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NORTH DAKOTA GEOLOGICAL SURVEY

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COUNTY GROUND WATER STUDIES 15 — PART II

NORTH DAKOTA STATE WATER COMMISSION

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GROUND WATER BASIC DATA

MERCER and OLIVER COUNTIES, NORTH DAKOTA

by

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U. S. Geological Survey

Prepared by the United States Geological Survey in cooperation with the North Dakota State Water Commission, North Dakota Geological Survey, Mercer County Water Management District, and Oliver County Management District.

GRAND FORKS, NORTH DAKOTA

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GEOLOGY AND GROUND WATER RESOURCES OF MERCER AND OLIVER COUNTIES, NORTH DAKOTA

PART II - GROUND WATER BASIC DATA

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INTRODUCTION

Purpose and Scope

The purpose of the hydrologic investigation in Mercer and Oliver Counties, N. Dak. (fig. 1), is to determine the quantity and quality of ground water available for municipal, domestic, livestock, industrial, and irrigation uses. Specifically, within the amount of financing and time available the scope is to: (1) determine the location, extent, and nature of the major aquifers; (2) evaluate the occurrence and movement of ground water, including the sources of recharge and discharge; (3) estimate the quantities of water stored in the aquifers; (4) estimate the potential yields to wells tapping the major aquifers; and (5) determine the chemical quality of the ground water.

The investigation was made cooperatively by the U.S. Geological Survey, North Dakota State Water Commission, North Dakota Geological Survey, and Mercer and Oliver Counties Water Management Districts. The results of the investigation will be published in three separate parts of the bulletin series of the North Dakota Geological Survey and the county ground-water studies series of the North Dakota State Water Commission. Part I is an interpretive report describing the geology, Part II is a compilation of the ground-water basic data, and Part III is an interpretive report describing the ground-water resources. Part II makes available hydrologic data collected during the county investigation and functions as a reference for Parts I and III.

The information in this report was collected chiefly between 1966 and 1969, and consists of the following: (1) Data on about 1,300 wells and test holes; (2) data on 9 springs; (3) water-level measurements in 29 observation wells; (4) logs of 299 test holes and selected wells; (5) chemical analyses of 160 water samples, and (6) 25 particle-size distribution curves.

The data in this report are useful for predicting geologic and ground-water conditions in Mercer and Oliver Counties. For example; a person considering the construction of a new well can locate the proposed site on plate 1 (in pocket). The characteristics of nearby wells and springs may be determined from tables 1 and 2, and the water-level fluctuations in the area may be determined from table 3. The type of material encountered

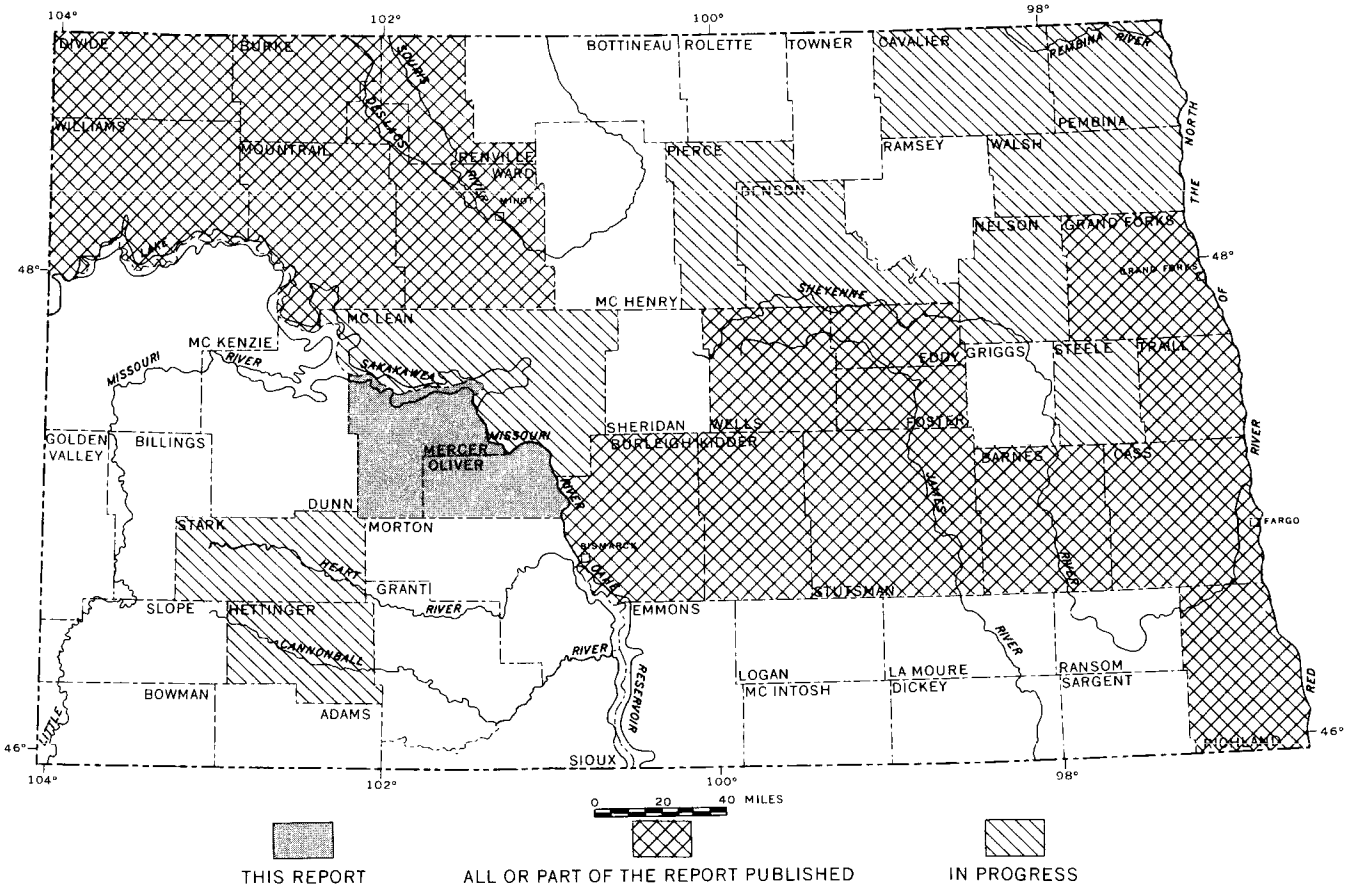

FIGURE 1.—County ground-water studies in North Dakota.

in nearby wells may be determined from table 4, and the chemical quality of water in adjacent wells may be determined from table 5. Extrapolations based on these data should be conservative because of the irregular distribution of the water-bearing rocks.

Well-Numbering System

The wells, springs, and test holes listed in the tables are numbered according to a system based on the location in the public land classification of the United States Bureau of Land Management. The 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 tract). For example, well 146-90-15DAA is in the NE¼NE¼SE¼ sec. 15, T. 146 N., R. 90 W. Consecutive terminal numerals are added if more than one well is recorded within a 10-acre tract. The location of each well, spring, and test hole listed in the tables is shown on plate 1.

Acknowledgments

The collection of data for this report was made possible by the cooperation of the County Commissioners, local residents, the U.S. Bureau of Reclamation, and electric power companies in the area. Bandy Drilling Co., Ray Mohl, Lloyd Erickson, Opp Drilling Co., and Mann Drilling Co. furnished logs and other information published in this report. L. L. Froelich, geologist with the North Dakota State Water Commission, logged most of the test holes.

EXPLANATION OF TABLES

Observation wells were developed in selected test holes for water-level measurements and quality-of-water sampling. The wells are constructed for the most part of 1¼-inch plastic casing with 18-slot Johnson well screens; 2-inch steel casings with 18-slot Johnson well screens; or 4-inch steel casing open at the bottom to the aquifer. Most of the observation wells were pumped a minimum of 6 hours before water samples were collected for chemical analyses (table 5). Several existing domestic and livestock wells also were used as observation wells. Water-level measurements were made periodically from the summer of 1967 through December 1969. Three wells were equipped with continuous water-level recorders. Measurements will continue to be made in many of these wells as part of the Statewide observation-well network. The locations of observation wells are shown on plate 1 and water-level measurements are given in table 3.

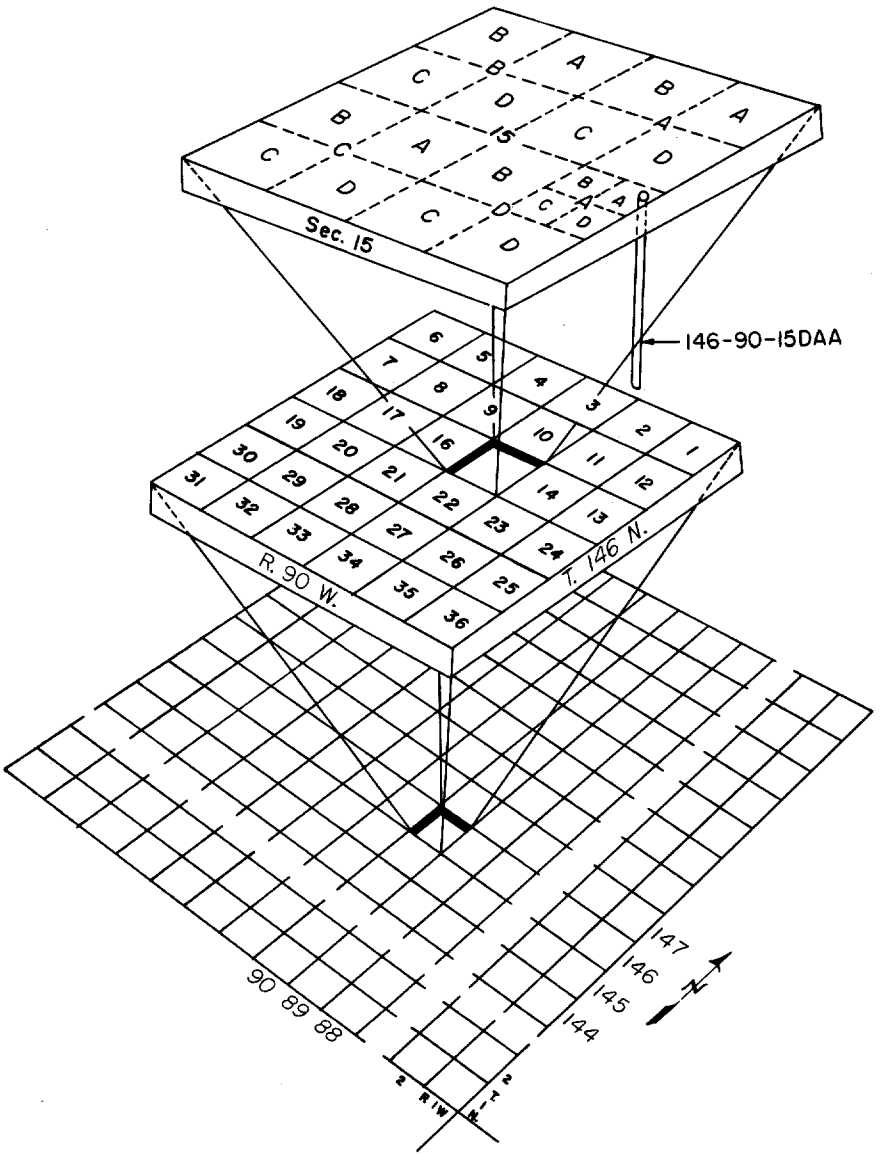

FIGURE 2.-- System of numbering wells, springs, and test holes.

The logs in table 4 are composites of the well-site geologists' and drillers' descriptions, sample analyses, and electric logs (where available). Many samples were examined with a binocular microscope. Color descriptions were determined by comparing the sample with the Geological Society of America rock-color chart (1963). Grain-size determinations refer to the Wentworth (1922) size scale. Test holes listed in table 4 with numbers between 2677 and 5276 were drilled as part of this investigation. Test holes with numbers between 1665 and 1684 were drilled for a ground-water investigation at the city of Beulah by Bradley and Jensen (1962). Well cuttings from the test holes drilled for the Beulah investigation were reexamined and several logs were revised.

Till, a descriptive term used in the well logs, is an unsorted, unstratified glacial deposit of clay, silt, sand, and gravel.

Particle-size distribution curves shown in table 6 are the result of sieve and hydrometer analysis of rock samples obtained from test holes. About half the curves were constructed from core analyses made by the U.S. Geological Survey laboratory, Denver, Colo. The remainder of the curves were constructed in Bismarck from analyses of drill cuttings from rotary-drilled holes or from bailer samples from percussion-drilled holes.

The stratigraphic nomenclature used in this report is that of the North Dakota Geological Survey and, in some instances, differs from that of the U. S. Geological Survey.

WATER-QUALITY DATA

Natural water contains dissolved mineral matter. Water in contact with soils or rock, even for only a few hours, will dissolve some mineral matter. The quantity of dissolved mineral matter in water depends primarily on the length of time and type of rocks or soil with which the water has been in contact. Ground water commonly is more highly mineralized than surface water because it remains in contact with rocks and soil for much longer periods.

The mineral constituents and physical properties of water reported in the table of analyses (table 5) include those that have a practical bearing on the value of the water for most purposes. The analyses generally include determinations of silica, iron, calcium, magnesium, sodium, potassium (or sodium and potassium together calculated as sodium), alkalinity as carbonate and bicarbonate, sulfate, chloride, fluoride, nitrate, boron, dissolved solids, pH, and specific conductance.

Mineral Constituents in Solution

Silica (SiO_2)

Silica is dissolved from practically all rocks. Some water contains less than 5 ppm (parts per million) of silica and some contains more than 50 ppm, but the more common range is from 10 to 30 ppm. Silica affects the usefulness of water because it contributes to the formation of scale in pipes, water heaters, and boilers.

Iron (Fe)

Iron compounds are common in rocks and are easily leached by ground water. On exposure to air, normal basic water that contains more than 1 ppm of iron soon becomes turbid with the insoluble reddish ferric oxide produced by oxidation. Surface water, therefore, seldom contains as much as 1 ppm of dissolved iron, although some acid water carries large quantities of iron in solution. Ground water commonly contains as much as 10 ppm. Rarely, concentrations over 50 ppm may occur in water with a pH of 5 to 8 (Hem, 1959). Iron causes reddish-brown stains on porcelain or enamelware and fixtures and on fabrics washed in the water. The U.S. Public Health Service (1962) recommends an upper limit of 0.3 ppm of iron in drinking water.

Calcium (Ca)

Calcium may be leached from most rocks. It is a major cause of hardness and forms scale on utensils and on boilers and pipes. The calcium content of ground water may be as high as several hundred parts per million.

Magnesium (Mg)

Magnesium is dissolved from many rocks, particularly from dolomitic rocks. Its effect in water is similar to that of calcium. The magnesium in soft water may amount to only 1 or 2 ppm, but water in areas that contain large quantities of dolomite or other magnesium-bearing rocks may contain more than 100 ppm of magnesium. Sea water contains more than 1,000 ppm of magnesium.

Sodium and potassium (Na and K)

Sodium and potassium are dissolved from practically all rocks. Sodium is the predominant cation in some of the more highly mineralized water found in the western United States. Water that contains 3 or 4 ppm of sodium and potassium is likely to contain them in equal concentrations. The proportion of sodium becomes much greater as the total quantity of these constituents increases. However, the potassium concentration in water rarely exceeds 50 ppm. Moderate quantities of sodium and potassium generally have little

effect on the usefulness of water, but water that carries more than about 50 ppm of the two may require careful operation of steam boilers to prevent foaming. More highly mineralized water that contains a large proportion of sodium salts may be unsatisfactory for irrigation. The presence of several hundred parts per million of sodium in water makes it unsuitable for use in sodium-restricted diets used as therapy for cardiovascular diseases.

Bicarbonate and carbonate (HCO_3 and CO_3)

Bicarbonate and carbonate ions commonly are dissolved from carbonate rocks and are the major cause of alkalinity in most water. Although alkalinity is primarily due to the presence of bicarbonate and carbonate, other ions also contribute to alkalinity such as silicates, phosphates, borates, possibly fluoride, and certain organic anions that may occur in colored water. The significance of alkalinity to the domestic, agricultural, and industrial user is usually dependent upon the nature of the cations (Ca, Mg, Na, and K) associated with it. However, moderate amounts of alkalinity do not adversely affect most uses.

Sulfate (SO_4)

Sulfate is dissolved from many rocks and soils--in especially large quantities from beds of gypsum and shale. It also is formed by the oxidation of sulfides of iron and may therefore be present in considerable quantities in mine water. Sulfate in water that contains much calcium and magnesium causes the formation of hard scale in steam boilers and may increase the cost of softening the water. The U.S. Public Health Service (1962) recommends that 250 ppm of sulfate should be the upper limit for drinking water.

Chloride (Cl)

Chlorides are generally very soluble compounds and are found in most rocks, therefore chlorides are found in all natural water. Large quantities of chloride may affect the industrial use of water by increasing the corrosiveness of water that contains large quantities of calcium and magnesium. The U.S. Public Health Service (1962) recommends an upper limit of 250 ppm of chloride for drinking water.

Fluoride (F)

Fluoride has been reported as being present in igneous and some sedimentary rocks to about the same extent as chloride. However, most fluorides, unlike the chlorides, are low in solubility so that the quantity of fluoride in natural water is ordinarily very small compared to that of chloride. Hem (1959) reported that fluoride concentrations in excess of 10 ppm are rare. Investigations have proved that fluoride concentrations greater than

1.7 ppm reduce the incidence of dental caries, and that concentrations greater than 1.7 ppm also protect the teeth from cavities, but cause an undesirable black stain (Durfor and Becker, 1964). U.S. Public Health Service (1962, p. 8) states, "When fluoride is naturally present in drinking water, the concentration should not average more than the appropriate upper control limit (0.6 to 1.7 ppm). Presence of fluoride in average concentrations greater than two times the optimum shall constitute grounds for rejection of the supply." Concentrations higher than the stated limits may cause mottled enamel in teeth, endemic cumulative fluorosis, and skeletal defects.

Nitrate (NO_3)

Nitrate in water is considered a final oxidation product of nitrogeneous material and may indicate contamination by sewage or other organic matter. U.S. Public Health Service (1962) sets 45 ppm as the upper limit for nitrate. Ingestion of water containing excessive quantities of nitrate may result in infantile methemoglobinemia. If the concentration is sufficiently great, both man and animals can be poisoned by nitrate.

Boron (B)

Boron in small quantities is essential for plant growth, but irrigation water containing more than 1 ppm boron is detrimental to boron-sensitive crops.

Dissolved solids

The reported quantity of dissolved solids--the residue on evaporation--consists mainly of the dissolved mineral constituents in the water. It may also contain some organic matter and water of crystallization. Water with less than 500 ppm of dissolved solids is usually satisfactory for domestic and some industrial uses. Water containing several thousand parts per million dissolved solids is sometimes successfully used for irrigation where practices permit the removal of soluble salts through the application of large volumes of water on well-drained lands, but generally water containing more than about 2,000 ppm is considered to be unsuitable for long-term irrigation under average conditions.

Properties and Characteristics of Water

Temperature

Temperature is an important factor in properly determining the quality of water. This is evident for such a direct use as an industrial coolant. Temperature also is important, but perhaps not so evident, for its indirect influence upon concentrations of dissolved gases and distribution of chemical solutes in ground water. Temperatures in

this report (tables 1, 2, and 5) are expressed in degrees Centigrade. Degrees Centigrade and the equivalent temperature in degrees Fahrenheit are given in the following table:

Degrees Centigrade	Degrees Fahrenheit	Degrees Centigrade	Degrees Fahrenheit	Degrees Centigrade	Degrees Fahrenheit
2.0	36	10.5	51	19.0	66
2.5	37	11.0	52	19.5	67
3.0	38	11.5	53	20.0	68
4.0	39	12.0	54	20.5	69
4.5	40	12.5	55	21.0	70
5.0	41	13.5	56	21.5	71
5.5	42	14.0	57	22.0	72
6.0	43	14.5	58	22.5	73
6.5	44	15.0	59	23.5	74
7.0	45	15.5	60	24.0	75
7.5	46	16.0	61	24.5	76
8.5	47	16.5	62	25.0	77
9.0	48	17.0	63	25.5	78
9.5	49	17.5	64	26.0	79
10.0	50	18.5	65	26.5	80

Normally, the temperature of ground water within 60 feet of the surface approximates the mean annual air temperature and increases 0.56°C (1°F) for each 60 to 100 feet of increase in depth.

Hardness

Hardness is the characteristic of water that receives the most attention in industrial and domestic use. It is commonly recognized by the increased quantity of soap required to produce lather. The use of 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 rate of heat transfer and possibility of water heater or boiler failure.

Hardness is caused almost entirely by compounds of calcium and magnesium. Other constituents--such as iron, manganese, aluminum, barium, strontium, and free acid--also cause hardness, although they usually are not present in quantities large enough to have any appreciable effect.

Generally, bicarbonate and carbonate determine the proportions of "carbonate" hardness of water. Carbonate hardness is the amount of hardness chemically equivalent to the amount of bicarbonate and carbonate in solution. Carbonate hardness is approximately equal to the amount of hardness that is removed from water by boiling and is termed temporary hardness.

Noncarbonate hardness is the difference between the hardness calculated from the total amount of calcium and magnesium in solution and the carbonate hardness. If the carbonate hardness (expressed as calcium carbonate) equals the amount of calcium and magnesium hardness (also expressed as calcium carbonate) there is no noncarbonate hardness. Noncarbonate hardness is about equal to the amount of hardness remaining after water is boiled.

The scale formed at high temperatures by the evaporation of water containing noncarbonate hardness commonly is tough, heat resistant, and difficult to remove.

Although many people talk about soft water and hard water, there has been no firm line of demarcation. Water that seems hard to an easterner may seem soft to a westerner. Therefore, the U.S. Geological Survey has adopted the following classification:

Hardness range (calcium carbonate in ppm)	Hardness description
0-60	Soft
61-120	Moderately hard
121-180	Hard
More than 180	Very hard

For public use, water with hardness of about 200 ppm generally requires softening treatment (Durfor and Becker, 1964).

Sodium-adsorption ratio (SAR)

The term "sodium-adsorption ratio (SAR)" was introduced by the U.S. Salinity Laboratory Staff (1954). It is the ratio expressing the relative activity of sodium ions in exchange reaction with soil and is an index of the sodium or alkali hazard to the 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 (or equivalents per million for most irrigation water).

Water is divided into sixteen classes (U.S. Salinity Laboratory Staff, 1954, p. 80), depending upon the SAR and specific conductance. Water varies in respect to sodium hazard and specific conductance from that which can be used for irrigation on almost all soils to that which is generally unsatisfactory for irrigation.

Specific conductance (micromhos per centimeter at 25°C)

Specific conductance is a convenient, rapid determination used to estimate the amount of dissolved solids in water. It is a measure of the ability of water to conduct an electrical current. Commonly, the amount of dissolved solids (in parts per million) is about 65 percent of the specific conductance (in micromhos). This relation is not constant from well to well and it may even vary in the same source with changes in the composition of the water (Durfor and Becker, 1964).

Specific conductance of most water in the eastern United States is less than 1,000 micromhos, but in the arid western parts of the country, a specific conductance of more than 1,000 micromhos is common.

Hydrogen-ion concentration (pH)

Hydrogen-ion concentration 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 concentration, expressed as pH, is related to the corrosive properties of water and is useful in determining the proper treatment for coagulation 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. The pH of most ground water ranges between 5.5 and slightly more than 8.

SELECTED REFERENCES

Abbott, G. A., and Voedisch, F. W., 1938, The municipal ground-water supplies of North Dakota: North Dakota Geol. Survey Bull. 11, 99 p.

Bradley, Edward, and Jensen, H. M., 1962, Test drilling near Beulah, North Dakota: North Dakota State Water Comm. Ground Water Studies, no. 40, 19 p.

Durfor, C. N., and Becker, Edith, 1964, Public water supplies of the 100 largest cities in the United States, 1962: U.S. Geol. Survey Water-Supply Paper 1812, 364 p.

Geological Society of America, 1963, Rock-Color chart: New York, Geological Society of America.

Hem, J. D., 1959, Study and interpretation of the chemical characteristics of natural water: U.S. Geol. Survey Water-Supply Paper 1473, 269 p.

Maxey, K. F., 1950, Report on the relation of nitrate concentrations in well waters to the occurrence of methemoglobinemia: Natl. Research Council Bull., Sanitary Engineering and Environment, p. 265-271, App. D.

Randich, P. G., 1965, Geology and ground water resources of Burleigh County, North Dakota; Part II, Ground Water Basic Data: North Dakota Geol. Survey Bull. 42 and North Dakota State Water Comm. County Ground Water Studies 3, 273 p.

Simpson, H. E., 1929, Geology and ground-water resources of North Dakota: U.S. Geol. Survey Water-Supply Paper 598, 312 p.

U.S. Public Health Service, 1962, Drinking water standards: U.S. Public Health Service Pub. 956, 61 p.

U.S. Salinity Laboratory Staff, 1954, Diagnosis and improvement of saline and alkaline soils: U.S. Dept. Agriculture Handb. 60, 160 p.

Wentworth, C. K., 1922, A scale of grade and class terms for clastic sediments: Jour. of Geol., v. 30, p. 377-392.

TABLE 1.--Records of wells and test holes

EXPLANATION

Water level (ft)

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

F, well flows

Water use

C, commercial
H, domestic
I, irrigation
K, domestic and stock
N, industrial
P, public supply
R, recreation
S, stock
U, unused

Water-bearing material

1, very fine grained
2, fine grained
4, coarse grained
6, clayey
8, sandy
9, gravelly

Water-bearing material, Continued

B, sedimentary rock, unclassified
F, shale
G, gravel
H, hard
O, organic
P, clay
R, sand and gravel
S, sand
V, sandstone
Y, clayey gravel
Z, lignite

Aquifer

OC, Fort Union Group
OD, Tongue River Formation
OE, Cannonball Formation
OH, Tongue River-Cannonball Formations, undifferentiated
OI, Cannonball-Ludlow Formations, undifferentiated
OJ, Sentinel Butte Formation
OK, Sentinel Butte-Tongue River Formations, undifferentiated
OL, Hell Creek-Ludlow Formations, undifferentiated
PA, Hell Creek Formation
PC, Fox Hills Formation
PS, Hell Creek-Fox Hills Formations, undifferentiated
21, alluvium
31, outwash

Log available

C, caliper (diameter) survey log
D, drillers log
E, electric log
G, geologists log
J, gamma-ray log
Y, electric, radiation, and sample (or drillers) logs

Frequency of water-level measurements

C, continuous - recorder
M, monthly
N, none
O, original only

Quality-of-water type

C, complete chemical analysis
K, specific conductance only
P, partial chemical analysis

LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT.)	DEPTH TO FIRST PERFOR-ATION (FT.)	WELL DEPTH (FT.)	CASING DIAM-ETER (IN.)	DATE DRILLED (YEAR)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	WATER USE	WATER BEARING MATERIAL	AQUIFER	SPE-CIFIC CON-DUCT ANCE	TEM-PER-ATURE (°C)	ELE-VATION OF LSD (FT.)	LOG AVAIL-ABLE	FREQUENCY OF WATER-LEVEL MEASURE-MENTS	QW TYPE
140N085W03DDD	W.RUSCH	1040	--	980	4	1967	278	--	K	S	PS	2630	--	2100	DE	N	C
141N081W11DC	T.PRICE		--	74	4	1967	--	--	S	S	OE	<500	--	--	--	N	K
141N081W11DD	T.PRICE		--	30	--	1959	--	--	S	--	OE	1100	--	--	--	N	K
141N081W12CD	T.PRICE		--	44	--	1959	10	4-67	S	--	31	1320	--	--	--	O	K
141N081W13CCC	NDGS	84	51	54	1	1967	9	8-67	U	S	31	900	9.5	1650	G	O	C
141N081W13DBB	J.WACHTER		--	--	2	--	+23	5-68	S	--	OL	2770	11.0	1645	--	O	C
141N081W14CCA	A.HUSFLOEN		--	54	--	1942	--	--	K	S	--	920	--	--	--	N	K
141N081W14CDA	A.HUSFLOEN		--	60	4	--	--	--	S	--	--	2100	--	1650	--	N	K
141N081W22BAC	O.HUSFLOEN		--	126	2	1937	--	--	U	--	--	--	--	1770	--	N	--
141N081W23CA	F.WETZSTEIN		--	--	--	--	--	--	S	--	31	1850	7.5	--	--	N	K
141N081W24CC	F.WETZSTEIN		--	42	6	--	--	--	S	--	31	1580	10.0	--	--	N	K
141N081W26AC	F.WETZSTEIN		--	44	6	--	--	--	S	--	31	1375	12.0	--	--	N	K
141N081W27DDB	F.WETZSTEIN		--	46	4	--	--	--	S	--	31	1450	--	--	--	N	K
141N082W02CB81	M.GEIGER		--	180	2	1950	155	--	H	S	OD	1800	--	--	--	N	K
141N082W02CB82	M.GEIGER		--	70	24	1961	58	--	S	HP	OD	1050	--	--	--	N	K
141N082W04ADD	M.EMINETH		--	180	2	--	--	--	K	S	OD	4550	--	--	--	N	K
141N082W06CB	K.NAGEL	82	--	--	4	1963	--	--	K	G	--	1810	--	--	--	N	K
141N082W07ACA1	S.ORGAARD		--	18	24	1946	16	--	S	G	--	1050	--	--	--	N	K
141N082W07ACA2	S.ORGAARD		--	35	2	1960	14	--	H	S	--	1270	--	--	--	N	K
141N082W08DDD1	E.ORGAARD		--	30	36	--	12	10-66	S	S	--	3350	7.0	--	--	O	K
141N082W08DDD2	E.ORGAARD		--	20	36	1956	10	--	H	S	--	3690	--	--	--	N	K
141N082W08DDD3	E.ORGAARD		--	28	16	1966	12	--	H	S	--	2000	--	--	--	N	K
141N082W09DDD	NDSWC 3649	440	431	437	2	1968	280	1-69	U	S	OI	2450	9.5	1969	DE	O	C
141N082W10BA	O.TYE		--	21	48	--	14	4-67	S	S	OD	--	--	--	--	O	--
141N082W12CBA	O.GAREN		--	28	24	1904	20	--	H	Z	OD	2950	8.5	--	--	N	K
141N082W20BDC	S.SCHMIDT		--	253	4	1966	193	--	K	S	OH	2210	--	--	--	N	K
141N082W20DDD	J.AMAN		--	67	24	1930	53	--	K	Z	OH	2550	8.5	--	--	N	K
141N082W22CCB	V.KOCH		--	220	4	1966	140	--	K	S	--	2320	--	--	--	N	K
141N082W22CD	NDSWC 3723	60	--	--	--	1969	--	--	U	--	--	--	--	1743	GE	N	--
141N082W22CDA	NDSWC 3725	60	28	34	1	1969	5	7-69	U	9S	31	1190	8.5	1746	GE	O	C
141N082W26CCB1	N.JACOBSON		--	156	2	1915	140	--	S	S	--	2300	8.5	--	--	N	K
141N082W26CCB2	N.JACOBSON		--	186	2	1956	160	--	H	S	--	2300	--	--	--	N	K
141N082W27BAB	NDSWC 3724	60	--	--	--	1969	--	--	U	--	--	--	--	1743	G	N	--
141N082W34BAA	V.KOCH		--	165	4	1962	80	--	K	S	--	2190	--	--	--	N	K
141N083N02DDB1	F.SCHWALBE		--	30	36	1930	10	5-67	S	--	OD	2900	--	--	--	O	K
141N083W02DDB2	F.SCHWALBE		--	160	6	1966	17	--	H	--	OH	2450	--	--	--	N	K
141N083W04ADD	NDGS	80	63	66	1	1967	14	8-67	U	S	31	1040	--	1886	G	M	C
141N083W04BAD	NDGS	80	45	48	1	1967	41	8-67	U	S	31	--	--	1902	G	O	--
141N083W04BC	USGS	340	310	316	2	1967	135	5-67	U	S	OU	2490	9.5	2015	Y	M	C
141N083W04BDA	NDGS	70	45	48	1	1967	18	8-67	U	S	31	1070	9.5	1888	G	O	C

LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT.)	DEPTH TO FIRST PERFORATION (FT.)	WELL DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	WATER USE	WATER BEARING MATERIAL	AQUIFER	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ELEVATION OF LSD (FT.)	LOG AVAILABLE	FREQUENCY OF WATER-LEVEL MEASUREMENTS	QW TYPE
141N083W04BDB	NDGS	76	73	76	1	1967	41	8-67	U	S	31	1050	8.5	1908	G	O	C
141N083W04DAD	J.MANNY	35	28	--	4	1965	--	--	K	--	--	2350	--	--	--	N	K
141N083W05BBD	G.BARMHARDT		--	--	24	--	21	5-67	S	--	--	680	--	--	--	O	K
141N083W08CDB	P.ERHARDT		100	106	--	1954	75	--	K	Z	OD	1290	--	--	--	N	K
141N083W12AAC1	A.SCHWALBE	60	56	--	4	1964	--	--	H	--	OD	1060	--	--	--	N	K
141N083W12AAC2	A.SCHWALBE	40	39	--	4	1965	--	--	S	--	OD	720	--	--	--	N	K
141N083W14BCD1	W.SCHWALBE		180	189	4	1962	--	--	H	S	--	2250	--	--	--	N	K
141N083W14BCD2	W.SCHWALBE	180	177	--	4	1965	100	--	S	S	OD	2250	8.5	--	--	N	K
141N083W20AAA	A.LANDEIS		--	360	2	--	--	--	K	--	OH	2070	--	--	--	N	K
141N083W30ADD	P.KRAFT		60	70	2	1959	--	--	K	--	OD	680	--	--	--	N	K
141N084W04DDD	S.HENDERSCHEID		--	84	18	--	--	--	H	Z	OD	--	--	--	--	N	--
141N084W05CAB1	E.MOSBRUCKER		--	32	24	1963	20	--	S	Z	OD	--	--	--	--	N	--
141N084W05CAB2	E.MOSBRUCKER		--	32	24	1963	20	--	H	Z	OD	1500	--	--	--	N	K
141N084W09AAB	S.HENDERSCHEID		--	208	4	1956	--	--	H	&P	OD	--	--	--	--	N	--
141N084W10ACC1	W.REINKE		--	36	24	1928	16	--	S	--	--	1490	7.0	--	--	N	K
141N084W10ACC2	W.REINKE		--	169	4	1962	90	--	H	Z	OC	2120	--	--	--	N	K
141N084W11AAB1	N.BERGER		--	75	24	1962	40	--	K	--	OD	>7000	--	--	--	N	K
141N084W11AAB2	N.BERGER		--	185	2	--	--	--	U	S	--	--	--	--	--	N	--
141N084W11ACB	N.BERGER		168	170	4	1959	120	--	U	S	OD	1600	8.5	--	--	N	K
141N084W14DAA	M.SCHMIDT		--	240	2	1949	100	--	K	S	OD	--	--	--	--	N	--
141N084W18DDC1	C.HEID		--	35	24	--	16	--	S	Z	OJ	1900	--	--	--	N	K
141N084W18DDC2	C.HEID		--	30	24	1947	16	--	H	Z	OJ	2420	--	--	--	N	K
141N084W18DDC3	C.HEID		--	28	24	1964	16	--	S	Z	OJ	2580	6.5	--	--	N	K
141N084W19CCC	M.BETHKE		--	160	4	1961	60	--	K	Z	OD	1280	--	--	--	N	K
141N084W20CBB	L.LESCH		--	72	24	1965	38	--	S	P	--	--	--	--	--	N	--
141N084W22CCA	F.MOSBRUCKER		--	120	4	1947	--	--	K	Z	OD	1510	--	--	--	N	K
141N084W24BBC1	L.PORSBORG		--	320	4	1950	100	--	K	Z	OH	2200	--	--	--	N	K
141N084W24BBC2	L.PORSBORG		--	50	24	1961	--	--	S	Z	OD	1820	9.0	--	--	N	K
141N084W26BDD	P.MOSBRUCKER		--	140	4	1961	--	--	K	Z	OD	1490	--	--	--	N	K
141N084W26DDD1	R.PFLEGER		--	290	2	1926	170	--	S	Z	OH	2100	6.5	--	--	N	K
141N084W26DDD2	R.PFLEGER	120	111	120	2	1961	110	--	H	Z	OD	1410	--	--	--	N	K
141N084W30DDD1	F.KUCH		--	52	18	1941	40	--	U	S	OD	--	--	--	--	N	--
141N084W30DDD2	F.KUCH		--	232	2	1943	200	--	S	Z	OH	2180	8.5	--	--	N	K
141N084W30DDD3	F.KUCH	230	222	--	4	1952	200	--	H	--	OH	2180	--	--	--	N	K
141N085W02BAD	W.HENKE	132	--	132	4	1960	50	--	S	S	OK	1620	--	--	--	N	K
141N085W03CCC	E.KITZMAN	397	--	--	4	1964	--	--	K	P	OD	2375	--	--	D	N	K
141N085W06ADD1	J.MEYER		250	300	--	--	--	--	S	Z	OD	1180	12.5	--	--	N	K
141N085W06ADD2	J.MEYER	120	81	103	4	1954	--	--	S	S	--	620	7.0	--	D	N	K
141N085W08DAA	A.MAIER	362	349	--	4	1964	90	--	K	Z	--	2300	--	--	D	N	K
141N085W10DDA	R.MAIER		89	89	24	1965	--	--	K	--	OJ	2500	--	--	--	N	K

LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT.)	DEPTH TO FIRST PERFOR-ATION (FT.)	WELL DEPTH (FT.)	CASING DIAM-ETER (IN.)	DATE DRILLED (YEAR)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	WATER USE	WATER BEARING MATERIAL	AQUIFER	SPE-CIFIC CON-DUCT ANCE	TEM-PER-ATURE (°C)	ELE-VATION OF LSD (FT.)	LOG AVAIL-ABLE	FREQUENCY OF WATER-LEVEL MEASURE-MENTS	QW TYPE
141N085W15AAA	R.MAIER	43	42	--	4	1957	--	--	U	--	OJ	--	--	--	--	N	--
141N085W18ABB	W.KITZMAN	320	299	--	3	1956	--	--	K	S	OD	2200	9.5	--	D	N	K
141N085W18DDA1	H.BECKER	25	--	--	4	1955	10	5-67	S	Z	OJ	--	--	2154	D	M	--
141N085W18DDA2	H.BECKER		385	400	3	--	230	--	K	BZ	--	1950	--	--	--	N	K
141N085W21BBD	C.MAIER		--	45	4	1957	24	--	S	--	OJ	1300	7.0	--	--	N	K
141N085W21DDA1	R.WINDHORST	230	--	210	4	1954	90	--	K	S	OD	2400	--	--	--	N	K
141N085W21DDA2	R.WINDHORST	175	153	175	4	1965	158	--	S	S	OD	2200	7.5	--	D	N	K
141N085W27DDD	NDSWC 3646	440	294	300	2	1968	143	1-69	U	S	OD	2280	--	2124	GE	M	C
141N085W30CDA	L.DOLL	55	--	55	4	1964	30	--	U	--	OJ	1575	6.5	--	--	N	K
141N086W02DAD	T.WEBER		--	30	24	1964	25	--	S	Z	OJ	2710	--	--	--	N	K
141N086W06DAA	L.HERMANN		--	96	24	1915	93	--	S	Z	OJ	2400	7.5	--	--	N	K
141N086W08ABB1	P.BREIMEIER		--	80	24	1936	60	--	H	OZ	OJ	--	--	--	--	N	--
141N086W08ABB2	P.BREIMEIER		--	90	24	1963	54	--	S	OZ	OJ	1000	7.5	--	--	N	K
141N086W10BAD1	B.GERVING		--	88	2	1943	58	--	S	OZ	OJ	1790	8.5	--	--	N	K
141N086W10BAD2	B.GERVING		--	137	6	1959	130	--	H	Z	OJ	1910	--	--	D	N	K
141N086W11DAD1	L.BRUNMEIR		--	30	24	1957	10	10-66	U	Z	OJ	--	--	--	--	O	--
141N086W11DAD2	L.BRUNMEIR		--	30	36	--	9	10-66	S	OZ	OJ	5190	9.0	--	--	O	K
141N086W14ABB1	J.WEBER		--	40	4	1960	15	--	S	--	--	--	--	--	--	N	--
141N086W14ABB2	J.WEBER		--	30	24	1962	10	--	H	S	--	1690	--	--	--	N	K
141N086W18CCA1	M.BAUER		--	75	24	1922	40	--	S	S	OJ	590	7.0	--	--	N	K
141N086W18CCA2	M.BAUER		--	80	24	1963	42	--	H	S	OJ	640	--	--	--	N	K
141N086W19BDD	M.BAUER		--	55	24	1966	35	--	S	S	OJ	--	--	--	--	N	--
141N086W24BAA1	G.DOLL		--	108	24	1928	80	--	S	OZ	--	--	--	--	--	N	--
141N086W24BAA2	G.DOLL		--	350	4	1963	250	--	K	1S	OD	2320	--	--	--	N	K
141N086W25AC 1	R.GAPPERT		--	385	4	1949	270	--	S	1S	OD	2300	9.5	--	--	N	K
141N086W25AC 2	R.GAPPERT		--	60	48	1965	40	--	H	OZ	OJ	2200	--	--	--	N	K
141N086W30CCD	M.BAUER		--	20	36	1934	18	--	H	P	OJ	2300	--	--	--	N	K
141N086W32DBA1	E.BAUER		--	90	72	1890	35	--	S	S	OJ	1980	7.0	--	--	N	K
141N086W32DBA2	E.BAUER		--	45	24	1900	35	--	S	--	OJ	750	7.0	--	--	N	K
141N086W32DBA3	E.BAUER		--	70	24	1966	35	10-66	K	OZ	OJ	--	--	--	--	O	--
141N087W02CCA	M.SCHUTT		--	22	24	1948	4	8-67	U	--	--	1400	12.0	--	--	O	K
141N087W03CAC	L.SKALSKY	277	250	--	4	1966	--	--	S	S	OK	2100	11.5	--	D	N	K
141N087W04DAB1	L.SKALSKY		35	37	24	1962	20	8-67	U	--	--	3120	9.0	--	--	O	K
141N087W04DAB2	L.SKALSKY		--	53	24	1965	23	8-67	K	--	--	2150	7.0	--	--	O	K
141N087W07ABD1	N.SCHUMACHER		--	46	6	1946	26	--	K	--	--	1350	--	--	--	N	K
141N087W07ABD2	N.SCHUMACHER		--	46	24	1965	31	--	S	Z	OJ	780	10.5	--	--	N	K
141N087W10AAB1	M.SCHUTT		--	33	24	1950	15	8-67	H	V	OJ	2900	--	--	--	O	K
141N087W10AAB2	M.SCHUTT		--	90	6	1952	26	--	H	G	--	1700	--	--	--	N	K
141N087W10AAR3	M.SCHUTT		--	110	6	--	35	--	S	--	OJ	2325	9.0	--	--	N	K
141N087W10AAB4	M.SCHUTT		--	61	24	--	18	--	S	Z	OJ	--	--	--	--	N	--

LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT.)	DEPTH TO FIRST PERFOR-ATION (FT.)	WELL DEPTH (FT.)	CASING DIAM-ETER (IN.)	DATE DRILLED (YEAR)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	WATER USE	WATER BEARING MATERIAL	AQUIFER	SPE-CIFIC CON-DUCT ANCE	TEM-PER-ATURE (°C)	ELE-VATION OF LSD (FT.)	LOG AVAIL-ABLE	FREQUENCY OF WATER-LEVEL MEASURE-MENTS	QW TYPE
141N087W11CDC	M.SCHUTT		--	17	24	--	5	8-67	U	--	--	1010	11.5	--	--	O	K
141N087W12ABA1	C.LENNICK		--	90	2	1942	60	--	S	Z	OJ	725	7.5	--	--	N	K
141N087W12ABA2	C.LENNICK		--	78	24	1962	62	--	H	--	OJ	750	--	--	--	N	K
141N087W17BCC	F.PULVER		--	42	24	1961	7	8-67	S	G	--	5500	7.5	--	--	O	K
141N087W18DAC	F.PULVER	210	203	--	4	1956	110	--	K	Z	OJ	2280	--	--	--	N	K
141N087W20CCC1	J.RAUSCH		--	100	24	1963	50	8-67	S	P	OJ	4200	--	--	--	O	K
141N087W20CCC2	J.RAUSCH		80	90	24	1965	38	8-67	H	P	OJ	3000	--	--	--	O	K
141N087W20DCC1	J.RAUSCH		--	36	--	1942	7	8-67	H	--	--	650	--	--	--	O	K
141N087W20DCC2	J.RAUSCH		--	25	--	--	--	--	S	--	--	650	9.5	--	--	N	K
141N087W22CDD	A.WINKLER		--	60	--	1961	--	--	K	--	--	1275	--	--	--	N	K
141N087W26BBC	R.BUCHMANN		--	24	48	--	9	8-67	S	G	--	2320	4.0	--	--	O	K
141N087W26CAA	R.BUCHMANN		--	105	5	1947	65	--	H	--	OJ	2150	--	--	--	N	K
141N087W32CCD1	E.SCHIRADO		36	43	72	1933	23	8-67	H	Z	OJ	500	--	--	--	O	K
141N087W32CCD2	E.SCHIRADO		26	42	24	1958	22	8-67	U	Z	OJ	1800	6.5	--	--	O	K
141N087W32CCD3	E.SCHIRADO		--	280	2	1959	--	--	S	S	OK	2300	--	--	--	N	K
141N087W34CAA1	F.VOEGELE		--	13	24	1939	7	8-67	S	--	--	1000	8.5	--	--	O	K
141N087W34CAA2	F.VOEGELE		--	52	12	1958	34	--	H	Z	OJ	2500	--	--	--	N	K
141N087W34CAA3	F.VOEGELE		--	14	36	--	5	8-67	S	--	--	940	9.5	--	--	O	K
141N087W36ACA	H.BAUER		--	36	24	1961	10	--	K	Z	OJ	6400	--	--	--	N	K
141N088W06AAA	R.FISCHER		--	--	--	--	--	--	H	--	--	1880	--	--	--	N	K
141N088W06CCA	J.JAKOBER		--	--	--	--	--	--	H	--	--	2050	--	--	--	N	K
141N088W08BDC	D.VOEGELE		--	--	--	--	--	--	H	--	--	7000	--	--	--	N	K
141N088W10BBD	E.KEMMET		--	100	--	--	--	--	K	--	--	6900	--	--	--	N	K
141N088W10DDA	R.FLEMMER	170	154	155	4	1960	50	--	S	S	OJ	1900	9.5	--	D	N	K
141N088W23DDC	NDSWC 3650	660	588	594	2	1968	283	12-68	U	S	OD	--	--	2245	GE	O	--
141N088W28ABB	F.HURER	50	--	47	6	--	--	--	S	P	OJ	980	--	--	--	N	K
141N088W30CCD	J.SEBASTIAN	79	74	--	--	1946	--	--	K	Z	OJ	2200	--	--	D	N	K
141N088W32BAA	A.WAGNER	230	191	192	4	--	--	--	K	Z	OJ	1700	--	--	D	N	K
141N089W03CC	J.GODES	180	--	--	2	1964	100	--	S	--	OJ	--	--	--	--	N	--
141N089W05CBB	NDSWC 3763	200	156	162	1	1969	19	8-69	U	S	31	4000	--	1995	Y	O	C
141N089W10CBD	J.GODES		--	24	--	--	--	--	S	--	21	6800	--	--	--	N	K
141N089W11BC	J.WORONIECKI,JR	1400	--	1318	2	1964	81	5-68	S	S	PS	2390	8.5	2065	--	O	C
141N089W15CB	R.HAUSER		--	350	4	--	--	--	S	--	--	>500	--	--	--	N	K
141N089W15DCC	NDSWC 3764	280	--	--	--	1969	--	--	U	--	--	--	--	2062	Y	N	--
141N089W20CB	J.WORONIECKI,JR	1340	--	--	2	--	138	5-68	K	S	PS	2750	--	2213	--	O	C
141N089W22AAA	NDSWC 3664	260	--	--	--	1968	--	--	U	--	--	--	--	2047	GE	N	--
141N089W22ABD1	O.HAUSER		--	36	24	1904	15	6-67	H	--	--	1100	--	--	--	O	K
141N089W22ABD2	O.HAUSER		--	111	--	--	--	--	S	--	OJ	3000	--	--	--	N	K
141N089W23AA	NDSWC 3765	160	96	102	1	1969	28	8-69	U	S	31	6320	9.0	2062	Y	O	C
141N089W23BAA	NDSWC 3663	300	265	280	1	1968	12	12-68	U	S	31	3080	--	2042	GE	M	C

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141N089W25CCD	NDGS	79	--	--	--	1967	--	--	U	--	--	--	--	--	G	N	--
141N089W26DDA	J.WEHRI		--	120	--	--	--	--	K	--	31	4100	--	--	--	N	K
141N089W28ABA	R.HAUSER		60	65	4	--	--	--	S	--	OJ	2100	--	--	--	N	K
141N090W09BAC	N.KINNISCHTSKE	940	--	925	2	1964	+10	5-68	S	S	PS	--	--	2035	D	O	--
141N090W09DB	S.JAEGER	1300	--	--	2	1964	+14	7-68	S	S	PS	2560	13.5	2051	D	O	C
141N090W11ACA	N.SCHWARTZ JR.		--	--	2	1940	--	--	K	--	--	3500	--	--	--	N	K
141N090W17DDD	G.KNOPP		--	80	--	1917	--	--	K	--	--	4650	--	--	--	N	K
141N090W18DCC	E.SPOER		50	50	24	1965	25	5-67	H	S	--	4400	--	--	--	O	K
141N090W19CCD	NDSWC 3433	1788	1142	--	4	1967	4	8-67	U	S	PS	2310	16.5	2080	Y	C	C
141N090W24BCA	A.BRANDT		--	40	36	--	--	--	H	--	--	3400	--	--	--	N	K
141N090W24DDC	S.WORONIECKI		--	227	4	1958	--	--	K	--	OJ	2650	--	--	--	N	K
141N090W26BBB	A.FUNK		402	402	6	1949	--	--	K	--	OD	2340	--	--	--	N	K
141N090W28ACA	N.MISCHE		--	--	36	--	8	5-67	H	--	--	2300	--	--	--	O	K
141N090W33BDD	S.JAEGER		--	30	36	1945	20	5-67	H	--	--	4000	--	--	--	O	K
141N090W33CDC	NDSWC 3662	520	504	516	--	1968	214	12-68	U	S	OD	--	--	2251	GE	O	--
142N081W07AAA	P.HILLSTROM		--	39	24	1956	8	8-67	S	--	--	1850	4.5	--	--	O	K
142N081W08BBB1	P.HILLSTROM		--	30	36	1941	8	--	S	--	--	1600	5.5	--	--	N	K
142N081W08BBB2	P.HILLSTROM		--	210	2	1959	--	--	K	--	OL	2500	--	--	--	N	K
142N081W08CDD	NDGS	34	--	--	--	--	--	--	U	--	--	--	--	1720	G	N	--
142N081W08DAB	R.STEFFENSON		--	350	2	1961	F	--	S	--	OL	2940	--	--	--	N	C
142N081W09CBB	A.STEFFENSON		210	350	2	1961	F	--	S	--	OL	--	--	--	--	N	--
142N081W17ACC	NDGS	54	--	--	--	--	--	--	U	--	--	--	--	1721	G	N	--
142N081W17BDA	R.STEFFENSON		--	33	24	1961	25	--	H	B	--	1600	--	--	--	N	K
142N081W20DCD1	R.PRICE		--	17	24	1955	11	8-67	H	--	--	3200	--	--	--	O	K
142N081W20DCD2	R.PRICE		--	13	30	--	5	8-67	S	--	--	2250	6.5	--	--	O	K
142N081W28BAD	MANLEY SCHOOL		--	24	24	1965	14	8-67	H	--	--	1270	5.5	--	--	O	K
142N081W30CDA	C.NELSON		--	32	24	1930	28	--	H	G	--	2400	--	--	--	N	K
142N082W02BAD	D.FLOWERS		--	80	4	1962	70	--	S	S	OD	700	6.0	--	--	N	K
142N082W04BCA	A.SCHNEIDER		--	69	24	1958	54	8-67	S	9Z	--	2950	6.0	--	--	O	K
142N082W04BDB	A.SCHNEIDER		--	80	2	1920	30	--	K	--	--	2300	--	--	--	N	K
142N082W05DAA1	NDSWC 3647	520	495	501	2	1968	201	11-68	U	S	PA	2450	9.5	1955	Y	O	C
142N082W05DAA2	NDSWC 3648	60	35	50	1	1968	18	11-68	U	S	31	1290	--	1955	G	O	C
142N082W08AAA	R.HICKLE		136	160	4	1955	100	--	K	Z	OD	800	6.5	--	--	N	K
142N082W08AAD	R.HICKLE		--	160	4	1961	40	--	S	--	OD	1100	5.5	--	--	N	K
142N082W08BBA	J.KOCOUREK		--	48	24	1944	24	8-67	K	Z	OD	1075	7.0	--	--	O	K
142N082W09DDD	NDSWC 3637	280	220	226	1	1968	171	11-68	U	S	OD	--	--	2050	GE	O	--
142N082W11BDD	R.HICKLE		--	160	4	1963	125	--	S	--	OD	500	7.0	--	--	N	K
142N082W13ABB1	G.KELLER		--	32	24	1937	20	--	H	G	--	1000	--	--	--	N	K
142N082W13ABB2	G.KELLER		--	28	24	1941	13	8-67	S	G	--	1150	5.5	--	--	O	K
142N082W14AAD	J.HAYES		--	28	24	1963	10	--	H	--	--	1120	--	--	--	N	K

LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT.)	DEPTH TO FIRST PERFORATION (FT.)	WELL DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	WATER USE	WATER BEARING MATERIAL	AQUIFER	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ELEVATION OF LSD (FT.)	LOG AVAILABLE	FREQUENCY OF WATER-LEVEL MEASUREMENTS	QW TYPE
142N082W17CAA1	W.HICKLE		--	56	24	1919	46	--	S	Z	OD	4175	6.5	--	--	N	K
142N082W17CAA2	W.HICKLE		170	240	2	1944	80	--	K	S	OD	2800	5.5	--	--	N	K
142N082W20DDD	P.BAUER		--	325	2	1963	--	--	S	R	--	--	--	--	--	N	--
142N082W21BDD	R.STEFFENSON	200	180	200	4	1966	--	--	S	S	OD	1450	10.0	--	D	N	K
142N082W22DAA1	G.SCHMIDT		--	35	6	1946	23	--	H	S	OD	520	--	--	--	N	K
142N082W22DAA2	G.SCHMIDT		--	35	30	--	18	--	S	S	OD	850	5.5	--	--	N	K
142N082W24CAA	F.HOESEL		--	32	24	1945	20	--	H	Z	OD	1000	--	--	--	N	K
142N082W25ACD	F.HOESEL		--	32	24	1966	16	8-67	S	Z	OD	500	5.0	--	--	N	K
142N082W28BCD1	P.BAUER		--	240	2	1924	--	--	S	S	--	1300	--	--	--	N	K
142N082W28BCD2	P.BAUER	320	294	--	2	1964	--	--	K	S	--	1075	--	--	--	N	K
142N082W30ADD1	J.WEBBER		--	95	2	1946	70	--	K	Z	OD	1700	5.0	--	--	N	K
142N082W30ADD2	J.WEBBER		273	305	2	1964	200	--	S	G	--	1510	--	--	--	N	K
142N082W32BCD1	K.JOHNSON		--	18	20	1900	13	--	S	--	--	900	--	--	--	N	K
142N082W32BCD2	K.JOHNSON		--	18	24	1954	13	--	H	--	--	1450	--	--	--	N	K
142N082W33CCA	P.BAUER		--	200	2	1943	170	--	S	S	--	950	6.5	--	--	N	K
142N083W01DAA1	J.HATZENBIHLER		--	32	24	1943	16	--	H	Z	OD	2500	--	--	--	N	K
142N083W01DAA2	J.HATZENBIHLER		--	28	24	--	7	8-67	S	Z	OD	1700	7.0	--	--	O	K
142N083W02CCA	E.GULLICKSON		--	77	24	--	70	8-67	K	--	--	2000	--	--	--	O	K
142N083W07CDA	T.MOON		--	39	24	1965	10	8-67	S	G	--	900	--	--	--	O	K
142N083W07CDB1	T.MOON		--	15	24	--	--	--	S	--	--	1350	9.5	--	--	N	K
142N083W07CDB2	T.MOON	123	115	121	4	1946	34	8-67	K	--	OD	1000	--	--	D	O	K
142N083W09AAD	J.VITEK		--	11	24	1961	13	8-67	K	Z	OJ	2550	--	--	--	O	K
142N083W12BDA	F.WEISS		--	90	--	1961	--	--	H	--	--	1500	--	--	--	N	K
142N083W14BCA	T.STARCK		--	30	24	1902	15	8-67	K	--	--	510	8.5	--	--	O	K
142N083W14BCC	T.STARCK		--	150	2	--	--	--	U	S	OD	2000	9.5	--	--	N	K
142N083W14BDC	T.STARCK		--	70	24	1949	42	8-67	S	Z	OJ	4800	12.5	--	--	O	K
142N083W14DBD	A.STARCK		152	185	2	--	--	--	S	--	OD	1700	9.5	--	--	N	K
142N083W19ACB	M.ERHARDT		--	32	24	1956	22	8-67	U	--	--	1550	8.5	--	--	O	K
142N083W19CCD1	J.SCHMIDT		--	16	--	1946	16	--	S	S	--	950	9.0	--	--	N	K
142N083W19CCD2	J.SCHMIDT		--	16	--	1950	16	--	H	S	--	1500	--	--	--	N	K
142N083W20CBB	M.ERHARDT		--	200	2	1929	--	--	K	--	OD	1900	--	--	--	N	K
142N083W21ACC	E.FERDERER		--	80	30	1951	70	--	K	Z	OD	1260	--	--	--	N	K
142N083W25BBB1	M.HATZENBIHLER		--	29	24	1948	13	8-67	S	--	--	920	7.0	--	--	O	K
142N083W25BBB2	M.HATZENBIHLER		--	18	24	1957	12	8-67	H	--	--	720	--	--	--	O	K
142N083W26CCC	J.FRIEDIG		--	68	24	--	62	--	K	Z	OD	1225	7.0	--	--	N	K
142N083W29BCC	M.SCHENK		--	100	4	1935	50	--	K	Z	OD	2250	--	--	--	N	K
142N083W30BAA	J.HAAG		--	16	--	1933	16	--	K	S	--	820	--	--	--	N	K
142N083W30DAD	H.DUHR	104	--	104	6	1946	20	--	K	--	OD	850	10.0	--	--	N	K
142N083W32CCD	MINNKOTA POWER	43	40	--	3	1958	20	--	H	G	31	1000	--	--	--	N	K
142N083W34CDB	C.CHRISTMAN		--	145	6	1957	135	--	K	--	OD	1650	--	--	--	N	K

LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT.)	DEPTH TO FIRST PERFOR-ATION (FT.)	WELL DEPTH (FT.)	CASING DIAM-ETER (IN.)	DATE DRILLED (YEAR)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	WATER USE	WATER BEARING MATERIAL	AQUIFER	SPE-CIFIC CON-DUCT ANCE	TEM-PER-ATURE (DC)	ELE-VATION OF LSD (FT.)	LOG AVAIL-ABLE	FREQUENCY OF WATER-LEVEL MEASURE-MENTS	QW TYPE
142N084W03CDD	A.BUBEL EST.		--	74	24	1966	48	8-67	S	--	OD	800	6.0	--	--	O	K
142N084W04BDD	L.BORNEMAN		--	31	24	1952	22	8-67	S	Z	OK	750	5.5	--	--	O	K
142N084W04CCC	L.BORNEMAN		--	30	24	1954	17	8-67	K	P	--	680	6.0	--	--	O	K
142N084W05DDA1	S.BUBEL		--	25	--	1941	15	--	S	S	31	1500	6.5	--	--	N	K
142N084W05DDA2	S.BUBEL		--	26	24	1966	14	8-67	H	S	31	1950	--	--	--	O	K
142N084W06CCC1	W.WOLF		--	19	24	1952	15	8-67	S	S	--	720	--	--	--	O	K
142N084W06CCC2	W.WOLF		--	27	24	1965	20	8-67	H	--	--	620	--	--	--	O	K
142N084W08AAB	NDSWC 3732	180	118	124	1	1969	5	8-69	U	S	31	806	--	2008	Y	O	C
142N084W08ABB	NDSWC 3733	140	78	81	1	1969	10	8-69	U	R	31	595	8.5	2029	Y	O	C
142N084W09DBC	H.WENTZ		--	5	--	1947	5	--	H	--	21	910	--	--	--	N	K
142N084W10DAD	E.MATZKE		--	39	24	1954	24	8-67	K	Z	OD	2700	--	--	--	O	K
142N084W11CCB	L.MAUER		--	160	4	1946	102	8-67	H	S	OD	1090	--	--	--	O	K
142N084W11CCC	O.BITTNER		--	180	3	--	70	--	H	--	OD	1100	--	--	--	N	K
142N084W12BCB	F.FANDRICH	228	223	--	4	1946	200	--	K	Z	OD	900	--	--	D	N	K
142N084W13AAD	F.FANDRICH		--	26	24	1950	18	8-67	U	--	OD	700	--	--	--	O	K
142N084W13DDD	H.LENIUS	91	--	91	4	1956	--	--	U	--	OD	1600	--	--	--	N	K
142N084W14BC	CENTER	130	115	130	--	1965	--	--	P	S	OD	1100	9.5	--	D	N	C
142N084W14CB	CENTER		103	118	8	1961	--	--	P	S	OD	1270	12.5	--	D	N	C
142N084W14CBB	G.STAIGLE		--	18	6	--	18	8-67	U	--	--	--	8.5	--	--	O	--
142N084W14CDB	Y.BERGER		106	110	4	--	19	8-67	U	S	OD	--	--	--	--	O	--
142N084W15DA	CENTER		124	139	--	1962	--	--	P	Z	OD	778	9.5	--	D	N	C
142N084W18DDD	S.LA VOLD		--	74	24	1961	50	8-67	S	--	OD	1175	9.0	--	--	O	K
142N084W21ACA	J.BOBB		102	120	1	--	--	--	--	--	--	980	7.5	--	--	N	K
142N084W23ABB	C.DENNIUS		--	100	6	1963	--	--	H	S	OD	790	--	--	--	N	K
142N084W23BBA	E.MYERS		--	98	4	--	30	--	K	--	OD	1410	--	--	--	N	K
142N084W24BBA	NDSWC 3558	1295	966	1008	--	1967	198	6-68	U	S	PC	2800	--	2006	Y	C	C
142N084W31DCC1	J.BARNHARDT,JR.		--	56	24	1944	48	--	S	Z	OJ	2500	7.0	--	--	N	K
142N084W31DCC2	J.BARNHARDT,JR.		--	64	24	1962	43	--	K	Z	OJ	2200	--	--	--	N	K
142N084W32BBB	V.GANSKE		--	68	24	1965	47	8-67	K	Z	OJ	2300	7.5	--	--	O	K
142N085W02CCD1	M.ALBERS	50	--	27	6	1958	10	--	S	Z	OJ	500	5.5	--	D	N	K
142N085W02CCD2	M.ALBERS		--	30	24	1960	10	--	H	Z	OJ	1400	--	--	--	N	K
142N085W02CCD3	M.ALBERS		--	22	24	1963	8	8-67	S	--	--	1800	6.5	--	--	O	K
142N085W02DCB1	C.BORNEMANN		--	12	24	1948	11	8-67	H	S	--	1380	--	--	--	O	K
142N085W02DCB2	C.BORNEMANN		--	18	24	1963	9	8-67	S	P	--	1060	5.0	--	--	O	K
142N085W04BDB	O.BORNEMANN		--	30	24	1957	6	--	K	--	--	920	--	--	--	N	K
142N085W08ADC	M.HENKE		--	48	24	--	28	--	K	--	OJ	1050	--	--	--	N	K
142N085W11BBA	M.ALBERS		--	27	24	1961	8	--	S	--	21	850	6.5	--	--	N	K
142N085W11BCB	NDSWC 3735	60	--	--	--	1969	--	--	U	--	--	--	--	2085	G	N	--
142N085W11BCC	NDSWC 3734	480	294	303	2	1969	188	8-69	U	S	OD	2350	10.0	2087	YC	O	C
142N085W12DCA	K.HENKE		--	240	6	1951	--	--	K	S	OD	2100	--	--	--	N	K

LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT.)	DEPTH TO FIRST PERFOR-ATION (FT.)	WELL DEPTH (FT.)	CASING DIAM-ETER (IN.)	DATE DRILLED (YEAR)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	WATER USE	WATER BEARING MATERIAL	AQUIFER	SPE-CIFIC CON-DUCT ANCE	TEM-PER-ATURE (°C)	ELE-VATION OF LSD (FT.)	LOG AVAIL-ABLE	FREQUENCY OF WATER-LEVEL MEASURE-MENTS	QW TYPE
142N085W13ACC	K.HENKE		--	30	24	1962	10	---	S	--	--	1720	6.5	--	--	N	K
142N085W14AAA	E.HENKE		--	10	48	--	5	---	K	Z	OJ	3250	---	--	--	N	K
142N085W14CCC1	H.HENKE		--	38	24	1965	8	---	H	--	OJ	4800	---	---	--	N	K
142N085W14CCC2	NDSWC 3645	400	270	276	1	1968	234	11-68	U	S	OD	--	---	2142	Y	O	---
142N085W18DDD	L.WILKENS		--	120	24	--	60	8-67	K	---	--	950	--	---	--	O	K
142N085W19BAA	G.RABE	83	76	--	4	1951	--	---	S	Z	--	620	5.5	--	D	N	K
142N085W20BAB1	E.WILKENS		--	--	12	--	--	---	S	---	--	550	6.0	--	--	N	K
142N085W20BAB2	E.WILKENS		--	--	24	---	41	8-67	U	---	--	1000	7.0	--	--	O	K
142N085W23BBB	HANNOVER CREAMY		--	17	24	1944	9	8-67	C	S	--	2350	---	---	--	O	K
142N085W23BBC1	H.HENKE		--	60	4	---	54	---	H	Z	OD	820	5.5	---	--	N	K
142N085W23BBC2	H.HENKE		--	40	24	1950	10	---	K	S	--	950	---	--	--	N	K
142N085W27BBB	H.RABE	20	10	20	6	1958	--	---	U	G	21	<500	--	--	--	N	K
142N085W27CCB1	N.RABE	70	52	53	4	1955	30	---	K	Z	OJ	1050	---	--	--	N	K
142N085W27CCB2	N.RABE		--	46	24	1967	28	---	H	S	OJ	525	---	--	--	N	K
142N085W28BCB1	B.OESTREICH		--	104	20	1939	45	8-67	S	S	OJ	2200	---	---	--	O	K
142N085W28BCB2	B.OESTREICH		--	88	24	1967	81	8-67	K	S	OJ	820	---	--	--	O	K
142N086W03CDD1	H.WITTENBERG		--	11	6	1946	7	8-67	H	---	--	1650	--	---	--	O	K
142N086W03CDD2	H.WITTENBERG		--	30	24	---	15	---	S	---	--	1200	4.0	---	--	N	K
142N086W07ADC1	I.BOECKEL		--	80	24	---	--	---	S	---	--	1850	6.0	---	--	N	K
142N086W07ADC2	I.BOECKEL	180	133	--	4	1957	--	--	K	S	OJ	2100	---	---	D	N	K
142N086W08ACD1	A.KESSLER		--	31	24	1967	--	--	H	---	--	4000	--	--	--	N	K
142N086W08ACD2	A.KESSLER		--	80	24	---	--	---	S	---	--	3500	5.5	---	--	N	K
142N086W11ABC1	F.JENSEN		--	51	6	1944	44	---	S	Z	OJ	1300	5.5	---	--	N	K
142N086W11ABC2	F.JENSEN	102	83	--	4	1965	65	---	K	Z	OJ	880	6.0	---	D	N	K
142N086W12CDD	C.KUCH		--	54	24	1945	39	8-67	S	---	--	1380	7.0	---	--	O	K
142N086W14ADD1	C.KUCH	30	24	30	4	1950	22	---	S	G	--	1450	8.5	---	D	N	K
142N086W14ADD2	C.KUCH		--	50	24	1963	26	8-67	H	P	--	900	---	---	--	O	K
142N086W14DDD	G.ALBERS	199	193	194	4	1959	--	---	K	Z	OJ	1700	---	---	D	N	K
142N086W16CCC1	J.JOCHIM		--	46	24	1967	20	---	H	---	--	1050	---	---	--	N	K
142N086W16CCC2	J.JOCHIM		--	45	24	1967	20	---	S	---	--	2500	6.0	---	--	N	K
142N086W18DAB1	J.FAUT		--	80	24	1966	50	---	H	P	OJ	1520	---	---	--	N	K
142N086W18DAB2	J.FAUT		--	60	24	1966	30	---	S	---	--	1400	6.5	---	--	N	K
142N086W20BBA	NDSWC 3559	1535	--	---	---	1967	---	---	U	---	--	---	---	2062	Y	N	---
142N086W24CCA	W.GUENTHER		--	46	24	1964	2	8-67	H	P	--	775	6.0	---	--	O	K
142N086W27CBA1	L.HUBER		--	24	24	1940	10	8-67	S	P	--	2000	---	---	--	O	K
142N086W27CBA2	L.HUBER		--	26	24	1963	10	8-67	H	---	--	1520	---	---	--	O	K
142N086W28AAD	NDSWC 3770	140	--	---	---	1969	---	---	U	---	--	---	---	2021	Y	N	---
142N086W28DAA	NDSWC 3769	160	44	47	1	1969	13	9-69	U	G	31	---	---	2016	Y	O	---
142N086W30CBA	I.BRUNMEIER		--	48	24	1963	30	---	S	---	--	3800	7.0	---	--	N	K
142N086W30CBC	I.BRUNMEIER		--	200	6	1947	125	---	K	---	OJ	2450	---	---	--	N	K

LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT.)	DEPTH TO FIRST PERFOR-ATION (FT.)	WELL DEPTH (FT.)	CASING DIAM-ETER (IN.)	DATE DRILLED (YEAR)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	WATER USE	WATER BEARING MATERIAL	AQUIFER	SPE-CIFIC CON-DUCT ANCE	TEM-PER-ATURE (°C)	ELE-VATION OF LSD (FT.)	LOG AVAIL-ABLE	FREQUENCY OF WATER-LEVEL MEASURE-MENTS	QW TYPE
142N086W32C8A	D.UNTERSEHER		--	--	--	--	--	--	K	--	--	3060	--	--	--	N	K
142N086W32CBD	D.UNTERSEHER	1320	--	--	4	1967	248	3-68	S	S	PS	--	--	2180	--	O	--
142N087W02AAA	L.BLOHM		--	34	4	1948	6	--	K	Z	OJ	1075	7.5	--	--	N	K
142N087W03DDD1	C.ZUERN		--	45	4	--	40	--	H	Z	OJ	775	--	--	--	N	K
142N087W03DDD2	C.ZUERN		--	45	4	1959	--	--	S	Z	OJ	1100	6.0	--	--	N	K
142N087W04ABA	C.ZUERN		--	280	4	1961	--	--	S	Z	OK	1900	7.0	--	--	N	K
142N087W06AAA	M.EMIG	82	77	--	4	1963	70	--	K	--	OJ	920	--	--	--	N	K
142N087W07DCC	T.KUSLER		--	12	48	--	4	7-67	K	--	--	3100	5.0	--	--	O	K
142N087W08BB01	E.STROM		--	46	42	1906	43	7-67	K	--	--	1650	--	--	--	O	K
142N087W08BB02	E.STROM	54	--	54	4	1958	48	--	K	Z	--	1500	--	--	--	N	K
142N087W14ABA1	A.MILLER		--	85	24	1964	64	--	K	Z	OJ	2950	--	--	--	N	K
142N087W14ABA2	A.MILLER		--	74	24	--	64	7-67	S	Z	OJ	3400	6.0	--	--	O	K
142N087W17DBD	M.STROM		--	51	24	--	45	--	K	Z	OJ	2100	6.0	--	--	N	K
142N087W17DCC	M.STROM		--	37	24	1965	14	--	S	QZ	--	3500	6.0	--	--	N	K
142N087W21ACA1	N.SMITH		--	70	24	1948	63	7-67	S	Z	OJ	>7000	6.0	--	--	O	K
142N087W21ACA2	N.SMITH		--	76	4	1950	70	--	H	Z	OJ	1100	--	--	--	N	K
142N087W21ACB3	N.SMITH		--	92	24	1964	85	--	S	Z	OJ	>7000	6.5	--	--	N	K
142N087W21ACB4	N.SMITH		--	84	24	1965	70	--	S	--	OJ	1200	6.0	--	--	N	K
142N087W22DDA	E.TJADEN		--	22	--	--	20	7-67	U	--	--	6500	6.0	--	--	O	K
142N087W28DCD	J.ZAHN		--	65	24	--	20	--	H	--	--	1030	--	--	--	N	K
142N087W30BAC1	J.SCHUTT		--	31	24	--	10	7-67	H	--	--	1120	--	--	--	O	K
142N087W30BAC2	J.SCHUTT		--	248	4	1958	--	--	S	Z	OK	1900	9.0	--	--	N	K
142N087W30BAC3	J.SCHUTT		--	44	24	1967	10	--	S	--	OJ	3250	5.5	--	--	N	K
142N087W30DDD	ST.BENED.CHURCH	129	110	129	4	1966	--	--	H	Z	OJ	2200	--	--	D	N	K
142N087W32DCC1	J.WEIAND		--	82	24	1950	67	--	K	B	OJ	4150	6.5	--	--	N	K
142N087W32DCC2	J.WEIAND		--	93	6	1961	63	--	K	--	OJ	2050	7.0	--	--	N	K
142N087W34DCD	E.LENNICK		--	72	--	1955	--	--	K	--	OJ	900	6.0	--	--	N	K
142N088W01CDC	NDSWC 3651	640	544	560	2	1968	219	12-68	U	S	OJ	3190	9.5	2075	Y	O	C
142N088W02DDB	G.SCHEIDT		--	32	24	1967	9	--	H	Z	OJ	720	6.5	--	--	N	K
142N088W04AAD	L.ERICKSON		--	36	4	1958	--	--	S	--	--	1150	9.0	--	--	N	K
142N088W04ADA	L.ERICKSON		--	29	24	1937	7	8-67	H	--	--	950	10.5	--	--	O	K
142N088W04BBB	J.WINKLER		--	28	24	1959	19	9-67	S	Z	OJ	1700	7.0	--	--	O	K
142N088W04BBB	J.WINKLER		--	28	24	1959	19	9-67	S	Z	OJ	1700	7.0	--	--	O	K
142N088W04DCD	L.ERICKSON	205	--	--	4	1947	--	--	S	--	OJ	820	8.5	--	D	N	K
142N088W08ABB1	J.WINKLER		--	18	--	1952	15	9-67	H	G	21	1950	--	--	--	O	K
142N088W08ABB2	J.WINKLER	83	--	83	4	1960	63	--	K	Z	OJ	1010	--	--	--	N	K
142N088W10DC	NDGS	93	--	--	--	1966	--	--	U	--	--	--	--	2218	G	N	--
142N088W14AA	NDGS	48	--	--	--	1966	--	--	U	--	--	--	--	2175	G	N	--
142N088W14CBD	R.FISCHER		--	46	24	1961	26	--	K	Z	OJ	1750	10.0	--	--	N	K
142N088W14CDC	R.FISCHER		--	44	24	1963	33	8-67	S	--	--	1000	9.0	--	--	O	K

LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT.)	DEPTH TO FIRST PERFORATION (FT.)	WELL DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	WATER USE	WATER BEARING MATERIAL	AQUIFER	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ELEVATION OF LSD (FT.)	LOG AVAILABLE	FREQUENCY OF WATER-LEVEL MEASUREMENTS	QW TYPE
142N088W20ACC	M.BALLENSKY		--	42	24	--	19	9-67	K	--	--	1600	--	--	--	O	K
142N088W21ACD	M.BALLENSKY		--	200	4	1961	--	--	S	P	OJ	2700	8.5	--	--	N	K
142N088W22CDD1	M.BALLENSKY		--	26	--	1947	18	8-67	S	--	--	>7000	6.0	--	--	O	K
142N088W22CDD2	M.BALLENSKY	90	67	--	4	1959	30	--	K	Z	OJ	1200	--	--	--	N	K
142N088W24ACC1	J.SEBASTIAN	214	202	--	5	1946	139	--	K	Z	OJ	1700	--	--	D	N	K
142N088W24ACC2	J.SEBASTIAN		--	68	24	1961	46	8-67	K	--	OJ	4800	7.5	--	--	O	K
142N088W25CDA1	C.FLEMMER		--	70	12	1954	10	--	H	--	OJ	2550	--	--	--	N	K
142N088W25CDA2	C.FLEMMER		--	16	48	--	10	--	S	--	--	4500	9.0	--	--	N	K
142N088W26AAD	A.FLEMMER	201	179	--	4	1966	110	--	K	S	OJ	2300	9.0	--	D	N	K
142N088W26BBA	A.FLEMMER		--	60	18	1960	30	--	H	Z	OJ	2150	--	--	--	N	K
142N088W29DAA1	J.GOETZ		--	25	24	--	6	8-67	K	Z	OJ	3700	--	--	--	O	K
142N088W29DAA2	J.GOETZ		--	44	24	1960	10	8-67	S	S	--	5300	7.0	--	--	O	K
142N088W29DAA3	J.GOETZ		--	35	24	--	17	8-67	S	Z	OJ	2500	7.5	--	--	O	K
142N088W30CCC1	J.GUNSCH		--	15	48	1940	13	8-67	S	Z	OJ	1700	--	--	--	O	K
142N088W30CCC2	J.GUNSCH	26	21	--	4	1956	5	--	H	Z	OJ	1500	--	--	--	N	K
142N088W30CCC3	J.GUNSCH		--	24	4	1964	6	--	S	Z	OJ	2400	8.5	--	--	N	K
142N088W32CCC1	E.FRANK		--	9	24	1953	6	--	H	--	--	1510	--	--	--	N	K
142N088W32CCC2	E.FRANK		--	40	24	1964	20	--	S	G	--	990	--	--	--	N	K
142N088W34CAD1	L.BOECKEL		--	96	24	--	72	8-67	S	--	OJ	5900	7.5	--	--	O	K
142N088W34CAD2	L.BOECKEL		--	100	8	--	--	--	H	--	OJ	1750	9.5	--	--	O	K
142N089W04CA	F.UNRUH	1260	--	--	2	1964	+28	7-68	S	S	PS	--	--	1950	D	O	--
142N089W09AB	F.UNRUH	1250	--	--	2	1966	+28	5-68	S	S	PS	--	--	1948	D	O	--
142N089W10AB	E.UNRUH	1480	--	--	2	--	F	--	S	S	PS	2700	11.5	1965	--	N	C
142N089W13CBB	E.UNRUH		--	45	24	1965	18	--	S	--	--	2500	--	--	--	N	K
142N089W13CBC	E.UNRUH	40	--	40	4	1950	24	8-67	K	G	21	2150	--	--	--	O	K
142N089W13CCB1	E.UNRUH		--	40	24	1954	13	8-67	S	G	21	3250	--	--	--	O	K
142N089W13CCB2	E.UNRUH		--	45	24	1961	20	--	H	G	21	3100	--	--	--	N	K
142N089W13CCB3	E.UNRUH		--	58	24	1965	15	8-67	S	Z	OJ	2475	--	--	--	O	K
142N089W26CCA	C.FISCHER		--	67	24	1966	31	8-67	S	--	OJ	3200	9.0	--	--	O	K
142N089W26CCD1	C.FISCHER		--	45	24	1967	10	--	H	--	--	2250	10.0	--	--	N	K
142N089W26CCD2	C.FISCHER		--	65	24	--	42	8-67	S	--	--	4000	7.0	--	--	O	K
142N089W30CCC	W.OPP		--	300	4	1952	30	--	S	S	OK	4400	--	--	--	N	K
142N090W03AAA	NDSWC 3761	60	--	--	--	1969	--	--	U	--	--	--	--	--	--	--	--
142N090W03DC	V.KREIN	880	--	861	2	1964	+86	7-68	S	S	PS	--	--	1870	GE	N	--
142N090W04CB	F.CROWLEY	840	--	--	2	--	+75	6-68	S	S	PS	--	--	1890	D	O	--
142N090W07AA	J.CROWLEY	880	--	--	2	--	+41	10-67	S	S	PS	--	--	1904	D	O	--
142N090W10DDC	V.KREIN	880	--	--	2	--	+22	5-68	S	S	PS	--	--	1945	D	O	--
142N090W13ABB	F.UNRUH	1100	--	--	2	1966	+19	5-68	S	S	PS	--	--	1954	D	O	--
142N090W15BD 1	F.UNRUH	543	--	--	2	1966	F	--	S	S	OD	3010	11.5	--	--	O	--
142N090W15BD 2	F.UNRUH		--	280	2	1930	F	--	S	--	OD	3020	9.5	1912	--	N	C
														1912	--	N	C

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142N090W20BC	F.TREIBER	810	--	--	2	--	+19	10-67	S	S	PS	--	--	1971	D	O	--
142N090W21DD	B.KITZAN	920	--	--	2	1964	--	--	S	S	--	--	--	--	--	N	--
142N090W23AC	F.UNRUH	920	--	--	2	1966	+21	4-68	S	S	PS	2580	12.5	1954	D	O	K
142N090W23DB	F.UNRUH	880	--	--	2	1966	+36	3-67	K	S	PS	--	--	1941	D	O	--
142N090W23DCC1	NDGS	74	--	--	--	1967	--	--	U	--	--	--	--	--	G	N	--
142N090W23DCC2	NDSWC 3762	220	176	179	1	1969	31	8-69	U	R	31	3990	--	1952	Y	O	C
142N090W25BA	F.SCHMIDT	960	--	--	2	--	F	--	S	S	PS	2900	13.5	--	--	N	C
142N090W25CB	F.SCHMIDT		--	880	2	--	+19	5-68	S	--	PS	2900	14.5	1956	--	O	C
142N090W26ABB	F.UNRUH	860	--	--	2	1963	+19	6-68	S	S	PS	2900	14.5	1958	D	M	C
142N090W29BCC	F.MARTIN	940	--	--	2	--	F	--	S	S	PS	--	--	1986	--	N	--
142N090W30AA	J.SCHNAIDT	860	--	--	--	--	+12	5-68	S	S	PS	--	--	1958	--	D	--
142N090W36AD	W.OPP	910	--	--	2	--	+12	5-68	S	S	PS	--	--	1971	--	M	--
142N090W36ADA	W.OPP		--	36	36	1957	18	--	H	S	21	1900	9.0	--	--	N	K
143N081W30BCB	N.PACIFIC R.R.		--	9	30	--	--	8	7-67	U	--	--	1650	9.5	--	--	O	K
143N081W31DDD	NDGS	24	--	--	--	--	--	--	U	--	--	--	--	1705	G	N	--
143N081W32CBC1	G.SMITH		--	30	24	--	12	--	S	--	--	3600	9.0	--	--	N	K
143N081W32CBC2	G.SMITH		--	240	2	1959	18	--	H	G	OL	2500	--	--	--	N	K
143N082W01BBB	NDSWC 3726	80	--	--	--	1969	--	--	U	--	--	--	--	1725	Y	N	--
143N082W07ABC	W.VAN OOSTING		--	260	--	--	--	--	K	--	OD	1400	8.5	--	--	N	K
143N082W09BCC	R.MCCONE		--	560	2	1929	--	--	K	Z	OL	2200	9.0	--	--	N	K
143N082W09CAD	R.MCCONE		--	41	24	1962	10	7-67	S	--	--	900	6.5	--	--	O	K
143N082W10BDD	NDGS	40	--	--	--	--	--	--	U	--	--	--	--	1860	G	N	--
143N082W10CAD	NDGS	59	--	--	--	--	--	--	U	--	--	--	--	1850	G	N	--
143N082W13ADC1	CROSS RANCH		--	250	4	--	--	--	S	--	OL	2350	--	--	--	N	K
143N082W13ADC2	CROSS RANCH		--	250	4	--	--	--	K	--	OL	2400	--	--	--	N	K
143N082W17BCC	NDGS	29	--	--	--	--	--	--	U	--	--	--	--	1995	G	N	--
143N082W18CDC1	M.SORSTOKKE		--	70	24	--	55	--	H	Z	OD	1900	--	--	--	N	K
143N082W18CDC2	M.SORSTOKKE		--	70	24	1960	55	--	S	Z	OD	1450	7.0	--	--	N	K
143N082W20DAD1	J.DUHR		--	132	4	1948	122	--	H	S	OD	1325	--	--	--	N	K
143N082W20DAD2	J.DUHR		--	71	24	1960	49	7-67	U	Z	OD	4200	11.0	--	--	O	K
143N082W20DAD3	J.DUHR		--	230	4	1965	200	--	K	S	OD	1350	--	--	--	N	K
143N082W22BAD1	B.SMITH		--	19	36	1930	14	7-67	H	GZ	--	650	9.5	--	--	O	K
143N082W22BAD2	B.SMITH		--	11	24	1938	8	7-67	U	--	--	725	7.5	--	--	O	K
143N082W23DDA	B.CORWIN		--	240	4	1951	--	--	K	--	OD	2500	--	--	--	N	K
143N082W30ABB	H.ELLIS		--	82	24	--	27	7-67	U	--	--	6200	9.0	--	--	O	K
143N082W30DCB	H.ELLIS		--	67	24	1960	47	7-67	S	--	--	1400	8.5	--	--	O	K
143N082W34CCD1	T.BARTH	233	--	233	4	1960	150	--	K	Z	OD	1340	--	--	--	N	K
143N082W34CCD2	T.BARTH		--	100	2	--	60	--	S	Z	OD	--	6.5	--	--	N	--
143N082W34CDC	T.BARTH		--	40	24	1962	22	--	S	P	--	1450	6.0	--	--	N	K
143N082W35CCB	D.FLOWERS	81	--	81	4	1960	70	--	K	Z	--	635	--	--	--	N	K

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143N083W06BAB	N.PACIFIC R.R.		--	284	6	1958	--	--	U	V	OL	2320	9.5	--	D	N	K
143N083W06BCA	FORT CLARK	284	263	--	--	--	F	--	H	--	--	2400	13.5	1705	--	N	K
143N083W06BCB1	F.BRAZDA		--	65	24	1948	20	7-67	S	--	--	2400	8.5	--	--	O	K
143N083W06BCB2	F.BRAZDA		--	47	4	1954	16	--	H	P	--	1950	--	--	--	N	K
143N083W06BCB3	F.BRAZDA		--	72	4	1958	36	--	S	--	--	2400	8.5	--	--	N	K
143N083W08ADD1	B.COGAN		--	319	4	1954	100	--	H	S	OL	2100	9.0	--	--	N	K
143N083W08ADD2	B.COGAN	78	74	--	4	1957	72	--	S	Z	--	2600	8.5	--	--	N	K
143N083W10BAC	CO.WELFARE BD.		--	12	24	--	10	--	K	Z	OD	980	8.5	--	--	N	K
143N083W10DCC	W.ROCKENBACH		--	86	24	1963	--	--	S	2S	OD	2300	8.5	--	--	N	K
143N083W14CDC	C.STAIGLE		--	47	24	1962	13	6-67	K	G	21	2050	--	--	--	O	K
143N083W18BCB1	J.BRAZDA		--	63	18	1949	--	--	K	--	--	2400	8.5	--	--	N	K
143N083W18BCB2	J.BRAZDA	265	260	--	4	1963	--	--	H	--	--	3250	--	--	--	N	K
143N083W19BAA	O.SKAGER		--	278	4	1951	100	--	K	--	OD	2580	--	--	--	N	K
143N083W28DAD	R.BENJAMIN		--	94	24	1905	66	6-67	U	Z	OD	3500	7.0	--	--	O	K
143N084W01BBC	K.ALDERIN		--	104	6	1958	2	--	S	--	--	2500	--	--	--	N	K
143N084W10ADD	J.MCNULTY		--	115	4	1966	100	--	K	P	OD	2700	--	--	--	N	K
143N084W12DCC	B.HEINZ		--	84	24	--	63	7-67	K	--	OD	2100	7.5	--	--	O	K
143N084W14BBB	BAGLEY BROS.		--	220	4	1960	--	--	K	Z	OD	--	--	--	--	N	--
143N084W18DCC1	A.BERG		--	160	6	1942	148	--	K	--	OD	1250	--	--	--	N	K
143N084W18DCC2	A.BERG		--	104	6	1957	80	--	S	Z	OD	600	8.5	--	--	N	K
143N084W20CBC	NDGS	59	--	--	--	--	--	--	U	--	--	--	--	2070	G	N	--
143N084W22DDC1	PERSCHKE BROS.		--	29	4	1967	23	--	S	Z	OJ	1300	--	--	--	N	K
143N084W22DDC2	PERSCHKE BROS.		--	30	36	--	24	--	H	Z	OD	1185	--	--	--	N	K
143N084W28CCC1	H.SCHULTE		--	60	24	--	42	--	S	G	--	885	9.5	--	--	N	K
143N084W28CCC2	H.SCHULTZ	65	--	65	4	1956	40	--	S	G	31	1050	--	--	D	N	C
143N084W29DDD1	E.BORNEMANN		--	46	24	--	39	7-67	S	Z	OD	1000	7.0	--	--	O	K
143N084W29DDD2	E.BORNEMANN	62	57	--	4	1958	--	--	H	G	31	1160	--	--	--	N	K
143N084W31CAA	P.BECKMAN	40	36	--	4	--	20	--	S	Z	OD	750	7.5	--	--	N	K
143N084W32DAB1	K.ALBERS	90	86	--	4	1951	36	--	S	Z	--	680	8.5	--	--	N	K
143N084W32DAB2	K.ALBERS	93	84	--	4	1954	40	--	H	Z	--	680	--	--	--	N	K
143N084W32DAB3	K.ALBERS		--	30	18	--	14	--	S	Z	OJ	550	6.5	--	--	N	K
143N084W34ACD	C.SCHULTE		--	243	2	1940	100	--	K	Z	OD	880	--	--	--	N	K
143N085W02BCB	C.BERG		--	43	14	--	24	7-67	K	--	--	1200	--	--	--	O	K
143N085W02DAA1	M.SCHUMANN		--	40	4	1947	12	--	K	Z	OD	2075	--	--	--	N	K
143N085W02DAA2	M.SCHUMANN		--	84	4	1950	--	--	S	Z	OD	1500	--	--	--	N	K
143N085W02DAD	M.SCHUMANN		--	12	48	--	6	--	S	--	--	1700	--	--	--	N	K
143N085W03AAA	NDSWC 3643	80	--	--	--	1968	--	--	U	--	--	1240	--	1960	G	N	C
143N085W03AAD	NDSWC 3736	160	--	--	--	1969	--	--	U	--	--	--	--	1980	Y	N	--
143N085W03AD	M.SCHUMANN		--	84	4	1956	30	--	S	S	--	510	--	--	--	N	K
143N085W03DAD	NDSWC 3557	1360	--	--	--	1967	--	--	U	--	--	--	--	1988	Y	N	--

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143N085W03DDD	NDSWC 3644	80	--	--	--	1968	--	--	U	--	--	--	--	1986	G	N	--
143N085W04DAC1	M.PFLIGER		--	135	4	1939	95	--	S	8Z	0D	2150	--	--	--	N	K
143N085W04DAC2	M.PFLIGER		--	132	3	1946	40	--	K	8Z	0D	2100	--	--	D	N	K
143N085W04DAC3	M.PFLIGER		--	28	24	1965	4	--	S	S	--	5000	--	--	--	N	K
143N085W06DAA1	O.CAHOON		--	10	15	1946	9	7-67	H	S	--	1200	--	--	--	O	K
143N085W06DAA2	O.CAHOON		--	18	36	1960	7	7-67	S	S	--	3800	6.5	--	--	O	K
143N085W08ADA	N.RITTERATH		--	80	4	1957	40	--	H	S	--	1680	--	--	--	N	K
143N085W08DDA1	J.SCHWAB		--	42	24	1946	19	7-67	S	Z	--	6250	8.5	--	--	O	K
143N085W08DDA2	J.SCHWAB		--	46	5	1953	21	7-67	H	G	--	1650	--	--	--	O	K
143N085W11ADB	R.BERG	100	--	100	4	1958	18	--	H	Z	0D	1175	--	--	--	N	K
143N085W20BDD	V.KARGAS	225	222	--	4	1959	--	--	S	--	0D	800	9.0	--	--	N	K
143N085W22AAB1	J.VAVRA		--	100	24	1963	80	--	K	HS	0D	1350	--	--	--	N	K
143N085W22AAB2	J.VAVRA		--	30	24	--	23	7-67	U	--	--	550	9.0	--	--	O	K
143N085W22CDC1	A.CAHOON		--	63	24	1920	49	7-67	K	--	0D	1500	8.5	--	--	O	K
143N085W22CDC2	A.CAHOON	128	--	128	4	1963	--	--	K	--	0D	925	8.5	--	--	N	K
143N085W25CCD	P.BECKMAN	122	118	--	4	1964	60	--	K	Z	0D	925	--	--	--	N	K
143N085W29DDC	H.BARGMANN		--	116	4	1959	--	--	S	--	--	620	8.5	--	--	N	K
143N085W30CDD	R.UNTERSEHER		--	32	24	1960	15	--	K	--	--	810	--	--	--	N	K
143N085W32AAA	A.BARGMANN	103	--	103	4	1955	48	7-67	S	Z	0D	750	--	--	--	O	K
143N085W34DCC	F.BORNEMANN		--	150	6	1925	98	7-67	K	Z	0D	1030	9.5	--	--	O	K
143N085W35BBC	E.BECKMAN		--	105	4	1945	65	--	K	Z	0D	775	7.5	--	--	N	K
143N085W36BAB	E.BECKMAN		--	110	4	1947	60	--	S	S	0D	575	13.5	--	--	N	K
143N086W02CBD	G.CLARK		--	225	4	1955	135	--	H	P	0D	2000	--	--	--	N	K
143N086W04BBC	W.KOVARIK		--	22	15	--	6	7-67	H	--	--	1650	12.5	--	--	O	K
143N086W06BCC	H.TYSVER		--	28	48	1903	20	--	K	--	--	1120	9.0	--	--	N	K
143N086W07DDC1	A.BENTZ	100	92	--	4	1954	40	--	H	Z	0K	1580	--	--	D	N	K
143N086W07DDC2	A.BENTZ		--	42	24	--	34	--	S	--	--	4900	6.0	--	--	N	K
143N086W10CCD	E.REICH		--	50	18	--	40	--	K	Z	0J	1475	9.0	--	--	N	K
143N086W12DAA	F.SCHAROSCH		--	60	4	--	40	--	K	Z	0J	1375	--	--	--	N	K
143N086W15BBA	E.REICH		--	23	24	1966	9	7-67	S	Z	0J	6200	7.0	--	--	O	K
143N086W17CCB	A.GROSZ		--	80	24	1962	65	--	K	P	--	1880	10.0	--	--	N	K
143N086W18DDA	A.GROSZ		--	46	24	1966	34	--	S	Z	0J	7000	8.5	--	--	N	K
143N086W21BA	C.SCHUH	100	85	--	4	1956	60	--	K	Z	0J	975	--	--	D	N	K
143N086W24BCC	A.RAHN		--	20	24	1966	7	--	S	G	2I	1000	8.5	--	--	N	K
143N086W25CCD	NDGS	29	--	--	--	--	--	--	U	--	--	--	--	--	G	N	--
143N086W35CDD1	R.JENSEN		--	130	6	1935	100	--	S	Z	0J	1700	8.5	--	--	N	K
143N086W35CDD2	R.JENSEN		--	68	4	1947	45	--	K	G	--	880	10.5	--	--	N	K
143N087W02BCB1	A.HILDEBRAND	140	135	136	4	1955	115	--	K	Z	0J	2100	--	--	D	N	K
143N087W02BCB2	A.HILDEBRAND		--	140	4	1966	115	--	S	Z	0J	2080	9.0	--	--	N	K
143N087W04ABC	J.THOMPSON		--	170	--	--	--	--	K	--	0J	2050	9.0	--	--	N	K

LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT.)	DEPTH TO FIRST PERFOR-ATION (FT.)	WELL DEPTH (FT.)	CASING DIAM-ETER (IN.)	DATE DRILLED (YEAR)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	WATER USE	WATER BEARING MATERIAL	AQUIFER	SPE-CIFIC CON-DUCT ANCE	TEM-PER-ATURE (°C)	ELE-VATION OF LSD (FT.)	LOG AVAIL-ABLE	FREQUENCY OF WATER-LEVEL MEASURE-MENTS	QW TYPE
143N087W06CAA1	E.LIEBELT,SR.	167	162	--	4	1947	152	--	S	Z	OJ	2050	9.5	--	D	N	K
143N087W06CAA2	E.LIEBELT,SR.		--	14	30	--	10	7-67	S	Z	OJ	3800	--	--	--	O	K
143N087W08AAA	D.NEUBERGER		--	90	5	--	--	--	K	Z	OJ	2900	9.0	--	--	N	K
143N087W08BBB	A. NEUBERGER		--	280	5	--	180	--	K	--	--	2780	11.0	--	--	N	--
143N087W10CBB	J.WAGNER		--	12	6	1953	7	--	H	Z	OJ	1900	10.0	--	--	N	K
143N087W11AAA	L.TYSVER		--	26	30	1962	7	7-67	S	Z	OJ	2350	7.5	--	--	O	K
143N087W12BAA	L.TYSVER		--	135	5	1947	--	--	K	Z	OJ	1350	9.0	--	--	N	K
143N087W13CCB	O.KOEHLER		--	67	24	1961	50	--	K	--	--	5600	9.0	--	--	N	K
143N087W19DAD1	W.HETH		--	80	6	--	--	--	H	Z	OJ	5000	--	--	--	N	K
143N087W19DAD2	W.HETH		--	46	36	--	16	7-67	S	--	--	5900	8.5	--	--	O	K
143N087W23BBD1	O.RASZLER		--	21	36	1960	17	--	S	P	--	1225	9.0	--	--	N	K
143N087W23BBD2	O.RASZLER		--	39	24	1966	16	7-67	H	P	--	1080	--	--	--	O	K
143N087W25BB	J.BORNEMAN	1380	--	--	2	--	54	5-68	S	S	PS	3200	--	1967	--	O	C
143N087W31BBC1	G.CLINE		--	60	5	--	40	--	U	--	--	675	10.0	--	--	N	K
143N087W31BBC2	G.CLINE		--	180	5	--	145	--	K	--	OJ	2450	--	--	--	N	K
143N087W31ODC	E.STROM		--	54	4	1954	46	--	U	--	--	1200	6.0	--	--	N	K
143N087W33BAD1	E.BUCHMANN		--	48	24	1962	32	--	H	Z	OJ	1050	--	--	--	N	K
143N087W33BAD2	E.BUCKMAN		--	71	24	1962	29	7-67	S	Z	OJ	2700	8.5	--	--	O	K
143N088W04CBC	F.MURRAY	803	--	798	2	1967	+62	5-68	S	S	OL	--	--	1795	D	O	--
143N088W04DCD	R.KEOGH		--	30	--	--	18	7-48	S	--	31	1410	6.5	1790	--	M	C
143N088W06CDD	F.MURRAY	963	--	945	2	1967	+105	6-68	S	S	PS	--	--	1835	D	O	--
143N088W10AAD	KNIFE RIVER CO.		--	340	4	1963	--	--	C	--	--	1470	--	--	--	N	K
143N088W10CCC	B.KEOGH	960	--	--	2	--	+108	7-68	S	S	PS	--	--	1865	D	O	--
143N088W21CAC1	W.FETCH		--	105	24	1965	62	9-67	S	P	OJ	1490	11.0	--	--	O	K
143N088W21CAC2	W.FETCH		--	28	24	--	26	9-67	K	P	--	880	--	--	--	O	K
143N088W22AAA	H.SCHMIDT		--	8	24	1956	15	9-67	K	G	--	1400	--	--	--	O	K
143N088W25DAD1	J.ORTH		--	30	24	1925	16	9-67	S	Z	OJ	1100	7.5	--	--	O	K
143N088W25DAD2	J.ORTH		--	30	4	1957	20	--	K	Z	OJ	1300	--	--	--	N	K
143N088W28CBB	NDGS	74	--	--	--	1966	--	--	U	--	--	--	--	2082	G	N	--
143N088W28DAO	R.ENDRESON		--	115	4	1960	105	--	H	--	OJ	1950	--	--	--	N	K
143N088W29DBC	H.WINKLER		--	300	2	--	50	--	K	--	OK	2450	--	--	--	N	K
143N088W31BD	R.MURRAY	1040	--	--	2	--	+43	5-68	S	S	PS	--	--	1910	D	O	--
143N088W31CAA1	R.MURRAY		--	22	24	--	16	--	S	--	--	2500	7.5	--	--	N	K
143N088W31CAA2	R.MURRAY		--	20	6	--	18	--	H	Z	OJ	2200	12.5	--	--	N	K
143N088W31CAA3	R.MURRAY		--	300	2	--	50	--	K	S	OK	2850	10.5	--	--	N	K
143N088W33CAA	D.GUNSCH		--	74	24	1937	56	--	K	Z	OJ	2980	--	--	--	N	K
143N088W34BCB1	D.GUNSCH		--	100	24	1966	45	--	S	Z	OJ	3200	9.5	--	--	N	K
143N088W34BCB2	D.GUNSCH		--	74	24	--	46	8-67	S	Z	OJ	4280	9.5	--	--	O	K
143N088W34DAD	A.KUSLER		--	136	6	1936	136	--	K	Z	OJ	2000	--	--	--	N	K
143N088W35ADD	A.ERICKSON	210	202	204	4	1956	--	--	K	S	OJ	2100	9.5	--	D	N	K

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143N089W02DCA	J.BUECHLER		--	23	4	1963	--	--	S	--	--	3700	9.0	--	--	N	K
143N089W02DC0	J.BUECHLER		--	47	4	--	--	--	K	Z	OJ	1150	--	--	--	N	K
143N089W04ABB1	A.BOECKEL		--	142	4	1940	125	--	S	Z	OJ	1800	9.5	--	--	N	K
143N089W04ABB2	A.BOECKEL		--	48	4	1963	28	--	H	Z	OJ	2650	--	--	--	N	K
143N089W05DCC	C.TESKE		--	70	4	1930	60	--	K	--	--	3300	10.5	--	--	N	K
143N089W08AB8	C.TESKE		--	67	24	1964	50	--	S	--	--	3800	--	--	--	N	K
143N089W09BCA	A.BRANDT		--	180	4	1961	--	--	S	--	--	2600	9.5	--	--	N	K
143N089W09BCC	A.BRANDT		--	238	4	1944	208	--	K	--	--	2400	10.0	--	--	N	K
143N089W10CC	E.TESKE		--	100	5	--	49	4-46	U	--	--	--	--	--	--	O	--
143N089W11DAA	NDGS	68	--	--	--	1968	--	--	U	--	--	--	--	1848	G	N	--
143N089W11DDD1	NDGS	85	--	--	--	--	--	--	U	--	--	--	--	1815	G	N	--
143N089W11DDD2	NDSWC 3766	90	56	59	1	1969	18	8-69	U	9S	31	1720	9.5	1822	Y	O	C
143N089W11DDD3	NDSWC 3767	120	--	--	--	1969	--	--	U	--	--	--	--	1822	Y	N	--
143N089W12ABD1	D.& K.REICH	85	82	--	4	1964	20	--	S	Z	OJ	2930	8.5	--	--	N	K
143N089W12ABD2	D.& K.REICH		--	85	4	--	20	--	H	Z	OJ	2450	--	--	--	N	K
143N089W14ADD	NDGS	29	--	--	--	1968	--	--	U	--	--	--	--	1820	G	N	--
143N089W14DDA	NDSWC 3768	40	--	--	--	1969	--	--	U	--	--	--	--	1815	G	N	--
143N089W15AB	R.JOHNSON	1000	--	--	2	1964	+82	7-68	S	S	--	--	--	1857	D	O	--
143N089W15CBD1	R.JOHNSON		--	30	6	1953	26	--	H	G	--	1200	9.5	--	--	N	K
143N089W15CBD2	R.JOHNSON		--	30	6	1955	26	--	S	G	--	1400	9.0	--	--	N	K
143N089W18ACC	HAUCK BROS.	1380	--	--	2	1964	+89	7-68	S	S	PS	--	--	1920	D	O	--
143N089W19ACC	HAUCK BROS.	1280	--	--	2	--	+97	5-68	S	S	PS	2320	17.5	1897	--	O	C
143N089W21AAC1	P.GOEHRING		--	38	6	1963	14	--	H	G	--	1400	8.5	--	--	N	K
143N089W21AAC2	P.GOEHRING		--	38	6	--	12	--	S	G	--	1150	9.5	--	--	N	K
143N089W25BAB	R.MURRAY	463	--	441	2	--	255	--	S	S	OD	--	--	--	--	N	--
143N089W27ADC	E.UNRUH	1100	--	--	2	1967	+45	4-68	S	S	PS	--	--	1910	D	O	--
143N089W33DCC	F.UNRUH	1040	--	--	2	--	+26	4-68	S	--	--	--	--	1906	--	O	--
143N090W02CCA	C.QUAST		--	70	24	1966	38	9-67	S	V	--	1920	7.0	--	--	O	K
143N090W02CDA1	C.QUAST		--	51	20	1930	34	9-67	S	Z	OJ	1700	7.0	--	--	O	K
143N090W02CDA2	C.QUAST		--	45	24	1960	20	--	H	Z	OJ	1400	--	--	--	N	K
143N090W05BAA1	A.WOLFF		--	42	24	1964	20	--	S	R	--	1050	--	--	--	N	K
143N090W05BAA2	A.WOLFF		--	45	24	1965	17	--	H	R	--	620	--	--	--	N	K
143N090W08BBA	M.FAUT		--	100	5	1951	32	--	K	--	--	1700	7.0	--	--	N	K
143N090W08DAD1	M.FAUT	125	--	125	4	1963	91	9-67	U	Z	OJ	2300	--	--	--	O	K
143N090W08DAD2	M.FAUT		--	117	24	1967	97	9-67	S	Z	OJ	1300	7.0	--	--	O	K
143N090W08DDA	M.FAUT		--	95	24	--	87	9-67	U	--	--	900	9.0	--	--	O	K
143N090W18ADC	C.KIESZ		--	90	--	1952	60	--	K	Z	OJ	1000	--	--	--	N	K
143N090W18CCA	C.KIESZ		--	28	4	1967	20	--	S	Z	OJ	<500	7.0	--	--	N	K
143N090W24BA	HAUCK BROS.	1300	--	1280	2	1964	+38	4-68	K	S	PS	2420	17.5	1962	D	O	C
143N090W24BAA1	HAUCK BROS.		--	24	48	1936	7	9-67	S	--	--	4400	14.5	--	--	O	K

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143N090W24BAA2	HAUCK BROS.		--	18	1	--	6	--	S	--	--	3300	--	--	--	N	K
143N090W24BAA3	HAUCK BROS.		--	18	48	1950	6	9-67	S	--	--	4020	9.5	--	--	D	K
143N090W26DDB	J.CONNOLLY	500	--	--	2	1966	+87	3-67	K	S	QD	2900	--	1864	--	D	C
143N090W29CBA	A.EHLI		--	248	5	1949	200	--	K	Z	QJ	1300	--	--	--	N	K
143N090W30DAC	J.CONNOLLY	73	--	73	4	1960	--	--	K	G	--	1950	--	--	--	N	K
143N090W33CC	R.BACKFISH	920	--	--	2	--	+17	6-68	S	S	--	--	--	1861	D	D	--
143N090W34AC	NDSWC 3661	540	--	--	--	1968	--	--	U	--	--	--	--	1922	GE	N	--
143N090W34CD	R.BACKFISH	880	--	--	2	--	+98	6-68	K	S	PS	2870	12.0	1870	D	D	C
143N090W34DAC1	NDSWC 3759	140	99	105	1	1969	19	8-69	U	G	31	2330	10.0	1869	G	D	C
143N090W34DAC2	NDSWC 3760	120	76	79	1	1969	19	8-69	U	R	31	3160	--	1870	Y	D	C
143N090W34DCB	R.BACKFISH	680	--	680	2	1963	+74	6-68	S	S	QD	2830	11.5	1865	D	D	C
144N081W31CCC	NDSWC 2691	60	--	--	--	1967	--	--	U	--	--	--	--	1680	GD	N	--
144N082W17CCB	USBR	70	--	--	--	1945	--	--	U	--	--	--	--	1675	G	N	--
144N082W17CCC	NDGS	24	20	23	1	1967	14	9-67	U	S	31	1360	12.5	1674	GD	D	C
144N082W17CDB	USBR	70	--	--	--	1945	--	--	U	--	--	--	--	1675	G	N	--
144N082W17CDD1	NDSWC PW	115	97	111	8	1968	17	10-68	U	G	31	2030	--	1674	G	D	C
144N082W17CDD2	NDSWC 3630 NO.1	240	80	105	1	1968	16	10-68	U	S	31	1970	--	1674	GE	D	C
144N082W17CDD3	NDSWC 3631 NO.2	120	59	103	1	1968	17	10-68	U	R	31	1800	--	1674	GE	D	C
144N082W17CDD4	NDSWC 3632 NO.6	120	60	103	1	1968	14	10-68	U	G	31	1910	--	1672	GE	D	C
144N082W20ABB	NDSWC 3633 NO.4	120	98	101	1	1968	17	10-68	U	S	31	1770	--	1674	GE	D	C
144N082W20DCD	B.FAIMIN		--	85	--	--	--	--	N	--	31	1110	10.0	--	--	N	C
144N082W21AAA	NDGS	19	17	19	1	1967	13	9-67	U	S	31	--	--	1671	GD	D	--
144N082W21BBB	NDGS	19	17	19	1	1967	12	9-67	U	S	31	--	--	1669	GD	D	--
144N082W21CBB	NDGS	19	17	19	1	1967	11	9-67	U	S	31	1490	9.0	1675	GD	D	C
144N082W21CBD	USBR	49	--	--	--	1945	--	--	U	--	--	--	--	1672	G	N	--
144N082W21CDD	NDSWC 3730	140	98	104	1	1969	11	8-69	U	S	31	1600	9.0	1675	Y	D	C
144N082W21DAA	NDSWC 2903	100	67	70	1	1967	11	1-68	U	S	31	1720	7.0	1670	GD	D	C
144N082W22ACC	NDSWC 3731	240	--	--	--	1969	--	--	U	--	--	--	--	1670	Y	N	--
144N082W22BAC1	F.WEISGARBER		--	--	--	--	--	--	S	--	--	1280	8.5	--	--	N	K
144N082W22BAC2	F.WEISGARBER		--	21	--	--	--	--	H	--	--	850	8.5	--	--	N	K
144N082W23BBB1	NDSWC 2688	70	35	38	1	1967	12	8-67	U	S	31	979	9.5	1665	GD	D	C
144N082W23BBB2	NDSWC 2901	60	48	51	1	1967	6	1-68	U	S	31	--	--	1665	GD	M	--
144N082W23DDD	NDSWC 3729	240	197	200	1	1969	4	8-69	U	R	31	2410	9.5	1670	YC	D	C
144N082W25BBB	NDGS	14	12	14	1	1967	7	9-67	U	S	31	--	--	1663	GD	D	--
144N082W26ADD	NDSWC 3728	80	23	26	1	1969	9	8-69	U	S	31	2160	7.5	1775	GE	D	C
144N082W26BBA	NDSWC 2690	80	57	60	1	1967	7	7-67	U	S	31	1600	8.5	1668	Y	D	C
144N082W27BBB1	NDSWC 2689	84	47	50	1	1967	8	7-67	U	S	31	1480	9.5	1668	Y	M	C
144N082W27BBB2	NDSWC 2902	100	62	68	4	1967	12	1-68	U	S	31	--	--	1668	Y	C	--
144N082W27DDA	USBR	30	--	--	--	1945	--	--	U	--	--	--	--	1669	G	N	--
144N082W28BBB	NDGS	49	--	--	--	1967	--	--	U	--	--	--	--	1705	G	N	--

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144N082W28CBA	NDSWC 3638	140	100	120	1	1968	49	11-68	U	S	31	1030	--	1704	GE	M	C
144N082W28CDC	G.KIRK		--	15	36	1957	8	7-67	H	G	--	750	--	--	--	O	K
144N082W28DAA	NDGS	19	17	19	1	1967	7	1-68	U	S	21	--	--	1675	G	O	--
144N082W29AB	A.VAN OOSTING		--	72	18	1950	--	--	I	4G	31	1140	7.0	--	--	N	C
144N082W29ACA	A.VAN OOSTING		--	294	4	1949	50	--	K	S	OL	2750	--	--	--	N	K
144N082W29DAD	USBR	41	--	--	--	1945	--	--	U	--	--	--	--	1721	G	N	--
144N082W32ABA	G.BENTZ		--	95	2	1948	75	--	K	--	--	1800	--	--	--	N	K
144N082W35ADA	NDSWC 3727	60	--	--	--	1969	--	--	U	--	--	--	--	1738	Y	N	--
144N083W13DDD	NDGS	19	17	19	1	1967	9	8-67	U	S	21	980	8.5	1671	GD	O	C
144N083W24CCC	NDGS	29	27	29	1	1967	9	8-67	U	S	31	1520	8.5	1675	GD	O	C
144N083W24DBA	CULLEN BROS.		--	100	18	1957	20	--	I	--	31	2480	10.5	--	--	N	C
144N083W24DDC1	CULLEN BROS.		--	14	60	--	7	7-67	S	S	--	2520	8.5	--	--	O	K
144N083W24DDC2	CULLEN BROS.		--	20	36	--	13	--	K	P	--	2350	--	--	--	N	K
144N083W24DDD	NDGS	28	26	28	1	1967	9	8-67	U	S	31	2000	9.0	1684	GD	O	C
144N083W25AAA	NDSWC 2904	40	--	--	--	1967	--	--	U	--	--	--	--	1684	GD	N	--
144N083W25ABA	CULLEN BROS.		--	18	36	--	13	--	H	V	--	2875	--	--	--	N	K
144N083W26BBB	NDGS	19	17	19	1	1967	13	8-67	U	S	21	--	--	1675	GD	O	--
144N083W26D8	H.SMITH	360	--	--	2	1967	+34	5-68	K	S	OL	2570	--	1680	D	O	C
144N083W26D8C	H.SMITH		--	30	18	--	20	--	K	G	31	1900	--	--	--	N	K
144N084W17CC	G.SAGEHORN		--	320	4	1966	F	--	K	S	OL	--	--	1735	--	N	--
144N084W18BCB1	E.LINK	140	90	--	4	1963	12	6-67	S	S	--	550	--	--	--	O	K
144N084W18BCB2	E.LINK		--	25	24	1965	--	--	K	S	--	1900	10.0	--	--	N	K
144N084W18DD 1	HILLSIDE TR.PK.		--	430	4	1965	20	--	C	--	--	2600	--	--	--	N	K
144N084W18DD 2	HILLSIDE TR.PK.		--	285	4	1967	85	--	C	S	OL	2800	--	--	--	N	K
144N084W26BCC	C.FRETTY		--	42	4	1965	--	--	H	--	--	920	--	--	--	N	K
144N084W26BDD	C.FRETTY		--	42	4	1963	11	--	S	--	--	4200	9.0	--	--	N	K
144N084W27ADD	NDSWC 3639	150	100	140	1	1968	54	11-68	U	S	31	1280	--	1720	GE	M	C
144N084W32AD	H.JOHNSON		--	400	--	1965	12	--	H	--	--	2500	--	--	--	N	K
144N084W34ADD1	L.OLANDER		--	9	36	1964	5	6-67	S	--	--	5100	10.0	--	--	O	K
144N084W34ADD2	L.OLANDER		--	28	24	--	16	6-67	S	--	--	2350	8.5	--	--	O	K
144N084W34ADD3	L.OLANDER		--	38	48	--	--	--	H	--	--	1600	--	--	--	N	K
144N085W01BBB	NDSWC 5276	180	87	93	1	1969	30	6-69	U	S	31	--	--	1713	GE	O	--
144N085W01CAA	NDGS	14	12	14	1	1967	9	8-67	U	S	--	--	--	1699	--	O	--
144N085W01DD	L.REINHOLT		--	14	--	--	--	--	H	--	--	747	--	--	--	N	K
144N085W01DDD	NDSWC 2687	160	67	70	1	1967	23	7-67	U	S	31	939	--	1700	Y	M	C
144N085W02BCB1	NDSWC NO.3	180	115	118	2	1969	50	7-69	U	G	31	1080	9.0	1730	GE	O	C
144N085W02BCB2	NDSWC NO.4	160	113	116	2	1969	55	7-69	U	8G	31	1130	--	1735	GE	O	C
144N085W02BCB3	NDSWC NO.6	147	115	118	2	1969	57	7-69	U	G	31	1240	26.5	1737	GE	O	C
144N085W02BCB4	NDSWC	37	34	37	2	1969	--	--	U	S	--	--	--	1735	--	N	--
144N085W02BCB5	NDSWC PW-1	140	--	--	--	1969	--	--	U	--	--	--	--	1735	G	N	--

LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT.)	DEPTH TO FIRST PERFORATION (FT.)	WELL DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	WATER USE	WATER BEARING MATERIAL	AQUIFER	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ELEVATION OF LSD (FT.)	LOG AVAILABLE	FREQUENCY OF WATER-LEVEL MEASUREMENTS	QW TYPE
144N085W028C86	NDSWC PW-2	140	110	130	8	1969	57	7-69	U	R	31	1190	--	1737	G	O	C
144N085W028CC	NDSWC NO.5	160	116	119	2	1969	55	7-69	U	G	31	1340	26.5	1735	GE	O	C
144N085W02CD	R.BERG	483	--	--	2	--	+26	4-68	S	S	OL	2740	10.5	1735	D	O	C
144N085W03ADA	NDSWC NO.2	180	109	112	2	1969	47	7-69	U	G	31	1310	--	1727	GE	O	C
144N085W03ADC	NDSWC NO.1	140	--	--	--	1969	--	--	U	--	--	--	--	1718	GE	N	--
144N085W03DAA	NDSWC 5268	160	117	123	1	1969	55	5-69	U	BG	31	1200	9.0	1738	GE	O	C
144N085W03DCD	A.LORENZ		--	452	2	1964	+29	5-68	S	--	OL	2570	11.0	1737	--	O	C
144N085W05BD	B.THOMAS	740	--	734	2	1965	F	--	K	S	PS	2520	--	1725	--	N	K
144N085W06ABA	NDSWC 2681	80	49	51	1	1967	11	7-67	U	S	31	971	9.0	1705	Y	M	C
144N085W06ABD	NDSWC 3641	280	--	--	--	1968	--	--	U	--	--	--	--	1750	Y	N	--
144N085W06BAD1	J.COOK		--	20	--	--	18	--	H	S	31	1020	--	--	--	N	K
144N085W06BAD2	J.COOK		--	70	4	1950	18	--	S	G	31	920	9.0	--	--	N	K
144N085W06BAD3	J.COOK		--	68	--	1955	5	--	H	G	31	1000	--	--	--	N	K
144N085W06BAD4	J.COOK		--	36	--	--	34	--	S	--	31	920	10.0	--	--	N	K
144N085W06BBB	J.COOK		--	35	--	--	10	--	S	--	31	700	8.5	--	--	N	K
144N085W06BDC	COOK RANCH	903	--	882	2	1967	F	--	K	S	PS	--	--	1725	--	N	--
144N085W08BBB	NDSWC 3642	80	--	--	--	1968	--	--	U	--	--	--	--	1760	GE	N	--
144N085W10AAA	NDSWC 5269	160	107	110	1	1969	52	5-69	U	BG	31	1200	6.5	1733	GE	O	C
144N085W10CCA	J.SCHULTZ RANCH	900	--	--	2	1966	+97	5-68	S	S	PS	2560	--	1762	D	O	C
144N085W11CCC	NDSWC 5270	180	97	100	1	1969	41	5-69	U	S	31	2120	7.5	1780	GE	O	C
144N085W12DDC	NDSWC 3640	160	--	--	--	1968	--	--	U	--	--	--	--	1725	Y	N	--
144N085W15CCD	NDSWC 5271	60	--	--	--	1969	--	--	U	--	--	--	--	1885	G	N	--
144N085W17BBB	NDSWC 5275	80	--	--	--	1969	--	--	U	--	--	--	--	1845	G	N	--
144N085W18CCD1	A.KLAUDT	120	100	--	4	1955	60	--	S	Z	OD	1800	--	--	--	N	K
144N085W18CCD2	A.KLAUDT		--	60	4	1958	30	--	U	Z	OD	--	--	--	--	N	--
144N085W18CCD3	A.KLAUDT		--	60	24	1962	20	--	U	--	--	--	--	--	--	N	--
144N085W21AAA	F.MAICHEL	110	98	--	4	1955	29	6-67	S	Z	OD	1700	9.0	--	D	O	K
144N085W26CCC	A.BARNHARDT		--	45	--	1960	--	--	H	--	--	1400	--	--	--	N	K
144N085W29CBC	NDGS	34	--	--	--	--	--	--	U	--	--	--	--	1895	G	N	--
144N085W30BBB	R.WEIL		--	50	24	1962	32	6-67	S	R	--	1900	8.5	--	--	O	K
144N085W32BAA	B.OREVESKRACHT		--	137	6	1962	--	--	K	Z	OD	1660	--	--	--	N	K
144N085W34AA 1	H.WUERTH		--	75	6	1920	45	--	K	S	--	750	7.0	--	--	N	K
144N085W34AA 2	H.WUERTH		33	50	4	1958	--	--	H	--	--	1880	--	--	--	N	K
144N085W34DDA	NDSWC 3737	80	--	--	--	1969	--	--	U	--	--	--	--	1965	GE	N	--
144N085W36CD	C.BERG	56	--	56	4	1960	--	--	U	Y	--	--	--	--	--	N	--
144N086W02BCA	E.HEINEMEYER		--	28	24	--	26	--	K	4S	21	1000	7.5	--	--	N	K
144N086W03AB 1	L.LOEWEN		--	12	--	1942	--	--	H	--	--	750	--	--	--	N	K
144N086W03AB 2	L.LOEWEN		--	50	4	--	13	6-67	S	--	--	1150	7.5	--	--	O	K
144N086W03CCC	T.COOPER		--	15	--	--	--	--	H	G	21	1080	--	--	--	N	K
144N086W03DBB	L.LOEWEN		--	56	4	1966	20	--	H	--	31	1300	--	--	--	N	K

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144N086W07DDD1	E.OSTER		--	34	24	1953	20	--	S	S	31	1200	7.0	--	--	N	K
144N086W07DDD2	NDSWC 2680	60	--	--	--	1967	--	--	U	--	--	--	--	1735	G	N	--
144N086W08BAA1	G.REICHENBERG		--	60	--	1961	--	--	H	--	--	4600	--	--	--	N	K
144N086W08BAA2	G.REICHENBERG		--	50	24	--	--	--	S	--	--	3050	8.5	--	--	N	K
144N086W08DDD1	L.SAILER		--	33	4	--	20	6-67	S	--	31	580	--	--	--	O	K
144N086W08DDD2	L.SAILER		--	18	--	1965	14	--	H	--	31	600	--	--	--	N	K
144N086W09ABB	P.DOLAN		--	35	--	--	--	--	H	--	31	980	8.5	--	--	N	K
144N086W09DCB	R.TESKE	70	65	--	4	1951	58	--	K	--	--	1450	--	--	--	N	K
144N086W11CC01	C.BENTZ		--	90	6	--	70	--	S	S	--	880	8.5	--	--	N	K
144N086W11CC02	C.BENTZ		--	12	48	1957	11	--	H	GS	--	1150	--	--	--	N	K
144N086W11DAA	E.OSTER	1000	--	--	2	--	F	--	S	S	PS	2650	--	1784	D	N	C
144N086W14ADD	NDGS	29	--	--	--	--	--	--	U	--	--	--	--	1850	G	N	--
144N086W14DDD1	E.BENTZ		--	14	--	--	12	--	H	R	--	700	11.0	--	--	N	K
144N086W14DDD2	E.BENTZ		--	18	--	--	17	--	S	R	--	<500	7.5	--	--	N	K
144N086W15CD	E.MORGENSTERN		--	20	48	1965	4	6-67	S	G	--	820	7.5	--	--	O	K
144N086W15CDC1	E.MORGENSTERN		--	28	30	1950	14	--	H	--	--	1775	--	--	--	N	K
144N086W15CDC2	E.MORGENSTERN		--	32	36	1958	5	6-67	S	--	--	2800	6.5	--	--	O	K
144N086W16BBB	HAZEN GOLF CLUB	50	--	50	4	1965	--	--	H	--	31	690	--	--	--	N	K
144N086W17AD	F.HOFFMAN	730	--	--	2	1966	+60	4-68	S	S	OL	2700	11.0	1732	D	O	C
144N086W18ADA1	N.PACIFIC R.R.	66	--	66	6	1914	--	--	P	S	31	717	--	--	D	N	C
144N086W18ADA2	HAZEN	69	59	69	12	1944	--	--	P	G	31	--	--	--	D	N	--
144N086W18ADA3	HAZEN		--	65	--	1944	--	--	P	--	31	1170	10.0	--	--	N	C
144N086W18ADA4	HAZEN		--	--	--	1964	--	--	P	--	31	--	--	--	--	N	--
144N086W18ADC1	N.PACIFIC R.R.	63	--	63	6	1914	24	5-67	U	S	31	--	--	1743	D	O	--
144N086W18ADC2	NDSWC 2677	100	60	63	1	1967	20	7-67	U	S	21	907	9.5	1741	Y	M	C
144N086W18ADD	N.PACIFIC R.R.	66	--	66	6	1914	--	--	U	--	31	--	--	--	--	N	--
144N086W18BA	V.STEPHENS	70	--	70	4	--	22	5-67	H	--	--	--	--	--	--	O	--
144N086W18BAD	C.AFFOLTER	58	--	58	--	1957	--	--	I	S	31	820	--	--	--	N	K
144N086W18DAB	NDSWC 3748	220	158	164	1	1969	10	8-69	U	QS	31	1280	9.5	1739	Y	O	C
144N086W18DAC	NDSWC 2679	80	60	63	1	1967	13	7-67	U	S	31	753	9.0	1737	Y	O	C
144N086W18DC 1	E.OSTER		--	35	24	1947	28	--	H	S	31	975	--	--	--	N	K
144N086W18DC 2	E.OSTER		--	60	4	1953	20	--	S	S	31	800	8.5	--	--	N	K
144N086W18DDC1	W.HAAS		--	17	36	--	17	6-67	H	--	--	600	--	--	--	O	K
144N086W18DDC2	W.HAAS		--	22	--	1967	19	--	S	--	--	950	7.5	--	--	N	K
144N086W18DDC3	NDSWC 2678	100	50	53	1	1967	11	7-67	U	S	31	837	9.5	1736	Y	O	C
144N086W18DDC4	NDSWC 3747	240	197	203	1	1969	11	8-69	U	R	31	1420	9.5	1735	Y	O	C
144N086W19ABA	NDSWC 3739	250	218	224	1	1969	11	8-69	U	G	31	1540	10.5	1735	Y	O	C
144N086W20BCB	NDSWC 3740	100	--	--	--	1969	--	--	U	--	--	--	--	1800	Y	N	--
144N086W20CDC	H.SAILER		--	300	4	--	72	6-67	K	S	OK	1340	--	--	--	O	K
144N086W23ADD	E.REICH		--	30	18	1961	6	--	S	--	--	500	8.5	--	--	N	K

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144N086W24BCC	D.BOECKEL		--	40	18	1961	11	6-67	S	--	--	--	--	--	--	O	--
144N086W24DDD1	F.ALBERS		--	60	--	--	--	--	S	--	--	1000	--	--	--	N	K
144N086W24DDD2	F.ALBERS		--	30	--	--	--	--	H	--	--	620	--	--	--	N	K
144N086W26DBB	C.FOSS,JR.		--	17	30	1958	2	6-67	S	--	--	1250	5.5	--	--	O	K
144N086W28DDC	T.WOLF	66	58	66	4	1955	--	--	H	--	OJ	990	--	--	--	N	K
144N086W30BBB	NDGS	51	--	--	--	--	--	--	U	--	--	--	--	1755	G	N	--
144N086W32CC	V.KARGAS	180	178	--	4	1957	--	--	S	--	OJ	1480	--	--	--	N	K
144N086W35ABB1	C.FOSS,JR.		--	12	30	--	1	6-67	S	--	--	1550	6.0	--	--	O	K
144N086W35ABB2	C.FOSS,JR.		--	128	4	1953	90	--	K	Z	OJ	2000	--	--	--	N	K
144N087W04AD	H.MATTHEIS		--	35	20	--	32	6-67	K	Z	--	2000	--	--	--	O	K
144N087W04CBB	O.MATTHEIS	210	185	201	4	1956	30	--	K	S	OJ	1450	--	--	D	N	K
144N087W12CDD	A.CHRISTMANN	114	--	114	4	1964	60	--	S	Z	OJ	1600	10.0	--	--	N	K
144N087W13CB	A.CHRISTMAN	743	--	--	2	1967	F	--	S	S	OL	--	--	1782	--	N	--
144N087W14AA 1	E.OSTER		--	--	36	--	12	5-67	U	--	Z1	--	--	--	--	O	--
144N087W14AA 2	E.OSTER		--	245	4	1965	--	--	S	G	31	1310	--	--	--	N	K
144N087W14AAA	NDSWC 3652	260	218	230	1	1968	19	11-68	U	S	31	1120	--	1760	Y	M	C
144N087W20DDD	E.SASSE		--	1144	--	1964	F	--	K	--	PS	2420	13.5	1865	--	N	C
144N087W22DD 1	F.NELSON		--	273	5	1966	30	--	S	BZ	OJ	2700	--	--	--	N	K
144N087W22DD 2	F.NELSON		--	20	--	--	15	--	H	S	--	2200	--	--	--	N	K
144N087W23ACC	J.NELSON	630	--	--	2	--	+53	4-68	S	S	OL	3030	12.0	1759	D	O	C
144N087W25ADC1	B.SCHWARZ	98	--	98	4	1960	29	6-67	S	Z	OJ	1575	--	--	--	O	K
144N087W25ADC2	B.SCHWARZ		--	32	24	1966	16	6-67	H	AS	--	1900	--	--	--	O	K
144N087W26ADA	H.ADOLPH		--	55	24	--	50	--	K	S	--	1475	9.0	--	--	N	K
144N087W28CB	J.KRAUSZ		--	32	30	--	32	--	S	--	--	850	12.0	--	--	N	K
144N087W29CBB	NDSWC 3745	80	--	--	--	1969	--	--	U	--	--	--	--	1768	Y	N	--
144N087W30AAC	J.MAIER		--	180	4	1949	--	--	U	--	--	1750	7.5	--	--	N	K
144N087W31ADB	A.SAILER	120	116	--	5	1959	67	6-67	K	G	31	1120	12.0	1814	D	M	C
144N087W32BAC	L.KRAUSZ	56	--	56	4	1966	40	--	K	--	--	1120	--	--	--	N	K
144N087W32BBB	NDSWC 3746	160	--	--	--	1969	--	--	U	--	--	--	--	1780	GJ	N	--
144N087W33BBC	NDGS	64	--	--	--	1967	--	--	U	--	--	--	--	1810	G	N	--
144N088W01BBB	NDSWC 3749	260	--	--	--	1969	--	--	U	--	--	--	--	1865	Y	N	--
144N088W02AAB	NDSWC 3755	320	238	241	1	1969	45	8-69	U	BG	31	891	10.5	1920	G	O	C
144N088W03CAA1	E.VOEGELE		--	105	5	1942	63	6-67	K	Z	OJ	1480	--	--	--	O	K
144N088W03CAA2	E.VOEGELE		--	110	5	1956	40	--	S	Z	OJ	2500	7.5	--	--	N	K
144N088W06ACD	J.SASSE	77	66	--	4	1961	65	--	S	--	--	970	8.5	--	--	N	K
144N088W06CDA	J.SASSE	88	78	--	4	1961	--	--	S	Z	OJ	930	9.0	--	--	N	K
144N088W10CAB	A.BOECKEL	216	--	216	4	1954	--	--	K	Z	OJ	1700	7.5	--	--	N	K
144N088W11CAA	A.BOECKEL		--	--	4	1957	--	--	S	--	--	1550	9.0	--	--	N	K
144N088W12BDC	A.BOECKEL	75	--	74	5	1962	--	--	U	--	--	4225	9.0	--	--	N	K
144N088W13CCB1	C.SCHNAIDT		--	95	4	1932	87	--	S	S	--	2425	9.0	--	--	N	K

LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT.)	DEPTH TO FIRST PERFOR-ATION (FT.)	WELL DEPTH (FT.)	CASING DIAM-ETER (IN.)	DATE DRILLED (YEAR)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	WATER USE	WATER BEARING MATERIAL	AQUIFER	SPE-CIFIC CON-DUCT ANCE	TEM-PER-ATURE (°C)	ELE-VATION OF LSD (FT.)	LOG AVAIL-ABLE	FREQUENCY OF WATER-LEVEL MEASURE-MENTS	QW TYPE
144N088W13CCB2	C.SCHNAIDT	242	234	242	4	1962	142	--	K	BP	OJ	2400	--	--	--	N	K
144N088W17BCD	NDSWC 3656	260	200	206	1	1968	28	11-68	U	S	31	--	--	1840	GE	O	--
144N088W20DDC	J.REINHARDT		--	29	18	--	--	--	H	--	--	1250	7.0	--	--	N	K
144N088W22BCB1	R.SCHUMAIER	141	--	140	4	1964	115	--	H	Z	OJ	2600	9.0	--	--	N	K
144N088W22BCB2	R.SCHUMAIER		--	35	36	--	30	--	S	--	--	2050	8.5	--	--	N	K
144N088W23DDA	J.SCHUMAIER	242	233	--	3	1961	--	--	U	--	OJ	2900	8.5	--	--	N	K
144N088W25AD 1	MDU		--	130	6	--	--	--	N	--	--	--	--	--	--	N	--
144N088W25AD 2	BEULAH		--	153	8	1953	--	--	P	Z	OJ	--	--	--	--	N	--
144N088W25BAA	NDSWC 1679	504	--	--	--	1960	--	--	U	--	--	--	--	1838	Y	N	--
144N088W25BBB	NDSWC 1680	126	--	--	--	1960	--	--	U	--	--	--	--	1815	G	N	--
144N088W25BCC	NDSWC 1681	157	--	--	--	1960	--	--	U	--	--	--	--	1787	Y	N	--
144N088W25CA	BEULAH		--	114	10	1961	--	--	P	--	31	870	8.5	--	D	N	C
144N088W25CAD	NDSWC 1683	52	--	--	--	1960	--	--	U	--	--	--	--	1778	G	N	P
144N088W25CBC	NDSWC 1665	74	--	--	--	1960	--	--	U	--	--	--	--	1778	G	N	--
144N088W25CC			--	23	18	--	--	--	U	--	31	588	--	--	--	N	C
144N088W25CCA	BEULAH		--	46	--	1952	--	--	P	--	--	--	--	--	--	N	--
144N088W25CCC1	NDSWC 1684	52	--	--	--	1960	--	--	U	--	--	--	--	1778	G	N	--
144N088W25CCC2	NDSWC 1666	105	--	--	--	1960	--	--	U	--	--	--	--	1778	G	N	--
144N088W25CCC3	NDSWC 3743	240	158	161	1	1969	7	8-69	U	G	31	1260	--	1775	Y	O	C
144N088W25CD	BEULAH		--	126	--	1961	--	--	P	--	31	1100	--	--	--	N	C
144N088W25DA	R.SCHLECHT		--	25	--	--	17	--	H	S	--	3600	--	--	--	N	K
144N088W25DAA	NDSWC 1675	42	--	--	--	1960	--	--	U	--	--	--	--	1775	Y	N	--
144N088W25DAD	NDSWC 1682	57	--	--	--	1960	--	--	U	--	--	--	--	1775	G	N	--
144N088W25DDA	NDSWC 1676	52	--	--	--	1960	--	--	U	--	--	--	--	1775	G	N	P
144N088W25DDD	NDSWC 1677	42	--	--	--	1960	--	--	U	--	--	--	--	1769	Y	N	--
144N088W26AA 1	F.OST		147	147	4	1959	46	6-67	H	Z	--	1475	--	--	--	O	K
144N088W26AA 2	O.REICH		120	125	4	1965	40	--	H	--	--	1320	--	--	--	N	K
144N088W26CAD	NDSWC 1672	42	--	--	--	1960	--	--	U	--	--	--	--	1776	Y	N	--
144N088W26CCB	L.SAILER		--	100	6	1949	30	--	H	Z	--	2250	--	--	--	N	K
144N088W26DAO	NDSWC 3744	100	--	--	--	1969	--	--	U	--	--	--	--	1770	GJ	N	--
144N088W26DBA	E.JOOS		--	27	24	--	20	6-67	K	S	--	1750	8.5	--	--	O	K
144N088W28ADD1	E.MOHL	50	40	--	4	1953	16	--	S	Z	OJ	1620	9.0	--	--	N	K
144N088W28ADD2	E.MOHL	140	123	140	4	1957	40	--	H	Z	OJ	2100	--	--	--	N	K
144N088W28ADD3	NDSWC 1673	42	--	--	--	1960	--	--	U	--	--	--	--	1790	Y	N	--
144N088W28CDD1	F.FLEMMER		--	138	4	--	--	--	S	--	--	1520	8.5	--	--	N	K
144N088W28CDD2	F.FLEMMER	138	136	--	4	1960	40	--	S	--	--	1550	8.5	--	--	N	K
144N088W28DAD	NDSWC 1674	42	--	--	--	1960	--	--	U	--	--	--	--	1795	G	N	--
144N088W29DAA	I.SCHMID		--	94	5	1950	45	--	K	Z	OJ	1320	7.5	--	--	N	K
144N088W34DAD	S.DAVIDSON		--	29	36	1931	26	--	H	R	--	1100	7.5	--	--	N	K
144N088W35ABB	J.MAIER	48	47	48	4	1966	--	--	U	G	--	1050	7.0	--	--	N	K

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144N088W35AA1	J.MAIER		--	18	--	1951	--	--	S	S	--	900	7.5	--	--	N	K
144N088W35AA2	NDSWC 1671	63	--	--	--	1960	--	--	U	--	--	--	--	1775	G	N	--
144N088W35BDA	NDSWC 1670	168	--	--	--	1960	--	--	U	--	--	--	--	1776	G	N	--
144N088W35BDD	NDSWC 1669	32	--	--	--	1960	--	--	U	--	--	--	--	1778	G	N	--
144N088W36AAA	NDSWC 1678	42	--	--	--	1960	--	--	U	--	--	--	--	1769	G	N	--
144N088W36BB8	NDSWC 1667	52	--	--	--	1960	--	--	U	--	--	--	--	1775	G	N	--
144N088W36BBC1	NDSWC 1668	42	--	--	--	1960	--	--	U	--	--	--	--	1778	G	N	--
144N088W36BBC2	NDSWC 3741	160	98	104	1	1969	15	8-69	U	S	31	960	9.5	1770	Y	O	C
144N088W36BCC	NDSWC 3742	160	118	121	1	1969	41	8-69	U	9S	31	--	--	1790	GE	O	--
144N089W10DC 1	E.MOHL	120	109	--	4	1951	30	--	K	Z	0J	1300	--	--	--	N	K
144N089W10DC 2	E.MOHL	108	69	--	4	1954	30	--	S	--	0J	1800	--	--	--	N	K
144N089W14CAC1	H.KRAFT		--	28	7	1944	26	--	H	G	--	3500	7.5	--	--	N	K
144N089W14CAC2	H.KRAFT		--	92	4	1956	30	--	H	--	--	1800	--	--	--	N	K
144N089W14CD 1	N.FUCHS	108	94	101	4	1958	19	--	H	Z	--	1475	--	--	--	N	K
144N089W14CD 2	ZAP SCHOOL BD.		--	83	4	1959	--	--	H	--	0J	1400	--	--	--	N	K
144N089W14CD 3	ZAP THEATRE	120	108	--	4	1964	--	--	C	--	0J	1600	--	--	--	N	K
144N089W14CD 4	F.BITTERMAN	115	--	115	4	1962	--	--	H	--	0J	1420	--	--	--	N	K
144N089W14CDD	ZAP	1515	1241	1281	--	1969	+154	7-69	P	S	PS	2370	--	1845	--	O	C
144N089W14DB	F.HELM	110	108	--	4	1965	30	--	H	--	0J	1880	--	--	--	N	K
144N089W14DC 1	N.PACIFIC R.R.	121	119	--	4	1948	--	--	U	Z	0J	1900	9.0	--	D	N	K
144N089W14DC 2	A.BECK	110	102	--	4	1956	39	6-67	H	--	0J	1425	--	--	--	O	K
144N089W14DC 3	B.DSCHAAK	96	--	96	4	1966	23	6-67	H	--	--	1900	--	--	--	O	K
144N089W14DC 4	F.REINER	142	112	142	--	--	--	--	H	--	0J	1650	--	--	--	N	K
144N089W19CC	L.MANN		--	75	4	1956	--	--	S	--	--	1250	9.0	--	--	N	K
144N089W20AC	A.DALLMAN		--	100	4	1961	--	--	S	--	--	2120	9.5	--	--	N	K
144N089W20CCB1	R.ENGBRECHT	44	--	44	5	1963	20	--	S	--	--	1425	8.5	--	--	N	K
144N089W20CCB2	R.ENGBRECHT	32	30	--	5	1966	20	--	H	--	--	1550	--	--	--	N	K
144N089W23AB 1	ZAP PUB. SCHOOL	140	--	140	5	1960	--	--	H	Z	0J	2520	--	--	--	N	K
144N089W23AB 2	W.DSCHAAK	125	123	--	5	1965	--	--	S	--	--	1500	7.5	--	--	N	K
144N089W23ABB	NDGS	44	--	--	--	1968	--	--	U	--	--	--	--	1838	G	N	--
144N089W23ABC1	NDGS	58	--	--	--	1968	--	--	U	--	--	--	--	1831	G	N	--
144N089W23ABC2	NDSWC 3756	100	--	--	--	1969	--	--	U	--	--	--	--	1832	GE	N	--
144N089W23BDA	NDGS	59	--	--	--	1968	--	--	U	--	--	--	--	1845	G	N	--
144N089W23CB	D.LANG	1060	--	--	2	--	+68	4-68	S	S	PS	--	--	1883	D	O	--
144N089W24AA	N.AM.COAL CORP.	96	--	96	4	1962	--	--	N	G	--	1700	--	--	--	N	K
144N089W24BCC	E.BEICK		--	26	48	1963	15	6-67	K	Z	0J	3120	6.5	--	--	O	K
144N089W24DA	N.AM.COAL CORP.		--	120	4	1959	90	--	N	Z	0J	1700	--	--	--	N	K
144N089W29CA	A.SIMENSON		--	150	4	1961	140	--	K	Z	0J	1175	--	--	--	N	K
144N089W30AAA	NDGS	114	--	--	--	1967	--	--	U	--	--	--	--	--	G	N	--
144N089W30AC	R.ENGBRECHT		--	54	18	--	41	6-67	U	--	--	1400	9.5	--	--	O	K

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144N089W30BCB1	L.MANN		--	32	4	1953	--	--	S	--	--	1100	8.5	--	--	N	K
144N089W30BCB2	L.MANN		--	104	4	1963	80	--	H	--	OJ	1140	--	--	--	N	K
144N089W30DBC1	G.SCHEURER		--	--	4	--	--	--	S	--	--	1400	10.0	--	--	N	K
144N089W30DBC2	G.SCHEURER		--	--	--	1958	--	--	H	--	--	1500	--	--	--	N	K
144N089W32BC	A.SIMENSON	254	245	--	4	1965	--	--	S	--	OJ	2500	9.5	--	--	N	K
144N089W33ADD	A.JOHNSON		--	31	5	--	26	--	S	--	--	2250	9.0	--	--	N	K
144N090W01CDD	E.BYERLE		--	74	4	1943	46	--	K	Z	OJ	650	--	--	--	N	K
144N090W01DCC	J.FLEMMER		--	87	6	1935	70	--	K	Z	OJ	550	7.0	--	--	N	K
144N090W02CDD	F.BUNK		--	22	6	1957	18	--	S	B	--	800	7.0	--	--	N	K
144N090W04ABA	D.BRECHT	1280	--	1265	2	1964	+66	7-68	S	S	PS	2360	9.5	1953	D	D	C
144N090W04BBD	D.BRECHT		--	55	5	--	--	--	K	--	--	1650	--	--	--	N	K
144N090W04DAB1	O.TSCHAEKOFSKE		--	56	5	1957	20	--	S	Z	--	1550	8.5	--	--	N	K
144N090W04DAB2	O.TSCHAEKOFSKE		--	25	24	1960	18	--	H	S	--	1100	--	--	--	N	K
144N090W04DDC	NDSWC 5265	260	157	160	1	1969	9	5-69	U	9S	31	1210	6.5	1936	GE	D	C
144N090W06CBB1	A.KELLER		--	50	18	1942	35	--	H	S	OJ	4000	--	--	--	N	K
144N090W06CBB2	A.KELLER		--	280	6	1953	230	--	S	S	OJ	1600	--	--	--	N	K
144N090W09ADC	R.SCHEURER		--	23	18	1959	15	5-67	H	--	--	1400	--	--	--	O	K
144N090W11DDD1	E.ERDMAN		--	56	24	1960	28	--	K	P	--	1025	--	--	--	N	K
144N090W11DDD2	E.ERDMAN		--	18	36	1960	11	--	K	S	--	1025	5.5	--	--	N	K
144N090W15AC	R.BAUER		--	58	16	1956	50	5-67	K	Z	OJ	1050	--	--	--	O	K
144N090W15CC	G.V.CONG.CHURCH		143	150	4	1960	--	--	H	--	OJ	2600	--	--	--	N	K
144N090W15CD	W.RICHAU		--	46	24	1967	26	--	H	--	--	--	--	--	--	N	--
144N090W15DA	F.WUGUM	48	45	--	5	1966	--	--	H	--	--	2100	--	--	--	N	K
144N090W15DAC	N.PACIFIC R.R.	107	32	--	--	--	--	--	U	Z	OJ	1400	9.5	--	D	N	K
144N090W15DB	GOLDEN VALLEY	1325	1275	1325	6	1968	+94	6-68	H	S	PS	2310	17.0	1925	Y	O	C
144N090W16ABC	NDSWC 3757	200	135	141	1	1969	0	8-69	U	9S	31	1270	9.0	1914	Y	O	C
144N090W18CAA1	C.JACOBSON		--	17	4	1959	18	5-67	H	--	--	1500	--	--	--	O	K
144N090W18CAA2	C.JACOBSON		--	29	18	1967	17	--	--	S	--	2600	--	--	--	N	K
144N090W20DCC1	V.ENTZE		--	40	36	--	40	--	S	S	--	1100	7.0	--	--	N	K
144N090W20DCC2	V.ENTZE		--	40	4	1954	40	--	H	S	--	510	--	--	--	N	K
144N090W22AB	T.BRAUN	1140	--	--	2	1966	+95	7-68	S	S	PS	--	--	1890	D	O	--
144N090W22ABD	T.BRAUN		--	80	4	--	18	--	S	G	--	1000	8.5	--	--	N	K
144N090W22ADD1	G.BOEHLER	91	--	91	6	1959	5	--	S	--	--	2400	7.5	--	--	N	K
144N090W22ADD2	G.BOEHLER		--	48	24	1967	16	--	H	--	--	2400	7.0	--	--	N	K
144N090W22DAD	NDSWC 3758	220	156	162	1	1969	35	8-69	U	S	31	1710	--	1930	Y	O	C
144N090W23CCC	NDSWC 3660	220	--	--	--	1968	--	--	U	--	--	--	--	1934	GE	N	--
144N090W25BD	HAUCK BROS.		--	1360	2	--	+7	3-67	S	S	PS	2360	14.0	1990	--	O	C
144N090W25BDD	A.HAUCK		--	60	4	--	--	--	U	--	--	1200	--	--	--	N	K
144N090W28AAD	T.BRAUN		--	14	4	--	14	5-67	U	--	--	--	--	--	--	O	--
144N090W29AD	V.ENTZE	1400	--	--	2	1964	+30	4-68	S	S	PS	2230	13.5	1988	D	O	C

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144N090W30AA	V.ENTZE	1443	--	1428	2	1967	+31	4-68	S	S	PS	--	--	1958	D	O	--
145N084W06CCB	W.WIEDRICH	1260	--	--	2	--	F	--	K	S	PS	2470	--	1870	D	N	C
145N084W18AAD1	R.KESSLER		--	80	5	1943	70	--	H	--	--	800	--	--	--	N	K
145N084W18AAD2	R.KESSLER		--	60	24	1948	51	5-67	S	--	--	650	7.0	--	--	O	K
145N084W18AAD3	R.KESSLER		--	80	5	1950	70	--	S	--	--	1750	9.0	--	--	N	K
145N084W19CCC	H.MILLER	119	--	119	4	1947	90	--	S	--	OJ	1500	9.0	--	D	N	K
145N084W20DDD	NDSWC 2684	120	100	103	1	1967	22	7-67	U	S	31	1680	9.5	1690	GE	M	C
145N084W21BAB	G.KRIEGER	440	--	420	2	1965	+47	5-68	S	S	OL	2350	10.0	1695	D	O	K
145N084W21CDA1	B.GRANNIS		--	53	--	--	10	--	H	--	--	1000	--	--	--	N	K
145N084W21CDA2	B.GRANNIS		--	180	24	--	--	--	S	--	--	2400	8.5	--	--	N	K
145N084W21DBB	B.GRANNIS		--	35	--	--	8	--	S	--	--	825	7.5	--	--	N	K
145N084W27BA	C.RUSSEL		--	24	--	1954	15	--	K	S	21	1000	--	--	--	N	K
145N084W27BAD1	M.MARLENEE		--	20	--	1951	--	--	H	S	21	1500	--	--	--	N	K
145N084W27BAD2	M.MARLENEE		--	20	--	1956	--	--	S	--	21	2400	7.5	--	--	N	K
145N084W27BAB	W.RUSSEL		--	30	--	1965	20	--	H	S	21	1400	--	--	--	N	K
145N084W28BAD	NDSWC 2685	220	100	103	1	--	17	7-67	U	S	31	1280	9.5	1690	GE	M	C
145N084W28DBB	V.SMITH		--	40	--	--	15	--	H	S	21	1150	--	--	--	N	K
145N084W28DCC1	R.RUSSELL		--	27	18	--	21	5-67	U	G	21	1400	6.5	--	--	O	K
145N084W28DCC2	R.RUSSELL		--	36	18	1954	27	5-67	U	G	21	1000	8.5	--	--	O	K
145N084W28DCC3	NDSWC 2686	140	60	63	1	1967	12	7-67	U	S	31	893	9.0	1698	GE	O	C
145N084W29BAB1	C.STIEFEL		--	26	6	1960	15	--	S	--	--	1050	8.5	--	--	N	K
145N084W29BAB2	C.STIEFEL		--	18	6	1962	17	5-67	H	--	--	575	--	--	--	O	K
145N084W29CCB	NDSWC 5273	100	67	70	1	1969	16	6-69	U	BG	31	1720	7.0	1685	GE	O	C
145N084W30ADD	C.STIEFEL		--	33	24	--	18	5-67	S	--	--	925	7.0	--	--	O	K
145N084W30CAO	A.PETERSON	50	--	50	4	1959	+1	--	K	--	--	2400	--	--	--	N	K
145N084W31DAA	NDSWC 5272	240	87	93	1	1969	20	5-69	U	BG	31	--	--	1697	GE	O	--
145N084W32BCC	NDSWC 5266	227	87	90	1	1969	15	6-69	U	BG	31	901	7.0	1697	GE	O	C
145N084W32CCC	NDSWC 5267	160	77	83	1	1969	18	5-69	U	BG	31	850	6.5	1700	GE	O	C
145N084W32DDD	NDGS	47	45	47	1	1967	20	8-67	U	S	--	--	--	1692	--	O	--
145N084W33ADD	NDSWC 3738	180	128	134	1	1969	57	8-69	U	S	31	948	9.5	1736	Y	O	C
145N084W34CAB	R.RUSSELL		--	420	--	1965	+70	7-68	K	--	OL	2590	10.0	1683	--	O	C
145N085W01DDD	F.SCHIMKE	80	68	--	4	1951	--	--	S	Z	OJ	2200	7.5	--	--	N	K
145N085W06DDD	E.WEISZ	98	94	--	4	1957	--	--	H	Z	OJ	2000	--	--	--	N	K
145N085W10DAA	R.WITTMEYER	60	--	60	4	1957	52	--	S	Z	OJ	1400	--	--	--	N	K
145N085W11AAB	L.SAILER		--	62	4	1955	22	--	K	--	OJ	1200	7.5	--	--	N	K
145N085W17AAA	C.RATHJEN		100	100	4	1964	100	--	S	--	--	2500	--	--	--	N	K
145N085W22CAC	E.ZIEMAN	903	--	891	2	1967	+132	5-68	S	S	PS	2420	11.5	1765	D	O	C
145N085W24DDA	H.GALSTER	1070	--	1058	2	--	+76	5-68	K	S	PS	2570	--	1815	D	O	C
145N085W26DA	T.REEDE		--	35	24	--	16	5-67	S	--	--	7000	5.0	--	--	O	K
145N085W27ADA1	C.KRUCKENBURG		--	30	24	--	3	--	S	--	--	2600	4.5	--	--	N	K

LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT.)	DEPTH TO FIRST PERFOR-ATION (FT.)	WELL DEPTH (FT.)	CASING DIAM-ETER (IN.)	DATE DRILLED (YEAR)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	WATER USE	WATER BEARING MATERIAL	AQUIFER	SPE-CIFIC CON-DUCT ANCE	TEM-PER-ATURE (°C)	ELE-VATION OF LSD (FT.)	LOG AVAIL-ABLE	FREQUENCY OF WATER-LEVEL MEASURE-MENTS	QW TYPE
145N085W27ADA2	C.KRUCKENBURG		--	50	30	--	15	--	K	--	--	2700	--	--	--	N	K
145N085W27CA	C.SAILER		--	958	2	1967	+9	3-68	K	S	--	--	--	1785	--	O	--
145N085W27CAD	C.SAILER		--	97	6	1953	32	--	K	--	--	2700	--	--	--	N	K
145N085W32AAA	R.MITTELSTEADT		--	130	6	1951	70	--	K	Z	OJ	3000	12.0	--	--	N	K
145N085W32CDC	L.MITTELSTEADT		--	30	30	--	22	--	K	B	--	1500	7.5	--	--	N	K
145N085W33BAA	NDGS	29	--	--	--	--	--	--	U	--	--	--	--	1780	G	N	--
145N085W33CCC	E.HAMMOCK		--	28	24	--	20	--	K	--	--	2200	7.0	--	--	N	K
145N085W33DCD	J.COOK		--	90	4	1963	20	--	S	G	31	2400	8.5	--	--	N	K
145N085W34CBC	NDSWC 2683	40	--	--	--	1967	--	--	U	--	--	--	--	1710	G	N	--
145N085W34CCB	NDSWC 2682	80	50	53	1	1967	10	7-67	U	S	31	842	9.0	1704	GE	O	C
145N085W35BAA	NDSWC 5274	80	--	--	--	1969	--	--	U	--	--	--	--	1710	G	N	--
145N085W36BDC1	J.MUTZENBERGER		--	28	--	1948	24	--	H	S	21	900	--	--	--	N	K
145N085W36BDC2	J.MUTZENBERGER		--	38	--	--	30	--	S	--	21	1050	7.5	--	--	N	K
145N086W01DDD1	H.REICHENBERG		--	200	--	--	--	--	H	--	OJ	2350	--	--	--	N	K
145N086W01DDD2	H.REICHENBERG	35	28	--	4	1964	--	--	I	--	--	4600	9.0	--	--	N	K
145N086W04DAC	TRUAX TRAER CO		--	28	4	1948	--	--	H	Z	--	1450	--	--	--	N	K
145N086W06CDD1	J.WEIDRICK	105	103	--	4	1959	--	--	S	--	--	2500	7.5	--	--	N	K
145N086W06CDD2	J.WEIDRICH		--	65	30	1960	40	--	H	--	--	3500	7.0	--	--	N	K
145N086W10DBA	G.WEISZ	60	54	--	--	1950	--	--	S	S	--	2550	--	--	--	N	K
145N086W11CDD	E.RICHTER	100	--	100	4	1960	46	4-67	K	Z	OJ	1550	12.5	1995	D	M	C
145N086W20CDD1	A.SOMMERS		--	60	--	--	40	5-67	K	--	--	3150	--	--	--	O	K
145N086W20CDD2	A.SOMMERS		--	60	--	--	45	--	S	Z	OJ	2100	7.0	--	--	N	K
145N086W22AAA	A.BENZ	30	29	30	4	1953	10	--	S	Z	--	1800	8.5	--	--	N	K
145N086W35CCA1	W.RAHN		--	65	24	1954	54	5-67	S	Z	OJ	3700	10.5	--	--	O	K
145N086W35CCA2	W.RAHN		--	70	6	1957	60	--	H	Z	OJ	3100	--	--	--	N	K
145N087W01DDD	E.WOLF		--	210	4	1939	--	--	U	Z	OJ	3400	5.0	--	--	N	K
145N087W02ADD	A.SCHEID	26	24	--	5	1963	--	--	S	S	--	500	5.0	--	--	N	K
145N087W06AC	E.BOECKEL	52	50	--	4	1963	--	--	S	--	--	1550	7.5	--	--	N	K
145N087W06CBB1	E.BOECKEL	92	--	92	4	1962	--	--	U	--	--	--	--	--	--	N	--
145N087W06CBB2	E.BOECKEL	91	--	91	4	1965	77	5-67	U	--	--	--	--	--	--	O	--
145N087W06CBB3	E.BOECKEL		--	1370	4	1966	99	5-68	K	--	PS	2360	--	2069	--	O	C
145N087W09CCC	R.HIPFNER	36	--	36	4	1965	--	--	H	G	--	850	--	--	--	N	K
145N087W11CAA	V.HOEPFNER	71	60	--	6	1954	--	--	K	Z	OJ	<500	7.0	--	--	N	K
145N087W12BBB	NDGS	84	--	--	--	--	--	--	U	--	--	--	--	--	G	N	--
145N087W12DB	A.LINK	139	--	139	4	1959	130	--	K	Z	OJ	2000	10.0	--	--	N	K
145N087W13CDC	B.WOLF	90	85	--	4	1953	42	4-67	K	Z	OJ	2400	--	--	--	O	K
145N087W19DCC	D.BOECKEL	42	25	27	5	1962	25	5-67	S	Z	OJ	1050	7.0	--	--	O	K
145N087W24ABB1	T.WOLF		--	90	6	1910	80	--	H	--	OJ	1250	--	--	--	N	K
145N087W24ABB2	T.WOLF	140	134	135	4	1956	76	--	S	Z	OJ	2300	--	--	--	N	K
145N087W26AAD	L.OSTER	218	207	215	4	1960	100	--	S	S	OJ	--	--	--	--	N	--

LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT.)	DEPTH TO FIRST PERFOR-ATION (FT.)	WELL DEPTH (FT.)	CASING DIAM-ETER (IN.)	DATE DRILLED (YEAR)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	WATER USE	WATER BEARING MATERIAL	AQUIFER	SPE-CIFIC CON-DUCT ANCE	TEM-PER-ATURE (°C)	ELE-VATION OF LSD (FT.)	LOG AVAIL-ABLE	FREQUENCY OF WATER-LEVEL MEASURE-MENTS	QW TYPE
145N087W27BBB	R.GALSTER	32	23	--	4	1957	--	--	U	Z	0J	1300	7.5	--	--	N	K
145N087W28CDD	T.TESKE		--	34	24	1966	9	4-67	S	Z	0J	<500	6.0	--	--	O	K
145N087W30CCA	H.BOECKEL		--	23	24	--	15	--	S	P	--	1700	7.0	--	--	N	K
145N087W32ACC	P.BECKER		--	106	--	1943	40	--	K	--	--	1200	--	--	--	N	K
145N087W32DBB	J.BECKER		--	16	24	--	4	4-67	S	--	--	950	4.0	--	--	O	K
145N087W32DC	NDGS	49	46	49	1	1967	16	8-67	U	S	31	1210	9.0	1862	G	M	C
145N087W33DCA1	J.SAILER	150	134	--	4	1957	--	--	H	S	0J	2310	--	--	--	N	C
145N087W33DCA2	J.SAILER		--	28	20	--	14	4-67	S	--	--	1700	7.0	--	--	O	K
145N088W03ACC	A.EISENBEIS		--	118	4	1950	71	4-67	K	--	31	2080	7.5	--	--	O	C
145N088W04AAA	L.WALZ		--	30	--	--	--	--	H	--	--	3000	--	--	--	N	K
145N088W06AAA	W.MORAST		--	210	5	1964	190	--	H	S	0J	3500	7.0	--	--	N	K
145N088W06CC	F.MURCHEL		--	15	36	1935	13	--	S	--	--	525	3.5	--	--	N	K
145N088W06DDD	F.MURCHEL		--	82	24	1965	70	--	H	--	--	1475	6.5	--	--	N	K
145N088W07DDA1	E.HERRMANN		--	15	6	1956	9	--	S	G	--	500	6.0	--	--	N	K
145N088W07DDA2	E.HERRMANN		--	11	6	1966	9	--	H	G	--	700	5.5	--	--	N	K
145N088W08ABB	G.KRUCKENBERG		--	25	5	1955	17	--	H	Z	--	2100	6.5	--	--	N	K
145N088W08BCC	R.RENNER		--	54	--	1955	40	--	H	Z	--	1550	--	--	--	N	K
145N088W11DBB	G.OST	64	55	--	4	1965	20	--	S	Z	0J	2400	7.0	--	--	N	K
145N088W12DCD1	E.KELLER	70	49	--	4	1957	58	--	U	Z	0J	--	--	--	--	N	--
145N088W12DCD2	E.KELLER	122	112	--	4	1960	90	--	K	Z	0J	1600	--	--	D	N	K
145N088W13BAA	E.KELLER		--	250	4	1962	--	--	S	R	0J	750	7.5	--	--	N	K
145N088W17DDC	M.HERRMANN		--	140	5	1961	120	--	H	S	0J	550	--	--	--	N	K
145N088W18DA	I.HERRMANN		--	100	8	--	80	--	K	--	--	2400	7.0	--	--	N	K
145N088W19DDD	J.BECKER		--	140	4	1962	90	--	S	Z	0J	<500	7.5	--	--	N	K
145N088W20BAB	A.REINHARDT		--	90	5	--	70	--	H	--	0J	900	7.0	--	--	N	K
145N088W20CCC	J.BECKER		--	135	6	--	90	--	H	--	0J	900	--	--	--	N	K
145N088W21AC	H.BOECKEL	160	157	--	4	1963	--	--	S	--	0J	--	--	--	--	N	--
145N088W23AAA1	A.KELLER	75	--	75	5	1965	--	--	H	--	--	2100	--	--	--	N	K
145N088W23AAA2	A.KELLER		--	--	--	--	--	--	S	--	--	1600	7.5	--	--	N	K
145N088W24DDD	J.WALKER		--	110	4	1956	78	4-67	H	--	0J	775	--	--	--	O	K
145N088W25ABA	NDSWC 3655	80	--	--	--	1968	--	--	U	--	--	--	--	1928	GE	N	--
145N088W25ABB	NDSWC 3653	320	210	216	1	1968	67	11-68	U	S	31	656	--	1910	Y	M	C
145N088W25BBA	NDSWC 3654	260	--	--	--	1968	--	--	U	--	--	--	--	1935	GE	N	--
145N088W30ABB	E.WEISS		--	95	6	1942	80	--	H	Z	0J	900	4.5	--	--	N	K
145N088W30CCC	A.MITTELSTEADT		--	110	6	--	88	4-67	H	Z	0J	850	10.5	--	--	O	K
145N088W32AAA	NDGS	24	--	--	--	--	--	--	U	--	--	--	--	--	G	N	--
145N088W32CCC	A.HOFFMAN	123	--	123	4	1965	80	--	S	--	0J	1050	6.0	--	--	N	K
145N089W02AAA	A.HOFFMAN		--	217	6	--	190	--	H	--	0J	1150	7.5	--	--	N	K
145N089W02DCC	C.MORAST		--	120	5	--	90	--	S	--	0J	500	6.0	--	--	N	K
145N089W03CBB1	C.BUECHLER		--	38	8	1955	25	--	S	--	--	710	7.0	--	--	N	K

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145N089W03CBB2	C.BUECHLER		--	48	20	1963	35	--	H	P	OJ	920	--	--	--	N	K
145N089W03DAD	C.BUECHLER		--	38	20	--	10	--	S	G	--	1150	6.5	--	--	N	K
145N089W04BAB	A.WEIGUM		--	75	6	--	--	--	H	Z	OJ	1710	7.5	--	--	N	K
145N089W05DCB	R.HAUFF		--	9	30	--	1	4-67	S	P	--	750	7.5	--	--	O	K
145N089W06ADD	H.HENKE		--	13	18	--	8	4-67	H	R	--	2600	11.0	--	--	O	K
145N089W06DAA	H.HENKE		--	8	18	--	--	--	S	G	--	1200	10.0	--	--	N	K
145N089W08BAA1	R.HAUFF		--	55	18	--	25	--	H	S	--	1500	8.5	--	--	N	K
145N089W08BAA2	R.HAUFF		--	65	6	1947	25	--	S	S	--	825	8.5	--	--	N	K
145N089W08BAA3	R.HAUFF		--	90	6	--	30	--	H	S	--	725	--	--	--	N	K
145N089W09AAA	O.PFENNING		--	10	48	1960	4	--	U	--	--	590	8.5	--	--	N	K
145N089W09DDA	O.PFENNING	115	--	115	6	1961	50	--	U	--	OJ	600	9.5	--	--	N	K
145N089W10RBB	C.BUECHLER		--	18	20	--	7	--	S	G	--	<500	8.5	--	--	N	K
145N089W11ADB	B.WEIDNER		--	105	6	1961	92	--	S	S	--	1040	8.5	--	--	N	K
145N089W11CDB	W.RICHAU		--	140	6	--	80	--	S	--	OJ	700	7.0	--	--	N	K
145N089W12ABB	C.MORAST	44	--	44	5	1966	20	--	H	Z	OJ	975	7.0	--	--	N	K
145N089W13DBB	J.WEIGUM EST.	250	241	247	3	1958	236	--	K	Z	OJ	3350	7.0	--	--	N	K
145N089W14BAA	B.WEIDNER		--	100	6	1953	78	--	H	P	OJ	1300	7.5	--	--	N	K
145N089W14CCA1	J.LANG		--	49	6	1954	35	--	H	S	--	550	8.5	--	--	N	K
145N089W14CCA2	J.LANG		--	57	8	1958	30	--	S	V	--	950	7.0	--	--	N	K
145N089W16CA	H.SCHRIEFER		--	52	24	1965	--	--	S	S	--	420	9.0	--	--	N	K
145N089W18ACC	E.HORN		--	97	6	--	--	--	H	--	--	970	10.0	--	--	N	K
145N089W19AAC	J.LINDEMANN	160	108	160	--	1961	--	--	S	S	--	--	--	--	--	N	--
145N089W19CAB	J.LINDEMANN	160	--	160	4	1966	--	--	S	S	--	640	10.0	--	--	N	K
145N089W19CBB	J.LINDEMANN		160	160	4	1966	--	--	S	--	--	510	7.0	--	--	N	K
145N089W20AA	H.SCHRIEFER		--	45	5	--	--	--	H	S	--	1000	--	--	--	N	K
145N089W20DC 1	O.ERDMAN		--	225	6	1919	--	--	H	--	OJ	1750	9.5	--	--	N	K
145N089W20DC 2	O.ERDMAN		--	135	6	1950	--	--	S	--	OJ	840	9.0	--	--	N	K
145N089W21BB	H.SCHRIEFER		--	32	18	1966	--	--	S	S	--	800	7.5	--	--	N	K
145N089W22ABB1	H.BUECHLER		--	50	6	--	25	--	H	Z	--	1200	--	--	--	N	K
145N089W22ABB2	H.BUECHLER		--	49	18	1957	19	4-67	S	P	--	980	6.0	--	--	O	K
145N089W22BB	E.SCHLENDER		--	29	36	1940	12	4-67	S	--	--	1700	6.5	--	--	O	K
145N089W22CAA	A.MEYER		--	32	36	1944	25	--	H	S	--	2100	6.5	--	--	N	K
145N089W23BAA	A.RICHAU	120	--	120	6	--	100	--	H	--	--	925	7.5	--	--	N	K
145N089W24BDB	A.WEIDNER		--	18	30	--	7	4-67	H	--	--	500	6.0	--	--	O	K
145N089W24CAA	W.MITTELSTEADT		--	69	24	--	54	--	S	--	--	1400	7.0	--	--	N	K
145N089W25DBA	A.MITTELSTEADT	1507	--	1500	--	1964	132	--	S	S	PS	2330	--	2118	D	N	C
145N089W26DDC	O.RENNER		--	110	6	--	92	--	H	--	OJ	750	7.5	--	--	N	K
145N089W28CC 1	A.& N.RICHAU		--	44	6	--	--	--	H	S	--	1500	7.5	--	--	N	K
145N089W28CC 2	A.& N.RICHAU		--	40	18	--	--	--	S	--	--	1100	9.5	--	--	N	K
145N089W28CCB	A.& N.RICHAU		--	62	--	1959	--	--	H	Z	OJ	520	--	--	--	N	K

LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT.)	DEPTH TO FIRST PERFOR-ATION (FT.)	WELL DEPTH (FT.)	CASING DIAM-ETER (IN.)	DATE DRILLED (YEAR)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	WATER USE	WATER BEARING MATERIAL	AQUIFER	SPE-CIFIC CON-DUCT ANCE	TEM-PER-ATURE (°C)	ELE-VATION OF LSD (FT.)	LOG AVAIL-ABLE	FREQUENCY OF WATER-LEVEL MEASURE-MENTS	QW TYPE
145N089W30ACC	W.ERDMAN		--	4	21	--	2	4-67	H	--	--	1200	6.5	--	--	O	K
145N089W35AAA	W.BAUER		--	--	4	--	103	4-67	S	--	--	1700	7.0	--	--	O	K
145N090W01DCB	E.BAUER		--	--	4	--	61	4-67	S	--	--	--	--	--	--	O	--
145N090W02BCB1	N.SAILER		--	40	4	1962	32	4-67	K	Z	--	3250	--	--	--	O	K
145N090W02BCB2	D.BOCKEL	121	--	121	18	1964	44	4-67	K	--	OJ	2800	8.5	--	--	O	K
145N090W05CBB	NDSWC 5263	53	--	--	--	1969	--	--	U	--	--	--	--	2052	D	N	--
145N090W06DAA1	A.HURER		--	70	4	1950	32	--	S	S	--	1000	7.5	--	--	N	K
145N090W06DAA2	A.HUBER		--	46	24	--	32	--	H	S	--	650	--	--	--	N	K
145N090W06DB 1	E.WEISZ		--	35	24	1905	29	--	S	--	--	625	7.5	--	--	N	K
145N090W06DB 2	E.WEISZ		--	54	24	1964	29	--	K	S	--	<500	--	--	--	N	C
145N090W07DBB	E.WEISZ		--	--	4	--	19	4-67	U	--	--	--	--	--	--	O	--
145N090W08BBB	NDSWC 3658	260	--	--	--	1968	--	--	U	--	--	--	--	2039	GE	N	--
145N090W08CAA1	A.ISAAK		--	34	36	1918	18	4-67	S	G	--	1800	6.0	--	--	O	K
145N090W08CAA2	A.ISAAK		--	11	36	1928	14	4-67	H	S	--	2120	--	--	--	O	K
145N090W08CAA3	A.ISAAK		--	22	48	1928	12	4-67	S	G	--	2100	6.5	--	--	O	K
145N090W08CBB	NDSWC 3657	260	231	236	2	1968	10	11-68	U	S	31	1520	--	2027	GE	M	C
145N090W08CCC	NDSWC 3659	220	--	--	--	1968	--	--	U	--	--	--	--	2029	GE	N	--
145N090W08DBD	A.STOHLMILLER		--	58	5	1945	35	--	S	S	--	1150	7.5	--	--	N	K
145N090W12DD	RAAB BROS.		--	63	6	1940	30	--	K	Z	--	910	--	--	--	N	K
145N090W14BBB	W.ZEISLER	60	60	--	4	1960	--	--	S	P	--	2800	9.0	--	--	N	K
145N090W14DDD	W.ZEISLER		--	6	24	--	2	4-67	H	P	--	1800	--	--	--	O	K
145N090W15DD	J.FISCHER,JR.	140	--	140	4	1942	100	--	K	Z	OJ	2250	7.0	--	--	N	K
145N090W16BBB	A.STUHLMILLER		--	48	4	1961	8	--	H	Z	OJ	1200	9.5	--	--	N	K
145N090W16BCC	NDGS	74	--	--	--	1967	--	--	U	--	--	--	--	--	G	N	--
145N090W16DD	A.STUHLMILLER		--	--	--	--	--	--	U	--	--	875	6.5	--	--	N	K
145N090W18ADD	NDSWC 5262	40	--	--	--	1969	--	--	U	--	--	--	--	2037	D	N	--
145N090W18BCD	R.SCHIELD		--	42	18	--	30	--	H	--	--	900	7.0	--	--	N	K
145N090W19AA	A.ISAAK TRUSTEE		--	74	12	--	45	4-67	S	--	--	1200	7.5	--	--	O	K
145N090W19AAA	A.ISAAK TRUSTEE		--	74	3	--	--	--	H	--	--	650	7.0	--	--	N	K
145N090W20BA	E.TSCHAEKOFSKE		--	115	5	1949	70	--	K	HS	--	1450	7.5	--	--	N	K
145N090W21AAA1	NDSWC 5264	240	197	200	1	1969	4	5-69	U	G	31	1150	7.0	1989	GE	O	C
145N090W21AAA2	NDSWC 5264A	80	77	80	1	1969	3	5-69	U	S	31	937	7.5	1989	GE	O	C
145N090W22DAA1	A.BAUMAN		--	76	4	1955	16	--	S	Z	OJ	1900	9.0	--	--	N	K
145N090W22DAA2	A.BAUMAN		--	9	48	--	5	--	S	S	--	2100	--	--	--	N	K
145N090W22DAA3	A.BAUMAN		--	30	36	1962	21	--	H	S	--	2100	--	--	--	N	K
145N090W25BCC1	R.ISAAK		--	30	36	--	16	--	S	--	--	1025	7.0	--	--	N	K
145N090W25BCC2	R.ISAAK		--	15	48	--	12	--	S	--	--	1525	6.5	--	--	N	K
145N090W25BDB	R.ISAAK	102	100	--	6	1960	50	--	S	Z	--	1550	8.5	--	--	N	K
145N090W30DDA	A.ISAAK		--	20	4	--	12	4-67	S	Z	OJ	1200	6.5	--	--	O	K
145N090W32DBA1	A.KELLER		--	98	6	1964	--	--	H	Z	OJ	1500	--	--	--	N	K

LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT.)	DEPTH TO FIRST PERFOR-ATION (FT.)	WELL DEPTH (FT.)	CASING DIAM-ETER (IN.)	DATE DRILLED (YEAR)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	WATER USE	WATER BEARING MATERIAL	AQUIFER	SPE-CIFIC CON-DUCT ANCE	TEM-PER-ATURE (°C)	ELE-VATION OF LSD (FT.)	LOG AVAIL-ABLE	FREQUENCY OF WATER-LEVEL MEASURE-MENTS	QW TYPE
145N090W32DBR2	A.KELLER		--	100	6	1966	--	--	S	Z	OJ	1300	7.5	--	--	N	K
145N090W33AAA1	A.TSCHAEKOFSKE		--	74	4	1956	--	--	H	Z	OJ	1700	--	--	--	N	K
145N090W33AAA2	A.TSCHAEKOFSKE		--	50	18	--	25	4-67	S	S	--	2900	7.0	--	--	O	K
145N090W34AA 1	R.LINK		--	67	24	--	47	--	H	Z	--	3200	--	--	--	N	K
145N090W34AA 2	R.LINK		--	17	4	--	13	4-67	S	--	--	3600	7.0	--	--	O	K
146N084W06ACD	CORPS OF ENGRS.		--	148	--	1957	--	--	U	--	OK	4200	9.5	--	--	N	K
146N084W06CAD	CORPS OF ENGRS.		--	150	5	1957	--	--	R	Z	OK	4400	8.5	--	--	N	K
146N084W30RCA	R.KRUCKENBERG	483	--	464	2	1963	+46	5-68	S	S	OL	2350	10.5	1715	D	O	K
146N084W30CCA	R.KRUCKENBERG	460	--	446	2	1965	F	--	K	S	OL	2400	10.0	--	--	N	K
146N084W30CDB	R.KRUCKENBERG		--	19	2	1948	--	--	S	S	--	1390	5.5	--	--	N	K
146N084W31AD	M.KRUCKENBERG	440	--	426	2	1966	+61	5-68	S	S	OL	--	--	1695	D	O	--
146N084W31CCC	M.KRUCKENBERG	92	--	92	4	1964	--	--	K	Z	OJ	2350	7.0	--	--	N	K
146N085W018AA	J.BORNEMANN		--	515	2	1961	35	--	K	S	--	3000	7.0	--	--	N	K
146N085W02CCA	W.RICHTER	300	--	300	4	1957	180	--	K	Z	OK	2650	7.5	--	--	N	K
146N085W04DAA1	A.KNELL		--	70	24	--	30	--	S	--	--	2620	6.5	--	--	N	K
146N085W04DAA2	A.KNELL	1220	--	1192	4	1965	90	--	K	S	PS	2200	7.5	2016	--	N	K
146N085W08DDD1	J.WEIGUM		--	26	36	--	18	--	K	S	--	1200	6.0	--	--	N	K
146N085W08DDD2	J.WEIGUM		--	36	24	1963	28	--	S	S	--	2780	5.5	--	--	N	K
146N085W09DDD1	R.REINHARDT		--	15	40	1951	7	--	S	S	--	830	--	--	--	N	K
146N085W09DDD2	R.REINHARDT		--	15	40	1965	8	7-66	H	S	--	810	6.0	--	--	O	K
146N085W10CBB	NDSWC 3560	1520	--	--	--	1967	--	--	U	--	--	--	--	2041	Y	N	--
146N085W13AC	L.KRUCKENBERG	500	--	488	2	1966	+42	9-67	S	S	OL	2620	10.5	1742	D	O	C
146N085W18BBB1	A.WEGERLE		--	25	30	--	9	7-66	S	P	--	1510	6.0	--	--	O	K
146N085W18BBB2	A.WEGERLE	210	201	--	4	1955	90	--	K	--	OJ	--	--	--	--	N	--
146N085W20AAA1	C.KRUCKENBERG		--	22	7	1936	20	--	H	Z	OJ	1230	--	--	--	N	K
146N085W20AAA2	C.KRUCKENBERG		--	14	7	1951	12	--	K	Z	--	1300	5.5	--	--	N	K
146N085W20AAA3	C.KRUCKENBERG		--	109	3	1958	64	--	H	Z	OJ	2200	--	--	--	N	K
146N085W20AAA4	C.KRUCKENBERG		--	30	24	1963	15	--	S	Z	OJ	1860	5.5	--	--	N	K
146N085W20CCC1	B.MAAS		--	90	24	1931	50	--	S	Z	OJ	1020	6.5	--	--	N	K
146N085W20CCC2	B.MAAS	155	141	155	4	1953	--	--	H	Z	OJ	1900	--	--	--	N	K
146N085W20CCC3	B.MAAS	80	78	80	4	1960	50	--	U	Z	OJ	1030	6.5	--	--	N	K
146N085W21BBB	C.KRUCKENBERG		--	20	24	1963	10	--	S	Z	OJ	530	5.5	--	--	N	K
146N085W21DCD	W.ZIEMAN		--	66	24	1963	63	7-66	K	S	--	1940	--	--	--	O	K
146N085W21DDC	W.ZIEMAN		--	98	6	--	--	--	K	--	--	2680	6.5	--	--	N	K
146N085W23CDD1	R.HILDEBRAND	61	58	--	5	1952	54	--	S	Z	OJ	1600	6.5	--	--	N	K
146N085W23CDD2	R.HILDEBRAND		--	96	5	1955	53	--	H	Z	OJ	1900	--	--	--	N	K
146N085W26CDU	E.LAUF		--	46	24	1965	26	--	H	R	--	1700	--	--	--	N	K
146N085W27DCC	A.KILBER		--	46	24	1966	10	--	K	Z	OJ	430	--	--	--	N	K
146N085W28DDD1	E.KRIEGER		--	70	6	1952	--	--	S	S	--	1230	6.0	--	--	N	K
146N085W28DDD2	E.KRIEGER		--	60	30	--	40	--	K	S	--	1100	--	--	--	N	K

LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT.)	DEPTH TO FIRST PERFORATION (FT.)	WELL DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	WATER USE	WATER BEARING MATERIAL	AQUIFER	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ELEVATION OF LSD (FT.)	LOG AVAILABLE	FREQUENCY OF WATER-LEVEL MEASUREMENTS	QW TYPE
146N085W29DCD1	G.OSTER		--	127	4	1951	62	--	H	--	--	1700	--	--	--	N	K
146N085W29DCD2	G.OSTER		--	18	16	1957	3	--	S	Z	OJ	1430	6.0	--	--	N	K
146N085W29DCD3	G.OSTER		--	23	24	1961	5	--	S	Z	OJ	2000	6.0	--	--	N	K
146N085W32BCB	C.HEINE		--	90	24	1964	40	--	K	Z	OJ	1380	6.5	--	--	N	K
146N086W01BBB	NDGS	59	--	--	--	--	--	--	U	--	--	--	--	1995	G	N	--
146N086W03BBC	G.ADOLF	151	129	--	4	1965	122	--	K	Z	OJ	830	7.0	--	--	N	K
146N086W04CAC	H.ZABEL		--	104	24	1965	50	--	K	S	OJ	700	7.0	--	--	N	K
146N086W05AAA	H.ZABEL		--	168	4	1951	140	--	K	Z	OJ	1640	7.5	--	--	N	K
146N086W08DCB	E.ORATH		--	75	30	1948	50	--	K	Z	OJ	770	7.5	--	--	N	K
146N086W09DAA	R.MAAS		--	72	6	1928	--	--	K	G	--	980	7.0	--	--	N	K
146N086W12CCC	D.MILLER		--	84	4	1927	35	--	K	Z	OJ	2500	7.0	--	--	N	K
146N086W13BBD	A.MILLER		--	60	4	1954	6	--	K	Z	OJ	1970	6.5	--	--	N	K
146N086W14BBA	H.MILLER		1309	1320	4	1964	110	--	K	S	PS	2000	--	--	--	N	K
146N086W15BBB	NDGS	115	--	--	--	--	--	--	U	--	--	--	--	--	G	N	--
146N086W21DAD1	A.RAHN		--	44	24	1948	34	--	S	BP	--	3800	6.5	--	--	N	K
146N086W21DAD2	A.RAHN		150	150	6	1954	135	--	H	Z	OJ	1550	--	--	--	N	K
146N086W30AAC	P.MADCHE		--	230	4	1931	140	--	K	4G	--	2050	--	--	--	N	K
146N086W31DDD	R.KNECHT		--	68	24	1915	58	--	K	P	--	1500	--	--	--	N	K
146N086W32DDD1	R.MILLER		--	15	30	1936	8	--	H	P	--	1600	--	--	--	N	K
146N086W32DDD2	R.MILLER		--	147	5	1962	112	--	K	Z	OJ	1580	--	--	--	N	K
146N086W34CDD1	A.KNELL		--	26	36	1930	13	--	S	Z	OJ	3000	5.5	--	--	N	K
146N086W34CDD2	A.KNELL		--	24	24	1948	8	--	S	Z	OJ	1980	5.0	--	--	N	K
146N086W34CDD3	A.KNELL		--	33	24	1956	18	--	H	G	--	2080	--	--	--	N	K
146N086W36AAA	R.WOLF		--	40	24	1964	26	--	K	S	--	820	6.0	--	--	N	K
146N087W02CAA	E.SCHEID		--	150	4	1948	100	--	K	F	--	1170	--	--	--	N	K
146N087W08DDD1	H.HAFNER		--	288	4	--	208	--	S	Z	OJ	2900	7.5	--	--	N	K
146N087W08DDD2	H.HAFNER	1220	1140	1205	2	1964	+48	7-68	K	S	PS	2340	14.0	1915	D	M	C
146N087W10DBC	M.HAFNER	1320	--	1299	2	1967	+40	4-68	S	S	PS	2340	10.0	1923	D	O	C
146N087W10DCC	M.HAFNER		--	234	4	--	180	--	K	R	--	2150	--	--	--	N	K
146N087W12DBA	A.MORAST		--	240	5	1949	200	--	K	Z	OJ	1400	7.5	--	--	N	K
146N087W14CDB1	T.WIEDRICH		--	72	24	1914	62	--	K	Z	OJ	1650	7.5	--	--	N	K
146N087W14CDB2	T.WIEDRICH		--	150	6	1955	90	--	K	S	OJ	2350	7.5	--	--	N	K
146N087W17DDD1	E.HAFNER		--	293	5	1925	233	--	S	S	OK	2370	9.0	--	--	N	K
146N087W17DDD2	E.HAFNER	320	293	--	4	1949	206	5-67	H	Z	OK	2370	8.5	--	--	O	K
146N087W18CCA	J.WEIDNER		--	210	6	1911	37	8-66	K	--	OJ	2270	7.5	--	--	O	K
146N087W20DAD	P.HAFNER		--	280	2	1923	140	--	K	--	OK	1780	7.5	--	--	N	K
146N087W21ADD	W.KOEHLER		--	16	48	--	8	--	K	--	--	700	6.5	--	--	N	K
146N087W25BCB	R.MATTHEIS		--	180	4	--	150	--	K	Z	OJ	2000	--	--	--	N	K
146N087W26AAC1	R.MORAST		--	157	6	1928	140	--	S	G	--	1950	7.5	--	--	N	K
146N087W26AAC2	R.MORAST		--	38	20	1963	16	--	H	P	--	2000	--	--	--	N	K

LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT.)	DEPTH TO FIRST PERFOR-ATION (FT.)	WELL DEPTH (FT.)	CASING DIAM-ETER (IN.)	DATE DRILLED (YEAR)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	WATER USE	WATER BEARING MATERIAL	AQUIFER	SPE-CIFIC CON-DUCT ANCE	TEM-PER-ATURE (°C)	ELE-VATION OF LSD (FT.)	LOG AVAIL-ABLE	FREQUENCY OF WATER-LEVEL MEASURE-MENTS	QW TYPE
146N087W26CDB	P.MORAST	277	269	270	4	1946	255	--	S	Z	OK	2540	8.5	--	--	N	K
146N087W30ABB1	W.WIEDRICH		--	18	72	--	14	--	K	G	--	1630	6.5	--	--	N	K
146N087W30ABB2	W.WIEDRICH		--	190	6	1958	144	--	K	4S	OJ	3080	--	--	--	N	K
146N087W30DDA	J.RENNER,JR.		--	168	5	1935	154	--	K	Z	OJ	3050	7.5	--	--	N	K
146N087W31ABA	R.RENNER		--	168	6	--	166	--	K	Z	OJ	3150	7.5	--	--	N	K
146N087W33BCC	H.EID		--	11	4	--	3	8-66	U	--	--	--	--	--	--	O	--
146N087W35BBA	NDGS	24	--	--	--	--	--	--	U	--	--	--	--	--	G	N	--
146N087W36BBA	NDGS	49	--	--	--	--	--	--	U	--	--	--	--	--	G	N	--
146N087W36CCC	B.SCHEID		--	12	48	1950	4	--	K	G	--	700	--	--	--	N	K
146N088W09CCD	T.PFENNING		--	200	6	1962	185	--	K	S	OJ	3750	--	--	--	N	K
146N088W10DDC	J.RENNER		--	120	4	1936	72	5-67	K	Z	OJ	2520	8.5	1906	--	M	C
146N088W13DDC1	E.RENNER		--	10	30	1938	7	8-66	U	S	--	780	8.5	--	--	O	K
146N088W13DDC2	E.RENNER		--	9	48	1946	8	8-66	K	S	--	1020	--	--	--	O	K
146N088W13DDC3	E.RENNER		--	180	2	--	170	--	S	--	OJ	2100	7.5	--	--	N	K
146N088W20CCD	E.WEIGUM		--	48	24	1965	33	--	K	Z	OJ	2010	--	--	--	N	K
146N088W21DDD	NDSWC 3750	300	218	224	1	1969	4	8-69	U	8G	31	1250	10.0	1855	Y	O	C
146N088W22CBB	A.CHRISTMAN		--	54	18	--	23	8-66	S	Z	OJ	2700	6.5	--	--	O	K
146N088W22DCD1	L.RENNER		--	170	5	1946	--	--	K	8P	OJ	1420	8.5	--	--	N	K
146N088W22DCD2	L.RENNER	108	--	108	5	1963	--	--	U	--	--	1540	8.5	--	--	N	K
146N088W23AB41	H.PFENNING		--	80	5	1934	60	--	S	Z	OJ	2100	7.5	--	--	N	K
146N088W23ABA2	H.PFENNING		--	70	4	1962	50	--	K	Z	OJ	3100	--	--	--	N	K
146N088W25BDD	M.HAFNER		--	80	4	1956	--	--	K	--	--	1200	7.5	--	--	N	K
146N088W26BBA	L.HUBER		--	50	6	1958	30	--	H	Z	OJ	1200	8.5	--	--	N	K
146N088W27CCD1	NDGS	63	--	--	--	1967	--	--	U	--	--	--	--	--	G	N	--
146N088W27CCD2	NDSWC 3753	260	196	199	1	1969	35	8-69	U	S	31	--	--	1884	Y	O	--
146N088W27CDD	NDSWC 3754	40	--	--	--	1969	--	--	U	--	--	--	--	1903	G	N	--
146N088W28DDC	NDSWC 3751	40	--	--	--	1969	--	--	U	--	--	--	--	1894	G	N	--
146N088W28DDD	NDSWC 3752	224	156	162	1	1969	38	8-69	U	S	31	1250	10.0	1889	Y	O	C
146N088W29BCA	E.WEIGUM		--	60	4	1961	--	--	S	Z	OJ	3850	7.5	--	--	N	K
146N088W30DAC	E.REINHARDT		--	80	4	--	--	--	H	Z	OJ	1950	--	--	--	N	K
146N088W34DCC	E.EISENBEIS		--	120	4	1957	105	--	K	Z	OJ	2400	8.5	--	--	N	K
146N089W06BDB	J.EAGLE	122	--	122	4	--	94	--	H	--	--	820	7.5	--	--	N	K
146N089W09DAC	L.WHITMAN		--	18	6	1955	10	--	H	G	21	1490	--	--	--	N	K
146N089W15CDC	F.SCHEURER		--	120	4	1958	20	--	S	Z	OJ	2010	7.0	--	--	N	K
146N089W15DCB2	F.SCHEURER		--	30	4	1966	24	--	K	G	--	1800	7.0	--	--	N	K
146N089W17BDC	H.LINK		--	80	4	--	54	--	H	S	--	1100	--	--	--	N	K
146N089W20BBB	L.LINK		--	92	4	--	76	--	K	S	--	920	7.5	--	--	N	K
146N089W22DCB1	L.PFENNING		--	18	20	1946	14	--	S	Z	--	1950	--	--	--	N	K
146N089W22DCB2	L.PFENNING		--	18	20	1950	15	--	H	Z	--	1550	--	--	--	N	K
146N089W24CBC	E.SAILER		--	90	4	1944	72	--	K	S	--	750	--	--	--	N	K

LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT.)	DEPTH TO FIRST PERFOR-ATION (FT.)	WELL DEPTH (FT.)	CASING DIAM-ETER (IN.)	DATE DRILLED (YEAR)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	WATER USE	WATER BEARING MATERIAL	AQUIFER	SPE-CIFIC CON-DUCT ANCE	TEM-PER-ATURE (°C)	ELE-VATION OF LSD (FT.)	LOG AVAIL-ABLE	FREQUENCY OF WATER-LEVEL MEASURE-MENTS	OW TYPE
146N089W25AAA	E.WOLF		--	365	2	--	--	--	K	S	OK	2580	9.5	--	--	N	K
146N089W28CDA	S.STERN		--	112	4	--	87	--	K	--	--	1310	7.5	--	--	N	K
146N089W30AAA	T.SCHULZ		--	100	6	--	70	--	K	S	--	640	7.5	--	--	N	K
146N089W34BBA1	A.WEIGUM		--	67	5	1940	49	--	K	S	--	1090	7.5	--	--	N	K
146N089W34BBA2	A.WEIGUM		--	61	--	1947	--	--	S	S	--	1200	7.5	--	--	N	K
146N089W35BBA1	E.MORAST		--	30	6	1949	--	--	H	S	--	700	--	--	--	N	K
146N089W35BBA2	E.MORAST		--	50	6	--	--	--	S	S	--	740	7.0	--	--	N	K
146N089W36BDA	E.MORAST		--	130	6	--	100	--	U	--	--	--	--	--	--	N	--
146N090W01ADD	S.CROW		--	--	--	--	--	--	H	--	--	<500	8.5	--	--	N	K
146N090W07CAB	J.SAEMAN	74	74	74	5	--	--	--	S	Z	OJ	1500	8.5	--	--	N	K
146N090W08BBC	T.RABERN		--	22	20	--	19	8-66	H	--	--	850	--	--	--	O	K
146N090W08CAA	R.BAUER	64	--	64	4	1963	--	--	S	P	--	1080	9.0	--	--	N	K
146N090W09CDD	D.WEGNER		--	145	4	1962	--	--	S	S	--	--	--	--	--	N	--
146N090W13DCA	R.LINK		125	146	4	1963	--	--	K	S	OJ	1020	7.0	--	--	N	K
146N090W13DCC1	R.LINK	146	125	--	6	--	100	--	S	--	--	<500	7.5	--	--	N	K
146N090W13DCC2	R.LINK		--	136	6	1952	132	--	H	S	OJ	1010	--	--	--	N	K
146N090W15BCC	D.WEGNER		--	125	6	--	--	--	K	--	--	<500	8.5	2182	--	N	K
146N090W15OAA1	D.MUELLER		--	12	30	1939	9	--	K	G	--	--	--	--	--	N	--
146N090W15DAA2	D.MUELLER		--	30	5	1962	20	--	S	G	--	2800	7.0	--	--	N	K
146N090W18CDD1	J.SAEMAN		--	52	18	1934	38	9-67	K	Z	OJ	690	--	--	--	O	K
146N090W18CDD2	J.SAEMAN	76	--	--	5	1963	--	--	S	G	--	<500	8.5	--	--	N	K
146N090W19CBA	J.SAEMAN	62	--	--	5	1964	--	--	S	G	--	820	8.5	--	--	N	K
146N090W20BDB1	E.WEIDNER		--	34	24	1948	30	--	H	S	--	510	--	--	--	N	K
146N090W20BDB2	E.WEIDNER	46	--	46	6	1961	--	--	S	SP	--	<500	7.0	--	--	N	K
146NB90W20CCC	NDSWC 3575	1860	1540	1574	--	1968	73	7-68	U	S	PS	2240	--	2120	Y	M	C
146N090W21ACC	J.LINDEMAN	162	--	162	4	1961	142	--	K	P	--	2500	--	--	--	N	K
146N090W22ACD1	M.BAUER		--	11	72	--	8	--	K	P	--	2490	9.5	--	--	N	K
146N090W22ACD2	M.BAUER		--	212	2	--	--	--	S	S	OJ	2700	7.5	--	--	N	K
146N090W25OAD1	G.SCHUH		--	20	24	1946	15	--	H	P	--	1030	6.5	--	--	N	K
146N090W25DAD2	G.SCHUH		--	68	6	1956	54	--	S	S	--	2100	7.0	--	--	N	K
146N090W30BAA	J.HUBER		--	40	24	1960	20	--	S	S	--	600	7.0	--	--	N	K
146N090W30DDD1	J.HUBER		--	26	24	--	10	--	S	S	--	1490	7.5	--	--	N	K
146N090W30DDD2	J.HUBER		--	38	24	1955	21	--	K	S	--	600	--	--	--	N	K
147N085W20DBD1	F.ISAAK		--	100	30	1910	94	--	S	Z	OJ	1900	7.0	--	--	N	K
147N085W20DBD2	F.ISAAK		--	100	4	1950	94	7-66	H	Z	OJ	1800	--	--	--	O	K
147N085W20DBD3	F.ISAAK	1440	--	1403	2	1965	+19	5-68	K	S	PS	2690	10.5	1915	D	O	C
147N085W25ADA	CORPS OF ENGRS.		--	229	--	--	--	--	R	Z	--	2750	9.0	--	--	N	K
147N085W25BAD	CORPS OF ENGRS.		--	224	--	1956	--	--	R	--	--	3420	9.0	--	--	N	K
147N085W27CBA	A.GUENTHNER		--	48	24	1920	40	7-66	K	Z	OJ	1590	7.0	--	--	O	K
147N085W28AAB1	W.ISAAK		--	40	48	1926	30	--	S	P	--	3400	7.5	--	--	N	K

LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT.)	DEPTH TO FIRST PERFOR-ATION (FT.)	WELL DEPTH (FT.)	CASING DIAM-ETER (IN.)	DATE DRILLED (YEAR)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	WATER USE	WATER BEARING MATERIAL	AQUIFER	SPE-CIFIC CON-DUCT ANCE	TEM-PER-ATURE (°C)	ELE-VATION OF LSD (FT.)	LOG AVAIL-ABLE	FREQUENCY OF WATER-LEVEL MEASURE-MENTS	OW TYPE
147N085W28AAB2	W.ISAAK		--	96	5	1958	60	--	S	Z	OJ	3400	8.5	--	--	N	K
147N085W28AAB3	W.ISAAK		--	96	6	1960	60	--	H	Z	--	3400	--	--	--	N	K
147N085W31CAA	L.WERNER		--	54	24	1923	40	--	K	--	--	1020	7.0	--	--	N	K
147N085W32ADC1	L.NEUBERGER		--	18	36	--	10	7-66	S	G	--	1570	5.0	--	--	O	K
147N085W32ADC2	L.NEUBERGER		--	18	10	1949	14	--	H	G	--	780	--	--	--	N	K
147N085W32CBB1	L.ELLWEIN		--	50	24	1946	38	--	H	S	--	980	--	--	--	N	K
147N085W32CBB2	L.ELLWEIN		--	20	48	1950	5	7-66	S	4G	--	1100	--	--	--	O	K
147N085W32DBD1	H.SCHLENDER		--	21	30	1906	11	7-66	S	Z	OJ	1780	6.0	--	--	O	K
147N085W32DBD2	H.SCHLENDER		--	30	6	1946	11	7-66	H	Z	OJ	670	--	--	--	O	K
147N085W32DBD3	H.SCHLENDER		--	26	36	--	12	7-66	S	F	--	3300	--	--	--	O	K
147N085W34BCD1	O.HUBER		--	30	18	--	22	7-66	U	G	--	--	--	--	--	O	--
147N085W34BCD2	O.HUBER		--	25	5	1949	--	--	S	Z	--	1380	7.5	--	--	N	K
147N085W34BCD3	O.HUBER		--	30	5	1951	20	--	S	Z	--	1400	7.0	--	--	N	K
147N085W34DDD	R.POCHANT	352	--	352	4	1963	--	--	S	--	OK	1900	7.5	--	--	N	K
147N086W25CDD	A.WITTMAYER		--	205	4	1915	175	--	K	S	OK	2000	8.5	--	--	N	K
147N086W36ABC1	A.HUBER		--	200	6	--	--	--	S	--	OK	2000	7.5	--	--	N	K
147N086W36ABC2	A.HUBER		--	190	6	--	--	--	H	--	--	1870	--	--	--	N	K
147N089W31DDD	M.GRINNELL		--	165	6	--	140	--	K	--	--	1040	7.5	--	--	N	K
147N089W33ADA	A.L.SOLDIER	55	52	--	4	1963	--	--	S	--	--	780	7.0	--	--	N	K
147N089W33DAD1	G.L.SOLDIER		--	70	6	--	20	--	H	G	--	1000	--	--	--	N	K
147N089W33DAD2	G.L.SOLDIER		--	50	2	1956	20	--	S	BP	--	--	--	--	--	N	--
147N089W33DDA	A.L.SOLDIER		--	70	4	1951	45	9-67	H	--	--	--	--	--	--	O	--
147N089W34DCB1	N.L.SOLDIER		--	70	6	1953	60	--	H	--	--	880	8.5	--	--	N	K
147N089W34DCB2	N.L.SOLDIER		25	26	4	1963	5	8-66	U	S	--	--	--	--	--	O	--
147N089W34DDC	N.L.SOLDIER	22	20	--	4	1963	4	9-67	S	--	--	700	9.0	--	--	O	K
147N090W20DD8	E.STONE		--	84	4	1951	44	--	H	S	OJ	780	7.5	--	--	N	K
147N090W22CCC	USGS	150	--	--	4	1950	74	4-67	U	--	--	2010	8.5	--	--	O	C
147N090W25ABC	USGS 54		--	155	4	1950	98	11-50	U	--	--	3900	--	--	--	O	C
147N090W31ACD	E.BENSON		--	65	3	1952	--	--	H	Z	OJ	930	--	--	--	N	K
147N090W36DAD	J.DARCY	152	--	152	4	1965	--	--	S	--	--	--	--	--	--	N	--

TABLE 2.--Records of springs

Location	Owner or name	Use of water	Lithology	Flow (gallons per minute)	Conductance (micromhos per centimeter at 25°C)	Temperature °C	Remarks
143-87- 6CAA3	E. Liebelt, Sr.	Stock	....	..	2600	10.0	....
144-89- 9CC	A. Dallman	Domestic and stock	....	3.5	1500	8.5	....
144-90-17CDD	W. Herman	do.	....	10	1000	8.5	Flows continuously.
145-88- 2CBB	G. Ost	Stock	....	..	2150	7.5	Do.
145-88-13CBB	A. Keller	Stock	....	..	1300	4.5	....
146-84-31CCA	M. Kruckenberg	Stock	Lignite	.5	1450	8.5	....
146-86-31DDA	R. Knecht	Stock	....	2	680	7.5	....
146-88-28DAC	R. Sailer	Domestic and stock	Lignite	2.5	2250	..	....
146-89-15DCB1	F. Scheurer	Stock	do.	1.4	1530	9.0	....

TABLE 3.--Water levels in selected wells

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

141-83-4ADD

Date	Water level	Date	Water level	Date	Water level
Aug. 28, 1967....	14.10	June 13.....	13.41	Apr. 15.....	11.21
Sept. 18.....	14.60	July 17.....	13.47	May 21.....	12.04
Oct. 12.....	14.59	Aug. 9.....	13.60	June 12.....	12.23
Nov. 6.....	14.57	Sept. 9.....	13.58	July 17.....	12.41
Dec. 4.....	14.52	Oct. 3.....	13.55	Aug. 9.....	11.23
Jan. 12, 1968....	14.60	Nov. 19.....	13.53	Sept. 9.....	12.05
Feb. 23.....	14.30	Dec. 5.....	13.33	Oct. 29.....	12.44
Mar. 13.....	13.89	Jan. 21, 1969....	13.50	Nov. 19.....	12.57
Apr. 12.....	13.65	Feb. 21.....	13.60	Dec. 15.....	12.62
May 8.....	13.35	Mar. 19.....	13.33		

141-83-4BC

June 15, 1967....	133.09	May 8.....	131.26	Apr. 15.....	130.44
July 14.....	133.31	June 13.....	131.11	May 21.....	129.96
Aug. 17.....	133.60	July 17.....	131.34	June 12.....	130.32
Sept. 18.....	133.58	Aug. 9.....	131.55	July 17.....	130.30
Oct. 12.....	133.43	Sept. 9.....	131.32	Aug. 9.....	130.16
Nov. 6.....	133.50	Oct. 3.....	131.44	Sept. 9.....	130.34
Dec. 4.....	133.28	Nov. 19.....	131.65	Oct. 29.....	130.30
Jan. 12, 1968....	133.60	Dec. 5.....	131.30	Nov. 19.....	130.35
Feb. 23.....	133.01	Jan. 21, 1969....	130.65	Dec. 15.....	130.15
Mar. 13.....	132.8	Feb. 21.....	130.70		
Apr. 12.....	131.55	Mar. 19.....	130.92		

141-85-18DDA1

May 29, 1967....	10.0	July 16.....	11.64	May 20.....	10.91
Oct. 9.....	11.50	Aug. 13.....	12.37	June 11.....	11.10
Nov. 13.....	11.05	Sept. 4.....	11.70	July 15.....	11.13
Dec. 5.....	11.45	Oct. 2.....	11.74	Aug. 8.....	10.95
Jan. 12, 1968....	11.25	Nov. 19.....	11.43	Sept. 8.....	11.52
Feb. 15.....	10.90	Dec. 5.....	11.35	Oct. 28.....	11.07
Mar. 13.....	10.36	Jan. 20, 1969....	11.27	Nov. 19.....	11.17
Apr. 11.....	10.10	Feb. 21.....	Frozen	Dec. 15.....	10.82
May 10.....	10.65	Mar. 19.....	Frozen		
June 13.....	10.85	Apr. 15.....	9.96		

141-85-27DDD

Jan. 20, 1969....	143.43	May 20.....	143.55	Sept. 8.....	143.54
Feb. 21.....	143.42	June 11.....	143.37	Oct. 28.....	143.87
Mar. 19.....	143.20	July 15.....	143.93	Nov. 19.....	143.55
Apr. 15.....	143.45	Aug. 8.....	143.26	Dec. 15.....	143.60

141-89-23BAA

Dec. 3, 1968....	11.90	July 15.....	11.79	Oct. 26.....	11.92
May 22, 1969....	11.88	Aug. 6.....	11.54	Nov. 21.....	11.88
June 13.....	11.61	Sept. 8.....	11.96		

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

141-90-19CCD

Date	Water level	Date	Water level	Date	Water level
June 23, 1967	5.28	Mar. 27	5.36	Feb. 11	5.70
July 13	5.55	Apr. 9	5.55	Mar. 17	5.50
Aug. 4	5.50	May 9	5.60	Apr. 23	5.69
Aug. 17	5.50	June 12	5.54	May 22	5.83
Sept. 19	5.27	July 17	5.56	June 13	5.83
Oct. 17	5.57	Aug. 12	5.68	July 10	Well pumped
Nov. 8	5.49	Sept. 5	5.70	Aug. 6	5.79
Dec. 6	5.42	Oct. 2	5.75	Sept. 8	6.06
Jan. 15, 1968	5.43	Nov. 6	5.78	Oct. 27	6.04
Feb. 14	5.36	Dec. 4	5.60	Nov. 21	5.82
Mar. 7	5.36	Jan. 13, 1969	5.75	Dec. 16	5.89

142-84-24BBA

Jan. 16, 1968	198.1	Sept. 10	198.09	June 13	198.15
Feb. 5	198.6	Oct. 3	198.15	July 29	197.99
Feb. 26	198.7	Nov. 19	197.90	Aug. 9	197.95
Mar. 25	198.3	Dec. 5	198.03	Sept. 9	198.23
Apr. 15	198.3	Jan. 31, 1969	197.88	Oct. 29	198.15
May 12	197.7	Feb. 21	198.03	Nov. 19	198.23
June 13	198.0	Mar. 18	197.83	Dec. 15	198.17
July 17	198.14	Apr. 15	197.90		
Aug. 13	198.3	May 23	198.05		

142-90-26ABB

Mar. 23, 1967	+18.0	Feb. 14	+15.8	Nov. 6	+13.0
May 4	+17.9	Mar. 7	+15.1	Dec. 4	+13.2
June 6	+18.5	Apr. 9	+14.6	Jan. 13, 1969	+12.1
July 13	+19.8	May 9	+15.9	Feb. 11	+12.1
Aug. 17	+20.0	June 12	+17.10	Mar. 18	+11.1
Sept. 19	+19.6	July 15	+16.40	Apr. 23	+11.3
Oct. 31	+15.94	Aug. 13	+14.1	May 20	+11.2
Dec. 6	+16.60	Sept. 4	+14.1	June 12	+10.7
Jan. 15, 1968	+16.0	Oct. 2	+14.0	July 15	+11.6

142-90-36AD

May 17, 1968	+12.20	Aug. 6	5.99	Nov. 21	6.00
June 13, 1969	7.00	Sept. 8	5.96	Dec. 16	5.96
July 16	6.01	Oct. 26	6.05		

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

143-88-4DCD

Depth	Water level	Depth	Water level	Depth	Water level
July 30, 1948....	18.54	Oct. 10.....	18.90	Dec. 4.....	20.27
Oct. 18.....	19.66	Nov. 8.....	19.35	Jan. 17, 1969....	20.36
Apr. 21, 1949....	13.80	Dec. 6.....	19.50	Feb. 11.....	20.40
July 16.....	17.25	Jan. 15, 1968....	19.72	Mar. 17.....	19.47
Dec. 7.....	19.68	Feb. 15.....	19.84	Apr. 17.....	13.82
May 16, 1950....	11.59	Mar. 7.....	19.42	May 21.....	15.14
June 16.....	13.53	Apr. 11.....	19.29	June 11.....	15.92
Sept. 14.....	16.91	May 9.....	19.40	July 14.....	16.56
Apr. 19, 1951....	16.01	June 12.....	19.65	Aug. 7.....	17.14
Apr. 28, 1967....	17.54	July 15.....	19.77	Sept. 9.....	18.03
June 14.....	16.38	Aug. 13.....	20.02	Oct. 28.....	18.87
July 13.....	17.10	Sept. 4.....	19.96	Nov. 20.....	18.99
Aug. 17.....	17.95	Oct. 3.....	20.20	Dec. 16.....	19.20
Sept. 19.....	18.65	Nov. 5.....	20.40		

144-82-23BBB2

Jan. 12, 1968....	5.65	Sept. 9.....	12.25	May 23.....	11.62
Feb. 23.....	6.12	Oct. 3.....	9.85	June 12.....	11.75
Mar. 13.....	10.10	Nov. 19.....	11.09	July 17.....	10.70
Apr. 12.....	10.92	Dec. 5.....	10.20	Aug. 9.....	10.66
May 10.....	11.79	Jan. 20, 1969....	8.32	Sept. 9.....	10.55
June 13.....	11.54	Feb. 22.....	6.50	Oct. 29.....	11.24
July 17.....	12.48	Mar. 19.....	9.54	Nov. 18.....	10.67
Aug. 9.....	12.27	Apr. 15.....	10.89	Dec. 15.....	10.22

144-82-27BBB1

July 18, 1967....	8.33	Apr. 11.....	9.55	Mar. 19.....	10.61
Aug. 17.....	9.40	May 10.....	9.85	Apr. 15.....	7.67
Sept. 18.....	9.97	June 13.....	10.02	May 23.....	8.69
Oct. 12.....	10.04	July 17.....	10.49	June 12.....	9.26
Nov. 6.....	10.25	Aug. 9.....	10.88	July 17.....	9.81
Dec. 4.....	10.28	Sept. 10.....	11.04	Aug. 9.....	8.34
Jan. 12, 1968....	10.32	Oct. 3.....	11.20	Sept. 9.....	10.77
Feb. 16.....	10.08	Nov. 19.....	11.20	Oct. 29.....	11.10
Feb. 23.....	9.92	Dec. 5.....	11.15	Nov. 18.....	11.18
Feb. 27.....	9.91	Jan. 20, 1969....	10.78		
Mar. 13.....	9.38	Feb. 22.....	10.73		

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

144-82-27BBB2

Depth	Water level	Depth	Water level	Depth	Water level
Feb. 5, 1968....	9.69	Aug. 25.....	11.48	Apr. 5.....	10.75
Feb. 29.....	8.91	Aug. 30.....	11.44	Apr. 10.....	9.10
Mar. 25.....	9.95	Sept. 1.....	11.45	Apr. 15.....	8.18
Mar. 30.....	9.95	Sept. 5.....	11.50	Apr. 20.....	8.28
Apr. 1.....	9.95	Sept. 10.....	11.56	Apr. 25.....	8.43
Apr. 5.....	10.01	Sept. 15.....	11.56	Apr. 30.....	8.70
Apr. 10.....	10.03	Sept. 20.....	11.60	May 1.....	8.77
Apr. 15.....	10.05	Sept. 25.....	11.65	May 5.....	8.87
Apr. 20.....	10.06	Sept. 30.....	11.67	May 10.....	9.01
Apr. 25.....	10.21	Oct. 1.....	11.64	May 15.....	9.10
Apr. 30.....	10.27	Oct. 5.....	11.68	May 23.....	9.24
May 1.....	10.28	Oct. 10.....	11.70	June 12.....	9.77
May 5.....	10.36	Oct. 15.....	11.68	June 15.....	9.78
May 10.....	10.39	Oct. 20.....	11.69	July 17.....	10.35
May 15.....	10.29	Oct. 25.....	11.68	July 20.....	10.36
May 20.....	10.33	Oct. 30.....	11.63	July 25.....	10.50
May 25.....	10.36	Nov. 1.....	11.68	July 30.....	10.59
May 30.....	10.37	Nov. 5.....	11.70	Sept. 15.....	11.41
June 1.....	10.41	Nov. 20.....	11.66	Sept. 20.....	11.40
June 5.....	10.45	Nov. 25.....	11.70	Sept. 25.....	11.48
June 10.....	10.55	Nov. 30.....	11.66	Sept. 30.....	11.52
June 15.....	10.61	Dec. 1.....	11.66	Oct. 1.....	11.48
June 20.....	10.66	Dec. 5.....	11.69	Oct. 5.....	11.55
June 25.....	10.74	Dec. 10.....	11.71	Oct. 10.....	11.56
June 30.....	10.77	Dec. 15.....	11.69	Oct. 15.....	11.56
July 1.....	10.82	Dec. 20.....	11.68	Oct. 30.....	11.66
July 5.....	10.84	Dec. 25.....	11.72	Nov. 1.....	11.67
July 10.....	10.89	Feb. 25, 1969....	11.25	Nov. 5.....	11.65
July 15.....	10.95	Feb. 28.....	11.20	Nov. 10.....	11.66
July 20.....	11.06	Mar. 1.....	11.20	Nov. 15.....	11.66
July 25.....	11.15	Mar. 5.....	11.23	Nov. 20.....	11.72
July 30.....	11.24	Mar. 10.....	11.17	Nov. 25.....	11.74
Aug. 1.....	11.25	Mar. 15.....	11.16	Nov. 30.....	11.73
Aug. 5.....	11.31	Mar. 20.....	11.13	Dec. 1.....	11.74
Aug. 10.....	11.42	Mar. 25.....	11.14	Dec. 5.....	11.73
Aug. 15.....	11.44	Mar. 30.....	11.18	Dec. 10.....	11.74
Aug. 20.....	11.50	Apr. 1.....	11.11	Dec. 15.....	11.74

144-82-28CBA

Nov. 25, 1968....	49.19	May 23.....	47.32	Oct. 29.....	49.60
Jan. 20, 1969....	49.49	June 12.....	47.93	Nov. 18.....	49.76
Feb. 22.....	49.27	July 17.....	48.48	Dec. 15.....	49.60
Mar. 19.....	49.15	Aug. 9.....	48.87		
Apr. 15.....	46.55	Sept. 9.....	49.39		

144-84-27ADD

Nov. 25, 1968....	54.01	July 17.....	54.28	Oct. 28.....	54.15
May 23, 1969....	55.80	Aug. 8.....	53.55	Nov. 18.....	53.82
June 12.....	54.13	Sept. 8.....	54.70	Dec. 16.....	53.20

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

144-85-1DDD

Date	Water level	Date	Water level	Date	Water level
July 14, 1967....	23.40	Aug. 8.....	24.60	Mar. 19.....	22.79
Aug. 17.....	23.40	Sept. 4.....	24.42	Apr. 16.....	22.59
Sept. 14.....	23.62	Oct. 3.....	24.07	May 22.....	23.03
Oct. 12.....	23.44	Nov. 19.....	24.05	June 12.....	23.40
Nov. 13.....	23.80	Dec. 4.....	23.78	July 13.....	23.62
Dec. 5.....	23.33	Jan. 20, 1969....	23.04		
July 17, 1968....	24.33	Feb. 21.....	22.83		

144-85-6ABB

July 14, 1967....	11.45	May 8.....	13.97	Mar. 17.....	15.10
Aug. 17.....	12.10	June 13.....	14.26	Apr. 16.....	7.47
Sept. 14.....	12.58	July 16.....	14.50	May 22.....	9.36
Oct. 12.....	12.84	Aug. 8.....	14.60	June 12.....	9.63
Nov. 13.....	13.26	Sept. 4.....	14.68	July 13.....	10.26
Dec. 5.....	13.45	Oct. 3.....	14.87	Aug. 8.....	10.38
Jan. 16, 1968....	13.68	Nov. 19.....	15.08	Sept. 8.....	11.21
Feb. 16.....	14.03	Dec. 4.....	15.10	Oct. 28.....	12.05
Mar. 6.....	13.72	Jan. 17, 1969....	15.20	Nov. 19.....	12.45
Apr. 11.....	13.82	Feb. 21.....	15.03	Dec. 16.....	12.76

144-86-18ADC2

July 14, 1967....	19.78	May 8.....	20.43	Mar. 17.....	21.57
Aug. 17.....	19.95	June 13.....	20.61	Apr. 16.....	16.68
Sept. 14.....	20.2	July 15.....	21.00	May 22.....	17.30
Oct. 12.....	20.17	Aug. 8.....	21.20	June 12.....	17.63
Nov. 8.....	20.35	Sept. 4.....	21.17	July 11.....	17.78
Dec. 5.....	20.30	Oct. 3.....	21.22	Aug. 8.....	17.55
Jan. 15, 1968....	20.25	Nov. 19.....	21.26	Sept. 8.....	18.00
Feb. 15.....	20.53	Dec. 4.....	21.40	Oct. 28.....	18.25
Mar. 8.....	20.46	Jan. 17, 1969....	21.49	Nov. 19.....	18.60
Apr. 11.....	20.30	Feb. 11.....	21.61	Dec. 16.....	18.98

144-87-14AAA

Nov. 19, 1968....	19.17	May 22.....	16.40	Oct. 28.....	16.87
Jan. 17, 1969....	19.16	June 12.....	16.62	Nov. 19.....	17.00
Feb. 11.....	19.24	July 16.....	16.73	Dec. 16.....	17.10
Mar. 17.....	19.23	Aug. 8.....	16.15		
Apr. 16.....	16.24	Sept. 8.....	17.49		

144-87-31ADB

June 15, 1967....	67.1	Apr. 17.....	66.60	Feb. 11, 1969....	67.33
Oct. 9.....	66.75	May 8.....	66.72	Mar. 17.....	66.99
Nov. 8.....	66.80	July 15.....	66.06	Apr. 17.....	64.13
Jan. 15, 1968....	67.90	Sept. 4.....	67.00	May 21.....	65.62
Feb. 15.....	67.05	Nov. 5.....	67.20	June 11.....	66.30
Mar. 7.....	66.0	Dec. 4.....	67.36	July 14.....	65.64

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

145-84-20DDD

Date	Water level	Date	Water level	Date	Water level
July 14, 1967....	21.96	May 8.....	22.33	Mar. 19.....	21.92
Aug. 17.....	21.75	June 13.....	22.17	Apr. 16.....	19.67
Sept. 14.....	22.12	July 17.....	22.57	May 22.....	22.32
Oct. 12.....	22.42	Aug. 8.....	22.73	June 12.....	22.80
Nov. 13.....	22.77	Sept. 4.....	23.02	July 13.....	21.70
Dec. 5.....	22.40	Oct. 3.....	22.87	Aug. 8.....	22.33
Jan. 16, 1968....	21.10	Nov. 19.....	23.17	Sept. 8.....	22.95
Feb. 16.....	21.45	Dec. 4.....	23.04	Oct. 28.....	23.43
Mar. 7.....	19.20	Jan. 20, 1969....	22.28	Nov. 19.....	23.30
Apr. 12.....	21.73	Feb. 21.....	22.02	Dec. 16.....	22.77

145-84-28BAD

July 14, 1967....	16.71	May 8.....	17.25	Mar. 19.....	16.99
Aug. 17.....	16.18	June 13.....	17.49	Apr. 16.....	15.27
Sept. 14.....	16.72	July 17.....	17.90	May 22.....	16.83
Oct. 12.....	16.79	Aug. 8.....	18.20	June 12.....	17.25
Nov. 13.....	17.30	Sept. 4.....	18.02	July 13.....	16.77
Dec. 5.....	16.76	Oct. 3.....	17.53	Aug. 8.....	17.10
Jan. 16, 1968....	15.55	Nov. 19.....	18.20	Sept. 8.....	17.27
Feb. 16.....	15.99	Dec. 4.....	17.70	Oct. 28.....	17.73
Mar. 6.....	14.40	Jan. 20, 1969....	16.98	Nov. 19.....	17.70
Apr. 12.....	16.77	Feb. 21.....	16.78	Dec. 16.....	17.19

145-86-11CDD

Apr. 12, 1967....	45.70	June 13.....	45.90	May 22.....	45.01
Oct. 9.....	45.25	July 16.....	44.91	June 12.....	45.24
Nov. 13.....	45.42	Aug. 13.....	45.80	July 16.....	45.00
Dec. 5.....	45.50	Sept. 4.....	45.30	Aug. 8.....	44.55
Jan. 15, 1968....	45.30	Oct. 3.....	45.57	Sept. 8.....	45.15
Feb. 16.....	45.95	Dec. 4.....	45.10	Oct. 28.....	44.60
Mar. 8.....	45.30	Jan. 17, 1969....	45.27	Nov. 19.....	44.95
Apr. 11.....	45.07	Feb. 21.....Well pumping			
May 8.....	44.60	Apr. 16.....	45.37		

145-87-32DC

Aug. 31, 1967....	15.7	Mar. 7.....	14.74	Sept. 4.....	14.41
Oct. 10.....	15.07	Apr. 11.....	14.47	Oct. 3.....	14.48
Nov. 8.....	15.00	May 8.....	14.69	Nov. 5.....	14.41
Dec. 6.....	14.98	June 12.....	14.42	Dec. 4.....	14.30
Jan. 15, 1968....	14.90	July 15.....	14.22	Jan. 17, 1969....	14.21
Feb. 15.....	14.86	Aug. 13.....	14.54	Feb. 11.....	14.31

145-88-25ABB

Nov. 25, 1968....	66.68	July 16.....	66.09	Dec. 16.....	66.23
May 22, 1969....	66.75	Aug. 7.....	65.48		
June 11.....	66.47	Nov. 20.....	66.28		

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

145-90-8CBB

Date	Water level	Date	Water level	Date	Water level
Nov. 25, 1968....	10.22	May 21.....	9.73	Oct. 28.....	10.08
Jan. 17, 1969....	10.26	June 11.....	9.78	Nov. 20.....	10.13
Feb. 11.....	10.37	July 16.....	9.67	Dec. 16.....	10.16
Mar. 18.....	10.30	Aug. 7.....	9.77		
Apr. 16.....	9.72	Sept. 8.....	10.14		

146-87-8DDD2

Mar. 27, 1967....	+41.9	Mar. 7.....	+41.00	Feb. 11.....	+48.7
May 4.....	+41.5	Apr. 11.....	+40.10	Apr. 16.....	+48.0
June 6.....	+42.6	May 9.....	+42.00	May 21.....	+48.8
July 12.....	+46.8	June 12.....	+44.70	June 11.....	+48.5
Aug. 17.....	+44.2	July 15.....	+47.00	July 16.....	+49.6
Sept. 18.....	+43.4	Aug. 13.....	+49.00	Aug. 7.....	+50.5
Oct. 10.....	+41.25	Sept. 4.....	+49.50	Sept. 8.....	+48.5
Nov. 8.....	+40.10	Oct. 3.....	+49.50	Oct. 28.....	+49.5
Dec. 6.....	+42.00	Nov. 19.....	+48.50	Nov. 20.....	+48.7
Jan. 15, 1968....	+42.10	Dec. 4.....	+49.40	Dec. 16.....	+46.5
Feb. 15.....	+41.20	Jan. 17, 1969....	+49.0		

146-88-10DDC

July 17, 1951....	98.9	Nov. 8.....	64.95	June 12.....	67.43
May 4, 1967....	71.1	Dec. 6.....	65.60	July 15.....	63.78
June 17.....	67.75	Jan. 15, 1968....	67.02	Aug. 13.....	62.85
July 14.....	64.02	Feb. 15.....	68.00	Sept. 4.....	61.10
Aug. 17.....	62.87	Mar. 7.....	68.30	Oct. 3.....	62.39
Sept. 19.....	63.78	Apr. 11.....	67.15	Nov. 5.....	63.10
Oct. 10.....	64.18	May 9.....	67.91		

146-90-20CCC

July 15, 1968....	73.18	Feb. 11.....	72.16	July 23.....	75.23
Aug. 9.....	73.25	Mar. 18.....	71.92	Aug. 7.....	74.77
Sept. 4.....	72.35	Apr. 16.....	72.15	Sept. 8.....	74.83
Oct. 2.....	72.36	May 21.....	72.21	Oct. 28.....	74.82
Nov. 5.....	72.37	June 11.....	71.93	Nov. 20.....	74.55
Dec. 4.....	72.13	July 8.....Well pumped		Dec. 16.....	74.55
Jan. 17, 1969....	72.10	July 16.....	76.40		

TABLE 4.--Logs of test holes and wells

Explanation of lithologic symbols

Gravel or sand and gravel

Sand or sandstone

Till

Silt or siltstone

Claystone or shale

Lignite

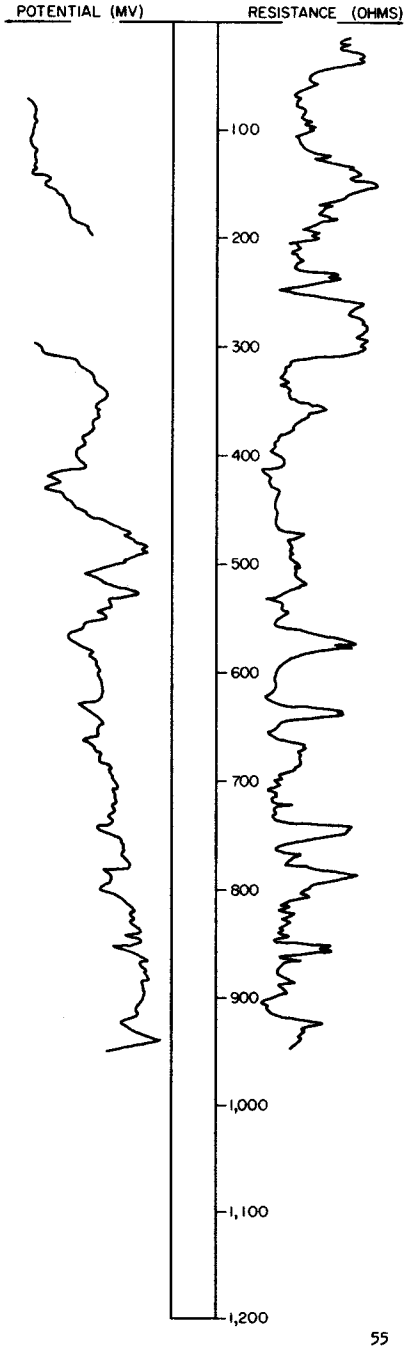
Unconformity

LOCATION: 140-85-3 DDD
(Log from Mann Drilling Co.)

DATE DRILLED: November 1967

ELEVATION: 2100
(FT, MSL)

DEPTH: 1040
(FT)



DESCRIPTION OF DEPOSITS

Tongue River Formation

0-42	Claystone, sandy, brown.
42-44	Lignite.
44-116	Claystone, gray.
116-118	Lignite.
118-131	Claystone, gray.
131-132	Lignite.
132-150	Claystone, gray.
150-151	Sandstone.
151-169	Claystone, gray.
169-172	Lignite.
172-230	Claystone, gray.
230-241	Lignite.
241-261	Claystone, gray.
261-310	Sandstone, brown water, 100 gpm.

Cannonball-Ludlow Formations, undifferentiated

310-370	Claystone, gray.
370-470	Claystone, sandy, gray.
470-474	Sandstone.
474-516	Claystone, gray.
516-517	Sandstone.
517-562	Claystone, sandy, gray.
562-571	Claystone, sandy.

Hell Creek Formation

571-573	Sandstone.
573-628	Claystone, sandy, gray.
628-629	Sandstone.
629-635	Claystone, sandy, gray.
635-637	Sandstone.
637-662	Claystone, sandy, gray.
662-687	Claystone, sandy.
687-689	Sandstone.
689-748	Claystone, sandy, dark-gray
748-750	Sandstone.
750-950	Claystone, sandy, brown.

Fox Hills(?) Formation

950-980	Sandstone.
980-1040	Claystone, sandy, gray.

141-81-13CCC
Auger Hole 0-67-MK-14

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium:			
	Sand, fine- to medium-grained, silty, pale-yellowish-brown	9	9
Glacial drift:			
	Sand, fine- to medium-grained, dark-greenish-gray	6	15
	Sand, fine- to coarse-grained, pebbly, dark-greenish-gray	25	40
	Sand, medium- to very coarse-grained, pebbly	23	63
	Sand, fine- to very coarse-grained, pebbly, lignitic, poorly sorted, dusky-yellowish-brown	17	80
Cannonball Formation:			
	Siltstone, clayey, moderate-olive-brown	4	84

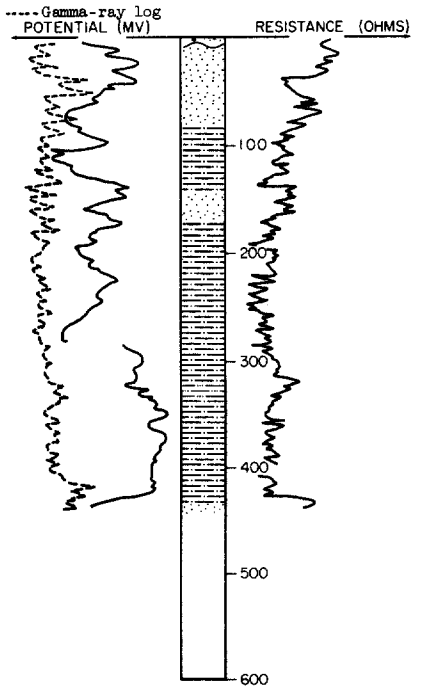
TEST HOLE 3649

LOCATION: 141-82-9DDD

DATE DRILLED: October 1968

ELEVATION: 1969 (FT, MSL)

DEPTH: 440 (FT)



DESCRIPTION OF DEPOSITS

Roadfill

0-7 Gravel, sandy, clayey.

Tongue River Formation

7-75 Sandstone and siltstone, fine- to medium-grained, clayey, moderate-yellowish-brown.

75-136 Claystone, silty, sandy.

136-162 Sandstone, fine-grained, dark-greenish-gray.

Cannonball-Ludlow Formations, undifferentiated

162-315 Claystone, silty, sandy, variegated light-olive-gray to moderate-yellowish-brown.

315-330 Siltstone, clayey, sandy, carbonaceous, dark-greenish-gray.

330-428 Claystone, silty, dark-greenish-gray.

428-440 Sandstone, fine- to medium-grained, thinly bedded, light-olive-gray; shell fragments.

141-82-22CD
TEST HOLE 3723

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium:			
	Sand, fine- to coarse-grained, yellowish-gray----	15	15
Cannonball-Ludlow Formations, undifferentiated:			
	Claystone, silty, olive-gray----------	45	60

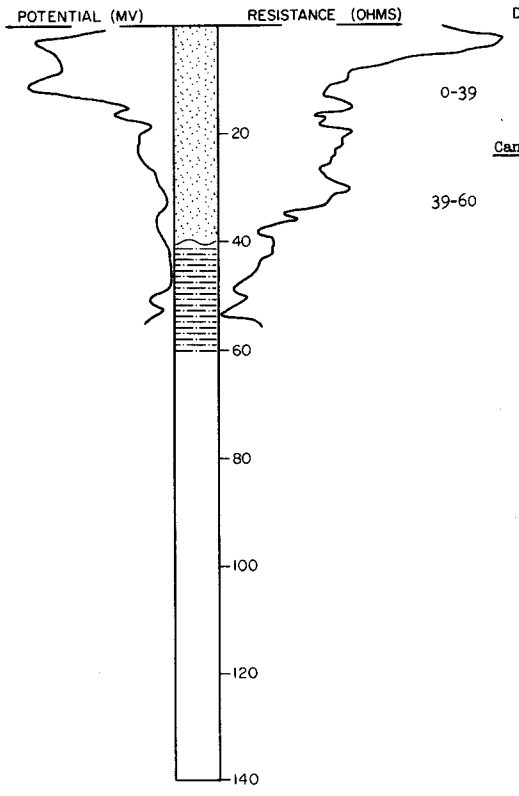
TEST HOLE 3725

LOCATION: 141-82-22CDA

DATE DRILLED: July 1969

ELEVATION: 1746 (FT, MSL)

DEPTH: 60 (FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-39 Sand, fine- to coarse-grained; gravelly in lower part.

Cannonball-Ludlow Formations, undifferentiated

39-60 Claystone, silty, dark-gray.

141-82-27BAB
TEST HOLE 3724

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium:			
	Sand, very fine- to coarse-grained, pebbly, yellowish-brown	16	16
Cannonball-Ludlow Formations, undifferentiated:			
	Claystone, silty, sandy, brownish-gray	44	60

141-83-4ADD
Auger Hole 0-67-5, Minnkota TW-4

Alluvium:	Sand, fine-grained, silty, dark-yellowish-brown	6	6
	Sand, medium-grained, pebbly, moderate-yellowish-brown	7	13
Glacial drift:			
	Sand, medium- to coarse-grained, silty, pebbly	7	20
	Sand, fine- to medium-grained, silty, pebbly	30	50
	Sand, fine- to coarse-grained, pebbly, dark-greenish-gray	23	73
Tongue River Formation:			
	Siltstone and claystone	7	80

141-83-4BAD
Auger Hole 0-67-4, Minnkota TW-3

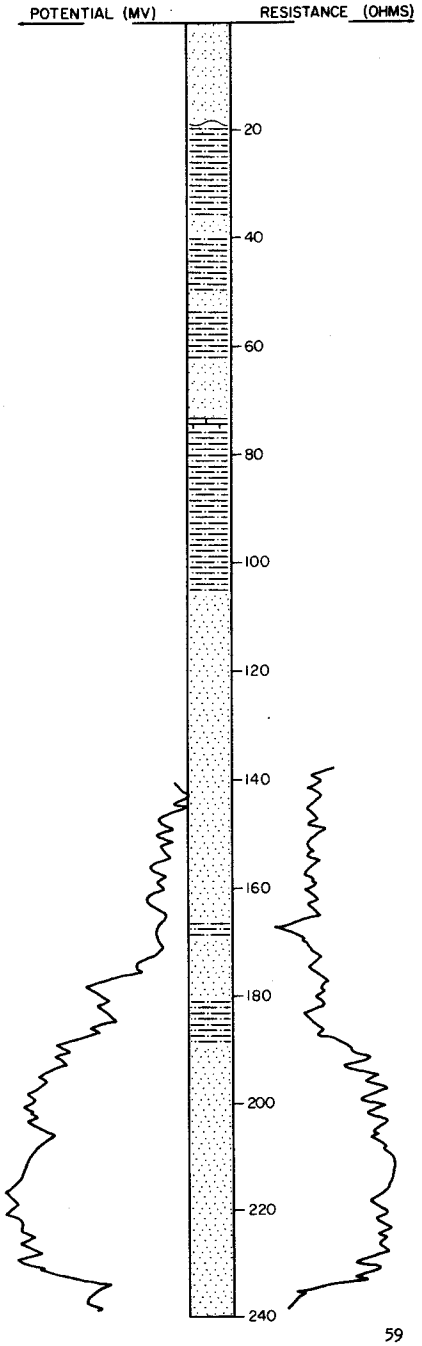
Alluvium:			
	Fill	3	3
	Clay, silty, pale-brown	1	4
	Silt, sandy, moderate-brown	3	7
Glacial drift:			
	Sand, medium-grained, silty	7	14
	Sand, medium- to coarse-grained, silty, pebbly	8	22
	Gravel and sand	12	34
	Gravel, sandy	9	43
	Sand, medium-grained, silty, pebbly	32	75
	Gravel	4.5	79.5
Tongue River Formation:			
	Siltstone	.5	80

LOCATION: 141-83-4BC

DATE DRILLED: May 1967

ELEVATION: 2017
(FT, MSL)

DEPTH: 340
(FT)



DESCRIPTION OF DEPOSITS

Glacial drift

0-20	Sand, fine- to medium-grained, silty, clayey, moderate-yellowish-brown.

Tongue River Formation

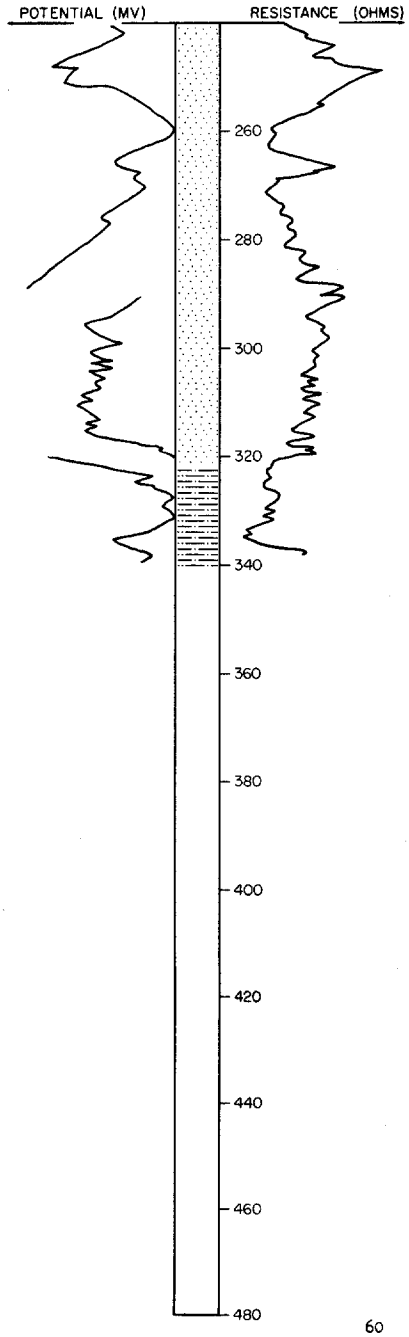
20-36	Claystone, silty, calcareous, greenish-gray; lignitic at 21 ft.
36-40	Sand, fine- to medium-grained.
40-50	Claystone, silty, greenish-gray.
50-53.5	Sand, fine-grained.
53.5-62	Claystone, silty, lignitic, moderate-brown.
62-72	Sand, fine- to medium-grained.
72-74	Limestone, light-bluish-gray.
74-105	Claystone, silty, greenish-gray; lignitic 94-95 ft.
105-167	Sandstone, fine- to medium-grained, silty, greenish-gray.
167-170	Claystone, dark-greenish-gray.
170-181	Sandstone, greenish-gray.
181-189	Claystone and lignite.
189-235	Sandstone, fine- to medium-grained, silty, greenish-gray.

LOCATION: 141-83-4BC, Continued

DATE DRILLED: May 1967

ELEVATION: 2017
(FT, MSL)

DEPTH: 340
(FT)



DESCRIPTION OF DEPOSITS

235-280	Sandstone and claystone, fine-grained, silty, greenish-gray; Shells at 239 ft, lignite at 268-270 ft.
280-287	Sandstone, fine-grained, silty.
287-322	Sandstone, fine- to coarse-grained, dark-greenish-gray.

Cannonball-Ludlow Formations, undifferentiated

322-340	Claystone, sandy, silty, dark-greenish-gray; lignite at 338 ft.

141-83-4BDA
Auger Hole 0-67-2, Minnkota TW-2

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium:			
	Silt, sandy, pale-yellowish-brown	6	6
	Sand and gravel, silty, light-brown	3	9
	Silt	3	12
Glacial drift:			
	Sand, fine-grained, pebbly	1	13
	Gravel and sand, coarse-grained, silty	2.5	15.5
	Sand, fine-grained, gravelly, silty	39.5	55
	Silt, sandy	9	64
Tongue River Formation:			
	Sandstone, very fine-grained, silty	6	70

141-83-4BDB
Auger Hole 0-67-1, Minnkota TW-1

Alluvium:			
	Fill	2	2
	Silt, sandy, dry	17	19
	Sand, very fine- to fine-grained, dry, moderate-yellowish-brown	4.5	23.5
Glacial drift:			
	Gravel and sand	6.5	30
	Sand, coarse-grained, gravelly	45	75
Tongue River Formation:			
	Siltstone and claystone	1	76

141-85-3CCC
(Log from Mann Drilling Co.)

Clay	24	24
Coal	2	26
Clay	12	38
Coal	3	41
Clay	95	136
Sandstone	1	137
Clay	69	206
Coal	4	210
Clay	121	331
Sandstone	2	333
Clay, sandy	28	361
Clay	11	372
Clay, sandy	6	378
Sand	19	397

141-85-6ADD2
(Log from Ray Mohl)

Sandstone	73	73
Rock	6	79
Clay, sandy	14	93
Sandstone	1	94
Clay, sandy, blue	19	113
Clay, hard, black	3	116
Clay, gray	4	120

141-85-8DAA
(Log from Opp Drilling Co.)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay	12	12
	Coal with water	5	17
	Clay	9	26
	Sand	2	28
	Rock	3	31
	Coal, water at 8 gpm	2	33
	Clay	42	75
	Coal	1	76
	Clay	5	81
	Coal, water at 15 gpm	2	83
	Clay	25	108
	Coal, some water	1	109
	Clay, sandy	2	111
	Sand	3	114
	Clay, sandy	5	119
	Clay	6	125
	Clay, sandy	5	130
	Sand, blue	2	132
	Rock	1	133
	Sand	9	142
	Coal, dry	4	146
	Clay, sandy	17	163
	Clay	3	166
	Coal, dry	5	171
	Clay, sandy, blue	31	202
	Sand, clayey, blue, dry	16	218
	Coal, hard, dry	10	228
	Clay, dark	4	232
	Clay, sandy, blue	19	251
	Rock, hard	2	253
	Clay, sandy, hard	2	255
	Coal, hard, dry	1	256
	Clay, sandy, hard	9	265
	Sand, clayey, blue	15	280
	Clay, sandy, hard, blue	15	295
	Clay, hard, blue; 1 ft of coal at 297 ft	20	315
	Clay, sandy, hard, blue	3	318
	Rock, hard	1	319
	Sand, clayey, blue	4	323
	Coal, water at 1 gpm	2	325
	Clay, sandy, hard, dark	22	347
	Coal, dry	.5	347.5
	Clay, hard, dry	1.5	349
	Coal, hard, dry	1	350
	Sand, hard	12	362

141-85-18ABB
(Log from Ray Mohl)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay and coal, sandy, yellow	44	44
	Clay and coal	15	59
	Clay, gray	7	66
	Coal	3	69
	Clay, gray	8	77
	Coal	4	81
	Clay, gray	81	162
	Rock	4	166
	Sandstone, soft	6	172
	Coal	1	173
	Clay, sandy	6	179
	Coal	2	181
	Clay, sandy, gray	30	211
	Limestone	2	213
	Clay, sandy	15	228
	Sand, soft	1	229
	Clay	15	244
	Clay and coal	3	247
	Clay, gray	24	271
	Rock	11	282
	Coal, broken, water	2	284
	Clay, gray	4	288
	Sandstone	1	289
	Clay, sandy, gray	19	308
	Sandstone	12	320

141-85-18DDA1
(Log from Ray Mohl)

	Sand and gravel, fine	9	9
	Clay, gray and brown	7	16
	Coal and water	2	18
	Clay, gray	7	25

141-85-21DDA2
(Log from Opp Drilling Co.)

	Topsoil	3	3
	Clay, dark	18	21
	Clay, blue	15	36
	Clay, dark	5	41
	Clay, blue	19	60
	Clay, green	2	62
	Clay, sandy, green	4	66
	Clay, green	2	68
	Coal	1	69
	Clay, green	9	78
	Sand, gray	6	84
	Clay, gray	8	92
	Clay, blue	5	97
	Sand, hard, blue	5	102
	Sand, hard, gray	3	105
	Clay, sandy	5	110
	Sand, gray	3	113
	Clay, gray	13	126
	Clay, green	8	134
	Clay, gray	11	145
	Coal, dry	1	146
	Clay, sandy	7	153
	Sand, blue	22	175

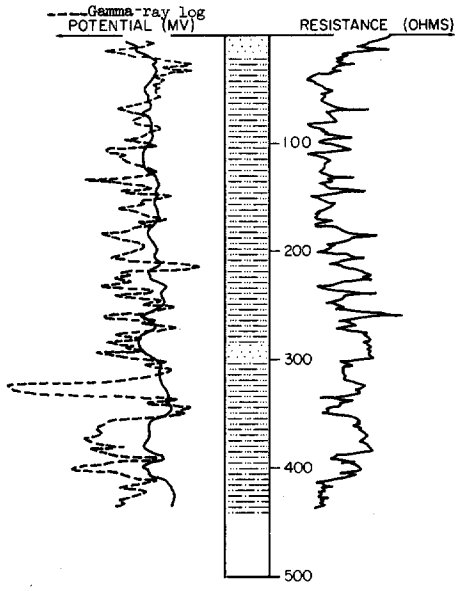
TEST HOLE 3646

LOCATION: 141-85-27DDD

DATE DRILLED: October 1968

ELEVATION: 2124
(FT, MSL)

DEPTH: 440
(FT)



DESCRIPTION OF DEPOSITS

Sentinel Butte Formation

0-20 Sandstone and siltstone, fine-grained, clayey, moderate-yellowish-brown.

Tongue River Formation

20-180 Siltstone and claystone, sandy, thin bedded, lignitic, light-olive-gray.

180-280 Siltstone and sandstone, fine-grained, clayey, light-olive-gray.

280-300 Sandstone, fine- to medium-grained.

300-400 Siltstone and claystone, sandy, light-olive-gray; lignite at 320 ft.

Cannonball-Ludlow Formations, undifferentiated

400-440 Claystone, silty, carbonaceous, lignitic, tight, light-olive-gray to moderate-olive-brown.

141-86-10BAD2
(Log from Ray Mohl)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand, mostly fine	29	29
	Coal, soft	1	30
	Coal	2	32
	Clay, gray	2	34
	Coal	3	37
	Clay, gray	15	52
	Coal	3	55
	Clay	2	57
	Coal	3	60
	Clay, gray	20	80
	Coal, with small layer of clay	12	92
	Clay, gray	13	105
	Coal	2	107
	Clay, gray	7	114
	Sandrock	1	115
	Clay, gray	10	125
	Coal	1	126
	Clay, gray	8	134
	Coal, water at about 2 gpm	3	137

141-87-3CBC
(Log from Opp Drilling Co.)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Topsoil	5	5
	Sand, yellow	5	10
	Clay, blue	8	18
	Clay, yellow	7	25
	Clay, blue; strip of coal	2	27
	Sand, gray	1	28
	Clay, green	1	29
	Clay, blue	21	50
	Coal	1	51
	Clay, blue; 2 inch strip of rock at 51 ft	16	67
	Sand, gray; some clay	18	85
	Sand, blue; some clay	7	92
	Sand, blue; seepage	8	100
	Coal, hard	2	102
	Clay, blue	1.5	103.5
	Coal, hard	1.5	105
	Clay, blue	3	108
	Rock, hard	2	110
	Clay, blue	12	122
	Coal, dry	1	123
	Clay, green	7	130
	Clay, gray; a little sand	19	149
	Clay, brown	1	150
	Rock, hard	.5	150.5
	Clay, blue	13.5	164
	Coal, hard, dry	4	168
	Clay, blue	6	174
	Coal, some water, 1 gpm	6	180
	Clay, blue	4	184
	Sandrock, soft	1	185
	Clay, blue	5	190
	Sandrock, soft	1	191
	Clay, blue	21	212
	Rock, hard	2	214
	Clay, white	4	218
	Clay, dark, clam shells	3	221
	Clay, gray	2	223
	Clay, gray	8	231
	Sand, blue	4	235
	Coal, hard, dry	1	236
	Clay, blue	3	239
	Coal, hard, dry	1	240
	Clay, blue	7	247
	Coal	.5	247.5
	Sand, fine; some clay	2.5	250
	Sand, fine; strip of coal at 249.5 ft	10	260
	Sand, fine, white; makes water milky when mixed	12	272
	Clay, blue; hard rock at bottom; water comes in from 255-260 ft	5	277

141-88-10DDA
(Log from Ray Mohl)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand and gravel	6	6
	Clay	33	39
	Clay, sandy, gray	19	58
	Clay, black	10	68
	Coal	3	71
	Clay, gray	4	75
	Coal	9	84
	Clay	3	87
	Coal	4	91
	Clay, gray	9	100
	Rock	1	101
	Clay, hard	19	120
	Clay, sandy, soft	7	127
	Clay, sandy, brown	22	149
	Sandstone, soft, brown water	3	152
	Clay, sandy	18	170

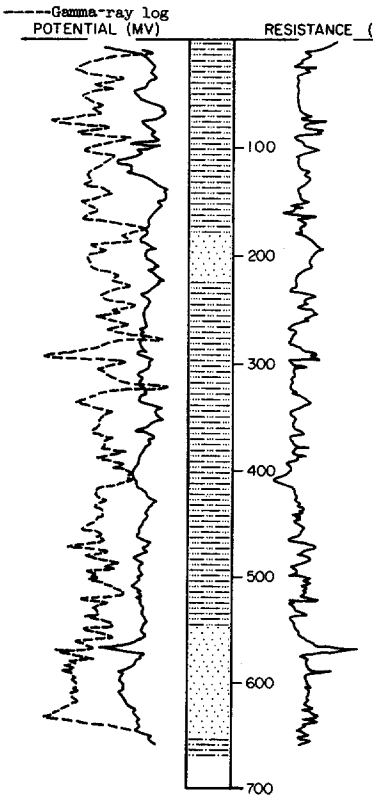
TEST HOLE 3650

LOCATION: 141-88-23DDC

DATE DRILLED: October 1968

ELEVATION: 2245 (FT, MSL)

DEPTH: 660 (FT)



DESCRIPTION OF DEPOSITS

Sentinel Butte Formation

0-180 Siltstone and claystone, lignitic, light-olive-gray to dark-greenish-gray; sandy from 100 to 140 ft.

180-220 Sandstone, very fine-grained, silty.

Tongue River Formation

220-540 Siltstone and claystone, sandy, light-olive-gray to dark-greenish-gray; lignitic 300 to 340 ft.

540-640 Sandstone, very fine- to fine-grained, silty.

Cannonball-Ludlow Formations, undifferentiated

640-660 Claystone, silty, lignitic.

141-88-30CCD
(Log from Lloyd Erickson)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Topsoil	2	2
	Clay, sandy, yellow	33	35
	Sand, clayey, gray	35	70
	Coal	8	78
	Clay	1	79

141-88-32BAA
(Log from Ray Mohl)

	Clay, sandy, yellow	42	42
	Clay, sorted color	35	77
	Rock	2	79
	Clay and sandy clay	34	113
	Rock	1	114
	Clay, gray	3	117
	Coal	6	123
	Clay, gray	6	129
	Clay and coal layers	3	132
	Clay, gray	15	147
	Coal	4	151
	Clay, sandy, gray	10	161
	Clay, sandy, soft	35	196
	Sand; trace of coal; water	2	198
	Clay, sandy	32	230

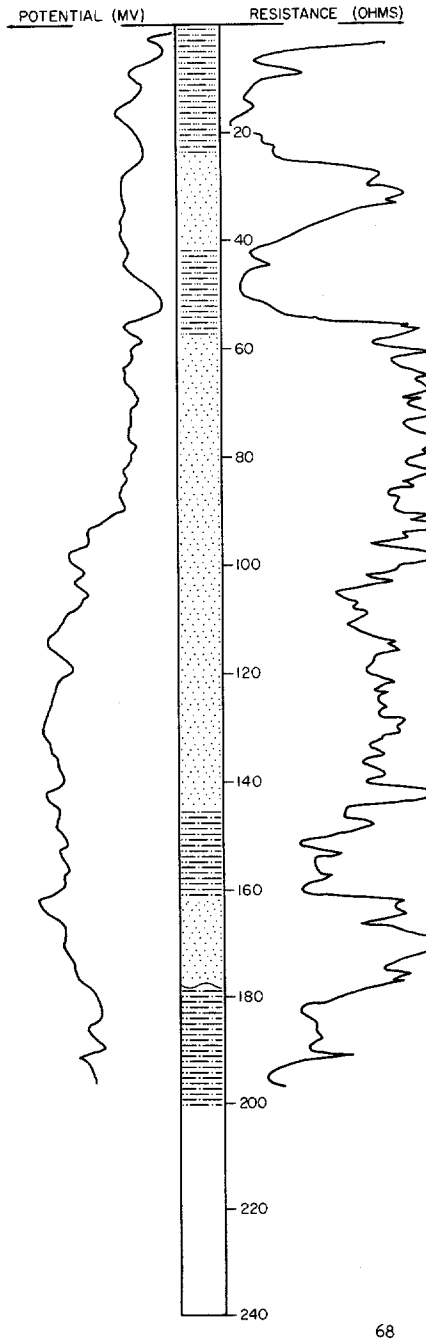
TEST HOLE 3763

LOCATION: 141-89-5CBB

DATE DRILLED: August 1969

ELEVATION: 1995
(FT, MSL)

DEPTH: 200
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-56 Silt and sand, fine-grained, clayey, moderate-olive-brown.

Glacial drift

56-104 Sand, fine- to medium-grained, lignitic, gray.

104-144 Sand, fine- to medium-grained, lignitic; thin beds of silty clay.

144-160 Clay, silty, sandy, olive-gray.

160-176 Sand, medium- to coarse-grained, gravelly, greenish-gray.

Tongue River Formation

176-200 Claystone, silty, sandy, carbonaceous, olive-gray.

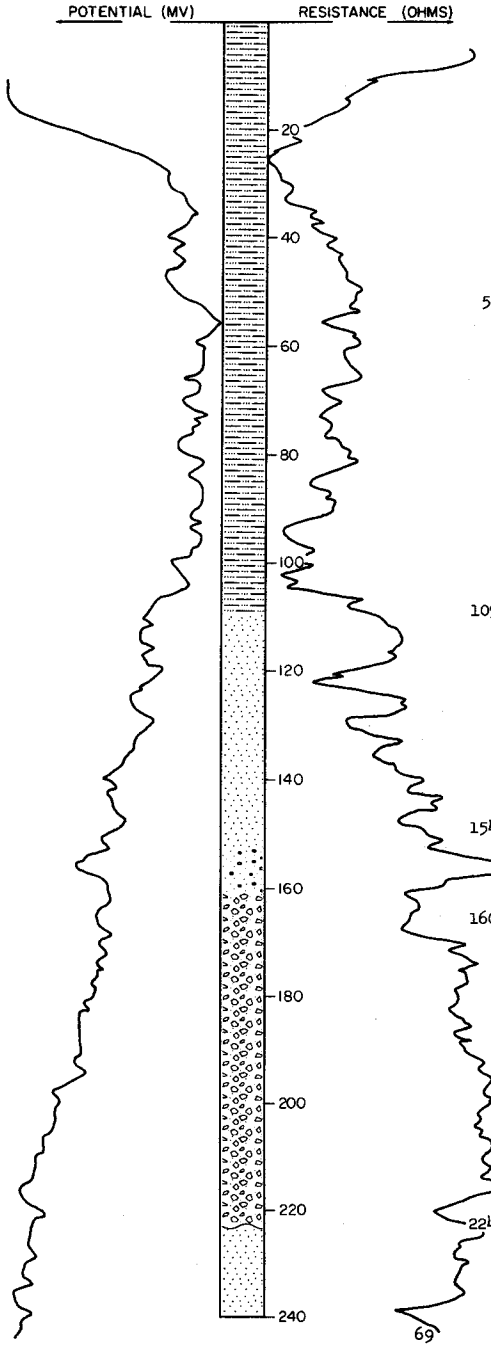
TEST HOLE 3764

LOCATION: 141-89-15DCC

DATE DRILLED: August 1969

ELEVATION: 2062
(FT, MSL)

DEPTH: 280
(FT)



	DESCRIPTION OF DEPOSITS
	Alluvium
0-56	Silt and clay, sandy, yellowish-gray to moderate-olive-brown.
	Glacial drift
56-109	Silt and clay, plastic, laminated, olive-gray to black.
109-154	Sand, fine- to medium-grained, gray.
154-160	Gravel.
160-224	Till(?), silty, sandy, pebbly, olive-gray.
	Tongue River Formation
224-280	Sandstone and claystone, fine-grained, olive-gray.

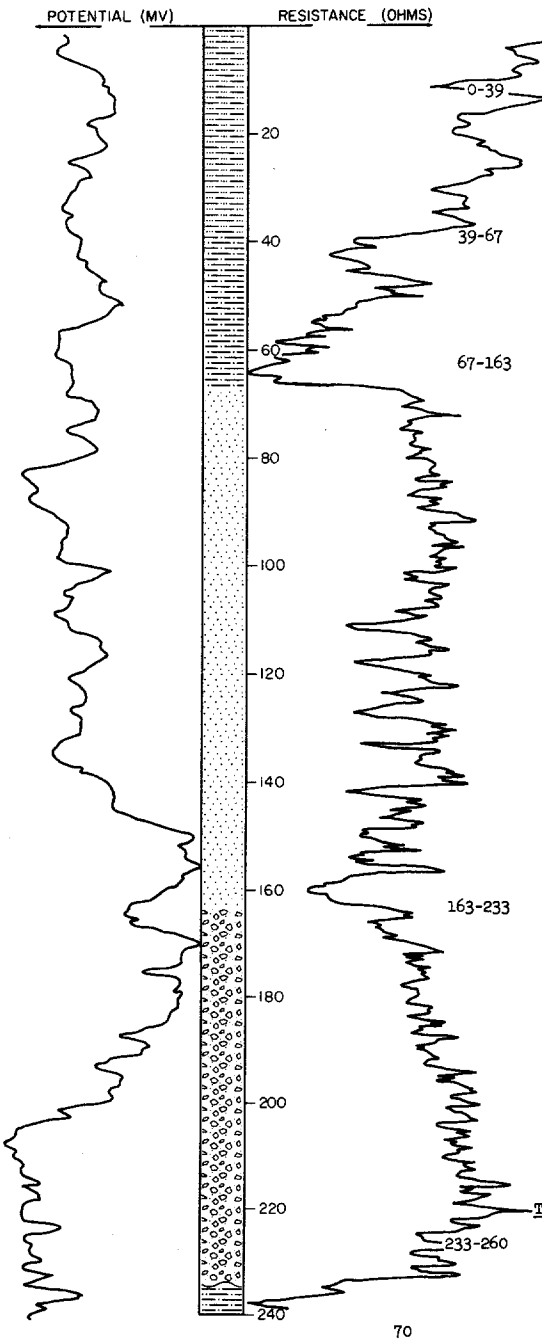
TEST HOLE 3664

LOCATION: 141-89-22AAA

DATE DRILLED: November 1968

ELEVATION: 2047
(FT, MSL)

DEPTH: 260
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-39 Silt, clayey, sandy, moderate-yellowish-brown.

39-67 Clay, silty, sandy, moderate-yellowish-brown to light-olive-gray; a few carbonaceous beds.

Glacial drift

67-163 Sand and silt, very fine- to coarse-grained, thinly bedded, lignitic, light-olive-gray; a few clay beds.

163-233 Till(?), silty, clayey, pebbly, lignitic, grayish-brown to light-olive-gray.

Tongue River Formation

233-260 Claystone, silty, sandy, light-olive-gray.

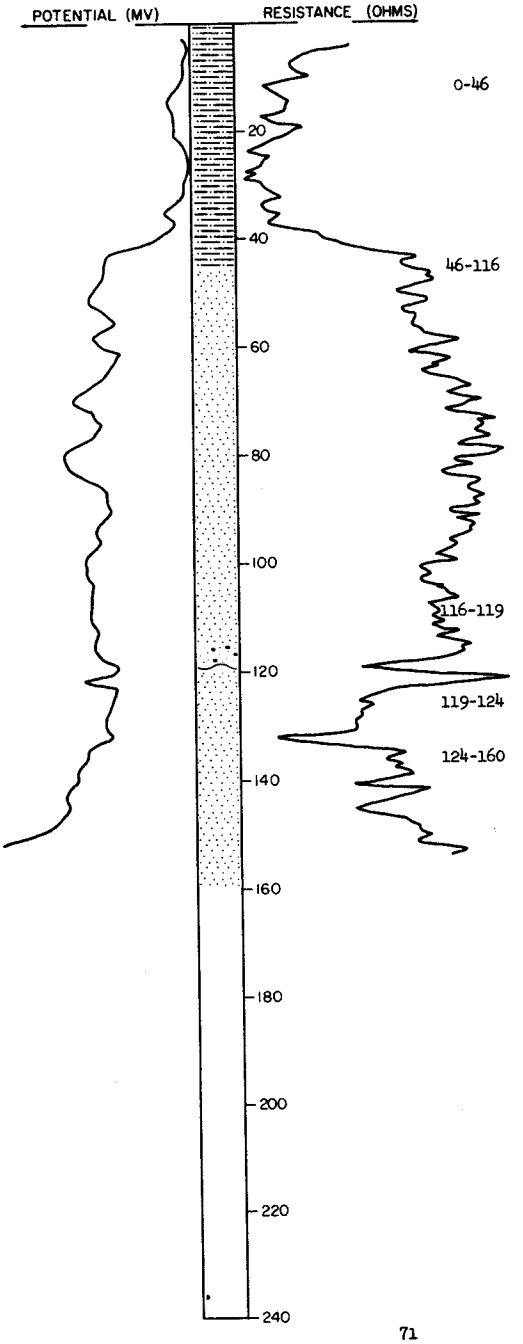
TEST HOLE 3765

LOCATION: 141-89-23AA

DATE DRILLED: August 1969

ELEVATION: 2062
(FT, MSL)

DEPTH: 160
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-46 Clay, silty, moderate-olive-brown.

Glacial drift

46-116 Sand, medium- to coarse-grained, lignitic, gray.

116-119 Gravel, brown.

Tongue River Formation

119-124 Sandstone, fine-grained, greenish-gray.

124-160 Sandstone, fine-grained, silty, clayey, lignitic, gray.

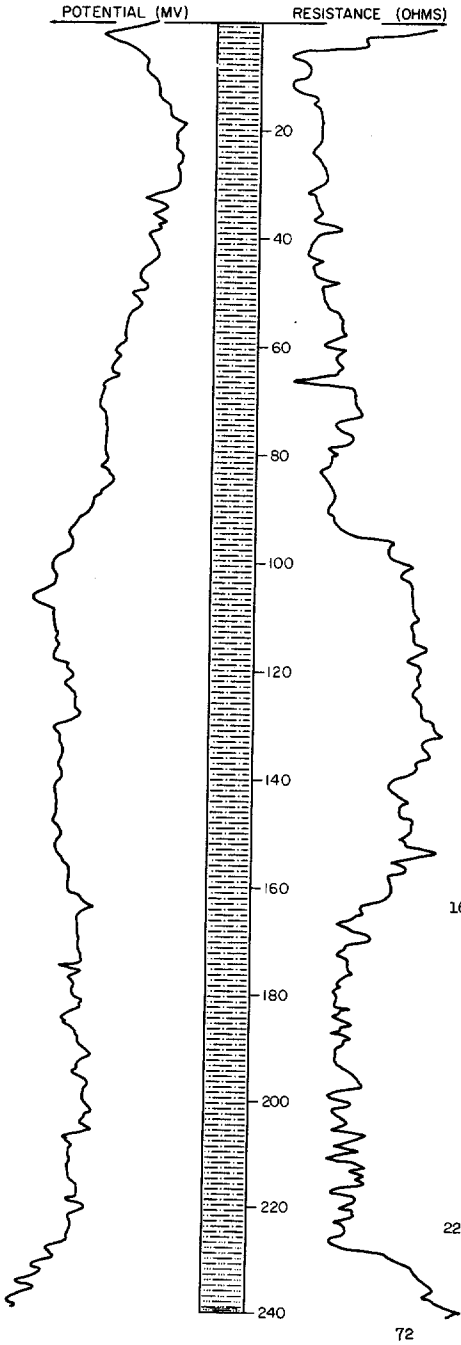
TEST HOLE 3663

LOCATION: 141-89-23BAA

DATE DRILLED: November 1968

ELEVATION: 2042
(FT, MSL)

DEPTH: 300
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-33 Clay, silty, sandy, light-olive-brown to light-olive gray.

Glacial drift

33-93 Clay, silty, plastic, olive-gray to black; contains a few carbonaceous beds.

93-164 Clay, sandy, silty, light-olive-gray.

164-226 Clay, silty, light-olive-gray.

226-256 Silt and clay, sandy.

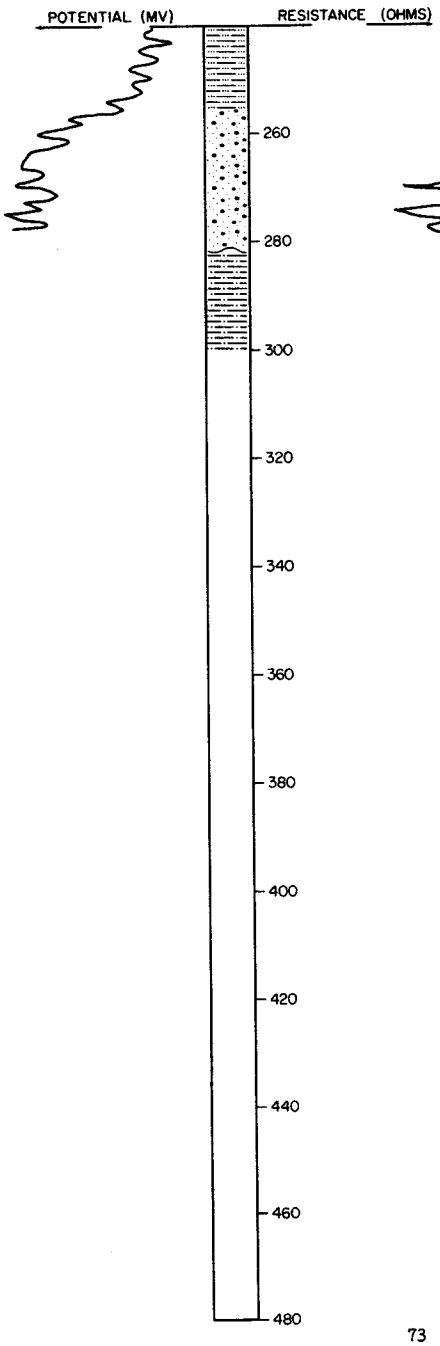
TEST HOLE 3663, Continued

LOCATION: 141-89-23BAA

DATE DRILLED: November 1968

ELEVATION: 2042
(FT, MSL)

DEPTH: 300
(FT)



DESCRIPTION OF DEPOSITS

256-282 Sand and gravel; a few beds of silt and clay.

Tongue River Formation

282-300 Claystone, silty, light-olive-gray.

141-89-25CCD
Auger Hole 67-45

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium:			
	Silt, sandy, clayey, carbonate streaks, moderate-olive-brown	20	20
Glacial drift:			
	Silt, sandy, clayey, pebbly, light-olive-gray	47	67
	Clay, silty, firm, dark-greenish-gray	10	77
	Sand, fine- to coarse-grained, silty	2	79

141-90-9BAC
(Log from Bandy Drilling Co.)

Surface soil	112	112
Shale, blue	106	218
Sandstone	17	235
Shale, blue	80	315
Rock, hard	3	318
Sandstone	17	335
Shale, blue	103	438
Sandstone	42	480
Shale, blue	294	774
Sand	5	779
Rock, hard	4	783
Sand	7	790
Shale, blue	100	890
Sandstone	25	915
Shale, blue	25	940

141-90-9DB
(Log from Bandy Drilling Co.)

Surface soil	75	75
Shale, blue	51	126
Sandstone	6	132
Shale, blue	56	188
Sandstone	5	193
Shale, sandy	9	202
Sandstone	7	209
Shale	156	365
Rock, hard	4	369
Shale, blue	10	379
Rock, hard	4	383
Shale, blue	62	445
Rock, hard	4	449
Shale, blue	59	508
Rock, hard	3	511
Shale, blue	29	540
Sandstone	49	589
Shale, blue	60	649
Rock, hard	11	660
Shale, blue	132	792
Sandstone	6	798
Rock, hard	2	800
Sandstone	40	840
Shale, blue	132	972
Sandstone and shale	57	1029
Shale, blue	156	1185
Sandstone	37	1222
Shale, blue	38	1260
Sandstone	20	1280
Shale, blue	20	1300

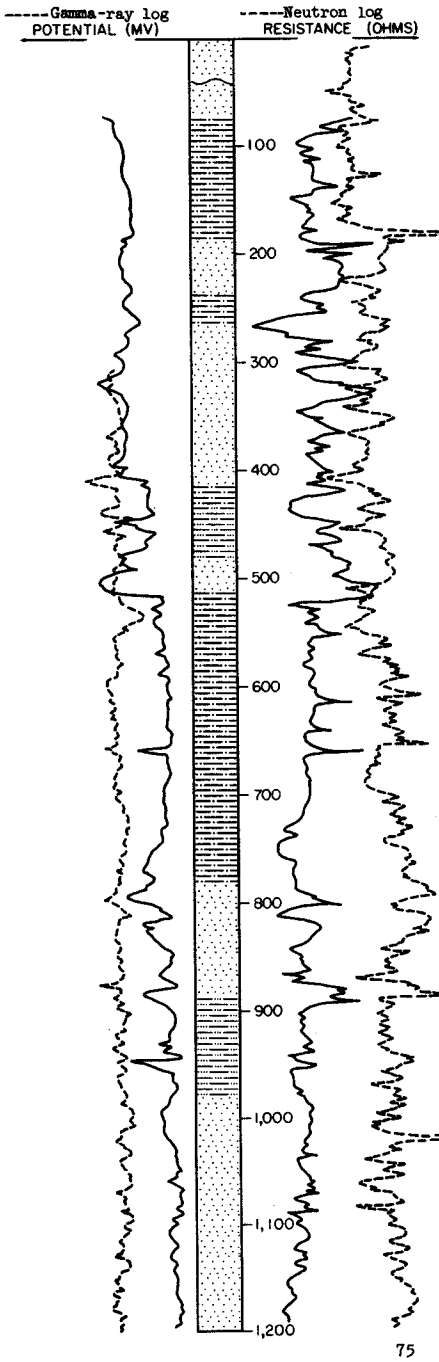
TEST HOLE 3433

LOCATION: 141-90-19CCD

DATE DRILLED: June 1967

ELEVATION: 2080
(FT, MSL)

DEPTH: 1790
(FT)



DESCRIPTION OF DEPOSITS

Glacial drift

0-36 Sand, fine- to medium-grained, silty.

Sentinel Butte Formation

36-68 Sandstone, fine-grained, silty, light-olive-gray; lignite from 57-60 ft.

Tongue River Formation

68-182 Claystone, silty, sandy, light-olive-gray; lignitic 109-110 and 163-170 ft.

182-196 Sandstone and claystone, very fine-grained.

196-235 Sandstone, fine-grained.

235-258 Claystone and siltstone, sandy.

258-264 Claystone.

264-418 Sandstone and claystone, silty, lignitic, grayish-olive.

418-440 Claystone, silty, lignitic, grayish-olive.

440-490 Siltstone, sandy, clayey, grayish-olive.

490-520 Sandstone, fine- to medium-grained; shells at 500 ft.

Cannonball-Ludlow Formations, undifferentiated

520-616 Claystone and siltstone, lignitic, light-olive-gray.

616-662 Claystone and sandstone, silty, light-olive-gray.

662-790 Claystone, silty, light-olive-gray.

790-892 Sandstone and claystone, silty, lignitic, dark-greenish-gray.

Hell Creek Formation

892-980 Siltstone and claystone, sandy, lignitic, light-olive-gray.

980-1212 Sandstone and claystone, silty, light-olive-gray.

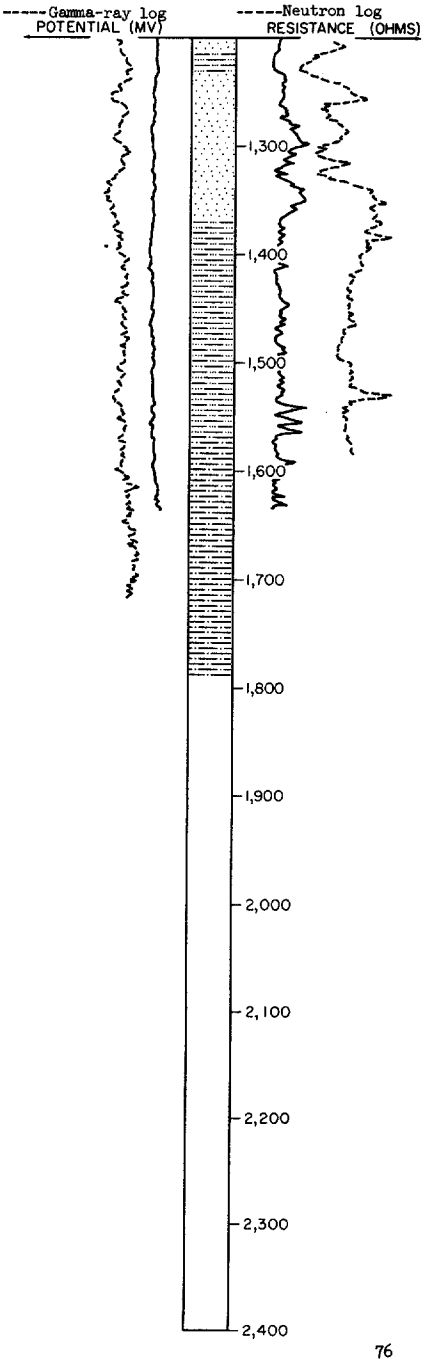
TEST HOLE 3433, Continued

LOCATION: 141-90-19CCD

DATE DRILLED: June 1967

ELEVATION: 2080
(FT, MSL)

DEPTH: 1790
(FT)



	DESCRIPTION OF DEPOSITS
1212-1230	Siltstone and claystone.
	Fox Hills Formation
1230-1364	Colgate Sandstone member, fine-grained, silty, clayey, dark-greenish-gray.
1364-1564	Siltstone and sandstone, fine-grained, clayey, grayish-olive.
	Pierre Formation
1564-1790	Shale and sandstone, dark-greenish-gray.

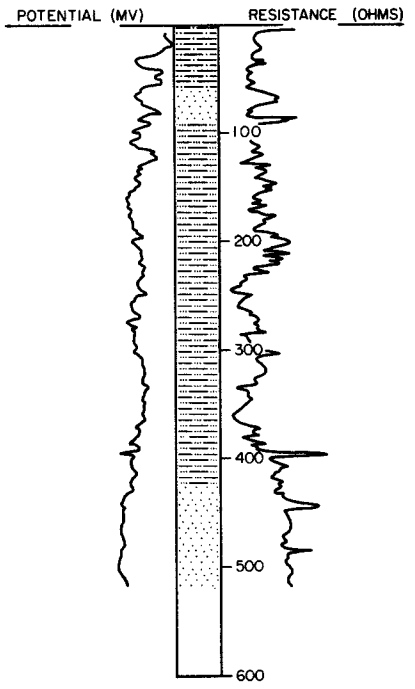
TEST HOLE 3662

LOCATION: 141-90-33CDC

DATE DRILLED: November 1968

ELEVATION: 2251
(FT, MSL)

DEPTH: 520
(FT)



DESCRIPTION OF DEPOSITS

Sentinel Butte Formation

0-60	Claystone, silty, yellowish-gray.
60-90	Sandstone, very fine-grained, silty, clayey, light-olive-gray.
90-220	Siltstone and claystone, sandy, bentonitic, light-olive-gray.

Tongue River Formation

220-395	Siltstone and claystone, bentonitic, light-olive-gray.
395-420	Siltstone and sandstone, very fine-grained.
420-517	Sandstone, fine-grained, silty, clayey.
517-520	Claystone, silty, yellowish-gray.

142-81-8CDD
Auger Hole 0-68-4

Geologic source	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Clay and silt, medium-brown----------	2	2
	Till, silty, clayey, medium-brown to olive-brown-	23	25
Cannonball-Ludlow Formations, undifferentiated:			
	Claystone, laminated, light-gray to light-brown--	9	34

142-81-17ACC
Auger Hole 0-68-3

Glacial drift:			
	Clay, silty, dark-brown----------	5	5
	Clay, light-brown----------	5	10
	Sand and gravel, light-brown----------	4	14
	Poor samples----------	28	42
Cannonball-Ludlow Formations, undifferentiated:			
	Claystone, medium-gray----------	12	54

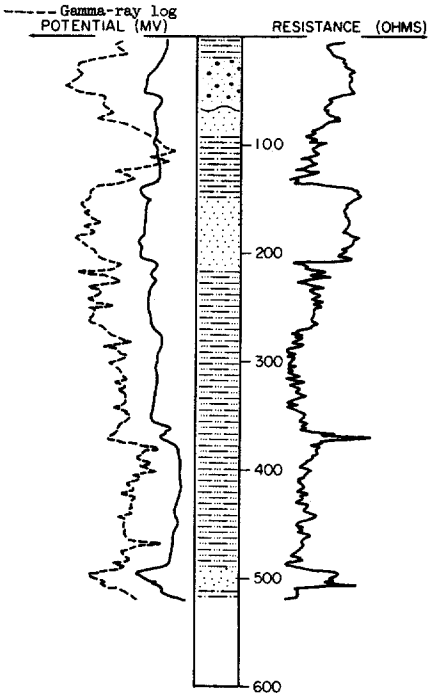
TEST HOLE 3647

LOCATION: 142-82-5DAA1

DATE DRILLED: October 1968

ELEVATION: 1955 (FT, MSL)

DEPTH: 520 (FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-20 Silt and clay, sandy, moderate-yellowish-brown.

Glacial drift

20-60 Sand and gravel, fine- to coarse-grained.

Tongue River Formation

60-80 Sandstone, very fine-grained, silty, shell fragments, light-olive-gray.

80-140 Claystone, silty, sandy, carbonaceous, light-olive-gray.

140-204 Sandstone, fine- to medium-grained, lignitic, dark-greenish-gray.

Cannonball-Ludlow Formations, undifferentiated

204-360 Siltstone and claystone, sandy, light-olive-gray to olive-gray.

360-400 Siltstone and sandstone, very fine-grained, olive-gray.

Hell Creek(?) Formation

400-490 Siltstone and claystone, sandy, light-olive-gray.

490-510 Sandstone, fine-grained.

510-520 Claystone, silty, light-olive-gray.

142-82-5DAA2
TEST HOLE 3648

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium:			
	Clay, silty, moderate-yellowish-brown----------	19	19
Glacial drift:			
	Sand and gravel----------	19	38
	Sand, medium- to coarse-grained, well-sorted-----	10	48
Tongue River Formation(?):			
	Sandstone, very fine-grained, silty, clayey, light-olive-gray----------	12	60

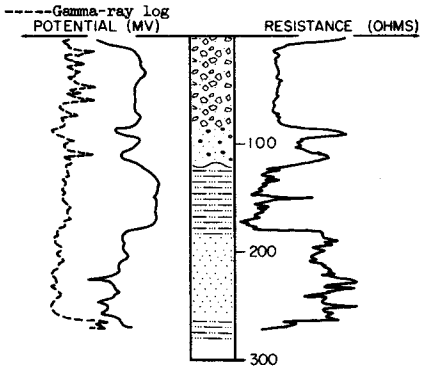
TEST HOLE 3637

LOCATION: 142-82-9DDD

DATE DRILLED: October 1968

ELEVATION: 2050
(FT, MSL)

DEPTH: 282
(FT)



DESCRIPTION OF DEPOSITS

Glacial drift

0-85 Till, clayey, silty, pebbly, moderate-olive-brown.

85-118 Sand and gravel, clayey.

Tongue River Formation

118-178 Siltstone and claystone, carbonaceous, light-olive-gray.

178-262 Sandstone, very fine- to medium-grained, shell fragments.

Cannonball-Ludlow Formations, undifferentiated

262-282 Siltstone and claystone, carbonaceous, tight, light-olive-gray.

142-82-21BDD
(Log from Wetch Drilling Co.)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand----------	2	2
	Clay, sandy, brown----------	10	12
	Clay and gravel, sandy, brown----------	8	20
	Clay, sandy----------	20	40
	Coal----------	1	41
	Clay, sandy, brown----------	79	120
	Rock----------	1	121
	Clay, sandy, green----------	55	176
	Coal----------	1	177
	Clay, blue, green----------	3	180
	Sand, blue, gray; water 6 gpm----------	20	200

142-83-7CDB2
(Log from Lloyd Erickson)

	Topsoil----------	2	2
	Gravel and sand, clayey, brown----------	18	20
	Sand, brown----------	2	22
	Clay, sandy----------	28	50
	Rock, gray----------	2	52
	Clay, gray----------	35	87
	Clay, black----------	4	91
	Rock, gray----------	1	92
	Clay, sandy, blue----------	16	108
	Clay, black----------	1	109
	Coal----------	1	110
	Clay, gray----------	5	115
	Sand, water----------	4	119
	Clay, gray----------	4	123

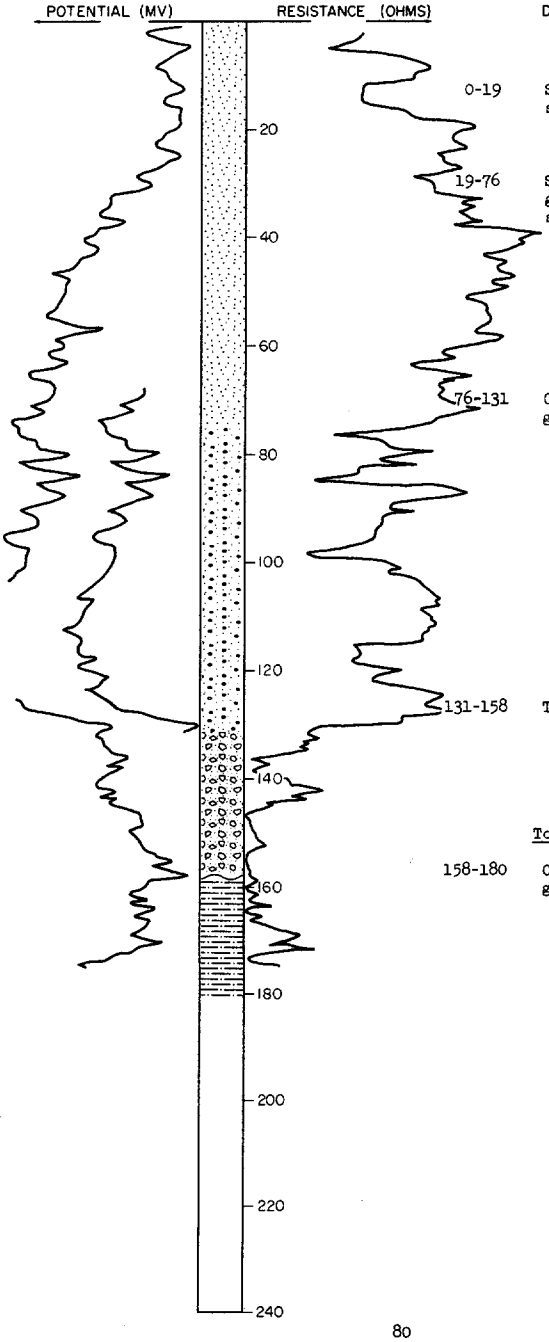
TEST HOLE 3732

LOCATION: 142-84-8AAB

DATE DRILLED: July 1969

ELEVATION: 2008
(FT, MSL)

DEPTH: 180
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-19 Sand, fine- to medium-grained, silty, brown; gravel 8-12 ft.

Glacial drift

19-76 Sand, medium- to coarse-grained, clean, lignitic, shells.

76-131 Gravel and sand, fine- to medium-grained.

131-158 Till(?) silty, sandy, lignitic.

Tongue River Formation

158-180 Claystone, silty, carbonaceous, greenish-gray.

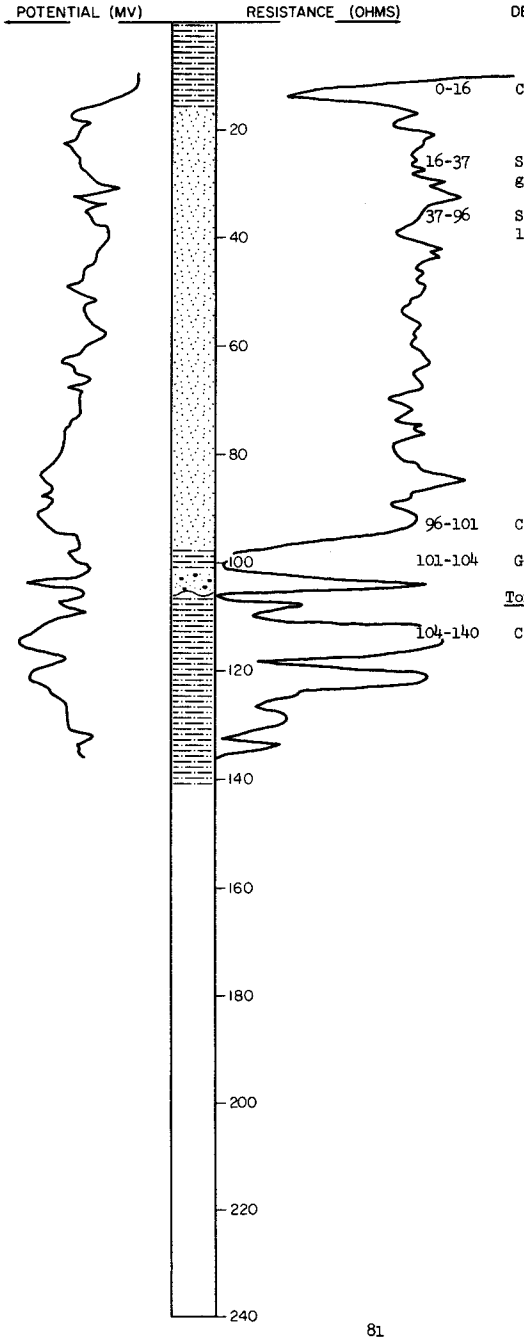
TEST HOLE 3733

LOCATION: 142-84-8ABB

DATE DRILLED: July 1969

ELEVATION: 2029
(FT, MSL)

DEPTH: 140
(FT)



	DESCRIPTION OF DEPOSITS
	Alluvium
0-16	Clay, silty, sandy, brown.
	Glacial drift
16-37	Sand, medium-grained, lignitic, gray.
37-96	Sand, coarse-grained, gravelly, lignitic.
96-101	Clay, gray.
101-104	Gravel.
	Tongue River Formation
104-140	Claystone, silty, gray.

142-84-12BCB
(Log from Lloyd Erickson)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand, brown	28	28
	Sandrock	4	32
	Sand, brown	38	70
	Sandrock	4	74
	Sand, brown	22	96
	Sand, clayey, blue	19	115
	Sand, black, water	2.5	117.5
	Clay, gray	2.5	120
	Clay, sandy, gray	16	136
	Coal	6	142
	Clay, black	10	152
	Clay, sandy, gray	18	170
	Sand, clayey, blue	1	171
	Rock, blue	3	174
	Sand, clayey, blue	4	178
	Clay, sandy, gray	2	180
	Coal	6	186
	Clay, gray	4	190
	Coal	1	191
	Clay, sandy, gray	27	218
	Clay, black	2	220
	Coal	8	228

142-84-14BC
(Log from Mann Drilling Co.)

	Topsoil, black	8	8
	Clay, gray	24	32
	Lignite	4	36
	Clay, gray	73	109
	Sand, (20 gpm)	21	130

142-84-14CB
(Log from Schnell Inc.)

	Topsoil	5	5
	Clay, sandy	7	12
	Sand	6	18
	Clay, yellow	7	25
	Clay, blue	5	30
	Clay, black	6	36
	Clay, gray	19	55
	Clay, sandy, blue	29	84
	Clay, gray	11	95
	Clay, black	4	99
	Sand, fine, gray	7	106
	Clay, gray	2	108
	Sand, fine	9	117
	Clay	2	119
	Rock		

142-84-15DA
(Log from Schnell Inc.)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Fill	6	6
	Clay, yellow	11	17
	Boulders	1	18
	Gravel and sand	2	20
	Clay and clay	2	22
	Gravel and sand	13	35
	Clay, sandy, gray	8	43
	Sand and coal	6	49
	Clay, sandy	3	52
	Sand and coal	32	84
	Clay	3	87
	Sand and coal	3	90
	Clay, sandy	4	94
	Clay	2	96
	Clay, sandy	14	110
	Sand and coal, loose clay sliding	29	139

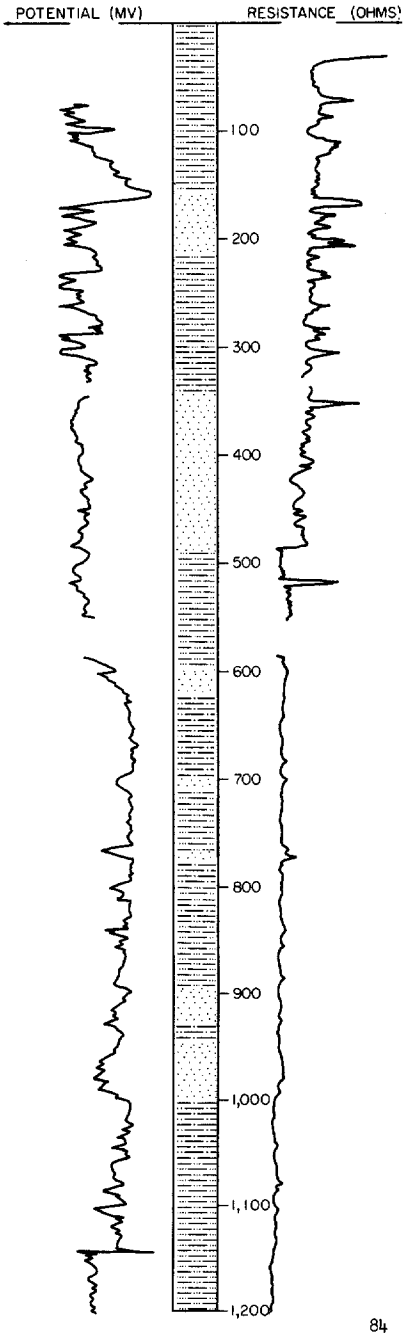
TEST HOLE 3558

LOCATION: 142-84-24BBA

DATE DRILLED: December 1967

ELEVATION: 2006
(FT, MSL)

DEPTH: 1295
(FT)



DESCRIPTION OF DEPOSITS

Tongue River Formation

0-60	Siltstone and claystone, sandy, dark-reddish-brown to dark-greenish-gray; lignitic 15-16 ft.
60-99	Siltstone and sandstone, fine-grained, dark-greenish-gray.
99-105	Claystone, lignitic, dark-reddish-brown.
105-122	Siltstone.
122-160	Siltstone and claystone.
160-215	Sandstone and siltstone, fine-grained, clayey, grayish-olive; lignitic 197-198 ft; limestone at 205 ft.
215-300	Siltstone and claystone, sandy, lignitic, grayish-olive.
300-305	Sandstone.
305-340	Claystone, silty, sandy, lignitic, grayish-olive.
340-418	Sandstone, fine- to medium-grained, silty, grayish-olive.

Tongue River Formation(?)

418-422	Siltstone.
422-484	Sandstone, fine- to medium-grained, silty, grayish-olive.

Cannonball-Ludlow Formations, undifferentiated

484-517	Siltstone and claystone, grayish-olive.
517-520	Sandstone, fine-grained.
520-595	Siltstone and claystone.
595-620	Sandstone, fine-grained, loose.
620-696	Claystone and siltstone, sandy; shells at 690 ft.
696-707	Sandstone, fine-grained, silty, olive-gray.

Hell Creek Formation

707-762	Siltstone and claystone, sandy, grayish-olive.
762-776	Sandstone, fine-grained, silty, olive-gray.
776-796	Claystone, silty, dark-greenish-gray.
796-812	Siltstone and sandstone, fine-grained, clayey.
812-828	Claystone.
828-895	Siltstone and sandstone, fine-grained, clayey, lignitic, grayish-olive.
895-930	Sandstone, fine-grained, silty, light-olive-gray.
930-945	Claystone, silty.

Fox Hills Formation

945-1000	Colgate Sandstone member, fine- to medium-grained, silty, grayish-olive.
1000-1055	Claystone and siltstone, sandy, grayish-olive.
1055-1202	Siltstone and sandstone, fine-grained, silty, clayey, grayish-olive.

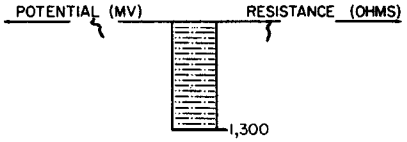
TEST HOLE 3558, Continued

LOCATION: 142-84-24BBA

DATE DRILLED: December 1967

ELEVATION: 2006
(FT, MSL)

DEPTH: 1295
(FT)



DESCRIPTION OF DEPOSITS

Pierre Formation

1202-1295 Shale, silty, olive-gray.

142-85-2CCD1
(Log from Ray Mohl)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Topsoil, sandy----------	2	2
	Sand, brown----------	9	11
	Sand and gravel----------	5	16
	Clay, blue----------	10	26
	Coal, hard, (water at 27 ft)----------	2.75	28.75
	Clay, gray----------	21.25	50

142-85-11BCB
TEST HOLE 3735

Alluvium:			
	Clay, silty, sandy, moderate-olive-brown---------	12	12
	Gravel, lignitic, scoriaceous, poorly sorted-----	6	18
	Gravel, sandy, lignitic----------	13	31
Tongue River Formation:			
	Claystone, silty, gray----------	29	60

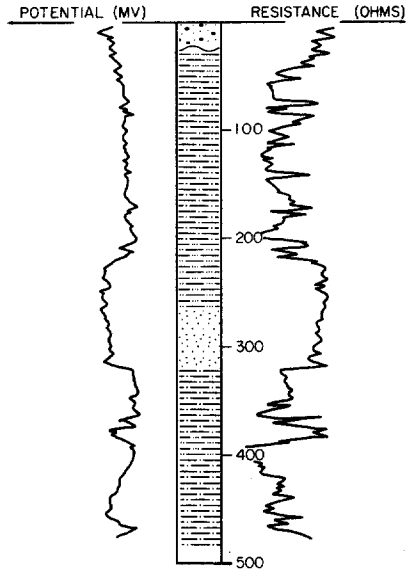
TEST HOLE 3734

LOCATION: 142-85-11BCC

DATE DRILLED: July 1969

ELEVATION: 2087
(FT, MSL)

DEPTH: 480
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-20	Sand and gravel, clayey, brown.

Tongue River Formation

20-40	Siltstone, sandy, light-gray.
40-200	Claystone, silty, sandy, olive-gray; lignitic 80 to 100 ft.
200-260	Siltstone and sandstone, very fine-grained, light-olive-gray.
260-320	Sandstone, fine-grained, dark-greenish-gray.
320-380	Claystone, sandy, silty, light-olive-gray to reddish-brown.
380-400	Siltstone, sandy, clayey, greenish-gray.
400-480	Claystone and siltstone, sandy, olive-gray.

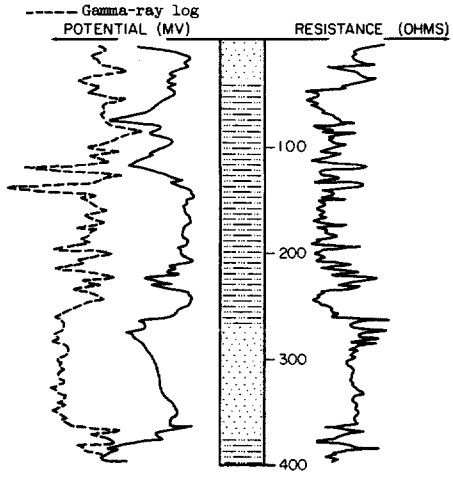
TEST HOLE 3645

LOCATION: 142-85-14CCC2

DATE DRILLED: October 1968

ELEVATION: 2142
(FT, MSL)

DEPTH: 400
(FT)



DESCRIPTION OF DEPOSITS

Glacial drift

0-5	Sand and gravel.

Sentinel Butte Formation

5-40	Sandstone and siltstone, silty.

Tongue River Formation

40-260	Siltstone and claystone, sandy, thinly bedded, lignitic, light-olive-gray.
260-360	Sandstone, silty, very fine- to medium-grained, light-olive-gray to dark-greenish-gray.
360-400	Siltstone and claystone, sandy, shell fragments, tight.

142-85-19BAA
(Log from Ray Mohl)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Topsoil	1.75	1.75
	Clay, gray and brown	30.25	32
	Sandrock, gray	4	36
	Clay, sandy, brown	2.5	38.5
	Clay, hard, gray	4	42.5
	Clay, sandy, brown	2.25	44.75
	Sand, dry, blue	12.75	57.5
	Sandrock, brown	4.5	62
	Sand, blue	7	69
	Sand, coal seams, gray	4	73
	Clay, black	4	77
	Coal, hard, (water)	5	82
	Clay, gray	1	83

142-86-7ADC2
(Log from Ray Mohl)

	Clay, sandy, yellow	24	24
	Sandstone, soft, brown	2	26
	Clay, sandy	1	27
	Coal slack	4	31
	Sand, hard, gray	18	49
	Coal	2	51
	Sandstone	16	67
	Coal	6	73
	Clay, sandy, gray	5	78
	Coal, broken	2	80
	Clay, sandy	14	94
	Sand	2	96
	Clay, sandy	23	119
	Clay, sandy, hard	14	133
	Sandstone, soft, and quicksand water	3	136
	Sandstone and clay, fine, brown	43	179
	Limestone	1	180

142-86-11ABC2
(Log from Opp Drilling Co.)

	Topsoil	3	3
	Clay, gray	6	9
	Gravel	1	10
	Sand, hard	9	19
	Sand, yellow	9	28
	Coal slack	10	38
	Clay, sandy	2	40
	Coal slack	1	41
	Sand, blue	2	43
	Coal	1	44
	Clay, sandy	2	46
	Coal, hard, (seepage 0.5 gpm)	5	51
	Clay, blue	2	53
	Clay, sandy, gray	13	66
	Clay, sandy, gray	17	83
	Coal, hard, with water	7	90
	Clay	12	102

142-86-14ADD1
(Log from Ray Mohl)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Soil, sandy, black	16	16
	Rock, hard	2.75	18.75
	Clay and coal seams, gray	5.25	24
	Gravel (water 24-25 ft)	1	25
	Clay, blue	5	30

142-86-14DDD
(Log from Ray Mohl)

	Clay, gray	23	23
	No log	2	25
	Clay, black	17	42
	Coal	4	46
	Clay, sandy, gray	56	102
	Clay, gray	15	117
	Sandrock	1	118
	Clay, gray	1	119
	Coal	5	124
	Clay, green	12	136
	Rock	.75	136.75
	Clay	9.25	146
	Coal	2	148
	Clay, brown	3	151
	Sandstone and sandy layers	21	172
	Clay, sandy, brown; layer of coal at 180 ft	9	181
	Clay, sandy	4	185
	Clay, brown	4	189
	Coal water	3	192
	No record	7	199

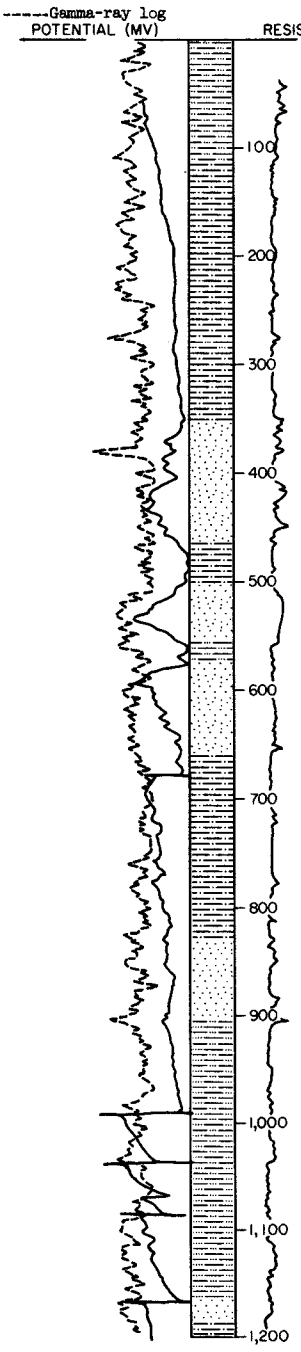
TEST HOLE 3559

LOCATION: 142-86-20BBA

DATE DRILLED: December 1967

ELEVATION: 2062
(FT, MSL)

DEPTH: 1535
(FT)



DESCRIPTION OF DEPOSITS

Sentinel Butte Formation

0-1 Topsoil, silty, pebbly, dark-brown.

1-110 Siltstone and claystone, sandy, grayish-olive; lignite at 10 and 15 ft.

Tongue River Formation

110-232 Claystone, silty, sandy, grayish-olive; lignitic at 150 and 230 ft.

232-236 Sandstone, very fine-grained.

236-272 Claystone, silty, sandy, grayish-olive.

272-282 Siltstone, sandy, clayey, lignitic.

282-348 Claystone, silty, lignitic, grayish-olive.

348-460 Sandstone and siltstone, very fine-grained, grayish-olive; lignitic at 385 and 405 ft.

460-500 Claystone, silty, hard, grayish-olive to olive-gray.

500-558 Sandstone, fine- to medium-grained, silty, grayish-olive.

Tongue River Formation(?)

558-578 Siltstone and lignite, sandy.

578-658 Sandstone, fine- to medium-grained, silty, grayish-olive.

Cannonball-Ludlow Formations, undifferentiated

658-825 Claystone, silty, grayish-olive; sandstone stringers at 720 and 775 ft.

Hell Creek Formation

825-905 Sandstone and siltstone, fine-grained, clayey, lignitic, grayish-olive.

905-1115 Siltstone and claystone, sandy, grayish-olive; a few thin carbonaceous shale beds.

1115-1165 Siltstone and claystone, sandy, dark-greenish-gray.

1165-1185 Sandstone, fine-grained, silty, clayey, dark-greenish-gray.

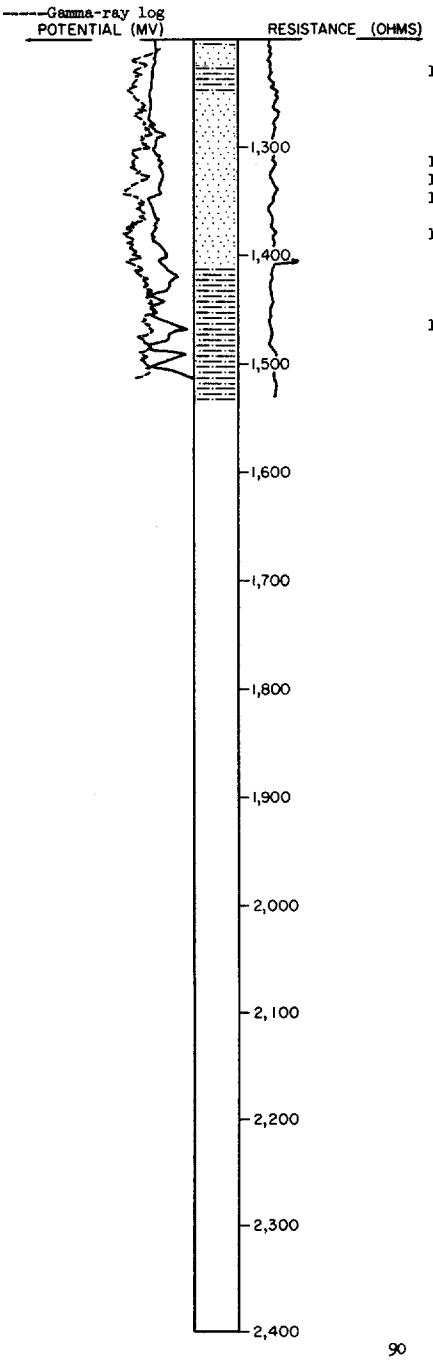
TEST HOLE 3559, Continued

LOCATION: 142-86-20BBA

DATE DRILLED: December 1967

ELEVATION: 2062
(FT, MSL)

DEPTH: 1535
(FT)



1185-1205	Claystone, silty, sandy, dark-greenish-gray
	Fox Hills Formation
1205-1225	Colgate Sandstone member, silty.
1225-1250	Claystone, silty, sandy.
1250-1295	Sandstone, fine-grained, silty.
1295-1410	Sandstone and siltstone, clayey, dark-greenish-gray.
	Pierre Formation
1410-1535	Shale.

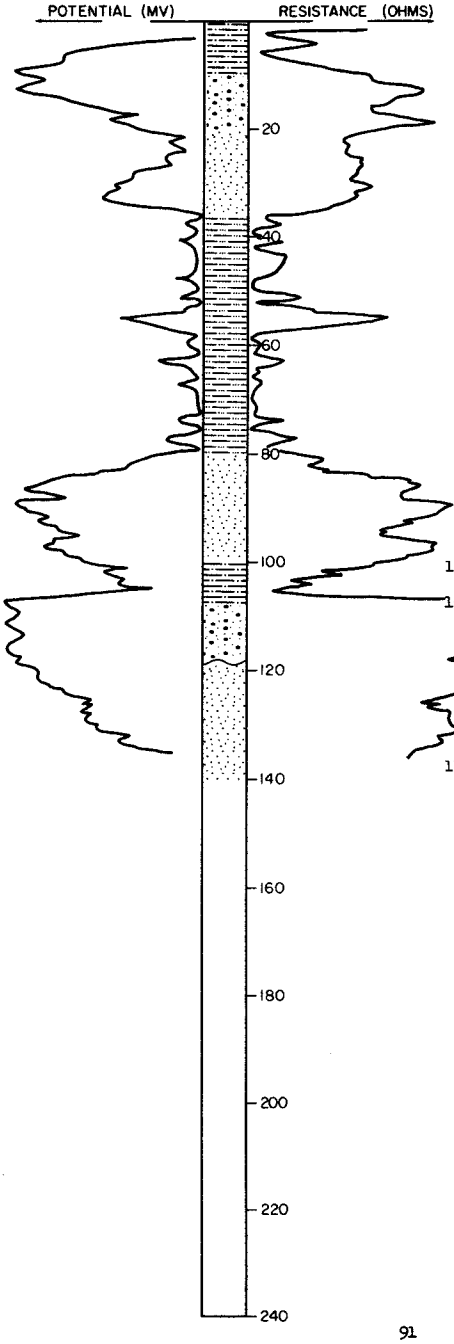
TEST HOLE 3770

LOCATION: 142-86-28AAD

DATE DRILLED: August 1969

ELEVATION: 2021
(FT, MSL)

DEPTH: 140
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-10 Clay, silty, sandy, moderate-olive-brown.

Glacial drift

10-21 Gravel, sandy.
21-36 Sand, fine-grained, lignitic.
36-80 Silt and clay, pebbly, sandy, olive-gray.

80-100 Sand, fine- to medium-grained, lignitic.

100-107 Clay, olive-gray

107-117 Gravel.

Sentinel Butte Formation(?)

117-140 Sandstone, fine-grained, calcareous, greenish-gray.

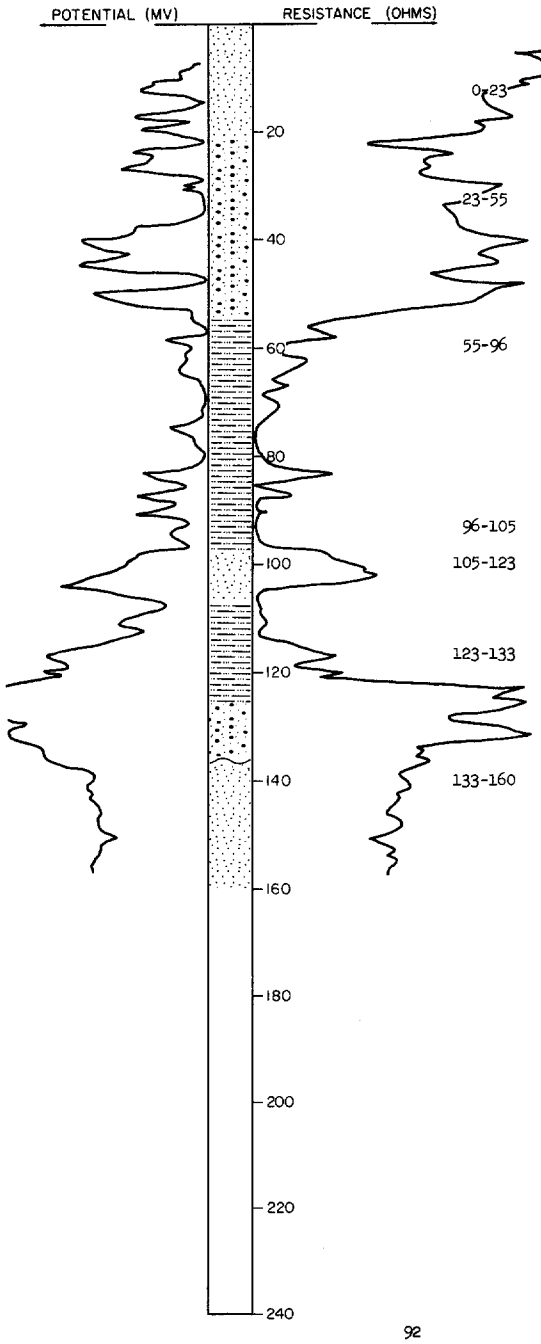
TEST HOLE 3769

LOCATION: 142-86-28DAA

DATE DRILLED: August 1969

ELEVATION: 2016
(FT, MSL)

DEPTH: 160
(FT)



DESCRIPTION OF DEPOSITS

	Alluvium
0-23	Sand, very fine-to medium-grained, silty, clayey, moderate-olive-brown.
	Glacial drift
23-55	Gravel, sandy, brown.
55-96	Silt and clay, sandy, olive-gray.
96-105	Sand, medium-grained, olive-gray.
105-123	Silt and clay, sandy, olive-gray.
123-133	Gravel, brown.
	Sentinel Butte Formation(?)
133-160	Sandstone, fine-grained.

142-87-30DDD
(Log from Opp Drilling Co.)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Topsoil, sandy	2	2
	Sand, gray	6	8
	Sandrock	1.5	9.5
	Clay, blue	10.5	20
	Sand, gray	2	22
	Clay, blue	12	34
	Coal	1	35
	Clay, blue	6	41
	Sand, gray	26	67
	Sand, gray	23	90
	Sand, blue	23	113
	Coal, hard, water	5	118
	Sand, blue	2	120
	Clay, blue	9	129

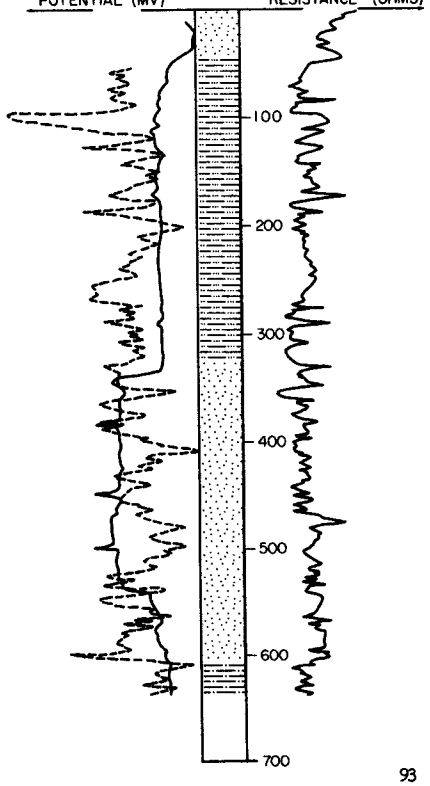
TEST HOLE 3651

LOCATION: 142-88-1CDC

DATE DRILLED: October 1968

ELEVATION: 2075
(FT, MSL)

DEPTH: 640
(FT)



DESCRIPTION OF DEPOSITS

Sentinel Butte Formation

0-45 Sandstone and siltstone, very fine-grained, lignitic, moderate-yellowish-brown to light-olive-gray.

45-195 Siltstone and claystone, sandy, light-olive-gray to dark-greenish-gray; several lignite beds between 100 to 195 ft.

Tongue River Formation

195-325 Siltstone and claystone, sandy, light-olive-gray; lignite at 250 ft.

325-610 Sandstone and siltstone, very fine-grained, clayey, thinly bedded, lignitic, light-olive-gray to dark-greenish-gray.

Cannonball-Ludlow Formations, undifferentiated

610-640 Claystone, silty, sandy, carbonaceous, tight, light-olive-gray to moderate-olive brown.

142-88-4DCD
(Log from Lloyd Erickson)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Topsoil, brown	3	3
	Clay, gray	2	5
	Coal slack	5	10
	Sand	25	35
	Sandstone	1	36
	Sand and clay, blue	50	86
	Coal	3	89
	Clay, gray	31	120
	Sand and clay, blue	15	135
	Rock	4	139
	Clay, sandy	50	189
	Coal	12	201
	Clay, gray	4	205

142-88-10DC
Auger Hole M-66-3

Sentinel Butte Formation:			
	Siltstone, light-brown	7	7
	Claystone, silty, medium-dark-gray	4	11
	Siltstone, medium-brown	4	15
	Claystone, silty, medium-brown	3	18
	Claystone, carbonaceous, medium- to dark-gray	.5	18.5
	Claystone, silty, medium-brown	1.5	20
	Claystone, light-gray	1	21
	Lignite	2	23
	Claystone, silty, medium-gray	7	30
	Claystone, medium- to dark-gray	8	38
	Claystone, lignitic, dark-gray	2	40
	Claystone, dark-gray; hard zone 40.5-41 ft	15	55
	Claystone, silty, medium-dark-gray	8	63
	Claystone, light-gray	1	64
	Lignite(?)	1	65
	Claystone, lignitic, medium-gray	3	68
	Claystone, medium-gray; top of water table	4	72
	Claystone, carbonaceous, dark-gray	8	80
	No record	13	93

142-88-14AA
Auger Hole M-66-2

Glacial drift:			
	Till, silty, dry, medium-brown	2.5	2.5
Sentinel Butte Formation:			
	Sandstone, very fine-grained, light-brown	2	4.5
	Sandstone, fine-grained, light-gray	1.5	6
	Sandstone, silty, light- to medium-brown; hard concretion 6-8 ft	5	11
	Siltstone, clayey, light-gray	2.5	13.5
	Claystone, silty, medium-gray	2	15.5
	Claystone, silty, light-gray	2.5	18
	Claystone, silty, sandy, medium-brown	.5	18.5
	Claystone, medium-gray	2.5	21
	Lignite	2	23
	Claystone, very dark-gray	1	24
	Lignite	1	25
	Claystone, slightly silty, very dark-gray	3	28
	Claystone, dark-gray to medium-gray	8	36
	Siltstone, medium-gray	2	38
	Claystone, silty, medium-gray	2	40
	Claystone, medium-dark-gray	8	48

142-88-24ACC1
(Log from Lloyd Erickson)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay, yellow	5	5
	Sand, clayey, gray	13	18
	Coal slack	1	19
	Clay, blue	10	29
	Sandrock	1	30
	Clay and sand, blue	5	35
	Clay, sandy, blue	21	56
	Coal	1	57
	Clay, sandy, gray	23	80
	Clay and sand	32	112
	Coal	5	117
	Clay, gray	3	120
	Clay and sand	20	140
	Coal	1	141
	Clay, sandy, gray	14	155
	Quicksand	18	173
	Clay, sandy, dark	8	181
	Rock, gray	2	183
	Clay, gray	19	202
	Coal	12	214

142-88-26AAD
(Log from Opp Drilling Co.)

	Sand, gray and black	3	3
	Coal slack	1	4
	Sand, yellow-gray	6	10
	Clay, sandy, blue	12	22
	Coal, medium-hard	4	26
	Clay, green	4	30
	Clay, sandy, blue	2	32
	Sand, blue, dry	2	34
	Clay, blue	11	45
	Clay, blue; looks like silt; some gravel	16	61
	Clay, blue	2	63
	Rock, very hard	3.5	66.5
	Sand, fine, grayish-white; just a little clay	4.5	71
	Clay, blue; looks like silt	16	87
	Rock, very hard	2	89
	Clay, sand, blue	16.5	105.5
	Coal, hard; dark water at 1 gpm	12	117.5
	Clay, blue	3.5	121
	Coal, hard and dry	5	126
	Clay, white, very solid	21	147
	Clay, brown	14	161
	Sand, blue	2	163
	Coal, hard, dry	4	167
	Clay, blue-gray	12	179
	Coal, hard, dry	2	181
	Clay, hard, white	6	187
	Clay turning to sand	3	190
	Sand, fine, hard; water at 5 gpm	6	196
	Sand and white clay, bottom	5	201

142-89-4CA
(Log from Bandy Drilling Co.)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Surface soil	28	28
	Shale, blue	95	123
	Rock	3	126
	Shale, blue	204	330
	Shale, sandy	27	357
	Sandstone	13	370
	Shale, blue	110	480
	Rock, hard	3	483
	Shale, blue	6	489
	Rock, hard	3	492
	Shale, blue	36	528
	Sand and shale	20	548
	Shale, blue	117	665
	Sandstone	15	680
	Shale, blue	9	689
	Rock, hard	3	692
	Shale, blue	158	850
	Rock, hard	4	854
	Shale, blue	26	880
	Sandstone	35	915
	Shale, blue	85	1000
	Sandstone	15	1015
	Shale, blue	20	1035
	Sandstone	29	1064
	Shale, blue	116	1180
	Sandstone	58	1238
	Shale, blue	22	1260

142-89-9AB
(Log from Bandy Drilling Co.)

	Surface soil	14	14
	Gravel	3	17
	Shale, blue	21	38
	Sandstone	8	46
	Shale, blue	36	82
	Hard rock	7	89
	Shale, blue	167	256
	Shale, sandy	81	337
	Shale, blue	22	359
	Hard rock	23	382
	Shale, sandy	8	390
	Sandstone	36	426
	Shale, sandy	16	442
	Sandstone	55	497
	Shale and coal streaks	37	534
	Shale, blue	88	622
	Hard rock	3	625
	Shale, blue	13	638
	Shale, sandy	56	694
	Hard rock	3	697
	Shale, blue	39	736
	Shale, sandy	17	753
	Shale, blue	179	932
	Sandstone	3	935
	Shale, blue	45	980
	Sandstone	19	999
	Hard rock	5	1004
	Shale, sandy	26	1030
	Shale and sand	57	1087
	Sandstone	27	1114
	Shale, sandy	66	1180
	Sandstone	50	1230
	Shale, blue	20	1250

142-90-3AAA
TEST HOLE 3761

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium:			
	Sand, fine- to coarse-grained, silty, clayey, dark-brown to yellowish-gray----------	33	33
Sentinel Butte	Formation:		
	Claystone, silty, dark-greenish-gray----------	27	60

142-90-3DC
(Log from Bandy Drilling Co.)

Surface soil----------	30	30
Shale, blue----------	22	52
Sandstone----------	13	65
Shale, blue----------	104	169
Hard rock----------	4	173
Shale, blue----------	40	213
Hard rock----------	3	216
Shale, blue----------	146	362
Sandstone----------	40	402
Hard rock----------	3	405
Sandstone----------	63	468
Shale, blue----------	30	498
Coal----------	13	511
Sandstone----------	99	610
Shale, blue----------	85	695
Hard rock----------	3	698
Shale, blue----------	109	807
Sandstone----------	10	817
Hard rock----------	3	820
Sandstone----------	45	865
Shale, blue----------	15	880

142-90-4CB
(Log from Bandy Drilling Co.)

Surface soil----------	16	16
Shale, blue----------	16	32
Sand----------	13	45
Shale, blue----------	255	300
Sand----------	7	307
Shale, blue----------	51	358
Sand----------	48	406
Shale, blue----------	104	510
Sand----------	45	555
Shale, blue----------	210	765
Sand----------	12	777
Hard rock----------	3	780
Sand----------	43	823
Shale, blue----------	17	840

142-90-7AA
(Log from Bandy Drilling Co.)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Surface soil	30	30
	Shale, blue	120	150
	Hard rock	7	157
	Sandstone	22	179
	Hard rock	7	186
	Sandstone	26	212
	Shale, blue	93	305
	Hard rock	4	309
	Shale, blue	41	350
	Hard rock	6	356
	Shale, blue	39	395
	Hard rock	3	398
	Sandstone	43	441
	Coal	5	446
	Shale, blue	66	512
	Coal	13	525
	Sandstone	75	600
	Hard rock	3	603
	Sandstone	19	622
	Shale, blue	183	805
	Hard rock	3	808

142-90-10DDC
(Log from Bandy Drilling Co.)

	Surface soil	36	36
	Shale, blue	110	146
	Hard rock	3	149
	Shale and coal streaks, gray	104	253
	Hard rock	4	257
	Shale, blue	363	620
	Water sand	40	660
	Shale, blue	132	792
	Sandstone	6	798
	Hard rock	4	802
	Water sand	47	849
	Shale, blue	31	880

142-90-20BC
(Log from Bandy Drilling Co.)

	Surface soil	4	4
	Shale, blue	165	169
	Sand	11	180
	Coal	8	188
	Shale, blue	196	384
	Sand	44	428
	Shale and coal streaks, gray	247	675
	Hard rock	1	676
	Shale, blue	111	787
	Hard rock	3	790
	Water sand	20	810

142-90-23AC
(Log from Bandy Drilling Co.)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Surface soil	16	16
	Shale, sandy	30	46
	Shale, blue	138	184
	Sandstone	7	191
	Shale, blue	125	316
	Sandrock	2	318
	Shale, blue	18	336
	Sandstone	11	347
	Shale, blue	35	382
	Hard rock	6	388
	Shale, blue	37	425
	Sandstone	15	440
	Shale, blue	96	536
	Sandstone	34	570
	Hard rock	8	578
	Shale, sandy	40	618
	Shale, blue	71	689
	Hard rock	3	692
	Shale, blue	97	789
	Shale, sandy	3	792
	Shale, blue	26	818
	Shale, sandy	13	831
	Shale, blue	5	836
	Sandstone	66	902
	Shale, blue	18	920

142-90-23DB
(Log from Bandy Drilling Co.)

	Surface soil	16	16
	Sand and gravel	18	34
	Sand	59	93
	Shale, blue	128	221
	Hard rock	5	226
	Shale, blue	141	367
	Hard rock	4	371
	Shale, blue	97	468
	Sandstone	11	479
	Shale, blue	31	510
	Sandstone	11	521
	Shale, sandy	35	556
	Shale, blue	30	586
	Sandstone	11	597
	Shale, blue	16	613
	Sandstone	11	624
	Shale, sandy	14	638
	Shale, blue	11	649
	Hard rock	7	656
	Shale, blue	45	701
	Hard rock	5	706
	Sandstone	12	718
	Shale, blue	64	782
	Hard rock	12	794
	Shale, blue	18	812
	Sandstone	52	864
	Shale, blue	16	880

142-90-23DCC1
Auger Hole Mer-67-41

Geologic source	Material	Thickness (feet)	Depth (feet)
	Road fill----------	2	2
Alluvium:			
	Clay, silty, cohesive, moderate-olive-brown------	22	24
	Silt, sandy, clayey, pale-brown----------	15	39
Glacial drift:			
	Sand, fine- to medium-grained, silty, greenish-gray with brown mottling----------	35	74

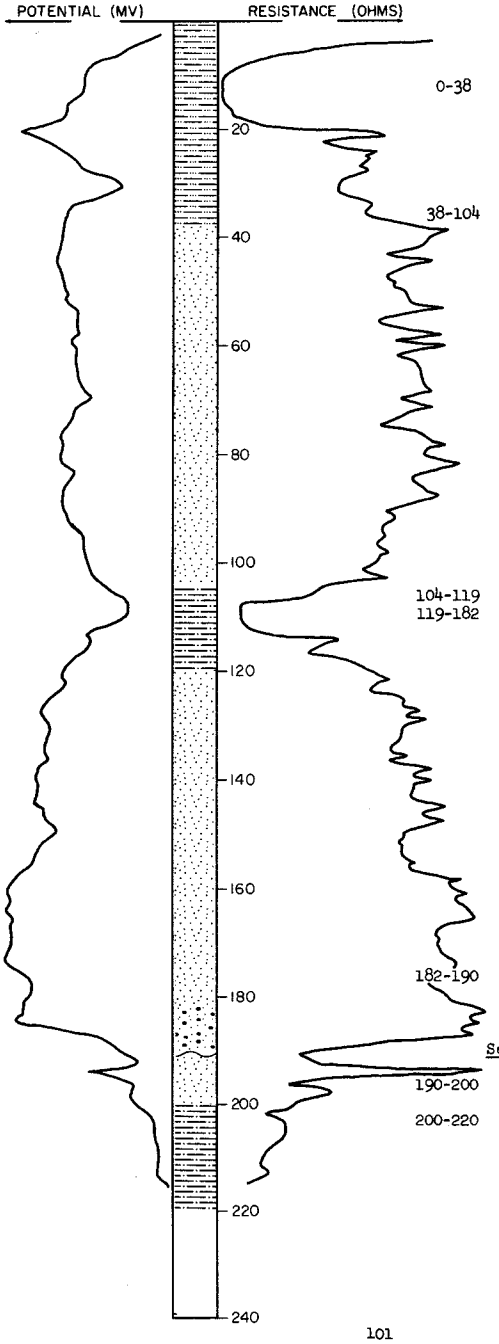
TEST HOLE 3762

LOCATION: 142-90-23DCC2

DATE DRILLED: August 1969

ELEVATION: 1952
(FT, MSL)

DEPTH: 220
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-38 Silt and clay, sandy, yellowish-gray to moderate-olive-brown.

Glacial drift

38-104 Sand, fine- to coarse-grained, lignitic, gray.

104-119 Clay, silty, sandy, olive-gray.

119-182 Sand, medium- to coarse-grained, pebbly, lignitic, gray.

182-190 Gravel.

Sentinel Butte Formation(?)

190-200 Sandstone, fine-grained, greenish-gray.

200-220 Claystone and siltstone, silty, greenish-gray.

142-90-26ABB
(Log from Bandy Drilling Co.)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Surface soil----------	38	38
	Sand----------	142	180
	Shale and coal streaks, blue----------	328	508
	Sandstone----------	57	565
	Shale, blue----------	251	816
	Water sand----------	18	834
	Hard rock----------	1	835
	Water sand----------	19	854
	Shale, blue----------	6	860

143-81-31DDD
Auger Hole 0-68-5

Glacial drift:			
	Clay, medium-brown----------	8	8
Cannonball-Ludlow Formations, undifferentiated:			
	Claystone, thinly laminated, medium-brown to light-gray----------	16	24

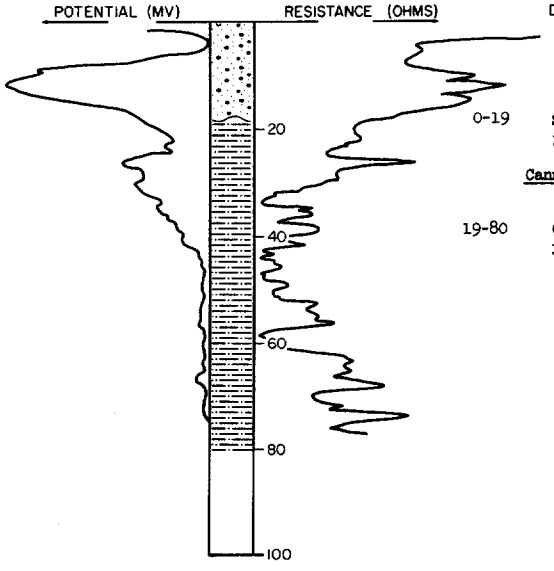
TEST HOLE 3726

LOCATION: 143-82-1BBB

DATE DRILLED: July 1969

ELEVATION: 1725 (FT, MSL)

DEPTH: 80 (FT)



DESCRIPTION OF DEPOSITS

Glacial drift

0-19 Sand and gravel, silty, yellowish-gray.

Cannonball-Ludlow Formations, undifferentiated

19-80 Claystone, silty, sandy, yellowish-gray to olive-gray.

143-82-10BDD
Auger Hole 0-68-23

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium:			
	Clay, medium-brown----------	35	35
Glacial drift:			
	Till, olive-brown----------	5	40

143-82-10CAD
Auger Hole 0-68-24

Alluvium:			
	Clay, medium-brown----------	20	20
	Clay, slightly sandy, dark-brown----------	26	46
Glacial drift:			
	Till, silty, clayey, olive-brown----------	11	57
Tongue River Formation:			
	Sandstone----------	2	59

143-82-17BCC
Auger Hole 0-68-10

Alluvium:			
	Clay, medium-brown to medium-gray----------	19	19
Glacial drift:			
	Till, silty, clayey, olive-brown----------	10	29

143-83-6BAB
(Log from Northern Pacific Railway)

	Topsoil----------	3	3
	Shale, gray----------	37	40
	Coal----------	12	52
	Shale, sticky, gray----------	14	66
	Shale, sticky, black----------	20	86
	Shale, sandy, hard, gray----------	41	127
	Shale, sticky, gray----------	136	263
	Sandstone, blue, water----------	14	277
	Shale, blue----------	7	284

143-84-20CBC
Auger Hole 0-68-8

Alluvium:			
	Clay, silty, sandy, light-brown----------	9	9
	Clay, silty, sandy, dark-gray----------	6	15
	Sand, very fine- to medium-grained, light-brown; saturated----------	2	17
Glacial drift:			
	Sand, very fine- to medium-grained; poor samples-	42	59

143-84-28CCC2
(Log from Ray Mohl)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay, yellow and gray----------	24	24
	Sand, fine----------	22	46
	Gravel----------	2	48
	Sand and gravel, coarse----------	7	55
	Gravel, coarse----------	10	65

143-85-3AAA
TEST HOLE 3643

Glacial drift:			
	Sand, medium- to very coarse-grained, pebbly-----	6	6
	Till, clayey, silty, sandy, pebbly----------	5	11
	Till, silty, sandy; lignite and limestone pebbles	51	62
	Sand and gravel, lignitic----------	18	80

Well was plugged after it began to flow.

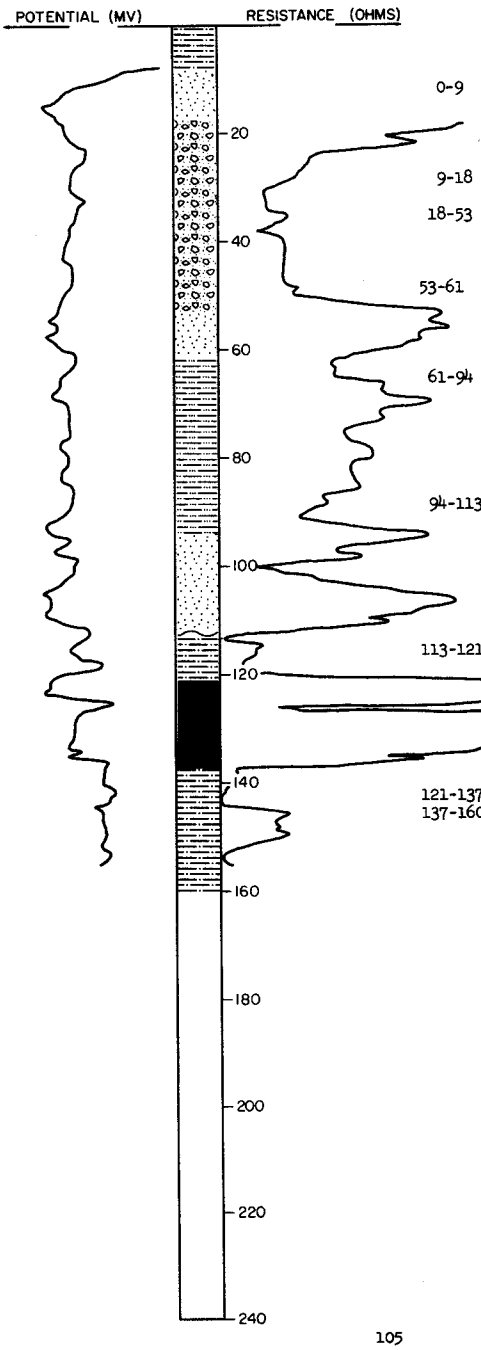
TEST HOLE 3736

LOCATION: 143-85-3AAD

DATE DRILLED: July 1969

ELEVATION: 1980
(FT, MSL)

DEPTH: 160
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-9 Clay, silty, sandy, yellowish-gray.

Glacial drift

9-18 Sand, medium- to coarse-grained, pebbly.

18-53 Till, clayey, silty, sandy.

53-61 Sand, medium-grained, lignitic.

61-94 Silt and clay, sandy, organic.

94-113 Sand, fine- to medium-grained, lignitic.

Tongue River Formation

113-121 Claystone, silty, light-gray.

121-137 Lignite.

137-160 Claystone and sandstone.

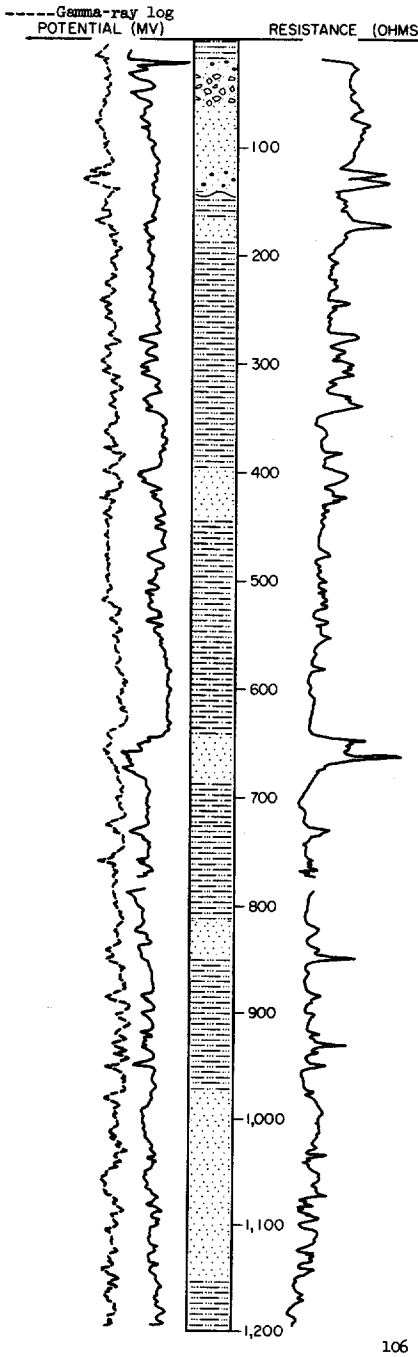
TEST HOLE 3557

LOCATION: 143-85-3DAD

DATE DRILLED: November 1967

ELEVATION: 1988
(FT, MSL)

DEPTH: 1360
(FT)



DESCRIPTION OF DEPOSITS

	Alluvium
0-21	Silt and sand, clayey, dark-yellowish-brown.
	Glacial drift
21-24	Gravel.
24-58	Till, clayey, sandy, silty, dark-greenish-gray.
58-120	Sand, fine- to medium-grained, dark-yellowish-brown.
120-140	Gravel(?), lignitic.
	Tongue River Formation
140-158	Siltstone and claystone, sandy, grayish-olive.
158-176	Sandstone and siltstone, grayish-olive.
176-268	Siltstone and claystone, lignitic, grayish-olive.
268-344	Siltstone and claystone, sandy, lignitic; shells at 300 ft.
344-392	Siltstone and claystone, bentonitic, lignitic, grayish-olive.
392-440	Sandstone and siltstone, fine- to medium-grained, lignitic.
	Cannonball-Ludlow Formations, undifferentiated
440-468	Claystone, silty, dark-greenish-gray.
468-550	Siltstone and sandstone, clayey, grayish-olive.
550-640	Claystone and siltstone, grayish-olive.
640-680	Sandstone, fine- to medium-grained, siliceous, hard drilling.
	Hell Creek Formation
680-724	Claystone, grayish-olive.
724-816	Siltstone and sandstone, clayey, grayish-olive.
816-852	Sandstone, silty, clayey.
852-955	Siltstone and sandstone, clayey, grayish-olive; shells at 950 ft.
955-977	Siltstone, sandy, grayish-olive; lignitic at 974-977 ft.
	Fox Hills Formation
977-1075	Colgate Sandstone member, fine- to medium-grained, dark-greenish-gray.
1075-1150	Sandstone and siltstone, fine- to medium-grained.
1150-1260	Siltstone and claystone, sandy, grayish-olive.

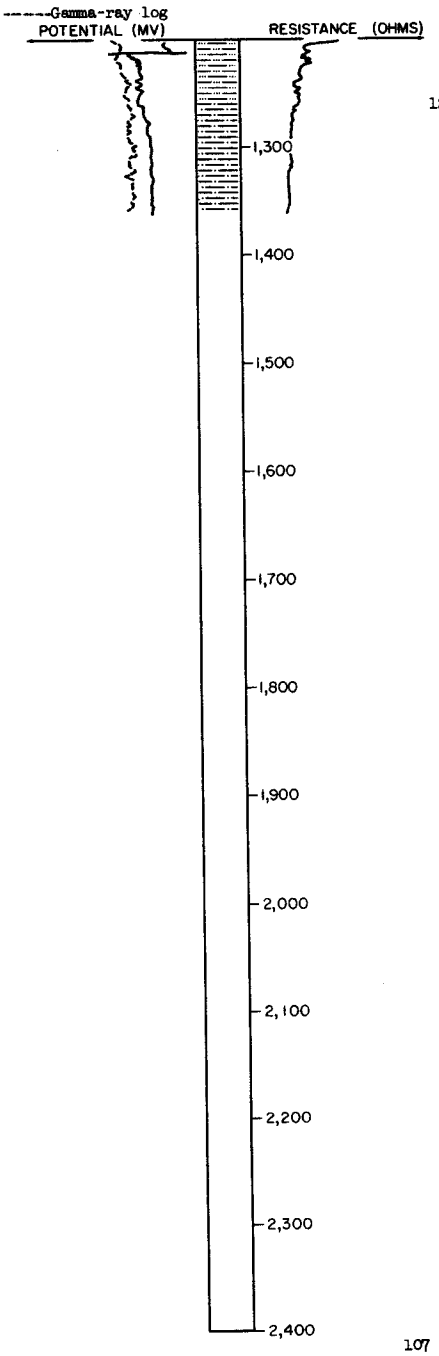
TEST HOLE 3557, Continued

LOCATION: 143-85-3DAD

DATE DRILLED: November 1967

ELEVATION: 1988
(FT, MSL)

DEPTH: 1360
(FT)



DESCRIPTION OF DEPOSITS

Pierre Formation

1260-1360 Shale, silty, olive-gray.

143-85-3DDD
TEST HOLE 3644

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium:			
	Clay, silty, marly, moderate-yellowish-brown-----	11	11
Glacial drift:			
	Sand, medium- to coarse-grained, lignitic--------	4	15
	Clay, silty, sandy, pale-olive to light-olive-gray----------	22	37
Tongue River Formation:			
	Lignite, hard, black----------	2	39
	Sandstone, very fine-grained, silty, clayey, light-olive-gray----------	21	60

143-85-4DAC2
(Log from Lloyd Erickson)

Topsoil, brown----------	2	2
Clay, sandy, yellow----------	13	15
Sand, blue----------	1	16
Sand, clayey----------	7	23
Sandstone, gray----------	2	25
Sand, clayey----------	25	50
Sandstone, blue-gray----------	2	52
Sand, clayey, blue----------	43	95
Sandrock, blue----------	17	112
Sand, blue----------	3	115
Clay----------	13	128
Sand, fine----------	2	130
Coal slack----------	2	132

143-86-7DDC1
(Log from Ray Mohl)

Topsoil----------	34	34
Coal----------	3	37
Clay and coal layers----------	31	68
Clay, sandy, gray----------	24	92
Coal with water----------	6	98
Clay, gray----------	2	100

143-86-21BA
(Log from Ray Mohl)

Clay, yellow----------	16	16
Coal----------	1	17
Clay, gray----------	1	18
Coal, hard----------	3	21
Clay, mostly hard----------	40	61
Sandrock ----------	1	62
Clay, gray----------	2	64
Sand, medium-hard, gray----------	21	85
Coal, broken; water raises to 72 ft from top-----	3	88
Clay, brown----------	3	91
Coal, hard----------	3	94
Clay, gray----------	6	100

143-86-25CCD
Auger Hole 0-68-20

Geologic source	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Sand, light-brown	3	3
	Till(?), pebbly, clayey, olive-brown	4	7
	Clay, sandy, olive-brown	7	14
	Sand, very fine- to coarse-grained, saturated, light-brown to medium-gray	5	19
	Sand, gravelly	5	24
Tongue River Formation:			
	Claystone and siltstone, light-gray near bottom of unit	5	29

143-87-2BCB1
(Log from Ray Mohl)

Clay, yellow and gray	23	23
Coal, soft	4	27
Clay, gray	17	44
Coal, hard	2	46
Clay, gray	19	65
Sandstone, soft	10	75
Limestone	2	77
Loam, silty	56	133
Coal and water	7	140

143-87-6CAA1
(Log from Lloyd Erickson)

Topsoil, brown	2	2
Sand, brown	3	5
Coal slack	2	7
Clay, yellow	4	11
Coal	2.5	13.5
Clay, sandy, gray	18.5	32
Sandstone	.5	32.5
Clay, gray	8.5	41
Clay, sandy, gray	6	47
Coal, gray	12	59
Clay, sandy	7	66
Coal	3	69
Sand, clayey, gray	11	80
Sand, clayey, blue	19	99
Sandstone, blue	1	100
Sand, clayey, blue	60	160
Coal slack, water	7	167

143-88-4CBC
(Log from Bandy Drilling Co.)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Surface soil	4	4
	Sand, clay, and gravel	42	46
	Shale, blue; coal streaks	152	198
	Coal	8	206
	Shale, sandy	17	223
	Hard rock	5	228
	Shale, gray	26	254
	Coal	4	258
	Shale, blue	112	370
	Sandstone	83	453
	Shale, blue	33	486
	Sandstone	22	508
	Shale, blue	230	738
	Sandstone	46	784
	Shale, blue	19	803

143-88-6CDD
(Log from Bandy Drilling Co.)

	Surface soil	8	8
	Clay	10	18
	Clay and gravel	11	29
	Clay	7	36
	Coal	2	38
	Shale, blue	78	116
	Coal	3	119
	Shale, blue; coal streaks	55	174
	Shale, gray; coal streaks	43	217
	Sandstone	19	236
	Shale, blue	40	276
	Shale, sandy	3	279
	Sandstone	19	298
	Shale, gray	78	376
	Coal and shale	15	391
	Shale, gray	7	398
	Sandstone	28	426
	Shale and coal streaks	5	431
	Shale, blue	83	514
	Shale, sandy	19	533
	Sandstone	23	556
	Hard rock	3	559
	Shale, blue	5	564
	Hard rock	8	572
	Sandstone	62	634
	Shale, blue	160	794
	Sand	43	837
	Shale, blue	46	883
	Sandstone	9	892
	Hard rock	4	896
	Sandstone	42	938
	Shale, blue	8	946
	Sandstone	11	957
	Shale, blue	6	963

143-88-10CCC
(Log from Bandy Drilling Co.)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Surface soil	11	11
	Coal and shale	29	40
	Shale, blue	216	256
	Hard rock	4	260
	Shale, blue	23	283
	Sand	37	320
	Shale, blue	465	785
	Sand and clay streaks	155	940
	Shale, blue	20	960

143-88-28CBB
Auger Hole Mer-66-7

Glacial drift:			
	Silt, sandy, dark-brown	4	4
	Till, silty, clayey, medium-brown	12	16
	Till, clayey, pebbly, dark-brown	4	20
Sentinel Butte Formation:			
	Claystone, medium-brown	8	28
	Claystone, silty, light-gray	7	35
	Claystone, silty, medium-gray	25	60
	Claystone, carbonaceous, dark-gray	7	67
	Lignite	2	69
	Claystone, carbonaceous, dark-gray	5	74

143-88-31BD
(Log from Bandy Drilling Co.)

	Surface soil	5	5
	Clay	7	12
	Clay and shale	10	22
	Shale, blue	246	268
	Shale, sandy	19	287
	Sandstone	23	310
	Shale, sandy	44	354
	Hard rock	3	357
	Shale, blue	224	581
	Shale, sandy	37	618
	Shale, blue	19	637
	Shale, sandy	23	660
	Shale, blue	168	828
	Sandstone	7	835
	Shale, blue	19	854
	Sandstone	7	861
	Shale, blue	57	918
	Sandstone	12	930
	Shale, blue	5	935
	Hard rock	3	938
	Shale, sandy	21	959
	Sandstone	38	997
	Shale, blue	21	1018
	Sandstone	8	1026
	Shale, blue	14	1040

143-88-35ADD
(Log from Ray Mohl)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Topsoil and broken sandstone	6	6
	Clay, mostly gray	17	23
	Clay, blue	12	35
	Clay, sandy, gray; trace of coal slack	11	46
	Clay, gray	12	58
	Coal, hard	5	63
	Clay, gray	14	77
	Coal, hard; lost water but dry	3	80
	Clay, brown and gray	15	95
	Clay, blue	9	104
	Sandrock	3	107
	Clay, gray	14	121
	Coal, hard	13	134
	Clay, gray	4	138
	Coal, hard	3	141
	Clay, gray	9	150
	Clay, gray	8	158
	Coal	3	161
	Coal; small layers of clay	4	165
	Clay, blue	15	180
	Coal, broken	7	187
	Clay, gray	7	194
	Sandrock	3	197
	Clay, gray	7	204
	Sandstone	4	208
	Clay	2	210

143-89-11DAA
Auger Hole M-68-5

Alluvium:			
	Silt and clay, dark-yellowish-brown	10	10
	Clay, silty; scoria pebbles	35	45
Glacial drift:			
	Sand, fine-grained, silty, light-olive-gray	20	65
Tongue River Formation(?):			
	Lignite and claystone, light-brown	3	68

143-89-11DDD1
Auger Hole Mer-67-50

Alluvium:			
	Soil	1.5	1.5
	Sand, very fine-grained, silty, dusky-yellowish-brown	5.5	7
	Sand, fine- to medium-grained, silty, dark-yellowish-brown	8	15
	Clay, banded	1	16
	Sand, coarse-grained, silty, moderate-yellowish-brown	2	18
	Sand, coarse-grained, silty, clayey, pebbly, moderate-yellowish-brown	2	20
Glacial drift:			
	Sand, coarse-grained, slightly silty, pebbly, moderate-yellowish-brown	23.5	43.5
	Gravel(?)	16.5	60
	Sand(?)	10	70
Tongue River Formation(?):			
	Claystone(?)	15	85

143-89-11DDD2
TEST HOLE 3766

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium:			
	Sand and clay, silty, yellowish-gray to dark-brown----------	16	16
Glacial drift:			
	Sand, coarse-grained, gravelly, lignitic---------	56	72
Tongue River Formation(?):			
	Siltstone, gray----------	4	76
	Lignite----------	2	78
	Claystone, silty, carbonaceous, gray----------	12	90

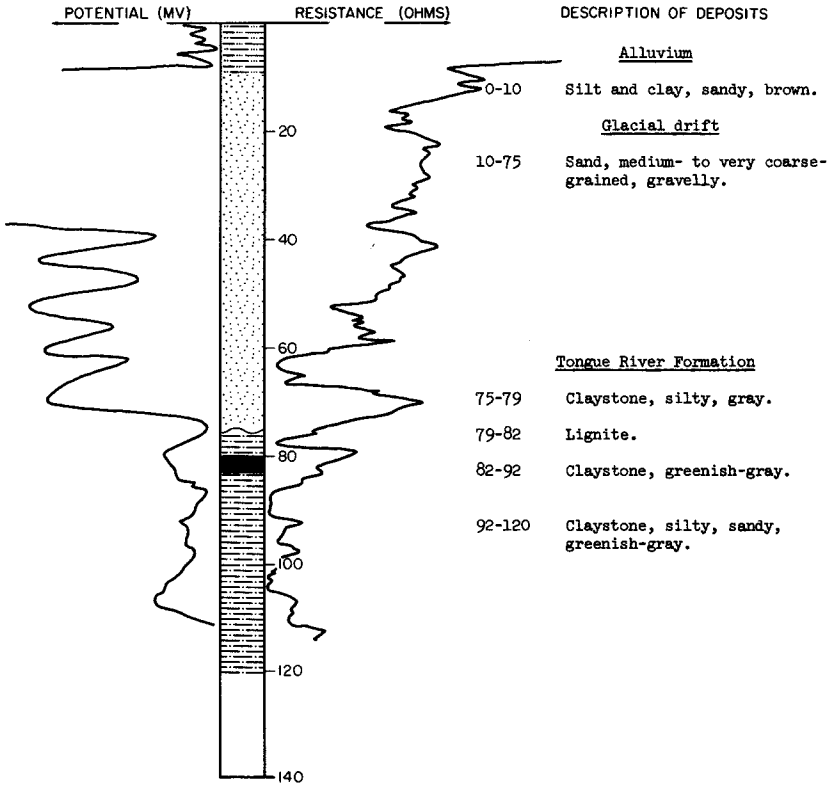
TEST HOLE 3767

LOCATION: 143-89-11DDD3

DATE DRILLED: August 1969

ELEVATION: 1822 (FT, MSL)

DEPTH: 120 (FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-10 Silt and clay, sandy, brown.

Glacial drift

10-75 Sand, medium- to very coarse-grained, gravelly.

Tongue River Formation

75-79 Claystone, silty, gray.

79-82 Lignite.

82-92 Claystone, greenish-gray.

92-120 Claystone, silty, sandy, greenish-gray.

143-89-14ADD
Auger Hole M-68-4

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium:			
	Silt, clayey, dark-yellowish-brown----------	3	3
	Sand, fine-grained, silty, dark-yellowish-brown--	16	19
Glacial drift:			
	Sand, fine- to coarse-grained, pebbly----------	5	24
Tongue River Formation(?):			
	Claystone----------	5	29

143-89-14DDA
TEST HOLE 3768

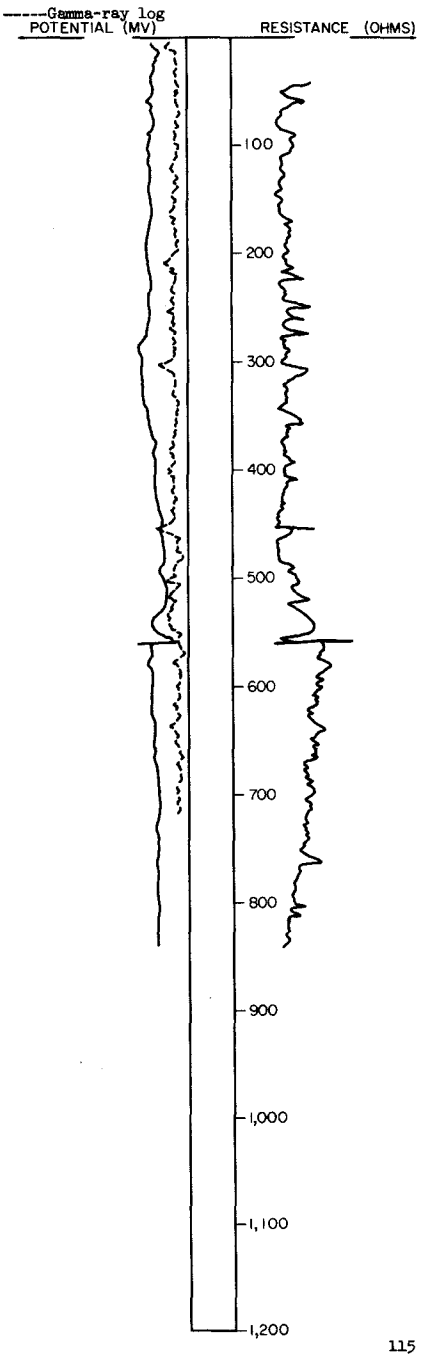
Alluvium:			
	Clay, sandy, yellowish-gray----------	7	7
	Sand and gravel, lignitic, brown----------	11	18
Tongue River Formation(?):			
	Sandstone, fine-grained, silty, clayey, greenish-gray----------	7	25
	Claystone, silty, gray----------	15	40

143-89-15AB
(Log from Bandy Drilling Co.)

Surface soil----------	30	30
Shale, blue----------	44	74
Coal----------	9	83
Shale, blue----------	118	201
Coal----------	8	209
Shale, blue----------	191	400
Hard rock----------	4	404
Shale, blue----------	69	473
Sandstone----------	48	521
Shale, blue----------	239	760
Hard rock----------	5	765
Shale, blue----------	50	815
Sand----------	37	852
Shale, blue----------	39	891
Hard rock----------	2	893
Sand----------	44	937
Shale, blue----------	22	959
Sand----------	29	988
Shale, blue----------	12	1000

LOCATION: 143-89-18ACC
(Log from Bandy Drilling Co.)
ELEVATION: 1920
(FT, MSL)

DATE DRILLED: August 1964
DEPTH: 1380
(FT)



DESCRIPTION OF DEPOSITS

Sentinel Butte Formation

0-12	Surface soil.
12-19	Coal.
19-105	Shale, blue.

Tongue River Formation

105-221	Shale, blue.
221-225	Hard rock.
225-246	Shale, blue
246-249	Hard rock.
249-305	Shale, blue.
305-314	Coal.
314-520	Shale, blue.
520-523	Hard Rock.
523-554	Sandstone.

Cannonball-Ludlow Formations, undifferentiated

554-619	Shale, blue.
619-622	Hard rock.
622-680	Shale, blue.
680-762	Sand and shale.
762-849	Shale, blue.
849-850	Hard rock.

Hell Creek(?) Formation

850-950	Sand and shale.
950-1245	Shale, blue.
1245-1320	Sandstone.
1320-1333	Shale, blue.
1333-1380	Sandstone.

143-89-27ADC
(Log from Bandy Drilling Co.)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Surface soil	6	6
	Clay	15	21
	Clay and gravel	7	28
	Shale, blue	11	39
	Coal	4	43
	Shale, gray	139	182
	Hard rock	3	185
	Shale, sandy	17	202
	Shale, gray	72	274
	Hard rock	3	277
	Shale, blue	10	287
	Shale, sandy	44	331
	Hard rock	2	333
	Shale, sandy	12	345
	Coal	3	348
	Shale, sandy	16	364
	Sandstone	28	392
	Shale, gray	50	442
	Hard rock	4	446
	Sandstone	11	457
	Shale, blue	181	638
	Sandstone	19	657
	Shale, blue	142	799
	Hard rock	6	805
	Shale, blue	52	857
	Sandstone	38	895
	Shale, blue	52	947
	Sandstone	61	1008
	Shale, blue	53	1061
	Sandstone	25	1086
	Shale, blue	14	1100

143-90-24BA
(Log from Bandy Drilling Co.)

	Surface soil	39	39
	Shale, blue	155	194
	Coal	6	200
	Shale, blue	103	303
	Coal	7	310
	Shale, blue	150	460
	Hard rock	4	464
	Sandstone	31	495
	Coal and shale	22	517
	Shale, blue	45	562
	Sandstone	13	575
	Shale, blue	65	640
	Sandstone	92	732
	Shale, blue	218	950
	Sand and shale	119	1069
	Hard rock	3	1072
	Sand and shale	38	1110
	Shale, blue	72	1182
	Sandstone	25	1207
	Shale, blue	33	1240
	Sandstone	49	1289
	Shale, blue	11	1300

143-90-33CC
(Log from Bandy Drilling Co.)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Surface soil	27	27
	Shale, blue	2	29
	Coal	5	34
	Shale, blue	33	67
	Hard rock	4	71
	Shale, blue	112	183
	Coal	6	189
	Shale, blue	47	236
	Sandstone	17	253
	Shale, blue	44	297
	Coal	4	301
	Shale, blue	128	429
	Shale, sandy	54	483
	Hard rock	5	488
	Shale, blue	87	575
	Sandstone	35	610
	Hard rock	3	613
	Sandstone	32	645
	Shale, blue	109	754
	Hard rock	3	757
	Shale, blue	85	842
	Hard rock	2	844
	Sandstone	46	890
	Shale, blue	30	920

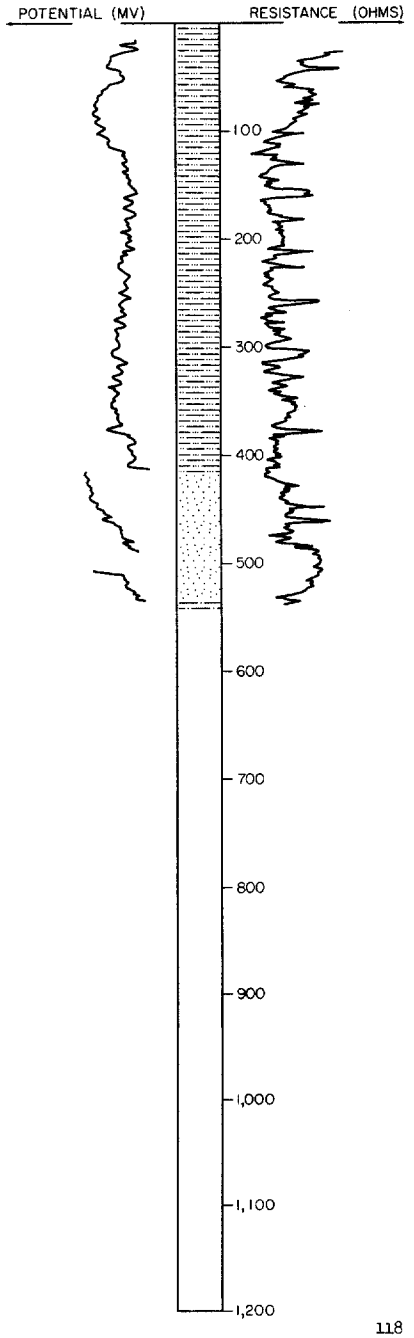
TEST HOLE 3661

LOCATION: 143-90-34AC

DATE DRILLED: November 1968

ELEVATION: 1922
(FT, MSL)

DEPTH: 540
(FT)



DESCRIPTION OF DEPOSITS

Sentinel Butte Formation

0-115 Siltstone and sandstone, very fine-grained, clayey, moderate-yellowish-brown to light-olive-gray.

Tongue River Formation

115-420 Siltstone and claystone, sandy, thinly bedded, lignitic, light-olive-gray.

420-528 Sandstone, fine- to medium-grained, light-olive-gray to dark-greenish-gray; a few silty beds.

Cannonball-Ludlow Formations, undifferentiated

528-540 Claystone, silty, carbonaceous, tight.

143-90-34CD
(Log from Bandy Drilling Co.)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Surface soil----------	26	26
	Shale and coal streaks, blue----------	456	482
	Sand----------	25	507
	Hard rock----------	7	514
	Sand----------	21	535
	Shale, blue----------	250	785
	Sand, water----------	77	862
	Shale, blue----------	18	880

143-90-34DAC1
TEST HOLE 3759

Alluvium:			
	Sand, medium-grained, dark-brown----------	22	22
Glacial drift:			
	Sand, medium- to very coarse-grained, gravelly---	14	36
	Sand, medium- to coarse-grained, pebbly, gray----	22	58
	Gravel, lignitic----------	65	123
Tongue River Formation:			
	Claystone, silty, carbonaceous, gray----------	17	140

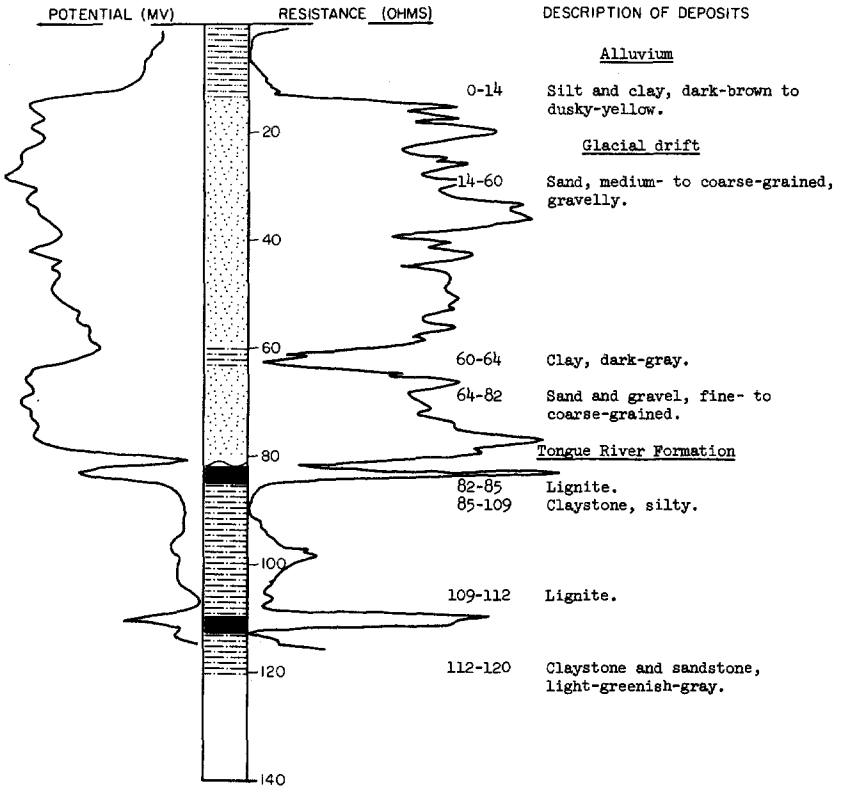
TEST HOLE 3760

LOCATION: 143-90-34DAC2

DATE DRILLED: August 1969

ELEVATION: 1870
(FT, MSL)

DEPTH: 120
(FT)



143-90-34DCB
(Log from Bandy Drilling Co.)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Surface soil	21	21
	Shale and coal streaks, blue	307	328
	Shale, sandy	75	403
	Shale, blue	125	528
	Sand	22	550
	Shale, blue	18	568
	Water sand	90	658
	Shale, blue	22	680

144-81-31CCC
TEST HOLE 2691

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium:	Clay, sandy, silty, dark-yellowish-brown---------	9	9
Glacial drift:	Sand, fine- to medium-grained, dark-greenish-gray----------	21	30
	Sand, fine- to coarse-grained, pebbly, dark-greenish-gray----------	12	42
	Gravel and sand----------	18	60

144-82-17CCB
USBR No. 1

	Sand, fine----------	14	14
	Sand, fine----------	41	55
	Sand, gravelly, lignitic----------	15	70

144-82-17CCC
Auger Hole 0-67-MK-10

Alluvium:	Sand, fine-grained, silty, moderate-yellowish-brown----------	5	5
	Sand, fine- to coarse-grained, moderate-yellowish-brown----------	8	13
	Sand, fine- to coarse-grained, dusky-yellowish-brown----------	2.5	15.5
Glacial drift:	Sand, fine- to coarse-grained, dark-greenish-gray----------	8.5	24

144-82-17CDB
USBR No. 2

	Sand, fine-grained----------	18	18
	Sand----------	30	48
	Sand and gravel----------	14	62
	Gravel----------	2	64
	Lignite----------	1	65
	Sand, lignitic----------	5	70

144-82-17CDD1

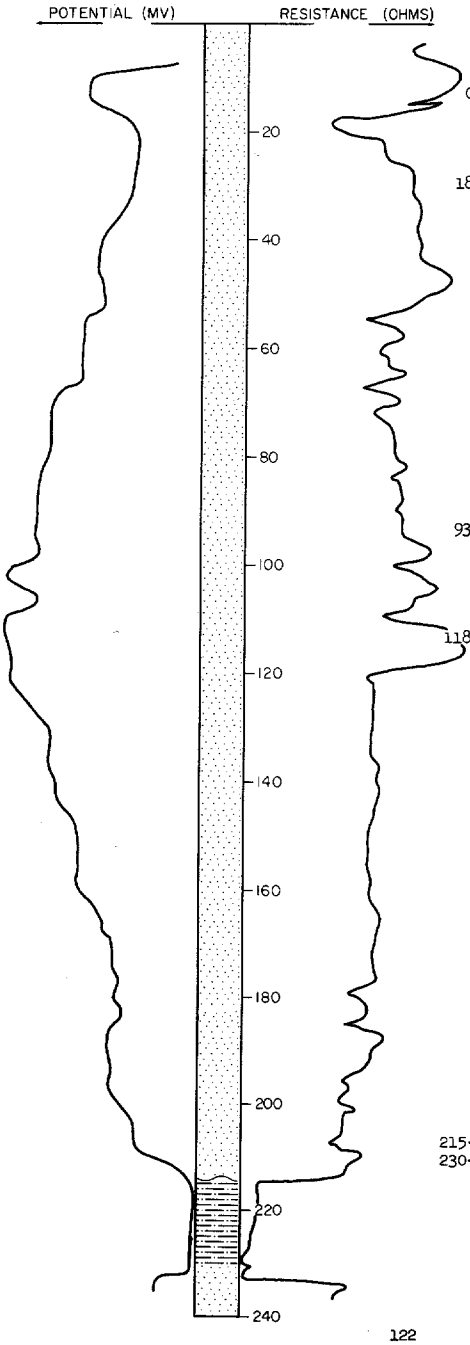
Alluvium:	Silt and sand, very fine-grained, yellowish-brown----------	9	9
	Sand, fine-grained, silty, yellowish-brown-------	10	19
Glacial drift:	Sand, fine- to medium-grained----------	30	49
	Gravel, sandy----------	6	55
	Sand----------	10	65
	Gravel----------	5	70
	Sand, medium- to coarse-grained----------	25	95
	Sand, pebbly----------	6	101
	Gravel, sandy----------	10	111
	Gravel, silty, clayey----------	4	115

TEST HOLE 3630

LOCATION: 144-82-17CDD2
No. 1
ELEVATION: 1674
(FT, MSL)

DATE DRILLED: September 1968

DEPTH: 240
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-18 Sand, very fine-grained, silty, yellowish-gray.

Glacial drift

18-93 Sand, fine- to coarse-grained, pebbly, lignitic, olive-gray.

93-118 Sand, medium- to coarse-grained, gray; abundant lignite.

118-215 Sand, fine- to medium-grained; a few thin gravel beds.

Cannonball-Ludlow Formations, undifferentiated

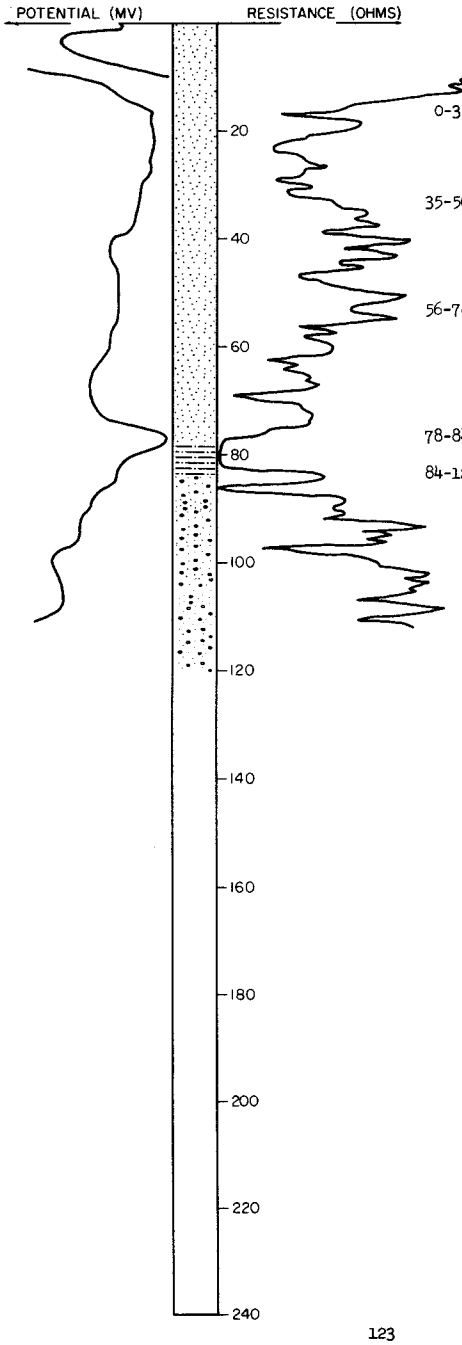
215-230 Claystone, silty, gray.
230-240 Sandstone, fine-grained.

TEST HOLE 3631

LOCATION: 144-82-17CDD3
No. 2
ELEVATION: 1674
(FT, MSL)

DATE DRILLED: September 1968

DEPTH: 120
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-35 Sand, fine- to medium-grained, silty, yellowish-gray.

Glacial drift

35-56 Sand, fine- to coarse-grained, pebbly, gray.

56-78 Sand, fine- to medium-grained, silty, gray.

78-84 Clay, silty, plastic, olive-gray.

84-120 Gravel, sandy, brown; a few thin beds of silt and clay.

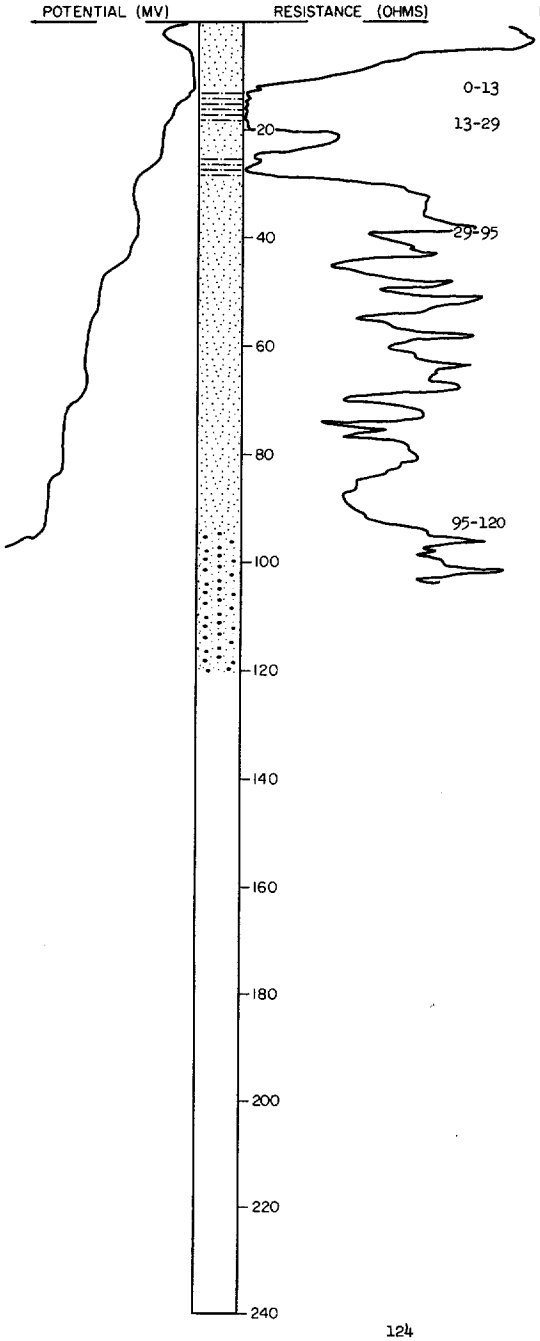
TEST HOLE 3632

LOCATION: 144-82-17CDD4
No. 6

ELEVATION: 1672
(FT, MSL)

DATE DRILLED: September 1968

DEPTH: 120
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-13 Sand, fine-grained, yellowish-gray.

13-29 Silt and sand, fine-grained, clayey, light-olive-gray.

Glacial drift

29-95 Sand, medium- to coarse-grained, lignitic, olive-gray; interbedded with thin beds of silt.

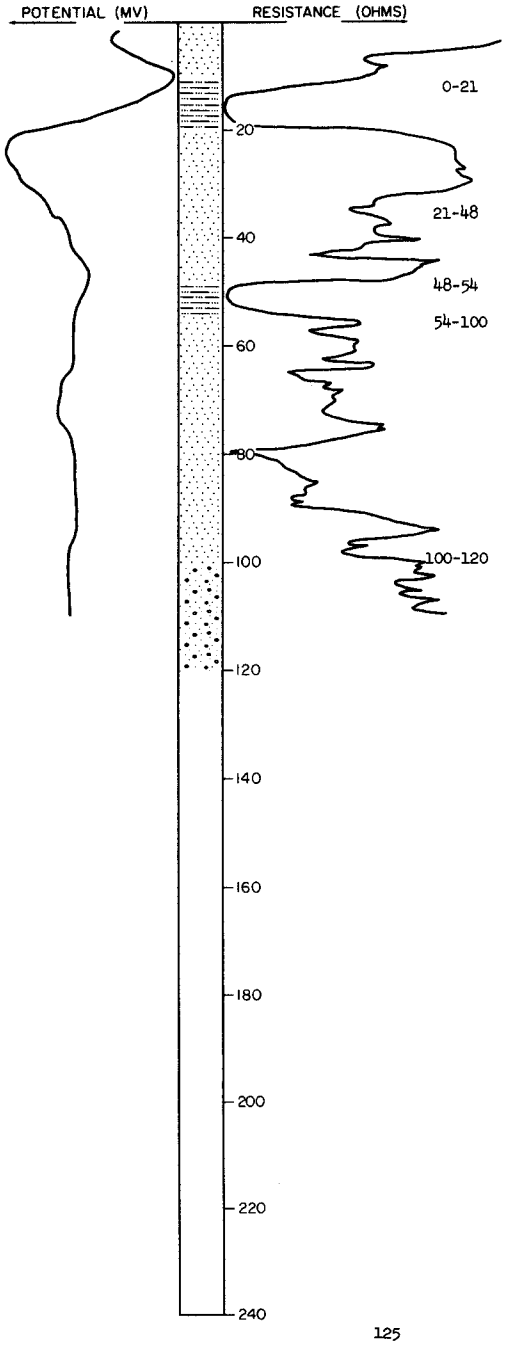
95-120 Gravel, brown.

TEST HOLE 3633

LOCATION: 144-82-20ABB
NO. 4
ELEVATION: 1674
(FT, MSL)

DATE DRILLED: September 1968

DEPTH: 120
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-21 Silt and sand.

Glacial drift

21-48 Sand, medium- to coarse-grained, gray.

48-54 Silt, clayey, sandy.

54-100 Sand, medium- to coarse-grained, pebbly; thin silt beds.

100-120 Gravel, brown.

144-82-21AAA
Auger Hole 0-67-MK-6

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium:			
	Sand, fine- to medium-grained, silty, moderate-yellowish-brown	13	13
	Sand, fine- to coarse-grained, dark-greenish-gray	6	19

144-82-21BBB
Auger Hole 0-67-MK-9

Alluvium:			
	Sand, fine- to medium-grained, moderate-yellowish-brown	3	3
	Silt, sandy, clayey, moderate-yellowish-brown	7	10
	Sand, fine- to medium-grained	9	19

144-82-21CBB
Auger Hole 0-67-MK-8

Alluvium:			
	Sand, fine-grained, silty, pale-yellowish-brown	3	3
	Silt, clayey, light-olive-gray	6	9
	Sand, fine-grained, silty, moderate-greenish-yellow; becomes medium-grained with depth	10	19

144-82-21CBD
USBR

Sand and clay, silty	13	13
Sand, silty	4	17
Sand and shale	5	22
Sand	10	32
Sand and lignite	17	49

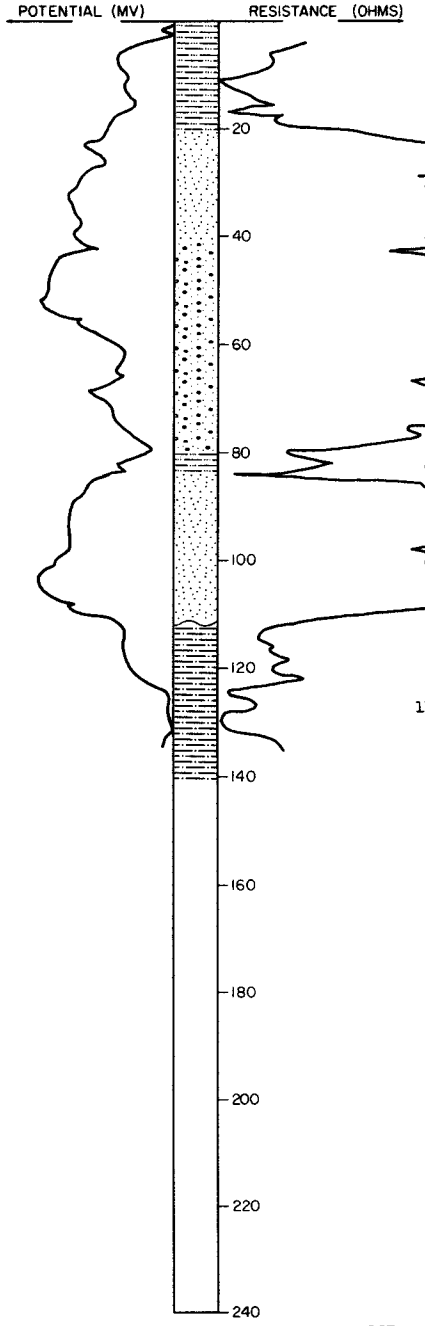
TEST HOLE 3730

LOCATION: 144-82-21CDD

DATE DRILLED: July 1969

ELEVATION: 1675
(FT, MSL)

DEPTH: 140
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-20 Silt, sandy, clayey, yellowish-gray.

Glacial drift

20-40 Sand, medium- to very coarse-grained, pebbly, lignitic.

40-80 Gravel, sandy, lignitic; clay beds in lower part.

80-84 Silt and sand, medium- to coarse-grained, lignitic, dark-gray.

84-111 Sand, medium- to coarse-grained, lignitic.

Cannonball-Ludlow Formations, undifferentiated

111-140 Claystone, silty, sandy, brown to light-olive-gray.

144-82-21DAA
TEST HOLE 2903

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium:			
	Topsoil, sandy, silty, brownish-black----------	1	1
	Clay, sandy, silty, calcareous, slightly plastic, moderate-yellowish-brown----------	9	10
	Clay, sandy, silty, calcareous, olive-gray to dark-greenish-gray----------	11	21
Glacial drift:			
	Sand, fine- to medium-grained----------	11	32
	Clay, sandy, silty, pebbly, calcareous, slightly plastic, olive-gray to light-brownish-gray-------	14	46
	Gravel, sandy----------	35	81
Cannonball-Ludlow Formations, undifferentiated:			
	Shale, sandy, light-bluish-gray to medium-bluish-gray----------	19	100

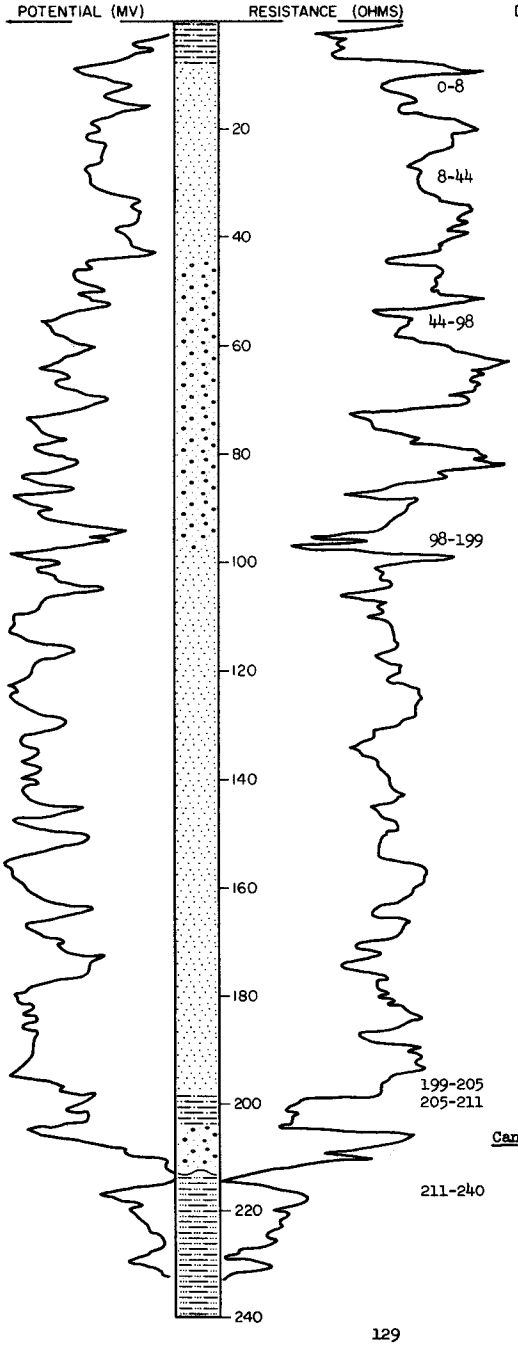
TEST HOLE 3731

LOCATION: 144-82-22ACC

DATE DRILLED: July 1969

ELEVATION: 1670
(FT, MSL)

DEPTH: 240
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-8 Clay, silty, yellowish-gray.

8-44 Sand, fine- to coarse-grained, silty, lignitic, carbonaceous, gray.

Glacial drift

44-98 Sand and gravel, lignitic.

98-199 Sand, fine- to coarse-grained; contains a few thin beds of detrital lignite and gravel.

199-205 Clay, silty, olive-gray.

205-211 Sand and gravel.

Cannonball-Ludlow Formations, undifferentiated

211-240 Claystone and siltstone, sandy, light-olive-gray.

144-82-23BBB1
TEST HOLE 2688

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium:			
	Sand, very fine- to medium-grained, clayey, dark-yellowish-brown----------	25	25
Glacial drift:			
	Sand, fine- to very coarse-grained, pebbly, lignitic, dark-greenish-gray----------	24	49
Cannonball-Ludlow Formations, undifferentiated:			
	Sandstone, hard----------	2	51
	Claystone, sandy, silty, dark-greenish-gray------	19	70

144-82-23BBB2
TEST HOLE 2901

Alluvium:			
	Topsoil, sandy, gravelly, brownish-black---------	.5	.5
	Clay, very sandy, silty, moderate-yellowish-brown----------	5.5	6
Glacial drift:			
	Sand, very fine- to medium-grained----------	38	44
	Sand, fine- to coarse-grained, pebbly----------	10	54
Cannonball-Ludlow Formations, undifferentiated:			
	Shale, sandy, calcareous, medium-bluish-gray-----	6	60

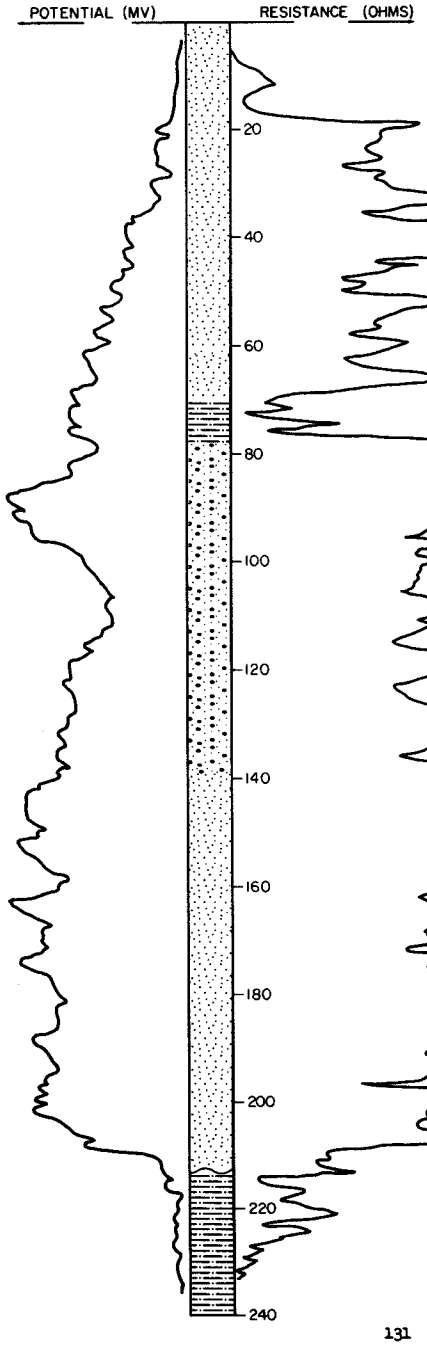
TEST HOLE 3729

LOCATION: 144-82-23DDD

DATE DRILLED: July 1969

ELEVATION: 1670
(FT, MSL)

DEPTH: 240
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-18 Sand, fine- to medium-grained, silty, clayey, organic, yellowish-gray.

Glacial drift

18-70 Sand, medium- to coarse-grained, lignitic, light-olive-gray.

70-78 Clay, sandy, silty, carbonaceous.

78-140 Sand and gravel, fine- to coarse-grained, lignitic.

140-214 Sand, medium- to coarse-grained, pebbly, lignitic; thin beds of gravel.

Cannonball-Ludlow Formations, undifferentiated

214-240 Claystone, silty, sandy, calcareous, gray.

144-82-25BBB
Auger Hole 0-67-MK-11

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium:			
	Sand, fine- to medium-grained, silty, pale-yellowish-brown	4	4
	Sand, fine-grained, silty, dark-greenish-gray	8	12
	Sand, medium- to coarse-grained, dark-greenish-gray	2	14

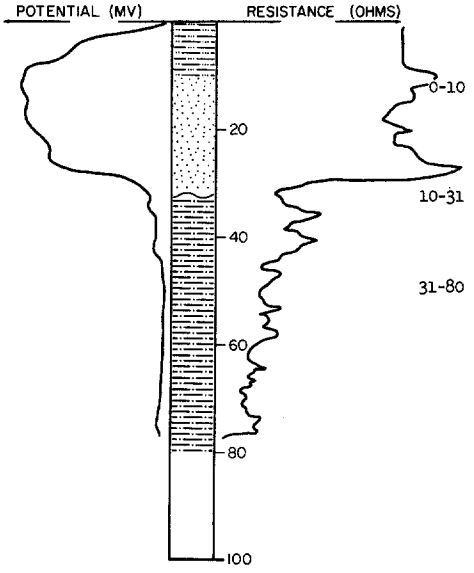
TEST HOLE 3728

LOCATION: 144-82-26ADD

DATE DRILLED: July 1969

ELEVATION: 1775 (FT, MSL)

DEPTH: 80 (FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-10 Silt and clay, yellowish-brown.

Glacial drift

10-31 Sand, fine- to medium-grained.

Cannonball-Ludlow Formations, undifferentiated

31-80 Claystone, silty, sandy, calcareous, olive-gray.

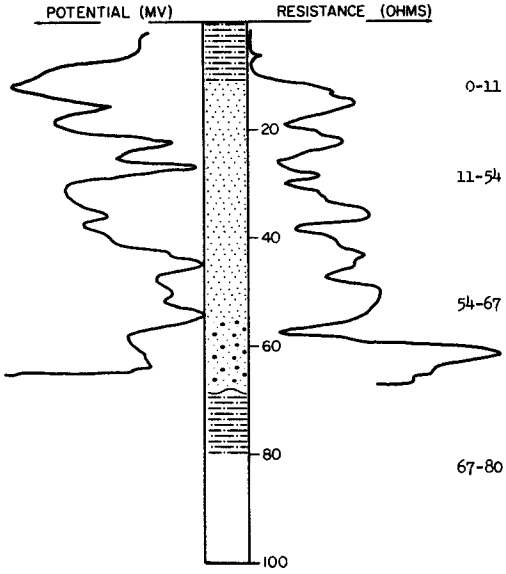
TEST HOLE 2690

LOCATION: 144-82-26BBA

DATE DRILLED: June 1967

ELEVATION: 1668
(FT, MSL)

DEPTH: 80
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-11 Clay, sandy, silty, dark-yellowish-brown.

Glacial drift

11-54 Sand, fine- to medium-grained, silty, dark-greenish-gray.

54-67 Sand and gravel, fine- to very coarse-grained, dark-greenish-gray.

Cannonball-Ludlow Formations, undifferentiated

67-80 Claystone, sandy, silty, dark-greenish-gray.

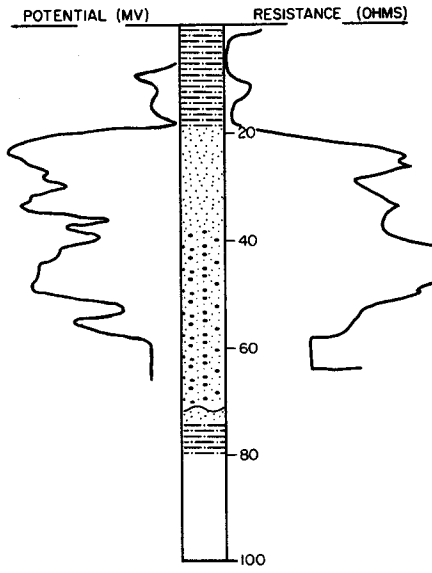
TEST HOLE 2689

LOCATION: 144-82-27BBB1

DATE DRILLED: June 1967

ELEVATION: 1668
(FT, MSL)

DEPTH: 80
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-19 Clay, sandy, silty, dark-yellowish-brown to dark-greenish-gray.

Glacial drift

19-38 Sand, fine- to coarse-grained, dark-greenish-gray.

38-72 Sand and gravel, fine- to very coarse-grained.

Cannonball-Ludlow Formations, undifferentiated

72-74 Sandstone.
74-80 Claystone, silty, sandy, dark-greenish-gray.

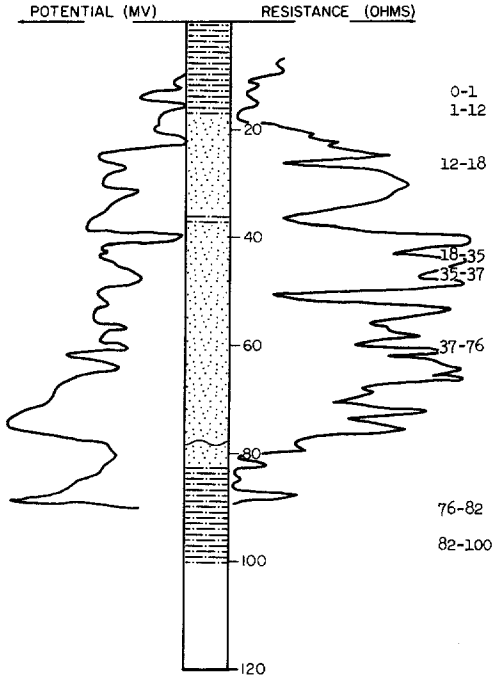
TEST HOLE 2902

LOCATION: 144-82-27BBB2

DATE DRILLED: December 1967

ELEVATION: 1668
(FT, MSL)

DEPTH: 100
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-1 Topsoil.
1-12 Clay, very sandy, silty, calcareous, moderate-yellowish-brown.
12-18 Clay, very sandy, silty, olive-gray.

Glacial drift

18-35 Sand, fine- to coarse-grained.
35-37 Clay, sandy, silty, olive-gray.
37-76 Sand and gravel, fine- to very coarse-grained, dark-greenish-gray.

Cannonball-Ludlow Formations, undifferentiated

76-82 Sandstone, clayey, light-bluish-gray
82-100 Shale, sandy, indurated.

144-82-27DDA
USBR No. 4

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand	10	10
	Sand, fine	5	15
	Sand	3	18
	Sand and gravel, clayey	2	20
	Sand, clay, and shale	5	25
	Shale, hard, blue	5	30

144-82-28BBB
Auger Hole 0-67-MK-7

Glacial drift:			
	Sand, fine-grained, silty, pale-yellowish-brown	2	2
	Sand, very fine-grained, silty, clayey, dark-yellowish-brown	4	6
	Sand, very fine-grained, clayey	1.5	7.5
	Gravel	1	8.5
	Sand, fine- to coarse-grained, clayey, dusky-brown	12.5	21
	Till, clayey, silty, sandy, pebbly, dark-yellowish-brown	28	49

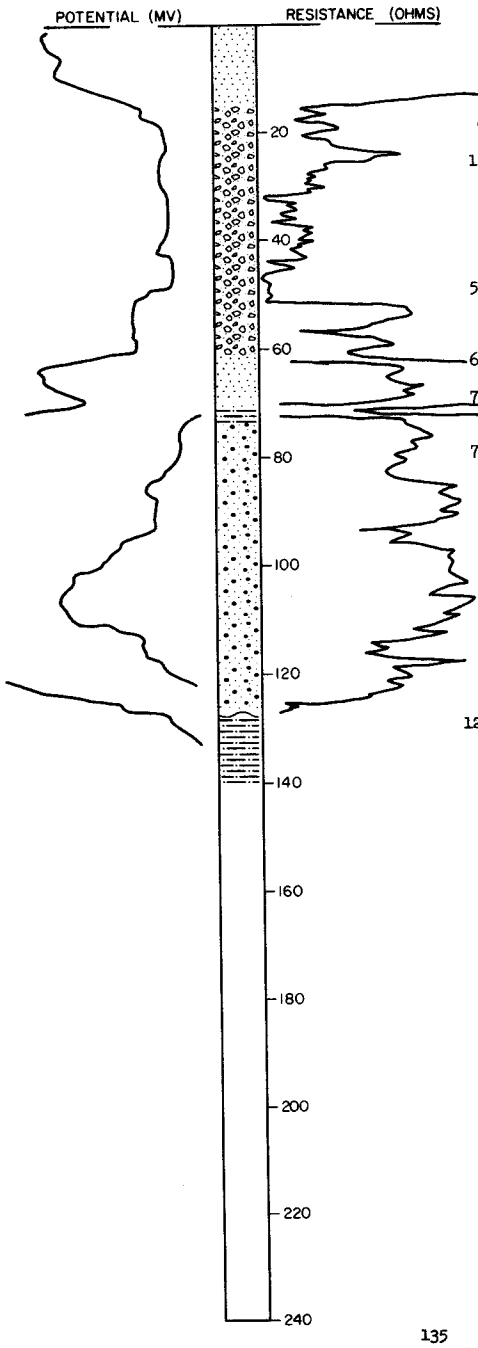
TEST HOLE 3638

LOCATION: 144-82-28CBA

DATE DRILLED: October 1968

ELEVATION: 1704
(FT, MSL)

DEPTH: 140
(FT)



DESCRIPTION OF DEPOSITS

Glacial drift

0-15	Sand, medium- to coarse-grained, silty, lignitic.
15-52	Till, clayey, silty, sandy, pebbly, moderate-yellowish-brown.
52-62	Till(?), silty, very sandy, light-olive-gray.
62-71	Sand, medium- to very coarse-grained, pebbly, very lignitic.
71-73	Clay, silty, olive-gray.
73-126	Sand and gravel, coarse, lignitic.

Cannonball-Ludlow Formations, undifferentiated

126-140	Claystone, silty, bentonitic, light-olive-gray.

144-82-28DAA
Auger Hole 0-67-MK-12

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium:			
	Clay, sandy, calcareous----------	3	3
	Sand, fine- to coarse-grained, pale-brown to dark-greenish-gray----------	16	19

144-82-29DAD
USBR No. 5

Glacial drift:			
	Loam, sandy----------	4	4
	Gravel and cobbles----------	4	8
	Clay, sandy----------	7.7	15.7
	Sand----------	17.3	33
	Sand and lignite----------	3.6	36.6
	Lignite----------	3.4	40
Cannonball-Ludlow Formations, undifferentiated:			
	Shale, blue----------	1	41

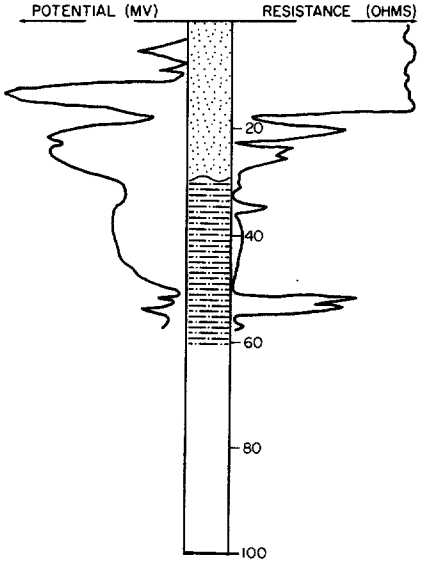
TEST HOLE 3727

LOCATION: 144-82-35ADA

DATE DRILLED: July 1969

ELEVATION: 1738 (FT, MSL)

DEPTH: 60 (FT)



DESCRIPTION OF DEPOSITS

Glacial drift

0-30 Sand, coarse-grained, pebbly, yellowish-brown; silty in lower part.

Cannonball-Ludlow Formations, undifferentiated

30-60 Claystone, sandy, silty, light-olive-gray to brownish-black.

144-83-13DDD
Auger Hole 0-67-MK-2

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium:			
	Sand, fine-grained, silty, pale-yellowish-brown	2	2
	Sand, fine- to coarse-grained, pale-brown	17	19

144-83-24CCC
Auger Hole 0-67-MK-3

Alluvium:			
	Sand, fine-grained, silty, dark-yellowish-brown	1	1
	Silt, sandy, dark-yellowish-brown	22	23
Glacial drift:			
	Sand, fine-grained, silty, dark-greenish-gray	3	26
	Silt, sandy, dark-greenish-gray	3	29

144-83-24DDD
Auger Hole 0-67-MK-1

Alluvium:			
	Sand, fine-grained, silty, pale-yellowish-brown to moderate-brown	4	4
	Sand, fine- to medium-grained, silty, moderate-brown	10	14
	Sand, fine- to coarse-grained; dark-yellowish-brown in upper part, dark-greenish-gray in lower part	14	28

144-83-25AAA
TEST HOLE 2904

Alluvium:			
	Topsoil, sandy, silty, brownish-black	1	1
	Clay, sandy, silty, gravelly, moderate-yellowish-brown to dusky-yellow	11	12
Cannonball-Ludlow Formations, undifferentiated:			
	Shale, sandy, calcareous, moderate-olive-brown	9	21
	Lignite and shale	8	29
	Shale, sandy, bluish-gray	11	40

144-83-26BBB
Auger Hole 0-67-MK-4

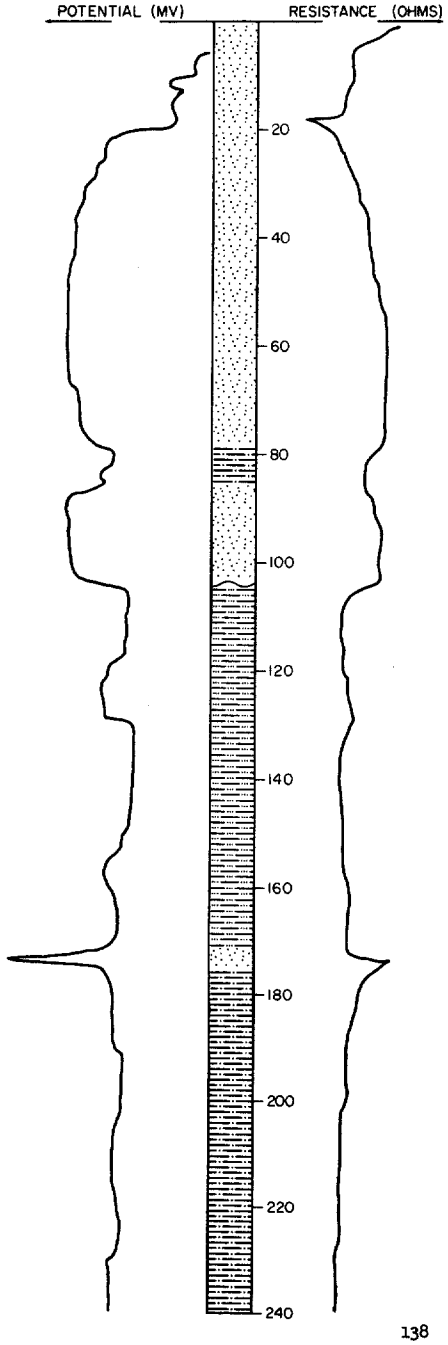
Alluvium:			
	Sand, fine- to medium-grained, moderate-yellowish-brown	7	7
	Sand, fine- to coarse-grained, dark-yellowish-brown	12	19

LOCATION: 144-83-26DB

DATE DRILLED: July 1967

ELEVATION: 1680
(FT, MSL)

DEPTH: 360
(FT)



DESCRIPTION OF DEPOSITS

Glacial drift

0-79 Sand.

79-86 Clay, sandy, dark-greenish-gray.

86-104 Sand, fine-grained.

Cannonball-Ludlow Formations, undifferentiated

104-171 Claystone and siltstone, sandy, dark-greenish-gray.

171-175 Sandstone, very fine-grained, silty, clayey, dark-greenish-gray.

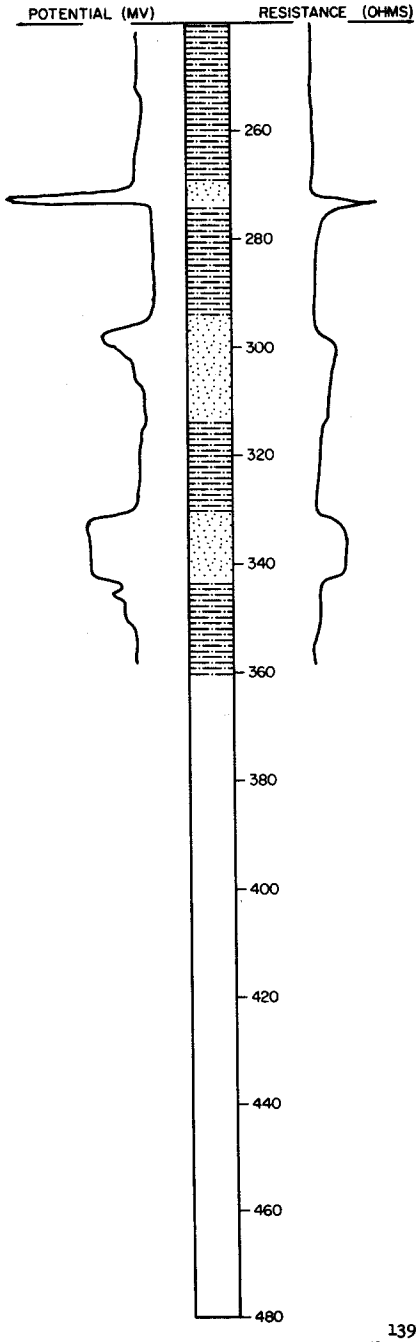
175-270 Claystone, silty, dark-greenish-gray.

LOCATION: 144-83-26DB, Continued

DATE DRILLED: July 1967

ELEVATION: 1680
(FT, MSL)

DEPTH: 360
(FT)



DESCRIPTION OF DEPOSITS

Hell Creek Formation

270-274	Sandstone, fine-grained, well indurated.
274-295	Claystone, silty, dark-greenish-gray.
295-314	Sandstone, fine- to medium-grained.
314-331	Claystone, silty, dark-greenish-gray.
331-343	Sandstone, fine- to medium-grained, silty.
343-360	Claystone, silty, dark-greenish-gray.

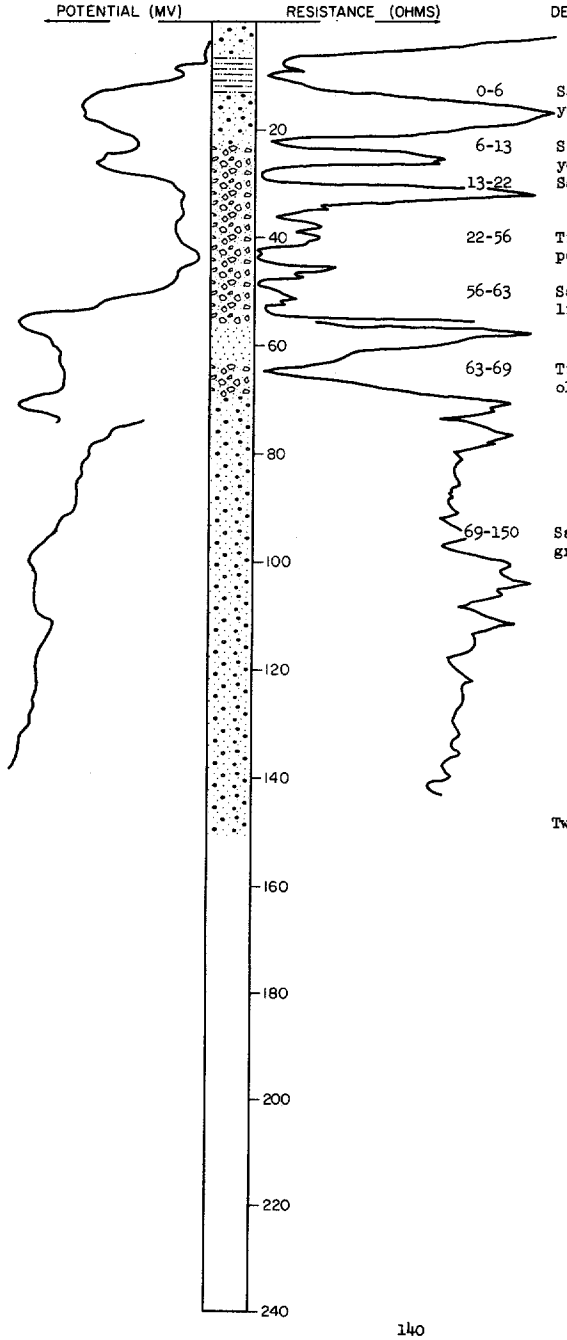
TEST HOLE 3639

LOCATION: 144-84-27ADD

DATE DRILLED: October 1968

ELEVATION: 1720
(FT, MSL)

DEPTH: 150
(FT)



DESCRIPTION OF DEPOSITS

Glacial drift

0-6	Sand and gravel, moderate-yellowish-brown.
6-13	Silt and clay, moderate-yellowish-brown.
13-22	Sand and gravel.
22-56	Till, sandy, silty, clayey, pebbly, moderate-olive-brown.
56-63	Sand, coarse-grained, pebbly, lignitic.
63-69	Till, silty, sandy, light-olive-gray.
69-150	Sand and gravel, coarse-grained.

Twisted off bit at 150 ft.

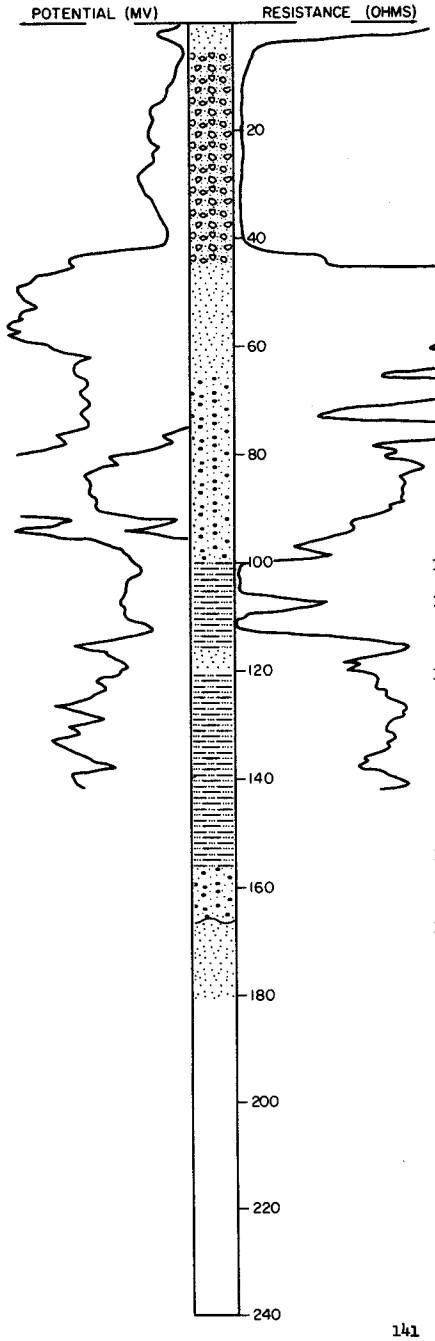
TEST HOLE 5276

LOCATION: 144-85-1BBB

DATE DRILLED: May 1969

ELEVATION: 1713
(FT, MSL)

DEPTH: 180
(FT)



DESCRIPTION OF DEPOSITS

Glacial drift

0-5	Sand, fine- to medium-grained, silty, yellowish-brown.
5-45	Till, silty, sandy, pebbly; yellowish-brown above 22 ft, olive-gray below 22 ft.
45-65	Sand, fine- to very coarse-grained, pebbly.
65-100	Gravel and sand; a few thin clay beds.
100-116	Silt and clay, sandy, olive-gray.
116-120	Sand, fine- to coarse-grained, silty.
120-155	Silt, sandy, clayey, light-olive-gray.
155-164	Gravel; interbedded silty clay.

Tongue River Formation

164-180	Sandstone, silty, clayey.

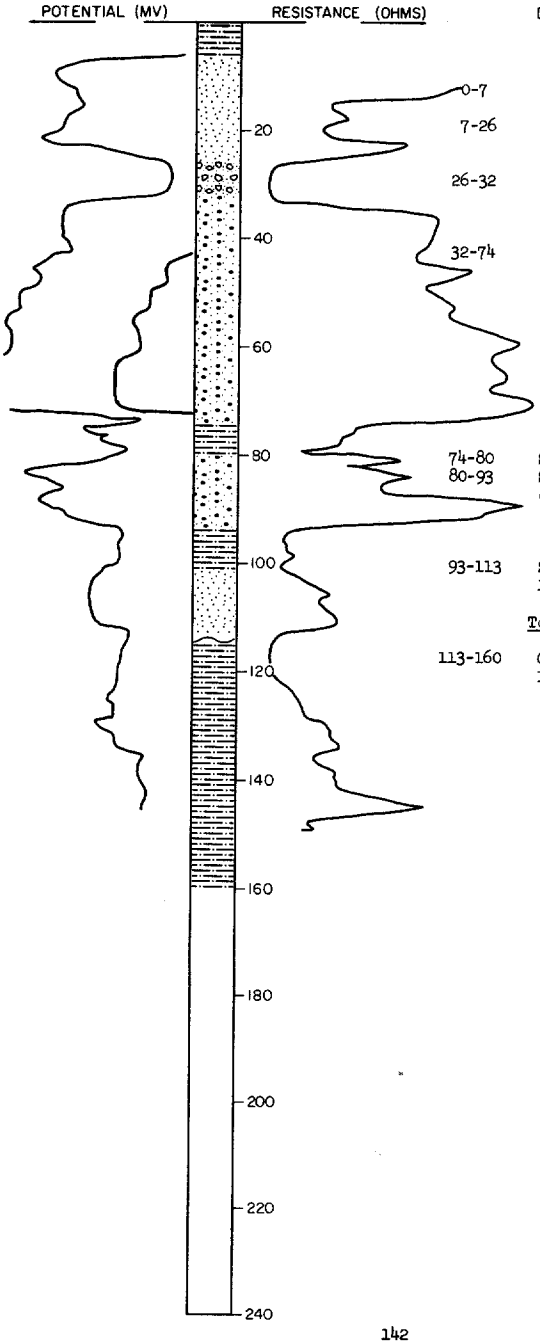
TEST HOLE 2687

LOCATION: 144-85-1DDD

DATE DRILLED: June 1967

ELEVATION: 1700
(FT, MSL)

DEPTH: 160
(FT)



DESCRIPTION OF DEPOSITS

Glacial drift

0-7	Clay, sandy, silty, dark-yellowish-brown.
7-26	Sand, fine- to very coarse-grained, pebbly, dark-yellowish-brown.
26-32	Till, clayey, silty, sandy, pebbly, dark-yellowish-brown.
32-74	Sand and gravel, fine- to very coarse-grained, lignitic.
74-80	Sand and clay.
80-93	Sand and gravel, fine- to coarse-grained, lignitic.
93-113	Sand and clay, silty, lignitic, light-olive-gray.

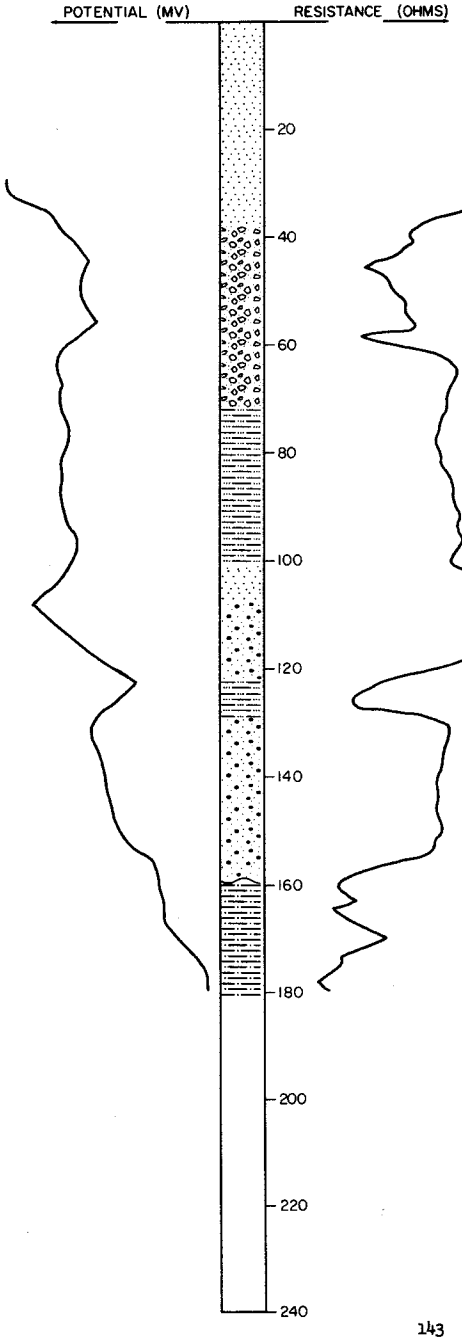
Tongue River Formation

113-160	Claystone, sandy, silty, light-olive-gray.

LOCATION: 144-85-2BCB1
No. 3
ELEVATION: 1730
(FT, MSL)

DATE DRILLED: June 1965

DEPTH: 180
(FT)



DESCRIPTION OF DEPOSITS

Glacial drift

0-38	Sand, very fine- to medium-grained, silty.
38-58	Till, clayey, silty, pebbly, calcareous, brown.
58-72	Till(?), sandy, silty, olive-gray.
72-100	Silt, sandy, calcareous, olive-gray.
100-107	Sand, fine- to very coarse-grained, pebbly.
107-122	Gravel, sandy.
122-128	Silt, calcareous, olive-gray.
128-158	Gravel and sand.

Tongue River Formation

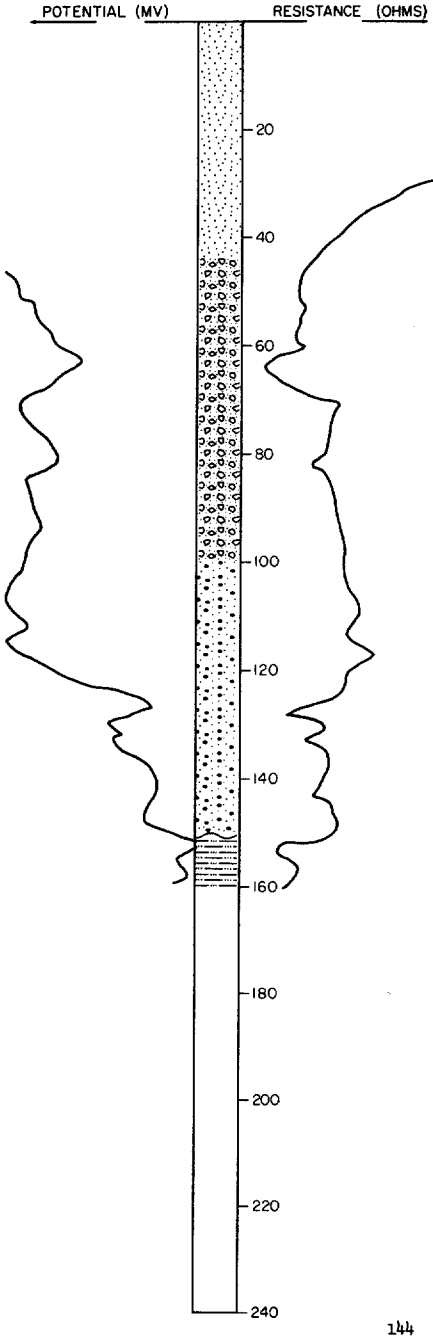
158-180	Claystone, silty.

LOCATION: 144-85-2BCB2
No. 4

DATE DRILLED: June 1969

ELEVATION: 1735
(FT, MSL)

DEPTH: 160
(FT)



DESCRIPTION OF DEPOSITS

Glacial drift

0-44	Sand, very fine- to coarse-grained, pebbly, yellowish-brown.
44-66	Till, silty, sandy, pebbly, brown.
66-100	Till(?), sandy, gravelly, olive-gray.
100-150	Sand and gravel, fine- to coarse-grained; a few thin beds of silt.

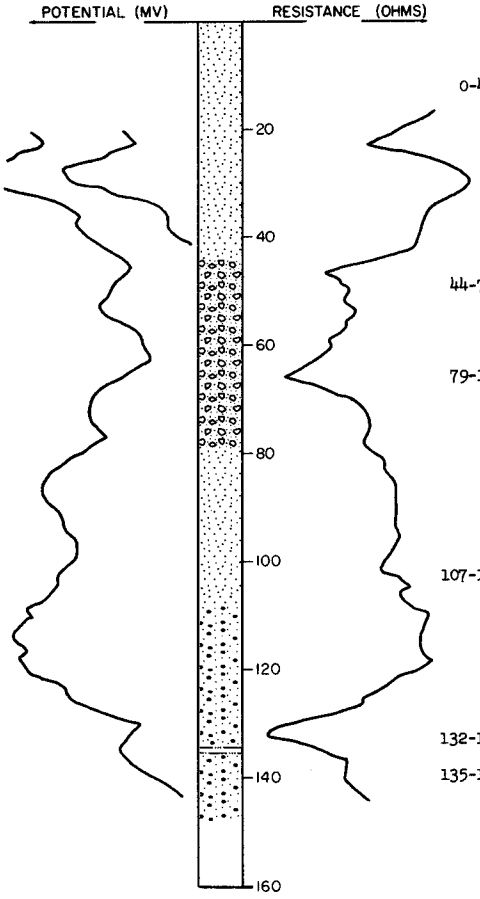
Tongue River Formation

150-160	Siltstone, lignitic, olive-gray.

LOCATION: 144-85-2BCB3
No. 6
ELEVATION: 1737
(FT, MSL)

DATE DRILLED: June 1969

DEPTH: 147
(FT)



DESCRIPTION OF DEPOSITS

Glacial drift

0-44	Sand and silt, very fine- to coarse-grained, yellowish-brown.
44-79	Till, sandy, silty, calcareous, olive-gray.
79-107	Sand, very fine- to coarse-grained.
107-132	Gravel.
132-135	Silt, sandy, hard, light-olive-gray.
135-147	Gravel, silty, sandy.

144-85-2BCB5

Geologic source	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Sand, silty, yellowish-brown----------	61	61
	Till, olive-gray----------	9	70
	Sand, fine- to coarse-grained, pebbly, lignitic--	45	115
	Gravel----------	20	135
	Silt, pebbly, olive-gray----------	5	140

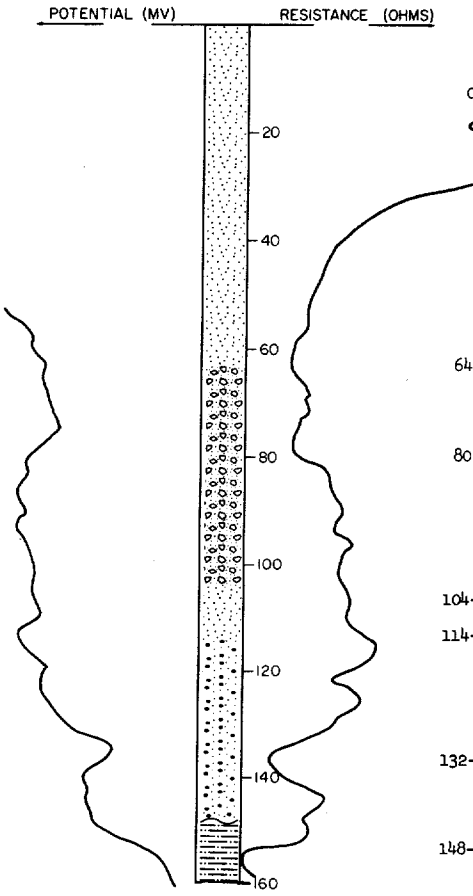
144-85-2BCB6

Geologic source	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Sand, brown----------	38	38
	Sand, silty----------	19	57
	Till----------	12	69
	Sand, lignitic----------	16	85
	Sand, fine- to medium-grained----------	18	103
	Sand and gravel----------	32	135
	Silt, with thin beds of gravel----------	5	140

LOCATION: 144-85-2BCC
No. 5
ELEVATION: 1735
(FT, MSL)

DATE DRILLED: June 1969

DEPTH: 160
(FT)



DESCRIPTION OF DEPOSITS

Glacial drift

0-64 Sand, very fine- to medium-grained, pebbly, yellowish-brown.

64-80 Till, silty, clayey, gravelly, olive-gray.

80-104 Till(?), silty, gravelly.

104-114 Sand, fine- to very coarse-grained, pebbly, silty.

114-132 Gravel.

132-148 Sand and gravel, silty, olive-gray.

Tongue River Formation

148-160 Claystone, silty, olive-gray.

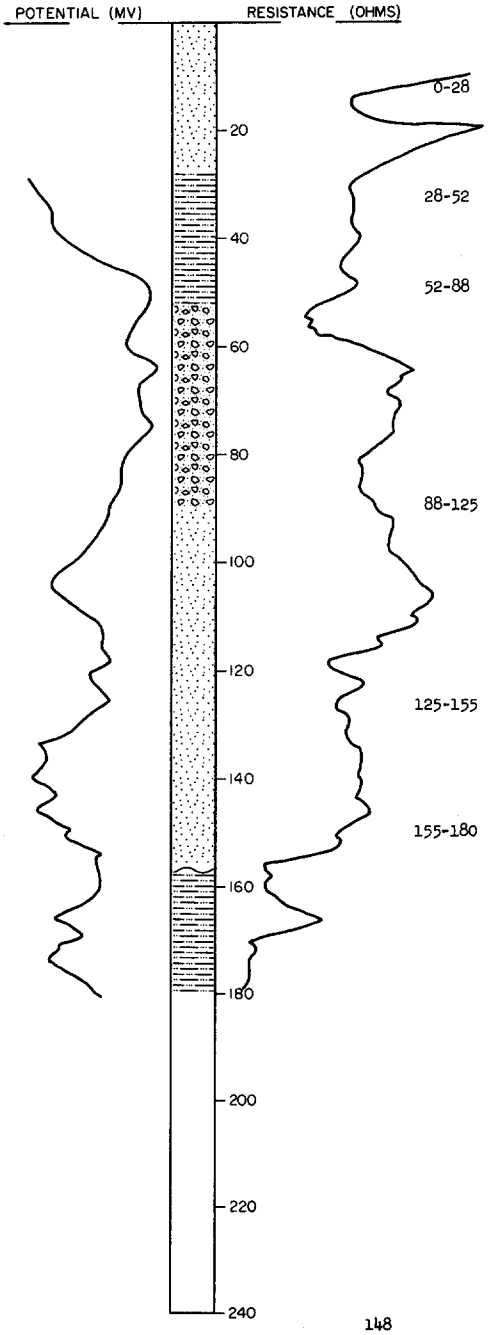
144-85-2CD
(Log from Bandy Drilling Co.)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Surface soil, sandy	38	38
	Clay, blue	42	80
	Sand and gravel	55	135
	Shale, blue	12	147
	Gravel	51	198
	Sandstone, hard	6	204
	Shale, blue	44	248
	Sand and shale	15	263
	Shale, blue	28	291
	Sandstone	12	303
	Hard rock	4	307
	Shale, gray	119	426
	Sandstone	38	464
	Shale, blue	19	483

LOCATION: 144-85-3ADA
No. 2
ELEVATION: 1727
(FT, MSL)

DATE DRILLED: June 1969

DEPTH: 180
(FT)



DESCRIPTION OF DEPOSITS

Glacial drift

0-28 Sand, very fine- to medium-grained, silty, yellowish-brown.

28-52 Silt, sandy, calcareous; yellowish-brown to 45 ft.

52-88 Till, clayey, sandy, pebbly, calcareous, olive-gray; contains a few beds of sandy silt.

88-125 Sand, fine- to coarse-grained, pebbly.

125-155 Sand, fine-grained, silty, pebbly.

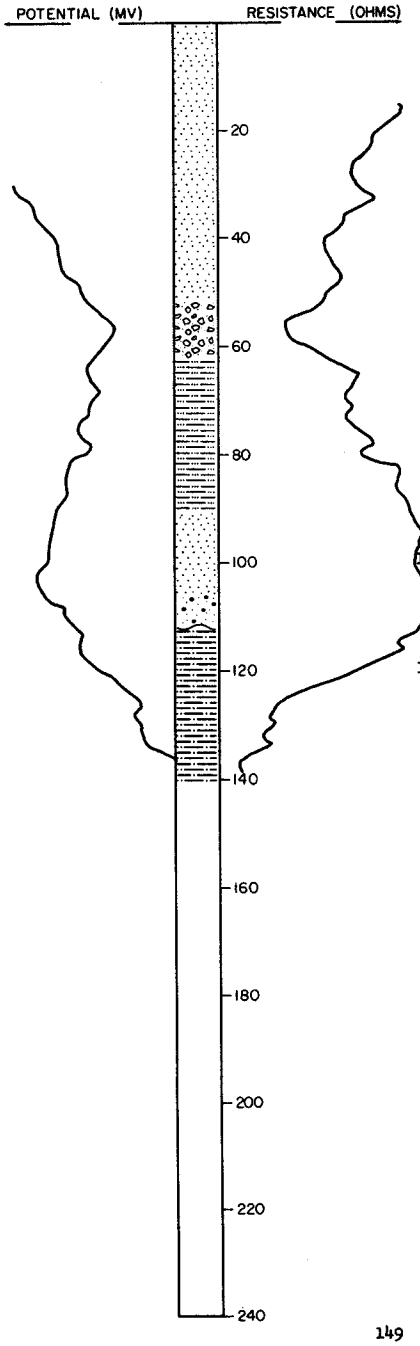
Tongue River Formation

155-180 Siltstone, sandy, clayey, bluish-gray.

LOCATION: 144-85-3ADC
No. 1
ELEVATION: 1718
(FT, MSL)

DATE DRILLED: June 1969

DEPTH: 140
(FT)



DESCRIPTION OF DEPOSITS

Glacial drift

0-53	Sand and silt, fine- to medium-grained; yellowish-brown above 32 ft.
53-63	Till, pebbly, olive-gray.
63-90	Silt, sandy, olive-gray.
90-105	Sand, very fine- to coarse-grained.
105-110	Gravel.

Tongue River Formation

110-140	Claystone, olive-gray.

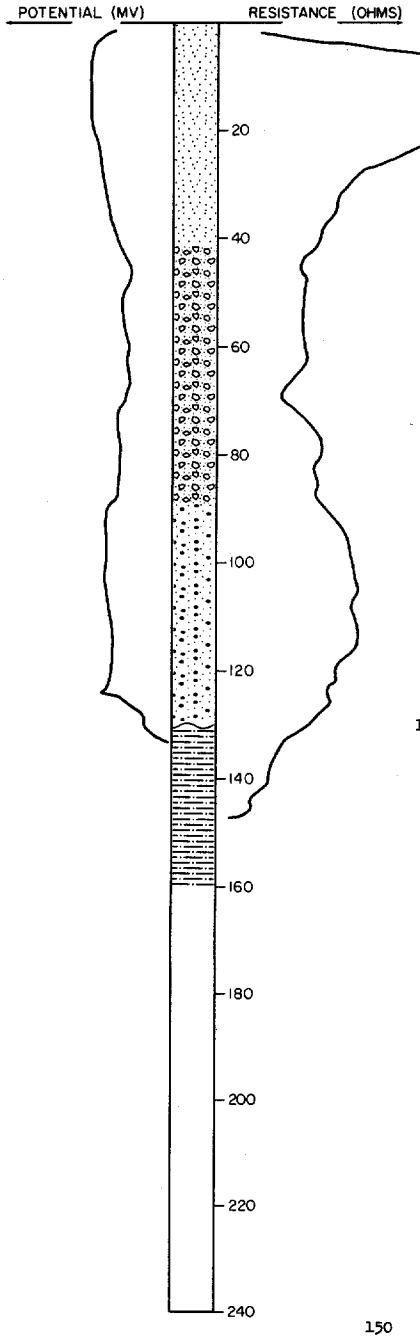
TEST HOLE 5268

LOCATION: 144-85-3DAA

DATE DRILLED: May 1969

ELEVATION: 1738
(FT, MSL)

DEPTH: 160
(FT)



DESCRIPTION OF DEPOSITS

Glacial drift

0-42	Sand, fine- to coarse-grained, silty, yellowish-brown.
42-90	Till, clayey, sandy, pebbly, olive-gray.
90-130	Sand and gravel.

Tongue River Formation

130-160	Claystone, silty, sandy, light-olive-gray.

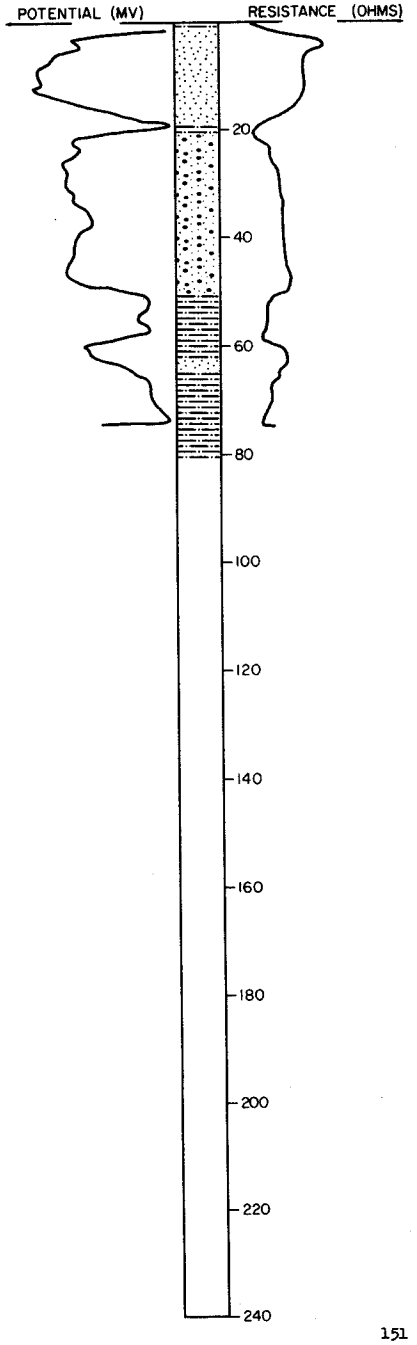
TEST HOLE 2681

LOCATION: 144-85-6ABB

DATE DRILLED: June 1967

ELEVATION: 1705
(FT, MSL)

DEPTH: 80
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-2	Clay, sandy, silty, dark-yellowish-brown.
2-19	Sand, fine- to coarse-grained, dark-yellowish-brown.
19-21	Clay.

Glacial drift

21-51	Sand and gravel, fine- to coarse-grained, lignitic, dark-greenish-gray.
51-63	Clay, sandy, silty, lignitic, dark-greenish-gray.
63-65	Sand, fine-grained.
65-80	Clay, silty.

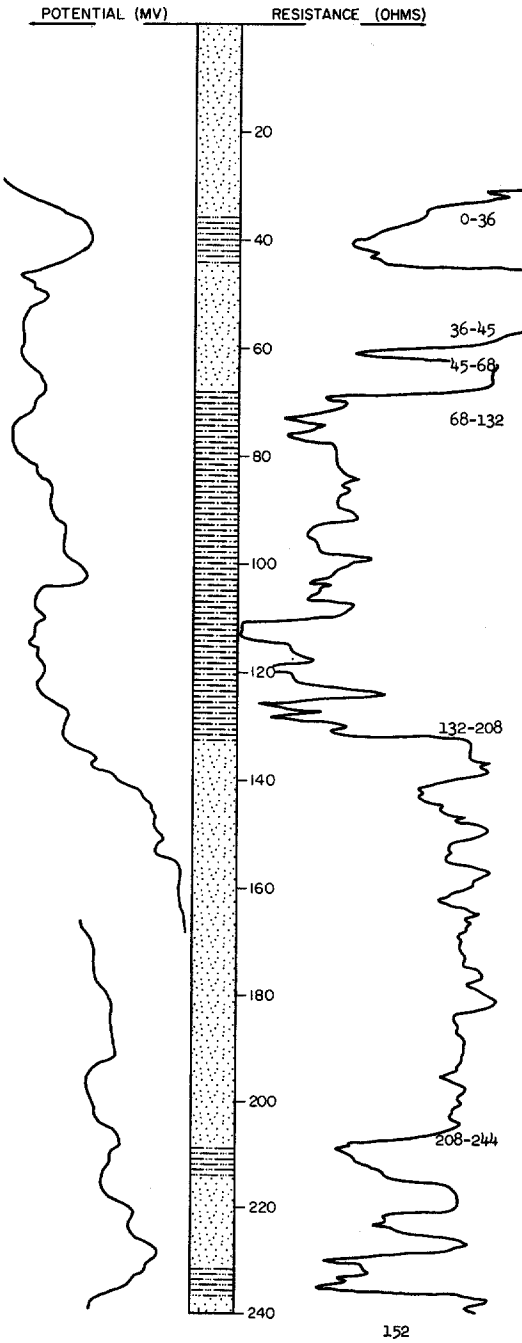
TEST HOLE 3641

LOCATION: 144-85-6ABD

DATE DRILLED: October 1968

ELEVATION: 1750
(FT, MSL)

DEPTH: 280
(FT)



DESCRIPTION OF DEPOSITS

Glacial drift

0-36 Sand, medium- to very coarse-grained, silty, moderate-yellowish-brown.

36-45 Silt, clayey, sandy, light-olive-gray.

45-68 Sand and silt, very coarse-grained in upper part, clayey.

68-132 Clay, silty, light-olive-gray; some beds plastic or carbonaceous.

132-208 Sand, fine- to medium-grained, silty, lignitic, light-olive-gray.

208-244 Sand and silt, fine- to medium-grained, clayey, lignitic.

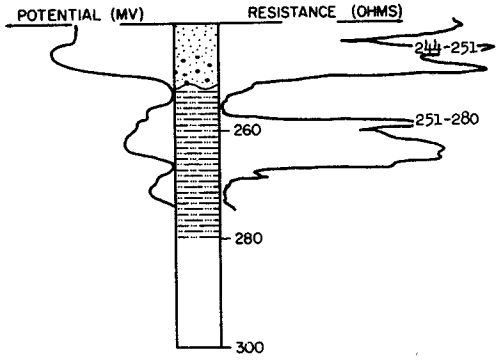
TEST HOLE 3641, Continued

LOCATION: 144-85-6ABD

DATE DRILLED: October 1968

ELEVATION: 1750
(FT, MSL)

DEPTH: 280
(FT)



DESCRIPTION OF DEPOSITS

Gravel.

Tongue River Formation

Sandstone and siltstone, very fine-grained, light-olive-gray.

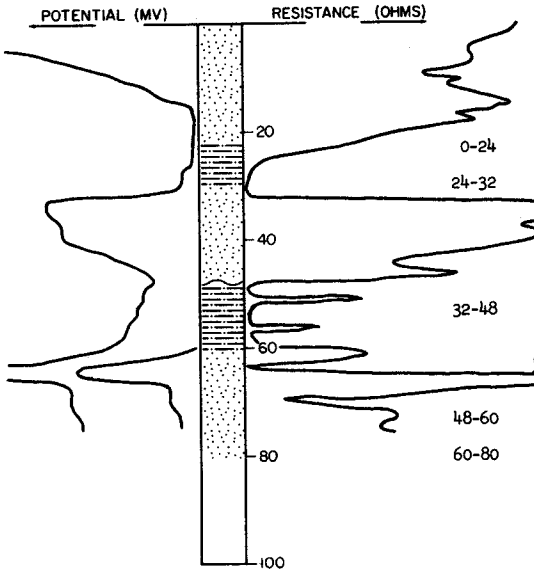
TEST HOLE 3642

LOCATION: 144-85-8BBB

DATE DRILLED: October 1968

ELEVATION: 1760
(FT, MSL)

DEPTH: 80
(FT)



DESCRIPTION OF DEPOSITS

Glacial drift

0-24 Sand, fine- to medium-grained, moderate-yellowish-brown.

24-32 Clay, silty, light-olive-gray.

32-48 Sand, medium- to coarse-grained, pebbly.

Tongue River Formation

48-60 Claystone, silty, lignitic, light-olive-gray.

60-80 Sandstone, silty, clayey, light-olive-gray.

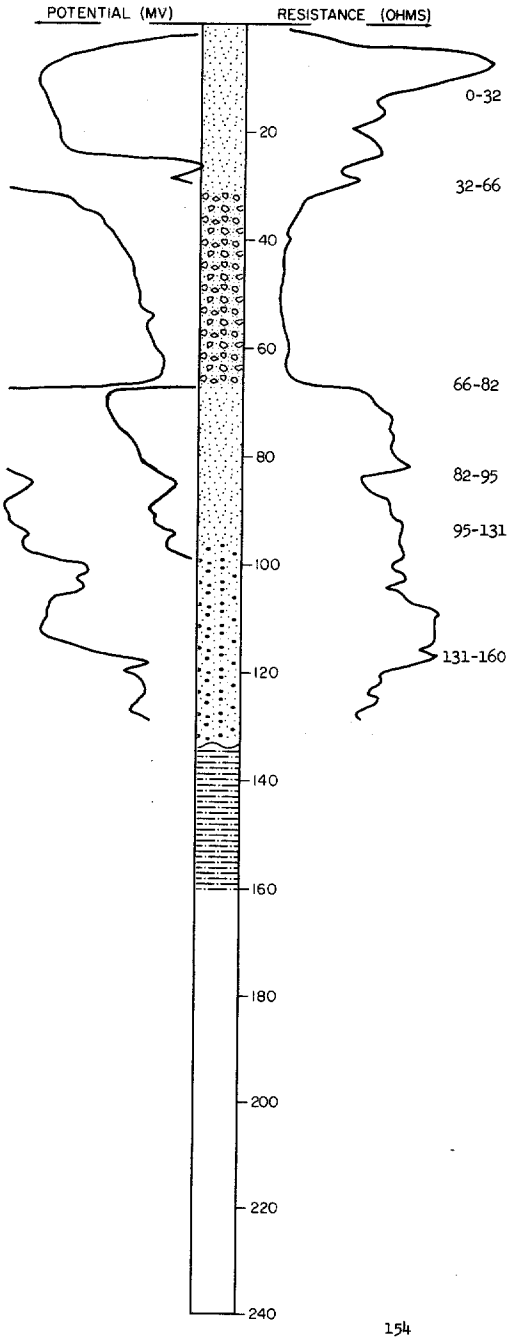
TEST HOLE 5269

LOCATION: 144-85-10AAA

DATE DRILLED: May 1969

ELEVATION: 1733
(FT, MSL)

DEPTH: 160
(FT)



DESCRIPTION OF DEPOSITS

Glacial drift

0-32	Sand, very fine- to medium-grained, silty, yellowish-brown.
32-66	Till, silty, sandy, pebbly, lignitic, dark-yellowish-brown to olive-gray.
66-82	Sand, very fine- to medium-grained.
82-95	Sand, fine- to very coarse-grained, pebbly.
95-131	Sand and gravel, fine- to very coarse-grained; lower part of section contains several thin silt beds.

Tongue River Formation

131-160	Claystone, silty, brownish-gray.

144-85-10CCA
(Log from Bandy Drilling Co.)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Surface soil	4	4
	Sand	6	10
	Clay and sand	42	52
	Shale, soft	53	105
	Rock	2	107
	Shale, soft, blue	120	227
	Shale, sandy	47	274
	Shale, blue	40	314
	Rock, hard	2	316
	Shale, sandy	26	342
	Sandstone	44	386
	Shale, blue	52	438
	Sandstone	8	446
	Shale, blue	40	486
	Sandstone	52	538
	Shale, blue	42	580
	Sand and shale	40	620
	Sandstone	14	634
	Shale, blue	12	646
	Sandstone	46	692
	Shale, blue	27	719
	Sandstone	5	724
	Shale, blue	86	810
	Sandstone	64	874
	Shale, blue	26	900

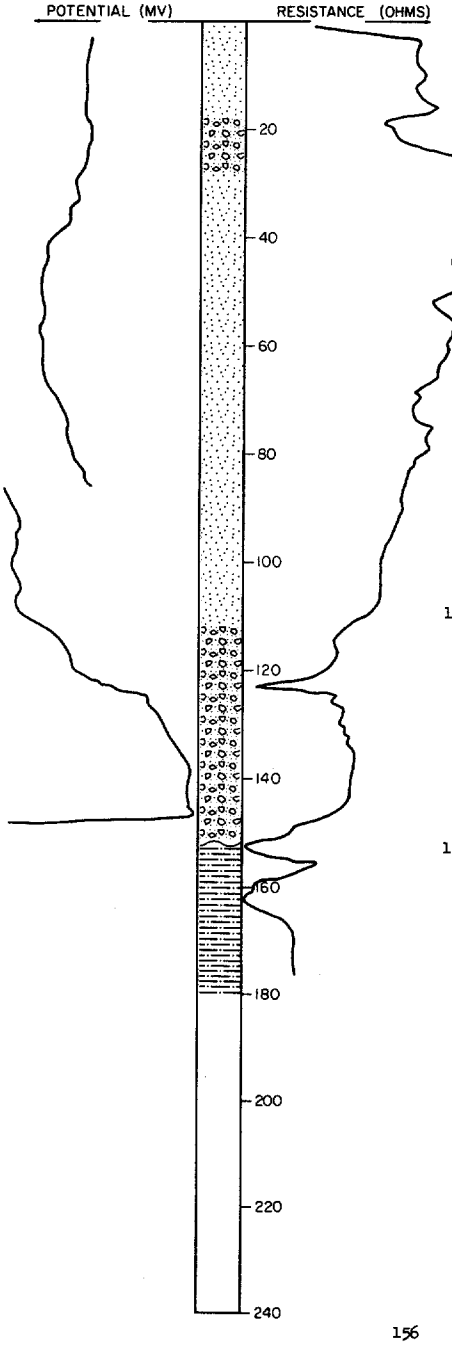
TEST HOLE 5270

LOCATION: 144-85-11CCC

DATE DRILLED: May 1969

ELEVATION: 1780
(FT, MSL)

DEPTH: 180
(FT)



DESCRIPTION OF DEPOSITS

Glacial drift

0-18	Sand, very fine-grained, silty, yellowish-brown.
18-28	Till(?), clayey, sandy, moderate-yellowish-brown.
28-39	Sand and silt, clayey, yellowish-brown.
39-88	Sand, fine- to coarse-grained.
88-113	Sand, fine- to coarse-grained, pebbly.
113-153	Till(?), silty, sandy, pebbly, olive-gray.

Tongue River Formation

153-180	Claystone, silty, calcareous, brownish-gray.

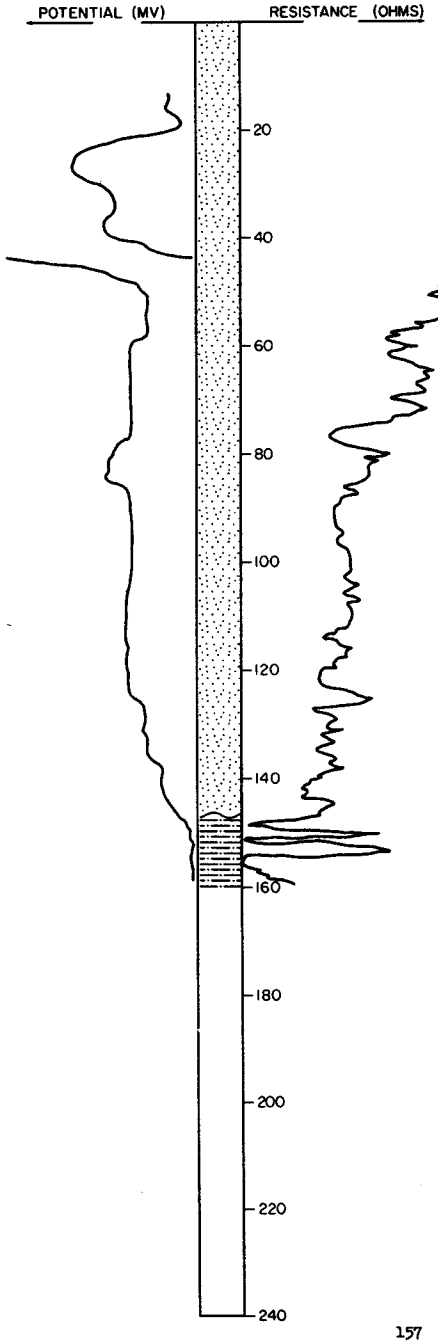
TEST HOLE 3640

LOCATION: 144-85-12DDC

DATE DRILLED: October 1968

ELEVATION: 1725
(FT, MSL)

DEPTH: 160
(FT)



DESCRIPTION OF DEPOSITS

Glacial drift

0-48 Sand, medium- to coarse-grained, pebbly, moderate-yellowish-brown.

48-75 Sand, fine- to medium-grained, silty, lignitic, light-olive-gray.

75-147 Sand and silt, clayey, thinly bedded, carbonaceous, light-olive-gray to grayish-black.

Tongue River Formation

147-160 Claystone, silty, sandy, lignitic, light-olive-gray.

144-85-15CCD
TEST HOLE 5271

Geologic source	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Sand, fine- to coarse-grained, clayey, silty, yellowish-brown	9	9
	Till, clayey, silty, sandy, moderate-yellowish-brown	17	26
	Sand, fine- to coarse-grained, pebbly, calcareous, yellowish-brown	4	30
	Till(?), clayey, silty, pebbly	4	34
Tongue River Formation:			
	Sandstone, silty, clayey, light-olive-gray	26	60

144-85-17BBB
TEST HOLE 5275

Glacial drift:			
	Till, sandy, silty, pebbly, lignitic, moderate-yellowish-brown to dark-yellowish-brown	18	18
Tongue River Formation:			
	Sandstone, fine-grained, silty, clayey, calcareous, medium-bluish-gray	30	48
	Siltstone, clayey, light-bluish-gray	32	80

144-85-21AAA
(Log from Ray Mohl)

	Sand and gravel, fine	35	35
	Sand, fine; clay binder with coal seams	28	63
	Clay, sandy, gray	34	97
	Coal, water	6	103
	Clay, blue	7	110

144-85-29CBC
Auger Hole M-68-32

Glacial drift:			
	Sand, very fine- to fine-grained, medium-brown	6	6
	Gravel, yellowish-brown	7	13
	Till(?), poor samples	8	21
	Sand, very fine- to fine-grained, medium-brown	7	28
Tongue River Formation:			
	Lignite	2	30
	Claystone, light-gray	4	34

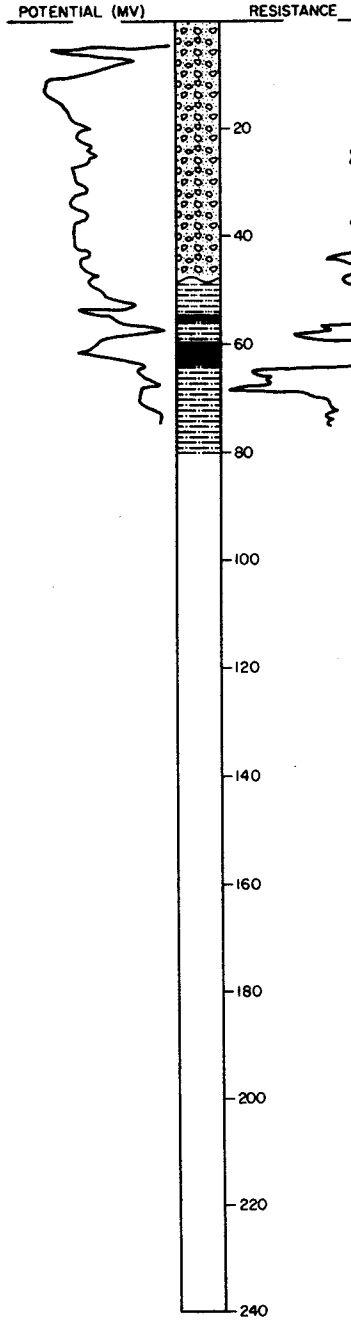
TEST HOLE 3737

LOCATION: 144-85-34DDA

DATE DRILLED: July 1969

ELEVATION: 1965
(FT, MSL)

DEPTH: 80
(FT)



DESCRIPTION OF DEPOSITS

Glacial drift

0-49 Till, silty, sandy, pebbly; moderate-olive-brown to 17 ft.

Tongue River Formation

49-55 Siltstone, light-gray.
55-56 Lignite.

56-60 Claystone, silty, carbonaceous.
60-64 Lignite.
64-80 Claystone, silty, sandy, carbonaceous, light-greenish-gray.

144-86-7DDD2
TEST HOLE 2680

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium:			
	Clay, silty, sandy, dark-yellowish-brown---------	14	14
	Sand, fine- to coarse-grained, gravelly----------	4	18
Sentinel Butte Formation:			
	Claystone, silty, sandy--------------------------	2	20
	Sand, clayey-------------------------------------	5	25
	Claystone, sandy, silty, dark-greenish-gray------	35	60

144-86-11DAA
(Log from Bandy Drilling Co.)

	Surface soil-------------------------------------	2	2
	Sand---	12	14
	Gravel---	4	18
	Silt---	200	218
	Shale, blue--------------------------------------	158	376
	Rock---	2	378
	Shale, blue--------------------------------------	48	426
	Shale, sandy-------------------------------------	17	443
	Shale, blue--------------------------------------	165	608
	Hard rock--	3	611
	Shale, blue--------------------------------------	7	618
	Hard rock--	3	621
	Shale, blue--------------------------------------	121	742
	Sandstone--	12	754
	Shale, blue--------------------------------------	67	821
	Sandstone--	22	843
	Shale, sandy-------------------------------------	51	894
	Sandstone--	90	984
	Shale, blue--------------------------------------	16	1000

144-86-14ADD
Auger Hole M-67-8

Glacial drift:			
	Sand---	2	2
	Till---	8	10
	Sand---	15	25
Tongue River Formation:			
	Claystone--	4	29

144-86-17AD
(Log from Bandy Drilling Co.)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Surface soil	3	3
	Sand	9	12
	Clay	19	31
	Silt	36	67
	Sand	191	258
	Gravel	5	263
	Shale, blue	4	267
	Hard rock	5	272
	Shale, blue	38	310
	Hard rock	8	318
	Sandstone	13	331
	Shale, blue	10	341
	Hard rock	2	343
	Shale, blue	156	499
	Hard rock	3	502
	Shale, blue	15	517
	Hard rock	2	519
	Shale, blue	38	557
	Hard rock	6	563
	Shale, sandy	54	617
	Sandstone, hard	3	620
	Shale, sandy	60	680
	Sandstone	30	710
	Shale, blue	20	730

144-86-18ADA1
(Log from Northern Pacific Railway)

	Loam	5	5
	Clay, yellow	16	21
	Quicksand	16	37
	Sand and clay	27.5	64.5
	Sand, coarse	2	66.5

144-86-18ADA2
(Log from Northern Pacific Railway)

	Topsoil	4	4
	Clay, yellow	18	22
	Sand, fine-grained, dirty, yellow	7	29
	Sand, gray	26	55
	Gravel	14	69

144-86-18ADC1
(Log from Northern Pacific Railway)

	Loam	5	5
	Sand and clay, yellow	20	25
	Quicksand	7	32
	Clay	4	36
	Sand and clay, lignitic	25	61
	Sand, coarse	2	63

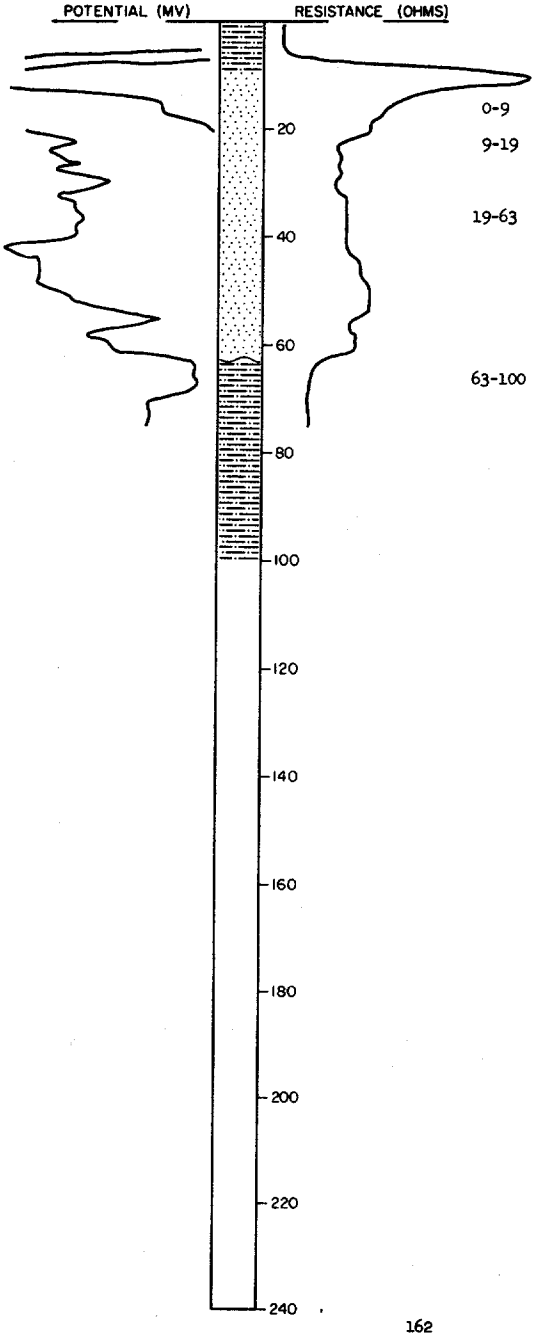
TEST HOLE 2677

LOCATION: 144-86-18ADC2

DATE DRILLED: June 1967

ELEVATION: 1741
(FT, MSL)

DEPTH: 100
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-9	Clay, sandy, silty, gravelly, dark-yellowish-brown.
9-19	Sand, fine- to medium-grained, dark-yellowish-brown.
19-63	Sand, fine- to coarse-grained, gravelly, lignitic, dark-greenish-gray. Wood fragments from 25 ft have a radiocarbon age of 5,700±300 years B.P. (lab No. W-2184).

Tongue River Formation(?)

63-100	Claystone, silty, dark-greenish-gray.

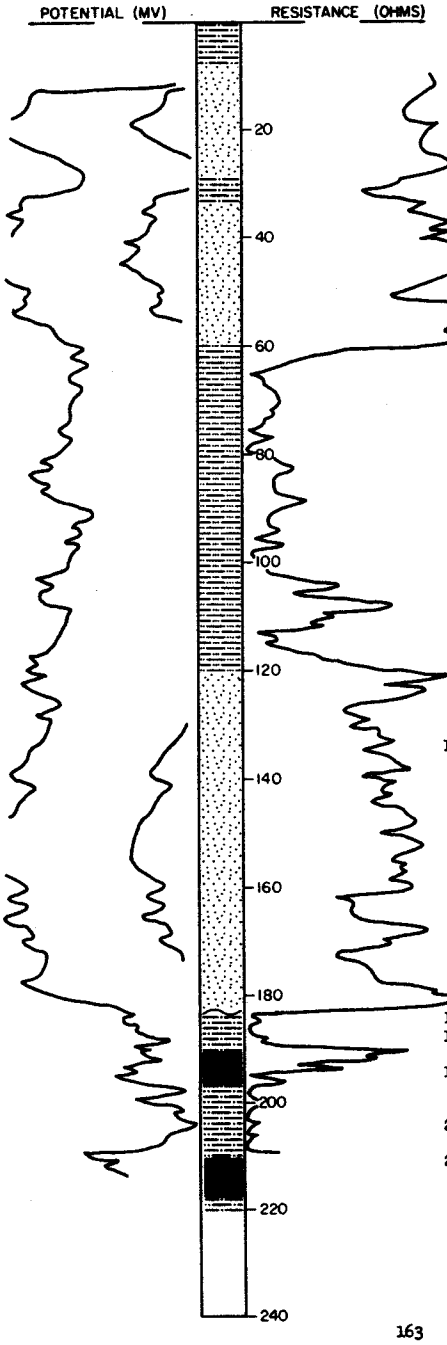
TEST HOLE 3748

LOCATION: 144-86-18DAB

DATE DRILLED: July 1969

ELEVATION: 1739
(FT, MSL)

DEPTH: 220
(FT)



	DESCRIPTION OF DEPOSITS
	Alluvium
0-8	Clay, silty, sandy, yellowish-gray.
8-28	Sand, medium- to coarse-grained, brown.
28-33	Clay, sandy, gray.
	Glacial drift
33-60	Sand, medium- to coarse-grained, lignitic, gray.
60-120	Silt and sand, clayey.
120-182	Sand, coarse-grained, gravelly, lignitic.
	Tongue River Formation
182-189	Claystone, silty.
189-195	Lignite.
195-209	Claystone, silty, greenish-gray.
209-216	Lignite.
216-220	Claystone, silty, gray.

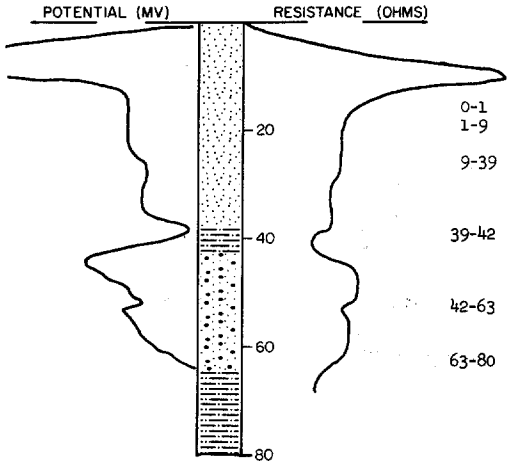
TEST HOLE 2679

LOCATION: 144-86-18DAC

DATE DRILLED: June 1967

ELEVATION: 1737
(FT, MSL)

DEPTH: 80
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-1	Topsoil, silty.
1-9	Sand, fine- to medium-grained, dark-yellowish-brown.
9-39	Sand, fine- to coarse-grained, dark-yellowish-brown to dark-greenish-gray.
39-42	Clay, sandy, silty.

Glacial drift

42-63	Sand and gravel, fine- to coarse-grained, lignitic.
63-80	Clay, sandy, silty, olive-gray.

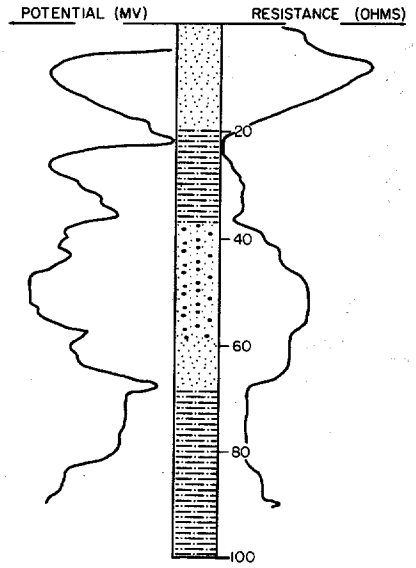
TEST HOLE 2678

LOCATION: 144-86-18DDC3

DATE DRILLED: June 1967

ELEVATION: 1736
(FT, MSL)

DEPTH: 100
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-1	Clay, sandy, silty, yellowish-grown.
1-10	Sand, fine- to medium-grained, dark-yellowish-brown.
10-19	Sand and gravel, fine- to coarse-grained, dark-yellowish-brown.
19-37	Clay, sandy, dark-greenish-gray.

Glacial drift

37-58	Sand and gravel, fine- to medium-grained, gray.
58-67	Sand, fine- to medium-grained, dark-greenish-gray.
67-100	Claystone, silty, sandy.

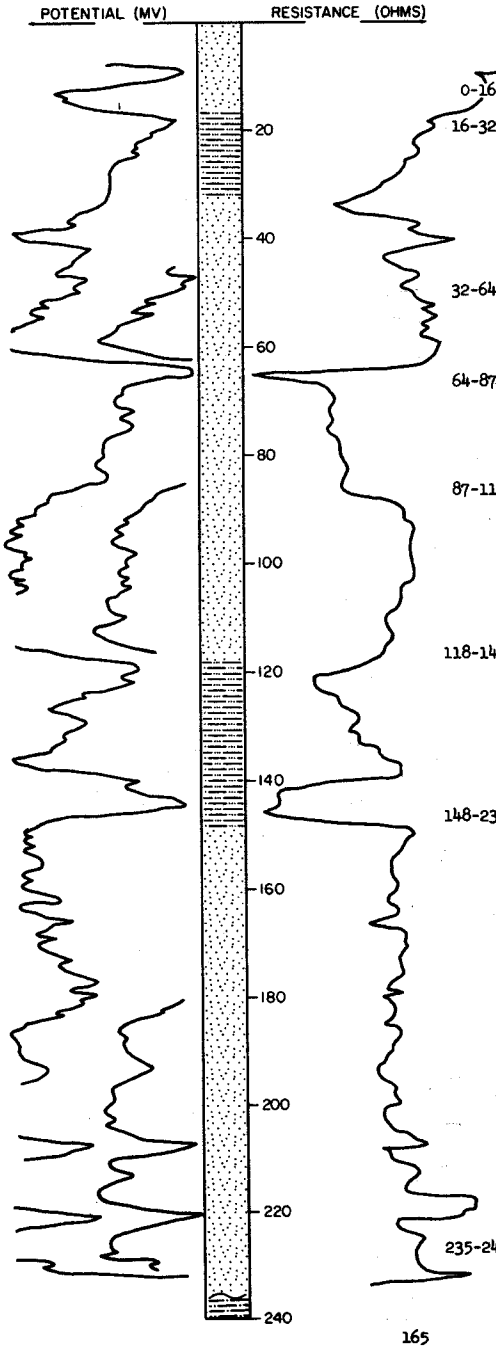
TEST HOLE 3747

LOCATION: 144-86-18DDC4

DATE DRILLED: July 1969

ELEVATION: 1735
(FT, MSL)

DEPTH: 240
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-16 Sand, medium- to coarse-grained, reddish-brown.

16-32 Silt and clay, sandy, carbonaceous, yellowish-gray to brownish-black.

Glacial drift

32-64 Sand, fine- to medium-grained, pebbly, lignitic, gray.

64-87 Sand, fine-grained, lignitic.

87-118 Sand, medium-grained, lignitic.

118-148 Silt, sandy, clayey, pebbly.

148-235 Sand, medium- to coarse-grained, gravelly, lignitic.

Tongue River Formation

235-240 Claystone, gray.

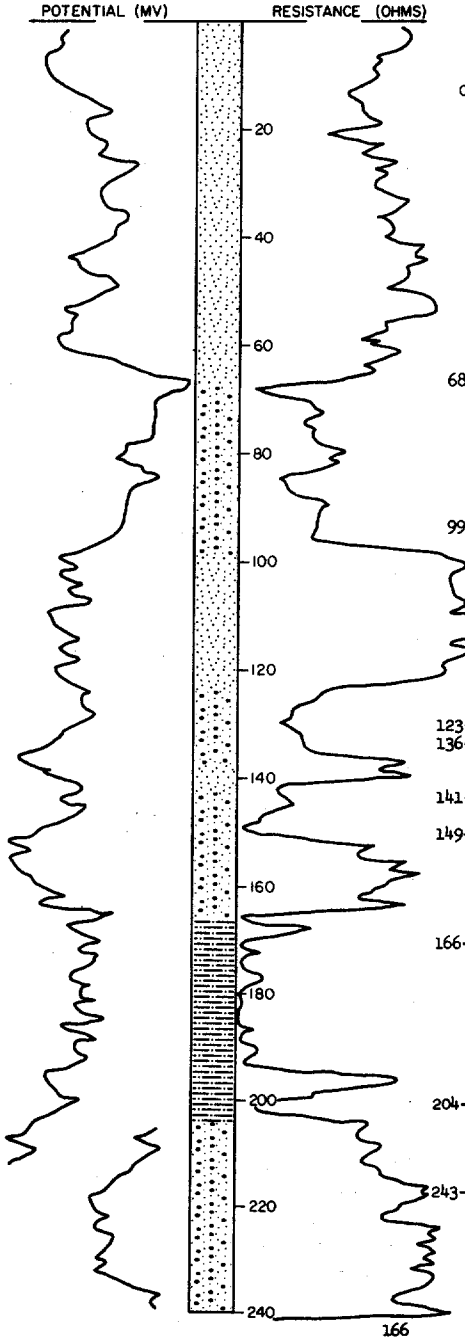
TEST HOLE 3739

LOCATION: 144-86-19ABA

DATE DRILLED: July 1969

ELEVATION: 1735
(FT, MSL)

DEPTH: 260
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-68 Sand, medium-grained, highly lignitic, yellowish-gray to dark-gray.

Glacial drift

68-99 Gravel, silty, clayey, highly lignitic.

99-123 Sand, medium- to coarse-grained, lignitic, gray.

123-136 Gravel, sandy, clayey, dirty.

136-141 Sand, medium-grained, olive-gray.

141-149 Gravel, clayey.

149-166 Sand and gravel, fine- to coarse-grained, lignitic.

166-204 Clay and silt, sandy; gravelly near bottom.

204-243 Gravel, sandy, brown.

Tongue River Formation

243-260 Claystone, silty, sandy.

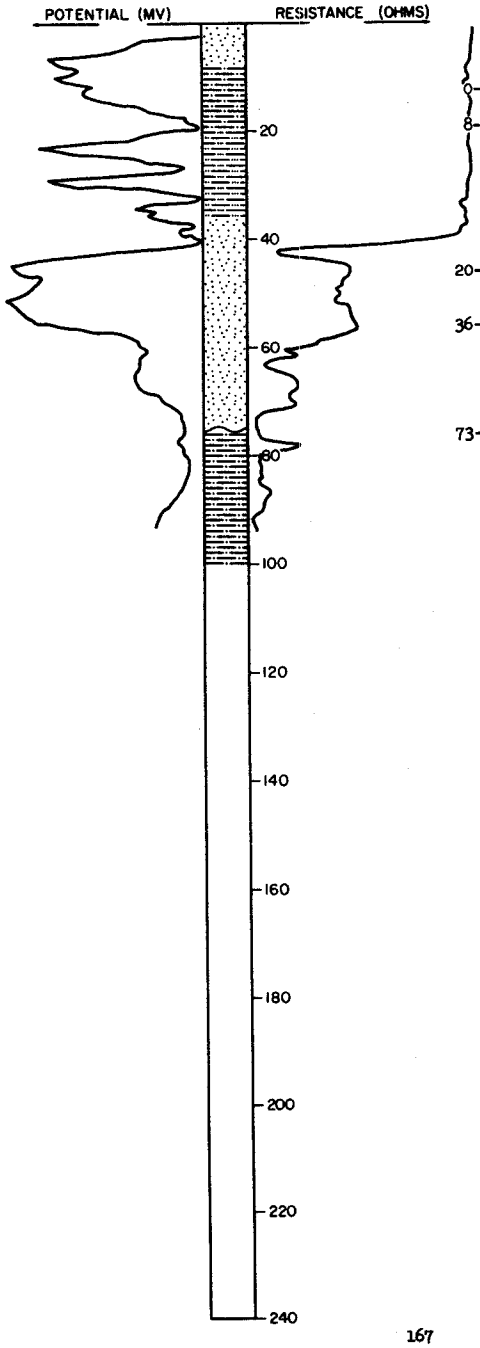
TEST HOLE 3740

LOCATION: 144-86-20BCB

DATE DRILLED: July 1969

ELEVATION: 1800
(FT, MSL)

DEPTH: 100
(FT)



DESCRIPTION OF DEPOSITS

Glacial drift

0-8 Sand, fine- to medium-grained, yellowish-brown.

8-20 Clay, silty, sandy, yellowish-gray.

20-36 Silt and sand, medium- to coarse-grained, brown.

36-73 Sand, medium- to coarse-grained, pebbly, silty, brown.

Tongue River Formation

73-100 Claystone, silty, olive-gray.

144-86-30BBB
Auger Hole M-68-17

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium:			
	Sand, very fine- to medium-grained, medium-brown-	3	3
	Clay and silt, laminated, medium-brown----------	7	10
Glacial drift:			
	Till, silty, clayey, medium-brown----------	9	19
	Sand, fine- to medium-grained, medium- to light-brown; no samples 29-47 ft----------	28	47
Tongue River Formation(?):			
	Claystone(?), light gray fragments on bit; hard drilling----------	4	51

144-87-4CBB
(Log from Ray Mohl)

	Clay----------	65	65
	Coal, hard----------	4	69
	Clay, gray----------	25	94
	Coal, hard----------	5	99
	Clay, brown; trace of coal at 104 ft----------	12	111
	Coal----------	1	112
	Clay, sandy, gray----------	17	129
	Hard rock----------	2	131
	Clay, brown----------	14	145
	Coal, hard----------	6	151
	Clay, gray----------	4	155
	Coal----------	1	156
	Clay, blue----------	8	164
	Clay, sandy, gray----------	19	183
	Sand, blue----------	8	191
	Sandstone, soft, broken----------	11	202
	Sand, blue----------	8	210

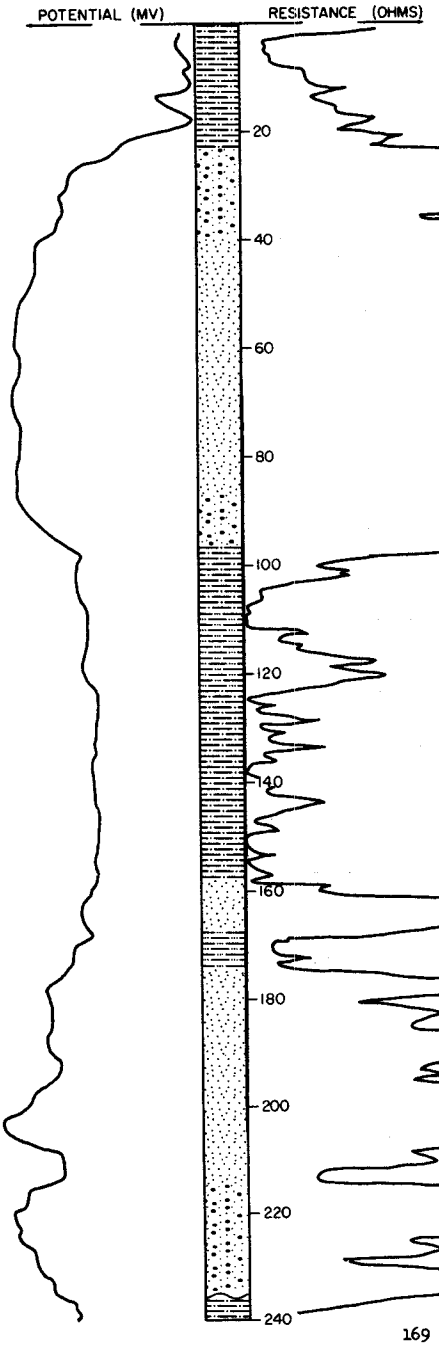
TEST HOLE 3652

LOCATION: 144-87-14AAA

DATE DRILLED: October 1968

ELEVATION: 1760
(FT, MSL)

DEPTH: 260
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-17 Clay, silty, moderate-yellowish-brown.

17-23 Silt, sandy, light-olive-gray.

Glacial drift

23-39 Sand and gravel.

39-87 Sand, fine- to medium-grained, lignitic, light-olive-gray.

87-98 Sand and gravel.

98-159 Silt and clay, sandy, light-olive-gray.

159-168 Sand, fine-grained, lignitic.

168-175 Silt and clay, light-olive-gray.

175-215 Sand and silt, clayey.

215-236 Gravel.

Tongue River Formation

236-242 Claystone, silty, light-olive-gray.

242-245 Lignite.

245-260 Claystone, silty.

144-87-23ACC
(Log from Bandy Drilling Co.)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Surface soil	4	4
	Sandstone	44	48
	Shale, blue	30	78
	Sandstone	19	97
	Coal	14	111
	Shale, blue	186	297
	Sandstone	6	303
	Shale, blue	15	318
	Shale, sandy	16	334
	Shale, blue	109	443
	Sandstone	33	476
	Shale, blue	100	576
	Sandstone	34	610
	Shale, blue	20	630

144-87-29CBB
TEST HOLE 3745

Alluvium:			
	Clay, silty, dark-brown	5	5
	Sand, fine- to medium-grained, reddish-brown	9	14
	Sand, coarse-grained, reddish-brown	6	20
	Clay, silty, yellowish-gray	2	22
	Sand, medium- to coarse-grained, dark-brown	7	29
	Clay, light-olive-gray	5	34
Glacial drift:			
	Gravel, sandy, lignitic, brown	7	41
	Clay, silty, gray	6	47
Tongue River Formation:			
	Sandstone and siltstone, fine-grained, clayey, light-greenish-gray	33	80

144-87-31ADB
(Log from Ray Mohl)

	Sand, yellow	35	35
	Sand and gravel	25	60
	Loam, silty	22	82
	Quicksand	7	89
	Clay, sandy	9	98
	Gravel, fine	14	112
	Coal, broken	4	116
	Coal, hard	2	118
	Gravel	2	120

144-87-32BBB
TEST HOLE 3746

Geologic source	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Sand, fine- to medium-grained, well-sorted, yellowish-brown	18	18
	Gravel, sandy, reddish-brown	4	22
	Clay, olive-brown	10	32
	Sand, fine- to medium-grained, pebbly, brown	26	58
	Sand, fine-grained, pebbly, lignitic, dark-gray	26	84
	Gravel, sandy	20	104
	Till(?), clayey, silty, sandy	25	129
Tongue River Formation:			
	Sandstone, fine-grained, light-greenish-gray	31	160

144-87-33BBC
Auger Hole Mer-67-48

	Sand, very fine-grained, silty; pale-yellowish-brown in upper part, moderate-brown in lower part	11	11
	Clay, silty, sandy, moderate-brown	5	16
	Clay, sandy, silty, dark-yellowish-orange	2	18
	Silt, sandy, dark-yellowish-brown	2	20
	Silt, sandy, dusky-yellowish-brown	2	22
	Sand, very fine-grained, moderate-yellowish-brown	4	26
	Sand, very fine-grained, silty, grayish-brown	11	37
	Sand, coarse-grained, gravelly, moderate-brown	3	40
	Sand, medium-grained, gravelly	4	44
	Silt, sandy	5	49
	Gravel, silty	2	51
	Silt, sandy, pebbly	4	55
	Sand, very silty, moderate-yellowish-brown	8	63
	Sand, silty, clayey, medium-light-gray	1	64

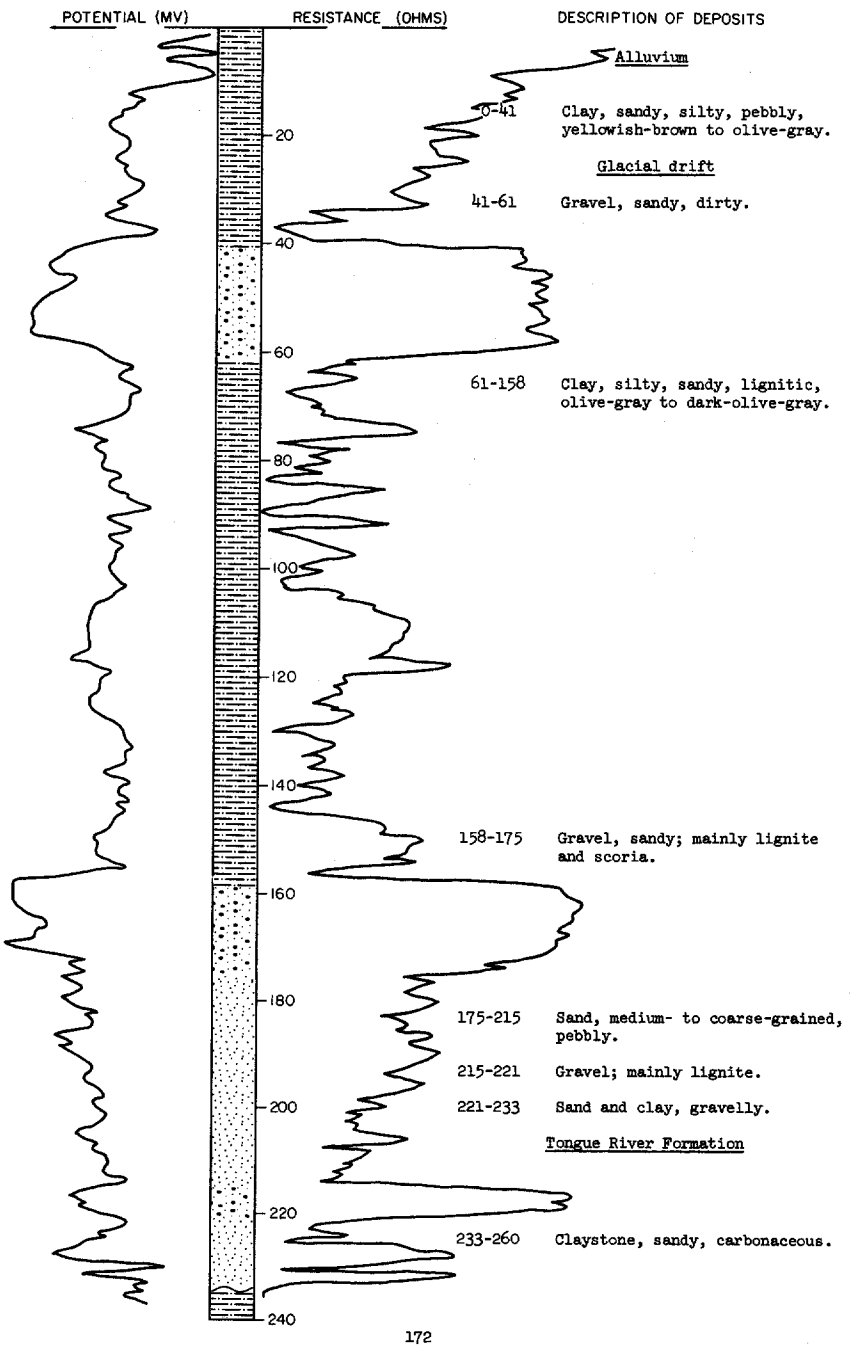
TEST HOLE 3749

LOCATION: 144-88-1BBB

DATE DRILLED: July 1969

ELEVATION: 1865
(FT, MSL)

DEPTH: 260
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-41 Clay, sandy, silty, pebbly, yellowish-brown to olive-gray.

Glacial drift

41-61 Gravel, sandy, dirty.

61-158 Clay, silty, sandy, lignitic, olive-gray to dark-olive-gray.

158-175 Gravel, sandy; mainly lignite and scoria.

175-215 Sand, medium- to coarse-grained, pebbly.

215-221 Gravel; mainly lignite.

221-233 Sand and clay, gravelly.

Tongue River Formation

233-260 Claystone, sandy, carbonaceous.

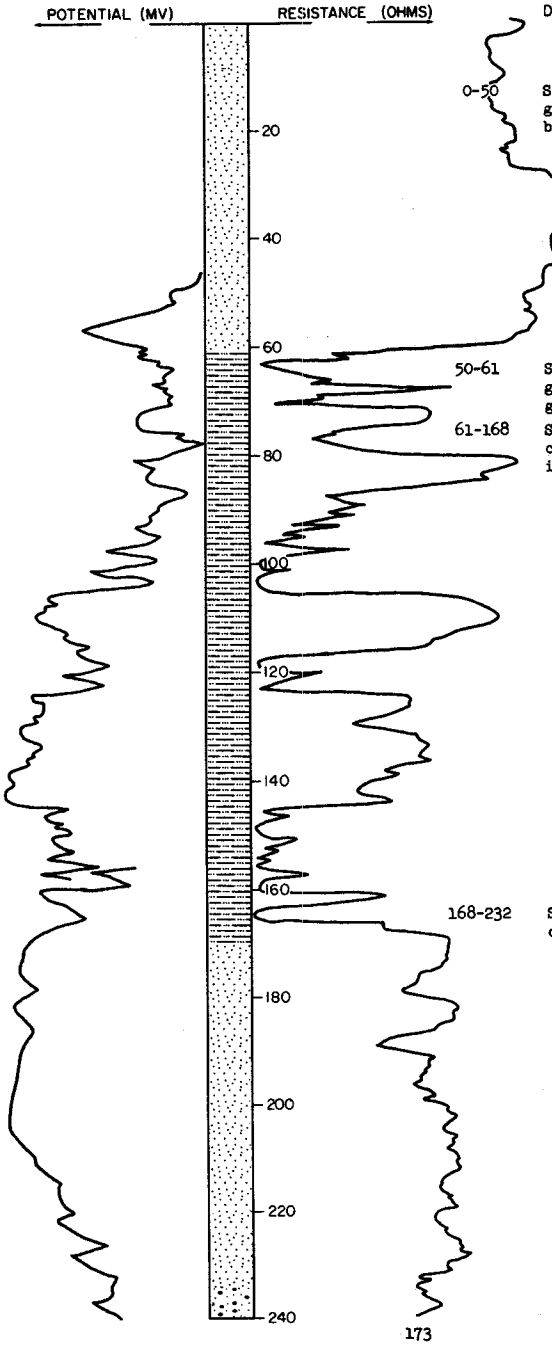
TEST HOLE 3755

LOCATION: 144-88-2AAB

DATE DRILLED: July 1969

ELEVATION: 1920
(FT, MSL)

DEPTH: 320
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-50 Sand, very fine- to medium-grained, lignitic, yellowish-brown.

Glacial drift

50-61 Sand, medium- to coarse-grained, pebbly, lignitic, gray.

61-168 Silt and sand, fine-grained, clayey, pebbly, lignitic, interbedded, gray.

168-232 Sand, medium- to coarse-grained, clean, light-olive-gray.

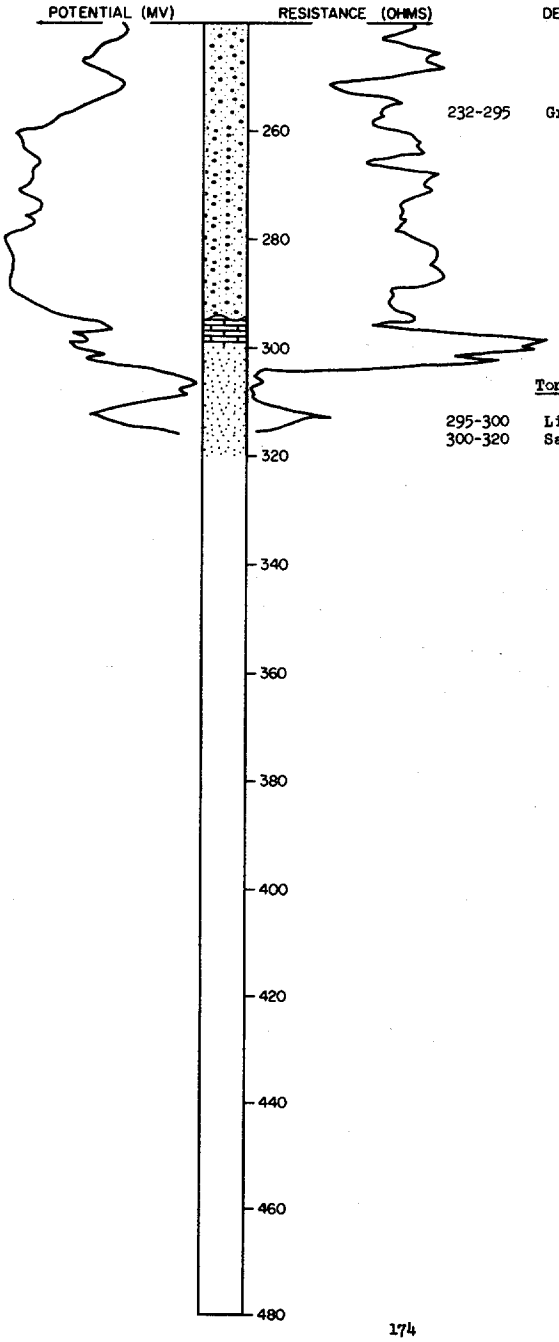
TEST HOLE 3755, Continued

LOCATION: 144-88-2AAB

DATE DRILLED: July 1969

ELEVATION: 1920
(FT, MSL)

DEPTH: 320
(FT)



DESCRIPTION OF DEPOSITS

232-295 Gravel, sandy.

Tongue River Formation

295-300 Limestone, hard, gray.
300-320 Sandstone and siltstone, gray.

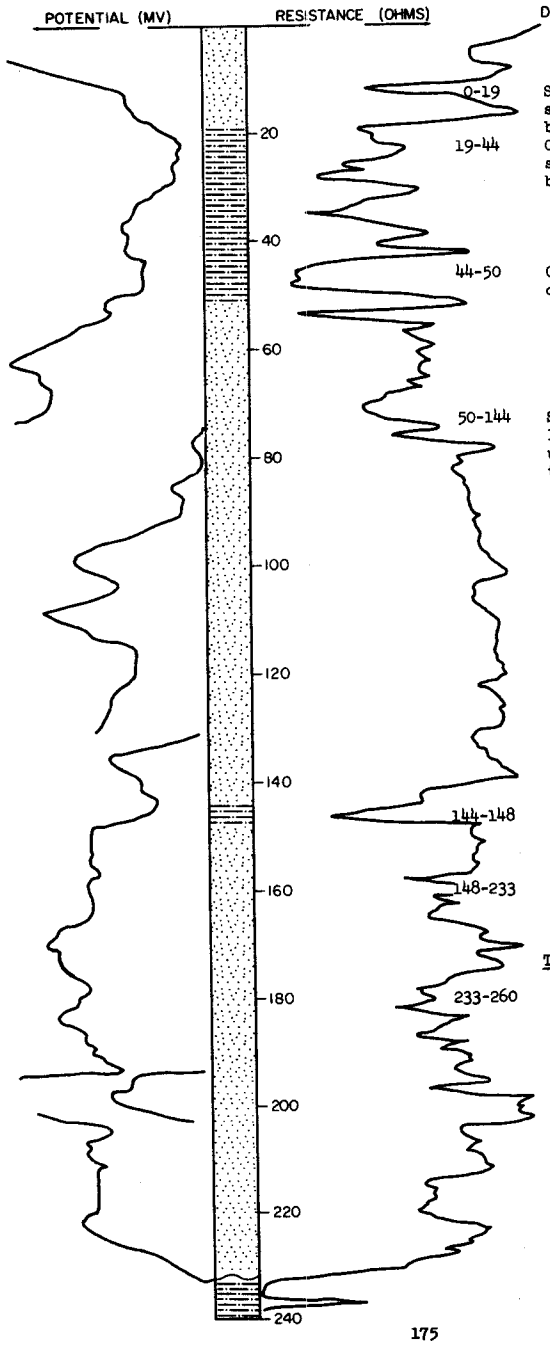
TEST HOLE 3656

LOCATION: 144-88-17BCD

DATE DRILLED: November 1968

ELEVATION: 1840
(FT, MSL)

DEPTH: 260
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-19 Sand, fine- to medium-grained, silty, moderate-yellowish-brown.

19-44 Clay, fine- to medium-grained, silty, sandy, moderate-yellowish-brown to light-olive-gray.

Glacial drift

44-50 Clay and sand, plastic, olive-gray.

50-144 Sand, fine- to medium-grained, light-olive-gray; silty in upper part; gastropods at 55 to 60 ft.

144-148 Clay, silty, sandy.

148-233 Sand, pebbly, lignitic; a few silty beds.

Tongue River Formation

233-260 Claystone, silty, light-olive-gray.

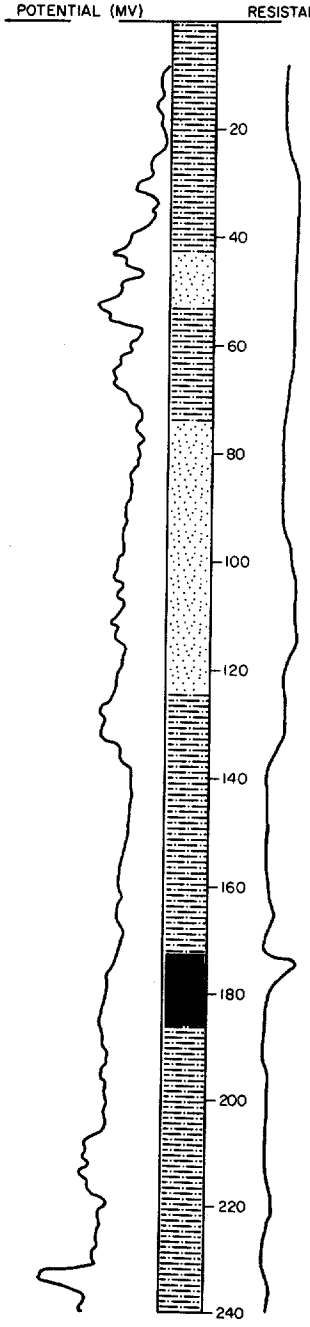
TEST HOLE 1679
(Revised from Bradley and Jensen, 1962)

LOCATION: 144-88-25BAA

DATE DRILLED: April 1960

ELEVATION: 1838
(FT, MSL)

DEPTH: 504
(FT)



DESCRIPTION OF DEPOSITS

Glacial drift

0-3	Topsoil, silty, brown.
3-21	Clay, brittle, plastic, light-gray.
21-43	Clay, silty, sandy, gray-yellow; some limestone cobbles.

Sentinel Butte Formation

43-52	Sandstone, very fine- to medium-grained, highly lignitic, gray.

Tongue River Formation

52-73	Claystone, silty, sandy; trace of iron nodules, scoria, and lignite.
73-124	Sandstone, very fine- to medium-grained, silty, yellowish- to greenish-gray.
124-171	Claystone, brittle, plastic, light-gray; some lignitic fragments.
171-184	Lignite.
184-189	Claystone, silty, olive-gray.
189-220	Claystone, brittle, light-gray.
220-261	Claystone, brittle gray; lignite fragments and thin stringers of limestone.

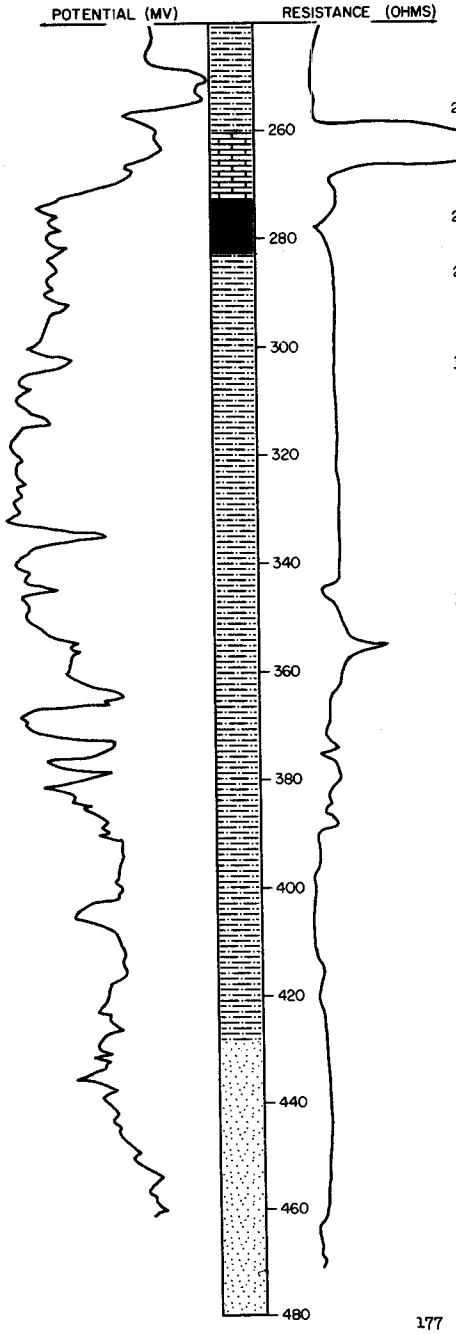
TEST HOLE 1679, Continued

LOCATION: 144-88-25BAA

DATE DRILLED: April,1960

ELEVATION: 1838
(FT, MSL)

DEPTH: 504
(FT)



	DESCRIPTION OF DEPOSITS
261-273	Limestone, very fine-grained, silty, gray to light-gray.
273-283	Lignite, shaly, platy, black to dark-brown.
283-304	Claystone, silty, sandy, light-gray.
304-346	Claystone, brittle, gray; thin stringers of lignitic shale.
346-357	Claystone, brittle, gray; thin stringers of lignitic shale.
357-388	Clay, sandy, light-gray.
388-399	Shale, platy, carbonaceous.
399-430	Clay, sandy, plastic, dark-gray to gray.
430-483	Sandstone, very fine-grained, clayey, olive-gray; lignite fragments.
483-504	Claystone, very sandy, light-gray to olive-gray.

144-88-25BBB
TEST HOLE 1680
(Revised from Bradley and Jensen, 1962)

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium:			
	Topsoil, brown----------	1	1
	Clay, silty, sandy, light-brown to yellowish-brown; with trace of scoria and pebbles----------	20	21
Glacial drift:			
	Gravel, granular to pebbly; scoria, iron concretions, and lignite fragments----------	5	26
Tongue River Formation:			
	Claystone, brittle, cohesive, gray----------	17	43
	Claystone, sandy, dark-gray----------	20	63
	Claystone, sandy, light-gray; iron concretions and scoria fragments----------	63	126

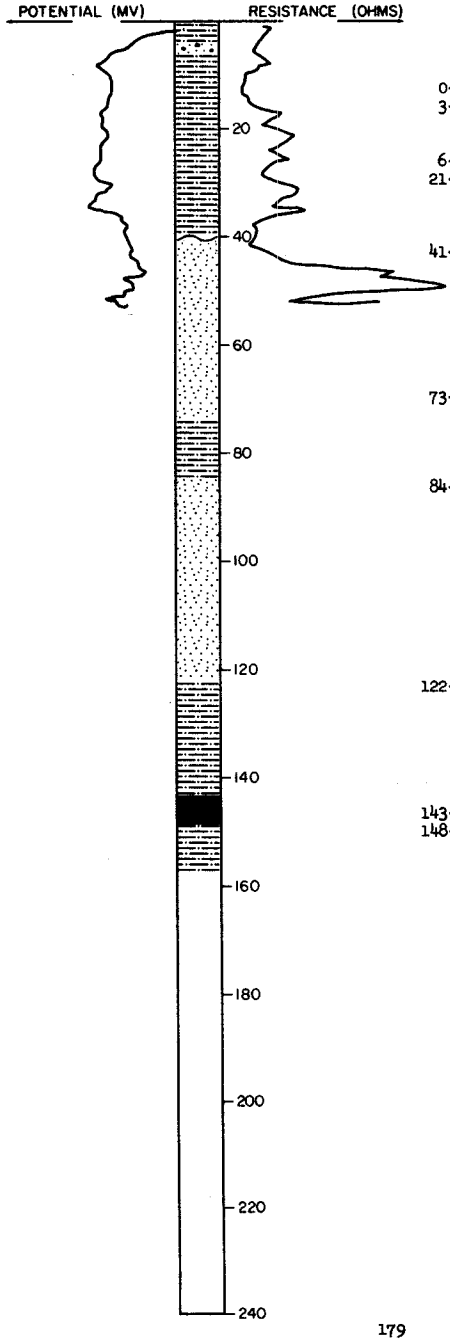
TEST HOLE 1681
(Revised from Bradley and Jensen, 1962)

LOCATION: 144-88-25BCC

DATE DRILLED: April 1960

ELEVATION: 1787
(FT, MSL)

DEPTH: 157
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-3	Topsoil, clayey, sandy, brown.
3-6	Gravel, granule to pebbly, clayey; medium- to coarse-grained sand.
6-21	Clay, brittle, yellowish-gray.
21-41	Clay, sandy, light-tan.

Tongue River Formation(?)

41-73	Sandstone, clayey, lignitic, cohesive and brittle, dark-gray to brownish-gray.
73-84	Claystone, sandy, light-gray to dark-gray.
84-122	Sandstone, very fine- to fine-grained, clayey, light-gray; lignite fragments.
122-143	Claystone, brittle, plastic, gray.
143-148	Lignite, black.
148-157	Claystone, sandy, gray; large lignite fraction.

144-88-25CA
(Log from Schnell, Inc.)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Loam, sandy----------	9	9
	Sand, fine; traces of lignite----------	13	22
	Sand and gravel, coarse, dark----------	3	25
	Sand, medium, sharp----------	4	29
	Sand, medium- to coarse-grained; some gravel-----	4	33
	Sand, medium- to coarse-grained----------	5	38
	Sand, fine- and medium-grained, sharp----------	47	85
	Sand, fine- and medium-grained, little coarse----	12	97
	Clay lens----------	2	99
	Sand----------	15	114

144-88-25CAD
TEST HOLE 1683
(Revised from Bradley and Jensen, 1962)

Alluvium:			
	Topsoil, silty, brown----------	1	1
	Clay, sandy, silty, light-brown----------	9	10
Glacial drift:			
	Sand, very fine- to coarse-grained, silty; granule gravel and lignite fragments----------	10	20
	Gravel, granule to cobbles; coarse sand; iron concretions, scoria and lignite fragments--------	20	40
	Sand, very fine-grained to coarse-grained, clean----------	12	52

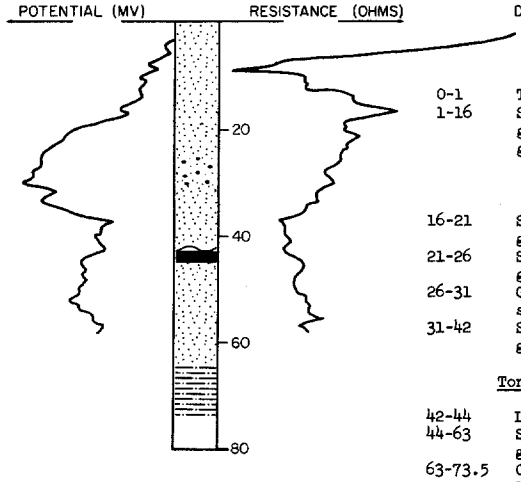
TEST HOLE 1665
(Revised from Bradley and Jensen, 1962)

LOCATION: 144-88-25CBC

DATE DRILLED: April 1960

ELEVATION: 1778 (FT, MSL)

DEPTH: 73.5 (FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-1 Topsoil, sandy, brown.
1-16 Sand, very fine- to fine-grained, silty, dark-gray; granule gravel and lignite.

Glacial drift

16-21 Sand, very fine- to coarse-grained, silty, gray.
21-26 Sand, very fine- to coarse-grained, clean.
26-31 Gravel, granule; coarse sand and lignite fragments.
31-42 Sand, very fine- to coarse-grained; lignite fragments.

Tongue River Formation(?)

42-44 Lignite, black.
44-63 Sandstone, very fine- to coarse-grained; large lignite fraction.
63-73.5 Claystone, silty, sandy, light-gray, very calcareous; scoria and iron nodules.

144-88-25CCC1
TEST HOLE 1684
(Revised from Bradley and Jensen, 1962)

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium:			
	Topsoil, sandy, brown----------	1	1
	Clay, silty, sandy, yellowish-brown----------	19	20
	Sand, very fine- to coarse-grained, brown; lignite and scoria fragments----------	21	41
	Clay, sandy, brittle, gray, very calcareous------	11	52

144-88-25CCC2
TEST HOLE 1666
(Revised from Bradley and Jensen, 1962)

Alluvium:			
	Topsoil, silty, brown----------	3	3
	Sand, fine, silty----------	8	11
	Sand, fine- to coarse-grained, lignite fragments-	21	32
Glacial drift:			
	Sand, coarse-grained; fine gravel; lignite fragments----------	11	43
	Sand, fine, clayey; thin lignite beds----------	54	97
	Clay, sandy, gray----------	8	105

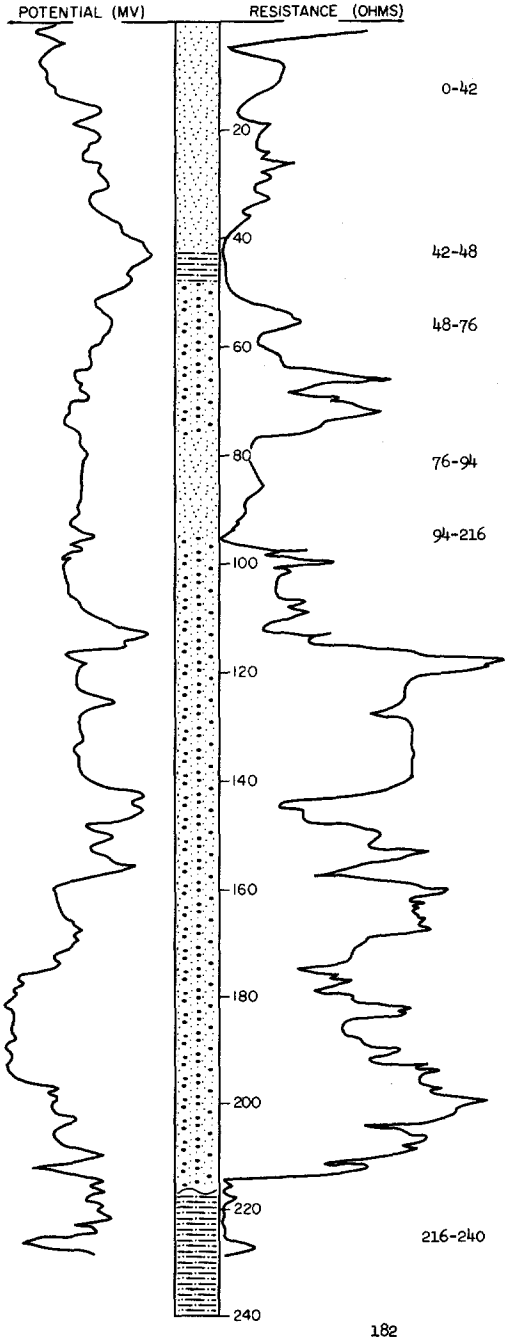
TEST HOLE 3743

LOCATION: 144-88-25CCC3

DATE DRILLED: July 1969

ELEVATION: 1775
(FT, MSL)

DEPTH: 240
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-42 Sand, fine- to coarse-grained, lignitic, brown.

42-48 Clay, silty, gray.

Glacial drift

48-76 Gravel, sandy.

76-94 Sand, medium- to coarse-grained.

94-216 Sand and gravel, fine- to coarse-grained.

Tongue River Formation

216-240 Claystone, silty, carbonaceous.

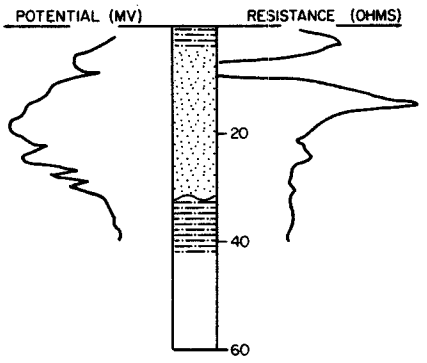
TEST HOLE 1675
(Revised from Bradley and Jensen, 1962)

LOCATION: 144-88-25DAA

DATE DRILLED: April 1960

ELEVATION: 1775
(FT, MSL)

DEPTH: 42
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-1 Topsoil, silty, sandy, gray.

1-4 Clay, silty, sandy, gray.

4-22 Sand, very fine- to coarse-grained, iron stained; granule gravel and some lignite and scoria fragments.

Glacial drift

22-31 Sand, very fine- to coarse-grained, gray.

Tongue River Formation

31-42 Claystone, silty, sandy, light-gray, very calcareous.

144-88-25DAD
TEST HOLE 1682
(Revised from Bradley and Jensen, 1962)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Topsoil, silty, sandy, brown----------	1	1
	Clay, silty, sandy, gray-brown----------	3	4
	Sand, fine- to coarse-grained, angular to round, well-sorted----------	17	21
	Gravel, granule to pebbly; medium and coarse sand; lignite and scoria fragments----------	21	42
	Sand, very fine- to coarse-grained; granule gravel, iron concretions; lignite and scoria fragments----------	9	51
	Lignite, black----------	6	57

144-88-25DDA
TEST HOLE 1676
(Revised from Bradley and Jensen, 1962)

	Topsoil, sandy, light-brown----------	1	1
	Clay, silty, sandy, light-brown----------	4	5
	Sand, very fine- to medium-grained, silty; lignite fragments----------	6	11
	Sand, fine- to coarse-grained; lignite fragments-	11	22
	Sand, very fine- to coarse-grained, granule gravel; lignite and scoria fragments----------	8	30
	Gravel, granular to bouldery; iron nodules; scoria and lignite fragments----------	14	44
	Clay, silty, sandy, very calcareous, light-gray--	8	52

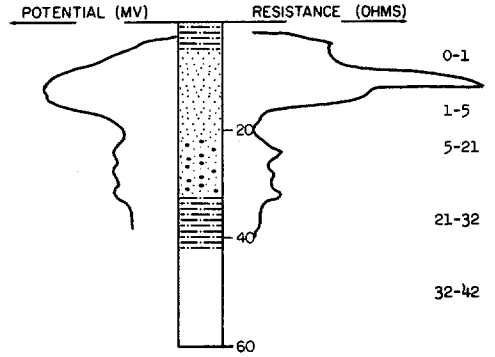
TEST HOLE 1677
(Revised from Bradley and Jensen, 1962)

LOCATION: 144-88-25DDD

DATE DRILLED: April 1960

ELEVATION: 1769
(FT, MSL)

DEPTH: 42
(FT)



	DESCRIPTION OF DEPOSITS
0-1	Topsoil, sandy, light-brown.
1-5	Clay, very silty and sandy, light-brown.
5-21	Sand, very fine- to coarse-grained; granule and pebbly gravel; lignite and scoria fragments.
21-32	Gravel, granule to pebbly; medium- to coarse-grained sand; lignite and scoria fragments.
32-42	Clay, silty, sandy, very calcareous, light-gray.

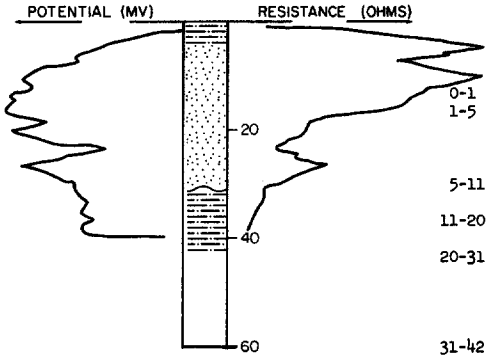
TEST HOLE 1672
(Revised from Bradley and Jensen, 1962)

LOCATION: 144-88-26CAD

DATE DRILLED: April 1960

ELEVATION: 1776
(FT, MSL)

DEPTH: 42
(FT)



	DESCRIPTION OF DEPOSITS
	Alluvium
0-1	Topsoil, silty, brown.
1-5	Clay, silty, brown.
	Glacial drift
5-11	Sand, very fine- to medium-grained.
11-20	Sand, very fine- to coarse-grained.
20-31	Sand, very fine- to coarse-grained; some granule gravel.
	Tongue River Formation
31-42	Claystone, sandy, brittle, light-gray, calcareous.

144-88-26DAD
TEST HOLE 3744

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium:			
	Clay and silt, sandy, moderate-olive-brown-------	17	17
Glacial drift:			
	Gravel, reddish,brown----------	24	41
	Gravel and clay, sandy----------	8	49
Tongue River Formation:			
	Claystone, dark-gray----------	7	56
	Sandstone, fine-grained----------	5	61
	Claystone, silty----------	9	70
	Lignite----------	4	74
	Claystone----------	4	78
	Sandstone, fine-grained, greenish-gray----------	14	92
	Claystone, gray----------	8	100

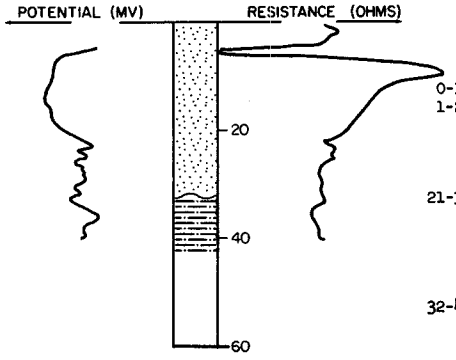
TEST HOLE 1673
(Revised from Bradley and Jensen, 1962)

LOCATION: 144-88-28ADD3

DATE DRILLED: April 1960

ELEVATION: 1790 (FT, MSL)

DEPTH: 42 (FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-1 Topsoil, sandy, brown.

1-21 Sand, very fine- to coarse-grained; lignite fragments.

Glacial drift

21-32 Sand, very fine- to coarse-grained, silty and clayey; some granule gravel.

Tongue River Formation

32-42 Claystone, sandy, calcareous, light-gray.

144-88-28DAD
TEST HOLE 1674
(Revised from Bradley and Jensen, 1962)

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium:			
	Topsoil, silty, sandy, brown	1	1
	Clay, silty, sandy, brownish-gray	10	11
Glacial drift:			
	Sand, very fine- to coarse-grained, iron-stained; granule, pebbly gravel and lignite fragments	10	21
	Sand, very fine- to coarse-grained; large lignite fraction; some gray silty clay	12	33
Tongue River Formation:			
	Claystone, silty, sandy, very calcareous, light-gray	9	42

144-88-35BAA2
TEST HOLE 1671
(Revised from Bradley and Jensen, 1962)

Alluvium:			
	Topsoil, silty, brown	1	1
	Clay, silty, sandy, light-brown; granule gravel and lignite fragments	10	11
Glacial drift:			
	Sand, very fine- to coarse-grained, silty and clayey; granule gravel and lignite fragments	18	29
	Gravel, granule to bouldery; medium- and coarse-grained	12	41
Tongue River Formation(?):			
	Claystone, brittle, sandy, very calcareous, light-gray	22	63

144-88-35BDA
TEST HOLE 1670
(Revised from Bradley and Jensen, 1962)

Alluvium:			
	Topsoil, silty, brownish-gray	1	1
	Clay, silty, sandy, gray	9	10
Glacial drift:			
	Sand, very fine- to coarse-grained, silty; granule gravel	8	18
	Gravel, granule to bouldery	4	22
	Gravel, granule to bouldery; largely rounded lignite fragments with some fine to coarse sand	8	30
	Sand, very fine- to coarse-grained, silty; some granule gravel from above; larger lignite fraction	43	73
	Sand, very fine- to coarse-grained, silty; large lignite fraction	95	168

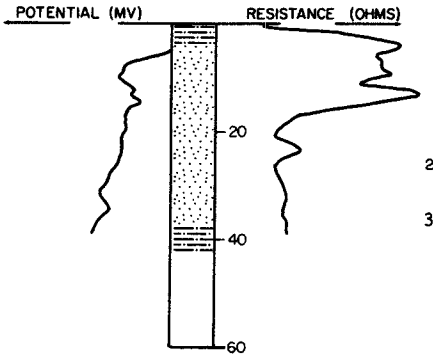
144-88-35BDD
TEST HOLE 1669
(Revised from Bradley and Jensen, 1962)

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium:			
	Topsoil, clayey, brownish-gray----------	1	1
	Clay, silty, brown----------	4	5
	Sand, very fine- to medium-grained; lignite fragments----------	6	11
Glacial drift:			
	Gravel, granule to pebbly; medium to coarse sand and lignite fragments----------	9	20
	Gravel, granule to pebbly----------	10	30
Tongue River Formation:			
	Lignite, black; drilling sample contains unusually large lignite fragments----------	.5	30.5
	Lost circulation; hole abandoned.		

TEST HOLE 1678
(Revised from Bradley and Jensen, 1962)

LOCATION: 144-88-36AAA
DATE DRILLED: April 1960

ELEVATION: 1769 (FT, MSL)
DEPTH: 42 (FT)



	DESCRIPTION OF DEPOSITS
0-1	Topsoil, silty, sandy, brown.
1-4	Clay, very silty, sandy, brown.
4-22	Sand, very fine- to coarse-grained.
22-37	Sand, very fine- to coarse-grained; large lignite fraction.
37-42	Clay, silty, sandy, very calcareous, light-gray.

144-88-36BBB
TEST HOLE 1667
(Revised from Bradley and Jensen, 1962)

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium:			
	Topsoil, silty, brown----------	1	1
	Clay, sandy, gray-brown----------	4	5
	Sand, very fine- to coarse-grained; lignite and shale fragments----------	37	42
	Clay, sandy, brittle, very calcareous, light-gray----------	10	52

144-88-36BBC1
TEST HOLE 1668
(Revised from Bradley and Jensen, 1962)

Alluvium:			
	Topsoil, silty, brownish-gray----------	1	1
	Clay, silty, gray----------	7	8
	Sand, fine-grained; lignite fragments----------	12	20
Glacial drift:			
	Gravel, granule; lignite fragments----------	4	24
	Clay, silty, calcareous, greenish-gray----------	18	42

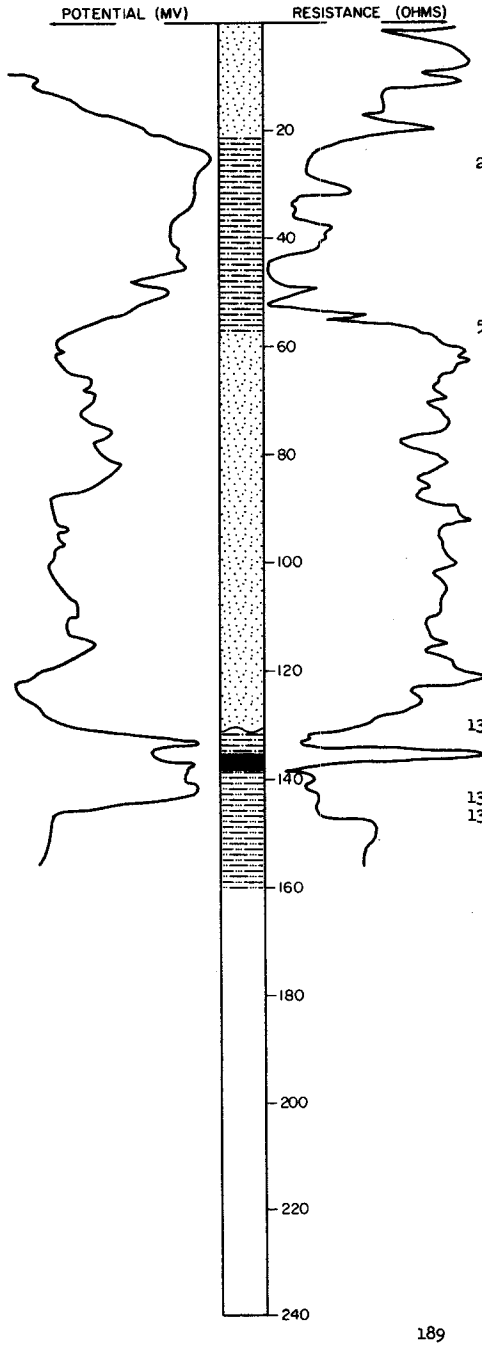
TEST HOLE 3741

LOCATION: 144-88-36BBC2

DATE DRILLED: July 1969

ELEVATION: 1770
(FT, MSL)

DEPTH: 160
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-22 Sand, fine- to medium-grained, pebbly, yellowish-gray.

22-58 Clay, silty light- to dark-gray.

Glacial drift

58-131 Sand, medium-grained, lignitic, well-sorted.

Tongue River Formation

131-135 Claystone, sandy, light-greenish-gray.

135-138 Lignite.

138-160 Siltstone and claystone, light-gray.

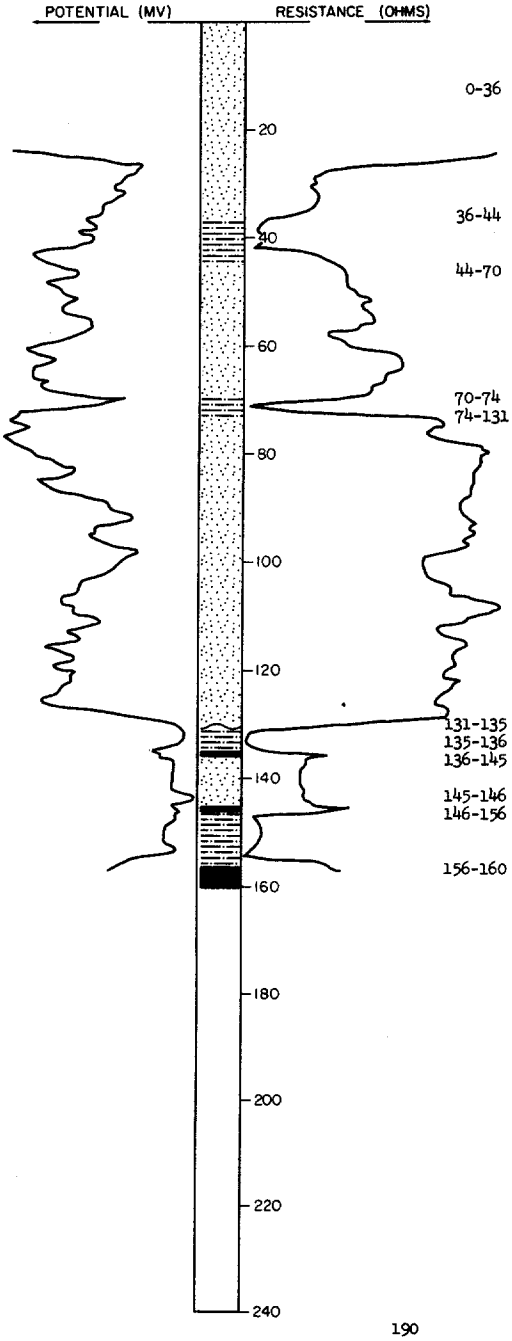
TEST HOLE 3742

LOCATION: 144-88-36BCC

DATE DRILLED: July 1969

ELEVATION: 1790
(FT, MSL)

DEPTH: 160
(FT)



DESCRIPTION OF DEPOSITS

Glacial drift

0-36	Sand, fine- to coarse-grained, lignitic, well-sorted, yellowish-gray to light-olive-gray.
36-44	Clay, plastic, gray.
44-70	Sand, fine- to medium-grained, lignitic, gray.
70-74	Clay, gray.
74-131	Sand, medium- to coarse-grained, lignitic; a few thin beds of gravel.

Tongue River Formation

131-135	Claystone, silty, light-gray.
135-136	Lignite.
136-145	Sand, fine-grained, gray.
145-146	Lignite.
146-156	Claystone, silty.
156-160	Lignite.

144-89-14DC1
(Log from Northern Pacific Railway)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay, sandy	22	22
	Sand	2	24
	Shale	18	42
	Shale, sandy, gray	34	76
	Sandstone, hard	3	79
	Rock, hard, dry	3	82
	Clay, sandy, gray	36	118
	Coal	3	121

144-89-23ABB
Auger Hole M-68-3

Alluvium:			
	Sand, fine- to medium-grained, dark-yellowish-brown; pebbly at 20 ft	25	25
	Sand, fine- to medium-grained, light-olive-gray	13	38
Tongue River Formation:			
	Siltstone, sandy, clayey, dark-greenish-gray	6	44

144-89-23ABC1
Auger Hole M-68-2

Alluvium:			
	Sand, fine- to medium-grained, dark-yellowish-brown	13	13
	Sand, fine- to medium-grained, light-olive-gray	29	42
Tongue River Formation:			
	Sandstone and siltstone, fine-grained, light-olive-gray	16	58

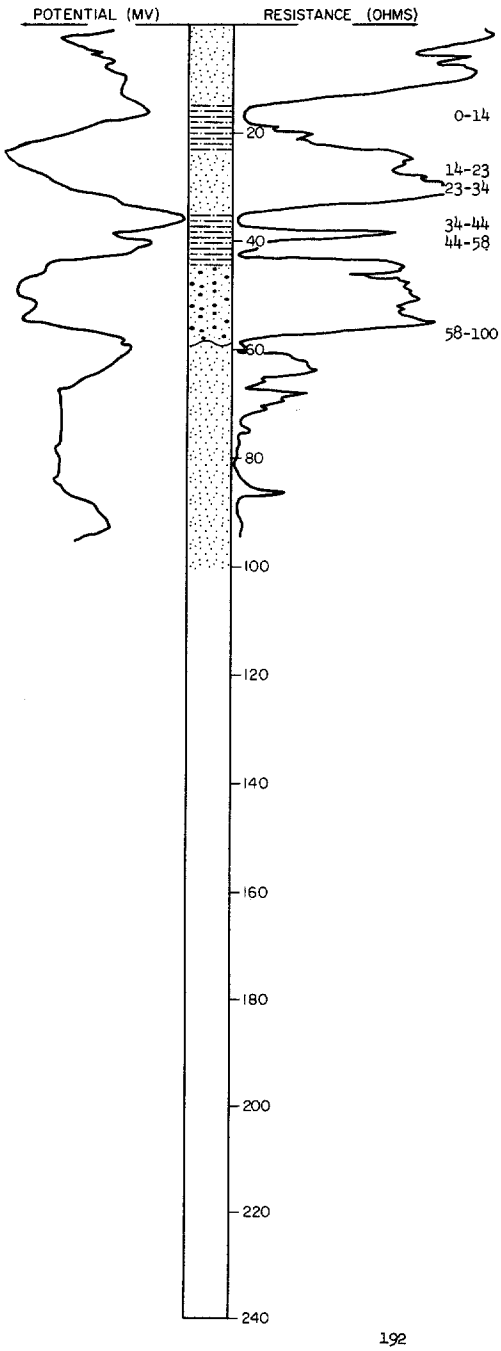
TEST HOLE 3756

LOCATION: 144-89-23ABC2

DATE DRILLED: July 1969

ELEVATION: 1832
(FT, MSL)

DEPTH: 100
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-14 Sand, medium- to coarse-grained, pebbly, yellowish-gray.
14-23 Clay, silty, dusky-yellow.
23-34 Sand, medium- to coarse-grained.
34-44 Clay, silty, lignitic.
44-58 Gravel, sandy, lignitic.

Tongue River Formation

58-100 Sandstone, fine-grained, clayey, carbonaceous, greenish-gray.

144-89-23BDA
Auger Hole M-68-1

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium:			
	Silt, clayey, sandy, dark-yellowish-brown--------	7	7
	Sand, fine-grained, silty, dark-yellowish-brown--	13	20
Glacial drift:			
	Till, pebbly, dark-yellowish-brown----------	2	22
	Sand, fine- to medium-grained, pebbly, dark-yellowish-brown----------	3	25
	Sand, fine-grained, silty----------	32	57
Tongue River Formation:			
	Siltstone, clayey, sandy----------	2	59

144-89-23CB
(Log from Bandy Drilling Co.)

	Surface soil----------	19	19
	Shale, blue----------	63	82
	Sand----------	42	124
	Shale, blue----------	322	446
	Sand----------	74	520
	Shale, blue----------	170	690
	Hard rock----------	5	695
	Shale, blue----------	255	950
	Sand----------	15	965
	Shale, blue----------	55	1020
	Water sand----------	27	1047
	Shale, blue----------	13	1060

144-89-30AAA
Auger Hole Mer-67-31

	Roadfill----------	3	3
	Clay, sandy, silty, pebbly, moderate-olive-brown-	3	6
	Sand, fine- to coarse-grained, clayey, moderate-olive-brown----------	1	7
	Clay, silty, sandy, light-olive-brown to moderate-olive-brown----------	19	26
	Sand, fine- to medium-grained, silty, clayey, moderate-olive-brown----------	21	47
	Clay, sandy, silty, cohesive, moderate-olive-brown----------	3	50
	Sand, fine- to medium-grained, light-olive-brown-	64	114

144-90-4BBA
(Log from Bandy Drilling Co.)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Surface soil	178	178
	Shale, blue	92	270
	Coal	4	274
	Shale, blue	64	338
	Sandstone	22	360
	Shale, blue	225	585
	Hard rock	3	588
	Shale, blue	2	590
	Sandstone	49	639
	Shale, blue	51	690
	Sandstone	24	714
	Shale, blue	321	1035
	Sandstone	45	1080
	Shale, blue	43	1123
	Hard rock	4	1127
	Sandstone	145	1272
	Shale, blue	8	1280

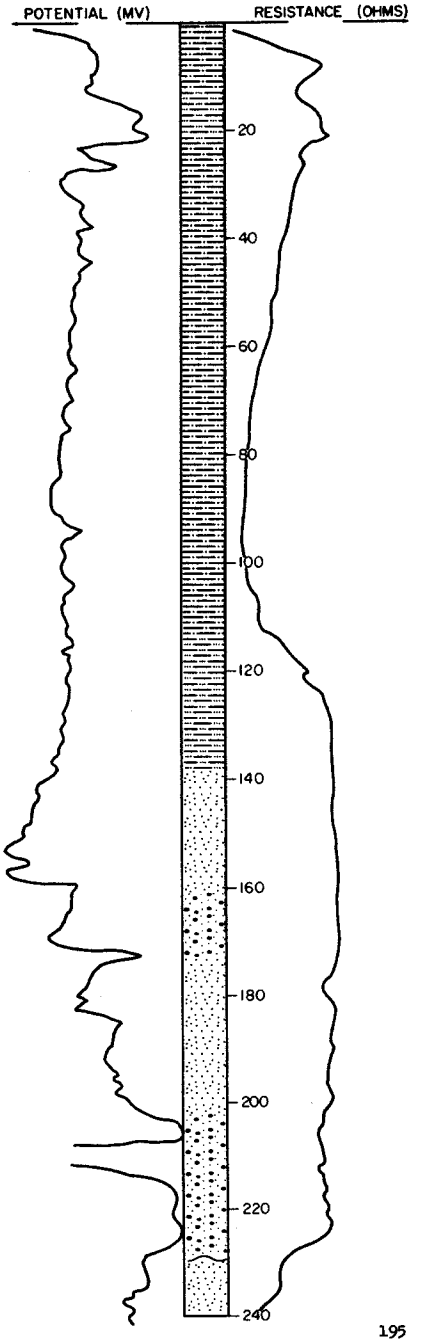
TEST HOLE 5265

LOCATION: 144-90-4DDC

DATE DRILLED: May 1969

ELEVATION: 1936
(FT, MSL)

DEPTH: 260
(FT)



	DESCRIPTION OF DEPOSITS
	Alluvium
0-15	Clay, silty, sandy, moderate-yellowish-brown.
15-24	Silt and sand, fine-grained, clayey, yellowish-brown.
	Glacial drift
24-114	Clay, silty, sandy, calcareous, dark-gray.
114-138	Silt and clay, olive-gray.
138-160	Sand, fine- to coarse-grained, pebbly.
160-172	Gravel, sandy.
172-200	Sand, fine- to coarse-grained, pebbly.
200-227	Gravel, sandy.
	Tongue River Formation
227-260	Sandstone, silty, clayey, olive-gray.

144-90-15DAC
(Log from Northern Pacific Railway)

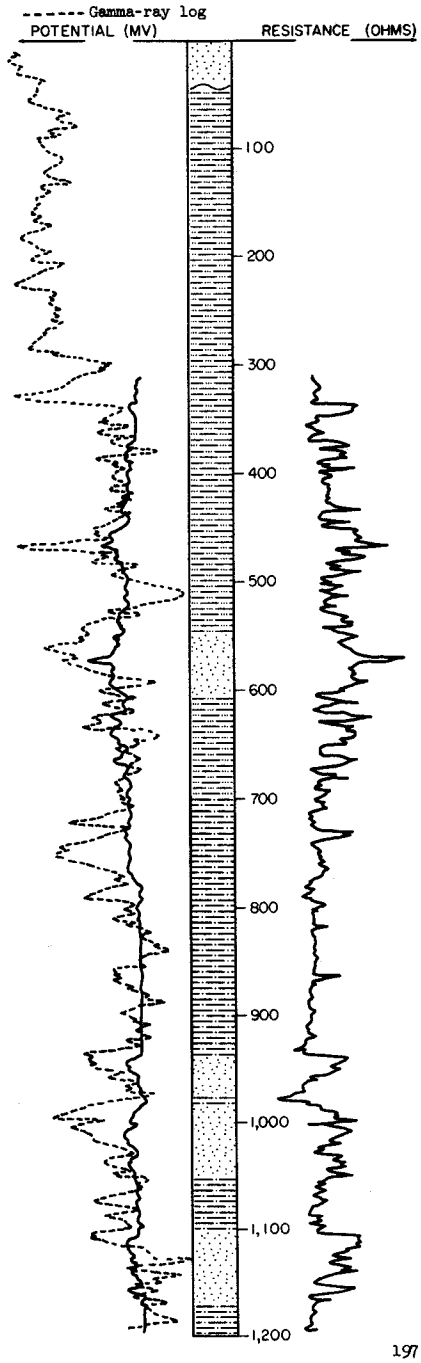
Geologic source	Material	Thickness (feet)	Depth (feet)
	Topsoil, fine	4	4
	Sand, fine	6	10
	Gravel, coarse	5	15
	Clay, blue, hard	16.5	31.5
	Coal	2.5	34
	Shale, hard, gray	61	95
	Sand, coarse	1	96
	Gravel, hard	6	102
	Hard rock	5	107

LOCATION: 144-90-15DB

DATE DRILLED: May 1968

ELEVATION: 1931
(FT, MSL)

DEPTH: 1325
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-38 Sand and gravel, fine- to medium-grained.

Tongue River Formation

38-335 Siltstone and claystone, sandy, dark-greenish-gray; lignitic 195-205, 285-300, and 325-335.

335-347 Siltstone and sandstone, very fine-grained.

347-450 Claystone and siltstone, sandy, dark-greenish-gray.

450-490 Siltstone and sandstone, very fine-grained.

490-545 Claystone and siltstone, dark-greenish-gray.

545-600 Sandstone and siltstone, fine-grained.

Cannonball-Ludlow Formations, undifferentiated

600-695 Siltstone and claystone, sandy, dark-greenish-gray.

695-940 Claystone, silty, sandy, dark-greenish-gray.

Hell Creek Formation

940-975 Sandstone, fine-grained.

975-985 Claystone.

985-1050 Sandstone and siltstone, clayey.

1050-1100 Claystone, silty, dark-greenish-gray.

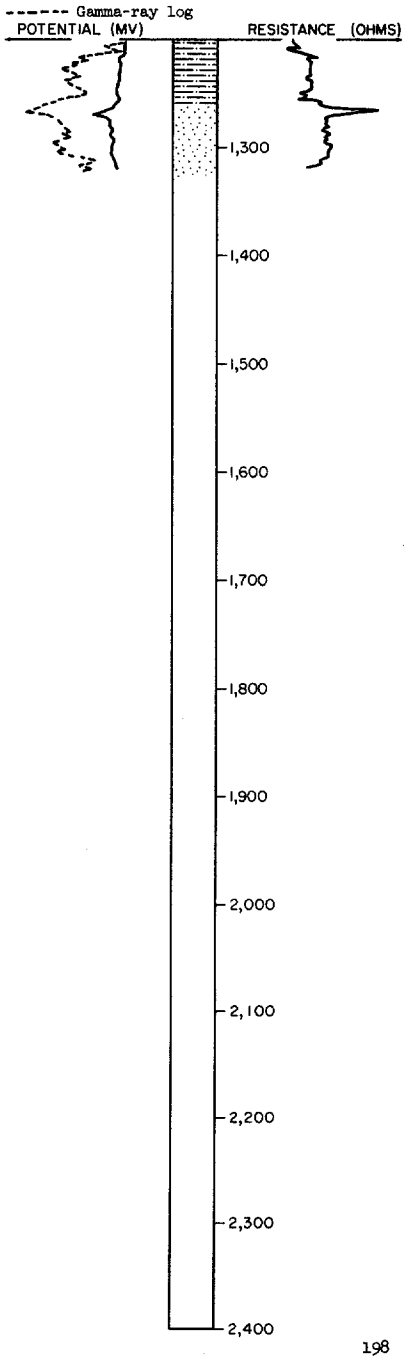
1100-1165 Sandstone and siltstone, fine- to medium-grained; flow from drill stem about 12 gpm.

LOCATION: 144-90-15DB, Continued

DATE DRILLED: May 1968

ELEVATION: 1931
(FT, MSL)

DEPTH: 1325
(FT)



	DESCRIPTION OF DEPOSITS
1165-1260	Claystone, silty, dark-greenish-gray.
	Fox Hills(?) Formation
1260-1325	Colgate Sandstone member.

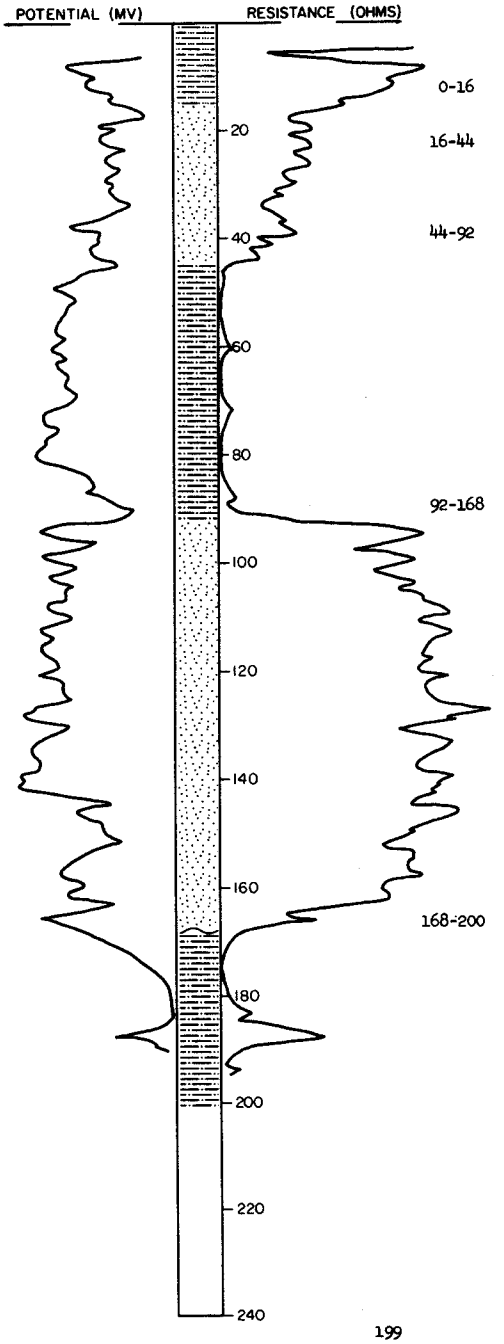
TEST HOLE 3757

LOCATION: 144-90-16ABC

DATE DRILLED: July 1969

ELEVATION: 1914
(FT, MSL)

DEPTH: 200
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-16 Silt and clay, sandy, lignitic, dusky-yellow.

16-44 Sand, fine- to medium-grained, silty, clayey, gray.

Glacial drift

44-92 Clay, silty, olive-gray.

92-168 Sand, medium- to coarse-grained, gravelly, lignitic.

Tongue River Formation

168-200 Claystone, silty, sandy, greenish-gray.

144-90-22AB
(Log from Bandy Drilling Co.)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Surface soil	9	9
	Sand and gravel	33	42
	Shale, blue	204	246
	Shale, sandy	8	254
	Sandstone	19	273
	Shale, blue	72	345
	Sandstone	6	351
	Shale, blue	116	467
	Hard rock	3	470
	Shale, blue	48	518
	Sandstone	99	617
	Shale, blue	61	678
	Shale, sandy	45	723
	Shale, blue	109	832
	Sandstone	2	834
	Shale, blue	130	964
	Sandstone	8	972
	Shale, sandy	36	1008
	Shale, blue	36	1044
	Sandstone	5	1049
	Shale, blue	9	1058
	Hard rock	3	1061
	Sandstone	15	1076
	Shale, blue	11	1087
	Sandstone	27	1114
	Shale, blue	7	1121
	Sandstone	5	1126
	Shale, blue	14	1140

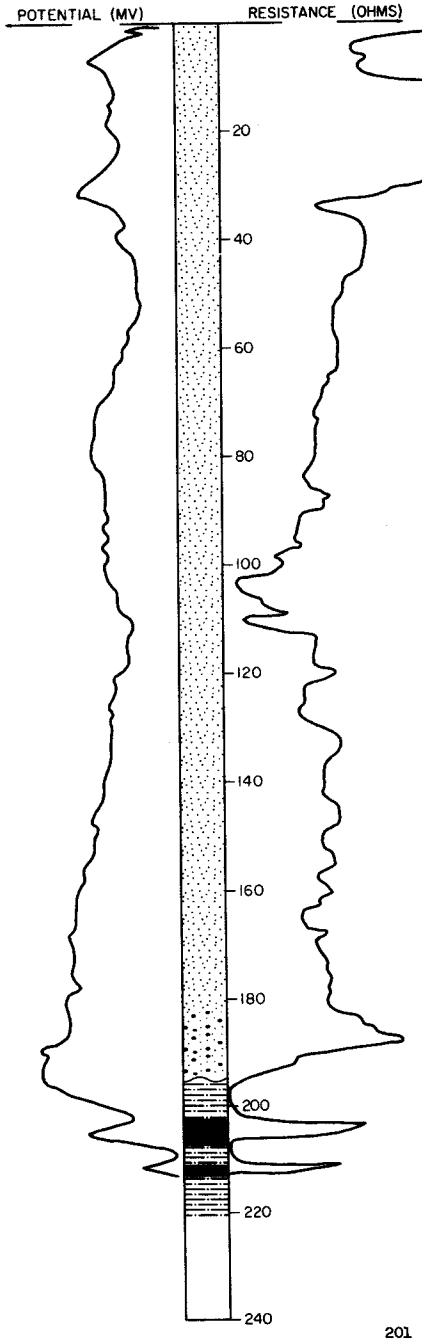
TEST HOLE 3758

LOCATION: 144-90-22DAD

DATE DRILLED: July 1969

ELEVATION: 1930
(FT, MSL)

DEPTH: 220
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-11 Sand, fine- to medium-grained, yellowish-gray.

Glacial drift

11-33 Sand, medium- to coarse-grained, moderate-yellowish-brown.

33-45 Sand, medium-grained, dark-brown.

45-101 Sand, fine- to medium-grained, lignitic, gray.

101-112 Sand, fine-grained, clayey, lignitic.

112-183 Sand, fine- to medium-grained, lignitic.

183-195 Gravel, sandy, lignitic.

Tongue River Formation

195-202 Claystone, silty, light-olive-gray.

202-207 Lignite.

207-211 Claystone, silty.

211-213 Lignite.

213-220 Claystone, silty, carbonaceous.

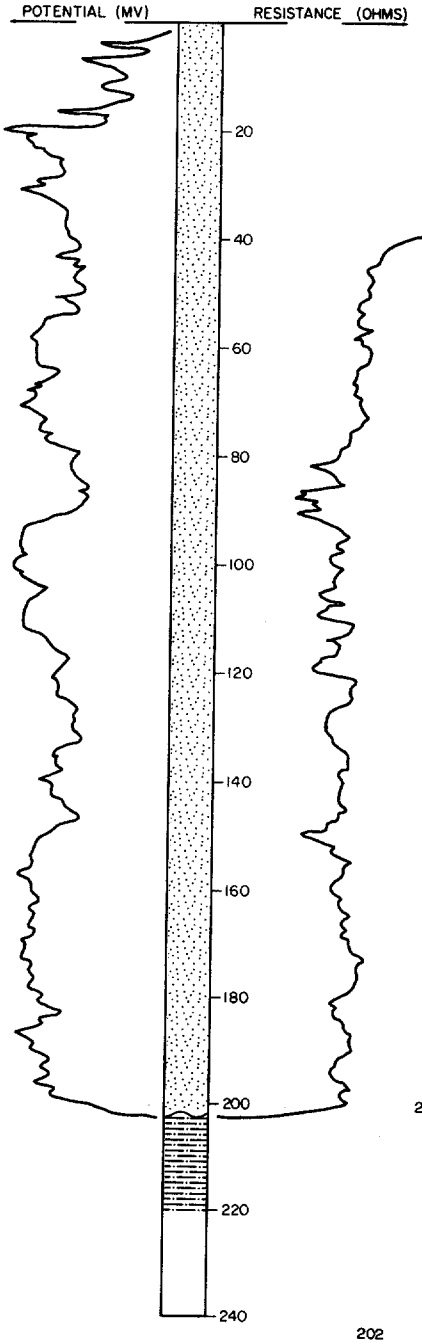
TEST HOLE 3660

LOCATION: 144-90-23CCC

DATE DRILLED: November 1968

ELEVATION: 1934
(FT, MSL)

DEPTH: 220
(FT)



DESCRIPTION OF DEPOSITS

Glacial drift

0-40 Sand, fine- to medium-grained, well-sorted, moderate-yellowish-brown.

40-203 Sand, fine- to medium-grained, silty, light-olive-gray; a few clayey beds.

Tongue River Formation

203-220 Claystone, silty, sandy, light-olive-gray.

144-90-29AD
(Log from Bandy Drilling Co.)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Surface soil	86	86
	Shale, blue	19	105
	Coal	4	109
	Shale, blue	19	128
	Coal	6	134
	Shale, blue	72	206
	Sandstone	4	210
	Shale, blue	167	377
	Coal	9	386
	Shale, blue	72	458
	Coal	8	466
	Shale, blue	73	539
	Hard rock	4	543
	Shale, blue	92	635
	Sandstone and shale	137	772
	Shale, blue	64	836
	Hard rock	3	839
	Shale, blue	52	891
	Hard rock	5	896
	Shale, blue	157	1053
	Sandstone	23	1076
	Shale, blue	44	1120
	Sandstone	40	1160
	Shale, blue	78	1238
	Sandstone	17	1255
	Hard rock	4	1259
	Sandstone	141	1400

144-90-30BA
(Log from Bandy Drilling Co.)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Surface soil	18	18
	Shale, blue	11	29
	Coal	9	38
	Shale, blue	49	87
	Shale, sandy	32	119
	Coal and shale streaks	27	146
	Shale	144	290
	Shale, sandy	57	347
	Shale, blue	43	390
	Shale and hard rock, sandy	10	400
	Shale, blue	35	435
	Coal	8	443
	Shale, blue	33	476
	Sandstone	10	486
	Shale, blue	10	496
	Sandstone	9	505
	Shale, blue	82	587
	Shale, sandy	37	624
	Hard rock	2	626
	Sandstone	59	685
	Shale, blue	37	722
	Sandstone	90	812
	Shale, blue	142	954
	Sandstone	8	962
	Shale, blue	92	1054
	Sandstone	5	1059
	Hard rock	5	1064
	Sandstone	14	1078
	Shale, blue	30	1108
	Sandstone	95	1203
	Shale, blue	35	1238
	Sandstone	29	1267
	Shale, blue	101	1368
	Sandstone	17	1385
	Shale, blue	17	1402
	Sandstone	23	1425
	Shale, blue	18	1443

145-84-6CCB
(Log from Bandy Drilling Co.)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Surface soil	3	3
	Clay	24	27
	Shale, blue	20	47
	Sand and gravel	4	51
	Shale, blue	12	63
	Gravel	8	71
	Shale, blue	55	126
	Shale, sandy	42	168
	Shale, blue	18	186
	Sandstone	97	283
	Shale, blue	36	319
	Hard rock	5	324
	Shale, sandy	23	347
	Sandstone	37	384
	Shale, blue	78	462
	Hard rock	5	467
	Shale, blue	119	586
	Hard rock	5	591
	Sandstone	27	618
	Shale, blue	190	808
	Sandstone	7	815
	Shale, blue	20	835
	Sandstone	5	840
	Shale, blue	92	932
	Sandstone	55	987
	Shale, blue	125	1112
	Sandstone	30	1142
	Shale, blue	118	1260

145-84-19CCC
(Log from Lloyd Erickson)

	Topsoil, brown	2	2
	Clay, sandy	2	4
	Sand and gravel	16	20
	Clay, sandy, blue	10	30
	Clay, blue	10	40
	Clay, sandy, blue	49	89
	Sand, gray	26	115
	Gravel	1	116
	Sand, coarse, white and yellow	2.5	118.5

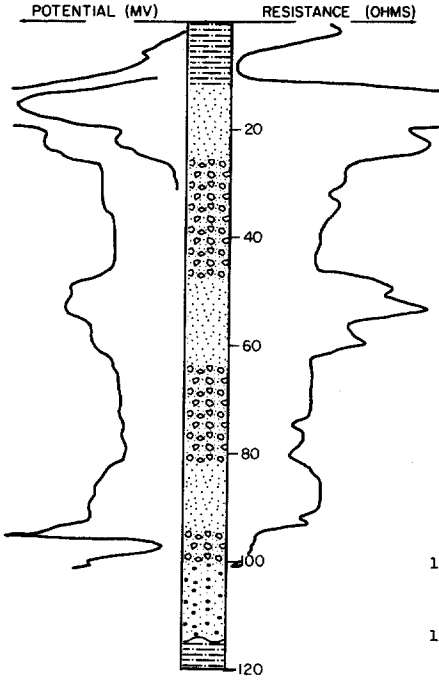
TEST HOLE 2684

LOCATION: 145-84-20DDD

DATE DRILLED: June 1967

ELEVATION: 1690 (FT, MSL)

DEPTH: 120 (FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-12	Clay, sandy, silty, dark-yellowish-brown.
12-18	Sand, fine- to coarse-grained, silty, dark-yellowish-brown.
18-25	Sand and gravel, clayey, dark-yellowish-brown.

Glacial drift

25-47	Till, clayey, silty, sandy, pebbly, olive-gray.
47-62	Sand and gravel, fine- to very coarse-grained.
62-82	Till, silty, clayey, olive-gray.
82-94	Sand, fine- to coarse-grained.
94-101	Till, silty, clayey, olive-gray.
101-114	Sand and gravel, lignitic.

Tongue River Formation

114-120	Claystone, sandy, silty, dark-greenish-gray.

145-84-21BAB
(Log from Bandy Drilling Co.)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Surface soil	19	19
	Sand and gravel	28	47
	Shale, blue	31	78
	Shale, sandy	7	85
	Shale, blue	5	90
	Sand	50	140
	Shale, blue	21	161
	Sandstone	9	170
	Shale, blue	13	183
	Coal	13	196
	Shale, blue	80	276
	Hard rock	1	277
	Shale, blue	103	380
	Sandstone	30	410
	Shale, blue	18	428
	Hard rock	3	431
	Shale, blue	9	440

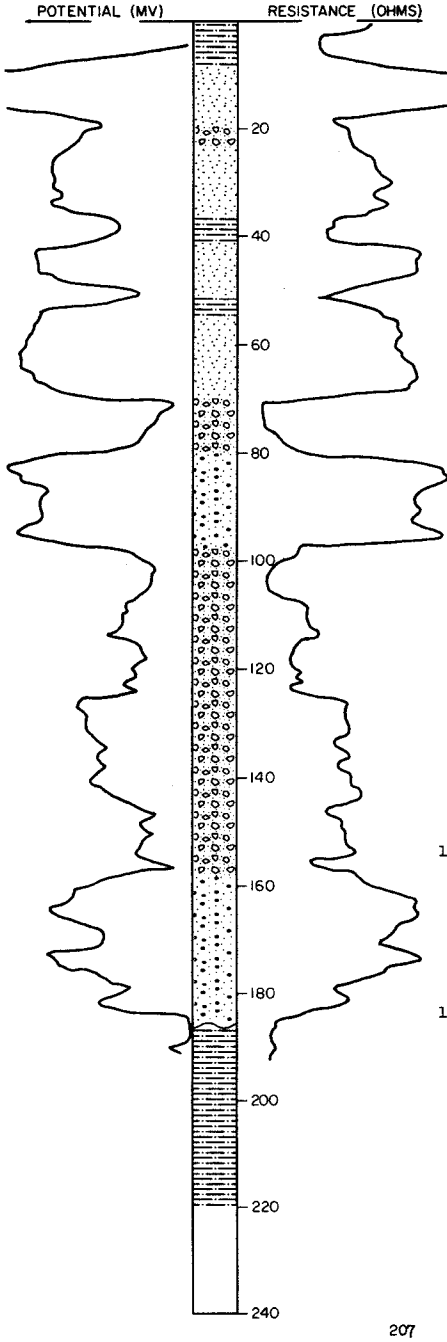
TEST HOLE 2685

LOCATION: 145-84-28BAD

DATE DRILLED: June 1967

ELEVATION: 1690
(FT, MSL)

DEPTH: 220
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-8	Clay, silty, sandy, dark-yellowish-brown.
8-19	Sand, fine- to medium-grained, dark-yellowish-brown.

Glacial drift

19-24	Till(?), clayey, dark-yellowish-brown.
24-36	Sand, fine- to coarse-grained, dark-greenish-gray.
36-40	Clay, sandy, silty.
40-50	Sand, fine- to coarse-grained, gravelly, dark-greenish-gray.
50-53	Clay, sandy, silty, dark-greenish-gray.
53-70	Sand, fine- to coarse-grained, gravelly, lignitic, dark-greenish-gray.
70-80	Till, clayey, sandy, silty, lignitic, dark-greenish-gray.
80-97	Sand and gravel, fine- to coarse-grained.
97-157	Till, clayey, sandy, silty, olive-gray; gravelly in lower part.
157-185	Sand and gravel, fine- to medium-grained, lignitic.

Cannonball-Ludlow Formations, undifferentiated

185-220	Claystone, sandy, silty, light-olive-gray.

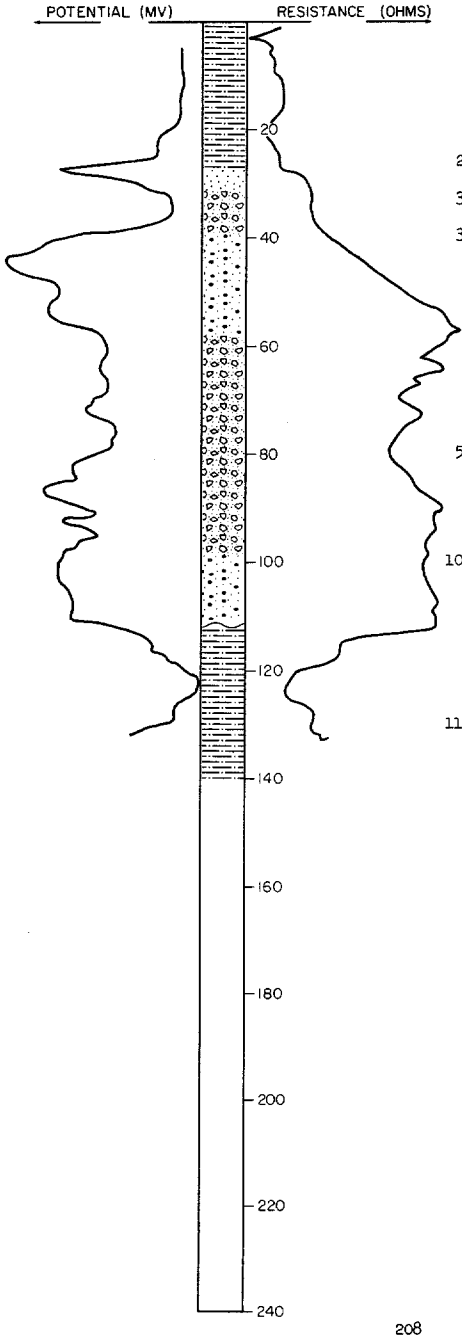
TEST HOLE 2686

LOCATION: 145-84-28DCC3

DATE DRILLED: June 1967

ELEVATION: 1698
(FT, MSL)

DEPTH: 140
(FT)



DESCRIPTION OF DEPOSITS

Glacial drift

0-27	Clay, sandy, silty; dark-yellowish-brown above 15 ft, dark-greenish-gray below 15 ft.
27-31	Sand, fine- to coarse-grained, dark-greenish-gray.
31-39	Till, clayey, silty, sandy, pebbly, dark-greenish-gray.
39-58	Sand and gravel, fine- to medium-grained, dark-greenish-gray.
58-100	Till, sandy, silty, gravelly, lignitic, olive-gray.
100-112	Sand and gravel, fine- to coarse-grained.

Cannonball-Ludlow Formations, undifferentiated

112-140	Claystone, sandy, silty, dark-greenish-gray.

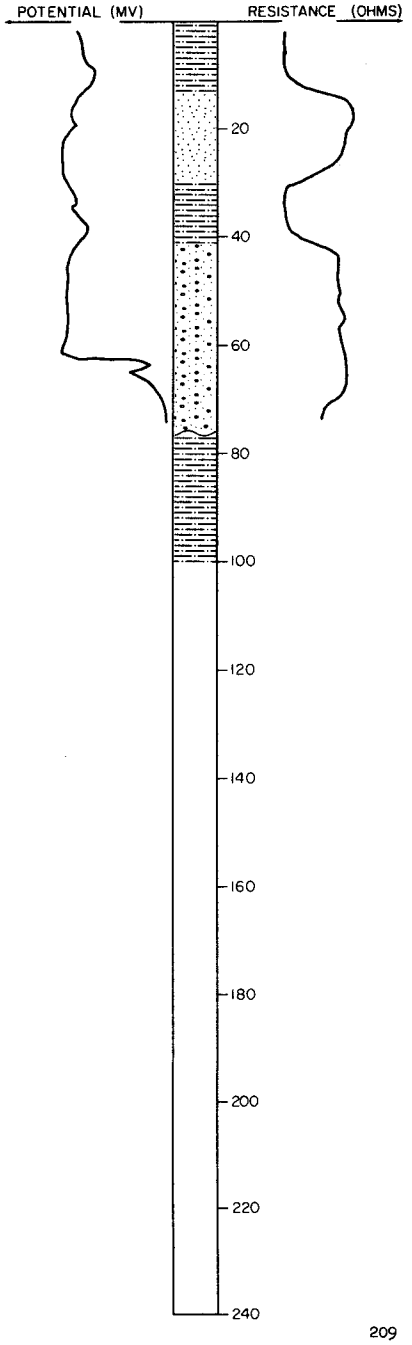
TEST HOLE 5273

LOCATION: 145-84-29CCB

DATE DRILLED: May 1969

ELEVATION: 1685
(FT, MSL)

DEPTH: 100
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-14	Clay, silty, sandy, yellowish-brown.
14-30	Sand, fine- to coarse-grained, silty; yellowish-brown to 25 ft.
30-42	Clay, silty, olive-gray.

Glacial drift

42-76	Gravel, sandy.

Tongue River Formation

76-100	Claystone, silty, olive-gray.

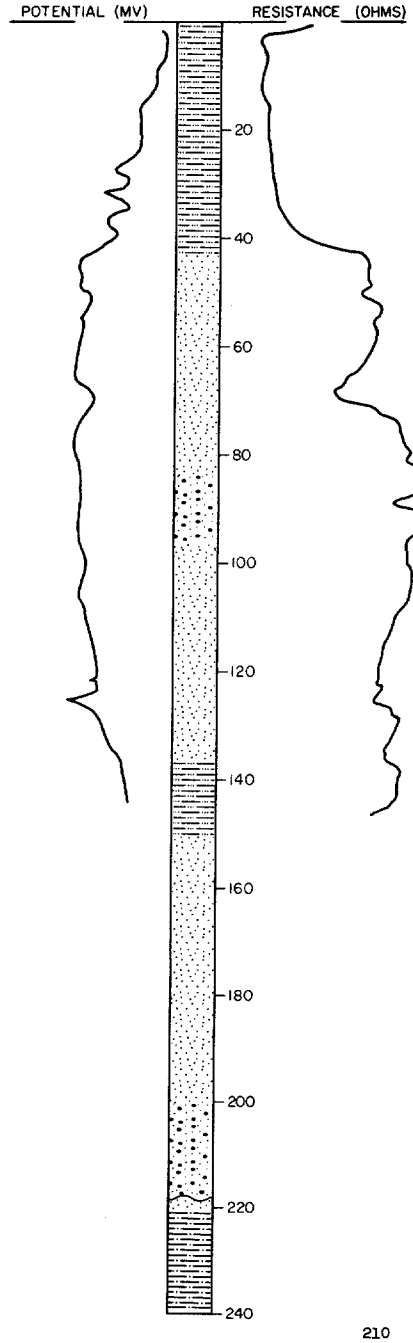
TEST HOLE 5272

LOCATION: 145-84-31DAA

DATE DRILLED: May 1969

ELEVATION: 1697
(FT, MSL)

DEPTH: 240
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-43	Silt and clay, sandy; yellowish-brown to 25 ft.

Glacial drift

43-84	Sand, fine- to coarse-grained.
84-96	Gravel and sand, fine- to coarse-grained.
96-106	Sand and silt, calcareous, olive-gray.
106-136	Sand, fine- to coarse-grained.
136-150	Silt and clay, sandy, olive-gray.
150-200	Sand, fine- to coarse-grained, pebbly.
200-218	Gravel, sandy.

Cannonball-Ludlow Formations, undifferentiated

218-220	Sandstone, fine-grained, gray.
220-240	Claystone, olive-gray.

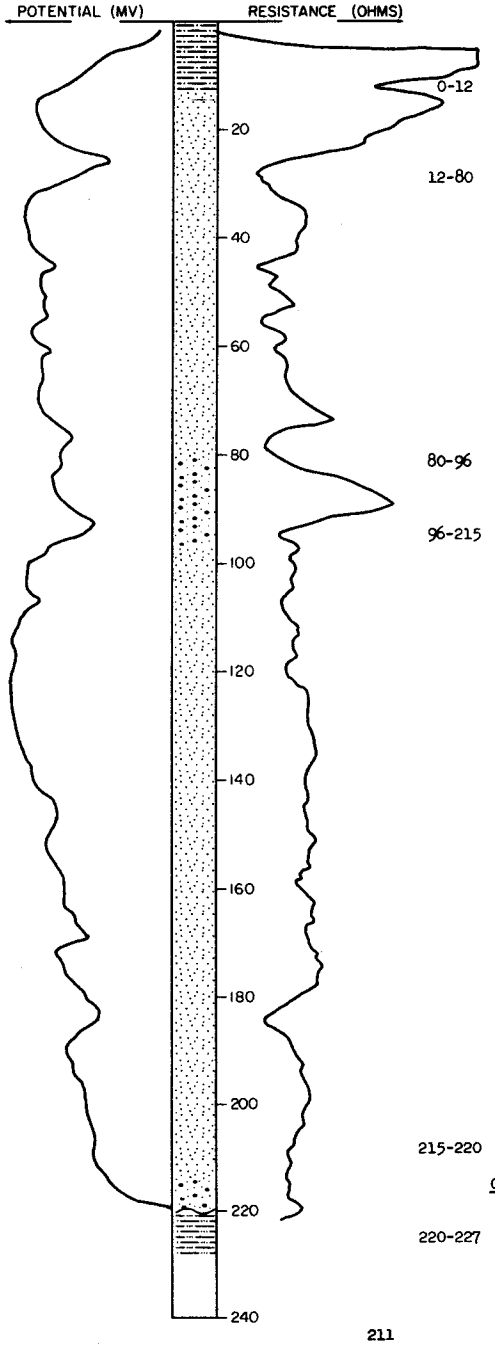
TEST HOLE 5266

LOCATION: 145-84-32BCC

DATE DRILLED: May 1969

ELEVATION: 1697
(FT, MSL)

DEPTH: 227
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-12 Clay, silty, sandy, moderate-yellowish-brown.

Glacial drift

12-80 Sand, fine- to coarse-grained, lignitic; a few thin silt beds.

80-96 Sand and gravel, fine- to coarse-grained.

96-215 Sand, fine- to coarse-grained, pebbly.

215-220 Gravel, sandy.

Cannonball-Ludlow Formations, undifferentiated

220-227 Siltstone and sandstone, calcareous, light-bluish-gray.

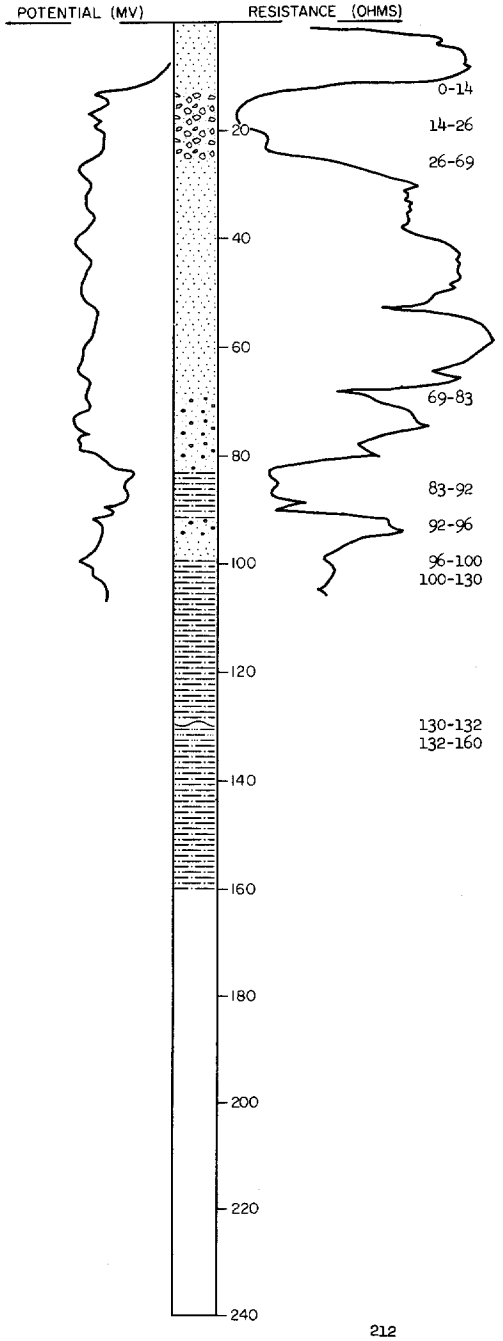
TEST HOLE 5267

LOCATION: 145-84-32CCC

DATE DRILLED: May 1969

ELEVATION: 1700
(FT, MSL)

DEPTH: 160
(FT)



DESCRIPTION OF DEPOSITS

Glacial drift

0-14	Sand, fine- to medium-grained, silty.
14-26	Till, silty, clayey, sandy; yellowish-brown above 21 ft.
26-69	Sand, fine- to medium-grained.
69-83	Gravel, sandy.
83-92	Clay, sandy, silty, olive-gray.
92-96	Gravel.
96-100	Sand, fine- to coarse-grained.
100-130	Clay, sandy, silty, calcareous, bedded, olive-gray.

Tongue River Formation

130-132	Sandstone, silty, clayey.
132-160	Claystone, silty, clayey, olive-gray.

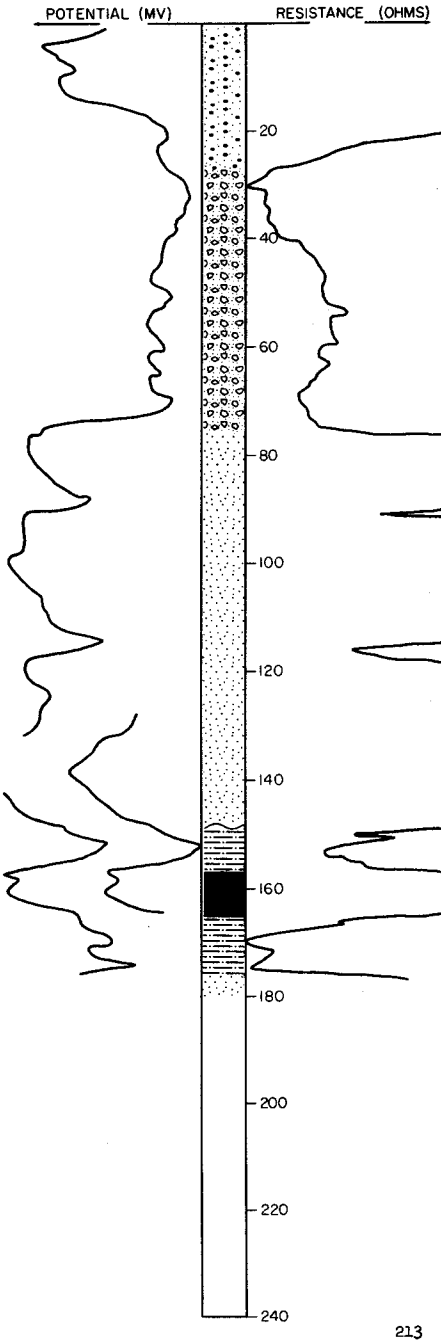
TEST HOLE 3738

LOCATION: 145-84-33BDD

DATE DRILLED: July 1969

ELEVATION: 1736
(FT, MSL)

DEPTH: 180
(FT)



DESCRIPTION OF DEPOSITS

Glacial drift

0-27	Gravel, yellowish-brown.
27-41	Till, clayey, silty, sandy, yellowish-brown.
41-76	Till(?), clayey, silty, plastic, dark-greenish-gray.
76-149	Sand, medium- to coarse-grained, pebbly, gray.

Tongue River Formation

149-157	Claystone, silty, light-gray.
157-165	Lignite.
165-176	Claystone, calcareous, brownish-black.
176-180	Sandstone, fine-grained.

145-85-22CAC
(Log from Bandy Drilling Co.)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Surface soil	28	28
	Gravel	11	39
	Shale, blue	78	117
	Shale and coal streaks	31	148
	Shale, blue	109	257
	Sandstone	59	316
	Shale, blue	18	334
	Shale, sandy	13	347
	Shale, blue	172	519
	Hard rock	2	521
	Sandstone, hard	11	532
	Sandstone	25	557
	Shale, blue	67	624
	Hard rock	2	626
	Shale, blue	132	758
	Sandstone	28	786
	Shale, blue	62	848
	Sandstone	44	892
	Shale, blue	11	903

145-85-24DDA
(Log from Bandy Drilling Co.)

	Surface soil	2	2
	Clay	21	23
	Coal	2	25
	Shale, blue	16	41
	Shale, sandy	19	60
	Shale, blue	7	67
	Coal streaks	7	74
	Shale, blue	18	92
	Shale and coal streaks	31	123
	Hard rock	2	125
	Shale, blue	125	250
	Hard rock	6	256
	Shale, sandy	49	305
	Hard rock	6	311
	Sandstone	40	351
	Shale, blue	17	368
	Shale, sandy	89	457
	Hard rock	2	459
	Shale, blue	89	548
	Hard rock	2	550
	Shale, sandy	8	558
	Hard rock	4	562
	Sandstone	12	574
	Hard rock	1	575
	Shale, blue	13	588
	Hard rock	4	592
	Shale, blue	160	752
	Hard rock	4	756
	Shale, blue	156	912
	Sandstone	16	928
	Shale, blue	50	978
	Sandstone	44	1022
	Hard rock	2	1024
	Sandstone	24	1048
	Shale, blue	22	1070

145-85-33BAA
Auger Hole M-68-13

Geologic source	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Sand, very fine- to medium-grained, pebbly, medium-brown to light-brown	10	10
	Sand, gravelly, medium-brown	2	12
	Gravel, medium-brown	4	16
	Sand, fine- to medium-grained, gravelly, yellowish-brown	4	20
	Till, silty, clayey, medium-brown	6	26
Tongue River Formation:			
	Claystone, silty, light-gray	3	29

145-85-34CBC
TEST HOLE 2683

Alluvium:			
	Clay, sandy, silty, dark-yellowish-brown	11	11
	Sand, fine- to medium-grained, dark-yellowish-brown	7	18
	Clay, sandy, silty, olive-gray	3	21
Glacial drift:			
	Sand, fine- to coarse-grained, pebbly, dark-greenish-gray	4	25
Tongue River Formation:			
	Claystone, silty, dark-greenish-gray	15	40

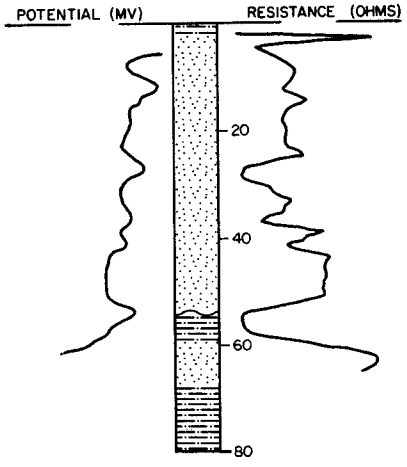
TEST HOLE 2682

LOCATION: 145-85-34CCB

DATE DRILLED: June 1967

ELEVATION: 1704 (FT, MSL)

DEPTH: 80 (FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-2 Topsoil, clayey.
2-25 Sand, fine- to medium-grained, dark-yellowish-brown.

Glacial drift

25-37 Sand and silt, fine- to very coarse-grained, gravelly, dark-greenish-gray.
37-53 Sand, fine- to very coarse-grained, gravelly, dark-greenish-gray.

Tongue River Formation(?)

53-58 Claystone, silty, dark-greenish-gray.
58-66 Sandstone, fine- to medium-grained.
66-80 Claystone and lignite, silty, dark-greenish-gray.

145-85-35BAA
TEST HOLE 5274

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium:			
	Clay, silty, sandy, yellowish-brown to olive-gray	35	35
	Sand, fine- to coarse-grained, silty, clayey, pebbly, yellowish-brown	3	38
	Clay, silty, lignitic, olive-gray	20	58
Tongue River Formation:			
	Claystone, silty, bluish-gray	22	80

145-86-11CDD
(Log from Ray Mohl)

	Sand, mostly yellow	28	28
	Clay, yellow	3	31
	Clay, blue	1	32
	Coal, soft, broken	4	36
	Coal, hard	2	38
	Coal, broken	1	39
	Coal, hard	7	46
	Clay, mostly sandy, gray	30	76
	Clay, sandy	5	81
	Trace coal	1	82
	Clay, gray	13	95
	Clay, sandy, yellow-brown	2	97
	Coal	2	99

145-87-12BBB
Auger Hole M-68-14

Glacial drift:			
	Till, silty, clayey, medium-brown; pebbles decrease in number with depth	75	75
	Till(?), silty, clayey, dark-gray	4	79
Sentinel Butte Formation(?):			
	Lignite fragments on bit; no samples	5	84

145-87-32DC
Auger Hole Mer-67-20

Alluvium:			
	Topsoil, clayey, hard	2	2
	Silt, sandy, olive-gray	6	8
	Clay, silty, pebbly, moderate-olive-brown to olive-gray	36	44
Glacial drift:			
	Sand and gravel	5	49

145-88-12DCD2
(Log from Ray Mohl)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Topsoil, mixed gravel----------	28	28
	Scoria----------	19	47
	Coal slack----------	1	48
	Clay, gray----------	19	67
	Rock----------	1	68
	Clay, gray----------	17	85
	Coal, trace----------	1	86
	Clay, gray----------	3	89
	Coal----------	2	91
	Clay, gray----------	20	111
	Coal, water at 113----------	7	118
	Clay----------	2	120
	Coal, water at 121----------	2	122

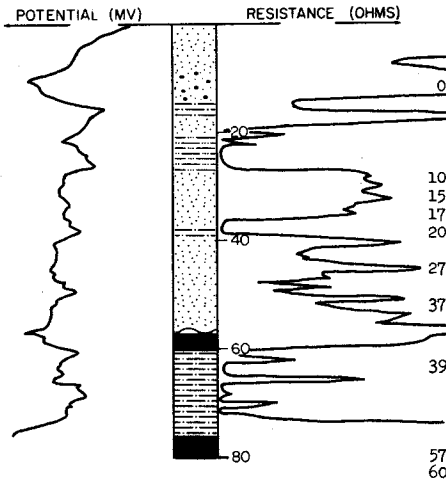
TEST HOLE 3655

LOCATION: 145-88-25ABA

DATE DRILLED: November 1968

ELEVATION: 1928
(FT, MSL)

DEPTH: 80
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-10 Sand and clay, silty, moderate-yellowish-brown.

Glacial drift

10-15 Gravel.
15-17 Clay, silty.
17-20 Sand.
20-27 Silt and clay, dusky-yellow to light-olive-gray.
27-37 Sand, silty, lignitic, light-olive-gray.
37-39 Clay, light-olive-gray.
39-57 Sand and silt, clayey, lignitic, thinly bedded.

Sentinel Butte Formation

57-60 Lignite.
60-76 Claystone, silty, sandy, light-olive-gray.
76-80 Lignite.

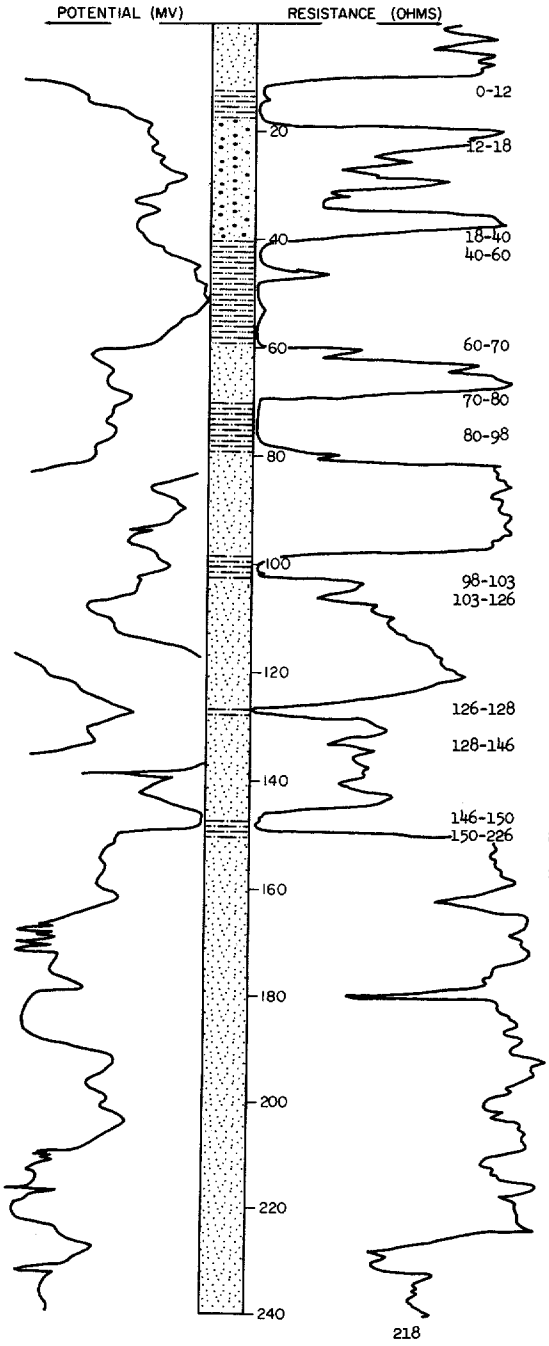
TEST HOLE 3653

LOCATION: 145-88-25ABB

DATE DRILLED: October 1968

ELEVATION: 1910
(FT, MSL)

DEPTH: 320
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-12 Sand, fine- to medium-grained, silty, moderate-yellowish-brown.

12-18 Silt and clay, moderate-yellowish-brown.

Glacial drift

18-40 Sand and gravel, silty.

40-60 Silt and clay, light-olive-gray.

60-70 Sand, medium-grained, lignitic, light-olive-gray.

70-80 Clay and silt, light-olive-gray to black.

80-98 Sand, medium-grained, light-olive-gray.

98-103 Clay, light-olive-gray.

103-126 Sand, fine- to medium-grained, lignitic.

126-128 Clay, silty, light-olive-gray.

128-146 Sand, silty, fine-grained, lignitic.

146-150 Clay, silty, light-olive-gray.

150-226 Sand, medium- to coarse-grained, clean, well-sorted, rarely lignitic.

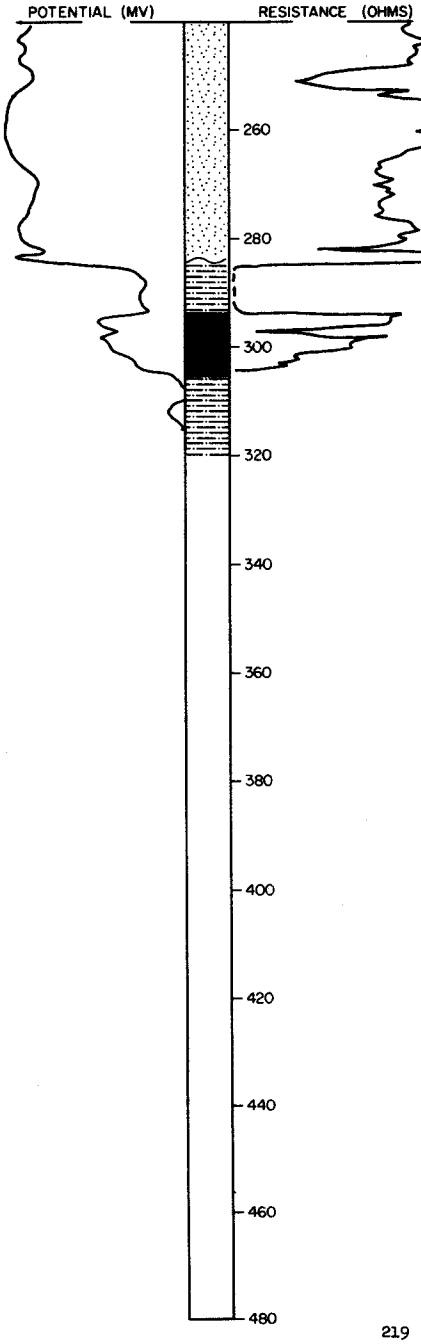
TEST HOLE 3653, Continued

LOCATION: 145-88-25ABB

DATE DRILLED: October 1968

ELEVATION: 1910
(FT, MSL)

DEPTH: 320
(FT)



	DESCRIPTION OF DEPOSITS
226-285	Sand, silty, lignitic; a few beds of clay.
	Tongue River Formation
285-294	Claystone, silty, light-olive-gray.
294-305	Lignite.
305-320	Claystone, silty, light-olive-gray.

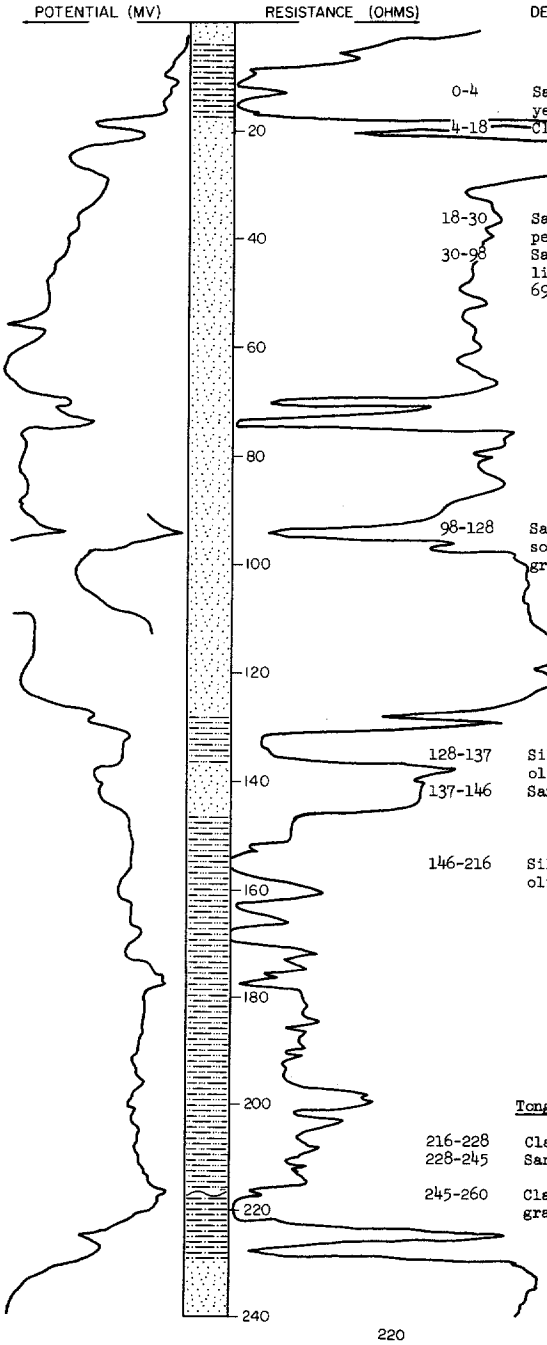
TEST HOLE 3654

LOCATION: 145-88-25BBA

DATE DRILLED: November 1968

ELEVATION: 1935
(FT, MSL)

DEPTH: 260
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-4 Sand, fine-grained, moderate-yellowish-brown.

4-18 Clay, silty, light-olive-gray.

Glacial drift

18-30 Sand, medium- to coarse-grained, pebbly; silty at 20 ft.

30-98 Sand, very fine-grained, silty, lignitic; thin clay beds at 69, 74, and 95 ft.

98-128 Sand, medium-grained, well-sorted, lignitic, light-olive-gray.

128-137 Silt and clay, sandy, light-olive-gray.

137-146 Sand, fine-grained, silty.

146-216 Silt and clay, sandy, light-olive-gray to greenish-black.

Tongue River Formation

216-228 Claystone and lignite.

228-245 Sandstone, silty.

245-260 Claystone, silty, light-olive-gray.

145-88-32AAA
Auger Hole M-68-22

Geologic source	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Till, silty, clayey, olive-brown----------	19	19
Sentinel Butte Formation:			
	Siltstone and sandstone, very fine-grained, light-yellowish-brown----------	5	24

145-89-25DBA
(Log from Frederickson's, Inc.)

	Topsoil, clay, brown----------	36	36
	Clay, blue----------	36	72
	Clay, green----------	18	90
	Clay, blue----------	114	204
	Shale with coal, hard, blue----------	33	237
	Shale, hard, gray----------	68	305
	Shale with coal, hard, gray----------	7	312
	Shale with sand, softer, green----------	16	328
	Shale with coal, soft, green----------	32	360
	Shale, soft, green----------	31	391
	Shale with sand, gray----------	35	426
	Shale with coal, gray----------	4	430
	Shale, gray----------	18	448
	Sand, dirty, gray----------	16	464
	Shale and lignite----------	18	482
	Shale, lensed with sand and lignite, gray--------	258	740
	Sand, fine, gray----------	8	748
	Shale, gray----------	127	875
	Shale with lenses of sand----------	40	915
	Shale, hard, gray----------	15	930
	Sand----------	25	955
	Shale, hard, gray----------	8	963
	Sand, fine, gray----------	7	970
	Shale, gray----------	135	1105
	Shale, hard, sticky, gray----------	25	1130
	Shale, hard, gray----------	26	1156
	Sand, fine, gray----------	2	1158
	Shale, hard, gray----------	15	1173
	Sand, dirty, gray----------	4	1177
	Shale, hard, gray----------	8	1185
	Sand, gray----------	3	1188
	Shale, hard, gray----------	17	1205
	Sand, fine, gray----------	8	1213
	Coal, black----------	2	1215
	Shale, gray----------	9	1224
	Sand, blue----------	16	1240
	Shale, sticky-gray----------	65	1305
	Sand, dirty, gray----------	6	1311
	Shale, gray----------	106	1417
	Sand, fine, gray----------	83	1500
	Shale, gray----------	7	1507

145-90-5CBB
TEST HOLE 5263

Alluvium:			
	Clay, silty, sandy, moderate-yellowish-brown-----	22	22
	Sand, fine- to medium-grained, silty, clayey, moderate-yellowish-brown----------	20	42
	Sand, fine- to medium-grained, lignitic----------	11	53
Sentinel Butte Formation:			
	Siltstone, bluish-gray----------	27	80

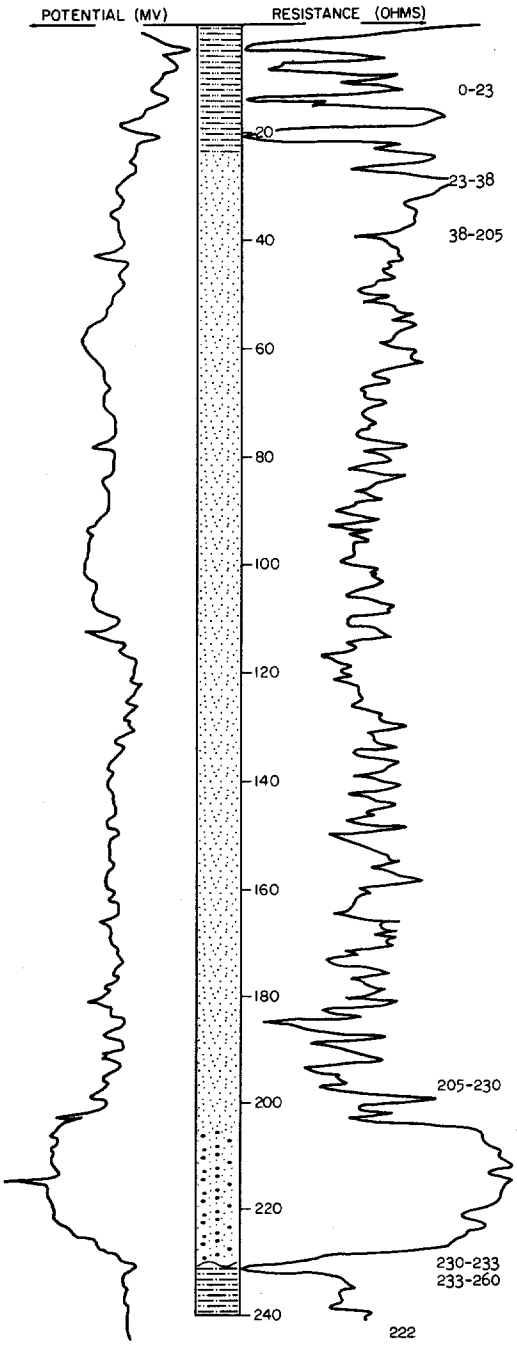
TEST HOLE 3658

LOCATION: 145-90-8BBB

DATE DRILLED: November 1968

ELEVATION: 2039
(FT, MSL)

DEPTH: 260
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-23 Silt and sand, clayey, moderate-yellowish-brown.

Glacial drift

23-38 Sand, fine- to medium-grained, well-sorted, light-olive-gray.

38-205 Sand, fine- to medium-grained, silty, pebbly, lignitic, thinly bedded, light-olive-gray.

205-230 Sand and gravel.

Sentinel Butte Formation

230-233 Claystone.

233-260 Claystone, silty, sandy.

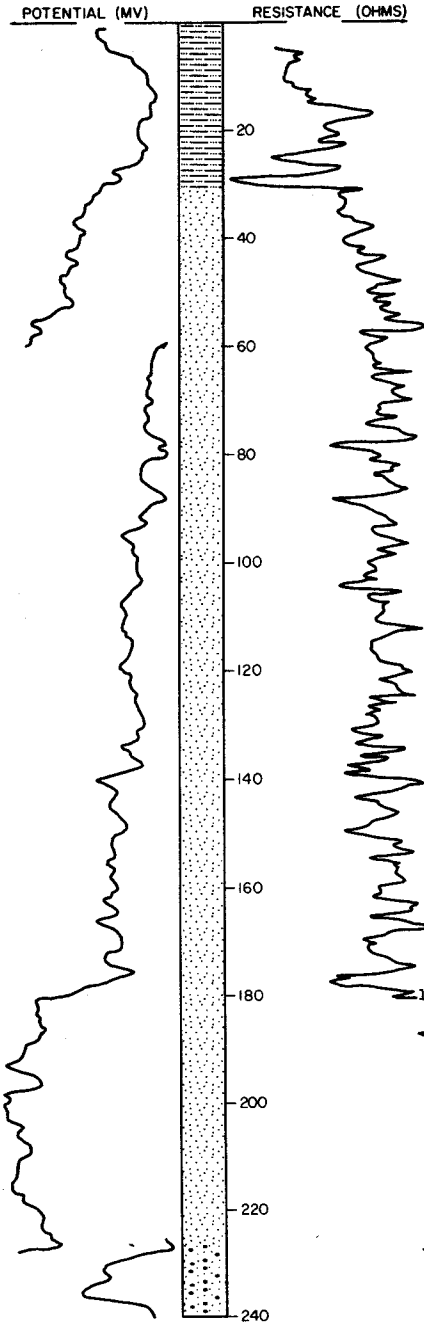
TEST HOLE 3657

LOCATION: 145-90-8CBB

DATE DRILLED: November 1968

ELEVATION: 2027
(FT, MSL)

DEPTH: 260
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-30 Silt and clay, sandy, moderate-yellowish-brown.

Glacial drift

30-181 Sand, silty, lignitic, thinly bedded, light-olive-gray.

181-228 Sand, coarse-grained, well-sorted.

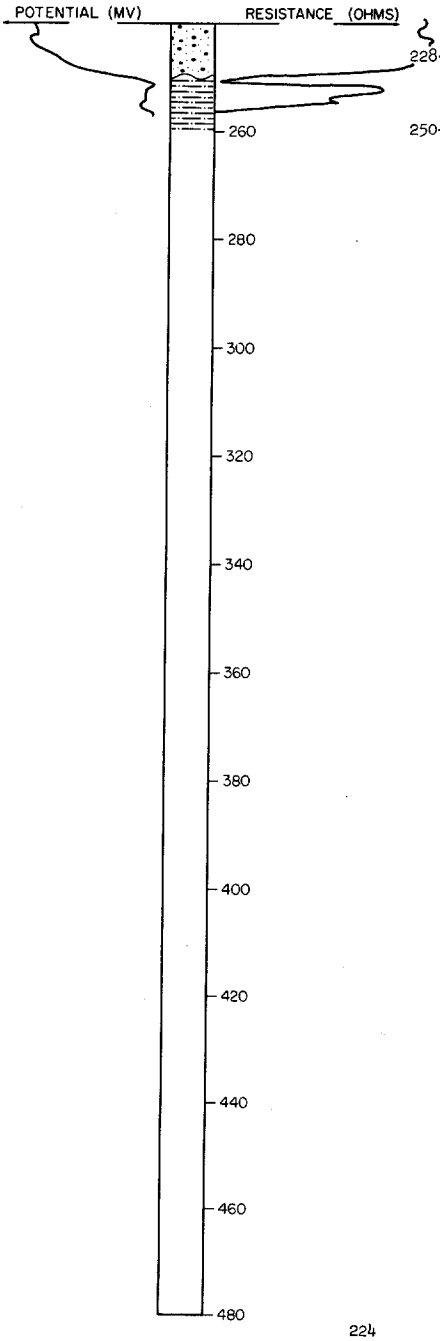
TEST HOLE 3657, Continued

LOCATION: 145-90-8CBB

DATE DRILLED: November 1968

ELEVATION: 2027
(FT, MSL)

DEPTH: 260
(FT)



	DESCRIPTION OF DEPOSITS
228-250	Sand and gravel.
	Sentinel Butte Formation
250-260	Claystone, silty, sandy, light-olive-gray.

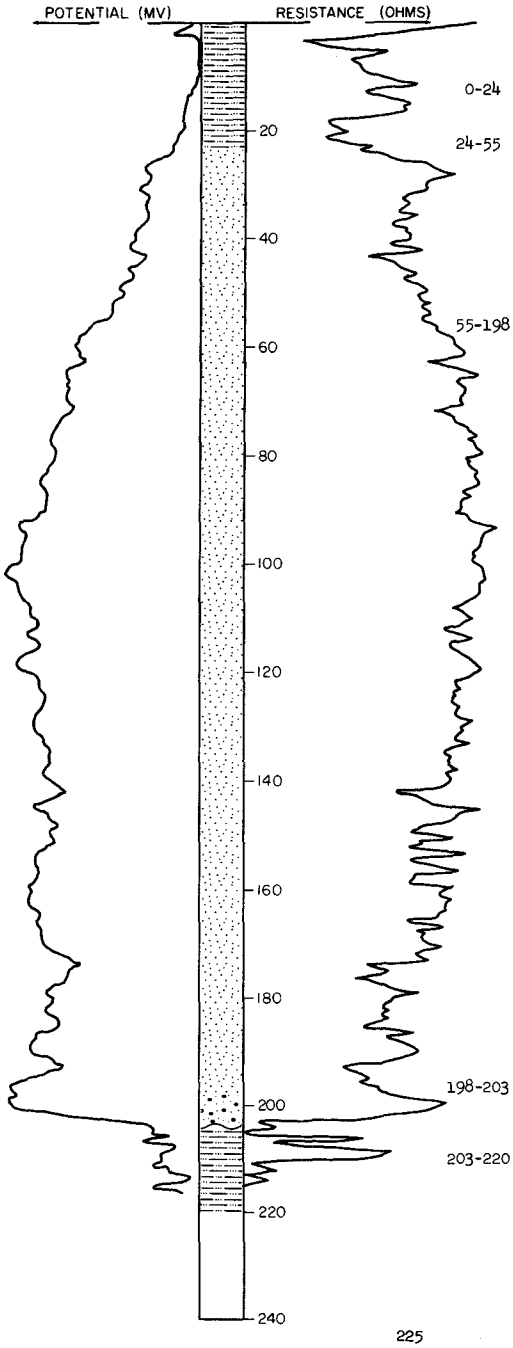
TEST HOLE 3659

LOCATION: 145-90-8CCC

DATE DRILLED: November 1968

ELEVATION: 2029
(FT, MSL)

DEPTH: 220
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-24 Silt and clay, sandy, moderate-yellowish-brown.

24-55 Sand, fine- to medium-grained, moderate-yellowish-brown.

Glacial drift

55-198 Sand, fine- to coarse, grained, pebbly, lignitic; silty in lower part.

198-203 Gravel.

Sentinel Butte Formation

203-220 Siltstone and claystone, sandy, lignitic, light-olive-gray.

145-90-16BCC
Auger Hole Mer-67-29

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium:			
	Clay, sandy, silty, dusky-yellow----------	7	7
	Sand, fine-grained, silty, clayey, yellowish-gray----------	9	16
Glacial drift:			
	Sand, fine- to medium-grained, silty, medium-gray----------	58	74

145-90-18ADD
TEST HOLE 5262

Sentinel Butte Formation:			
	Sandstone, silty, yellowish-brown----------	21	21
	Sandstone, silty, clayey, greenish-gray----------	19	40

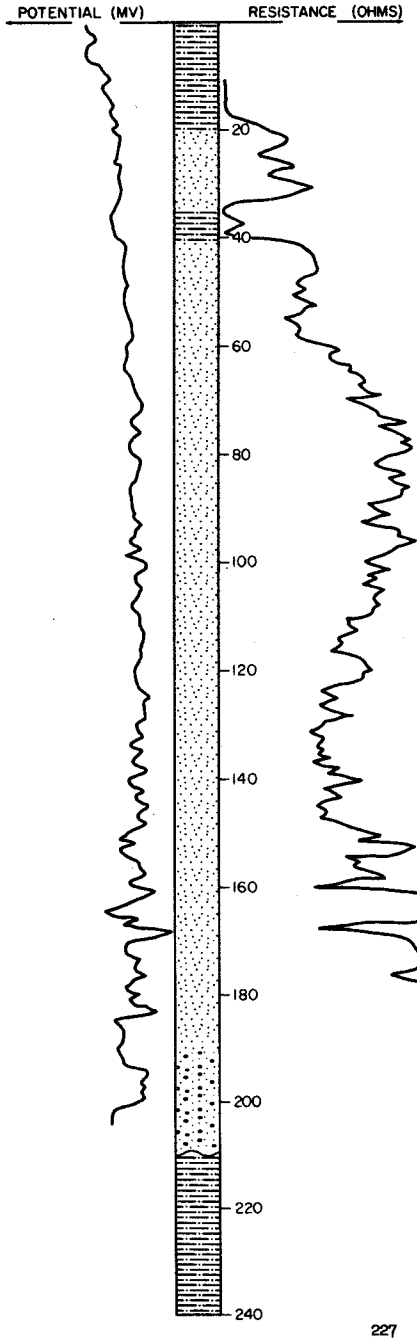
TEST HOLES 5264 and 5264A

LOCATION: 145-90-21AAA1 and 2

DATE DRILLED: May 1968

ELEVATION: 1989
(FT, MSL)

DEPTH: 240
(FT)



	DESCRIPTION OF DEPOSITS
	Alluvium
0-20	Clay, silty, calcareous, light-brownish-gray.
20-34	Sand, fine- to medium-grained, clayey.
34-40	Clay, silty, sandy, calcareous.
	Glacial drift
40-80	Sand, fine- to coarse-grained, pebbly, lignitic.
80-160	Sand and silt, fine-grained, clayey, olive-gray.
160-190	Sand, fine- to coarse-grained, pebbly, lignitic.
190-208	Gravel, sandy.
	Sentinel Butte Formation
208-240	Claystone, silty, brownish-gray.

146-84-30BCA
(Log from Bandy Drilling Co.)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Surface soil	18	18
	Sand	11	29
	Shale and coal, blue	108	137
	Sand	54	191
	Shale, blue	59	250
	Sandstone, hard	35	285
	Sand	19	304
	Shale, blue	133	437
	Water sand	33	470
	Shale, blue	13	483

146-84-31AD
(Log from Bandy Drilling Co.)

	Sand	18	18
	Quicksand	79	97
	Sand and gravel	11	108
	Shale, sandy	16	124
	Hard rock	3	127
	Shale, sandy	11	138
	Sandstone	24	162
	Shale, blue	16	178
	Shale, sandy	60	238
	Shale, blue	20	258
	Hard rock	8	266
	Shale, blue	70	336
	Hard rock	3	339
	Shale, blue	33	372
	Sandstone	21	393
	Hard rock	2	395
	Sandstone	11	406
	Shale, blue	34	440

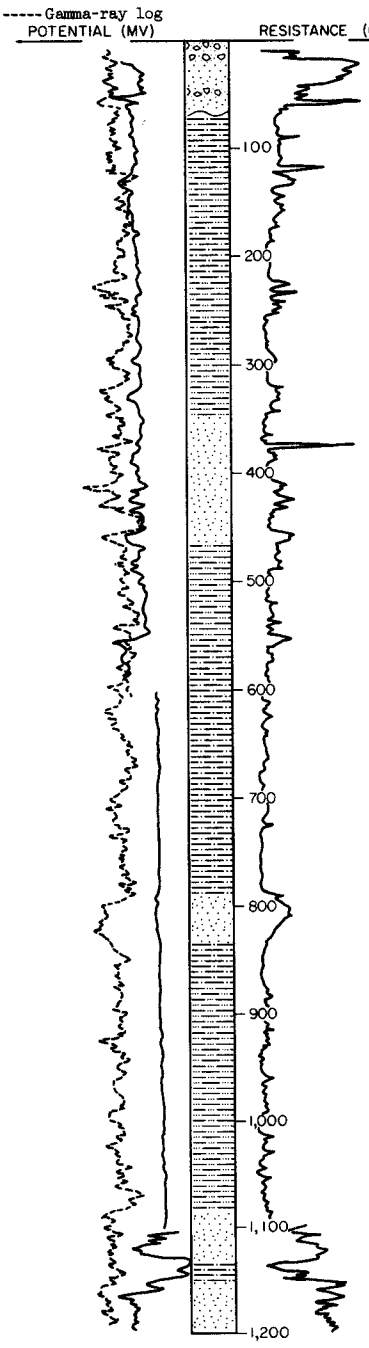
TEST HOLE 3560

LOCATION: 146-85-10CBB

DATE DRILLED: December 1967

ELEVATION: 2041
(FT, MSL)

DEPTH: 1520
(FT)



DESCRIPTION OF DEPOSITS

Glacial drift

0-20	Till, clayey, silty, sandy, dark-yellowish-brown.
20-40	Sand, medium-grained.
40-52	Till, clayey, silty, very sandy, grayish-olive.
52-60	Sand.

Sentinel Butte Formation

60-118	Claystone, silty, lignitic, grayish-olive.
118-172	Siltstone, sandy, clayey, lignitic, grayish-olive.

Tongue River Formation

172-220	Claystone, silty, grayish-olive.
220-255	Siltstone and lignite, clayey, sandy.
255-284	Claystone, silty, lignitic.
284-344	Siltstone and claystone, sandy, lignitic, grayish-olive.
344-404	Sandstone and claystone, silty, grayish-olive.
404-464	Sandstone and siltstone, clayey, lignitic, grayish-olive.
464-548	Siltstone and claystone, lignitic, grayish-olive.
548-556	Siltstone, sandy.

Cannonball-Ludlow Formations, undifferentiated

556-784	Claystone and siltstone, sandy, grayish-olive; lignitic in upper part.
784-832	Sandstone, fine-grained, silty, grayish-olive.

Hell Creek Formation

832-870	Claystone, silty, sandy, grayish-olive.
870-1085	Siltstone and claystone, grayish-olive.
1085-1132	Sandstone, fine-grained, silty, shells, dark-greenish-gray.
1132-1150	Claystone and siltstone, grayish-olive.

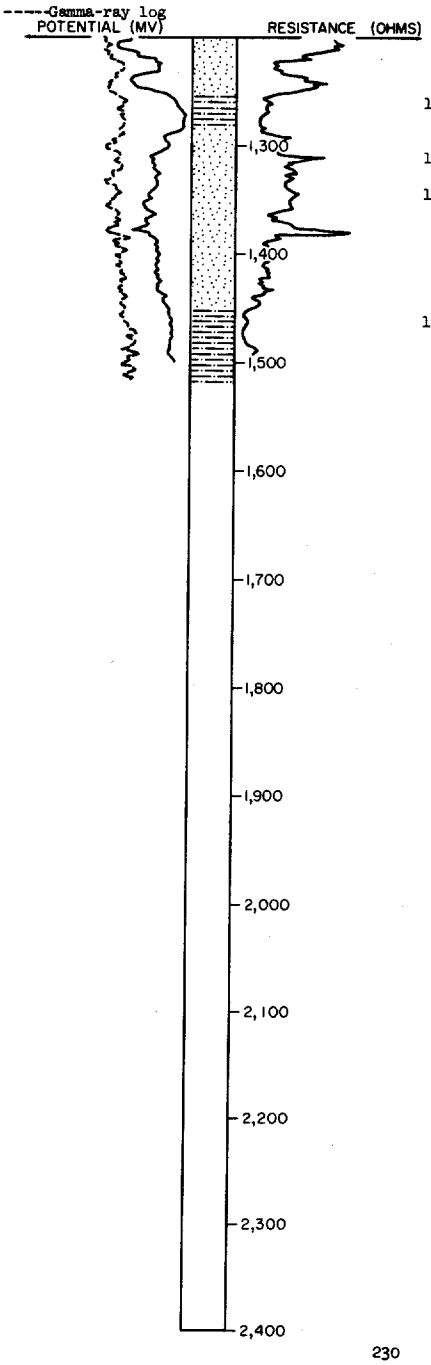
TEST HOLE 3560, Continued

LOCATION: 146-85-10CBB

DATE DRILLED: December 1967

ELEVATION: 2041
(FT, MSL)

DEPTH: 1520
(FT)



DESCRIPTION OF DEPOSITS

Fox Hills Formation

1150-1252	Colgate Sandstone member, fine- to medium-grained, grayish-olive; some silty beds.
1252-1284	Claystone, very sandy, silty, grayish-olive.
1284-1448	Sandstone and siltstone, clayey, grayish-olive.

Pierre Formation

1448-1520	Shale, silty, olive-gray.

146-85-13AC
(Log from Bandy Drilling Co.)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Surface soil	5	5
	Gravel	3	8
	Clay	11	19
	Sand	4	23
	Shale, blue	5	28
	Coal	8	36
	Shale, blue	16	52
	Coal	9	61
	Shale, blue	259	320
	Rock	6	326
	Shale, blue	122	448
	Sandstone	29	477
	Shale, blue	23	500

146-86-1BBB
Auger Hole M-67-15

Glacial drift:			
	Gravel	1	1
	Till, sandy, silty, clayey, olive-gray	44	45
Sentinel Butte Formation:			
	Siltstone, sandy	14	59

146-86-15BBB
Auger Hole M-67-11

Glacial drift:			
	Till, silty, clayey, olive-brown	13	13
	Sand, fine- to medium-grained	3	16
	Till, silty, clayey, olive-brown	64	80
	Till, olive-gray	35	115

146-87-8DDD2
(Log from Bandy Drilling Co.)

	Surface soil	55	55
	Shale, blue	223	278
	Coal	9	287
	Shale, blue	179	466
	Coal	4	470
	Shale, blue	32	502
	Coal	7	509
	Shale, blue	37	546
	Sandstone	74	620
	Shale, blue	26	646
	Sandstone	44	690
	Shale, blue	235	925
	Sandstone	83	1008
	Shale, blue	132	1140
	Sandstone	65	1205
	Shale, blue	15	1220

146-87-10DBC
(Log from Bandy Drilling Co.)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Surface soil	38	38
	Silt	58	96
	Clay, black	10	106
	Shale, blue	67	173
	Coal	6	179
	Shale, blue	85	264
	Coal streaks	15	279
	Clay	19	298
	Hard rock	4	302
	Shale, sandy	36	338
	Sandstone	4	342
	Shale, blue	14	356
	Hard rock	3	359
	Shale, blue	36	395
	Sandstone	28	423
	Shale, blue	155	578
	Sandstone	16	594
	Shale, blue	70	664
	Sandstone	19	683
	Shale, sandy	27	710
	Shale, blue	54	764
	Hard rock	2	766
	Shale, blue	162	928
	Sandstone	29	957
	Shale, blue	52	1009
	Sandstone	29	1038
	Shale, blue	104	1142
	Sandstone	36	1178
	Hard rock	5	1183
	Sandstone	55	1238
	Shale, blue	31	1269
	Sandstone	25	1294
	Shale, blue	26	1320

146-87-35BBA
Auger Hole M-25

Glacial drift:			
	Silt and clay, dark-gray	3	3
	Till, silty, clayey, olive-brown	7	10
Sentinel Butte Formation:			
	Claystone, dark-gray to black	9	19
	Claystone, light-gray	5	24

146-87-36BBA
Auger Hole M-24A

Glacial drift:			
	Clay, dark-gray	3	3
	Clay, medium-brown	5	8
	Till, gravelly, sandy, silty, clayey, olive-brown	4	12
	Till, silty, clayey, olive-brown	5	17
	Till, silty, clayey, medium-gray	19	36
Sentinel Butte Formation:			
	Claystone and siltstone, medium-gray	13	49

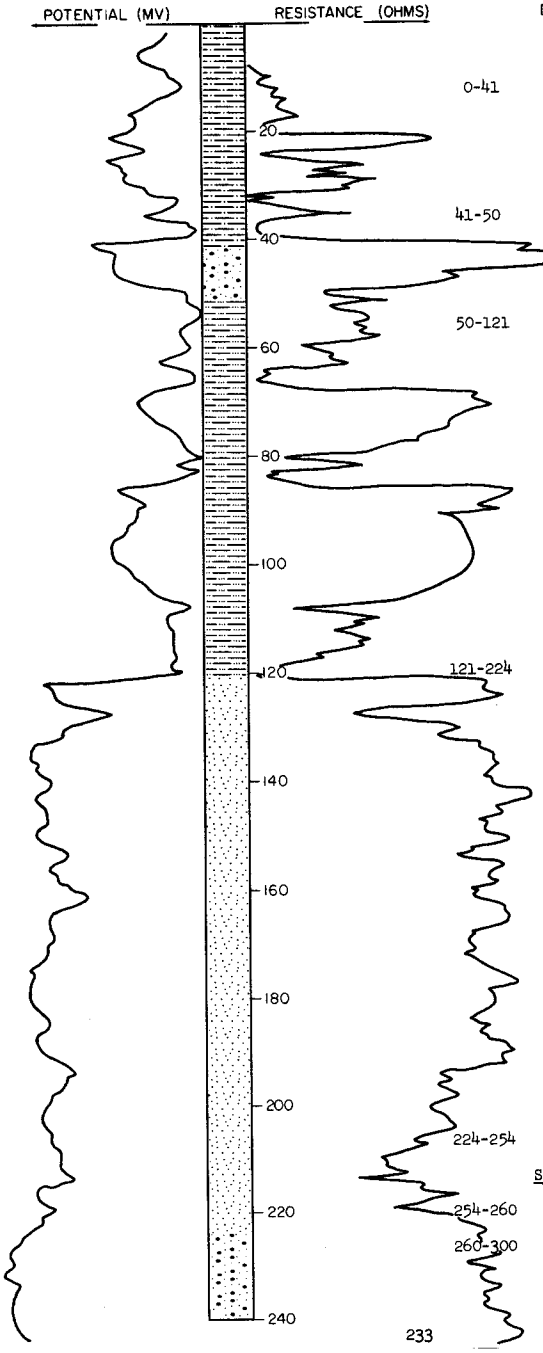
TEST HOLE 3750

LOCATION: 146-88-21DDD

DATE DRILLED: July 1969

ELEVATION: 1855
(FT, MSL)

DEPTH: 300
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-41 Clay, silty, sandy, yellowish-gray to moderate-olive-brown.

Glacial drift

41-50 Gravel, sandy.

50-121 Silt and sand, fine-grained, lignitic; interbedded clay.

121-224 Sand, medium- to coarse-grained, lignitic.

224-254 Gravel, sandy, brown.

Sentinel Butte Formation

254-260 Lignite.

260-300 Claystone and sandstone, gray.

146-88-27CCD1
Auger Hole Mer-67-25

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium:			
	Sand, fine- to medium-grained, pale-brown--------	4	4
	Clay, sandy, silty, pebbly, dusky-brown----------	31	35
Glacial drift:			
	Sand, fine-grained, silty, light-olive-gray------	10	45
	Till(?), clayey, sandy, pebbly, light-olive-gray----------	18	63

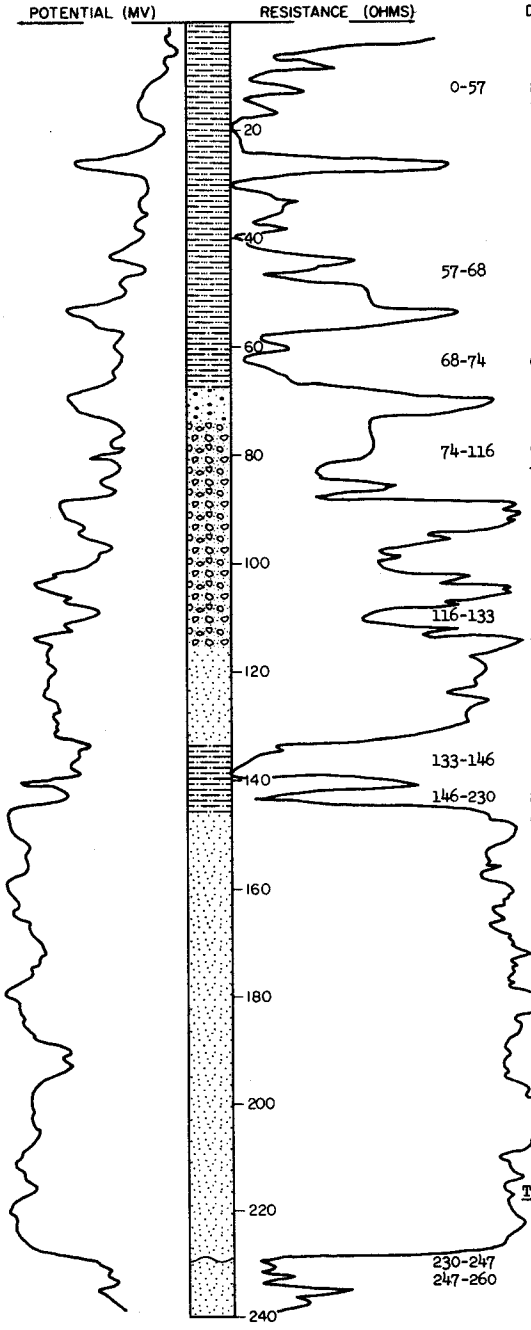
TEST HOLE 3753

LOCATION: 146-88-27CCD2

DATE DRILLED: July 1969

ELEVATION: 1884
(FT, MSL)

DEPTH: 260
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-57 Silt and clay, sandy, dusky-yellow to light-olive-brown.

Glacial drift

57-68 Clay, silty, carbonaceous, light-olive-gray.

68-74 Gravel.

74-116 Till, silty, sandy; interbedde with sand and gravel.

116-133 Sand, very fine- to fine-grained.

133-146 Clay, plastic, olive-black.

146-230 Sand, medium- to coarse-grained; gravelly in the lower part.

Tongue River Formation

230-247 Sandstone, fine-grained.

247-260 Claystone, silty, gray.

146-88-27CDD
TEST HOLE 3754

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium:			
	Silt, yellowish-gray----------	4	4
	Clay, silty, sandy, moderate-olive-brown---------	25	29
Sentinel Butte Formation:			
	Siltstone, gray----------	11	40

146-88-28DDC
TEST HOLE 3751

Alluvium:			
	Clay, silty, dark-brown----------	4	4
	Gravel and sand----------	11	15
Glacial drift:			
	Till, silty, sandy, brown----------	12	27
Sentinel Butte Formation:			
	Siltstone, sandy, clayey, carbonaceous, dusky-yellow----------	7	34
	Claystone, silty----------	6	40

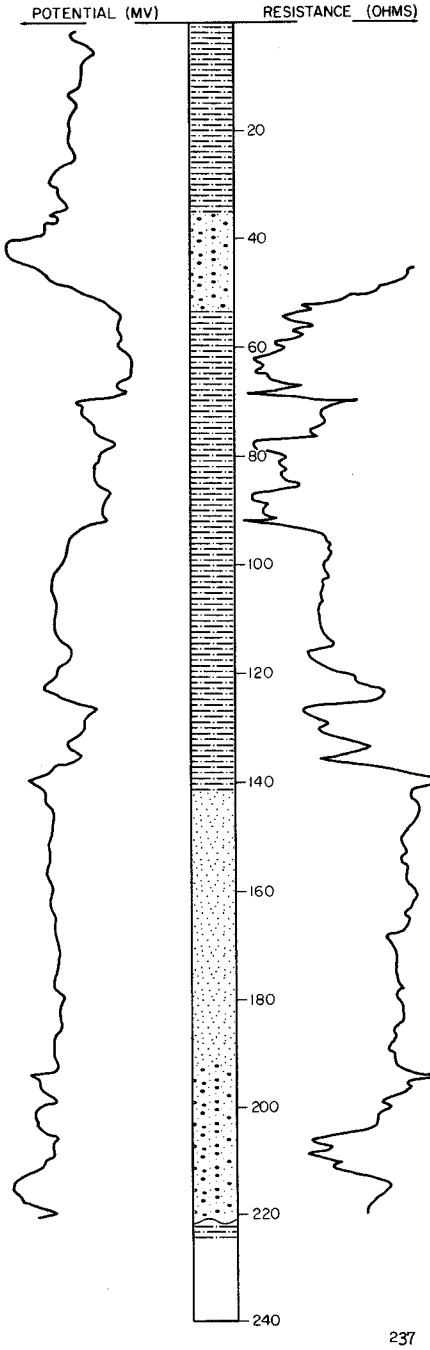
TEST HOLE 3752

LOCATION: 146-88-28DDD

DATE DRILLED: July 1969

ELEVATION: 1889
(FT, MSL)

DEPTH: 224
(FT)



DESCRIPTION OF DEPOSITS

Alluvium

0-36 Clay, silty, sandy, yellowish-gray.

Glacial drift

36-53 Gravel, sandy, brown.

53-140 Clay, silty, sandy, carbonaceous, dark-gray.

140-192 Sand, very fine- to medium-grained, lignitic, gray.

192-220 Gravel, sandy, lignitic, scoriaceous.

Sentinel Butte Formation

220-224 Claystone, sandy.

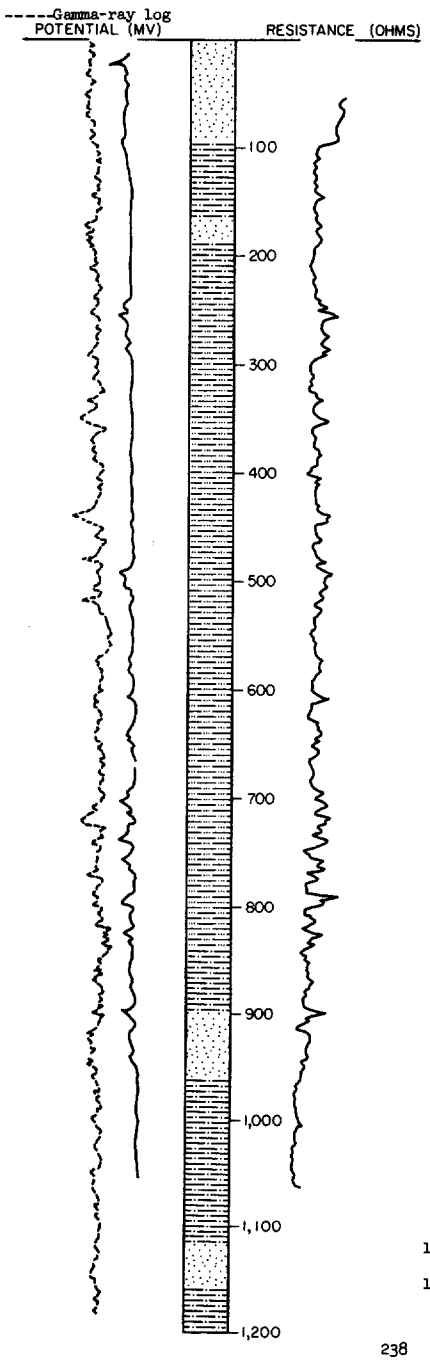
TEST HOLE 3575

LOCATION: 146-90-20CCC

DATE DRILLED: June 1968

ELEVATION: 2120
(FT, MSL)

DEPTH: 1860
(FT)



DESCRIPTION OF DEPOSITS

Sentinel Butte Formation

0-96	Sandstone, fine-grained, silty, moderate-yellowish-brown.
96-168	Claystone, sandy, dark-greenish-gray.
168-188	Sandstone, very fine-grained, silty, lignitic.
188-236	Claystone, silty, dark-greenish-gray.
236-300	Siltstone, sandy, clayey.
300-510	Siltstone and claystone, sandy, lignitic, dark-greenish-gray.

Tongue River Formation

510-684	Siltstone and claystone, sandy, lignitic, dark-greenish-gray.
684-840	Siltstone, sandy, clayey, lignitic, dark-greenish-gray.
840-896	Claystone, dark-greenish-gray.
896-960	Sandstone and siltstone, fine-grained.

Cannonball-Ludlow Formations, undifferentiated

960-1120	Claystone, silty, grayish-olive.
1120-1160	Sandstone, very fine-grained, silty.
1160-1200	Claystone, silty, grayish-olive.

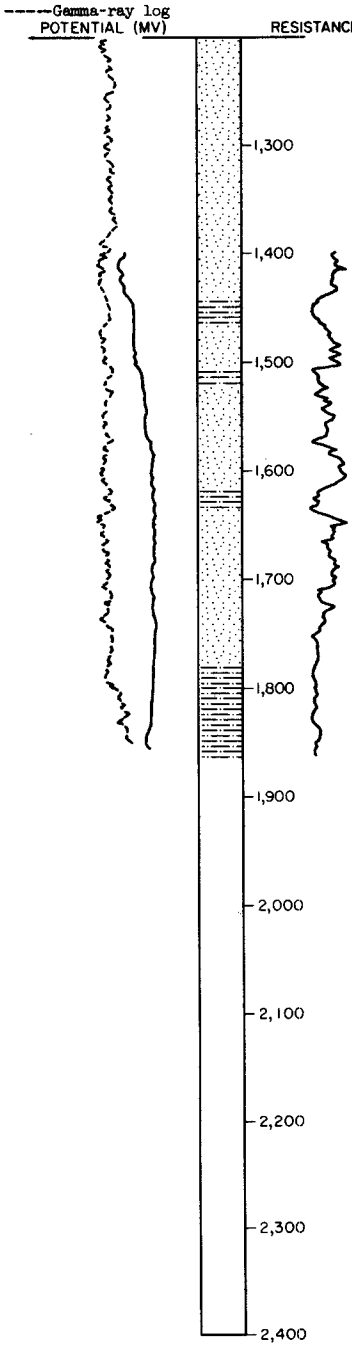
TEST HOLE 3575, Continued

LOCATION: 146-90-20CCC

DATE DRILLED: June 1968

ELEVATION: 2120
(FT, MSL)

DEPTH: 1860
(FT)



	DESCRIPTION OF DEPOSITS
1200-1219	Sandstone, fine-grained, silty, lignitic.
	Hell Creek Formation
1219-1440	Sandstone, very fine- to fine-grained, silty, moderate-yellowish-brown.
1440-1460	Claystone, shells.
1460-1504	Sandstone, fine- to medium-grained, light-olive-gray.
1504-1520	Claystone, silty.
1520-1576	Sandstone, fine- to medium-grained, light-olive-gray.
	Fox Hills Formation
1576-1616	Colgate Sandstone member, fine- to medium-grained, light-olive-gray; shell fragments.
1616-1640	Claystone, silty.
1640-1780	Sandstone, fine-grained, silty, clayey.
1780-1840	Claystone, silty, sandy, olive-gray.
	Pierre Formation
1840-1860	Shale, black, fissile.

147-85-20DBD3
(Log from Bandy Drilling Co.)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Surface soil	36	36
	Shale and coal, blue	99	135
	Rock	2	137
	Shale, blue	153	290
	Rock	3	293
	Shale, blue	77	370
	Sand	12	382
	Shale, blue	102	484
	Sandstone	11	495
	Shale, blue	205	700
	Sandstone	50	750
	Shale, blue	60	810
	Sand	25	835
	Shale, blue	125	960
	Shale, sandy	50	1010
	Sandstone	118	1128
	Shale, blue	132	1260
	Sand and shale	160	1420
	Shale, blue	20	1440

TABLE 5.--Chemical analyses of selected water samples

(Analytical results are in parts per million, unless otherwise indicated)

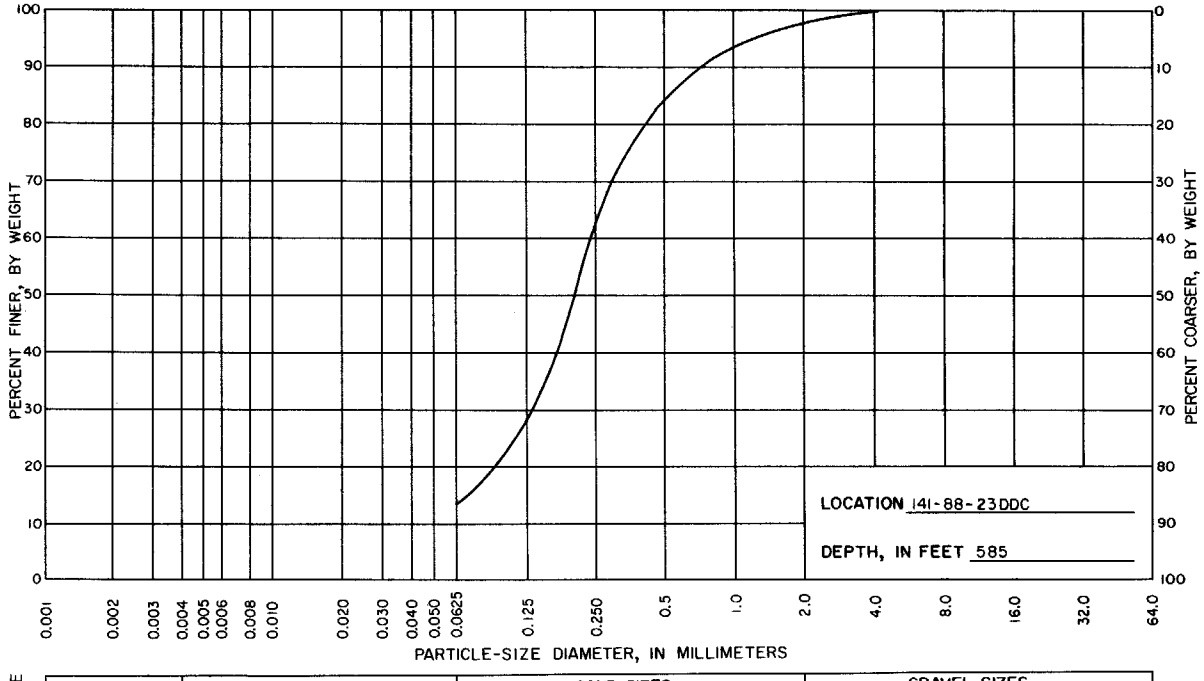
LOCAL NUMBER	MAJOR AQUIFER[1]	DEPTH OF WELL (FT.)	DATE	SILICA (SiO2)	TOTAL IRON (Fe)	CALCIUM (Ca)	MAGNESIUM (Mg)	SODIUM (Na)	POTASSIUM (K)	BICARBONATE (HCO3)	CARBONATE (CO3)	SULFATE (SO4)	CHLORIDE (Cl)	FLUORIDE (F)	NITRATE (NO3)	BORON (B)	DISSOLVED SOLIDS (RESIDUE AT 180°C)	HARDNESS (Ca,Mg)	NONCARBONATE HARDNESS	SODIUM ADSORPTION RATIO	PERCENT SODIUM	SPECIFIC CONDUCTANCE (MICROMHOS)	PH	TEMPERATURE (DEG C)
140N085W03DDD	PS	980	06-16-69	11	.94	4.7	1.6	659	2.4	1260	18	3.8	282	3.7	--	3.3	1660	18	0	68	99	2630	8.3	--
141N081W13CCC	31	54	08-28-67	21	3.3	93	36	67	5.5	467	0	114	11	.3	2.5	.10	547	380	0	1.5	27	900	7.8	9
141N081W13DBB	OL	--	07-19-67	15	.13	4.8	.7	657	2.0	1090	22	.8	381	2.2	--	2.2	1610	15	0	74	99	2770	8.4	11
141N082W09DDD	OI	437	04-18-69	8.1	8.4	6.0	2.7	609	2.5	1420	21	9.6	123	.8	--	1.6	1540	26	0	52	98	2450	8.5	9
141N082W22COA	31	34	07-02-69	19	1.3	66	29	174	4.7	518	0	222	10	.1	1.0	.15	720	285	0	4.5	57	1190	7.8	8
141N083W04ADD	31	66	08-28-67	18	2.8	48	22	196	9.2	579	0	160	2.7	.2	1.0	.15	745	212	0	5.9	66	1040	8.0	--
141N083W04BC	OO	316	05-15-67	7.7	6.8	9.6	.5	653	3.9	1670	0	14	35	1.5	3.0	.62	1700	26	0	56	98	2490	8.2	9
141N083W04BDA	31	48	08-29-67	19	3.3	24	12	221	5.5	983	5	100	2.6	.4	3.0	.39	712	108	0	9.2	81	1070	8.4	9
141N083W04BDB	31	76	08-29-67	13	3.2	47	19	179	4.1	531	8	128	3.8	.2	--	.15	645	194	0	5.6	66	1050	8.4	8
141N085W27DDD	OO	300	10-28-68	7.5	2.0	7.3	3.4	611	3.3	1560	20	1.8	17	1.8	1.0	.62	1530	32	--	47	97	2280	8.4	--
141N089W05CBA	31	162	08-04-69	26	.30	101	46	849	9.9	999	0	1450	3.5	.1	2.5	.26	2660	440	0	18	80	4000	7.9	--
141N089W11BC	PS	1318	03-21-67	10	.04	3.6	.2	601	1.9	1280	0	3.3	189	3.9	--	2.4	1470	10	0	83	99	2390	8.2	8
141N089W20CB	PS	--	03-21-67	9.1	1.8	4.4	.7	750	2.4	1880	24	3.3	33	1.2	1.8	1.8	1810	14	0	87	99	2750	8.4	--
141N089W23AA	31	102	08-07-69	20	18	213	83	1370	7.0	1450	0	2700	3.6	.4	1.0	.48	4650	872	0	20	77	6320	8.0	9
141N089W23BAA	31	280	11-19-68	27	3.8	152	60	551	11	850	0	1110	4.0	.4	5.6	.62	2320	628	0	9.5	65	3080	7.9	--
141N090W09DB	PS	--	06-03-68	11	--	3.2	1.5	716	2.6	1840	14	2.9	29	1.6	2.5	2.1	1690	14	0	83	99	2560	8.3	13
141N090W19CCD	PS	--	06-06-67	14	4.8	3.6	1.0	584	2.7	1140	22	1.6	198	4.7	3.0	2.0	1490	13	0	80	99	2330	8.4	16
141N090W19CCD	PS	--	06-15-67	12	5.4	3.2	1.0	578	2.3	1170	19	5.9	185	4.7	3.0	1.8	1520	12	0	73	99	2310	8.4	16
141N090W19CCD	PS	--	07-10-69	12	14	4.0	.5	581	2.8	1200	0	11	188	4.6	1.0	1.7	1410	12	0	73	99	2310	8.1	--
141N090W19CCD	PS	--	07-10-69	12	.40	3.2	.2	563	2.6	1160	30	1.6	175	4.6	2.5	1.7	1310	9	0	82	99	2280	8.6	16
142N081W08DAA	OL	350	03-31-67	6.7	.30	4.8	.7	714	2.2	1220	24	--	363	1.2	--	2.2	1730	15	0	80	99	2940	8.5	--
142N082W05DAA1	PA	501	04-25-69	9.4	1.1	4.9	1.7	619	2.3	1350	35	8.7	142	.9	--	1.7	1510	19	0	62	98	2450	8.5	9
142N082W05DAA2	31	50	10-25-68	20	5.5	101	46	143	4.7	472	0	359	4.3	.1	2.0	.16	911	440	53	3.0	41	1290	7.9	--
142N084W08AAB	31	124	07-09-69	24	.88	53	18	107	3.5	416	0	104	1.2	.1	1.0	.26	527	206	0	3.2	52	806	8.0	--
142N084W08ABB	31	81	07-13-69	22	1.2	68	11	51	2.8	334	0	55	1.8	.1	1.0	.11	374	214	0	--	34	595	8.0	8
142N084W14AC	OO	130	06-12-68	13	.10	21	6.0	253	3.6	699	0	54	3.0	.4	3.0	.34	695	77	0	13	87	1100	8.0	9
142N084W14CB	OO	118	06-12-68	9.3	.07	10	3.4	317	3.4	796	0	65	3.3	.4	.4	.34	806	39	0	22	94	1270	8.1	12
142N084W15DA	OO	139	06-12-68	28	3.2	66	13	98	3.7	483	0	44	2.3	.2	--	.24	479	219	0	2.9	49	778	7.8	9
142N084W24BBA	PC	1008	12-07-67	--	2.1	4.4	2.0	686	2.4	--	--	9.1	--	3.2	--	2.7	1620	19	--	--	99	2800	--	--
142N084W24BBA	PC	1008	08-22-68	7.9	.32	4.2	1.3	684	2.5	1170	38	4.6	343	3.5	--	3.5	1680	16	0	74	99	2820	8.6	--
142N085W11BCC	OO	303	07-11-69	10	5.7	6.0	2.2	635	4.2	1580	26	12	30	1.3	1.0	.70	1440	24	0	56	98	2350	8.3	10
142N088W01CDC	OO	560	05-24-69	4.5	.05	6.1	2.7	828	4.1	1920	49	15	124	1.9	.5	.33	2030	26	0	71	98	3190	8.6	9
142N088W04BBB	OJ	28	- - -	---	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1700	--	--
142N089W10AB	PS	--	04-18-67	11	.15	4.0	.2	671	2.1	1220	0	.3	315	3.8	--	2.2	1650	11	0	88	99	2700	8.2	11
142N090W15BD 1	OO	--	07-13-67	9.1	.08	6.0	1.2	812	3.0	2050	34	2.6	39	.9	1.0	.62	1930	20	0	79	99	3010	8.4	11
142N090W15BD 2	OO	280	07-13-67	9.0	.10	6.0	1.2	830	3.5	2180	0	3.0	16	1.3	--	.31	1940	20	0	81	99	3020	8.2	9
142N090W23DCC2	31	179	08-06-69	27	6.1	170	63	770	12	981	0	1570	1.9	.3	2.5	.19	2860	682	0	13	71	3990	7.8	--
142N090W25BA	PS	--	08-25-64	9.2	1.6	5.2	.5	806	20	1970	58	11	54	.6	--	2.4	1970	15	0	90	98	2900	8.3	13
142N090W25CB	PS	880	08-25-64	9.5	1.1	5.2	.5	810	20	1940	65	21	63	.7	--	2.2	1990	15	0	91	98	2900	8.3	14
142N090W26ABB	PS	--	08-25-64	10	2.5	5.6	.5	790	24	1950	50	13	56	.8	--	1.9	1920	16	0	86	97	2900	8.4	14
143N084W28CCC2	31	65	05-24-69	27	.40	103	32	97	4.2	485	0	186	3.1	.1	1.0	.11	698	388	0	2.1	35	1050	7.7	--
143N085W03AAA	--	--	10-21-68	25	6.1	61	19	215	5.6	586	0	214	2.7	.3	2.3	.23	863	229	--	6.2	66	1240	7.6	--
143N087W25BB	PS	--	03-28-67	12	1.4	4.8	1.2	750	2.4	1020	0	.7	561	3.1	--	3.0	1940	17	0	79	99	3200	8.1	--
143N088W04DCD	31	30	06-12-68	18	--	116	41	159	6.0	574	0	323	8.0	.2	20	.20	962	458	0	3.2	43	1410	7.9	7
143N089W11DDD2	31	59	08-07-69	32	2.7	139	38	217	10	695	0	436	1.2	.2	1.0	--	1130	505	0	4.2	48	1720	7.7	9
143N089W19ACC	PS	--	08-24-64	9.0	2.0	2.8	.7	570	24	1180	29	5.8	186	6.0	--	2.6	1430	10	0	78	97	2320	8.4	17
143N090W24BA	PS	1280	08-24-64	8.2	1.7	2.8	.7	626	24	1520	0	11	108	2.9	--	2.4	1520	10	0	86	97	2420	8.2	17
143N090W26DDB	OO	--	06-03-68	8.5	--	4.1	2.2	816	3.4	2090	27	2.3	30	1.2	--	.63	1910	19	0	81	99	2900	8.3	--
143N090W34CD	PS	--	06-17-68	11	--	3.9	1.3	767	2.6	1950	19	4.1	65	.7	--	1.7	1860	15	0	86	99	2870	8.4	12
143N090W34DAC1	31	105	08-03-69	22	1.9	83	35	435	7.1	776	0	678	4.0	.3	2.5	--	1390	351	0	10	72	2330	7.9	10
143N090W34DAC2	31	79	08-03-69	25	.98	74	33	687	8.4	1260	0	800	4.0	.5	1.0	.07	1980	319	0	17	82	3160	8.0	--
143N090W34DCB	OO	680	06-17-68	11	--	4.4	1.5	756	2.8	1850	14	4.3	96	.6	--	.93	1810	17	0	80	99	2830	8.3	11
144N082W17CCC	31	23	09-11-67	14	2.9	70	52	180	5.8	540	0	312	7.0	.2	1.0	.05	883	389	0	4.0	50	1360	7.9	12
144N082W17CDD1	31	111	10-04-68	28	7.3	141	35	322	8.8	1060	0	334	13	.5	--	.12	1400	497	0	6.3	58	2030	7.9	--
144N082W17CDD1	31	111	10-05-68	--	6.0	144	36	312	8.9	1050	0	334	11	--	--	--	--	506	0	6.0	57	2000	7.8	--
144N082W17CDD1	31	111	10-06-69	28	5.9	138	39	315	8.8	1050	0	332	11	.5	--	.19	1370	507	0	6.1	57	2020	7.9	--
144N082W17CDD2	31	105	09-20-68	26	4.8	122	32	333	8.8	989	0	338	14	.5	4.0	.16	1350	435	0	6.9	62	1970	8.0	--
144N082W17CDD3	31	103	09-19-68	25	5.2	125	42	271	8.8	910	0	325	6.8	.4	.5	.19	1230	485	0	7.2	54	1800	7.9	--
144N082W17CDD4	31	103	09-20-68	25	5.7	112	37	313	9.7	959	0	330	8.0	.4	1.0	.31	1290	433	0	6.5	61	1910	7.9	--
144N082W20ABB	31	101	09-17-68	27	5.4	132	36	254	9.6	900	0	317	8.4	.5	.6	.27	1200	480	0	5.0	53	1770	7.9	--

LOCAL NUMBER	MAJOR AQUIFER[1]	DEPTH OF WELL (FT.)	DATE	SILICA (SIO2)	TOTAL IRON (FE)	CALCIUM (CA)	MAGNESIUM (MG)	SODIUM (NA)	POTASSIUM (K)	BICARBONATE (HCO3)	CARBONATE (CO3)	SULFATE (SO4)	CHLORIDE (CL)	FLUORIDE (F)	NITRATE (NO3)	BORON (B)	DISSOLVED SOLIDS (RESIDUE AT 180°C)	HARDNESS (CA,MG)	NONCARBONATE HARDNESS	SODIUM ADSORPTION RATIO	PERCENT SODIUM	SPECIFIC CONDUCTANCE (MICROMHOS)	PH	TEMPERATURE (DEG C)
144N08W20DCD	31	85	07-13-67	25	.34	74	21	166	4.6	592	0	135	5.7	.2	--	.12	687	266	0	4.4	57	1110	8.0	10
144N08W21CBA	31	19	09-01-67	15	3.3	60	57	215	7.1	661	0	288	10	.1	1.0	.05	960	384	0	4.8	54	1490	8.0	9
144N08W21CDD	31	104	07-09-69	27	3.8	99	34	245	8.3	780	0	263	17	.2	.4	.22	1000	386	0	5.4	57	1600	7.8	9
144N08W21DAA	31	70	12-13-67	26	3.5	128	58	209	7.1	737	0	377	18	.1	1.0	.05	1150	560	0	3.8	44	1720	7.7	7
144N08W23BBB1	31	38	07-18-67	15	5.3	96	27	94	8.7	578	0	69	9.3	.7	.6	--	585	352	0	2.2	36	979	7.5	9
144N08W23DDD	31	200	07-08-69	20	2.4	18	3.9	607	4.8	1380	0	95	107	.9	1.0	1.3	1480	61	0	34	95	2410	8.1	9
144N08W26ADD	31	26	07-03-69	15	15	184	75	247	8.5	776	0	608	39	.1	4.9	.07	1520	770	133	3.9	41	2160	7.5	7
144N08W26BBA	31	60	07-18-67	23	5.2	150	52	168	5.0	800	0	281	15	.2	--	.12	1070	590	0	3.0	38	1600	7.5	8
144N08W27BBB1	31	50	07-18-67	24	5.4	145	47	150	4.0	710	0	276	11	.3	5.0	.08	985	556	0	2.8	37	1480	7.1	9
144N08W28CBA	31	120	10-21-68	27	1.1	82	27	125	7.4	485	0	184	3.0	.3	1.0	.27	695	315	--	3.1	46	1030	7.8	--
144N08W29AB	31	72	07-21-67	23	.04	66	24	155	3.7	562	0	123	4.0	.2	--	.07	671	263	0	4.2	56	1140	8.2	7
144N08W33D0D	21	19	08-30-67	14	3.2	90	44	72	6.0	384	0	214	10	.2	3.0	--	741	405	90	1.6	27	980	7.8	8
144N08W34CCC	31	29	08-30-67	17	3.0	32	32	284	5.6	902	0	71	6.3	.2	2.0	.10	892	213	0	8.5	74	1520	8.2	8
144N08W34DBA	31	100	07-21-67	21	4.0	69	32	527	6.6	1210	0	444	4.0	.4	2.5	.24	1660	305	0	13	79	2480	8.0	10
144N08W34DDD	31	28	08-30-67	14	2.8	28	35	412	5.8	789	7	452	2.4	.1	4.0	.39	1300	215	0	12	80	2000	8.3	9
144N08W36DB	OL	--	07-13-67	9.5	.04	4.4	2.0	667	2.2	1580	0	1.4	119	1.1	--	1.8	1590	19	0	67	99	2570	8.2	--
144N08W27ADD	31	140	10-23-68	26	3.3	78	26	207	6.4	691	0	167	3.8	.2	1.0	.19	860	303	--	5.2	59	1280	7.9	--
144N08W01DDD	31	70	06-29-67	28	5.0	114	28	66	5.5	536	0	108	2.6	.2	1.0	.04	585	398	0	1.4	26	939	7.8	--
144N08W02BCB1	31	118	06-26-69	29	2.3	130	32	81	4.7	586	0	193	1.9	.1	1.0	.11	724	456	0	1.7	28	1080	7.9	9
144N08W02BCB2	31	116	06-24-69	27	.10	146	42	60	4.5	513	0	240	1.5	.1	.2	.07	745	539	118	1.1	19	1130	7.8	--
144N08W02BCB3	31	118	06-23-69	27	1.7	164	41	72	4.6	592	0	273	1.9	.1	2.0	.07	848	580	95	1.3	21	1240	7.8	26
144N08W02BCB6	31	130	07-08-69	28	.30	147	43	68	4.7	564	0	228	1.9	.3	2.5	.19	818	566	84	1.3	21	1190	7.6	--
144N08W02BCB6	31	130	07-09-69	28	4.6	157	46	65	4.6	556	0	264	1.2	.2	2.5	.19	839	583	127	1.2	19	1220	7.5	--
144N08W02BCB6	31	130	07-10-69	28	4.8	162	44	65	4.6	558	0	273	1.9	.2	2.5	.19	870	584	126	1.2	19	1240	7.5	9
144N08W02BCB6	31	130	07-11-69	28	6.1	165	42	69	4.6	560	0	274	1.5	.2	2.5	.19	868	585	126	1.2	19	1240	7.5	--
144N08W02BCC	31	119	06-29-69	2.6	5.8	166	56	74	4.7	502	0	396	1.2	.1	1.0	.11	964	645	233	1.3	20	1340	7.7	26
144N08W02CD	OL	--	05-01-69	10	.10	5.5	2.1	675	2.6	1390	17	14	236	.8	1.0	1.7	1690	22	0	63	98	2740	6.4	10
144N08W03ADA	31	112	06-24-69	24	2.1	171	54	64	4.4	523	0	361	1.7	.1	1.0	--	908	649	220	1.1	18	1310	7.7	--
144N08W03DAA	31	123	06-27-69	28	--	146	41	76	4.8	542	0	264	1.2	.1	2.5	.15	797	535	91	1.4	23	1200	7.8	9
144N08W03DCD	OL	452	08-27-64	7.5	1.7	4.0	1.2	642	24	1280	38	5.8	233	.8	.0	2.4	1610	15	0	72	97	2570	8.5	11
144N08W06ABB	31	51	07-17-67	25	6.9	149	25	43	16	488	0	161	2.5	.3	--	.08	620	474	74	.9	16	971	7.7	9
144N08W10AAA	31	110	05-13-69	27	4.5	109	32	136	4.6	649	0	147	2.1	.2	--	--	765	405	0	2.9	42	1200	7.8	7
144N08W10CCA	PS	--	03-29-67	11	.10	4.4	.2	613	2.2	1100	43	2.1	275	4.4	--	2.6	1550	12	0	77	99	2560	8.5	--
144N08W11CCC	31	100	05-13-69	24	25	339	81	98	4.9	660	0	807	--	.1	2.5	.19	1740	1180	639	1.2	15	2120	7.3	7
144N08W11DAA	PS	--	05-27-67	9.5	.06	4.4	.7	634	2.2	1140	24	1.3	308	2.9	--	2.6	1510	14	0	74	99	2650	8.5	--
144N08W17AD	OL	--	07-19-67	10	.30	4.4	1.2	679	2.4	1290	21	.4	278	1.2	--	1.7	1660	16	0	74	99	2700	8.4	11
144N08W18ADA1	31	66	05-01-69	10	2.8	60	27	66	4.9	457	0	26	15	.4	1.1	.19	431	260	0	1.8	35	717	7.9	--
144N08W18ADA3	31	65	01-23-68	24	3.2	77	24	178	6.5	647	0	118	5.3	.5	5.5	.34	774	293	0	4.5	56	1170	8.0	10
144N08W18ADC2	21	63	07-17-67	21	5.2	81	25	105	8.5	580	0	45	2.3	.5	.6	.04	539	303	0	2.6	42	907	7.8	9
144N08W18DAB	31	164	07-23-69	26	3.4	82	32	184	9.4	732	0	135	2.6	.3	.2	.48	746	339	0	4.4	53	1280	7.9	9
144N08W18DAC	31	63	07-18-67	22	5.3	94	24	37	7.0	396	0	68	13	.4	1.0	.04	619	336	10	.9	19	753	7.6	9
144N08W18DDC3	31	53	07-18-67	23	5.4	77	23	85	6.4	378	0	149	1.5	.3	--	.04	511	285	0	2.2	39	837	7.8	9
144N08W18DDC4	31	203	07-23-69	26	2.2	61	18	263	8.1	828	0	110	8.2	.5	.3	.48	742	227	0	7.6	71	1420	7.9	9
144N08W19ABA	31	224	07-14-69	24	.96	51	17	307	6.9	876	0	143	12	.7	.3	.48	1040	198	0	9.5	76	1540	8.1	10
144N07W14AAA	31	230	11-02-68	23	5.0	93	25	139	9.4	573	0	153	5.4	.3	8.6	.23	683	336	0	3.3	47	1120	7.5	--
144N07W20DDD	PS	1144	08-26-64	8.6	1.3	3.6	.5	590	34	1070	50	3.3	267	5.0	--	3.4	1520	11	0	77	96	2420	8.6	13
144N07W23ACC	OL	--	07-19-67	10	.06	5.6	1.2	750	2.2	1400	0	.4	356	.8	--	1.3	1890	19	0	75	99	3030	8.2	12
144N07W31ADB	31	--	06-12-68	28	3.3	73	18	176	7.6	638	0	115	8.9	.4	1.0	.24	722	256	0	4.8	59	1120	7.9	12
144N08W02AAB	31	241	07-28-69	28	2.0	73	20	100	5.0	483	0	101	.8	.5	--	--	504	264	0	2.7	45	891	7.8	10
144N08W29CA	31	114	01-29-68	25	3.2	80	21	93	5.1	487	0	94	2.5	.3	1.0	.29	554	286	0	2.4	41	870	7.9	8
144N08W29CAD	--	--	05- -60	--	5.6	153	155	80	5.0	348	0	152	--	.1	--	.25	540	308	--	--	15	--	8.1	--
144N08W29CC	31	23	05-13-67	21	.02	79	24	5.4	8.0	294	--	76	2.0	.1	--	.11	364	296	55	--	4	588	8.1	--
144N08W29CCC3	31	161	07-22-69	28	1.2	69	25	196	7.6	656	0	168	3.0	.4	.5	.52	858	276	0	5.1	60	1260	7.9	--
144N08W29CD	31	126	05-24-69	27	2.0	87	27	133	8.1	600	0	121	.5	.4	1.0	.26	706	327	0	9.2	46	1100	7.7	--
144N08W29DDA	--	--	05- -60	--	17	483	308	278	6.0	616	0	761	11	.1	--	.20	1790	791	--	--	20	--	7.7	--
144N08W36BBC2	31	104	07-15-69	26	.88	72	26	115	4.8	478	0	141	2.0	.2	1.0	.48	625	285	0	3.0	46	960	8.2	9
144N09W14CDD	PS	1281	05-10-69	11	.05	4.0	.5	601	1.9	1160	0	4.9	237	4.9	.2	1.8	1510	12	0	75	99	2370	8.2	--
144N09W04ABA	PS	1265	08-25-64	8.2	.46	4.0	.2	614	10	1350	50	2.5	121	2.7	--	2.1	1510	11	0	80	98	2360	8.6	9
144N09W04ADC	31	160	05-09-68	33	3.7	92	35	142	9.2	498	0	270	--	.6	--	.33	802	373	0	3.2	44	1210	7.9	7
144N09W15DB	PS	1325	06-03-68	13	.24	2.4	1.2	567	1.9	1120	38	2.0	185	5.2	--	2.5	1290	11	0	74	99	2310	8.4	17

LOCAL NUMBER	MAJOR AQUIFER 1/	DEPTH OF WELL (FT.)	DATE	SILICA (SIO2)	TOTAL IRON (FE)	CALCIUM (CA)	MAGNESIUM (MG)	SODIUM (NA)	POTASSIUM (K)	BICARBONATE (HCO3)	CARBONATE (CO3)	SULFATE (SO4)	CHLORIDE (CL)	FLUORIDE (F)	NITRATE (NO3)	BORON (B)	DISSOLVED SOLIDS (RESIDUE AT 180°C)	HARDNESS (CA,MG)	NONCARBONATE HARDNESS	SODIUM ADSORPTION RATIO	PERCENT SODIUM	SPECIFIC CONDUCTANCE (MICROMHOS)	PH	TEMPERATURE (DEG C)
144N090W16ABC	31	141	07-29-69	32	1.8	64	28	196	8.8	562	0	254	.2	.5	2.5	.11	771	275	0	5.1	60	1270	7.8	9
144N090W22DAD	31	162	08-02-69	28	2.3	60	24	317	8.7	740	0	350	2.0	.6	1.0	.04	1010	250	0	6.7	73	1710	8.0	—
144N090W25AD	PS	1360	08-27-64	8.4	1.0	3.6	.7	626	20	1370	95	8.2	124	3.2	—	2.2	1530	12	0	78	97	2360	8.6	14
144N090W29AD	PS	—	04-05-67	11	.12	2.8	.7	556	1.5	1130	27	1.8	166	5.4	.6	2.3	1300	10	0	76	99	2230	8.5	13
145N084W06CCB	PS	—	03-31-67	11	.08	4.4	.2	602	1.8	1100	22	.1	264	5.2	.9	2.7	1500	12	0	76	99	2470	8.5	—
145N084W20DDD	31	103	07-17-67	22	.20	91	15	306	7.3	775	0	228	63	.5	—	.31	1100	288	0	7.8	69	1680	7.5	9
145N084W28BAD	31	103	07-17-67	23	6.7	87	17	199	3.0	645	0	169	11	.3	2.0	.27	807	287	0	5.1	60	1280	7.7	9
145N084W28DCC3	31	63	07-17-67	27	2.0	79	18	100	15	447	0	105	3.2	.3	—	.12	537	270	0	2.7	49	893	7.9	9
145N084W29CCB	31	70	05-13-69	24	2.2	94	18	367	7.1	956	0	178	8.6	.6	.5	.41	1140	309	0	11	79	1720	8.0	7
145N084W32BCC	31	90	05-12-69	25	4.5	92	19	100	5.2	564	0	48	1.7	.3	.2	.15	569	307	0	2.5	41	901	7.8	7
145N084W32CCC	31	83	05-12-69	25	3.5	99	22	69	4.7	494	0	69	1.0	.2	.2	.15	542	339	0	1.6	30	850	7.9	7
145N084W33ADD	31	134	07-16-69	26	4.3	96	22	99	5.8	516	0	103	1.0	.3	2.5	.52	636	330	0	2.4	39	948	7.9	9
145N084W34CAB	OL	420	07-17-68	8.2	.03	4.9	1.9	653	2.4	1380	31	3.7	184	.8	—	2.2	1590	20	0	63	98	2590	8.5	10
145N085W22CAC	PS	891	05-01-69	12	—	4.5	1.7	587	2.1	1100	25	8.6	234	4.8	1.0	2.4	1480	18	0	60	98	2420	8.5	11
145N085W24DDA	PS	1058	03-31-67	15	.10	4.0	.4	623	2.0	1130	0	.7	305	4.4	.8	3.0	1550	12	0	78	99	2570	8.2	—
145N085W34CCA	31	53	07-17-67	18	3.6	—	—	76	8.5	493	0	74	1.7	.2	—	.12	503	318	0	1.9	—	842	7.8	9
145N086W11CDD	OJ	100	06-12-68	18	3.6	116	44	190	10	720	0	311	4.3	.2	.0	.34	1050	469	0	3.8	46	1550	7.4	12
145N087W06CBB3	PS	1370	05-09-68	11	3.4	4.0	1.2	593	2.4	1200	22	2.1	201	3.9	—	2.7	1450	15	0	67	99	2360	8.3	—
145N087W32DC	31	49	08-31-67	23	5.0	92	36	150	9.8	638	0	171	2.0	.4	.5	.26	779	377	0	3.4	46	1210	8.0	9
145N087W33DCA1	OJ	—	05-29-69	7.9	.64	4.9	2.9	608	3.4	1450	0	119	4.0	2.9	3.0	.19	1500	24	0	54	98	2310	8.2	—
145N088W03ACC	31	118	05-24-69	29	8.6	140	55	304	10	1010	0	403	.5	.5	8.4	.59	1460	576	0	5.5	53	2080	7.5	—
145N088W25AB8	31	216	11-04-68	24	3.3	90	24	29	4.2	395	0	47	1.4	.3	1.0	.19	423	322	—	.7	16	656	7.8	—
145N089W25DBA	PS	1500	04-06-67	4.8	—	2.8	.2	577	2.3	1060	58	3.0	206	5.0	.4	2.5	1420	8	0	—	99	2330	8.7	—
145N090W06DB 2	—	54	05-22-69	14	.08	74	11	17	2.5	260	0	36	.3	.6	6.4	.11	276	228	15	.5	14	489	7.6	—
145N090W08CBA	31	236	11-04-68	27	2.9	103	24	231	5.8	463	0	465	1.5	.5	1.0	.19	1090	356	—	5.3	58	1520	7.7	—
145N090W21AAA1	31	200	05-08-69	26	2.7	90	33	132	7.8	429	0	282	—	.6	.4	.48	1000	360	8	3.0	44	1150	7.8	7
145N090W21AAA2	31	80	05-08-69	29	4.0	70	21	124	4.6	452	0	145	—	1.5	.1	.70	614	260	0	3.3	50	937	7.9	7
146N085W13AC	OL	488	07-19-67	9.7	.08	5.2	1.0	673	1.9	1350	24	.4	231	.9	—	1.7	1650	17	0	71	99	2620	8.4	10
146N087W04DDD2	PS	1205	03-23-67	12	—	3.4	.6	583	2.1	1140	47	1.8	192	4.6	.1	2.3	1450	11	0	—	99	2340	8.6	14
146N087W10UBC	PS	1299	06-12-68	12	.06	3.3	1.0	571	2.0	1060	33	3.8	234	5.0	—	2.3	1400	12	0	72	99	2340	8.6	10
146N088W10DDC	OJ	120	06-17-67	15	—	—	—	606	3.4	881	0	631	6.9	.6	—	—	1670	67	0	32	—	2520	8.1	8
146N088W10DDC	OJ	120	06-12-68	13	3.3	18	2.4	625	3.2	857	6	660	7.3	.4	—	.12	1810	55	0	37	96	2550	8.3	8
146N088W21DDD	31	224	07-25-69	28	3.0	82	29	174	6.9	638	0	184	.2	.3	.2	.56	784	325	0	4.2	53	1250	7.8	10
146N088W28DDD	31	162	07-25-69	26	8.5	73	22	194	5.9	611	0	201	.8	.4	2.5	.67	862	273	0	5.1	60	1250	7.8	10
146N090W20CCC	PS	1574	06-28-68	11	5.0	3.2	1.0	571	1.9	1080	22	5.5	217	4.8	3.0	2.4	1370	12	0	72	99	2240	8.4	—
146N090W20CCC	PS	1574	07-09-69	14	.24	2.5	.7	564	1.7	1100	14	2.9	214	4.9	2.5	1.7	1230	9	0	82	99	2260	8.4	19
147N085W20DBD3	PS	1403	03-31-67	14	1.4	4.6	.6	693	2.3	1010	49	.8	359	4.8	—	3.1	1610	14	0	—	99	2690	8.7	10
147N090W22CCC	—	—	11-03-50	17	1.7	80	54	332	8.5	493	—	698	5.0	—	1.5	.30	1440	422	18	—	63	2010	7.9	8
147N090W25ABC	—	155	11-03-50	13	1.5	26	18	928	9.6	1200	14	1150	17	.6	2.2	—	—	139	0	—	93	3900	8.2	—
Missouri River water																								
147N084W31			06-14-67	5.7	0	64	22	60	4.4	196	0	187	10	.7	0	0	420	250	90	1.7	34	686	8.0	7
147N084W31			01-16-68	6.6	.12	57	18	59	4.1	180	0	186	8.3	.4	1	.34	427	215	68	1.8	37	657	8.0	1

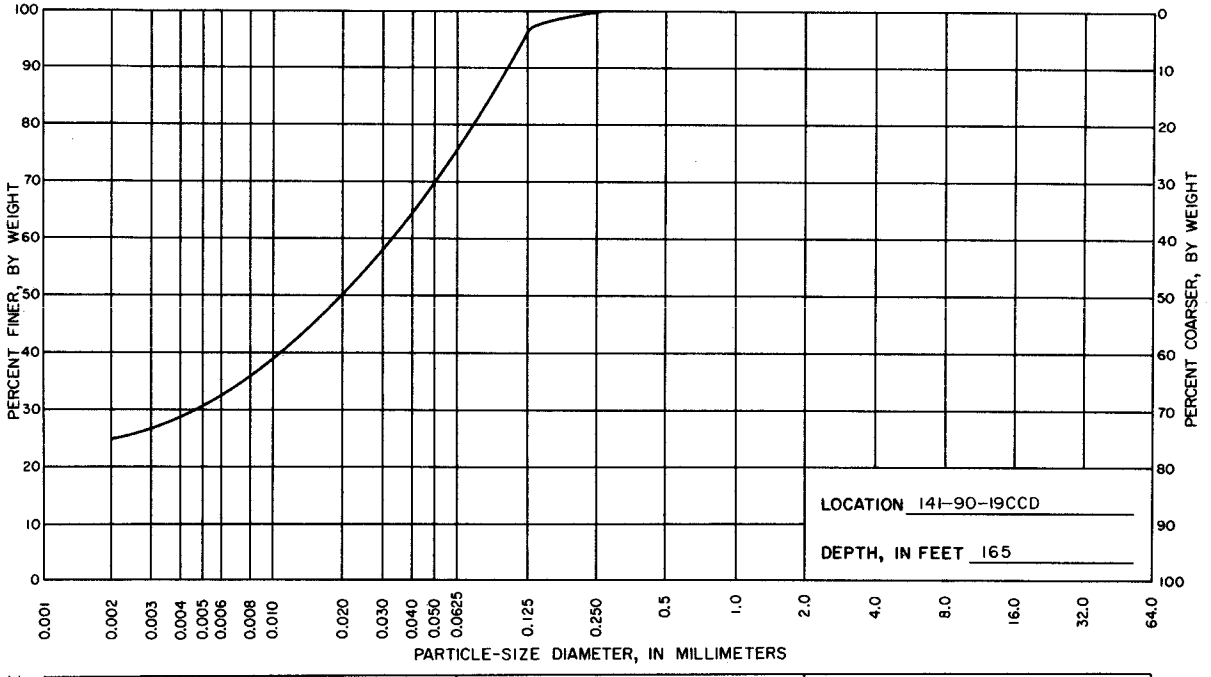
1/ See explanation, p. 12, for definition of aquifer abbreviations.

TABLE 6.-- Particle-size distribution curves



PERCENT OF SIZE

CLAY SIZES	SILT SIZES	SAND SIZES					GRAVEL SIZES				
<0.004mm	0.004–0.0625mm	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
13		15	35	22	9	4	2				



PERCENT OF SIZE

CLAY SIZES	SILT SIZES	SAND SIZES					GRAVEL SIZES				
<0.004mm	0.004–0.0625mm	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
28.8	49.2	18.4	3.4	0.2							

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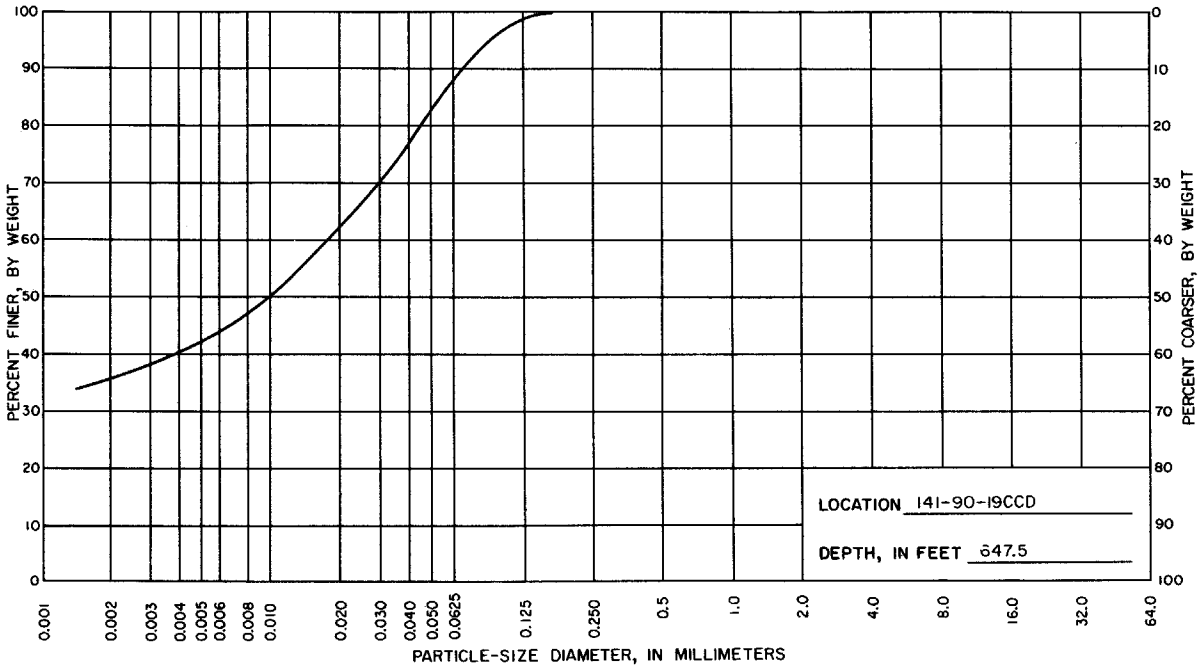

PERCENT OF SIZE

CLAY SIZES	SILT SIZES	SAND SIZES					GRAVEL SIZES				
<0.004mm	0.004–0.0625mm	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
40.3	47.9	11.0	0.8								

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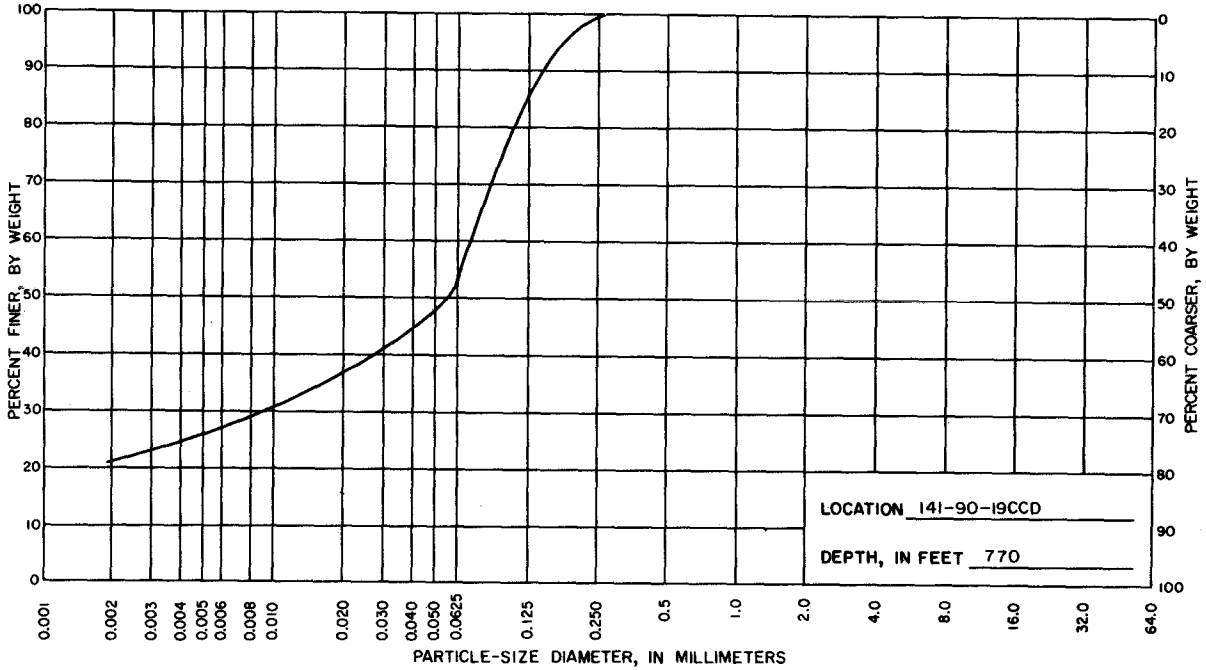

PERCENT OF SIZE

CLAY SIZES	SILT SIZES	SAND SIZES					GRAVEL SIZES				
<0.004mm	0.004–0.0625mm	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
25.0	29.0	31.4	14.4	0.2							

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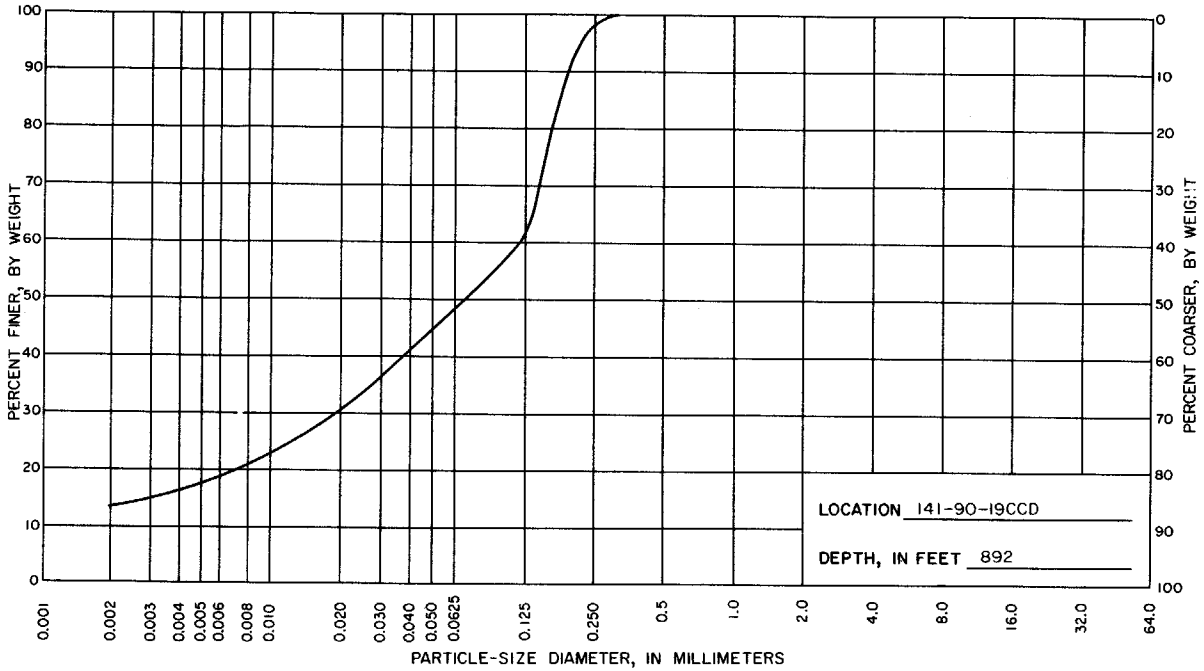

PERCENT OF SIZE

CLAY SIZES	SILT SIZES	SAND SIZES					GRAVEL SIZES				
<0.004mm	0.004–0.0625mm	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
16.3	33.1	12.4	37.2	1.0							

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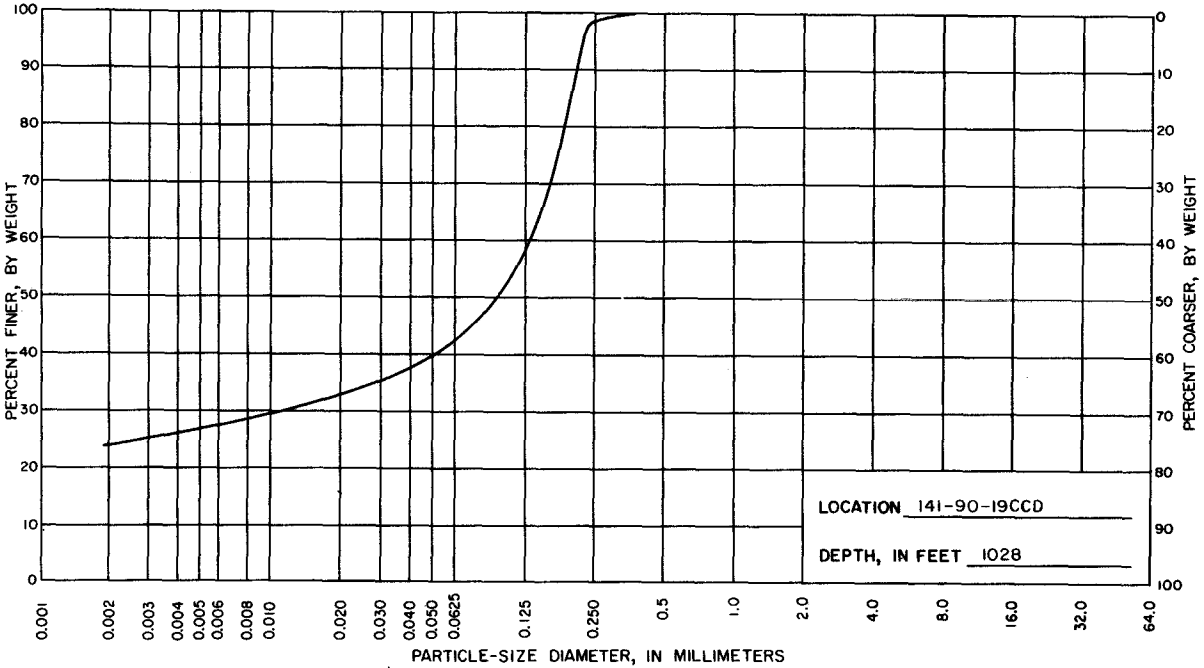

PERCENT OF SIZE

CLAY SIZES	SILT SIZES	SAND SIZES					GRAVEL SIZES				
<0.004mm	0.004–0.0625mm	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
26.0	16.4	16.2	40.4	1.0							

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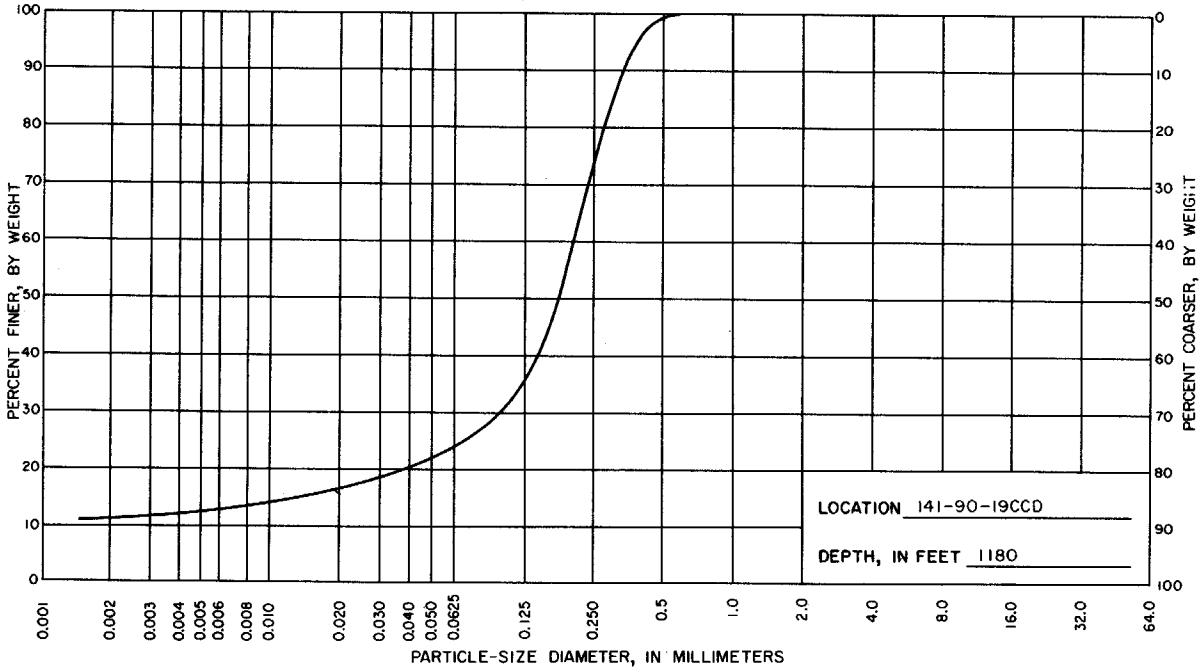

PERCENT OF SIZE

CLAY SIZES	SILT SIZES	SAND SIZES					GRAVEL SIZES				
<0.004mm	0.004–0.0625mm	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
12.3	12.3	10.0	38.8	25.6	1.0						

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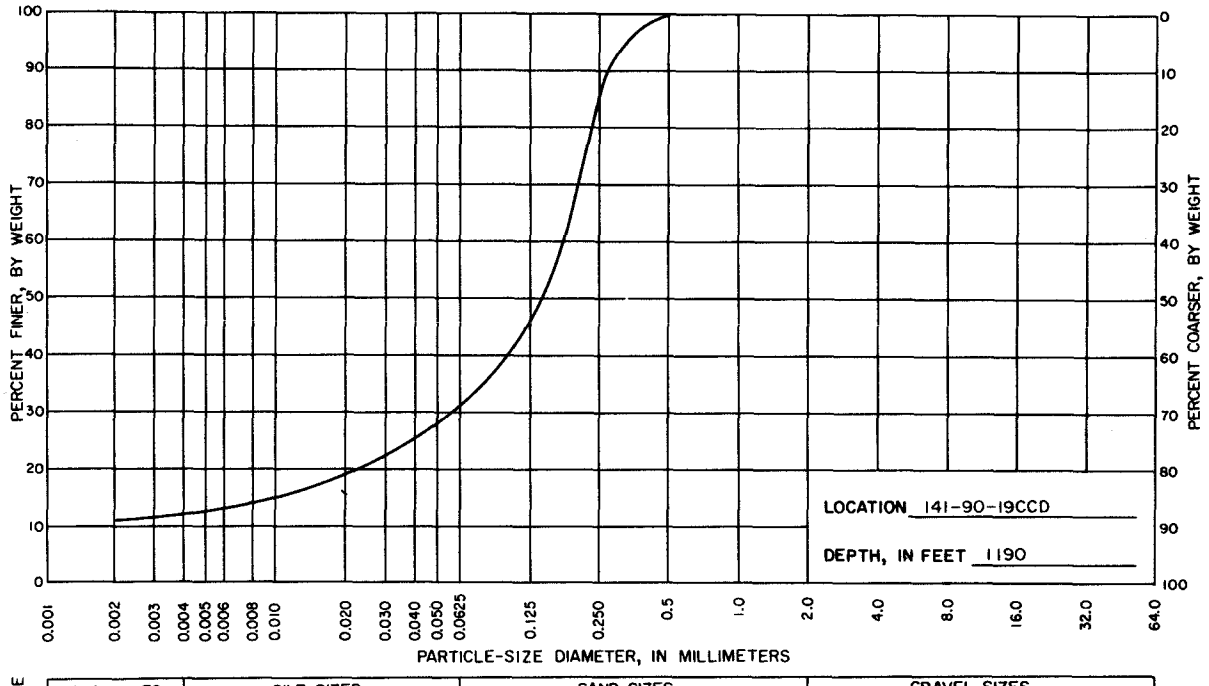

PERCENT OF SIZE

CLAY SIZES	SILT SIZES	SAND SIZES					GRAVEL SIZES				
<0.004mm	0.004–0.0625mm	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
12.4	18.6	14.4	39.8	14.8							

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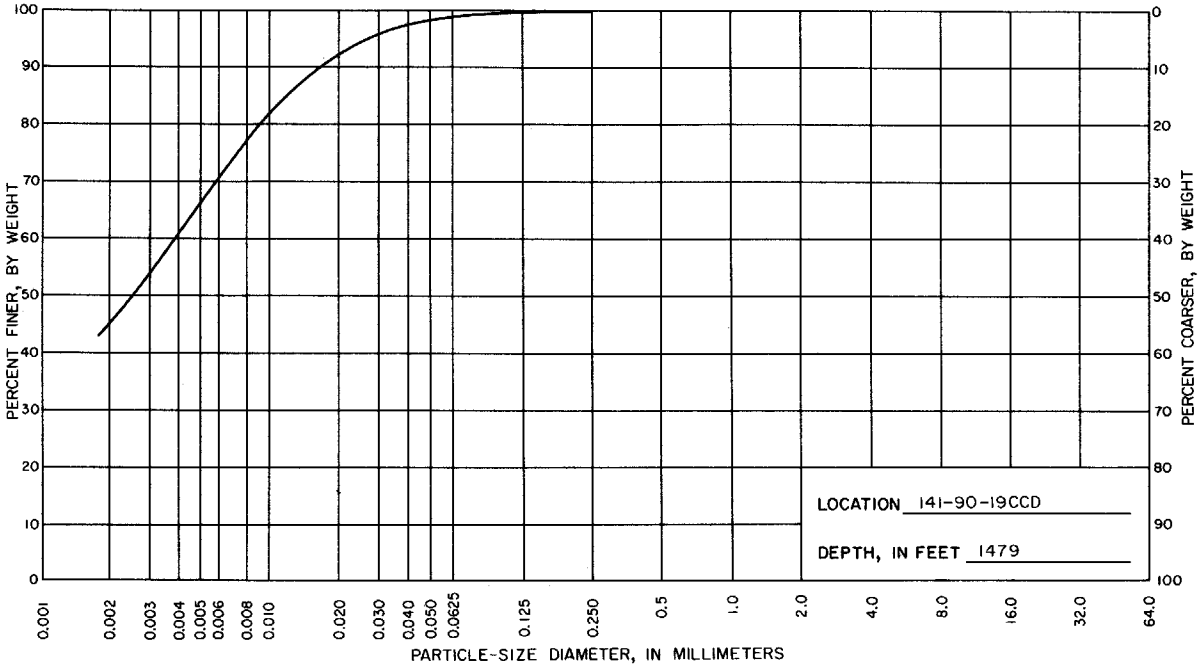

PERCENT OF SIZE

CLAY SIZES	SILT SIZES	SAND SIZES					GRAVEL SIZES				
<0.004mm	0.004–0.0625mm	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
60.4	38.6	0.8	0.2								

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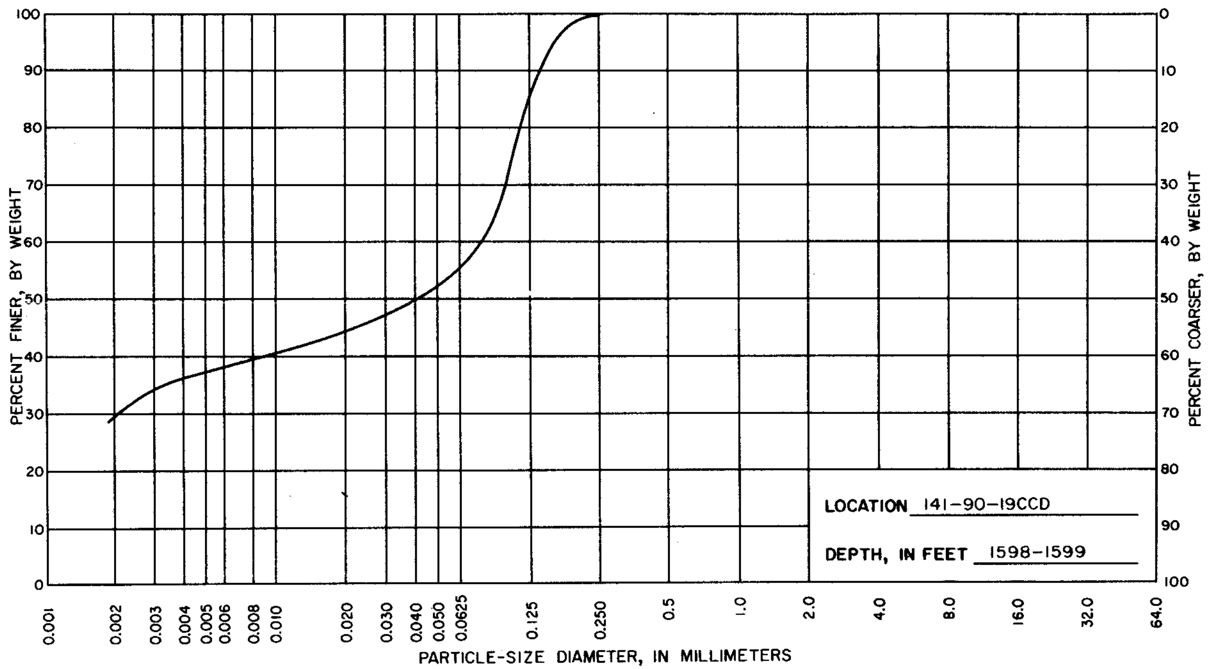

	CLAY SIZES	SILT SIZES	SAND SIZES					GRAVEL SIZES				
	<0.004mm	0.004-0.0625mm	V fine .0625-.125	Fine .125-.25	Medium .25-.5	Coarse .5-1	V coarse 1-2	V fine 2-4	Fine 4-8	Medium 8-16	Coarse 16-32	V coarse 32-64
PERCENT OF SIZE	36.7	19.1	31.6	12.6								

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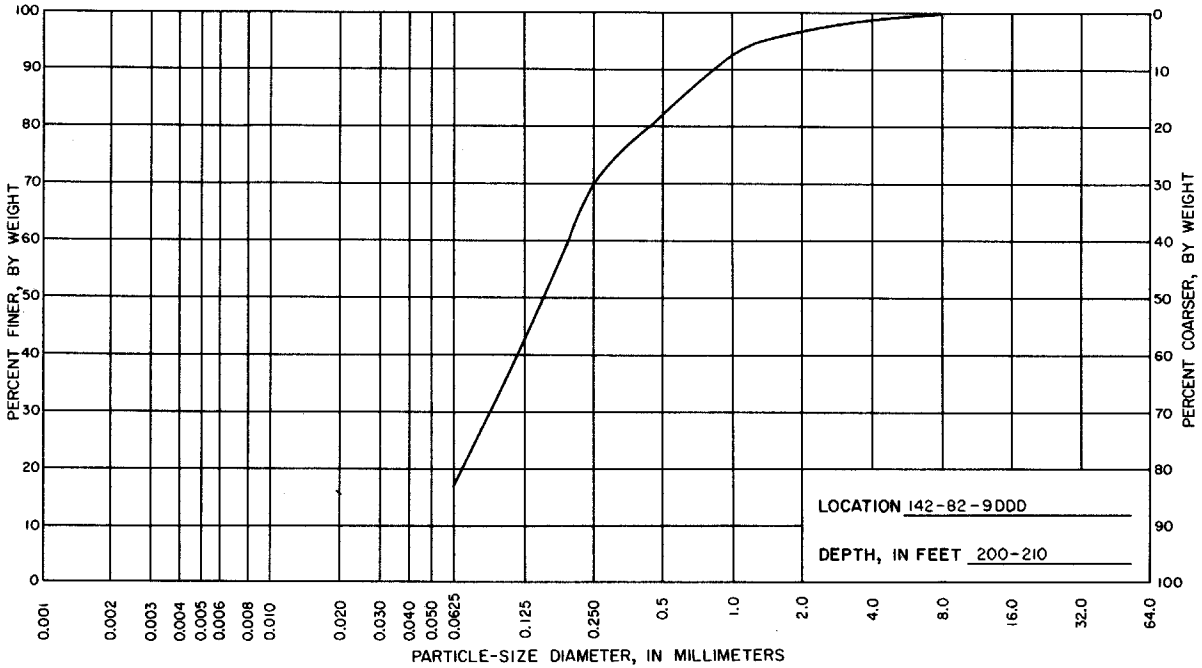
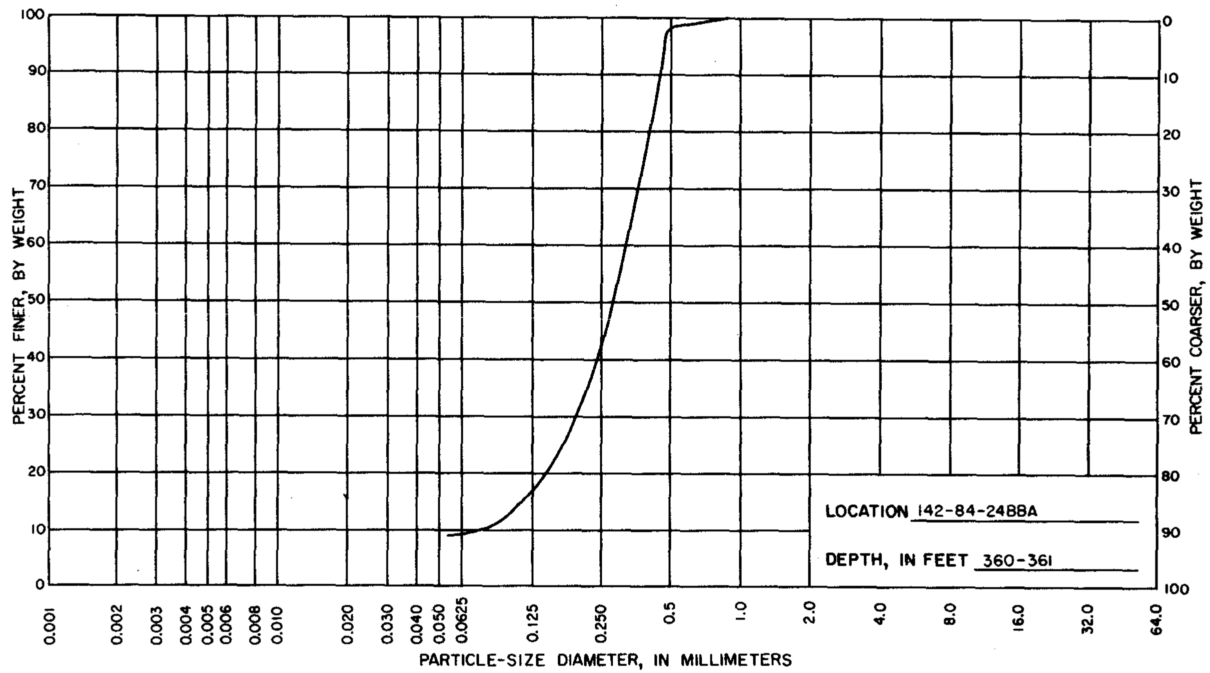


PERCENT OF SIZE

CLAY SIZES	SILT SIZES	SAND SIZES					GRAVEL SIZES				
<0.004mm	0.004–0.0625mm	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
17		26	28	11	12	3	2	1			



PERCENT OF SIZE

CLAY SIZES	SILT SIZES	SAND SIZES					GRAVEL SIZES				
<0.004mm	0.004–0.0625mm	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
	9.2	8.0	25.2	56.0	1.4	0.2					

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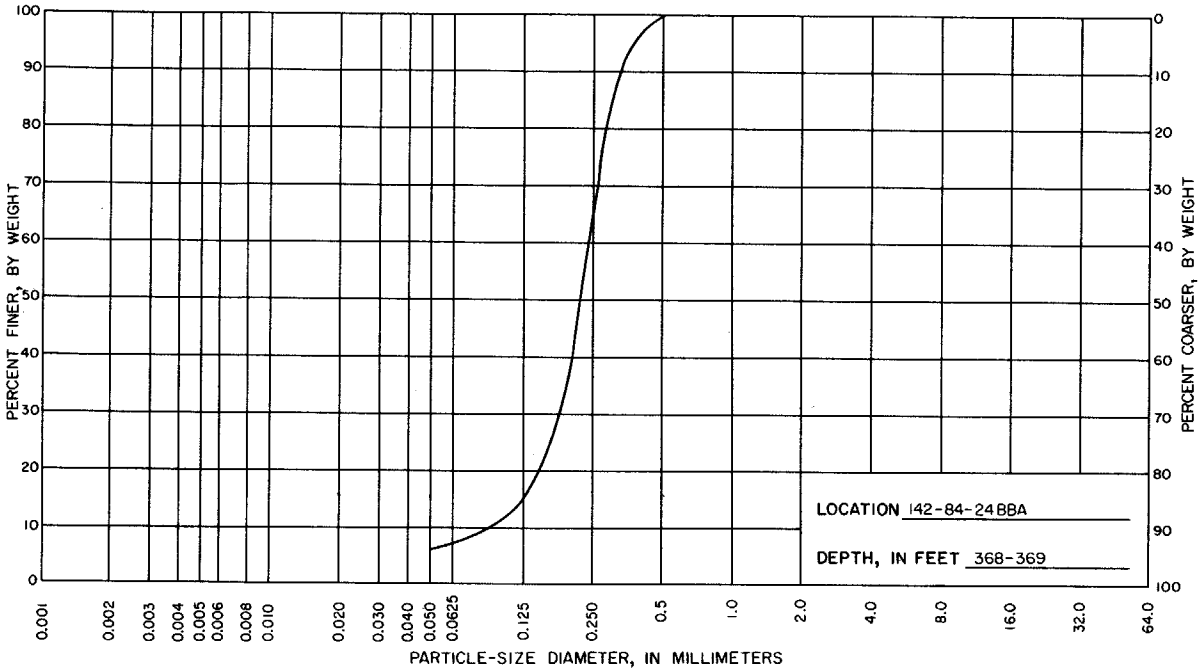

PERCENT OF SIZE

CLAY SIZES	SILT SIZES	SAND SIZES					GRAVEL SIZES				
<0.004mm	0.004–0.0625mm	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
7.4		8.0	48.0	35.4	1.2						

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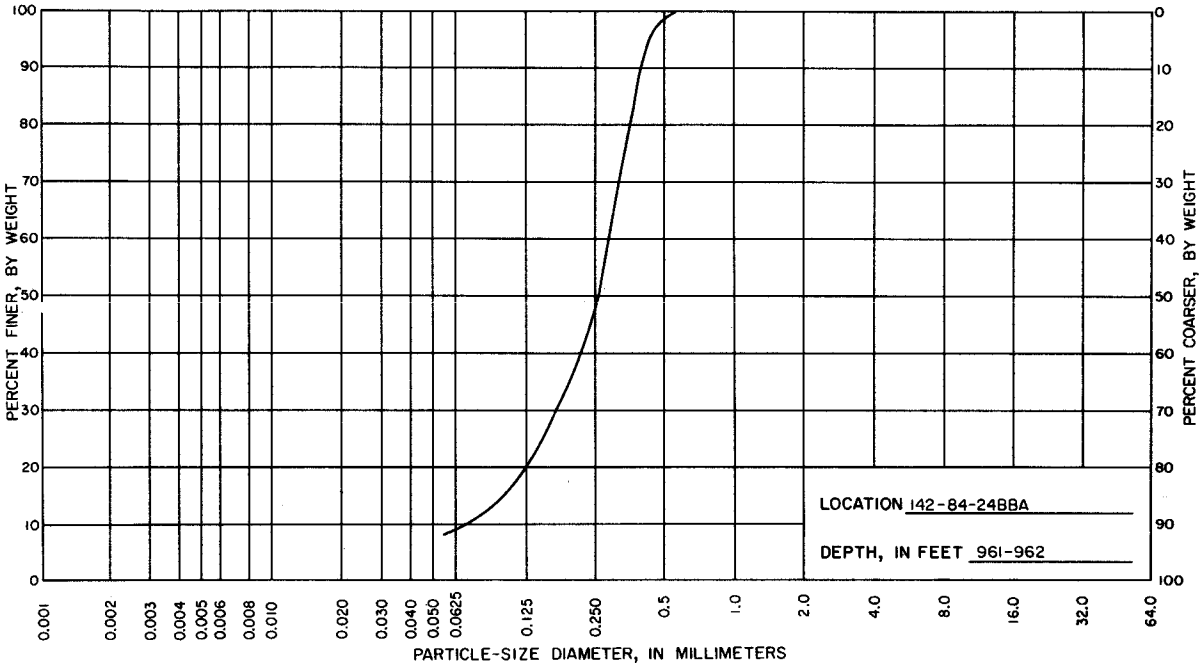

PERCENT OF SIZE

CLAY SIZES	SILT SIZES	SAND SIZES					GRAVEL SIZES				
<0.004mm	0.004–0.0625mm	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
9.6		10.8	29.0	49.6	1.0						

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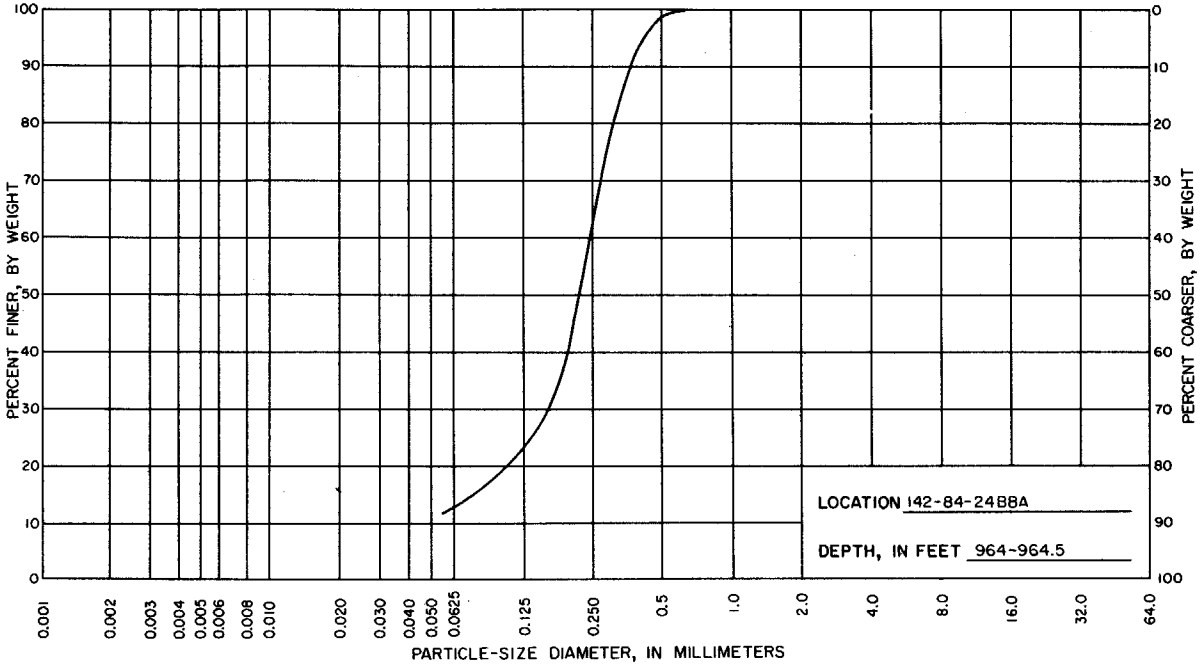

PERCENT OF SIZE

CLAY SIZES	SILT SIZES	SAND SIZES					GRAVEL SIZES				
<0.004mm	0.004–0.0625mm	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
13.0		10.0	40.8	35.6	0.6						

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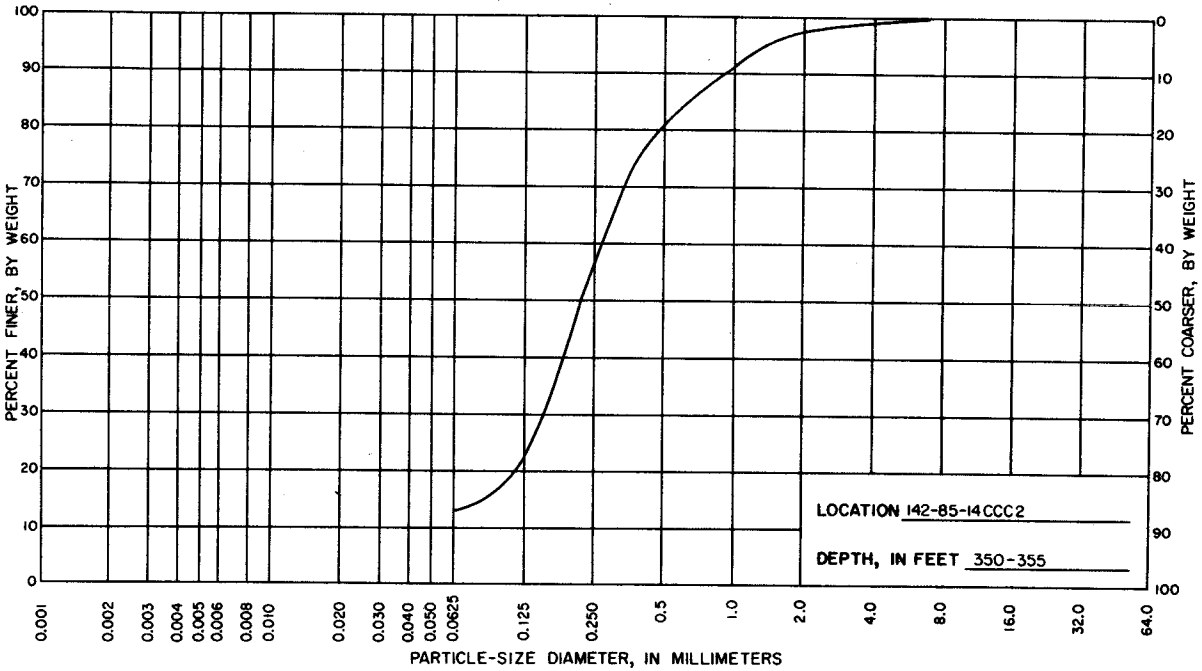
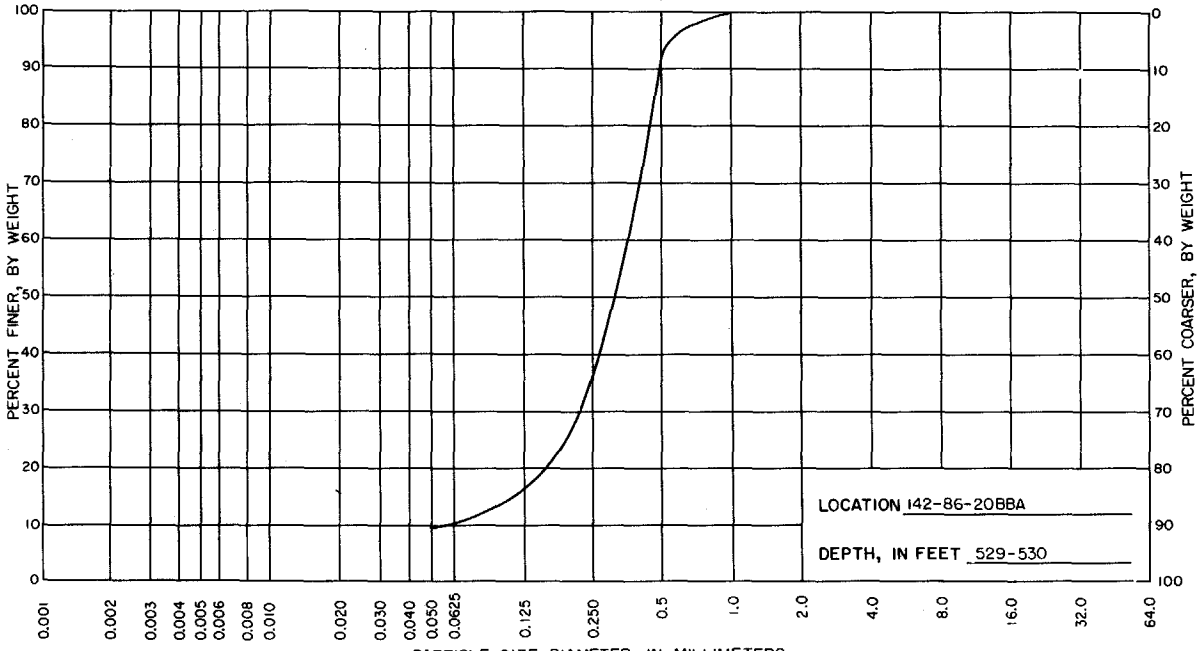


PERCENT OF SIZE

CLAY SIZES	SILT SIZES	SAND SIZES					GRAVEL SIZES				
<0.004mm	0.004–0.0625mm	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
13		9	35	25	9	7	1	1			



PERCENT OF SIZE

CLAY SIZES	SILT SIZES	SAND SIZES					GRAVEL SIZES				
<0.004mm	0.004–0.0625mm	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
11.0		5.6	20.4	55.8	7.0	0.2					

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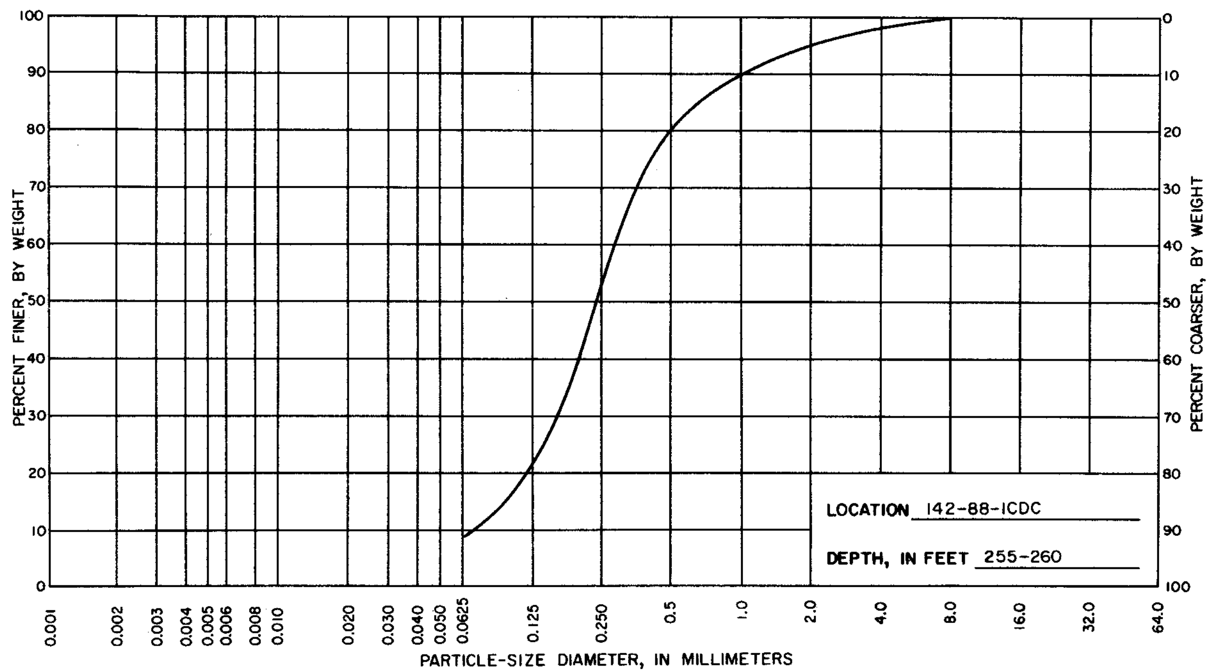
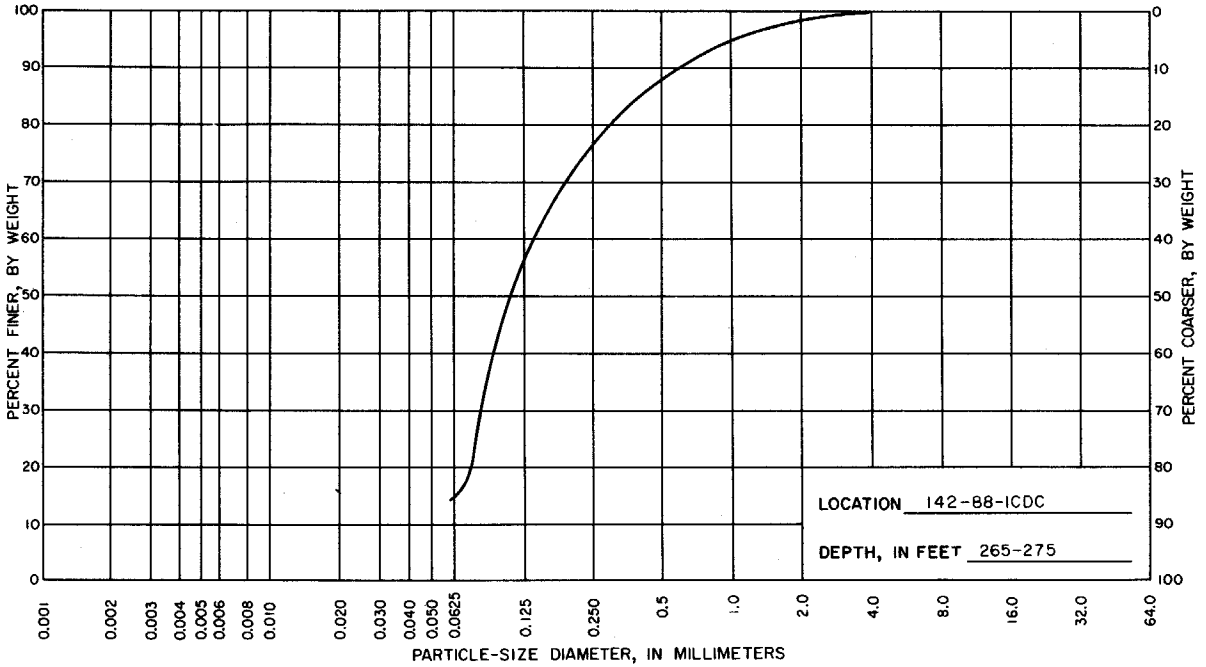


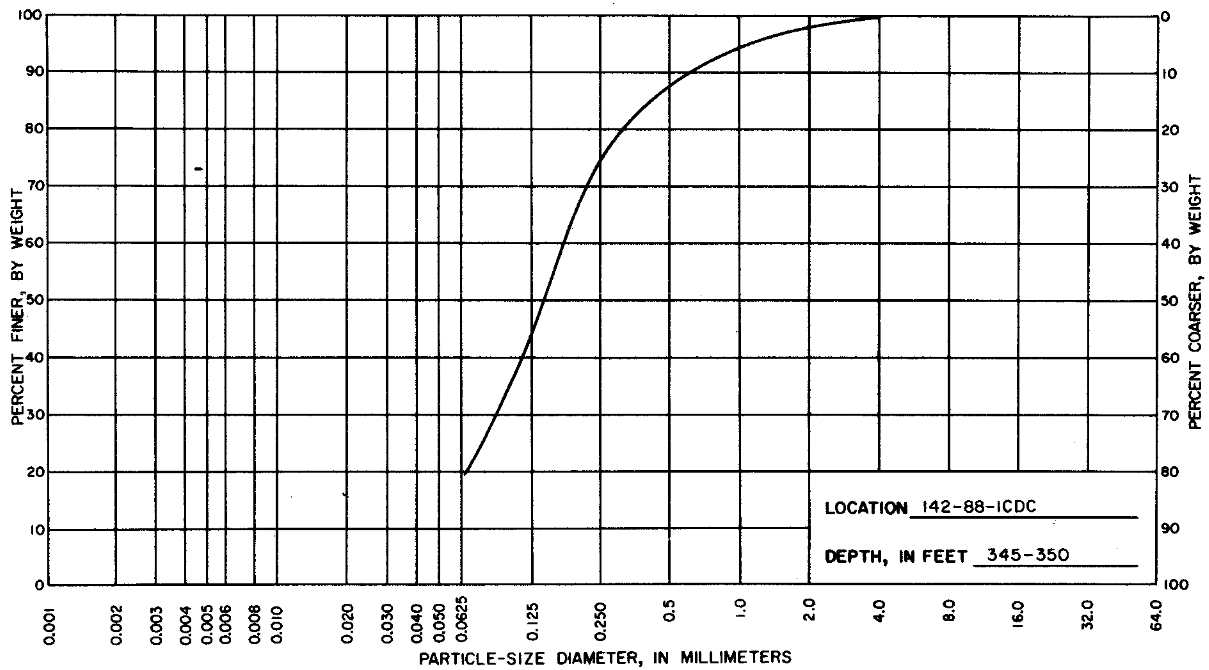
PERCENT OF SIZE

CLAY SIZES	SILT SIZES	SAND SIZES					GRAVEL SIZES				
<0.004mm	0.004–0.0625mm	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
	9	11	30	31	11	3	3	2			



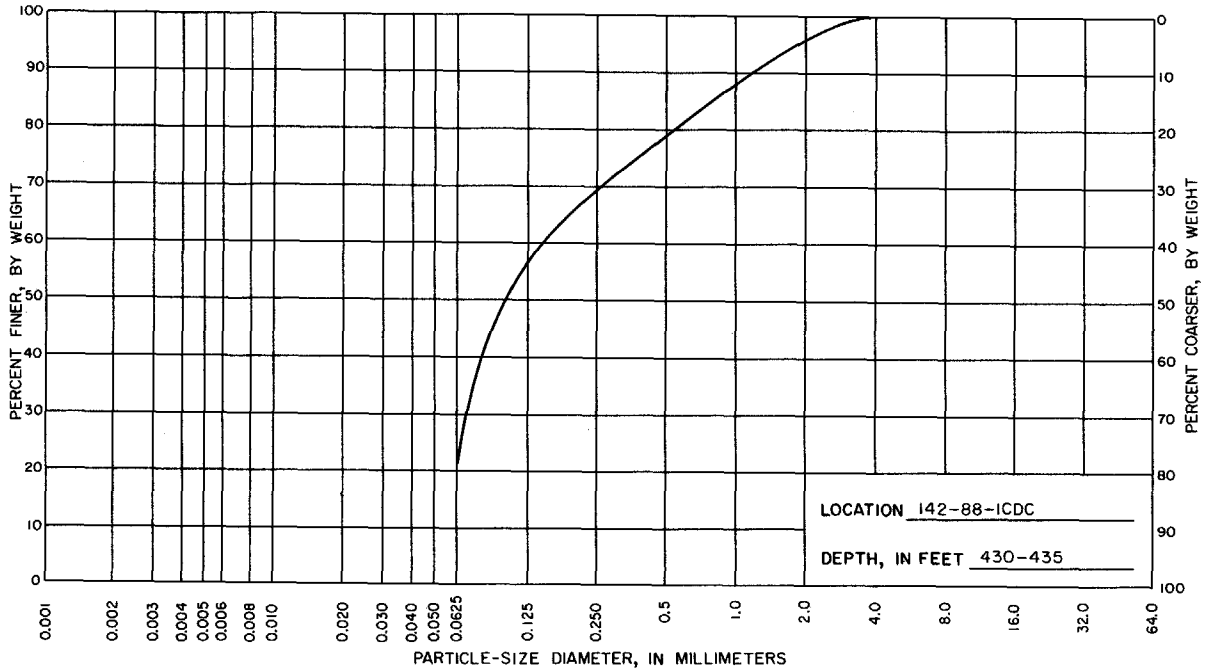
PERCENT OF SIZE

CLAY SIZES	SILT SIZES	SAND SIZES					GRAVEL SIZES				
<0.004mm	0.004–0.0625mm	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
15		42	22	9	8	3	1				



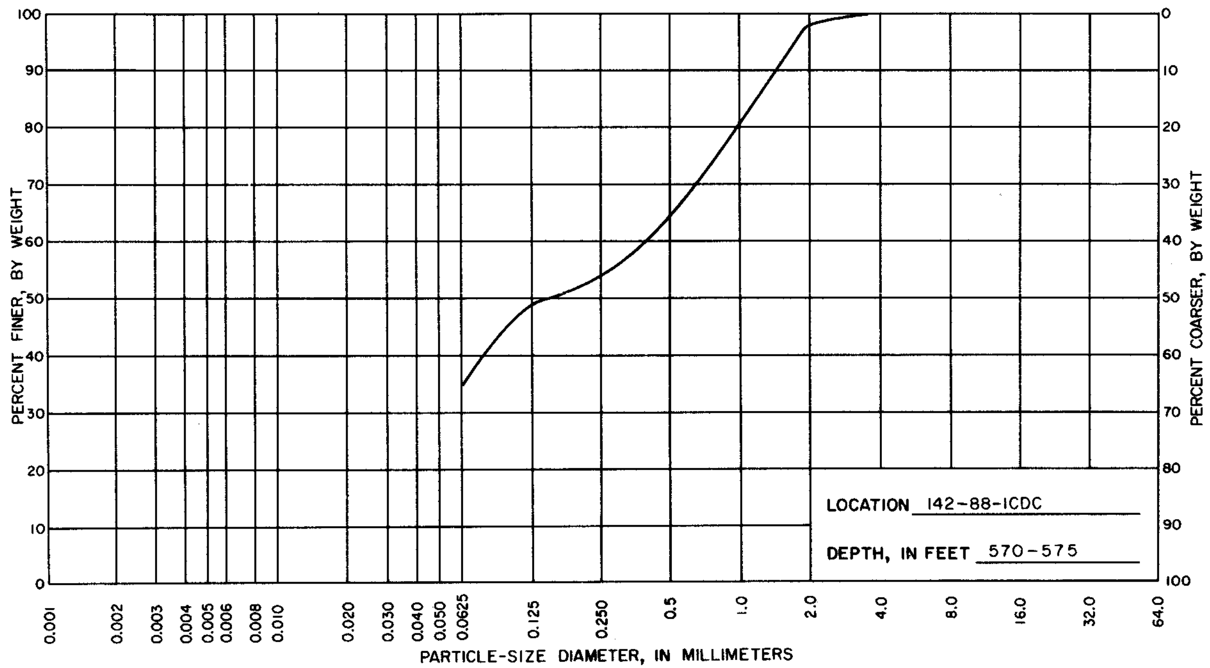
PERCENT OF SIZE

CLAY SIZES	SILT SIZES	SAND SIZES					GRAVEL SIZES				
<0.004mm	0.004–0.0625mm	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
	18	27	33	8	9	3	1				



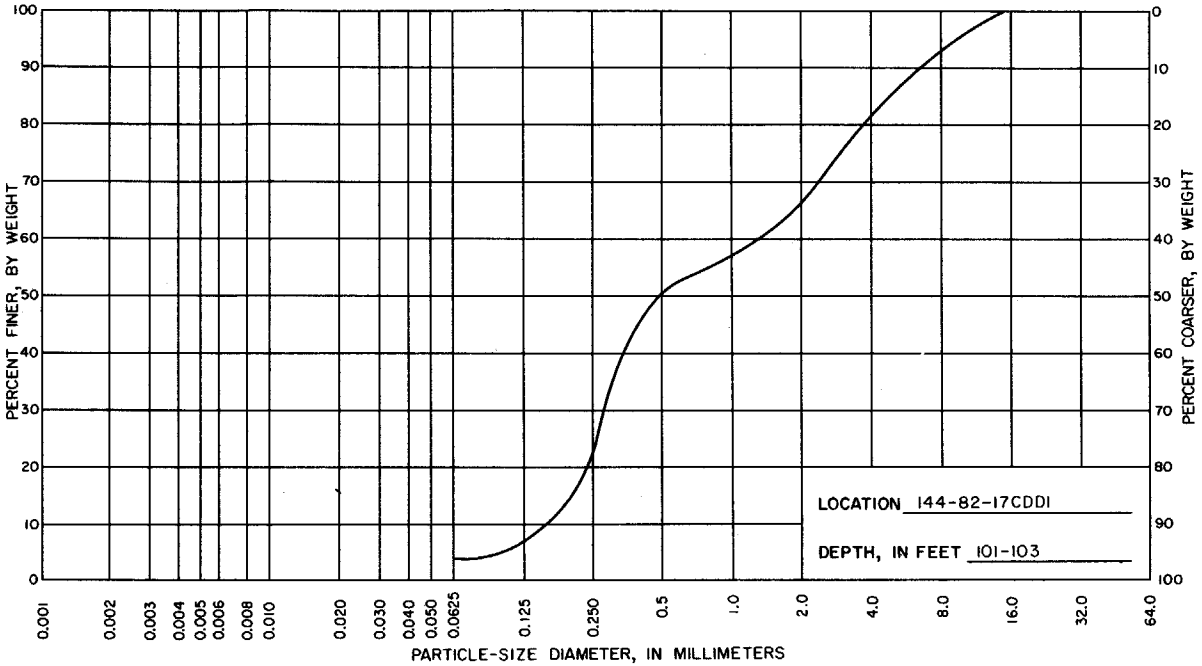
PERCENT OF SIZE

CLAY SIZES	SILT SIZES	SAND SIZES					GRAVEL SIZES				
<0.004mm	0.004–0.0625mm	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
23		35	12	18	10	8	4				



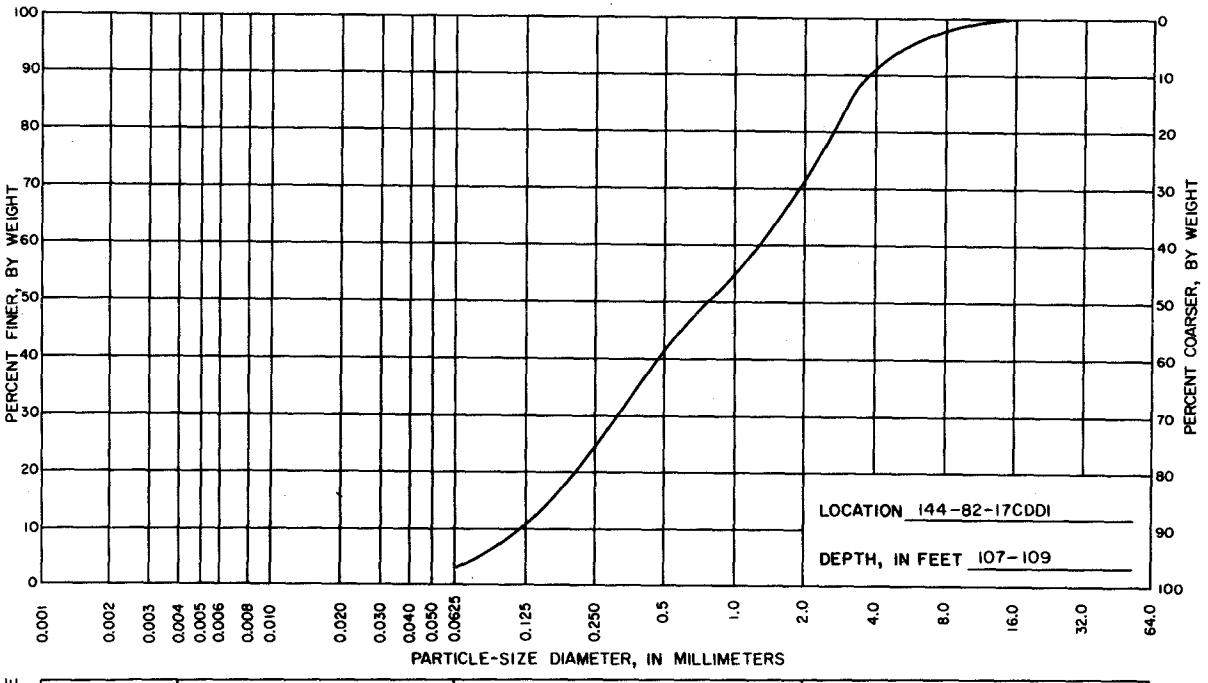
PERCENT OF SIZE

CLAY SIZES	SILT SIZES	SAND SIZES					GRAVEL SIZES				
<0.004mm	0.004–0.0625mm	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
	35	14	5	10	17	18	1				



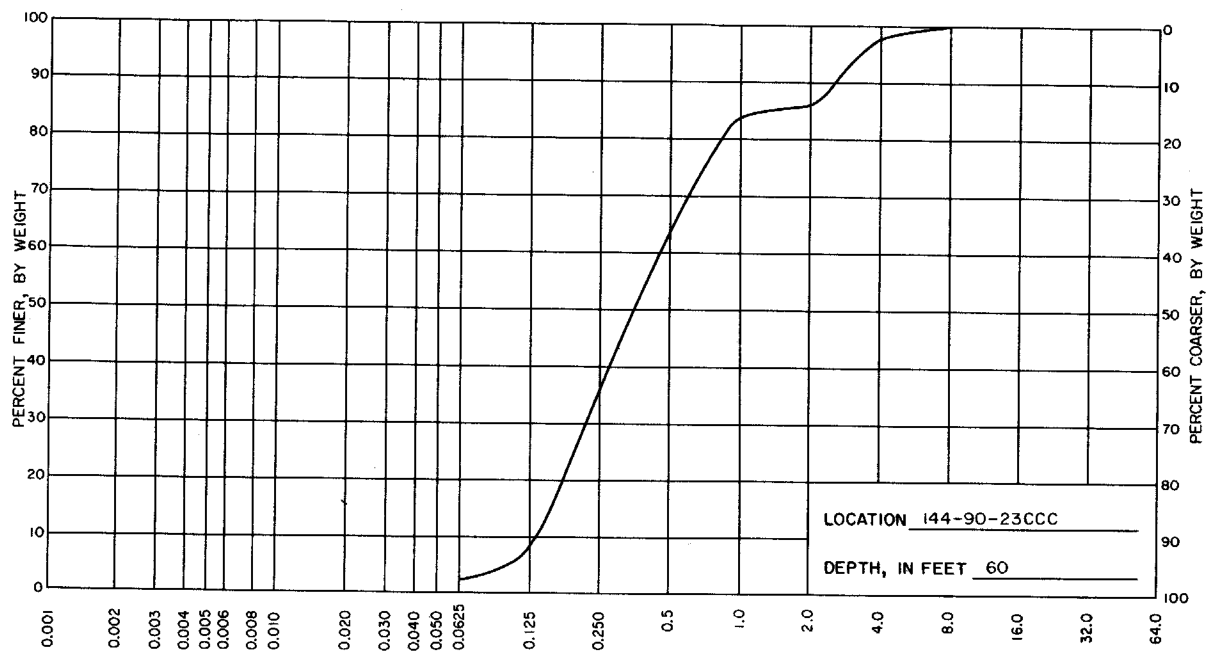
PERCENT OF SIZE

CLAY SIZES	SILT SIZES	SAND SIZES					GRAVEL SIZES				
<0.004mm	0.004–0.0625mm	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
3		3	14	31	6	8	17	12	5.9	0.1	



PERCENT OF SIZE

CLAY SIZES	SILT SIZES	SAND SIZES					GRAVEL SIZES				
<0.004mm	0.004–0.0625mm	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
	6	4	12	18	14	14	23	8.5	.5		



	CLAY SIZES	SILT SIZES	SAND SIZES					GRAVEL SIZES				
	<0.004mm	0.004–0.0625mm	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
PERCENT OF SIZE		2	4	29	27	23	1	13	1			