 Claystone, silty, hard, carbonaceous.

336-399 Sandstone, silty, fine- to medium-grained, carbonaceous, dark-green.

399-424 Sandstone and siltstone, clayey, bentonitic, yellowish-gray.

424-445 Claystone, silty, hard, carbonaceous.

445-480 Siltstone and sandstone, clayey, fine-grained.

129-102-28BAD
(Log from Dependable Drilling Co.)

Altitude: 2851 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand, brown	26	26
	Sand, blue	4	30
	Coal, soft	3	33
	Clay, blue	7	40
	Rock	1	41
	Clay, blue	2	43
	Coal	1	44
	Clay, blue	6	50
	Clay, sandy, blue	6	56
	Clay, blue	9	65
	Sand, blue	5	70
	Clay, blue	32	102
	Clay, sandy, blue	2	104
	Sand, blue	6	110
	Rock	1	111
	Clay, sandy, blue	12	123
	Coal	3	126
	Clay, blue, coal streaks	17	143
	Clay, sandy, blue	4	147
	Clay, blue	8	155
	Clay, sandy, blue	4	159
	Clay, blue	8	167
	Coal	2	169
	Clay, blue	11	180
	Rock	1	181
	Clay, sandy, blue	6	187
	Sand, blue	23	210
	Clay, sandy, blue	10	220

129-102-29CCA
(Log from Dependable Drilling Co.)

Altitude:

	Surface	1	1
	Sand, brown	7	8
	Clay, gray	1	9
	Coal slack	1	10
	Clay, gray	11	21
	Rock	2	23
	Clay, gray	8	31
	Clay, brownish	8	39
	Coal	2	41
	Clay, brownish	5	46
	Clay, blue	4	50
	Clay, gray, with coal streaks	8	58
	Clay, sandy, gray, with coal streaks	6	64
	Sand, fine, with mica	3	67
	Clay, gray	8	75
	Coal	1	76
	Clay, gray, with coal streaks	9	85
	Clay, gray, with sandy streaks	14	99
	Coal	1	100
	Clay, gray, with coal streaks	7	107
	Sand, fine, gray	2	109
	Rock	1	110
	Sand	5	115
	Clay	1	116
	Coal	1	117
	Clay, gray	10	127
	Sand, fine	7	134
	Coal, with fine sandy clay	12	146

129-102-29CCA, Continued
(Log from Dependable Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand, fine, gray	2	148
	Clay, sandy	17	165
	Sand, coarse, blue, green	10	175
	Clay, sandy	9	184
	Coal	2	186
	Clay, with coal	15	201
	Clay, green	29	230
	Rock	1	231
	Clay, sandy, blue, with sandy streaks	24	255
	Shale, green	6	261
	Clay, gray, with brown streaks	15	276
	Clay, sandy, blue	25	301
	Sand, coarse, black and blue	4	305
	Sand, coarse, black and blue, with blue shale	16	321
	Shale, blue, green	6	327

129-102-35BBB
(Log from H & H Service Co.)

Altitude:

	Shale	50	50
	Coal	1	51
	Shale	11	62
	Coal	1	63
	Shale	14	77
	Coal	1	78
	Shale	17	95
	Coal	1	96
	Shale	32	128
	Coal	1	129
	Shale	6	135
	Coal	1	136
	Shale, lignitic and rocky	265	401
	Shale, very firm	28	429
	Rock ledge	1	430
	Sand	12	442
	Sand and shale	14	456
	Shale	5	461

129-103-10DCC
(Log from Dependable Drilling Co.)

Altitude: 2960 ft

	Sand and gravel	16	16
	Rock	2	18
	Clay and coal	32	50
	Sand, fine, gray	3	53
	Clay and coal, gray	54	107
	Rock	1	108
	Clay, gray	4	112
	Sand, medium, blue	3	115
	Clay, gray, rock ledge at bottom	31	146
	Clay, blue, rock ledge at bottom	27	173
	Clay, blue	47	220
	Sand, black and white	22	242
	Rock	1	243
	Sandstone, black and white, soft	54	297
	Shale and clay	12	309

129-103-13ADA
(Log from Dependable Drilling Co.)

Altitude: 2890 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand, surface	12	12
	Clay, with coal streaks	8	20
	Coal	2	22
	Clay	5	27
	Coal	5	32
	Clay	4	36
	Clay, sandy	6	42
	Coal	2	44
	Clay, sandy	9	53
	Coal	1	54
	Rock	1	55
	Sand	7	62
	Clay	6	68
	Rock	2	70
	Clay, sandy, with coal streaks	34	104
	Clay	23	127
	Sand	19	146
	Rock	1	147
	Sand	7	154
	Clay, with coal streaks	24	178
	Coal, hard	4	182
	Clay, with coal streaks	6	188
	Sand, fine mica	7	195
	Clay, brown	43	238
	Rock	1	239
	Sand, blue with clay streaks	8	247
	Sand, blue	6	253
	Rock	1	254
	Sand, blue	35	289

129-103-23BDD
(Log from Dependable Drilling Co.)

Altitude: 2950 ft

	Sand, surface	20	20
	Gravel	2	22
	Coal with brown clay	4	26
	Clay, gray	38	64
	Coal	6	70
	Clay, brown	5	75
	Coal	5	80
	Clay, gray	10	90
	Coal	2	92
	Clay, brown	8	100
	Clay, sandy	20	120
	Clay, white and gray	6	126
	Clay, gray	4	130
	Rock	2	132
	Clay, brown and gray	24	156
	Coal	4	160
	Clay, sandy, gray	28	188
	Clay, yellow	12	200
	Clay, brown	8	208
	Coal	4	212
	Rock	1	213
	Clay, gray	16	229
	Clay, sandy	35	264
	Clay, brown	6	270
	Clay, gray	10	280
	Rock	3	283
	Clay, blue	28	311
	Clay, gray	21	332

129-103-23BDD, Continued
(Log from Dependable Drilling Co.)

Altitude: 2950 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay, blue	21	353
	Clay, blue	9	362
	Coal	2	364
	Clay, sandy, blue	9	373
	Clay, blue	72	445
	Rock, sand	2	447
	Sand	9	456
	Sand	20	476
	Shale	2	478

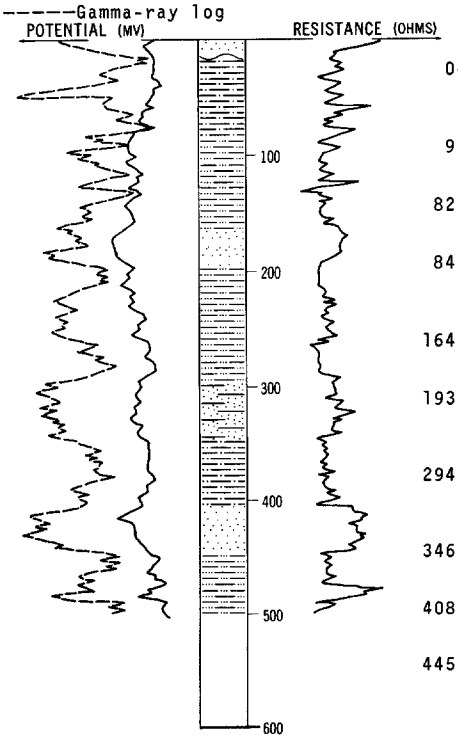
NDSWC 4464

LOCATION: 129-104-03DDD

DATE DRILLED: July 1972

ALTITUDE: 3130
(FT, MSL)

DEPTH: 500
(FT)



DESCRIPTION OF DEPOSITS

	Alluvium
0-9	Sand, medium- to coarse-grained, yellowish-brown.
	Ludlow Formation
9-82	Claystone, silty, tight, carbonaceous, greenish-gray.
82-84	Lignite.
	Hell Creek Formation
84-164	Siltstone and sandstone, fine-grained, carbonaceous, greenish-gray.
164-193	Sandstone, fine-grained, greenish-gray.
193-294	Siltstone and claystone, carbonaceous, greenish-gray.
294-346	Sandstone and siltstone, very fine to fine-grained, greenish-gray.
346-408	Claystone, silty, greenish-gray.
408-445	Sandstone, fine- to medium-grained, greenish-gray.
445-500	Siltstone and sandstone, clayey, fine-grained.

129-104-17ADD1
(Log from Dependable Drilling Co.)

Altitude: 3165 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand, brown	30	30
	Sand, blue, with coal streaks	6	36
	Limestone rock	1	37
	Sand, blue, with coal streaks	2	39
	Clay, blue	15	54
	Coal	1	55
	Clay, gray	3	58
	Rock ledge	1	59
	Clay, gray	2	61
	Rock ledge	1	62
	Clay, gray	23	85
	Rock ledge	1	86
	Clay, blue	20	106
	Sand, blue	25	131
	Limestone rock	1	132
	Sand, blue, with coal streaks	11	143
	Clay, blue	3	146

129-104-23BCC
(Log from Dependable Drilling Co.)

Altitude:

	Surface sand, brown	8	8
	Shale, loose, brown	15	23
	Clay	3	26
	Shale, blue	7	33
	Sandrock	2	35
	Shale, blue	13	48
	Coal	7	55
	Shale, blue, with soft coal stringers	6	61
	Shale, sandy, blue	19	80
	Sandrock	1	81
	Shale, sandy, blue	9	90
	Coal	10	100
	Clay, blue	30	130
	Sand, blue	19	149
	Rock	2	151
	Sand, blue	28	179
	Shale, blue	5	184

NDSWC 4309

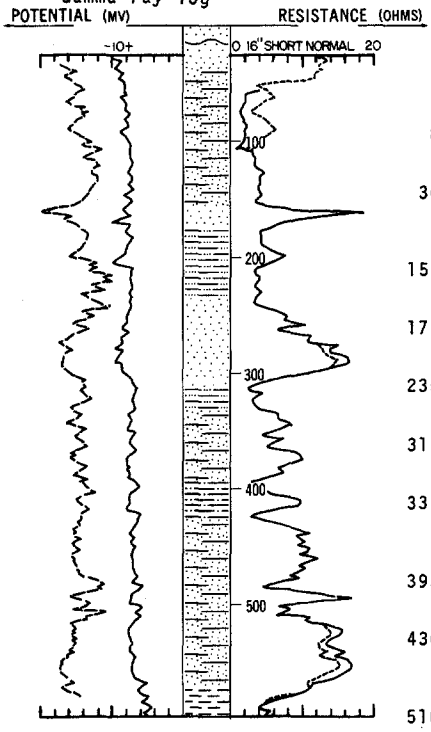
LOCATION: 129-104-34ADA

DATE DRILLED: June 1971

ALTITUDE: 3013
(FT, MSL)

DEPTH: 595
(FT)

Schlumberger induction log------
-----Gamma-ray log



	DESCRIPTION OF DEPOSITS
	Alluvium
0-8	Sand, fine- to medium-grained, brown.
	Hell Creek Formation
8-30	Sandstone, clayey, fine-grained, yellowish-gray.
30-155	Sandstone and siltstone, shaly, carbonaceous, greenish-gray.
155-175	Sandstone, fine to very fine grained, greenish-gray.
175-235	Siltstone and claystone, sandy, dark-greenish-gray.
235-315	Sandstone, fine- to medium grained, dark-greenish-gray.
315-335	Siltstone and claystone, sandy, carbonaceous.
335-395	Sandstone and siltstone, fine- to medium-grained, friable.
395-430	Claystone and sandstone, carbonaceous.
430-510	Sandstone and siltstone, friable, greenish-gray.
	Fox Hills Formation
510-575	Sandstone and siltstone, fine- to medium-grained, greenish-brown.
	Pierre Formation
575-595	Shale, black, fissile.

Bit size 6-3/4".
Natural drilling mud.
Rm 6.13 @ 78°F
Rmf 4.92 @ 78°F

CD none, SO none.

LOCATION: 129-104-34ADA

DATE DRILLED: June 1971

ALTITUDE: 3013
(FT, MSL)

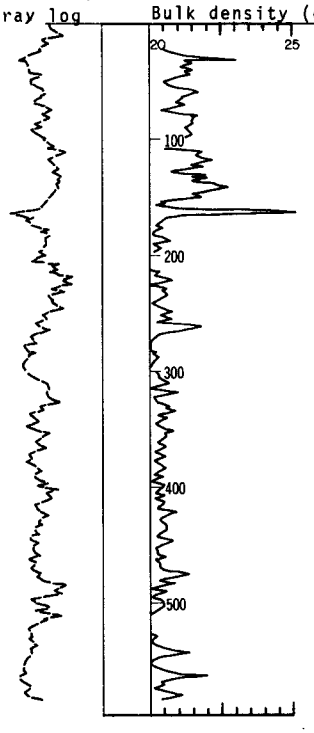
DEPTH: 595
(FT)

Schlumberger gamma-gamma log

Gamma-ray log

Bulk density (grams/cc)

DESCRIPTION OF DEPOSITS



129-104-34ADD1
(Log from Sander Drilling Co.)

Altitude: 3025 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand	29	29
	Rock	2	31
	Sand	12	43
	Clay	34	77
	Sand	15	92
	Clay	6	98
	Water sand	22	120

129-104-34ADD2
(Source unknown)

Altitude:

	Sand and gravel	14	14
	Rock	1.5	15.5
	Gravel and quicksand	30.5	46
	Coal	2	48
	Clay and sand	22	70
	Clay	5	75
	Sand	10	85
	Rock	2	87
	Sand	9	96
	Clay	4	100
	Water sand	28	128

129-104-34DAD
(Source unknown)

Altitude:

	Sand	6	6
	Clay, sandy	12	18
	Shale	16	34
	Sand	4	38
	Rock	4	42
	Sand and shale	6	48
	Shale and coal	6	54
	Shale	58	112
	Shale, sandy	4	116
	Sand	8	124
	Shale, sandy	12	136
	Rock	2	138
	Sand	2	140
	Rock	2	142
	Sand	10	152
	Shale	2	154

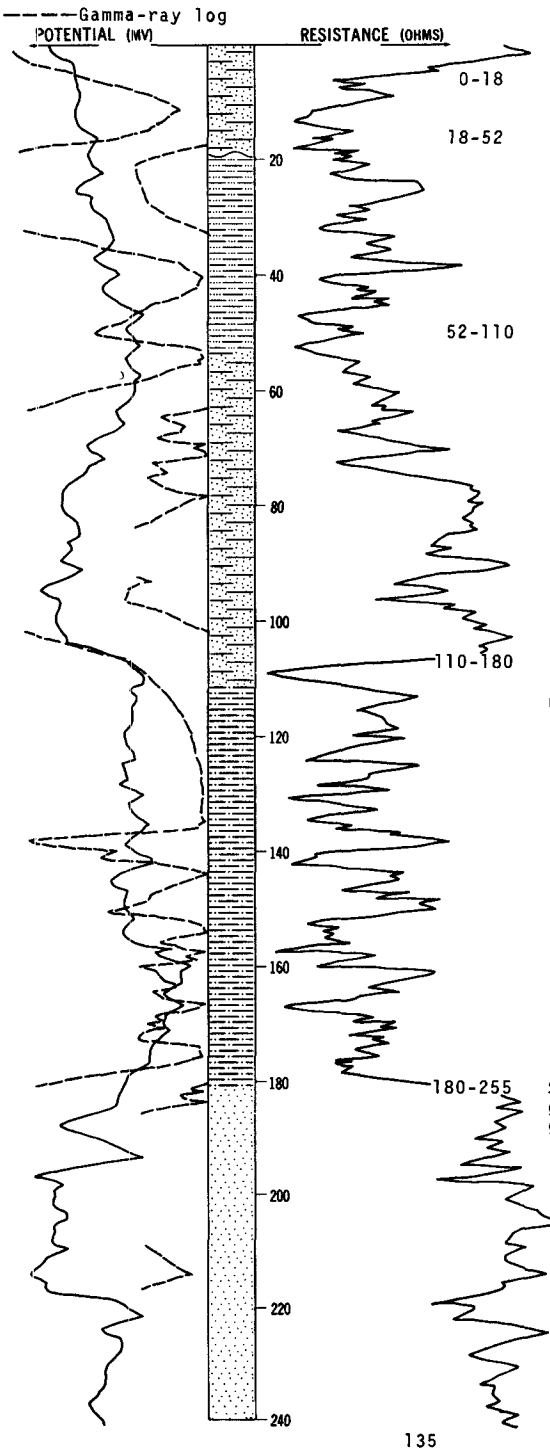
NDSWC 4465

LOCATION: 129-105-02CAA

DATE DRILLED: July 1972

ALTITUDE: 3083
(FT, MSL)

DEPTH: 420
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-18 Sand and clay, brown.

Hell Creek Formation

18-52 Siltstone and sandstone, clayey, fine-grained, carbonaceous, greenish-gray.

52-110 Sandstone, silty, clayey, fine- to medium-grained, carbonaceous, greenish-gray.

110-180 Claystone and siltstone, sandy, bentonitic, carbonaceous.

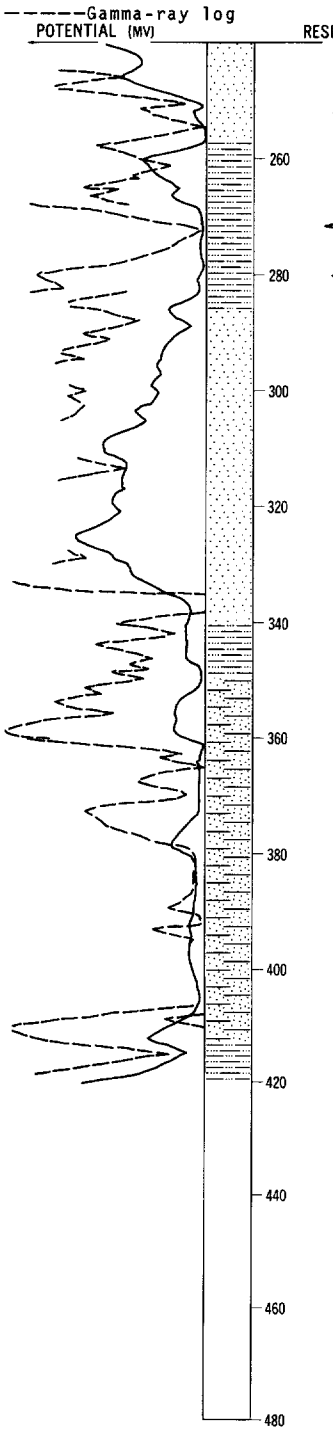
180-255 Sandstone, fine- to medium-grained, clean, medium-gray.

LOCATION: 129-105-02CAA

DATE DRILLED: July 1972

ALTITUDE: 3083
(FT, MSL)

DEPTH: 420
(FT)



DESCRIPTION OF DEPOSITS

Hell Creek Formation, Continued

255-284 Siltstone and sandstone, clayey, carbonaceous.

284-337 Sandstone, fine- to medium-grained, loose, carbonaceous.

337-350 Siltstone and claystone, sandy, greenish-gray to brownish-gray.

350-414 Sandstone and siltstone, clayey, fine-grained, carbonaceous.

414-420 Siltstone and sandstone, greenish-brown.

129-105-20ABC
(Log from Dependable Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay, sandy, gray	10	10
	Clay, gray	4	14
	Clay, with gravel, gray	3	17
	Clay, gray	3	20
	Clay, sandy, gray	3	23
	Sand	11	34
	Clay, sandy, gray	2	36
	Clay, sandy, blue	9	45
	Sand, blue	13	58
	Clay, brown	5	63
	Clay, sandy, gray	16	79
	Sand, loose	3	82
	Clay, gray	6	88
	Clay, sandy, blue	8	96
	Sand, blue	4	100
	Clay, sandy, blue	2	102
	Sand, coarse, blue-black, with clay streaks-	35	137
	Rock	2	139
	Clay, sandy, blue	5	144

129-106-09ADC
Auger hole LM-38

Altitude: 2857 ft

	Sand, fine	15	15
	Sand, medium	4	19
	Clay, sandy, lumpy, blue	2	21
	Clay, sandy, sticky, blue	2	23

129-106-16ADB
Auger hole LM-39

Altitude: 2875 ft

	Sand, fine	7	7
	Sand, medium, lignitic	4	11
	Sand, coarse, wet	4	15
	Sand, clayey, lumpy, blue	3	18

130-092-18ADD
(Log from Knutson Drilling Co.)

Altitude:

	Sand	70	70
	Clay	13	83
	Clay	27	110
	Rock, hard	1	111
	Clay	64	175
	Rocks and sandy clay	15	190
	Rock	1	191
	Clay, green, sandy	5	196
	Hard rock	1.5	197.5
	Clay, sandy	7.5	205
	Rock	.5	205.5
	Sand	24.5	230

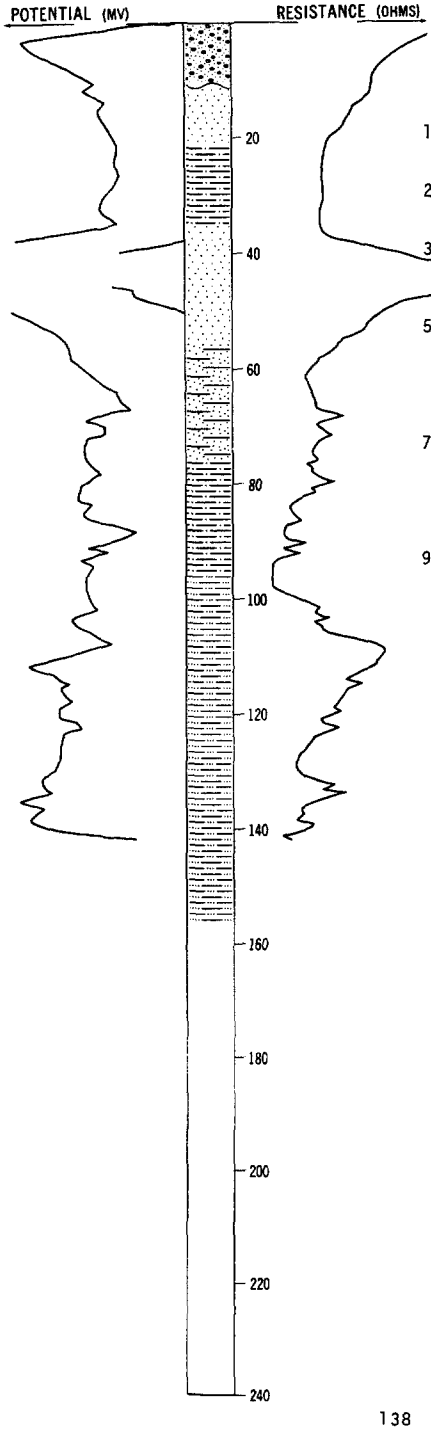
NDSWC 4310

LOCATION: 130-092-22CBB

DATE DRILLED: June 1971

ALTITUDE: 2330
(FT, MSL)

DEPTH: 155
(FT)



	DESCRIPTION OF DEPOSITS
	Alluvium
0-10	Sand, clayey, gravelly, yellowish-gray.
	Cannonball Formation
10-20	Sandstone, fine-grained, greenish-gray.
20-35	Claystone, sandy, carbonaceous, olive-gray.
35-55	Sandstone, green and gray.
55-75	Sandstone and siltstone, clayey, greenish-gray.
75-95	Claystone, silty, dark-brownish-gray.
95-155	Siltstone, shaly, massive.

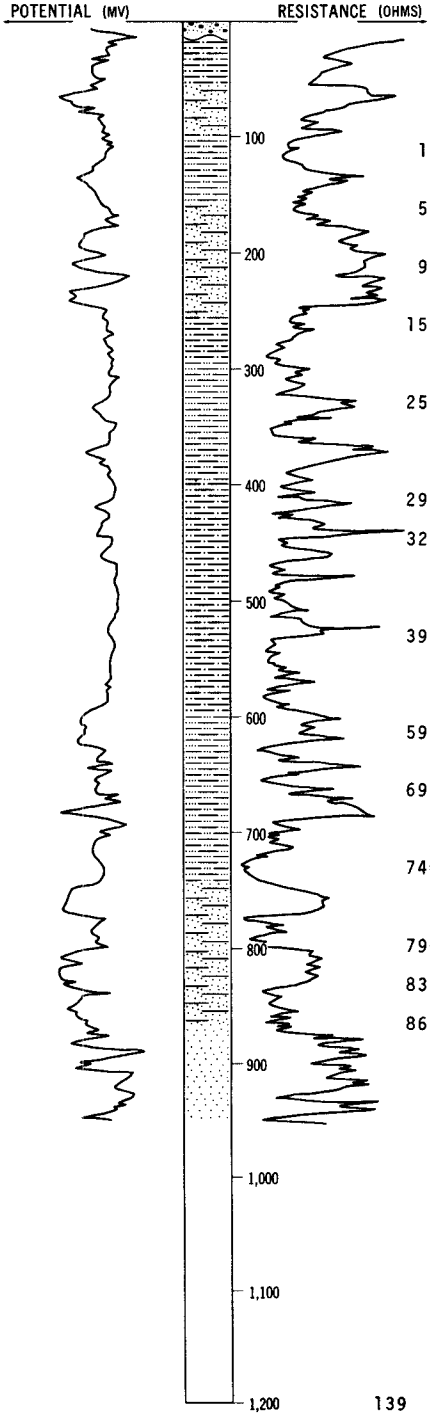
NDSWC 4311

LOCATION: 130-092-22CCC

DATE DRILLED: July 1971

ALTITUDE: 2385
(FT, MSL)

DEPTH: 955
(FT)



DESCRIPTION OF DEPOSITS

	Alluvium
0-10	Sand and gravel, fine- to coarse-grained, reddish-brown.
	Cannonball Formation
10-55	Claystone, silty, sandy, yellowish-brown.
55-95	Sandstone, silty, fine-grained.
95-155	Siltstone, sandy.
	Ludlow Formation
155-250	Sandstone, silty, fine- to medium-grained.
	Cannonball Formation
250-290	Claystone and siltstone, carbonaceous, dark-brownish-gray.
	Ludlow Formation
290-320	Siltstone, sandy, clayey.
320-395	Siltstone and sandstone, clayey, sandy, carbonaceous, olive-gray.
	Hell Creek Formation
395-595	Shale and siltstone, carbonaceous, greenish-gray; thin beds of sandstone.
595-695	Siltstone and sandstone, fine-grained, carbonaceous.
695-740	Siltstone, sandy, carbonaceous, greenish-brown.
740-790	Sandstone, silty, very fine to fine-grained, friable.
	Fox Hills Formation
790-835	Sandstone, silty.
835-860	Sandstone and siltstone.
860-955	Sandstone, very fine to medium-grained.

130-092-27AAB
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Gravel	11	11
	Clay, with thin rock at bottom	9	20
	Clay	5	25
	Sand	5	30
	Hard rock	2	32
	Sand	3	35
	Rock	2	37
	Sand	23	60
	Hard rock	1	61
	Clay	9	70
	Clay, with thin rock at bottom	12	82
	Sand, dark	6	88
	Soft rock	1	89
	Sand, coarse	29	118
	Clay, dark	3	121

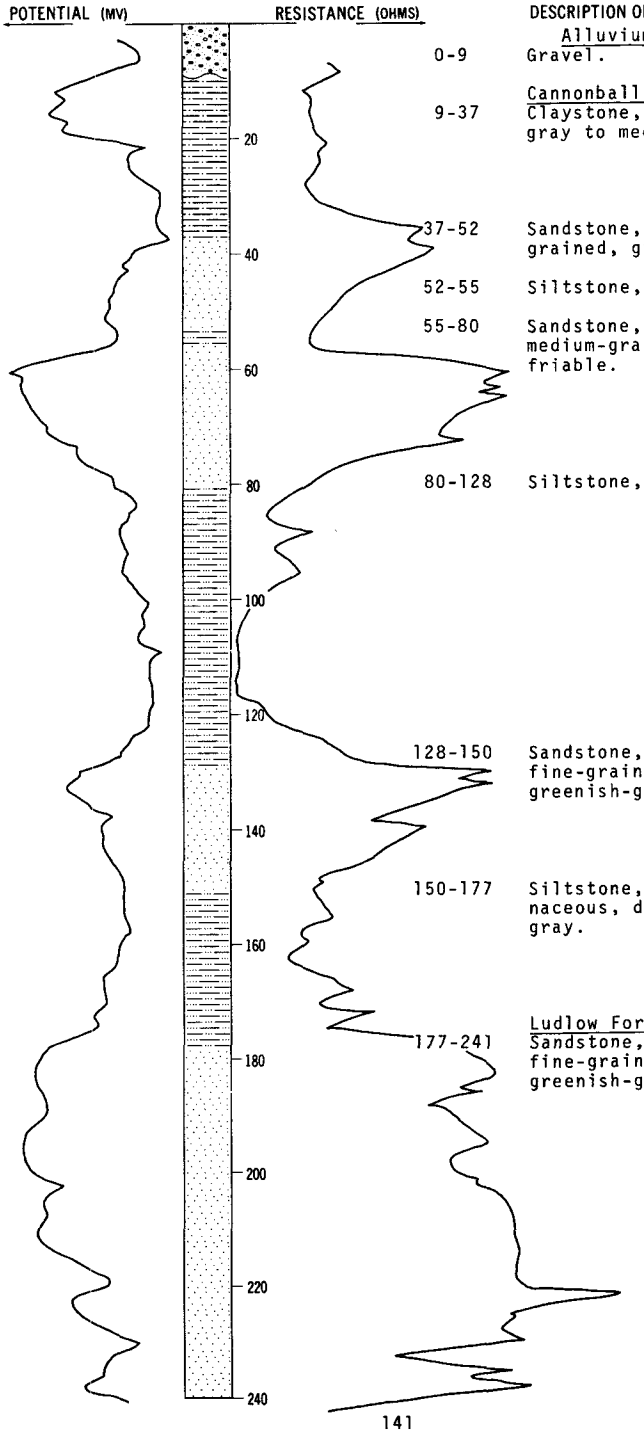
NDSWC 4381 and 8344

LOCATION: 130-092-27BBA1, 3

DATE DRILLED: September 1971

ALTITUDE: 2383
(FT, MSL)

DEPTH: 400
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-9 Gravel.

Cannonball Formation

9-37 Claystone, silty, yellowish-gray to medium-gray.

37-52 Sandstone, very fine grained, gray.

52-55 Siltstone, sandy.

55-80 Sandstone, very fine to medium-grained, loose, friable.

80-128 Siltstone, sandy.

128-150 Sandstone, very fine to fine-grained, loose, dark-greenish-gray.

150-177 Siltstone, sandy, carbonaceous, dark-brownish-gray.

Ludlow Formation

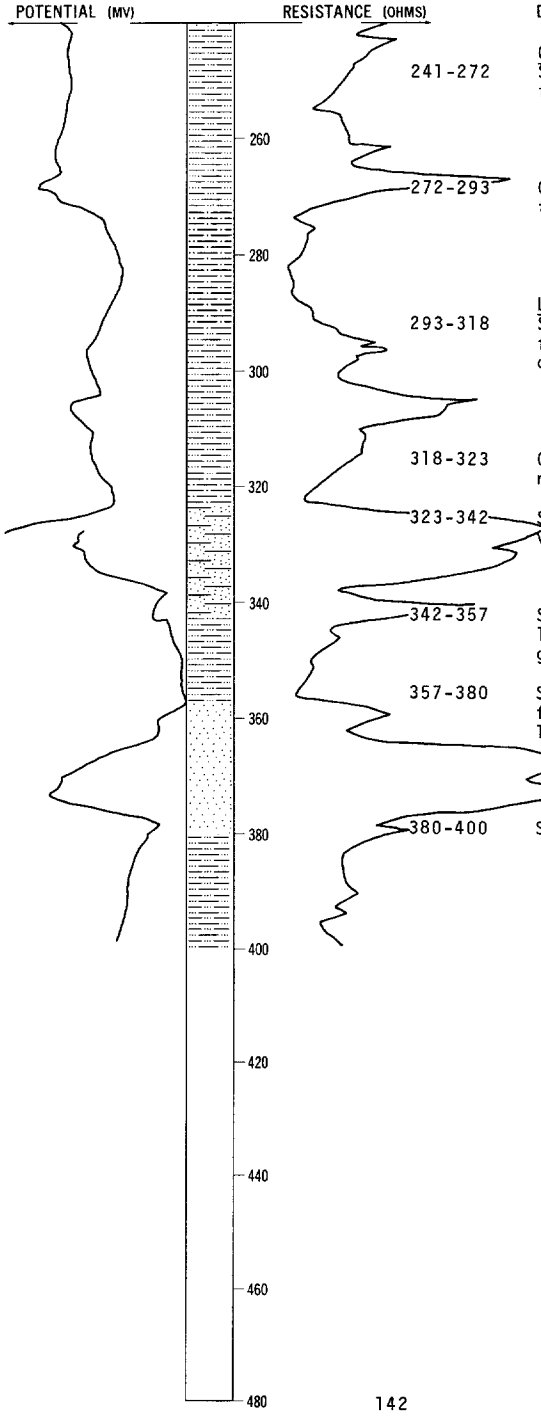
177-241 Sandstone, very fine to fine-grained, loose, dark-greenish-gray.

LOCATION: 130-092-27BBA1, 3

DATE DRILLED: September 1971

ALTITUDE: 2383
(FT, MSL)

DEPTH: 400
(FT)



	DESCRIPTION OF DEPOSITS
	Cannonball Formation
241-272	Siltstone, sandy, clayey, friable, light-olive-gray.
272-293	Claystone, silty, light- to medium-gray.
	Ludlow Formation
293-318	Siltstone, sandy, very fine to fine-grained, dark-greenish-gray.
318-323	Claystone, silty, carbonaceous.
323-342	Sandstone and siltstone, very fine to fine-grained.
342-357	Siltstone and claystone, lignitic, light-olive-gray to brownish-black.
357-380	Sandstone, very fine to fine-grained, carbonaceous, light-greenish-gray.
380-400	Siltstone and claystone.

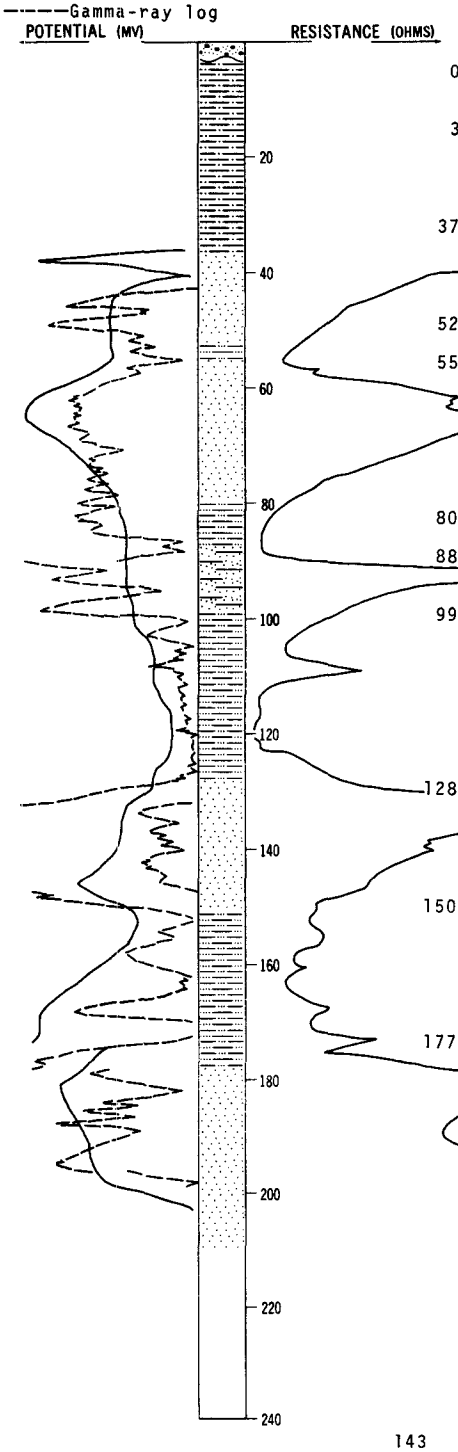
NDSWC 4380

LOCATION: 130-092-27BBA2

DATE DRILLED: September 1971

ALTITUDE: 2383
(FT, MSL)

DEPTH: 210
(FT)



	DESCRIPTION OF DEPOSITS
	Alluvium
0-3	Gravel.
	Cannonball Formation
3-37	Claystone, silty, yellowish-gray to medium-gray.
37-52	Sandstone, very fine grained, gray.
52-55	Siltstone, sandy.
55-80	Sandstone, very fine to medium-grained, loose, friable.
80-88	Siltstone, sandy.
88-99	Sandstone, silty, fine-grained, brown.
99-128	Siltstone, sandy, clayey, carbonaceous.
128-150	Sandstone, very fine to fine-grained, loose, dark-greenish-gray.
150-177	Siltstone, sandy, carbonaceous, dark-brownish-gray.
	Ludlow Formation
177-210	Sandstone, very fine to fine-grained, loose, dark-greenish-gray.

130-093-06AAA
(Log from Alfred Jacobson)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Gravel	10	10
	Sand, coarse	2	12
	Clay, blue	28	40
	Clay, hard	50	90
	Sand, black, sticky	8	98
	Clay, tough	42	140
	Water sand	10	150

130-093-20CAA
(Log from Knutson Drilling Co.)

Altitude:

	Sand, with thin rock at bottom	25	25
	Clay	17	42
	Sand	2	44
	Rock	1	45
	Clay	8	53
	Sand, coarse	5	58
	Clay, with thin rock at bottom	2	60
	Clay	7	67
	Rock, soft	1	68
	Clay, sandy	3	71
	Rock	1	72
	Clay, hard	7	79
	Rock	.5	79.5
	Clay	4.5	84
	Rock	1	85
	Clay	10	95

130-093-20DAA
(Log from Knutson Drilling Co.)

Altitude:

	Sand	6	6
	Clay	12	18
	Hard rock	1	19
	Sand	3	22
	Hard rock	1	23
	Clay	2	25
	Sand	4	29
	Clay	4	33
	Sand, with thin rock	3	36
	Clay	4	40
	Sand	2	42
	Clay, with thin rock	2	44
	Clay	2	46
	Hard rock	.5	46.5
	Clay	5.5	52

130-093-31ADD
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay	15	15
	Clay, sandy, coarse, with thin rock at bottom	40	55
	Sand	21	76
	Rock	1	77
	Sand	2	79
	Rock	2	81
	Sand	4	85
	Coal	1	86
	Sand	6	92
	Clay, dark	3	95

130-094-03CDD
(Log from Knutson Drilling Co.)

Altitude:

	Sand	35	35
	Clay, sandy	11	46
	Clay, sandy, blue, with thin rock	5	51
	Clay, sandy, blue, with rock at bottom	22	73
	Clay	43	116

130-094-06BCA
(Log from Knutson Drilling Co.)

Altitude:

	Sand	4	4
	Hard rock	1	5
	Sand	72	77
	Clay	3	80

130-094-07CBC
(Log from Knutson Drilling Co.)

Altitude: 2575 ft

	Sand, medium to coarse	23	23
	Sand, fine	41	64

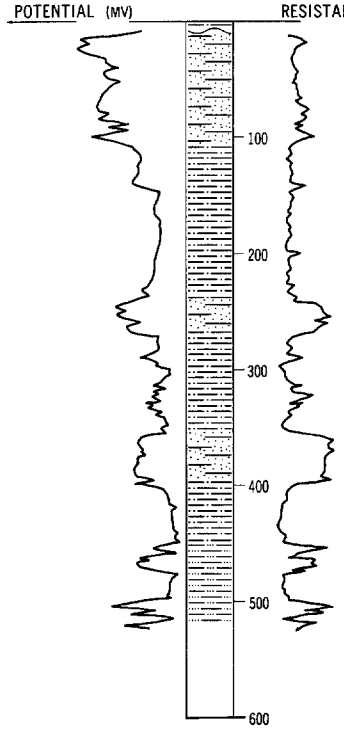
NDSWC 8348 and 8348A

LOCATION: 130-094-07DDD1, 2

DATE DRILLED: June 1972

ALTITUDE: 2570
(FT, MSL)

DEPTH: 520
(FT)



	DESCRIPTION OF DEPOSITS
	Alluvium
0-7	Clay, sandy, silty, yellowish-brown.
	Ludlow Formation
7-100	Sandstone, silty, clayey, very fine to medium-grained, gray.
	Cannonball Formation
100-238	Claystone and siltstone, calcareous, light-olive-gray.
	Ludlow Formation
238-266	Sandstone, silty, fine- to medium-grained, greenish-gray.
	Cannonball Formation
266-356	Claystone and siltstone, sandy, carbonaceous.
	Ludlow Formation
356-398	Sandstone, silty, very fine to fine-grained, light-gray.
398-450	Claystone, silty, carbonaceous, greenish-brown.
450-520	Siltstone and claystone, sandy, lignitic, brownish-gray.

130-094-10DAC
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand	30	30
	Clay, white, sandy	30	60
	Clay	25	85
	Coal	1	86
	Sand	57	143

130-094-12CAA
(Log from Knutson Drilling Co.)

Altitude:

	Clay	3	3
	Shale	17	20
	Coal, soft	3	23
	Sand and shale	62	85
	Sand	25	110
	Clay, hard	2	112

130-094-19DCD
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sandy	53	53
	Rock	2	55
	Sand	12	67
	Clay	6	73

130-094-20CDD
(Log from Knutson Drilling Co.)

Altitude:

	Sand	16	16
	Coal	2	18
	Shale	12	30
	Sand	2	32
	Rock	2	34
	Sand	32	66
	Clay, sandy, blue	31	97
	Clay, sandy	33	130
	Clay, dark	13	143
	Rock	1	144
	Clay, sandy	14	158
	Clay, soft	6	164
	Clay	36	200
	Sand	20	220
	Rock, hard	2	222
	Clay	28	250
	Clay, sandy	4	254
	Rock, hard	3	257
	Sand	30	287
	Clay, sandy	7	294

130-094-31BCC
(Log from Knutson Drilling Co.)

Altitude:

	Topsoil	2	2
	Rock	2	4
	Clay	12	16
	Coal, soft	1	17
	Shale	53	70
	Sand	46	116

130-094-36CAD
(Log from Knutson Drilling Co.)

Altitude:

	Silt	14	14
	Rock, loose	1	15
	Sand	25	40
	Shale	12	52
	Clay, sandy	11	63
	Rock	1	64
	Sand	12	76
	Clay	8	84
	Rock	1	85
	Sand	15	100
	Clay	5	105

130-095-01CDC
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Shale	8	8
	Coal, soft	3	11
	Shale	15	26
	Sand	74	100

130-095-04BBB
(Log from Alfred Jacobson)

Altitude:

	"Gumbo"	30	30
	Water-bearing material	12	42
	Sandstone	2	44
	Sand, blue	31	75
	Sand, blue, water	5	80
	"Main water"	5	85
	Sand; water	15	100

130-095-06BBB
NDSWC 999
(Log from Robinove, 1956)

Altitude: 2765 ft

	Clay, sandy, yellow	8	8
	Clay, light-brown	8	16
	Lignite, brown	1	17
	Clay, gray	6	23
	Clay, sandy, light-gray	5	28
	Clay, brown	1	29
	Lignite, brown	1	30
	Clay, sandy, light-gray	14	44
	Clay, sandy, dark-gray	5	49
	Lignite, shaly	2	51
	Clay, sandy, gray	4	55
	Sand, fine; gray clay	10	65
	Clay, sandy, light-gray; some selenite	135	200

130-095-06DDD
(Log from Alfred Jacobson)

Altitude:

	Clay, yellow	20	20
	Water-bearing material	5	25
	"Tough gumbo"	30	55
	Sand and clay	10	65
	Sand; water	30	95

130-095-07CCB
(Log from Knutson Drilling Co.)

Altitude:

	Sand	39	39
	Coal	1	40
	Clay	6	46
	Clay, sandy	4	50
	Clay	6	56
	Coal	2	58
	Clay, sandy	7	65

130-095-07CCB, Continued
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay	8	73
	Clay	13	86
	Clay, sandy	4	90
	Coal	2	92
	Sand, gray	34	126

130-095-07CCC
NDSWC 998
(Log from Robinove, 1956)

Altitude: 2749 ft

	Clay, sandy, dark-brown	4	4
	Silt, sandy, light-brown	4	8
	Sand, fine to coarse; fine gravel	8	16
	Clay, sandy, yellow	26	42
	Sand, fine, gray	9	51
	Lignite	2	53
	Clay, light-gray	16	69
	Lignite	2	71
	Clay, sandy, gray	129	200

130-095-08DDD
(Log from Knutson Drilling Co.)

Altitude: 2718 ft

	Silt, loose rock at bottom	5	5
	Sand, rock at bottom	63	68
	Sand	37	105

130-095-09BBB
(Log from Knutson Drilling Co.)

Altitude:

	Sand	10	10
	Clay, coal at bottom	10	20
	Sand	20	40
	Sand; water	3	43
	Rock	2	45
	Water sand	10	55
	Rock	3	58
	Water sand	7	65
	Clay, sandy	8	73

130-095-11DCC1
(Log from Knutson Drilling Co.)

Altitude:

	Sand	33	33
	Rock, soft	3	36
	Sand	9	45
	Rock, soft	1	46
	Clay	4	50
	Sand	20	70
	Rock, soft	.5	70.5
	Sand	2.5	73
	Clay	9	82

130-095-11DCC1, Continued
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Rock, soft	1	83
	Clay	7	90
	Clay, sandy	2	92
	Clay, sandy	6	98
	Clay, sandy	12	110

130-095-12BCA
(Log from Knutson Drilling Co.)

Altitude:

	Sand	6	6
	Rock	1	7
	Clay	11	18
	Coal, soft	1	19
	Clay	9	28
	Coal	1	29
	Clay, sandy, coarse	6	35
	Clay	15	50
	Sand, fine	33	83

130-095-16CBB
(Log from Knutson Drilling Co.)

Altitude:

	Topsoil	1	1
	Rock	1	2
	Clay	43	45
	Coal, soft	1	46
	Clay, sandy	8	54
	Coal	2	56
	Clay, thin rock at bottom	9	65
	Sand	4	69
	Clay	5	74
	Coal, hard	1	75
	Sand	20	95
	Sand	10	105

130-095-23ABB
(Log from Knutson Drilling Co.)

Altitude:

	Sand	5	5
	Clay, sandy	19	24
	Coal	4	28
	Clay	2	30
	Rock, hard	.5	30.5
	Clay	19.5	50
	Sand, yellow	38	88
	Sand, fine, blue	28	116

130-095-25DAC
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Topsoil	4	4
	Rocky	2	6
	Clay	49	55
	Rock	3	58
	Sand	7	65
	Rock	1	66
	Sand	29	95

130-095-28AAA
(Log from Knutson Drilling Co.)

Altitude:

	Clay	16	16
	Coal	2	18
	Sand	7	25
	Clay	13	38
	Rock, hard	4	42
	Sand, fine	95	137
	Clay, sandy, fine	15	152
	Rock	1	153
	Clay, sandy, fine, dark	27	180
	Clay	50	230
	Sand, rocky, coarse	10	240
	Hard rock	2	242
	Sand, coarse	21	263

130-095-30ACD
(Log from Knutson Drilling Co.)

Altitude:

	Clay	8	8
	Silt	4	12
	Coal	1	13
	Shale	23	36
	Coal	2	38
	Sand	46	84

130-095-30BBB
NDSWC 997
(Log from Robinove, 1956)

Altitude: 2742 ft

	Clay, sandy, yellow	4	4
	Sand, fine to medium	29	33
	Lignite, brown. Lost circulation of drilling mud	1	34
	Clay, light-brown	11	45
	Sand, fine	6	51
	Lignite, shaly	2	53
	Clay, light- to dark-gray; some sand. Lost circulation of drilling mud from 60 to 70 ft, 70 to 120 ft, and 120 to 195 ft	147	200

130-095-31DDB
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Gravel	5	5
	Sand	45	50
	Clay, sandy	33	83
	Clay	12	95

130-096-01BBB
(Log from Knutson Drilling Co.)

Altitude:

	Sand	14	14
	Coal	2	16
	Sand	19	35
	Clay	19	54
	Coal	2	56
	Sand	17	73

130-096-03BCB
(Log from Knutson Drilling Co.)

Altitude:

	Clay, sandy	17	17
	Rock	1	18
	Clay, sandy	5	23
	Clay	17	40
	Coal	2	42
	Clay	17	59
	Coal	2	61
	Clay	5	66
	Clay, sandy	9	75
	Clay	20	95
	Clay, sandy	3	98
	Clay	3	101
	Coal	1	102
	Clay	8	110
	Coal	2	112
	Clay, sandy	8	120
	Sand	22	142
	Sand	6	148

130-096-07ABA
(Log from Alfred Jacobson)

Altitude:

	Topsoil	4	4
	Clay; water	6	10
	Clay, sticky	5	15
	"Gumbo"	20	35
	Sand; water	27	62

130-096-07BBB
(Log from Sander Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay, sandy, brown	11	11
	Clay, gray	8	19
	Sand and clay	4	23
	Clay, gray	10	33
	Rock	1	34
	Clay	10	44
	Lignite	1	45
	Sand and clay	12	57
	Rock	1	58
	Sand	5	63
	Sand and clay	5	68
	Lignite	1	69
	Clay	1	70

130-096-09ACD
(Log from Knutson Drilling Co.)

Altitude:

	Sand	24	24
	Rock	1	25
	Sand	20	45
	Rock	1	46
	Sand	8	54
	Coal	3	57
	Sand	7	64
	Coal, hard	1	65
	Clay	10	75
	Clay, sandy	9	84
	Sand	6	90
	Coal	1	91
	Clay	4	95
	Sand	31	126

130-096-10BCC
(Log from Alfred Jacobson)

Altitude:

	Topsoil	3	3
	"Flintstone"	3	6
	Sand, brown	44	50
	Sand; water	12	62

130-096-11DDD
(Log from Alfred Jacobson)

Altitude:

	"Flintstone"	6	6
	Clay, gray	34	40
	Sand	20	60
	Clay, hard	5	65
	Sand	6	71
	No record	84	155

130-096-12DDC
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Shale	18	18
	Clay	3	21
	Shale	39	60
	Clay, sandy	68	128
	Rock	2	130
	Sand	10	140

130-096-14AAB
(Log from Knutson Drilling Co.)

Altitude:

	Sand	29	29
	Coal	1	30
	Clay	31	61
	Rock, hard	2	63
	Sand	31	94
	Clay, with rock at bottom	8	102
	Clay, with hard coal at bottom	4	106
	Clay and coal	1	107
	Clay, with rock at bottom	7	114
	Rock	1	115
	Clay, with rock at bottom	6	121
	Clay	3	124
	Coal	1	125
	Clay, sandy	19	144
	Clay	11	155
	Sand, coarse	31	186
	Rock	.5	186.5
	Clay, sandy	13.5	200

130-096-17CDD
(Log from Knutson Drilling Co.)

Altitude:

	Sand	50	50
	Clay	45	95
	Coal	2	97
	Sand	8	105
	Clay	45	150
	Rock	1	151
	Sand, coarse, with rock at bottom	24	175

130-096-21DDD
(Log from Knutson Drilling Co.)

Altitude:

	Sand	41	41
	Coal	1	42
	Clay	4	46
	Sand	5	51
	Coal	2	53
	Clay	10	63
	Sand, milky	5	68
	Clay	7	75
	Coal	3	78
	Clay	6	84

130-096-22DAD
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand and gravel	4	4
	Rock	11	15
	Sand, brown	21	36
	Rock	4	40
	Sand, brown	35	75
	Sand and coal, blue	11	86
	Clay, gray	35	121
	Coal	28	149
	Clay, gray	34	183
	Sand, medium, blue	35	218
	Clay, sandy, blue	8	226

130-096-32AAB
(Log from Knutson Drilling Co.)

Altitude:

	Clay	6	6
	Rock	1	7
	Sand, coarse	26	33
	Sandstone	2	35
	Sand, medium	8	43
	Sandstone	.5	43.5
	Sand, medium	8.5	52
	Rock, hard	2	54
	Sand, fine	26	80
	Clay	15	95
	Clay, with thin rock at bottom	50	145
	Clay, sandy, coarse	10	155

130-096-32CCC
NDSWC 1002
(Log from Robinove, 1956)

Altitude: 2723 ft

	Clay, light-brown	3	3
	Clay, light-brown; fine gravel	4	7
	Clay, yellowish-brown; fine to medium gravel	11	18
	Sand, fine, silty	14	32
	Clay, sandy, gray	22	54
	Clay, gray; some sand. Lost circulation of drilling mud at 120 ft	146	200

130-096-33DCC
(Log from Knutson Drilling Co.)

Altitude:

	Rock	2	2
	Shale	16	18
	Coal	2	20
	Sand, yellow	50	70
	Sand, blue	4	74
	Rock	2	76
	Sand	14	90
	Rock	1	91
	Sand	24	115
	Clay	33	148
	Clay, soft	3	151
	Clay, hard	9	160

130-096-33DCC, Continued
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay, rock at bottom----------	15	175
	Clay, sandy, coarse----------	10	185
	Clay, dark----------	5	190
	Rock----------	1	191
	Sand, coarse----------	4	195
	Clay, dark----------	17	212
	Sand, coarse----------	5	217
	Rock, hard----------	1	218
	Clay, sandy----------	1	219
	Rock, hard----------	1	220
	Sand----------	55	275
	Clay, dark----------	7	282

130-096-34BBA
(Log from Knutson Drilling Co.)

Altitude:

	Sand----------	7	7
	Coal, soft----------	2	9
	Clay----------	8	17
	Coal----------	1	18
	Clay----------	7	25
	Sand----------	3	28
	Clay----------	2	30
	Coal----------	1	31
	Clay----------	8	39
	Coal, hard----------	1	40
	Clay----------	6	46

130-096-34CDD
(Log from Knutson Drilling Co.)

Altitude:

	Sand----------	56	56
	Clay, rock at bottom----------	2	58
	Sand----------	12	70
	Rock----------	1	71
	Sand----------	9	80

130-097-02CCC
(Log from Knutson Drilling Co.)

Altitude:

	Sand----------	40	40
	Coal, soft----------	1	41
	Clay----------	69	110
	Sand----------	27	137

130-097-04AAC
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Topsoil	1	1
	Sand rock	1	2
	Sand	23	25
	Clay	5	30
	Sand, rock at bottom	54	84
	Sand	11	95
	Clay, thin rock at bottom	5	100
	Sand	20	120
	Clay	6	126

130-097-19AAA
(Log from Knutson Drilling Co.)

Altitude:

	Sand	3	3
	Rock	1	4
	Sand	19	23
	Rock	1	24
	Sand	39	63
	Shale	7	70
	Clay, sandy	15	85
	Clay	19	104
	Coal	1	105
	Clay	15	120
	Clay	6	126
	Sand, rock at bottom	8	134
	Sand	43	177
	Clay	3	180

130-097-20AAA
(Log from Knutson Drilling Co.)

Altitude:

	Sand	5	5
	Shale	16	21
	Coal	4	25
	Clay	4	29
	Coal	1	30
	Clay	15	45
	Rock, soft	1	46
	Clay, yellow	10	56
	Rock	1	57
	Clay	5	62
	Sand, yellow	8	70
	Rock, soft	1	71
	Sand	40	111
	Clay	5	116

130-097-22ADD
(Log from Knutson Drilling Co.)

Altitude:

	Gravel	5	5
	Sand	13	18
	Clay	12	30
	Coal	1	31
	Sand	29	60
	Clay, sandy	18	78

130-097-22DDD1
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Gravel	4	4
	Clay	6	10
	Sand	13	23
	Rock, soft	1	24
	Clay	10	34
	Coal	1	35
	Clay	2	37
	Coal	1	38
	Clay	7	45
	Rock	1	46
	Clay, sandy	2	48
	Sand	3	51
	Coal	3	54
	Sand	27	81
	Rock, soft	1	82
	Sand	11	93
	Rock, hard	.5	93.5
	Clay	1.5	95

130-097-22DDD2
(Log from Knutson Drilling Co.)

Altitude:

	Gravel	10	10
	Sand	8	18
	Clay	12	30
	Coal	1	31
	Clay, rock at bottom	2	33
	Clay, sandy, green	4	37
	Rock, hard	3	40
	Clay, sandy	4	44
	Rock	1	45
	Sand	5	50
	Coal, hard	2	52
	Clay	1.5	53.5
	Rock	1.5	55
	Sand	33	88
	Rock	2	90

130-097-22DDD3
(Log from Knutson Drilling Co.)

Altitude:

	Gravel	7	7
	Clay	28	35
	Sand	12	47
	Coal	1	48
	Clay, dark	2	50
	Sand	28	78
	Clay, sandy	6	84

130-097-22DDD4
(Log from Dependable Drilling Co.)

Altitude:

	Sand	16	16
	Sand, fine	2	18
	Clay	2	20
	Coal	2	22

130-097-22DDD4, Continued
(Log from Dependable Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay, gray	20	42
	Rock, soft	2	44
	Clay, sandy	6	50
	Sand, brown	26	76
	Clay, white and blue	1	77

130-097-22DDD5
(Log from Knutson Drilling Co.)

Altitude:

	Gravel	10	10
	Sand	8	18
	Clay	12	30
	Coal	1	31
	Clay, rock at bottom	2	33
	Clay, green, sandy	4	37
	Rock, hard	3	40
	Clay, sandy	4	44
	Rock	1	45
	Sand	5	50
	Coal, hard	2	52
	Clay	1.5	53.5
	Rock	1.5	55
	Sand	33	88
	Rock	2	90

130-097-23CCC1
(Log from Knutson Drilling Co.)

Altitude: 2778 ft

	Gravel, small	6	6
	Sand	7	13
	Clay	17	30
	Coal	1	31
	Clay	3	34
	Rock	.5	34.5
	Clay	7.5	42
	Rock	.5	42.5
	Clay	1.5	44
	Rock, hard	1	45
	Clay	1	46
	Coal, sandy	1	47
	Clay	3	50
	Coal	1	51
	Sand	24	75

130-097-23CCC2
(Log from Knutson Drilling Co.)

Altitude:

	Topsoil	2	2
	Gravel	5	7
	Sand	11	18
	Shale	12	30
	Clay, sandy	8	38
	Sand	7	45
	Shale	2	47
	Coal	1	48
	Sand	2	50

130-097-23CCC2, Continued
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay	1	51
	Coal	1	52
	Sand	20	72
	Coal	1	73
	Sand	22	95

130-097-24CCC
(Log from Knutson Drilling Co.)

Altitude:

	Gravel	18	18
	Sand	10	28
	Clay, with coal at 30 ft	5	33
	Sand	8	41
	Coal	1	42
	Sand	26	68
	Clay, sandy	12	80

130-097-25CBC2
(Log from Knutson Drilling Co.)

Altitude:

	No record	120	120
	Sand	25	145
	Shale	5	150
	Clay	.5	150.5
	Shale	24.5	175
	Rock, medium	1	176
	Shale	6	182
	Rock, soft	.5	182.5
	Shale	32.5	215
	Clay, sandy	4	219
	Shale	11	230
	Rock, medium	1	231
	Clay, hard	11	242
	Rock, hard	1	243
	Clay	27	270
	Rock, hard	1	271
	Sand	42	313

130-097-26ADD
NDSWC 1003
(Log from Robinove, 1956)

Altitude: 2780 ft

	Clay, buff	4	4
	Clay, light-gray	5	9
	Clay, reddish-brown; fine sand	7	16
	Clay, buff	5	21
	Clay, light-gray	15	36
	Lignite, black	1	37
	Sand, fine, greenish-gray; some clay	14	51
	Lignite	2	53
	Clay, sandy, gray. Lost circulation of drilling mud from 40 to 70 ft	147	200

130-097-29DCB
(Log from Knutson Drilling Co.)

Altitude: 2946 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand	32	32
	Rock, soft	1	33
	Sand, rock at bottom	4	37
	Clay	63	100
	Sand	30	130
	Rock	1	131
	Sand, dark	25	156
	Clay, dark, with rock at bottom	12	168
	Rock, hard	.5	168.5
	Clay, dark	11.5	180
	Coal	2	182
	Clay, dark	11	193
	Coal	2	195
	Sand, coarse	16	211

130-097-32ADC
(Log from Knutson Drilling Co.)

Altitude:

	Sand	5	5
	Clay	28	33
	Sand	22	55
	Rock, hard	1	56
	Sand	44	100
	Coal	1	101
	Clay	6	107
	Sand	13	120
	Clay, hard, coal at bottom	20	140
	Clay, hard	12	152
	Sand, fine	26	178
	Sand, coarse	11	189

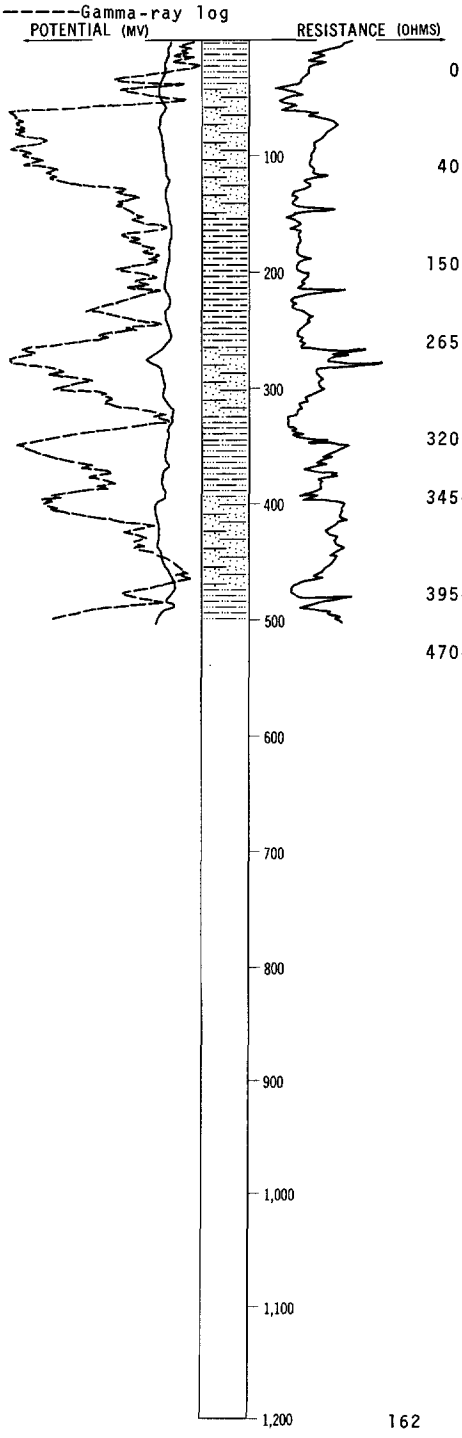
NDSWC 4452 and 4452A

LOCATION: 130-097-35BCB1, 2

DATE DRILLED: June 1972

ALTITUDE: 2825
(FT, MSL)

DEPTH: 500
(FT)



	DESCRIPTION OF DEPOSITS
0-40	Tongue River Formation Siltstone and sandstone, clayey, carbonaceous, brown.
40-150	Ludlow Formation Sandstone and siltstone, lignitic, greenish-gray; indurated at 117 ft.
150-265	Cannonball Formation Claystone and siltstone, sandy, greenish-gray.
265-320	Ludlow Formation Sandstone and siltstone, fine-grained, greenish-gray.
320-345	Cannonball Formation Claystone, silty, carbonaceous.
345-395	Siltstone and sandstone, clayey, fine-grained, olive-gray.
395-470	Ludlow Formation Sandstone, silty, fine-grained, greenish-gray.
470-500	Siltstone and claystone, sandy, bentonitic, gray.

130-098-03DAD1
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Gravel	4	4
	Sand	5	9
	Clay, thin rock at bottom	42	51
	Clay	11	62
	Sand	3	65
	Clay	8	73
	Coal	.5	73.5
	Clay, rock at bottom	1.5	75
	Clay	15	90
	Coal	1	91
	Clay, white	8	99
	Coal	1	100
	Clay	7	107
	Coal	4	111
	Clay	5	116
	Coal	2	118
	Clay	6	124
	Coal	2	126
	Clay	22	148
	Coal	7	155
	Sand	24	179

130-098-04CBB
(Log from Knutson Drilling Co.)

Altitude:

	Clay	16	16
	Sand	8	24
	Clay, coal at bottom	12	36
	Clay, coal at bottom	18	54
	Clay	1	55
	Clay, light-green, rock at bottom	10	65
	Clay	4	69
	Coal	9	78
	Clay	7	85
	Coal, hard	9	94
	Clay, dark	1	95

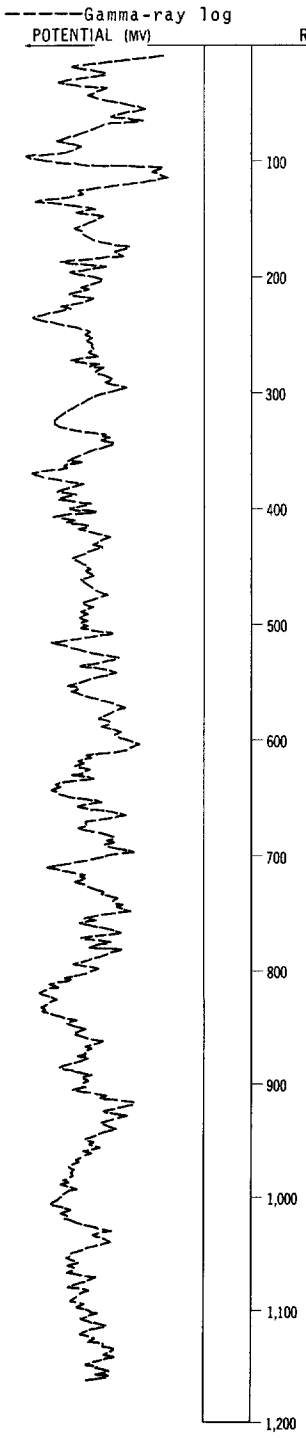
Log from Frederickson's, Inc.

LOCATION: 130-098-04DBB

DATE DRILLED: September 1971

ALTITUDE: 2850
(FT, MSL)

DEPTH: 1340
(FT)



0-3	Topsoil, yellow.
3-16	Shale, gray.
16-32	Clay, yellow.
32-33	Rock.
33-62	Shale, hard.
62-75	Clay, soft.
75-105	Clay; lenses of coal.
105-130	Clay, sticky.
130-133	Coal.
133-165	Clay, gray; with lenses of banded clay.
165-230	Clay; lenses of coal.
230-475	Shale, blue.
475-610	Shale, sandy; with lignite.
610-630	Shale, brown.
630-788	Shale, gray and white.
788-865	Shale, sandy, soft, gray.
865-971	Shale.
971-1010	Sand and shale.
1010-1021	Hard.
1021-1045	Shale, black.
1045-1060	Sand; with lenses of shale.
1060-1080	Shale, sandy.
1080-1090	Sand; some shale.
1090-1165	Shale, colored.
1165-1172	Sand.
1172-1198	Shale, sandy.
1198-1216	Sand, dirty.

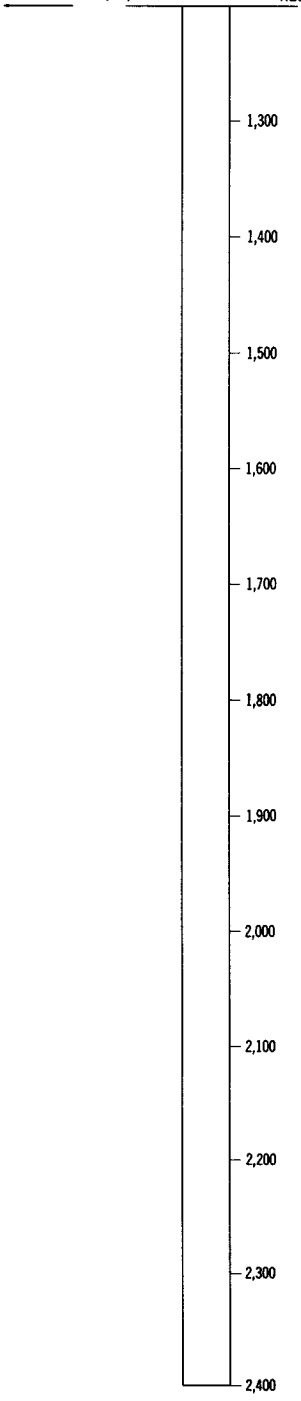
Log from Frederickson's, Inc.

LOCATION: 130-98-04DBB, Continued

DATE DRILLED: September 1971

ALTITUDE: 2850
(FT, MSL)

DEPTH: 1340
(FT)



RESISTANCE (OHMS)	DESCRIPTION OF DEPOSITS
1216-1275	Sand, cleaner.
1275-1298	Shale, colored.
1298-1302	Sand.
1302-1315	Shale.
1315-1322	Sand.
1322-1340	Pierre shale.

130-098-07BDD
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand	42	42
	Shale	5	47
	Coal	1	48
	Shale	9	57
	Coal	1	58
	Clay	12	70

130-098-14DBB
(Log from Knutson Drilling Co.)

Altitude:

	Clay	18	18
	Quicksand	20	38
	Clay, hard	10	48
	Rock	1	49
	Clay	6	55
	Clay, sandy	10	65
	Shale	1	66
	Clay	4	70
	Coal	2	72
	Sand	8	80
	Clay, sandy	15	95
	Clay	13	108
	Sand, coarse	2	110
	Clay	37	147
	Clay	8	155
	Rock	1	156
	Clay	69	225
	Rock	1	226
	Sand	24	250

130-098-17DAA
(Log from Knutson Drilling Co.)

Altitude:

	Rock	4	4
	Sand	2	6
	Clay	54	60
	Coal	2	62
	Clay, sandy	58	120
	Hard rock	2	122
	Clay	78	200
	Sand	7	207
	Rock, hard	1	208
	Clay	57	265
	Sand	25	290
	Clay	4	294
	Coal	2	296

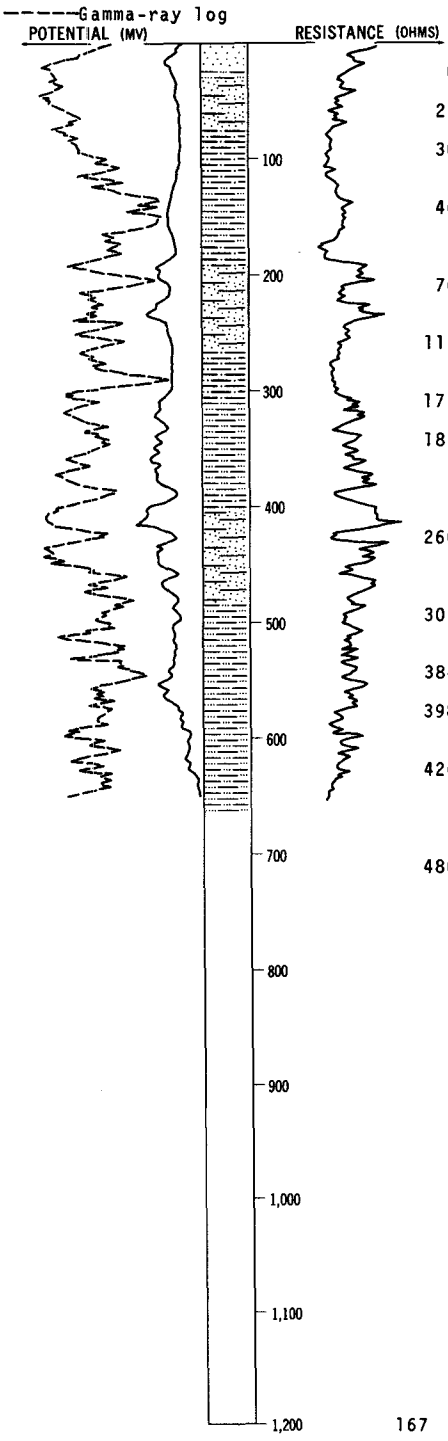
NDSWC 4389 and 4389A

LOCATION: 130-098-21CCC1, 2

DATE DRILLED: October 1971

ALTITUDE: 2750
(FT, MSL)

DEPTH: 660
(FT)



	DESCRIPTION OF DEPOSITS
	Ludlow Formation
0-20	Sandstone, friable, yellow.
20-30	Siltstone, sandy, lignitic.
30-46	Sandstone, clayey, fine-grained.
46-70	Sandstone and siltstone, very fine to fine-grained.
	Cannonball Formation
70-119	Claystone, silty.
	Ludlow Formation
119-171	Siltstone, sandy, light-olive-gray.
171-189	Claystone, silty, bentonitic.
189-260	Sandstone and siltstone, very fine to medium-grained.
	Cannonball Formation
260-305	Claystone, silty, light-olive-gray to dark-gray.
	Ludlow Formation
305-384	Siltstone and sandstone, very fine to fine-grained.
384-398	Claystone, silty, sandy.
398-420	Sandstone, silty, friable, fossiliferous.
420-480	Sandstone and claystone, silty, friable, fossiliferous, greenish-gray.
	Hell Creek Formation
480-660	Siltstone and claystone, sandy, carbonaceous.

130-098-26BAC
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand	3	3
	Rock	1	4
	Sand	9	13
	Clay	4	17
	Coal, soft	5	22
	Sand	23	45
	Rock, soft	1	46
	Sand	29	75
	Clay, rock at bottom	50	125
	Sand, coarse	2	127
	Clay	1	128
	Hard rock	3	131
	Clay	6	137
	Sand, coarse	2	139
	Clay	31	170
	Sand	16	186
	Clay, dark	6	192
	Coal	2	194
	Sand	38	232

130-098-28BBD
(Log from Knutson Drilling Co.)

Altitude: 2700 ft

	Clay	135	135
	Sand	5	140
	Rock	1	141
	Sand	14	155
	Clay, sandy	12	167

130-098-34BBA
(Log from Knutson Drilling Co.)

Altitude:

	Shale	6	6
	Rock, hard	1	7
	Clay	63	70
	Rock	1	71
	Clay, sandy, coarse	7	78
	Clay, dark	47	125
	Sand	13	138
	Rock, hard	.5	138.5
	Sand, rock at bottom	1.5	140
	Sand	10	150
	Clay, dark	13	163
	Coal	2	165
	Rock	1	166
	Sand	2	168

130-099-03ABC
(Log from H & H Service Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Surface soil	2	2
	Sand	13	15
	Shale, yellow	7	22
	Sand, yellowish-brown	5	27
	Shale	3	30
	Sand, blue	5	35
	Coal	1	36
	Sand	2	38
	Shale, blue	4	42
	Coal	2	44
	Shale	6	50
	Sand and shale, soft ledge at bottom	9	59
	Shale	4	63

130-099-04BBB
(Log from Knutson Drilling Co.)

Altitude:

	Gravel	13	13
	Sand	5	18
	Clay	8	26
	Rock, thin, yellow	1	27
	Sand, fine, yellow	2	29
	Clay, green	5	34
	Rock	1	35
	Clay	5	40
	Rock	1	41
	Sand, coarse	5	46
	Coal	4	50
	Clay	8	58
	Sand, fine	5	63

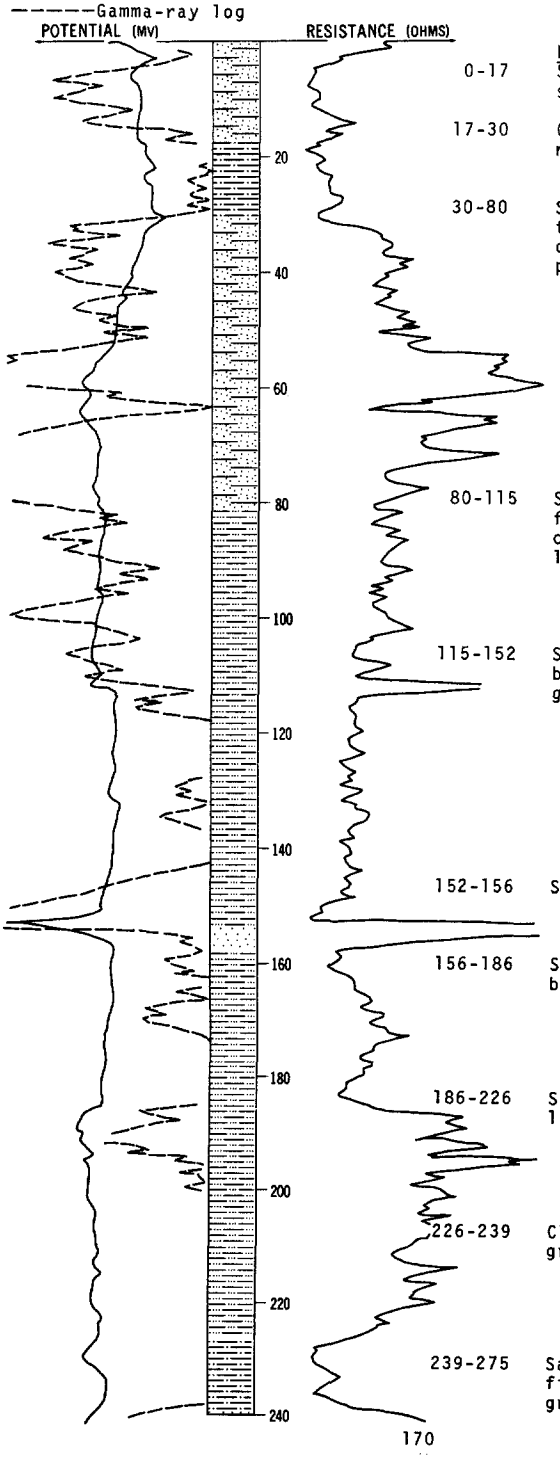
NDSWC 4454 and 4454A

LOCATION: 130-099-17AAA1, 2

DATE DRILLED: June 1972

ALTITUDE: 2775
(FT, MSL)

DEPTH: 410
(FT)



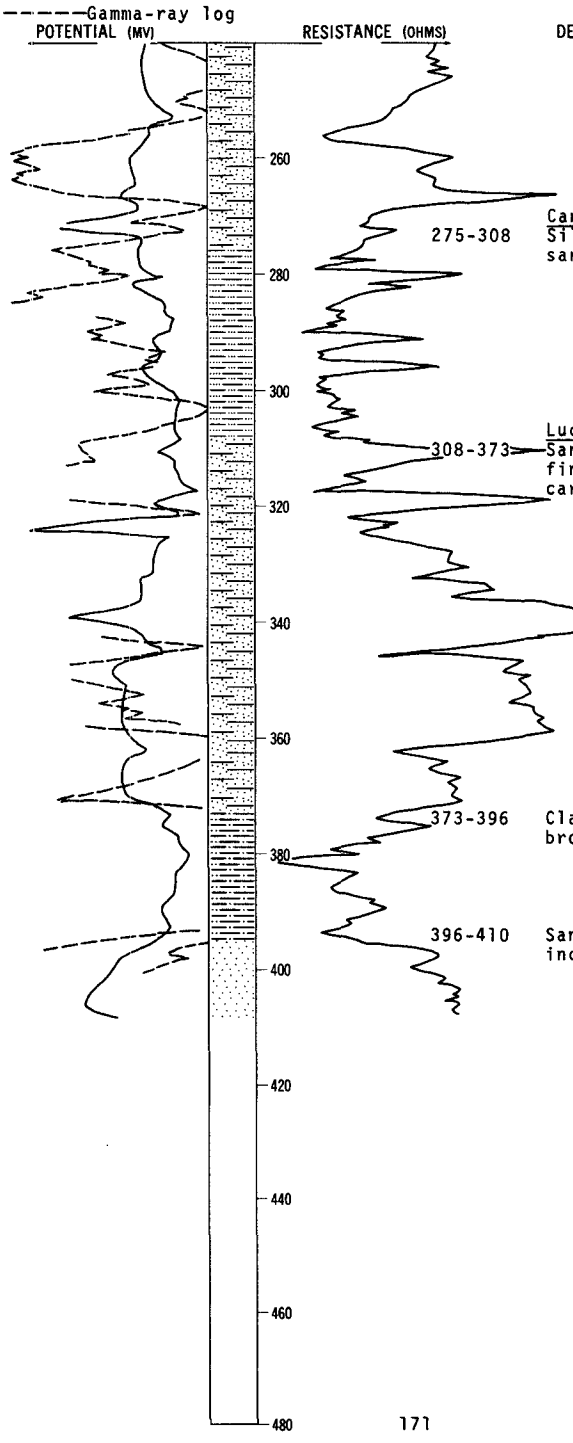
	DESCRIPTION OF DEPOSITS
	Ludlow Formation
0-17	Sandstone and claystone, silty, yellowish-brown.
17-30	Claystone, silty, carbonaceous, gray.
30-80	Sandstone, silty, fine- to medium-grained, loose; carbonaceous in lower part.
80-115	Siltstone and sandstone, fine-grained, carbonaceous; cemented sandstone at 111 ft.
115-152	Siltstone, sandy, clayey, bentonitic, dark-greenish-gray.
152-156	Sandstone, indurated.
156-186	Siltstone, sandy, clayey, bentonitic.
186-226	Siltstone and sandstone, light-greenish-gray.
226-239	Claystone, silty, light-gray.
239-275	Sandstone and siltstone, fine-grained, thin-bedded, greenish-gray.

LOCATION: 130-099-17AAA1, 2

DATE DRILLED: June 1972

ALTITUDE: 2775
(FT, MSL)

DEPTH: 410
(FT)



DESCRIPTION OF DEPOSITS

Cannonball Formation
275-308 Siltstone and claystone, sandy, greenish-gray.

Ludlow Formation
308-373 Sandstone and siltstone, fine- to medium-grained, carbonaceous.

373-396 Claystone, lignitic, brownish-black.

396-410 Sandstone, fine-grained, indurated.

130-099-19AAA
(Log from Dependable Drilling Co.)

Altitude: 2800 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand, brown	12	12
	Clay, brown	6	18
	Sand, brown	6	24
	Sand, blue	9	33
	Clay, blue	35	68
	Coal	10	78
	Clay, sandy, blue	20	98
	Rock	2	100
	Sand, blue	3	103
	Rock	3	106
	Clay, blue	91	197
	Clay, sandy, blue	8	205
	Clay, blue	70	275
	Rock	1	276
	Clay, blue	4	280
	Coal	1	281
	Clay, blue, and coal streaks	14	295
	Sand, medium, blue	92	387

130-099-20ADD
(Log from Dependable Drilling Co.)

Altitude:

	Surface sand	14	14
	Sand, loose, gray	12	26
	Sand, blue	15	41
	Clay	1	42

130-099-21DBD
(Log from Dependable Drilling Co.)

Altitude:

	Surface	2	2
	Sand, brown	22	24
	Sand, blue	20	44
	Sand, brown	1	45
	Sand, gray	1	46
	Coal and clay	12	58
	Clay, sandy	26	84

130-099-23BCC
(Log from Dependable Drilling Co.)

Altitude: 2770 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay, gray	6	6
	Clay, brown	3	9
	Coal	10	19
	Clay, sandy, dark-blue	22	41
	Rock	4	45
	Clay, sandy, blue	15	60
	Clay, gray	30	90
	Lost circulation	2	92
	Clay, gray	8	100
	Rock, hard	1	101
	Clay, sandy, green	13	114
	Clay, gray	33	147
	Rock, hard	5	152
	Clay, gray	56	208
	Sand	26	234
	Clay, gray	11	245
	Coal	1	246
	Clay, sandy, gray	32	278
	Rock	2	280
	Clay, gray	8	288
	Rock, hard	1	289
	Clay, gray	4	293
	Clay, sandy	2	295
	Rock, hard	1	296
	Sand	5	301
	Clay, gray	22	323
	Rock, hard	3	326
	Clay, sandy	18	344
	No record	20	364
	Rock	6	370
	Sand, gray	42	412

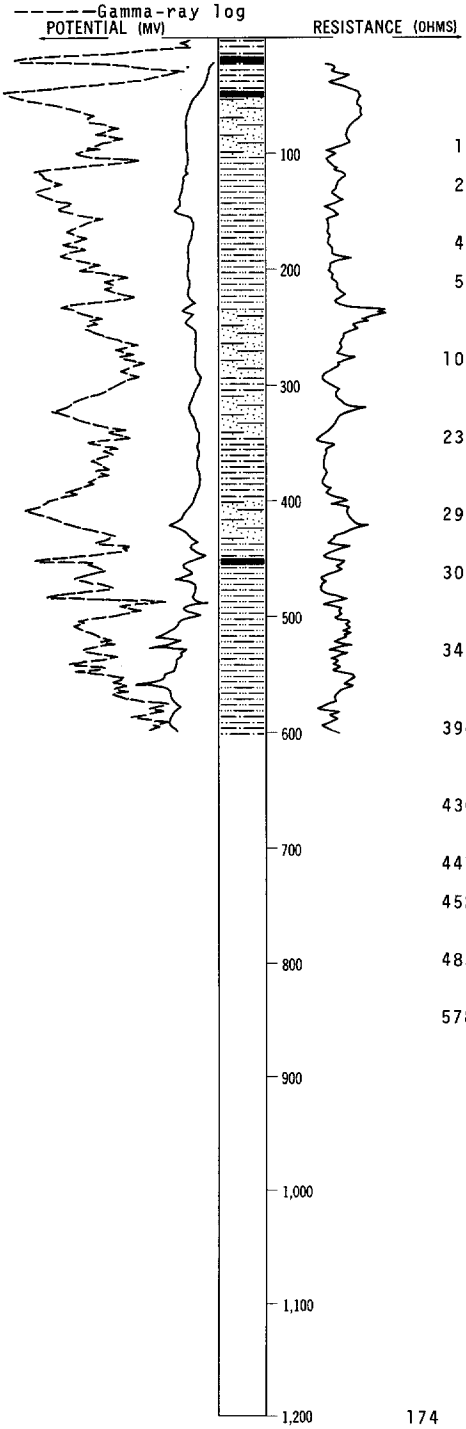
NDSWC 4455

LOCATION: 130-100-02AAA

DATE DRILLED: June 1972

ALTITUDE: 2805
(FT, MSL)

DEPTH: 600
(FT)



	DESCRIPTION OF DEPOSITS
	Ludlow Formation
0-15	Claystone and siltstone, carbonaceous, yellowish-brown.
15-21	Lignite.
21-45	Claystone, silty, carbonaceous, greenish-gray.
45-51	Lignite.
51-100	Sandstone and siltstone, fine- to medium-grained, carbonaceous.
100-233	Siltstone, sandy, clayey, carbonaceous, greenish-gray.
233-290	Sandstone and siltstone, greenish-gray.
	Cannonball Formation(?)
290-306	Claystone, silty, gray.
	Ludlow Formation
306-342	Sandstone, silty, carbonaceous, greenish-gray.
	Cannonball Formation
342-394	Claystone, silty, greenish-gray.
	Ludlow Formation
394-430	Sandstone, silty, fine- to medium-grained, greenish-gray.
430-447	Siltstone and sandstone, clayey, carbonaceous.
447-452	Lignite.
452-485	Siltstone, sandy, lignitic.
	Hell Creek Formation
485-578	Siltstone, sandy, clayey, carbonaceous, olive-gray.
578-600	Claystone, silty, gray.

130-100-02BCC
(Log from Dependable Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay, buff, with rock ledge at bottom-------	28	28
	Clay, green----------	4	32
	Sand, coarse----------	6	38
	Coal----------	4	42
	Clay, sandy, gray----------	25	67
	Sand and clay, fine, gray----------	13	80
	Sand, good, black and white----------	23	103

130-100-02DDA1
(Log from Sander Drilling Co.)

Altitude:

	Clay----------	23	23
	Coal----------	8	31
	Sand; water----------	25	56
	Clay----------	23	79
	Coal----------	2	81
	Clay, with coal at bottom----------	8	89
	Sand----------	18	107

130-100-02DDA2
(Log from Dependable Drilling Co.)

Altitude:

	Clay----------	23	23
	Coal----------	5	28
	Clay, brown, sandy----------	12	40
	Sand, coarse----------	16	56
	Coal----------	1	57
	Clay, rock at bottom----------	5	62
	Clay----------	4	66
	Coal----------	1	67
	Clay----------	3	70
	Rock----------	1	71
	Clay----------	9	80
	Coal----------	1	81
	Clay----------	14	95
	Clay, sandy----------	5	100
	Sand----------	8	108
	Clay----------	3	111
	Hard rock----------	1	112
	Sand and clay, coarse----------	18	130
	Clay----------	5	135

130-100-10BDD
(Log from Dependable Drilling Co.)

Altitude:

	Sand----------	13	13
	Sandstone, drills hard----------	1	14
	Sand, brown----------	6	20
	Sand and clay, brown----------	18	38
	Sand, black and white----------	7	45
	Clay, brown----------	23	68
	Sand, black and white----------	35	103

130-100-24DAB
(Log from Sander Drilling Co.)

Altitude: 2820 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand	8	8
	Rock	7	15
	Sand	2	17
	Rock ledge	8	25
	Clay	17	42
	Clay and coal	9	51
	Coal	4	55
	Clay	2	57
	Coal	5	62
	Clay	64	126
	Rock ledge	.5	126.5
	Clay	87.5	214
	Rock	2	216
	Clay	38	254
	Rock	1	255
	Sand	2	257
	Rock	1	258
	Clay	12	270

130-101-24DDD
(Log from Dependable Drilling Co.)

Altitude:

	Surface	2	2
	Sand	18	20
	Sandrock	1.5	21.5
	Sand	2.5	24
	Shale	7	31
	Coal	1	32
	Shale, gray	7	39
	Shale, sandy	7	46
	Ledge	.5	46.5
	Shale, gray	10.5	57
	Coal	2	59
	Sand	11	70
	Ledge	1	71
	Sand, brown, sharp, ledge at bottom	12	83
	Sand, sharp, fine	17	100
	Shale, sandy, blue	24	124
	Sand, blue	13	137
	Rock, hard	1	138
	Shale, sandy	27	165

130-101-25AAA
(Log from H & H Service Co.)

Altitude: 2934 ft

	Surface	22	22
	Shale	21	43
	Shale	5	48
	Rock ledge	1	49
	Shale	3	52
	Ledge	1	53
	Shale	10	63
	Shale and fine brown sand	21	84
	Sand, blue	31	115
	Shale, sandy	11	126
	Sand, blue	32	158
	Ledge	1	159

130-101-25AAA, Continued
(Log from H & H Service Co.)

Altitude: 2934 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand, fine, brown	59	218
	Rock ledge	2	220
	Shale	70	290
	Rock ledge	2	292
	Sand, medium, blue	7	299
	Shale, sandy	20	319
	Coal	2	321
	Sand and shale, sandy	8	329
	Coal	1	330
	Shale	20	350
	Coal	2	352
	Soft	7	359
	Shale	30	389
	Shale with stringers	15	404
	Ledges	15	419
	Soft	19	438
	Ledge	1	439
	Sand, fine with soft streak	10	449
	Coal stringers, soft	15	464
	Shale, soft	14	478
	Ledge	2	480
	Shale, with coal stringers	89	569
	Shale	12	581
	Rock ledge	2	583
	Soft	1	584
	Shale	14	598
	Ledge	1	599
	Soft	1	600
	Coal	2	602
	Soft	12	614
	Drilled like sand, soft	36	650
	Shale	4	654
	Ledge	1	655
	Sand, fine	6	661
	Shale	69	730
	Rock ledge	1	731
	Shale	44	775
	Shale, with rock and coal stringers	15	790
	Shale	5	795
	Shale, soft, white	10	805
	Soft	1	806
	Hard spot	1	807
	Soft	13	820
	Shale, sandy	14	834
	Ledge	1	835
	Shale, sandy	30	865
	Shale	15	880
	Sand, good	30	910
	Sand	15	925
	Coal	1	926
	Shale	4	930

130-101-25ADD
(Log from Knutson Drilling Co.)

Altitude: 2933 ft

	Clay, rock at bottom	15	15
	Shale	15	30
	Clay, dark	5	35
	Sand, tan	30	65
	Clay, sandy, tan	30	95
	Clay, sandy, blue, gray	14	109
	Hard rock	.5	109.5

130-101-25ADD, Continued
(Log from Knutson Drilling Co.)

Altitude: 2933 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay, sandy	2.5	112
	Clay, dark	9	121
	Clay, fine, sandy	14	135
	Clay, sandy, white	41	176
	Clay	3	179
	Clay, sandy, with rock at bottom	2	181
	Clay, sandy, fine, white	15	196
	Clay	4	200

130-102-05DAD
(Log from Dependable Drilling Co.)

Altitude: 2922 ft

	Clay, brown	24	24
	Clay, blue	8	32
	Rock ledge	1	33
	Clay, blue	5	38
	Rock	1	39
	Clay, blue	9	48
	Coal	2	50
	Sand, blue	4	54
	Clay, blue	3	57
	Coal	2	59
	Clay, blue	10	69
	Sand, fine, gray	9	78
	Clay, blue	20	98
	Rock	1	99
	Clay, blue	2	101
	Rock	1	102
	Clay, blue	4	106
	Coal	7	113
	Clay, blue	2	115
	Sand, fine, gray	5	120
	Clay, blue	33	153
	Sand, fine, gray	4	157
	Coal	8	165
	Clay, blue	2	167
	Sand, fine, gray	7	174
	Clay, sandy, blue	6	180
	Clay, blue	30	210
	Coal	6	216
	Clay, sandy, blue	7	223
	Rock ledge	1	224
	Clay, blue	4	228
	Sand, fine, gray	8	236
	Clay, blue	7	243
	Sand, fine, blue	2	245
	Clay, blue	4	249
	Sand, fine, blue	11	260
	Rock ledge	1	261
	Clay, blue	7	268
	Rock	1	269
	Clay, blue	3	272
	Coal	2	274
	Clay, blue	6	280
	Sand, fine, gray	6	286
	Clay, blue	47	333
	Rock	1	334
	Clay, blue	4	338
	Coal	1	339

130-102-05DAD, Continued
(Log from Dependable Drilling Co.)

Altitude: 2922 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay, blue	13	352
	Rock, soft	1	353
	Clay, blue	7	360
	Sand, fine, blue	6	366
	Clay, blue, with coal stringers	12	378
	Clay, sandy, blue	5	383
	Limestone rock	1	384
	Clay, sandy, blue	11	395
	Sand, blue, sharp	14	409

130-102-13DCD
(Log from Dependable Drilling Co.)

Altitude:

	Clay and sand	35	35
	Sand	5.5	40.5
	Rock, soft	1	41.5
	Sand	3.5	45
	Sand, hard	25	70
	Clay, black	10	80

130-102-15DDD1
(Log from Dependable Drilling Co.)

Altitude:

	Sand, brown	15	15
	Sandstone	1	16
	No record	2	18
	Sand, brown	3	21
	Limestone rock	1	22
	Clay, blue	42	64
	Coal	3	67
	Clay, blue	49	116
	Sand, blue	9	125
	Clay, brown	5	130
	Coal	3	133
	Clay, brown	5	138
	Rock	2	140
	Clay, blue	5	145
	Rock, limestone	1	146
	Clay, blue	2	148
	Rock	1	149
	Clay, blue	7	156
	Coal	4	160
	Sand, fine, blue, gray	12	172
	Clay, blue	11	183
	Coal	2	185
	Clay, gray	52	237
	Coal	3	240
	Clay, blue	3	243
	Sand, fine, blue, gray	14	257
	Rock	1	258
	Sand, gray	15	273
	Clay, blue	2	275
	Coal	2	277
	Clay, blue, with coal streaks	28	305
	Clay, sandy, blue	7	312
	Sand, blue, with clay streaks	39	351
	Coal, hard	2	353
	Clay, sandy, blue, firm	17	370

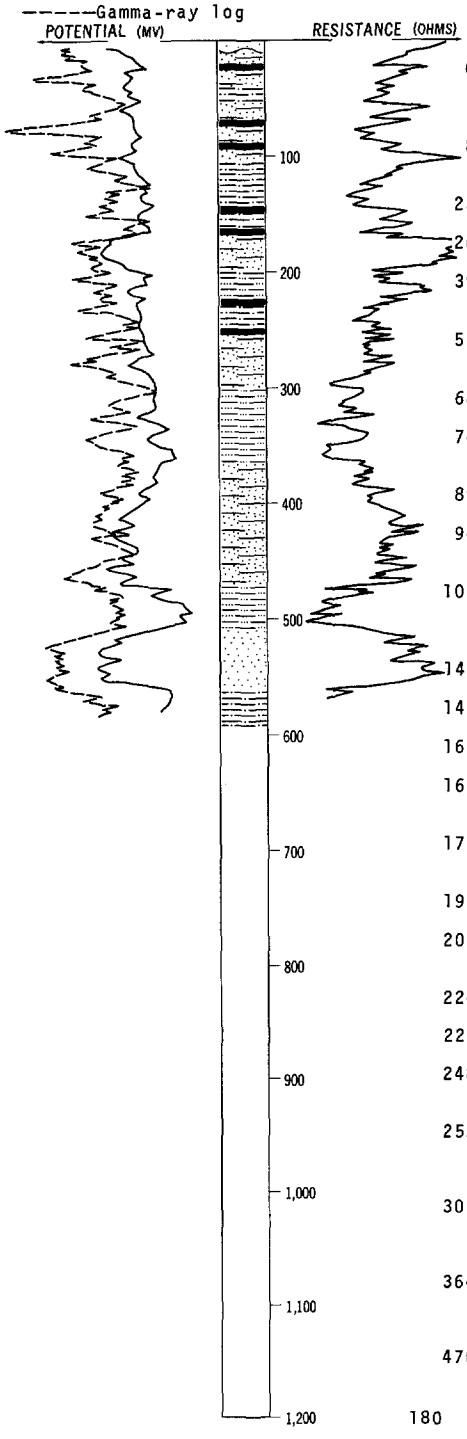
NDSWC 4458

LOCATION: 130-102-15DDD2

DATE DRILLED: June 1972

ALTITUDE: 2870
(FT, MSL)

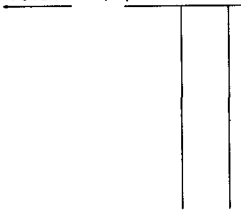
DEPTH: 580
(FT)



	DESCRIPTION OF DEPOSITS
	Alluvium
0-8	Sand, fine-grained, loose, brown.
	Ludlow Formation
8-23	Sandstone, silty, fine-grained, yellowish-gray.
23-26	Lignite.
26-39	Sandstone, silty, lignitic.
39-55	Claystone, silty, carbonaceous.
55-68	Sandstone, silty, olive-gray.
68-74	Lignite.
74-89	Sandstone, silty, fine-grained.
89-94	Lignite.
94-107	Sandstone and siltstone, fine-grained.
107-144	Claystone and siltstone, carbonaceous, brown to greenish-gray.
144-149	Lignite.
149-166	Claystone, silty, sandy.
166-169	Lignite.
169-171	Claystone, silty, carbonaceous.
171-197	Sandstone, silty, clayey, light-greenish-gray.
197-203	Claystone and lignite.
203-224	Siltstone and claystone, sandy, carbonaceous.
224-227	Lignite.
227-248	Claystone.
248-252	Lignite.
	Hell Creek Formation
252-301	Sandstone and siltstone, clayey, carbonaceous, greenish-gray.
301-364	Siltstone and claystone, sandy, carbonaceous, olive-gray.
364-470	Sandstone and siltstone, very fine to fine-grained, carbonaceous, greenish-gray.
470-512	Siltstone, clayey, sandy, tight, greenish-gray to black.

LOCATION: 130-102-15DDD2 DATE DRILLED: June 1972

ALTITUDE: 2870 (FT, MSL) DEPTH: 580 (FT)



	DESCRIPTION OF DEPOSITS
	Hell Creek Formation, Continued
512-558	Sandstone, fine- to medium-grained, dark-green; shell fragments.
558-580	Claystone, hard, greenish-black.

130-102-24BBB1
(Source unknown)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Topsoil	3	3
	Surface sands	11	14
	Shale, dark-gray	9	23
	Shale, sandy, gray	5	28
	Shale, dark-gray, hard	18	46
	Coal and shale stringers	8	54
	Coal, medium hard	5	59
	Shale, dark-gray, hard	9	68
	Shale, light-gray, soft	3	71
	Shale, coal stringers	22	93
	Shale, sandy, some sand	7	100
	Shale, dark-gray, hard	9	109
	Shale, dark-gray	11	120
	Shale, medium-gray	8	128
	Shale, dark-gray, hard	2	130
	Coal	3	133
	Shale, gray	9	142
	Limestone ledge	2	144
	Shale, gray	9	153
	Limestone ledge, soft	1	154
	Shale, gray	4	158
	Sandstone ledge	4	162
	Sand	9	171
	Shale, gray	3	174

130-102-24BBB2
(Log from Dependable Drilling Co.)

Altitude: 2922 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand, brown	15	15
	Sandstone	3	18
	Sand, brown	3	21
	Limestone rock	1	22
	Clay, blue	42	64
	Coal	3	67
	Clay, blue	49	116
	Sand, blue; water	9	125
	Clay, brown	5	130
	Coal	3	133
	Clay, brown	6	139
	Rock	1	140
	Clay	5	145
	Limestone rock	1	146
	Clay, blue	2	148
	Rock	1	149
	Clay, blue	7	156
	Coal	4	160
	Sand, fine, bluish-gray	23	183
	Coal	2	185
	Clay, gray	52	237
	Coal	3	240
	Clay	3	243
	Clay, blue	14	257
	Rock	1	258
	Sand, gray	15	273
	Clay, blue	2	275
	Coal	2	277
	Clay, blue, with coal streaks	29	306
	Clay, sandy, blue	6	312
	Sand, blue, with clay	39	351
	Coal, hard	2	353
	Sand, blue, with firm clay	17	370

130-103-02DAA
(Log from Dependable Drilling Co.)

Altitude:

	Sand, brown	15	15
	Sandstone	2	17
	Clay, brown	3	20
	Clay, blue	3	23
	Sand, blue	7	30
	Clay, sandy, blue	10	40
	Clay, blue	22	62
	Rock, limestone	1	63
	Clay, blue	22	85
	Sandstone, blue, medium	36	121

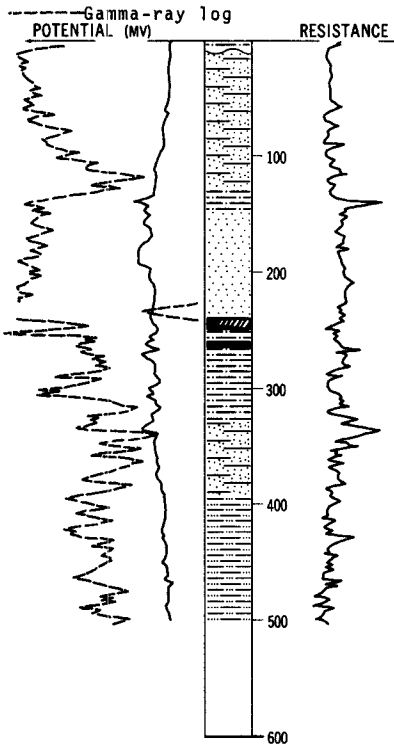
NDSWC 4463

LOCATION: 130-103-03AAA

DATE DRILLED: July 1972

ALTITUDE: 2995
(FT, MSL)

DEPTH: 500
(FT)



	DESCRIPTION OF DEPOSITS
	Alluvium
0-8	Clay, silty, sandy, brown.
	Ludlow Formation
8-118	Sandstone and siltstone, clayey, very fine to medium-grained, greenish-gray.
118-141	Claystone, silty, carbonaceous.
141-230	Sandstone, fine- to medium-grained, light-olive-gray.
230-241	Lignite.
241-250	Claystone, silty, carbonaceous.
250-253	Lignite.
	Hell Creek Formation
253-320	Claystone, silty, sandy, carbonaceous, greenish-gray.
320-384	Sandstone, silty, fine- to medium-grained, carbonaceous.
384-500	Siltstone and claystone, carbonaceous, greenish-gray.

130-103-09BBC
(Log from Dependable Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Surface	8	8
	Sand and gravel	5	13
	Shale, sandy, blue	7	20
	Rock ledge	3	23
	Sand	6	29
	Shale, blue, with loose sand at base	28	57
	Shale, brown	6	63
	Shale, blue	7	70
	Shale, brown	16	86
	Rock ledge	1	87
	Shale, blue	4	91
	Coal	2	93
	Shale	4	97
	Ledge	1	98
	Shale, sandy, light-brown, ledge at base	20	118
	Sand, fine, gray	4	122

130-103-11CCC
(Log from Dependable Drilling Co.)

Altitude: 3090 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Surface	1	1
	Clay	6	7
	Sandstone	1	8
	Sand, brown, with rock ledge at bottom	15	23
	Clay, sandy, blue, with rock ledge at bottom	30	53
	Clay, sandy, blue	9	62
	Rock, hard	1	63
	Clay, gray	1	64
	Coal	1	65
	Clay, gray	13	78
	Coal, hard	2	80
	Clay, sandy, gray	22	102
	Coal	1	103
	Clay, gray	1	104
	Rock	1	105
	Clay, sandy, gray	5	110
	Sand, fine, gray	5	115
	Clay and sandstone, gray	75	190
	Sand, coarse, gray	10	200
	Clay, gray	2	202
	Rock	1	203
	Coal	2	205
	Clay, gray, with rock ledge at bottom	5	210
	Clay, gray	5	215
	Coal	3	218
	Clay, gray, with rock ledge at bottom	12	230
	Clay, gray	24	254
	Coal	3	257
	Clay, gray	3	260
	Sand, poor, white	11	271
	Coal	2	273
	Rock ledge	15	288
	Clay, gray	4	292
	Rock	1	293
	Clay, hard, gray	27	320
	Coal	1	321
	Clay, gray	29	350
	Clay, sandy, blue	14	364
	Rock	1.5	365.5
	Clay, sandy, gray	5.5	371
	Rock, hard	1.5	372.5
	Clay, gray	19.5	392
	Clay, sandy, gray, with rock ledge at bottom	39	431
	Clay, sandy, gray	17	448
	Clay, sandy, white, blue	20	468
	Sand, fine, blue, white	14	482
	Clay, sandy, gray	13	495
	Clay, light-green	7	502
	Sand, soft, blue	31	533
	Clay, soft, gray	20	553
	Clay, hard, gray	30	583
	Clay and shale, green, with rock ledge at bottom	44	627
	Sand and shale	15	642
	Clay, sandy, gray	15	657
	Fox Hills	30	687

130-103-15ADA
(Log from Dependable Drilling Co.)

Altitude: 3100 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand and clay	14	14
	Clay, gray	8	22
	Clay, blue	1	23
	Clay and sand, gray	27	50
	Rock	1	51
	Clay, gray	16	67
	Coal	4	71
	Clay, gray	34	105
	Sand, fine	7	112
	Clay, gray	3	115
	Sand, medium, dark	35	150
	Clay, gray	25	175
	Rock	1	176
	Clay and coal	11	187
	Coal	10	197
	Sand, fine, gray	7	204
	Clay, gray, with rock ledge at bottom	4	208
	Clay and coal, gray, with rock ledge at bottom	17	225
	Clay and coal, with rock ledge	13	238
	Clay and coal, gray	69	307
	Rock	1	308
	Clay, gray	7	315
	Sand, brown	50	365
	Clay and coal	8	373
	Sand, fine, gray	9	382
	Clay, gray, with rock ledge at bottom	44	426
	Clay, gray, sandy	30	456
	Sand, clayey, gray, with rock ledge at bottom	23	479
	Shale, green, with rock ledge at bottom	5	484
	Shale and clay, green	13	497
	Sand, fine, blue	9	506
	Shale and clay, green, with rock ledge at bottom	20	526
	Clay, green	4	530
	Sand, medium, black and white	36	566
	Clay	6	572
	Sand, black and white	48	620
	Clay, sandy, green	15	635

130-103-28ABD
(Log from Dependable Drilling Co.)

Altitude: 2993 ft

	Surface	5	5
	Gravel	1	6
	Clay, yellow	17	23
	Rock, sand	2	25
	Clay, yellow	12	37
	Clay, gray	2	39
	Coal	2	41
	Clay, gray	14	55
	Coal	10	65
	Shale	39	104
	Coal	3	107
	Shale, sandy, gray, with ledge at bottom	6	113
	Shale, gray	25	138
	Coal	2	140
	Shale, sandy, gray	19	159
	Coal	5	164
	Shale, gray	40	204

130-103-28ABD, Continued
(Log from Dependable Drilling Co.)

Altitude: 2993 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Coal	2	206
	Shale	7	213
	Rock	1	214
	Shale, blue	40	254
	Shale, sandy	23	277
	Rock, soft	1	278
	Shale, sandy	59	337
	Coal	3	340
	Shale, sandy, blue	40	380
	Clay, green	6	386
	Shale, blue	14	400
	Sand, blue	47	447
	Shale	6	453

130-103-29CBB
(Log from Sander Drilling Co.)

Altitude: 3108 ft

	No record	108	108
	Rock	1	109
	Sand	11	120
	Clay and coal	130	250
	Sand	20	270
	Clay and coal	82	352
	Rock	1	353
	Sand	31	384
	Rock	2	386
	Sand and clay	79	465
	Sand	30	495

130-103-31AAA
(Log from Sander Drilling Co.)

Altitude: 3105 ft

	Clay	24	24
	Rock ledge	.5	24.5
	Clay	19.5	44
	Sand	2	46
	Clay	14	60
	Coal	5	65
	Clay	19	84
	Rock	.5	84.5
	Clay and coal	18.5	103
	Rock	2	105
	Clay and coal ledges	56	161
	Clay and sand	107	268
	Rock	2	270
	Sand	10	280
	Coal	4	284
	Clay and sand	44	328
	Rock	2	330
	Sand; water	20	350

130-103-34DDD
(Log from Dependable Drilling Co.)

Altitude: 3098 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Surface	1	1
	Clay, gray	8	9
	Clay, brownish	7	16
	Clay, light-gray	10	26
	Clay, sandy, gray	9	35
	Coal	3	38
	Clay, sandy, gray	1	39
	Coal	2	41
	Clay, gray, rock ledge at bottom	5	46
	Clay, gray, with sandy streaks	3	49
	Clay, gray	7	56
	Coal and clay, hard	19	75
	Clay, gray	8	83
	Sand, medium, gray	11	94
	Clay, gray, with coal streaks	6	100
	Clay and sand, fine	13	113
	Sand	4	117
	Clay, gray	4	121
	Rock, soft	2	123
	Clay, sandy	9	132
	Coal	9	141
	Clay	12	153
	Coal	2	155
	Clay, gray, with rock ledge at bottom	23	178
	Clay, gray	16	194
	Clay, green	7	201
	Sand, blue and white	18	219
	Rock	1	220
	Clay, sandy, gray	14	234
	Clay, gray	11	245
	Clay, green	23	268
	Clay, gray	3	271
	Sand, blue, black, and white	13	284
	Clay, gray and brown	37	321
	Coal	2	323
	Clay, gray, with fine sand, rock ledge at bottom	5	328
	Clay, sandy, blue, with rock ledge at bottom	20	348
	Clay, gray	26	374
	Clay, sandy, coarse, green, with rock ledge at bottom	15	389
	Shale, gray and green	35	424
	Sand	4	428
	Rock	1	429
	Shale, with streaks of fine sand	31	460
	Sand, coarse, firm, clean	30	490
	Clay, sandy	2	492

130-104-13DDC
(Log from Dependable Drilling Co.)

Altitude:

	Clay, brown	22	22
	Sand	8	30
	Shale, rock at bottom	13	43
	Shale, gray	5	48
	Ledge	3	51
	Sand	5	56
	Coal	5	61
	Shale	5	66
	Coal	2	68
	Shale	2	70
	Coal	2	72

130-104-13DDC, Continued
(Log from Dependable Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Shale, with coal streaks	10	82
	Rock	7	89
	Coal	2	91
	Sand	2	93
	Rock, hard	1	94
	Sand, fine, gray	22	116
	Shale, sandy	8	124

130-104-21BBA
(Log from H & H Service Co.)

Altitude: 3128 ft

	Shale	124	124
	Rock ledge	1	125
	Shale	20	145
	Sand, very fine	21	166
	Shale	105	271
	Rock ledge	1	272
	Shale	82	354
	Shale, sandy	15	369
	Rock ledge	1	370
	Shale	25	395
	Sand, coarse, black	11	406

130-105-22AAA
(Log from Dependable Drilling Co.)

Altitude:

	Sand, brown	39	39
	Clay, brown	13	52
	Clay, blue	8	60
	Sand, brown	5	65
	Clay, blue	7	72
	Sand, blue	26	98
	Clay, sandy, blue	5	103

130-106-03DCA
Auger hole LM-36

Altitude: 2816 ft

	Sand, very fine	13	13
	Sand, fine, moist	3	16
	Sand, clayey, fine	3	19
	Clay, hard, lumpy, blue	4	23

130-106-03DCD
Auger hole LM-35

Altitude: 2813 ft

	Sand, very fine	5	5
	Clay, sandy, fine, brown	7	12
	Sand, clayey, coarse, moist	3	15
	Clay, hard, lumpy, blue	3	18

130-106-03DDA
Auger hole LM-37

Altitude: 2817 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand, fine, dry----------	11	11
	Sand, clayey, fine, lumpy----------	4	15
	Sand, fine, moist, blue----------	1	16
	Sand, coarse to medium----------	9	25
	Sand, coarse, wet----------	5	30
	Clay, hard, blue----------	3	33

130-106-29CDD
Auger hole

Altitude: 2840

Alluvium:			
	Clay, silty, sandy, yellowish-brown---------	3	3
	Sand, fine, yellowish-brown----------	10	13
	Silt, sandy, clayey, yellowish-brown--------	2	15
	Sand, fine to coarse, pebbly, yellowish-brown----------	2	17
	Sand and gravel----------	5	22
Pierre Formation:			
	Shale, gray----------	2	24

130-106-29DCC
Auger hole

Altitude: 2837

Alluvium:			
	Clay, yellowish-brown----------	2	2
	Sand, fine, yellowish-brown----------	8	10
	Clay, silty, sandy, yellowish-brown---------	1	11
	Sand, fine to medium----------	12	23
Pierre Formation:			
	Shale, gray----------	1	24

130-106-29DCD
Auger hole

Altitude: 2835

Alluvium:			
	Clay, silty, yellowish-brown----------	10	10
	Sand and gravel----------	13	23
Pierre Formation:			
	Shale, gray----------	1	24

130-106-29DDC
Auger hole

Altitude: 2832 ft

Alluvium:			
	Sand, fine to medium; a few pebbles and thin beds of sandy clay; yellowish-brown-------	13	13
	Clay, sandy, pebbly, yellowish-brown--------	2	15
Pierre Formation:			
	Shale, gray----------	4	19

130-106-29DDD
Auger hole

Altitude: 2846 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium:			
	Sand, very fine to fine, brown	6	6
	Sand and gravel	7	13
Pierre Formation:			
	Shale, gray	3	16

131-091-07DAD
(Log from Moe Drilling Co.)

Altitude:

Sandstone	12	12
Clay, yellow	2	14
Rock, flint, hard	.5	14.5
Clay	5	19.5
Coal	.5	20
Clay	2	22
Coal	2	24
Clay, brown	3	27
Coal	1	28
Clay	4	32
Coal	1	33
Sand, very fine to fine	25	58
Rock, hard	2	60
Sandstone	29	89
Clay, gray	2	91

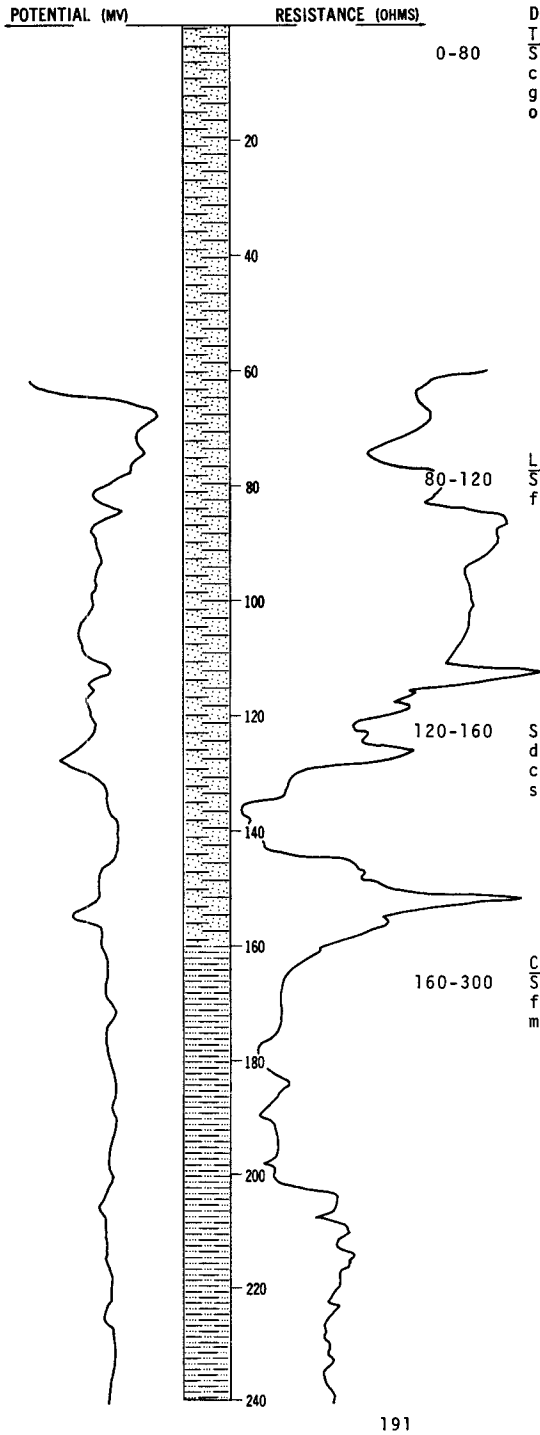
NDSWC 4379

LOCATION: 131-091-10CCC

DATE DRILLED: September 1971

ALTITUDE: 2450
(FT, MSL)

DEPTH: 480
(FT)



DESCRIPTION OF DEPOSITS

0-80 Tongue River Formation
Sandstone and siltstone, clayey, very fine to fine-grained, carbonaceous, olive-gray.

80-120 Ludlow Formation
Sandstone, silty, very fine, light-gray.

120-160 Sandstone and siltstone, dark-greenish-gray; clayey at bottom of section.

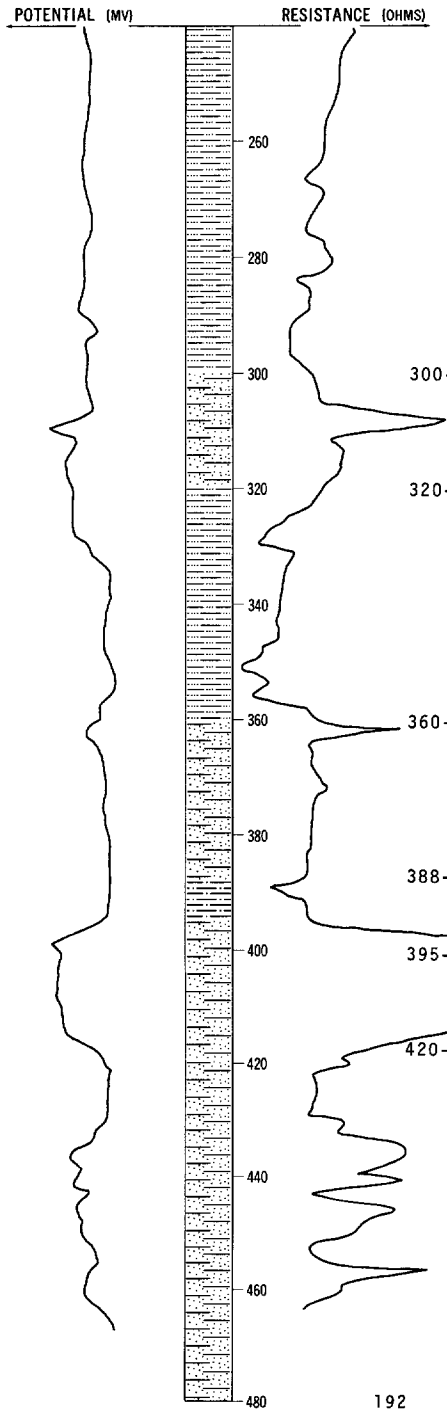
160-300 Cannonball Formation
Siltstone, sandy, clayey, fine-grained, carbonaceous, medium-gray.

LOCATION: 131-091-10CCC

DATE DRILLED: September 1971

ALTITUDE: 2450
(FT, MSL)

DEPTH: 480
(FT)



DESCRIPTION OF DEPOSITS

Cannonball Formation, Continued

300-320 Sandstone, silty, very fine to fine-grained, greenish-gray.

320-360 Siltstone, clayey, sandy, gray.

360-388 Sandstone and siltstone, fine-grained, carbonaceous.

388-395 Claystone, silty, carbonaceous.

Ludlow Formation

395-420 Sandstone, silty, light-gray.

Cannonball Formation

420-480 Sandstone and siltstone, clayey; highly indurated at 458 ft.

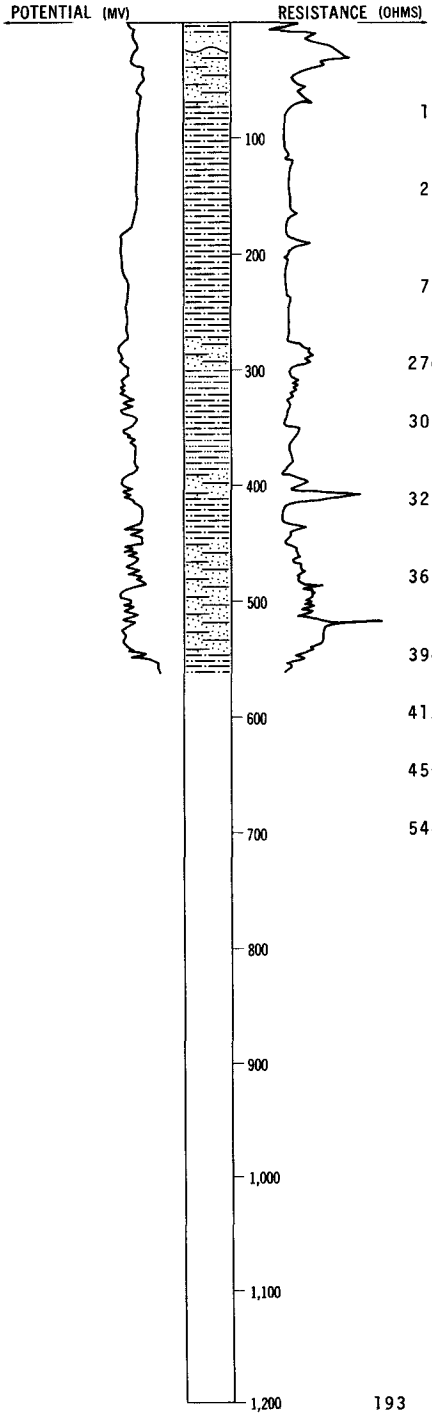
NDSWC 8345

LOCATION: 131-091-15CCC

DATE DRILLED: June 1972

ALTITUDE: 2360
(FT, MSL)

DEPTH: 560
(FT)



	DESCRIPTION OF DEPOSITS
	Alluvium
0-10	Clay, sandy, yellowish-brown.
10-21	Sand, pebbly, fine- to medium-grained.
	Ludlow Formation
21-70	Sandstone and siltstone, clayey, calcareous, yellowish-gray.
	Cannonball Formation
70-276	Claystone, silty, sandy, calcareous, brownish-gray.
	Ludlow Formation
276-300	Sandstone, silty, fine- to medium-grained.
300-322	Siltstone and claystone, sandy, calcareous.
	Cannonball Formation
322-363	Claystone and siltstone, sandy, greenish-gray.
	Ludlow Formation
363-394	Siltstone and claystone, carbonaceous, grayish-brown.
394-412	Sandstone, silty, fine-grained, calcareous.
412-450	Claystone, silty, carbonaceous.
450-544	Sandstone, silty, lignitic, fine- to medium-grained.
544-560	Claystone, silty.

131-091-26AAA
(Log from Knutson Well Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand, yellow	18	18
	Rock	1	19
	Clay, sandy	11	30
	Clay	36	66
	Clay, sandy	2	68
	Clay	42	110
	Clay, sandy, fine	5	115
	Clay	8	123
	Rock	2	125
	Clay	40	165
	Clay, sandy	24	189
	Rock	5	194
	Clay, sandy	1	195
	Rock	1	196
	Clay, sandy	32	228
	Sandstone, coarse	22	250

131-092-08BBA
(Log from Moe Drilling Co.)

Altitude:

	Clay	10	10
	Sandstone	8	18
	Clay	5	23
	Sand, gray	4	27
	Coal	7	34
	Clay	3	37
	Coal	6	43
	Clay	1	44
	Clay	6	50
	Coal	1	51
	Sand	2	53
	Clay, gray	4	57
	Coal	1	58
	Clay	5	63
	Sand	37	100
	Coal	9	109
	Clay, gray	2	111
	Coal	3	114
	Sand, black, rock at bottom	2	116
	Clay, gray	20	136
	Clay	2	138
	Coal	7	145
	Rock	2	147
	Sand, coarse	55	202

131-092-10BBC
(Log from Moe Drilling Co.)

Altitude:

	Sandstone	10	10
	Clay, yellow	3	13
	Coal, slack	3	16
	Coal	8	24
	Clay, gray	20.5	44.5
	Coal	2	46.5
	Clay, gray	4.5	51
	Coal	2	53
	Sandstone	17	70
	Rock	.5	70.5
	Sand, gray	20.5	91

131-092-11ABC
(Log from Moe Drilling Co.)

Altitude: 2465 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand, brown	14	14
	Sand, red	2	16
	Coal, slack	4	20
	Clay, gray	4.5	24.5
	Coal	1.5	26
	Clay, brown	7	33
	Clay, white	8	41
	Clay, brown, with hard rock on bottom	6	47
	Clay, brown	19	66
	Coal	5	71
	Sand, gray	30.5	101.5
	Rock, gray	1.5	103
	Clay, gray	5	108
	Sand, gray	5.5	113.5
	Rock	1.5	115
	Sand, gray	10	125

131-092-11BBC
(Log from Moe Drilling Co.)

Altitude:

	Soil, surface	1.5	1.5
	Clay, yellow, soft	17.5	19
	Coal, soft	1	20
	Clay, yellow	3	23
	Coal, hard	1.5	24.5
	Clay, gray to light-green	22.5	47
	Sand and clay, gray, soft	4.5	51.5
	Coal, hard	.25	51.75
	Clay, gray, hard	2.25	54
	Coal, hard	1.5	55.5
	Clay, brown, hard	1.5	57
	Clay, gray	3	60
	Coal, hard	3.5	63.5
	Sand, yellow, soft	21.5	85
	Sand, gray	20	105
	Clay, gray, hard	20.5	125.5
	Rock, soft	1.5	127
	Sand, gray, soft	5	132
	Clay, gray, hard	28	160

131-093-07AAA2
(Log from Knutson Drilling Co.)

Altitude:

	Sand	30	30
	Coal	12	42
	Sand	3	45
	Coal	5	50
	Clay, rock at bottom	17	67
	Clay, sandy	13	80
	Clay	15	95

131-093-10AAA
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Gravel	4	4
	Sand	26	30
	Coal	8	38
	Sand	12	50
	Clay	10	60
	Sand	4	64
	Coal	2	66
	Sand	2	68
	Clay	5	73
	Clay, sandy, thin rock at bottom	3	76
	Clay, sandy	14	90
	Clay	2	92
	Sand	13	105
	Sand	17	122
	Clay, sandy	4	126

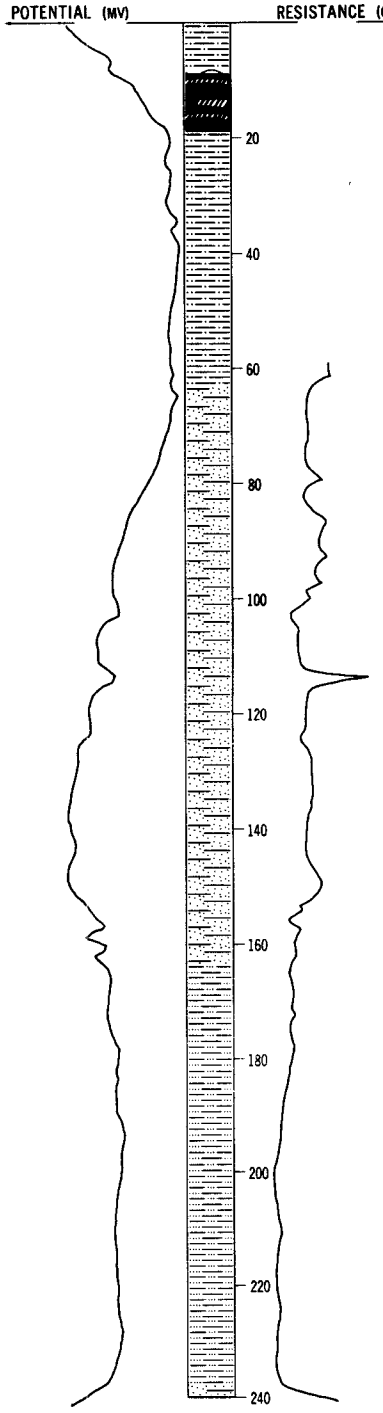
NDSWC 8346, 8346A, and 8346B

LOCATION: 131-093-21AAA1, 2, 3

DATE DRILLED: June 1972

ALTITUDE: 2549
(FT, MSL)

DEPTH: 475
(FT)



	DESCRIPTION OF DEPOSITS
	Alluvium
0-8	Clay, silty, sandy, yellowish-brown.
	Tongue River Formation
8-18	Lignite.
18-62	Claystone, silty, sandy, lignitic.
62-162	Ludlow Formation Sandstone, silty, very fine to medium-grained, greenish-gray.
162-236	Cannonball Formation Siltstone and claystone, calcareous, light-gray to dark-greenish-gray.
236-260	Ludlow Formation Sandstone, silty, fine- to medium-grained, dark-greenish-gray.

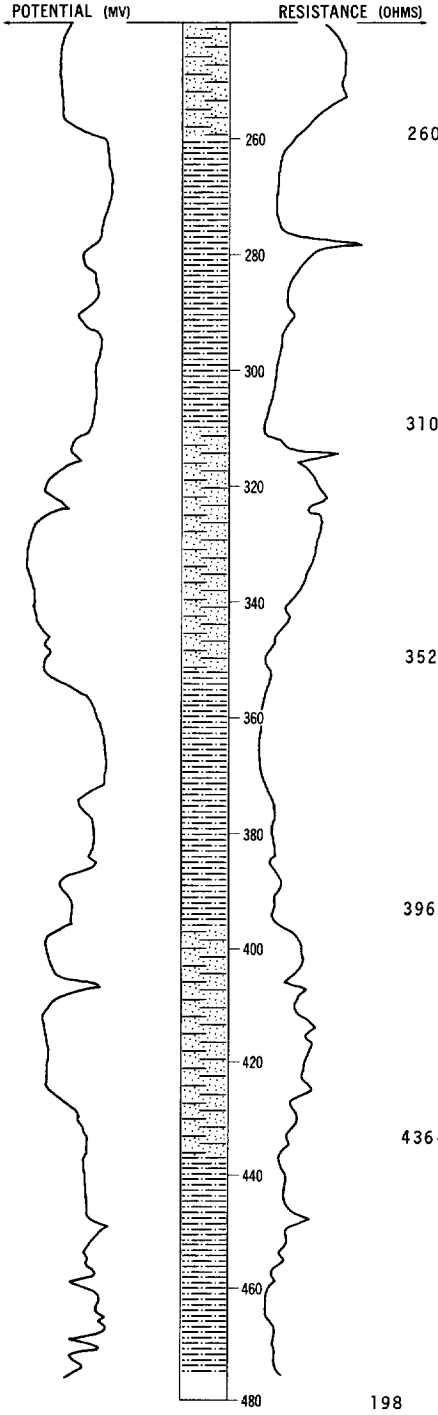
NDSWC 8346, 8346A, and 8346B, Continued

LOCATION: 131-093-21AAA1, 2, 3

DATE DRILLED: June 1972

ALTITUDE: 2549
(FT, MSL)

DEPTH: 475
(FT)



	DESCRIPTION OF DEPOSITS
260-310	Cannonball Formation Claystone, silty, sandy, brownish-gray.
310-352	Ludlow Formation Sandstone, silty, lignitic, fine- to medium-grained, bluish-gray.
352-396	Cannonball Formation(?) Claystone, silty, sandy, lignitic, brownish-gray.
396-436	Sandstone, silty, very fine to fine-grained, calcareous, carbonaceous, greenish-gray.
436-475	Claystone, silty, lignitic, carbonaceous, brownish-gray.

131-094-07DAA
(Log from Moe Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay	15	15
	Coal	1.5	16.5
	Clay, brown	1.5	18
	Coal	1	19
	Clay, gray	6	25
	Rock, glossy	1	26
	Coal	1	27
	Clay, gray	11	38
	Sand and clay	3.5	41.5
	Coal	1.5	43
	Sand, brown	6	49
	Clay, brown	5	54
	Coal	1	55
	Sand, gray, with hard sandstone on bottom	23	78
	Sand, gray	20	98
	Rock	1	99
	No record	2	101

NDSWC 4312

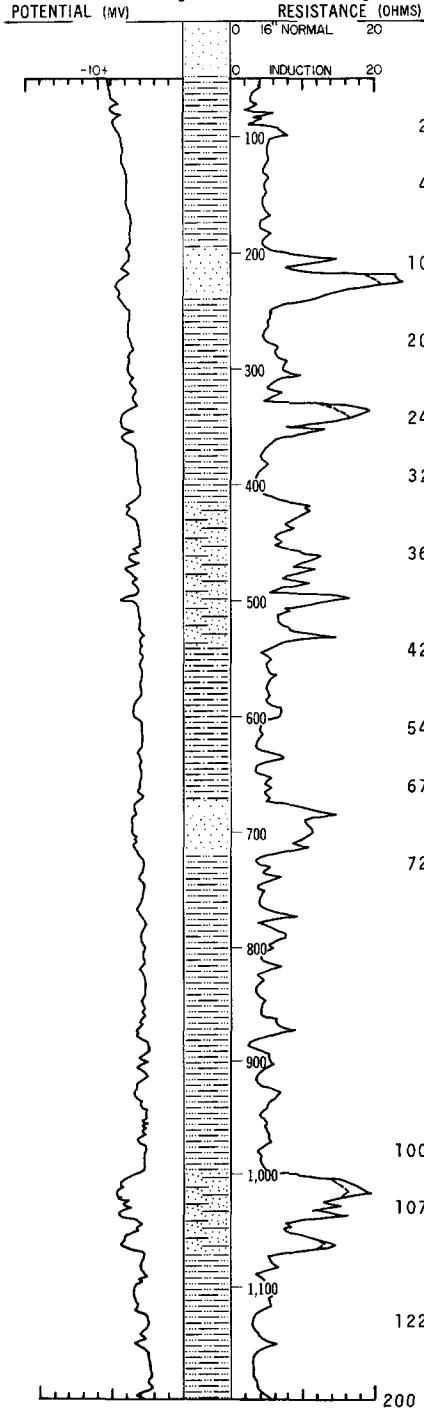
LOCATION: 131-094-20CBC1

DATE DRILLED: July 1971

ALTITUDE: 2500
(FT, MSL)

DEPTH: 1280
(FT)

Schlumberger induction log



DESCRIPTION OF DEPOSITS

	Alluvium
0-20	Sand, pebbly, fine- to coarse-grained.
	Ludlow Formation
20-40	Sand, very fine to fine-grained, yellowish.
40-100	Siltstone and claystone, sandy, light-olive-gray.
	Cannonball Formation
100-200	Siltstone and claystone, sandy, light-olive-gray.
	Ludlow Formation
200-240	Sandstone, fine-grained, dark-greenish-gray.
	Cannonball Formation
240-326	Siltstone, sandy, clayey.
	Ludlow Formation
326-365	Siltstone and sandstone, carbonaceous.
	Cannonball Formation(?)
365-420	Siltstone and claystone, carbonaceous, light-olive-gray to brownish-gray.
	Ludlow Formation
420-540	Sandstone and siltstone, friable, light-olive-gray.
	Hell Creek Formation
540-675	Claystone and siltstone, dark-greenish-gray.
675-720	Sandstone, very fine grained, silty, friable, greenish-gray.
720-1000	Siltstone and sandstone, clayey, very fine grained, carbonaceous, light-olive-gray.
	Fox Hills Formation
1000-1070	Sandstone, silty, greenish-gray.
1070-1220	Siltstone and sandstone, clayey, carbonaceous, light-olive-gray to brown.
	Pierre Formation
1220-1280	Shale, silty, fissile, dark-gray to black.

Rm 5.24 @ 90°F
Bit size 6-3/4".

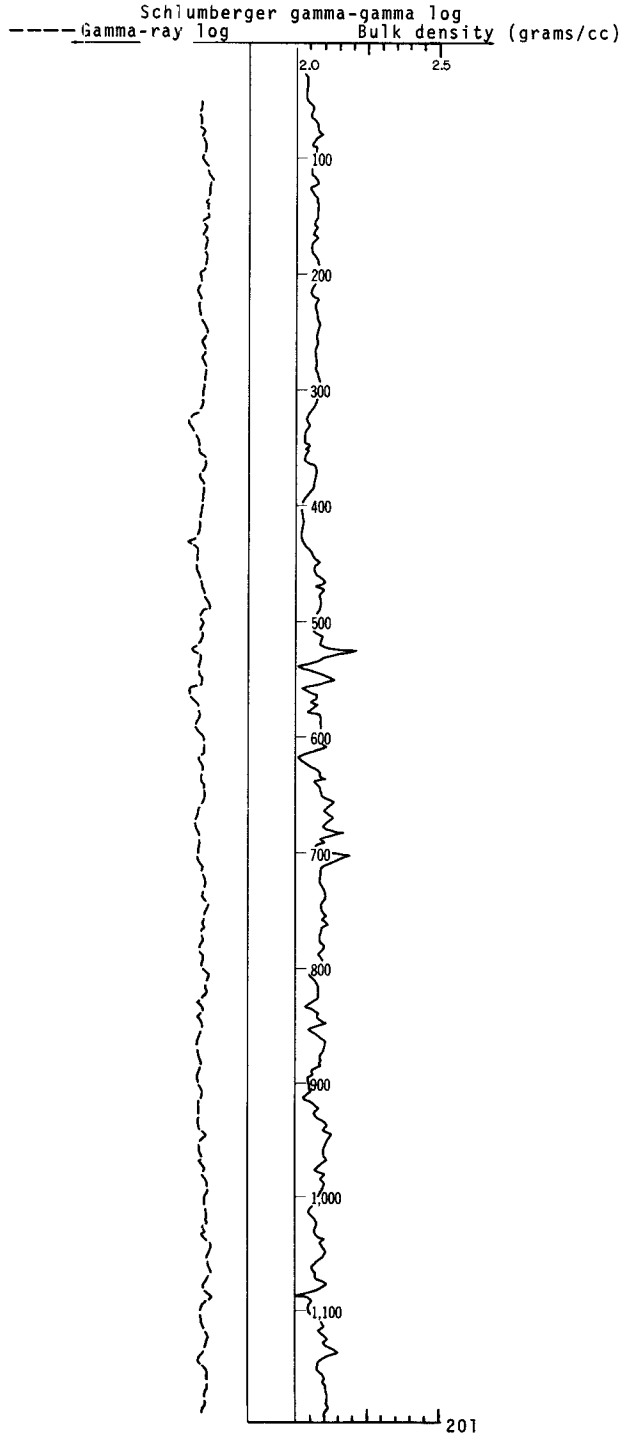
NDSWC 4312, Continued

LOCATION: 131-094-20CBC1

DATE DRILLED: July 1971

ALTITUDE: 2500
(FT, MSL)

DEPTH: 1280
(FT)



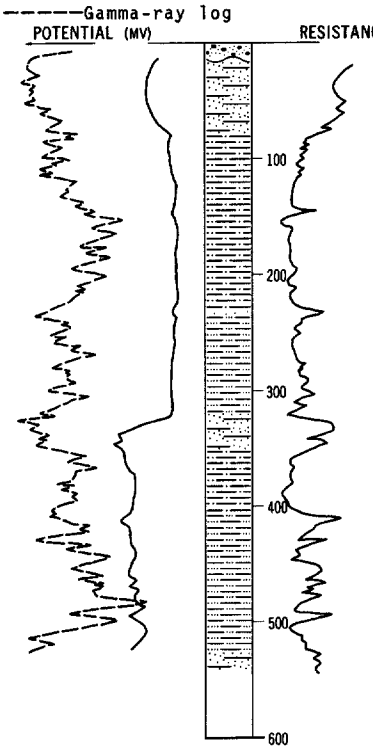
NDSWC 4386 and 4386A

LOCATION: 131-094-20CBC2, 3

DATE DRILLED: September 1971

ALTITUDE: 2500
(FT, MSL)

DEPTH: 540
(FT)



	DESCRIPTION OF DEPOSITS
	Alluvium
0-10	Sand and gravel, oxidized.
	Ludlow Formation
10-77	Sandstone and siltstone, very fine to fine-grained, friable.
	Cannonball Formation
77-229	Claystone and siltstone, bentonitic, very light gray.
	Ludlow Formation
229-233	Sandstone, very fine grained, greenish-gray.
	Cannonball Formation
233-320	Siltstone and claystone, sandy, carbonaceous, light-gray.
	Ludlow Formation
320-350	Sandstone, silty, very fine to fine-grained, friable, dark-greenish-gray.
	Cannonball Formation(?)
350-404	Claystone, silty, lignitic, carbonaceous.
	Ludlow Formation
404-523	Siltstone and sandstone, lignitic, carbonaceous, light-greenish-gray.
523-540	Sandstone, silty, very fine to fine-grained, friable.

131-094-24ADD
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Shale	30	30
	Clay, sandy, yellow	30	60
	Sand	20	80
	Clay, sandy, with rock at bottom	12	92
	Clay	3	95

131-095-02BBB
(Log from Knutson Drilling Co.)

Altitude:

	Sand, fine	45	45
	Sand, medium	15	60
	Sand and clay	27	87
	Coal	2	89
	Clay, dark	1	90

131-095-02DBB
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand	35	35
	Rock	1	36
	Sand	22	58
	Clay	13	71
	Sand	2	73
	Clay	4	77
	Coal	3	80
	Sand	35	115
	Clay, sand	5	120

131-095-10ABB
(Log from Moe Drilling Co.)

Altitude:

	Sandstone	9	9
	Clay, brown	2	11
	Sand, yellow	4	15
	Clay, gray	2	17
	Coal	.5	17.5
	Sand, tan	19.5	37
	Sand, gray	5	42
	Rock	1	43
	Sand, gray	53	96
	Clay, brown	5	101

131-095-15DCC
(Log from Knutson Drilling Co.)

Altitude:

	Sand	42	42
	Rock, hard	3	45
	Sand	18	63

131-095-24CBC
(Log from Alfred Jacobson)

Altitude:

	Sand	8	8
	Clay	17	25
	Sand, hard	43	68
	Sand; water	10	78
	Sandstone	3	81
	Sand; water	21	102

131-095-27CCB
(Log from Moe Drilling Co.)

Altitude:

	Stone, hard	2	2
	Clay	63	65
	Hard cap	10	75
	Sand, dark	5	80
	Sand; water	45	125

131-095-28BBC1
(Log from Alfred Jacobson)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay, hard, blue	80	80
	Clay and sand	10	90
	Sandstone	1	91
	Sand	18	109
	Sandstone	1	110
	Sand and water	15	125

131-095-28BBC2
(Log from Alfred Jacobson)

Altitude:

	Topsoil	1	1
	Shale	3	4
	Clay	71	75
	Sand	45	120

131-096-02DBD
(Log from Knutson Drilling Co.)

Altitude:

	Sand	20	20
	Clay	20	40
	Clay, sandy	20	60
	Sand	8	68
	Coal	1	69
	Clay	4	73

131-096-05AAD
(Log from Alfred Jacobson)

Altitude:

	Gravel	4	4
	Clay, brown	21	25
	Clay, gray	15	40
	Clay, hard	9	49
	Coal	4	53
	Clay, hard	32	85
	Sand, gray; water	40	125

131-096-14ADD2
(Log from Knutson Drilling Co.)

Altitude:

	Clay	18	18
	Sand, coarse	12	30
	Coal	1	31
	Sand	7	38
	Clay	4	42

131-096-14ADD3
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay	21	21
	Sand	9	30
	Clay	6	36
	Clay, sandy	7	43
	Coal	1	44
	Clay	9	53
	Rock	1	54
	Sand	8	62
	Coal	1	63
	Clay	5	68
	Clay, hard, dark	4	72
	Coal, hard	2	74
	Clay	2	76
	Sand	39	115
	Clay, sandy	6	121

131-096-15AAD
(Log from Knutson Drilling Co.)

Altitude:

	Topsoil	3	3
	Shale	1	4
	Sand	4	8
	Rock	3	11
	Sand	39	50
	Clay, sandy	2	52

131-096-15CCC1
(Log from Knutson Drilling Co.)

Altitude:

	Sand	26	26
	Rock	1	27
	Sand	29	56
	Coal	1	57
	Clay	3	60

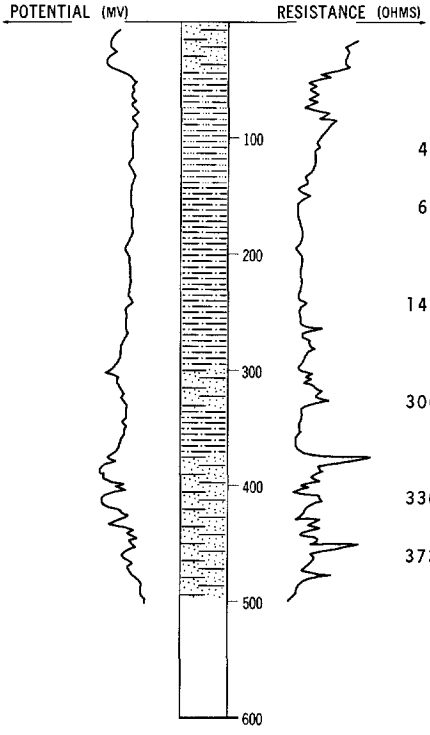
NDSWC 8349

LOCATION: 131-096-15CCC2

DATE DRILLED: June 1972

ALTITUDE: 2665
(FT, MSL)

DEPTH: 500
(FT)



	DESCRIPTION OF DEPOSITS
	Tongue River Formation
0-40	Sandstone, silty, lignitic, very fine to medium-grained; yellowish-brown to 30 ft.
	Ludlow Formation
40-65	Claystone, silty, light-gray.
65-140	Siltstone and sandstone, clayey, fine- to medium-grained, grayish-brown.
	Cannonball Formation
140-300	Claystone and siltstone, sandy, calcareous, grayish-brown.
	Ludlow Formation(?)
300-336	Sandstone, silty, very fine to fine-grained, olive-gray.
	Cannonball Formation
336-373	Claystone, silty, gray.
	Ludlow Formation
373-500	Sandstone and siltstone, lignitic, fine- to medium-grained, carbonaceous, gray.

131-096-18ADD
(Log from Dependable Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Surface	4	4
	Clay, buff	20	24
	Clay, blue-gray, rock ledge at bottom	16	40
	Clay, blue	17	57
	Clay, gray	26	83
	Sand, fine, gray	28	111
	Clay, blue	49	160
	Rock ledge, drills hard	6	166
	Sand, hard, gray	36	202

131-096-21DDA
(Log from Knutson Drilling Co.)

Altitude:

	Clay	25	25
	Coal	2	27
	Clay	33	60
	Sand	40	100

131-096-26AAA
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Shale	24	24
	Coal	1	25
	Sand	2	27
	Rock	23	50
	Clay	17	67
	Rock	1	68
	Clay	12	80
	Sand	44	124

131-096-27BCC2
(Log from Knutson Drilling Co.)

Altitude:

	Sand	5	5
	Clay	9	14
	Sand; water	12	26
	Clay	4	30
	Coal	1	31
	Clay	2	33
	Coal	.5	33.5
	Sand	11.5	45
	Clay, silt	3	48
	Rock	2	50
	Clay	5	55
	Coal	1	56
	Clay, hard	18	74
	Coal	1	75
	Clay, hard	3	78
	Coal, hard	9	87
	Coal	2	89
	Clay, lignitic	35	124
	Coal	1	125
	Clay, white, sandy	9	134
	Coal	1	135
	Sand; water	25	160
	Clay	10	170

131-096-30DCD
(Log from Alfred Jacobson)

Altitude:

	Topsoil	5	5
	Sand and clay	5	10
	Clay	4	14
	Clay	4	18
	Clay, blue	57	75
	Sand; water	10	85
	Clay	23	108
	Stone	2	110
	Sand; water	12	122

131-096-32ACA
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Rock	5	5
	Sand, yellow	33	38
	Rock	.5	38.5
	Coal	1.5	40
	Clay	48	88
	Coal	3	91
	Clay, sandy	9	100
	Clay	15	115
	Coal	1	116
	Clay, sandy	12	128
	Clay and coal	5	133
	Clay	2	135
	Clay, sandy	10	145
	Sand	22	167
	Rock	1	168
	Sand, medium	8	176
	Clay, sandy	4	180

131-097-07CCC
(Log from Knutson Drilling Co.)

Altitude:

	Sand, yellow	85	85
	Clay	12	97
	Coal	2	99
	Clay	21	120
	Clay, sandy, fine	8	128
	Clay	12	140
	Coal	1	141
	Clay	5	146
	Coal	.33	146.33
	Clay	5.67	152
	Coal, hard	2	154
	Clay	3	157
	Clay, green	31	188
	Coal	8	196
	Clay, hard	2	198
	Clay, green	17	215
	Coal	1	216
	Rock	2	218
	Sand	17	235
	Clay	10	245

131-097-10AAA
(Log from Dependable Drilling Co.)

Altitude:

	Surface clay	3	3
	Clay, buff	16	19
	Clay, gray	6	25
	Coal	2	27
	Clay, blue	38	65
	Clay and coal, blue, rock ledge at bottom	14	79
	Clay and coal, gray, rock ledge at bottom	14	93
	Clay and coal, brown and gray	29	122
	Clay, gray	35	157
	Clay, sandy, gray	47	204
	Sand, fine, blue, rock ledge at bottom	7	211

131-097-10AAA, Continued
(Log from Dependable Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand and clay, medium to fine, blue and white, rock ledge at bottom	13	224
	Sand, medium	6	230
	Sand, coarse, black and white	6	236
	Sand, fine	7	243
	Clay, sandy	4	247

131-097-10BBB
(Log from Knutson Drilling Co.)

Altitude:

	Sand	8	8
	Clay	24	32
	Sand	4	36
	Clay	4	40
	Coal	2	42
	Clay, sandy, rock at bottom	3	45
	Clay, white	16	61
	Coal	1	62
	Clay, soft	4	66
	Clay, green	3	69
	Rock, soft	2	71
	Clay	7	78
	Clay, soft, rock at bottom	1	79
	Clay, soft	5	84
	Clay	7	91
	Sand	3	94
	Clay, dark	2	96
	Coal	1	97
	Clay	4	101
	Coal	4	105
	Sand	3	108
	Clay	17	125
	Clay, green	3	128
	Sand, fine, coal at bottom	5	133
	Clay	7	140
	Coal, hard	3	143
	Clay	2	145
	Clay, sandy	3	148
	Clay	2	150

131-097-14CCB
(Log from Knutson Drilling Co.)

Altitude:

	Shale and clay	39	39
	Coal, hard	2	41
	Clay	4	45
	Sand, fine	7	52
	Clay	8	60
	Clay, green	5	65
	Sand, fine	9	74
	Clay and coal, dark	2	76
	Clay, green	20	96
	Sand, fine	18	114
	Rock, hard	5	119
	Sand, medium	10	129
	Clay, dark	3	132

131-097-17BCC
(Log from Dependable Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay, gray	15	15
	Clay and coal	8	23
	Clay, blue	31	54
	Sand, fine, blue	2	56
	Clay, blue	30	86
	Sand, fine, blue	3	89
	Clay, blue	13	102
	Sand, fine, blue	4	106
	Rock	8	114
	Clay, gray	25	139
	Rock	2	141
	Clay, gray	15	156
	Coal	2	158
	Clay and coal, gray	12	170
	Sand, fine, gray	12	182
	Clay and coal	14	196
	Sand	3	199
	Clay and coal	38	237
	Sand	4	241
	Clay and coal, gray, rock at bottom	16	257
	Clay, sandy	3	260
	Sand, blue	27	287
	Sand and clay	8	295
	Sand and clay	10	305

131-097-19DCC2
(Log from Knutson Drilling Co.)

Altitude:

	No record	220	220
	Clay, hard	10	230
	Sand	20	250
	Clay and coal	10	260
	Sand	29	289

131-097-19DCC3
(Log from Knutson Drilling Co.)

Altitude:

	Clay, with coal at bottom	39	39
	Clay, green	6	45
	Coal	2	47
	Clay, green	12	59
	Sand, fine, gray	5	64
	Sand, clayey, fine	12	76
	Clay, sandy, fine	2	78
	Clay, green	3	81
	Rock, soft	2	83
	Clay, green	9	92
	Clay, dark	2	94
	Coal, hard	1	95
	Clay	5	100
	Rock	1	101
	Clay, brown	4	105
	Clay, green	10	115
	Clay, sandy, fine	7	122
	Sand, fine	3	125
	Clay, coal at bottom	15	140

131-097-19DCC3, Continued
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay	6	146
	Coal, hard	2	148
	Clay, dark	2	150
	No record	85	235

131-097-19DCC4
(Log from Dependable Drilling Co.)

Altitude:

	Clay, gray	15	15
	Clay and coal	8	23
	Clay, blue	31	54
	No record	2	56
	Clay, blue	30	86
	Sand, fine, blue	3	89
	Clay, blue	13	102
	Sand, fine, blue	4	106
	Clay and sand, gray	7	113
	Rock	1	114
	Clay, gray	25	139
	Rock	2	141
	Clay, gray	15	156
	Coal	2	158
	Clay, gray	12	170
	Sand, fine, gray	12	182
	Coal and clay	14	196
	Sand	3	199
	Clay and coal	38	237
	Sand	4	241
	Clay and coal, rock ledge at bottom	16	257
	Clay, sandy	3	260
	Sand, medium, blue	5	265
	Sand, blue	22	287
	Sand and clay	8	295

131-097-20ADD
(Log from Knutson Drilling Co.)

Altitude:

	Topsoil	2	2
	Rock, loose	2	4
	Clay, soft	16	20
	Coal	1	21
	Clay	2	23
	Rock	.5	23.5
	Clay	3.5	27
	Rock	.5	27.5
	Clay	6.5	34
	Rock	.5	34.5
	Clay	1.5	36
	Coal	1	37
	Clay	23	60
	Rock	.5	60.5
	Clay	24.5	85
	Coal	1	86
	Clay	5	91
	Rock	.5	91.5
	Clay, soft	8.5	100

131-097-20ADD, Continued
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Coal	1	101
	Clay	25	126
	Rock, hard	2	128
	Clay, soft	9	137
	Sand	3	140
	Clay	2	142
	Coal	1	143
	Clay	1	144
	Coal	2	146
	Sand	4	150
	Clay	6	156
	Coal	1	157
	Sandstone	1	158
	No record	32	190

131-097-20DAD
(Log from Dependable Drilling Co.)

Altitude:

	Surface	2	2
	Sand	39	41
	Clay, gray	5	46
	Coal	6	52
	Clay, blue	7	59
	Coal	3	62
	Sand, fine, gray	7	69
	Clay, blue	56	125
	Coal	17	142
	Rock, hard	4	146
	Sand, gray	4	150
	Clay, gray	2	152
	Coal	2	154
	Clay, gray	26	180
	Coal	4	184
	Clay, gray	2	186
	Sandstone, soft	7	193
	Clay, gray, rock ledge at bottom	7	200
	Sand	5	205
	Clay, gray	12	217
	Sand, loose, white and black	8	225
	Clay, gray	25	250
	Coal	3	253
	Clay	4	257
	Coal	7	264
	Clay, gray	19	283
	Sand, speckled, white, gray, and black	8	291
	Coal	4	295
	Clay, gray	2	297
	Rock	2	299
	Sand, lignitic, white and gray	21	320
	Sand and clay, gray and black	10	330

131-097-26BBC2
(Log from Knutson Drilling Co.)

Altitude:

	Topsoil	4	4
	Sand	2	6
	Clay	15	21
	Coal	1	22

131-097-26BBC2, Continued
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay	11	33
	Rock	1	34
	Clay	26	60
	Coal	2	62
	Rock	1	63
	Clay	32	95
	Clay, sandy	10	105
	Clay	17	122
	Sand	25	147
	Clay	3	150

131-097-26DDD
(Log from Dependable Drilling Co.)

Altitude:

	Surface	1	1
	Sand and gravel	18	19
	Clay, buff	30	49
	Coal	2	51
	Clay, blue	12	63
	Clay, brown	10	73
	Clay, blue	16	89
	Clay and sand, gray	6	95
	Clay, sandy, blue	5	100
	Sand, poor	3	103
	Clay, sandy	7	110
	Sand, gray	33	143

131-098-01BCC1
(Log from Alfred Jacobson)

Altitude:

	Clay, brown	12	12
	Clay, gray	33	45
	Clay and blackjack	56	101
	Limestone	2	103
	Sand and water	9	112

131-098-01BCC2
(Log from Knutson Drilling Co.)

Altitude:

	Sand	15	15
	Shale	11	26
	Coal, soft	2	28
	Clay	12	40
	Clay, sandy	5	45
	Clay	4	49
	Coal	.5	49.5
	Clay	10.5	60
	Coal	1	61
	Clay, rock at bottom	19	80
	Clay	10	90
	Coal	1	91
	Clay	4	95
	Sand	7	102
	Clay	2	104
	Coal	1	105

131-098-01BCC2, Continued
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay	2	107
	Rock	1	108
	Clay	1	109
	Coal	1	110

131-098-01BCC3
(Log from Knutson Drilling Co.)

Altitude:

	Topsoil	4	4
	Sand	10	14
	Shale	10	24
	Coal	1	25
	Clay and shale, coal at bottom	35	60
	Clay	15	75
	Rock, soft	1	76
	Clay	14.5	90.5
	Coal and rock	1.5	92
	Clay	2	94
	Sand	5	99
	Clay	5	104
	Sand	1	105
	Clay	1	106
	Rock	1	107
	Coal	3	110
	Clay, green, rock at bottom	5	115
	Clay, green	11	126
	Coal, hard	6	132
	Clay, red	2	134
	Clay, green, rock at bottom	6	140
	Sand, fine	7	147
	Clay	10	157
	Clay, sandy	3	160
	Clay	5	165
	Rock	2	167
	Clay	6	173
	Sand, rock at bottom	1	174
	Sand, fine, brown	7	181
	Clay	4	185
	Coal, hard	1.5	186.5
	Clay and sand	3.5	190

131-098-01BCC4
(Log from Knutson Drilling Co.)

Altitude:

	Silt and sand	11	11
	Clay	8	19
	Chalky	5	24
	Clay	3	27
	Coal	1	28
	Clay, sandy, fine	5	33
	Clay	4	37
	Clay, sandy, fine	2	39
	Clay, rock at bottom	1	40
	Clay	7	47
	Clay, sandy, fine, lignitic	3	50
	Clay, lignitic	10	60
	Clay	10	70
	Sand	11	81
	Clay	8	89

131-098-07BCC
(Log from Dependable Drilling Co.)

Altitude: 2959 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Surface	2	2
	Clay, yellow	8	10
	Rock	1	11
	Clay, blue	19	30
	Coal	2	32
	Clay, blue	14	46
	Coal	6	52
	Clay, blue, green	8	60
	Clay, brown	44	104
	Sand	36	140
	Rock, hard	5	145
	Clay, green	30	175
	Clay, sandy	10	185
	Clay, gray	17	202
	Coal	3	205
	Clay, sandy, fine, gray	7	212
	Coal	2	214
	Clay, gray	14	228
	Coal	4	232
	Clay, gray	10	242
	Rock, hard	5	247
	Clay, brown	4	251
	Coal	13	264
	Clay, green	6	270
	Coal, black, greasy	3	273
	Clay, gray	27	300
	Rock	4	304
	Clay, gray	2	306
	Coal	2	308
	Clay, gray	9	317
	Clay, sandy, white	14	331
	Sand, white, bentonitic	9	340
	Clay, sandy, gray	15	355
	Sand, coarse, white, black	12	367
	Clay, gray	7	374
	Rock, hard	2	376
	Sand, clayey	5	381
	Clay, sandy, gray	6	387

131-098-11ACC
(Log from Knutson Drilling Co.)

Altitude:

	Sand	25	25
	Clay	45	70
	Coal	1	71
	Sand	9	80
	Clay	15	95

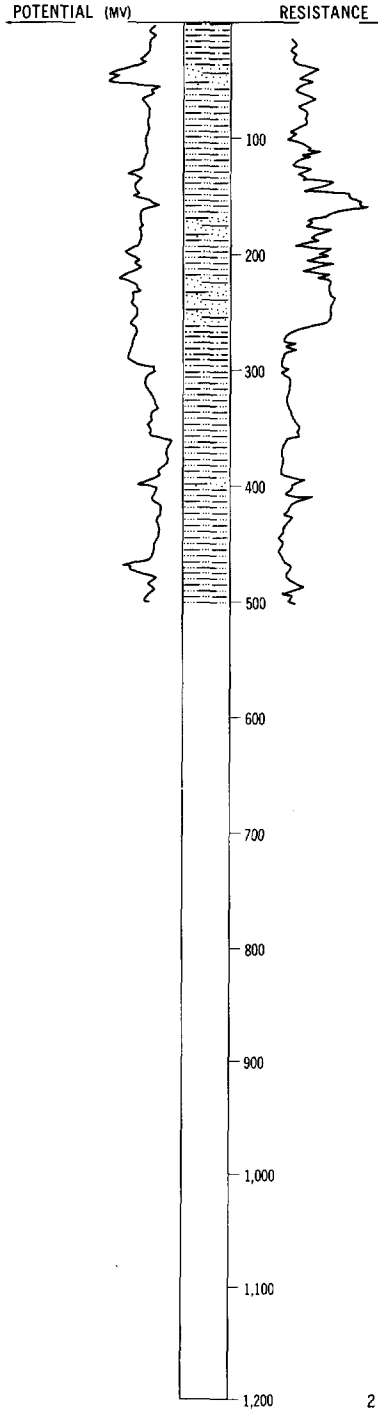
NDSWC 8352 and 8352A

LOCATION: 131-098-23DAD1, 2

DATE DRILLED: June 1972

ALTITUDE: 2882
(FT, MSL)

DEPTH: 500
(FT)



	DESCRIPTION OF DEPOSITS
	Tongue River Formation
0-38	Claystone, silty, sandy, yellowish-brown.
38-54	Sandstone, silty, fine-grained.
54-164	Siltstone and claystone, sandy, olive-gray.
164-184	Sandstone, silty, fine-grained.
	Ludlow Formation
184-218	Siltstone and sandstone, clayey, olive-gray.
218-262	Sandstone, silty, very fine to fine-grained, slightly indurated.
	Cannonball Formation
262-306	Claystone, silty, brownish-gray.
306-360	Siltstone and sandstone, fine- to medium-grained, greenish-gray.
360-396	Siltstone and claystone, gray.
	Ludlow Formation
396-400	Sandstone, silty, clayey, very fine to medium-grained, gray.
400-426	Siltstone and claystone, sandy, brownish-gray.
	Cannonball Formation
426-480	Siltstone and claystone, olive-gray.
	Ludlow Formation
480-500	Siltstone and sandstone, clayey, lignitic, brownish-gray.

131-098-36DAA
(Log from Dependable Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Surface	2	2
	Sand	2	4
	Clay, hard	21	25
	Sand, blue, black	1	26
	Clay, gray	13	39
	Sand, blue and black	1	40
	Clay, gray	2	42
	Rock, hard	2	44
	Clay, sandy, gray	4	48
	Clay, gray	19	67
	Coal	2	69
	Clay and coal, gray	6	75
	Coal	1	76

131-099-07BBC
(Log from Dependable Drilling Co.)

Altitude:

	Surface sand	3	3
	Sand, brown	17	20
	Sand, grayish-blue	9	29
	Clay	2	31
	Sand, blue	16	47
	Clay, blue	4	51

131-099-22CCC1
(Log from Sander Drilling Co.)

Altitude: 2845 ft

	Clay	18	18
	Sandrock	2	20
	First vein	2	22
	Clay	40	62
	Coal	5	67
	Clay	4	71
	Coal	38	109
	Sand, fine	1	110
	Clay	2	112

131-099-22CCC2
(Log from Sander Drilling Co.)

Altitude: 2845 ft

	Clay	18	18
	Sandstone	2	20
	Sand, first vein	2	22
	Clay	40	62
	Coal	5	67
	Clay	4	71
	Coal, second vein	38	109
	Sand, fine	1	110
	Clay	4	114
	Sand, fine	4	118
	Rock	4	122
	Clay	7	129
	Clay, sandy, lignitic	31	160
	Coal	10	170
	Sand and clay, fine	65	235
	Clay and sand	39	274
	Rock	4	278
	Sand and clay	56	334
	Rock and sand	7	341
	Sand; water	49	390

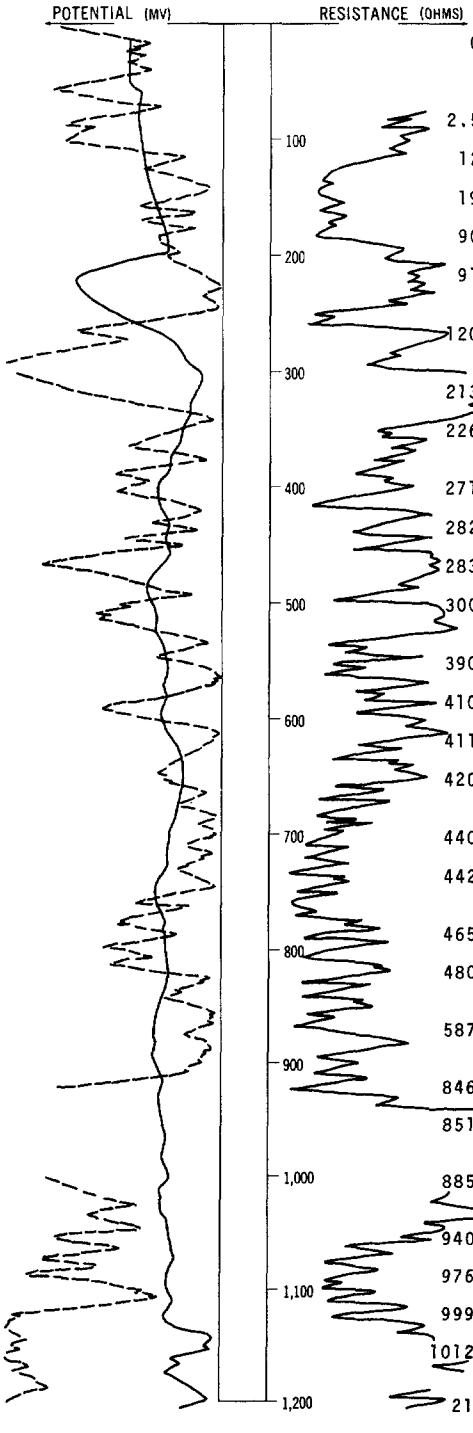
Log from H & H Service Co.

LOCATION: 131-099-34DAA

DATE DRILLED: January 1973

ALTITUDE: 2760
(FT, MSL)

DEPTH: 1363
(FT)



	DESCRIPTION OF DEPOSITS
0-2.5	Landfill.
	Tongue River-Ludlow Formations, undifferentiated
2.5-12	Slack.
12-19	Coal.
19-90	Sand, coarse, gray.
90-91	Coal.
91-120	Shale, sandy.
	Cannonball Formation
120-213	Shale, sandy; sandstone ledge 212-213 ft.
213-226	Sand.
226-271	Shale; rock ledge 270-271 ft.
	Ludlow Formation
271-282	Sand and shale.
282-283	Sandstone.
283-300	Shale.
300-390	Shale, sandy.
	Cannonball Formation
390-410	Shale, sandy.
410-411	Sandstone.
411-420	Sand.
420-440	Shale, sandy.
	Ludlow Formation
440-442	Coal.
442-465	Shale, sandy, soft; ledge 464-465 ft.
465-480	Sand.
480-587	Shale, sandy; ledge 587 ft.
	Hell Creek Formation
587-846	Shale, sandy; ledge 845-846 ft.
846-851	Soft; ledge 850-851 ft.
851-885	Soft with hard streaks; ledge 884-885 ft.
885-940	Soft with hard streaks and ledges.
940-976	Shale; hard ledge 975-976 ft.
976-999	Soft; ledge 998-999 ft.
999-1012	Soft; ledge 1010-1012 ft.
1012-1135	Shale and siltstone, soft.
218	

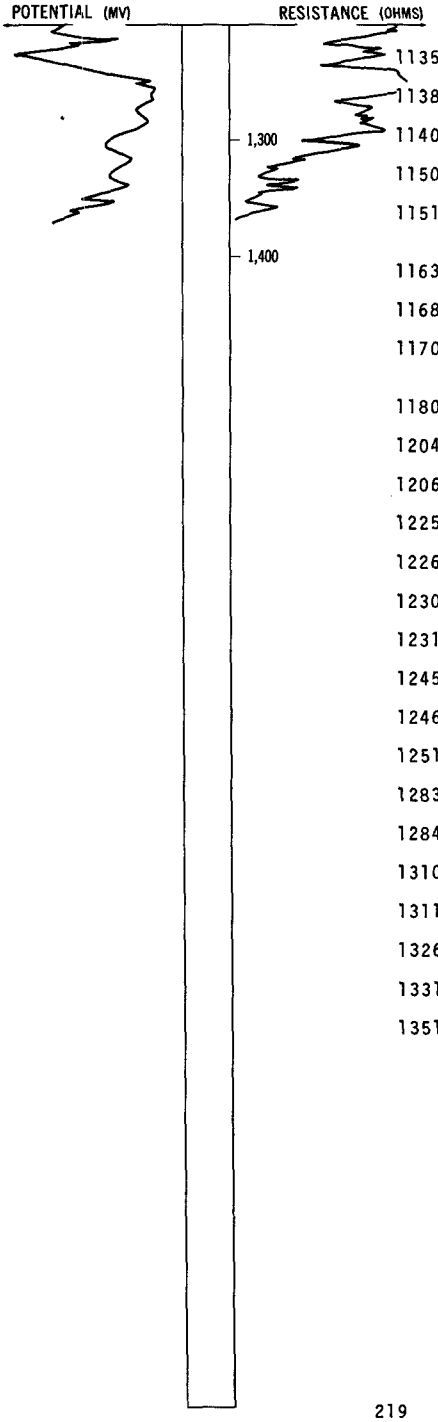
Log from H & H Service Co.

LOCATION: 131-099-34DAA, Continued

DATE DRILLED: January 1973

ALTITUDE: 2760
(FT, MSL)

DEPTH: 1363
(FT)



	DESCRIPTION OF DEPOSITS
	Fox Hills Formation
1135-1138	Rock ledge.
1138-1140	Shale with soft ledge.
1140-1150	Soft.
1150-1151	Firm spot.
1151-1163	Soft; firm ledge 1162-1163 ft.
1163-1168	Soft; ledge 1167-1168 ft.
1168-1170	Soft.
1170-1180	Shale; rock ledge 1179-1180 ft.
1180-1204	Soft.
1204-1206	Firm spot.
1206-1225	Sand, soft.
1225-1226	Shale, firm.
1226-1230	Soft.
1230-1231	Firm spot.
1231-1245	Sand, soft.
1245-1246	Firm.
1246-1251	Sand with ledge.
1251-1283	Sand, soft to firm sandstone.
1283-1284	Firm.
1284-1310	Shale, soft to firm.
1310-1311	Ledge, soft.
1311-1326	Shale; ledge 1325-1326 ft.
1326-1331	Shale; ledge 1330-1331 ft.
1331-1351	Shale; ledge 1350-1351 ft.
1351-1363	Shale.

131-100-09CCD
(Log from Sander Drilling Co. and Dependable Drilling Co.)

Altitude: 2845 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay, brown	15	15
	Clay and sand, brown	17	32
	Coal	5	37
	Clay, blue	3	40
	Coal	8	48
	Clay	7	55
	Coal	3	58
	Clay	19	77
	Coal	1	78
	Clay, blue	20	98
	Clay and coal	13	111
	Rock	2	113
	Clay	12	125
	Coal	5	130
	Sand, brown	8	138
	Clay, blue	32	170
	Clay and coal, brown	51	221
	Rock	1	222
	Clay, sandy	26	248
	Rock	3.5	251.5
	Clay, sandy	7.5	259
	Rock	1	260
	Sand	25	285
	Sand, coarse	20	305
	Clay	5	310
	Log from Dependable Drilling Co. from 310 to 1068 feet		
	No record	15	325
	Sand and coal	11	336
	Clay	10	346
	Coal	2	348
	Sand, gray	4	352
	Clay	7	359
	Coal	6	365
	Clay, gray	16	381
	Coal	2	383
	Sand, coarse, blue, lignitic	53	436
	Coal	6	442
	Clay, blue	14	456
	Rock	1	457
	Clay	11	468
	Sand, gray, soft	5	473
	Clay	2	475
	Coal	20	495
	Sand, blue, lignitic	22	517
	Clay, sandy	8	525
	Sand, fine, brown, lignitic	6	531
	Clay	9	540
	Sand and coal, blue	20	560
	Clay	11	571
	Sand, fine, gray	19	590
	Clay	10	600
	Clay, sandy, gray	8	608
	Coal	85	693
	Clay	5	698
	Clay and coal, fine, gray	33	731
	Clay, brown	8	739
	Sand and coal, fine, gray	21	760
	Clay	11	771
	Rock	1	772
	Sand, gray	15	787
	Shale, sandy, brown and green	27	814
	Sand and coal, blue	21	835
	Clay, gray	6	841

131-100-09CCD, Continued
(Log from Sander Drilling Co. and Dependable Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Rock	3	844
	Sand and coal, blue, green	53	897
	Shale, brown, green	6	903
	Sand and coal, blue	21	924
	Shale and coal	7	931
	Sand and coal, blue	49	980
	Shale	1	981
	Shale and sand, green	21	1002
	Shale	23	1025
	Coal, with rock ledge at bottom	13	1038
	Fox Hills	30	1068

131-100-23DAD
(Log from Dependable Drilling Co.)

Altitude:

	Sand	5	5
	Clay, gray	17	22
	Clay	23	45
	Clay, blue	6	51
	Coal	21	72
	Clay	15	87
	Clay and coal	7	94
	Rock ledge	1	95
	No record	28	123

131-100-23DBB
(Log from Dependable Drilling Co.)

Altitude:

	Surface	2	2
	Clay and sand, brown	13	15
	Clay, gray	25	40
	Coal	19	59
	Clay, gray	5	64
	Clay and coal, brown	6	70
	Coal	10	80
	Clay, brown	5	85
	Clay, gray	2	87
	Sand and rock ledge	1	88
	Clay, gray, sandy	3	91
	Sandstone, soft	3	94
	Clay, sandy	14	108
	No record	6	114
	Sand	3	117
	Clay, sandy	3	120
	Clay	4	124

131-100-24ABB
(Log from Sander Drilling Co.)

Altitude:

	Clay	18	18
	Sand, fine	3	21
	Clay	49	70
	Coal	1	71
	Rock	3	74
	Coal	16	90
	Clay	2	92
	Coal	8	100

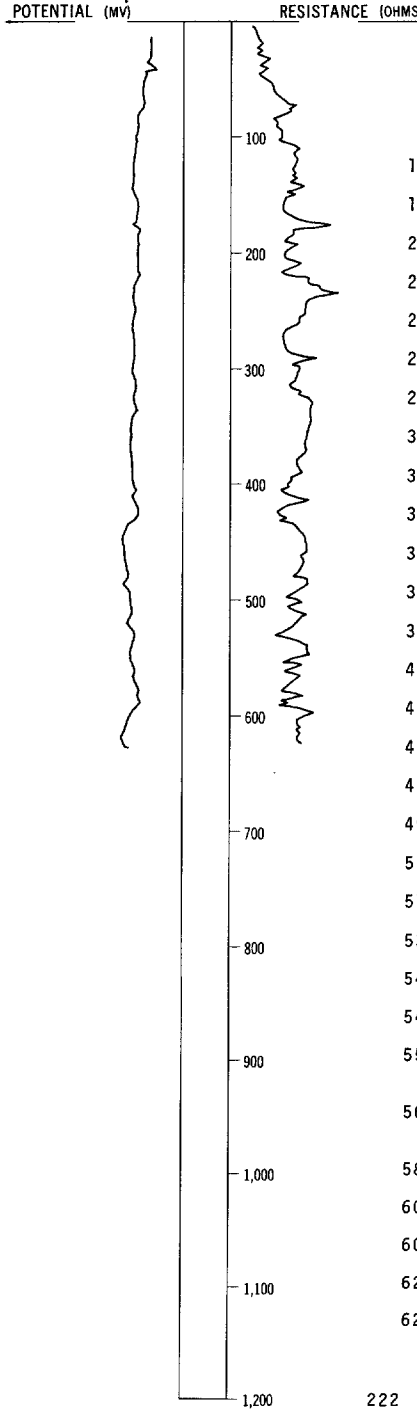
Log from Dependable Drilling Company

LOCATION: 131-100-26ABA

DATE DRILLED: July 1969

ALTITUDE: 2774
(FT, MSL)

DEPTH: 1205
(FT)



	DESCRIPTION OF DEPOSITS
0-17	Clay and coal.
17-88	Sand, coarse, clayey, lignitic.
88-178	Clay, blue.
178-181	Rock.
181-238	Sandstone and clay.
238-240	Rock.
240-272	Clay and sandstone, blue.
272-296	Clay and sand, poor.
296-297	Rock.
297-306	Clay, gray.
306-307	Rock.
307-325	Sand, black and white.
325-330	Coal.
330-332	Rock.
332-388	Sand, fine.
388-420	Sandstone and clay.
420-436	Sand.
436-450	Clay, gray, lignitic.
450-468	Sand, gray.
468-490	Clay and sandstone, gray.
490-512	Sand, gray.
512-518	Clay, gray.
518-535	No record.
535-543	Sand, fine, gray.
543-548	Clay, gray.
548-552	Coal.
552-564	Sand, gray; thin beds of clay and a rock ledge.
564-580	Clay, gray; with coal and rock.
580-600	Sand, blue.
600-602	Rock.
602-628	Sand, black and white.
628-629	Rock.
629-645	Clay, gray.

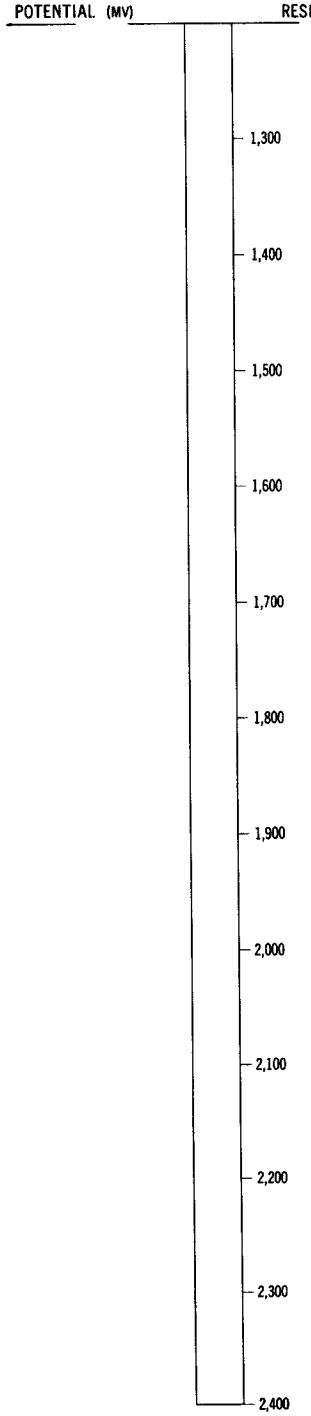
Log from Dependable Drilling Company

LOCATION: 131-100-26ABA, Continued

DATE DRILLED: July 1969

ALTITUDE: 2774
(FT, MSL)

DEPTH: 1205
(FT)



645-646	Rock ledge.
646-668	Clay, gray.
668-683	Sand.
683-684	Rock.
684-692	Sand, medium, black and white.
692-717	Clay and sandstone, gray.
717-757	Clay, gray.
757-758	Rock.
758-778	Clay.
778-806	Sand, black and white.
806-832	Clay with thin beds of sandstone.
832-844	Sand.
844-875	Clay, sandy, gray.
875-877	Sand, black and white.
877-912	Clay, gray; with thin beds of sandstone and rock ledge at bottom.
912-926	Clay, gray.
926-932	Sand, medium, black and white; rock ledges.
932-940	Clay, gray.
940-952	Shale, brown and green.
952-975	Sand and shale, black and white.
975-1055	Sandstone and clay, lignitic; rock ledge at bottom.
1055-1120	Sand and shale, black and white; with thin rocks.
1120-1160	Sand and clay, fine.
1160-1178	Clay, gray; with thin beds of sand.
1178-1205	Sand and shale, black, white, brown, and green.

131-100-29AAA
(Log from H & H Service Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand, fine, blue	50	50
	Shale, sandy	15	65
	Shale, blue	10	75
	Coal	5	80
	Shale	12	92
	Coal	1	93
	Shale	4	97
	Coal	3	100
	Shale, blue	21	101
	Shale, sandy	45	166
	Sand	17	183
	Shale	3	186
	Coal	1	187
	Shale	6	193

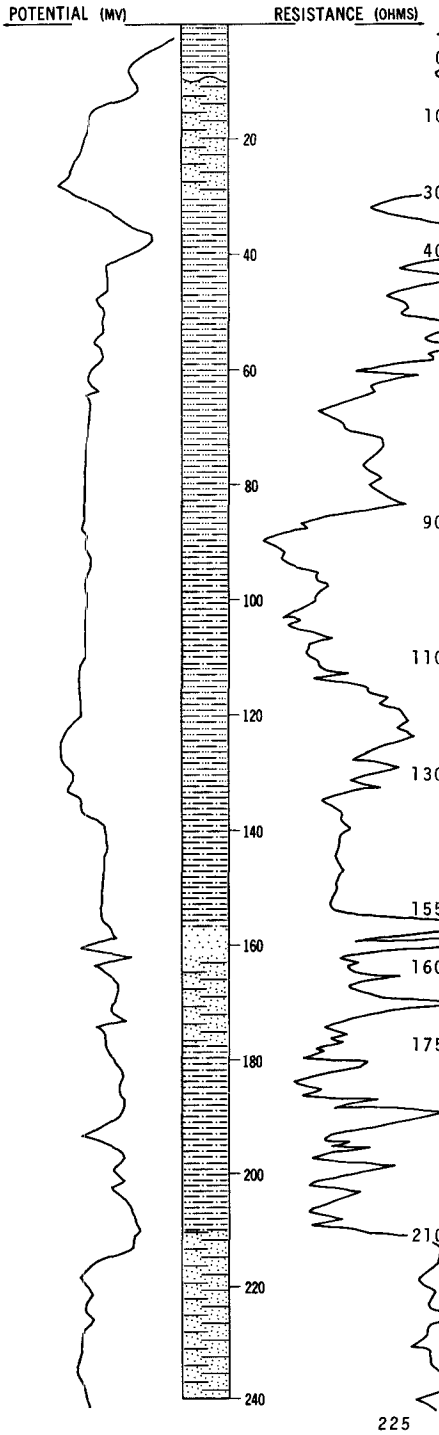
NDSWC 4459 and 4459A

LOCATION: 131-100-29BBB1, 2

DATE DRILLED: July 1972

ALTITUDE: 2950 (FT, MSL)

DEPTH: 440 (FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-10 Silt and sand, brown.

Tongue River Formation

10-30 Sandstone and siltstone, lignitic, fine-grained, greenish-gray.

30-40 Siltstone, sandy, gray.

Ludlow Formation

40-90 Siltstone, sandy, clayey, calcareous, carbonaceous, brownish-gray.

90-110 Claystone, silty.

110-130 Siltstone, sandy, clayey; lignitic 118-121 ft.

130-155 Claystone, silty, sandy.

155-160 Sandstone, fine- to medium-grained, indurated.

160-175 Sandstone and siltstone.

175-210 Claystone, silty, calcareous, brownish-gray.

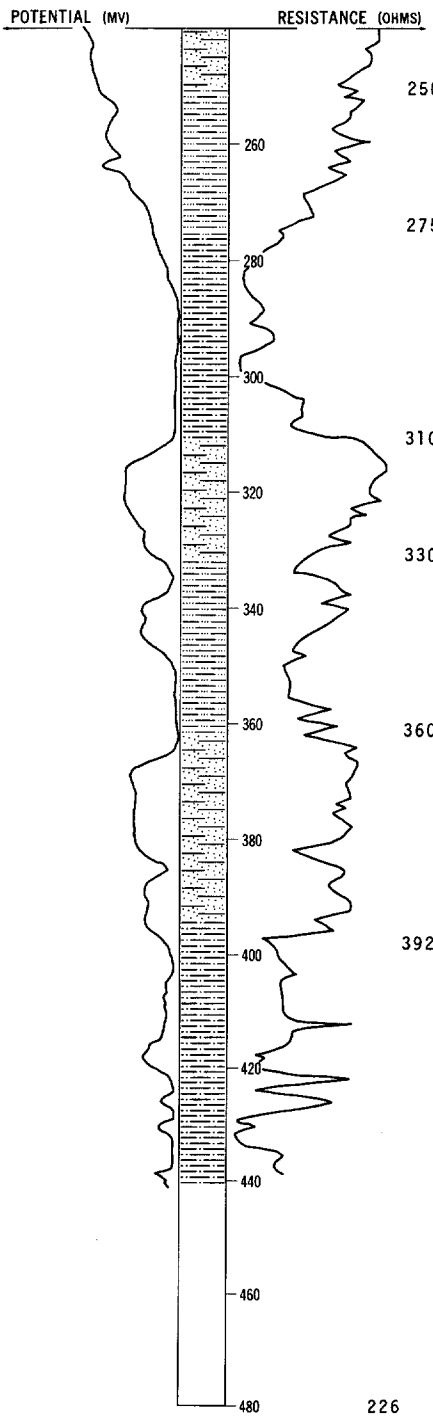
210-250 Sandstone, silty, fine- to medium-grained, friable, calcareous, light-gray.

LOCATION: 131-100-29BBB1, 2

DATE DRILLED: July 1972

ALTITUDE: 2950 (FT, MSL)

DEPTH: 440 (FT)



DESCRIPTION OF DEPOSITS

	Ludlow Formation, Continued
250-275	Siltstone and claystone, brownish-gray.
275-310	Claystone, silty, carbonaceous.
310-330	Sandstone, silty, fine- to medium-grained, friable, greenish-gray.
330-360	Siltstone and claystone, sandy, carbonaceous.
360-392	Sandstone, silty, fine- to medium-grained, greenish-gray.
392-440	Cannonball Formation(?) Claystone and siltstone, carbonaceous, brownish-gray.

131-101-08CCC
(Log from H & H Service Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Shale	15	15
	Sand	7	22
	Shale	5	27
	Coal	1	28
	Shale	17	45
	Coal	1.5	46.5
	Shale	3.5	50
	Coal	1	51
	Shale	21	72
	Coal	2	74
	Shale	21	95
	Coal	1	96
	Shale, sandy	1	97
	Rock ledge	1	98
	Shale	6	104

131-101-30CCC1
(Log from Dependable Drilling Co.)

Altitude:

	Clay, brown	10	10
	Coal	3	13
	Clay, brown	12	25
	Clay, dark-brown	3	28
	Sand, brown	7	35
	Sand, blue	9	44
	Clay, sandy, blue	16	60
	Sand, firm, blue	8	68
	Clay, blue	12	80
	Sand, coarse, blue	40	120

131-102-01DBB
(Log from H & H Service Co.)

Altitude: 3005 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Surface soil	20	20
	Shale, sandy	48	68
	Ledge	1	69
	Sand, hard spot 70 to 71 ft	14	83
	Shale, sandy	12	95
	Coal	1	96
	Shale	56	152
	Coal	1	153
	Shale	22	175
	Coal	1	176
	Sand, fine	7	183
	Shale	87	270
	Sand, fine	33	303
	Shale, several hard spots	295	598
	Sand, very fine	15	613
	Shale	230	843
	Sand, coarse, blue	20	863
	Sand, soft	18	881
	Coal	1	882
	Shale, soft	21	903

131-102-01DDD
(Log from H & H Service Co.)

Altitude:

	Surface sand	12	12
	Shale	1	13
	Sand, brown	8	21
	Shale	9	30
	Rock ledge	1	31
	Sand, brown	7	38
	No record	47	85
	Ledge	1	86
	Shale, sandy	24	110
	Coal	1	111
	Sand, fine	7	118
	Shale	4	122
	Sand, fine	3	125
	Shale, sandy	15	140
	Sand and shale	21	161

Log from Independent Drilling Co.

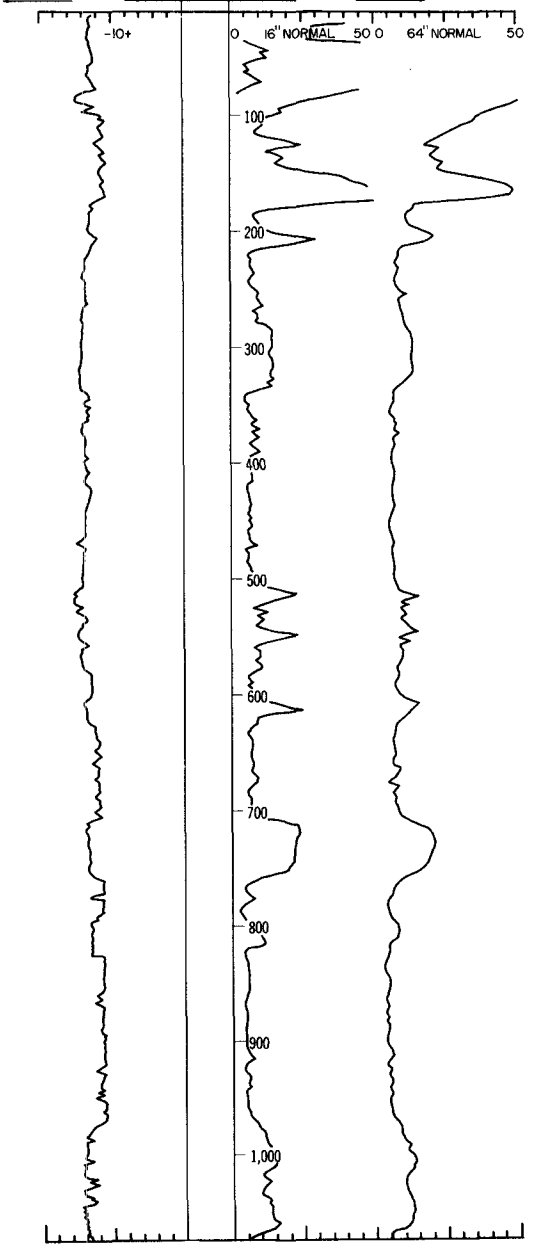
LOCATION: 131-102-02DDA

DATE DRILLED: February 1961

ALTITUDE: 3023
(FT, MSL)

DEPTH: 1075
(FT)

Schlumberger electric log



DESCRIPTION OF DEPOSITS

0-60	Clay.
60-100	Coal.
100-596	Coal.
596-616	Sand and clay.
616-904	Clay.
904-905	Rock.
905-958	Clay.
958-1060	Sand.
1060-1065	Shale, sandy.
1065-1075	Shale.

Natural drilling mud.
Rm 6.4 @ 62°F.

131-102-03DDD
(Log from Dependable Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Surface sand	4	4
	Sand, brown	22	26
	Sand, blue, gray	6	32
	Clay	2	34
	Sand and clay, blue	22	56
	Clay, gray	7	63

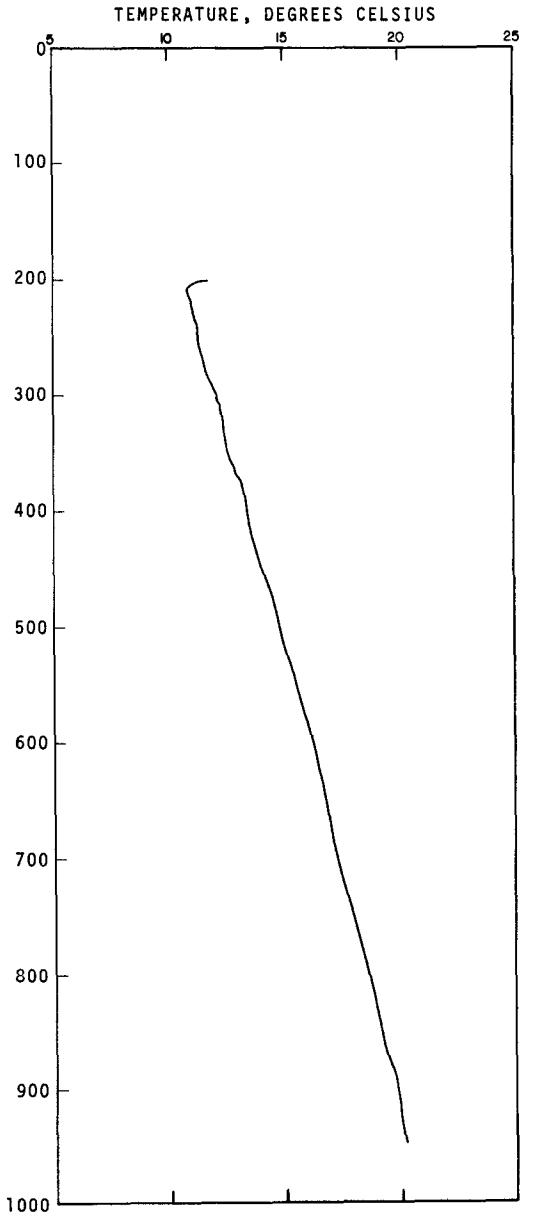
NDSWC 4462

LOCATION: 131-102-07DDD1

DATE LOGGED: July 1973

ALTITUDE: 2945
(FT, MSL)

DEPTH: 1240
(FT)



NDSWC 4462, 4462A, and 4462B

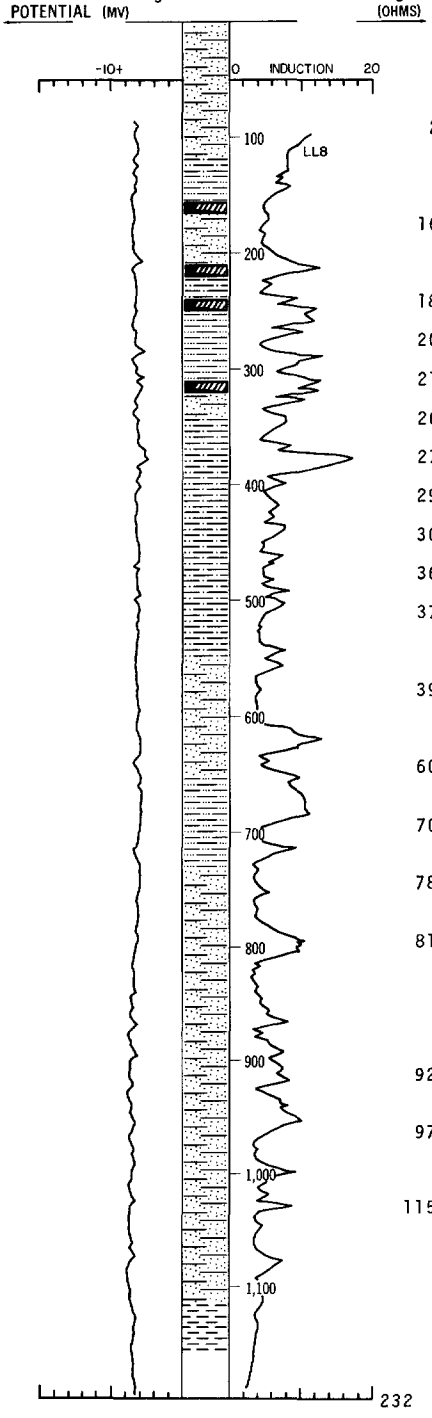
LOCATION: 131-102-07DDD1, 2, 3

DATE DRILLED: July 1972

ALTITUDE: 2945
(FT, MSL)

DEPTH: 1240
(FT)

Schlumberger dual induction log



	DESCRIPTION OF DEPOSITS
	Alluvium
0-20	Sand and clay, pebbly, silty, brown.
	Ludlow Formation
20-165	Sandstone and siltstone, fine- to medium-grained, gray.
	Cannonball Formation
165-180	Claystone, silty, olive-gray.
	Ludlow Formation
180-205	Siltstone and claystone.
205-215	Lignite and claystone.
215-260	Sandstone and siltstone.
260-270	Lignite.
270-290	Claystone, silty.
290-300	Lignite.
300-360	Siltstone and claystone.
360-370	Lignite.
370-390	Sandstone and siltstone, clayey.
	Hell Creek Formation
390-600	Claystone and siltstone, carbonaceous, light-olive-gray.
600-700	Sandstone and siltstone, clayey, carbonaceous.
700-780	Siltstone and claystone, carbonaceous, brown.
780-810	Sandstone, silty, olive-gray.
810-920	Sandstone and siltstone, clayey, olive-gray.
	Fox Hills Formation
920-970	Sandstone, silty, fine- to medium-grained.
970-1155	Sandstone and siltstone, clayey, olive-gray.
	Pierre Formation
1155-1240	Shale, olive-gray to black.

Rm 1.7 @ 75°F.

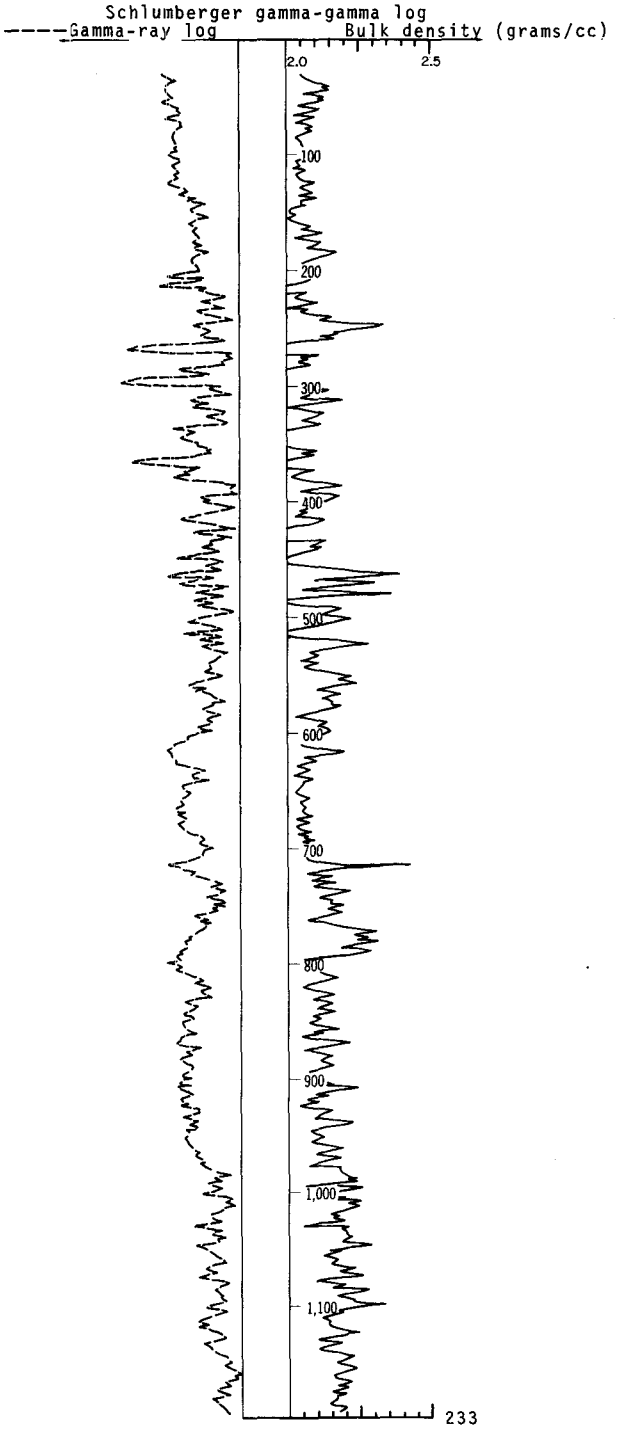
NDSWC 4462, 4462A, and 4462B, Continued

LOCATION: 131-102-07DDD1, 2, 3

DATE DRILLED: July 1972

ALTITUDE: 2945
(FT, MSL)

DEPTH: 1240
(FT)



131-102-09BCC
(Log from Dependable Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay, brown	12	12
	Coal	2	14
	Clay, brown	3	17
	Clay, blue	13	30
	Sandstone	5	35
	Clay, sandy, blue	5	40
	Clay, gray	48	88
	Clay and sand, gray	8	96
	Clay, gray	10	106
	Sand, gray	14	120
	Clay, gray	6	126
	Sand, clayey, gray	9	135
	Clay, gray	4	139
	Coal	2	141
	Clay, gray	5	146
	Coal	5	151
	Clay, brown	25	176
	Clay, gray	4	180
	Sand, fine, gray	8	188
	Clay, sandy, gray	35	223
	Rock	1	224
	Clay, gray	3	227

131-102-11BDC
(Log from Dependable Drilling Co.)

Altitude:

	Sand	15	15
	Quicksand	5	20
	Clay, brown, hard	10	30
	Clay, black, soft	10	40
	Sand and coal	14	54
	Clay, blue, soft	2	56

131-102-11BDD
(Log from Dependable Drilling Co.)

Altitude:

	Sand, yellow, soft	16	16
	Quicksand, yellow	2	18
	Sand, gray	24	42
	Coal	3	45
	Gravel and sand	3	48
	Clay	2	50

131-102-11CAA
(Log from Dependable Drilling Co.)

Altitude:

	Sand	16	16
	Quicksand	3	19
	Sand	20	39
	Coal	7	46
	Clay	4	50

131-102-11CAD1
(Log from Dependable Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand	16	16
	Quicksand, yellow	3	19
	Sand and clay	4	23
	Water sand	2	25
	Coal	4	29
	Clay	1	30

131-102-11CAD2
(Log from Dependable Drilling Co.)

Altitude:

	Sand, soft, yellow	11	11
	Quicksand	8	19
	Sand, shale, and coal	15	34
	Clay, blue	1	35

131-102-11CBA
(Log from Dependable Drilling Co.)

Altitude:

	Sand, soft	5	5
	Clay	12	17
	Quicksand	6	23
	Rock, very hard	3	26
	Coal	7	33
	Sand and shale	15	48
	Clay and coal	2	50

131-102-11CDB
(Log from Dependable Drilling Co.)

Altitude:

	Surface	2	2
	Sand, brown	31	33
	Sand, blue	5	38
	Sand and coal	6	44
	Clay and coal, sandy, gray	9	53
	Rock	1	54
	Clay and coal, whitish	18	72
	Coal and clay, gray	6	78
	Clay, gray	22	100
	Coal	2	102
	Clay, sandy, gray	24	126
	Coal	1	127
	Clay, gray	4	131
	Sand, gray	23	154
	Sand, coarse, clean, bluish-green; finer below 161 ft	10	164

131-102-11DAB
(Log from Dependable Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand	13	13
	Quicksand	4	17
	Sand and coal	32	49
	Clay, blue	3	52

131-102-11DAD
(Log from Norbeck Drilling Co.)

Altitude: 2959 ft

	Clay, sandy	10	10
	Sand	23	33
	Clay, yellow	9	42
	Coal	4	46
	Clay, with streaks of coal	179	225
	Sand	15	240
	Coal	16	256
	Rock	2	258
	Clay and coal streaks	327	585
	Rock	2	587
	Clay	78	665
	Rock	2	667
	Clay	23	690
	Clay and coal streaks	272	962
	Sand	28	990
	Sand	55	1045
	Clay	5	1050

131-102-11DBD1
(Log from Dependable Drilling Co.)

Altitude:

	Sand, soft	15	15
	Sand, hard	5	20
	Sand, soft	5	25
	Coal, hard	.5	25.5
	Sand, soft	19.5	45
	Clay, blue	5	50

131-102-11DBD2
(Log from Dependable Drilling Co.)

Altitude:

	Sand	17	17
	Quicksand	16	33
	Sand and shale; water	12	45

131-102-11DBD3
(Log from Dependable Drilling Co.)

Altitude:

	Sand, yellow, soft	5	5
	Sand, gray, hard	8.5	13.5
	Quicksand, some hard	7.5	21
	Sand, rock, hard	4	25
	Sand, rock, and gravel	25	50
	Coal, hard; water	3	53
	Sand and clay	3	56

131-102-11DCA1
(Log from Dependable Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand, yellow, gray----------	14	14
	Quicksand, yellow----------	6	20
	Sand, gray----------	10	30
	Coal----------	7	37
	Clay, blue----------	1	38

131-102-11DCA2
(Log from Dependable Drilling Co.)

Altitude:

	Sand----------	3	3
	Clay----------	12	15
	Quicksand----------	4	19
	Sand----------	13	32
	Coal and shale----------	4	36
	Clay and water sand----------	3	39
	Coal, hard----------	4	43
	Clay----------	2	45

131-102-11DDA
(Log from Dependable Drilling Co.)

Altitude:

	Sand----------	10	10
	Quicksand----------	20	30
	Sand and shale----------	5	35
	Coal and shale----------	9	44
	Clay, blue----------	1	45

131-102-11DDC
(Log from Dependable Drilling Co.)

Altitude:

	Sand, yellow, soft----------	10	10
	Clay and shale----------	10	20
	Shale----------	18	38
	Sand----------	5	43
	Coal----------	6	49
	Clay, blue----------	1	50

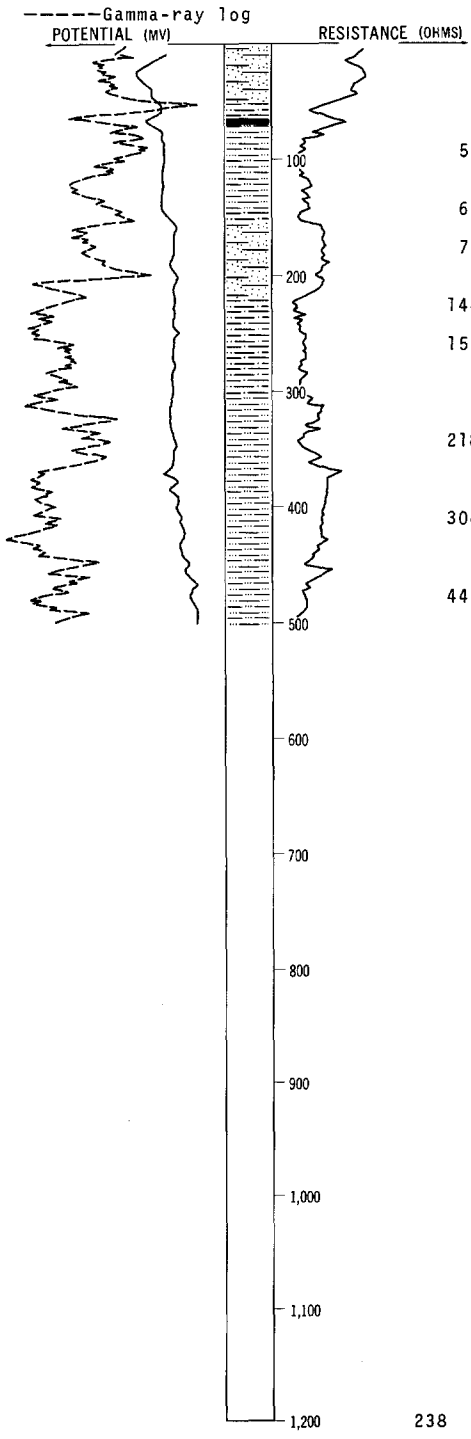
NDSWC 4393 and 4393A

LOCATION: 131-102-13CCC1, 2

DATE DRILLED: October 1971

ALTITUDE: 2930
(FT, MSL)

DEPTH: 500
(FT)



	DESCRIPTION OF DEPOSITS
	Ludlow Formation
0-50	Sandstone, silty, very fine to fine-grained, light-olive-gray.
50-63	Claystone and siltstone, carbonaceous.
63-71	Lignite.
71-144	Siltstone, sandy, very fine to fine-grained.
144-153	Claystone, carbonaceous.
153-218	Sandstone and siltstone, fine-grained, light-olive-gray.
	Cannonball Formation
218-304	Claystone and siltstone, sandy, brown.
	Ludlow Formation
304-442	Siltstone, sandy, clayey, light-greenish-gray; lignite 440-446 ft.
442-500	Siltstone and claystone, lignitic, light-olive-gray.

Log from Layne-Minnesota Co.

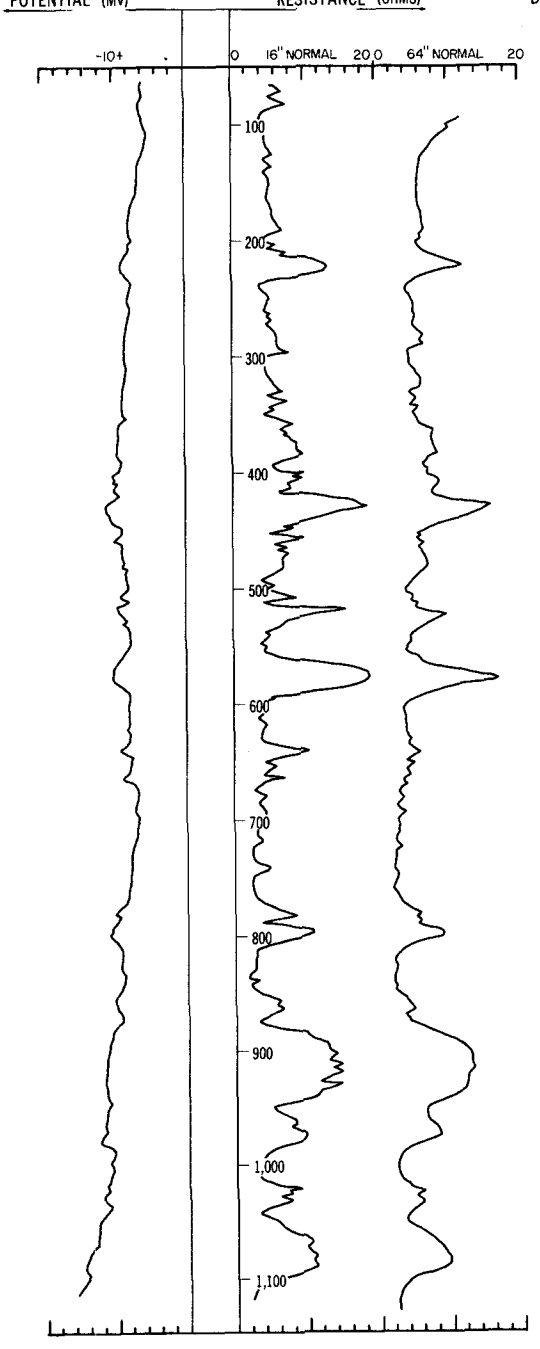
LOCATION: 131-102-14AAB

DATE DRILLED: 1968

ALTITUDE: 2948
(FT, MSL)

DEPTH: 1147
(FT)

Schlumberger electric log



DESCRIPTION OF DEPOSITS

0-1	Topsoil
1-30	Sandy clay.
30-40	Sand, brown.
40-44	Clay, gray.
44-208	Clay and coal.
208-210	Limestone.
210-308	Clay, lignitic.
308-431	Shale and clay, hard.
431-643	Clay and shale, lignitic.
643-673	Clay, coal, and shale.
673-765	Clay, hard and sticky.
765-790	Clay, coal, and shale.
790-805	Clay, sandy, gray.
805-835	Clay and coal.
835-860	Shale, hard.
860-875	Clay, soft.
875-920	Clay, sandy.
920-990	Sand and clay, gray.
990-1010	Clay and coal, soft.
1010-1062	Sand and shale, lignitic, hard.
1062-1100	Sand and shale, lignitic.
1100-1135	Sand and shale.
1135-1140	Sand and clay.
1140-1147	Shale and coal.

Natural drilling mud.
Bit size 12-1/2".
Rm 4.95 @ 75°F.

Log from Layne-Minnesota Co.

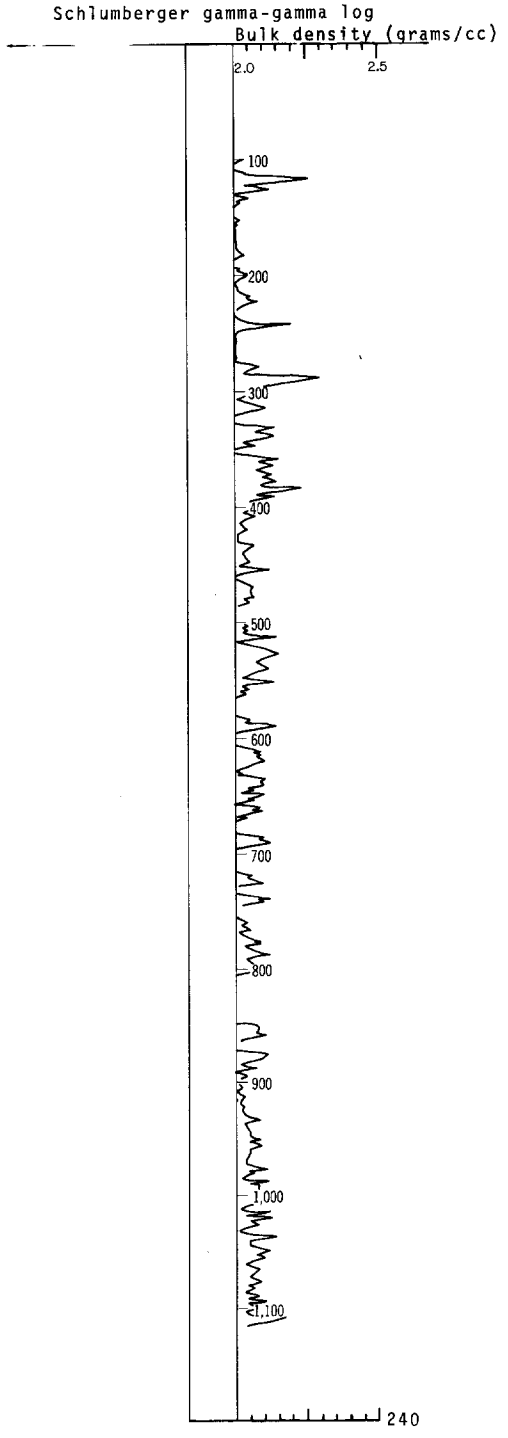
LOCATION: 131-102-14AAB, Continued

DATE DRILLED: 1968

ALTITUDE: 2948
(FT, MSL)

DEPTH: 1147
(FT)

Schlumberger gamma-gamma log



131-103-14CCD
(Log from H & H Service Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Shale	21	21
	Sand, brown	9	30
	Shale	11	41
	Shale, sandy	25	66
	Coal	6	72
	Shale, sandy	14	86
	Rock	1	87
	Shale	14	101
	Sand, fine, brown	10	111
	Shale	10	121
	Sand, fine, brown	14	135
	Shale	25	160
	Sand, fine, brown	13	173
	Shale	71	244
	Sand	9	253
	Shale	12	265

131-103-20CBA
(Log from Dependable Drilling Co.)

Altitude:

	Clay, brown	10	10
	Clay, blue	22	32
	Coal	2	34
	Clay, blue	7	41
	Coal	3	44
	Clay, blue	18	62
	Coal	2	64
	Clay, blue	45	109
	Rock	1	110
	Clay, blue	20	130
	Rock	1	131
	Clay, blue	31	162
	Sand, fine, blue	10	172
	Clay, sandy, brown	15	187

131-103-20DBA
(Log from Dependable Drilling Co.)

Altitude: 3156 ft

	Clay, brown	16	16
	Clay, blue	24	40
	Clay, sandy, blue	8	48
	Coal	1	49
	Clay, blue	57	106
	Sand, fine, blue	10	116
	Clay, blue	24	140
	Sand	13	153
	No record	6	159
	Clay, sandy, blue	61	220
	Sand, coarse, blue	39	259

131-103-21DBC
(Log from Dependable Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand, brown	20	20
	Clay, blue	9	29
	No record	3	32
	Clay, brown	2	34
	Clay, gray	5	39
	Rock	1	40
	Clay, gray	3	43
	Coal	2	45
	Clay, blue	1	46
	Sandstone, white	14	60
	Sand, white	14	74
	Sand, blue	8	82
	Sandstone	1	83
	Clay, gray	8	91
	Sand, blue	42	133
	Clay, brown	6	139

131-103-35CCD
(Log from Dependable Drilling Co.)

Altitude:

	Sand, surface	7	7
	Clay, sandy, black	22	29
	Shale, sandy, blue	11	40
	Hard rock	.5	40.5
	Clay, brown	13.5	54
	Clay, green	2	56
	Clay, brown	3	59
	Rock ledge	.5	59.5
	Clay, gray	6.5	66
	Coal	2	68
	Clay, gray	13	81
	Coal	5	86
	Clay, sandy, gray	11	97
	Shale, gray	19	116
	Rock, hard	3	119
	Sand, gray	54	173

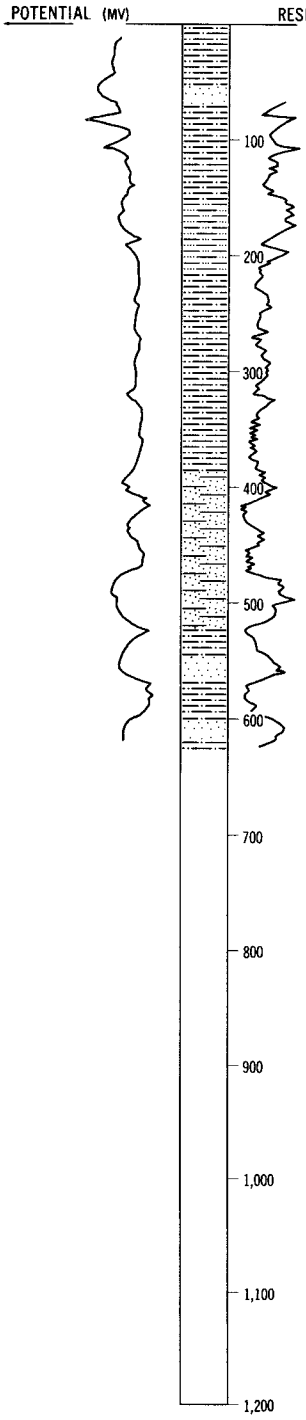
NDSWC 4394

LOCATION: 131-104-26CCC

DATE DRILLED: October 1971

ALTITUDE: 3157
(FT, MSL)

DEPTH: 620
(FT)



	DESCRIPTION OF DEPOSITS
	Ludlow Formation
0-51	Claystone and siltstone, sandy, brown.
51-66	Sandstone, very fine to fine-grained.
66-150	Claystone and siltstone, carbonaceous; sandstone 82-88 ft.
150-210	Siltstone and sandstone, very fine grained.
210-386	Claystone and siltstone, carbonaceous, light-olive-gray to brown.
386-432	Sandstone, silty, very fine.
432-478	Sandstone and siltstone, shaly.
478-519	Sandstone, very fine to fine-grained, friable, dark-greenish-gray.
519-547	Claystone, silty, carbonaceous.
547-566	Sandstone, fine- to medium-grained, dark-greenish-gray.
566-600	Claystone, silty, sandy.
	Hell Creek Formation
600-616	Sandstone, very fine, light-greenish-gray.
616-620	Claystone, black, hard.

131-104-28AAA2
(Log from Dependable Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Surface sand	22	22
	No record	14	36
	Sand, blue	5	41
	Coal	5	46
	Clay, blue	24	70
	Coal	10	80
	Clay, gray	4	84
	Coal	13	97
	Clay, gray	53	150
	Sand, fine	12	162
	Clay, gray	8	170
	Coal	4	174
	Clay, brown	36	210
	Hard rock	2	212
	Clay, sandy, blue	17	229
	Clay, gray-blue	20	249
	Clay, gray	21	270
	Clay, brown, lignitic	9	279
	Sand, brown	32	311
	Clay, gray	62	373
	Sand, fine	21	394
	Sand	1	395
	Rock and limestone	2	397
	Clay, sandy	29	426
	Rock	3	429
	Clay, white, sandy	11	440
	Rock	2	442
	Sand	28	470
	Shale, brown	27	497
	Clay, sandy, gray	82	579
	Clay, gray	42	621
	Sand	9	630
	Clay, sandy, gray	6	636
	Rock	2	638
	Clay, gray	12	650
	Rock	3	653
	Sand	9	662
	Clay, gray and brown	41	703
	Shale, gray	24	727
	Clay, sandy, gray	17	744
	No record	21	765

131-104-33BBB
(Log from Dependable Drilling Co.)

Altitude: 3118 ft

	Gravel and boulders	15	15
	Clay, blue	15	30
	Clay, blue, lignitic	7	37
	Clay, blue	6	43
	Sand, blue	23	66
	Coal	27	93
	Clay, blue	73	166
	Sand, blue	2	168
	Coal	3	171
	Clay and coal	59	230
	Sand, blue, fine	16	246
	Clay and coal, blue	54	300
	Sand, fine, blue	13	313
	Limestone, rock	1	314

131-104-33BBB, Continued
(Log from Dependable Drilling Co.)

Altitude: 3118 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay, sandy, blue	22	336
	Clay, blue	10	346
	Sand, blue	9	355
	Coal	1	356
	Sand, blue	19	375
	Clay, blue	17	392
	Sand, blue	13	405

131-105-18DCC
(Log from Dependable Drilling Co.)

Altitude:

	Sand, brown	13	13
	Gravel	3	16
	Clay, blue	16	32
	Rock	1	33
	Sand, blue	5	38
	Clay, sandy, blue	8	46
	Clay, blue	22	68
	Clay, sandy, blue	7	75
	Rock	3	78
	Clay, blue	2	80
	Sand, firm, blue	46	126

131-105-21ACC
(Log from Dependable Drilling Co.)

Altitude:

	Sand, brown	19	19
	Rock, soft	2	21
	Sand and clay, blue	30	51
	Shale, sandy	9	60
	Sand, clayey, black and white; with rock ledge at bottom	10	70
	Clay, blue	18	88
	Shale, blue	3	91
	Clay, brown	36	127
	Sand, clayey, blue	3	130
	White sand	22	152
	Rock	1	153
	Sand, black and white	9	162
	Clay, sandy	23	185
	Clay, brown and green	19	204
	Sand, black and white	16	220
	Sand, clayey, blue	6	226
	Sand, black and white; with rock ledge at bottom	37	263
	No record	21	284
	Clay, brown and green	3	287

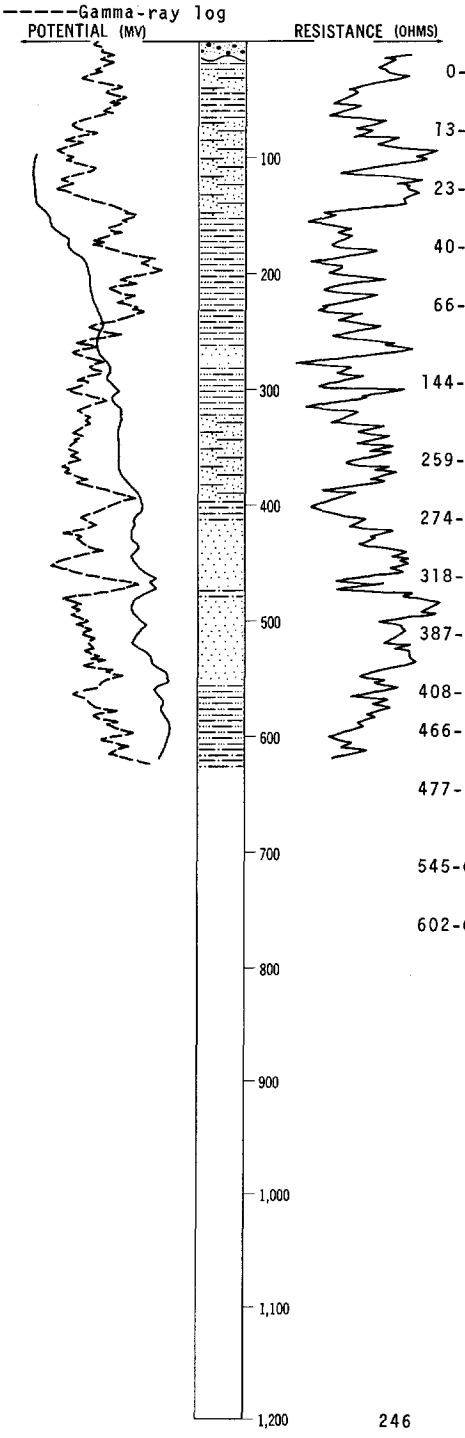
NDSWC 4466

LOCATION: 131-105-23CDD

DATE DRILLED: July 1972

ALTITUDE: 2995
(FT, MSL)

DEPTH: 620
(FT)



	DESCRIPTION OF DEPOSITS
	Alluvium
0-13	Sand and gravel, brown.
	Hell Creek Formation
13-23	Siltstone, sandy, yellowish-green.
23-40	Sandstone, silty, fine-grained.
40-66	Claystone, silty, carbonaceous.
66-144	Sandstone and siltstone, fine- to medium-grained, greenish-gray.
144-259	Siltstone, sandy, clayey, carbonaceous, greenish-gray.
259-274	Sandstone, fine- to medium-grained.
274-318	Siltstone and sandstone, clayey, carbonaceous.
318-387	Sandstone, silty, fine-grained, greenish-gray.
387-408	Claystone, silty, tight, greenish-gray.
408-466	Sandstone, fine-grained.
466-477	Claystone, greenish-gray.
	Fox Hills Formation
477-545	Sandstone, fine- to medium-grained, loose, greenish-gray.
545-602	Siltstone, sandy, carbonaceous, olive-gray.
602-620	Claystone, silty, fissile.

131-105-33BDB
(Log from Dependable Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand, brown	21	21
	Sandstone	1	22
	Sand, brown	14	36
	Clay, blue	11	47
	Sand, blue	6	53
	Clay, blue	28	81
	Rock ledge	1	82
	Sand, blue	3	85
	Coal	1	86
	Clay, brown	1	87
	Sand, blue	18	105
	Sand, medium, blue	45	150
	Rock	1	151

131-105-33DCC
(Log from Dependable Drilling Co.)

Altitude:

	Clay, brown	30	30
	Clay, sandy, brown	4	34
	No record	20	54
	Clay, blue	52	106
	Clay, sandy, blue	13	119
	Sand, blue	11	130

131-106-04DCC
(Log from Sikorski Drilling Co.)

Altitude:

	Sand	35	35
	Shale	5	40
	Sand and shale	15	55
	Shale	12	67

131-106-11AAC
Auger hole LM-30

Altitude:

Alluvium:

	Sand, fine	10	10
	Gravel, coarse	5	15
	Sand, fine, sticky	3	18

131-106-11BBC
Auger hole LM-26

Altitude: 2768 ft

Alluvium:

	Clay, brown, moist	10	10
	Sand, medium; wet at 15 ft	20	30
	Sand, clayey, medium to coarse	3	33

131-106-11BBD
Auger hole LM-27

Altitude: 2768 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium:			
	Clay, fine, dry----------	10	10
	Sand, fine, moist----------	5	15
	Gravel, coarse----------	8	23
	Sand, medium, blue; wet----------	25	48

131-106-13CBB
Auger hole LM-33

Altitude: 2780 ft

Alluvium:			
	Sand, fine, dry----------	3	3
	Sand, fine to medium, blue----------	35	38
	Sand, fine, sticky, blue----------	23	61

131-106-14ACD
Auger hole LM-32

Altitude: 2800 ft

	Sand, fine----------	10	10
	Gravel, medium----------	6	16
	Gravel, coarse----------	6	22
	Clay, brown, hard, dry----------	11	33

131-106-14BDD
Auger hole LM-31

Altitude: 2780 ft

	Sand, medium----------	5	5
	Sand, medium to coarse----------	5	10
	Gravel, medium----------	2	12
	Clay, brown, lumpy----------	2	14
	Clay, hard, lumpy, brown----------	4	18

132-095-17AAA
(Log from Knutson Drilling Co.)

Altitude:

	Clay----------	17	17
	Coal, soft----------	2	19
	Shale----------	9	28
	Coal----------	1	29
	Clay----------	16	45
	Sand, yellow----------	13	58
	Clay, blue----------	2	60
	Sandstone----------	2	62
	Clay----------	8	70
	Sand, coarse----------	10	80
	Rock----------	1	81
	Clay; coal at bottom----------	4	85
	Clay----------	1	86
	Coal----------	1	87
	Clay, dark----------	4	91
	Clay----------	5	96
	Clay, green; thin rock at bottom----------	1	97

132-095-17AAA, Continued
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay	7	104
	Clay, dark	2	106
	Clay	17	123
	Coal and dark clay	4	127
	Clay, sandy, fine, green; coal at bottom	7	134
	Clay; thin rock at bottom	6	140
	Clay, sandy, fine, green	14	154
	Clay, gray	4	158
	Clay, sandy, fine, dark	3	161
	Rock	1	162
	Sand, fine	40	202
	Sand and coal, fine	18	220
	Clay, soft	20	240
	Sand and clay, rock at bottom	31	271
	Clay	5	276
	Clay, sandy, coarse	9	285
	Coal	1	286
	Sandstone, coarse	42	328
	Rock	1	329
	Clay, dark	2	331
	Clay	17	348
	Clay, sandy, fine	6	354
	Clay; rock at bottom	37	391
	Clay	42	433
	Clay, sandy	5	438
	Rock	1	439
	Clay, sandy	7	446
	Hard rock	1	447
	Clay, sandy, coarse, green	9	456
	Hard rock	.5	456.5
	Clay, sandy, coarse	12.5	469
	Hard rock	.5	469.5
	Clay, sandy, coarse	18.5	488
	Rock	.5	488.5
	Clay, sandy, coarse	5.5	494
	Sand, coarse	7	501

132-095-20AAD
(Log from Knutson Drilling Co.)

Altitude: 2686 ft

	No record	6	6
	Gravel	2	8
	Sandstone, lignitic	120	128
	Coal	1	129
	Sand, gray	11	140
	Clay; thin rock at bottom	4	144
	Clay	3	147
	Sand	3	150
	Clay	6	156
	Clay, sandy, fine, green	10	166
	Rock	10	176
	Sand, fine, gray	14	190
	Hard rock	1.5	191.5
	Sand, medium, gray	13.5	205
	Hard rock	1	206
	Sand, coarse, lignitic	2	208
	Sand, coarse	2	210

132-095-28DCC
(Log from Moe Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Topsoil	1	1
	Sand, yellow	46	47
	Clay, gray	11	58
	Clay, green	17	75
	Clay, brown	27	102
	Sand, gray	3	105
	Clay, brown	38	143
	Sand, brown	57	200

132-095-31CBB
(Log from Knutson Drilling Co.)

Altitude:

	Gravel	5	5
	Shale	25	30
	Sand	40	70
	Coal	2	72
	Sand	16	88
	Clay	7	95

132-096-18BAA
(Log from Dependable Drilling Co.)

Altitude:

	Clay, brown	8	8
	Coal, soft	1	9
	Clay, brown	2	11
	Coal	1	12
	Clay, brown	18	30
	Coal	1	31
	Clay, blue	2	33
	Rock	1	34
	Clay, blue	27	61
	Rock, hard	1	62
	Clay, blue	14	76
	Rock ledge	1	77
	Coal	2	79
	Clay, blue	6	85
	Rock	1	86
	Clay, blue	17	103
	Clay, gray	10	113
	Sand, gray	1	114
	Clay, gray	2	116
	Coal	7	123
	Sand, fine, gray	4	127
	Clay, gray	5	132

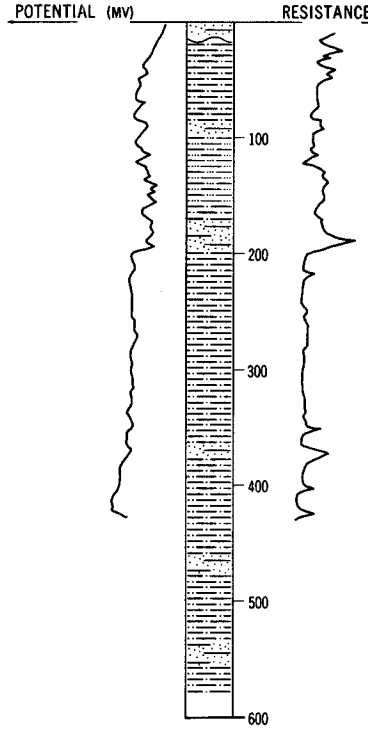
NDSWC 8350 and 8350A

LOCATION: 132-096-22ABC1, 2

DATE DRILLED: June 1972

ALTITUDE: 2585
(FT, MSL)

DEPTH: 580
(FT)



	DESCRIPTION OF DEPOSITS
	Alluvium
0-16	Silt and sand, clayey, yellowish-brown.
	Tongue River Formation
16-86	Claystone, silty, sandy, lignitic, greenish-gray.
86-96	Sandstone, clayey, very fine to fine-grained, gray.
	Ludlow Formation
96-126	Siltstone and claystone, gray.
126-156	Siltstone and sandstone, fine-grained, bluish-gray.
156-170	Claystone, gray.
170-197	Sandstone, silty, very fine to medium-grained, light-gray.
	Cannonball Formation
197-367	Claystone, silty, sandy, calcareous, greenish-gray.
	Ludlow Formation
367-377	Sandstone, silty, very fine to fine-grained, gray.
	Cannonball Formation
377-460	Claystone, silty, sandy, gray.
	Ludlow Formation
460-475	Sandstone, silty, fine-grained.
475-535	Claystone, silty, sandy, carbonaceous.
535-555	Sandstone, silty.
555-580	Claystone, sandy, carbonaceous.

132-096-22BBD
(Log from Moe Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Surface sand----------	11	11
	Clay, gray----------	2.5	13.5
	Sand, yellow----------	.5	14
	Coal----------	3	17
	Clay, gray----------	11	28
	Coal----------	3	31
	Clay, gray----------	2	33

132-096-23BBD
(Log from Knutson Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand	30	30
	Rock	1	31
	Clay	15	46
	Coal	2	48
	Sand	2	50
	Clay	27	77
	Rock	1	78
	Clay	32	110
	Coal	1	111
	Clay	34	145
	Rock	1	146
	Sand	5	151
	Clay	7	158

132-096-24ADA
(Log from Knutson Drilling Co.)

Altitude:

	Clay, sandy	10	10
	Rock	1	11
	Sand	40	51
	Rock	1	52
	Sand, fine; rock at bottom	16	68
	Clay	7	75

132-096-26BBA2
(Log from Knutson Drilling Co.)

Altitude:

	Shale	4	4
	Gravel	2	6
	Clay	32	38
	Clay, sandy	32	70
	Clay	18	88
	Rock	2	90
	Clay	4	94
	Sand	6	100
	Clay	15	115

132-096-34ADD
(Log from Knutson Drilling Co.)

Altitude:

	Clay	7	7
	Rock	1	8
	Clay, sticky	32	40
	Coal	1	41
	Clay	43	84
	Hard rock	1	85
	Clay	5	90
	Clay, sandy	5	95
	Clay	17	112
	Coal	1	113
	Clay	7	120
	Sand	10	130
	Coal	1	131
	Sand	19	150
	Clay, sandy	8	158

NDSWC 4313

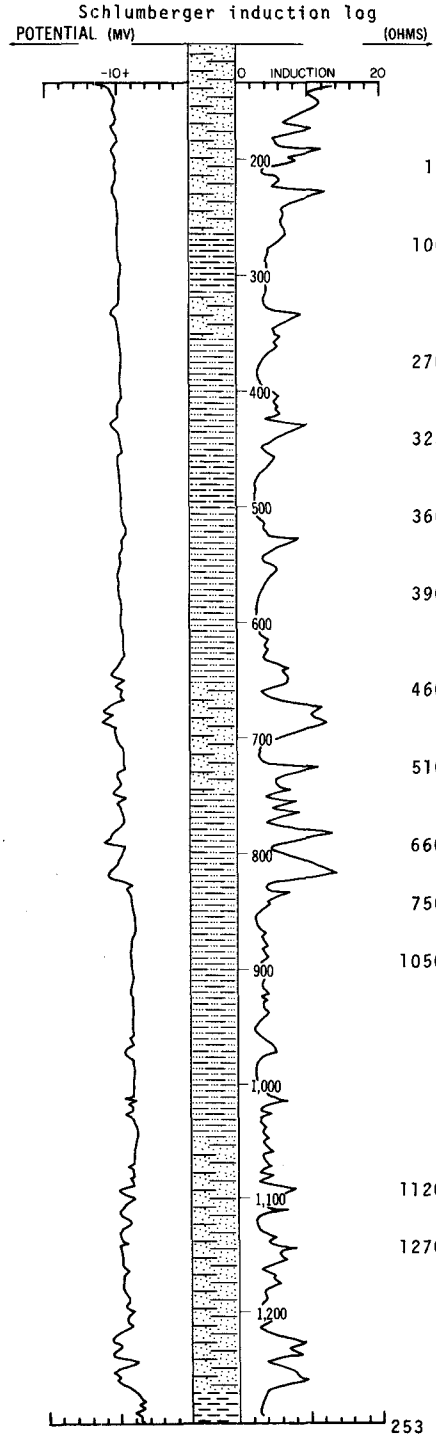
LOCATION: 132-097-07CAB1

DATE DRILLED: July 1971

ALTITUDE: 2665
(FT, MSL)

DEPTH: 1300
(FT)

Schlumberger induction log



	DESCRIPTION OF DEPOSITS
	Alluvium
0-14	Sand, very fine to fine-grained, pebbly, yellowish-gray.
	Tongue River Formation
14-100	Sandstone and siltstone, clayey, lignitic.
	Ludlow Formation
100-270	Sandstone and siltstone; lignite at 130 ft and 190 ft; a few thin beds of claystone.
	Cannonball Formation
270-325	Claystone, silty, olive-gray.
	Ludlow Formation
325-360	Sandstone, silty, very fine to fine-grained.
	Cannonball Formation
360-390	Siltstone and claystone, olive-gray.
	Ludlow Formation
390-460	Siltstone and sandstone; a few thin beds of claystone; lignitic.
	Cannonball Formation(?)
460-510	Claystone, silty, medium-dark-gray.
	Ludlow Formation
510-660	Siltstone and sandstone, lignitic, brownish-gray.
	Hell Creek Formation
660-750	Sandstone and siltstone, clayey.
750-1050	Siltstone and claystone, sandy, carbonaceous.
1050-1120	Sandstone and siltstone, fine- to medium-grained, friable, carbonaceous, dark-green.
	Fox Hills Formation
1120-1270	Sandstone and siltstone, fine- to medium-grained.
1270-1300	Shale, silty, dark-gray.

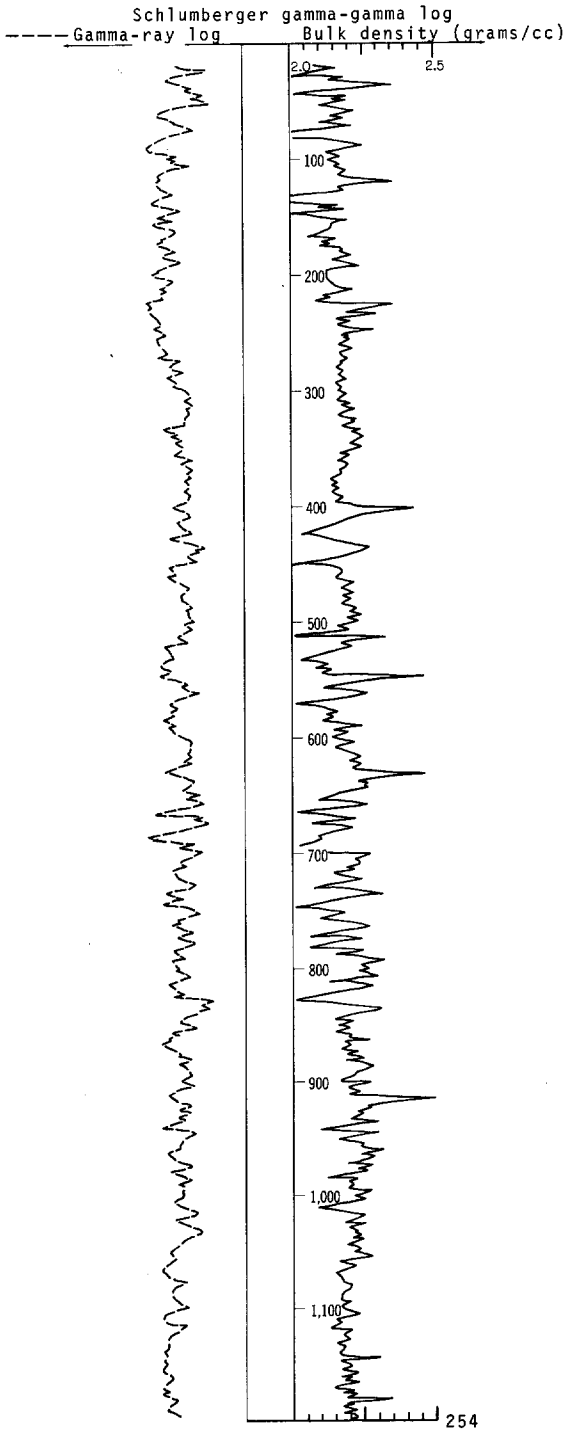
Bit size 6-3/4"
Rm 6.6 @ 80°F

LOCATION: 132-097-7CAB1

DATE DRILLED: July 1971

ALTITUDE: 2665
(FT, MSL)

DEPTH: 1300
(FT)



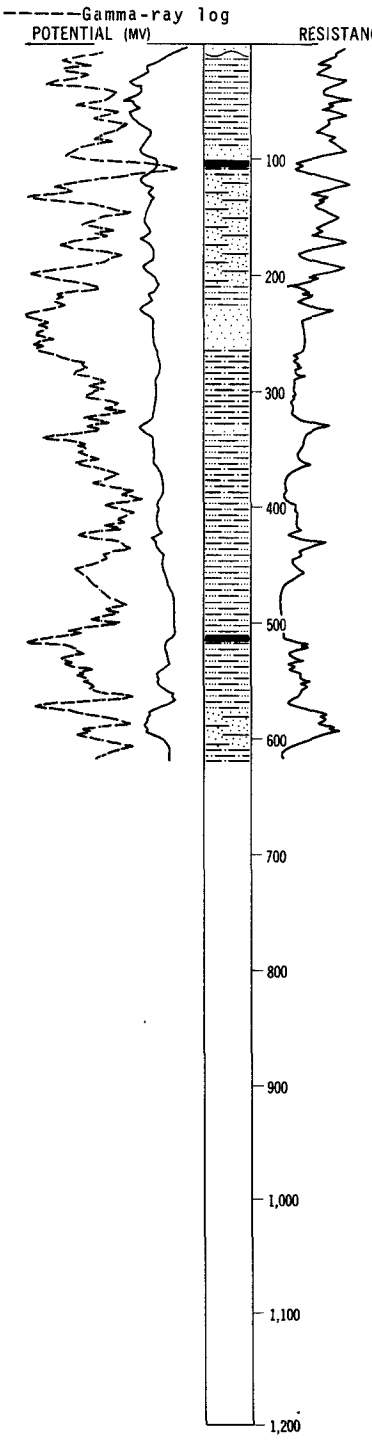
NDSWC 4387, 4387A, and 8351

LOCATION: 132-097-07CAB2, 3, 4

DATE DRILLED: September 1971

ALTITUDE: 2665
(FT, MSL)

DEPTH: 620
(FT)



	Alluvium
0-4	Sand, pebbly, coarse- to medium-grained, brown.
	Tongue River Formation
4-86	Siltstone and claystone, sandy; lignite 19-22 and 77-80 ft.
86-98	Sandstone, very fine to fine-grained.
98-101	Lignite.
	Ludlow Formation
101-111	Claystone, silty, gray.
111-203	Sandstone and siltstone, lignitic; a few beds of claystone.
203-224	Siltstone and claystone.
224-261	Sandstone, very fine to fine-grained, friable, fossiliferous.
	Cannonball Formation
261-329	Claystone, silty, light-gray.
	Ludlow Formation
329-335	Sandstone, very fine to fine-grained.
335-365	Siltstone, sandy, carbonaceous.
	Cannonball Formation
365-391	Claystone, carbonaceous, dark.
	Ludlow Formation
391-468	Siltstone and sandstone; lignite 423 to 430 and 452 to 457 ft.
	Cannonball Formation(?)
468-512	Siltstone, massive, friable, medium-gray.
	Ludlow Formation
512-518	Lignite.
518-573	Siltstone and claystone, carbonaceous.
573-607	Sandstone, silty.
607-620	Claystone, silty, light-brownish-gray.

NDSWC 4387A and 8351

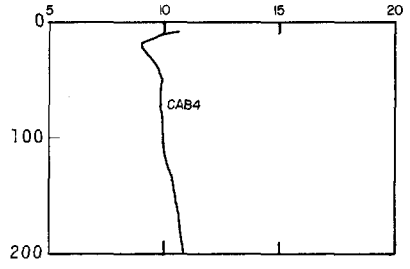
LOCATION: 132-097-07CAB2, 4

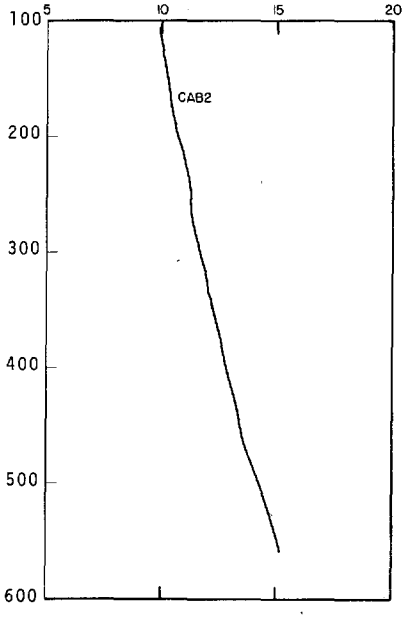
DATE LOGGED: July 1973

ALTITUDE: 2665
(FT, MSL)

DEPTH: 620
(FT)

TEMPERATURE, DEGREES CELSIUS





132-097-15CBC
(Log from Moe Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Surface sand, yellow	16	16
	Clay, yellow	6	22
	Surface sand, yellow	13	35
	Coal	2	37
	Clay, gray	8	45
	Coal	1	46
	Sand, very fine, gray	24	70
	Clay, gray	18.5	88.5
	Coal	2.5	91
	Clay, gray	9	100

132-097-18CDD
(Log from Knutson Drilling Co.)

Altitude:

	Topsoil and silt	8	8
	Clay	8	16
	Sand	4	20
	Clay	16	36
	Coal	1	37
	Clay, blue	13	50
	Sand	3	53
	Clay	5	58
	Coal	1	59
	Clay	9	68
	Coal	1	69
	Clay	1	70
	Coal	.5	70.5
	Sand, fine; with lignite at bottom	2.5	73
	Clay	7	80
	Coal and sand	3	83
	Clay; rock at bottom	5	88
	Clay	46	134
	Coal	1	135
	Clay	16	151
	Sand, fine	24	175
	Clay	5	180

132-097-20AAA
(Log from Knutson Drilling Co.)

Altitude: 2712 ft

	Surface	4	4
	Clay, gray	13	17
	Sand, blue, white; rock ledge at bottom	7	24
	Sand and gravel	6	30
	Clay, gray	5	35
	Coal	4	39
	Clay, gray	6	45
	Clay and coal, gray	5	50
	Clay, gray	10	60
	Rock	3	63
	Clay, gray	5	68
	Clay, brown	2	70
	Clay, gray	2	72
	Coal slack	1	73
	Clay and coal, green	10	83
	Clay, gray; rock ledge at 86 ft	5	88
	Clay, blue	32	120

132-097-20AAA, Continued
(Log from Knutson Drilling Co.)

Altitude: 2712 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay, brown	2	122
	Coal and clay	1	123
	Sand and clay, fine	7	130
	Clay, gray	10	140
	Rock	3	143
	Clay and sand	10	153
	Clay, blue	13	166
	Clay, gray	52	218
	Sand, blue and black	26	244

132-097-23BAA
(Log from Knutson Drilling Co.)

Altitude:

	Gravel	6	6
	Coal	6	12
	Gravel	4	16
	Clay, yellow	4	20
	Sand	12	32
	Coal	1	33
	Clay, gray	19	52
	Coal	1	53
	Sand	17	70

132-097-30AAD
(Log from Alfred Jacobson)

Altitude:

	Topsoil	3	3
	Sand, hard	5	8
	Gravel and quicksand	7	15
	Gravel and sand	10	25
	Clay	35	60
	Sand	8	68
	Clay, hard	2	70
	Sand; water	7	77

132-097-32CBC
(Log from Alfred Jacobson)

Altitude:

	Sand, hard	40	40
	Sand and water	15	55
	Sand	5	60
	Sandstone	2	62
	Sand	4	66
	Blackjack and clay	9	75
	Gumbo	15	90
	Sand; water	11	101

132-097-34BCB
(Log from Moe Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand, surface	11	11
	Clay, yellow	8	19
	Rock, soft	7	26
	Coal	1	27
	Clay, green	14	41
	Rock, gray	1	42
	Sand, very fine, gray	14	56
	Clay, gray	7	63
	Clay, brown	11	74
	Coal	2.5	76.5
	Clay, gray	4.5	81
	Sand, gray	9	90

132-098-15CBC
(Log from Knutson Drilling Co.)

Altitude:

	Clay	4	4
	Rock	1	5
	Sand	15	20
	Sand; water	32	52

132-098-23CDD
(Log from Moe Drilling Co.)

Altitude:

	Clay	62	62
	Coal	1	63
	Clay	3	66
	Rock	1	67
	Clay, sandy	4	71
	Rock	1	72
	Clay, sandy	16	88
	Sand	62	150

132-098-27CBA
(Log from Knutson Drilling Co.)

Altitude:

	Sand	8	8
	Coal	2	10
	Clay	5	15
	Coal	1	16
	Clay	1	17
	Rock, soft	1	18
	Clay	8	26
	Coal	1	27
	Clay, green, soft, hard rock at bottom	17.5	44.5
	Clay, green	5.5	50
	Sand	5	55
	Clay, green	20	75
	Rock	.5	75.5
	Clay, soft	2.5	78
	Rock, soft	.5	78.5
	Sand, real fine	18.5	97
	Rock	1	98
	Sand, rock at bottom	14	112
	Clay	3	115

132-098-34DDD
(Log from Alfred Jacobson)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Topsoil	2	2
	Sand and water	38	40
	Clay, sticky	32	72
	Clay	14	86

132-099-28ACB
(Log from Dependable Drilling Co.)

Altitude:

	Surface	10	10
	Sand, gray	7	17
	Clay, gray	30	47
	Rock	1	48
	Clay, soft, blue	36	84
	Clay, gray	29	113
	Rock, hard	1	114
	Clay, bluish	26	140
	Rock, soft	2	142
	Clay, gray	13	155
	Rock ledge	3	158
	Clay, gray	1	159
	Sand, fine	3	162
	Clay, gray	23	185
	Sand, fine, hard, gray	35	220
	Clay, gray	8	228
	Sand, gray, medium	11	239
	Clay, hard, gray	28	267
	Rock, hard	4	271
	Clay and coal	7	278
	Clay	31	309

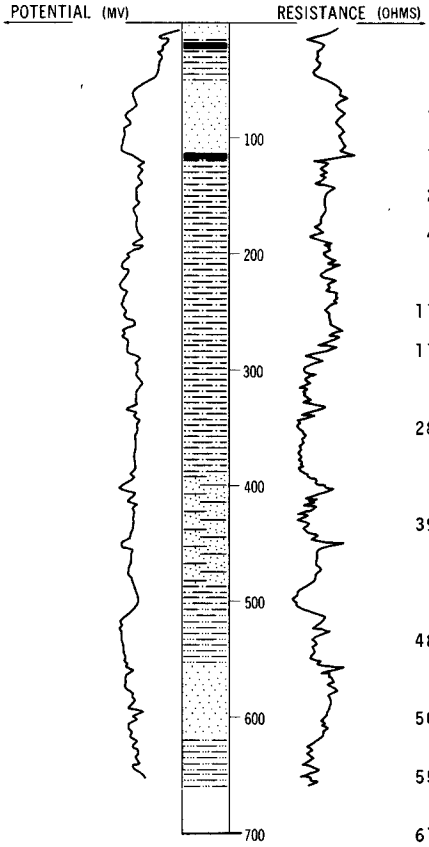
NDSWC 4391 and 4391A

LOCATION: 132-099-32DDC1, 2

DATE DRILLED: October 1971

ALTITUDE: 2900
(FT, MSL)

DEPTH: 660
(FT)



	DESCRIPTION OF DEPOSITS
	Tongue River Formation
0-12	Sandstone, medium- to fine-grained.
12-17	Claystone, yellow.
17-21	Lignite.
21-48	Claystone, silty, lignitic.
48-111	Sandstone, very fine to fine-grained, greenish-gray.
	Ludlow Formation
111-115	Lignite.
115-283	Claystone and siltstone, carbonaceous.
	Cannonball Formation(?)
283-390	Claystone, silty, lignitic, dark-greenish-gray and brown.
	Ludlow Formation
390-486	Sandstone and siltstone, fine- to medium-grained, carbonaceous, loose, greenish-gray.
	Cannonball Formation(?)
486-507	Claystone and siltstone, dark-greenish-gray.
	Ludlow Formation
507-553	Siltstone, sandy, carbonaceous.
553-616	Sandstone, very fine to fine-grained, loose.
616-660	Siltstone and sandstone, carbonaceous.

132-100-14ADB
(Log from Sander Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand and shale, brown----------	32	32
	Clay----------	19	51
	Coal----------	9	60

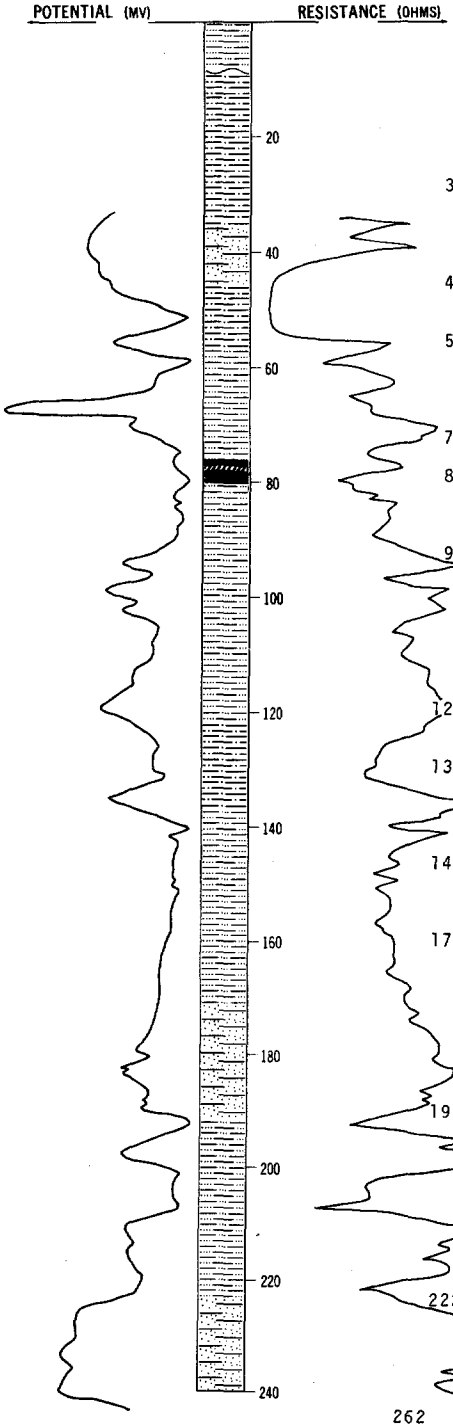
NDSWC 4460

LOCATION: 132-101-10DDD

DATE DRILLED: July 1972

ALTITUDE: 2925
(FT, MSL)

DEPTH: 360
(FT)



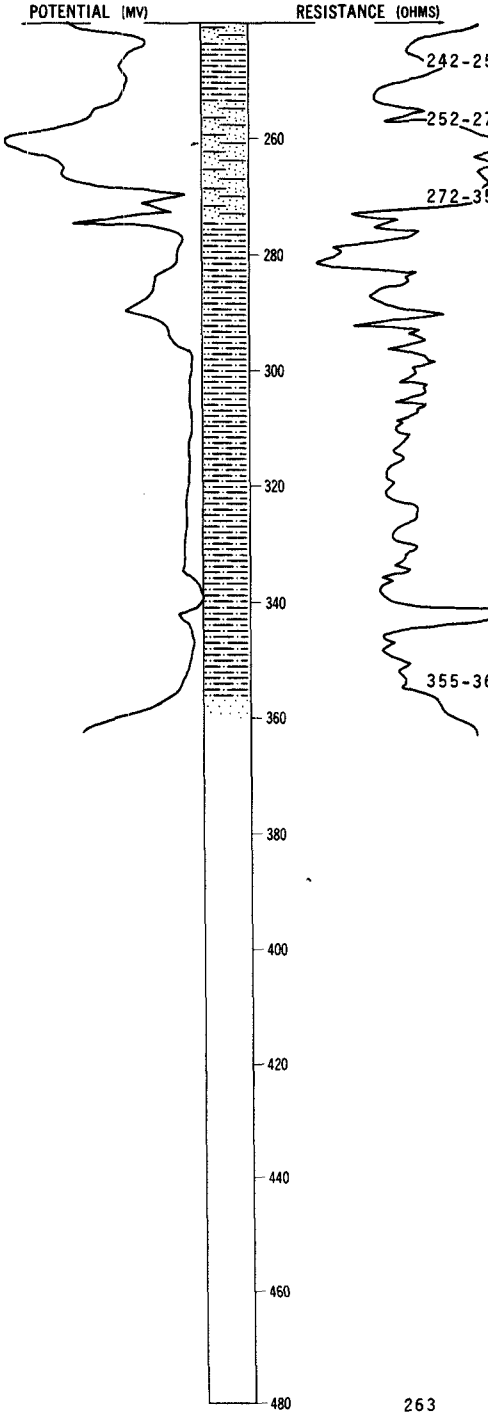
	DESCRIPTION OF DEPOSITS
	Alluvium
0-8	Silt and clay, sandy, brown.
	Tongue River Formation
8-35	Claystone, calcareous, yellowish-brown.
35-45	Sandstone, silty, lignitic, medium-grained.
45-55	Claystone, silty, calcareous, greenish-gray.
55-75	Siltstone and claystone, lignitic, calcareous.
75-80	Lignite.
80-90	Siltstone, clayey, carbonaceous; lignite at 86 to 88 ft.
90-120	Siltstone and claystone, sandy, calcareous, greenish-gray.
120-135	Claystone, lignitic, grayish-brown.
135-145	Siltstone and sandstone, gray.
145-170	Siltstone and claystone, calcareous, olive-gray.
	Ludlow Formation
170-190	Sandstone, silty, lignitic, fine-grained.
190-222	Siltstone and claystone, sandy, calcareous.
222-242	Sandstone, silty, fine-grained, calcareous, light-gray.

LOCATION: 132-101-10DDD

DATE DRILLED: July 1972

ALTITUDE: 2925
(FT, MSL)

DEPTH: 360
(FT)



DESCRIPTION OF DEPOSITS

Ludlow Formation, Continued

242-252 Claystone, silty, lignitic, carbonaceous.

252-272 Sandstone, silty, fine- to medium-grained, greenish-gray.

272-355 Claystone, silty, tight, calcareous.

355-360 Sandstone?

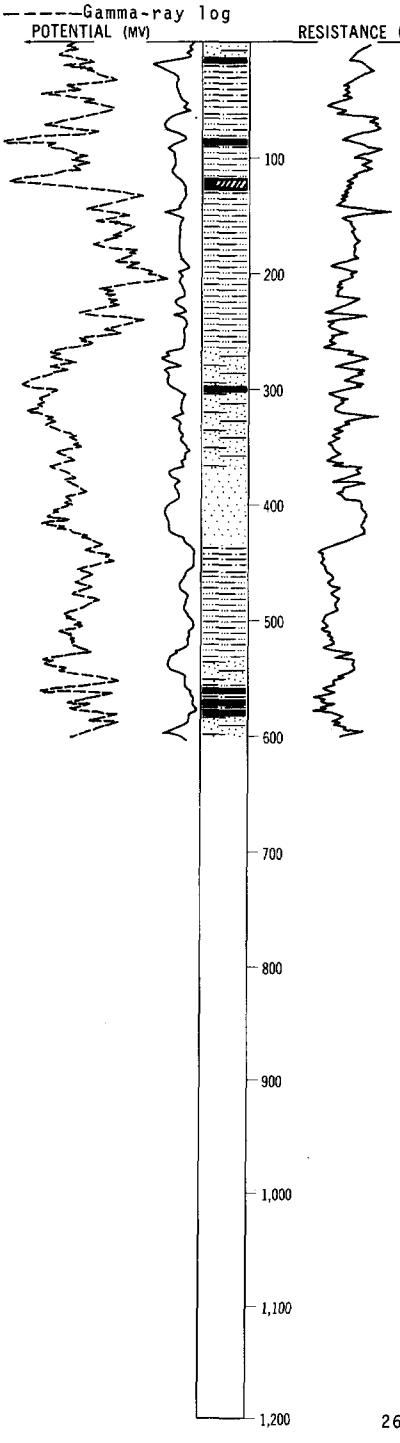
NDSWC 4392

LOCATION: 132-101-12CCC

DATE DRILLED: October 1971

ALTITUDE: 2886
(FT, MSL)

DEPTH: 600
(FT)



	DESCRIPTION OF DEPOSITS
	Tongue River Formation
0-12	Sandstone, clayey, very fine to fine-grained, friable.
12-14	Lignite.
14-62	Claystone and siltstone; lignite at 36 to 40 and 45 to 48 ft.
62-110	Siltstone and sandstone, very fine to fine-grained; lignite at 81 to 87 ft.
110-118	Siltstone, sandy, light-olive-gray.
118-125	Lignite.
	Ludlow Formation
125-264	Siltstone and claystone, carbonaceous; sandstone bed 142 to 146 ft.
264-294	Sandstone and siltstone, clayey.
294-300	Lignite.
300-364	Sandstone and siltstone.
364-430	Sandstone, very fine to fine-grained, loose.
	Cannonball Formation(?)
430-454	Claystone, silty, highly carbonaceous.
454-528	Siltstone, clayey, sandy, carbonaceous.
	Ludlow Formation
528-550	Sandstone, silty, fine-grained, calcareous.
550-556	Siltstone.
556-560	Lignite.
560-566	Claystone.
566-571	Lignite.
571-575	Claystone.
575-581	Lignite.
581-600	Sandstone and claystone.

132-102-18ADD
(Log from Dependable Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Surface sand	7	7
	Clay, sandy, white	5	12
	Clay, blue	4	16
	Clay, brown	2	18
	Coal	2	20
	Clay, brown	2	22
	Clay, gray	10	32
	Limestone	2	34
	Clay, gray	9	43
	Coal	5	48
	Clay, gray	4	52
	Coal	8	60
	Clay, brown	4	64
	Clay, gray	11	75
	Clay, brown	9	84
	Sand	36	120
	Clay, blue	6	126

132-102-18BAA
(Log from Dependable Drilling Co.)

Altitude: 2961 ft

	Surface sand	7	7
	Clay, white	3	10
	Coal	1	11
	Clay, white	17	28
	Clay, gray	12	40
	Rock ledge	1	41
	Clay, sandy, blue	9	50
	Clay, blue	17	67
	Clay, brown	3	70
	Clay, gray	9	79
	Coal	4	83
	Clay, brown	22	105
	Clay, gray	33	138
	Coal, soft	2	140
	Clay, gray	17	157
	Rock ledge	1	158
	Clay, gray	15	173
	Coal	2	175
	Clay, brown	30	205
	Coal	3	208
	Clay, brown	7	215
	Clay, gray	5	220
	Clay, brown	9	229
	Clay, gray	31	260
	Rock	5	265
	Sand, blue	51	316
	Shale, blue	16	332

132-102-21DAA
(Log from Dependable Drilling Co.)

Altitude:

	Sand, brown	10	10
	Sand, blue	13	23
	Coal	3	26
	Clay, blue	14	40
	Coal	3	43
	Clay, blue	20	63

132-102-22CBB
(Log from Dependable Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand, brown----------	10	10
	Clay, brown----------	5	15
	Sand, brown----------	11	26
	Rock----------	1	27
	Sand, brown----------	18	45
	Rock, hard----------	3	48
	Sand, blue----------	12	60
	Coal----------	1	61

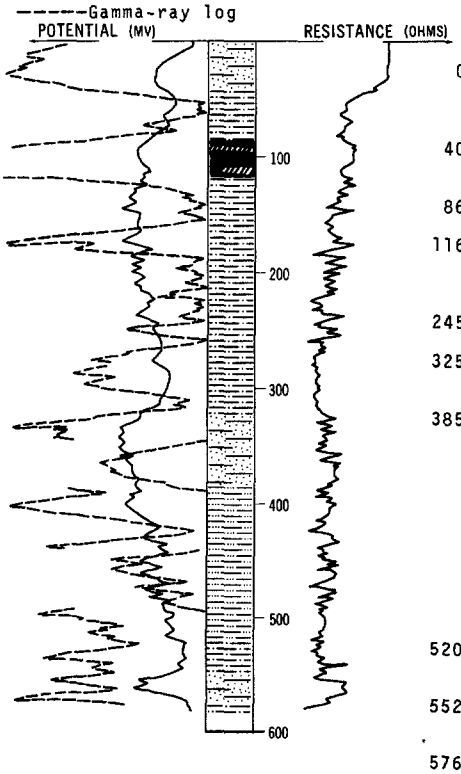
NDSWC 4461, 4461A, and 4461B

LOCATION: 132-102-24BBB1, 2, 3

DATE DRILLED: July 1972

ALTITUDE: 3040
(FT, MSL)

DEPTH: 580
(FT)



DESCRIPTION OF DEPOSITS

Tongue River Formation

0-40 Sandstone, silty, fine- to medium-grained, yellowish-brown.

40-86 Claystone, silty, calcareous.

86-116 Lignite.

116-245 Claystone, silty, sandy, carbonaceous, olive-gray.

Ludlow Formation

245-325 Claystone, silty, sandy.

325-385 Sandstone, silty, greenish-gray.

385-520 Siltstone, clayey, sandy, carbonaceous, greenish-gray.

520-552 Claystone, silty, indurated, brownish-gray.

552-576 Sandstone, silty, fine-grained, calcareous.

576-580 Claystone.

132-103-20BBB
(Log from Dependable Drilling Co.)

Altitude: 3175 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand, brown	2	2
	Clay, blue	37	39
	Rock	1	40
	Clay, blue	5	45
	Rock	1	46
	Sand, brown	11	57
	Clay, brown	3	60
	Clay, blue	3	63
	Coal	1	64
	Clay, brown	4	68
	Clay, gray	7	75
	Clay, brown	9	84
	Clay, sandy, blue	6	90
	Clay, blue	9	99
	Clay, sandy, blue	6	105
	Clay, blue	5	110
	Clay, gray	21	131
	Clay, sandy, gray	14	145
	Clay, gray	17	162
	Clay, brown	3	165
	Clay, gray	28	193
	Sand streaks	16	209
	Shale, sandy	15	224
	Coal	2	226
	Shale, sandy	11	237
	Clay, sandy	7	244
	Coal	5	249
	Clay, gray	12	261
	Coal	8	269
	Clay, white	14	283
	Shale	5	288
	Sand	11	299
	Clay, brown	2	301
	Sand, blue	60	361

132-103-26DCC
(Log from Dependable Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay	23	23
	Clay, sandy	15	38
	Sand, brown	12	50
	Rock	2	52
	Clay, sandy, blue	5	57
	Coal	2	59
	Shale, brown	1	60
	Coal	1	61
	Clay, sandy, blue	37	98

132-103-35BCC
(Log from Dependable Drilling Co.)

Altitude:

	Surface	2	2
	Clay, sandy, yellow	5	7
	Sand, brown	13	20
	Coal	3	23
	Clay, gray	2	25
	Sand, fine, gray	7	32
	Clay, sandy, gray	6	38
	Clay and coal	2	40
	Coal	3	43
	Clay, gray	19	62
	Coal	5	67
	Clay, sandy, gray	13	80
	Sand, white, gray	4	84
	Coal	9	93
	Sand, gray, white, loose	7	100
	Clay, gray, sandy	6	106
	Sand, blue, white	16	122
	No record	43	165
	Sand, coarse, blue, white	20	185
	No record	2	187
	Rock	1	188
	Clay, sandy, gray	18	206
	Clay, brown	22	228
	Rock	1	229
	Coal, hard	35	264
	Rock	1	265
	Sand and coal, hard	30	295
	Sand, fine, gray; mica	31	326
	Coal	12	338
	Sand, fine, clean; mica	13	351
	Clay, gray, coal stringers	34	385
	Coal	3	388
	Clay and sand	24	412

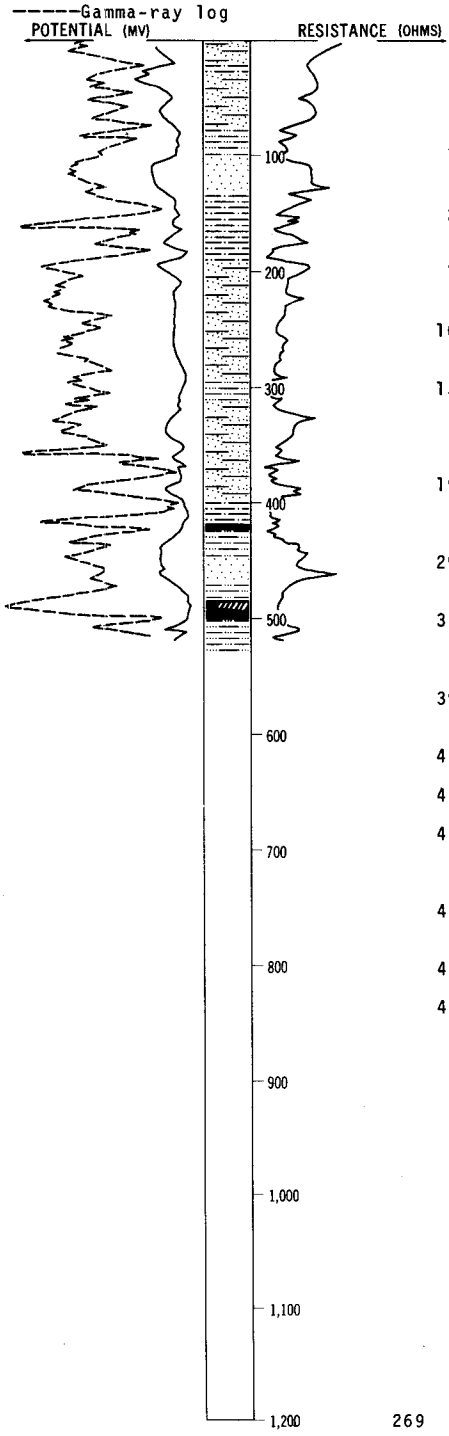
NDSWC 4395

LOCATION: 132-104-12BCC

DATE DRILLED: October 1971

ALTITUDE: 3100
(FT, MSL)

DEPTH: 520
(FT)



	DESCRIPTION OF DEPOSITS
	Ludlow Formation
0-18	Sandstone, very fine to fine-grained, clayey, yellowish-brown.
18-27	Claystone, silty, yellowish-gray.
27-75	Sandstone and siltstone, clayey, light-olive-gray.
75-100	Siltstone and claystone, carbonaceous.
100-131	Sandstone, very fine to fine-grained, dark-gray.
131-190	Claystone and siltstone, sandy, carbonaceous, light-olive-gray; lignite 153-160 ft.
190-290	Sandstone and siltstone, very fine to medium-grained, greenish-gray.
290-310	Siltstone, clayey, dark-brownish-gray.
310-395	Sandstone and siltstone, clayey, fine-grained, light-olive-gray.
395-416	Claystone, silty, carbonaceous.
416-423	Lignite.
423-443	Siltstone, clayey.
443-464	Sandstone, silty, very fine to fine-grained, light-greenish-gray.
464-481	Siltstone and claystone, carbonaceous.
481-496	Lignite.
496-520	Siltstone and claystone.

132-105-08BBD
(Log from Dependable Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand, brown	38	38
	Coal	1	39
	Clay, brown	3	42
	Clay, blue	7	49
	Sand, brown	21	70
	Clay, sandy, blue	1	71
	Rock	1	72
	Clay, sandy, blue	4	76
	Rock	1	77
	Clay, sandy, blue	4	81
	Clay, blue	41	122
	Sand, fine, blue	18	140
	Coal	2	142
	Clay, blue	33	175
	Sand, blue	1	176
	Clay, blue	11	187
	Rock, hard	2	189
	Clay, blue	3	192
	Clay, sandy, blue	8	200
	Sand, blue	14	214
	Coal	1	215
	Clay, blue	5	220

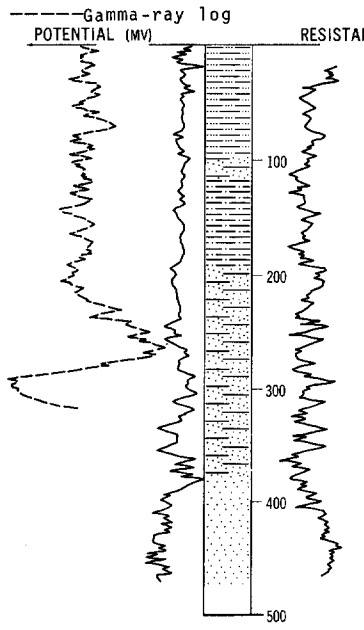
NDSWC 4308

LOCATION: 132-105-16BDB

DATE DRILLED: June 1971

ALTITUDE: 3010 (FT, MSL)

DEPTH: 475 (FT)



	DESCRIPTION OF DEPOSITS
0-95	Ludlow Formation Siltstone and claystone, sandy, lignitic, laminated, greenish-gray.
95-115	Hell Creek Formation Sandstone and siltstone, very fine to fine-grained, greenish-gray.
115-195	Claystone and siltstone, sandy, carbonaceous.
195-375	Sandstone and siltstone, very fine grained, carbonaceous, light-olive-gray.
375-475	Sandstone, very fine to medium-grained, dark-greenish-gray.

132-106-15CAA
Auger hole LM-20

Altitude: 2730 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand, medium to coarse	6	6
	Gravel	2	8
	Clay and sand, dry	2	10
	Sand, fine to coarse, moist	11	21
	Gravel and clay, moist	2	23

132-106-15CAB
Auger hole LM-19

Altitude: 2750 ft

	Clay, dry	5	5
	Sand and clay, medium to coarse; moist at 17 ft	16	21
	Gravel, wet	5	26
	Gravel and clay, hard	2	28

132-106-15CBA1
Auger hole LM-17

Altitude: 2800 ft

	Sand, medium to coarse	23	23
	Clay, sandy, moist	2	25
	Clay, brown, moist; hard at 28 ft	23	48

132-106-15CBA2
Auger hole LM-18

Altitude: 2780 ft

	Sand, medium to coarse	8	8
	Clay, sandy, moist	3	11
	Sand and clay, dry; hard drilling at 11 ft	9	20
	Sand, coarse, hard	6	26
	Gravel, clayey, wet	12	38

132-106-15DAB
Auger hole LM-23

Altitude: 2710 ft

Alluvium:			
	Sand and clay	10	10
	Gravel, fine, wet; coarse at 15 ft	13	23

132-106-15DBA
Auger hole LM-22

Altitude: 2720 ft

Alluvium:			
	Clay, fine, dry	6	6
	Sand, fine	9	15
	Gravel; wet at 24 ft	13	28

132-106-15DBB
Auger hole LM-21

Altitude: 2720 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium:			
	Sand and gravel	14	14
	Sand, coarse	2	16
	Gravel, moist	10	26
	Clay and gravel	2	28

132-106-35DBA
Auger hole LM-24

Altitude: 2730 ft

Alluvium:			
	Sand, fine, dry	9	9
	Gravel, wet	4	13

132-106-35DBB
Auger hole LM-25

Altitude: 2750 ft

Alluvium:			
	Clay, sandy, fine, dry	9	9
	Sand, fine, dry	3	12
	Gravel, medium to coarse; wet at 14 ft	3	15
	Clay, gravelly, hard	3	18

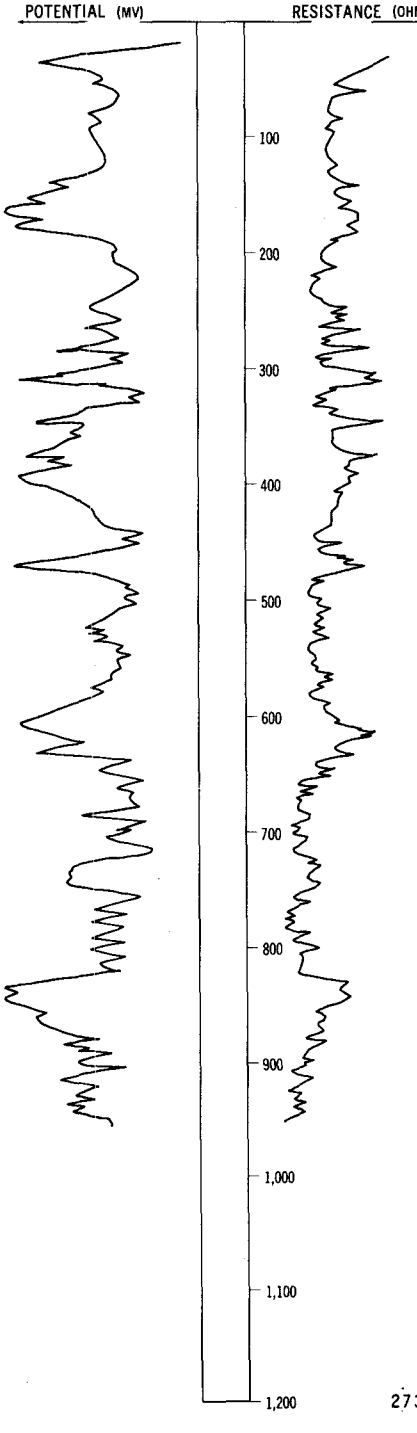
Log from Brady Engineering Co.

LOCATION: City of Lemmon, S. Dak. No. 9

DATE DRILLED: September 1970

ALTITUDE: 2562
(FT, MSL)

DEPTH: 975
(FT)



	DESCRIPTION OF DEPOSITS
0-10	Brown clay.
10-20	Brown clay and gravel.
20-50	Gray clay.
50-60	Gray clay and boulders.
60-130	Gray clay.
130-180	Sandy gray clay.
180-210	Black clay.
210-240	Blue Clay.
240-260	Gray clay.
260-270	Gray clay and sand.
270-410	Gray clay.
410-430	Hard gray clay.
430-470	Gray clay.
470-480	Sandy gray clay.
480-570	Gray clay.
570-650	Gray clay with sand streaks.
650-700	Gray clay.
700-730	Gray clay and sand streaks.
730-750	Sand, some clay streaks.
750-758	Gray clay.
758-768	Sandy gray clay.
768-778	Gray clay.
778-788	Sandy gray clay.
788-798	Gray clay.
798-808	Sandy clay.
808-818	Sand, some clay streaks.
818-878	Sand, fine to medium.
878-908	Intermittent sand and clay streaks.
908-918	Sand, fine.
918-938	Clay and sand streaks.
938-975	Clay and fine sand streaks.

TABLE 4.--Chemical analyses of ground water

LOCAL WELL NUMBER	MAJOR AQUIFER 1/	DEPTH OF WELL (FT)	DATE OF SAMPLE	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED IRON (FE) (UG/L) 2/	DIS-SOLVED MANGANESE (MN) (UG/L) 2/	DIS-SOLVED CALCIUM (CA) (MG/L)	DIS-SOLVED MAGNESIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLORIDE (CL) (MG/L)	DIS-SOLVED FLUORIDE (F) (MG/L)	DIS-SOLVED NITRATE (NO3) (MG/L)	DIS-SOLVED BORON (B) (UG/L) 2/	DIS-SOLVED SOLIDS (RESIDUE AT 180°C) (MG/L)	HARDNESS (CA,MG) (MG/L)	NON-CARBONATE HARDNESS (MG/L)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICROMHOS/CM @ 25°C)	PH (UNITS)	TEMPERATURE (DEG C)
129-091-07AAA1	125LHCK	348	9-27-71	7.7	120	40	4.7	1.6	443	2.4	975	51	24	58	3.0	1.0	750	1090	18	0	98	45	1770	8.7	10.0
129-091-07AAA2	125LDLW	186	9-28-71	8.9	0	20	8.7	5.5	527	2.8	716	26	529	3.1	1.4	2.5	1500	1470	44	0	96	35	2270	8.6	9.5
129-091-08CCC	125LDLW	261	6-15-71	9.7	50	20	7.2	2.2	422	2.9	590	12	418	5.3	1.3	1.0	240	1180	27	0	97	35	1790	8.4	10.0
129-091-19BAA	125TRVL	80	6-21-71	11	100	20	41	14	147	4.3	409	0	147	2.1	.5	.0	310	556	162	0	66	5.0	935	7.8	10.0
129-092-06DDC	125CNBL	80	8-11-70	9.1	320	20	29	21	738	5.8	642	4	1210	1.6	1.3	.0	740	2220	159	0	91	25	3190	8.3	9.0
129-092-26CCB	125LDLW	222	6-23-71	9.3	70	30	159	82	659	13	747	0	1490	29	.7	8.1	730	2850	734	122	66	11	3660	7.8	--
129-093-08CBB1	125LHCK	363	6-14-72	8.1	90	50	4.7	2.1	471	2.5	1140	19	14	67	3.2	1.0	820	1140	20	0	98	46	1870	8.3	11.0
129-093-08CBB2	125LDLW	207	6-13-72	8.0	140	30	5.2	3.4	432	2.4	942	0	170	13	5.5	1.0	1200	1120	27	0	97	36	1760	8.2	10.0
129-093-28ABB2	125TRVL	65	6-15-71	10	80	--	24	22	422	3.9	663	0	462	24	1.0	26	340	1320	150	0	86	15	1950	8.1	--
129-093-28ABB3	125LDLW	240	6-24-71	8.0	480	10	3.8	1.3	419	2.2	886	14	151	9.6	8.9	1.0	1200	1050	15	0	98	47	1670	8.4	9.0
129-094-17BBC1	125LHCK	474	10-14-71	4.4	0	30	11	6.4	525	4.3	851	0	489	9.0	1.0	1.0	750	1490	54	0	95	31	2270	8.0	9.5
129-094-17BBC2	125LDLW	290	10- 4-71	8.0	280	30	13	4.5	401	2.0	947	12	68	17	8.4	.1	1200	973	51	0	94	24	1610	8.4	10.0
129-094-29BBB	125LDLW	135	8- 5-70	7.7	1300	10	8.8	7.5	674	3.6	875	0	759	4.5	.9	.0	740	1780	53	0	96	40	2750	8.2	11.0
129-095-02DAD	125LDLW	306	6-18-71	8.5	0	30	6.6	2.6	516	2.6	770	0	435	9.2	5.1	.0	1000	1310	27	0	97	43	2140	8.2	--
129-095-06BCC	125LDLW	304	7- 8-71	8.3	0	10	4.2	1.8	407	2.1	903	9	130	11	5.7	1.0	1300	1040	18	0	98	42	1620	8.3	--
129-095-08BCC	125TRVL	126	8- 4-70	10	4500	10	64	68	76	11	487	0	197	4.0	.3	.0	0	667	439	40	27	1.6	1050	8.2	12.0
129-095-11CCC1	125LDLW	287	6-16-71	8.2	680	10	8.0	43	408	1.6	989	11	166	23	12	.0	1600	1150	196	0	82	13	1600	8.4	--
129-095-13BBD	125TRVL	42	6-16-71	11	0	40	195	90	113	4.7	362	0	749	33	.7	31	350	1400	856	559	22	1.7	1830	7.6	--
129-095-13BCD	125LDLW	221	6-15-71	8.4	0	30	14	5.8	804	2.9	727	0	1180	13	4.2	1.5	1300	2300	59	0	97	46	3420	8.1	--
129-095-18BBA1	125TRVL	20	7-13-71	14	0	90	71	48	129	10	651	0	126	4.4	.1	1.3	240	771	375	0	42	2.9	1120	7.8	--
129-095-18BBA2	125TRVL	100	7-13-71	14	0	90	87	40	127	10	649	0	129	3.6	.1	.2	240	750	380	0	41	2.8	1150	7.8	--
129-095-30AAB	125LDLW	240	6-14-73	6.2	0	240	18	15	476	5.3	764	9	468	26	4.0	2.5	1900	1370	106	0	90	20	2070	8.3	9.5
129-095-30CBC	125TRVL	160	6-13-71	11	0	10	41	26	167	10	458	0	194	2.9	.8	1.0	420	640	209	0	62	5.0	1060	8.0	--
129-096-01DAD2	125CNBL	94	7-16-71	11	0	120	228	105	298	13	485	0	1160	29	.1	14	450	2230	1000	602	39	4.1	2690	7.8	--
129-096-02DCC3	125LHCK	420	8- 3-70	8.6	0	--	3.2	9.2	391	3.0	889	19	101	12	14	1.2	940	1020	46	0	94	25	1610	8.4	12.0
129-096-02DDC1	125LHCK	378	7-20-71	7.6	2000	10	6.6	.1	410	2.3	927	15	69	14	7.4	1.0	1600	988	17	0	98	43	1560	8.5	--
129-096-02DDC2	125TRVL	165	7-20-71	13	380	50	81	56	278	14	566	0	550	2.2	.1	.1	450	1270	433	0	57	5.8	1840	8.1	--
129-096-04DCB	211MCFH	880	6-15-71	11	700	70	5.3	.2	397	1.2	735	32	120	55	3.6	.4	1000	1010	14	0	98	46	1580	8.7	--
129-096-06DAA	125LDLW	300	7- 6-71	8.8	200	10	8.1	.5	422	1.7	858	9	156	14	8.4	2.0	1400	1090	22	0	97	39	1660	8.3	--
129-096-12DBB	211MCFH	1314	7-23-70	11	320	40	4.2	1.1	455	2.7	852	0	45	165	2.7	1.0	1600	1110	15	0	98	51	1840	8.0	21.0
129-096-12DCD2	125TRVL	142	7-21-70	15	0	60	94	59	24	4.1	535	0	65	18	.5	2.5	350	519	476	37	10	.5	909	7.7	--
129-096-13AAD	125LHCK	463	10-19-71	5.9	0	30	2.7	3.3	422	2.1	929	51	50	43	4.4	2.0	1200	1040	20	0	98	41	1720	8.8	8.8
129-096-13ACA	211MCFH	1140	7-23-70	11	200	0	2.5	1.2	464	1.2	877	0	6.6	194	3.8	1.0	1600	1130	11	0	99	61	1890	7.9	19.5
129-096-13ACA	211MCFH	1140	4-18-73	11	40	10	1.9	.3	460	1.5	884	0	6.9	180	3.6	--	1600	1170	6	0	99	82	1880	8.5	19.5
129-096-13ADD	211MCFH	1050	7-23-70	11	200	0	2.5	.6	393	1.1	789	13	101	47	3.8	2.0	1300	983	9	0	99	57	1550	8.2	17.0
129-096-13BBB1	211MCFH	1180	7-23-70	11	280	0	2.3	1.6	400	1.2	794	20	66	71	4.4	.0	1400	941	12	0	98	50	1598	8.3	17.5
129-096-13BBB3	125TRVL	23	7-21-71	16	0	100	80	139	50	6.5	519	0	298	68	.3	43	520	987	774	348	12	.8	1480	7.9	--
129-096-13BDB	125TRVL	120	7-21-71	14	0	50	45	47	36	6.2	373	0	75	5.3	.1	8.1	590	494	306	0	20	.9	683	8.0	10.0
129-096-13BDD1	211MCFH	1182	7-23-70	11	480	0	2.3	1.1	390	1.1	853	1	70	44	4.9	1.0	1100	950	10	0	99	54	1530	8.2	18.5
129-096-13BDD4	125TRVL	80	7-22-71	21	200	80	214	191	50	6.5	1050	0	232	160	.1	73	590	1490	1320	458	8	.6	2310	7.7	--
129-096-18CDD	125LDLW	318	7- 3-71	8.2	380	60	10	6.2	811	4.0	807	0	1090	6.9	2.3	.5	1200	2320	48	0	97	51	3320	8.2	10.0
129-096-20AAA	125LDLW	231	7- 9-71	6.2	140	20	4.0	4.1	459	2.7	797	30	257	16	6.8	1.0	1500	1180	27	0	97	38	1830	8.6	10.0
129-096-25BAD	125LDLW	275	7-13-71	9.5	0	50	75	44	173	10	415	0	412	6.6	1.0	1.0	420	953	368	28	50	3.9	1350	8.0	9.0
129-096-26AAB	125TRVL	142	7-31-70	14	60	10	158	99	66	7.7	467	0	276	72	.1	234	0	1230	801	418	15	1.0	1710	8.0	10.0
129-096-26CAA	125LDLW	335	7-13-71	8.2	0	20	5.0	3.0	496	3.5	832	0	391	9.9	2.7	2.5	1100	1390	25	0	97	43	2050	8.2	12.0
129-096-26CAD	125TRVL	100	7-31-70	13	80	30	91	91	150	10	513	0	389	32	.1	84	0	1150	600	179	35	2.7	1620	8.2	10.0
129-096-33AAA1	125LDLW	242	7-13-71	7.9	0	20	5.4	2.6	572	3.5	808	0	547	11	4.6	1.0	1100	1600	24	0	98	51	2350	7.9	11.0
129-097-11DAC	125LDLW	294	7- 1-71	8.4	340	30	6.4	2.7	655	3.0	759	27	781	10	4.4	1.8	1300	1880	27	0	98	55	2750	8.7	--
129-097-15AAB	125LDLW	240	7- 1-71	8.2	0	20	3.6	2.4	538	2.5	860	7	407	10	6.8	1.0	1200	1500	19	0	98	54	2180	8.3	15.0
129-098-07DDA	125LDLW	300	6-29-71	8.5	2400	20	7.5	7.4	391	1.5	955	17	35	6.1	7.8	.2	930	935	49	0	94	24	1520	8.4	15.0
129-098-09BDD	125LHCK	706	8- 6-70	11	200	10	.0	1.9	394	1.0	768	17	149	31	2.7	3.1	830	988	8	0	99	61	1580	8.5	14.0
129-098-30DCC	125LDLW	194	6-29-71	8.3	2600	130	12	8.5	690	3.4	1230	0	980	8.8	5.7	2.5	1500	2680	65	0	97	48	3550	8.2	--
129-098-31ABB	211MCFH	800	8-06-70	10	260	--	.6	3.3	376	1.0	708	13	194	24	3.8	1.0	860	965	15	0	98	42	1540	8.4	17.0
129-098-32ADB	125LHCK	250	6-28-72	5.5	180	10	11	6.4	411	2.3	950	14	66	25	5.5	1.0	710	1150	54	0	94	24	1570	8.4	11.5
129-099-04ABA2	211MCFH	940	5- 3-71	10	860	30	1.9	.9	400	1.0	685	27	214	29	3.0	2.0	620	1010	8	0	99	61	1620	8.6	--
129-099-04CBB	211MCFH	926	8-18-70	11	100	20	2.2	.9	393	1.0	724	7	213	30	3.6	1.0	1000	1040	9	0	99	57	1630	8.3	13.5
129-100-07DAA	125LHCK	206	8-20-70	7.7	0	20	.6	1.9	606	1.9	721	14	679	8.5	11	1.3	1000	1730	10	0	99	83	2570	8.4	12.0
129-100-13DDA	125LHCK	159	5-18-71	9.1	460	40	30	25	656	3.7	982	0	816	6.8	3.2	3.1	1400	1950	176	0	89	21	2950	8.1	--
129-100-19AAA	125LHCK	271	7- 6-72	7.6	1100	60	17	5.5	455	2.0	855	29	239	5.6	4.9	2.0	460	1430	65	0	94	25	1770	8.6	11.0
129-100-21DBA	125TRVL	56	5-21-71	8.3	240	40	4.6	3.5	609	2.6	787	13	685	4.3	3.6	1.4	1700	1750	26	0	98	52	2550	8.4	--

LOCAL WELL NUMBER	MAJOR AQUIFER 1/	DEPTH OF WELL (FT)	DATE OF SAMPLE	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED IRON (FE) (UG/L) 2/	DIS-SOLVED MAN-GANESE (MN) (UG/L) 2/	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED NITRATE (NO3) (MG/L)	DIS-SOLVED BORON (B) (UG/L) 2/	DIS-SOLVED SOLIDS (RESI-DUE AT 180°C) (MG/L)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	SPECIFIC CONDUCT-ANCE (µMHOS/CM @ 25°C)	PH (UNITS)	TEMPER-ATURE (DEG C)
129-100-25DAA1	125LHCK	530	11-15-71	4.3	1300	10	3.7	.2	389	.8	672	35	220	22	2.9	1.0	1300	1020	10	0	99	53	1650	8.8	11.0
129-100-25DAA2	125LHCK	290	11-15-71	9.0	1100	20	8.4	8.3	425	1.0	834	19	207	16	4.0	1.0	890	1110	55	0	94	25	1710	8.5	10.0
129-100-26ADA	125LHCK	517	8-19-70	11	50	10	1.9	.7	400	1.0	745	5	219	21	4.9	1.0	900	1030	8	0	99	61	1630	8.3	14.0
129-101-02CCC	125LDLW	71	8-20-70	7.2	1000	20	7.0	5.5	601	1.0	655	14	772	5.9	2.5	1.0	1200	1740	40	0	97	41	2600	8.4	12.0
129-101-07CCC	125LHCK	333	5- 3-71	11	440	10	2.7	1.1	392	1.0	697	28	203	24	3.0	.3	1200	994	11	0	99	51	1580	8.6	--
129-101-10BBB	125TRVL	78	5-28-71	11	120	400	277	206	708	13	553	0	2530	30	.8	2.5	760	4130	1540	1090	50	7.9	4690	7.1	9.5
129-101-27BBB	125TRVL	747	5- 3-71	12	320	10	2.6	.1	390	.8	689	28	208	22	3.0	1.1	900	1030	7	0	99	64	1600	8.6	--
129-101-32BCD	125LHCK	438	8-20-70	10	320	10	2.9	1.2	411	3.3	744	0	258	14	3.8	1.0	730	1060	12	0	98	52	1660	8.1	13.0
129-102-01ADD	125LHCK	632	5- 4-71	12	240	30	2.2	1.3	381	.9	687	28	196	16	3.4	1.0	940	973	11	0	99	50	1550	8.7	16.0
129-102-11CAA	125LHCK	460	5- 4-71	11	300	10	2.6	1.1	378	.9	666	31	186	12	1.3	1.6	970	988	11	0	99	50	1550	8.7	--
129-102-14CDD	211HCFM	714	8-19-70	2.3	4400	10	2.6	.9	391	1.0	676	27	212	22	3.8	1.0	680	991	10	0	99	54	1590	8.6	11.0
129-102-27AAA	125LHCK	390	7- 5-72	11	40	20	2.0	.2	386	1.1	647	43	249	11	2.1	1.0	1000	1040	6	0	99	69	1590	8.8	12.0
129-102-28BAD	125LHCK	176	5- 4-71	8.6	300	20	3.2	1.5	539	1.1	693	21	570	7.7	2.9	.8	940	1480	14	0	99	63	2240	8.5	12.0
129-103-10DCC	125LHCK	242	5-28-71	9.1	400	20	2.9	.7	387	.9	700	26	232	4.4	4.2	1.5	900	999	10	0	99	53	1590	8.6	--
129-103-13ADA	125LHCK	249	5-26-71	9.6	200	40	3.8	1.3	579	1.2	793	14	604	3.9	2.9	.6	940	1530	15	0	99	65	2360	8.4	--
129-103-23BDD	--	440	5- 5-71	1.2	520	40	2.7	.9	44	3.7	64	33	7.9	1.6	.7	1.0	280	142	10	0	86	6.1	302	9.6	11.0
129-103-35BBB	125LHCK	430	5- 5-71	12	300	10	2.8	1.2	375	.9	646	34	235	16	.8	2.0	800	1010	12	0	98	47	1600	8.7	--
129-104-08DDD	125LHCK	390	9- 2-70	7.9	160	20	2.5	1.5	505	1.0	792	52	367	4.6	.9	1.0	520	1280	12	0	99	63	2060	8.8	11.5
129-104-34ADA	211HCFM	543	8-11-71	12	140	20	3.5	.4	396	1.4	683	31	254	14	.9	1.0	350	1010	10	0	99	54	1650	8.7	13.5
129-104-34ADD3	211HCFM	377	7-21-71	13	0	30	4.2	3.5	511	1.0	941	7	316	1.1	.3	1.0	870	1310	25	0	98	44	2030	8.3	12.0
129-105-02CAA	211HCFM	334	7-25-72	11	370	20	1.8	.0	308	.8	581	15	180	1.0	.3	2.5	40	866	4	0	99	67	1290	8.5	12.5
130-091-09BAB	125LHCK	340	4-14-71	9.8	280	10	4.6	1.6	484	2.2	1180	0	49	48	4.8	1.0	830	1110	18	0	98	50	1890	8.2	--
130-092-22CBB	125CNRL	31	6-29-71	8.2	1700	10	4.2	1.6	457	2.1	924	0	207	7.3	7.2	.0	1500	1170	17	0	98	48	1780	8.2	9.5
130-092-27BBA2	125LDLW	204	10-10-71	7.0	0	30	14	6.3	452	5.9	944	17	183	20	5.1	2.0	1000	1250	61	0	93	25	1820	8.4	10.0
130-092-27BBA3	125LHCK	374	6-15-72	7.3	90	50	6.0	1.9	422	3.0	977	53	13	.3	2.7	1.0	1100	1100	23	0	97	38	1670	8.7	--
130-094-07DDD1	125TRVL	390	6-15-72	8.9	160	40	10	9.0	431	2.9	1120	0	12	23	6.5	1.0	1400	1080	62	0	93	24	1670	8.2	11.5
130-094-07DDD2	125TRVL	253	6-15-72	7.3	0	60	18	12	483	3.8	884	40	357	10	6.3	1.0	1300	1400	93	0	91	22	2100	8.6	--
130-094-31BCC	125TRVL	116	6-18-71	21	4800	3000	397	243	1070	25	401	0	3950	34	.8	21	1200	6150	1990	1660	54	10	6490	6.9	9.5
130-095-28AAA	125TRVL	257	7- 8-71	9.1	0	50	13	7.2	759	4.3	733	0	1050	6.5	3.0	.4	1000	2170	62	0	96	42	3190	8.2	--
130-096-14AAB	125TRVL	198	7- 2-71	8.7	0	30	20	13	413	6.7	624	0	451	4.2	1.1	1.0	550	1240	103	0	89	18	1840	8.0	--
130-096-15BCC	125TRVL	135	7- 2-71	9.4	0	20	11	6.9	337	5.2	630	0	253	3.1	.3	1.2	450	913	56	0	92	20	1430	8.2	--
130-096-33DCC	125TRVL	282	7- 9-71	16	--	550	134	79	54	9.4	699	0	181	2.7	.2	1.0	800	833	658	85	15	.9	1260	7.4	--
130-096-34CDD	125TRVL	80	7- 6-71	12	0	400	150	135	263	15	524	0	1020	3.9	.3	1.0	350	1940	929	499	38	3.8	2410	7.8	--
130-097-29DCB	125TRVL	211	6-30-71	11	0	10	18	9.7	141	5.4	409	0	69	1.8	.4	1.0	730	446	85	0	77	6.7	741	8.0	10.5
130-097-35BCB1	125LHCK	411	7-31-72	10	320	80	8.3	6.0	442	3.2	1040	0	91	12	7.8	1.0	960	1050	45	0	95	29	1670	8.2	11.0
130-097-35BCB2	125TRVL	72	6-28-72	9.1	0	10	14	8.3	393	6.7	646	18	376	4.4	.3	1.0	540	1080	69	0	92	6.5	1710	8.5	10.0
130-098-04CBB	125TRVL	95	6-30-71	8.4	0	30	59	31	159	11	411	0	268	4.5	.3	2.5	900	768	274	0	54	4.2	1140	7.7	--
130-098-04DBB	211HCFM	1274	10-11-71	12	0	10	3.4	1.6	418	1.9	897	0	11	129	4.8	1.0	1500	1040	13	0	98	47	1730	8.2	22.0
130-098-04DCC	211HCFM	1200	7-23-70	11	140	10	2.0	1.5	438	1.1	892	4	4.1	138	4.6	1.0	1400	1050	11	0	99	57	1760	8.2	19.5
130-098-17DAA	125LDLW	296	6-30-71	8.2	830	20	8.3	7.4	481	2.1	877	15	303	6.8	7.6	.0	1000	1180	51	0	95	29	1940	8.4	10.2
130-098-21CCC1	125LHCK	411	10-22-71	8.5	320	30	4.1	.7	466	1.5	989	38	132	12	6.5	1.0	1400	1160	13	0	99	56	1760	8.6	10.0
130-098-21CCC2	125LDLW	196	11- 8-71	8.6	0	30	4.5	4.4	405	2.3	932	31	66	17	8.4	1.0	1100	992	29	0	96	33	1590	8.6	8.5
130-098-26DAC	125LDLW	232	6-30-71	8.6	0	30	7.0	2.3	396	1.8	938	25	58	18	8.7	.2	1100	971	27	0	98	33	1580	8.5	--
130-099-15BCC	--	--	7-13-70	11	120	10	31	18	103	5.3	362	0	79	3.5	1.6	1.0	30	455	152	0	58	3.6	712	7.9	11.0
130-099-17AAA1	125LHCK	346	6-29-72	7.0	220	10	15	6.7	399	2.5	719	40	222	4.6	6.7	5.5	710	1020	65	0	93	22	1610	8.7	11.0
130-099-17AAA2	125LDLW	198	6-29-72	5.8	0	10	27	24	499	5.0	604	22	716	7.2	4.9	1.0	360	1610	165	0	86	17	2280	8.5	14.0
130-100-02AAA	125LHCK	418	5- 5-72	5.8	180	30	11	8.9	405	1.7	696	41	247	4.4	5.3	1.0	890	1080	64	0	93	22	1580	8.8	11.5
130-100-02DDA2	125TRVL	129	8-18-70	7.9	400	20	18	7.1	647	3.6	722	0	673	11	3.8	1.0	730	1950	74	0	95	33	2810	8.2	10.0
130-100-24DAB	125LDLW	270	8-18-70	9.2	80	10	43	35	122	4.0	462	6	106	17	1.0	4.9	190	587	252	0	51	3.3	960	8.3	9.0
130-101-24DDD	125LDLW	127	6- 4-71	6.1	0	40	7.4	13	1040	6.6	1050	92	1190	6.9	.5	1.0	1000	3060	73	0	97	53	4040	8.9	9.0
130-101-25AAA	211HCFM	893	6- 4-71	11	40	20	11	8.6	373	1.3	680	23	208	36	2.7	18	900	971	63	0	93	20	1610	8.6	--
130-101-25ADD	125LDLW	200	5-21-71	11	70	40	22	12	923	7.9	1150	0	1140	6.5	1.2	1.0	1000	2460	106	0	95	39	3740	7.8	--
130-102-13DCD	125TRVL	60	8-21-70	13	120	20	80	37	600	14	893	0	863	.0	.7	1.0	160	2050	301	0	80	15	2930	7.9	9.0
130-102-23CDA	125LHCK	500	5- 4-71	10	400	10	2.3	1.1	379	.8	686	25	221	16	3.0	2.0	1000	969	10	0	99	52	1590	8.6	--
130-102-24BAB2	125LHCK	298	8-21-70	9.5	480	10	2.5	4.1	441	1.5	851	15	225	15	13	1.0	1400	1150	23	0	97	40	1780	8.4	--
130-103-03AAA	125LHCK	207	7-19-72	8.6	0	30	5.5	3.0	806	2.2	772	9	1150	.0	.2	1.0	820	2210	26	0	98	69	3130	8.3	10.0
130-103-09BBC	125LDLW	102	6- 3-71	1.9	--	60	--	--	477	1.7	--	--	585	2.7	.1	1.1	730	1370	--	--	--	--	2130	--	10.0
130-103-11CCC	211HCFM	651	8-26-70	11	120	10	1.8	.7	402	1.0	733	16	241	11	6.5	1.0	680	1050	7	0	99	66	1650	8.4	14.0
130-103-28ABD	125LHCK	422	6- 3-71	2.3	1500	30	7.6	2.4	409	.9	537	96	308	6.1	2.5	2.5	1000	1090	29	0	97	33	1720	9.2	10.0
130-103-29CBB	125LHCK	454	8-28-70	10	200	30	4.4	1.5	519	1.1	783	18	447	5.2	1.1	1.0	840	1360	17	0	98	55	2120	8.5	14.0

LOCAL WELL NUMBER	MAJOR AQUIFER[1]	DEPTH OF WELL (FT)	DATE OF SAMPLE	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED IRON (FE) (UG/L)[2]	DIS-SOLVED MAN-GANESE (MN) (UG/L)[2]	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED NITRATE (NO3) (MG/L)	DIS-SOLVED BORON (B) (UG/L)[2]	DIS-SOLVED SOLIDS (RESI-DUE AT 180°C) (MG/L)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	SPECIFIC CONDUCT-ANCE (µMHOS/CM @ 25°C)	PH (UNITS)	TEMPER-ATURE (DEG C)
130-103-31AAA	125LHCK	328	8-28-70	9.8	520	30	5.4	1.6	566	1.3	870	12	497	4.0	2.3	1.0	1100	1470	20	0	98	55	2280	8.4	14.0
130-103-34DDD	125LHCK	490	5- 5-71	11	440	10	2.8	.7	379	.8	705	32	207	6.9	3.0	2.0	1100	1000	10	0	99	52	1590	8.7	14.0
130-103-35DAA	125LHCK	380	5- 5-71	13	760	10	2.6	1.1	396	1.0	808	23	161	8.0	9.1	1.6	1500	1060	11	0	99	51	1610	8.6	13.0
130-104-03DDD1	125LHCK	700	5- 4-71	10	760	20	3.0	1.1	453	.8	733	53	267	4.7	2.3	1.0	1100	1230	12	0	99	57	1850	8.9	11.0
130-104-15CAC	125LHCK	500	5- 4-71	11	320	10	2.3	2.1	393	1.5	610	57	285	2.4	.9	1.6	620	1080	14	0	98	46	1660	8.9	12.0
130-104-18DBA	125LHCK	310	5- 4-71	10	140	20	2.6	.9	513	1.3	838	53	353	2.0	1.0	.4	620	1290	10	0	99	71	2090	8.9	--
130-104-21BBA	211HCFH	447	2-24-72	11	140	30	2.5	1.7	461	.8	698	56	387	4.1	.6	1.0	350	1240	13	0	99	56	1930	8.9	13.0
130-104-26DCD	211HCFH	600	5- 4-71	12	220	10	1.9	.4	360	1.0	621	50	194	3.2	1.3	1.0	450	918	6	0	99	64	1480	9.0	13.0
131-091-10CCC	125LDLW	408	9-22-71	9.4	320	10	3.8	2.3	468	1.8	1130	25	33	50	2.1	1.0	1600	1170	19	0	98	47	1780	8.5	1.0
131-091-13CCB	125LDLW	345	8- 7-70	10	160	20	3.4	2.1	473	2.2	1150	12	42	50	2.7	1.0	1300	1120	17	0	98	50	1870	8.3	13.0
131-091-15CCC	125LHCK	537	6- 9-72	9.2	80	30	5.0	1.6	489	2.3	1170	10	99	.6	3.2	1.0	1400	1250	19	0	98	49	1860	8.3	10.5
131-092-08BBA	125TRVL	202	8- 7-70	7.7	200	20	.3	13	706	3.9	462	0	1200	6.6	1.4	2.5	640	2150	56	0	96	41	3080	7.9	11.0
131-093-21AAAb	125LDLW	334	6-13-72	9.0	40	30	10	3.6	408	2.3	1030	0	23	20	5.3	1.0	1400	1030	40	0	95	28	1690	8.2	11.5
131-093-21AAA2	125LDLW	253	6-14-72	7.3	440	40	6.6	3.8	407	3.6	960	15	62	17	5.5	1.0	1100	1040	32	0	96	31	1630	8.3	10.5
131-093-21AAA3	125TRVL	143	6-12-72	8.0	0	40	28	17	774	6.4	495	0	1490	1.8	.8	1.0	390	2510	139	0	92	29	3500	7.7	11.0
131-094-07DAA	--	101	8-23-70	19	--	--	537	1100	835	9.6	121	0	7450	20	.6	84	4200	10900	5830	5730	50	4.8	9430	6.9	--
131-094-20CBC1	211HCFH	1045	7-22-71	9.7	260	50	6.2	2.3	504	3.0	888	0	44	237	3.6	1.0	1600	1330	25	0	97	44	1930	7.8	19.0
131-094-20CBC2	125LHCK	537	10-14-71	10	680	10	8.0	7.3	516	1.6	1250	26	9.5	65	3.4	2.0	1400	1340	50	0	96	32	2020	8.4	9.5
131-094-20CBC3	125LDLW	224	10-12-71	8.2	0	20	20	3.4	405	2.2	970	21	44	16	7.2	1.0	2300	1020	64	0	93	22	1590	8.4	9.5
131-095-19DCC	125TRVL	63	7- 7-71	5.0	0	10	21	31	200	9.3	366	0	304	2.7	.1	1.6	210	692	181	0	69	6.5	1140	8.1	9.0
131-095-22BAA	125TRVL	31	7- 7-71	9.3	0	30	154	211	174	12	499	0	370	67	.3	272	140	1610	842	432	31	2.6	2160	7.8	--
131-095-27CCB	125TRVL	125	8- 7-70	10	180	470	135	84	127	9.3	465	0	571	2.0	.5	1.0	180	1270	683	302	28	2.1	1640	8.0	12.0
131-096-02DBD	125TRVL	73	6-11-71	1.2	580	20	6.3	3.8	314	3.1	502	44	241	3.7	.7	1.0	450	873	31	0	95	25	1370	9.1	8.0
131-096-15CCC1	125TRVL	60	6-11-71	14	0	40	90	71	91	10	537	0	280	4.6	.3	1.2	450	844	516	76	27	1.7	1260	7.5	--
131-096-18ADD	125TRVL	202	6- 8-71	13	180	40	58	36	71	8.1	413	0	120	2.5	.4	2.5	350	505	292	0	34	1.8	803	7.6	10.0
131-096-21DDA	125TRVL	100	6- 8-71	11	180	130	114	75	199	11	540	0	576	5.6	.6	2.5	450	1270	594	151	42	3.5	1760	7.5	8.5
131-096-27BCC2	125TRVL	140	6- 8-71	9.0	0	70	30	21	641	5.5	723	0	939	14	.8	1.0	970	2110	162	0	89	22	2920	8.0	--
131-096-30DCD	125TRVL	122	6- 8-71	14	1000	60	106	67	83	9.9	574	0	245	4.0	.4	1.0	0	827	539	68	25	1.6	1330	7.5	--
131-098-01BCC4	125TRVL	81	6-15-71	7.6	70	80	17	9.6	338	5.8	439	0	458	6.3	1.0	.0	1800	1040	82	0	89	16	1580	8.0	--
131-098-07BCC	125CNBL	352	6-15-71	4.9	530	20	7.9	7.9	380	2.6	861	18	85	17	5.9	.3	840	935	52	0	94	23	1440	8.5	9.5
131-098-08CDD	125TRVL	170	6-15-71	15	--	--	134	102	230	16	884	0	539	8.1	.1	1.0	1900	1470	755	30	39	3.6	2030	7.4	--
131-098-23DAD1	125CNBL	356	6-21-72	9.6	40	20	19	16	431	1.9	642	24	426	1.1	5.5	2.0	680	1260	104	0	89	18	1760	8.6	10.5
131-098-23DAD2	125TRVL	248	6-21-72	8.3	0	20	21	11	387	2.7	568	0	445	4.6	3.4	.0	540	1240	96	0	89	17	1610	8.2	9.5
131-099-04DAA	125TRVL	390	4-14-71	9.2	1700	30	6.8	4.9	362	1.5	767	12	146	6.3	3.4	.1	1200	953	37	0	95	26	1450	8.3	--
131-099-22CCC1	125TRVL	112	8-12-70	7.9	1600	40	7.2	3.4	518	5.6	601	0	668	5.6	4.2	1.0	770	1470	32	0	97	40	2260	8.1	10.0
131-099-22CCC2	125LDLW	336	8-12-70	9.2	320	10	2.2	.6	498	2.0	1200	17	48	7.2	19	2.0	1100	1170	8	0	99	77	1880	8.4	13.0
131-100-09CCD	211HCFH	1068	8-14-70	13	240	10	2.1	1.7	416	1.0	783	0	212	44	8.2	1.0	1000	1090	12	0	99	52	1730	8.2	14.0
131-100-23DBA	211HCFH	1180	7-20-70	12	300	10	2.2	.2	415	1.0	789	3	179	35	3.8	1.0	1300	997	7	0	99	68	1660	8.2	19.5
131-100-24ABB	125TRVL	71	8-14-70	9.4	100	50	25	15	198	7.0	454	0	192	2.7	2.5	2.0	630	643	125	0	76	7.7	1050	8.2	--
131-100-26ABA	211HCFH	1193	2-24-72	11	420	20	3.6	2.4	435	1.7	782	45	93	120	3.0	1.0	2000	1080	19	0	98	43	1870	6.8	6.1
131-100-29BBB1	125LDLW	376	7-11-72	13	620	30	9.0	3.9	425	1.9	767	17	277	5.0	6.8	.4	1100	1120	39	0	96	30	1680	8.4	11.0
131-100-29BBB2	125TRVL	228	7-11-72	10	170	30	13	9.1	482	3.0	617	21	576	3.5	1.7	1.0	1200	1330	70	0	93	25	2030	8.5	10.0
131-100-31BBB	125LDLW	550	6- 4-71	9.3	50	10	3.1	1.6	222	1.3	509	0	83	1.9	.5	1.0	450	373	14	0	97	26	922	8.0	--
131-101-18BCC1	211HCFH	900	5- 5-71	10	640	20	3.4	.6	503	1.3	774	38	400	7.8	5.3	2.5	1200	1280	11	0	99	66	2080	8.8	12.0
131-102-02DDA	211HCFH	1067	7-28-70	13	80	10	1.2	.0	409	1.1	743	11	240	26	2.3	.0	600	1080	3	0	100	100	1710	8.4	19.0
131-102-07DDD1	211HCFH	963	7-20-72	8.0	230	20	3.4	.6	465	2.8	779	23	165	133	2.9	2.5	1100	1190	11	0	99	61	1890	8.5	14.0
131-102-07DDD3	125TRVL	138	7-18-72	9.1	90	50	22	2.2	439	2.2	483	17	591	5.3	.3	1.0	640	1260	64	0	93	24	1810	8.6	10.5
131-102-11BDC	125TRVL	56	6- 2-71	13	0	50	42	19	81	5.9	343	0	81	4.1	.5	2.5	210	433	185	0	48	2.6	752	7.8	13.0
131-102-11CAB	211HCFH	1042	7-28-70	12	140	20	1.2	.0	403	1.1	688	56	231	22	2.9	.3	690	1050	3	0	100	100	1660	8.7	19.0
131-102-11CAD3	125TRVL	190	6- 3-71	7.2	0	20	8.8	7.8	348	1.2	497	9	359	4.5	.7	.1	490	996	54	0	93	21	1500	8.4	10.0
131-102-11CBA	125TRVL	50	6- 4-71	12	0	100	88	38	55	4.6	441	0	129	14	.5	4.0	100	579	377	15	24	1.2	872	7.7	--
131-102-11CDB	125TRVL	121	6- 2-71	7.0	2600	20	14	11	301	1.9	478	0	331	4.5	.5	.0	800	897	81	0	89	15	1380	8.2	--
131-102-11DAB	125TRVL	52	6- 2-71	12	0	10	83	69	180	2.3	732	0	221	28	.1	21	350	1000	492	0	44	3.5	1500	7.8	10.0
131-102-11DAD	211HCFH	1050	7-29-70	13	120	0	.0	.0	415	1.0	751	4	219	33	2.7	1.0	550	1050	--	--	100	--	1670	8.3	21.0
131-102-11DBD1	125TRVL	50	6- 3-71	14	0	230	149	89	169	11	616	0	377	129	.2	15	420	1330	737	232	93	2.7	1910	7.5	--
131-102-11DBD2	125TRVL	45	6- 3-71	15	200	230	163	74	141	8.4	631	0	371	75	.4	3.6	1500	1210	711	194	30	2.3	1720	7.5	--
131-102-11DCA1	125TRVL	38	6- 2-71	13	0	50	95	64	103	6.9	431	0	274	44	.6	17	170	865	501	148	31	2.0	1300	7.7	--
131-102-11DCA2	125TRVL	45	6- 2-71	12	20	30	93	52	108	8.2	409	0	292	44	.5	17	170	831	448	113	34	2.2	1240	7.7	11.0
131-102-11DDA	125TRVL	45	6- 2-71	8.0	0	280	121	84	103	7.9	411	0	461	58	.5	1.0	0	1120	646	309	25	1.8	1520	7.6	--
131-102-11DDC	125TRVL	50	6- 2-71	12	0	140	106	76	240	5.9	675	0	450	56	.5	1.0	450	1300	579	26	47	4.3	1900	7.7	--

LOCAL WELL NUMBER	MAJOR AQUIFER[1]	DEPTH OF WELL (FT)	DATE OF SAMPLE	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED IRON (FE) (UG/L)[2]	DIS-SOLVED MAN-GANESE (MN) (UG/L)[2]	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED NITRATE (NO3) (MG/L)	DIS-SOLVED BORON (B) (UG/L)[2]	DIS-SOLVED SOLIDS (RESI-DUE AT 180°C) (MG/L)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	SPECIFIC CONDUCT-ANCE (UMHOS/CM @ 25°C)	PH (UNITS)	TEMPER-ATURE (DEG C)
131-102-13CCC1	125LHCK	432	11-17-71	6.9	0	30	11	9.8	486	1.6	647	11	576	8.7	2.1	.1	750	1410	68	0	94	26	2120	8.4	10.0
131-102-13CCC2	125LDLW	184	11-18-71	9.2	450	20	8.1	3.2	558	2.5	452	17	832	6.8	.9	1.0	270	1670	33	0	97	42	2470	8.6	9.0
131-102-14AAB	211HCFH	1096	7-28-70	12	0	0	1.9	1.3	405	1.0	761	0	213	36	2.7	1.0	900	1050	10	0	99	56	1660	8.2	19.0
131-102-14AAB	211HCFH	1096	6- 6-73	12	50	0	1.5	.4	410	1.1	667	47	200	36	2.1	--	990	1070	5	0	99	77	1660	8.9	19.5
131-103-08CAC1	211HCFH	927	5-27-71	12	0	10	2.2	.6	428	.7	722	43	248	10	3.6	.6	1000	1200	8	0	99	66	1740	8.7	16.5
131-103-21DBC	125TRVL	99	5-27-71	6.1	400	10	5.4	1.3	459	2.8	488	47	551	4.9	.6	.0	1400	1260	19	0	98	46	1980	9.0	9.0
131-103-35CCD	125TRVL	122	6- 3-71	.7	20	20	3.1	5.0	509	2.0	--	--	407	3.9	.1	1.0	690	1410	--	--	97	42	2230	--	8.0
131-104-28AAA2	211HCFH	700	8-27-70	12	760	20	3.3	1.0	386	1.0	663	25	209	3.6	.8	1.0	460	940	12	0	98	46	1490	8.6	16.0
131-105-18DCC	211HCFH	80	5-26-71	9.3	180	10	3.1	.2	444	1.0	701	36	322	7.2	.7	.7	30	1150	9	0	99	44	1820	8.8	--
131-105-21ACC	211HCFH	287	5-26-71	8.0	300	20	2.6	.5	426	1.0	687	55	270	3.8	.7	.0	0	1060	8	0	99	65	1740	8.9	9.0
131-105-23CDD	211HCFH	495	7-26-72	8.9	160	0	1.9	.2	435	1.1	767	45	242	7.5	.5	2.5	680	1150	5	0	99	85	1760	8.8	13.5
131-106-03DAA	211HCFH	96	5-20-71	12	100	80	46	22	541	5.4	825	0	681	5.7	.4	4.4	210	1680	206	0	85	16	2500	7.8	9.0
131-106-04DCC	211HCFH	66	5-20-71	13	0	20	32	15	149	4.5	390	0	138	11	.7	2.5	170	504	143	0	69	5.4	869	7.6	--
132-095-20AAD	125TRVL	210	7- 7-71	7.6	30	20	18	11	649	4.9	613	0	1010	9.5	.2	2.5	350	2050	89	0	94	30	2830	8.0	--
132-096-22ABC1	125LDLW	377	6-20-72	9.2	300	10	2.5	2.4	538	2.7	1350	23	34	17	4.0	1.0	890	1270	16	0	98	58	2040	8.4	9.5
132-096-22ABC2	125TRVL	188	6-19-72	5.9	90	10	12	10	390	2.6	872	11	126	12	4.6	1.0	460	1060	73	0	92	20	1550	8.3	9.0
132-096-23BBD	125TRVL	158	6-11-71	4.3	0	10	44	28	5.0	2.1	263	0	18	1.4	.3	1.7	520	249	224	9	5	.1	604	8.2	10.0
132-096-26BBA2	125TRVL	115	6-11-71	6.5	200	20	7.2	5.8	380	2.2	775	18	157	15	4.0	.2	750	935	42	0	95	25	1540	8.5	8.0
132-097-07CAB1	211HCFH	1080	7-29-71	12	2800	30	5.2	1.5	451	1.7	877	0	175	54	5.3	1.0	1600	1110	19	0	98	45	1790	8.0	20.0
132-097-07CAB2	125LHCK	590	10-28-71	7.7	0	40	8.4	3.6	546	3.4	1250	33	144	15	6.5	1.0	1600	1430	36	0	97	40	2110	8.4	9.5
132-097-07CAB3	125LDLW	229	10-29-71	9.6	1100	30	26	2.4	374	2.5	882	20	104	16	5.5	1.0	1200	1010	75	0	91	19	1500	8.5	7.5
132-097-07CAB4	125LDLW	335	6-20-72	7.7	620	10	2.2	.9	540	2.1	1340	53	14	7.6	6.1	1.0	1300	1310	9	0	99	78	2050	8.7	11.0
132-097-08DAA1	125TRVL	100	7-31-71	15	160	280	91	33	88	3.2	354	0	245	7.7	.5	1.0	350	604	364	74	34	2.0	988	7.6	9.0
132-097-15CBC	125TRVL	100	8- 6-70	10	60	0	78	42	86	5.1	465	0	144	9.2	.5	11	250	620	368	0	33	2.0	982	8.1	13.0
132-097-23BAA	125TRVL	70	8- 6-70	11	400	40	100	46	57	5.6	450	0	191	5.3	.5	1.0	120	650	439	70	22	1.2	994	7.9	12.0
132-098-23CDD	125TRVL	150	6- 8-70	6.1	4100	60	1.0	23	527	4.9	683	0	678	2.5	1.3	.0	460	1640	99	0	92	23	2360	8.2	14.0
132-099-32DDC1	125LHCK	572	10-11-71	9.1	2500	20	18	30	595	3.3	954	41	598	15	8.7	1.0	1100	1700	169	0	88	19	2600	8.7	11.0
132-099-32DDC2	125TRVL	110	9-11-71	15	500	80	92	61	79	7.5	441	0	286	3.2	.4	5.0	0	753	482	120	26	1.6	1130	8.0	8.5
132-100-14ADB	125TRVL	51	8-14-70	7.5	180	20	32	11	500	4.9	634	6	668	3.6	2.3	1.0	300	1500	124	0	89	20	2280	8.3	9.0
132-100-35DDD	211HCFH	1200	8-18-70	12	0	10	4.1	1.2	447	1.3	908	0	179	37	4.0	.0	1100	1130	15	0	98	50	1810	8.2	--
132-101-10DDD	125TRVL	264	7-12-72	8.0	1100	30	9.0	6.9	428	5.0	629	7	427	9.2	2.5	6.1	1100	1630	51	0	94	26	1750	8.3	10.0
132-101-12CCC	125LDLW	411	11-16-71	9.0	440	20	13	6.0	349	.6	559	35	256	14	1.3	.0	750	935	57	0	93	20	1450	8.7	10.5
132-101-28BDC	125LDLW	230	5- 5-71	14	4200	70	55	20	456	4.2	772	0	584	3.5	.7	1.0	730	1420	213	0	82	14	2200	7.6	--
132-101-30DDD	125LDLW	280	5- 6-71	7.9	420	20	3.8	1.3	405	1.6	457	30	480	4.1	.6	1.0	520	1130	15	0	98	45	1780	8.9	10.0
132-102-09DDD1	125LDLW	300	5-11-71	8.4	440	20	5.4	2.3	482	1.5	538	8	626	3.4	.1	1.0	420	1350	23	0	98	14	2080	8.5	--
132-102-09DDD2	125LDLW	200	5-11-71	8.6	880	40	3.4	.6	407	1.0	471	26	444	3.3	.3	2.5	1000	1100	11	0	99	17	1700	8.8	6.0
132-102-12CCC	125TRVL	40	5-12-71	19	680	200	566	259	227	6.0	419	0	2320	44	.2	86	730	4230	2480	2140	67	2.0	4120	6.6	7.5
132-102-18BAA	125LDLW	261	5-10-71	8.5	360	20	4.3	2.6	561	1.4	492	14	799	3.6	.4	1.0	660	1630	21	0	98	17	2430	8.6	--
132-102-24BBB1	125LDLW	565	7-12-72	11	500	50	11	12	427	1.9	1020	28	54	4.2	8.6	1.0	1100	1060	76	0	92	21	1620	8.4	12.0
132-102-24BBB2	125LDLW	376	8- 2-72	6.3	90	50	9.0	1.8	389	2.2	465	0	501	2.1	.9	2.5	640	1090	30	0	96	31	1650	7.9	12.0
132-102-24BBB3	125TRVL	117	7-25-72	9.3	0	60	23	19	75	2.5	328	0	31	.8	.1	1.4	0	351	137	0	54	2.8	562	8.1	9.5
132-102-28AAA	125TRVL	55	6- 5-73	12	50	--	82	150	43	14	580	0	130	88	.2	--	360	1140	820	350	10	.7	1730	7.7	10.0
132-102-32DBB	125LDLW	280	5-14-71	7.3	1000	30	3.7	1.0	430	2.0	457	28	504	4.4	.2	1.0	450	1230	13	0	98	16	1860	8.8	8.0
132-103-20BBB	125LDLW	297	5-12-71	8.6	360	20	7.1	2.8	510	5.7	435	11	766	2.7	.2	2.5	420	1530	29	0	97	13	2230	8.5	--
132-104-09CDD	125TRVL	268	6- 3-71	15	--	--	485	274	53	37	727	0	1900	7.7	.1	1.0	3300	3090	2340	1740	5	.5	3330	7.0	9.5
132-104-17CCC	211HCFH	600	5-14-71	11	0	40	2.6	2.3	423	1.0	676	54	289	5.2	1.0	.4	350	1070	16	0	98	46	1740	8.9	--
132-104-21AAA	211HCFH	750	5-14-71	11	100	30	2.5	1.5	444	1.1	792	35	250	7.7	4.2	2.5	590	1170	12	0	99	56	1790	8.7	--
132-104-27ADA	125TRVL	31	8- 5-71	13	0	20	122	116	175	28	539	0	724	6.5	.4	2.5	180	1510	782	340	32	2.7	2010	8.0	8.0
132-105-08BBD	125LHCK	190	6- 2-71	3.0	200	20	4.2	6.2	848	2.3	982	200	799	2.9	.5	1.0	350	2270	36	0	98	61	3390	9.2	12.0
132-105-16BDB	211HCFH	459	6-25-71	11	240	20	3.4	2.8	425	1.0	736	35	259	3.2	.4	.0	350	1100	20	0	98	41	1720	8.7	13.0
132-106-26BDC	211HCFH	229	5-19-71	8.7	200	30	5.8	3.5	627	1.6	769	18	661	2.3	.1	2.2	0	1640	29	0	98	51	2530	8.5	--
023-016-05D	211HCFH	913	7-22-71	10	30	30	4.2	.4	501	1.2	884	0	11	255	4.4	1.0	1700	1200	12	0	99	63	2070	8.2	15

1/ SEE TABLE 1 FOR EXPLANATION.
2/ IRON, MANGANESE, AND BORON ARE REPORTED IN MICROGRAMS PER LITER (UG/L).

TABLE 5.--Chemical analyses of water from streams and reservoirs

DATE	DIS-CHARGE (CFS)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED IRON (FE) (UG/L) 1/	DIS-SOLVED MAN-GANESE (MN) (UG/L) 1/	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED NITRATE (NO3) (MG/L)	DIS-SOLVED BORON (B) 1/ (UG/L)	DIS-SOLVED SOLIDS (RESI-DUE AT 180°C) (MG/L)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	SPECIFIC CONDUCT-ANCE (µMHOS/CM AT 25°C)	PH (UNITS)	TEMPER-ATURE (DEG C)
06335500 - Little Missouri River at Marmarth, N. Dak.																							
AUG., 1970																							
6...	75	9.0	760	10	38	19	310	8.3	361	0	520	12	.8	1.0	330	1090	430	130	79	10	1620	7.8	26.0
FEB., 1971																							
23...	790	4.7	--	--	49	18	74	6.8	107	0	260	5.2	.8	2.0	280	455	200	110	44	2.3	713	7.0	.5
MAR.																							
18...	2960	6.9	--	200	22	7.8	37	7.7	87	0	95	2.7	.6	1.0	30	216	87	16	45	1.7	351	7.0	--
24...	1670	5.9	--	100	23	8.1	35	5.3	91	0	93	1.4	.7	1.0	--	228	91	17	44	1.6	350	7.0	--
APR.																							
6...	4170	5.8	--	--	28	9.2	36	4.6	86	0	120	2.3	.1	1.0	310	273	110	38	41	1.5	380	6.9	--
MAY																							
12...	238	9.0	460	10	67	30	190	7.3	311	0	420	9.0	1.2	1.0	280	872	290	35	58	4.8	1290	7.9	15.5
JUNE																							
2...	530	9.3	400	10	53	29	180	6.5	160	0	440	25	.4	--	170	825	250	120	60	4.9	1210	7.2	--
OCT.																							
14...	584	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	540	--	8.0
NOV.																							
9...	164	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1110	--	2.0
DEC.																							
14...	86	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1460	--	.0
JAN., 1972																							
11...	48	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1710	--	.0
FEB.																							
9...	18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2000	--	.0
MAR.																							
12...	13300	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	250	--	1.0
APR.																							
6...	388	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1210	--	10.0
MAY																							
9...	2270	9.1	80	110	73	48	290	6.8	124	0	900	6.8	.2	1.0	180	1320	380	280	62	6.5	1890	7.4	5.0
9...	2270	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1790	--	5.0
JUNE																							
15...	148	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2410	--	24.0
JULY																							
11...	92	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	150	--	24.0
AUG.																							
8...	152	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1230	--	23.0
SEP.																							
13...	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1820	--	18.0
NOV.																							
14...	35	7.4	3200	10	61	45	360	6.4	540	0	650	30	.5	1.0	510	1350	300	0	69	8.5	2020	8.2	.5
APR., 1973																							
11...	71	4.8	5700	20	72	39	310	6.8	414	0	670	19	.2	--	260	1330	340	1	66	7.3	1880	8.0	10.5
MAY																							
9...	160	8.5	20	10	76	38	190	7.2	249	0	530	8.5	.4	--	280	1040	350	140	54	4.4	1410	8.2	14.0

DATE	DIS-CHARGE (CFS)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED IRON (FE) (UG/L) 1/	DIS-SOLVED MAN-GANESE (MN) (UG/L) 1/	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS_SOLVED NITRATE (NO3) (MG/L)	DIS-SOLVED BORON (B) (UG/L) 1/	DIS-SOLVED SOLIDS (RESI-DUE AT 180°C) (MG/L)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	SPECIFIC CONDUCT-ANCE (µMHOS/CM AT 25°C)	PH (UNITS)	TEMPER-ATURE (DEG C)
0635200 - Cedar Creek near Haynes, N. Dak.																							
MAR., 1971																							
17...	856	6.2	--	--	53	38	100	9.3	170	--	360	4.0	.6	1.5	280	655	290	150	42	2.6	988	7.1	--
JULY																							
14...	1250	6.8	--	--	42	21	89	12	162	--	240	6.2	.3	4.2	170	539	190	58	48	2.8	771	7.2	18.0
OCT.																							
15...	13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1900	--	7.0
NOV.																							
10...	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2200	--	.0
DEC.																							
7...	9.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2390	--	.0
JAN., 1972																							
12...	6.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2670	--	.0
FEB.																							
10...	5.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2910	--	.0
MAR.																							
8...	11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1610	--	.0
13...	4280	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	840	--	1.0
14...	5060	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.0
21...	194	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5.0
APR.																							
12...	153	4.9	0	90	95	85	220	8.3	252	0	840	4.1	.1	1.0	360	1410	590	380	44	4.0	1870	7.6	7.0
12...	153	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1780	--	7.0
MAY																							
12...	980	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1930	--	10.0
JUNE																							
20...	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2200	--	16.5
JULY																							
13...	159	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2470	--	22.5
AUG.																							
9...	11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2400	--	18.0
SEP.																							
14...	4.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2230	--	17.0
NOV.																							
15...	16	3.3	100	--	190	170	400	10	456	--	1700	17	.4	8.7	1100	2820	1200	810	42	5.1	3210	8.1	.5
APR., 1973																							
13...	31	.6	280	60	140	150	330	12	400	0	1300	14	.2	--	260	2210	970	640	42	4.6	2680	7.8	10.0
MAY																							
11...	15	1.7	30	250	180	200	530	10	506	0	1900	18	.4	--	1100	3230	1300	860	47	6.5	3620	8.1	12.0

DATE	DIS-CHARGE (CFS)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED IRON (FE) (UG/L) 1/	DIS-SOLVED MAN-GANESE (MN) (UG/L) 1/	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED NITRATE (NO3) (MG/L)	DIS-SOLVED BORON (B) (UG/L) 1/	DIS-SOLVED SOLIDS (RESI-DUE AT 180°C) (MG/L)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	SPECIFIC CONDUCT-ANCE (µMHOS/CM AT 25°C)	PH (UNITS)	TEMPER-ATURE (DEG C)
06355000 - North Fork Grand River at Haley, N. Dak.																							
OCT., 1971																							
13...	1.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2040	--	10.0
NOV.																							
8...	3.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2020	--	.0
DEC.																							
6...	1.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1910	--	.0
JAN., 1972																							
10...	1.6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2710	--	.0
FEB.																							
8...	.78	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2700	--	.0
MAR.																							
15...	1150	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.0
23...	218	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5.0
APR.																							
5...	57	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	840	--	8.0
MAY																							
11...	105	.2	1600	100	31	19	140	6.3	192	0	296	.0	.1	1.0	180	619	160	0	65	4.9	897	7.7	9.0
11...	105	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	9.0
JUNE																							
16...	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1310	--	20.0
JULY																							
10...	34	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1270	--	24.0
AUG.																							
7...	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1400	--	21.5
SEP.																							
12...	1.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1930	--	21.0
NOV.																							
14...	--	5.6	40	120	65	56	420	5.7	502	0	870	7.4	.5	--	1300	1740	390	0	70	9.2	2410	8.1	.5
DEC.																							
12...	--	7.4	300	120	87	69	520	5.8	649	0	1100	8.8	.6	--	1500	2160	500	0	69	10	2960	8.0	.0
JAN., 1973																							
19...	--	4.3	300	80	44	37	230	9.0	288	0	520	8.5	.2	--	130	974	260	26	65	6.2	1460	7.7	.0
MAR.																							
6...	--	4.5	120	40	36	27	170	10	220	0	400	5.9	.1	--	300	771	200	21	63	5.2	1160	7.3	4.0
APR.																							
10...	12	3.1	80	80	45	36	240	7.2	307	0	530	6.1	.2	--	210	1040	260	9	66	6.5	1510	7.9	8.0

DATE	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED IRON (FE) (UG/L) 1/	DIS-SOLVED MAN-GANESE (MN) (UG/L) 1/	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED NITRATE (NO3) (MG/L)	DIS-SOLVED BORON (B) (UG/L) 1/	DIS-SOLVED SOLIDS (RESI-DUE AT 180°C) (MG/L)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	SPECIFIC CONDUCT-ANCE (µMHOS/CM AT 25°C)	PH (UNITS)	TEMPER-ATURE (DEG C)
06354988 - Bowman-Haley Lake near Haley, N. Dak.																					
JULY, 1969																					
11...	2.7	480	20	34	18	150	8.7	239	0	290	2.4	.1	2.5	2600	659	160	0	66	5.2	974	7.7	--
AUG., 1970																					
6...	9.2	50	--	84	55	380	7.1	483	0	840	4.9	.9	1.0	550	1690	440	39	65	7.9	2260	7.8	18.0
OCT.																					
12...	.3	0	10	31	25	210	8.7	285	0	400	2.5	.5	3.9	270	858	180	0	70	6.8	1270	7.9	7.5
FEB., 1971																					
24...	1.3	380	10	38	25	210	9.3	296	0	430	4.2	.9	3.1	350	873	200	0	69	6.5	1310	7.4	2.0
MAR.																					
17...	2.5	280	10	28	21	170	8.5	228	0	320	3.3	.8	2.5	30	639	160	0	69	5.9	1020	7.3	2.0

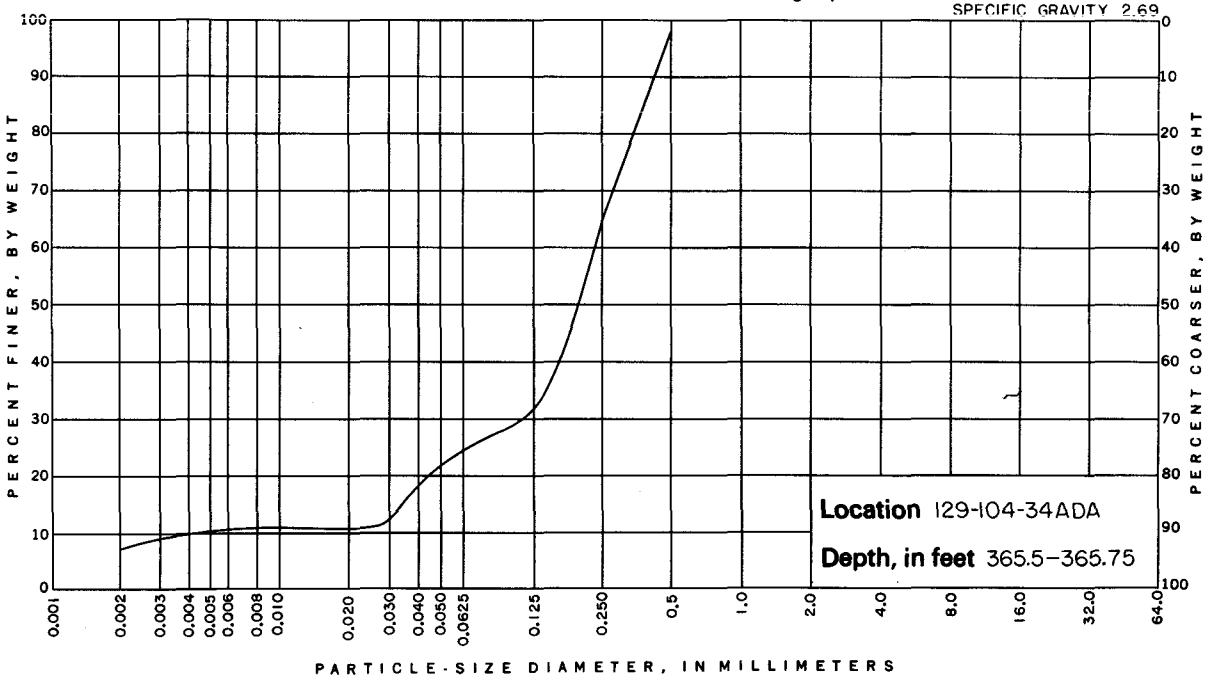
1/Iron, Manganese, and Boron are reported in micrograms per liter (µg/l).

TABLE 6.--Minor elements from selected wells and streams

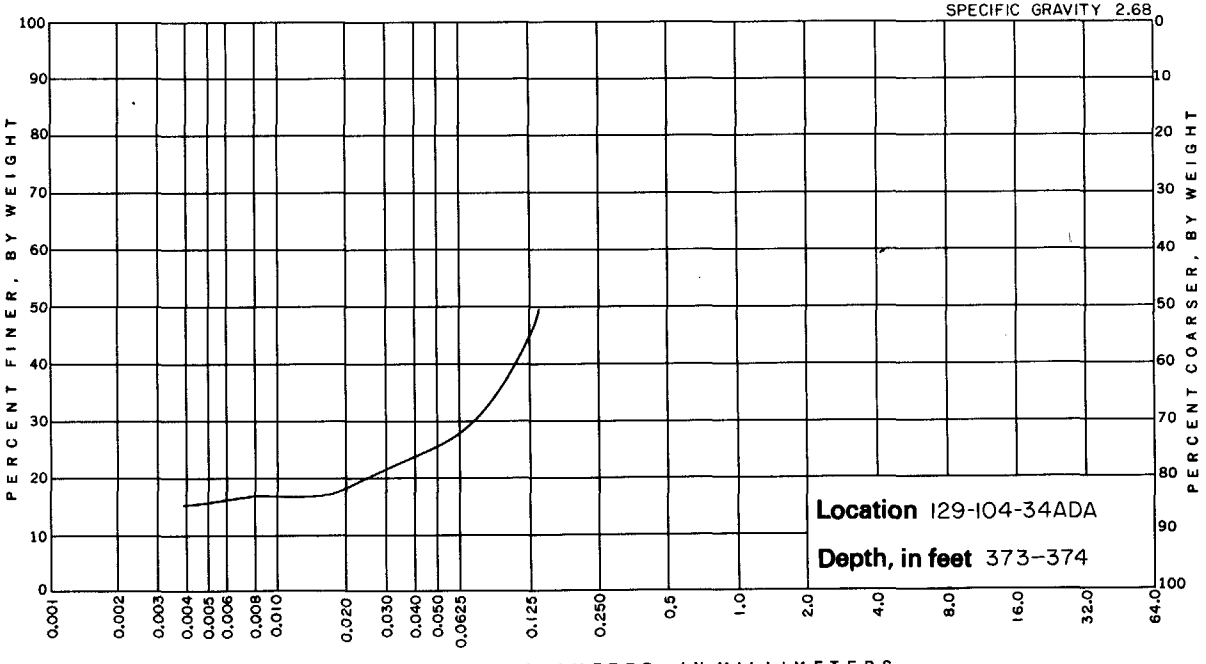
(Mineral constituents are in micrograms per liter (µg/l), except as indicated)

	Location				
	129-096-13ACA	131-102-14AAB	132-102-28AAA	Little Missouri River at Marmarth 06335500	Cedar Creek near Haynes 06352000
Geologic unit	211HCFH	211HCFH	125TRVL	--	--
Well depth (feet)	1140	1096	55	--	--
Date of sample	4-18-73	6-06-73	6-05-73	6-25-73	5-31-73
Dissolved aluminum (Al)	0	0	0	20	30
Dissolved phosphorus (P) (mg/l)	.23	.50	.010	.04	.02
Dissolved arsenic (As)	6	2	3	5	2
Dissolved barium (Ba)	0	0	0	0	0
Dissolved cadmium (Cd)	1	0	0	0	0
Dissolved chromium (Cr)	0	0	0	0	0
Dissolved cobalt (Co)	1	0	0	1	1
Dissolved copper (Cu)	190	5	18	10	10
Cyanide (CN) (mg/l)	.00	.01	.02	.00	.00
Dissolved lead (Pb)	4	0	4	1	1
Dissolved lithium (Li)	60	40	20	90	80
Dissolved mercury (Hg)	.0	.2	.2	.0	.0
Dissolved molybdenum (Mo)	10	4	--	5	4
Dissolved nickel (Ni)	2	1	2	13	40
Dissolved selenium (Se)	3	4	0	10	32
Dissolved silver (Ag)	0	1	1	0	0
Dissolved strontium (Sr)	90	60	460	610	2400
Dissolved vanadium (V)	4.4	.8	.4	.4	.0
Dissolved zinc (Zn)	10	10	100	10	10

TABLE 7. -- Particle-size distribution graphs.

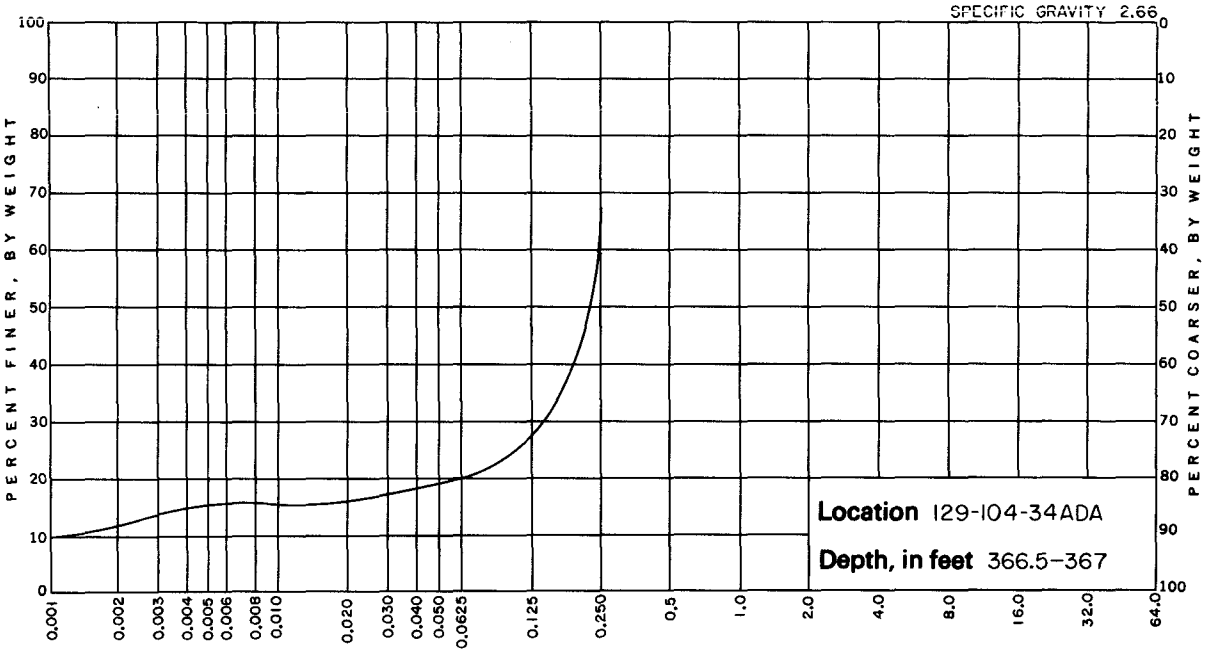


PERCENT OF SIZE	CLAY SIZES <0.004 mm	SILT SIZES 0.004-0.0625 mm	SAND SIZES					GRAVEL SIZES				
			V. FINE .0625-.125	FINE .125-.25	MEDIUM .25-.5	COARSE .5-1	V. COARSE 1-2	V. FINE 2-4	FINE 4-8	MEDIUM 8-16	COARSE 16-32	V. COARSE 32-64
	8.8	17.1	4.3	35.4	33.2	0.2						



PERCENT OF SIZE

CLAY SIZES <0.004 mm	SILT SIZES 0.004-0.0625 mm	SAND SIZES					GRAVEL SIZES				
		V. FINE .0625-.125	FINE .125-.25	MEDIUM .25-.5	COARSE .5-1	V. COARSE 1-2	V. FINE 2-4	FINE 4-8	MEDIUM 8-16	COARSE 16-32	V. COARSE 32-64
16.1	12.1	17.5	53.5	0.9	0.2						



PERCENT OF SIZE	CLAY SIZES <0.004 mm	SILT SIZES 0.004-0.0625 mm	SAND SIZES					GRAVEL SIZES				
			V. FINE .0625-.125	FINE .125-.25	MEDIUM .25-.5	COARSE .5-1	V. COARSE 1-2	V. FINE 2-4	FINE 4-8	MEDIUM 8-16	COARSE 16-32	V. COARSE 32-64
	14.1	7.0	5.9	40.4	32.3			0.2	0.1			

TABLE 8.--Hydraulic conductivity and porosity values determined by laboratory tests[1/]

Local well number	Sampling depth (feet below land surface)	Hydraulic conductivity (feet per day)[2/]	Porosity (percent)
131-094-20CBC1	224	1.3	35.5
131-094-20CBC1	698	1.1	34.2
131-094-20CBC1	1014	1.2	37.7
131-094-20CBC1	1016	1.9	35.7
131-094-20CBC1	1104	2.6	32
132-097-07CAB1	91	.006	30.5
132-097-07CAB1	573	.9	33.5
132-097-07CAB1	686	.6	35.7
132-097-07CAB1	1062	1.3	36.8
132-097-07CAB1	1144	1.7	37.3
132-097-07CAB1	1240	1.2	31.2

1/Analysis of sidewall cores by Core Laboratories, Inc.
2/Feet per day can be converted to meters per day by multiplying the feet per day by 0.3048.

TABLE 9.--Well location numbers and corresponding U.S. Geological Survey well numbers

LOCAL WELL NUMBER	U.S. GEOLOGICAL SURVEY WELL NUMBER (LAT-LONG)	LOCAL WELL NUMBER	U.S. GEOLOGICAL SURVEY WELL NUMBER (LAT-LONG)	LOCAL WELL NUMBER	U.S. GEOLOGICAL SURVEY WELL NUMBER (LAT-LONG)
129-091-06ACA	460135N1020629.1	129-094-01CCC	460104N1022330.1	129-095-18BBA1	460008N1023704.1
129-091-07AAA1	460056N1020610.1	129-094-04BCB	460137N1022716.1	129-095-18BBA2	460008N1023704.2
129-091-07AAA2	460056N1020610.2	129-094-07DCD	460013N1022859.1	129-095-18BBB	460008N1023713.1
129-091-07BB	460053N1020711.1	129-094-17BBC1	460000N1022831.1	129-095-18BCC	455949N1023713.1
129-091-08CCC	460010N1020600.1	129-094-17BBC2	460000N1022831.2	129-095-19BAA	455916N1023645.1
129-091-19BAA	455912N1020647.1	129-094-17CBB	455940N1022831.1	129-095-19DAC	455844N1023617.1
129-091-21BBB	455912N1020446.1	129-094-22AAA	455914N1022455.1	129-095-20BBB	455916N1023559.1
129-091-23BBD1	455905N1020207.1	129-094-22CAA	455848N1022533.1	129-095-23DBA	455849N1023129.1
129-091-23BBD2	455905N1020207.2	129-094-24ABD	455908N1022243.1	129-095-24ADD	455855N1022956.1
129-091-27DDB	455741N1020235.1	129-094-26DDD	455737N1022340.1	129-095-26ADD	455803N1023110.1
129-091-29BBB	455820N1020600.1	129-094-28DA	455753N1022615.1	129-095-27ADB	455810N1023234.1
129-092-02AAB	460148N1020849.1	129-094-29BBA	455822N1022822.1	129-095-27BAB	455823N1023311.1
129-092-06DCA	460109N1021359.1	129-094-29BBB	455822N1022831.1	129-095-28BDB	455811N1023426.1
129-092-06DDB	460109N1021350.1	129-094-31AAB	455731N1022850.1	129-095-29ADA	455811N1023454.1
129-092-06DDC	460102N1021350.1	129-094-32CCB	455652N1022831.1	129-095-29BCB	455811N1023559.1
129-092-10BCB	460043N1021101.1	129-094-33ABB	455731N1022638.1	129-095-29CCB	455745N1023559.1
129-092-22ADD	455853N1020955.1	129-094-33DCC	455645N1022638.1	129-095-30AAB	455824N1023617.1
129-092-26CCB	455742N1020946.1	129-095-02DAD	460118N1023110.1	129-095-30CBC	455752N1023713.1
129-092-26CCC	455735N1020946.1	129-095-03ADA	460137N1023225.1	129-095-31AAA	455732N1023608.1
129-092-27BBB	455820N1021101.1	129-095-06ABB	460152N1023635.1	129-095-31AAC	455726N1023617.1
129-092-30CBB	455755N1021446.1	129-095-06BBB	460152N1023713.1	129-095-31CBD	455700N1023704.1
129-092-32CAB	455703N1021312.1	129-095-06BCC	460132N1023713.1	129-095-31DBD	455700N1023627.1
129-093-08CBB1	460032N1022100.1	129-095-07BBB	460100N1023713.1	129-095-32CBA	455706N1023550.1
129-093-08CBB2	460032N1022100.2	129-095-07CCC	460015N1023713.1	129-095-33ACC	455712N1023407.1
129-093-08DCC	460012N1022023.1	129-095-08BCC	460040N1023559.1	129-095-34ADD	455712N1023225.1
129-093-11CDD	460011N1021648.1	129-095-10DCA	460020N1023243.1	129-095-35CBB	455705N1023215.1
129-093-11DCB	460018N1021639.1	129-095-11CCC1	460013N1023215.1	129-096-01ABC	460145N1023751.1
129-093-12CCP	460017N1021601.1	129-095-11CCC2	460013N1023215.2	129-096-01DAD1	460119N1023723.1
129-093-12CCC	460011N1021601.1	129-095-11CCC3	460013N1023215.3	129-096-01DAD2	460119N1023723.2
129-093-17BAA	460006N1022032.1	129-095-12AAB	460058N1023005.1	129-096-02DCC1	460106N1023906.1
129-093-18ADA	455953N1022110.1	129-095-12DDD	460013N1022956.1	129-096-02DCC2	460106N1023906.2
129-093-20DAD	455841N1021955.1	129-095-13BBD	460000N1023052.1	129-096-02DCC3	460106N1023906.3
129-093-21ADD	455854N1021840.1	129-095-13BCD	455947N1023052.1	129-096-02DDC1	460106N1023847.1
129-093-27BBA	455821N1021821.1	129-095-14BBB	460007N1023215.1	129-096-02DDC2	460106N1023847.2
129-093-27BDD	455802N1021803.1	129-095-15CCA	455928N1023321.1	129-096-03BAD	460145N1024030.1
129-093-28ABB1	455822N1021908.1	129-095-16CBC	455935N1023444.1	129-096-04DCB	460113N1024135.1
129-093-28ABB2	455822N1021908.2	129-095-17AAA	460007N1023454.1	129-096-06DAA	460126N1024337.1
129-093-28ABB3	455822N1021908.3	129-095-18AAA	460008N1023608.1	129-096-08AAB	460100N1024231.1
129-093-32BDC	455711N1022042.1	129-095-18AAB	460008N1023617.1	129-096-10BBB	460100N1024058.1
129-093-35ADD	455710N1021611.1	129-095-18BAA	460008N1023645.1	129-096-10CAA1	460034N1024030.1

LOCAL WELL NUMBER	U.S. GEOLOGICAL SURVEY WELL NUMBER (LAT-LONG)	LOCAL WELL NUMBER	U.S. GEOLOGICAL SURVEY WELL NUMBER (LAT-LONG)	LOCAL WELL NUMBER	U.S. GEOLOGICAL SURVEY WELL NUMBER (LAT-LONG)
129-096-10CAA2	460034N1024030.2	129-096-19BCB	455903N1024442.1	129-097-34AAA	455731N1024721.1
129-096-11CAD	460027N1023915.1	129-096-20AAA	455916N1024222.1	129-097-34DCC	455646N1024749.1
129-096-11CBC	460027N1023943.1	129-096-22ABB	455916N1024020.1	129-097-34DDB	455652N1024730.1
129-096-12BBC	460053N1023828.1	129-096-22CCC	455830N1024058.1	129-097-35BCC	455712N1024711.1
129-096-12BCC	460040N1023828.1	129-096-23AAA	455916N1023838.1	129-097-35CBB	455705N1024711.1
129-096-12CAD	460027N1023800.1	129-096-23ABB	455916N1023906.1	129-097-36AAB	455732N1024501.1
129-096-12DBB	460034N1023751.1	129-096-23DDB1	455837N1023847.1	129-098-01ABB	460151N1025247.1
129-096-12DCD1	460014N1023741.1	129-096-23DDB2	455837N1023847.2	129-098-04BCD	460131N1025702.1
129-096-12DCD2	460014N1023741.2	129-096-24BBB	455916N1023828.1	129-098-07DDA	460019N1025837.1
129-096-13AAD	460001N1023723.1	129-096-24BCC	455856N1023828.1	129-098-09BDD	460039N1025644.1
129-096-13ABD	460001N1023741.1	129-096-24CBD	455843N1023819.1	129-098-09CAA	460032N1025644.1
129-096-13ACA	455955N1023741.1	129-096-24CCC	455830N1023828.1	129-098-11CCC	460013N1025441.1
129-096-13ADD	455948N1023723.1	129-096-25BAD	455817N1023800.1	129-098-14DDD	455921N1025334.1
129-096-13BBB1	460008N1023828.1	129-096-26AAB	455824N1023847.1	129-098-15CDD	455921N1025528.1
129-096-13BBB2	460008N1023828.2	129-096-26CAA	455758N1023915.1	129-098-23AAA	455915N1025334.1
129-096-13BBB3	460008N1023828.3	129-096-26CAD	455751N1023915.1	129-098-27CCB	455743N1025556.1
129-096-13BCD	455948N1023819.1	129-096-29BDD	455804N1024259.1	129-098-29AAD	455816N1025721.1
129-096-13BDB	455955N1023809.1	129-096-32BDC	455712N1024309.1	129-098-30DCC	455736N1025905.1
129-096-13BDD1	455948N1023800.1	129-096-32DDA	455653N1024222.1	129-098-31ABB	455730N1025905.1
129-096-13BDD2	455948N1023800.2	129-096-33AAA1	455732N1024107.1	129-098-32ADB	455717N1025731.1
129-096-13BDD3	455948N1023800.3	129-096-33AAA2	455732N1024107.2	129-098-32DDB	455651N1025731.1
129-096-13BDD4	455948N1023800.4	129-096-35DCC	455646N1023906.1	129-098-35ABA	455731N1025353.1
129-096-13CCC1	455922N1023828.1	129-097-01DDD	460106N1024452.1	129-098-35ABC	455724N1025403.1
129-096-13CCC2	455922N1023828.2	129-097-06ABA	460151N1025123.1	129-098-35BBC	455724N1025441.1
129-096-13DDA	455929N1023723.1	129-097-08AAC	460053N1024959.1	129-099-04ABA1	460151N1030355.1
129-096-14ACD	455948N1023856.1	129-097-11DAC	460027N1024615.1	129-099-04ABA2	460151N1030355.2
129-096-14CBD	455935N1023934.1	129-097-11DDB	460021N1024615.1	129-099-04CBB	460125N1030442.1
129-096-14DAD1	455935N1023838.1	129-097-12AAC	460053N1024501.1	129-099-08BBB	460059N1030557.1
129-096-14DAD2	455935N1023838.2	129-097-14CBB	455941N1024711.1	129-099-11CCB	460019N1030213.1
129-096-14DBB	455942N1023906.1	129-097-15AAB	460007N1024730.1	129-099-18BAA	460007N1030643.1
129-096-14DDA	455929N1023838.1	129-097-18AAA	460007N1025104.1	129-099-18CCB	455928N1030711.1
129-096-14DDD1	455922N1023838.1	129-097-28ABB	455823N1024903.1	129-099-21AAB	455914N1030346.1
129-096-14DDD2	455922N1023838.3	129-097-29CBC	455750N1025055.1	129-099-22BCC	455855N1030327.1
129-096-15BAA	460008N1024030.1	129-097-29CCB	455744N1025055.1	129-099-24BBB	455914N1030058.1
129-096-15BAC	460001N1024039.1	129-097-30DAC	455750N1025113.1	129-099-26CA	455752N1030149.1
129-096-15DDB	455929N1024002.1	129-097-31AAC	455724N1025113.1	129-099-30CBB	455757N1030711.1
129-096-16CCC	455922N1024213.1	129-097-31CAD	455658N1025141.1	129-099-30CCB	455744N1030711.1
129-096-18AAA	460008N1024337.1	129-097-32AAA	455731N1024950.1	129-099-30CCC	455737N1030711.1
129-096-18CDD	455922N1024414.1	129-097-32BBA	455731N1025046.1	129-099-31BBC	455724N1030711.1
129-096-18DCC	455922N1024405.1	129-097-33AAA	455731N1024835.1	129-099-31BCB	455718N1030711.1

LOCAL WELL NUMBER	U.S. GEOLOGICAL SURVEY WELL NUMBER (LAT-LONG)
129-099-31CBC	455658N1030711.1
129-099-32BCC	455711N1030557.1
129-099-33BCA	455717N1030433.1
129-099-35BCD	455710N1030203.1
129-100-01BDC	460132N1030807.1
129-100-03CCC	460106N1031054.1
129-100-07DAA	460034N1031332.1
129-100-12DAA	455850N1031218.1
129-100-13DDA	455929N1030721.1
129-100-14ADB	455955N1030844.1
129-100-19AAA	455916N1031332.1
129-100-19ABB	455916N1031400.1
129-100-20DBD	455843N1031237.1
129-100-21DBA	455850N1031122.1
129-100-24DD	455833N1030725.1
129-100-25DAA1	455758N1030721.1
129-100-25DAA2	455758N1030721.2
129-100-26ADA	455811N1030835.1
129-100-26ADD	455804N1030835.1
129-100-26BDC	455804N1030921.1
129-100-28DDD	455738N1031104.1
129-100-29DCC	455738N1031246.1
129-100-35CDD	455646N1030912.1
129-101-02CCC	460105N1031707.1
129-101-04BCC1	460131N1031936.1
129-101-04BCC2	460131N1031936.2
129-101-06DCC	460104N1032128.1
129-101-07CCC	460012N1032205.1
129-101-10BBB	460059N1031821.1
129-101-10BBD	460052N1031812.1
129-101-12DCA	460020N1031505.1
129-101-13AAA1	460007N1031447.1
129-101-13AAA2	460007N1031447.2
129-101-13AC	455951N1031510.1
129-101-13DDD	455922N1031447.1
129-101-27BBB	455822N1031821.1
129-101-31AC	455713N1032123.1
129-101-32BCD	455710N1032041.1
129-102-01ADD	460130N1032215.1
129-102-11CAA	460031N1032407.1
129-102-14CDD	455920N1032407.1
129-102-20CCC	455827N1032819.1
129-102-24CCD	455827N1032311.1
129-102-27AAA	455821N1032444.1
129-102-28BAD	455814N1032636.1
129-102-29CCA	455741N1032809.1
129-102-35BBB	455729N1032435.1
129-103-10DCC	460012N1033240.1
129-103-13ADA	455951N1032943.1
129-103-23BDD	455853N1033135.1
129-103-35BBB	455729N1033203.1
129-104-03DDD	460106N1033940.1
129-104-08DDD	460013N1034210.1
129-104-16BB	460004N1034156.1
129-104-17ADD1	455947N1034210.1
129-104-17ADD2	455947N1034210.2
129-104-23BCC	455855N1033931.1
129-104-29BA	455819N1034252.1
129-104-34ADA	455718N1033940.1
129-104-34ADD1	455711N1033940.1
129-104-34ADD2	455711N1033940.2
129-104-34ADD3	455711N1033940.3
129-104-34DAD	455658N1033940.1
129-105-02CAA	460125N1034632.1
129-105-17DDD	455923N1034940.1
129-105-20ABC	455910N1035008.1
129-105-25BCC1	455803N1034545.1
129-105-25BCC2	455803N1034545.2
129-105-31DDD	455647N1035055.1
129-106-04CA	460126N1035636.1
129-106-09ADC	460044N1035603.1
129-106-14AAA	460010N1035324.1
129-106-16ADB	455958N1035603.1
129-106-26DDB	455747N1035334.1
130-091-04DDD	460614N1020342.1
130-091-08ADD	460548N1020456.1
130-091-09BAB	460608N1020428.1
130-091-19ADA	460410N1020611.1
130-091-24BBA	460423N1020054.1
130-091-26CBD	460258N1020208.1
130-091-29ADB	460318N1020506.1
130-091-30CCD	460246N1020707.1
130-091-30DCB	460253N1020639.1
130-091-33CCD	460153N1020438.1
130-091-34ABB	460238N1020255.1
130-092-02DCC	460615N1020909.1
130-092-04AAD	460655N1021111.1
130-092-07CCD	460524N1021437.1
130-092-08ADA	460556N1021226.1
130-092-09BBC	460603N1021216.1
130-092-10CDC	460523N1021043.1
130-092-15CCB	460437N1021101.1
130-092-17CBC	460444N1021331.1
130-092-18ADD	460457N1021341.1
130-092-18DB	460448N1021404.1
130-092-22CBB	460358N1021101.1
130-092-22CCC	460338N1021101.1
130-092-27AAB	460332N1021005.1
130-092-27BBA1	460332N1021052.1
130-092-27BBA2	460332N1021052.2
130-092-27BBA3	460332N1021052.3
130-092-31ABB	460240N1021409.1
130-092-34BBB	460240N1021101.1
130-093-01AAA	460702N1021456.1
130-093-01CCD	460616N1021552.1
130-093-05CBB	460637N1022101.1
130-093-06AAA	460703N1022111.1
130-093-20CAA	460400N1022033.1
130-093-20DAA	460400N1021956.1
130-093-25BAC	460326N1021543.1
130-093-25BDB	460320N1021543.1
130-093-25BDD	460313N1021533.1
130-093-27AAC	460327N1021735.1
130-093-28BCC	460314N1021946.1
130-093-30DBB	460308N1022139.1
130-093-31ADD	460222N1022111.1
130-093-32ACD	460222N1022014.1
130-093-32CDD	460156N1022033.1
130-093-34DAA	460215N1021726.1
130-094-03CDD	460618N1022533.1

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130-094-05BDC	460645N1022813.1
130-094-06BCA	460652N1022937.1
130-094-07CBC	460540N1022946.1
130-094-07DDD1	460526N1022841.1
130-094-07DDD2	460526N1022841.2
130-094-10DAC	460539N1022505.1
130-094-12ADD	460552N1022226.1
130-094-12CAA	460545N1022303.1
130-094-15DCC	460434N1022524.1
130-094-19DCD	460342N1022859.1
130-094-20CDD	460342N1022803.1
130-094-22BCC	460408N1022601.1
130-094-23ADD	460407N1022341.1
130-094-25DBA	460308N1022244.1
130-094-29CCC	460249N1022831.1
130-094-30BCC	460316N1022946.1
130-094-31BCC	460223N1022946.1
130-094-36CAD	460209N1022303.1
130-095-01CDC	460619N1023042.1
130-095-04BBB	460705N1023445.1
130-095-06BBB	460706N1023714.1
130-095-06DDD	460620N1023609.1
130-095-07CCB	460534N1023714.1
130-095-07CCC	460528N1023714.1
130-095-08DDD	460527N1023454.1
130-095-09BBB	460613N1023445.1
130-095-09DDC	460527N1023349.1
130-095-11DCC1	460527N1023138.1
130-095-11DCC2	460527N1023138.2
130-095-12BCA	460559N1023052.1
130-095-12BCC	460553N1023101.1
130-095-16CBB	460455N1023445.1
130-095-19DAD	460356N1023609.1
130-095-23ABB	460428N1023138.1
130-095-25DAC	460303N1023005.1
130-095-28AAA	460336N1023340.1
130-095-30ACD	460317N1023628.1
130-095-30BBB	460336N1023714.1
130-095-31BBA	460244N1023705.1
130-095-31DDB	460205N1023618.1
130-095-32CCD	460158N1023550.1
130-096-01BBB	460706N1023829.1
130-096-03BCB	460653N1024058.1
130-096-06BAB	460706N1024424.1
130-096-07ABA	460613N1024356.1
130-096-09ACD	460554N1024126.1
130-096-10BBC	460607N1024058.1
130-096-10BCC	460554N1024058.1
130-096-11DDD	460528N1023838.1
130-096-12AAA	460613N1023724.1
130-096-12DDC	460528N1023733.1
130-096-14AAB	460521N1023848.1
130-096-15BCC	460501N1024058.1
130-096-17CDD	460435N1024300.1
130-096-21DDD	460343N1024108.1
130-096-22DAD	460356N1023953.1
130-096-32AAB	460244N1024232.1
130-096-32CCC	460158N1024328.1
130-096-33BAB	460244N1024154.1
130-096-33DCC	460158N1024136.1
130-096-34BBA	460244N1024049.1
130-096-34CDD	460158N1024030.1
130-096-35ACD	460224N1023857.1
130-097-02CCC	460620N1024711.1
130-097-04AAC	460659N1024844.1
130-097-05ADD	460646N1024949.1
130-097-14BCB	460508N1024711.1
130-097-14DDC	460435N1024615.1
130-097-17DDA	460442N1024949.1
130-097-19AAA	460429N1025103.1
130-097-20AAA	460429N1024949.1
130-097-22ADD	460409N1024720.1
130-097-22CCC	460343N1024825.1
130-097-22DDD1	460343N1024720.1
130-097-22DDD2	460343N1024720.2
130-097-22DDD3	460343N1024720.3
130-097-22DDD4	460343N1024720.4
130-097-22DDD5	460343N1024720.5
130-097-23CBB	460448N1024710.1
130-097-23CCC1	460343N1024711.1
130-097-23CCC2	460343N1024711.2
130-097-24CCC	460343N1024557.1
130-097-25CBC1	460304N1024557.1
130-097-25CBC2	460304N1024557.2
130-097-26ADD	460317N1024606.1
130-097-29DCB	460257N1025017.1
130-097-30DDA	460257N1025103.1
130-097-31CBC	460211N1025208.1
130-097-32ADC	460224N1024958.1
130-097-34AAD	460238N1024720.1
130-097-35BCB1	460231N1024711.1
130-097-35BCB2	460231N1024711.2
130-097-35CCD	460158N1024702.1
130-098-01CDD	460620N1025255.1
130-098-03DAD1	460633N1025448.1
130-098-03DAD2	460633N1025448.2
130-098-04CBB	460639N1025708.1
130-098-04DBB	460639N1025631.1
130-098-04DCC	460619N1025631.1
130-098-07BDD	460553N1025910.1
130-098-14DBB	460455N1025401.1
130-098-17DAA	460454N1025718.1
130-098-19CDD	460342N1025910.1
130-098-21CCC1	460342N1025708.1
130-098-21CCC2	460342N1025708.2
130-098-24ACA	460416N1025236.1
130-098-26BAC	460330N1025420.1
130-098-27ABD	460329N1025506.1
130-098-28BBD	460329N1025659.1
130-098-34BBA	460244N1025544.1
130-098-35DDA	460205N1025333.1
130-099-03ABC	460658N1030246.1
130-099-03CDD	460619N1030256.1
130-099-04BBB	460705N1030439.1
130-099-12CCB	460533N1030053.1
130-099-15BCC	460501N1030324.1
130-099-17AAA1	460520N1030448.1
130-099-17AAA2	460520N1030448.2
130-099-18ADA	460507N1030604.1
130-099-19AAA	460428N1030604.1

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130-099-20ADD	460409N1030448.1
130-099-21DBD	460356N1030352.1
130-099-23AAD	460422N1030103.1
130-099-23BCC	460409N1030209.1
130-099-28BBA	460336N1030430.1
130-100-02AAA	460705N1030833.1
130-100-02BCC	460645N1030939.1
130-100-02DDA1	460625N1030833.1
130-100-02DDA2	460625N1030833.2
130-100-06DAA	460638N1031332.1
130-100-10BDD	460552N1031025.1
130-100-21DAA	460401N1031103.1
130-100-23ABA	460428N1030852.1
130-100-24DAB	460402N1030728.1
130-100-29DDD	460249N1031217.1
130-100-31CBC	460209N1031437.1
130-101-03BBB	460704N1031821.1
130-101-06CBC1	460631N1032205.1
130-101-06CBC2	460631N1032205.2
130-101-12BAA	460612N1031524.1
130-101-14BAA	460519N1031639.1
130-101-17BBA	460519N1032041.1
130-101-17BBD	460513N1032041.1
130-101-21CCB	460348N1031936.1
130-101-24DDD	460342N1031447.1
130-101-25AAA	460335N1031447.1
130-101-25ADD	460316N1031447.1
130-101-26DAA	460309N1031601.1
130-102-05DAD	460630N1032713.1
130-102-11AAA1	460611N1032329.1
130-102-11AAA2	460611N1032329.2
130-102-13CC	460437N1032316.1
130-102-13DCD	460434N1032233.1
130-102-15DDD1	460433N1032444.1
130-102-15DDD2	460433N1032444.2
130-102-23CDA	460348N1032407.1
130-102-24BBB1	460427N1032320.1
130-102-24BBB2	460427N1032320.2
130-102-24BBB3	460427N1032320.3
130-103-01BCC1	460643N1033048.1
130-103-01BCC2	460643N1033048.2
130-103-02DAA	460637N1033058.1
130-103-03AAA	460705N1033212.1
130-103-06CCB	460626N1033703.1
130-103-06CCC1	460619N1033703.1
130-103-06CCC2	460619N1033703.2
130-103-09BBC	460605N1033433.1
130-103-11CCC	460526N1033203.1
130-103-14CCB	460440N1033203.1
130-103-14CCD	460433N1033154.1
130-103-15ADA	460506N1033213.1
130-103-24AAA1	460426N1032943.1
130-103-24AAA2	460426N1032943.2
130-103-28ABD	460329N1033346.1
130-103-29CBB	460310N1033548.1
130-103-31AAA	460244N1033558.1
130-103-34CD	460200N1033255.1
130-103-34DDD	460157N1033213.1
130-103-35DAA	460216N1033058.1
130-104-03ABB1	460705N1034010.1
130-104-03ABB2	460705N1034010.2
130-104-03DDD1	460619N1033942.1
130-104-03DDD2	460619N1033942.2
130-104-07DBA	460547N1034346.1
130-104-13DCD	460435N1033731.1
130-104-13DDC	460435N1033722.1
130-104-15ABD	460514N1034001.1
130-104-15CAC	460448N1034029.1
130-104-18DBA	460455N1034346.1
130-104-21BBA	460429N1034153.1
130-104-23ADA1	460415N1033828.1
130-104-23ADA2	460415N1033828.2
130-104-26DCD	460251N1033846.1
130-104-32BBD	460238N1034309.1
130-104-33DCC	460159N1034125.1
130-105-01CCD1	460620N1034538.1
130-105-01CCD2	460620N1034538.2
130-105-13BAD	460515N1034519.1
130-105-22AAA	460430N1034712.1
130-105-25BBB	460337N1034547.1
130-106-29CDD	460255N1035747.1
130-106-29DCC	460255N1035738.1
130-106-29DCD	460255N1035728.1
130-106-29DDC	460255N1035719.1
130-106-29DDD	460254N1035710.1
130-106-3DCA	460629N1035459.1
130-106-3DCD	460622N1035459.1
130-106-3DDA	460629N1035441.1
131-091-07DAD	461050N1020611.1
131-091-10CBC	461050N1020331.1
131-091-10CCC	461037N1020331.1
131-091-12CCC	461037N1020100.1
131-091-13CCB	460951N1020100.1
131-091-15BB	461027N1020326.1
131-091-15CCC	460944N1020331.1
131-091-18AAA	461030N1020611.1
131-091-22CDC	460852N1020312.1
131-091-26AAA	460845N1020110.1
131-091-27BBD	460839N1020321.1
131-092-08BBA	461123N1021322.1
131-092-10BBC	461116N1021101.1
131-092-11ABC	461116N1020909.1
131-092-11BBC	461116N1020946.1
131-092-12DAA	461056N1020726.1
131-092-14DAD1	460958N1020841.1
131-092-14DAD2	460958N1020841.2
131-092-20DAD	460906N1021226.1
131-092-26CBC	460813N1020946.1
131-092-32AAA	460754N1021226.1
131-092-35BCC	460734N1020946.1
131-093-07AAA1	461124N1022108.1
131-093-07AAA2	461124N1022108.2
131-093-10AAA	461124N1021725.1
131-093-12DCD	461038N1021514.1
131-093-21AAA1	460939N1021839.1
131-093-21AAA2	460939N1021839.2
131-093-21AAA3	460939N1021839.3
131-094-06CDC	461132N1022924.1
131-094-07DAA	461059N1022837.1
131-094-13CCD	460946N1022319.1

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131-094-20CBC1	460908N1022827.1
131-094-20CBC2	460908N1022827.2
131-094-20CBC3	460908N1022827.3
131-094-20CCB	460901N1022827.1
131-094-24ADD	460920N1022223.1
131-094-32BBB	460756N1022827.1
131-095-02BBB	461218N1023213.1
131-095-02DBB	461152N1023135.1
131-095-04BBB	461218N1023444.1
131-095-10ABB	461126N1023251.1
131-095-10DBA	461059N1023241.1
131-095-12BAB1	461126N1023039.1
131-095-12BAB2	461126N1023039.2
131-095-15DCC	460948N1023251.1
131-095-22BAA	460941N1023300.1
131-095-24CBC	460909N1023058.1
131-095-27CCB	460810N1023328.1
131-095-28BBC1	460843N1023444.1
131-095-28BBC2	460843N1023444.2
131-095-30DAD	460816N1023608.1
131-096-02DBD	461145N1023857.1
131-096-04DDD	461133N1024107.1
131-096-05AAD	461212N1024221.1
131-096-14ADD1	461014N1023838.1
131-096-14ADD2	461014N1023838.2
131-096-14ADD3	461014N1023838.3
131-096-15AAD	461027N1023952.1
131-096-15CCC1	460948N1024057.1
131-096-15CCC2	460948N1024057.2
131-096-18ADD	461015N1024335.1
131-096-21DDA	460903N1024107.1
131-096-26AAA	460849N1023838.1
131-096-27BCC1	460830N1024057.1
131-096-27BCC2	460830N1024057.2
131-096-30DCD	460804N1024354.1
131-096-32ACA	460745N1024240.1
131-097-07CCC	461041N1025208.1
131-097-10AAA	461125N1024720.1
131-097-10BBB	461127N1024824.1
131-097-10DDD	461041N1024719.1
131-097-14CCB	460955N1024710.1
131-097-15CBD	461002N1024815.1
131-097-17BCC	461015N1025054.1
131-097-19DCC1	460857N1025131.1
131-097-19DCC2	460857N1025131.2
131-097-19DCC3	460857N1025131.3
131-097-19DCC4	460857N1025131.4
131-097-20ADD	460923N1024948.1
131-097-20DAD	460910N1024948.1
131-097-26BBC1	460844N1024710.1
131-097-26BBC2	460844N1024710.2
131-097-26DDD	460804N1024604.1
131-098-01BCC1	461159N1025323.1
131-098-01BCC2	461159N1025323.2
131-098-01BCC3	461159N1025323.3
131-098-01BCC4	461159N1025323.4
131-098-07BCC	461106N1025937.1
131-098-08CDD	461040N1025754.1
131-098-11ACC	461107N1025401.1
131-098-12BCC	461107N1025323.1
131-098-23CCC	460857N1025438.1
131-098-23DAD1	460910N1025333.1
131-098-23DAD2	460910N1025333.2
131-098-26CCD	460805N1025429.1
131-098-31DDA	460719N1025832.1
131-098-36DAA	460733N1025218.1
131-099-04DAA	461151N1030331.1
131-099-07BBC	461110N1030700.1
131-099-10CCC	461040N1030321.1
131-099-12BCB	461113N1030052.1
131-099-18AAA	461033N1030600.1
131-099-22CCC1	460856N1030321.1
131-099-22CCC2	460856N1030321.2
131-099-34DAA	460734N1030212.1
131-100-09CCD	461039N1031156.1
131-100-12BBB	461125N1030820.1
131-100-22DDA	460901N1030945.1
131-100-23DAD	460908N1030830.1
131-100-23DBA	460915N1030848.1
131-100-23DBB	460915N1030858.1
131-100-24ABB	460941N1030743.1
131-100-26ABA	460849N1030848.1
131-100-29AAA	460848N1031215.1
131-100-29BBB1	460848N1031320.1
131-100-29BBB2	460848N1031320.2
131-100-31BBB	460756N1031435.1
131-101-08CCC	461036N1032050.1
131-101-18BCC1	461010N1032205.1
131-101-18BCC2	461010N1032205.2
131-101-19CCA	460858N1032156.1
131-101-26BBB	460846N1031705.1
131-101-26CBC	460814N1031705.1
131-101-26CCC	460801N1031705.1
131-101-28BDB	460833N1031917.1
131-101-30CCB	460806N1032205.1
131-101-30CCC1	460759N1032205.1
131-101-30CCC2	460759N1032205.2
131-101-36CD	460712N1031527.1
131-102-01DBB	461148N1032243.1
131-102-01DDD	461128N1032215.1
131-102-02DDA	461135N1032329.1
131-102-03DDD	461130N1032442.1
131-102-07DDD1	461039N1032828.1
131-102-07DDD2	461039N1032828.2
131-102-07DDD3	461039N1032828.3
131-102-09BCC	461104N1032704.1
131-102-11BDC	461103N1032416.1
131-102-11BDD	461103N1032407.1
131-102-11CAA	461057N1032407.1
131-102-11CAB	461057N1032416.1
131-102-11CAD1	461050N1032407.1
131-102-11CAD2	461050N1032407.2
131-102-11CAD3	461050N1032407.3
131-102-11CBA	461057N1032425.1
131-102-11CDB	461044N1032416.1
131-102-11DAB	461056N1032339.1
131-102-11DAD	461050N1032329.1
131-102-11DBD1	461050N1032348.1
131-102-11DBD2	461050N1032348.2
131-102-11DBD3	461050N1032348.3

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131-102-11DCA1	461043N1032348.1
131-102-11DCA2	461043N1032348.2
131-102-11DDA	461043N1032329.1
131-102-11DDC	461037N1032339.1
131-102-12ABA	461122N1032233.1
131-102-13CCC1	460945N1032320.1
131-102-13CCC2	460945N1032320.2
131-102-14AAB	461030N1032339.1
131-103-08AB	461122N1033506.1
131-103-08CAC1	461052N1033530.1
131-103-08CAC2	461052N1033530.2
131-103-14CCD	460947N1033154.1
131-103-20CBA	460915N1033539.1
131-103-20DBA	460915N1033501.1
131-103-21DBC	460908N1033356.1
131-103-25AB	460845N1033006.1
131-103-35CCD	460711N1033154.1
131-104-09AA	461122N1034103.1
131-104-10AAA	461125N1033943.1
131-104-10ADA	461112N1033943.1
131-104-14BAC	461027N1033915.1
131-104-20DBC	460909N1034242.1
131-104-26CCC	460804N1033934.1
131-104-27DD	460807N1033948.1
131-104-28AAA1	460849N1034059.1
131-104-28AAA2	460849N1034059.2
131-104-33BBB	460758N1034205.1
131-105-18DCC	460950N1035131.1
131-105-21ACC	460923N1034900.1
131-105-23CDD	460857N1034638.1
131-105-33BDB	460746N1034919.1
131-105-33DCC	460713N1034900.1
131-106-03DAA	461154N1035447.1
131-106-04DCC	461135N1035630.1
131-106-10AAB	461128N1035457.1
131-106-11AAC	461121N1035342.1
131-106-11BBC	461121N1035438.1
131-106-11BBD	461121N1035429.1
131-106-13CBB	461009N1035324.1
131-106-14ACD	461016N1035352.1
131-106-14BAB	461036N1035419.1
131-106-14BDD	461016N1035410.1
132-095-03CCC	461645N1023330.1
132-095-08AAC	461632N1023503.1
132-095-12DCD	461553N1023013.1
132-095-17AAA	461546N1023454.1
132-095-20AAD	461448N1023454.1
132-095-28DCC	461316N1023407.1
132-095-31CBB	461244N1023714.1
132-095-33CCD	461224N1023435.1
132-096-08CAD	461605N1024300.1
132-096-15DAA	461521N1023953.1
132-096-16DDA	461507N1024108.1
132-096-18BAA	461544N1024414.1
132-096-22ABC1	461448N1024021.1
132-096-22ABC2	461448N1024021.2
132-096-22BBD	461447N1024049.1
132-096-22DDA	461415N1023953.1
132-096-23BBC	461448N1023944.1
132-096-23BBD	461448N1023934.1
132-096-24ADA	461443N1023724.1
132-096-26BBA1	461402N1023934.1
132-096-26BBA2	461402N1023934.2
132-096-28AAD	461355N1024108.1
132-096-34ADD	461250N1023953.1
132-097-07CAB1	461614N1025152.1
132-097-07CAB2	461614N1025152.2
132-097-07CAB3	461614N1025152.3
132-097-07CAB4	461614N1025152.4
132-097-08DAA1	461614N1024950.1
132-097-08DAA2	461614N1024950.2
132-097-09CCB	461601N1024941.1
132-097-15CBC	461515N1024826.1
132-097-17ADD	461528N1024950.1
132-097-18CDD	461502N1025142.1
132-097-20AAA	461455N1024950.1
132-097-23BAA	461455N1024644.1
132-097-30AAD	461357N1025105.1
132-097-32CBC	461238N1025056.1
132-097-34BCB	461257N1024826.1
132-098-04DCB1	461654N1025629.1
132-098-04DCB2	461654N1025629.2
132-098-09BAA	461641N1025639.1
132-098-09BBA	461641N1025657.1
132-098-11DAA	461615N1025334.1
132-098-15CBC	461516N1025552.1
132-098-21CCB	461417N1025706.1
132-098-23CDD	461411N1025411.1
132-098-27CBA	461338N1025543.1
132-098-34DDD	461226N1025448.1
132-099-08DAA	461615N1030444.1
132-099-10BCB	461629N1030320.1
132-099-18DCC	461502N1030628.1
132-099-28ACB	461351N1030357.1
132-099-31CDD	461225N1030637.1
132-099-32DD	461229N1030449.1
132-099-32DDC1	461226N1030454.1
132-099-32DDC2	461226N1030454.2
132-099-34DBC	461240N1030242.1
132-100-09BAB	461638N1031205.1
132-100-10CDD	461554N1031022.1
132-100-14ADB	461536N1030839.1
132-100-18DDC	461458N1031338.1
132-100-22CBB1	461428N1031050.1
132-100-22CBB2	461428N1031050.2
132-100-32CCD	461222N1031310.1
132-100-35DDD	461226N1030830.1
132-101-08CAA	461611N1032022.1
132-101-10DDD	461552N1031714.1
132-101-12BB	461635N1031545.1
132-101-12CCC	461552N1031549.1
132-101-12DDD	461552N1031444.1
132-101-14AAA	461546N1031559.1
132-101-15DA	461516N1031719.1
132-101-28BDC	461340N1031916.1
132-101-30DDD	461314N1032100.1
132-101-32BB	461304N1032045.1
132-101-35AA	461305N1031604.1
132-102-07BC	461623N1032931.1
132-102-09AA	461635N1032604.1

LOCAL WELL NUMBER	U.S. GEOLOGICAL SURVEY WELL NUMBER (LAT-LONG)
132-102-09DDD1	461552N1032600.1
132-102-09DDD2	461552N1032600.2
132-102-10BBB	461638N1032550.1
132-102-12AAA	461636N1032215.1
132-102-12CCC	461551N1032320.1
132-102-13CA	461515N1032257.1
132-102-13CDD	461459N1032252.1
132-102-18ADD	461527N1032830.1
132-102-18BAA	461547N1032907.1
132-102-20BDD	461434N1032752.1
132-102-21DAA	461427N1032600.1
132-102-22CBB	461427N1032550.1
132-102-22DBB	461427N1032513.1
132-102-23AD	461436N1032334.1
132-102-24BBB1	461452N1032320.1
132-102-24BBB2	461452N1032320.2
132-102-24BBB3	461452N1032320.3
132-102-26DDD	461314N1032330.1
132-102-28AAA	461401N1032600.1
132-102-29CAA	461336N1032752.1
132-102-32DBB	461243N1032743.1
132-102-34CCC	461223N1032550.1
132-102-34DCC	461222N1032513.1
132-103-15AD	461530N1033220.1
132-103-19ACD	461433N1033621.1
132-103-20BBB	461453N1033553.1
132-103-21CCA	461414N1033428.1
132-103-22BDD	461434N1033253.1
132-103-25DD	461319N1032949.1
132-103-26DCC	461315N1033129.1
132-103-27BDD	461341N1033253.1
132-103-35BCC	461249N1033206.1
132-104-09CDD	461553N1034138.1
132-104-12BCC	461618N1033823.1
132-104-12CC	461555N1033818.1
132-104-12CCC	461552N1033823.1
132-104-13AA	461542N1033722.1
132-104-14CCC	461500N1033937.1
132-104-15CDD	461501N1034023.1
132-104-17CCC	461502N1034321.1
132-104-21AAA	461454N1034101.1
132-104-21CA	461425N1034143.1
132-104-24DBB	461427N1033746.1
132-104-27ADA	461348N1033947.1
132-104-32DAA	461244N1034216.1
132-104-34BAA	461309N1034024.1
132-104-35BBB	461309N1033937.1
132-105-08BBD	461633N1035041.1
132-105-15AA	461544N1034719.1
132-105-16BDB	461534N1034917.1
132-105-17AAA	461547N1034945.1
132-105-21ACC	461436N1034858.1
132-105-24CCC	461410N1034550.1
132-105-25DCC	461317N1034513.1
132-106-15CAA	461523N1035521.1
132-106-15CAB	461523N1035531.1
132-106-15CBA1	461523N1035540.1
132-106-15CBA2	461523N1035540.2
132-106-15DAB	461523N1035453.1
132-106-15DBA	461523N1035503.1
132-106-15DBB	461523N1035512.1
132-106-20AAA	461458N1035713.1
132-106-24CAD	461424N1035252.1
132-106-24CCC	461411N1035320.1
132-106-26BDC	461345N1035416.1
132-106-27CD	461323N1035526.1
132-106-35DBA	461246N1035348.1
132-106-35DBB	461246N1035357.1