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**HYDROGEOLOGY OF THE SOUTHERN SKUNK CREEK MANAGEMENT
UNIT OF THE BIG SIOUX AQUIFER**

by

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INTRODUCTION

The purpose of the study was to define the general quality of water in the Southern Skunk Creek management unit of the Big Sioux aquifer. Special attention was to be given to the potential degradation of water quality by:

1. inflow of poor quality water from the Wall Lake aquifer,
2. the Ellis landfill, and
3. manure which was placed in the Friessen gravel pit in early 1984 about 2 miles west of the town of Ellis.

This report contains the results of the investigation which was conducted in T. 101 N., R. 50 W., Minnehaha County, South Dakota (fig. 1). The investigation was conducted by the South Dakota Geological Survey (SDGS) at the request of the city of Sioux Falls and the East Dakota Water Development District. The investigation was financed by the city of Sioux Falls, the East Dakota Water Development District, and the state of South Dakota.

METHODS AND PROCEDURES

Drilling and Well Installation

Drilling and well installation began in the summer of 1986 and was finished in the summer of 1987. Drilling was performed using the mud rotary drilling method and a drill bit diameter of 4.75 inches. Sixty-one test holes were drilled, 42 of which were completed as monitoring wells (fig. 2, app. A). Test-hole and monitoring-well data already on file at the SDGS which were used for this study are also included in appendix A.

Monitoring wells were constructed using 2-inch diameter, schedule 40 or 80, glued or threaded, polyvinyl chloride (PVC) casing and screen. Data on the screen length and well depth are presented in appendix A. Filter pack, a washed coarse sand from a gravel pit in the area, was placed around the outside of the screen and up to at least 3 feet above the top of the screen. A tremie pipe was used to ensure proper positioning of the filter pack. Bentonite grout was then pumped through the tremie pipe into the remaining annular space (from the bottom up) around the outside of the casing up to land surface. At a later date, an upper portion of the annular space was finished with cement grout and finally topped with soil.

Well Development and Water Sampling

All monitoring wells installed for this study were developed by removing water with compressed air, a pitcher pump, or by bailer until the water became clear.

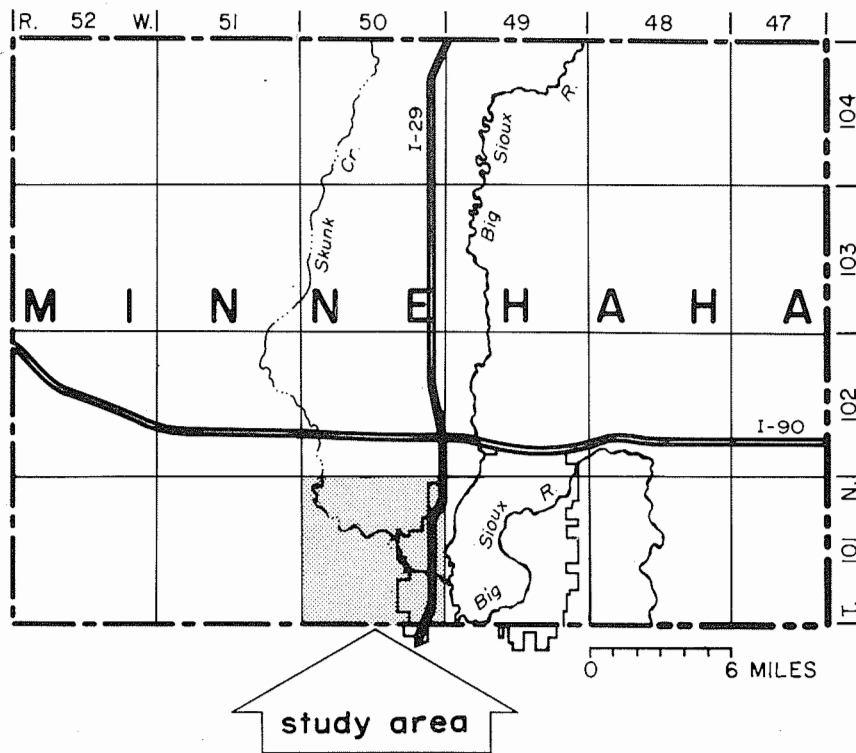
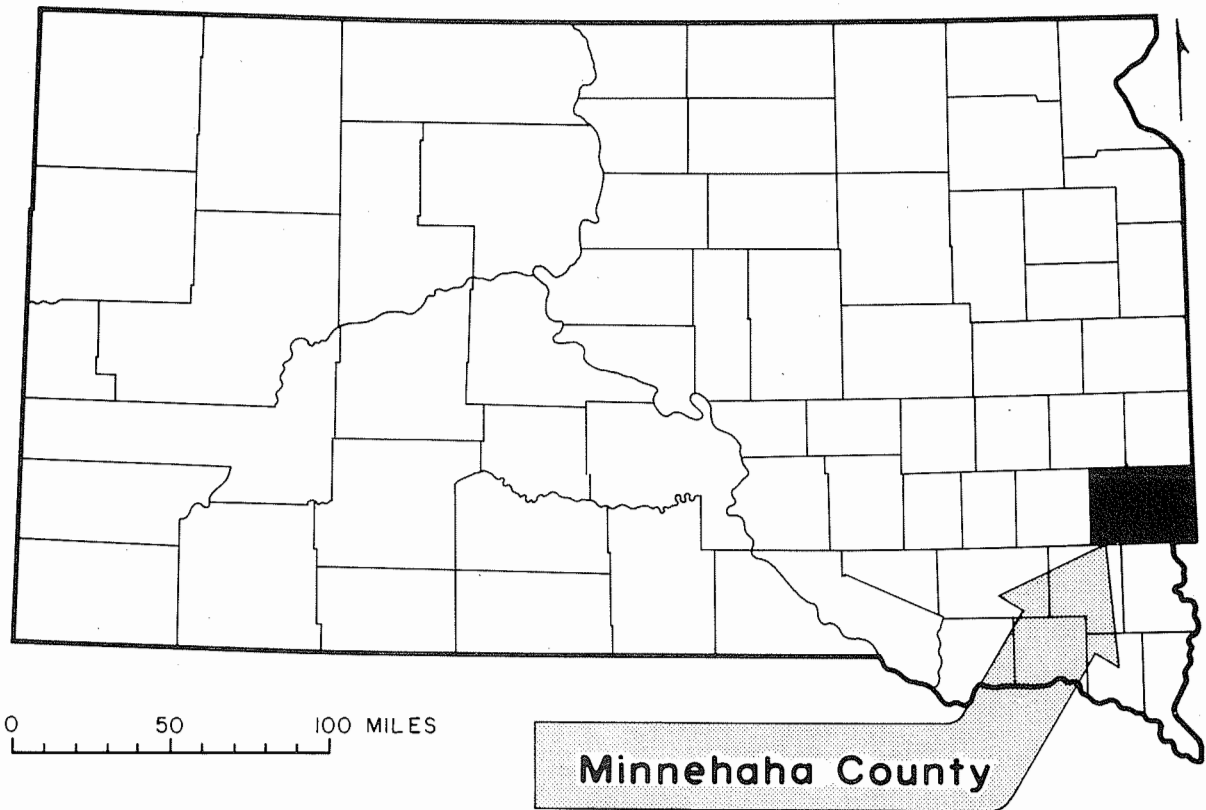
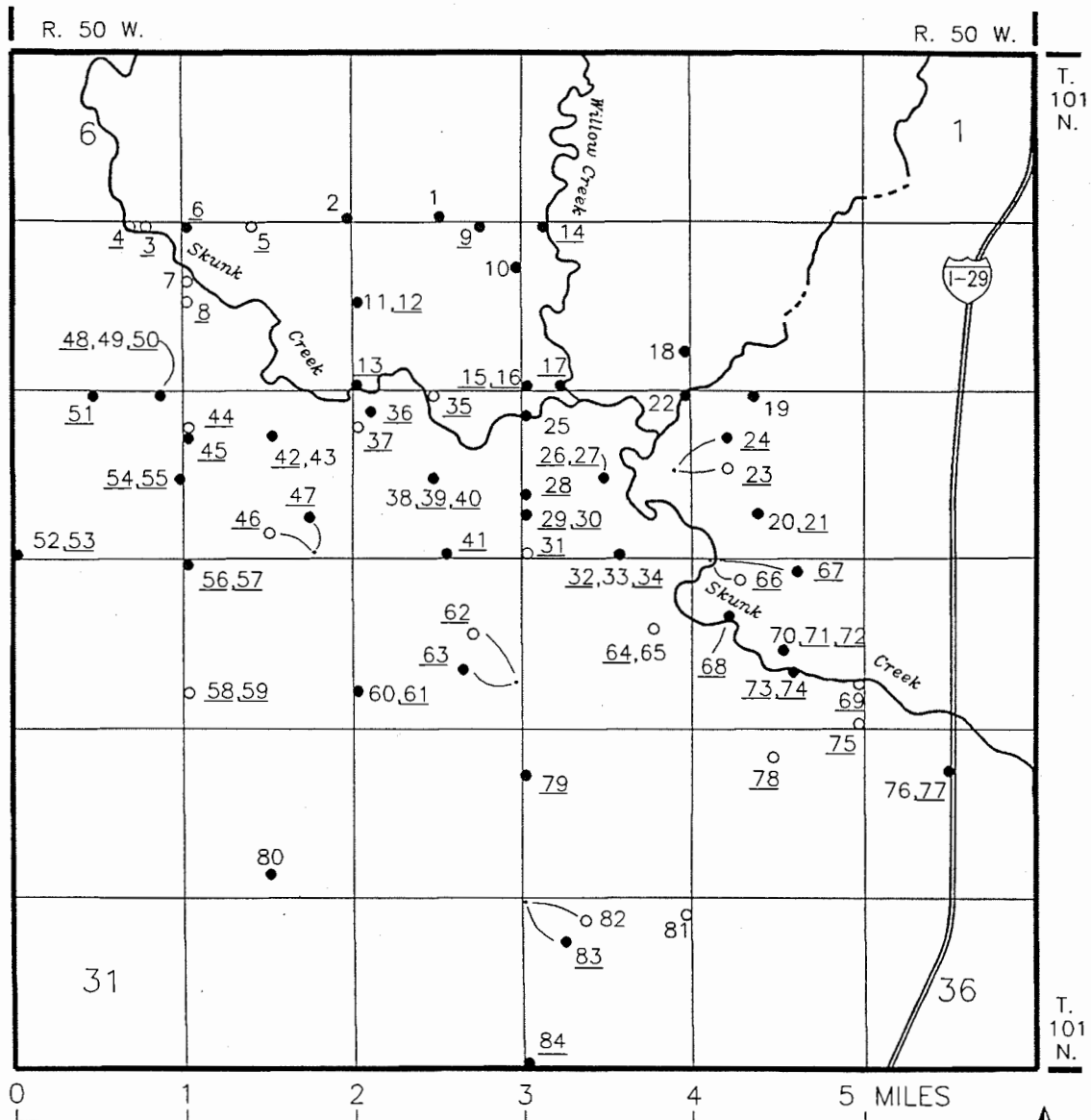


Figure 1. Location of the study area.



11,12 ● Test hole or monitoring well completed for this study.
 78 ○ Test hole or monitoring well completed for other study.

The number refers to drill site number as listed in appendix A. An underlined number indicates a monitoring well. A number not underlined indicates a test hole.

- - - - Intermittent stream

Figure 2. Locations of test holes and monitoring wells.

All water samples from monitoring wells were collected with a bladder pump or, when that was not possible, with a bailer. A minimum of 3 well volumes of water were evacuated from the well before a sample was collected. Water samples were collected from all monitoring wells installed for this investigation, from 19 other monitoring wells previously installed by the SDGS, and from five points along Skunk Creek. Water-quality analyses were performed by the South Dakota Geological Survey Basic and Analytical Studies Laboratory. The analyses are presented in appendix B.

Water-Level Measurements

Water levels were measured on several occasions to the nearest 0.01 foot (app. C). Measurements were made using a fiberglass tape measure with a concave-shaped device on the end which makes an audible sound upon impact with the water.

HYDROGEOLOGIC SETTING

Surficial sediments in the study area consist of Pleistocene age glacial deposits, either till or outwash, and Recent alluvium (fig. 3). The till is composed of a mixture of unsorted sand, pebbles, and boulders in a silt and clay matrix. Outwash and alluvium are composed primarily of water-sorted sands and gravels, although silt and clay lenses may occur. These deposits overlie undifferentiated Cretaceous sediments and Precambrian quartzite (Tomhave, in preparation).

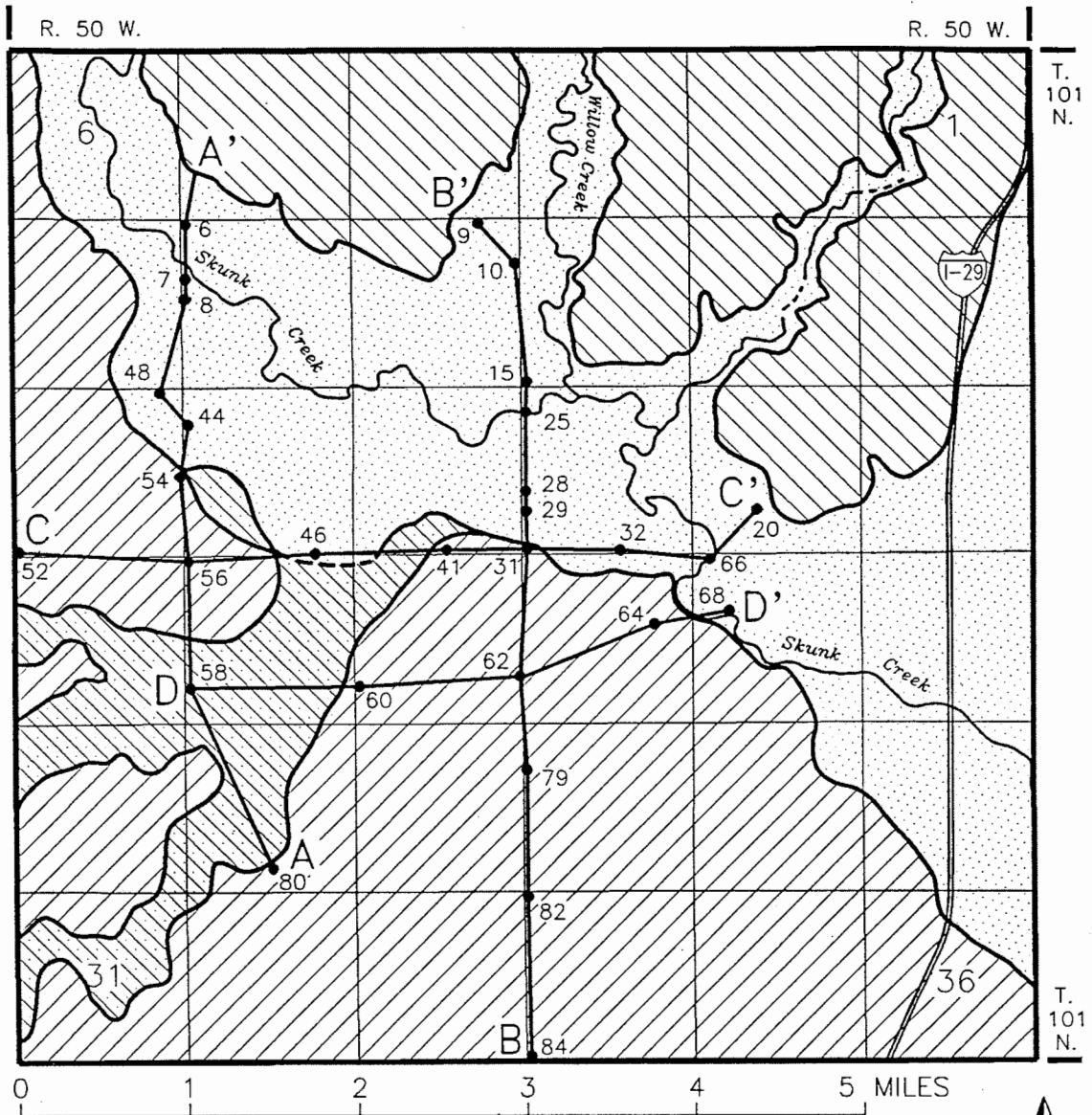
An aquifer is a formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield economical quantities of water to wells. Four named aquifers, consisting primarily of outwash, are present in the study area:

1. the Sioux Falls management unit of the Big Sioux aquifer,
2. the South management unit of the Big Sioux aquifer,
3. the Southern Skunk Creek management unit of the Big Sioux aquifer, and
4. the Wall Lake aquifer.

Only the latter two of these aquifers will be addressed in this report. The locations of the aquifers are shown on figure 4.

The Southern Skunk Creek management unit of the Big Sioux aquifer is a surficial outwash and has been previously described by Ellis and Adolphson (1965). For purposes of this report this outwash unit will be referred to as the Southern Skunk Creek management unit.

The Wall Lake aquifer is a buried outwash body first described by Iles (in preparation). He found the buried outwash to extend into three counties: Minnehaha, Lincoln, and Turner. The Wall



Modified from Steece (1959) and Tomhave (in preparation).

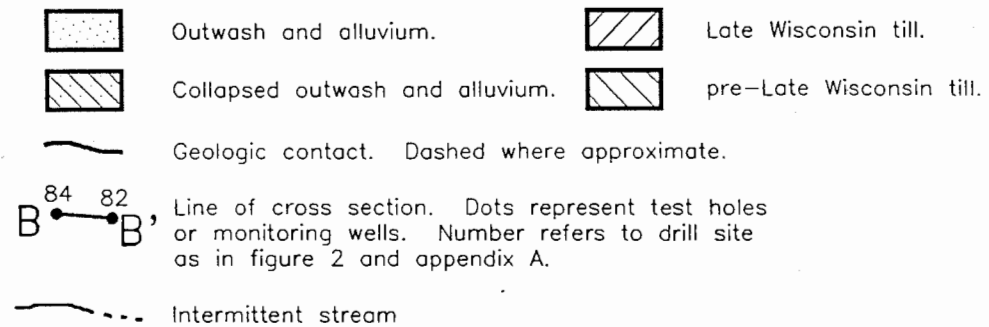
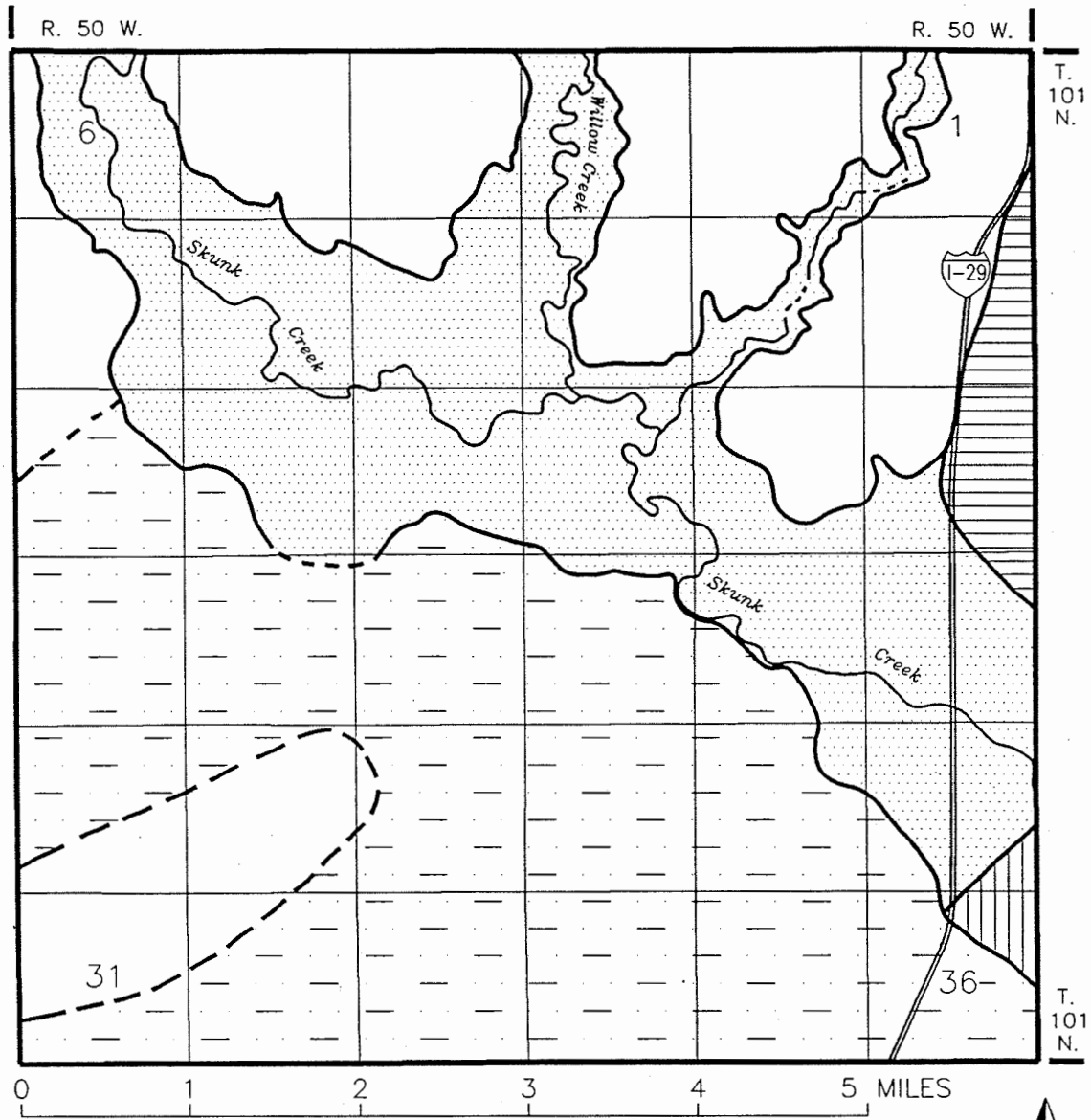








Figure 3. Surface geology and locations of geologic cross sections.



-  Southern Skunk Creek management unit
 -  Sioux Falls management unit
 -  South management unit
 -  Wall Lake aquifer
 -  Aquifer boundary. Dashed where approximate.
 -  Intermittent stream
- } Big Sioux aquifer

Aquifer boundaries adapted from Ellis and Adolphson (1965), Hedges and others (1982), and Tomhave (in preparation).

Figure 4. Major aquifers in this study area.

Lake aquifer lies to the south and west of the Southern Skunk Creek management unit (fig. 4). Iles postulated that the Wall Lake aquifer and the Southern Skunk Creek management unit were connected only in an area along the south edge of the Southern Skunk Creek management unit in sections 22, 23, 25, 26, and 36, T. 101 N., R. 50 W. and in section 31, T. 101 N., R. 49 W. Poor quality water is thought to move from the Wall Lake aquifer into the Southern Skunk Creek management unit. Iles (in preparation) showed the ground-water flow to be in a generally northeast direction in a portion of the Wall Lake aquifer in sections 22, 23, 25, 26, 27, 28, 32, 33, 34, 35, and 36, T. 101 N., R. 50 W. This flow direction is toward the Southern Skunk Creek management unit.

RESULTS OF INVESTIGATION

Geology

A major objective of this investigation was to determine the extent of the connection between the Wall Lake aquifer and the Southern Skunk Creek management unit. Thus, a number of test holes were drilled south of Skunk Creek to define the extent of this connection (fig. 2). The Wall Lake aquifer was found to be connected to the Southern Skunk Creek management unit in sections 15, 16, 17, 18, 20, 21, 22, 23, 25, 26, and 36, T. 101 N., R. 50 W. It is also connected to the South management unit of the Big Sioux aquifer in section 36, T. 101 N., R. 50 W. (fig. 4). The extent of the connection of the Wall Lake aquifer with surficial outwash is larger than previously postulated.






Four cross sections, whose locations are shown in figure 3, illustrate the spatial distribution of the Wall Lake aquifer and the Southern Skunk Creek management unit in the study area (figs. 5, 6, 7, and 8). The line of separation between the Southern Skunk Creek management unit and the Wall Lake aquifer is an arbitrary one. For this investigation, if the aquifer material is buried by till, it is identified as the Wall Lake aquifer. If the aquifer material is essentially at land surface, it is identified as the Southern Skunk Creek management unit (figs. 3 and 4).

The Wall Lake aquifer is absent in portions of sections 28, 29, 30, 31, and 32, T. 101 N., R. 50 W. which coincides with a high area in the underlying undifferentiated Cretaceous sediments (figs. 4 and 5 and Tomhave, in preparation).

Ground-Water Levels and Flow Directions

The water-level contours shown in figure 9 indicate a hydraulic continuity between the Southern Skunk Creek management unit and the Wall Lake aquifer. Similar water elevations occur in both aquifers near their contact. The water levels in the geologic cross sections (figs. 5, 6, 7, and 8) show the Wall Lake aquifer changing from confined to unconfined conditions near the contact with the Southern Skunk Creek management unit.

Figure 5. Geologic Cross Section A-A'

- Qa ... Alluvium
 - Qt ... Till. Primarily clay and silt.
May include 1 to 3 feet of topsoil.
 - Qo ... Outwash. Primarily sand and gravel.
May include 1 to 3 feet of topsoil.
 - Bu ... Bedrock, undifferentiated
 - Bs ... Bedrock sand
 - pCs ... Sioux Quartzite
-  Southern Skunk Creek management unit of the Big Sioux aquifer
 -  Wall Lake aquifer
 -  Lithologic contact. Dashed where approximate.
 -  Approximate water level in well on 4-28-88.
 -  Approximate potentiometric/water-table surface on 4-28-88.
- Vertical exaggeration = 40x
- See figure 3 for location of cross section and appendix A for logs of wells and test holes.

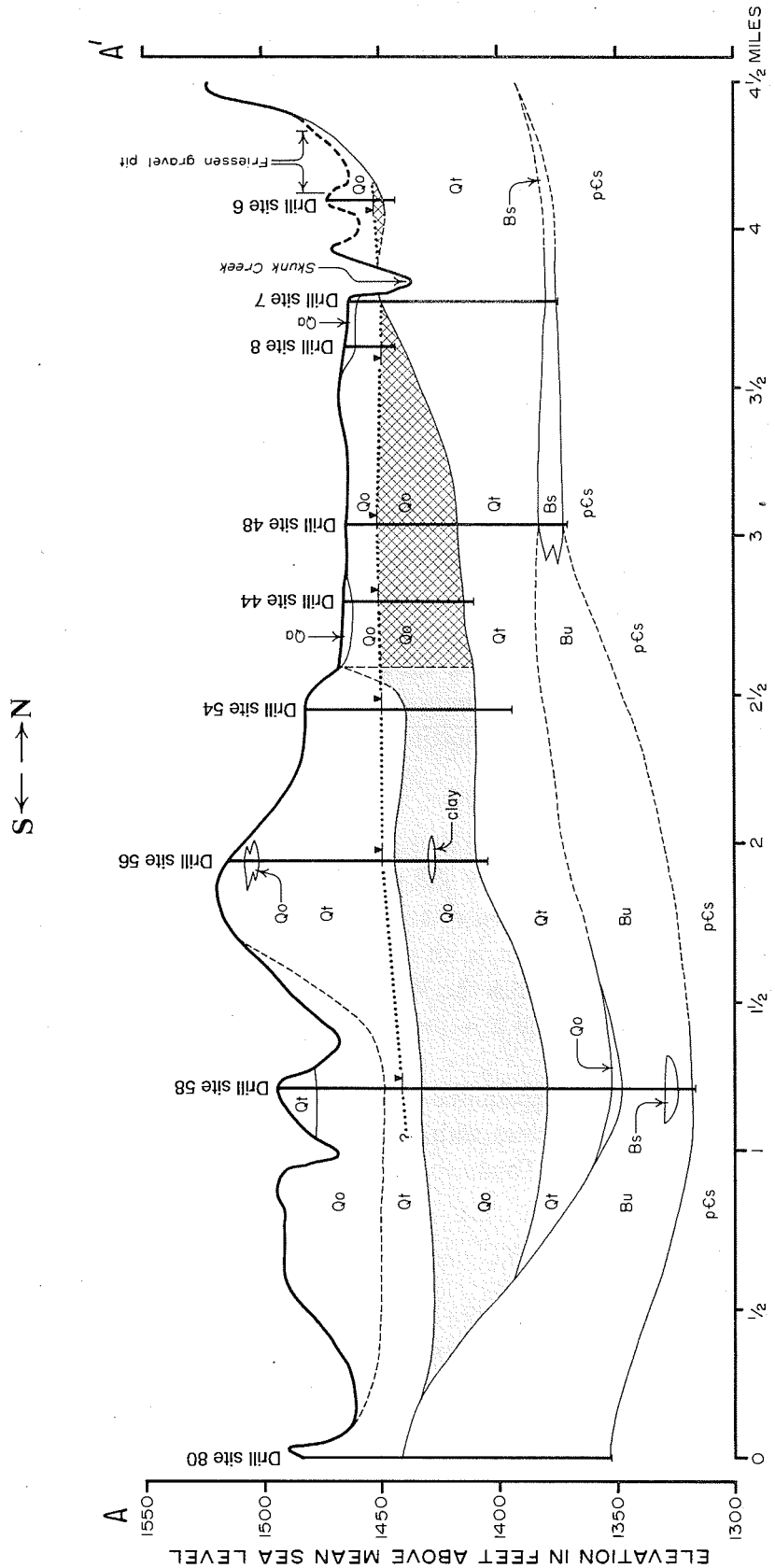
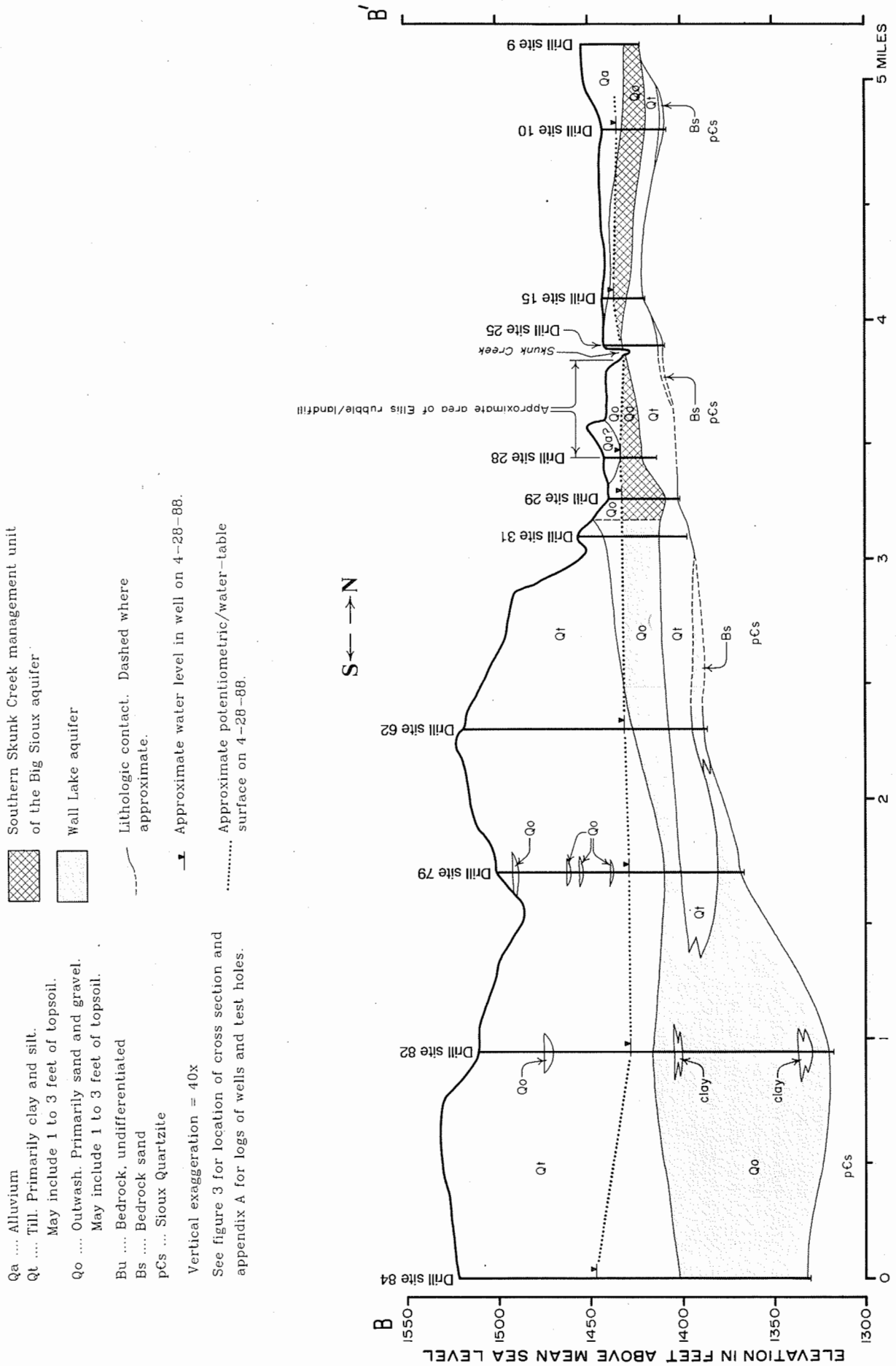


Figure 6. Geologic Cross Section B-B'.



Qa ... Alluvium
 Qt ... Till. Primarily clay and silt.
 May include 1 to 3 feet of topsoil.
 Qo ... Outwash. Primarily sand and gravel.
 May include 1 to 3 feet of topsoil.
 Bu ... Bedrock, undifferentiated
 Bs ... Bedrock sand
 pCs ... Sioux Quartzite

Vertical exaggeration = 40x
 See figure 3 for location of cross section and appendix A for logs of wells and test holes.

Southern Skunk Creek management unit of the Big Sioux aquifer

Wall Lake aquifer

Lithologic contact. Dashed where approximate.

Approximate water level in well on 4-28-88.

Approximate potentiometric/water-table surface on 4-28-88.

Approximate area of Ellis rubble/landfill

Skunk Creek

Drill site 84

Drill site 82

Drill site 79

Drill site 62

Drill site 31

Drill site 29

Drill site 28

Drill site 25

Drill site 15

Drill site 10

Drill site 9

5 MILES

ELEVATION IN FEET ABOVE MEAN SEA LEVEL

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Figure 7. Geologic Cross Section C-C'.

- Qa Alluvium
 - Qt Till. Primarily clay and silt.
May include 1 to 3 feet of topsoil.
 - Qo Outwash. Primarily sand and gravel.
May include 1 to 3 feet of topsoil.
 - Bu Bedrock, undifferentiated
 - Bs Bedrock sand
 - pCs Sioux Quartzite
- Vertical exaggeration = 40x
 - See figure 3 for location of cross section and appendix A for logs of wells and test holes.
-  Southern Skunk Creek management unit of the Big Sioux aquifer
 -  Wall Lake aquifer
 -  Lithologic contact. Dashed where approximate.
 -  Approximate water level in well on 4-28-88.
 -  Approximate potentiometric/water-table surface on 4-28-88.

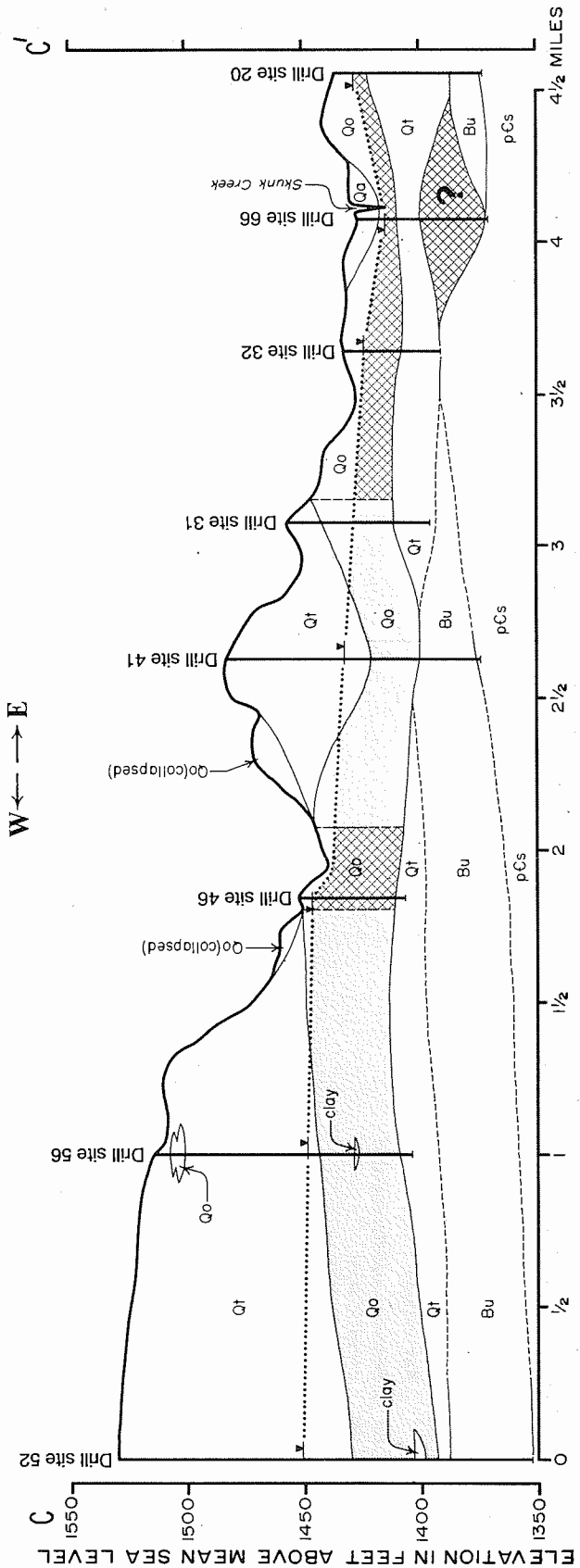





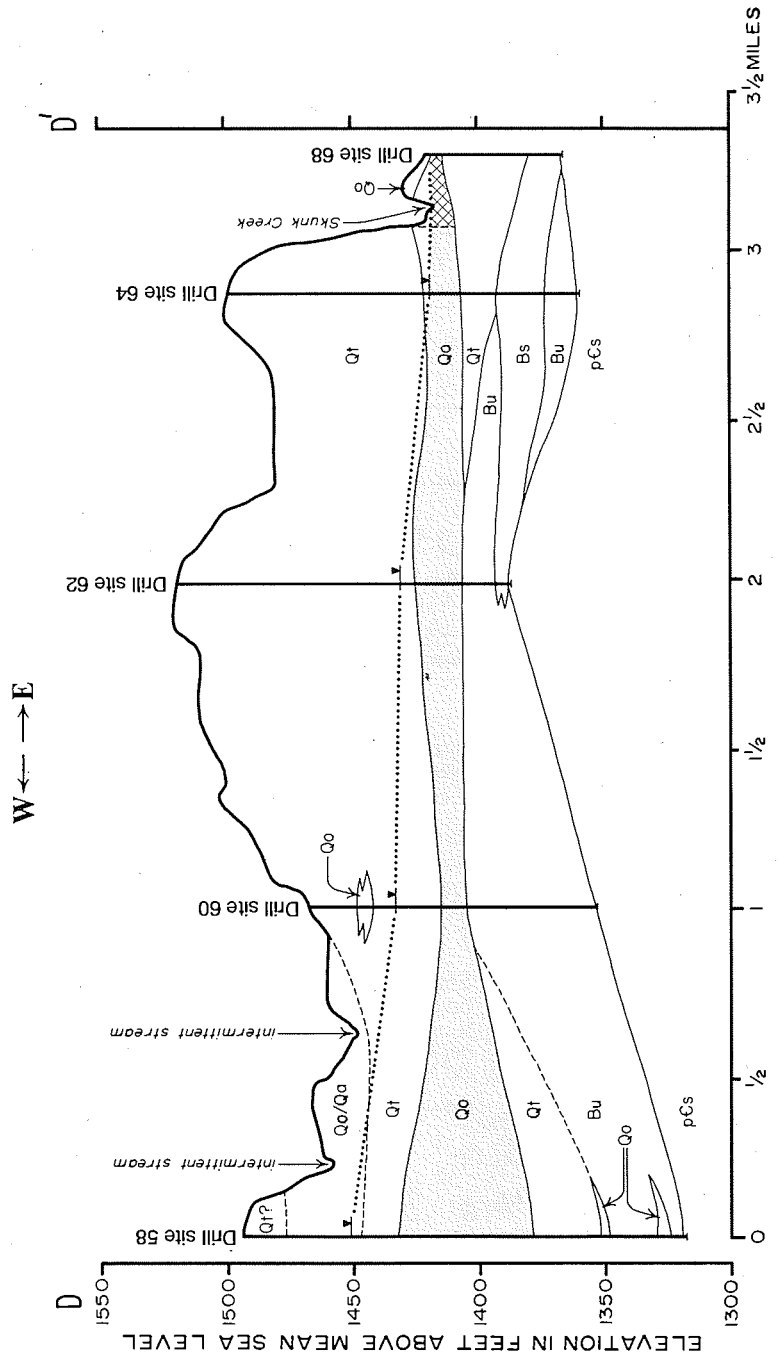
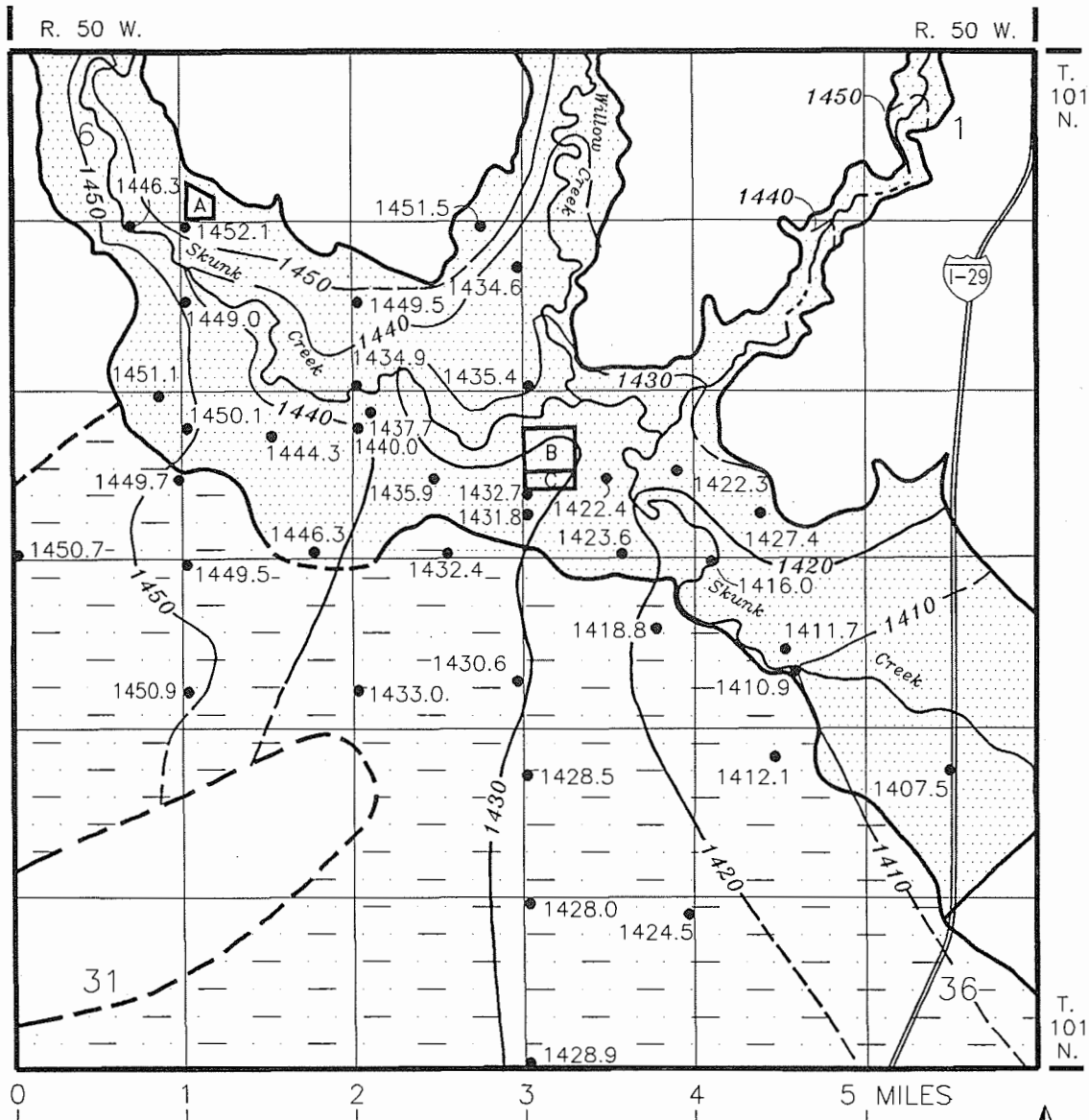


Figure 8. Geologic Cross Section D-D'.

- Qa Alluvium
 - Qt Till. Primarily clay and silt.
May include 1 to 3 feet of topsoil.
 - Qo Outwash. Primarily sand and gravel.
May include 1 to 3 feet of topsoil.
 - Bu Bedrock, undifferentiated
 - Bs Bedrock sand
 - pCs ... Sioux Quartzite
- Vertical exaggeration = 40x
- See figure 3 for location of cross section and appendix A for logs of wells and test holes.
-  Southern Skunk Creek management unit of the Big Sioux aquifer
 -  Wall Lake aquifer
 -  Lithologic contact. Dashed where approximate.
 -  Approximate water level in well on 4-28-88.
 -  Approximate potentiometric/water-table surface on 4-28-88.





● 1428.9 Monitoring well. Number is elevation of water in feet above mean sea level. If there is more than one well at a given location, then the shallowest well with water in it was used for this map.

— 1430 — Generalized contour line connecting points of equal elevation on the water surface. Line dashed where location is uncertain. Contour interval = 10'. Locations of contours crossing surface water are inferred from the Hartford South and Sioux Falls West quadrangles, 7.5 minute series (topographic).

▨ Southern Skunk Creek management unit of the Big Sioux aquifer.

▨ Wall Lake aquifer.

--- Intermittent stream

A Friessen gravel pit.

B Old Ellis landfill.

C Ellis rubble landfill.

— Aquifer boundary. Dashed where approximate.

Figure 9. Water levels in the Wall Lake aquifer and the Southern Skunk Creek management unit of the Big Sioux aquifer on April 28, 1988.

The ground water flow direction is perpendicular to the water-level contours shown on figure 9: from areas of higher water elevation to areas of lower water elevation. Ground-water flow in the Wall Lake aquifer in the study area is generally toward the east. In the Southern Skunk Creek management unit, ground water moves in a generally downstream direction and toward Skunk Creek and its tributaries, which act as discharge zones for the ground water.

Saturated Thickness

The saturated thicknesses of the Southern Skunk Creek management unit and the Wall Lake aquifer are shown in figure 10. Data shown on figure 10 indicate that the saturated thickness of the Southern Skunk Creek management unit ranges from about 4 to about 74 feet and ranges from about 10 to about 78 feet in the Wall Lake aquifer.

Water Quality

Eighty-seven water samples were collected from monitoring wells and Skunk Creek for this investigation. Sample locations are shown in figure 11 and the results of the analyses are summarized in table 1 with a complete listing of analyses given in appendix B.

The results of water analyses show a marked difference between the water quality in the Wall Lake aquifer and the Southern Skunk Creek management unit (table 1). The Wall Lake aquifer has higher average concentrations of every constituent for which averages were determined. Nitrate concentrations are, however, generally lower in the Wall Lake aquifer. The Southern Skunk Creek management unit and the surface water in Skunk Creek have a similar general water chemistry.

The Wall Lake aquifer exhibits water-chemistry anomalies in water samples 61, 68, and 69 (fig. 11, app. B). These samples show higher concentrations of nitrate than other samples from that aquifer. Another water-chemistry anomaly in the Wall Lake aquifer is evident in water sample 62. This analysis shows a much better quality water than the surrounding water in the Wall Lake aquifer. These anomalies cannot be explained with presently available data.

Figure 12 shows the dissolved-solids concentrations in parts per million (ppm). The buried aquifer (Wall Lake) generally has a much higher dissolved-solids concentration than the surficial aquifer (Southern Skunk Creek management unit). The influence of ground-water discharge from the Wall Lake aquifer to the Southern Skunk Creek management unit is evident in the quality of water in some monitoring wells in sections 15, 17, 23, and 25, T. 101 N., R. 50 W. in the portion of the Southern Skunk Creek management unit that is south of Skunk Creek (fig. 12).

Nitrate concentrations in the Southern Skunk Creek management unit are generally low, although, concentrations can vary considerably in samples collected at different times from the same well and from different locations (table 1, app. B). Because the outwash associated with this aquifer is at or very near ground surface, any nitrate-nitrogen applied on the ground surface has the potential of being transported downward to the ground water by infiltration of water. The nitrate-

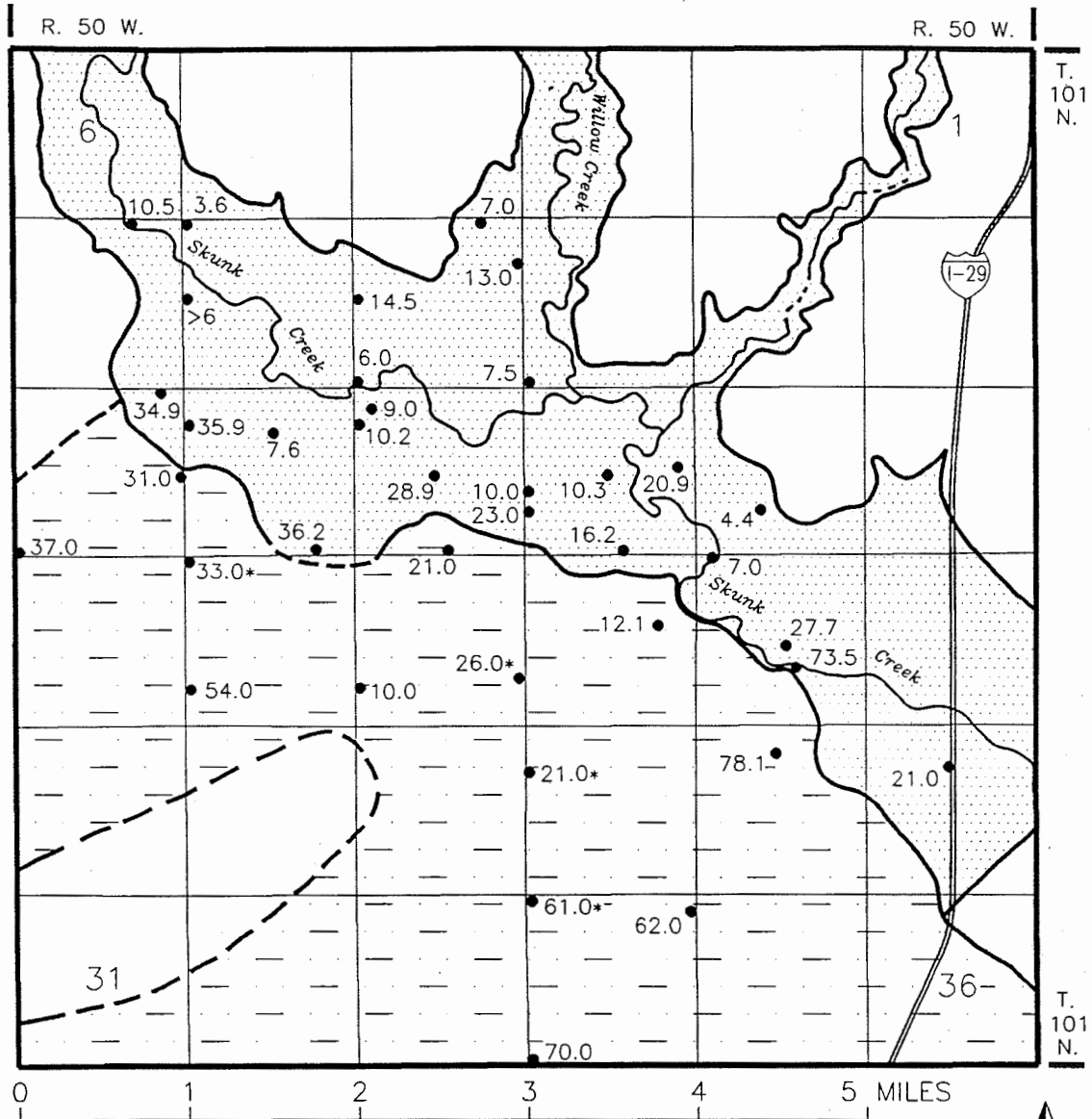
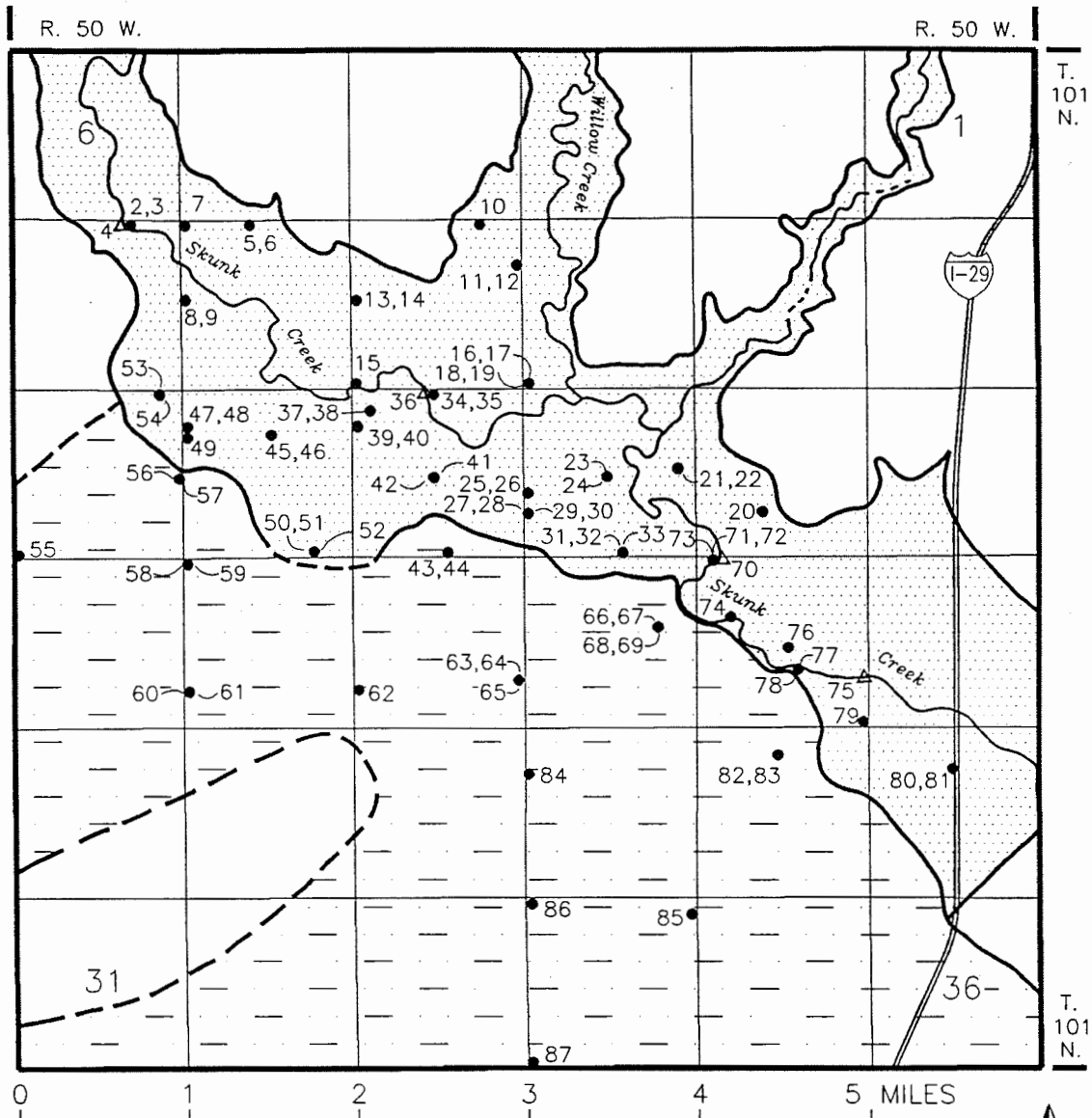


Figure 10. Saturated thickness of the Wall Lake aquifer and the Southern Skunk Creek management unit of the Big Sioux aquifer on April 28, 1988.



- 43 ● Monitoring well
 - 4,36,70,75 ▲ Surface water collection point. Water sample 1 is located off the southeast edge of the map.
 - Southern Skunk Creek management unit of the Big Sioux aquifer.
 - Wall Lake aquifer.
 - Intermittent stream
 - Aquifer boundary. Dashed where approximate.
- Number is water-sample number as explained in appendix B.

Figure 11. Locations of water samples.

TABLE 1. Summary of analyses of water from the Southern Skunk Creek management unit of the Big Sioux aquifer, the Wall Lake aquifer, and Skunk Creek

Parameter	Number of analyses ²	Concentration ¹		
		Maximum	Minimum	Average ³
SOUTHERN SKUNK CREEK MANAGEMENT UNIT OF THE BIG SIOUX AQUIFER				
Calcium	37	285	71	138
Magnesium	37	99	26	52
Sodium	37	134	7	28
Potassium	37	10.6	1.0	4.3
Sulfate	37	944	32	287
Chloride	37	336	3	27
Iron	37	5.45	<0.05	-----
Manganese	37	2.52	<0.05	-----
Nitrate-Nitrogen	37	32.00	<0.04	-----
Fluoride	37	0.72	<0.08	-----
Dissolved Solids	37	1616	381	765
Conductivity	37	1909	616	1080
Hardness as CaCO ₃	37	1045	301	557
WALL LAKE AQUIFER				
Calcium	16	520	119	258
Magnesium	16	204	48	87
Sodium	16	179	21	69
Potassium	16	19.1	3.5	10.1
Sulfate	16	1962	283	825
Chloride	16	38	<3	-----
Iron	16	9.27	<0.05	-----
Manganese	16	3.20	0.36	1.45
Nitrate-Nitrogen	16	5.20	<0.04	-----
Fluoride	16	0.72	0.18	0.35
Dissolved Solids	16	3050	722	1538
Conductivity	16	3031	975	1843
Hardness as CaCO ₃	16	2139	495	1002

TABLE 1 -- continued.

Parameter	Number of analyses ²	Concentration ¹		
		Maximum	Minimum	Average ³
SKUNK CREEK (SURFACE WATER)				
Calcium	4	126	122	124
Magnesium	4	61	59	60
Sodium	4	32	31	31
Potassium	4	5.4	5.1	5.2
Sulfate	4	336	315	328
Chloride	4	24	22	23
Iron	4	<0.05	<0.05	-----
Manganese	4	0.37	0.32	0.34
Nitrate-Nitrogen	4	0.64	0.46	0.54
Fluoride	4	0.31	0.29	0.30
Dissolved Solids	4	814	761	788
Conductivity	4	1127	1085	1106
Hardness as CaCO ₃	4	566	550	557

¹ Concentrations are in parts per million except for Conductivity which is in micromhos.

² Each analysis is from a different well or location and is the most recent analysis available.

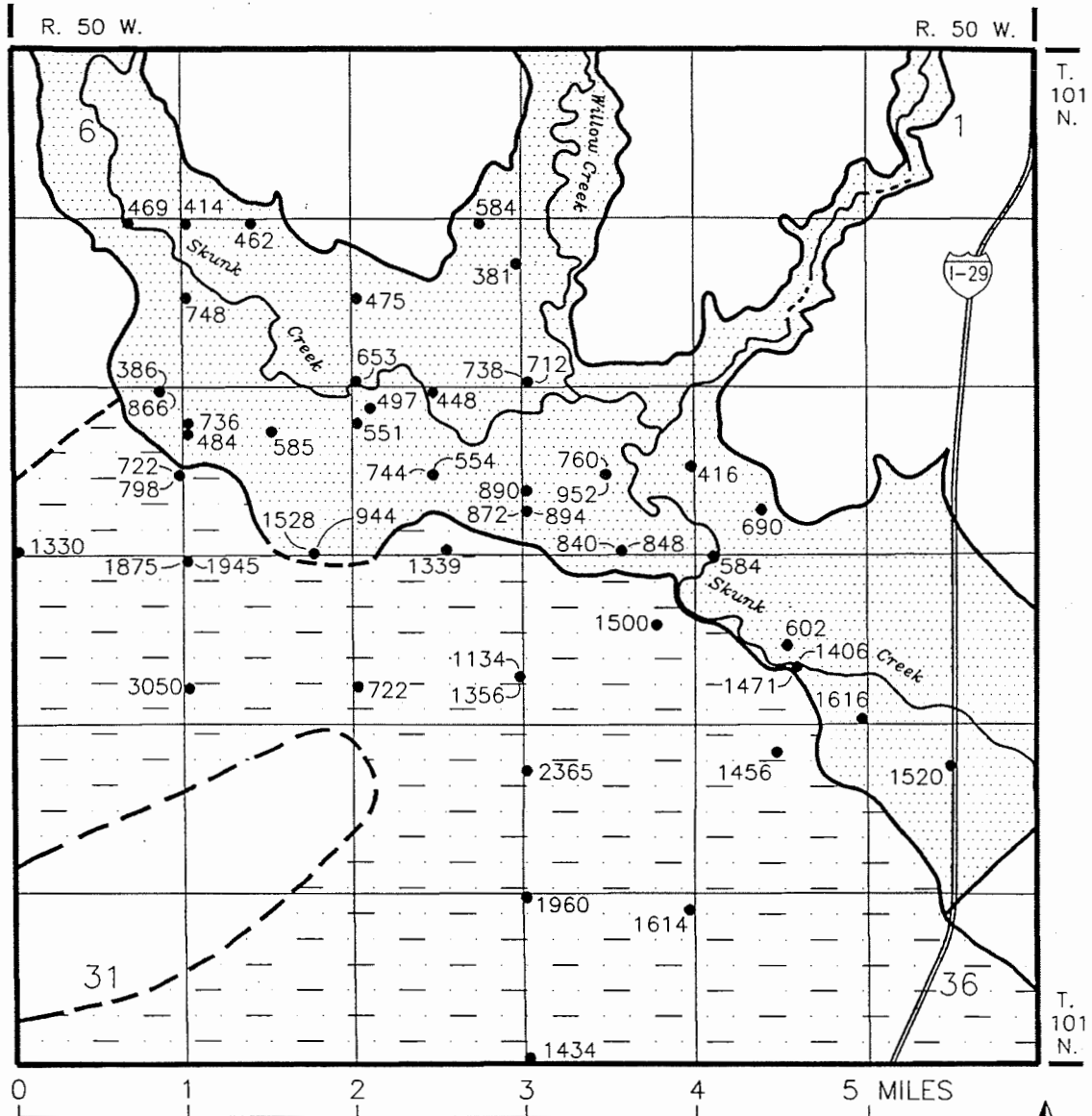
³ No averages were calculated for parameters where an analysis (app. B) listed a "less than" value.

nitrogen concentrations in the Southern Skunk Creek management unit were found to range from <0.04 to 32 ppm.

Rapid fluctuation in nitrate concentration is illustrated by water samples 13 and 14 (app. B) which were taken from the same well approximately 2 weeks apart. Water sample 13 has a nitrate-nitrogen concentration of 22 ppm and water sample 14 has a concentration of 32 ppm. This is an increase of 10 ppm in a relatively short time.

The nitrate concentrations are stratified in the Southern Skunk Creek management unit. Analyses from two sites (water samples 41 and 42; 53 and 54, app. B), which have two or more wells installed at different depths, show that the higher concentrations are found at shallower depths.

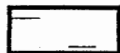
The areal distribution of nitrate in the Southern Skunk Creek management unit and the Wall Lake aquifer are shown in figure 13. The concentrations shown in figure 13 represent water-sample dates ranging from September 16, 1986, through June 13, 1988. The most recent analysis



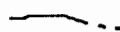
● 1356 Monitoring well. Number is dissolved-solids concentration in parts per million. The most recent analysis from each well was used. See figure 11 for water-sample numbers and appendix B for individual analyses. Dates of samples range from 9-16-1986 through 6-13-1988.



Southern Skunk Creek management unit of the Big Sioux aquifer.



Wall Lake aquifer.

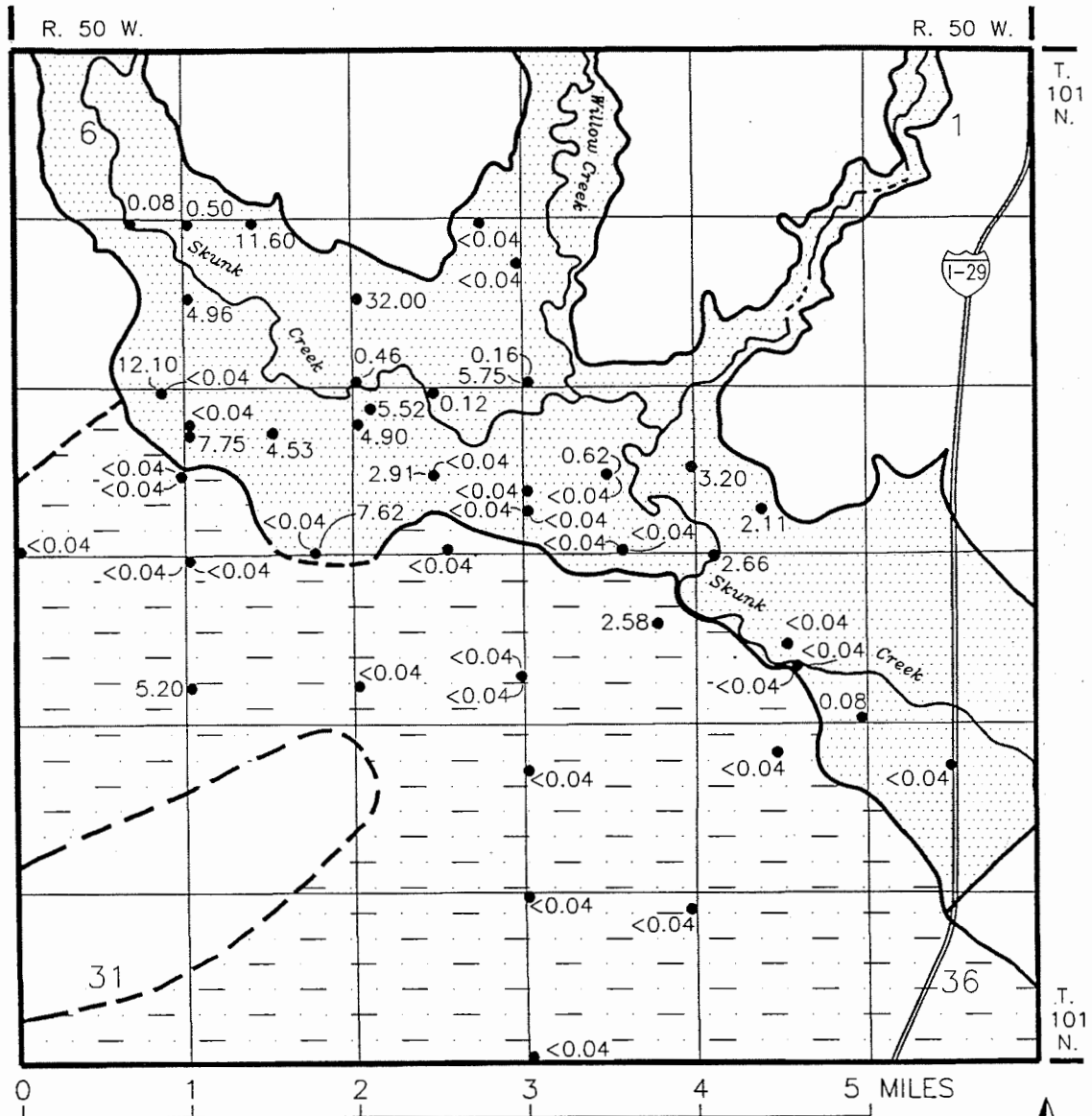


Intermittent stream



Aquifer boundary. Dashed where approximate.

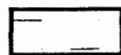
Figure 12. Dissolved-solids concentrations in the Wall Lake aquifer and the Southern Skunk Creek management unit of the Big Sioux aquifer.



● 4.90 Monitoring well. Number is concentration of nitrate-nitrogen in parts per million. The most recent analysis from each well was used. See figure 11 for water-sample numbers and appendix B for individual analyses. Dates of samples range from 9-16-1986 through 6-13-1988.



Southern Skunk Creek management unit of the Big Sioux aquifer.



Wall Lake aquifer.



Intermittent stream



Aquifer boundary. Dashed where approximate.

Figure 13. Nitrate-nitrogen concentrations in the Wall Lake aquifer and the Southern Skunk Creek management unit of the Big Sioux aquifer.

was used for those wells from which more than one analysis was available. The significance of figure 13 is that it shows that most of the water samples taken from the Wall Lake aquifer had nitrate-nitrogen concentrations which were less than the laboratory detection limit of 0.04 ppm and that the concentrations were variable, but generally low, in the Southern Skunk Creek management unit.

Friessen Gravel Pit

The Friessen gravel pit is located in the extreme southwest corner of section 5, T. 101 N., R. 50 W. (fig. 9). This site is located on outwash higher than the elevation of Skunk Creek (fig. 5). The outwash is underlain by a till whose surface slopes generally toward Skunk Creek. Consequently, precipitation or surface runoff which infiltrates through unsaturated outwash at this site would likely migrate downward from land surface until:

1. it reaches the water table, at which point it would begin to migrate in the direction of ground-water flow (fig. 9), or
2. it reaches the till surface, at which point it would follow the till surface generally toward saturated outwash and Skunk Creek.

The most recent water-level measurement available for a well that is just across the road to the south of the gravel pit (drill site 6, fig. 2) showed that there was about 4 feet of saturated outwash at that location on April 28, 1988 (app. C). Infiltrating water at the gravel pit has the potential to transport contaminants, if present, into the Southern Skunk Creek management unit and toward Skunk Creek.

Little data are available regarding background nitrate concentrations in the Southern Skunk Creek management unit in the immediate gravel pit area. There is a well (drill site 6, fig. 2 and app. A), however, that is just across the road to the south of the gravel pit which had a nitrate-nitrogen concentration of 0.50 ppm in water sample 7 collected on September 16, 1986 (fig. 11 and app. B). Figure 9 shows this well to be in a generally downgradient direction from the gravel pit. There are two other wells, one about one-half mile west and the other about one-half mile east of drill site 6 (drill sites 4 and 5, respectively; fig. 2). Both of these wells were sampled in 1986 and the well at drill site 4 was sampled again in 1987 and the well at drill site 5 was sampled again in 1988 (water samples 2 and 3; 5 and 6, fig. 11, app. B). The well at drill site 4 showed a fluctuation in nitrate-nitrogen from <0.04 to 0.08 ppm between the two sample dates and the well at drill site 5 showed a fluctuation from 5.70 to 11.60 ppm. The reason for the significant increase in nitrate concentration in the well at drill site 5 is not known. The concentration of nitrate in the most recent sample from each of these wells is shown on figure 13.

Ellis Landfill

The Ellis landfill is located generally in the SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 15, T. 101 N., R. 50 W. (fig. 9).

Garbage was placed in this landfill from the mid-1950's until 1977. From 1977 until a portion of the landfill was closed in 1979, only rubble was allowed to be placed in the landfill. The portion of the landfill which reportedly received garbage and rubble is indicated as the "old Ellis landfill" on figure 9. In 1979, the rubble-filling activities were moved south of and adjacent to the "old Ellis landfill", to NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 15, T. 101 N., R. 50 W., where it is still in operation. This area is referred to as the "Ellis rubble landfill" on figure 9. No records are available as to what was placed into either the "garbage" or "rubble" portions of the site.

It appears that the landfill may be having an impact on the quality of ground water downgradient from the site. A comparison of the quality of water from two wells which are downgradient from the landfill (drill sites 26 and 27, figs. 2 and 9) with the quality of aquifer water (background water quality) which is moving past or into the landfill on the west and south sides of the landfill (wells at drill sites 28, 29, 30, 39, and 40, figs. 2 and 9) is presented in table 2. Of the two downgradient wells, the well at drill site 26 is about 6 feet deeper than the adjacent well at drill site 27 and shows a greater deviation from average water quality than the well at drill site 27. The well at drill site 26 (water sample 23) has higher concentrations of calcium, sodium, chloride, and dissolved solids than the background water quality while at the same time having lower concentrations of sulfate and fluoride. Although no average concentrations are provided for iron and manganese in the "background" wells in table 2, the downgradient well at drill site 26 (water sample 23) has higher concentrations of iron and manganese than all "background" wells and the downgradient well at drill site 27 (water sample 24) has higher concentrations of iron and manganese than all "background" wells except the one at drill site 39. No differences in water chemistry are seen between the well at drill site 27 and the "background" wells except for the apparent elevated concentrations of iron and manganese.

More wells would need to be installed and data gathered in order to accurately define the directions of ground-water flow in and near the landfill and to document any impact on ground-water chemistry by the landfill. Ground-water flow is, however, likely being affected by ongoing man-induced changes in site conditions. Immediately to the east of the landfill is an active sand and gravel mining operation and the rubble presently being disposed of in the landfill is filling an abandoned sand and gravel pit. These activities will likely continue to alter site specific ground water flow patterns, although the ultimate discharge point for water moving through the landfill area will still be Skunk Creek.

SUMMARY AND RECOMMENDATIONS

Wall Lake Aquifer and the Southern Skunk Creek Management Unit of the Big Sioux Aquifer

The Wall Lake aquifer is in direct contact with the Southern Skunk Creek management unit in sections 15, 16, 17, 18, 20, 21, 22, 23, 25, 26, and 36, T. 101 N., R. 50 W. (fig. 4). The ground water flow direction in the Wall Lake aquifer in the study area is generally to the east while the ground water flow direction in the Southern Skunk Creek management unit is generally to the southeast and/or toward Skunk Creek or its tributaries (fig. 9).

TABLE 2. Comparison of background water quality with downgradient water quality near the Ellis landfill

Parameter	Concentration ¹				
	Average	Background quality ²		Downgradient quality ³	
		Average plus one standard deviation	Average minus one standard deviation	Drill Site 26 Water Sample 23	Drill Site 27 Water Sample 24
Calcium	133	149	---	177	141
Magnesium	57	67	---	62	51
Sodium	24	35	---	56	17
Potassium	5.0	6.5	---	5.4	4.0
Sulfate	356	---	262	70	340
Chloride	9	14	---	336	8
Iron	--- ⁴	--- ⁴	---	0.77	0.41
Manganese	--- ⁴	--- ⁴	---	2.19	0.88
Nitrate-Nitrogen	--- ⁴	--- ⁴	---	0.62	<0.04
Fluoride	0.29	0.38	---	<0.08	0.42
Dissolved Solids	791	921	---	952	760

¹ Concentrations are presented in parts per million.

² Five wells were used to calculate these numbers: wells at drill sites 28, 29, 30, 39, and 40 (fig. 2 and app. A) and water samples 26, 28, 30, 41, and 42 (fig. 11 and app. B), respectively. Although these wells are not directly upgradient of the landfill, water from these wells is believed to be representative of background water quality near the landfill.

³ The two downgradient wells are at drill sites 26 and 27 (fig. 2 and app. A); water samples 23 and 24 (fig. 11 and app. B), respectively.

⁴ No averages were calculated due to "less than" values listed in the individual water analyses presented in appendix B.

Water from the Wall Lake aquifer, which is of poorer quality than water from either Skunk Creek (surface water) or the Southern Skunk Creek management unit, has an effect on the quality of ground water on the south side of Skunk Creek in the Southern Skunk Creek management unit as evidenced by data from some monitoring wells located in sections 15, 17, 23, and 25, T. 101 N., R. 50 W. In this area of the Southern Skunk Creek management unit, the dissolved-solids concentrations are often more like those in the Wall Lake aquifer as compared to the rest of the Southern Skunk Creek management unit (fig. 12).

Sioux Falls has a water right for use of ground water from portions of the Southern Skunk Creek management unit which show the impact of discharge of water from the Wall Lake aquifer into the Southern Skunk Creek management unit. This impact is limited to the south side of Skunk Creek because the creek is generally a discharge zone for shallow ground water. The quality of water in the Southern Skunk Creek management unit on the north side of Skunk Creek is of generally better quality than some of the water on the south side of the creek. This relationship must be kept in mind if development of the ground water on a large scale is planned. If large-scale development is anticipated, additional investigation should be conducted regarding optimum pumping rates under varying surface-water and ground-water levels to limit the possibility of inducing poor quality water into the area of better quality.

Friessen Gravel Pit

The Friessen gravel pit is located in outwash overlying a till surface. If a large source of nitrate-nitrogen (manure) was placed in the gravel pit, then infiltration from precipitation and surface runoff could potentially carry nitrate into the Southern Skunk Creek management unit and toward Skunk Creek. It is recommended that possible pollutants, including excessive quantities of manure, not be disposed of or placed at this site because of the potential to contaminate the Southern Skunk Creek management unit and Skunk Creek.

Ellis Landfill

Based on the limited available data, it appears that the landfill may be having an impact on the quality of ground water downgradient from the landfill: between the landfill and the natural ground water discharge zone along Skunk Creek. Concentrations of dissolved minerals in one downgradient well are higher for some constituents and lower for some other constituents than in surrounding water in the aquifer. The differences in concentrations may be the result of leaching of the refuse that has been placed in the landfill. The leaching process can add organic and inorganic matter to the ground water. Such a process can result in the increase or decrease of the concentrations of certain constituents.

Figure 9 shows regional ground water flow directions across the Ellis landfill site. However, due to (1) the ongoing landfilling and mining activities on and near the site, and (2) the lack of a detailed monitoring well network, ground-water flow in and near the site is not fully understood.

If further definition of hydrogeologic conditions and ground-water chemistry at the Ellis landfill

is desired, it is recommended that, at a minimum, monitoring wells be installed around the perimeter of the landfill. These wells could be used for determining site specific ground water flow directions and for collecting water samples for organic analysis in addition to more samples for inorganic analysis.

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- Hedges, L. S., Burch, S. L., Iles, D. L., Barari, R. A., and Schoon, R. A., 1982, *Evaluation of ground-water resources eastern South Dakota and upper Big Sioux River, South Dakota and Iowa*: Prepared by the South Dakota Geological Survey for the U.S. Army Corps of Engineers, Contract DACW 45-80-C-0185.
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APPENDIX A

Logs of Test Holes and Monitoring Wells

DRILL SITE

A number arbitrarily assigned to the log according to the order in which it is listed (see **LEGAL LOCATION** and **LOCATION**). This number corresponds to the numbers listed on figure 2.

LEGAL LOCATION and LOCATION

The logs are listed by smallest township number, then the smallest range number, the smallest section number, and then by quarter section: NE = A; NW = B; SW = C; SE = D. A comparison of **LEGAL LOCATION** and **LOCATION** is as follows. A **LEGAL LOCATION** of NW¼SE¼NE¼SW¼ sec. 30, T. 99 N., R. 64 W. is the same as a **LOCATION** of 099N-64W-30CADB. In several **LOCATIONS**, the smallest quarter section is followed by the number 1 or 2 which indicates that more than one log may exist for that particular location.

LATITUDE and LONGITUDE

The format is DD.MMSS where **D** is degrees, **M** is minutes, and **S** is seconds.

DRILLING COMPANY

SDGS is an abbreviation for South Dakota Geological Survey.

TOTAL DRILL HOLE DEPTH, SCREEN LENGTH, TOTAL CASING AND SCREEN, and CASING STICK-UP

The numbers are presented in feet.

SCREEN TYPE and CASING TYPE

PVC is an abbreviation for polyvinyl chloride. MFG. is an abbreviation for manufactured and indicates a product that is commercially available. **SLOT SIZE** is the size, in inches, of the openings on the screen. **SCH.** is an abbreviation for schedule and refers to casing thickness. **HM.** is an abbreviation for homemade and indicates a hacksaw-slotted casing.

CASING TOP ELEVATION and GROUND SURFACE ELEVATION

The numbers are presented in feet above mean sea level. **I** - the elevation was determined using a surveying instrument. **T** - the elevation was estimated from a 7½ minute series topographic map.

CASING DIAMETER

The numbers are presented in inches.

County: MINNEHAHA
 Drill Site: 1
 Legal Location: SW SW SW SE sec. 04, T. 101 N., R. 50 W.
 Latitude: 43.3422
 Land Owner:
 Project: SKUNK CREEK WATER QUALITY
 Drilling Company: SDGS
 Driller: D. JACOBSON
 Geologist: L. FRYKMAN
 Date Drilled: 08-10-1987
 Ground Surface Elevation: 1459.27 I
 Total Drill Hole Depth: 34.1
 USGS Hydrological Unit Code: 10170203
 Electric Log Information:
 Spontaneous Potential:
 Natural Gamma:
 Samples:

Location: 101N-50W-04DCCC
 Longitude: 96.5024

Driller's Log:
 Geologist's Log: X
 Drilling Method: ROTARY
 Test Hole Number: CO-87-97

Single Point Resistivity:
 Extra:

0	-	3	Clay, black, silty (topsoil)
3	-	20	Silt, light-brown, clayey
20	-	31	Silt, greenish to bluish-green-gray, clayey
31	-	34	Sand and gravel, grayish-brown, medium to coarse sand, fine to medium gravel; made up of carbonates, quartz and quartzite
34	-	34.1	Quartzite; no penetration was made

* * * * *

County: MINNEHAHA
 Drill Site: 2
 Legal Location: SE SE SE SE sec. 05, T. 101 N., R. 50 W.
 Latitude: 43.3424
 Land Owner:
 Project: SKUNK CREEK WATER QUALITY
 Drilling Company: SDGS
 Driller: D. JACOBSON
 Geologist: L. FRYKMAN
 Date Drilled: 08-05-1987
 Ground Surface Elevation: 1507.00 T
 Total Drill Hole Depth: 109
 USGS Hydrological Unit Code: 10170203
 Electric Log Information:
 Spontaneous Potential:
 Natural Gamma:
 Samples:

Location: 101N-50W-05DDDD
 Longitude: 96.5102

Driller's Log:
 Geologist's Log: X
 Drilling Method: ROTARY
 Test Hole Number: CO-87-90

Single Point Resistivity:
 Extra:

0	-	20	Silt, light-brown, clayey (loess)
20	-	72	Clay, light-yellow-brown, silty; oxidized (till)
72	-	98	Clay, gray, silty, sandy; unoxidized (till)
98	-	104	Sand, brown, fine to medium; primarily quartz
104	-	109	Clay, gray, silty, sandy, pebbly; unoxidized (till)

* * * * *

County: MINNEHAHA
 Drill Site: 3

Location: 101N-50W-07AABB

Legal Location: NW NW NE NE sec. 07, T. 101 N., R. 50 W.
 Latitude: 43.3421
 Land Owner:
 Project: WATER RIGHTS
 Drilling Company: MAXWELL-HOLZBAUER
 Driller:
 Geologist: ED. ST. ONGE
 Date Drilled: 08-13-1957
 Ground Surface Elevation:
 Total Drill Hole Depth: 45
 Water Rights Well: MA-57F
 Other Well Name: S-27
 Basin: BIG SIOUX
 Management Unit: SOUTHERN SKUNK CREEK
 Screen Type: UNKNOWN
 Casing Type: UNKNOWN
 Casing Top Elevation: 1455.80 I
 Casing Stick-up: 2.10
 Well Maintenance Date: 10-24-1974
 USGS Hydrological Unit Code: 10170203
 Electric Log Information:
 Spontaneous Potential:
 Natural Gamma:
 Samples: X

Longitude: 96.5231

Driller's Log:
 Geologist's Log: X
 Drilling Method:

Test Hole Number:
 SDGS Well Name:

Aquifer: BIG SIOUX

Screen Length:
 Casing Diameter: 1.3

Total Casing and Screen: 18.0

Single Point Resistivity:
 Extra:

Replaced by MA-80R.

0	-	12	Loam
12	-	19	Gravel, coarse; sample taken
19	-	45	Clay, blue

County: MINNEHAHA
 Drill Site: 4
 Legal Location: NW NE NW NE sec. 07, T. 101 N., R. 50 W.
 Latitude: 43.3421
 Land Owner:
 Project: SIOUX FALLS-BRANDON STUDY
 Drilling Company: SDGS
 Driller: R. DANZL
 Geologist: D. ILES
 Date Drilled: 07-25-1979
 Ground Surface Elevation: 1450.87 I
 Total Drill Hole Depth: 20
 Water Rights Well: MA-80R
 Other Well Name:
 Basin: BIG SIOUX
 Management Unit: SOUTHERN SKUNK CREEK
 Screen Type: PVC, MFG.
 Casing Type: PVC
 Casing Top Elevation: 1454.07 I
 Casing Stick-up: 3.20
 Well Maintenance Date: 06-29-1983
 USGS Hydrological Unit Code: 10170203

Location: 101N-50W-07ABAB

Longitude: 96.5236

Driller's Log:
 Geologist's Log: X
 Drilling Method: ROTARY

Test Hole Number: SFB-96
 SDGS Well Name: SFB-96

Aquifer: BIG SIOUX

Screen Length: 5.0
 Casing Diameter: 2.0

Total Casing and Screen: 17.3

Electric Log Information:

Spontaneous Potential:
Natural Gamma:
Samples:

Single Point Resistivity:
Extra:

Replaces MA-57F.

0 - 4 Clay, black
4 - 15 Gravel, coarse
15 - 20 Clay, brown, pebbly

* * * *

County: MINNEHAHA

Location: 101N-50W-08BAAB

Drill Site: 5

Legal Location: NW NE NE NW sec. 08, T. 101 N., R. 50 W.

Latitude: 43.3421

Longitude: 96.5143

Land Owner:

Project: BIG SIOUX HYDRO STUDY

Drilling Company: SDGS

Driller: L. HELSETH

Geologist:

Driller's Log: X

Geologist's Log:

Drilling Method: AUGER

Date Drilled: 08-23-1984

Ground Surface Elevation: 1475.00 T

Total Drill Hole Depth: 20

Test Hole Number: R20-84-300

SDGS Well Name: R20-84-300

Water Rights Well:

Other Well Name:

Aquifer: BIG SIOUX

Basin: BIG SIOUX

Management Unit: SOUTHERN SKUNK CREEK

Screen Type: PVC, HM.

Screen Length: 10.0

Casing Type: PVC

Casing Diameter: 2.0

Casing Top Elevation: 1478.00 T

Casing Stick-up: 3.00

Total Casing and Screen: 23.0

Well Maintenance Date:

USGS Hydrological Unit Code: 10170203

Electric Log Information:

Spontaneous Potential:

Single Point Resistivity:

Natural Gamma:

Extra:

Samples:

PVC slotted 6 to 16 feet from ground surface.

0 - 3 Clay, yellow-brown, silty, pebbly (till)
3 - 16 Sand and gravel, medium to coarse
16 - 20 Clay, yellow-brown, silty, pebbly (till)

* * * *

County: MINNEHAHA

Location: 101N-50W-08BBBB

Drill Site: 6

Legal Location: NW NW NW NW sec. 08, T. 101 N., R. 50 W.

Latitude: 43.3421

Longitude: 96.5213

Land Owner:

Project: SKUNK CREEK WATER QUALITY

Drilling Company: SDGS

Driller: D. JACOBSON

Driller's Log:

Geologist: L. FRYKMAN
Date Drilled: 08-18-1986
Ground Surface Elevation: 1470.43 I
Total Drill Hole Depth: 27
Water Rights Well:
Other Well Name:
Basin: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Screen Type: PVC, MFG.
Casing Type: PVC, SCH. 40
Casing Top Elevation: 1473.39 I
Casing Stick-up: 2.96
Well Maintenance Date:
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:
Natural Gamma:
Samples:

0	-	12	Gravel, reddish-brown, medium; much iron staining
12	-	22	Gravel, reddish-brown, fine
22	-	27	Clay, brown, silty, sandy; oxidized (till)

* * * *

County: MINNEHAHA
Drill Site: 7
Legal Location: SW NW SW NW sec. 08, T. 101 N., R. 50 W.
Latitude: 43.3403
Land Owner:
Project: MINNEHAHA COUNTY STUDY
Drilling Company: SDGS
Driller: S. MITCHELL/D. JACOBSON
Geologist: D. TOMHAVE
Date Drilled: 07-23-1986
Ground Surface Elevation: 1462.00 T
Total Drill Hole Depth: 88
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:
Natural Gamma:
Samples:

0	-	1	Clay, black, silty (topsoil)
1	-	3	Clay, brown, silty, sandy; oxidized
3	-	13	Sand and gravel, brown, medium to coarse sand, medium gravel
13	-	55	Clay, brown, silty, sandy, pebbly; oxidized (till)
55	-	72	Clay, gray, silty, sandy, pebbly; unoxidized (till)
72	-	75	Clay, brown, silty, sandy, pebbly; oxidized (till)
75	-	84	Clay, gray, silty, sandy, pebbly; unoxidized (till)
84	-	87	Sand, pink, medium
87	-	88	Quartzite, pink; very hard, only a few inches were actually penetrated (Sioux Quartzite)

* * * *

Geologist's Log: X
Drilling Method: ROTARY
Test Hole Number: CO-86-103
SDGS Well Name: CO-86-103
Aquifer: BIG SIOUX
Screen Length: 5.0
Casing Diameter: 2.0
Total Casing and Screen: 23.7
Single Point Resistivity:
Extra:

Location: 101N-50W-08BCBC
Longitude: 96.5213
Driller's Log:
Geologist's Log: X
Drilling Method: ROTARY
Test Hole Number: CO-86-57

Single Point Resistivity:
Extra:

County: MINNEHAHA
Drill Site: 8
Legal Location: SW SW SW NW sec. 08, T. 101 N., R. 50 W.
Latitude: 43.3356
Land Owner:
Project: BIG SIOUX HYDRO STUDY
Drilling Company: SDGS
Driller: L. HELSETH
Geologist:
Date Drilled: 08-23-1984
Ground Surface Elevation: 1464.04 I
Total Drill Hole Depth: 21
Water Rights Well:
Other Well Name:
Basin: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Screen Type: PVC, HM.
Casing Type: PVC
Casing Top Elevation: 1466.54 I
Casing Stick-up: 2.50
Well Maintenance Date:
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:
Natural Gamma:
Samples:

Location: 101N-50W-08BCCC

Longitude: 96.5213

Driller's Log: X
Geologist's Log:
Drilling Method: AUGER

Test Hole Number: R20-84-301
SDGS Well Name: R20-84-301

Aquifer: BIG SIOUX

Screen Length: 10.0
Casing Diameter: 2.0

Total Casing and Screen: 23.5

Single Point Resistivity:
Extra:

PVC slotted 7 to 17 feet from ground surface.

0	-	4	Clay, yellow-brown, silty, pebbly
4	-	21	Sand and gravel, medium to coarse, rocky; rock at 21 feet, could not penetrate

* * * *

County: MINNEHAHA
Drill Site: 9
Legal Location: NW NW NE NE sec. 09, T. 101 N., R. 50 W.
Latitude: 43.3422
Land Owner:
Project: SKUNK CREEK WATER QUALITY
Drilling Company: SDGS
Driller: D. JACOBSON
Geologist: L. FRYKMAN
Date Drilled: 08-10-1987
Ground Surface Elevation: 1453.07 I
Total Drill Hole Depth: 31.1
Water Rights Well:
Other Well Name:
Basin: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Screen Type: PVC, MFG.
Casing Type: PVC, SCH. 80
Casing Top Elevation: 1456.08 I
Casing Stick-up: 3.01

Location: 101N-50W-09AABB

Longitude: 96.5006

Driller's Log:
Geologist's Log: X
Drilling Method: ROTARY

Test Hole Number: CO-87-98
SDGS Well Name: CO-87-98

Aquifer: BIG SIOUX

Screen Length: 5.0
Casing Diameter: 2.0

Total Casing and Screen: 34.0

Well Maintenance Date:
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:
Natural Gamma:
Samples:

Single Point Resistivity:
Extra:

0	-	2	Silt, black, clayey (topsoil)
2	-	12	Silt, light-brown, clayey
12	-	24	Silt, gray, clayey
24	-	31	Sand and gravel, gray, medium to coarse sand, fine to medium gravel; made up of quartz, carbonates and igneous grains
31	-	31.1	Quartzite; no penetration was made

* * * * *

County: MINNEHAHA
Drill Site: 10
Legal Location: NE NE SE NE sec. 09, T. 101 N., R. 50 W.
Latitude: 43.3405
Land Owner:
Project: SKUNK CREEK WATER QUALITY
Drilling Company: SDGS
Driller: D. JACOBSON
Geologist: L. FRYKMAN
Date Drilled: 08-19-1986
Ground Surface Elevation: 1441.47 I
Total Drill Hole Depth: 33.1
Water Rights Well:
Other Well Name:
Basin: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Screen Type: PVC, MFG.
Casing Type: PVC, SCH. 40
Casing Top Elevation: 1443.97 I
Casing Stick-up: 2.50
Well Maintenance Date:
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:
Natural Gamma:
Samples:

Location: 101N-50W-09ADAA

Longitude: 96.4951

Driller's Log:
Geologist's Log: X
Drilling Method: ROTARY

Test Hole Number: CO-86-109
SDGS Well Name: CO-86-109

Aquifer: BIG SIOUX

Screen Length: 5.0
Casing Diameter: 2.0

Total Casing and Screen: 25.6

Single Point Resistivity:
Extra:

0	-	7	Clay, black, silty (alluvium)
7	-	11	Clay, bluish-gray, silty (alluvium)
11	-	24	Gravel, gray, very fine to coarse; much shale and limestone
24	-	30	Clay, yellowish-brown, silty; oxidized (till)
30	-	33	Sand, brown, coarse
33	-	33.1	Quartzite; no penetration was made

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County: MINNEHAHA
Drill Site: 11
Legal Location: SW SW SW NW sec. 09, T. 101 N., R. 50 W.
Latitude: 43.3358

Location: 101N-50W-09BCCC 1

Longitude: 96.5101

Land Owner:
Project: SKUNK CREEK WATER QUALITY
Drilling Company: SDGS
Driller: D. JACOBSON
Geologist: L. FRYKMAN
Date Drilled: 08-03-1987
Ground Surface Elevation: 1458.00 T
Total Drill Hole Depth: 56.1
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:
Natural Gamma:
Samples:

0 - 3	Silt, black, clayey (topsoil)
3 - 23	Sand and gravel, yellow-brown, medium to coarse sand, fine to medium gravel
23 - 30	Clay, gray, silty (alluvium)
30 - 31	Gravel, grayish-brown, fine to medium
31 - 52	Clay, light-brown, silty
52 - 56	Clay, very light-brown, silty
56 - 56.1	Quartzite; no penetration was made

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County: MINNEHAHA
Drill Site: 12
Legal Location: SW SW SW NW sec. 09, T. 101 N., R. 50 W.
Latitude: 43.3358
Land Owner:
Project: SKUNK CREEK WATER QUALITY
Drilling Company: SDGS
Driller: D. JACOBSON
Geologist: L. FRYKMAN
Date Drilled: 08-03-1987
Ground Surface Elevation: 1458.13 I
Total Drill Hole Depth: 23
Water Rights Well:
Other Well Name:
Basin: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Screen Type: PVC, MFG.
Casing Type: PVC, SCH. 80
Casing Top Elevation: 1461.11 I
Casing Stick-up: 2.98
Well Maintenance Date:
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:
Natural Gamma:
Samples:

0 - 9	Silt, black, clayey (topsoil)
9 - 23	Sand and gravel, brown, medium to coarse sand, fine to medium gravel; made up of carbonates and quartz

Driller's Log:
Geologist's Log: X
Drilling Method: ROTARY
Test Hole Number: CO-87-83

Single Point Resistivity:
Extra:

Location: 101N-50W-09BCCC 2
Longitude: 96.5101

Driller's Log:
Geologist's Log: X
Drilling Method: ROTARY

Test Hole Number: CO-87-84
SDGS Well Name: CO-87-84

Aquifer: BIG SIOUX

Screen Length: 5.0
Casing Diameter: 2.0

Total Casing and Screen: 24.0

Single Point Resistivity:
Extra:

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County: MINNEHAHA
Drill Site: 13
Legal Location: SW SW SW SW sec. 09, T. 101 N., R. 50 W.
Latitude: 43.3331
Land Owner:
Project: SKUNK CREEK WATER QUALITY
Drilling Company: SDGS
Driller: D. JACOBSON
Geologist: L. FRYKMAN
Date Drilled: 08-03-1987
Ground Surface Elevation: 1440.50 I
Total Drill Hole Depth: 30
Water Rights Well:
Other Well Name:
Basin: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Screen Type: PVC, MFG., SLOT SIZE 0.020 IN.
Casing Type: PVC, SCH. 80
Casing Top Elevation: 1443.43 I
Casing Stick-up: 2.93
Well Maintenance Date:
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:
Natural Gamma:
Samples:

Location: 101N-50W-09CCCC

Longitude: 96.5101

Driller's Log:
Geologist's Log: X
Drilling Method: ROTARY

Test Hole Number: CO-87-82
SDGS Well Name: CO-87-82

Aquifer: BIG SIOUX

Screen Length: 5.0
Casing Diameter: 2.0

Total Casing and Screen: 32.9

Single Point Resistivity:
Extra:

Screened from 10 to 15 below ground surface, blank casing from 15 to 30 feet below ground surface.

0	-	9	Clay, black, silty (alluvium)
9	-	15	Sand and gravel, yellow-brown, fine to coarse sand, fine to medium gravel
15	-	30	Clay, light-brown, silty, sandy, pebbly; oxidized (till)

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County: MINNEHAHA
Drill Site: 14
Legal Location: NE NW NW NW sec. 10, T. 101 N., R. 50 W.
Latitude: 43.3422
Land Owner:
Project: SKUNK CREEK WATER QUALITY
Drilling Company: SDGS
Driller: D. JACOBSON
Geologist: L. FRYKMAN
Date Drilled: 08-19-1986
Ground Surface Elevation: 1441.00 T
Total Drill Hole Depth: 40.1
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:
Natural Gamma:
Samples:

Location: 101N-50W-10BBBA

Longitude: 96.4942

Driller's Log:
Geologist's Log: X
Drilling Method: ROTARY

Test Hole Number: CO-86-110

Single Point Resistivity:
Extra:

0 - 14 Clay, black, silty (alluvium)
 14 - 18 Gravel, brown, very fine to coarse; has some cobbles
 18 - 32 Clay, yellowish-brown, silty
 32 - 35 Sand, brown, fine; predominantly quartz
 35 - 40 Clay, dark-brown, very silty
 40 - 40.1 Quartzite; no penetration was made

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County: MINNEHAHA
 Drill Site: 15
 Legal Location: SW SW SW SW sec. 10, T. 101 N., R. 50 W.
 Latitude: 43.3331
 Land Owner:
 Project: SKUNK CREEK WATER QUALITY
 Drilling Company: SDGS
 Driller: D. JACOBSON
 Geologist: L. FRYKMAN
 Date Drilled: 08-19-1986
 Ground Surface Elevation: 1442.93 I
 Total Drill Hole Depth: 23.1
 Water Rights Well:
 Other Well Name:
 Basin: BIG SIOUX
 Management Unit: SOUTHERN SKUNK CREEK
 Screen Type: PVC, MFG.
 Casing Type: PVC, SCH. 40
 Casing Top Elevation: 1446.03 I
 Casing Stick-up: 3.10
 Well Maintenance Date:
 USGS Hydrological Unit Code: 10170203
 Electric Log Information:
 Spontaneous Potential:
 Natural Gamma:
 Samples:

0 - 5 Clay, yellowish-brown, silty
 5 - 15 Gravel, brown, coarse to fine
 15 - 23 Clay, brown, silty; oxidized (till)
 23 - 23.1 Quartzite; no penetration was made

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County: MINNEHAHA
 Drill Site: 16
 Legal Location: SW SW SW SW sec. 10, T. 101 N., R. 50 W.
 Latitude: 43.3331
 Land Owner:
 Project: SKUNK CREEK WATER QUALITY
 Drilling Company: SDGS
 Driller: D. JACOBSON
 Geologist: L. FRYKMAN
 Date Drilled: 08-20-1986
 Ground Surface Elevation: 1443.00 I

Location: 101N-50W-10CCCC 1

Longitude: 96.4950

Driller's Log:
 Geologist's Log: X
 Drilling Method: ROTARY

Test Hole Number: CO-86-111
 SDGS Well Name: CO-86-111

Aquifer: BIG SIOUX

Screen Length: 5.0
 Casing Diameter: 2.0

Total Casing and Screen: 22.6

Single Point Resistivity:
 Extra:

Location: 101N-50W-10CCCC 2

Longitude: 96.4950

Driller's Log:
 Geologist's Log: X
 Drilling Method: ROTARY

Total Drill Hole Depth: 15
Water Rights Well:
Other Well Name:
Basin: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Screen Type: PVC, MFG.
Casing Type: PVC, SCH. 40
Casing Top Elevation: 1445.90 I
Casing Stick-up: 2.90
Well Maintenance Date:
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:
Natural Gamma:
Samples:

0 - 5 Clay, yellowish-brown, silty
5 - 15 Gravel, brown, coarse to fine

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County: MINNEHAHA
Drill Site: 17
Legal Location: SE SE SW SW sec. 10, T. 101 N., R. 50 W.
Latitude: 43.3330
Land Owner:
Project: SKUNK CREEK WATER QUALITY
Drilling Company: SDGS
Driller: D. JACOBSON
Geologist: L. FRYKMAN
Date Drilled: 08-20-1986
Ground Surface Elevation: 1440.24 I
Total Drill Hole Depth: 19.1
Water Rights Well:
Other Well Name:
Basin: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Screen Type: PVC, MFG.
Casing Type: PVC, SCH. 40
Casing Top Elevation: 1442.36 I
Casing Stick-up: 2.12
Well Maintenance Date:
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:
Natural Gamma:
Samples:

0 - 15 Gravel, brown, fine to coarse
15 - 19 Clay, yellowish-brown, silty; oxidized (till)
19 - 19.1 Quartzite; no penetration was made

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County: MINNEHAHA

Test Hole Number: CO-86-112
SDGS Well Name: CO-86-112

Aquifer: BIG SIOUX

Screen Length: 5.0
Casing Diameter: 2.0

Total Casing and Screen: 12.2

Single Point Resistivity:
Extra:

Location: 101N-50W-10CCDD

Longitude: 96.4932

Driller's Log:
Geologist's Log: X
Drilling Method: ROTARY

Test Hole Number: CO-86-113
SDGS Well Name: CO-86-113

Aquifer: BIG SIOUX

Screen Length: 5.0
Casing Diameter: 2.0

Total Casing and Screen: 16.2

Single Point Resistivity:
Extra:

Location: 101N-50W-10DDAA

Drill Site: 18
Legal Location: NE NE SE SE sec. 10, T. 101 N., R. 50 W.
Latitude: 43.3340
Land Owner:
Project: SKUNK CREEK WATER QUALITY
Drilling Company: SDGS
Driller: D. JACOBSON
Geologist: L. FRYKMAN
Date Drilled: 08-10-1987
Ground Surface Elevation: 1446.00 T
Total Drill Hole Depth: 41.1
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:
Natural Gamma:
Samples:

0	-	2	Clay, black (topsoil)
2	-	27	Silt, orange-brown, clayey
27	-	32	Gravel, gray, fine to medium, silty
32	-	41	Clay, light-brown, silty
41	-	41.1	Quartzite; no penetration was made

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County: MINNEHAHA
Drill Site: 19
Legal Location: NE NW NE NW sec. 14, T. 101 N., R. 50 W.
Latitude: 43.3330
Land Owner:
Project: SKUNK CREEK WATER QUALITY
Drilling Company: SDGS
Driller: D. JACOBSON
Geologist: L. FRYKMAN
Date Drilled: 08-10-1987
Ground Surface Elevation: 1463.00 T
Total Drill Hole Depth: 38.1
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:
Natural Gamma:
Samples:

0	-	27	Clay, yellow-brown, silty, sandy, pebbly (till)
27	-	31	Silt, bluish-gray, clayey
31	-	32	Sand, brown, medium
32	-	38	Clay, light-brown, silty
38	-	38.1	Quartzite; no penetration was made

Original drillers notes lost, lithology breaks are made from cuttings piles.

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County: MINNEHAHA
Drill Site: 20

Longitude: 96.4838

Driller's Log:
Geologist's Log: X
Drilling Method: ROTARY

Test Hole Number: CO-87-99

Single Point Resistivity:
Extra:

Location: 101N-50W-14BABA

Longitude: 96.4812

Driller's Log:
Geologist's Log: X
Drilling Method: ROTARY

Test Hole Number: CO-87-100

Single Point Resistivity:
Extra:

Location: 101N-50W-14CADC 1

Legal Location: SW SE NE SW sec. 14, T. 101 N., R. 50 W.

Latitude: 43.3251

Land Owner:

Project: SKUNK CREEK WATER QUALITY

Drilling Company: SDGS

Driller: D. JACOBSON

Geologist: L. FRYKMAN

Date Drilled: 08-11-1987

Ground Surface Elevation: 1436.00 T

Total Drill Hole Depth: 61.1

USGS Hydrological Unit Code: 10170203

Electric Log Information:

Spontaneous Potential:

Natural Gamma:

Samples:

0	-	5	Silt, black (topsoil)
5	-	13	Sand and gravel, reddish-brown, sand fine to coarse, gravel fine to medium; make up consists of quartz and igneous clasts with some carbonates
13	-	22	Clay, light-brown, silty, sandy, pebbly; oxidized (till)
22	-	40	Clay, gray, silty, sandy, pebbly; carbonate cobbles; unoxidized (till)
40	-	50	Clay, light-brown, silty, sandy, pebbly; oxidized (till)
50	-	61	Clay, gray, silty; undifferentiated Cretaceous
61	-	61.1	Quartzite; no penetration was made

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County: MINNEHAHA

Drill Site: 21

Legal Location: SW SE NE SW sec. 14, T. 101 N., R. 50 W.

Latitude: 43.3251

Land Owner:

Project: SKUNK CREEK WATER QUALITY

Drilling Company: SDGS

Driller: D. JACOBSON

Geologist: L. FRYKMAN

Date Drilled: 08-11-1987

Ground Surface Elevation: 1435.86 I

Total Drill Hole Depth: 17

Water Rights Well:

Other Well Name:

Basin: BIG SIOUX

Management Unit: SOUTHERN SKUNK CREEK

Screen Type: PVC, MFG.

Casing Type: PVC, SCH. 80

Casing Top Elevation: 1438.93 I

Casing Stick-up: 3.07

Well Maintenance Date:

USGS Hydrological Unit Code: 10170203

Electric Log Information:

Spontaneous Potential:

Natural Gamma:

Samples:

0	-	5	Silt, black (topsoil)
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Longitude: 96.4809

Driller's Log:

Geologist's Log: X

Drilling Method: ROTARY

Test Hole Number: CO-87-101

Single Point Resistivity:

Extra:

Location: 101N-50W-14CADC 2

Longitude: 96.4809

Driller's Log:

Geologist's Log: X

Drilling Method: ROTARY

Test Hole Number: CO-87-102

SDGS Well Name: CO-87-102

Aquifer: BIG SIOUX

Screen Length: 5.0

Casing Diameter: 2.0

Total Casing and Screen: 15.8

Single Point Resistivity:

Extra:

5 - 13 Sand and gravel, reddish-brown, fine to coarse sand, fine to medium gravel
13 - 17 Clay, light-brown, silty, sandy, pebbly; oxidized (till)

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County: MINNEHAHA Location: 101N-50W-15AAAA
Drill Site: 22
Legal Location: NE NE NE NE sec. 15, T. 101 N., R. 50 W.
Latitude: 43.3328 Longitude: 96.4839
Land Owner:
Project: SKUNK CREEK WATER QUALITY
Drilling Company: SDGS
Driller: D. JACOBSON Driller's Log:
Geologist: L. FRYKMAN Geologist's Log: X
Date Drilled: 08-20-1986 Drilling Method: ROTARY
Ground Surface Elevation: 1432.00 T
Total Drill Hole Depth: 18.1 Test Hole Number: CO-86-114
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential: Single Point Resistivity:
Natural Gamma: Extra:
Samples:

0 - 13 Clay, black, silty (alluvium)
13 - 16 Gravel, brown, fine to medium
16 - 18 Clay, dark-brown, silty
18 - 18.1 Quartzite; no penetration was made

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County: MINNEHAHA Location: 101N-50W-15ADDC
Drill Site: 23
Legal Location: SW SE SE NE sec. 15, T. 101 N., R. 50 W.
Latitude: 43.3304 Longitude: 96.4844
Land Owner:
Project: BIG SIOUX HYDRO STUDY
Drilling Company: SDGS
Driller: L. HELSETH Driller's Log: X
Geologist: F. AMUNDSON Geologist's Log:
Date Drilled: 08-27-1984 Drilling Method: AUGER
Ground Surface Elevation: 1439.45 I
Total Drill Hole Depth: 39 Test Hole Number: R20-84-306
Water Rights Well: SDGS Well Name: R20-84-306
Other Well Name:
Basin: BIG SIOUX Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Screen Type: PVC, HM. Screen Length: 10.0
Casing Type: PVC Casing Diameter: 2.0
Casing Top Elevation: 1442.31 I
Casing Stick-up: 2.86 Total Casing and Screen: 39.3
Well Maintenance Date:
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential: Single Point Resistivity:
Natural Gamma: Extra:

Samples:

Casing slotted from 22 to 32 feet.

0	-	2	Clay, yellowish-brown, silty, pebbly
2	-	38	Sand and gravel, medium to coarse
38	-	39	Quartzite

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County: MINNEHAHA
Drill Site: 24
Legal Location: SW SE SE NE sec. 15, T. 101 N., R. 50 W.
Latitude: 43.3304
Land Owner:
Project: SKUNK CREEK WATER QUALITY
Drilling Company: SDGS
Driller: D. JACOBSON
Geologist: L. FRYKMAN
Date Drilled: 08-11-1987
Ground Surface Elevation: 1439.80 I
Total Drill Hole Depth: 27
Water Rights Well:
Other Well Name:
Basin: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Screen Type: PVC, MFG.
Casing Type: PVC, SCH. 80
Casing Top Elevation: 1442.78 I
Casing Stick-up: 2.98
Well Maintenance Date:
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:
Natural Gamma:
Samples:

0	-	2	Clay, black, silty (topsoil)
2	-	27	Sand and gravel, brown, medium to coarse sand, fine to medium gravel

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County: MINNEHAHA
Drill Site: 25
Legal Location: NW SW NW NW sec. 15, T. 101 N., R. 50 W.
Latitude: 43.3320
Land Owner:
Project: SKUNK CREEK WATER QUALITY
Drilling Company: SDGS
Driller: D. JACOBSON
Geologist: L. FRYKMAN
Date Drilled: 08-19-1986
Ground Surface Elevation: 1441.00 T
Total Drill Hole Depth: 33.1
USGS Hydrological Unit Code: 10170203

Location: 101N-50W-15ADDC 1

Longitude: 96.4846

Driller's Log:
Geologist's Log: X
Drilling Method: ROTARY

Test Hole Number: CO-87-106
SDGS Well Name: CO-87-106

Aquifer: BIG SIOUX

Screen Length: 5.0
Casing Diameter: 2.0

Total Casing and Screen: 19.9

Single Point Resistivity:
Extra:

Location: 101N-50W-15BBCB

Longitude: 96.4950

Driller's Log:
Geologist's Log: X
Drilling Method: ROTARY

Test Hole Number: CO-86-108

Electric Log Information:

Spontaneous Potential:
Natural Gamma:
Samples:

Single Point Resistivity:
Extra:

0	-	10	Gravel, brown, fine to coarse
10	-	14	Clay, yellowish-brown, silty, pebbly; oxidized (till)
14	-	23	Silt, yellowish-gray (loess?)
23	-	30	Clay, yellowish-brown, silty; oxidized (till?)
30	-	33	Sand, yellowish-brown, fine to coarse; primarily quartz with some carbonate grains
33	-	33.1	Quartzite; no penetration was made

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County: MINNEHAHA

Location: 101N-50W-15CAAA 1

Drill Site: 26

Legal Location: NE NE NE SW sec. 15, T. 101 N., R. 50 W.

Latitude: 43.3303

Longitude: 96.4914

Land Owner:

Project: SKUNK CREEK WATER QUALITY

Drilling Company: SDGS

Driller: D. JACOBSON

Driller's Log:

Geologist: L. FRYKMAN

Geologist's Log: X

Date Drilled: 08-04-1987

Drilling Method: ROTARY

Ground Surface Elevation: 1436.08 I

Total Drill Hole Depth: 27

Test Hole Number: CO-87-88

Water Rights Well:

SDGS Well Name: CO-87-88

Other Well Name:

Basin: BIG SIOUX

Aquifer: BIG SIOUX

Management Unit: SOUTHERN SKUNK CREEK

Screen Type: PVC, MFG.

Screen Length: 5.0

Casing Type: PVC, SCH. 80

Casing Diameter: 2.0

Casing Top Elevation: 1439.05 I

Casing Stick-up: 2.97

Total Casing and Screen: 27.5

Well Maintenance Date:

USGS Hydrological Unit Code: 10170203

Electric Log Information:

Spontaneous Potential:

Single Point Resistivity:

Natural Gamma:

Extra:

Samples:

0	-	9	Clay, black, silty (alluvium)
9	-	24	Sand and gravel, brown, medium to coarse sand, fine to medium gravel
24	-	27	Clay, gray to light-gray, silty

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County: MINNEHAHA

Location: 101N-50W-15CAAA 2

Drill Site: 27

Legal Location: NE NE NE SW sec. 15, T. 101 N., R. 50 W.

Latitude: 43.3303

Longitude: 96.4914

Land Owner:

Project: SKUNK CREEK WATER QUALITY

Drilling Company: SDGS

Driller: D. JACOBSON
Geologist: L. FRYKMAN
Date Drilled: 08-04-1987
Ground Surface Elevation: 1435.95 I
Total Drill Hole Depth: 23
Water Rights Well:
Other Well Name:
Basin: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Screen Type: PVC, MFG.
Casing Type: PVC, SCH. 80
Casing Top Elevation: 1439.18 I
Casing Stick-up: 3.23
Well Maintenance Date:
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:
Natural Gamma:
Samples:

0 - 9 Clay, black, silty (alluvium)
9 - 23 Sand and gravel, brown, medium to coarse sand, fine to medium gravel

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County: MINNEHAHA
Drill Site: 28
Legal Location: NW SW NW SW sec. 15, T. 101 N., R. 50 W.
Latitude: 43.3256
Land Owner:
Project: SKUNK CREEK WATER QUALITY
Drilling Company: SDGS
Driller: D. JACOBSON
Geologist: L. FRYKMAN
Date Drilled: 08-19-1986
Ground Surface Elevation: 1440.56 I
Total Drill Hole Depth: 27
Water Rights Well:
Other Well Name:
Basin: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Screen Type: PVC, MFG.
Casing Type: PVC, SCH. 40
Casing Top Elevation: 1442.26 I
Casing Stick-up: 1.70
Well Maintenance Date:
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:
Natural Gamma:
Samples:

0 - 9 Clay, brown, silty, pebbly
9 - 19 Gravel, brown, medium to coarse
19 - 27 Clay, gray, silty, pebbly; unoxidized (till)

Driller's Log:
Geologist's Log: X
Drilling Method: ROTARY

Test Hole Number: CO-87-89
SDGS Well Name: CO-87-89

Aquifer: BIG SIOUX

Screen Length: 5.0
Casing Diameter: 2.0

Total Casing and Screen: 22.0

Single Point Resistivity:
Extra:

Location: 101N-50W-15CBCB

Longitude: 96.4949

Driller's Log:
Geologist's Log: X
Drilling Method: ROTARY

Test Hole Number: CO-86-107
SDGS Well Name: CO-86-107

Aquifer: BIG SIOUX

Screen Length: 5.0
Casing Diameter: 2.0

Total Casing and Screen: 22.0

Single Point Resistivity:
Extra:

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County: MINNEHAHA
Drill Site: 29
Legal Location: NW NW SW SW sec. 15, T. 101 N., R. 50 W.
Latitude: 43.3250
Land Owner:
Project: SKUNK CREEK WATER QUALITY
Drilling Company: SDGS
Driller: D. JACOBSON
Geologist: L. FRYKMAN
Date Drilled: 08-19-1986
Ground Surface Elevation: 1438.77 I
Total Drill Hole Depth: 36.1
Water Rights Well:
Other Well Name:
Basin: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Screen Type: PVC, MFG.
Casing Type: PVC, SCH. 40
Casing Top Elevation: 1441.47 I
Casing Stick-up: 2.70
Well Maintenance Date:
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:
Natural Gamma:
Samples:

Location: 101N-50W-15CCBB 1
Longitude: 96.4949
Driller's Log:
Geologist's Log: X
Drilling Method: ROTARY
Test Hole Number: CO-86-106
SDGS Well Name: CO-86-106

Aquifer: BIG SIOUX
Screen Length: 5.0
Casing Diameter: 2.0
Total Casing and Screen: 30.7

Single Point Resistivity:
Extra:

0	-	5	Sand and gravel, brown, medium to coarse sand, fine to medium gravel
5	-	13	Sand and gravel, reddish-brown, medium to coarse sand, fine to coarse gravel; iron concretions; composed of quartz, igneous, carbonates and mudstone in equal portions
13	-	30	Sand and gravel, gray, medium to coarse sand, fine to coarse gravel; composed of the same material as in interval 5 to 13 feet; becomes coarser after 18 feet with a composition of primarily carbonate and mudstone clasts
30	-	36	Clay, gray, silty, sandy, pebbly; unoxidized (till)
36	-	36.1	Quartzite; no penetration was made

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County: MINNEHAHA
Drill Site: 30
Legal Location: NW NW SW SW sec. 15, T. 101 N., R. 50 W.
Latitude: 43.3250
Land Owner:
Project: SKUNK CREEK WATER QUALITY
Drilling Company: SDGS
Driller: D. JACOBSON
Geologist: L. FRYKMAN
Date Drilled: 08-10-1987
Ground Surface Elevation: 1439.09 I
Total Drill Hole Depth: 22
Water Rights Well:

Location: 101N-50W-15CCBB 2
Longitude: 96.4949
Driller's Log:
Geologist's Log: X
Drilling Method: ROTARY
Test Hole Number: CO-87-101
SDGS Well Name: CO-87-101

Other Well Name:
 Basin: BIG SIOUX
 Management Unit: SOUTHERN SKUNK CREEK
 Screen Type: PVC, MFG., SLOT SIZE 0.020 IN.
 Casing Type: PVC, SCH. 80
 Casing Top Elevation: 1442.03 I
 Casing Stick-up: 2.94
 Well Maintenance Date:
 USGS Hydrological Unit Code: 10170203
 Electric Log Information:
 Spontaneous Potential:
 Natural Gamma:
 Samples:

Aquifer: BIG SIOUX
 Screen Length: 10.0
 Casing Diameter: 2.0
 Total Casing and Screen: 19.4

Single Point Resistivity:
 Extra:

- 0 - 5 Sand and gravel, brown, medium to coarse sand, fine to coarse gravel
- 5 - 13 Sand and gravel, reddish-brown, medium to coarse sand, fine to coarse gravel; iron concretions; composed of quartz, igneous, carbonate and mudstone clast in equal portions
- 13 - 22 Sand and gravel, gray, medium to coarse sand, fine to coarse gravel; composed of the same material as in interval 5 to 13 feet; becomes coarser after 18 feet with a composition of primarily carbonate and mudstone clasts

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County: MINNEHAHA
 Drill Site: 31
 Legal Location: SW SW SW sec. 15, T. 101 N., R. 50 W.
 Latitude: 43.3241
 Land Owner:
 Project:
 Drilling Company: SDGS
 Driller: VON HOLDT
 Geologist:
 Date Drilled:
 Ground Surface Elevation: 1456.00 T
 Total Drill Hole Depth: 59
 USGS Hydrological Unit Code: 10170203
 Electric Log Information:
 Spontaneous Potential:
 Natural Gamma:
 Samples:

Location: 101N-50W-15CCC
 Longitude: 96.4945
 Driller's Log:
 Geologist's Log: X
 Drilling Method:
 Test Hole Number:

Single Point Resistivity:
 Extra:

Source of data: B.D.R. 3 Hydrogeology Data - Skunk Creek - Lake Madison.

- 0 - 4 Till, sandy
- 4 - 9 Till, gray, gravelly
- 9 - 14 Till, brown
- 14 - 29 Sand, fine to medium, silty
- 29 - 34 Sand, medium to coarse
- 34 - 44 Sand, medium
- 44 - 59 Till, tan

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County: MINNEHAHA

Location: 101N-50W-15DCCD 1

Drill Site: 32
 Legal Location: SE SW SW SE sec. 15, T. 101 N., R. 50 W.
 Latitude: 43.3238
 Land Owner:
 Project: SKUNK CREEK WATER QUALITY
 Drilling Company: SDGS
 Driller: D. JACOBSON
 Geologist: L. FRYKMAN
 Date Drilled: 08-20-1986
 Ground Surface Elevation: 1432.38 I
 Total Drill Hole Depth: 42.1
 Water Rights Well:
 Other Well Name:
 Basin: BIG SIOUX
 Management Unit: SOUTHERN SKUNK CREEK
 Screen Type: PVC, MFG.
 Casing Type: PVC, SCH. 40
 Casing Top Elevation: 1435.38 I
 Casing Stick-up: 3.00
 Well Maintenance Date:
 USGS Hydrological Unit Code: 10170203
 Electric Log Information:
 Spontaneous Potential:
 Natural Gamma:
 Samples:

Longitude: 96.4909

Driller's Log:
 Geologist's Log: X
 Drilling Method: ROTARY

Test Hole Number: CO-86-115
 SDGS Well Name: CO-86-115

Aquifer: BIG SIOUX

Screen Length: 5.0
 Casing Diameter: 2.0

Total Casing and Screen: 24.4

Single Point Resistivity:
 Extra:

0	-	15	Sand, reddish-brown, coarse; contains subangular quartz
15	-	25	Gravel, gray, fine; contains shale and limestone clasts
25	-	42	Clay, gray, very silty
42	-	42.1	Quartzite; no penetration was made

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County: MINNEHAHA
 Drill Site: 33
 Legal Location: SE SW SW SE sec. 15, T. 101 N., R. 50 W.
 Latitude: 43.3238
 Land Owner:
 Project: SKUNK CREEK WATER QUALITY
 Drilling Company: SDGS
 Driller: D. JACOBSON
 Geologist: L. FRYKMAN
 Date Drilled: 08-21-1986
 Ground Surface Elevation: 1432.20 T
 Total Drill Hole Depth: 17
 USGS Hydrological Unit Code: 10170203
 Electric Log Information:
 Spontaneous Potential:
 Natural Gamma:
 Samples:

Location: 101N-50W-15DCCD 2

Longitude: 96.4909

Driller's Log:
 Geologist's Log: X
 Drilling Method: ROTARY

Test Hole Number: CO-86-118

Single Point Resistivity:
 Extra:

Attempted to put in well but ran out of bentonite, couldn't keep sand up.

0	-	17	Sand, reddish-brown, medium to coarse
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County: MINNEHAHA
Drill Site: 34
Legal Location: SE SW SW SE sec. 15, T. 101 N., R. 50 W.
Latitude: 43.3238
Land Owner:
Project: SKUNK CREEK WATER QUALITY
Drilling Company: SDGS
Driller: D. JACOBSON
Geologist: L. FRYKMAN
Date Drilled: 08-05-1987
Ground Surface Elevation: 1432.16 I
Total Drill Hole Depth: 17
Water Rights Well:
Other Well Name:
Basin: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Screen Type: PVC, MFG.
Casing Type: PVC, SCH. 80
Casing Top Elevation: 1435.25 I
Casing Stick-up: 3.09
Well Maintenance Date:
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:
Natural Gamma:
Samples:

Location: 101N-50W-15DCCD 3

Longitude: 96.4909

Driller's Log:
Geologist's Log: X
Drilling Method: ROTARY

Test Hole Number: CO-87-92
SDGS Well Name: CO-87-92

Aquifer: BIG SIOUX

Screen Length: 5.0
Casing Diameter: 2.0

Total Casing and Screen: 17.0

Single Point Resistivity:
Extra:

0 - 17 Gravel and sand, reddish-brown, fine gravel, medium to coarse sand

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County: MINNEHAHA
Drill Site: 35
Legal Location: NE NE NE NW sec. 16, T. 101 N., R. 50 W.
Latitude: 43.3330
Land Owner:
Project: SIOUX FALLS-BRANDON STUDY
Drilling Company: SDGS
Driller: R. SNYDER
Geologist: D. ILES
Date Drilled: 07-19-1979
Ground Surface Elevation: 1443.00 T
Total Drill Hole Depth: 32
Water Rights Well: MA-80X
Other Well Name:
Basin: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Screen Type: PVC, MFG.
Casing Type: PVC
Casing Top Elevation:
Casing Stick-up: 3.30
Well Maintenance Date: 06-29-1983
USGS Hydrological Unit Code: 10170203

Location: 101N-50W-16BAAA

Longitude: 96.5027

Driller's Log:
Geologist's Log: X
Drilling Method: ROTARY

Test Hole Number: SFB-87
SDGS Well Name: SFB-87

Aquifer: BIG SIOUX

Screen Length: 5.0
Casing Diameter: 2.0

Total Casing and Screen: 20.6

Electric Log Information:

Spontaneous Potential:
Natural Gamma:
Samples:

Single Point Resistivity:
Extra:

0 - 14	Sand and gravel, coarse sand to coarse gravel
14 - 20	Clay, gray, silty
20 - 31	Sand and gravel, fine sand to fine gravel; clayey(?)
31 - 32	Quartzite; hard, there was actually no penetration in this interval and no sample was obtained (Sioux Quartzite)

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County: MINNEHAHA
 Drill Site: 36
 Legal Location: SE NW NW NW sec. 16, T. 101 N., R. 50 W.
 Latitude: 43.3324
 Land Owner:
 Project: SKUNK CREEK WATER QUALITY
 Drilling Company: SDGS
 Driller: D. JACOBSON
 Geologist: L. FRYKMAN
 Date Drilled: 08-18-1986
 Ground Surface Elevation: 1453.70 I
 Total Drill Hole Depth: 27
 Water Rights Well:
 Other Well Name:
 Basin: BIG SIOUX
 Management Unit: SOUTHERN SKUNK CREEK
 Screen Type: PVC, MFG.
 Casing Type: PVC, SCH. 40
 Casing Top Elevation: 1456.55 I
 Casing Stick-up: 2.85
 Well Maintenance Date:
 USGS Hydrological Unit Code: 10170203

Location: 101N-50W-16BBBD

Longitude: 96.5053

Driller's Log:
Geologist's Log: X
Drilling Method: ROTARY

Test Hole Number: CO-86-105
SDGS Well Name: CO-86-105

Aquifer: BIG SIOUX

Screen Length: 5.0
Casing Diameter: 2.0

Total Casing and Screen: 29.9

Electric Log Information:

Spontaneous Potential:
Natural Gamma:
Samples:

Single Point Resistivity:
Extra:

0 - 5	Clay, brown, silty, sandy
5 - 25	Gravel, brown, coarse to fine
25 - 27	Clay, gray, silty, sandy; unoxidized (till)

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County: MINNEHAHA
 Drill Site: 37
 Legal Location: SW SW NW NW sec. 16, T. 101 N., R. 50 W.
 Latitude: 43.3317
 Land Owner:
 Project: BIG SIOUX HYDRO STUDY
 Drilling Company: SDGS
 Driller: L. HELSETH
 Geologist:

Location: 101N-50W-16BBCC

Longitude: 96.5101

Driller's Log: X
Geologist's Log:

Date Drilled: 08-23-1984
Ground Surface Elevation: 1458.85 I
Total Drill Hole Depth: 30
Water Rights Well:
Other Well Name:
Basin: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Screen Type: PVC, HM.
Casing Type: PVC
Casing Top Elevation: 1461.26 I
Casing Stick-up: 2.41
Well Maintenance Date:
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:
Natural Gamma:
Samples:

PVC slotted 16 to 26 feet from ground surface.

0	-	4	Clay, yellow-brown, silty, pebbly (till)
4	-	29	Sand and gravel, medium to coarse
29	-	30	Clay, yellow-brown, silty, pebbly (till)

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County: MINNEHAHA
Drill Site: 38
Legal Location: NE NE NE SW sec. 16, T. 101 N., R. 50 W.
Latitude: 43.3303
Land Owner:
Project: SKUNK CREEK WATER QUALITY
Drilling Company: SDGS
Driller: D. JACOBSON
Geologist: L. FRYKMAN
Date Drilled: 08-04-1987
Ground Surface Elevation: 1453.00 T
Total Drill Hole Depth: 60.1
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:
Natural Gamma:
Samples:

0	-	3	Silt, black, clayey (topsoil)
3	-	43	Gravel, brown, fine to medium
43	-	60	Clay, gray, silty
60	-	60.1	Quartzite; no penetration was made

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County: MINNEHAHA
Drill Site: 39
Legal Location: NE NE NE SW sec. 16, T. 101 N., R. 50 W.
Latitude: 43.3303

Drilling Method: AUGER

Test Hole Number: R20-84-303
SDGS Well Name: R20-84-303

Aquifer: BIG SIOUX

Screen Length: 10.0
Casing Diameter: 2.0

Total Casing and Screen: 33.0

Single Point Resistivity:
Extra:

Location: 101N-50W-16CAAA 1

Longitude: 96.5027

Driller's Log:
Geologist's Log: X
Drilling Method: ROTARY

Test Hole Number: CO-87-85

Single Point Resistivity:
Extra:

Location: 101N-50W-16CAAA 2

Longitude: 96.5027

Land Owner:
Project: SKUNK CREEK WATER QUALITY
Drilling Company: SDGS
Driller: D. JACOBSON
Geologist: L. FRYKMAN
Date Drilled: 08-04-1987
Ground Surface Elevation: 1450.03 I
Total Drill Hole Depth: 47
Water Rights Well:
Other Well Name:
Basin: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Screen Type: PVC, MFG.
Casing Type: PVC, SCH. 80
Casing Top Elevation: 1452.93 I
Casing Stick-up: 2.90
Well Maintenance Date:
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:
Natural Gamma:
Samples:

0	-	3	Silt, black, clayey (topsoil)
3	-	43	Gravel, brown, fine to medium
43	-	47	Clay, gray, silty

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County: MINNEHAHA
Drill Site: 40
Legal Location: NE NE NE SW sec. 16, T. 101 N., R. 50 W.
Latitude: 43.3303
Land Owner:
Project: SKUNK CREEK WATER QUALITY
Drilling Company: SDGS
Driller: D. JACOBSON
Geologist: L. FRYKMAN
Date Drilled: 08-04-1987
Ground Surface Elevation: 1450.38 I
Total Drill Hole Depth: 37
Water Rights Well:
Other Well Name:
Basin: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Screen Type: PVC, MFG.
Casing Type: PVC, SCH. 80
Casing Top Elevation: 1453.06 I
Casing Stick-up: 2.68
Well Maintenance Date:
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:
Natural Gamma:
Samples:

Driller's Log:
Geologist's Log: X
Drilling Method: ROTARY

Test Hole Number: CO-87-86
SDGS Well Name: CO-87-86

Aquifer: BIG SIOUX

Screen Length: 5.0
Casing Diameter: 2.0

Total Casing and Screen: 42.0

Single Point Resistivity:
Extra:

Location: 101N-50W-16CAA 3

Longitude: 96.5027

Driller's Log:
Geologist's Log: X
Drilling Method: ROTARY

Test Hole Number: CO-87-87
SDGS Well Name: CO-87-87

Aquifer: BIG SIOUX

Screen Length: 5.0
Casing Diameter: 2.0

Total Casing and Screen: 28.0

Single Point Resistivity:
Extra:

0 - 3 Silt, black, clayey (topsoil)
3 - 37 Gravel, brown, fine to medium; coal in gravel from 30 to 37 feet

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County: MINNEHAHA	Location: 101N-50W-16DCCD
Drill Site: 41	
Legal Location: SE SW SW SE sec. 16, T. 101 N., R. 50 W.	
Latitude: 43.3238	Longitude: 96.5021
Land Owner:	
Project: MINNEHAHA COUNTY STUDY	
Drilling Company: SDGS	
Driller: S. MITCHELL/D. JACOBSON	Driller's Log:
Geologist: D. TOMHAVE	Geologist's Log: X
Date Drilled: 07-23-1986	Drilling Method: ROTARY
Ground Surface Elevation: 1481.10 I	
Total Drill Hole Depth: 107	Test Hole Number: CO-86-56
Water Rights Well:	SDGS Well Name: CO-86-56
Other Well Name:	
Basin: BIG SIOUX	Aquifer: WALL LAKE
Management Unit:	
Screen Type: PVC, MFG.	Screen Length: 10.0
Casing Type: PVC	Casing Diameter: 2.0
Casing Top Elevation: 1483.55 I	
Casing Stick-up: 2.45	Total Casing and Screen: 104.0
Well Maintenance Date:	
USGS Hydrological Unit Code: 10170203	
Electric Log Information:	
Spontaneous Potential:	Single Point Resistivity:
Natural Gamma:	Extra:
Samples:	

Screened from 71 to 81 feet below ground surface, 20 feet of blank casing below screen.

0 - 2 Clay, black, silty (topsoil)
2 - 26 Clay, brown, silty, sandy, pebbly; oxidized (till)
26 - 60 Clay, gray, silty, sandy, pebbly; unoxidized (till)
60 - 81 Sand and gravel, gray, medium sand, fine to medium gravel; various rock types
81 - 106 Shale, dark-gray
106 - 107 Quartzite, pink; very hard, only a few inches were actually penetrated (Sioux Quartzite)

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County: MINNEHAHA	Location: 101N-50W-17ACBB 1
Drill Site: 42	
Legal Location: NW NW SW NE sec. 17, T. 101 N., R. 50 W.	
Latitude: 43.3316	Longitude: 96.5135
Land Owner:	
Project: SKUNK CREEK WATER QUALITY	
Drilling Company: SDGS	
Driller: D. JACOBSON	Driller's Log:
Geologist: L. FRYKMAN	Geologist's Log: X
Date Drilled: 08-18-1986	Drilling Method: ROTARY

Ground Surface Elevation: 1458.43 I
Total Drill Hole Depth: 27
Water Rights Well:
Other Well Name:
Basin: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Screen Type: PVC, MFG.
Casing Type: PVC, SCH. 40
Casing Top Elevation: 1461.37 I
Casing Stick-up: 2.94
Well Maintenance Date:
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:
Natural Gamma:
Samples:

0	-	25	Gravel, brown, fine to medium
25	-	27	Clay, gray, silty, sandy; unoxidized (till)

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County: MINNEHAHA
Drill Site: 43
Legal Location: NW NW SW NE sec. 17, T. 101 N., R. 50 W.
Latitude: 43.3316
Land Owner:
Project: SKUNK CREEK WATER QUALITY
Drilling Company: SDGS
Driller: D. JACOBSON
Geologist: L. FRYKMAN
Date Drilled: 08-03-1987
Ground Surface Elevation: 1458.65 T
Total Drill Hole Depth: 77.1
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:
Natural Gamma:
Samples:

0	-	2	Silt, black, clayey (topsoil)
2	-	22	Gravel, brown, fine to medium
22	-	62	Clay, light-brown, silty, sandy, pebbly (till)
62	-	64	Sand, brown, fine to coarse
64	-	72	Clay, light-brown, silty, sandy, pebbly (till)
72	-	73	Gravel, brown, fine to medium
73	-	77	Clay, light-brown, silty, sandy, pebbly (till)
77	-	77.1	Quartzite; no penetration was made

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County: MINNEHAHA
Drill Site: 44
Legal Location: SW SW NW NW sec. 17, T. 101 N., R. 50 W.
Latitude: 43.3317

Test Hole Number: CO-86-104
SDGS Well Name: CO-86-104

Aquifer: BIG SIOUX

Screen Length: 5.0
Casing Diameter: 2.0

Total Casing and Screen: 24.2

Single Point Resistivity:
Extra:

Location: 101N-50W-17ACBB 2

Longitude: 96.5135

Driller's Log:
Geologist's Log: X
Drilling Method: ROTARY

Test Hole Number: CO-87-81

Single Point Resistivity:
Extra:

Location: 101N-50W-17BBCC 1

Longitude: 96.5213

Land Owner:
Project: BIG SIOUX HYDRO STUDY
Drilling Company: SDGS
Driller: L. HELSETH
Geologist:
Date Drilled: 08-23-1984
Ground Surface Elevation: 1465.18 I
Total Drill Hole Depth: 55
Water Rights Well:
Other Well Name:
Basin: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Screen Type: PVC, HM.
Casing Type: PVC
Casing Top Elevation: 1468.18 I
Casing Stick-up: 3.00
Well Maintenance Date:
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:
Natural Gamma:
Samples:

Driller's Log: X
Geologist's Log:
Drilling Method: AUGER

Test Hole Number: R20-84-302
SDGS Well Name: R20-84-302

Aquifer: BIG SIOUX

Screen Length: 10.0
Casing Diameter: 2.0

Total Casing and Screen: 58.0

Single Point Resistivity:
Extra:

PVC slotted 41 to 51 feet from ground surface.

0	-	4	Clay, yellow-brown, silty, pebbly
4	-	51	Sand, medium to coarse; some medium gravel
51	-	55	Clay, gray, silty (till)

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County: MINNEHAHA
Drill Site: 45
Legal Location: NW NW SW NW sec. 17, T. 101 N., R. 50 W.
Latitude: 43.3316
Land Owner:
Project: SKUNK CREEK WATER QUALITY
Drilling Company: SDGS
Driller: D. JACOBSON
Geologist: L. FRYKMAN
Date Drilled: 07-30-1987
Ground Surface Elevation: 1464.51 I
Total Drill Hole Depth: 22
Water Rights Well:
Other Well Name:
Basin: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Screen Type: PVC, MFG.
Casing Type: PVC, SCH. 80
Casing Top Elevation: 1467.61 I
Casing Stick-up: 3.10
Well Maintenance Date:
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:

Location: 101N-50W-17BCBB

Longitude: 96.5212

Driller's Log:
Geologist's Log: X
Drilling Method: ROTARY

Test Hole Number: CO-87-78
SDGS Well Name: CO-87-78

Aquifer: BIG SIOUX

Screen Length: 5.0
Casing Diameter: 2.0

Total Casing and Screen: 23.5

Single Point Resistivity:

Natural Gamma:
Samples:

Extra:

0 - 22 Sand and gravel, brown, fine to coarse sand, fine to coarse gravel

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County: MINNEHAHA
Drill Site: 46
Legal Location: SE SW SE SE sec. 17, T. 101 N., R. 50 W.
Latitude: 43.3238
Land Owner:
Project: BIG SIOUX HYDRO STUDY
Drilling Company: SDGS
Driller: L. HELSETH
Geologist: F. AMUNDSON
Date Drilled: 08-27-1984
Ground Surface Elevation: 1451.06 I
Total Drill Hole Depth: 45
Water Rights Well:
Other Well Name:
Basin: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Screen Type: PVC, HM.
Casing Type: PVC
Casing Top Elevation: 1455.06 I
Casing Stick-up: 4.00
Well Maintenance Date:
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:
Natural Gamma:
Samples:

Location: 101N-50W-17DDCD 1

Longitude: 96.5109

Driller's Log: X
Geologist's Log:
Drilling Method: AUGER

Test Hole Number: R20-84-304
SDGS Well Name: R20-84-304

Aquifer: BIG SIOUX

Screen Length: 10.0
Casing Diameter: 2.0

Total Casing and Screen: 49.0

Single Point Resistivity:
Extra:

Casing slotted from 31 to 41 feet.

0 - 3 Roadfill
3 - 41 Sand and gravel, medium to coarse
41 - 45 Clay

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County: MINNEHAHA
Drill Site: 47
Legal Location: SE SW SE SE sec. 17, T. 101 N., R. 50 W.
Latitude: 43.3238
Land Owner:
Project: SKUNK CREEK WATER QUALITY
Drilling Company: SDGS
Driller: D. JACOBSON
Geologist: L. FRYKMAN
Date Drilled: 07-29-1987
Ground Surface Elevation: 1452.62 I
Total Drill Hole Depth: 22
Water Rights Well:

Location: 101N-50W-17DDCD 2

Longitude: 96.5110

Driller's Log:
Geologist's Log: X
Drilling Method: ROTARY

Test Hole Number: CO-87-76
SDGS Well Name: CO-87-76

Other Well Name:
Basin: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Screen Type: PVC, MFG.
Casing Type: PVC, SCH. 80
Casing Top Elevation: 1455.40 I
Casing Stick-up: 2.78
Well Maintenance Date:
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:
Natural Gamma:
Samples:

Aquifer: BIG SIOUX
Screen Length: 10.0
Casing Diameter: 2.0
Total Casing and Screen: 24.4

Single Point Resistivity:
Extra:

0 - 22 Sand and gravel, reddish-brown, fine to coarse sand, fine to medium gravel,
rounded to subrounded; iron concretions

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County: MINNEHAHA
Drill Site: 48
Legal Location: NE NW NE NE sec. 18, T. 101 N., R. 50 W.
Latitude: 43.3329
Land Owner:
Project: SKUNK CREEK WATER QUALITY
Drilling Company: SDGS
Driller: D. JACOBSON
Geologist: L. FRYKMAN
Date Drilled: 07-08-1987
Ground Surface Elevation: 1464.17 I
Total Drill Hole Depth: 93.1
Water Rights Well:
Other Well Name:
Basin: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Screen Type: PVC, MFG., SLOT SIZE 0.020 IN.
Casing Type: PVC, SCH. 80
Casing Top Elevation: 1467.06 I
Casing Stick-up: 2.89
Well Maintenance Date:
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:
Natural Gamma:
Samples:

Location: 101N-50W-18AABA 1
Longitude: 96.5224

Driller's Log:
Geologist's Log: X
Drilling Method: ROTARY

Test Hole Number: CO-87-58
SDGS Well Name: CO-87-58

Aquifer: BIG SIOUX
Screen Length: 10.0
Casing Diameter: 2.0
Total Casing and Screen: 56.5

Single Point Resistivity:
Extra:

0 - 3 Silt, black, clayey (topsoil)
3 - 48 Sand and gravel, brown to reddish-brown, fine to coarse sand, fine to coarse gravel
48 - 70 Clay, gray, silty
70 - 82 Clay, gray, silty, sandy
82 - 93 Sand, brown-gray, fine to coarse; composed mostly of quartz
93 - 93.1 Quartzite; no penetration was made

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County: MINNEHAHA
Drill Site: 49
Legal Location: NE NW NE NE sec. 18, T. 101 N., R. 50 W.
Latitude: 43.3329
Land Owner:
Project: SKUNK CREEK WATER QUALITY
Drilling Company: SDGS
Driller: D. JACOBSON
Geologist: L. FRYKMAN
Date Drilled: 07-09-1987
Ground Surface Elevation: 1464.00 T
Total Drill Hole Depth: 97.1
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:
Natural Gamma:
Samples:

0	-	3	Silt, black, clayey (topsoil)
3	-	45	Sand and gravel, brown to reddish-brown, fine to coarse sand, fine to coarse gravel
45	-	90	Clay, gray, silty; hit a rock at 83 feet
90	-	97	Clay, gray, shaley
97	-	97.1	Quartzite; no penetration was made

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County: MINNEHAHA
Drill Site: 50
Legal Location: NE NW NE NE sec. 18, T. 101 N., R. 50 W.
Latitude: 43.3329
Land Owner:
Project: SKUNK CREEK WATER QUALITY
Drilling Company: SDGS
Driller: D. JACOBSON
Geologist: L. FRYKMAN
Date Drilled: 07-09-1987
Ground Surface Elevation: 1464.85 I
Total Drill Hole Depth: 27
Water Rights Well:
Other Well Name:
Basin: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Screen Type: PVC, MFG.
Casing Type: PVC, SCH. 80
Casing Top Elevation: 1467.96 I
Casing Stick-up: 3.11
Well Maintenance Date:
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:
Natural Gamma:
Samples:

0	-	3	Silt, black, clayey (topsoil)
3	-	27	Sand and gravel, brown to reddish-brown, fine to coarse sand, fine to coarse

Location: 101N-50W-18AABA 2

Longitude: 96.5224

Driller's Log:
Geologist's Log: X
Drilling Method: ROTARY

Test Hole Number: CO-87-59

Single Point Resistivity:
Extra:

Location: 101N-50W-18AABA 3

Longitude: 96.5224

Driller's Log:
Geologist's Log: X
Drilling Method: ROTARY

Test Hole Number: CO-87-60
SDGS Well Name: CO-87-60

Aquifer: BIG SIOUX

Screen Length: 10.0
Casing Diameter: 2.0

Total Casing and Screen: 28.7

Single Point Resistivity:
Extra:

gravel

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County: MINNEHAHA
Drill Site: 51
Legal Location: NE NE NE NW sec. 18, T. 101 N., R. 50 W.
Latitude: 43.3329
Land Owner:
Project: SKUNK CREEK WATER QUALITY
Drilling Company: SDGS
Driller: D. JACOBSON
Geologist: L. FRYKMAN
Date Drilled: 07-08-1987
Ground Surface Elevation: 1476.00 T
Total Drill Hole Depth: 123.1
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:
Natural Gamma:
Samples:

Location: 101N-50W-18BAAA
Longitude: 96.5244
Driller's Log:
Geologist's Log: X
Drilling Method: ROTARY
Test Hole Number: CO-87-57
Single Point Resistivity:
Extra:

0	-	4	Clay, yellow, silty (loess?)
4	-	44	Clay, yellowish-brown, silty; very fine sand (till)
44	-	80	Clay, yellowish-brown and light-gray, pebbly; mottled (till)
80	-	90	Clay, light-gray; greasy; compacted, calcareous, with few weathered quartzite chips
90	-	100	Clay, dark-gray; greasy, compacted, calcareous (shale?)
100	-	123	Clay, medium-gray; greasy; calcareous, lower portion slightly pebbly, sandy
123	-	123.1	Quartzite; no penetration was made

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County: MINNEHAHA
Drill Site: 52
Legal Location: SW SW SW SW sec. 18, T. 101 N., R. 50 W.
Latitude: 43.3237
Land Owner:
Project: SKUNK CREEK WATER QUALITY
Drilling Company: SDGS
Driller: D. JACOBSON
Geologist: L. FRYKMAN
Date Drilled: 06-09-1987
Ground Surface Elevation: 1530.00 T
Total Drill Hole Depth: 178.1
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:
Natural Gamma: X
Samples:

Location: 101N-50W-18CCCC 1
Longitude: 96.5321
Driller's Log:
Geologist's Log: X
Drilling Method: ROTARY
Test Hole Number: CO-87-18
Single Point Resistivity: X
Extra:

0	-	37	Clay, yellow-brown, silty, sandy, pebbly; oxidized; sand from 12 to 14 feet (till)
37	-	60	Clay, gray, silty, gravelly; unoxidized; hit rock at 50 feet (till)
60	-	100	Clay, gray, slightly silty, pebbly, becomes gravelly from 82 to 100 feet; unoxidized; because of high clay content till is sticky from 60 to 82 feet (till)
100	-	137	Gravel, gray, medium to coarse; contains carbonates, quartz and igneous rocks;

becomes medium to coarse sand towards bottom, clay stringer from 127 to 132 feet

137 - 142	Clay, brown, silty
142 - 149	Silt, gray, clayey
149 - 178	Clay, dark-gray; greasy (undifferentiated Cretaceous material)
178 - 178.1	Quartzite; no penetration was made

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County: MINNEHAHA	Location: 101N-50W-18CCCC 2
Drill Site: 53	
Legal Location: SW SW SW SW sec. 18, T. 101 N., R. 50 W.	
Latitude: 43.3237	Longitude: 96.5321
Land Owner:	
Project: SKUNK CREEK WATER QUALITY	
Drilling Company: SDGS	
Driller: D. JACOBSON	Driller's Log:
Geologist: L. FRYKMAN	Geologist's Log: X
Date Drilled: 06-10-1987	Drilling Method: ROTARY
Ground Surface Elevation: 1529.83 I	
Total Drill Hole Depth: 127	Test Hole Number: CO-87-19
Water Rights Well:	SDGS Well Name: CO-87-19
Other Well Name:	
Basin: BIG SIOUX	Aquifer: WALL LAKE
Management Unit:	
Screen Type: PVC, MFG.	Screen Length: 10.0
Casing Type: PVC, SCH. 40	Casing Diameter: 2.0
Casing Top Elevation: 1532.73 I	
Casing Stick-up: 2.90	Total Casing and Screen: 127.0
Well Maintenance Date:	
USGS Hydrological Unit Code: 10170203	
Electric Log Information:	
Spontaneous Potential:	Single Point Resistivity:
Natural Gamma:	Extra:
Samples:	

0 - 3	Silt, black, clayey (topsoil)
3 - 37	Clay, yellow-brown, silty, sandy, pebbly; sand stringer from 12 to 14 feet (till)
37 - 100	Clay, gray, silty, sandy, pebbly; unoxidized; high clay content from 60 to 90 feet; mixed with coarse gravel from 90 to 100 feet
100 - 127	Gravel, gray, medium to coarse; primarily carbonates; clay stringers from 117 to 127 feet

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County: MINNEHAHA	Location: 101N-50W-18DAAA 1
Drill Site: 54	
Legal Location: NE NE NE SE sec. 18, T. 101 N., R. 50 W.	
Latitude: 43.3301	Longitude: 96.5213
Land Owner:	
Project: SKUNK CREEK WATER QUALITY	
Drilling Company: SDGS	
Driller: D. JACOBSON	Driller's Log:
Geologist: L. FRYKMAN	Geologist's Log: X
Date Drilled: 06-30-1987	Drilling Method: ROTARY

Ground Surface Elevation: 1481.18 I
Total Drill Hole Depth: 87
Water Rights Well:
Other Well Name:
Basin: BIG SIOUX
Management Unit:
Screen Type: PVC, MFG., SLOT SIZE 0.020 IN.
Casing Type: PVC, SCH. 80
Casing Top Elevation: 1484.13 I
Casing Stick-up: 2.95
Well Maintenance Date:
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:
Natural Gamma:
Samples:

Test Hole Number: CO-87-79
SDGS Well Name: CO-87-79

Aquifer: WALL LAKE

Screen Length: 10.0
Casing Diameter: 2.0

Total Casing and Screen: 87.0

Single Point Resistivity:
Extra:

Screened from 56.3 to 66.3 feet below ground surface, blank casing from 66.3 to 87 feet.

0	-	2	Clay, black, silty (topsoil)
2	-	20	Clay, yellow-brown, silty, sandy, pebbly; oxidized; gravel stringer from 10 to 11 feet; mottled from 11 to 20 feet (till)
20	-	30	Clay, dark-brown to gray mottling, silty, sandy, pebbly; oxidized (till)
30	-	42	Clay, gray, silty, sandy, pebbly; unoxidized (till)
42	-	73	Sand and gravel, brown grading downward into gray, fine to coarse sand, fine to coarse gravel; top 6 feet are sand and composed mainly of quartz; gravel composed mainly of limestone and shale
73	-	87	Clay, gray, silty, sandy, pebbly; unoxidized (till)

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County: MINNEHAHA
Drill Site: 55
Legal Location: NE NE NE SE sec. 18, T. 101 N., R. 50 W.
Latitude: 43.3301
Land Owner:
Project: SKUNK CREEK WATER QUALITY
Drilling Company: SDGS
Driller: D. JACOBSON
Geologist: L. FRYKMAN
Date Drilled: 07-30-1987
Ground Surface Elevation: 1479.37 I
Total Drill Hole Depth: 49
Water Rights Well:
Other Well Name:
Basin: BIG SIOUX
Management Unit:
Screen Type: PVC, MFG., SLOT SIZE 0.020 IN.
Casing Type: PVC, SCH. 80
Casing Top Elevation: 1482.16 I
Casing Stick-up: 2.79
Well Maintenance Date:
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:

Location: 101N-50W-18DAAA 2

Longitude: 96.5213

Driller's Log:
Geologist's Log: X
Drilling Method: ROTARY

Test Hole Number: CO-87-80
SDGS Well Name: CO-87-80

Aquifer: WALL LAKE

Screen Length: 5.0
Casing Diameter: 2.0

Total Casing and Screen: 52.6

Single Point Resistivity:

Natural Gamma:
Samples:

Extra:

0	-	2	Clay, black, silty (topsoil)
2	-	20	Clay, yellow-brown, silty, sandy, pebbly; oxidized; mottled from 11 to 20 feet
20	-	30	Clay, dark-brown to gray mottling, silty, sandy, pebbly; oxidized (till)
30	-	42	Clay, gray, silty, sandy, pebbly; unoxidized (till)
42	-	49	Sand and gravel, brown, fine to coarse sand, fine to coarse gravel; composed mainly of quartz and limestone

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County: MINNEHAHA

Location: 101N-50W-20BBBB 1

Drill Site: 56

Legal Location: NW NW NW NW sec. 20, T. 101 N., R. 50 W.

Latitude: 43.3237

Longitude: 96.5212

Land Owner:

Project: SKUNK CREEK WATER QUALITY

Drilling Company: SDGS

Driller: D. JACOBSON

Driller's Log:

Geologist: L. FRYKMAN

Geologist's Log: X

Date Drilled: 06-11-1987

Drilling Method: ROTARY

Ground Surface Elevation: 1514.47 I

Total Drill Hole Depth: 110

Test Hole Number: CO-87-23

Water Rights Well:

SDGS Well Name: CO-87-23

Other Well Name:

Basin: BIG SIOUX

Aquifer: WALL LAKE

Management Unit:

Screen Type: PVC, MFG.

Screen Length: 10.0

Casing Type: PVC, SCH. 80

Casing Diameter: 2.0

Casing Top Elevation: 1517.47 I

Casing Stick-up: 3.00

Total Casing and Screen: 115.0

Well Maintenance Date:

USGS Hydrological Unit Code: 10170203

Electric Log Information:

Spontaneous Potential:

Single Point Resistivity:

Natural Gamma:

Extra:

Samples:

0	-	7	Clay, yellow-brown, silty, sandy, pebbly; oxidized (till)
7	-	13	Sand and gravel, yellow-brown, fine to coarse sand, fine to medium gravel; carbonates and quartz grains predominate; round to subangular
13	-	50	Clay, yellow-brown, silty, gravelly; oxidized (till)
50	-	70	Clay, gray, silty, pebbly; unoxidized (till)
70	-	85	Gravel, gray, very coarse, rounded to angular; contains carbonates, quartz, igneous clasts and quartzite
85	-	87	Clay, gray, silty
87	-	105	Gravel, gray, very coarse; same as interval from 70 to 85 feet
105	-	110	Clay, light-gray, silty, pebbly; unoxidized (till)

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County: MINNEHAHA

Location: 101N-50W-20BBBB 2

Drill Site: 57

Legal Location: NW NW NW NW sec. 20, T. 101 N., R. 50 W.

Latitude: 43.3237
 Land Owner:
 Project: SKUNK CREEK WATER QUALITY
 Drilling Company: SDGS
 Driller: D. JACOBSON
 Geologist: L. FRYKMAN
 Date Drilled: 07-29-1987
 Ground Surface Elevation: 1514.45 I
 Total Drill Hole Depth: 87
 Water Rights Well:
 Other Well Name:
 Basin: BIG SIOUX
 Management Unit:
 Screen Type: PVC, MFG., SLOT SIZE 0.020 IN.
 Casing Type: PVC, SCH. 80
 Casing Top Elevation: 1517.05 I
 Casing Stick-up: 2.60
 Well Maintenance Date:
 USGS Hydrological Unit Code: 10170203
 Electric Log Information:
 Spontaneous Potential:
 Natural Gamma:
 Samples:

Longitude: 96.5212

 Driller's Log:
 Geologist's Log: X
 Drilling Method: ROTARY

 Test Hole Number: CO-87-77
 SDGS Well Name: CO-87-77

 Aquifer: WALL LAKE

 Screen Length: 10.0
 Casing Diameter: 2.0

 Total Casing and Screen: 84.4

 Single Point Resistivity:
 Extra:

0	-	15	Clay, yellow-brown, silty, sandy, pebbly; oxidized (till)
15	-	44	Clay, dark-brown, silty, sandy, pebbly; oxidized (till)
44	-	46	Rock
46	-	70	Clay, gray, silty, sandy, pebbly; unoxidized
70	-	81	Sand and gravel, brown, fine to coarse sand, fine to medium gravel; sand composed mostly of quartz; gravel composed of limestone and shale
81	-	83	Sand and gravel, gray, fine to coarse sand, fine to medium gravel; this interval composed equally of shale, limestone and igneous clasts
83	-	87	Clay, gray, silty, sandy, pebbly; unoxidized (till)

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County: MINNEHAHA
 Drill Site: 58
 Legal Location: NW NW SW SW sec. 20, T. 101 N., R. 50 W.
 Latitude: 43.3157
 Land Owner:
 Project: MINNEHAHA COUNTY STUDY
 Drilling Company: SDGS
 Driller: G. JENSEN
 Geologist: D. TOMHAVE
 Date Drilled: 05-05-1987
 Ground Surface Elevation: 1493.58 I
 Total Drill Hole Depth: 176
 Water Rights Well:
 Other Well Name:
 Basin: BIG SIOUX
 Management Unit:
 Screen Type: PVC, MFG.
 Casing Type: PVC
 Casing Top Elevation: 1496.67 I

Location: 101N-50W-20CCBB

 Longitude: 96.5210

 Driller's Log:
 Geologist's Log: X
 Drilling Method: ROTARY

 Test Hole Number: R1-87-8
 SDGS Well Name: R1-87-8

 Aquifer:

 Screen Length: 5.0
 Casing Diameter: 2.0

Casing Stick-up: 3.09
 Well Maintenance Date:
 USGS Hydrological Unit Code: 10170203
 Electric Log Information:
 Spontaneous Potential:
 Natural Gamma: X
 Samples:

Total Casing and Screen: 178.0

Single Point Resistivity:
 Extra:

0	-	2	Clay, black, silty (topsoil)
2	-	16	Clay, tan, silty, sandy, pebbly; oxidized (till)
16	-	46	Sand and gravel, brown; some coarse gravel, oxidized
46	-	61	Clay, gray, silty, sandy, pebbly; unoxidized (till)
61	-	115	Gravel, brown, medium, some coarse
115	-	142	Clay, gray, silty, sandy, pebbly; unoxidized (till)
142	-	146	Sand, fine; cemented, quartz
146	-	165	Silt, fine, clayey; cemented, some sand layers
165	-	170	Sand, fine; cemented, quartz
170	-	175	Clay, pink; cemented, high gamma
175	-	176	Quartzite, pink; very hard, only a few inches were actually penetrated (Sioux Quartzite)

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County: MINNEHAHA
 Drill Site: 59
 Legal Location: NW NW SW SW sec. 20, T. 101 N., R. 50 W.
 Latitude: 43.3157
 Land Owner:
 Project: MINNEHAHA COUNTY STUDY
 Drilling Company: SDGS
 Driller: D. JACOBSON
 Geologist: W. BRADFORD
 Date Drilled: 07-20-1987
 Ground Surface Elevation: 1493.80 T
 Total Drill Hole Depth: 112
 Water Rights Well:
 Other Well Name:
 Basin: BIG SIOUX
 Management Unit:
 Screen Type: PVC, MFG., SLOT SIZE 0.020 IN.
 Casing Type: PVC, SCH. 40
 Casing Top Elevation: 1496.60 T
 Casing Stick-up: 2.80
 Well Maintenance Date:
 USGS Hydrological Unit Code: 10170203
 Electric Log Information:
 Spontaneous Potential:
 Natural Gamma:
 Samples:

Location: 101N-50W-20CCBB 1

Longitude: 96.5210

Driller's Log:
 Geologist's Log: X
 Drilling Method: ROTARY

Test Hole Number: CO-87-67
 SDGS Well Name: CO-87-67

Aquifer: WALL LAKE

Screen Length: 5.0
 Casing Diameter: 2.0

Total Casing and Screen: 94.0

Single Point Resistivity:
 Extra:

0	-	4	Clay, black, silty (topsoil)
4	-	20	Clay, tan, silty, sandy, pebbly; oxidized (till)
20	-	52	Sand and gravel, brown; some coarse gravel; oxidized
52	-	60	Clay, gray, silty, sandy, pebbly; unoxidized (till)
60	-	112	Gravel, brown, medium, some coarse

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County: MINNEHAHA
Drill Site: 60
Legal Location: NW NW SW SW sec. 21, T. 101 N., R. 50 W.
Latitude: 43.3158
Land Owner:
Project: SKUNK CREEK WATER QUALITY
Drilling Company: SDGS
Driller: D. JACOBSON
Geologist: L. FRYKMAN
Date Drilled: 06-10-1987
Ground Surface Elevation: 1467.00 T
Total Drill Hole Depth: 113.1
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:
Natural Gamma: X
Samples:

0	-	20	Clay, yellow-brown, silty, pebbly; oxidized (till)
20	-	25	Sand, yellow-brown, fine to coarse; carbonates and quartz
25	-	52	Clay, gray, silty, gravelly; unoxidized (till)
52	-	62	Gravel, gray, fine to coarse; contains carbonates, quartz and igneous, round to subangular; medium to coarse sand towards bottom
62	-	113	Silt, gray; undifferentiated Cretaceous material
113	-	113.1	Quartzite; no penetration was made

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County: MINNEHAHA
Drill Site: 61
Legal Location: NW NW SW SW sec. 21, T. 101 N., R. 50 W.
Latitude: 43.3158
Land Owner:
Project: SKUNK CREEK WATER QUALITY
Drilling Company: SDGS
Driller: D. JACOBSON
Geologist: L. FRYKMAN
Date Drilled: 06-11-1987
Ground Surface Elevation: 1467.06 I
Total Drill Hole Depth: 63
Water Rights Well:
Other Well Name:
Basin: BIG SIOUX
Management Unit:
Screen Type: PVC, MFG.
Casing Type: PVC, SCH. 80
Casing Top Elevation: 1469.26 I
Casing Stick-up: 2.20
Well Maintenance Date:
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:

Location: 101N-50W-21CCBB 1
Longitude: 96.5100
Driller's Log:
Geologist's Log: X
Drilling Method: ROTARY
Test Hole Number: CO-87-21
Single Point Resistivity: X
Extra:

Location: 101N-50W-21CCBB 2
Longitude: 96.5100
Driller's Log:
Geologist's Log: X
Drilling Method: ROTARY
Test Hole Number: CO-87-22
SDGS Well Name: CO-87-22
Aquifer: WALL LAKE
Screen Length: 5.0
Casing Diameter: 2.0
Total Casing and Screen: 65.0
Single Point Resistivity:

Natural Gamma:
Samples:

Extra:

0 - 20	Clay, yellow-brown, silty, pebbly; oxidized (till)
20 - 25	Sand, yellow-brown, fine to coarse; carbonates and quartz
25 - 57	Clay, gray, silty, gravelly; gravel stringers at bottom; unoxidized (till)
57 - 63	Gravel, gray, fine to coarse; contains carbonates, quartz and igneous rocks

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County: MINNEHAHA

Location: 101N-50W-21DADD

Drill Site: 62

Legal Location: SE SE NE SE sec. 21, T. 101 N., R. 50 W.

Latitude: 43.3158

Longitude: 96.4951

Land Owner:

Project: MINNEHAHA COUNTY STUDY

Drilling Company: SDGS

Driller: D. IVERSON

Driller's Log:

Geologist: D. TOMHAVE

Geologist's Log: X

Date Drilled: 06-26-1986

Drilling Method: ROTARY

Ground Surface Elevation: 1519.12 I

Total Drill Hole Depth: 133

Test Hole Number: R20-86-43

Water Rights Well:

SDGS Well Name: R20-86-43

Other Well Name:

Basin: BIG SIOUX

Aquifer: WALL LAKE

Management Unit:

Screen Type: PVC, MFG. AND HM.

Screen Length: 25.0

Casing Type: PVC

Casing Diameter: 2.0

Casing Top Elevation: 1521.20 I

Casing Stick-up: 2.08

Total Casing and Screen: 135.0

Well Maintenance Date:

USGS Hydrological Unit Code: 10170203

Electric Log Information:

Spontaneous Potential:

Single Point Resistivity:

Natural Gamma:

Extra:

Samples:

Casing slotted bottom 20 feet, with 5-foot screen, placed above slotted portion.

0 - 2	Clay, black, silty (topsoil)
2 - 12	Clay, yellowish-brown, silty, sandy, pebbly; oxidized (till)
12 - 18	Clay, brown to light-gray, silty, sandy, pebbly; oxidized (till)
18 - 33	Clay, yellowish-brown, silty, sandy, pebbly; oxidized, some gray layers (till)
33 - 93	Clay, gray, silty, sandy, pebbly; unoxidized (till)
93 - 113	Sand and gravel, medium sand, medium to coarse gravel; oxidized
113 - 126	Clay, gray, silty, shaley; soft
126 - 132	Sand, pink, fine; some quartzite boulders
132 - 133	Quartzite, pink; very hard, only a few inches were actually penetrated (Sioux Quartzite)

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County: MINNEHAHA

Location: 101N-50W-21DADD 1

Drill Site: 63

Legal Location: SE SE NE SE sec. 21, T. 101 N., R. 50 W.

Latitude: 43.3200
Land Owner:
Project: SKUNK CREEK WATER QUALITY
Drilling Company: SDGS
Driller: D. JACOBSON
Geologist: L. FRYKMAN
Date Drilled: 08-05-1987
Ground Surface Elevation: 1518.61 I
Total Drill Hole Depth: 122
Water Rights Well:
Other Well Name:
Basin: BIG SIOUX
Management Unit:
Screen Type: PVC, MFG.
Casing Type: PVC, SCH. 80
Casing Top Elevation: 1521.29 I
Casing Stick-up: 2.68
Well Maintenance Date:
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:
Natural Gamma:
Samples:

0	-	30	Clay, light-brown, silty, sandy, pebbly (till)
30	-	97	Clay, gray, silty, pebbly, cobbly; unoxidized (till)
97	-	122	Sand, brown-gray, coarse, subrounded to round; primarily carbonates

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County: MINNEHAHA
Drill Site: 64
Legal Location: NW SW SE NE sec. 22, T. 101 N., R. 50 W.
Latitude: 43.3216
Land Owner:
Project: MINNEHAHA COUNTY STUDY
Drilling Company: SDGS
Driller: S. MITCHELL
Geologist: D. TOMHAVE
Date Drilled: 07-22-1986
Ground Surface Elevation: 1499.72 I
Total Drill Hole Depth: 141
Water Rights Well:
Other Well Name:
Basin: BIG SIOUX
Management Unit:
Screen Type: PVC, MFG.
Casing Type: PVC
Casing Top Elevation: 1502.44 I
Casing Stick-up: 2.72
Well Maintenance Date:
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:
Natural Gamma:

Longitude: 96.4951

Driller's Log:
Geologist's Log: X
Drilling Method: ROTARY

Test Hole Number: CO-87-91
SDGS Well Name: CO-87-91

Aquifer: WALL LAKE

Screen Length: 10.0
Casing Diameter: 2.0

Total Casing and Screen: 125.0

Single Point Resistivity:
Extra:

Location: 101N-50W-22ADCB 1

Longitude: 96.4855

Driller's Log:
Geologist's Log: X
Drilling Method: ROTARY

Test Hole Number: CO-86-54
SDGS Well Name: CO-86-54

Aquifer:

Screen Length: 10.0
Casing Diameter: 2.0

Total Casing and Screen: 143.0

Single Point Resistivity:
Extra:

Samples:

Screened from 116 to 126 feet below ground surface, 14 feet of blank casing below screen.

0	-	1	Clay, black, silty (topsoil)
1	-	5	Clay, brown, silty, sandy
5	-	32	Clay, brown, silty, sandy, pebbly; oxidized (till)
32	-	78	Clay, gray, silty, sandy, pebbly; unoxidized (till)
78	-	93	Sand and gravel, gray, medium to coarse sand, fine gravel; various rock types
93	-	105	Clay, light-whitish-gray, silty, very sandy, pebbly; very hard (till)
105	-	107	Clay, yellowish-brown, silty, sandy, pebbly; oxidized (till)
107	-	127	Sand, fine to medium; some clay layers, some coarse sand, mostly quartz
127	-	140	Shale, dark-gray; hard, greasy
140	-	141	Quartzite, pink; very hard, only a few inches were actually penetrated (Sioux Quartzite)

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County: MINNEHAHA

Drill Site: 65

Legal Location: NW SW SE NE sec. 22, T. 101 N., R. 50 W.

Latitude: 43.3216

Land Owner:

Project: MINNEHAHA COUNTY STUDY

Drilling Company: SDGS

Driller: S. MITCHELL

Geologist: D. TOMHAVE

Date Drilled: 07-22-1986

Ground Surface Elevation: 1499.64 I

Total Drill Hole Depth: 97

Water Rights Well:

Other Well Name:

Basin: BIG SIOUX

Management Unit:

Screen Type: PVC, MFG.

Casing Type: PVC

Casing Top Elevation: 1502.64 I

Casing Stick-up: 3.00

Well Maintenance Date:

USGS Hydrological Unit Code: 10170203

Electric Log Information:

Spontaneous Potential:

Natural Gamma:

Samples:

Location: 101N-50W-22ADCB 2

Longitude: 96.4855

Driller's Log:

Geologist's Log: X

Drilling Method: ROTARY

Test Hole Number: CO-86-55

SDGS Well Name: CO-86-55

Aquifer: WALL LAKE

Screen Length: 10.0

Casing Diameter: 2.0

Total Casing and Screen: 95.0

Single Point Resistivity:

Extra:

Casing stick-up broken off-discovered 01-06-1989.

0	-	1	Clay, black, silty (topsoil)
1	-	5	Clay, brown, silty, sandy
5	-	52	Clay, brown, silty, sandy, pebbly, very sandy from 36 to 40 feet (till)
52	-	82	Clay, gray, silty, sandy, pebbly; unoxidized (till)
82	-	92	Sand and gravel, medium to coarse sand, fine gravel; various rock types

* * * *

County: MINNEHAHA
 Drill Site: 66
 Legal Location: NE NW NW NW sec. 23, T. 101 N., R. 50 W.
 Latitude: 43.3237
 Land Owner:
 Project: SIOUX FALLS-BRANDON STUDY
 Drilling Company: SDGS
 Driller: R. SNYDER
 Geologist: D. ILES
 Date Drilled: 07-19-1979
 Ground Surface Elevation: 1425.00 T
 Total Drill Hole Depth: 55
 Water Rights Well: MA-80Y
 Other Well Name:
 Basin: BIG SIOUX
 Management Unit: SOUTHERN SKUNK CREEK
 Screen Type: PVC, MFG.
 Casing Type: PVC
 Casing Top Elevation: 1429.33 I
 Casing Stick-up:
 Well Maintenance Date: 06-30-1983
 USGS Hydrological Unit Code: 10170203
 Electric Log Information:
 Spontaneous Potential:
 Natural Gamma:
 Samples:

Location: 101N-50W-23BBBA

Longitude: 96.4832

Driller's Log:
 Geologist's Log: X
 Drilling Method: ROTARY

Test Hole Number: SFB-88
 SDGS Well Name: SFB-88

Aquifer: BIG SIOUX?

Screen Length: 5.0
 Casing Diameter: 2.0

Total Casing and Screen: 56.8

Single Point Resistivity:
 Extra:

Bottom of well at 53 feet. The sand from 26 to 54 feet may or may not be part of the Southern Skunk Creek Management Unit of the Big Sioux aquifer. On April 28, 1988, the water elevation in this sand was about 2 feet lower than in the sand from 9 to 16 feet. (05-08-1990, DLI)

0 - 9	Clay, black, sandy
9 - 16	Gravel, fine to very coarse
16 - 24	Clay, very light-gray, silty
24 - 26	Clay, gray with much rust color, slightly sandy
26 - 51	Sand, fine to coarse
51 - 54	Sand, rust-brown, fine to coarse, gravelly
54 - 55	Quartzite; hard, there was actually no penetration in this interval and no sample was obtained (Sioux Quartzite)

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County: MINNEHAHA
 Drill Site: 67
 Legal Location: NE NW NW NW sec. 23, T. 101 N., R. 50 W.
 Latitude: 43.3237
 Land Owner:
 Project: SKUNK CREEK WATER QUALITY
 Drilling Company: SDGS
 Driller: D. JACOBSON
 Geologist: L. FRYKMAN
 Date Drilled: 08-05-1987
 Ground Surface Elevation: 1426.18 I
 Total Drill Hole Depth: 17
 Water Rights Well:

Location: 101N-50W-23BBBA 1

Longitude: 96.4832

Driller's Log:
 Geologist's Log: X
 Drilling Method: ROTARY

Test Hole Number: CO-87-93
 SDGS Well Name: CO-87-93

Other Well Name:
Basin: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Screen Type: PVC, MFG.
Casing Type: PVC, SCH. 80
Casing Top Elevation: 1429.13 I
Casing Stick-up: 2.95
Well Maintenance Date:
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:
Natural Gamma:
Samples:

Aquifer: BIG SIOUX
Screen Length: 5.0
Casing Diameter: 2.0
Total Casing and Screen: 17.0

Single Point Resistivity:
Extra:

0 - 10	Silt, black, clayey (alluvium)
10 - 17	Sand and gravel, gray, medium to coarse sand, fine to coarse gravel; sand contains equal portions of quartz and carbonates with some igneous clasts; gravel composed primarily of carbonate clasts

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County: MINNEHAHA
Drill Site: 68
Legal Location: SE NE SW NW sec. 23, T. 101 N., R. 50 W.
Latitude: 43.3220
Land Owner:
Project: SKUNK CREEK WATER QUALITY
Drilling Company: SDGS
Driller: D. JACOBSON
Geologist: L. FRYKMAN
Date Drilled: 08-06-1987
Ground Surface Elevation: 1420.49 I
Total Drill Hole Depth: 55.1
Water Rights Well:
Other Well Name:
Basin: BIG SIOUX
Management Unit:
Screen Type: PVC, MFG.
Casing Type: PVC, SCH. 80
Casing Top Elevation: 1423.38 I
Casing Stick-up: 2.89
Well Maintenance Date:
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:
Natural Gamma:
Samples:

Location: 101N-50W-23BCAD
Longitude: 96.4821

Driller's Log:
Geologist's Log: X
Drilling Method: ROTARY

Test Hole Number: CO-87-94
SDGS Well Name: CO-87-94

Aquifer:
Screen Length: 10.0
Casing Diameter: 2.0
Total Casing and Screen: 57.9

Single Point Resistivity:
Extra:

0 - 4	Silt, black, clayey (alluvium)
4 - 6	Gravel, brown, fine
6 - 10	Clay, brown, silty, sandy, pebbly; oxidized (till)
10 - 20	Clay, gray, silty, sandy, pebbly; unoxidized (till)
20 - 42	Clay, light-brown, silty, sandy, pebbly; oxidized (till)
42 - 55	Sand, yellow-brown, very fine to medium, subrounded to rounded
55 - 55.1	Quartzite; no penetration was made

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County: MINNEHAHA
Drill Site: 69
Legal Location: SE SE NE SE sec. 23, T. 101 N., R. 50 W.
Latitude: 43.3200
Land Owner:
Project: SIOUX FALLS-BRANDON STUDY
Drilling Company: SDGS
Driller: E. KOGLIN
Geologist: D. ILES
Date Drilled: 07-25-1979
Ground Surface Elevation: 1419.00 T
Total Drill Hole Depth: 64
Water Rights Well: MA-80HA
Other Well Name:
Basin: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Screen Type: PVC, MFG.
Casing Type: PVC
Casing Top Elevation: 1419.77 I
Casing Stick-up:
Well Maintenance Date:
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:
Natural Gamma:
Samples:

Location: 101N-50W-23DADD

Longitude: 96.4726

Driller's Log:
Geologist's Log: X
Drilling Method: ROTARY

Test Hole Number: SFB-94
SDGS Well Name: SFB-94

Aquifer: BIG SIOUX

Screen Length: 5.0
Casing Diameter: 2.0

Total Casing and Screen:

Single Point Resistivity:
Extra:

Bottom of well at 44 feet. Destroyed for new bridge 1987.

0	-	1	Topsoil
1	-	12	Clay, dark-brown, silty
12	-	64	Sand, fine to coarse

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County: MINNEHAHA
Drill Site: 70
Legal Location: NW NW NW SE sec. 23, T. 101 N., R. 50 W.
Latitude: 43.3210
Land Owner:
Project: SKUNK CREEK WATER QUALITY
Drilling Company: SDGS
Driller: D. JACOBSON
Geologist: L. FRYKMAN
Date Drilled: 08-11-1987
Ground Surface Elevation: 1426.00 T
Total Drill Hole Depth: 47.1
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:
Natural Gamma:
Samples:

Location: 101N-50W-23DBBB 1

Longitude: 96.4758

Driller's Log:
Geologist's Log: X
Drilling Method: ROTARY

Test Hole Number: CO-87-103

Single Point Resistivity:
Extra:

0	-	12	Silt, black, clayey, sandy towards bottom; an old marsh
12	-	42	Sand and gravel, reddish-brown, medium to coarse sand, fine to medium gravel; iron concretions in upper layers; grades downward; color change going from reddish-brown to gray at 28 feet
42	-	47	Clay, gray, silty
47	-	47.1	Quartzite; no penetration was made

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County: MINNEHAHA	Location: 101N-50W-23DBBB 2
Drill Site: 71	
Legal Location: NW NW NW SE sec. 23, T. 101 N., R. 50 W.	
Latitude: 43.3210	Longitude: 96.4758
Land Owner:	
Project: SKUNK CREEK WATER QUALITY	
Drilling Company: SDGS	
Driller: D. JACOBSON	Driller's Log:
Geologist: L. FRYKMAN	Geologist's Log: X
Date Drilled: 08-11-1987	Drilling Method: ROTARY
Ground Surface Elevation: 1426.31 I	
Total Drill Hole Depth: 37	Test Hole Number: CO-87-104
Water Rights Well:	SDGS Well Name: CO-87-104
Other Well Name:	
Basin: BIG SIOUX	Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK	
Screen Type: PVC, MFG.	Screen Length: 5.0
Casing Type: PVC, SCH. 80	Casing Diameter: 2.0
Casing Top Elevation: 1428.94 I	
Casing Stick-up: 2.63	Total Casing and Screen: 32.2
Well Maintenance Date:	
USGS Hydrological Unit Code: 10170203	
Electric Log Information:	Single Point Resistivity:
Spontaneous Potential:	Extra:
Natural Gamma:	
Samples:	

0	-	5	Silt, dark-brown, clayey; an old marsh
5	-	37	Sand and gravel, reddish-brown, medium to coarse sand, fine to medium gravel; clay stringers from 30 to 37 feet

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County: MINNEHAHA	Location: 101N-50W-23DBBB 3
Drill Site: 72	
Legal Location: NW NW NW SE sec. 23, T. 101 N., R. 50 W.	
Latitude: 43.3210	Longitude: 96.4758
Land Owner:	
Project: SKUNK CREEK WATER QUALITY	
Drilling Company: SDGS	
Driller: D. JACOBSON	Driller's Log:
Geologist: L. FRYKMAN	Geologist's Log: X
Date Drilled: 08-11-1987	Drilling Method: ROTARY
Ground Surface Elevation: 1426.09 I	
Total Drill Hole Depth: 17	Test Hole Number: CO-87-105

Water Rights Well:
Other Well Name:
Basin: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Screen Type: PVC, MFG.
Casing Type: PVC, SCH. 80
Casing Top Elevation: 1428.94 I
Casing Stick-up: 2.85
Well Maintenance Date:
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:
Natural Gamma:
Samples:

SDGS Well Name: CO-87-105
Aquifer: BIG SIOUX
Screen Length: 5.0
Casing Diameter: 2.0
Total Casing and Screen: 17.8

Single Point Resistivity:
Extra:

- 0 - 8 Silt, black, clayey; an old marsh
- 8 - 17 Sand and gravel, reddish-brown, medium to coarse sand, fine to medium gravel

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County: MINNEHAHA
Drill Site: 73
Legal Location: NE SW NW SE sec. 23, T. 101 N., R. 50 W.
Latitude: 43.3204
Land Owner:
Project: SKUNK CREEK WATER QUALITY
Drilling Company: SDGS
Driller: D. JACOBSON
Geologist: L. FRYKMAN
Date Drilled: 08-06-1987
Ground Surface Elevation: 1417.37 I
Total Drill Hole Depth: 80.1
Water Rights Well:
Other Well Name:
Basin: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Screen Type: PVC, MFG.
Casing Type: PVC, SCH. 80
Casing Top Elevation: 1420.33 I
Casing Stick-up: 2.96
Well Maintenance Date:
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:
Natural Gamma:
Samples:

Location: 101N-50W-23DBCA 1
Longitude: 96.4755

Driller's Log:
Geologist's Log: X
Drilling Method: ROTARY

Test Hole Number: CO-87-95
SDGS Well Name: CO-87-95

Aquifer: BIG SIOUX
Screen Length: 10.0
Casing Diameter: 2.0
Total Casing and Screen: 69.0

Single Point Resistivity:
Extra:

- 0 - 5 Silt, black, clayey (alluvium)
- 5 - 20 Gravel, brown grading downward to gray, fine to medium; consists of quartz, igneous and carbonates
- 20 - 40 Sand, brownish-gray, fine to medium; primarily quartz
- 40 - 80 Gravel, gray, fine to medium
- 80 - 80.1 Quartzite; no penetration was made

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County: MINNEHAHA
Drill Site: 74
Legal Location: NE SW NW SE sec. 23, T. 101 N., R. 50 W.
Latitude: 43.3204
Land Owner:
Project: SKUNK CREEK WATER QUALITY
Drilling Company: SDGS
Driller: D. JACOBSON
Geologist: L. FRYKMAN
Date Drilled: 08-06-1987
Ground Surface Elevation: 1417.49 I
Total Drill Hole Depth: 27
Water Rights Well:
Other Well Name:
Basin: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Screen Type: PVC, MFG.
Casing Type: PVC, SCH. 80
Casing Top Elevation: 1420.48 I
Casing Stick-up: 2.99
Well Maintenance Date:
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:
Natural Gamma:
Samples:

0 - 5 Silt, black, clayey (alluvium)
5 - 27 Gravel, brown grading downward to gray, fine to medium

Location: 101N-50W-23DBCA 2

Longitude: 96.4755

Driller's Log:
Geologist's Log: X
Drilling Method: ROTARY

Test Hole Number: CO-87-96
SDGS Well Name: CO-87-96

Aquifer: BIG SIOUX

Screen Length: 10.0
Casing Diameter: 2.0

Total Casing and Screen: 28.0

Single Point Resistivity:
Extra:

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County: MINNEHAHA
Drill Site: 75
Legal Location: SE SE SE SE sec. 23, T. 101 N., R. 50 W.
Latitude: 43.3145
Land Owner:
Project: BIG SIOUX HYDRO STUDY
Drilling Company: SDGS
Driller: L. HELSETH
Geologist: F. AMUNDSON
Date Drilled: 08-28-1984
Ground Surface Elevation: 1428.00 T
Total Drill Hole Depth: 80
Water Rights Well:
Other Well Name:
Basin: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Screen Type: PVC, HM.
Casing Type: PVC
Casing Top Elevation: 1432.00 T
Casing Stick-up: 4.00
Well Maintenance Date:
USGS Hydrological Unit Code: 10170203

Location: 101N-50W-23DDDD

Longitude: 96.4727

Driller's Log: X
Geologist's Log:
Drilling Method: AUGER

Test Hole Number: R20-84-308
SDGS Well Name: R20-84-308

Aquifer: BIG SIOUX

Screen Length: 10.0
Casing Diameter: 2.0

Total Casing and Screen: 84.0

Electric Log Information:

Spontaneous Potential:
Natural Gamma:
Samples:

Single Point Resistivity:
Extra:

Casing slotted from 66 to 76 feet. Four feet of unslotted casing on bottom.

0	-	3	Clay, gray, silty, pebbly
3	-	5	Clay, yellowish-brown, silty, pebbly
5	-	8	Sand and gravel, medium to coarse
8	-	78	Sand, medium to coarse; some fine gravel
78	-	80	Clay, gray, silty, pebbly (till)

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County: MINNEHAHA

Drill Site: 76

Legal Location: NE NE SE NW sec. 25, T. 101 N., R. 50 W.

Latitude: 43.3132

Land Owner:

Project: SKUNK CREEK WATER QUALITY

Drilling Company: SDGS

Driller: D. JACOBSON

Geologist: L. FRYKMAN

Date Drilled: 08-20-1986

Ground Surface Elevation: 1418.00 T

Total Drill Hole Depth: 112

USGS Hydrological Unit Code: 10170203

Electric Log Information:

Spontaneous Potential:
Natural Gamma:
Samples:

Location: 101N-50W-25BDAA 1

Longitude: 96.4651

Driller's Log:
Geologist's Log: X
Drilling Method: ROTARY

Test Hole Number: CO-86-116

Single Point Resistivity:
Extra:

0	-	12	Clay, brown, silty (alluvium)
12	-	35	Sand, brown, medium to coarse
35	-	60	Silt, gray (loess?)
60	-	75	Clay, brown, silty; oxidized (till)
75	-	105	Clay, dark-gray, silty; greasy; drilling got harder toward end and formation became darker in color (shale?)
105	-	110	Clay, white, silty (marl?)
110	-	112	Quartzite; weathered

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County: MINNEHAHA

Drill Site: 77

Legal Location: NE NE SE NW sec. 25, T. 101 N., R. 50 W.

Latitude: 43.3132

Land Owner:

Project: SKUNK CREEK WATER QUALITY

Drilling Company: SDGS

Driller: D. JACOBSON

Geologist: L. FRYKMAN

Date Drilled: 08-20-1986

Ground Surface Elevation: 1418.02 I

Location: 101N-50W-25BDAA 2

Longitude: 96.4651

Driller's Log:
Geologist's Log: X
Drilling Method: ROTARY

Total Drill Hole Depth: 37
 Water Rights Well:
 Other Well Name:
 Basin: BIG SIOUX
 Management Unit: SOUTHERN SKUNK CREEK
 Screen Type: PVC, MFG.
 Casing Type: PVC, SCH. 40
 Casing Top Elevation: 1421.03 I
 Casing Stick-up: 3.01
 Well Maintenance Date:
 USGS Hydrological Unit Code: 10170203
 Electric Log Information:
 Spontaneous Potential:
 Natural Gamma:
 Samples:

0 - 14 Clay, brown, silty (alluvium)
 14 - 35 Sand, brown, medium to coarse
 35 - 37 Silt, gray (loess?)

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County: MINNEHAHA
 Drill Site: 78
 Legal Location: NE SE NE NW sec. 26, T. 101 N., R. 50 W.
 Latitude: 43.3136
 Land Owner:
 Project: SIOUX FALLS-BRANDON STUDY
 Drilling Company: SDGS
 Driller: E. KOGLIN
 Geologist: E. KOGLIN
 Date Drilled: 05-28-1980
 Ground Surface Elevation: 1490.00 T
 Total Drill Hole Depth: 157
 Water Rights Well:
 Other Well Name:
 Basin: BIG SIOUX
 Management Unit:
 Screen Type: PVC, MFG.
 Casing Type: PVC
 Casing Top Elevation: 1490.86 I
 Casing Stick-up:
 Well Maintenance Date:
 USGS Hydrological Unit Code: 10170203
 Electric Log Information:
 Spontaneous Potential:
 Natural Gamma:
 Samples:

Bottom of well at 156 feet.

0 - 2 Topsoil, black
 2 - 24 Clay, gray-brown, silty, sandy, pebbly (till)
 24 - 43 Clay, medium-gray-brown, silty, sandy, pebbly; greasy, some parts were very sandy (till)

Test Hole Number: CO-86-117
 SDGS Well Name: CO-86-117

Aquifer: BIG SIOUX

Screen Length: 5.0
 Casing Diameter: 2.0

Total Casing and Screen: 35.3

Single Point Resistivity:
 Extra:

Location: 101N-50W-26BADA

Longitude: 96.4803

Driller's Log:
 Geologist's Log: X
 Drilling Method: ROTARY

Test Hole Number: SFB-148
 SDGS Well Name: SFB-148

Aquifer: WALL LAKE

Screen Length: 5.0
 Casing Diameter: 2.0

Total Casing and Screen:

Single Point Resistivity:
 Extra:

43 - 68 Clay, medium-gray, silty, sandy, pebbly; greasy (till)
 68 - 156 Sand and gravel, fine sand to medium gravel
 156 - 157 Quartzite, pink; there were actually only a few inches of penetration achieved
 (Sioux Quartzite)

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County: MINNEHAHA Location: 101N-50W-27BCBB
 Drill Site: 79
 Legal Location: NW NW SW NW sec. 27, T. 101 N., R. 50 W.
 Latitude: 43.3332 Longitude: 96.4950
 Land Owner:
 Project: SKUNK CREEK WATER QUALITY
 Drilling Company: SDGS
 Driller: D. JACOBSON Driller's Log:
 Geologist: L. FRYKMAN Geologist's Log: X
 Date Drilled: 07-28-1987 Drilling Method: ROTARY
 Ground Surface Elevation: 1500.07 I
 Total Drill Hole Depth: 134.1 Test Hole Number: CO-87-75
 Water Rights Well: SDGS Well Name: CO-87-75
 Other Well Name:
 Basin: BIG SIOUX Aquifer: WALL LAKE
 Management Unit:
 Screen Type: PVC, MFG. Screen Length: 10.0
 Casing Type: PVC, SCH. 80 Casing Diameter: 2.0
 Casing Top Elevation: 1503.11 I
 Casing Stick-up: 3.04 Total Casing and Screen: 137.0
 Well Maintenance Date:
 USGS Hydrological Unit Code: 10170203
 Electric Log Information:
 Spontaneous Potential: Single Point Resistivity:
 Natural Gamma: Extra:
 Samples:

0 - 2 Silt, light-brown, clayey (topsoil)
 2 - 8 Clay, dark-brown, silty, sandy, pebbly (till)
 8 - 12 Sand and gravel, brown, medium to coarse sand, fine to medium gravel; sand is
 primarily quartz; pebbles are primarily carbonates
 12 - 22 Silt, dark-brown, clayey, sandy, pebbly (till)
 22 - 38 Silt, gray, clayey, sandy, pebbly (till)
 38 - 40 Sand, brown, fine to medium, subrounded to rounded; primarily quartz
 40 - 45 Clay, gray, silty, sandy, pebbly (till)
 45 - 47 Sand, brown, fine to medium
 47 - 62 Clay, gray, silty, sandy, pebbly (till)
 62 - 64 Gravel, gray, very silty; primarily carbonates
 64 - 92 Clay, gray, silty, sandy, pebbly (till)
 92 - 99 Gravel, gray, silty, fine to medium
 99 - 120 Clay, gray, silty, sandy, pebbly (till)
 120 - 134 Gravel, gray, fine to coarse, silty
 134 - 134.1 Quartzite; no penetration was made

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County: MINNEHAHA Location: 101N-50W-29DCBC
 Drill Site: 80

Legal Location: SW NW SW SE sec. 29, T. 101 N., R. 50 W.

Latitude: 43.3101

Land Owner:

Project: SKUNK CREEK WATER QUALITY

Drilling Company: SDGS

Driller: D. JACOBSON

Geologist: L. FRYKMAN

Date Drilled: 06-10-1987

Ground Surface Elevation: 1481.00 T

Total Drill Hole Depth: 129.1

USGS Hydrological Unit Code: 10170203

Electric Log Information:

Spontaneous Potential:

Natural Gamma: X

Samples:

0	-	15	Clay, yellow-brown, silty, pebbly; oxidized (till)
15	-	30	Clay, gray, silty, pebbly; unoxidized (till)
30	-	40	Silt, gray; some sand
40	-	70	Chalk, white-brown; undifferentiated Cretaceous material
70	-	129	Shale, dark-gray; undifferentiated Cretaceous material
129	-	129.1	Quartzite; no penetration was made

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County: MINNEHAHA

Drill Site: 81

Legal Location: SE NE NE NE sec. 34, T. 101 N., R. 50 W.

Latitude: 43.3049

Land Owner:

Project: SIOUX FALLS-BRANDON STUDY

Drilling Company: SDGS

Driller: M. KOFFLER

Geologist: D. ILES

Date Drilled: 08-20-1980

Ground Surface Elevation: 1516.72 I

Total Drill Hole Depth: 160

Water Rights Well: MA-80IA

Other Well Name:

Basin: BIG SIOUX

Management Unit:

Screen Type: PVC, MFG.

Casing Type: PVC

Casing Top Elevation: 1519.52 I

Casing Stick-up: 2.80

Well Maintenance Date: 06-30-1983

USGS Hydrological Unit Code: 10170203

Electric Log Information:

Spontaneous Potential:

Natural Gamma:

Samples:

Longitude: 96.5136

Driller's Log:

Geologist's Log: X

Drilling Method: ROTARY

Test Hole Number: CO-87-20

Single Point Resistivity: X

Extra:

Location: 101N-50W-34AAAD

Longitude: 96.4839

Driller's Log:

Geologist's Log: X

Drilling Method: ROTARY

Test Hole Number: SFB-193

SDGS Well Name:

Aquifer: WALL LAKE

Screen Length: 10.0

Casing Diameter: 2.0

Total Casing and Screen:

Single Point Resistivity:

Extra:

Bottom of well at 158 feet. Two 5-foot sandpoints glued together.

0	-	32	Clay, yellow-brown, sandy, pebbly; very sandy from 0 to 12 feet and then it
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32 - 95 becomes more clayey (till)
 95 - 157 Clay, gray, sandy, pebbly (till)
 157 - 158 Sand, gray-brown, fine to medium; some coal
 158 - 159 Quartzite(?); weathered(?) (Sioux Quartzite)
 159 - 160 Quartzite, white; hard (Sioux Quartzite)
 Quartzite, pink; hard, there were actually only a few inches of penetration
 achieved (Sioux Quartzite)

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County: MINNEHAHA Location: 101N-50W-34BBBB
 Drill Site: 82
 Legal Location: NW NW NW NW sec. 34, T. 101 N., R. 50 W.
 Latitude: 43.3053 Longitude: 96.4948
 Land Owner:
 Project: SIOUX FALLS-BRANDON STUDY
 Drilling Company: SDGS
 Driller: E. KOGLIN Driller's Log:
 Geologist: D. ILES Geologist's Log: X
 Date Drilled: 08-02-1979 Drilling Method: ROTARY
 Ground Surface Elevation: 1510.00 T
 Total Drill Hole Depth: 191 Test Hole Number: SFB-106
 USGS Hydrological Unit Code: 10170203
 Electric Log Information:
 Spontaneous Potential: X Single Point Resistivity: X
 Natural Gamma: Extra:
 Samples:

0 - 2 Clay, tan, silty
 2 - 12 Clay, tan, silty, sandy (till)
 12 - 16 Clay, gray-brown, silty, sandy, gravelly (till)
 16 - 21 Clay, medium-gray, silty, sandy (till)
 21 - 22 Rock
 22 - 35 Clay, medium-gray, silty, sandy (till)
 35 - 40 Sand(?), medium to coarse
 40 - 95 Clay, medium-gray, silty, sandy, gravelly; hard layers at 45, 49, 55, and 89 feet.
 (till)
 95 - 106 Sand, medium to coarse; with coal pebbles
 106 - 110 Clay(?)
 110 - 150 Gravel, medium to coarse; with coal pebbles
 150 - 174 Gravel, medium to coarse; with coal pebbles, some clay(?)
 174 - 181 Clay(?), sandy
 181 - 190 Gravel, medium to coarse; with coal pebbles
 190 - 191 Quartzite, pink; there were actually only a few inches of penetration achieved
 (Sioux Quartzite)

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County: MINNEHAHA Location: 101N-50W-34BBBB 1
 Drill Site: 83
 Legal Location: NW NW NW NW sec. 34, T. 101 N., R. 50 W.
 Latitude: 43.3052 Longitude: 96.4950
 Land Owner:
 Project: SKUNK CREEK WATER QUALITY
 Drilling Company: SDGS

Driller: D. JACOBSON
Geologist: L. FRYKMAN
Date Drilled: 07-27-1987
Ground Surface Elevation: 1509.82 I
Total Drill Hole Depth: 168
Water Rights Well:
Other Well Name:
Basin: BIG SIOUX
Management Unit:
Screen Type: PVC, MFG., SLOT SIZE 0.020 IN.
Casing Type: PVC, SCH. 80
Casing Top Elevation: 1512.53 I
Casing Stick-up: 2.71
Well Maintenance Date:
USGS Hydrological Unit Code: 10170203
Electric Log Information:
Spontaneous Potential:
Natural Gamma:
Samples:

0	-	3	Clay, black, silty (topsoil)
3	-	13	Clay, yellow-brown to gray mottling, silty, sandy, pebbly; oxidized, gravel stringer from 12 to 13 feet (till)
13	-	104	Clay, gray, silty, sandy, pebbly; unoxidized (till)
104	-	132	Sand and gravel, brown-gray, fine to coarse sand, fine to medium gravel, some silt
132	-	134	Clay, gray, silty
134	-	167	Sand and gravel, gray, fine to coarse sand, fine gravel
167	-	168	Clay, gray, silty

* * * *

County: MINNEHAHA
Drill Site: 84
Legal Location: SW SW SW SW sec. 34, T. 101 N., R. 50 W.
Latitude: 43.3003
Land Owner:
Project: SKUNK CREEK WATER QUALITY
Drilling Company: SDGS
Driller: D. JACOBSON
Geologist: L. FRYKMAN
Date Drilled: 07-28-1987
Ground Surface Elevation: 1522.02 I
Total Drill Hole Depth: 190.1
Water Rights Well:
Other Well Name:
Basin: BIG SIOUX
Management Unit:
Screen Type: PVC, MFG., SLOT SIZE 0.020 IN.
Casing Type: PVC, SCH. 80
Casing Top Elevation: 1524.90 I
Casing Stick-up: 2.88
Well Maintenance Date:
USGS Hydrological Unit Code: 10170203
Electric Log Information:

Driller's Log:
Geologist's Log: X
Drilling Method: ROTARY
Test Hole Number: CO-87-73
SDGS Well Name: CO-87-73
Aquifer: WALL LAKE
Screen Length: 10.0
Casing Diameter: 2.0
Total Casing and Screen: 168.0
Single Point Resistivity:
Extra:

Location: 101N-50W-34CCCC 1
Longitude: 96.4949
Driller's Log:
Geologist's Log: X
Drilling Method: ROTARY
Test Hole Number: CO-87-74
SDGS Well Name: CO-87-74
Aquifer: WALL LAKE
Screen Length: 10.0
Casing Diameter: 2.0
Total Casing and Screen: 193.0

Spontaneous Potential:

Natural Gamma:

Samples:

Single Point Resistivity:

Extra:

0	-	3	Clay, black, silty (topsoil)
3	-	20	Clay, yellow-brown, silty, sandy, pebbly; oxidized (till)
20	-	30	Clay, dark-brown, silty, sandy, very pebbly; oxidized (till)
30	-	120	Clay, dark-gray, silty, sandy, very pebbly; unoxidized (till)
120	-	190	Sand and gravel, gray, medium to coarse sand, fine to medium gravel, silty
190	-	190.1	Quartzite; no penetration was made

* * * *

APPENDIX B

Water-Quality Analyses

LEGAL LOCATION and LOCATION

The analyses are listed by smallest township number, then the smallest range number, the smallest section number, and then by quarter section: NE = A; NW = B; SW = C; SE = D. A comparison of LEGAL LOCATION and LOCATION is as follows. A LEGAL LOCATION of SE $\frac{1}{4}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 23, T. 101 N. R. 50 W. is the same as a LOCATION of 101N-50W-23BCAD.

WATER SAMPLE

A number arbitrarily assigned to the log according to the order in which it is listed (see LEGAL LOCATION and LOCATION). This number corresponds to the numbers listed on figure 11.

LATITUDE and LONGITUDE

The format is DD.MMSS where D is degrees, M is minutes, and S is seconds.

OWNER-CONTROLLER

SDGS is an abbreviation for South Dakota Geological Survey.

USGS is an abbreviation for U.S. Geological Survey

WATER RIGHTS - Department of Water and Natural Resources - Division

LAB

SDGS is an abbreviation for South Dakota Geological Survey Basic and Analytical Studies Laboratory.

CASING TOP ELEVATION, GROUND SURFACE ELEVATION and WATER ELEVATION

The numbers are presented in feet above mean sea level. I - the elevation was determined using a surveying instrument. T - the elevation was estimated from 7.5 minute series topographic map.

WATER ELEVATION

Calculated by subtracting DEPTH TO WATER from CASING TOP ELEVATION.

WELL DEPTH

The numbers are presented in feet.

DEPTH TO WATER

The numbers are presented in feet below casing top.

SCREENED

An "X" indicates the well has a screen.

CASING TYPE

PVC is an abbreviation for polyvinyl chloride.

SCH. is an abbreviation for schedule and refers to casing thickness.

PUMP

Type of apparatus used to collect water sample.

FILTERED

An "X" indicates the water was filtered in the field through a glass filter prefilter and a 0.45 u membrane filter at time of collection.

The water sample collected at each site was split three ways:

1. nitric acid-treated - HNO_3 ,
2. sulfuric acid-treated - H_2SO_4 , and
3. UNTREATED marked with an "X" if completed.

H_2SO_4 OR FORMALIN TREATED is marked with H for H_2SO_4 or F for FORMALIN.

Concentrations of the listed parameters are presented in one of the following manners:

1. parts per million (ppm),
2. milligrams per liter (mg/L), and
3. not detected (ND).

Names for abbreviations are as follows:

Ca	.....	Calcium
Mg	.....	Magnesium
Na	.....	Sodium
K	.....	Potassium
SO_4	.....	Sulfate
Cl	.....	Chloride
HCO_3	.....	Bicarbonate
CO_3	.....	Carbonate
Fe	.....	Iron
Mn	.....	Manganese
$\text{NO}_3\text{-N}$	.....	Nitrate as Nitrogen
F	.....	Fluoride
DS	.....	Dissolved Solids
HARDNESS	..	as CaCO_3
ALK-P	.....	Alkalinity-Phenolphthalein

Lab Sample Number: SCR-87-051
Legal Location: NE SE SE SE sec. 31, T. 101 N., R. 49 W.
Water Sample: 1
Latitude: 43.3005 Longitude: 96.4503
Owner-Controller:
Sample Type: SURFACE WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation:
Ground Surface Elev.:
Casing Top Elevation:
Casing Type:
Pump:
Aquifer:
Management Unit:
Usage:
Lake:
Other:
Where Collected: OFF BRIDGE (WEST SIDE, MIDDLE)
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-49W-31DDDA

County: MINNEHAHA

Collection Date: 12-10-1987

Water Rights Well:
SDGS Well (Or Other):
Well Depth:
Depth To Water:
Screened:

Basin: BIG SIOUX

Stream: BIG SIOUX R.

HNO₃: X

Ca:	121 ppm
Mg:	56 ppm
Na:	32 ppm
K:	5.1 ppm
SO ₄ :	298 ppm
Cl:	24 ppm
HCO ₃ :	328 ppm
CO ₃ :	ND
Fe:	<0.05 ppm
Mn:	0.43 ppm
NO ₃ -N:	0.80 ppm
F:	0.26 ppm
DS:	764 ppm @ 180°C
pH:	7.70
Conductivity:	1054 umhos @ 25°C
Hardness:	533 ppm
Cations:	12.18 me/L
Anions:	12.33 me/L
ALK-P:	ND
Field Temperature:	1°C

Notes: Total alkalinity (field) = 259 mg/L as CaCO₃
Total alkalinity (lab) = 269 mg/L as CaCO₃

Lab Sample Number: SCR-86-013
Legal Location: NW NE NW NE sec. 07, T. 101 N., R. 50 W.
Water Sample: 2
Latitude: 43.3421 Longitude: 96.5236
Owner-Controller: WATER RIGHTS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1448.48 feet
Ground Surface Elevation: 1450.87 I
Casing Top Elevation: 1454.07 I
Casing Type: PVC
Pump:
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-07ABAB
County: MINNEHAHA
Collection Date: 09-17-1986
Water Rights Well: MA-80R
SDGS Well (Or Other): SFB-96
Well Depth: 17.30 feet
Depth to Water: 5.59 feet
Screened: X
Basin: BIG SIOUX
Stream:
HNO₃: X

Ca: 99 ppm
Mg: 41 ppm
Na: 8 ppm
K: 1.9 ppm
SO₄: 118 ppm
Cl: 17 ppm
HCO₃: 335 ppm
CO₃: ND
Fe: 3.19 ppm
Mn: 1.31 ppm
NO₃-N: <0.04 ppm
F: 0.35 ppm
DS: 526 ppm @ 180°C
Conductivity: 733 umhos @ 25°C
Hardness: 416 ppm
Cations: 8.87 me/L
Anions: 8.45 me/L
ALK-P: ND
Field pH: 7.44
Field Temperature: 15°C

Notes: Eh = -109 millivolts (unfiltered); Downhole Eh = 317 millivolts
Total alkalinity (field) = 275 mg/L as CaCO₃
Total alkalinity (lab) = 275 mg/L as CaCO₃

Lab Sample Number: SCR-87-047
Legal Location: NW NE NW NE sec. 07, T. 101 N., R. 50 W.
Water Sample: 3
Latitude: 43.3421 Longitude: 96.5236
Owner-Controller: WATER RIGHTS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1444.77 feet
Ground Surface Elevation: 1450.87 I
Casing Top Elevation: 1454.07 I
Casing Type: PVC
Pump: BLADDER
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-07ABAB

County: MINNEHAHA

Collection Date: 12-02-1987

Water Rights Well: MA-80R
SDGS Well (Or Other): SFB-96
Well Depth: 17.3 feet
Depth to Water: 9.30 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 96 ppm
Mg: 38 ppm
Na: 10 ppm
K: 2.8 ppm
SO₄: 86 ppm
Cl: 31 ppm
HCO₃: 362 ppm
CO₃: ND
Fe: 4.03 ppm
Mn: 1.26 ppm
NO₃-N: 0.08 ppm
F: 0.32 ppm
DS: 469 ppm @ 180°C
pH: approximate value 7.50
Conductivity: 771 umhos @ 25°C
Hardness: 396 ppm
Cations: 8.60 me/L
Anions: 8.62 me/L
ALK-P: ND
Field Temperature: 10°C

Notes: Total alkalinity (field) = 301 mg/L as CaCO₃
Total alkalinity (lab) = 297 mg/L as CaCO₃

Lab Sample Number: SCR-87-052
Legal Location: NW NE NW NE sec. 07, T. 101 N., R. 50 W.
Water Sample: 4
Latitude: 43.3422 Longitude: 96.5239
Owner-Controller:
Sample Type: SURFACE WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation:
Ground Surface Elev.:
Casing Top Elevation:
Casing Type:
Pump:
Aquifer:
Management Unit:
Usage:
Lake:
Other:
Where Collected: OFF BRIDGE (SOUTH SIDE MIDDLE)
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-07ABAB

County: MINNEHAHA

Collection Date: 12-10-1987

Water Rights Well:
SDGS Well (Or Other):
Well Depth:
Depth To Water:
Screened:

Basin: BIG SIOUX

Stream: SKUNK CREEK

HNO₃: X

Ca: 126 ppm
Mg: 61 ppm
Na: 31 ppm
K: 5.2 ppm
SO₄: 336 ppm
Cl: 23 ppm
HCO₃: 325 ppm
CO₃: approximate value 1 ppm
Fe: <0.05 ppm
Mn: 0.37 ppm
NO₃-N: 0.64 ppm
F: 0.31 ppm
DS: 814 ppm @ 180°C
pH: 8.33
Conductivity: 1127 umhos @ 25°C
Hardness: 566 ppm
Cations: 12.80 me/L
Anions: 13.07 me/L
ALK-P: approximate value 1 ppm (as CaCO₃)
Field Temperature: 1°C

Notes: Total alkalinity (field) = 257 mg/L as CaCO₃
Total alkalinity (lab) = 269 mg/L as CaCO₃

Lab Sample Number: SCR-86-011
Legal Location: NW NE NE NW sec. 08, T. 101 N., R. 50 W.
Water Sample: 5
Latitude: 43.3421 Longitude: 96.5143
Owner-Controller: USGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1462.79 feet
Ground Surface Elevation: 1475.00 T
Casing Top Elevation: 1478.00 T
Casing Type: PVC
Pump: BAILED
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-08BAAB
County: MINNEHAHA
Collection Date: 09-16-1986
Water Rights Well:
SDGS Well (Or Other): R20-84-300
Well Depth: 22.7 feet
Depth to Water: 15.21 feet
Screened: X
Basin: BIG SIOUX
Stream:
HNO₃: X

Ca: 100 ppm
Mg: 44 ppm
Na: 17 ppm
K: 1.3 ppm
SO₄: 39 ppm
Cl: 11 ppm
HCO₃: 472 ppm
CO₃: ND
Fe: 0.09 ppm
Mn: <0.05 ppm
NO₃-N: 5.70 ppm
F: 0.36 ppm
DS: 520 ppm @ 180°C
Conductivity: 817 umhos @ 25°C
Hardness: 431 ppm
Cations: 9.38 me/L
Anions: 9.28 me/L
ALK-P: ND
Field pH: 7.47
Field Temperature: 12°C

Notes: Eh = 431 millivolts (unfiltered); Downhole Eh = 398 millivolts
Total alkalinity (field) = 394 mg/L as CaCO₃
Total alkalinity (lab) = 387 mg/L as CaCO₃

Lab Sample Number: SCR-88-083
Legal Location: NW NE NE NW sec. 08, T. 101 N., R. 50 W.
Water Sample: 6
Latitude: 43.3421 Longitude: 96.5143
Owner-Controller: USGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation:
Ground Surface Elevation: 1475.00 T
Casing Top Elevation: 1478.00 T
Casing Type: PVC
Pump: BAILED
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-08BAAB

County: MINNEHAHA

Collection Date: 06-08-1988

Water Rights Well:
SDGS Well (Or Other): R20-84-300
Well Depth: 23 feet
Depth to Water: 16.86 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 81 ppm
Mg: 48 ppm
Na: 17 ppm
K: 2.0 ppm
SO₄: 36 ppm
Cl: 10 ppm
HCO₃: 433 ppm
CO₃: ND
Fe: <0.05 ppm
Mn: <0.05 ppm
NO₃-N: 11.60 ppm
F: 0.42 ppm
DS: 462 ppm @ 180°C
pH: 7.82
Conductivity: 806 umhos @ 25°C
Hardness: 400 ppm
Cations: 8.78 me/L
Anions: 8.97 me/L
ALK-P: ND
Field pH: 7.63
Field Temperature: 11°C

Notes: Eh = 315 millivolts (unfiltered)
Total alkalinity (field) = 357 mg/L as CaCO₃
Total alkalinity (lab) = 355 mg/L as CaCO₃

Lab Sample Number: SCR-86-010
Legal Location: NW NW NW NW sec. 08, T. 101 N., R. 50 W.
Water Sample: 7
Latitude: 43.3421 Longitude: 96.5213
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1454.01 feet
Ground Surface Elevation: 1470.43 I
Casing Top Elevation: 1473.39 I
Casing Type: PVC
Pump: BAILED
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-08BBBB
County: MINNEHAHA
Collection Date: 09-16-1986
Water Rights Well:
SDGS Well (Or Other): CO-86-103
Well Depth: 23.85 feet
Depth to Water: 19.38 feet
Screened: X
Basin: BIG SIOUX
Stream:
HNO₃: X

Ca: 71 ppm
Mg: 30 ppm
Na: 11 ppm
K: 1.5 ppm
SO₄: 32 ppm
Cl: 54 ppm
HCO₃: 256 ppm
CO₃: ND
Fe: <0.05 ppm
Mn: <0.05 ppm
NO₃-N: 0.50 ppm
F: 0.37 ppm
DS: 414 ppm @ 180°C
Conductivity: 628 umhos @ 25°C
Hardness: 301 ppm
Cations: 6.53 me/L
Anions: 6.44 me/L
ALK-P: ND
Field pH: 7.55
Field Temperature: 11°C

Notes: Eh = 402 millivolts (unfiltered); Downhole Eh = 413 millivolts
Total alkalinity (field) = 211 mg/L as CaCO₃
Total alkalinity (lab) = 210 mg/L as CaCO₃

Lab Sample Number: SCR-86-012
Legal Location: SW SW SW NW sec. 08, T. 101 N., R. 50 W.
Water Sample: 8
Latitude: 43.3356 Longitude: 96.5213
Owner-Controller: USGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1452.33 feet
Ground Surface Elevation: 1464.04 I
Casing Top Elevation: 1466.54 I
Casing Type: PVC
Pump: BAILED
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-08BCCC

County: MINNEHAHA

Collection Date: 09-17-1986

Water Rights Well:
SDGS Well (Or Other): R20-84-301
Well Depth: 22.39 feet
Depth to Water: 14.21 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 133 ppm
Mg: 56 ppm
Na: 14 ppm
K: 2.4 ppm
SO₄: 297 ppm
Cl: 6 ppm
HCO₃: 307 ppm
CO₃: ND
Fe: <0.05 ppm
Mn: <0.05 ppm
NO₃-N: 7.00 ppm
F: 0.32 ppm
DS: 780 ppm @ 180°C
Conductivity: 1012 umhos @ 25°C
Hardness: 563 ppm
Cations: 11.91 me/L
Anions: 11.90 me/L
ALK-P: ND
Field pH: 7.38
Field Temperature: 11°C

Notes: Eh = 424 millivolts (unfiltered); Downhole Eh = 409 millivolts
Total alkalinity (field) = 246 mg/L as CaCO₃
Total alkalinity (lab) = 252 mg/L as CaCO₃

Lab Sample Number: SCR-88-082
Legal Location: SW SW SW NW sec. 08, T. 101 N., R. 50 W.
Water Sample: 9
Latitude: 43.3356 Longitude: 96.5213
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1448.66 feet
Ground Surface Elevation: 1464.04 I
Casing Top Elevation: 1466.54 I
Casing Type: PVC
Pump: BAILED
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-08BCCC

County: MINNEHAHA

Collection Date: 06-08-1988

Water Rights Well:
SDGS Well (Or Other): R20-84-301
Well Depth: 23.5 feet
Depth to Water: 17.88 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 129 ppm
Mg: 59 ppm
Na: 13 ppm
K: 3.7 ppm
SO₄: 305 ppm
Cl: 8 ppm
HCO₃: 321 ppm
CO₃: ND
Fe: <0.05 ppm
Mn: <0.05 ppm
NO₃-N: 4.96 ppm
F: 0.29 ppm
DS: 748 ppm @ 180°C
pH: 7.74
Conductivity: 1032 umhos @ 25°C
Hardness: 565 ppm
Cations: 11.95 me/L
Anions: 12.20 me/L
ALK-P: ND
Field pH: 7.49
Field Temperature: 13°C

Notes: Eh = 285 millivolts (unfiltered)
Total alkalinity (field) = 259 mg/L as CaCO₃
Total alkalinity (lab) = 263 mg/L as CaCO₃

Lab Sample Number: SCR-87-058
Legal Location: NW NW NE NE sec. 09, T. 101 N., R. 50 W.
Water Sample: 10
Latitude: 43.3422 Longitude: 96.5006
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1444.55 feet
Ground Surface Elevation: 1453.07 I
Casing Top Elevation: 1456.08 I
Casing Type: PVC
Pump: BLADDER
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-09AABB

County: MINNEHAHA

Collection Date: 12-17-1987

Water Rights Well:
SDGS Well (Or Other): CO-87-98
Well Depth: 34.0 feet
Depth to Water: 11.53 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 99 ppm
Mg: 67 ppm
Na: 22 ppm
K: 2.6 ppm
SO₄: 61 ppm
Cl: 81 ppm
HCO₃: 472 ppm
CO₃: ND
Fe: 0.25 ppm
Mn: 0.31 ppm
NO₃-N: <0.04 ppm
F: 0.72 ppm
DS: 584 ppm @ 180°C
pH: approximate value 7.50
Conductivity: 1056 umhos @ 25°C
Hardness: 523 ppm
Cations: 11.49 me/L
Anions: 11.33 me/L
ALK-P: ND
Field Temperature: 9°C

Notes: Total alkalinity (field) = 388 mg/L as CaCO₃
Total alkalinity (lab) = 387 mg/L as CaCO₃

Lab Sample Number: SCR-86-007
Legal Location: NE NE SE NE sec. 09, T. 101 N., R. 50 W.
Water Sample: 11
Latitude: 43.3405 Longitude: 96.4951
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1441.09 feet
Ground Surface Elevation: 1441.47 I
Casing Top Elevation: 1443.97 I
Casing Type: PVC
Pump: BLADDER
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-09ADAA

County: MINNEHAHA

Collection Date: 09-15-1986

Water Rights Well:
SDGS Well (Or Other): CO-86-109
Well Depth: 25.6 feet
Depth to Water: 2.88 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 63 ppm
Mg: 25 ppm
Na: 10 ppm
K: 1.0 ppm
SO₄: 63 ppm
Cl: 6 ppm
HCO₃: 269 ppm
CO₃: ND
Fe: 0.31 ppm
Mn: 0.61 ppm
NO₃-N: <0.04 ppm
F: 0.76 ppm
DS: 354 ppm @ 180°C
Conductivity: 523 umhos @ 25°C
Hardness: 260 ppm
Cations: 5.69 me/L
Anions: 5.94 me/L
ALK-P: ND
Field pH: 7.55
Field Temperature: 11°C

Notes: Eh = 186 millivolts (unfiltered); Downhole Eh = 400 millivolts
Total alkalinity (field) = 234 mg/L as CaCO₃
Total alkalinity (lab) = 221 mg/L as CaCO₃

Lab Sample Number: SCR-87-049
Legal Location: NE NE SE NE sec. 09, T. 101 N., R. 50 W.
Water Sample: 12
Latitude: 43.3405 Longitude: 96.4951
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1437.34 feet
Ground Surface Elevation: 1441.47 I
Casing Top Elevation: 1443.97 I
Casing Type: PVC
Pump: BLADDER
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-09ADAA

County: MINNEHAHA

Collection Date: 12-02-1987

Water Rights Well:
SDGS Well (Or Other): CO-86-109
Well Depth: 25.6 feet
Depth to Water: 6.63 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 79 ppm
Mg: 30 ppm
Na: 14 ppm
K: 2.0 ppm
SO₄: 68 ppm
Cl: 6 ppm
HCO₃: 339 ppm
CO₃: ND
Fe: 1.11 ppm
Mn: 0.77 ppm
NO₃-N: <0.04 ppm
F: 0.51 ppm
DS: 381 ppm @ 180°C
pH: approximate value 7.60
Conductivity: 639 umhos @ 25°C
Hardness: 321 ppm
Cations: 7.14 me/L
Anions: 7.17 me/L
ALK-P: ND
Field Temperature: 9°C

Notes: Total alkalinity (field) = 278 mg/L as CaCO₃
Total alkalinity (lab) = 278 mg/L as CaCO₃

Lab Sample Number: SCR-87-048
Legal Location: SW SW SW NW sec. 09, T. 101 N., R. 50 W.
Water Sample: 13
Latitude: 43.3358 Longitude: 96.5101
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1449.40 feet
Ground Surface Elevation: 1458.13 I
Casing Top Elevation: 1461.11 I
Casing Type: PVC
Pump: BLADDER
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-09BCCC 2

County: MINNEHAHA

Collection Date: 12-02-1987

Water Rights Well:
SDGS Well (Or Other): CO-87-84
Well Depth: 24 feet
Depth to Water: 11.71 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 84 ppm
Mg: 35 ppm
Na: 17 ppm
K: 2.8 ppm
SO₄: 82 ppm
Cl: 18 ppm
HCO₃: 257 ppm
CO₃: ND
Fe: <0.05 ppm
Mn: 0.15 ppm
NO₃-N: 22.00 ppm
F: 0.46 ppm
DS: 462 ppm @ 180°C
pH: approximate value 7.70
Conductivity: 750 umhos @ 25°C
Hardness: 354 ppm
Cations: 7.89 me/L
Anions: 8.03 me/L
ALK-P: ND
Field Temperature: 11°C

Notes: Total alkalinity (field) = 207 mg/L as CaCO₃
Total alkalinity (lab) = 211 mg/L as CaCO₃

Lab Sample Number: SCR-87-057
Legal Location: SW SW SW NW sec. 09, T. 101 N., R. 50 W.
Water Sample: 14
Latitude: 43.3358 Longitude: 96.5101
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1449.33 feet
Ground Surface Elevation: 1458.13 I
Casing Top Elevation: 1461.11 I
Casing Type: PVC
Pump: BLADDER
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-09BCCC 2
County: MINNEHAHA
Collection Date: 12-17-1987
Water Rights Well:
SDGS Well (Or Other): CO-87-84
Well Depth: 24.0 feet
Depth to Water: 11.78 feet
Screened: X
Basin: BIG SIOUX
Stream:
HNO₃: X

Ca: 88 ppm
Mg: 37 ppm
Na: 14 ppm
K: 2.8 ppm
SO₄: 60 ppm
Cl: 21 ppm
HCO₃: 251 ppm
CO₃: ND
Fe: <0.05 ppm
Mn: 0.09 ppm
NO₃-N: 32.00 ppm
F: 0.39 ppm
DS: 475 ppm @ 180°C
pH: approximate value 7.50
Conductivity: 798 umhos @ 25°C
Hardness: 372 ppm
Cations: 8.12 me/L
Anions: 8.26 me/L
ALK-P: ND
Field Temperature: 11°C

Notes: Total alkalinity (field) = 195 mg/L as CaCO₃
Total alkalinity (lab) = 206 mg/L as CaCO₃

Lab Sample Number: SCR-87-060
Legal Location: SW SW SW SW sec. 09, T. 101 N., R. 50 W.
Water Sample: 15
Latitude: 43.3331 Longitude: 96.5101
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1433.34 feet
Ground Surface Elevation: 1440.50 I
Casing Top Elevation: 1443.43 I
Casing Type: PVC
Pump: BLADDER
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-09CCCC

County: MINNEHAHA

Collection Date: 12-17-1987

Water Rights Well:
SDGS Well (Or Other): CO-87-82
Well Depth: 18 feet
Depth to Water: 10.09 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 130 ppm
Mg: 42 ppm
Na: 21 ppm
K: 3.2 ppm
SO₄: 241 ppm
Cl: 4 ppm
HCO₃: 371 ppm
CO₃: ND
Fe: <0.05 ppm
Mn: 0.06 ppm
NO₃-N: 0.46 ppm
F: 0.38 ppm
DS: 653 ppm @ 180°C
pH: approximate value 7.50
Conductivity: 964 umhos @ 25°C
Hardness: 498 ppm
Cations: 10.94 me/L
Anions: 11.26 me/L
ALK-P: ND
Field Temperature: 10°C

Notes: Total alkalinity (field) = 289 mg/L as CaCO₃
Total alkalinity (lab) = 304 mg/L as CaCO₃

Lab Sample Number: SCR-86-005
 Legal Location: SW SW SW SW sec. 10, T. 101 N., R. 50 W.
 Water Sample: 16
 Latitude: 43.3331 Longitude: 96.4950
 Owner-Controller: SDGS
 Sample Type: GROUND WATER
 Lab: SDGS
 Project: SKUNK CREEK WATER QUALITY
 Water Elevation: 1436.44 feet
 Ground Surface Elevation: 1442.93 I
 Casing Top Elevation: 1446.03 I
 Casing Type: PVC
 Pump: BLADDER
 Aquifer: BIG SIOUX
 Management Unit: SOUTHERN SKUNK CREEK
 Usage: OBSERVATION
 Lake:
 Other:
 Where Collected:
 Clean Container: X Filtered: X
 H₂SO₄ Or Formalin Treated: H
 Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-10CCCC 1
 County: MINNEHAHA
 Collection Date: 09-08-1986
 Water Rights Well:
 SDGS Well (Or Other): CO-86-111
 Well Depth: 22.55 feet
 Depth to Water: 9.59 feet
 Screened: X
 Basin: BIG SIOUX
 Stream:
 HNO₃: X

Ca: 145 ppm
 Mg: 47 ppm
 Na: 43 ppm
 K: 3.5 ppm
 SO₄: 207 ppm
 Cl: 74 ppm
 HCO₃: 394 ppm
 CO₃: ND
 Fe: <0.05 ppm
 Mn: 0.16 ppm
 NO₃-N: 0.80 ppm
 F: 0.54 ppm
 DS: 740 ppm @ 180°C
 Conductivity: 1138 umhos @ 25°C
 Hardness: 556 ppm
 Cations: 13.07 me/L
 Anions: 12.94 me/L
 ALK-P: ND
 Field pH: 7.52
 Field Temperature: 14°C

Notes: Eh = 392 millivolts (unfiltered); Downhole Eh = 398 millivolts
 Total alkalinity (field) = 330 mg/L as CaCO₃
 Total alkalinity (lab) = 323 mg/L as CaCO₃

Lab Sample Number: SCR-87-042
Legal Location: SW SW SW SW sec. 10, T. 101 N., R. 50 W.
Water Sample: 17
Latitude: 43.3331 Longitude: 96.4950
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1434.98 feet
Ground Surface Elevation: 1442.93 I
Casing Top Elevation: 1446.03 I
Casing Type: PVC
Pump: BLADDER
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-10CCCC 1
County: MINNEHAHA
Collection Date: 11-24-1987
Water Rights Well:
SDGS Well (Or Other): CO-86-111
Well Depth: 21.76 feet
Depth to Water: 11.05 feet
Screened: X
Basin: BIG SIOUX
Stream:
HNO₃: X

Ca: 138 ppm
Mg: 46 ppm
Na: 36 ppm
K: 4.0 ppm
SO₄: 201 ppm
Cl: 68 ppm
HCO₃: 397 ppm
CO₃: ND
Fe: <0.05 ppm
Mn: 0.38 ppm
NO₃-N: 0.16 ppm
F: 0.44 ppm
DS: 738 ppm @ 180°C
pH: approximate value 7.60
Conductivity: 1135 umhos @ 25°C
Hardness: 534 ppm
Cations: 12.35 me/L
Anions: 12.66 me/L
ALK-P: ND
Field pH: 7.48
Field Temperature: 11°C

Notes: Eh = 238 millivolts (unfiltered)
Total alkalinity (field) = 319 mg/L as CaCO₃
Total alkalinity (lab) = 326 mg/L as CaCO₃

Lab Sample Number: SCR-86-006
Legal Location: SW SW SW SW sec. 10, T. 101 N., R. 50 W.
Water Sample: 18
Latitude: 43.3331 Longitude: 96.4950
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1436.46 feet
Ground Surface Elevation: 1443.00 I
Casing Top Elevation: 1445.90 I
Casing Type: PVC
Pump: BAILED
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-10CCCC 2

County: MINNEHAHA

Collection Date: 09-09-1986

Water Rights Well:
SDGS Well (Or Other): CO-86-112
Well Depth: 12.50 feet
Depth to Water: 9.44 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca:	146 ppm
Mg:	44 ppm
Na:	99 ppm
K:	3.7 ppm
SO ₄ :	135 ppm
Cl:	141 ppm
HCO ₃ :	533 ppm
CO ₃ :	ND
Fe:	<0.05 ppm
Mn:	<0.05 ppm
NO ₃ -N:	6.60 ppm
F:	0.26 ppm
DS:	866 ppm @ 180°C
Conductivity:	1394 umhos @ 25°C
Hardness:	546 ppm
Cations:	15.30 me/L
Anions:	16.01 me/L
ALK-P:	ND
Field pH:	7.28
Field Temperature:	14°C

Notes: Eh = 420 millivolts (unfiltered); Downhole Eh = 434 millivolts
Total alkalinity (field) = 415 mg/L as CaCO₃
Total alkalinity (lab) = 437 mg/L as CaCO₃

Lab Sample Number: SCR-87-043
Legal Location: SW SW SW SW sec. 10; T. 101 N., R. 50 W.
Water Sample: 19
Latitude: 43.3331 Longitude: 96.4950
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1434.99 feet
Ground Surface Elevation: 1443.00 I
Casing Top Elevation: 1445.90 I
Casing Type: PVC
Pump: BAILED
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-10CCCC 2

County: MINNEHAHA

Collection Date: 11-24-1987

Water Rights Well:
SDGS Well (Or Other): CO-86-112
Well Depth: 11.81 feet
Depth to Water: 10.91 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca:	95 ppm
Mg:	26 ppm
Na:	134 ppm
K:	3.6 ppm
SO ₄ :	99 ppm
Cl:	55 ppm
HCO ₃ :	521 ppm
CO ₃ :	ND
Fe:	<0.05 ppm
Mn:	<0.05 ppm
NO ₃ -N:	5.75 ppm
F:	0.40 ppm
DS:	712 ppm @ 180°C
pH:	approximate value 7.60
Conductivity:	1170 umhos @ 25°C
Hardness:	344 ppm
Cations:	12.80 me/L
Anions:	12.58 me/L
ALK-P:	ND
Field pH:	7.41
Field Temperature:	12°C

Notes: Eh = 324 millivolts (unfiltered)
Total alkalinity (field) = 417 mg/L as CaCO₃
Total alkalinity (lab) = 427 mg/L as CaCO₃

Lab Sample Number: SCR-88-067
Legal Location: SW SE NE SW sec. 14, T. 101 N., R. 50 W.
Water Sample: 20
Latitude: 43.3251 Longitude: 96.4809
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation:
Ground Surface Elevation: 1435.86 I
Casing Top Elevation: 1438.93 I
Casing Type: PVC
Pump: BLADDER
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-14CADC 2

County: MINNEHAHA

Collection Date: 05-17-1988

Water Rights Well:
SDGS Well (Or Other): CO-87-102
Well Depth: 15.8 feet
Depth to Water: 11.62 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 164 ppm
Mg: 60 ppm
Na: 18 ppm
K: 3.6 ppm
SO₄: 57 ppm
Cl: 16 ppm
HCO₃: 755 ppm
CO₃: ND
Fe: <0.05 ppm
Mn: <0.05 ppm
NO₃-N: 2.11 ppm
F: 0.17 ppm
DS: 690 ppm @ 180°C
pH: 7.35
Conductivity: 1157 umhos @ 25°C
Hardness: 657 ppm
Cations: 13.99 me/L
Anions: 14.16 me/L
ALK-P: ND
Field pH: 7.08
Field Temperature: 15°C

Notes: Eh = 333 millivolts (unfiltered)
Total alkalinity (field) = 601 mg/L as CaCO₃
Total alkalinity (lab) = 619 mg/L as CaCO₃

Lab Sample Number: SCR-86-023
Legal Location: SW SE SE NE sec. 15, T. 101 N., R. 50 W.
Water Sample: 21
Latitude: 43.3304 Longitude: 96.4844
Owner-Controller: USGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1425.51 feet
Ground Surface Elevation: 1439.45 I
Casing Top Elevation: 1442.31 I
Casing Type: PVC
Pump: BAILED
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-15ADDC

County: MINNEHAHA

Collection Date: 09-24-1986

Water Rights Well:
SDGS Well (Or Other): R20-84-306
Well Depth: 38.9 feet
Depth to Water: 16.80 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 98 ppm
Mg: 31 ppm
Na: 17 ppm
K: 2.0 ppm
SO₄: 108 ppm
Cl: 18 ppm
HCO₃: 340 ppm
CO₃: ND
Fe: <0.05 ppm
Mn: 0.27 ppm
NO₃-N: 3.00 ppm
F: 0.16 ppm
DS: 530 ppm @ 180°C
Conductivity: 744 umhos @ 25°C
Hardness: 372 ppm
Cations: 8.24 me/L
Anions: 8.55 me/L
ALK-P: ND
Field pH: 7.43
Field Temperature: 11°C

Notes: Eh = 421 millivolts (unfiltered); Downhole Eh = 362 millivolts
Total alkalinity (field) = 270 mg/L as CaCO₃
Total alkalinity (lab) = 279 mg/L as CaCO₃

Lab Sample Number: SCR-88-085
Legal Location: SW SE SE NE sec. 15, T. 101 N., R. 50 W.
Water Sample: 22
Latitude: 43.3304 Longitude: 96.4844
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1422.29 feet
Ground Surface Elevation: 1439.45 I
Casing Top Elevation: 1442.31 I
Casing Type: PVC
Pump: BAILED
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-15ADDC

County: MINNEHAHA

Collection Date: 06-08-1988

Water Rights Well:
SDGS Well (Or Other): R20-84-306
Well Depth: 39.3 feet
Depth to Water: 20.02 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca:	84 ppm
Mg:	32 ppm
Na:	17 ppm
K:	3.3 ppm
SO ₄ :	81 ppm
Cl:	13 ppm
HCO ₃ :	340 ppm
CO ₃ :	ND
Fe:	<0.05 ppm
Mn:	0.37 ppm
NO ₃ -N:	3.20 ppm
F:	0.18 ppm
DS:	416 ppm @ 180°C
pH:	7.74
Conductivity:	718 umhos @ 25°C
Hardness:	342 ppm
Cations:	7.66 me/L
Anions:	7.87 me/L
ALK-P:	ND
Field pH:	7.48
Field Temperature:	16°C

Notes: Eh = 207 millivolts (unfiltered)
Total alkalinity (field) = 278 mg/L as CaCO₃
Total alkalinity (lab) = 279 mg/L as CaCO₃

Lab Sample Number: SCR-88-070
Legal Location: NE NE NE SW sec. 15, T. 101 N., R. 50 W.
Water Sample: 23
Latitude: 43.3303 Longitude: 96.4914
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1421.47 feet
Ground Surface Elevation: 1436.08 I
Casing Top Elevation: 1439.05 I
Casing Type: PVC
Pump: BLADDER
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-15CAAA 1

County: MINNEHAHA

Collection Date: 05-18-1988

Water Rights Well:
SDGS Well (Or Other): CO-87-88
Well Depth: 27.45 feet
Depth to Water: 17.58 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 177 ppm
Mg: 62 ppm
Na: 56 ppm
K: 5.4 ppm
SO₄: 70 ppm
Cl: 336 ppm
HCO₃: 333 ppm
CO₃: ND
Fe: 0.77 ppm
Mn: 2.19 ppm
NO₃-N: 0.62 ppm
F: <0.08 ppm
DS: 952 ppm @ 180°C
pH: 7.28
Conductivity: 1668 umhos @ 25°C
Hardness: 697 ppm
Cations: 16.61 me/L
Anions: 16.46 me/L
ALK-P: ND
Field pH: 7.03
Field Temperature: 13°C

Notes: Eh = 192 millivolts (unfiltered)
Total alkalinity (field) = 266 mg/L as CaCO₃
Total alkalinity (lab) = 273 mg/L as CaCO₃

Lab Sample Number: SCR-88-087
Legal Location: NE NE NE SW sec. 15, T. 101 N., R. 50 W.
Water Sample: 24
Latitude: 43.3303 Longitude: 96.4914
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1421.60 feet
Ground Surface Elevation: 1435.95 I
Casing Top Elevation: 1439.18 I
Casing Type: PVC
Pump: BLADDER
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT ON ICE

Location: 101N-50W-15CAAA 2

County: MINNEHAHA

Collection Date: 06-13-1988

Water Rights Well:
SDGS Well (Or Other): CO-87-89
Well Depth: 22 feet
Depth to Water: 17.58 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 141 ppm
Mg: 51 ppm
Na: 17 ppm
K: 4.0 ppm
SO₄: 340 ppm
Cl: 8 ppm
HCO₃: 299 ppm
CO₃: ND
Fe: 0.41 ppm
Mn: 0.88 ppm
NO₃-N: <0.04 ppm
F: 0.42 ppm
DS: 760 ppm @ 180°C
pH: 7.55
Conductivity: 1040 umhos @ 25°C
Hardness: 562 ppm
Cations: 12.12 me/L
Anions: 12.22 me/L
ALK-P: ND
Field pH: 7.37
Field Temperature: 16°C

Notes: Eh = 137 millivolts (unfiltered)
Total alkalinity (field) = 245 mg/L as CaCO₃
Total alkalinity (lab) = 245 mg/L as CaCO₃

Lab Sample Number: SCR-86-004
Legal Location: NW SW NW SW sec. 15, T. 101 N., R. 50 W.
Water Sample: 25
Latitude: 43.3256 Longitude: 96.4949
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1432.45 feet
Ground Surface Elevation: 1440.56 I
Casing Top Elevation: 1442.26 I
Casing Type: PVC
Pump: BLADDER
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-15CBCB

County: MINNEHAHA

Collection Date: 09-09-1986

Water Rights Well:
SDGS Well (Or Other): CO-86-107
Well Depth: 21.54 feet
Depth to Water: 9.81 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 89 ppm
Mg: 36 ppm
Na: 56 ppm
K: 4.0 ppm
SO₄: 223 ppm
Cl: 5 ppm
HCO₃: 336 ppm
CO₃: ND
Fe: <0.05 ppm
Mn: <0.05 ppm
NO₃-N: <0.04 ppm
F: 0.41 ppm
DS: 576 ppm @ 180°C
Conductivity: 885 umhos @ 25°C
Hardness: 370 ppm
Cations: 9.94 me/L
Anions: 10.32 me/L
ALK-P: ND
Field pH: 7.59
Field Temperature: 13°C

Notes: Eh = 375 millivolts (unfiltered); Downhole Eh = 362 millivolts
Total alkalinity (field) = 280 mg/L as CaCO₃
Total alkalinity (lab) = 276 mg/L as CaCO₃

Lab Sample Number: SCR-88-073
Legal Location: NW SW NW SW sec. 15, T. 101 N., R. 50 W.
Water Sample: 26
Latitude: 43.3256 Longitude: 96.4949
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1432.02 feet
Ground Surface Elevation: 1440.56 I
Casing Top Elevation: 1442.26 I
Casing Type: PVC
Pump: BLADDER
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-15CBCB

County: MINNEHAHA

Collection Date: 06-01-1988

Water Rights Well:
SDGS Well (Or Other): CO-86-107
Well Depth: 22 feet
Depth to Water: 10.24 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 154 ppm
Mg: 63 ppm
Na: 20 ppm
K: 5.2 ppm
SO₄: 330 ppm
Cl: 4 ppm
HCO₃: 440 ppm
CO₃: ND
Fe: <0.05 ppm
Mn: 0.07 ppm
NO₃-N: <0.04 ppm
F: 0.11 ppm
DS: 890 ppm @ 180°C
pH: 7.79
Conductivity: 1174 umhos @ 25°C
Hardness: 644 ppm
Cations: 13.87 me/L
Anions: 14.20 me/L
ALK-P: ND
Field pH: 7.35
Field Temperature: 14°C

Notes: Eh = 252 millivolts (unfiltered)
Total alkalinity (field) = 348 mg/L as CaCO₃
Total alkalinity (lab) = 361 mg/L as CaCO₃

Lab Sample Number: SCR-86-003
Legal Location: NW NW SW SW sec. 15, T. 101 N., R. 50 W.
Water Sample: 27
Latitude: 43.3250 Longitude: 96.4949
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation:
Ground Surface Elevation: 1438.77 I
Casing Top Elevation: 1441.47 I
Casing Type: PVC
Pump: BLADDER
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-15CCBB 1

County: MINNEHAHA

Collection Date: 09-09-1986

Water Rights Well:
SDGS Well (Or Other): CO-86-106
Well Depth: 30.7 feet
Depth To Water:
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca:	120 ppm
Mg:	62 ppm
Na:	48 ppm
K:	5.1 ppm
SO ₄ :	434 ppm
Cl:	12 ppm
HCO ₃ :	258 ppm
CO ₃ :	ND
Fe:	<0.05 ppm
Mn:	0.38 ppm
NO ₃ -N:	<0.04 ppm
F:	0.24 ppm
DS:	822 ppm @ 180°C
Conductivity:	1138 umhos @ 25°C
Hardness:	555 ppm
Cations:	13.32 me/L
Anions:	13.62 me/L
ALK-P:	ND
Field pH:	7.70
Field Temperature:	11°C

Notes: Eh = 345 millivolts (unfiltered); Downhole Eh = 439 millivolts
Total alkalinity (field) = 213 mg/L as CaCO₃
Total alkalinity (lab) = 212 mg/L as CaCO₃

Lab Sample Number: SCR-87-040
Legal Location: NW NW SW SW sec. 15, T. 101 N., R. 50 W.
Water Sample: 28
Latitude: 43.3250 Longitude: 96.4949
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1431.20 feet
Ground Surface Elevation: 1438.77 I
Casing Top Elevation: 1441.47 I
Casing Type: PVC
Pump: BLADDER
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-15CCBB 1

County: MINNEHAHA

Collection Date: 11-24-1987

Water Rights Well:
SDGS Well (Or Other): CO-86-106
Well Depth: 30.72 feet
Depth to Water: 10.27 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 130 ppm
Mg: 66 ppm
Na: 35 ppm
K: 6.7 ppm
SO₄: 454 ppm
Cl: 14 ppm
HCO₃: 243 ppm
CO₃: ND
Fe: 0.11 ppm
Mn: 0.80 ppm
NO₃-N: <0.04 ppm
F: 0.33 ppm
DS: 872 ppm @ 180°C
pH: approximate value 7.50
Conductivity: 1185 umhos @ 25°C
Hardness: 596 ppm
Cations: 13.64 me/L
Anions: 13.84 me/L
ALK-P: ND
Field pH: 7.51
Field Temperature: 12°C

Notes: Eh = 148 millivolts (unfiltered)
Total alkalinity (field) = 196 mg/L as CaCO₃
Total alkalinity (lab) = 199 mg/L as CaCO₃

Lab Sample Number: SCR-87-041
Legal Location: NW NW SW SW sec. 15, T. 101 N., R. 50 W.
Water Sample: 29
Latitude: 43.3250 Longitude: 96.4949
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1431.17 feet
Ground Surface Elevation: 1439.09 I
Casing Top Elevation: 1442.03 I
Casing Type: PVC
Pump: BLADDER
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-15CCBB 2

County: MINNEHAHA

Collection Date: 11-24-1987

Water Rights Well:
SDGS Well (Or Other): CO-87-101
Well Depth: 18.68 feet
Depth to Water: 10.86 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 134 ppm
Mg: 59 ppm
Na: 50 ppm
K: 4.9 ppm
SO₄: 469 ppm
Cl: 16 ppm
HCO₃: 247 ppm
CO₃: ND
Fe: <0.05 ppm
Mn: 0.10 ppm
NO₃-N: 0.08 ppm
F: 0.35 ppm
DS: 904 ppm @ 180°C
pH: approximate value 7.70
Conductivity: 1204 umhos @ 25°C
Hardness: 578 ppm
Cations: 13.84 me/L
Anions: 14.30 me/L
ALK-P: ND
Field pH: 7.71
Field Temperature: 12°C

Notes: Eh = 300 millivolts (unfiltered)
Total alkalinity (field) = 201 mg/L as CaCO₃
Total alkalinity (lab) = 203 mg/L as CaCO₃

Lab Sample Number: SCR-87-059
Legal Location: NW NW SW SW sec. 15, T. 101 N., R. 50 W.
Water Sample: 30
Latitude: 43.3250 Longitude: 96.4949
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1431.29 feet
Ground Surface Elevation: 1439.09 I
Casing Top Elevation: 1442.03 I
Casing Type: PVC
Pump: BLADDER
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-15CCBB 2

County: MINNEHAHA

Collection Date: 12-17-1987

Water Rights Well:
SDGS Well (Or Other): CO-87-101
Well Depth: 19.4 feet
Depth to Water: 10.74 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 133 ppm
Mg: 64 ppm
Na: 38 ppm
K: 6.4 ppm
SO₄: 456 ppm
Cl: 15 ppm
HCO₃: 235 ppm
CO₃: ND
Fe: <0.05 ppm
Mn: 0.28 ppm
NO₃-N: <0.04 ppm
F: 0.37 ppm
DS: 894 ppm @ 180°C
pH: approximate value 7.70
Conductivity: 1202 umhos @ 25°C
Hardness: 596 ppm
Cations: 13.73 me/L
Anions: 13.79 me/L
ALK-P: ND
Field Temperature: 12°C

Notes: Total alkalinity (field) = 193 mg/L as CaCO₃
Total alkalinity (lab) = 193 mg/L as CaCO₃

Lab Sample Number: SCR-86-002
Legal Location: SE SW SW SE sec. 15, T. 101 N., R. 50 W.
Water Sample: 31
Latitude: 43.3238 Longitude: 96.4909
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1423.68 feet
Ground Surface Elevation: 1432.38 I
Casing Top Elevation: 1435.38 I
Casing Type: PVC
Pump: BLADDER
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-15DCCD 1

County: MINNEHAHA

Collection Date: 09-08-1986

Water Rights Well:
SDGS Well (Or Other): CO-86-115
Well Depth: 24.29 feet
Depth to Water: 11.70 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 147 ppm
Mg: 53 ppm
Na: 39 ppm
K: 3.6 ppm
SO₄: 432 ppm
Cl: 15 ppm
HCO₃: 256 ppm
CO₃: ND
Fe: 0.24 ppm
Mn: 0.71 ppm
NO₃-N: <0.04 ppm
F: 0.33 ppm
DS: 844 ppm @ 180°C
Conductivity: 1131 umhos @ 25°C
Hardness: 585 ppm
Cations: 13.52 me/L
Anions: 13.63 me/L
ALK-P: ND
Field pH: 7.45
Field Temperature: 14°C

Notes: Eh = 223 millivolts (unfiltered); Downhole Eh = 410 millivolts
Total alkalinity (field) = 216 mg/L as CaCO₃
Total alkalinity (lab) = 210 mg/L as CaCO₃

Lab Sample Number: SCR-87-038
Legal Location: SE SW SW SE sec. 15, T. 101 N., R. 50 W.
Water Sample: 32
Latitude: 43.3238 Longitude: 96.4909
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1423.24 feet
Ground Surface Elevation: 1432.38 I
Casing Top Elevation: 1435.38 I
Casing Type: PVC
Pump: BLADDER
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-15DCCD 1

County: MINNEHAHA

Collection Date: 11-23-1987

Water Rights Well:
SDGS Well (Or Other): CO-86-115
Well Depth: 24.4 feet
Depth to Water: 12.14 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 144 ppm
Mg: 53 ppm
Na: 34 ppm
K: 4.7 ppm
SO₄: 394 ppm
Cl: 14 ppm
HCO₃: 283 ppm
CO₃: ND
Fe: 0.58 ppm
Mn: 0.76 ppm
NO₃-N: <0.04 ppm
F: 0.40 ppm
DS: 848 ppm @ 180°C
pH: approximate value 7.40
Conductivity: 1156 umhos @ 25°C
Hardness: 578 ppm
Cations: 13.19 me/L
Anions: 13.25 me/L
ALK-P: ND
Field pH: 7.31
Field Temperature: 12°C

Notes: Eh = 131 millivolts (unfiltered)
Total alkalinity (field) = 229 mg/L as CaCO₃
Total alkalinity (lab) = 232 mg/L as CaCO₃

Lab Sample Number: SCR-87-039
Legal Location: SE SW SW SE sec. 15, T. 101 N., R. 50 W.
Water Sample: 33
Latitude: 43.3238 Longitude: 96.4909
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1423.22 feet
Ground Surface Elevation: 1432.16 I
Casing Top Elevation: 1435.25 I
Casing Type: PVC
Pump: BLADDER
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-15DCCD 3

County: MINNEHAHA

Collection Date: 11-23-1987

Water Rights Well:
SDGS Well (Or Other): CO-87-92
Well Depth: 16.88 feet
Depth to Water: 12.03 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 145 ppm
Mg: 52 ppm
Na: 34 ppm
K: 4.8 ppm
SO₄: 392 ppm
Cl: 16 ppm
HCO₃: 284 ppm
CO₃: ND
Fe: <0.05 ppm
Mn: 1.85 ppm
NO₃-N: <0.04 ppm
F: 0.41 ppm
DS: 840 ppm @ 180°C
pH: approximate value 7.30
Conductivity: 1145 umhos @ 25°C
Hardness: 576 ppm
Cations: 13.18 me/L
Anions: 13.29 me/L
ALK-P: ND
Field pH: 7.30
Field Temperature: 12°C

Notes: Eh = 198 millivolts (unfiltered)
Total alkalinity (field) = 231 mg/L as CaCO₃
Total alkalinity (lab) = 233 mg/L as CaCO₃

Lab Sample Number: SCR-86-016
Legal Location: NE NE NE NW sec. 16, T. 101 N., R. 50 W.
Water Sample: 34
Latitude: 43.3330 Longitude: 96.5027
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1435.46 feet
Ground Surface Elevation: 1443.00 T
Casing Top Elevation: 1446.30 T
Casing Type: PVC
Pump:
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-16BAAA

County: MINNEHAHA

Collection Date: 09-18-1986

Water Rights Well: MA-80X
SDGS Well (Or Other): SFB-87
Well Depth: 20.61 feet
Depth to Water: 10.84 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 90 ppm
Mg: 27 ppm
Na: 12 ppm
K: 1.8 ppm
SO₄: 104 ppm
Cl: 10 ppm
HCO₃: 308 ppm
CO₃: ND
Fe: 0.30 ppm
Mn: 0.91 ppm
NO₃-N: 0.07 ppm
F: 0.17 ppm
DS: 466 ppm @ 180°C
Conductivity: 664 umhos @ 25°C
Hardness: 336 ppm
Cations: 7.32 me/L
Anions: 7.52 me/L
ALK-P: ND
Field pH: 7.58
Field Temperature: 11°C

Notes: Eh = 141 millivolts (unfiltered); Downhole Eh = 377 millivolts
Total alkalinity (field) = 252 mg/L as CaCO₃
Total alkalinity (lab) = 253 mg/L as CaCO₃

Lab Sample Number: SCR-87-046
Legal Location: NE NE NE NW sec. 16, T. 101 N., R. 50 W.
Water Sample: 35
Latitude: 43.3330 Longitude: 96.5027
Owner-Controller: WATER RIGHTS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1432.88 feet
Ground Surface Elevation: 1443.00 T
Casing Top Elevation: 1446.30 T
Casing Type: PVC
Pump: BLADDER
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-16BAAA

County: MINNEHAHA

Collection Date: 12-02-1987

Water Rights Well: MA-80X
SDGS Well (Or Other): SFB-87
Well Depth: 20.6 feet
Depth to Water: 13.42 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 92 ppm
Mg: 29 ppm
Na: 12 ppm
K: 3.1 ppm
SO₄: 112 ppm
Cl: 18 ppm
HCO₃: 301 ppm
CO₃: ND
Fe: 1.54 ppm
Mn: 0.87 ppm
NO₃-N: 0.12 ppm
F: 0.23 ppm
DS: 448 ppm @ 180°C
pH: approximate value 7.60
Conductivity: 692 umhos @ 25°C
Hardness: 349 ppm
Cations: 7.66 me/L
Anions: 7.80 me/L
ALK-P: ND
Field Temperature: 10°C

Notes: Total alkalinity (field) = 247 mg/L as CaCO₃
Total alkalinity (lab) = 247 mg/L as CaCO₃

Lab Sample Number: SCR-87-055
Legal Location: NW NE NE NW sec. 16, T. 101 N., R. 50 W.
Water Sample: 36
Latitude: 43.3330 Longitude: 96.5031
Owner-Controller:
Sample Type: SURFACE WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation:
Ground Surface Elev.:
Casing Top Elevation:
Casing Type:
Pump:
Aquifer:
Management Unit:
Usage:
Lake:
Other:
Where Collected: OFF BRIDGE (SOUTH SIDE MIDDLE)
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-16BAAB

County: MINNEHAHA

Collection Date: 12-10-1987

Water Rights Well:
SDGS Well (Or Other):
Well Depth:
Depth To Water:
Screened:

Basin: BIG SIOUX

Stream: SKUNK CREEK

HNO₃: X

Ca: 122 ppm
Mg: 60 ppm
Na: 31 ppm
K: 5.1 ppm
SO₄: 332 ppm
Cl: 23 ppm
HCO₃: 314 ppm
CO₃: approximate value 1 ppm
Fe: <0.05 ppm
Mn: 0.32 ppm
NO₃-N: 0.57 ppm
F: 0.29 ppm
DS: 796 ppm @ 180°C
pH: 8.40
Conductivity: 1095 umhos @ 25°C
Hardness: 552 ppm
Cations: 12.51 me/L
Anions: 12.80 me/L
ALK-P: approximate value 1 ppm (as CaCO₃)
Field Temperature: 1°C

Notes: Total alkalinity (field) = 250 mg/L as CaCO₃
Total alkalinity (lab) = 260 mg/L as CaCO₃

Lab Sample Number: SCR-86-008
Legal Location: SE NW NW NW sec. 16, T. 101 N., R. 50 W.
Water Sample: 37
Latitude: 43.3324 Longitude: 96.5053
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1438.18 feet
Ground Surface Elevation: 1453.70 I
Casing Top Elevation: 1456.55 I
Casing Type: PVC
Pump: BAILED
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-16BBBD

County: MINNEHAHA

Collection Date: 09-15-1986

Water Rights Well:
SDGS Well (Or Other): CO-86-105
Well Depth: 26.24 feet
Depth to Water: 18.37 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 90 ppm
Mg: 39 ppm
Na: 22 ppm
K: 2.4 ppm
SO₄: 127 ppm
Cl: 14 ppm
HCO₃: 311 ppm
CO₃: ND
Fe: <0.05 ppm
Mn: 0.10 ppm
NO₃-N: 7.20 ppm
F: 0.31 ppm
DS: 554 ppm @ 180°C
Conductivity: 769 umhos @ 25°C
Hardness: 385 ppm
Cations: 8.72 me/L
Anions: 8.66 me/L
ALK-P: ND
Field pH: 7.62
Field Temperature: 10°C

Notes: Eh = 402 millivolts (unfiltered); Downhole Eh = 364 millivolts
Total alkalinity (field) = 264 mg/L as CaCO₃
Total alkalinity (lab) = 255 mg/L as CaCO₃

Lab Sample Number: SCR-87-045
Legal Location: SE NW NW NW sec. 16, T. 101 N., R. 50 W.
Water Sample: 38
Latitude: 43.3324 Longitude: 96.5053
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1437.36 feet
Ground Surface Elevation: 1453.70 I
Casing Top Elevation: 1456.55 I
Casing Type: PVC
Pump: BLADDER
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-16BBBD

County: MINNEHAHA

Collection Date: 12-01-1987

Water Rights Well:
SDGS Well (Or Other): CO-86-105
Well Depth: 29.9 feet
Depth to Water: 19.19 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 95 ppm
Mg: 37 ppm
Na: 12 ppm
K: 2.8 ppm
SO₄: 132 ppm
Cl: 6 ppm
HCO₃: 317 ppm
CO₃: ND
Fe: <0.05 ppm
Mn: <0.05 ppm
NO₃-N: 5.52 ppm
F: 0.25 ppm
DS: 497 ppm @ 180°C
pH: approximate value 7.60
Conductivity: 755 umhos @ 25°C
Hardness: 390 ppm
Cations: 8.38 me/L
Anions: 8.52 me/L
ALK-P: ND
Field Temperature: 9°C

Notes: Total alkalinity (field) = 258 mg/L as CaCO₃
Total alkalinity (lab) = 260 mg/L as CaCO₃

Lab Sample Number: SCR-86-015
Legal Location: SW SW NW NW sec. 16, T. 101 N., R. 50 W.
Water Sample: 39
Latitude: 43.3317 Longitude: 96.5101
Owner-Controller: USGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1441.00 feet
Ground Surface Elevation: 1458.85 I
Casing Top Elevation: 1461.26 I
Casing Type: PVC
Pump: BAILED
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-16BBCC
County: MINNEHAHA
Collection Date: 09-18-1986
Water Rights Well:
SDGS Well (Or Other): R20-84-303
Well Depth: 32.52 feet
Depth to Water: 20.26 feet
Screened: X
Basin: BIG SIOUX
Stream:
HNO₃: X

Ca: 110 ppm
Mg: 40 ppm
Na: 10 ppm
K: 1.8 ppm
SO₄: 195 ppm
Cl: 3 ppm
HCO₃: 268 ppm
CO₃: ND
Fe: <0.05 ppm
Mn: <0.05 ppm
NO₃-N: 9.10 ppm
F: 0.30 ppm
DS: 606 ppm @ 180°C
Conductivity: 740 umhos @ 25°C
Hardness: 439 ppm
Cations: 9.26 me/L
Anions: 9.21 me/L
ALK-P: ND
Field pH: 7.53
Field Temperature: 11°C

Notes: Eh = 403 millivolts (unfiltered); Downhole Eh = 431 millivolts
Total alkalinity (field) = 214 mg/L as CaCO₃
Total alkalinity (lab) = 220 mg/L as CaCO₃

Lab Sample Number: SCR-88-081
Legal Location: SW SW NW NW sec. 16, T. 101 N., R. 50 W.
Water Sample: 40
Latitude: 43.3317 Longitude: 96.5101
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1439.72 feet
Ground Surface Elevation: 1458.85 I
Casing Top Elevation: 1461.26 I
Casing Type: PVC
Pump: BAILED
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-16BBCC

County: MINNEHAHA

Collection Date: 06-07-1988

Water Rights Well:
SDGS Well (Or Other): R20-84-303
Well Depth: 33.0 feet
Depth to Water: 21.54 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 106 ppm
Mg: 38 ppm
Na: 9 ppm
K: 3.0 ppm
SO₄: 184 ppm
Cl: 5 ppm
HCO₃: 282 ppm
CO₃: ND
Fe: <0.05 ppm
Mn: <0.05 ppm
NO₃-N: 4.90 ppm
F: 0.29 ppm
DS: 551 ppm @ 180°C
pH: 7.77
Conductivity: 796 umhos @ 25°C
Hardness: 421 ppm
Cations: 8.88 me/L
Anions: 8.95 me/L
ALK-P: ND
Field pH: 7.51
Field Temperature: 12°C

Notes: Eh = 282 millivolts (unfiltered)
Total alkalinity (field) = 237 mg/L as CaCO₃
Total alkalinity (lab) = 231 mg/L as CaCO₃

Lab Sample Number: SCR-88-061
Legal Location: NE NE NE SW sec. 16, T. 101 N., R. 50 W.
Water Sample: 41
Latitude: 43.3303 Longitude: 96.5027
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1435.70 feet
Ground Surface Elevation: 1450.03 I
Casing Top Elevation: 1452.93 I
Casing Type: PVC, SCH. 80
Pump: BLADDER
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-16CAAA 2

County: MINNEHAHA

Collection Date: 05-09-1988

Water Rights Well:
SDGS Well (Or Other): CO-87-86
Well Depth: 42 feet
Depth to Water: 17.24 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 141 ppm
Mg: 50 ppm
Na: 18 ppm
K: 3.8 ppm
SO₄: 337 ppm
Cl: 8 ppm
HCO₃: 302 ppm
CO₃: ND
Fe: 0.44 ppm
Mn: 0.88 ppm
NO₃-N: <0.04 ppm
F: 0.33 ppm
DS: 744 ppm @ 180°C
pH: 7.72
Conductivity: 981 umhos @ 25°C
Hardness: 558 ppm
Cations: 12.08 me/L
Anions: 12.21 me/L
ALK-P: ND
Field pH: 7.37
Field Temperature: 12°C

Notes: Eh = 185 millivolts (unfiltered)
Total alkalinity (field) = 240 mg/L as CaCO₃
Total alkalinity (lab) = 248 mg/L as CaCO₃

Lab Sample Number: SCR-88-062
Legal Location: NE NE NE SW sec. 16, T. 101 N., R. 50 W.
Water Sample: 42
Latitude: 43.3303 Longitude: 96.5027
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1435.70 feet
Ground Surface Elevation: 1450.38 I
Casing Top Elevation: 1453.06 I
Casing Type: PVC, SCH. 80
Pump: BLADDER
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-16CAAA 3

County: MINNEHAHA

Collection Date: 05-09-1988

Water Rights Well:
SDGS Well (Or Other): CO-87-87
Well Depth: 28 feet
Depth to Water: 17.36 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 106 ppm
Mg: 40 ppm
Na: 11 ppm
K: 2.9 ppm
SO₄: 203 ppm
Cl: 6 ppm
HCO₃: 280 ppm
CO₃: ND
Fe: <0.05 ppm
Mn: <0.05 ppm
NO₃-N: 2.91 ppm
F: 0.33 ppm
DS: 554 ppm @ 180°C
pH: 7.74
Conductivity: 810 umhos @ 25°C
Hardness: 429 ppm
Cations: 9.13 me/L
Anions: 9.22 me/L
ALK-P: ND
Field pH: 7.41
Field Temperature: 12°C

Notes: Eh = 297 millivolts (unfiltered)
Total alkalinity (field) = 221 mg/L as CaCO₃
Total alkalinity (lab) = 230 mg/L as CaCO₃

Lab Sample Number: SCR-86-017
Legal Location: SE SW SW SE sec. 16, T. 101 N., R. 50 W.
Water Sample: 43
Latitude: 43.3238 Longitude: 96.5021
Owner-Controller: USGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1436.18 feet
Ground Surface Elevation: 1481.10 I
Casing Top Elevation: 1483.55 I
Casing Type: PVC
Pump: BLADDER
Aquifer: WALL LAKE
Management Unit:
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-16DCCD

County: MINNEHAHA

Collection Date: 09-22-1986

Water Rights Well:
SDGS Well (Or Other): CO-86-56
Well Depth: 83.16 feet
Depth to Water: 47.37 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca:	247 ppm
Mg:	82 ppm
Na:	54 ppm
K:	7.3 ppm
SO ₄ :	741 ppm
Cl:	6 ppm
HCO ₃ :	432 ppm
CO ₃ :	ND
Fe:	1.48 ppm
Mn:	1.79 ppm
NO ₃ -N:	<0.04 ppm
F:	0.39 ppm
DS:	1426 ppm @ 180°C
Conductivity:	1719 umhos @ 25°C
Hardness:	954 ppm
Cations:	21.72 me/L
Anions:	22.69 me/L
ALK-P:	ND
Field pH:	7.22
Field Temperature:	11°C

Notes: Eh = 179 millivolts (unfiltered); Downhole Eh = 377 millivolts
Total alkalinity (field) = 352 mg/L as CaCO₃
Total alkalinity (lab) = 354 mg/L as CaCO₃

Lab Sample Number: SCR-87-050
Legal Location: SE SW SW SE sec. 16, T. 101 N., R. 50 W.
Water Sample: 44
Latitude: 43.3238 Longitude: 96.5021
Owner-Controller: USGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1431.78 feet
Ground Surface Elevation: 1481.10 I
Casing Top Elevation: 1483.55 I
Casing Type: PVC
Pump: BLADDER
Aquifer: WALL LAKE
Management Unit:
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-16DCCD

County: MINNEHAHA

Collection Date: 12-03-1987

Water Rights Well:
SDGS Well (Or Other): CO-86-56
Well Depth: 104 feet
Depth to Water: 51.77 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 229 ppm
Mg: 76 ppm
Na: 52 ppm
K: 8.4 ppm
SO₄: 664 ppm
Cl: 6 ppm
HCO₃: 440 ppm
CO₃: ND
Fe: 2.26 ppm
Mn: 1.48 ppm
NO₃-N: <0.04 ppm
F: 0.38 ppm
DS: 1339 ppm @ 180°C
pH: approximate value 7.60
Conductivity: 1683 umhos @ 25°C
Hardness: 885 ppm
Cations: 20.29 me/L
Anions: 21.23 me/L
ALK-P: ND
Field Temperature: 10°C

Notes: Total alkalinity (field) = 364 mg/L as CaCO₃
Total alkalinity (lab) = 361 mg/L as CaCO₃

Lab Sample Number: SCR-86-009
Legal Location: NW NW SW NE sec. 17, T. 101 N., R. 50 W.
Water Sample: 45
Latitude: 43.3316 Longitude: 96.5135
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1446.45 feet
Ground Surface Elevation: 1458.43 I
Casing Top Elevation: 1461.37 I
Casing Type: PVC
Pump: BAILED
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-17ACBB 1

County: MINNEHAHA

Collection Date: 09-15-1986

Water Rights Well:
SDGS Well (Or Other): CO-86-104
Well Depth: 24.2 feet
Depth to Water: 14.92 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca:	107 ppm
Mg:	40 ppm
Na:	9 ppm
K:	2.6 ppm
SO ₄ :	190 ppm
Cl:	3 ppm
HCO ₃ :	277 ppm
CO ₃ :	ND
Fe:	<0.05 ppm
Mn:	<0.05 ppm
NO ₃ -N:	7.60 ppm
F:	0.33 ppm
DS:	616 ppm @ 180°C
Conductivity:	816 umhos @ 25°C
Hardness:	432 ppm
Cations:	9.09 me/L
Anions:	9.14 me/L
ALK-P:	ND
Field pH:	7.68
Field Temperature:	10°C

Notes: Eh = 428 millivolts (unfiltered); Downhole Eh = 397 millivolts
Total alkalinity (field) = 233 mg/L as CaCO₃
Total alkalinity (lab) = 227 mg/L as CaCO₃

Lab Sample Number: SCR-87-044
Legal Location: NW NW SW NE sec. 17, T. 101 N., R. 50 W.
Water Sample: 46
Latitude: 43.3316 Longitude: 96.5135
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1444.24 feet
Ground Surface Elevation: 1458.43 I
Casing Top Elevation: 1461.37 I
Casing Type: PVC
Pump: BLADDER
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-17ACBB 1

County: MINNEHAHA

Collection Date: 12-01-1987

Water Rights Well:
SDGS Well (Or Other): CO-86-104
Well Depth: 24.5 feet
Depth to Water: 17.13 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 108 ppm
Mg: 40 ppm
Na: 10 ppm
K: 3.4 ppm
SO₄: 200 ppm
Cl: 3 ppm
HCO₃: 296 ppm
CO₃: ND
Fe: <0.05 ppm
Mn: <0.05 ppm
NO₃-N: 4.53 ppm
F: 0.24 ppm
DS: 585 ppm @ 180°C
pH: approximate value 7.10
Conductivity: 824 umhos @ 25°C
Hardness: 434 ppm
Cations: 9.18 me/L
Anions: 9.44 me/L
ALK-P: ND
Field Temperature: 9°C

Notes: Total alkalinity (field) = 233 mg/L as CaCO₃
Total alkalinity (lab) = 243 mg/L as CaCO₃

Lab Sample Number: SCR-86-014
Legal Location: SW SW NW NW sec. 17, T. 101 N., R. 50 W.
Water Sample: 47
Latitude: 43.3317 Longitude: 96.5213
Owner-Controller: USGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1455.47 feet
Ground Surface Elevation: 1465.18 I
Casing Top Elevation: 1468.18 I
Casing Type: PVC
Pump: BAILED
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-17BBCC 1

County: MINNEHAHA

Collection Date: 09-17-1986

Water Rights Well:
SDGS Well (Or Other): R20-84-302
Well Depth: 56.83 feet
Depth to Water: 12.71 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 123 ppm
Mg: 47 ppm
Na: 22 ppm
K: 3.0 ppm
SO₄: 249 ppm
Cl: 14 ppm
HCO₃: 332 ppm
CO₃: ND
Fe: 0.08 ppm
Mn: 1.05 ppm
NO₃-N: <0.04 ppm
F: 0.28 ppm
DS: 720 ppm @ 180°C
Conductivity: 948 umhos @ 25°C
Hardness: 501 ppm
Cations: 11.08 me/L
Anions: 11.03 me/L
ALK-P: ND
Field pH: 7.42
Field Temperature: 12°C

Notes: Eh = 188 millivolts (unfiltered); Downhole Eh = 380 millivolts
Total alkalinity (field) = 268 mg/L as CaCO₃
Total alkalinity (lab) = 272 mg/L as CaCO₃

Lab Sample Number: SCR-88-080
Legal Location: SW SW NW NW sec. 17, T. 101 N., R. 50 W.
Water Sample: 48
Latitude: 43.3317 Longitude: 96.5213
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1449.95 feet
Ground Surface Elevation: 1465.18 I
Casing Top Elevation: 1468.18 I
Casing Type: PVC
Pump: BAILED
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-17BBCC 1

County: MINNEHAHA

Collection Date: 06-07-1988

Water Rights Well:
SDGS Well (Or Other): R20-84-302
Well Depth: 58 feet
Depth to Water: 18.23 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 152 ppm
Mg: 50 ppm
Na: 23 ppm
K: 4.4 ppm
SO₄: 302 ppm
Cl: 36 ppm
HCO₃: 316 ppm
CO₃: ND
Fe: 0.67 ppm
Mn: 1.25 ppm
NO₃-N: <0.04 ppm
F: 0.24 ppm
DS: 736 ppm @ 180°C
pH: 7.50
Conductivity: 1075 umhos @ 25°C
Hardness: 585 ppm
Cations: 12.88 me/L
Anions: 12.49 me/L
ALK-P: ND
Field pH: 7.35
Field Temperature: 13°C

Notes: Eh = 127 millivolts (unfiltered)
Total alkalinity (field) = 257 mg/L as CaCO₃
Total alkalinity (lab) = 259 mg/L as CaCO₃

Lab Sample Number: SCR-87-056
Legal Location: NW NW SW NW sec. 17, T. 101 N., R. 50 W.
Water Sample: 49
Latitude: 43.3316 Longitude: 96.5212
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1450.78 feet
Ground Surface Elevation: 1464.51 I
Casing Top Elevation: 1467.61 I
Casing Type: PVC
Pump: BLADDER
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-17BCBB

County: MINNEHAHA

Collection Date: 12-16-1987

Water Rights Well:
SDGS Well (Or Other): CO-87-78
Well Depth: 23.5 feet
Depth to Water: 16.83 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 90 ppm
Mg: 28 ppm
Na: 16 ppm
K: 2.3 ppm
SO₄: 164 ppm
Cl: 8 ppm
HCO₃: 222 ppm
CO₃: ND
Fe: <0.05 ppm
Mn: <0.05 ppm
NO₃-N: 7.75 ppm
F: 0.25 ppm
DS: 484 ppm @ 180°C
pH: approximate value 7.70
Conductivity: 705 umhos @ 25°C
Hardness: 340 ppm
Cations: 7.55 me/L
Anions: 7.84 me/L
ALK-P: ND
Field Temperature: 9°C

Notes: Total alkalinity (field) = 171 mg/L as CaCO₃
Total alkalinity (lab) = 182 mg/L as CaCO₃

Lab Sample Number: SCR-86-018
Legal Location: SE SW SE SE sec. 17, T. 101 N., R. 50 W.
Water Sample: 50
Latitude: 43.3238 Longitude: 96.5109
Owner-Controller: USGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1448.09 feet
Ground Surface Elevation: 1451.06 I
Casing Top Elevation: 1455.06 I
Casing Type: PVC
Pump: BAILED
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-17DDCD 1

County: MINNEHAHA

Collection Date: 09-22-1986

Water Rights Well:
SDGS Well (Or Other): R20-84-304
Well Depth: 48.28 feet
Depth to Water: 6.97 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 251 ppm
Mg: 84 ppm
Na: 57 ppm
K: 7.7 ppm
SO₄: 762 ppm
Cl: 3 ppm
HCO₃: 430 ppm
CO₃: ND
Fe: 0.39 ppm
Mn: 1.93 ppm
NO₃-N: 0.08 ppm
F: 0.33 ppm
DS: 1452 ppm @ 180°C
Conductivity: 1734 umhos @ 25°C
Hardness: 973 ppm
Cations: 22.19 me/L
Anions: 23.02 me/L
ALK-P: ND
Field pH: 7.21
Field Temperature: 11°C

Notes: Eh = 186 millivolts (unfiltered); Downhole Eh = 383 millivolts
Total alkalinity (field) = 344 mg/L as CaCO₃
Total alkalinity (lab) = 353 mg/L as CaCO₃

Lab Sample Number: SCR-88-079
Legal Location: SE SW SE SE sec. 17, T. 101 N., R. 50 W.
Water Sample: 51
Latitude: 43.3238 Longitude: 96.5110
Owner-Controller: USGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1455.63 feet
Ground Surface Elevation: 1451.06 I
Casing Top Elevation: 1455.06 I
Casing Type: PVC
Pump: BAILED
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-17DDCD 1

County: MINNEHAHA

Collection Date: 06-07-1988

Water Rights Well:
SDGS Well (Or Other): R20-84-304
Well Depth: 24.4 feet
Depth to Water: 9.43 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca:	262 ppm
Mg:	91 ppm
Na:	64 ppm
K:	10.6 ppm
SO ₄ :	794 ppm
Cl:	3 ppm
HCO ₃ :	440 ppm
CO ₃ :	ND
Fe:	2.47 ppm
Mn:	2.28 ppm
NO ₃ -N:	<0.04 ppm
F:	0.31 ppm
DS:	1528 ppm @ 180°C
pH:	7.27
Conductivity:	1882 umhos @ 25°C
Hardness:	1029 ppm
Cations:	23.78 me/L
Anions:	23.84 me/L
ALK-P:	ND
Field pH:	7.16
Field Temperature:	13°C

Notes: Eh = 145 millivolts (unfiltered)
Total alkalinity (field) = 361 mg/L as CaCO₃
Total alkalinity (lab) = 361 mg/L as CaCO₃

Lab Sample Number: SCR-88-065
Legal Location: SE SW SE SE sec. 17, T. 101 N., R. 50 W.
Water Sample: 52
Latitude: 43.3238 Longitude: 96.5110
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1445.84 feet
Ground Surface Elevation: 1452.62 I
Casing Top Elevation: 1455.40 I
Casing Type: PVC
Pump: BLADDER
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-17DDCD 2

County: MINNEHAHA

Collection Date: 05-17-1988

Water Rights Well:
SDGS Well (Or Other): CO-87-76
Well Depth: 24.4 feet
Depth to Water: 9.56 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 171 ppm
Mg: 64 ppm
Na: 24 ppm
K: 6.3 ppm
SO₄: 390 ppm
Cl: 10 ppm
HCO₃: 379 ppm
CO₃: ND
Fe: <0.05 ppm
Mn: 0.58 ppm
NO₃-N: 7.62 ppm
F: 0.34 ppm
DS: 944 ppm @ 180°C
pH: 7.37
Conductivity: 1244 umhos @ 25°C
Hardness: 691 ppm
Cations: 15.02 me/L
Anions: 15.18 me/L
ALK-P: ND
Field pH: 7.22
Field Temperature: 10°C

Notes: Eh = 268 millivolts (unfiltered)
Total alkalinity (field) = 300 mg/L as CaCO₃
Total alkalinity (lab) = 311 mg/L as CaCO₃

Lab Sample Number: SCR-88-077
Legal Location: NE NW NE NE sec. 18, T. 101 N., R. 50 W.
Water Sample: 53
Latitude: 43.3329 Longitude: 96.5224
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1450.72 feet
Ground Surface Elevation: 1464.17 I
Casing Top Elevation: 1467.06 I
Casing Type: PVC
Pump: BLADDER
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-18AABA 1
County: MINNEHAHA
Collection Date: 06-07-1988
Water Rights Well:
SDGS Well (Or Other): CO-87-58
Well Depth: 56.5 feet
Depth to Water: 16.34 feet
Screened: X
Basin: BIG SIOUX
Stream:
HNO₃: X

Ca: 163 ppm
Mg: 54 ppm
Na: 24 ppm
K: 6.9 ppm
SO₄: 365 ppm
Cl: 29 ppm
HCO₃: 358 ppm
CO₃: ND
Fe: 5.45 ppm
Mn: 0.33 ppm
NO₃-N: <0.04 ppm
F: 0.19 ppm
DS: 866 ppm @ 180°C
pH: 7.31
Conductivity: 1167 umhos @ 25°C
Hardness: 629 ppm
Cations: 14.00 me/L
Anions: 14.30 me/L
ALK-P: ND
Field pH: 7.27
Field Temperature: 13°C

Notes: Eh = 78 millivolts (unfiltered)
Total alkalinity (field) = 300 mg/L as CaCO₃
Total alkalinity (lab) = 294 mg/L as CaCO₃

Lab Sample Number: SCR-88-078
Legal Location: NE NW NE NE sec. 18, T. 101 N., R. 50 W.
Water Sample: 54
Latitude: 43.3329 Longitude: 96.5224
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1450.82 feet
Ground Surface Elevation: 1464.85 I
Casing Top Elevation: 1467.96 I
Casing Type: PVC
Pump: BLADDER
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-18AABA 3

County: MINNEHAHA

Collection Date: 06-07-1988

Water Rights Well:
SDGS Well (Or Other): CO-87-60
Well Depth: 28.7 feet
Depth to Water: 17.14 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 79 ppm
Mg: 28 ppm
Na: 7 ppm
K: 2.0 ppm
SO₄: 44 ppm
Cl: 6 ppm
HCO₃: 283 ppm
CO₃: ND
Fe: <0.05 ppm
Mn: <0.05 ppm
NO₃-N: 12.10 ppm
F: 0.26 ppm
DS: 386 ppm @ 180°C
pH: 7.64
Conductivity: 616 umhos @ 25°C
Hardness: 313 ppm
Cations: 6.62 me/L
Anions: 6.60 me/L
ALK-P: ND
Field pH: 7.48
Field Temperature: 15°C

Notes: Eh = 299 millivolts (unfiltered)
Total alkalinity (field) = 228 mg/L as CaCO₃
Total alkalinity (lab) = 232 mg/L as CaCO₃

Lab Sample Number: SCR-87-036
Legal Location: SW SW SW SW sec. 18, T. 101 N., R. 50 W.
Water Sample: 55
Latitude: 43.3237 Longitude: 96.5321
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1451.68 feet
Ground Surface Elevation: 1529.83 I
Casing Top Elevation: 1532.73 I
Casing Type: PVC
Pump: BLADDER
Aquifer: WALL LAKE
Management Unit:
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-18CCCC 2

County: MINNEHAHA

Collection Date: 11-18-1987

Water Rights Well:
SDGS Well (Or Other): CO-87-19
Well Depth: 127.0 feet
Depth to Water: 81.05 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 188 ppm
Mg: 66 ppm
Na: 133 ppm
K: 10.8 ppm
SO₄: 621 ppm
Cl: 7 ppm
HCO₃: 534 ppm
CO₃: ND
Fe: 0.67 ppm
Mn: 0.75 ppm
NO₃-N: <0.04 ppm
F: 0.49 ppm
DS: 1330 ppm @ 180°C
pH: 7.30
Conductivity: 1783 umhos @ 25°C
Hardness: 741 ppm
Cations: 20.92 me/L
Anions: 21.90 me/L
ALK-P: ND
Field pH: 7.14
Field Temperature: 9°C

Notes: Eh = 185 millivolts (unfiltered)
Total alkalinity (field) = 429 mg/L as CaCO₃
Total alkalinity (lab) = 438 mg/L as CaCO₃

Lab Sample Number: SCR-88-064
Legal Location: NE NE NE SE sec. 18, T. 101 N., R. 50 W.
Water Sample: 56
Latitude: 43.3301 Longitude: 96.5213
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1449.46 feet
Ground Surface Elevation: 1481.18 I
Casing Top Elevation: 1484.13 I
Casing Type: PVC, SCH. 80
Pump: BLADDER
Aquifer: WALL LAKE
Management Unit:
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-18DAAA 1
County: MINNEHAHA
Collection Date: 05-16-1988
Water Rights Well:
SDGS Well (Or Other): CO-87-79
Well Depth: 66.3 feet
Depth to Water: 34.67 feet
Screened: X
Basin: BIG SIOUX
Stream:
HNO₃: X

Ca: 123 ppm
Mg: 50 ppm
Na: 22 ppm
K: 3.6 ppm
SO₄: 283 ppm
Cl: 38 ppm
HCO₃: 273 ppm
CO₃: ND
Fe: <0.05 ppm
Mn: 0.36 ppm
NO₃-N: <0.04 ppm
F: 0.25 ppm
DS: 722 ppm @ 180°C
pH: 7.56
Conductivity: 1033 umhos @ 25°C
Hardness: 513 ppm
Cations: 11.31 me/L
Anions: 11.46 me/L
ALK-P: ND
Field pH: 7.32
Field Temperature: 12°C

Notes: Eh = 228 millivolts (unfiltered)
Total alkalinity (field) = 216 mg/L as CaCO₃
Total alkalinity (lab) = 224 mg/L as CaCO₃

Lab Sample Number: SCR-88-063
Legal Location: NE NE NE SE sec. 18, T. 101 N., R. 50 W.
Water Sample: 57
Latitude: 43.3301 Longitude: 96.5213
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1449.55 feet
Ground Surface Elevation: 1479.37 I
Casing Top Elevation: 1482.16 I
Casing Type: PVC, SCH. 80
Pump: BLADDER
Aquifer: WALL LAKE
Management Unit:
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-18DAAA 2

County: MINNEHAHA

Collection Date: 05-16-1988

Water Rights Well:
SDGS Well (Or Other): CO-87-80
Well Depth: 52.6 feet
Depth to Water: 32.61 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 137 ppm
Mg: 57 ppm
Na: 25 ppm
K: 3.5 ppm
SO₄: 376 ppm
Cl: 15 ppm
HCO₃: 274 ppm
CO₃: ND
Fe: 0.05 ppm
Mn: 0.55 ppm
NO₃-N: <0.04 ppm
F: 0.47 ppm
DS: 798 ppm @ 180°C
pH: 7.41
Conductivity: 1093 umhos @ 25°C
Hardness: 577 ppm
Cations: 12.72 me/L
Anions: 12.77 me/L
ALK-P: ND
Field pH: 7.34
Field Temperature: 12°C

Notes: Eh = 217 millivolts (unfiltered)
Total alkalinity (field) = 221 mg/L as CaCO₃
Total alkalinity (lab) = 225 mg/L as CaCO₃

Lab Sample Number: SCR-87-035
Legal Location: NW NW NW NW sec. 20, T. 101 N., R. 50 W.
Water Sample: 58
Latitude: 43.3237 Longitude: 96.5212
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1450.22 feet
Ground Surface Elevation: 1514.47 I
Casing Top Elevation: 1517.47 I
Casing Type: PVC
Pump: BLADDER
Aquifer: WALL LAKE
Management Unit:
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-20BBBB 1
County: MINNEHAHA
Collection Date: 11-18-1987
Water Rights Well:
SDGS Well (Or Other): CO-87-23
Well Depth: 115.0 feet
Depth to Water: 67.25 feet
Screened: X
Basin: BIG SIOUX
Stream:
HNO₃: X

Ca: 314 ppm
Mg: 106 ppm
Na: 80 ppm
K: 11.6 ppm
SO₄: 1062 ppm
Cl: 19 ppm
HCO₃: 434 ppm
CO₃: ND
Fe: 5.04 ppm
Mn: 2.11 ppm
NO₃-N: <0.04 ppm
F: 0.40 ppm
DS: 1945 ppm @ 180°C
pH: 7.30
Conductivity: 2254 umhos @ 25°C
Hardness: 1221 ppm
Cations: 28.42 me/L
Anions: 29.78 me/L
ALK-P: ND
Field pH: 7.02
Field Temperature: 10°C

Notes: Eh = 138 millivolts (unfiltered)
Total alkalinity (field) = 355 mg/L as CaCO₃
Total alkalinity (lab) = 356 mg/L as CaCO₃

Lab Sample Number: SCR-88-066
Legal Location: NW NW NW NW sec. 20, T. 101 N., R. 50 W.
Water Sample: 59
Latitude: 43.3237 Longitude: 96.5212
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1449.44 feet
Ground Surface Elevation: 1514.45 I
Casing Top Elevation: 1517.05 I
Casing Type: PVC
Pump: BLADDER
Aquifer: WALL LAKE
Management Unit:
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-20BBBB 2

County: MINNEHAHA

Collection Date: 05-17-1988

Water Rights Well:
SDGS Well (Or Other): CO-87-77
Well Depth: 84.3 feet
Depth to Water: 67.61 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 310 ppm
Mg: 104 ppm
Na: 93 ppm
K: 14.2 ppm
SO₄: 1065 ppm
Cl: 3 ppm
HCO₃: 439 ppm
CO₃: ND
Fe: 0.49 ppm
Mn: 2.96 ppm
NO₃-N: <0.04 ppm
F: 0.29 ppm
DS: 1875 ppm @ 180°C
pH: 7.24
Conductivity: 2222 umhos @ 25°C
Hardness: 1202 ppm
Cations: 28.56 me/L
Anions: 29.47 me/L
ALK-P: ND
Field pH: 6.93
Field Temperature: 12°C

Notes: Eh = 206 millivolts (unfiltered)
Total alkalinity (field) = 354 mg/L as CaCO₃
Total alkalinity (lab) = 360 mg/L as CaCO₃

Lab Sample Number: SCR-87-033
Legal Location: NW NW SW SW sec. 20, T. 101 N., R. 50 W.
Water Sample: 60
Latitude: 43.3157 Longitude: 96.5210
Owner-Controller: USGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1441.16 feet
Ground Surface Elevation: 1493.58 I
Casing Top Elevation: 1496.67 I
Casing Type: PVC
Pump: BLADDER
Aquifer:
Management Unit:
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-20CCBB

County: MINNEHAHA

Collection Date: 11-18-1987

Water Rights Well:
SDGS Well (Or Other): R1-87-8
Well Depth: 178.0 feet
Depth to Water: 55.51 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 230 ppm
Mg: 71 ppm
Na: 56 ppm
K: 7.1 ppm
SO₄: 668 ppm
Cl: 3 ppm
HCO₃: 433 ppm
CO₃: ND
Fe: 7.26 ppm
Mn: 1.59 ppm
NO₃-N: <=0.04 ppm
F: 0.40 ppm
DS: 1328 ppm @ 180°C
pH: 7.40
Conductivity: 1598 umhos @ 25°C
Hardness: 867 ppm
Cations: 20.25 me/L
Anions: 21.11 me/L
ALK-P: ND
Field pH: 7.28
Field Temperature: 10°C

Notes: Eh = 112 millivolts (unfiltered)
Total alkalinity (field) = 360 mg/L as CaCO₃
Total alkalinity (lab) = 355 mg/L as CaCO₃

Lab Sample Number: SCR-87-034
Legal Location: NW NW SW SW sec. 20, T. 101 N., R. 50 W.
Water Sample: 61
Latitude: 43.3157 Longitude: 96.5210
Owner-Controller: USGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1451.77 feet
Ground Surface Elevation: 1493.80 T
Casing Top Elevation: 1496.60 T
Casing Type: PVC
Pump: BLADDER
Aquifer: WALL LAKE
Management Unit:
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-20CCBB 1

County: MINNEHAHA

Collection Date: 11-18-1987

Water Rights Well:
SDGS Well (Or Other): CO-87-67
Well Depth: 86.0 feet
Depth to Water: 44.83 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 520 ppm
Mg: 204 ppm
Na: 36 ppm
K: 11.1 ppm
SO₄: 1962 ppm
Cl: <3 ppm
HCO₃: 344 ppm
CO₃: ND
Fe: <0.05 ppm
Mn: 0.58 ppm
NO₃-N: 5.20 ppm
F: 0.72 ppm
DS: 3050 ppm @ 180°C
pH: 7.30
Conductivity: 3031 umhos @ 25°C
Hardness: 2139 ppm
Cations: 44.60 me/L
Anions: 46.89 me/L
ALK-P: ND
Field pH: 7.08
Field Temperature: 10°C

Notes: Eh = 300 millivolts (unfiltered)
Total alkalinity (field) = 282 mg/L as CaCO₃
Total alkalinity (lab) = 291 mg/L as CaCO₃

Lab Sample Number: SCR-87-032
Legal Location: NW NW SW SW sec. 21, T. 101 N., R. 50 W.
Water Sample: 62
Latitude: 43.3158 Longitude: 96.5100
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1434.48 feet
Ground Surface Elevation: 1467.06 I
Casing Top Elevation: 1469.26 I
Casing Type: PVC
Pump: BLADDER
Aquifer: WALL LAKE
Management Unit:
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-21CCBB 2

County: MINNEHAHA

Collection Date: 11-17-1987

Water Rights Well:
SDGS Well (Or Other): CO-87-22
Well Depth: 65.0 feet
Depth to Water: 34.78 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 119 ppm
Mg: 48 ppm
Na: 21 ppm
K: 5.8 ppm
SO₄: 301 ppm
Cl: 5 ppm
HCO₃: 306 ppm
CO₃: ND
Fe: 0.57 ppm
Mn: 0.84 ppm
NO₃-N: <0.04 ppm
F: 0.27 ppm
DS: 722 ppm @ 180°C
pH: 7.20
Conductivity: 975 umhos @ 25°C
Hardness: 495 ppm
Cations: 11.00 me/L
Anions: 11.44 me/L
ALK-P: ND
Field pH: 7.36
Field Temperature: 9°C

Notes: Eh = 152 millivolts (unfiltered)
Total alkalinity (field) = 244 mg/L as CaCO₃
Total alkalinity (lab) = 251 mg/L as CaCO₃

Lab Sample Number: SCR-86-019
Legal Location: SE SE NE SE sec. 21, T. 101 N., R. 50 W.
Water Sample: 63
Latitude: 43.3158 Longitude: 96.4951
Owner-Controller: USGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1433.22 feet
Ground Surface Elevation: 1519.12 I
Casing Top Elevation: 1521.20 I
Casing Type: PVC
Pump: BLADDER
Aquifer: WALL LAKE
Management Unit:
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-21DADD

County: MINNEHAHA

Collection Date: 09-23-1986

Water Rights Well:
SDGS Well (Or Other): R20-86-43
Well Depth: 132.42 feet
Depth to Water: 87.98 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca:	223 ppm
Mg:	80 ppm
Na:	60 ppm
K:	8.0 ppm
SO ₄ :	664 ppm
Cl:	3 ppm
HCO ₃ :	425 ppm
CO ₃ :	ND
Fe:	3.80 ppm
Mn:	0.53 ppm
NO ₃ -N:	<0.04 ppm
F:	0.17 ppm
DS:	1318 ppm @ 180°C
Conductivity:	1605 umhos @ 25°C
Hardness:	886 ppm
Cations:	20.68 me/L
Anions:	20.89 me/L
ALK-P:	ND
Field pH:	7.35
Field Temperature:	11°C

Notes: Eh = 121 millivolts (unfiltered); Downhole Eh = 381 millivolts
Total alkalinity (field) = 355 mg/L as CaCO₃
Total alkalinity (lab) = 349 mg/L as CaCO₃

Lab Sample Number: SCR-87-031
Legal Location: SE SE NE SE sec. 21, T. 101 N., R. 50 W.
Water Sample: 64
Latitude: 43.3158 Longitude: 96.4951
Owner-Controller: USGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1431.91 feet
Ground Surface Elevation: 1519.12 I
Casing Top Elevation: 1521.20 I
Casing Type: PVC
Pump: BLADDER
Aquifer: WALL LAKE
Management Unit:
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-21DADD

County: MINNEHAHA

Collection Date: 11-17-1987

Water Rights Well:
SDGS Well (Or Other): R20-86-43
Well Depth: 132.0 feet
Depth to Water: 89.29 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 184 ppm
Mg: 69 ppm
Na: 55 ppm
K: 9.1 ppm
SO₄: 565 ppm
Cl: 3 ppm
HCO₃: 399 ppm
CO₃: ND
Fe: 4.43 ppm
Mn: 0.41 ppm
NO₃-N: <0.04 ppm
F: 0.24 ppm
DS: 1134 ppm @ 180°C
pH: 7.50
Conductivity: 1428 umhos @ 25°C
Hardness: 744 ppm
Cations: 17.65 me/L
Anions: 18.39 me/L
ALK-P: ND
Field pH: 7.35
Field Temperature: 8°C

Notes: Eh = 102 millivolts (unfiltered)
Total alkalinity (field) = 323 mg/L as CaCO₃
Total alkalinity (lab) = 327 mg/L as CaCO₃

Lab Sample Number: SCR-88-068
Legal Location: SE SE NE SE sec. 21, T. 101 N., R. 50 W.
Water Sample: 65
Latitude: 43.3200 Longitude: 96.4951
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1430.67 feet
Ground Surface Elevation: 1518.61 I
Casing Top Elevation: 1521.29 I
Casing Type: PVC
Pump: BLADDER
Aquifer: WALL LAKE
Management Unit:
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-21DADD 1

County: MINNEHAHA

Collection Date: 05-17-1988

Water Rights Well:
SDGS Well (Or Other): CO-87-91
Well Depth: 125 feet
Depth to Water: 90.62 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca:	248 ppm
Mg:	83 ppm
Na:	57 ppm
K:	9.2 ppm
SO ₄ :	657 ppm
Cl:	4 ppm
HCO ₃ :	492 ppm
CO ₃ :	ND
Fe:	1.45 ppm
Mn:	1.33 ppm
NO ₃ -N:	<0.04 ppm
F:	0.18 ppm
DS:	1356 ppm @ 180°C
pH:	7.49
Conductivity:	1574 umhos @ 25°C
Hardness:	961 ppm
Cations:	22.02 me/L
Anions:	21.87 me/L
ALK-P:	ND
Field pH:	7.30
Field Temperature:	13°C

Notes: Eh = 147 millivolts (unfiltered)
Total alkalinity (field) = 382 mg/L as CaCO₃
Total alkalinity (lab) = 404 mg/L as CaCO₃

Lab Sample Number: SCR-86-020
Legal Location: NW SW SE NE sec. 22, T. 101 N., R. 50 W.
Water Sample: 66
Latitude: 43.3216 Longitude: 96.4855
Owner-Controller: USGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1419.27 feet
Ground Surface Elevation: 1499.72 I
Casing Top Elevation: 1502.44 I
Casing Type: PVC
Pump: BLADDER
Aquifer:
Management Unit:
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-22ADCB 1

County: MINNEHAHA

Collection Date: 09-23-1986

Water Rights Well:
SDGS Well (Or Other): CO-86-54
Well Depth: 127.2 feet
Depth to Water: 83.17 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 276 ppm
Mg: 82 ppm
Na: 56 ppm
K: 5.4 ppm
SO₄: 766 ppm
Cl: 4 ppm
HCO₃: 436 ppm
CO₃: ND
Fe: <0.05 ppm
Mn: 2.53 ppm
NO₃-N: <0.04 ppm
F: 0.22 ppm
DS: 1493 ppm @ 180°C
Conductivity: 1788 umhos @ 25°C
Hardness: 1027 ppm
Cations: 23.18 me/L
Anions: 23.22 me/L
ALK-P: ND
Field pH: 7.12
Field Temperature: 12°C

Notes: Eh = 396 millivolts (unfiltered); Downhole Eh = 368 millivolts
Total alkalinity (field) = 353 mg/L as CaCO₃
Total alkalinity (lab) = 358 mg/L as CaCO₃

Lab Sample Number: SCR-87-029
Legal Location: NW SW SE NE sec. 22, T. 101 N., R. 50 W.
Water Sample: 67
Latitude: 43.3216 Longitude: 96.4855
Owner-Controller: USGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1417.65 feet
Ground Surface Elevation: 1499.72 I
Casing Top Elevation: 1502.44 I
Casing Type: PVC
Pump: BLADDER
Aquifer:
Management Unit:
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-22ADCB 1

County: MINNEHAHA

Collection Date: 11-17-1987

Water Rights Well:
SDGS Well (Or Other): CO-86-54
Well Depth: 129.0 feet
Depth to Water: 84.79 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 274 ppm
Mg: 86 ppm
Na: 54 ppm
K: 7.6 ppm
SO₄: 831 ppm
Cl: 4 ppm
HCO₃: 432 ppm
CO₃: ND
Fe: <0.05 ppm
Mn: 3.08 ppm
NO₃-N: <0.04 ppm
F: 0.27 ppm
DS: 1538 ppm @ 180°C
pH: 7.50
Conductivity: 1858 umhos @ 25°C
Hardness: 1038 ppm
Cations: 23.40 me/L
Anions: 24.50 me/L
ALK-P: ND
Field pH: 7.08
Field Temperature: 9°C

Notes: Eh = 254 millivolts (unfiltered)
Total alkalinity (field) = 348 mg/L as CaCO₃
Total alkalinity (lab) = 354 mg/L as CaCO₃
Unfiltered water initially smelled of H₂S, but odor cleared after extracting two well volumes.

Lab Sample Number: SCR-86-021
Legal Location: NW SW SE NE sec. 22, T. 101 N., R. 50 W.
Water Sample: 68
Latitude: 43.3216 Longitude: 96.4855
Owner-Controller: USGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1432.22 feet
Ground Surface Elevation: 1499.64 I
Casing Top Elevation: 1502.64 I
Casing Type: PVC
Pump: BAILED
Aquifer: WALL LAKE
Management Unit:
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-22ADCB 2

County: MINNEHAHA

Collection Date: 09-23-1986

Water Rights Well:
SDGS Well (Or Other): CO-86-55
Well Depth: 94.62 feet
Depth to Water: 70.42 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 457 ppm
Mg: 70 ppm
Na: 22 ppm
K: 8.9 ppm
SO₄: 1023 ppm
Cl: 5 ppm
HCO₃: 402 ppm
CO₃: ND
Fe: <0.05 ppm
Mn: 1.44 ppm
NO₃-N: 5.40 ppm
F: 0.63 ppm
DS: 2004 ppm @ 180°C
Conductivity: 2212 umhos @ 25°C
Hardness: 1429 ppm
Cations: 29.80 me/L
Anions: 28.45 me/L
ALK-P: ND
Field pH: 7.22
Field Temperature: 12°C

Notes: Eh = 424 millivolts (unfiltered); Downhole Eh = 393 millivolts
Total alkalinity (field) = 326 mg/L as CaCO₃
Total alkalinity (lab) = 330 mg/L as CaCO₃

Lab Sample Number: SCR-87-030
Legal Location: NW SW SE NE sec. 22, T. 101 N., R. 50 W.
Water Sample: 69
Latitude: 43.3216 Longitude: 96.4855
Owner-Controller: USGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1419.25 feet
Ground Surface Elevation: 1499.64 I
Casing Top Elevation: 1502.64 I
Casing Type: PVC
Pump: BLADDER
Aquifer: WALL LAKE
Management Unit:
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-22ADCB 2

County: MINNEHAHA

Collection Date: 11-17-1987

Water Rights Well:
SDGS Well (Or Other): CO-86-55
Well Depth: 95.0 feet
Depth to Water: 83.39 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 296 ppm
Mg: 67 ppm
Na: 43 ppm
K: 10.3 ppm
SO₄: 798 ppm
Cl: 6 ppm
HCO₃: 391 ppm
CO₃: ND
Fe: 0.07 ppm
Mn: 1.12 ppm
NO₃-N: 2.58 ppm
F: 0.60 ppm
DS: 1500 ppm @ 180°C
pH: 7.40
Conductivity: 1824 umhos @ 25°C
Hardness: 1015 ppm
Cations: 22.46 me/L
Anions: 23.41 me/L
ALK-P: ND
Field pH: 7.06
Field Temperature: 8°C

Notes: Eh = 243 millivolts (unfiltered)
Total alkalinity (field) = 321 mg/L as CaCO₃
Total alkalinity (lab) = 335 mg/L as CaCO₃

Lab Sample Number: SCR-87-054
Legal Location: NW NE NW NW sec. 23, T. 101 N., R. 50 W.
Water Sample: 70
Latitude: 43.3238 Longitude: 96.4828
Owner-Controller:
Sample Type: SURFACE WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation:
Ground Surface Elev.:
Casing Top Elevation:
Casing Type:
Pump:
Aquifer:
Management Unit:
Usage:
Lake:
Other:
Where Collected: OFF BRIDGE (SOUTH SIDE MIDDLE)
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-23BBAB

County: MINNEHAHA

Collection Date: 12-10-1987

Water Rights Well:
SDGS Well (Or Other):
Well Depth:
Depth To Water:
Screened:

Basin: BIG SIOUX

Stream: SKUNK CREEK

HNO₃: X

Ca: 124 ppm
Mg: 61 ppm
Na: 32 ppm
K: 5.4 ppm
SO₄: 328 ppm
Cl: 24 ppm
HCO₃: 322 ppm
CO₃: approximate value 1 ppm
Fe: <0.05 ppm
Mn: 0.33 ppm
NO₃-N: 0.50 ppm
F: 0.30 ppm
DS: 779 ppm @ 180°C
pH: 8.42
Conductivity: 1117 umhos @ 25°C
Hardness: 561 ppm
Cations: 12.75 me/L
Anions: 12.87 me/L
ALK-MO: 266 ppm (as CaCO₃)
ALK-P: approximate value 1 ppm (as CaCO₃)
Field Temperature: 1°C

Notes: Total alkalinity (field) = 263 mg/L as CaCO₃
Total alkalinity (lab) = 266 mg/L as CaCO₃

Lab Sample Number: SCR-86-022
Legal Location: NE NW NW NW sec. 23, T. 101 N., R. 50 W.
Water Sample: 71
Latitude: 43.3237 Longitude: 96.4832
Owner-Controller: WATER RIGHTS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1429.33 feet
Ground Surface Elevation: 1425.00 T
Casing Top Elevation: 1429.33 I
Casing Type: PVC
Pump: BLADDER
Aquifer: BIG SIOUX?
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-23BBBA
County: MINNEHAHA
Collection Date: 09-24-1986
Water Rights Well: MA-80Y
SDGS Well (Or Other): SFB-88
Well Depth: 56.77 feet
Depth to Water: 9.27 feet
Screened: X
Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 148 ppm
Mg: 55 ppm
Na: 20 ppm
K: 2.6 ppm
SO₄: 359 ppm
Cl: 7 ppm
HCO₃: 316 ppm
CO₃: ND
Fe: <0.05 ppm
Mn: 0.54 ppm
NO₃-N: 0.74 ppm
F: 0.12 ppm
DS: 830 ppm @ 180°C
Conductivity: 1060 umhos @ 25°C
Hardness: 596 ppm
Cations: 12.86 me/L
Anions: 12.91 me/L
ALK-P: ND
Field pH: 7.29
Field Temperature: 11°C

Notes: Eh = 422 millivolts (unfiltered); Downhole Eh = 415 millivolts
Total alkalinity (field) = 256 mg/L as CaCO₃
Total alkalinity (lab) = 259 mg/L as CaCO₃

Lab Sample Number: SCR-88-071
Legal Location: NE NW NW NW sec. 23, T. 101 N., R. 50 W.
Water Sample: 72
Latitude: 43.3237 Longitude: 96.4832
Owner-Controller: WATER RIGHTS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1413.27 feet
Ground Surface Elevation: 1425.00 T
Casing Top Elevation: 1429.33 I
Casing Type: PVC
Pump: BLADDER
Aquifer: BIG SIOUX?
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-23BBBA
County: MINNEHAHA
Collection Date: 05-18-1988
Water Rights Well: MA-80Y
SDGS Well (Or Other): SFB-88
Well Depth: 57.18 feet
Depth to Water: 16.06 feet
Screened: X
Basin: BIG SIOUX
Stream:
HNO₃: X

Ca: 149 ppm
Mg: 52 ppm
Na: 21 ppm
K: 3.8 ppm
SO₄: 368 ppm
Cl: 4 ppm
HCO₃: 317 ppm
CO₃: ND
Fe: <0.05 ppm
Mn: 0.55 ppm
NO₃-N: 0.28 ppm
F: 0.12 ppm
DS: 812 ppm @ 180°C
pH: 7.51
Conductivity: 1099 umhos @ 25°C
Hardness: 586 ppm
Cations: 12.74 me/L
Anions: 13.00 me/L
ALK-P: ND
Field pH: 7.31
Field Temperature: 11°C

Notes: Eh = 332 millivolts (unfiltered)
Total alkalinity (field) = 257 mg/L as CaCO₃
Total alkalinity (lab) = 260 mg/L as CaCO₃

Lab Sample Number: SCR-88-072
Legal Location: NE NW NW NW sec. 23, T. 101 N., R. 50 W.
Water Sample: 73
Latitude: 43.3237 Longitude: 96.4832
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1415.12 feet
Ground Surface Elevation: 1426.18 I
Casing Top Elevation: 1429.13 I
Casing Type: PVC
Pump: BLADDER
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-23BBBA 1

County: MINNEHAHA

Collection Date: 05-18-1988

Water Rights Well:
SDGS Well (Or Other): CO-87-93
Well Depth: 19.20 feet
Depth to Water: 14.01 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 116 ppm
Mg: 40 ppm
Na: 22 ppm
K: 1.0 ppm
SO₄: 132 ppm
Cl: 26 ppm
HCO₃: 391 ppm
CO₃: ND
Fe: <0.05 ppm
Mn: <0.05 ppm
NO₃-N: 2.66 ppm
F: 0.23 ppm
DS: 584 ppm @ 180°C
pH: 7.53
Conductivity: 898 umhos @ 25°C
Hardness: 454 ppm
Cations: 10.06 me/L
Anions: 10.10 me/L
ALK-P: ND
Field pH: 7.28
Field Temperature: 12°C

Notes: Eh = 346 millivolts (unfiltered)
Total alkalinity (field) = 316 mg/L as CaCO₃
Total alkalinity (lab) = 321 mg/L as CaCO₃

Lab Sample Number: SCR-88-084
Legal Location: SE NE SW NW sec. 23, T. 101 N., R. 50 W.
Water Sample: 74
Latitude: 43.3220 Longitude: 96.4821
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1410.84 feet
Ground Surface Elevation: 1420.49 I
Casing Top Elevation: 1423.38 I
Casing Type: PVC
Pump: BLADDER
Aquifer:
Management Unit:
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-23BCAD

County: MINNEHAHA

Collection Date: 06-08-1988

Water Rights Well:
SDGS Well (Or Other): CO-87-94
Well Depth: 58 feet
Depth to Water: 12.54 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 87 ppm
Mg: 32 ppm
Na: 28 ppm
K: 3.2 ppm
SO₄: 117 ppm
Cl: 22 ppm
HCO₃: 313 ppm
CO₃: ND
Fe: <0.05 ppm
Mn: 0.47 ppm
NO₃-N: <0.04 ppm
F: 0.22 ppm
DS: 476 ppm @ 180°C
pH: 7.73
Conductivity: 746 umhos @ 25°C
Hardness: 349 ppm
Cations: 8.29 me/L
Anions: 8.20 me/L
ALK-P: ND
Field pH: 7.50
Field Temperature: 14°C

Notes: Eh = 235 millivolts (unfiltered)
Total alkalinity (field) = 259 mg/L as CaCO₃
Total alkalinity (lab) = 257 mg/L as CaCO₃

Lab Sample Number: SCR-87-053
Legal Location: SE SE NE SE sec. 23, T. 101 N., R. 50 W.
Water Sample: 75
Latitude: 43.3201 Longitude: 96.4727
Owner-Controller:
Sample Type: SURFACE WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation:
Ground Surface Elev.:
Casing Top Elevation:
Casing Type:
Pump:
Aquifer:
Management Unit:
Usage:
Lake:
Other:
Where Collected: OFF BRIDGE (WEST SIDE, MIDDLE)
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-23DADD

County: MINNEHAHA

Collection Date: 12-10-1987

Water Rights Well:
SDGS Well (Or Other):
Well Depth:
Depth To Water:
Screened:

Basin: BIG SIOUX

Stream: SKUNK CREEK

HNO₃: X

Ca: 123 ppm
Mg: 59 ppm
Na: 31 ppm
K: 5.2 ppm
SO₄: 315 ppm
Cl: 22 ppm
HCO₃: 321 ppm
CO₃: ND
Fe: <0.05 ppm
Mn: 0.35 ppm
NO₃-N: 0.46 ppm
F: 0.29 ppm
DS: 761 ppm @ 180°C
pH: 8.31
Conductivity: 1085 umhos @ 25°C
Hardness: 550 ppm
Cations: 12.48 me/L
Anions: 12.48 me/L
ALK-P: ND
Field Temperature: 2°C

Notes: Total alkalinity (field) = 249 mg/L as CaCO₃
Total alkalinity (lab) = 263 mg/L as CaCO₃

Lab Sample Number: SCR-88-076
Legal Location: NW NW NW SE sec. 23, T. 101 N., R. 50 W.
Water Sample: 76
Latitude: 43.3210 Longitude: 96.4758
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1411.56 feet
Ground Surface Elevation: 1426.31 I
Casing Top Elevation: 1428.94 I
Casing Type: PVC
Pump: BLADDER
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-23DBBB 2

County: MINNEHAHA

Collection Date: 06-03-1988

Water Rights Well:
SDGS Well (Or Other): CO-87-104
Well Depth: 32.2 feet
Depth to Water: 17.38 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 115 ppm
Mg: 39 ppm
Na: 9 ppm
K: 3.3 ppm
SO₄: 199 ppm
Cl: 20 ppm
HCO₃: 301 ppm
CO₃: ND
Fe: 0.05 ppm
Mn: 0.30 ppm
NO₃-N: <0.04 ppm
F: 0.26 ppm
DS: 602 ppm @ 180°C
pH: 7.72
Conductivity: 850 umhos @ 25°C
Hardness: 448 ppm
Cations: 9.41 me/L
Anions: 9.66 me/L
ALK-P: ND
Field pH: 7.39
Field Temperature: 13°C

Notes: Eh = 226 millivolts (unfiltered)
Total alkalinity (field) = 241 mg/L as CaCO₃
Total alkalinity (lab) = 247 mg/L as CaCO₃

Lab Sample Number: SCR-88-074
Legal Location: NE SW NW SE sec. 23, T. 101 N., R. 50 W.
Water Sample: 77
Latitude: 43.3204 Longitude: 96.4755
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1410.60 feet
Ground Surface Elevation: 1417.37 I
Casing Top Elevation: 1420.33 I
Casing Type: PVC
Pump: BLADDER
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-23DBCA 1

County: MINNEHAHA

Collection Date: 06-01-1988

Water Rights Well:
SDGS Well (Or Other): CO-87-95
Well Depth: 69.10 feet
Depth to Water: 9.73 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 254 ppm
Mg: 89 ppm
Na: 49 ppm
K: 7.9 ppm
SO₄: 758 ppm
Cl: 4 ppm
HCO₃: 439 ppm
CO₃: ND
Fe: 1.92 ppm
Mn: 1.73 ppm
NO₃-N: <0.04 ppm
F: 0.31 ppm
DS: 1471 ppm @ 180°C
pH: 7.45
Conductivity: 1745 umhos @ 25°C
Hardness: 1001 ppm
Cations: 22.46 me/L
Anions: 23.10 me/L
ALK-P: ND
Field pH: 7.20
Field Temperature: 13°C

Notes: Eh = 142 millivolts (unfiltered)
Total alkalinity (field) = 352 mg/L as CaCO₃
Total alkalinity (lab) = 360 mg/L as CaCO₃

Lab Sample Number: SCR-88-075
 Legal Location: NE SW NW SE sec. 23, T. 101 N., R. 50 W.
 Water Sample: 78
 Latitude: 43.3204 Longitude: 96.4755
 Owner-Controller: SDGS
 Sample Type: GROUND WATER
 Lab: SDGS
 Project: SKUNK CREEK WATER QUALITY
 Water Elevation: 1410.22 feet
 Ground Surface Elevation: 1417.49 I
 Casing Top Elevation: 1420.48 I
 Casing Type: PVC
 Pump: BLADDER
 Aquifer: BIG SIOUX
 Management Unit: SOUTHERN SKUNK CREEK
 Usage: OBSERVATION
 Lake:
 Other:
 Where Collected:
 Clean Container: X Filtered: X
 H₂SO₄ Or Formalin Treated: H
 Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-23DBCA 2

County: MINNEHAHA

Collection Date: 06-01-1988

Water Rights Well:
 SDGS Well (Or Other): CO-87-96
 Well Depth: 29.04 feet
 Depth to Water: 10.26 feet
 Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 246 ppm
 Mg: 87 ppm
 Na: 47 ppm
 K: 6.3 ppm
 SO₄: 714 ppm
 Cl: 5 ppm
 HCO₃: 419 ppm
 CO₃: ND
 Fe: 1.82 ppm
 Mn: 1.99 ppm
 NO₃-N: <0.04 ppm
 F: 0.21 ppm
 DS: 1406 ppm @ 180°C
 pH: 7.53
 Conductivity: 1711 umhos @ 25°C
 Hardness: 973 ppm
 Cations: 21.77 me/L
 Anions: 21.89 me/L
 ALK-P: ND
 Field pH: 7.27
 Field Temperature: 12°C

Notes: Eh = 147 millivolts (unfiltered)
 Total alkalinity (field) = 240 mg/L as CaCO₃
 Total alkalinity (lab) = 344 mg/L as CaCO₃

Lab Sample Number: SCR-86-025
Legal Location: SE SE SE SE sec. 23, T. 101 N., R. 50 W.
Water Sample: 79
Latitude: 43.3145 Longitude: 96.4727
Owner-Controller: USGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1414.76 feet
Ground Surface Elevation: 1428.00 T
Casing Top Elevation: 1432.00 T
Casing Type: PVC
Pump: BAILED
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-23DDDD

County: MINNEHAHA

Collection Date: 09-25-1986

Water Rights Well:
SDGS Well (Or Other): R20-84-308
Well Depth: 83.64 feet
Depth to Water: 17.24 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 285 ppm
Mg: 81 ppm
Na: 72 ppm
K: 8.7 ppm
SO₄: 872 ppm
Cl: 3 ppm
HCO₃: 414 ppm
CO₃: ND
Fe: 0.21 ppm
Mn: 2.29 ppm
NO₃-N: 0.08 ppm
F: 0.32 ppm
DS: 1616 ppm @ 180°C
Conductivity: 1909 umhos @ 25°C
Hardness: 1045 ppm
Cations: 24.33 me/L
Anions: 25.05 me/L
ALK-P: ND
Field pH: 7.15
Field Temperature: 13°C

Notes: Eh = 206 millivolts (unfiltered); Downhole Eh = 378 millivolts
Total alkalinity (field) = 331 mg/L as CaCO₃
Total alkalinity (lab) = 340 mg/L as CaCO₃

Lab Sample Number: SCR-86-001
Legal Location: NE NE SE NW sec. 25, T. 101 N., R. 50 W.
Water Sample: 80
Latitude: 43.3132 Longitude: 96.4651
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1407.40 feet
Ground Surface Elevation: 1418.02 I
Casing Top Elevation: 1421.03 I
Casing Type: PVC
Pump: BLADDER
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-25BDAA 2
County: MINNEHAHA
Collection Date: 09-08-1986
Water Rights Well:
SDGS Well (Or Other): CO-86-117
Well Depth: 35.24 feet
Depth to Water: 13.63 feet
Screened: X
Basin: BIG SIOUX
Stream:
HNO₃: X

Ca: 258 ppm
Mg: 91 ppm
Na: 70 ppm
K: 7.6 ppm
SO₄: 929 ppm
Cl: 32 ppm
HCO₃: 217 ppm
CO₃: ND
Fe: 0.28 ppm
Mn: 2.19 ppm
NO₃-N: <0.04 ppm
F: 0.20 ppm
DS: 1573 ppm @ 180°C
Conductivity: 1878 umhos @ 25°C
Hardness: 1019 ppm
Cations: 23.69 me/L
Anions: 23.81 me/L
ALK-P: ND
Field pH: 7.33
Field Temperature: 14°C

Notes: Eh = 244 millivolts (unfiltered); Downhole Eh = 403 millivolts.
Total alkalinity (field) = 182 mg/L as CaCO₃
Total alkalinity (lab) = 178 mg/L as CaCO₃

Lab Sample Number: SCR-87-037
Legal Location: NE NE SE NW sec. 25, T. 101 N., R. 50 W.
Water Sample: 81
Latitude: 43.3132 Longitude: 96.4651
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1406.30 feet
Ground Surface Elevation: 1418.02 I
Casing Top Elevation: 1421.03 I
Casing Type: PVC
Pump: BLADDER
Aquifer: BIG SIOUX
Management Unit: SOUTHERN SKUNK CREEK
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-25BDAA 2

County: MINNEHAHA

Collection Date: 11-23-1987

Water Rights Well:
SDGS Well (Or Other): CO-86-117
Well Depth: 35.27 feet
Depth to Water: 14.73 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 242 ppm
Mg: 99 ppm
Na: 54 ppm
K: 8.3 ppm
SO₄: 944 ppm
Cl: 31 ppm
HCO₃: 197 ppm
CO₃: ND
Fe: 0.53 ppm
Mn: 2.52 ppm
NO₃-N: <0.04 ppm
F: 0.41 ppm
DS: 1520 ppm @ 180°C
pH: approximate value 7.40
Conductivity: 1856 umhos @ 25°C
Hardness: 1012 ppm
Cations: 22.89 me/L
Anions: 23.79 me/L
ALK-P: ND
Field pH: 7.17
Field Temperature: 12°C

Notes: Eh = 161 millivolts (unfiltered)
Total alkalinity (field) = 163 mg/L as CaCO₃
Total alkalinity (lab) = 162 mg/L as CaCO₃

Lab Sample Number: SCR-86-024
Legal Location: NE SE NE NW sec. 26, T. 101 N., R. 50 W.
Water Sample: 82
Latitude: 43.3136 Longitude: 96.4803
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1413.80 feet
Ground Surface Elevation: 1490.00 T
Casing Top Elevation: 1490.86 I
Casing Type: PVC
Pump: BLADDER
Aquifer: WALL LAKE
Management Unit:
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-26BADA

County: MINNEHAHA

Collection Date: 09-24-1986

Water Rights Well:
SDGS Well (Or Other): SFB-148
Well Depth: 158.2 feet
Depth to Water: 77.06 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 261 ppm
Mg: 74 ppm
Na: 67 ppm
K: 7.8 ppm
SO₄: 798 ppm
Cl: <3 ppm
HCO₃: 414 ppm
CO₃: ND
Fe: 0.55 ppm
Mn: 2.31 ppm
NO₃-N: <0.04 ppm
F: 0.29 ppm
DS: 1492 ppm @ 180°C
Conductivity: 1785 umhos @ 25°C
Hardness: 956 ppm
Cations: 22.33 me/L
Anions: 23.42 me/L
ALK-P: ND
Field pH: 7.21
Field Temperature: 12°C

Notes: Eh = 147 millivolts (unfiltered); Downhole Eh = -48 millivolts
Total alkalinity (field) = 337 mg/L as CaCO₃
Total alkalinity (lab) = 340 mg/L as CaCO₃

Lab Sample Number: SCR-88-086
Legal Location: NE SE NE NW sec. 26, T. 101 N., R. 50 W.
Water Sample: 83
Latitude: 43.3136 Longitude: 96.4803
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1411.66 feet
Ground Surface Elevation: 1490.00 T
Casing Top Elevation: 1490.86 I
Casing Type: PVC
Pump: BLADDER
Aquifer: WALL LAKE
Management Unit:
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-26BADA

County: MINNEHAHA

Collection Date: 06-09-1988

Water Rights Well:
SDGS Well (Or Other): SFB-148
Well Depth: 156 feet
Depth to Water: 79.2 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 248 ppm
Mg: 74 ppm
Na: 69 ppm
K: 10.1 ppm
SO₄: 756 ppm
Cl: 3 ppm
HCO₃: 408 ppm
CO₃: ND
Fe: 0.70 ppm
Mn: 2.54 ppm
NO₃-N: <0.04 ppm
F: 0.23 ppm
DS: 1456 ppm @ 180°C
pH: 7.43
Conductivity: 1758 umhos @ 25°C
Hardness: 924 ppm
Cations: 21.84 me/L
Anions: 22.53 me/L
ALK-P: ND
Field pH: 7.14
Field Temperature: 12°C

Notes: Eh = 120 millivolts (unfiltered)

Total alkalinity (field) = 340 mg/L as CaCO₃

Total alkalinity (lab) = 335 mg/L as CaCO₃

Water has odor of hydrogen sulfide, decreasing on evacuation.

Lab Sample Number: SCR-88-069
Legal Location: NW NW SW NW sec. 27, T. 101 N., R. 50 W.
Water Sample: 84
Latitude: 43.3332 Longitude: 96.4950
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1428.54 feet
Ground Surface Elevation: 1500.07 I
Casing Top Elevation: 1503.11 I
Casing Type: PVC
Pump: BLADDER
Aquifer: WALL LAKE
Management Unit:
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-27BCBB

County: MINNEHAHA

Collection Date: 05-18-1988

Water Rights Well:
SDGS Well (Or Other): CO-87-75
Well Depth: 4137 feet
Depth to Water: 74.57 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 376 ppm
Mg: 121 ppm
Na: 179 ppm
K: 19.1 ppm
SO₄: 1446 ppm
Cl: 5 ppm
HCO₃: 457 ppm
CO₃: ND
Fe: 4.24 ppm
Mn: 1.36 ppm
NO₃-N: <0.04 ppm
F: 0.18 ppm
DS: 2365 ppm @ 180°C
pH: 7.28
Conductivity: 2788 umhos @ 25°C
Hardness: 1437 ppm
Cations: 37.19 me/L
Anions: 37.75 me/L
ALK-P: ND
Field pH: 7.06
Field Temperature: 12°C

Notes: Eh = 155 millivolts (unfiltered)
Total alkalinity (field) = 277 mg/L as CaCO₃
Total alkalinity (lab) = 375 mg/L as CaCO₃

Lab Sample Number: SCR-87-028
Legal Location: SE NE NE NE sec. 34, T. 101 N., R. 50 W.
Water Sample: 85
Latitude: 43.3049 Longitude: 96.4839
Owner-Controller: WATER RIGHTS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1425.42 feet
Ground Surface Elevation: 1516.72 I
Casing Top Elevation: 1519.52 I
Casing Type: PVC
Pump: BLADDER
Aquifer: WALL LAKE
Management Unit:
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-34AAAD

County: MINNEHAHA

Collection Date: 11-16-1987

Water Rights Well: MA-80IA
SDGS Well (Or Other): SFB-193
Well Depth: 148.0 feet
Depth to Water: 94.10 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 271 ppm
Mg: 81 ppm
Na: 82 ppm
K: 11.5 ppm
SO₄: 840 ppm
Cl: 4 ppm
HCO₃: 453 ppm
CO₃: ND
Fe: 1.20 ppm
Mn: 3.20 ppm
NO₃-N: <0.04 ppm
F: 0.28 ppm
DS: 1614 ppm @ 180°C
pH: 7.30
Conductivity: 1980 umhos @ 25°C
Hardness: 1010 ppm
Cations: 24.20 me/L
Anions: 25.05 me/L
ALK-P: ND
Field pH: 7.06
Field Temperature: 9°C

Notes: Eh = 172 millivolts (unfiltered).
Total alkalinity (field) = 362 mg/L as CaCO₃
Total alkalinity (lab) = 372 mg/L as CaCO₃

Lab Sample Number: SCR-87-027
Legal Location: NW NW NW NW sec. 34, T. 101 N., R. 50 W.
Water Sample: 86
Latitude: 43.3052 Longitude: 96.4950
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1429.01 feet
Ground Surface Elevation: 1509.82 I.
Casing Top Elevation: 1512.53 I
Casing Type: PVC
Pump: BLADDER
Aquifer: WALL LAKE
Management Unit:
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-34BBBB 1

County: MINNEHAHA

Collection Date: 11-16-1987

Water Rights Well:
SDGS Well (Or Other): CO-87-73
Well Depth: 168.0 feet
Depth to Water: 83.52 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 327 ppm
Mg: 105 ppm
Na: 85 ppm
K: 13.1 ppm
SO₄: 1052 ppm
Cl: 3 ppm
HCO₃: 536 ppm
CO₃: ND
Fe: 9.27 ppm
Mn: 1.34 ppm
NO₃-N: <0.04 ppm
F: 0.33 ppm
DS: 1960 ppm @ 180°C
pH: 7.30
Conductivity: 2302 umhos @ 25°C
Hardness: 1249 ppm
Cations: 29.37 me/L
Anions: 30.80 me/L
ALK-P: ND
Field pH: 7.07
Field Temperature: 9°C

Notes: Eh = 130 millivolts (unfiltered)
Total alkalinity (field) = 453 mg/L as CaCO₃
Total alkalinity (lab) = 440 mg/L as CaCO₃

Lab Sample Number: SCR-87-026
Legal Location: SW SW SW SW sec. 34, T. 101 N., R. 50 W.
Water Sample: 87
Latitude: 43.3003 Longitude: 96.4949
Owner-Controller: SDGS
Sample Type: GROUND WATER
Lab: SDGS
Project: SKUNK CREEK WATER QUALITY
Water Elevation: 1429.86 feet
Ground Surface Elevation: 1522.02 I
Casing Top Elevation: 1524.90 I
Casing Type: PVC
Pump: BLADDER
Aquifer: WALL LAKE
Management Unit:
Usage: OBSERVATION
Lake:
Other:
Where Collected:
Clean Container: X Filtered: X
H₂SO₄ Or Formalin Treated: H
Other: UNTREATED; SAMPLE KEPT IN ICE

Location: 101N-50W-34CCCC 1

County: MINNEHAHA

Collection Date: 11-16-1987

Water Rights Well:
SDGS Well (Or Other): CO-87-74
Well Depth: 193.0 feet
Depth to Water: 95.04 feet
Screened: X

Basin: BIG SIOUX

Stream:

HNO₃: X

Ca: 245 ppm
Mg: 73 ppm
Na: 64 ppm
K: 10.3 ppm
SO₄: 753 ppm
Cl: 4 ppm
HCO₃: 401 ppm
CO₃: ND
Fe: 0.85 ppm
Mn: 2.34 ppm
NO₃-N: <0.04 ppm
F: 0.34 ppm
DS: 1434 ppm @ 180°C
pH: 7.80
Conductivity: 1760 umhos @ 25°C
Hardness: 912 ppm
Cations: 21.39 me/L
Anions: 22.38 me/L
ALK-P: ND
Field pH: 7.22
Field Temperature: 9°C

Notes: Eh = 165 millivolts (unfiltered)
Total alkalinity (field) = 329 mg/L as CaCO₃
Total alkalinity (lab) = 341 mg/L as CaCO₃

APPENDIX C. Water-Level Measurements

Drill Site No. ^f	Location ²	Well Name	Casing top elev. ³	Depth to water, in feet, from casing top and date of measurement							
				09-08-86	09-09-86	09-15-86	09-16-86	09-17-86	09-18-86	09-22-86	
4	101N-50W-07	ABAB	SFB-96	1454.07	----	----	----	----	5.59	----	----
5	101N-50W-08	BAAB	R20-84-300	1478	----	----	----	15.21	----	----	----
6	101N-50W-08	BBBB	CO-86-103	1473.39	----	----	----	19.38	----	----	----
8	101N-50W-08	BCCC	R20-84-301	1466.54	----	----	----	----	14.21	----	----
9	101N-50W-09	AABB	CO-87-98	1456.08	----	----	----	----	----	----	----
10	101N-50W-09	ADAA	CO-86-109	1443.97	----	----	2.88	----	----	----	----
12	101N-50W-09	BCCC 2	CO-87-84	1461.11	----	----	----	----	----	----	----
13	101N-50W-09	CCCC	CO-87-82	1443.43	----	----	----	----	----	----	----
15	101N-50W-10	CCCC 1	CO-86-111	1446.03	9.59	----	----	----	----	----	----
16	101N-50W-10	CCCC 2	CO-86-112	1445.90	----	9.44	----	----	----	----	----
17	101N-50W-10	CCDD	CO-86-113	1442.36	----	----	----	----	----	----	----
21	101N-50W-14	CADC 2	CO-87-102	1438.93	----	----	----	----	----	----	----
23	101N-50W-15	ADDC	R20-84-306	1442.31	----	----	----	----	----	----	----
24	101N-50W-15	ADDC 1	CO-87-106	1442.78	----	----	----	----	----	----	----
26	101N-50W-15	CAAA 1	CO-87-88	1439.05	----	----	----	----	----	----	----
27	101N-50W-15	CAAA 2	CO-87-89	1439.18	----	----	----	----	----	----	----
28	101N-50W-15	CBCB	CO-86-107	1442.26	----	9.81	----	----	----	----	----
29	101N-50W-15	CCBB 1	CO-86-106	1441.47	----	30.7	----	----	----	----	----
30	101N-50W-15	CCBB 2	CO-87-101	1442.03	----	----	----	----	----	----	----
32	101N-50W-15	DCCD 1	CO-86-115	1435.38	11.70	----	----	----	----	----	----
34	101N-50W-15	DCCD 3	CO-87-92	1435.25	----	----	----	----	----	----	----
35	101N-50W-16	BAAA	SFB-87	1446.3	----	----	----	----	----	10.84	----
36	101N-50W-16	BBBB	CO-86-105	1456.55	----	----	18.37	----	----	----	----
37	101N-50W-16	BBCC	R20-84-303	1461.26	----	----	----	----	----	20.26	----
39	101N-50W-16	CAAA 2	CO-87-86	1452.93	----	----	----	----	----	----	----
40	101N-50W-16	CAAA 3	CO-87-87	1453.06	----	----	----	----	----	----	----
41	101N-50W-16	DCCD	CO-86-56	1483.55	----	----	----	----	----	----	47.37
42	101N-50W-17	ACBB 1	CO-86-104	1461.37	----	----	14.92	----	----	----	----
44	101N-50W-17	BBCC 1	R20-84-302	1468.18	----	----	----	----	12.71	----	----
45	101N-50W-17	BCBB	CO-87-78	1467.61	----	----	----	----	----	----	----
46	101N-50W-17	DDCD 1	R20-84-304	1455.06	----	----	----	----	----	----	6.97
47	101N-50W-17	DDCD 2	CO-87-76	1455.40	----	----	----	----	----	----	----
48	101N-50W-18	AABA 1	CO-87-58	1467.06	----	----	----	----	----	----	----
50	101N-50W-18	AABA 3	CO-87-60	1467.96	----	----	----	----	----	----	----
53	101N-50W-18	CCCC 2	CO-87-19	1532.73	----	----	----	----	----	----	----
54	101N-50W-18	DAAA 1	CO-87-79	1484.13	----	----	----	----	----	----	----
55	101N-50W-18	DAAA 2	CO-87-80	1482.16	----	----	----	----	----	----	----
56	101N-50W-20	BBBB 1	CO-87-23	1517.47	----	----	----	----	----	----	----
57	101N-50W-20	BBBB 2	CO-87-77	1517.05	----	----	----	----	----	----	----
58	101N-50W-20	CCBB	R1-87-8	1496.67	----	----	----	----	----	----	----
59	101N-50W-20	CCBB 1	CO-87-67	1496.60	----	----	----	----	----	----	----
61	101N-50W-21	CCBB 2	CO-87-22	1469.26	----	----	----	----	----	----	----
62	101N-50W-21	DADD	R20-86-43	1521.20	----	----	----	----	----	----	----
63	101N-50W-21	DADD 1	CO-87-91	1521.29	----	----	----	----	----	----	----
64	101N-50W-22	ADCB 1	CO-86-54	1502.44	----	----	----	----	----	----	----
65	101N-50W-22	ADCB 2	CO-86-55	1502.64	----	----	----	----	----	----	----
66	101N-50W-23	BBBA	SFB-88	1429.33	----	----	----	----	----	----	----
67	101N-50W-23	BBBA 1	CO-87-93	1429.13	----	----	----	----	----	----	----
68	101N-50W-23	BCAD	CO-87-94	1423.38	----	----	----	----	----	----	----
69	101N-50W-23	DADD	SFB-94	1419.77	----	----	----	----	----	----	----
71	101N-50W-23	DBBB 2	CO-87-104	1428.94	----	----	----	----	----	----	----
72	101N-50W-23	DBBB 3	CO-87-105	1428.94	----	----	----	----	----	----	----
73	101N-50W-23	DBCA 1	CO-87-95	1420.33	----	----	----	----	----	----	----
74	101N-50W-23	DBCA 2	CO-87-96	1420.48	----	----	----	----	----	----	----
75	101N-50W-23	DDDD	R20-84-308	1432	----	----	----	----	----	----	----
77	101N-50W-25	BDAA 2	CO-86-117	1421.03	13.63	----	----	----	----	----	----
78	101N-50W-26	BADA	SFB-148	1490.86	----	----	----	----	----	----	----
79	101N-50W-27	BCBB	CO-87-75	1503.11	----	----	----	----	----	----	----
81	101N-50W-34	AAAD	SFB-193	1519.52	----	----	----	----	----	----	----
83	101N-50W-34	BBBB 1	CO-87-73	1512.53	----	----	----	----	----	----	----
84	101N-50W-34	CCCC 1	CO-87-74	1524.90	----	----	----	----	----	----	----

APPENDIX C -- continued

Drill Site No. ¹	Location ²	Well Name	Casing top elev. ³	Depth to water, in feet, from casing top and date of measurement						
				09-23-86	09-24-86	09-25-86	05-28-87	07-13-87	11-16-87	11-17-87
4	101N-50W-07 ABAB	SFB-96	1454.07	----	----	----	8.25	8.45	----	----
5	101N-50W-08 BAAB	R20-84-300	1478	----	----	----	14.88	15.85	----	----
6	101N-50W-08 BBBB	CO-86-103	1473.39	----	----	----	20.03	20.36	----	----
8	101N-50W-08 BCCC	R20-84-301	1466.54	----	----	----	15.27	15.66	----	----
9	101N-50W-09 AABB	CO-87-98	1456.08	----	----	----	----	----	----	----
10	101N-50W-09 ADAA	CO-86-109	1443.97	----	----	----	4.64	5.23	----	----
12	101N-50W-09 BCCC 2	CO-87-84	1461.11	----	----	----	----	----	----	----
13	101N-50W-09 CCCC	CO-87-82	1443.43	----	----	----	----	----	----	----
15	101N-50W-10 CCCC 1	CO-86-111	1446.03	----	----	----	9.26	9.69	----	----
16	101N-50W-10 CCCC 2	CO-86-112	1445.90	----	----	----	9.11	9.53	----	----
17	101N-50W-10 CCCD	CO-86-113	1442.36	----	----	----	DRY	DRY	----	----
21	101N-50W-14 CADC 2	CO-87-102	1438.93	----	----	----	----	----	----	----
23	101N-50W-15 ADDC	R20-84-306	1442.31	----	16.80	----	17.74	18.30	----	----
24	101N-50W-15 ADDC 1	CO-87-106	1442.78	----	----	----	----	----	----	----
26	101N-50W-15 CAAA 1	CO-87-88	1439.05	----	----	----	----	----	----	----
27	101N-50W-15 CAAA 2	CO-87-89	1439.18	----	----	----	----	----	----	----
28	101N-50W-15 CBCB	CO-86-107	1442.26	----	----	----	9.22	9.93	----	----
29	101N-50W-15 ACBB 1	CO-86-106	1441.47	----	----	----	----	9.58	----	----
30	101N-50W-15 CCBB 2	CO-87-101	1442.03	----	----	----	----	----	----	----
32	101N-50W-15 DCCD 1	CO-86-115	1435.38	----	----	----	11.53	11.85	----	----
34	101N-50W-15 DCCD 3	CO-87-92	1435.25	----	----	----	----	----	----	----
35	101N-50W-16 BAAA	SFB-87	1446.3	----	----	----	11.54	12.13	----	----
36	101N-50W-16 BBBB	CO-86-105	1456.55	----	----	----	18.17	18.80	----	----
37	101N-50W-16 BBCC	R20-84-303	1461.26	----	----	----	20.15	----	----	----
39	101N-50W-16 CAAA 2	CO-87-86	1452.93	----	----	----	----	----	----	----
40	101N-50W-16 CAAA 3	CO-87-87	1453.06	----	----	----	----	----	----	----
41	101N-50W-16 DCCD	CO-86-56	1483.55	----	----	----	----	50.62	----	----
42	101N-50W-17 ACBB 1	CO-86-104	1461.37	----	----	----	14.35	15.22	----	----
44	101N-50W-17 BBCC 1	R20-84-302	1468.18	----	----	----	14.21	14.97	----	----
45	101N-50W-17 BCBB	CO-87-78	1467.61	----	----	----	----	----	----	----
46	101N-50W-17 DDCD 1	R20-84-304	1455.06	----	----	----	----	8.08	----	----
47	101N-50W-17 DDCD 2	CO-87-76	1455.40	----	----	----	----	----	----	----
48	101N-50W-18 AABA 1	CO-87-58	1467.06	----	----	----	----	12.66	----	----
50	101N-50W-18 AABA 3	CO-87-60	1467.96	----	----	----	----	13.42	----	----
53	101N-50W-18 CCCC 2	CO-87-19	1532.73	----	----	----	----	79.24	----	----
54	101N-50W-18 DAAA 1	CO-87-79	1484.13	----	----	----	----	----	----	----
55	101N-50W-18 DAAA 2	CO-87-80	1482.16	----	----	----	----	----	----	----
56	101N-50W-20 BBBB 1	CO-87-23	1517.47	----	----	----	----	65.45	----	----
57	101N-50W-20 BBBB 2	CO-87-77	1517.05	----	----	----	----	----	----	----
58	101N-50W-20 CCBB	R1-87-8	1496.67	----	----	----	----	54.84	----	----
59	101N-50W-20 CCBB 1	CO-87-67	1496.60	----	----	----	----	----	----	----
61	101N-50W-21 CCBB 2	CO-87-22	1469.26	----	----	----	----	32.47	----	34.78
62	101N-50W-21 DADD	R20-86-43	1521.20	87.98	----	----	----	87.98	----	89.29
63	101N-50W-21 DADD 1	CO-87-91	1521.29	----	----	----	----	----	----	----
64	101N-50W-22 ADCB 1	CO-86-54	1502.44	83.17	----	----	----	----	----	84.79
65	101N-50W-22 ADCB 2	CO-86-55	1502.64	70.42	----	----	----	----	----	83.39
66	101N-50W-23 BBBA	SFB-88	1429.33	----	9.27	----	13.35	----	----	----
67	101N-50W-23 BBBA 1	CO-87-93	1429.13	----	----	----	----	----	----	----
68	101N-50W-23 BCAD	CO-87-94	1423.38	----	----	----	----	----	----	----
69	101N-50W-23 DADD	SFB-94	1419.77	----	----	----	5.53	----	----	----
71	101N-50W-23 DBBB 2	CO-87-104	1428.94	----	----	----	----	----	----	----
72	101N-50W-23 DBBB 3	CO-87-105	1428.94	----	----	----	----	----	----	----
73	101N-50W-23 DBCA 1	CO-87-95	1420.33	----	----	----	----	----	----	----
74	101N-50W-23 DBCA 2	CO-87-96	1420.48	----	----	----	----	----	----	----
75	101N-50W-23 DDDD	R20-84-308	1432	----	----	17.24	----	----	----	----
77	101N-50W-25 BDAA 2	CO-86-117	1421.03	----	----	----	13.28	13.52	----	----
78	101N-50W-26 BADA	SFB-148	1490.86	----	77.06	----	----	78.28	----	----
79	101N-50W-27 BCBB	CO-87-75	1503.11	----	----	----	----	----	----	----
81	101N-50W-34 AAAD	SFB-193	1519.52	----	----	----	----	93.98	94.10	----
83	101N-50W-34 BBBB 1	CO-87-73	1512.53	----	----	----	----	----	83.52	----
84	101N-50W-34 CCCC 1	CO-87-74	1524.90	----	----	----	----	----	95.04	----

APPENDIX C -- continued

Drill Site No. ¹	Location ²	Well Name	Casing top elev. ³	Depth to water, in feet, from casing top and date of measurement						
				11-18-87	11-23-87	11-24-87	12-01-87	12-02-87	12-03-87	12-16-87
4	101N-50W-07 ABAB	SFB-96	1454.07	----	----	----	----	9.30	----	----
5	101N-50W-08 BAAB	R20-84-300	1478	----	----	----	----	----	----	----
6	101N-50W-08 BBBB	CO-86-103	1473.39	----	----	----	----	----	----	----
8	101N-50W-08 BCCC	R20-84-301	1466.54	----	----	----	----	----	----	----
9	101N-50W-09 AABB	CO-87-98	1456.08	----	----	----	----	----	----	----
10	101N-50W-09 ADAA	CO-86-109	1443.97	----	----	----	----	6.63	----	----
12	101N-50W-09 BCCC 2	CO-87-84	1461.11	----	----	----	----	11.71	----	----
13	101N-50W-09 CCCC	CO-87-82	1443.43	----	----	----	----	----	----	----
15	101N-50W-10 CCCC 1	CO-86-111	1446.03	----	----	11.05	----	----	----	----
16	101N-50W-10 CCCC 2	CO-86-112	1445.90	----	----	10.91	----	----	----	----
17	101N-50W-10 CCDD	CO-86-113	1442.36	----	----	----	----	----	----	----
21	101N-50W-14 CADC 2	CO-87-102	1438.93	----	----	----	----	----	----	----
23	101N-50W-15 ADDC	R20-84-306	1442.31	----	----	----	----	----	----	----
24	101N-50W-15 ADDC 1	CO-87-106	1442.78	----	----	----	----	----	----	----
26	101N-50W-15 CAAA 1	CO-87-88	1439.05	----	----	----	----	----	----	----
27	101N-50W-15 CAAA 2	CO-87-89	1439.18	----	----	----	----	----	----	----
28	101N-50W-15 CBCB	CO-86-107	1442.26	----	----	----	----	----	----	----
29	101N-50W-15 CCBB 1	CO-86-106	1441.47	----	----	10.27	----	----	----	----
30	101N-50W-15 CCBB 2	CO-87-101	1442.03	----	----	10.86	----	----	----	----
32	101N-50W-15 DCCD 1	CO-86-115	1435.38	----	12.14	----	----	----	----	----
34	101N-50W-15 DCCD 3	CO-87-92	1435.25	----	12.03	----	----	----	----	----
35	101N-50W-16 BAAA	SFB-87	1446.3	----	----	----	----	13.42	----	----
36	101N-50W-16 BBBB	CO-86-105	1456.55	----	----	----	19.19	----	----	----
37	101N-50W-16 BCCC	R20-84-303	1461.27	----	----	----	----	----	----	----
39	101N-50W-16 CAAA 2	CO-87-86	1452.93	----	----	----	----	----	----	----
40	101N-50W-16 CAAA 3	CO-87-87	1453.06	----	----	----	----	----	----	----
41	101N-50W-16 DCCD	CO-86-56	1483.55	----	----	----	----	----	51.77	----
42	101N-50W-17 ACBB 1	CO-86-104	1461.37	----	----	----	17.13	----	----	----
44	101N-50W-17 BCCC 1	R20-84-302	1468.18	----	----	----	----	----	----	----
45	101N-50W-17 BCBB	CO-87-78	1467.61	----	----	----	----	----	----	16.83
46	101N-50W-17 DDCD 1	R20-84-304	1455.06	----	----	----	----	----	----	----
47	101N-50W-17 DDCD 2	CO-87-76	1455.40	----	----	----	----	----	----	----
48	101N-50W-18 AABA 1	CO-87-58	1467.08	----	----	----	----	----	----	----
50	101N-50W-18 AABA 3	CO-87-60	1467.96	----	----	----	----	----	----	----
53	101N-50W-18 CCCC 2	CO-87-19	1532.73	81.05	----	----	----	----	----	----
54	101N-50W-18 DAAA 1	CO-87-79	1484.13	----	----	----	----	----	----	----
55	101N-50W-18 DAAA 2	CO-87-80	1482.16	----	----	----	----	----	----	----
56	101N-50W-20 BBBB 1	CO-87-23	1517.47	67.25	----	----	----	----	----	----
57	101N-50W-20 BBBB 2	CO-87-77	1517.05	----	----	----	----	----	----	----
58	101N-50W-20 CCBB	R1-87-8	1496.67	55.51	----	----	----	----	----	----
59	101N-50W-20 CCBB 1	CO-87-67	1496.60	44.83	----	----	----	----	----	----
61	101N-50W-21 CCBB 2	CO-87-22	1469.26	----	----	----	----	----	----	----
62	101N-50W-21 DADD	R20-86-43	1521.20	----	----	----	----	----	----	----
63	101N-50W-21 DADD 1	CO-87-91	1521.29	----	----	----	----	----	----	----
64	101N-50W-22 ADCB 1	CO-86-54	1502.44	----	----	----	----	----	----	----
65	101N-50W-22 ADCB 2	CO-86-55	1502.64	----	----	----	----	----	----	----
66	101N-50W-23 BBBA	SFB-88	1429.33	----	----	----	----	----	----	----
67	101N-50W-23 BBBA 1	CO-87-93	1429.13	----	----	----	----	----	----	----
68	101N-50W-23 BCAD	CO-87-94	1423.38	----	----	----	----	----	----	----
69	101N-50W-23 DADD	SFB-94	1419.77	----	----	----	----	----	----	----
71	101N-50W-23 DBBB 2	CO-87-104	1428.94	----	----	----	----	----	----	----
72	101N-50W-23 DBBB 3	CO-87-105	1428.94	----	----	----	----	----	----	----
73	101N-50W-23 DBCA 1	CO-87-95	1420.33	----	----	----	----	----	----	----
74	101N-50W-23 DBCA 2	CO-87-96	1420.48	----	----	----	----	----	----	----
75	101N-50W-23 DDDD	R20-84-308	1432	----	----	----	----	----	----	----
77	101N-50W-25 BDAA 2	CO-86-117	1421.03	----	14.73	----	----	----	----	----
78	101N-50W-26 BADA	SFB-148	1490.86	----	----	----	----	----	----	----
79	101N-50W-27 BCBB	CO-87-75	1503.11	----	----	----	----	----	----	----
81	101N-50W-34 AAAD	SFB-193	1519.52	----	----	----	----	----	----	----
83	101N-50W-34 BBBB 1	CO-87-73	1512.53	----	----	----	----	----	----	----
84	101N-50W-34 CCCC 1	CO-87-74	1524.90	----	----	----	----	----	----	----

APPENDIX C -- continued

Drill Site No. ¹	Location ²	Well Name	Casing top elev. ³	Depth to water, in feet, from casing top and date of measurement								
				12-17-87	04-28-88	05-09-88	05-16-88	05-17-88	05-18-88	06-01-88		
4	101N-50W-07	ABAB	SFB-96	1454.07	----	7.73	----	----	----	----	----	----
5	101N-50W-08	BAAB	R20-84-300	1478	----	----	----	----	----	----	----	----
6	101N-50W-08	BBBB	CO-86-103	1473.39	----	21.33	----	----	----	----	----	----
8	101N-50W-08	BCCC	R20-84-301	1466.54	----	17.52	----	----	----	----	----	----
9	101N-50W-09	AABB	CO-87-98	1456.08	11.53	4.60?	----	----	----	----	----	----
10	101N-50W-09	ADAA	CO-86-109	1443.97	----	9.40	----	----	----	----	----	----
12	101N-50W-09	BCCC 2	CO-87-84	1461.11	11.78	11.62	----	----	----	----	----	----
13	101N-50W-09	CCCC	CO-87-82	1443.43	10.09	8.57	----	----	----	----	----	----
15	101N-50W-10	CCCC 1	CO-86-111	1446.03	----	10.65	----	----	----	----	----	----
16	101N-50W-10	CCCC 2	CO-86-112	1445.90	----	10.49	----	----	----	----	----	----
17	101N-50W-10	CCDD	CO-86-113	1442.36	----	DRY	----	----	----	----	----	----
21	101N-50W-14	CADC 2	CO-87-102	1438.93	----	11.55	----	----	11.62	----	----	----
23	101N-50W-15	ADDC	R20-84-306	1442.31	----	20.00	----	----	----	----	----	----
24	101N-50W-15	ADDC 1	CO-87-106	1442.78	----	DRY	----	----	----	----	----	----
26	101N-50W-15	CAAA 1	CO-87-88	1439.05	----	17.09	----	----	----	17.58	----	----
27	101N-50W-15	CAAA 2	CO-87-89	1439.18	----	16.82	----	----	----	----	----	----
28	101N-50W-15	CBCB	CO-86-107	1442.26	----	9.59	----	----	----	----	----	10.24
29	101N-50W-15	CCBB 1	CO-86-106	1441.47	----	9.65	----	----	----	----	----	----
30	101N-50W-15	CCBB 2	CO-87-101	1442.03	10.74	10.24	----	----	----	----	----	----
32	101N-50W-15	DCCD 1	CO-86-115	1435.38	----	11.79	----	----	----	----	----	----
34	101N-50W-15	DCCD 3	CO-87-92	1435.25	----	11.67	----	----	----	----	----	----
35	101N-50W-16	BAAA	SFB-87	1446.3	----	----	----	----	----	----	----	----
36	101N-50W-16	BBBD	CO-86-105	1456.55	----	18.83	----	----	----	----	----	----
37	101N-50W-16	BCCC	R20-84-303	1461.26	----	21.26	----	----	----	----	----	----
39	101N-50W-16	CAAA 2	CO-87-86	1452.93	----	17.03	17.24	----	----	----	----	----
40	101N-50W-16	CAAA 3	CO-87-87	1453.06	----	17.15	17.36	----	----	----	----	----
41	101N-50W-16	DCCD	CO-86-56	1483.55	----	51.11	----	----	----	----	----	----
42	101N-50W-17	ACBB 1	CO-86-104	1461.37	----	17.07	----	----	----	----	----	----
44	101N-50W-17	BCCC 1	R20-84-302	1468.18	----	----	----	----	----	----	----	----
45	101N-50W-17	BCBB	CO-87-78	1467.61	----	17.52	----	----	----	----	----	----
46	101N-50W-17	DDCD 1	R20-84-304	1455.06	----	----	----	----	----	----	----	----
47	101N-50W-17	DDCD 2	CO-87-76	1455.40	----	9.12	----	----	9.56	----	----	----
48	101N-50W-18	AABA 1	CO-87-58	1467.06	----	16.09	----	----	----	----	----	----
50	101N-50W-18	AABA 3	CO-87-60	1467.96	----	16.89	----	----	----	----	----	----
53	101N-50W-18	CCCC 2	CO-87-19	1532.73	----	82.00	----	----	----	----	----	----
54	101N-50W-18	DAAA 1	CO-87-79	1484.13	----	34.53	----	34.67	----	----	----	----
55	101N-50W-18	DAAA 2	CO-87-80	1482.16	----	32.47	----	32.61	----	----	----	----
56	101N-50W-20	BBBB 1	CO-87-23	1517.47	----	67.93	----	----	----	----	----	----
57	101N-50W-20	BBBB 2	CO-87-77	1517.05	----	67.54	----	----	67.61	----	----	----
58	101N-50W-20	CCBB	R1-87-8	1496.67	----	55.84	----	----	----	----	----	----
59	101N-50W-20	CCBB 1	CO-87-67	1496.60	----	45.67	----	----	----	----	----	----
61	101N-50W-21	CCBB 2	CO-87-22	1469.26	----	36.22	----	----	----	----	----	----
62	101N-50W-21	DADD	R20-86-43	1521.20	----	90.53	----	----	----	----	----	----
63	101N-50W-21	DADD 1	CO-87-91	1521.29	----	90.68	----	----	90.62	----	----	----
64	101N-50W-22	ADCB 1	CO-86-54	1502.44	----	85.09	----	----	----	----	----	----
65	101N-50W-22	ADCB 2	CO-86-55	1502.64	----	83.83	----	----	----	----	----	----
66	101N-50W-23	BBBA	SFB-88	1429.33	----	15.03	----	----	----	16.06	----	----
67	101N-50W-23	BBBA 1	CO-87-93	1429.13	----	13.11	----	----	----	14.01	----	----
68	101N-50W-23	BCAD	CO-87-94	1423.38	----	9.98	----	----	----	----	----	----
69	101N-50W-23	DADD	SFB-94	1419.77	----	----	----	----	----	----	----	----
71	101N-50W-23	DBBB 2	CO-87-104	1428.94	----	17.21	----	----	----	----	----	----
72	101N-50W-23	DBBB 3	CO-87-105	1428.94	----	DRY	----	----	----	----	----	----
73	101N-50W-23	DBCA 1	CO-87-95	1420.33	----	9.65	----	----	----	----	----	9.73
74	101N-50W-23	DBCA 2	CO-87-96	1420.48	----	9.59	----	----	----	----	----	10.26
75	101N-50W-23	DDDD	R20-84-308	1432	----	----	----	----	----	----	----	----
77	101N-50W-25	BDAA 2	CO-86-117	1421.03	----	13.56	----	----	----	----	----	----
78	101N-50W-26	BADA	SFB-148	1490.86	----	78.79	----	----	----	----	----	----
79	101N-50W-27	BCBB	CO-87-75	1503.11	----	74.60	----	----	----	74.57	----	----
81	101N-50W-34	AAAD	SFB-193	1519.52	----	95.06	----	----	----	----	----	----
83	101N-50W-34	BBBB 1	CO-87-73	1512.53	----	84.51	----	----	----	----	----	----
84	101N-50W-34	CCCC 1	CO-87-74	1524.90	----	95.97	----	----	----	----	----	----

Drill Site No. ¹	Location ²	Well Name	Casing top elev. ³	Depth to water, in feet, from casing top and date of measurement				
				06-03-88	06-07-88	06-08-88	06-09-88	06-13-88
4	101N-50W-07 ABAB	SFB-96	1454.07	----	----	----	----	----
5	101N-50W-08 BAAB	R20-84-300	1478	----	----	16.86	----	----
6	101N-50W-08 BBBB	CO-86-103	1473.39	----	----	----	----	----
8	101N-50W-08 BCCC	R20-84-301	1466.54	----	----	17.88	----	----
9	101N-50W-09 AABB	CO-87-98	1456.08	----	----	----	----	----
10	101N-50W-09 ADAA	CO-86-109	1443.97	----	----	----	----	----
12	101N-50W-09 BCCC 2	CO-87-84	1461.11	----	----	----	----	----
13	101N-50W-09 CCCC	CO-87-82	1443.43	----	----	----	----	----
15	101N-50W-10 CCCC 1	CO-86-111	1446.03	----	----	----	----	----
16	101N-50W-10 CCCC 2	CO-86-112	1445.90	----	----	----	----	----
17	101N-50W-10 CCDD	CO-86-113	1442.36	----	----	----	----	----
21	101N-50W-14 CADC 2	CO-87-102	1438.93	----	----	----	----	----
23	101N-50W-15 ADDC	R20-84-306	1442.31	----	----	20.02	----	----
24	101N-50W-15 ADDC 1	CO-87-106	1442.78	----	----	----	----	----
26	101N-50W-15 CAAA 1	CO-87-88	1439.05	----	----	----	----	----
27	101N-50W-15 CAAA 2	CO-87-89	1439.18	----	----	----	----	17.58
28	101N-50W-15 CBCB	CO-86-107	1442.26	----	----	----	----	----
29	101N-50W-15 CCBB 1	CO-86-106	1441.47	----	----	----	----	----
30	101N-50W-15 CCBB 2	CO-87-101	1442.03	----	----	----	----	----
32	101N-50W-15 DCCD 1	CO-86-115	1435.38	----	----	----	----	----
34	101N-50W-15 DCCD 3	CO-87-92	1435.25	----	----	----	----	----
35	101N-50W-16 BAAA	SFB-87	1446.3	----	----	----	----	----
36	101N-50W-16 BBBB	CO-86-105	1456.55	----	----	----	----	----
37	101N-50W-16 BBCC	R20-84-303	1461.26	----	21.54	----	----	----
39	101N-50W-16 CAAA 2	CO-87-86	1452.93	----	----	----	----	----
40	101N-50W-16 CAAA 3	CO-87-87	1453.06	----	----	----	----	----
41	101N-50W-16 DCCD	CO-86-56	1483.55	----	----	----	----	----
42	101N-50W-17 ACBB 1	CO-86-104	1461.37	----	----	----	----	----
44	101N-50W-17 BBCC 1	R20-84-302	1468.18	----	18.23	----	----	----
45	101N-50W-17 BCBB	CO-87-78	1467.61	----	----	----	----	----
46	101N-50W-17 DDCD 1	R20-84-304	1455.06	----	9.43	----	----	----
47	101N-50W-17 DDCD 2	CO-87-76	1455.40	----	----	----	----	----
48	101N-50W-18 AABA 1	CO-87-58	1467.06	----	16.34	----	----	----
50	101N-50W-18 AABA 3	CO-87-60	1467.96	----	17.14	----	----	----
53	101N-50W-18 CCCC 2	CO-87-19	1532.73	----	----	----	----	----
54	101N-50W-18 DAAA 1	CO-87-79	1484.13	----	----	----	----	----
55	101N-50W-18 DAAA 2	CO-87-80	1482.16	----	----	----	----	----
56	101N-50W-20 BBBB 1	CO-87-23	1517.47	----	----	----	----	----
57	101N-50W-20 BBBB 2	CO-87-77	1517.05	----	----	----	----	----
58	101N-50W-20 CCBB	R1-87-8	1496.67	----	----	----	----	----
59	101N-50W-20 CCBB 1	CO-87-67	1496.60	----	----	----	----	----
61	101N-50W-21 CCBB 2	CO-87-22	1469.26	----	----	----	----	----
62	101N-50W-21 DADD	R20-86-43	1521.20	----	----	----	----	----
63	101N-50W-21 DADD 1	CO-87-91	1521.29	----	----	----	----	----
64	101N-50W-22 ADCB 1	CO-86-54	1502.44	----	----	----	----	----
65	101N-50W-22 ADCB 2	CO-86-55	1502.64	----	----	----	----	----
66	101N-50W-23 BBBA	SFB-88	1429.33	----	----	----	----	----
67	101N-50W-23 BBBA 1	CO-87-93	1429.13	----	----	----	----	----
68	101N-50W-23 BCAD	CO-87-94	1423.38	----	----	12.54	----	----
69	101N-50W-23 DADD	SFB-94	1419.77	----	----	----	----	----
71	101N-50W-23 DBBB 2	CO-87-104	1428.94	17.38	----	----	----	----
72	101N-50W-23 DBBB 3	CO-87-105	1428.94	----	----	----	----	----
73	101N-50W-23 DBCA 1	CO-87-95	1420.33	----	----	----	----	----
74	101N-50W-23 DBCA 2	CO-87-96	1420.48	----	----	----	----	----
75	101N-50W-23 DDDD	R20-84-308	1432	----	----	----	----	----
77	101N-50W-25 BDAA 2	CO-86-117	1421.03	----	----	----	----	----
78	101N-50W-26 BADA	SFB-148	1490.86	----	----	----	79.2	----
79	101N-50W-27 BCBB	CO-87-75	1503.11	----	----	----	----	----
81	101N-50W-34 AAAD	SFB-193	1519.52	----	----	----	----	----
83	101N-50W-34 BBBB 1	CO-87-73	1512.53	----	----	----	----	----
84	101N-50W-34 CCCC 1	CO-87-74	1524.90	----	----	----	----	----

¹ Drill-site number as on figure 2 and in appendix A.
² Location format is explained in appendix A.
³ Elevations are presented in feet above mean sea level.