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DEPARTMENT OF WATER AND NATURAL RESOURCES
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Open-File Report 55-UR

SANITARY LANDFILL SITE INVESTIGATION FOR THE
CITY OF BROOKINGS, SOUTH DAKOTA

by

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INTRODUCTION

This report contains the results of an investigation conducted by the South Dakota Geological Survey for the city of Brookings to determine the suitability of a site for use as a municipal sanitary landfill. The study was financed by the city of Brookings and the state of South Dakota.

The area which was selected by the city of Brookings for investigation is the East 1/2 sec. 8, T. 110 N., R. 49 W. (fig. 1).

HYDROGEOLOGIC SETTING

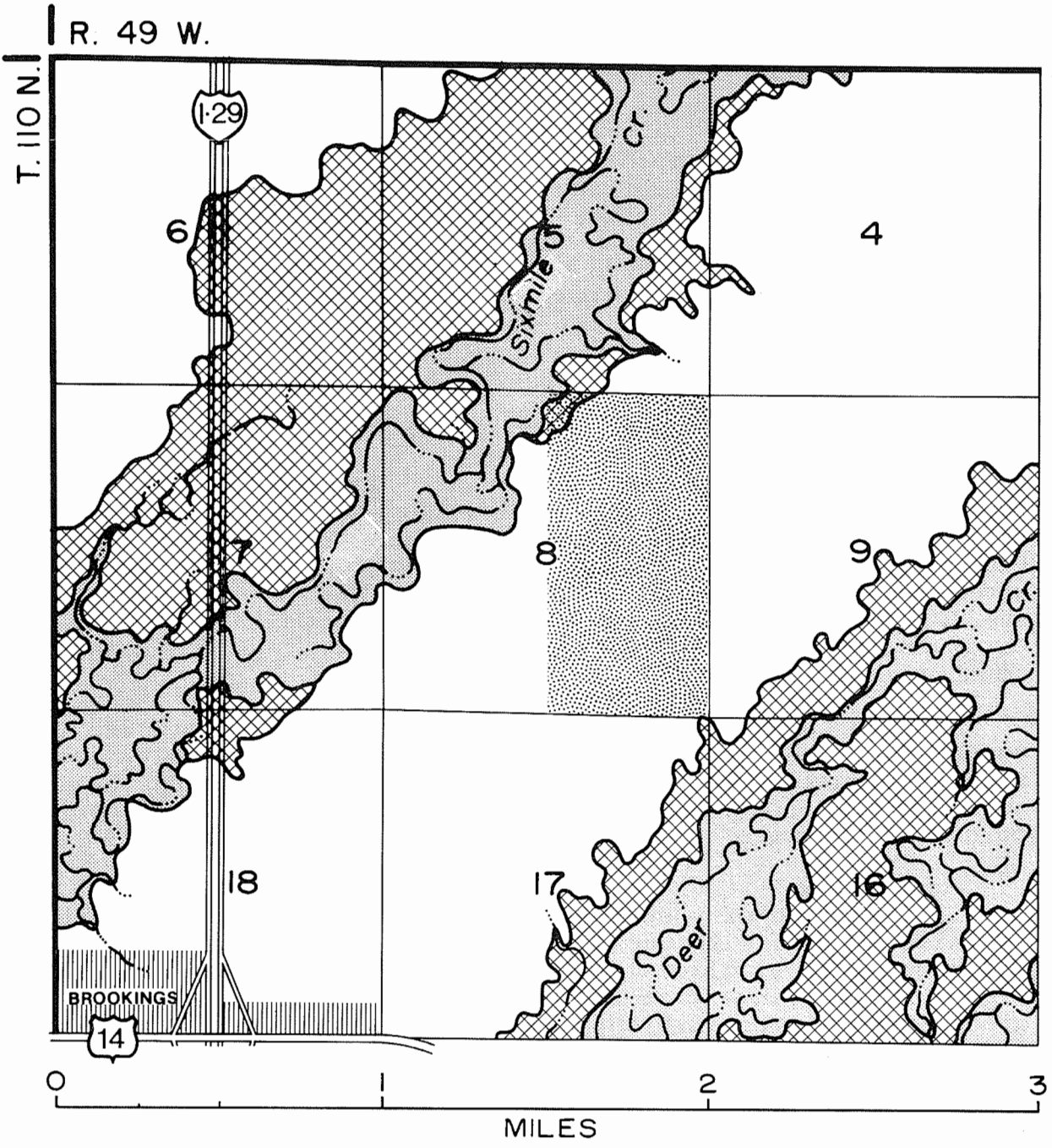
The site contains the interfluvium between Sixmile and Deer Creeks. A ridge within this interfluvium occurs from the south-central through the east-central portions of the site (fig. 2). Highest land surface elevations are associated with this ridge and lowest are in the northwest corner of the site adjacent to a small knoll. Surface drainage from the ridge is toward Sixmile Creek on the north and west and toward Deer Creek on the east and south (figs. 1 and 2).

The site is underlain primarily by early Wisconsin (25,000 - 80,000 years before present) ground moraine (till) that resulted from continental glaciation during the Pleistocene epoch of geologic time (fig. 1). Outwash underlies the extreme northwest corner of the site and is very near the southeast corner (fig. 1).

Till consists of unsorted sand, pebbles, and cobbles in a clay and silt matrix with pockets of stratified sediment (outwash). Thickness of the glacial sediments in the area encompassed in figure 1 may range from 250 to 450 feet. During a county-wide ground-water investigation, a test hole was drilled in the southwest corner of section 9, T. 110 N., R. 49 W. A complete core of the entire thickness of glacial sediment was obtained at that location and no significant aquifer unit was detected (Martin Jarrett, South Dakota Geological Survey, oral communication, 1988).

The depth of weathering in till at this site may extend down to 100 feet below the land surface (ML 54, app. A) and be made of many layers of weathered till (J. D. Lehr, South Dakota Geological Survey, oral communication, 1988).

The distinction between weathered and unweathered till is important with regard to water movement. According to a study by Hendry (1982), unweathered till has hydraulic conductivity values ranging from 3.4×10^{-8} to 9.8×10^{-8} centimeters per second (cm/sec) while the hydraulic conductivity of the weathered till ranges from $<2.0 \times 10^{-7}$ to 5.1×10^{-5} cm/sec. The range of geometric mean hydraulic conductivity values from till



Recent		Alluvium
Pleistocene		Outwash
		Ground moraine (till)
		Site of investigation

Map adapted from Lee, 1958a,b

Figure 1.
Geologic map of the study area.

Map location is East $\frac{1}{2}$ of section 8, T. 110 N., R. 49 W., Brookings Co.

- ==== Paved road
- ===== Gravelled road
- ==== Unimproved road
- Quarter-section line
- ~ Intermittent stream

Land surface contour in feet above mean sea level. Contour interval = 10 feet. Base map from US Geological Survey $7\frac{1}{2}$ minute series topographic map, Aurora Quadrangle.

- 19. Test hole or well. Number refers to map location (ML) as in Appendix A. Underlined number indicates a well. Numbers not underlined are test holes. A "●" indicates two or more test holes or wells with the same legal location.

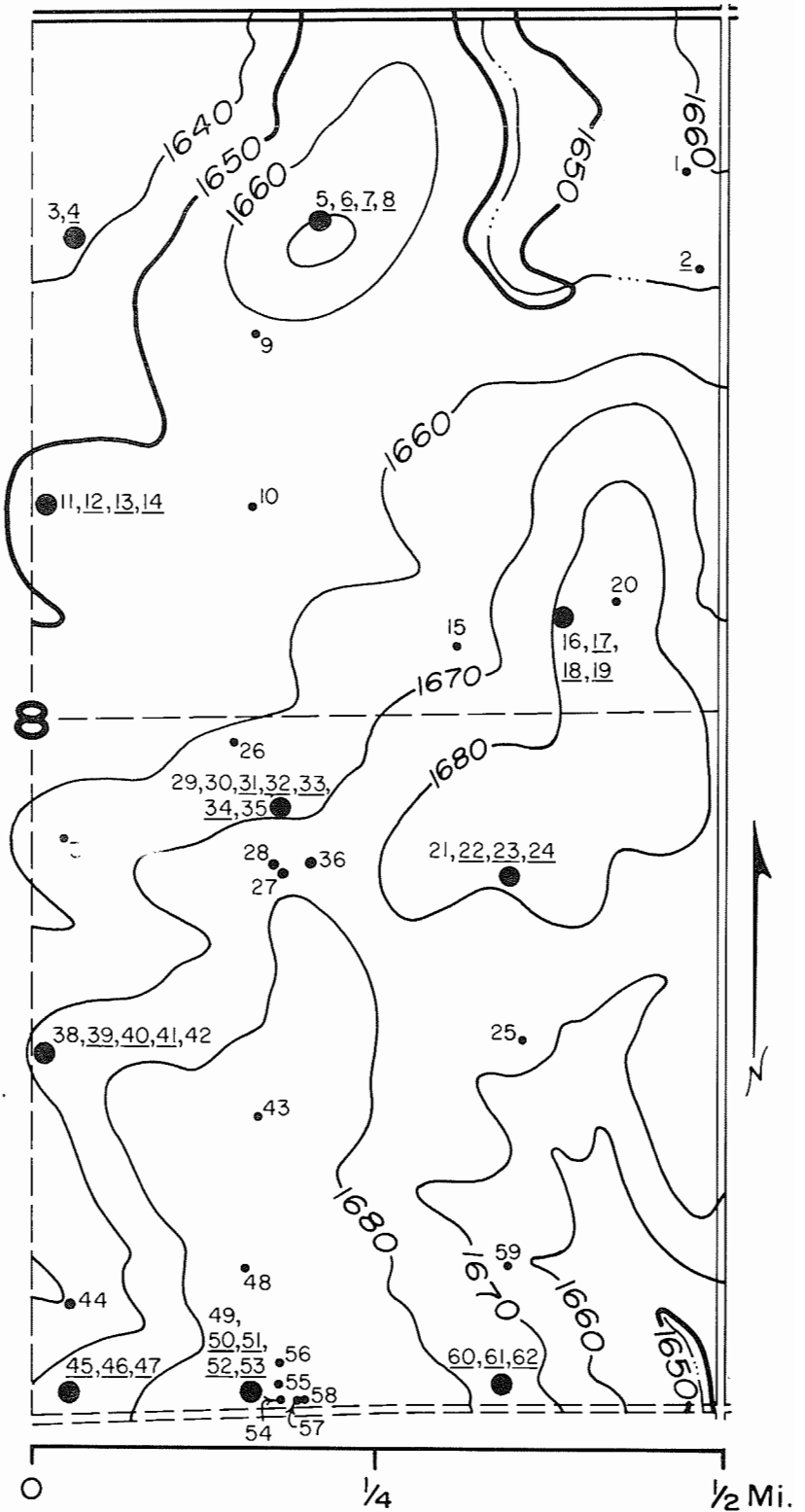


Figure 2. Locations of test holes and wells.

studies conducted in east-central South Dakota is 3.8×10^{-09} to 5.5×10^{-06} cm/sec in the unweathered till and 3.4×10^{-08} to 1.9×10^{-04} cm/sec in the weathered till (CENDAK Drainage Steering Committee, 1987). The higher hydraulic conductivity values of the weathered till are attributed to the presence of fractures (Hendry, 1982).

METHODS AND PROCEDURES

The site was investigated in two phases. Phase one consisted of drilling test holes to determine the type, and horizontal and vertical distribution of subsurface sediments. Phase two consisted of installing monitoring wells (fig. 2) to determine water levels and hydraulic conductivity.

Drilling and Well Installation

In April, 1988, during phase one of the investigation, two auger rigs with 4-inch diameter solid stem continuous flight auger were used to drill 22 holes to depths ranging from 28 feet to 48 feet. The majority of these holes were drilled to the 48-foot depth. Lithologic logs from this phase of drilling are listed in appendix A.

In May, 1988, during the second phase of the investigation using the auger rigs described above, 32 test holes were drilled, 31 of which were completed as wells, at 11 sites to monitor the ground water (fig. 3). Additionally, 8 test holes were drilled using the mud-rotary method to check for deeper occurrences of sand and gravel. Logs for these test holes and wells are also listed in appendix A. Nine sites contain nested wells (two or more wells at different depths) and two sites have one well each (table 1). Of these wells, 11 have screened intakes and 20 have cored intakes.

Construction of a conventional screened intake well was accomplished by augering a hole to the desired depth and withdrawing the auger from the hole. Then, 2-inch diameter polyvinyl-chloride (PVC) casing connected to a 2-inch diameter commercially manufactured PVC screen, 5 feet in length, was placed into the hole. Filter pack was placed in the annulus around the screen from the bottom of the hole to 2 feet above the top of the screen. Bentonite slurry was then poured into the annular space around the outside of the casing above the filter pack.

The construction of the cored-intake well was accomplished by augering a hole to the desired depth, withdrawing the auger from the hole, placing 2-inch diameter PVC casing into the hole and pushing it into the bottom-hole sediment approximately 3 inches to create a natural seal between the casing and bottom-hole sediment. Then a 1.5-inch diameter Shelby tube was lowered down the inside of the casing and was pushed approximately 15 inches into

Map location is East $\frac{1}{2}$
of section 8, T. 110 N.,
R. 49 W., Brookings Co.

- ==== Paved road
- ===== Gravelled road
- ==== Unimproved road
- - - Quarter-section line
- - - Intermittent stream

Land surface contour in feet above mean sea level. Contour interval = 10 feet. Base map from US Geological Survey 7 $\frac{1}{2}$ minute series topographic map, Aurora Quadrangle.

- Well site location. Number refers to listing in appendices B and C.

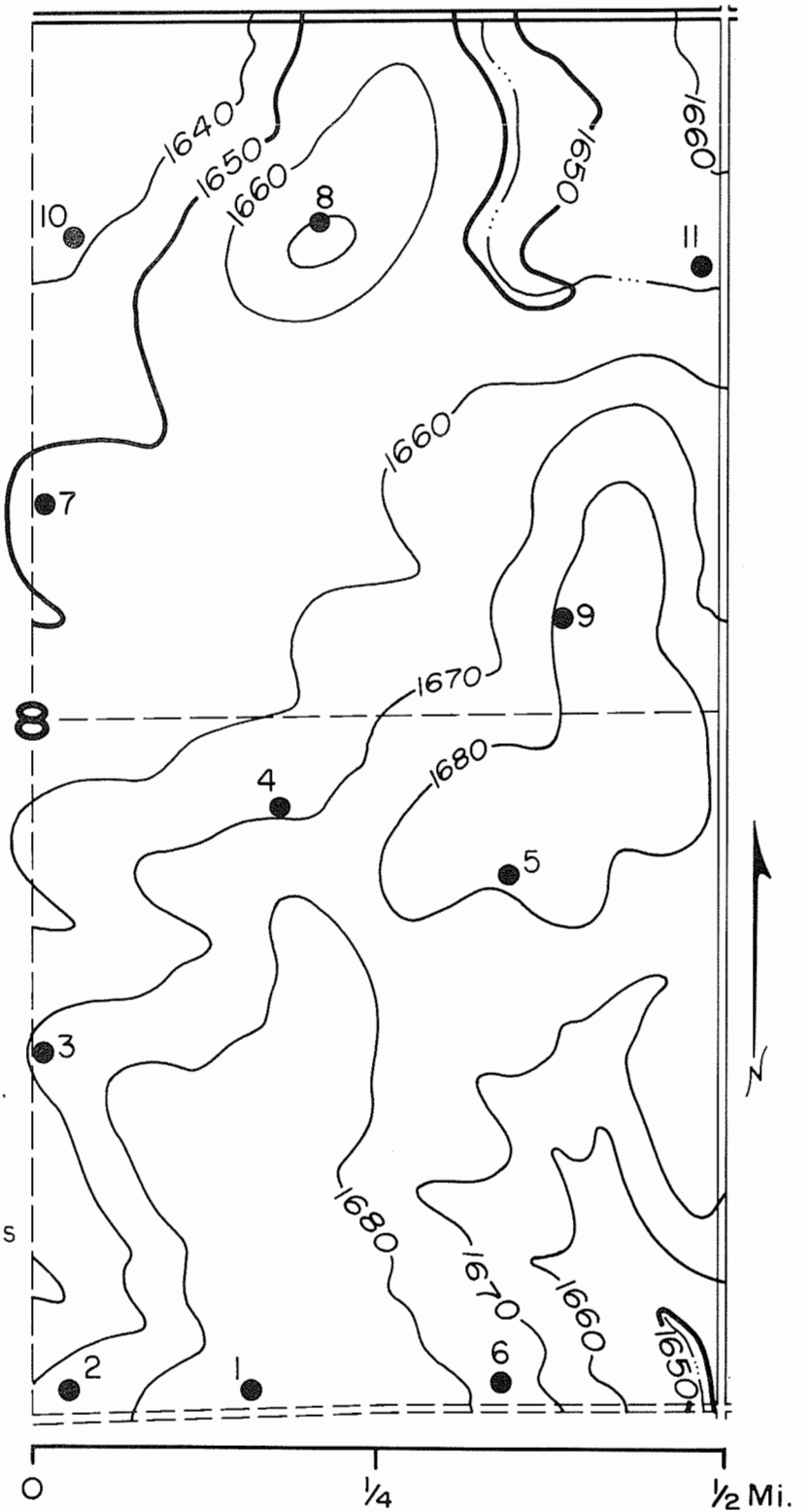


Figure 3. Well-site locations.

Table 1. Well sites

Site (1)	SDGS Well Name (2)	ML No. (3)	Type of Intake	Depth of Well (ft)
1	A2-88-01	51	Screened	15
	A2-88-03	53	Cored	19
	A2-88-02	52	Cored	29
	A1-88-23	50	Cored	39
2	A2-88-04	46	Screened	18
	A2-88-05	47	Cored	19
	A1-88-24	45	Cored	29
3	A1-88-25	40	Screened	18
	A1-88-26	39	Cored	19
	A2-88-06	41	Cored	29
4	A2-88-08	31	Screened	18
	A2-88-09	32	Cored	19
	A1-88-29	34	Cored	29
	A1-88-28	33	Cored	39
5	A2-88-11	23	Screened	18
	A2-88-10	24	Cored	19
	A2-88-12	22	Cored	29
6	A2-88-13	61	Screened	16
	A2-88-14	60	Cored	19
	A1-88-30	62	Cored	29
7	A1-88-31	13	Screened	18
	A1-88-32	14	Cored	19
	A2-88-15	12	Cored	29
8	A2-88-16	7	Screened	18
	A2-88-17	8	Cored	19
	A1-88-33	6	Cored	29
9	A1-88-35	18	Screened	18
	A1-88-36	19	Cored	19
	A2-88-19	17	Cored	29
10	A1-88-34	4	Screened	14
11	A2-88-18	2	Screened	18

(1) See figure 3 for site location.

(2) Listed in appendix A.

(3) Listed in appendix A and on figure 2.

the bottom-hole sediment. The Shelby tube was then removed, leaving a commensurately sized hole as the water-intake area for the well. Bentonite slurry was then poured into the annular space around the outside of the casing.

A screened-intake well has openings which may become plugged with fine-grained material, thereby yielding erroneously low hydraulic conductivity values for the till. On the other hand, water movement into cored-intake wells is through relatively undistributed natural sediment. This type of construction is expected to yield a more representative hydraulic-conductivity measurement. Another advantage of this type of construction is that there is a natural seal between the bentonite slurry around the outside of the casing and the well intake. This is important in low-permeability materials such as till where the hydraulic conductivity of the bentonite slurry can be greater than the native material (Tim Cowman, South Dakota Geological Survey, oral communication, 1988).

Water-Level Measurements

Water levels were measured to the nearest 0.01 foot using a tape measure with a concave-shaped device on the end which makes an audible sound upon impact with the water. Water levels were measured in the observation wells on several occasions. The results of these measurements are presented in appendix B.

Surveying

The casing-top elevations of the wells were surveyed by the city of Brookings, Engineering Department, using bench mark information from the South Dakota Department of Transportation on three bridges along Interstate Highway 29. The bench marks were established using a United States Coast and Geodetic Survey datum. All elevations referred to in this report are relative to that datum and are presented in feet above mean sea level. Surveying accuracy is to the nearest 0.01 foot. Records of the surveying can be obtained from the city of Brookings.

Hydraulic-Conductivity Calculations

Hydraulic conductivity is defined as the rate at which water is transmitted through a unit cross-sectional area of the sediment under a unit hydraulic gradient. The hydraulic conductivity of the weathered till was estimated by performing slug tests in the wells that had at least 3 feet of water in them. This amount of water was considered necessary in order to obtain reliable data. These tests were performed by bailing all the water that could be removed from the wells and then measuring water levels as they recovered. Data from the slug tests were then entered

into a computer program which calculated hydraulic conductivities using the method outlined by Hvorslev (1951).

RESULTS OF INVESTIGATION

Lithology

The predominant sediment type encountered in all test holes was till. However, minor sand and gravel layers were encountered at shallow depths in test holes ML 3, 4, 8 and 20 (app. A). Sand and gravel was also encountered in test holes ML 16, 54 and 55, but at depths greater than 40 feet.

Water Levels and Flow Directions

At every nested-well site, the water levels came to equilibrium at nearly the same elevation except at site 7 where the water level in the deep well is still recovering (apps. B and C). Because of the unusually dry weather during the measuring period, most of the wells showed a decline in water levels (apps. B and C). Figure 4 shows the minimum and maximum water levels below ground surface at each well site for the period of May through September, 1988, and indicates the seasonal variability in the water levels. Data used to construct figure 4 were taken from the shallowest well containing water at each site after the water level had reached equilibrium.

Figure 5 shows ground-water elevations for September 30, 1988, from the shallowest well containing water at each site (apps. B and C).

The water level contour lines (fig. 5) roughly follow the configuration of the ground-surface contours (fig. 4), thus the potential for ground-water flow is basically in the same directions as surface water. The flow directions, which are perpendicular to the contour lines, were essentially the same at the end of September, 1988, as they were in early June, 1988.

Hydraulic Conductivity of the Weathered Till

Results of the calculations for hydraulic conductivity are shown in table 2. Hydraulic conductivities of the weathered till were found to range from 2.0×10^{-08} to 7.6×10^{-05} cm/sec. The geometric mean of these values is 6.3×10^{-07} cm/sec. These results compare favorably with others obtained in different till areas of South Dakota (CENDAK Drainage Steering Committee, 1987).

Map location is East $\frac{1}{2}$ of section 8, T. 110 N., R. 49 W., Brookings Co.

- ==== Paved road
- ===== Gravelled road
- ==== Unimproved road
- - - Quarter-section line
- - - Intermittent stream

Land surface contour in feet above mean sea level. Contour interval = 10 feet. Base map from US Geological Survey $7\frac{1}{2}$ minute series topographic map, Aurora Quadrangle.

Well site location. Numbers are depth to water, in feet below land surface. Upper number is minimum depth to water. Lower number is maximum depth to water.

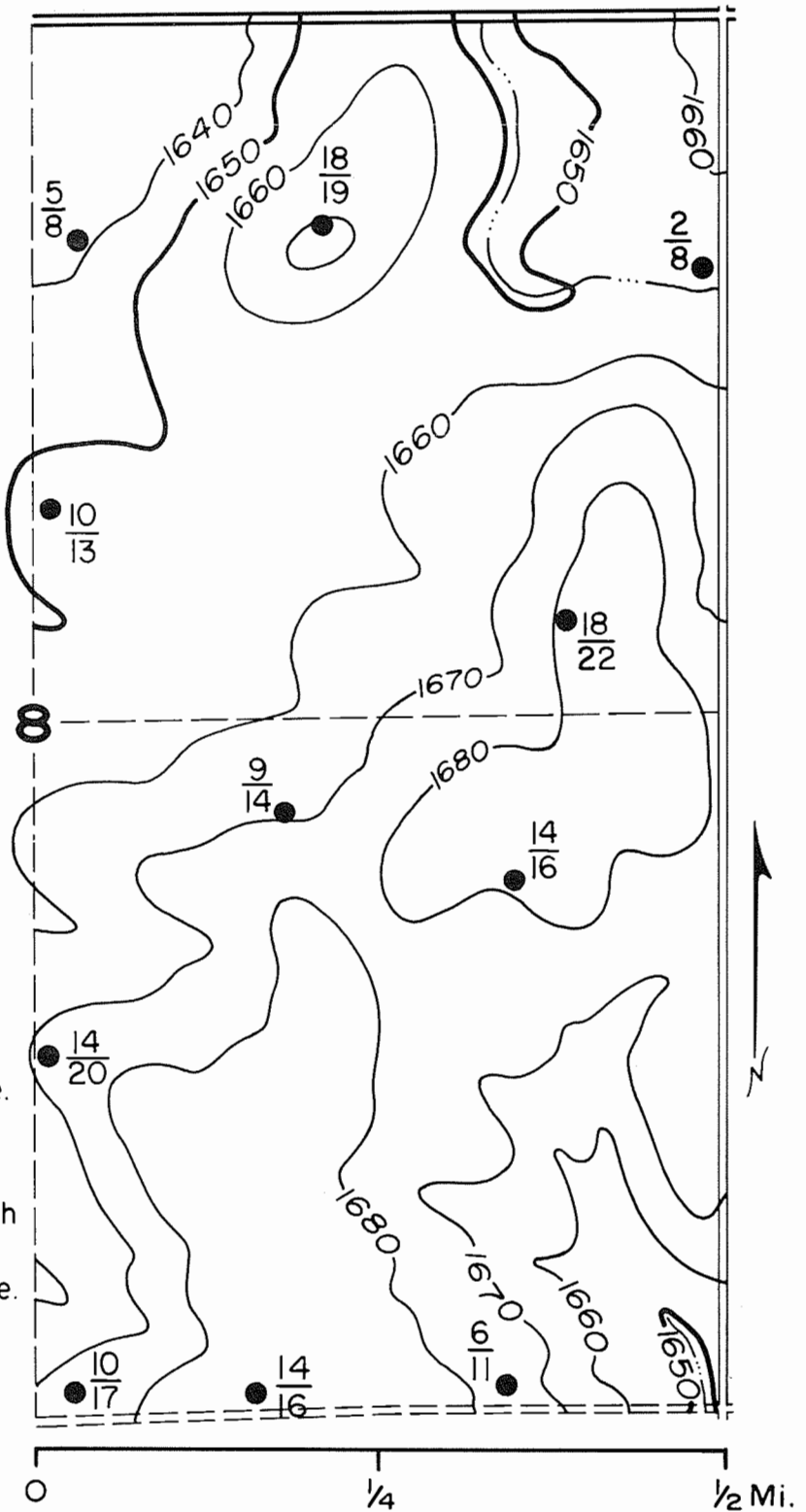


Figure 4. Minimum and maximum water depths from May through September, 1988.

Map location is East $\frac{1}{2}$
of section 8, T. 110 N.,
R. 49 W., Brookings Co.

- ==== Paved road
- ===== Gravelled road
- ==== Unimproved road
- - - Quarter-section line

● Well site location.
Number is elevation
of water, in feet
above mean sea
level.

⎵
1660
⎶
Water level contour
in feet above mean
sea level. Contour
interval = 10 feet.

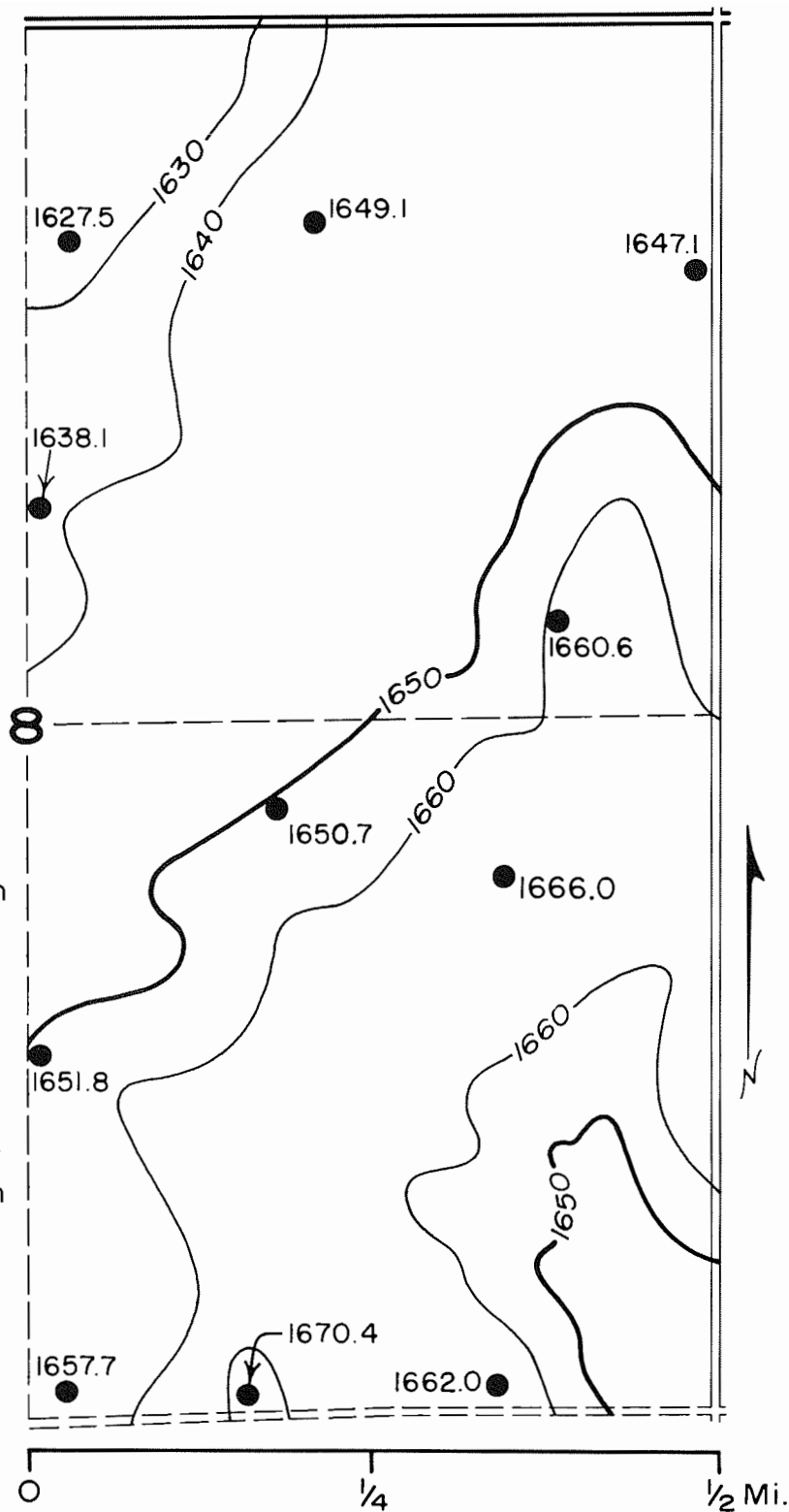


Figure 5. Water-level elevations on
September 30, 1988.

Table 2. Hydraulic-conductivity calculations

Site (1)	SDGS Well Name (2)	ML No. (3)	Intake Depth (feet) (4)	Hydraulic Conductivity	
				(cm/sec)	(feet/day)
1	A2-88-02	52	28-29	$3.7 \times 10(-06)$	$1.1 \times 10(-02)$
1	A1-88-23	50	38-39	$2.0 \times 10(-06)$	$5.7 \times 10(-03)$
2	A1-88-24	45	28-29	$1.1 \times 10(-05)$	$3.1 \times 10(-02)$
3	A2-88-06	41	28-29	$1.4 \times 10(-07)$	$4.0 \times 10(-04)$
4	A2-88-09	32	18-19	$5.3 \times 10(-07)$	$1.5 \times 10(-03)$
4	A1-88-29	34	28-29	$5.4 \times 10(-07)$	$1.5 \times 10(-03)$
4	A1-88-28	33	38-39	$1.7 \times 10(-07)$	$4.8 \times 10(-04)$
5	A2-88-12	22	28-29	$1.5 \times 10(-07)$	$4.3 \times 10(-04)$
6	A2-88-14	60	18-19	$6.3 \times 10(-08)$	$1.8 \times 10(-04)$
6	A1-88-30	62	28-29	$1.2 \times 10(-07)$	$3.4 \times 10(-04)$
7	A1-88-31	13	13-18	$7.6 \times 10(-05)$	$2.2 \times 10(-01)$
7	A1-88-32	14	18-19	$1.5 \times 10(-07)$	$4.3 \times 10(-04)$
7	A2-88-15	12	28-29	$2.0 \times 10(-08)$	$5.7 \times 10(-05)$
8	A1-88-33	6	28-29	$1.6 \times 10(-07)$	$4.5 \times 10(-04)$
9	A2-88-19	17	28-29	$4.2 \times 10(-05)$	$1.2 \times 10(-01)$

- (1) See figure 3 for site location.
(2) Listed in appendix A.
(3) Listed in appendix A and on figure 2.
(4) Depth is in feet below land surface.

DISCUSSION

The suitability of this site for use as a landfill was evaluated based on some of the requirements of the state of South Dakota (Administrative Rules of South Dakota 74:27:03:03) and the trench depths proposed by the city of Brookings. Three of the state requirements regarding new solid waste disposal sites are listed and addressed below.

1. Shall not be within a 100-year flood plain.

According to the Flood Hazard Boundary Map of Brookings County published by the U.S. Department of Housing and Urban Development in 1977, only a small portion of the extreme northwest corner of the site may be within the 100-year flood boundary. A copy of the Flood Hazard Boundary map is available at the Brookings Health Department or the East Dakota Water Development District office in Brookings.

2. Shall not be within an area where solid waste or leachate is likely to contaminate any surface water.

Surface runoff may have to be controlled to keep it from entering the drainage areas of Sixmile and Deer Creeks.

3. Shall not be within an area where leachate could potentially contaminate any ground water. To prevent this the minimum distance between any solid waste and historically high ground water table shall be 6 feet.

The results of test drilling in the study area indicate that the site is underlain by till and does not contain a significant amount of sand and gravel. Furthermore, results of tests indicate low hydraulic-conductivity values in the weathered till which would prevent significant volumetric water movement under the prevailing hydraulic gradients.

The city of Brookings is considering installation of trenches with bottom depths between 10 and 20 feet below land surface. The criterion of placing the bottom of the trenches no deeper than 6 feet above the historically high water table leaves very little space in the area which was investigated for 10-foot deep trenches and none for 20-foot deep trenches. According to the above-mentioned criterion, the water level has to be at least 16 feet below land surface for a 10-foot trench and 26 feet below land surface for a 20-foot trench. At the shallowest recorded water levels, only two well sites, 8 and 9, met the requirement for a 10-foot deep trench (figs. 3 and 4). Portions of the site in the northwest, northeast and southeast are probably unsuitable for use as a landfill because the water table was less than or equal to 6 feet below land surface during

the shallowest recorded water levels (fig. 4). The water levels at the proposed landfill site are typical of till in eastern South Dakota (Assad Barari, South Dakota Geological Survey, oral communication, 1988).

CONCLUSIONS

From a regulatory perspective, only a small portion of the area which was investigated could be suitable for use as a landfill. This is because of the required minimum 6-foot vertical separation between the bottom of the solid waste and the top of the water table. However, because the till underlying the site has a relatively low hydraulic conductivity, it should be suitable for use as a landfill, especially if an adequate landfill design and monitoring program are employed.

Control of surface runoff will probably be necessary to limit drainage into Sixmile and Deer Creeks. In addition, the position of the 100-year flood boundary should be addressed in the application procedure.

The above conclusions were arrived at by investigating the general hydrogeology of the site. The investigation was not intended to address the design and operation of the proposed landfill. The final suitability of the site for this use should be determined based on the proposed design and operation of the facility. Further, detailed data may be necessary to make this determination.

REFERENCES

- CENDAK Drainage Steering Committee, 1987, Comparison of irrigated land in southern Alberta, Canada, with the CENDAK area, South Dakota: South Dakota Geological Survey Open-File Report 8-BAS, 212 p.
- Hendry, M. J., 1982, Hydraulic conductivity of a glacial till in Alberta: *Ground Water*, v. 20, no. 2, p. 162-169.
- Hvorslev, M. J., 1951, Time lag and soil permeability in ground-water observations: *Waterways Experiment Station, United States Army Corps of Engineers Bulletin 36*, 50 p.
- Lee, K. Y., 1958a, Geology of the Brookings quadrangle, South Dakota: South Dakota Geological Survey Geologic Quadrangle Map, scale 1:62,500.
- _____, 1958b, Geology of the White quadrangle, South Dakota: South Dakota Geological Survey Geologic Quadrangle Map, scale 1:62,500.
- U.S. Department of Housing and Urban Development, 1977, Flood hazard boundary map, Brookings County, South Dakota, Unincorporated area, Community-panel no. 460253 0005A, p. 5

APPENDIX A

Logs of test holes and observation wells

MAP LOCATION (ML): 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 shown on figure 2.

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

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 NW SE NE SW 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 than more than one log may exist for that particular location.

DRILLING COMPANY: SDGS is an abbreviation for South Dakota Geological Survey.

TOTAL DRILL HOLE DEPTH, SCREEN LENGTH, and TOTAL CASING AND SCREEN: The numbers are presented in feet.

SCREEN TYPE and CASING TYPE: PVC = polyvinylchloride; MGF = commercially manufactured; SCH. = schedule and refers to casing thickness.

CASING DIAMETER: The numbers are presented in inches.

CASING TOP ELEVATION and GROUND SURFACE ELEVATION: The numbers are presented in feet above mean sea level. I - the elevation was determined by using a surveying instrument. T - the elevation was estimated from a 7½ minute series topographic map.

COUNTY: BROOKINGS LOCATION: 110N-49W-08AAAD
 MAP LOCATION: 1
 LEGAL LOCATION: SE NE NE NE SEC. 08, T. 110 N., R. 49 W.
 LATITUDE: 44.2112 LONGITUDE: 96.4342
 LAND OWNER:
 PROJECT: BROOKINGS LANDFILL STUDY
 DRILLING COMPANY: SDGS
 DRILLER: C. CHRISTENSEN DRILLER'S LOG:
 GEOLOGIST: L. FRYKMAN GEOLOGIST'S LOG: X
 DATE DRILLED: 04-12-1988 DRILLING METHOD: AUGER
 GROUND SURFACE ELEVATION: 1657.00 T
 TOTAL DRILL HOLE DEPTH: 48.0 TEST HOLE NUMBER: A1-88-11
 USGS HYDROLOGICAL UNIT CODE: 10170202
 ELECTRIC LOG INFORMATION:
 SPONTANEOUS POTENTIAL: SINGLE POINT RESISTIVITY:
 NATURAL GAMMA: EXTRA:
 SAMPLES:

0	-	2.0	CLAY, BLACK, SILTY; ORGANIC (TOPSOIL)
2.0	-	6.0	SILT, YELLOW-BROWN, SLIGHTLY CLAYEY, SLIGHTLY SANDY
6.0	-	8.0	CLAY, YELLOW-BROWN, SILTY, VERY SANDY, SLIGHTLY GRAVELLY; MOIST
8.0	-	11.0	CLAY, YELLOW-BROWN, SILTY, SLIGHTLY SANDY
11.0	-	48.0	CLAY, YELLOW-BROWN, SILTY, VERY SANDY; SATURATED (TILL)

* * * *

COUNTY: BROOKINGS LOCATION: 110N-49W-08AADA
 MAP LOCATION: 2
 LEGAL LOCATION: NE SE NE NE SEC. 08, T. 110 N., R. 49 W.
 LATITUDE: 44.2109 LONGITUDE: 96.4340
 LAND OWNER:
 PROJECT: BROOKINGS LANDFILL STUDY
 DRILLING COMPANY: SDGS
 DRILLER: S. PENCE DRILLER'S LOG:
 GEOLOGIST: L. FRYKMAN GEOLOGIST'S LOG: X
 DATE DRILLED: 05-25-1988 DRILLING METHOD: AUGER
 GROUND SURFACE ELEVATION: 1654.60 I
 TOTAL DRILL HOLE DEPTH: 18.0 TEST HOLE NUMBER: A2-88-18
 WATER RIGHTS WELL: SDGS WELL NAME: A2-88-18
 OTHER WELL NAME:
 BASIN: BIG SIOUX AQUIFER:
 MANAGEMENT UNIT:
 SCREEN TYPE: PVC, MFG., SLOT SIZE .020 IN. SCREEN LENGTH: 5.0
 CASING TYPE: PVC, SCH. 80 CASING DIAMETER: 2.0
 CASING TOP ELEVATION: 1656.99 I
 CASING STICK-UP: 2.39 TOTAL CASING AND SCREEN: 20.4
 WELL MAINTENANCE DATE:
 USGS HYDROLOGICAL UNIT CODE: 10170202
 ELECTRIC LOG INFORMATION:
 SPONTANEOUS POTENTIAL: SINGLE POINT RESISTIVITY:
 NATURAL GAMMA: EXTRA:

SAMPLES:

0 - 3.0 SILT, BLACK, CLAYEY, SANDY; ORGANIC
 (TOPSOIL)
 3.0 - 9.0 CLAY, LIGHT-YELLOW-BROWN, SILTY, SANDY,
 PEBBLY; OXIDIZED (TILL)
 9.0 - 18.0 CLAY, LIGHT-BROWN, SILTY, SANDY, PEBBLY;
 SATURATED; OXIDIZED (TILL)

* * * *

COUNTY: BROOKINGS LOCATION: 110N-49W-08ABCB
 MAP LOCATION: 3
 LEGAL LOCATION: NW SW NW NE SEC. 08, T. 110 N., R. 49 W.
 LATITUDE: 44.2110 LONGITUDE: 96.4415
 LAND OWNER:
 PROJECT: BROOKINGS LANDFILL STUDY
 DRILLING COMPANY: SDGS
 DRILLER: L. SCHULZ DRILLER'S LOG:
 GEOLOGIST: L. FRYKMAN GEOLOGIST'S LOG: X
 DATE DRILLED: 04-12-1988 DRILLING METHOD: AUGER
 GROUND SURFACE ELEVATION: 1635.00 T
 TOTAL DRILL HOLE DEPTH: 48.0 TEST HOLE NUMBER: A1-88-13
 USGS HYDROLOGICAL UNIT CODE: 10170202
 ELECTRIC LOG INFORMATION:
 SPONTANEOUS POTENTIAL: SINGLE POINT RESISTIVITY:
 NATURAL GAMMA: EXTRA:
 SAMPLES:

0 - 1.0 CLAY, BLACK, SILTY; ORGANIC (TOPSOIL)
 1.0 - 11.0 SILT, GRAY-BLACK, SLIGHTLY CLAYEY
 (ALLUVIUM)
 11.0 - 29.0 CLAY, GRAY, VERY SANDY, VERY GRAVELLY;
 SATURATED (ALLUVIUM)
 29.0 - 34.0 SAND AND GRAVEL, TAN-OLIVE, VERY FINE
 SAND, MEDIUM GRAVEL, VERY CLAYEY, SILTY
 34.0 - 39.0 CLAY, TAN-OLIVE, SILTY, VERY SANDY,
 GRAVELLY (ALLUVIUM)
 39.0 - 48.0 CLAY, GRAY, SILTY, SANDY, PEBBLY (TILL)

* * * *

COUNTY: BROOKINGS LOCATION: 110N-49W-08ABCB 1
 MAP LOCATION: 4
 LEGAL LOCATION: NW SW NW NE SEC. 08, T. 110 N., R. 49 W.
 LATITUDE: 44.2110 LONGITUDE: 96.4415
 LAND OWNER:
 PROJECT: BROOKINGS LANDFILL STUDY
 DRILLING COMPANY: SDGS
 DRILLER: C. PEERY DRILLER'S LOG:
 GEOLOGIST: L. FRYKMAN GEOLOGIST'S LOG: X
 DATE DRILLED: 05-25-1988 DRILLING METHOD: AUGER
 GROUND SURFACE ELEVATION: 1634.53 I
 TOTAL DRILL HOLE DEPTH: 18.0 TEST HOLE NUMBER: A1-88-34

WATER RIGHTS WELL: SDGS WELL NAME: A1-88-34
 OTHER WELL NAME:
 BASIN: BIG SIOUX AQUIFER:
 MANAGEMENT UNIT:
 SCREEN TYPE: PVC, MFG., SLOT SIZE .020 IN. SCREEN LENGTH: 5.0
 CASING TYPE: PVC, SCH. 80 CASING DIAMETER: 2.0
 CASING TOP ELEVATION: 1636.00 I
 CASING STICK-UP: 1.47 TOTAL CASING AND SCREEN: 15.5
 WELL MAINTENANCE DATE:
 USGS HYDROLOGICAL UNIT CODE: 10170202
 ELECTRIC LOG INFORMATION:
 SPONTANEOUS POTENTIAL: SINGLE POINT RESISTIVITY:
 NATURAL GAMMA: EXTRA:
 SAMPLES:

0	-	4.0	SILT, BLACK, CLAYEY, SANDY, PEBBLY; ORGANIC (TOPSOIL)
4.0	-	11.0	CLAY, BLACK, VERY SILTY, SANDY; FEW PEBBLES (ALLUVIUM)
11.0	-	15.0	CLAY, BLACK, VERY SILTY; ORGANIC, MOIST (ALLUVIUM)
15.0	-	18.0	SAND AND GRAVEL, BLACK TO GRAY, VERY FINE TO MEDIUM SAND, FINE TO MEDIUM GRAVEL, VERY CLAYEY, SILTY; SATURATED (ALLUVIUM)

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COUNTY: BROOKINGS LOCATION: 110N-49W-08ABDA
 MAP LOCATION: 5
 LEGAL LOCATION: NE SE NW NE SEC. 08, T. 110 N., R. 49 W.
 LATITUDE: 44.2111 LONGITUDE: 96.4400
 LAND OWNER:
 PROJECT: BROOKINGS LANDFILL STUDY
 DRILLING COMPANY: SDGS
 DRILLER: C. CHRISTENSEN DRILLER'S LOG:
 GEOLOGIST: L. FRYKMAN GEOLOGIST'S LOG: X
 DATE DRILLED: 04-12-1988 DRILLING METHOD: AUGER
 GROUND SURFACE ELEVATION: 1668.00 T
 TOTAL DRILL HOLE DEPTH: 48.0 TEST HOLE NUMBER: A1-88-12
 USGS HYDROLOGICAL UNIT CODE: 10170202
 ELECTRIC LOG INFORMATION:
 SPONTANEOUS POTENTIAL: SINGLE POINT RESISTIVITY:
 NATURAL GAMMA: EXTRA:
 SAMPLES:

0	-	2.0	CLAY, BLACK, SILTY; ORGANIC (TOPSOIL)
2.0	-	6.0	SILT, YELLOW-BROWN, CLAYEY (LOESS)
6.0	-	11.0	CLAY, YELLOW-BROWN, SILTY, SANDY, PEBBLY
11.0	-	20.0	CLAY, LIGHT-BROWN, SILTY, SANDY, PEBBLY (TILL)
20.0	-	48.0	CLAY, YELLOW-BROWN, SILTY, SANDY, PEBBLY

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WATER RIGHTS WELL: SDGS WELL NAME: A2-88-16
 OTHER WELL NAME:
 BASIN: BIG SIOUX AQUIFER:
 MANAGEMENT UNIT:
 SCREEN TYPE: PVC, MFG., SLOT SIZE .020 IN. SCREEN LENGTH: 5.0
 CASING TYPE: PVC, SCH. 80 CASING DIAMETER: 2.0
 CASING TOP ELEVATION: 1670.73 I
 CASING STICK-UP: 2.47 TOTAL CASING AND SCREEN: 20.5
 WELL MAINTENANCE DATE:
 USGS HYDROLOGICAL UNIT CODE: 10170202
 ELECTRIC LOG INFORMATION:
 SPONTANEOUS POTENTIAL: SINGLE POINT RESISTIVITY:
 NATURAL GAMMA: EXTRA:
 SAMPLES:

0	-	2.0	SILT, BLACK, CLAYEY, SANDY; ORGANIC (TOPSOIL)
2.0	-	7.0	SILT, LIGHT-ORANGISH-BROWN, CLAYEY, VERY SANDY, PEBBLY; OXIDIZED (TILL)
7.0	-	18.0	CLAY, LIGHT-BROWN, SILTY, SANDY, PEBBLY; OXIDIZED (TILL)

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COUNTY: BROOKINGS LOCATION: 110N-49W-08ABDA 3
 MAP LOCATION: 8
 LEGAL LOCATION: NE SE NW NE SEC. 08, T. 110 N., R. 49 W.
 LATITUDE: 44.2111 LONGITUDE: 96.4400
 LAND OWNER:
 PROJECT: BROOKINGS LANDFILL STUDY
 DRILLING COMPANY: SDGS
 DRILLER: S. PENCE DRILLER'S LOG:
 GEOLOGIST: L. FRYKMAN GEOLOGIST'S LOG: X
 DATE DRILLED: 05-25-1988 DRILLING METHOD: AUGER
 GROUND SURFACE ELEVATION: 1668.24 I
 TOTAL DRILL HOLE DEPTH: 18.0 TEST HOLE NUMBER: A2-88-17
 WATER RIGHTS WELL: SDGS WELL NAME: A2-88-17
 OTHER WELL NAME:
 BASIN: BIG SIOUX AQUIFER:
 MANAGEMENT UNIT:
 SCREEN TYPE: SCREEN LENGTH:
 CASING TYPE: PVC, SCH. 80 CASING DIAMETER: 2.0
 CASING TOP ELEVATION: 1670.82 I
 CASING STICK-UP: 2.58 TOTAL CASING AND SCREEN: 20.6
 WELL MAINTENANCE DATE:
 USGS HYDROLOGICAL UNIT CODE: 10170202
 ELECTRIC LOG INFORMATION:
 SPONTANEOUS POTENTIAL: SINGLE POINT RESISTIVITY:
 NATURAL GAMMA: EXTRA:
 SAMPLES:

SHELBY-TUBE-CORE-INTAKE WELL, CORE APPROXIMATELY
 1 FOOT IN LENGTH AND EXTENDS APPROXIMATELY 1
 FOOT BELOW TOTAL DRILL HOLE DEPTH.

0 - 2.0 SILT, BLACK, CLAYEY, SANDY; ORGANIC
(TOPSOIL)
2.0 - 6.0 SAND, LIGHT-ORANGISH-BROWN, VERY SILTY,
CLAYEY, PEBBLY; OXIDIZED (TILL)
6.0 - 18.0 CLAY, LIGHT-BROWN, SILTY, SANDY, PEBBLY;
OXIDIZED (TILL)

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COUNTY: BROOKINGS LOCATION: 110N-49W-08ABDC
MAP LOCATION: 9
LEGAL LOCATION: SW SE NW NE SEC. 08, T. 110 N., R. 49 W.
LATITUDE: 44.2105 LONGITUDE: 96.4402
LAND OWNER:
PROJECT: BROOKINGS LANDFILL STUDY
DRILLING COMPANY: SDGS
DRILLER: L. SCHULZ DRILLER'S LOG:
GEOLOGIST: L. FRYKMAN GEOLOGIST'S LOG: X
DATE DRILLED: 04-13-1988 DRILLING METHOD: AUGER
GROUND SURFACE ELEVATION: 1658.00 T
TOTAL DRILL HOLE DEPTH: 28.0 TEST HOLE NUMBER: A1-88-18
USGS HYDROLOGICAL UNIT CODE: 10170202
ELECTRIC LOG INFORMATION:
SPONTANEOUS POTENTIAL: SINGLE POINT RESISTIVITY:
NATURAL GAMMA: EXTRA:
SAMPLES:

0 - 3.0 CLAY, BLACK, SILTY; ORGANIC (TOPSOIL)
3.0 - 5.0 SILT, BROWN, CLAYEY, SANDY
5.0 - 11.0 CLAY, BROWN, VERY SILTY, VERY SANDY; FEW
PEBBLES; SATURATED AT 11 FEET
11.0 - 28.0 SILT, BROWN, VERY CLAYEY, SLIGHTLY SANDY;
FEW PEBBLES (TILL)

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COUNTY: BROOKINGS LOCATION: 110N-49W-08ACAC
MAP LOCATION: 10
LEGAL LOCATION: SW NE SW NE SEC. 08, T. 110 N., R. 49 W.
LATITUDE: 44.2059 LONGITUDE: 96.4405
LAND OWNER:
PROJECT: BROOKINGS LANDFILL STUDY
DRILLING COMPANY: SDGS
DRILLER: C. CHRISTENSEN DRILLER'S LOG:
GEOLOGIST: L. FRYKMAN GEOLOGIST'S LOG: X
DATE DRILLED: 04-12-1988 DRILLING METHOD: AUGER
GROUND SURFACE ELEVATION: 1657.00 T
TOTAL DRILL HOLE DEPTH: 48.0 TEST HOLE NUMBER: A1-88-15
USGS HYDROLOGICAL UNIT CODE: 10170202
ELECTRIC LOG INFORMATION:
SPONTANEOUS POTENTIAL: SINGLE POINT RESISTIVITY:
NATURAL GAMMA: EXTRA:
SAMPLES:

0	-	2.0	CLAY, BLACK, SILTY; ORGANIC (TOPSOIL)
2.0	-	13.0	SILT, GRAYISH-BROWN, CLAYEY, SANDY; SATURATED AT 11 FEET
13.0	-	19.0	CLAY, YELLOW-BROWN, SILTY, SANDY, SLIGHTLY PEBBLY
19.0	-	25.0	CLAY, BROWN, SILTY, SANDY, PEBBLY; MOIST (TILL)
25.0	-	43.0	CLAY, YELLOW-BROWN, SILTY, VERY SANDY (TILL)
43.0	-	48.0	CLAY, YELLOW-BROWN, SILTY, SLIGHTLY SANDY (TILL)

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COUNTY: BROOKINGS	LOCATION: 110N-49W-08ACBC
MAP LOCATION: 11	
LEGAL LOCATION: SW NW SW NE SEC. 08, T. 110 N., R. 49 W.	
LATITUDE: 44.2059	LONGITUDE: 96.4415
LAND OWNER:	
PROJECT: BROOKINGS LANDFILL STUDY	
DRILLING COMPANY: SDGS	
DRILLER: L. SCHULZ	DRILLER'S LOG:
GEOLOGIST: L. FRYKMAN	GEOLOGIST'S LOG: X
DATE DRILLED: 04-12-1988	DRILLING METHOD: AUGER
GROUND SURFACE ELEVATION: 1652.00 T	
TOTAL DRILL HOLE DEPTH: 48.0	TEST HOLE NUMBER: A1-88-14
USGS HYDROLOGICAL UNIT CODE: 10170202	
ELECTRIC LOG INFORMATION:	
SPONTANEOUS POTENTIAL:	SINGLE POINT RESISTIVITY:
NATURAL GAMMA:	EXTRA:
SAMPLES:	

0	-	1.0	CLAY, BLACK, SILTY; ORGANIC (TOPSOIL)
1.0	-	11.0	SILT, SLIGHTLY CLAYEY (LOESS?)
11.0	-	13.0	CLAY, OLIVE-BROWN, VERY SANDY, GRAVELLY
13.0	-	31.0	CLAY, BROWN, SILTY, SANDY, PEBBLY (TILL)
31.0	-	48.0	CLAY, OLIVE-BROWN, VERY SILTY, SANDY, PEBBLY (TILL)

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COUNTY: BROOKINGS	LOCATION: 110N-49W-08ACBC 1
MAP LOCATION: 12	
LEGAL LOCATION: SW NW SW NE SEC. 08, T. 110 N., R. 49 W.	
LATITUDE: 44.2059	LONGITUDE: 96.4415
LAND OWNER:	
PROJECT: BROOKINGS LANDFILL STUDY	
DRILLING COMPANY: SDGS	
DRILLER: S. PENCE	DRILLER'S LOG:
GEOLOGIST: L. FRYKMAN	GEOLOGIST'S LOG: X
DATE DRILLED: 05-25-1988	DRILLING METHOD: AUGER
GROUND SURFACE ELEVATION: 1650.59 I	
TOTAL DRILL HOLE DEPTH: 28.0	TEST HOLE NUMBER: A2-88-15
WATER RIGHTS WELL:	SDGS WELL NAME: A2-88-15

0 - 3.0 SILT, DARK-BROWN, CLAYEY, SANDY; ORGANIC
 (TOPSOIL)
 3.0 - 10.0 CLAY, YELLOW-BROWN, SILTY, SANDY, PEBBLY;
 OXIDIZED (TILL)
 10.0 - 18.0 CLAY, YELLOW-BROWN, SILTY, LESS SANDY;
 FEW PEBBLES, MOIST; OXIDIZED (TILL)

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COUNTY: BROOKINGS LOCATION: 110N-49W-08ACBC 3
 MAP LOCATION: 14
 LEGAL LOCATION: SW NW SW NE SEC. 08, T. 110 N., R. 49 W.
 LATITUDE: 44.2059 LONGITUDE: 96.4415
 LAND OWNER:
 PROJECT: BROOKINGS LANDFILL STUDY
 DRILLING COMPANY: SDGS
 DRILLER: C. PEERY DRILLER'S LOG:
 GEOLOGIST: L. FRYKMAN GEOLOGIST'S LOG: X
 DATE DRILLED: 05-25-1988 DRILLING METHOD: AUGER
 GROUND SURFACE ELEVATION: 1650.65 I
 TOTAL DRILL HOLE DEPTH: 18.0 TEST HOLE NUMBER: A1-88-32
 WATER RIGHTS WELL: SDGS WELL NAME: A1-88-32
 OTHER WELL NAME:
 BASIN: BIG SIOUX AQUIFER:
 MANAGEMENT UNIT:
 SCREEN TYPE: SCREEN LENGTH:
 CASING TYPE: PVC, SCH. 80 CASING DIAMETER: 2.0
 CASING TOP ELEVATION: 1653.68 I
 CASING STICK-UP: 3.03 TOTAL CASING AND SCREEN: 21.0
 WELL MAINTENANCE DATE:
 USGS HYDROLOGICAL UNIT CODE: 10170202
 ELECTRIC LOG INFORMATION:
 SPONTANEOUS POTENTIAL: SINGLE POINT RESISTIVITY:
 NATURAL GAMMA: EXTRA:
 SAMPLES:

SHELBY-TUBE-CORE-INTAKE WELL, CORE APPROXIMATELY
 1 FOOT IN LENGTH AND EXTENDS APPROXIMATELY 1
 FOOT BELOW TOTAL DRILL HOLE DEPTH.

0 - 2.0 SILT, BLACK, CLAYEY, SANDY; ORGANIC
 (TOPSOIL)
 2.0 - 10.0 CLAY, LIGHT-BROWN, SILTY, SANDY, PEBBLY;
 OXIDIZED (TILL)
 10.0 - 18.0 CLAY, REDDISH-YELLOW-BROWN, SILTY, SANDY,
 PEBBLY; OXIDIZED (TILL)

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COUNTY: BROOKINGS LOCATION: 110N-49W-08ADCC
 MAP LOCATION: 15
 LEGAL LOCATION: SW SW SE NE SEC. 08, T. 110 N., R. 49 W.
 LATITUDE: 44.2055 LONGITUDE: 96.4353
 LAND OWNER:

PROJECT: BROOKINGS LANDFILL STUDY

DRILLING COMPANY: SDGS

DRILLER: C. CHRISTENSEN

GEOLOGIST: L. FRYKMAN

DATE DRILLED: 04-13-1988

GROUND SURFACE ELEVATION: 1668.00 T

TOTAL DRILL HOLE DEPTH: 33.0

USGS HYDROLOGICAL UNIT CODE: 10170202

ELECTRIC LOG INFORMATION:

SPONTANEOUS POTENTIAL:

NATURAL GAMMA:

SAMPLES:

DRILLER'S LOG:

GEOLOGIST'S LOG: X

DRILLING METHOD: AUGER

TEST HOLE NUMBER: A1-88-19

SINGLE POINT RESISTIVITY:

EXTRA:

0	-	3.0	CLAY, BLACK, SILTY; ORGANIC (TOPSOIL)
3.0	-	9.0	SILT, BROWN, CLAYEY, SLIGHTLY SANDY; SATURATED AT 9 FEET
9.0	-	33.0	CLAY, BROWN, SILTY, SLIGHTLY SANDY, PEBBLY (TILL)

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COUNTY: BROOKINGS

LOCATION: 110N-49W-08ADDB

MAP LOCATION: 16

LEGAL LOCATION: NW SE SE NE SEC. 08, T. 110 N., R. 49 W.

LATITUDE: 44.2055

LONGITUDE: 96.4348

LAND OWNER:

PROJECT: BROOKINGS LANDFILL STUDY

DRILLING COMPANY: SDGS

DRILLER: D. JACOBSON

GEOLOGIST: L. FRYKMAN

DATE DRILLED: 05-25-1988

GROUND SURFACE ELEVATION: 1681.00 T

TOTAL DRILL HOLE DEPTH: 77.0

USGS HYDROLOGICAL UNIT CODE: 10170202

ELECTRIC LOG INFORMATION:

SPONTANEOUS POTENTIAL:

NATURAL GAMMA:

SAMPLES:

DRILLER'S LOG:

GEOLOGIST'S LOG: X

DRILLING METHOD: ROTARY

TEST HOLE NUMBER: CO-88-08

SINGLE POINT RESISTIVITY:

EXTRA:

0	-	3.0	SILT, BLACK, CLAYEY; ORGANIC (TOPSOIL)
3.0	-	20.0	CLAY, LIGHT-BROWN, SILTY, SANDY, PEBBLY; OXIDIZED (TILL)
20.0	-	30.0	CLAY, BROWNISH-GRAY, MOTTLED, SILTY, SANDY, PEBBLY; OXIDIZED (TILL)
30.0	-	60.0	CLAY, LIGHT-BROWN, SILTY, SANDY, PEBBLY; OXIDIZED (TILL)
60.0	-	61.0	GRAVEL, BROWN, FINE TO MEDIUM
61.0	-	70.0	CLAY, LIGHT-BROWN, SILTY, SANDY, PEBBLY; OXIDIZED (TILL)
70.0	-	77.0	CLAY, GRAY, SILTY, SANDY, PEBBLY; UNOXIDIZED (TILL)

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DATE DRILLED: 05-25-1988 DRILLING METHOD: AUGER
 GROUND SURFACE ELEVATION: 1682.53 I
 TOTAL DRILL HOLE DEPTH: 18.0 TEST HOLE NUMBER: A1-88-35
 WATER RIGHTS WELL: SDGS WELL NAME: A1-88-35
 OTHER WELL NAME:
 BASIN: BIG SIOUX AQUIFER:
 MANAGEMENT UNIT:
 SCREEN TYPE: PVC, MFG., SLOT SIZE .020 IN. SCREEN LENGTH: 5.0
 CASING TYPE: PVC, SCH. 80 CASING DIAMETER: 2.0
 CASING TOP ELEVATION: 1685.06 I
 CASING STICK-UP: 2.53 TOTAL CASING AND SCREEN: 20.5
 WELL MAINTENANCE DATE:
 USGS HYDROLOGICAL UNIT CODE: 10170202
 ELECTRIC LOG INFORMATION:
 SPONTANEOUS POTENTIAL: SINGLE POINT RESISTIVITY:
 NATURAL GAMMA: EXTRA:
 SAMPLES:

0	-	2.0	SILT, BLACK, CLAYEY, SANDY; ORGANIC (TOPSOIL)
2.0	-	10.0	CLAY, LIGHT-BROWN, SILTY, SANDY, PEBBLY; OXIDIZED (TILL)
10.0	-	15.0	CLAY, LIGHT-BROWN, SILTY, SANDY, PEBBLY, GRAVELLY; OXIDIZED (TILL)
15.0	-	18.0	CLAY, GRAY-BROWN, SILTY, SANDY, PEBBLY; OXIDIZED (TILL)

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COUNTY: BROOKINGS LOCATION: 110N-49W-08ADDB 3
 MAP LOCATION: 19
 LEGAL LOCATION: NW SE SE NE SEC. 08, T. 110 N., R. 49 W.
 LATITUDE: 44.2055 LONGITUDE: 96.4348
 LAND OWNER:
 PROJECT: BROOKINGS LANDFILL STUDY
 DRILLING COMPANY: SDGS
 DRILLER: E. JENSEN DRILLER'S LOG:
 GEOLOGIST: L. FRYKMAN GEOLOGIST'S LOG: X
 DATE DRILLED: 05-25-1988 DRILLING METHOD: AUGER
 GROUND SURFACE ELEVATION: 1682.36 I
 TOTAL DRILL HOLE DEPTH: 18.0 TEST HOLE NUMBER: A1-88-36
 WATER RIGHTS WELL: SDGS WELL NAME: A1-88-36
 OTHER WELL NAME:
 BASIN: BIG SIOUX AQUIFER:
 MANAGEMENT UNIT:
 SCREEN TYPE: SCREEN LENGTH:
 CASING TYPE: PVC, SCH. 80 CASING DIAMETER: 2.0
 CASING TOP ELEVATION: 1684.98 I
 CASING STICK-UP: 2.62 TOTAL CASING AND SCREEN: 20.6
 WELL MAINTENANCE DATE:
 USGS HYDROLOGICAL UNIT CODE: 10170202
 ELECTRIC LOG INFORMATION:
 SPONTANEOUS POTENTIAL: SINGLE POINT RESISTIVITY:
 NATURAL GAMMA: EXTRA:

SAMPLES:

SHELBY-TUBE-CORE-INTAKE WELL, CORE APPROXIMATELY
1 FOOT IN LENGTH AND EXTENDS APPROXIMATELY 1
FOOT BELOW THE LISTED TOTAL DRILL HOLE DEPTH.

0	-	3.0	CLAY, YELLOW-BROWN, SILTY; LITTLE SAND, FEW PEBBLES (ALLUVIUM?)
3.0	-	5.0	CLAY, LIGHT-BROWN, SILTY; LITTLE SAND, FEW PEBBLES (ALLUVIUM)
5.0	-	10.0	CLAY, YELLOW-BROWN, SILTY, SANDY, PEBBLY; OXIDIZED (TILL)
10.0	-	12.0	CLAY, YELLOW-BROWN, SILTY, SANDY, PEBBLY, GRAVELLY; OXIDIZED (TILL)
12.0	-	15.0	CLAY, GRAY-BROWN, SILTY, SLIGHTLY SANDY, GRAVELLY; OXIDIZED (TILL)
15.0	-	18.0	CLAY, BLACK-BROWN, SILTY, PEBBLY; LITTLE SAND (TILL)

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COUNTY: BROOKINGS	LOCATION: 110N-49W-08ADDB 4
MAP LOCATION: 20	
LEGAL LOCATION: NW SE SE NE SEC. 08, T. 110 N., R. 49 W.	
LATITUDE: 44.2056	LONGITUDE: 96.4346
LAND OWNER:	

PROJECT: BROOKINGS LANDFILL STUDY

DRILLING COMPANY: SDGS

DRILLER: C. CHRISTENSEN

DRILLER'S LOG:

GEOLOGIST: L. FRYKMAN

GEOLOGIST'S LOG: X

DATE DRILLED: 04-12-1988

DRILLING METHOD: AUGER

GROUND SURFACE ELEVATION: 1683.00 T

TOTAL DRILL HOLE DEPTH: 48.0

TEST HOLE NUMBER: A1-88-16

USGS HYDROLOGICAL UNIT CODE: 10170202

ELECTRIC LOG INFORMATION:

SPONTANEOUS POTENTIAL:

SINGLE POINT RESISTIVITY:

NATURAL GAMMA:

EXTRA:

SAMPLES:

0	-	2.0	CLAY, BLACK, SILTY; ORGANIC (TOPSOIL)
2.0	-	14.0	CLAY, YELLOW-BROWN, SILTY, PEBBLY (TILL)
14.0	-	17.0	GRAVEL, BROWN, COARSE, ANGULAR; COMPOSED OF SILTSTONE AND LIMESTONE, DRY
17.0	-	21.0	CLAY, BROWN, SILTY, PEBBLY; HARD DRILLING (TILL)
21.0	-	40.0	SILT, REDDISH-BROWN, CLAYEY; VERY LITTLE SAND, VERY FEW PEBBLES; VERY COMPACT, HARD DRILLING (TILL?)
40.0	-	48.0	CLAY, LIGHT-BROWN, SILTY, PEBBLY; MOIST AT 40 FEET, SATURATED AT 46 FEET (TILL)

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COUNTY: BROOKINGS

LOCATION: 110N-49W-08DADB

MAP LOCATION: 21
 LEGAL LOCATION: SE NW NE SE SEC. 08, T. 110 N., R. 49 W.
 LATITUDE: 44.2045 LONGITUDE: 96.4350
 LAND OWNER:
 PROJECT: BROOKINGS LANDFILL STUDY
 DRILLING COMPANY: SDGS
 DRILLER: L. SCHULZ DRILLER'S LOG:
 GEOLOGIST: L. FRYKMAN GEOLOGIST'S LOG: X
 DATE DRILLED: 04-12-1988 DRILLING METHOD: AUGER
 GROUND SURFACE ELEVATION: 1681.00 T
 TOTAL DRILL HOLE DEPTH: 48.0 TEST HOLE NUMBER: A1-88-10
 USGS HYDROLOGICAL UNIT CODE: 10170202
 ELECTRIC LOG INFORMATION:
 SPONTANEOUS POTENTIAL: SINGLE POINT RESISTIVITY:
 NATURAL GAMMA: EXTRA:
 SAMPLES:

0	-	2.0	CLAY, BLACK, SILTY; ORGANIC (TOPSOIL)
2.0	-	40.0	CLAY, YELLOW-BROWN, SILTY, SANDY, PEBBLY (TILL)
40.0	-	48.0	CLAY, LIGHT-BROWN, VERY SILTY, SANDY, PEBBLY; SATURATED AT 47 FEET (TILL)

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COUNTY: BROOKINGS LOCATION: 110N-49W-08DABD 1
 MAP LOCATION: 22
 LEGAL LOCATION: SE NW NE SE SEC. 08, T. 110 N., R. 49 W.
 LATITUDE: 44.2045 LONGITUDE: 96.4350
 LAND OWNER:
 PROJECT: BROOKINGS LANDFILL STUDY
 DRILLING COMPANY: SDGS
 DRILLER: D. GRAU DRILLER'S LOG:
 GEOLOGIST: L. FRYKMAN GEOLOGIST'S LOG: X
 DATE DRILLED: 05-24-1988 DRILLING METHOD: AUGER
 GROUND SURFACE ELEVATION: 1681.58 I
 TOTAL DRILL HOLE DEPTH: 28.0 TEST HOLE NUMBER: A2-88-12
 WATER RIGHTS WELL: SDGS WELL NAME: A2-88-12
 OTHER WELL NAME:
 BASIN: BIG SIOUX AQUIFER:
 MANAGEMENT UNIT:
 SCREEN TYPE: SCREEN LENGTH:
 CASING TYPE: PVC, SCH. 80 CASING DIAMETER: 2.0
 CASING TOP ELEVATION: 1683.89 I
 CASING STICK-UP: 2.31 TOTAL CASING AND SCREEN: 30.3
 WELL MAINTENANCE DATE:
 USGS HYDROLOGICAL UNIT CODE: 10170202
 ELECTRIC LOG INFORMATION:
 SPONTANEOUS POTENTIAL: SINGLE POINT RESISTIVITY:
 NATURAL GAMMA: EXTRA:
 SAMPLES:

SHELBY-TUBE-CORE-INTAKE WELL, CORE APPROXIMATELY
 1 FOOT IN LENGTH AND EXTENDS APPROXIMATELY 1

FOOT BELOW TOTAL DRILL HOLE DEPTH.

0 - 4.0 SILT, BLACK, CLAYEY, SANDY; ORGANIC
(TOPSOIL)
4.0 - 8.0 CLAY, ORANGISH-LIGHT-BROWN, SILTY, SANDY,
PEBBLY; OXIDIZED (TILL)
8.0 - 28.0 CLAY, LIGHT-YELLOW-BROWN, SILTY, SANDY,
PEBBLY; OXIDIZED (TILL)

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COUNTY: BROOKINGS LOCATION: 110N-49W-08DABD 2
MAP LOCATION: 23
LEGAL LOCATION: SE NW NE SE SEC. 08, T. 110 N., R. 49 W.
LATITUDE: 44.2045 LONGITUDE: 96.4350
LAND OWNER:
PROJECT: BROOKINGS LANDFILL STUDY
DRILLING COMPANY: SDGS
DRILLER: S. PENCE DRILLER'S LOG:
GEOLOGIST: L. FRYKMAN GEOLOGIST'S LOG: X
DATE DRILLED: 05-24-1988 DRILLING METHOD: AUGER
GROUND SURFACE ELEVATION: 1681.73 I
TOTAL DRILL HOLE DEPTH: 18.0 TEST HOLE NUMBER: A2-88-11
WATER RIGHTS WELL: SDGS WELL NAME: A2-88-11
OTHER WELL NAME:
BASIN: BIG SIOUX AQUIFER:
MANAGEMENT UNIT:
SCREEN TYPE: PVC, MFG., SLOT SIZE .020 IN. SCREEN LENGTH: 5.0
CASING TYPE: PVC, SCH. 80 CASING DIAMETER: 2.0
CASING TOP ELEVATION: 1684.25 I
CASING STICK-UP: 2.52 TOTAL CASING AND SCREEN: 20.5
WELL MAINTENANCE DATE:
USGS HYDROLOGICAL UNIT CODE: 10170202
ELECTRIC LOG INFORMATION:
SPONTANEOUS POTENTIAL: SINGLE POINT RESISTIVITY:
NATURAL GAMMA: EXTRA:
SAMPLES:

0 - 3.0 SILT, BLACK, CLAYEY, SANDY; ORGANIC
(TOPSOIL)
3.0 - 9.0 CLAY, ORANGISH-LIGHT-BROWN, SILTY, SANDY,
PEBBLY; OXIDIZED (TILL)
9.0 - 18.0 CLAY, YELLOW-BROWN, SILTY, SANDY, PEBBLY;
OXIDIZED (TILL)

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COUNTY: BROOKINGS LOCATION: 110N-49W-08DABD 3
MAP LOCATION: 24
LEGAL LOCATION: SE NW NE SE SEC. 08, T. 110 N., R. 49 W.
LATITUDE: 44.2045 LONGITUDE: 96.4350
LAND OWNER:
PROJECT: BROOKINGS LANDFILL STUDY
DRILLING COMPANY: SDGS

DRILLER: D. GRAU
 GEOLOGIST: L. FRYKMAN
 DATE DRILLED: 05-24-1988
 GROUND SURFACE ELEVATION: 1681.79 I
 TOTAL DRILL HOLE DEPTH: 18.0
 WATER RIGHTS WELL:
 OTHER WELL NAME:
 BASIN: BIG SIOUX
 MANAGEMENT UNIT:
 SCREEN TYPE:
 CASING TYPE: PVC, SCH. 80
 CASING TOP ELEVATION: 1683.41 I
 CASING STICK-UP: 1.62
 WELL MAINTENANCE DATE:
 USGS HYDROLOGICAL UNIT CODE: 10170202
 ELECTRIC LOG INFORMATION:
 SPONTANEOUS POTENTIAL:
 NATURAL GAMMA:
 SAMPLES:

DRILLER'S LOG:
 GEOLOGIST'S LOG: X
 DRILLING METHOD: AUGER
 TEST HOLE NUMBER: A2-88-10
 SDGS WELL NAME: A2-88-10

AQUIFER:
 SCREEN LENGTH:
 CASING DIAMETER: 2.0
 TOTAL CASING AND SCREEN: 19.6

SHELBY-TUBE-CORE-INTAKE WELL, CORE APPROXIMATELY
 1 FOOT IN LENGTH AND EXTENDS APPROXIMATELY 1
 FOOT BELOW TOTAL DRILL HOLE DEPTH.

0 - 4.0 SILT, BLACK, CLAYEY, SANDY; ORGANIC
 (TOPSOIL)
 4.0 - 8.0 CLAY, LIGHT-ORANGISH-BROWN, SILTY, SANDY,
 PEBBLY; OXIDIZED (TILL)
 8.0 - 18.0 CLAY, LIGHT-YELLOW-BROWN, SILTY, SANDY,
 PEBBLY; OXIDIZED (TILL)

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COUNTY: BROOKINGS
 MAP LOCATION: 25
 LEGAL LOCATION: SE SW NE SE SEC. 08, T. 110 N., R. 49 W.
 LATITUDE: 44.2040
 LAND OWNER:
 PROJECT: BROOKINGS LANDFILL STUDY
 DRILLING COMPANY: SDGS

LOCATION: 110N-49W-08DACD
 LONGITUDE: 96.4352

DRILLER: L. SCHULZ
 GEOLOGIST: L. FRYKMAN
 DATE DRILLED: 04-12-1988
 GROUND SURFACE ELEVATION: 1674.00 T
 TOTAL DRILL HOLE DEPTH: 48.0
 USGS HYDROLOGICAL UNIT CODE: 10170202
 ELECTRIC LOG INFORMATION:
 SPONTANEOUS POTENTIAL:
 NATURAL GAMMA:
 SAMPLES:

DRILLER'S LOG:
 GEOLOGIST'S LOG: X
 DRILLING METHOD: AUGER

TEST HOLE NUMBER: A1-88-09
 SINGLE POINT RESISTIVITY:
 EXTRA:

0 - 2.0 CLAY, BLACK, SILTY; ORGANIC (TOPSOIL)
 2.0 - 31.0 CLAY, YELLOW-BROWN, SILTY, SANDY, PEBBLY
 (TILL)

31.0 - 48.0 CLAY, DARK-BROWN, SILTY, SANDY, PEBBLY
(TILL)

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COUNTY: BROOKINGS LOCATION: 110N-49W-08DBAB
MAP LOCATION: 26
LEGAL LOCATION: NW NE NW SE SEC. 08, T. 110 N., R. 49 W.
LATITUDE: 44.2051 LONGITUDE: 96.4402
LAND OWNER:
PROJECT: BROOKINGS LANDFILL STUDY
DRILLING COMPANY: SDGS
DRILLER: L. SCHULZ DRILLER'S LOG:
GEOLOGIST: L. FRYKMAN GEOLOGIST'S LOG: X
DATE DRILLED: 04-13-1988 DRILLING METHOD: AUGER
GROUND SURFACE ELEVATION: 1664.00 T
TOTAL DRILL HOLE DEPTH: 28.0 TEST HOLE NUMBER: A1-88-17
USGS HYDROLOGICAL UNIT CODE: 10170202
ELECTRIC LOG INFORMATION:
SPONTANEOUS POTENTIAL: SINGLE POINT RESISTIVITY:
NATURAL GAMMA: EXTRA:
SAMPLES:

0 - 3.0 CLAY, BLACK, SILTY; ORGANIC (TOPSOIL)
3.0 - 6.0 SILT, BROWN, CLAYEY; FEW PEBBLES
6.0 - 28.0 CLAY, BROWN, VERY SILTY, SLIGHTLY SANDY;
FEW PEBBLES; MOST AT 21 FEET (TILL)

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COUNTY: BROOKINGS LOCATION: 110N-49W-08DBAC
MAP LOCATION: 27
LEGAL LOCATION: SW NE NW SE SEC. 08, T. 110 N., R. 49 W.
LATITUDE: 44.2046 LONGITUDE: 96.4403
LAND OWNER:
PROJECT: BROOKINGS LANDFILL STUDY
DRILLING COMPANY: SDGS
DRILLER: C. CHRISTENSEN DRILLER'S LOG:
GEOLOGIST: L. FRYKMAN GEOLOGIST'S LOG: X
DATE DRILLED: 04-11-1988 DRILLING METHOD: AUGER
GROUND SURFACE ELEVATION: 1675.00 T
TOTAL DRILL HOLE DEPTH: 48.0 TEST HOLE NUMBER: A1-88-04
USGS HYDROLOGICAL UNIT CODE: 10170202
ELECTRIC LOG INFORMATION:
SPONTANEOUS POTENTIAL: SINGLE POINT RESISTIVITY:
NATURAL GAMMA: EXTRA:
SAMPLES:

0 - 2.0 CLAY, BLACK, SILTY; ORGANIC (TOPSOIL)
2.0 - 11.0 CLAY, YELLOW-BROWN, SILTY, SANDY, PEBBLY
(TILL)
11.0 - 26.0 SILT, GRAY-BROWN, SLIGHTLY CLAYEY;
SATURATED AT 15 FEET (LACUSTRINE?)
26.0 - 35.0 CLAY, YELLOW-BROWN, SILTY, SANDY, PEBBLY

(TILL)
 35.0 - 41.0 SILT, BROWN, CLAYEY, SLIGHTLY SANDY;
 MOIST, EASIER DRILLING THAN ABOVE CLAY
 (TILL?)
 41.0 - 48.0 SILT, YELLOW-BROWN, CLAYEY, SANDY; VERY
 FEW PEBBLES (TILL)

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COUNTY: BROOKINGS LOCATION: 110N-49W-08DBAC 1
 MAP LOCATION: 28
 LEGAL LOCATION: SW NE NW SE SEC. 08, T. 110 N., R. 49 W.
 LATITUDE: 44.2046 LONGITUDE: 96.4404
 LAND OWNER:
 PROJECT: BROOKINGS LANDFILL STUDY
 DRILLING COMPANY: SDGS
 DRILLER: L. SCHULZ DRILLER'S LOG:
 GEOLOGIST: L. FRYKMAN GEOLOGIST'S LOG: X
 DATE DRILLED: 04-13-1988 DRILLING METHOD: AUGER
 GROUND SURFACE ELEVATION: 1674.00 T
 TOTAL DRILL HOLE DEPTH: 28.0 TEST HOLE NUMBER: A1-88-22
 USGS HYDROLOGICAL UNIT CODE: 10170202
 ELECTRIC LOG INFORMATION:
 SPONTANEOUS POTENTIAL: SINGLE POINT RESISTIVITY:
 NATURAL GAMMA: EXTRA:
 SAMPLES:

0 - 2.0 SILT, BLACK, CLAYEY; ORGANIC (TOPSOIL)
 2.0 - 4.0 CLAY, YELLOW-BROWN, SILTY, SANDY, PEBBLY
 (TILL)
 4.0 - 6.0 CLAY, BROWN, VERY SILTY, SANDY; FEW
 PEBBLES (TILL)
 6.0 - 28.0 CLAY, YELLOW-BROWN, SILTY, SANDY, PEBBLY
 (TILL)

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COUNTY: BROOKINGS LOCATION: 110N-49W-08DBAC 2
 MAP LOCATION: 29
 LEGAL LOCATION: SW NE NW SE SEC. 08, T. 110 N., R. 49 W.
 LATITUDE: 44.2049 LONGITUDE: 96.4403
 LAND OWNER:
 PROJECT: BROOKINGS LANDFILL STUDY
 DRILLING COMPANY: SDGS
 DRILLER: C. CHRISTENSEN DRILLER'S LOG:
 GEOLOGIST: L. FRYKMAN GEOLOGIST'S LOG: X
 DATE DRILLED: 04-13-1988 DRILLING METHOD: AUGER
 GROUND SURFACE ELEVATION: 1665.00 T
 TOTAL DRILL HOLE DEPTH: 28.0 TEST HOLE NUMBER: A1-88-20
 USGS HYDROLOGICAL UNIT CODE: 10170202
 ELECTRIC LOG INFORMATION:
 SPONTANEOUS POTENTIAL: SINGLE POINT RESISTIVITY:
 NATURAL GAMMA: EXTRA:
 SAMPLES:

WATER RIGHTS WELL: SDGS WELL NAME: A2-88-08
 OTHER WELL NAME:
 BASIN: BIG SIOUX AQUIFER:
 MANAGEMENT UNIT:
 SCREEN TYPE: PVC, MFG., SLOT SIZE .020 IN. SCREEN LENGTH: 5.0
 CASING TYPE: PVC, SCH. 80 CASING DIAMETER: 2.0
 CASING TOP ELEVATION: 1667.63 I
 CASING STICK-UP: 2.63 TOTAL CASING AND SCREEN: 20.6
 WELL MAINTENANCE DATE:
 USGS HYDROLOGICAL UNIT CODE: 10170202
 ELECTRIC LOG INFORMATION:
 SPONTANEOUS POTENTIAL: SINGLE POINT RESISTIVITY:
 NATURAL GAMMA: EXTRA:
 SAMPLES:

0 - 3.0 SILT, BLACK, CLAYEY, SANDY; ORGANIC
 (TOPSOIL)
 3.0 - 18.0 CLAY, LIGHT-BROWN, SILTY, SANDY, PEBBLY;
 OXIDIZED (TILL)

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COUNTY: BROOKINGS LOCATION: 110N-49W-08DBAC 5
 MAP LOCATION: 32
 LEGAL LOCATION: SW NE NW SE SEC. 08, T. 110 N., R. 49 W.
 LATITUDE: 44.2049 LONGITUDE: 96.4403
 LAND OWNER:
 PROJECT: BROOKINGS LANDFILL STUDY
 DRILLING COMPANY: SDGS
 DRILLER: S. PENCE DRILLER'S LOG:
 GEOLOGIST: L. FRYKMAN GEOLOGIST'S LOG: X
 DATE DRILLED: 05-24-1988 DRILLING METHOD: AUGER
 GROUND SURFACE ELEVATION: 1665.08 I
 TOTAL DRILL HOLE DEPTH: 18.0 TEST HOLE NUMBER: A2-88-09
 WATER RIGHTS WELL: SDGS WELL NAME: A2-88-09
 OTHER WELL NAME:
 BASIN: BIG SIOUX AQUIFER:
 MANAGEMENT UNIT:
 SCREEN TYPE: SCREEN LENGTH:
 CASING TYPE: PVC, SCH. 80 CASING DIAMETER: 2.0
 CASING TOP ELEVATION: 1667.68 I
 CASING STICK-UP: 2.60 TOTAL CASING AND SCREEN: 20.6
 WELL MAINTENANCE DATE:
 USGS HYDROLOGICAL UNIT CODE: 10170202
 ELECTRIC LOG INFORMATION:
 SPONTANEOUS POTENTIAL: SINGLE POINT RESISTIVITY:
 NATURAL GAMMA: EXTRA:
 SAMPLES:

SHELBY-TUBE-CORE-INTAKE WELL; CORE APPROXIMATELY
 1 FOOT IN LENGTH AND EXTENDS APPROXIMATELY 1
 FOOT BELOW TOTAL DRILL HOLE DEPTH.

0 - 2.0 SILT, BLACK, CLAYEY; ORGANIC (TOPSOIL)

2.0 - 18.0 CLAY, YELLOW-BROWN, SILTY, SANDY, PEBBLY;
OXIDIZED (TILL)

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COUNTY: BROOKINGS LOCATION: 110N-49W-08DBAC 6
MAP LOCATION: 33
LEGAL LOCATION: SW NE NW SE SEC. 08, T. 110 N., R. 49 W.
LATITUDE: 44.2049 LONGITUDE: 96.4403
LAND OWNER:
PROJECT: BROOKINGS LANDFILL STUDY
DRILLING COMPANY: SDGS
DRILLER: C. PEERY DRILLER'S LOG:
GEOLOGIST: L. FRYKMAN GEOLOGIST'S LOG: X
DATE DRILLED: 05-24-1988 DRILLING METHOD: AUGER
GROUND SURFACE ELEVATION: 1665.17 I
TOTAL DRILL HOLE DEPTH: 38.0 TEST HOLE NUMBER: A1-88-28
WATER RIGHTS WELL: SDGS WELL NAME: A1-88-28
OTHER WELL NAME:
BASIN: BIG SIOUX AQUIFER:
MANAGEMENT UNIT:
SCREEN TYPE: SCREEN LENGTH:
CASING TYPE: PVC, SCH. 80 CASING DIAMETER: 2.0
CASING TOP ELEVATION: 1666.91 I
CASING STICK-UP: 1.74 TOTAL CASING AND SCREEN: 39.7
WELL MAINTENANCE DATE:
USGS HYDROLOGICAL UNIT CODE: 10170202
ELECTRIC LOG INFORMATION:
SPONTANEOUS POTENTIAL: SINGLE POINT RESISTIVITY:
NATURAL GAMMA: EXTRA:
SAMPLES:

SHELBY-TUBE-CORE-INTAKE WELL, CORE APPROXIMATELY
1 FOOT IN LENGTH AND EXTENDS APPROXIMATELY 1
FOOT BELOW TOTAL DRILL HOLE DEPTH.

0 - 3.0 SILT, BLACK, CLAYEY, SANDY; ORGANIC
(TOPSOIL)
3.0 - 12.0 CLAY, LIGHT-BROWN, SILTY, SANDY, PEBBLY
(TILL)
12.0 - 38.0 CLAY, YELLOW-BROWN, SILTY, SANDY, PEBBLY;
SATURATED AT 15 FEET; OXIDIZED (TILL)

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COUNTY: BROOKINGS LOCATION: 110N-49W-08DBAC 7
MAP LOCATION: 34
LEGAL LOCATION: SW NE NW SE SEC. 08, T. 110 N., R. 49 W.
LATITUDE: 44.2049 LONGITUDE: 96.4403
LAND OWNER:
PROJECT: BROOKINGS LANDFILL STUDY
DRILLING COMPANY: SDGS
DRILLER: E. JENSEN DRILLER'S LOG:
GEOLOGIST: L. FRYKMAN GEOLOGIST'S LOG: X

DATE DRILLED: 05-24-1988 DRILLING METHOD: AUGER
 GROUND SURFACE ELEVATION: 1665.27 I
 TOTAL DRILL HOLE DEPTH: 28.0 TEST HOLE NUMBER: A1-88-29
 WATER RIGHTS WELL: SDGS WELL NAME: A1-88-29
 OTHER WELL NAME:
 BASIN: BIG SIOUX AQUIFER:
 MANAGEMENT UNIT:
 SCREEN TYPE: SCREEN LENGTH:
 CASING TYPE: PVC, SCH. 80 CASING DIAMETER: 2.0
 CASING TOP ELEVATION: 1667.00 I
 CASING STICK-UP: 1.73 TOTAL CASING AND SCREEN: 29.7
 WELL MAINTENANCE DATE:
 USGS HYDROLOGICAL UNIT CODE: 10170202
 ELECTRIC LOG INFORMATION:
 SPONTANEOUS POTENTIAL: SINGLE POINT RESISTIVITY:
 NATURAL GAMMA: EXTRA:
 SAMPLES:

SHELBY-TUBE-CORE-INTAKE WELL, CORE APPROXIMATELY
 1 FOOT IN LENGTH AND EXTENDS APPROXIMATELY 1
 FOOT BELOW TOTAL DRILL HOLE DEPTH.

0	-	3.0	SILT, BLACK, CLAYEY, SANDY; ORGANIC (TOPSOIL)
3.0	-	10.0	CLAY, YELLOW-BROWN, SILTY, SANDY, PEBBLY; OXIDIZED (TILL)
10.0	-	13.0	CLAY, LIGHT-BROWN, SILTY, SANDY, PEBBLY; OXIDIZED (TILL)
13.0	-	24.0	CLAY, YELLOW-BROWN, SILTY, SANDY, PEBBLY; OXIDIZED (TILL)
24.0	-	28.0	CLAY, LIGHT-YELLOW-BROWN, SILTY, LESS SANDY; FEW PEBBLES; OXIDIZED (TILL)

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COUNTY: BROOKINGS LOCATION: 110N-49W-08DBAC 8
 MAP LOCATION: 35
 LEGAL LOCATION: SW NE NW SE SEC. 08, T. 110 N., R. 49 W.
 LATITUDE: 44.2049 LONGITUDE: 96.4403
 LAND OWNER:
 PROJECT: BROOKINGS LANDFILL STUDY
 DRILLING COMPANY: SDGS
 DRILLER: D. JACOBSON DRILLER'S LOG:
 GEOLOGIST: L. FRYKMAN GEOLOGIST'S LOG: X
 DATE DRILLED: 05-25-1988 DRILLING METHOD: ROTARY
 GROUND SURFACE ELEVATION: 1666.00 T
 TOTAL DRILL HOLE DEPTH: 57.0 TEST HOLE NUMBER: CO-88-07
 USGS HYDROLOGICAL UNIT CODE: 10170202
 ELECTRIC LOG INFORMATION:
 SPONTANEOUS POTENTIAL: SINGLE POINT RESISTIVITY:
 NATURAL GAMMA: EXTRA:
 SAMPLES:

0	-	3.0	SILT, BLACK, CLAYEY; ORGANIC (TOPSOIL)
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3.0 - 52.0 CLAY, LIGHT-BROWN, SILTY, SANDY, PEBBLY;
 OXIDIZED (TILL)
 52.0 - 57.0 CLAY, GRAY, SILTY, SANDY, PEBBLY;
 OXIDIZED (TILL)

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COUNTY: BROOKINGS LOCATION: 110N-49W-08DBAD
 MAP LOCATION: 36
 LEGAL LOCATION: SE NE NW SE SEC. 08, T. 110 N., R. 49 W.
 LATITUDE: 44.2046 LONGITUDE: 96.4401
 LAND OWNER:
 PROJECT: BROOKINGS LANDFILL STUDY
 DRILLING COMPANY: SDGS
 DRILLER: L. SCHULZ DRILLER'S LOG:
 GEOLOGIST: L. FRYKMAN GEOLOGIST'S LOG: X
 DATE DRILLED: 04-13-1988 DRILLING METHOD: AUGER
 GROUND SURFACE ELEVATION: 1675.00 T
 TOTAL DRILL HOLE DEPTH: 28.0 TEST HOLE NUMBER: A1-88-21
 USGS HYDROLOGICAL UNIT CODE: 10170202
 ELECTRIC LOG INFORMATION:
 SPONTANEOUS POTENTIAL: SINGLE POINT RESISTIVITY:
 NATURAL GAMMA: EXTRA:
 SAMPLES:

0 - 2.0 SILT, BLACK, CLAYEY; ORGANIC (TOPSOIL)
 2.0 - 6.0 CLAY, YELLOW-BROWN, VERY SILTY, SANDY;
 FEW PEBBLES (TILL)
 6.0 - 28.0 CLAY, BROWN, SILTY, SANDY, PEBBLY (TILL)

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COUNTY: BROOKINGS LOCATION: 110N-49W-08DBBC
 MAP LOCATION: 37
 LEGAL LOCATION: SW NW SE SEC. 08, T. 110 N., R. 49 W.
 LATITUDE: 44.2046 LONGITUDE: 96.4414
 LAND OWNER:
 PROJECT: BROOKINGS LANDFILL STUDY
 DRILLING COMPANY: SDGS
 DRILLER: L. SCHULZ DRILLER'S LOG:
 GEOLOGIST: L. FRYKMAN GEOLOGIST'S LOG: X
 DATE DRILLED: 04-11-1988 DRILLING METHOD: AUGER
 GROUND SURFACE ELEVATION: 1664.00 T
 TOTAL DRILL HOLE DEPTH: 48.0 TEST HOLE NUMBER: A1-88-05
 USGS HYDROLOGICAL UNIT CODE: 10170202
 ELECTRIC LOG INFORMATION:
 SPONTANEOUS POTENTIAL: SINGLE POINT RESISTIVITY:
 NATURAL GAMMA: EXTRA:
 SAMPLES:

0 - 2.0 CLAY, BLACK, SILTY; ORGANIC (TOPSOIL)
 2.0 - 20.0 CLAY, YELLOW-BROWN, SILTY, SANDY, PEBBLY
 (TILL)
 20.0 - 23.0 CLAY, BROWN, VERY SILTY, SANDY (TILL?)

23.0 - 48.0 CLAY, BROWN, SILTY, SANDY, PEBBLY;
DRILLED HARD FROM 38 TO 48 FEET (TILL)

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COUNTY: BROOKINGS LOCATION: 110N-49W-08DBCC
MAP LOCATION: 38
LEGAL LOCATION: SW SW NW SE SEC. 08, T. 110 N., R. 49 W.
LATITUDE: 44.2040 LONGITUDE: 96.4415
LAND OWNER:
PROJECT: BROOKINGS LANDFILL STUDY
DRILLING COMPANY: SDGS
DRILLER: L. SCHULZ DRILLER'S LOG:
GEOLOGIST: L. FRYKMAN GEOLOGIST'S LOG: X
DATE DRILLED: 04-11-1988 DRILLING METHOD: AUGER
GROUND SURFACE ELEVATION: 1673.00 T
TOTAL DRILL HOLE DEPTH: 48.0 TEST HOLE NUMBER: A1-88-06
USGS HYDROLOGICAL UNIT CODE: 10170202
ELECTRIC LOG INFORMATION:
SPONTANEOUS POTENTIAL: SINGLE POINT RESISTIVITY:
NATURAL GAMMA: EXTRA:
SAMPLES:

0 -	2.0	CLAY, BLACK, SILTY; ORGANIC (TOPSOIL)
2.0 -	11.0	CLAY, YELLOW-BROWN, SILTY, SANDY, PEBBLY (TILL)
11.0 -	19.0	CLAY, DARK-BROWN-GRAY, SILTY, SANDY, PEBBLY (TILL)
19.0 -	48.0	CLAY, LIGHT-BROWN, SILTY, SANDY, PEBBLY (TILL)

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COUNTY: BROOKINGS LOCATION: 110N-49W-08DBCC 1
MAP LOCATION: 39
LEGAL LOCATION: SW SW NW SE SEC. 08, T. 110 N., R. 49 W.
LATITUDE: 44.2040 LONGITUDE: 96.4416
LAND OWNER:
PROJECT: BROOKINGS LANDFILL STUDY
DRILLING COMPANY: SDGS
DRILLER: C. PEERY DRILLER'S LOG:
GEOLOGIST: L. FRYKMAN GEOLOGIST'S LOG: X
DATE DRILLED: 05-24-1988 DRILLING METHOD: AUGER
GROUND SURFACE ELEVATION: 1671.87 I
TOTAL DRILL HOLE DEPTH: 18.0 TEST HOLE NUMBER: A1-88-26
WATER RIGHTS WELL: SDGS WELL NAME: A1-88-26
OTHER WELL NAME:
BASIN: BIG SIOUX AQUIFER:
MANAGEMENT UNIT:
SCREEN TYPE: SCREEN LENGTH:
CASING TYPE: PVC, SCH. 80 CASING DIAMETER: 2.0
CASING TOP ELEVATION: 1673.98 I
CASING STICK-UP: 2.11 TOTAL CASING AND SCREEN: 20.1
WELL MAINTENANCE DATE:

USGS HYDROLOGICAL UNIT CODE: 10170202

ELECTRIC LOG INFORMATION:

SPONTANEOUS POTENTIAL:

SINGLE POINT RESISTIVITY:

NATURAL GAMMA:

EXTRA:

SAMPLES:

SHELBY-TUBE-CORE-INTAKE WELL; CORE APPROXIMATELY
1 FOOT LONG AND EXTENDS APPROXIMATELY 1 FOOT
BELOW TOTAL DRILL HOLE DEPTH.

0	-	2.0	SILT, BLACK, CLAYEY, SANDY; ORGANIC (TOPSOIL)
2.0	-	10.0	CLAY, BROWN, SILTY, SANDY, PEBBLY; OXIDIZED (TILL)
10.0	-	18.0	CLAY, LIGHT-BROWN, SILTY, SANDY, PEBBLY; OXIDIZED (TILL)

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COUNTY: BROOKINGS

LOCATION: 110N-49W-08DBCC 2

MAP LOCATION: 40

LEGAL LOCATION: SW SW NW SE SEC. 08, T. 110 N., R. 49 W.

LATITUDE: 44.2040

LONGITUDE: 96.4416

LAND OWNER:

PROJECT: BROOKINGS LANDFILL STUDY

DRILLING COMPANY: SDGS

DRILLER: E. JENSEN

DRILLER'S LOG:

GEOLOGIST: L. FRYKMAN

GEOLOGIST'S LOG: X

DATE DRILLED: 05-24-1988

DRILLING METHOD: AUGER

GROUND SURFACE ELEVATION: 1672.11 I

TOTAL DRILL HOLE DEPTH: 18.0

TEST HOLE NUMBER: A1-88-25

WATER RIGHTS WELL:

SDGS WELL NAME: A1-88-25

OTHER WELL NAME:

BASIN: BIG SIOUX

AQUIFER:

MANAGEMENT UNIT:

SCREEN TYPE: PVC, MFG., SLOT SIZE .020 IN. SCREEN LENGTH: 5.0

CASING TYPE: PVC, SCH. 80 CASING DIAMETER: 2.0

CASING TOP ELEVATION: 1674.44 I

CASING STICK-UP: 2.33 TOTAL CASING AND SCREEN: 20.3

WELL MAINTENANCE DATE:

USGS HYDROLOGICAL UNIT CODE: 10170202

ELECTRIC LOG INFORMATION:

SPONTANEOUS POTENTIAL:

SINGLE POINT RESISTIVITY:

NATURAL GAMMA:

EXTRA:

SAMPLES:

0	-	6.0	SILT, BLACK, CLAYEY, SANDY, PEBBLY; ORGANIC (TOPSOIL)
6.0	-	10.0	CLAY, LIGHT-BROWN, SILTY, SANDY, PEBBLY; OXIDIZED (TILL)
10.0	-	15.0	CLAY, YELLOW-BROWN, SILTY, SANDY, PEBBLY; OXIDIZED (TILL)
15.0	-	18.0	CLAY, LIGHT-BROWN, SILTY, SANDY, PEBBLY; OXIDIZED (TILL)

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COUNTY: BROOKINGS LOCATION: 110N-49W-08DBCC 3
MAP LOCATION: 41
LEGAL LOCATION: SW SW NW SE SEC. 08, T. 110 N., R. 49 W.
LATITUDE: 44.2040 LONGITUDE: 96.4416
LAND OWNER:
PROJECT: BROOKINGS LANDFILL STUDY
DRILLING COMPANY: SDGS
DRILLER: S. PENCE DRILLER'S LOG:
GEOLOGIST: L. FRYKMAN GEOLOGIST'S LOG: X
DATE DRILLED: 05-24-1988 DRILLING METHOD: AUGER
GROUND SURFACE ELEVATION: 1672.13 I
TOTAL DRILL HOLE DEPTH: 28.0 TEST HOLE NUMBER: A2-88-06
WATER RIGHTS WELL: SDGS WELL NAME: A2-88-06
OTHER WELL NAME:
BASIN: BIG SIOUX AQUIFER:
MANAGEMENT UNIT:
SCREEN TYPE: SCREEN LENGTH:
CASING TYPE: PVC, SCH. 80 CASING DIAMETER: 2.0
CASING TOP ELEVATION: 1675.12 I
CASING STICK-UP: 2.99 TOTAL CASING AND SCREEN: 31.0
WELL MAINTENANCE DATE:
USGS HYDROLOGICAL UNIT CODE: 10170202
ELECTRIC LOG INFORMATION:
SPONTANEOUS POTENTIAL: SINGLE POINT RESISTIVITY:
NATURAL GAMMA: EXTRA:
SAMPLES:

SHELBY-TUBE-CORE-INTAKE WELL; CORE APPROXIMATELY
1 FOOT IN LENGTH AND EXTENDS APPROXIMATELY 1
FOOT BELOW TOTAL DRILL HOLE DEPTH.

0 - 2.0 SILT, BLACK, CLAYEY, SANDY; ORGANIC
(TOPSOIL)
2.0 - 28.0 CLAY, YELLOW-BROWN, SILTY, SANDY, PEBBLY;
MOIST AT 5 FEET; OXIDIZED (TILL)

* * * *

COUNTY: BROOKINGS LOCATION: 110N-49W-08DBCC 4
MAP LOCATION: 42
LEGAL LOCATION: SW SW NW SE SEC. 08, T. 110 N., R. 49 W.
LATITUDE: 44.2040 LONGITUDE: 96.4414
LAND OWNER:
PROJECT: BROOKINGS LANDFILL STUDY
DRILLING COMPANY: SDGS
DRILLER: D. JACOBSON DRILLER'S LOG:
GEOLOGIST: L. FRYKMAN GEOLOGIST'S LOG: X
DATE DRILLED: 05-25-1988 DRILLING METHOD: ROTARY
GROUND SURFACE ELEVATION: 1673.00 T
TOTAL DRILL HOLE DEPTH: 67.0 TEST HOLE NUMBER: CO-88-06
USGS HYDROLOGICAL UNIT CODE: 10170202
ELECTRIC LOG INFORMATION:

SPONTANEOUS POTENTIAL:
NATURAL GAMMA:
SAMPLES:

SINGLE POINT RESISTIVITY:
EXTRA:

0	-	3.0	SILT, BLACK, CLAYEY; ORGANIC (TOPSOIL)
3.0	-	60.0	CLAY, LIGHT-BROWN, SILTY, SANDY, PEBBLY; OXIDIZED (TILL)
60.0	-	67.0	CLAY, GRAY, SILTY, SANDY, PEBBLY; OXIDIZED (TILL)

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COUNTY: BROOKINGS

LOCATION: 110N-49W-08DCAB

MAP LOCATION: 43

LEGAL LOCATION: NW NE SW SE SEC. 08, T. 110 N., R. 49 W.

LATITUDE: 44.2037

LONGITUDE: 96.4403

LAND OWNER:

PROJECT: BROOKINGS LANDFILL STUDY

DRILLING COMPANY: SDGS

DRILLER: C. CHRISTENSEN

DRILLER'S LOG:

GEOLOGIST: L. FRYKMAN

GEOLOGIST'S LOG: X

DATE DRILLED: 04-11-1988

DRILLING METHOD: AUGER

GROUND SURFACE ELEVATION: 1682.00 T

TOTAL DRILL HOLE DEPTH: 48.0

TEST HOLE NUMBER: A1-88-03

USGS HYDROLOGICAL UNIT CODE: 10170202

ELECTRIC LOG INFORMATION:

SPONTANEOUS POTENTIAL:

SINGLE POINT RESISTIVITY:

NATURAL GAMMA:

EXTRA:

SAMPLES:

0	-	2.0	CLAY, BLACK, SILTY; ORGANIC (TOPSOIL)
2.0	-	19.0	CLAY, YELLOW-BROWN, SILTY, SANDY, PEBBLY (TILL)
19.0	-	48.0	CLAY, BROWN, SILTY, SANDY, PEBBLY; MOIST AT 31 FEET (TILL)

* * * *

COUNTY: BROOKINGS

LOCATION: 110N-49W-08DCCB

MAP LOCATION: 44

LEGAL LOCATION: NW SW SW SE SEC. 08, T. 110 N., R. 49 W.

LATITUDE: 44.2030

LONGITUDE: 96.4414

LAND OWNER:

PROJECT: BROOKINGS LANDFILL STUDY

DRILLING COMPANY: SDGS

DRILLER: C. CHRISTENSEN

DRILLER'S LOG:

GEOLOGIST: L. FRYKMAN

GEOLOGIST'S LOG: X

DATE DRILLED: 04-12-1988

DRILLING METHOD: AUGER

GROUND SURFACE ELEVATION: 1661.00 T

TOTAL DRILL HOLE DEPTH: 48.0

TEST HOLE NUMBER: A1-88-07

USGS HYDROLOGICAL UNIT CODE: 10170202

ELECTRIC LOG INFORMATION:

SPONTANEOUS POTENTIAL:

SINGLE POINT RESISTIVITY:

NATURAL GAMMA:

EXTRA:

SAMPLES:

0 - 2.0 CLAY, BLACK, SILTY; ORGANIC (TOPSOIL)
 2.0 - 10.0 SILT, BROWN, SLIGHTLY CLAYEY, VERY SANDY
 10.0 - 19.0 CLAY, YELLOW-BROWN, VERY SILTY, SANDY;
 FEW PEBBLES, SATURATED AT 12 FEET
 (TILL)
 19.0 - 23.0 SILT, YELLOW-BROWN, VERY SANDY, VERY
 CLAYEY
 23.0 - 48.0 CLAY, YELLOW-BROWN, VERY SILTY, VERY
 SANDY, SLIGHTLY PEBBLY; SATURATED
 (TILL)

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COUNTY: BROOKINGS LOCATION: 110N-49W-08DCCC 1
 MAP LOCATION: 45
 LEGAL LOCATION: SW SW SW SE SEC. 08, T. 110 N., R. 49 W.
 LATITUDE: 44.2026 LONGITUDE: 96.4415
 LAND OWNER:
 PROJECT: BROOKINGS LANDFILL STUDY
 DRILLING COMPANY: SDGS
 DRILLER: C. PEERY DRILLER'S LOG:
 GEOLOGIST: L. FRYKMAN GEOLOGIST'S LOG: X
 DATE DRILLED: 05-24-1988 DRILLING METHOD: AUGER
 GROUND SURFACE ELEVATION: 1674.36 I
 TOTAL DRILL HOLE DEPTH: 28.0 TEST HOLE NUMBER: A1-88-24
 WATER RIGHTS WELL: SDGS WELL NAME: A1-88-24
 OTHER WELL NAME:
 BASIN: BIG SIOUX AQUIFER:
 MANAGEMENT UNIT:
 SCREEN TYPE: SCREEN LENGTH:
 CASING TYPE: PVC, SCH. 80 CASING DIAMETER: 2.0
 CASING TOP ELEVATION: 1677.63 I
 CASING STICK-UP: 3.27 TOTAL CASING AND SCREEN: 31.3
 WELL MAINTENANCE DATE:
 USGS HYDROLOGICAL UNIT CODE: 10170202
 ELECTRIC LOG INFORMATION:
 SPONTANEOUS POTENTIAL: SINGLE POINT RESISTIVITY:
 NATURAL GAMMA: EXTRA:
 SAMPLES:

SHELBY-TUBE-CORE-INTAKE WELL; CORE APPROXIMATELY
 1 FOOT IN LENGTH AND EXTENDS APPROXIMATELY 1
 FOOT BELOW TOTAL DRILL HOLE DEPTH.

0 - 3.0 SILT, BLACK, CLAYEY, SANDY, PEBBLY;
 ORGANIC (TOPSOIL)
 3.0 - 10.0 CLAY, LIGHT-BROWN, SILTY, SANDY, PEBBLY;
 OXIDIZED (TILL)
 10.0 - 15.0 CLAY, YELLOW-BROWN, SILTY, SANDY, PEBBLY;
 OXIDIZED (TILL)
 15.0 - 20.0 CLAY, LIGHT-YELLOW-BROWN, SILTY, SANDY,
 PEBBLY; OXIDIZED (TILL)

20.0 - 24.0 CLAY, GRAYISH-YELLOW-BROWN, SILTY, SANDY;
 FEW PEBBLES, OXIDIZED (TILL)
 24.0 - 26.0 CLAY, DARK-YELLOW-BROWN, SILTY, SANDY,
 PEBBLY; OXIDIZED (TILL)
 26.0 - 28.0 CLAY, YELLOW-BROWN, SILTY, SANDY;
 SATURATED; OXIDIZED (TILL)

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COUNTY: BROOKINGS LOCATION: 110N-49W-08DCCC 2
 MAP LOCATION: 46
 LEGAL LOCATION: SW SW SW SE SEC. 08, T. 110 N., R. 49 W.
 LATITUDE: 44.2026 LONGITUDE: 96.4415
 LAND OWNER:
 PROJECT: BROOKINGS LANDFILL STUDY
 DRILLING COMPANY: SDGS
 DRILLER: S. PENCE DRILLER'S LOG:
 GEOLOGIST: L. FRYKMAN GEOLOGIST'S LOG: X
 DATE DRILLED: 05-24-1988 DRILLING METHOD: AUGER
 GROUND SURFACE ELEVATION: 1674.45 I
 TOTAL DRILL HOLE DEPTH: 18.0 TEST HOLE NUMBER: A2-88-04
 WATER RIGHTS WELL: SDGS WELL NAME: A2-88-04
 OTHER WELL NAME:
 BASIN: BIG SIOUX AQUIFER:
 MANAGEMENT UNIT:
 SCREEN TYPE: PVC, MFG., SLOT SIZE .020 IN. SCREEN LENGTH: 5.0
 CASING TYPE: PVC, SCH. 80 CASING DIAMETER: 2.0
 CASING TOP ELEVATION: 1677.20 I
 CASING STICK-UP: 2.75 TOTAL CASING AND SCREEN: 20.8
 WELL MAINTENANCE DATE:
 USGS HYDROLOGICAL UNIT CODE: 10170202
 ELECTRIC LOG INFORMATION:
 SPONTANEOUS POTENTIAL: SINGLE POINT RESISTIVITY:
 NATURAL GAMMA: EXTRA:
 SAMPLES:

0 - 2.0 SILT, BLACK, CLAYEY; ORGANIC (TOPSOIL)
 2.0 - 4.0 CLAY, LIGHT-BROWN, SILTY, SANDY, PEBBLY;
 OXIDIZED (TILL)
 4.0 - 15.0 CLAY, YELLOW-BROWN, SILTY, SANDY, PEBBLY;
 OXIDIZED (TILL)
 15.0 - 18.0 CLAY, LIGHT-BROWN, SILTY, SANDY, PEBBLY;
 SATURATED AT 17 FEET; OXIDIZED (TILL)

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COUNTY: BROOKINGS LOCATION: 110N-49W-08DCCC 3
 MAP LOCATION: 47
 LEGAL LOCATION: SW SW SW SE SEC. 08, T. 110 N., R. 49 W.
 LATITUDE: 44.2026 LONGITUDE: 96.4415
 LAND OWNER:
 PROJECT: BROOKINGS LANDFILL STUDY
 DRILLING COMPANY: SDGS
 DRILLER: D. GRAU DRILLER'S LOG:

GEOLOGIST: L. FRYKMAN
 DATE DRILLED: 05-24-1988
 GROUND SURFACE ELEVATION: 1674.50 I
 TOTAL DRILL HOLE DEPTH: 18.0
 WATER RIGHTS WELL:
 OTHER WELL NAME:
 BASIN: BIG SIOUX
 MANAGEMENT UNIT:
 SCREEN TYPE:
 CASING TYPE: PVC, SCH. 80
 CASING TOP ELEVATION: 1676.80 I
 CASING STICK-UP: 2.30
 WELL MAINTENANCE DATE:
 USGS HYDROLOGICAL UNIT CODE: 10170202
 ELECTRIC LOG INFORMATION:
 SPONTANEOUS POTENTIAL:
 NATURAL GAMMA:
 SAMPLES:

GEOLOGIST'S LOG: X
 DRILLING METHOD: AUGER
 TEST HOLE NUMBER: A2-88-05
 SDGS WELL NAME: A2-88-05

AQUIFER:

SCREEN LENGTH:
 CASING DIAMETER: 2.0
 TOTAL CASING AND SCREEN: 20.3

SHELBY-TUBE-CORE-INTAKE WELL; CORE APPROXIMATELY
 1 FOOT IN LENGTH AND EXTENDS APPROXIMATELY 1
 FOOT BELOW TOTAL DRILL HOLE DEPTH.

0	-	2.0	SILT, BLACK, CLAYEY; ORGANIC (TOPSOIL)
2.0	-	4.0	CLAY, LIGHT-BROWN, SILTY, SANDY, PEBBLY; OXIDIZED (TILL)
4.0	-	12.0	CLAY, YELLOW-BROWN, SILTY, SANDY, PEBBLY; OXIDIZED (TILL)
12.0	-	18.0	CLAY, LIGHT-BROWN, SILTY, SANDY, PEBBLY; MOIST, OXIDIZED (TILL)

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COUNTY: BROOKINGS
 MAP LOCATION: 48
 LEGAL LOCATION: NW SE SW SE SEC. 08, T. 110 N., R. 49 W.
 LATITUDE: 44.2031
 LAND OWNER:
 PROJECT: BROOKINGS LANDFILL STUDY
 DRILLING COMPANY: SDGS

LOCATION: 110N-49W-08DCDB
 LONGITUDE: 96.4403

DRILLER: L. SCHULZ
 GEOLOGIST: L. FRYKMAN
 DATE DRILLED: 04-11-1988
 GROUND SURFACE ELEVATION: 1685.00 T
 TOTAL DRILL HOLE DEPTH: 48.0
 USGS HYDROLOGICAL UNIT CODE: 10170202
 ELECTRIC LOG INFORMATION:
 SPONTANEOUS POTENTIAL:
 NATURAL GAMMA:
 SAMPLES:

DRILLER'S LOG:
 GEOLOGIST'S LOG: X
 DRILLING METHOD: AUGER

TEST HOLE NUMBER: A1-88-02

SINGLE POINT RESISTIVITY:
 EXTRA:

0	-	2.0	CLAY, BLACK, SILTY; ORGANIC (TOPSOIL)
2.0	-	19.0	CLAY, YELLOW-BROWN, SILTY, SANDY, PEBBLY (TILL)

19.0 - 41.0 CLAY, BROWN, SILTY, SANDY, PEBBLY (TILL)
41.0 - 48.0 CLAY, LIGHT-BROWN, VERY SILTY, SANDY,
PEBBLY; MOIST, SATURATED AT 46 FEET
(TILL)

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COUNTY: BROOKINGS LOCATION: 110N-49W-08DCDC
MAP LOCATION: 49
LEGAL LOCATION: SW SE SW SE SEC. 08, T. 110 N., R. 49 W.
LATITUDE: 44.2027 LONGITUDE: 96.4403
LAND OWNER:
PROJECT: BROOKINGS LANDFILL STUDY
DRILLING COMPANY: SDGS
DRILLER: L. SCHULZ DRILLER'S LOG:
GEOLOGIST: L. FRYKMAN GEOLOGIST'S LOG: X
DATE DRILLED: 04-11-1988 DRILLING METHOD: AUGER
GROUND SURFACE ELEVATION: 1687.00 T
TOTAL DRILL HOLE DEPTH: 48.0 TEST HOLE NUMBER: A1-88-01
USGS HYDROLOGICAL UNIT CODE: 10170202
ELECTRIC LOG INFORMATION:
SPONTANEOUS POTENTIAL: SINGLE POINT RESISTIVITY:
NATURAL GAMMA: EXTRA:
SAMPLES:

DEPTH TO WATER 28 FEET.

0 - 2.0 CLAY, BLACK, SILTY; ORGANIC (TOPSOIL)
2.0 - 19.0 CLAY, YELLOW, SILTY, SLIGHTLY SANDY,
SLIGHTLY PEBBLY (TILL)
19.0 - 48.0 CLAY, LIGHT-BROWN, SILTY, SANDY, PEBBLY;
MOIST AT 24 FEET, SATURATED AT 39 FEET
(TILL)

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COUNTY: BROOKINGS LOCATION: 110N-49W-08DCDC 1
MAP LOCATION: 50
LEGAL LOCATION: SW SE SW SE SEC. 08, T. 110 N., R. 49 W.
LATITUDE: 44.2026 LONGITUDE: 96.4404
LAND OWNER:
PROJECT: BROOKINGS LANDFILL STUDY
DRILLING COMPANY: SDGS
DRILLER: C. PEERY DRILLER'S LOG:
GEOLOGIST: L. FRYKMAN GEOLOGIST'S LOG: X
DATE DRILLED: 05-23-1988 DRILLING METHOD: AUGER
GROUND SURFACE ELEVATION: 1686.46 I
TOTAL DRILL HOLE DEPTH: 38.0 TEST HOLE NUMBER: A1-88-23
WATER RIGHTS WELL: SDGS WELL NAME: A1-88-23
OTHER WELL NAME:
BASIN: BIG SIOUX AQUIFER:
MANAGEMENT UNIT:
SCREEN TYPE: SCREEN LENGTH:
CASING TYPE: PVC, SCH. 80 CASING DIAMETER: 2.0

CASING TOP ELEVATION: 1688.95 I
 CASING STICK-UP: 2.49 TOTAL CASING AND SCREEN: 40.5
 WELL MAINTENANCE DATE:
 USGS HYDROLOGICAL UNIT CODE: 10170202
 ELECTRIC LOG INFORMATION:
 SPONTANEOUS POTENTIAL: SINGLE POINT RESISTIVITY:
 NATURAL GAMMA: EXTRA:
 SAMPLES:

SHELBY-TUBE-CORE-INTAKE WELL; CORE APPROXIMATELY
 1 FOOT IN LENGTH AND EXTENDS APPROXIMATELY 1
 FOOT BELOW TOTAL DRILL HOLE DEPTH.

0	-	4.0	SILT, DARK-BROWN, CLAYEY, SANDY; ORGANIC (TOPSOIL)
4.0	-	20.0	CLAY, LIGHT-BROWN, SILTY, SANDY, PEBBLY (TILL)
20.0	-	25.0	CLAY, DARK-BROWN, SILTY, SANDY, PEBBLY (TILL)
25.0	-	32.0	CLAY, BROWN, SILTY, SANDY, PEBBLY (TILL)
32.0	-	38.0	CLAY, LIGHT-BROWN, SILTY; SATURATED AT 34 FEET (TILL)

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COUNTY: BROOKINGS	LOCATION: 110N-49W-08DCDC 2
MAP LOCATION: 51	
LEGAL LOCATION: SW SE SW SE SEC. 08, T. 110 N., R. 49 W.	
LATITUDE: 44.2026	LONGITUDE: 96.4404
LAND OWNER:	
PROJECT: BROOKINGS LANDFILL STUDY	
DRILLING COMPANY: SDGS	
DRILLER: L. SCHULZ	DRILLER'S LOG:
GEOLOGIST: L. FRYKMAN	GEOLOGIST'S LOG: X
DATE DRILLED: 05-23-1988	DRILLING METHOD: AUGER
GROUND SURFACE ELEVATION: 1686.50 I	
TOTAL DRILL HOLE DEPTH: 15.0	TEST HOLE NUMBER: A2-88-01
WATER RIGHTS WELL:	SDGS WELL NAME: A2-88-01
OTHER WELL NAME:	
BASIN: BIG SIOUX	AQUIFER:
MANAGEMENT UNIT:	
SCREEN TYPE: PVC, MFG., SLOT SIZE .020 IN.	SCREEN LENGTH: 5.0
CASING TYPE: PVC, SCH. 80	CASING DIAMETER: 2.0
CASING TOP ELEVATION: 1689.60 I	
CASING STICK-UP: 3.10	TOTAL CASING AND SCREEN: 18.0
WELL MAINTENANCE DATE:	
USGS HYDROLOGICAL UNIT CODE: 10170202	
ELECTRIC LOG INFORMATION:	
SPONTANEOUS POTENTIAL:	SINGLE POINT RESISTIVITY:
NATURAL GAMMA:	EXTRA:
SAMPLES:	

0	-	2.0	SILT, BLACK, CLAYEY; ORGANIC (TOPSOIL)
2.0	-	5.0	CLAY, LIGHT-BROWN, VERY SILTY, SANDY,

PEBBLY (TILL)
 5.0 - 11.0 CLAY, YELLOW-BROWN, SILTY, SANDY, PEBBLY;
 OXIDIZED (TILL)
 11.0 - 15.0 CLAY, BROWN, SILTY, SANDY, PEBBLY;
 OXIDIZED (TILL)

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COUNTY: BROOKINGS LOCATION: 110N-49W-08DCDC 3
 MAP LOCATION: 52
 LEGAL LOCATION: SW SE SW SE SEC. 08, T. 110 N., R. 49 W.
 LATITUDE: 44.2026 LONGITUDE: 96.4404
 LAND OWNER:
 PROJECT: BROOKINGS LANDFILL STUDY
 DRILLING COMPANY: SDGS
 DRILLER: S. PENCE DRILLER'S LOG:
 GEOLOGIST: L. FRYKMAN GEOLOGIST'S LOG: X
 DATE DRILLED: 05-23-1988 DRILLING METHOD: AUGER
 GROUND SURFACE ELEVATION: 1686.43 I
 TOTAL DRILL HOLE DEPTH: 28.0 TEST HOLE NUMBER: A2-88-02
 WATER RIGHTS WELL: SDGS WELL NAME: A2-88-02
 OTHER WELL NAME:
 BASIN: BIG SIOUX AQUIFER:
 MANAGEMENT UNIT:
 SCREEN TYPE: SCREEN LENGTH:
 CASING TYPE: PVC, SCH. 80 CASING DIAMETER: 2.0
 CASING TOP ELEVATION: 1689.01 I
 CASING STICK-UP: 2.58 TOTAL CASING AND SCREEN: 30.6
 WELL MAINTENANCE DATE:
 USGS HYDROLOGICAL UNIT CODE: 10170202
 ELECTRIC LOG INFORMATION:
 SPONTANEOUS POTENTIAL: SINGLE POINT RESISTIVITY:
 NATURAL GAMMA: EXTRA:
 SAMPLES:

SHELBY-TUBE-CORE-INTAKE-WELL; CORE APPROXIMATELY
 1 FOOT IN LENGTH AND EXTENDS APPROXIMATELY 1
 FOOT BELOW TOTAL DRILL HOLE DEPTH.

0 - 3.0 SILT, BLACK, CLAYEY; ORGANIC (TOPSOIL)
 3.0 - 5.0 CLAY, LIGHT-BROWN, SILTY, SANDY, PEBBLY;
 OXIDIZED (TILL)
 5.0 - 27.0 CLAY, ORANGISH-LIGHT-BROWN, SILTY, SANDY,
 PEBBLY; OXIDIZED (TILL)
 27.0 - 28.0 CLAY, LIGHT-BROWN, SILTY, SANDY, PEBBLY;
 MOIST; OXIDIZED (TILL)

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COUNTY: BROOKINGS LOCATION: 110N-49W-08DCDC 4
 MAP LOCATION: 53
 LEGAL LOCATION: SW SE SW SE SEC. 08, T. 110 N., R. 49 W.
 LATITUDE: 44.2026 LONGITUDE: 96.4404
 LAND OWNER:

PROJECT: BROOKINGS LANDFILL STUDY

DRILLING COMPANY: SDGS

DRILLER: D. GRAU

GEOLOGIST: L. FRYKMAN

DATE DRILLED: 05-24-1988

GROUND SURFACE ELEVATION: 1686.58 I

TOTAL DRILL HOLE DEPTH: 18.0

WATER RIGHTS WELL:

OTHER WELL NAME:

BASIN: BIG SIOUX

MANAGEMENT UNIT:

SCREEN TYPE:

CASING TYPE: PVC, SCH. 80

CASING TOP ELEVATION: 1689.14 I

CASING STICK-UP: 2.56

WELL MAINTENANCE DATE:

USGS HYDROLOGICAL UNIT CODE: 10170202

ELECTRIC LOG INFORMATION:

SPONTANEOUS POTENTIAL:

NATURAL GAMMA:

SAMPLES:

DRILLER'S LOG:

GEOLOGIST'S LOG: X

DRILLING METHOD: AUGER

TEST HOLE NUMBER: A2-88-03

SDGS WELL NAME: A2-88-03

AQUIFER:

SCREEN LENGTH:

CASING DIAMETER: 2.0

TOTAL CASING AND SCREEN: 20.6

SINGLE POINT RESISTIVITY:

EXTRA:

SHELBY-TUBE-CORE-INTAKE WELL; CORE APPROXIMATELY
1 FOOT IN LENGTH AND EXTENDS APPROXIMATELY 1
FOOT BELOW TOTAL DRILL HOLE DEPTH.

0	-	2.0	SILT, BLACK, CLAYEY; ORGANIC (TOPSOIL)
2.0	-	5.0	CLAY, BROWN, SILTY, SANDY; OXIDIZED (TILL)
5.0	-	18.0	CLAY, LIGHT-BROWN, SILTY, SANDY, PEBBLY; OXIDIZED (TILL)

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COUNTY: BROOKINGS

MAP LOCATION: 54

LEGAL LOCATION: SW SE SW SE SEC. 08, T. 110 N., R. 49 W.

LATITUDE: 44.2026

LONGITUDE: 96.4403

LAND OWNER:

PROJECT: BROOKINGS LANDFILL STUDY

DRILLING COMPANY: SDGS

DRILLER: D. JACOBSON

GEOLOGIST: L. FRYKMAN

DATE DRILLED: 05-23-1988

GROUND SURFACE ELEVATION: 1686.00 T

TOTAL DRILL HOLE DEPTH: 107.0

USGS HYDROLOGICAL UNIT CODE: 10170202

ELECTRIC LOG INFORMATION:

SPONTANEOUS POTENTIAL:

NATURAL GAMMA:

SAMPLES:

DRILLER'S LOG:

GEOLOGIST'S LOG: X

DRILLING METHOD: ROTARY

TEST HOLE NUMBER: CO-88-01

SINGLE POINT RESISTIVITY:

EXTRA:

0	-	3.0	SILT, BLACK, CLAYEY; ORGANIC (TOPSOIL)
3.0	-	43.0	CLAY, LIGHT-BROWN, SILTY, SANDY, PEBBLY;

SAMPLES:

0 - 3.0 SILT, BLACK, CLAYEY; ORGANIC (TOPSOIL)
3.0 - 57.0 CLAY, LIGHT-BROWN, SILTY, SANDY, PEBBLY;
OXIDIZED (TILL)

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COUNTY: BROOKINGS LOCATION: 110N-49W-08DCDD 1
MAP LOCATION: 57
LEGAL LOCATION: SE SE SW SE SEC. 08, T. 110 N., R. 49 W.
LATITUDE: 44.2026 LONGITUDE: 96.4359
LAND OWNER:

PROJECT: BROOKINGS LANDFILL STUDY
DRILLING COMPANY: SDGS
DRILLER: D. JACOBSON DRILLER'S LOG:
GEOLOGIST: L. FRYKMAN GEOLOGIST'S LOG: X
DATE DRILLED: 05-24-1988 DRILLING METHOD: ROTARY
GROUND SURFACE ELEVATION: 1685.00 T
TOTAL DRILL HOLE DEPTH: 57.0 TEST HOLE NUMBER: CO-88-02
USGS HYDROLOGICAL UNIT CODE: 10170202
ELECTRIC LOG INFORMATION:
SPONTANEOUS POTENTIAL: SINGLE POINT RESISTIVITY:
NATURAL GAMMA: EXTRA:
SAMPLES:

0 - 3.0 SILT, BLACK, CLAYEY; ORGANIC (TOPSOIL)
3.0 - 57.0 CLAY, LIGHT-BROWN, SILTY, SANDY, PEBBLY;
OXIDIZED (TILL)

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COUNTY: BROOKINGS LOCATION: 110N-49W-08DCDD 2
MAP LOCATION: 58
LEGAL LOCATION: SE SE SW SE SEC. 08, T. 110 N., R. 49 W.
LATITUDE: 44.2026 LONGITUDE: 96.4400
LAND OWNER:

PROJECT: BROOKINGS LANDFILL STUDY
DRILLING COMPANY: SDGS
DRILLER: D. JACOBSON DRILLER'S LOG:
GEOLOGIST: L. FRYKMAN GEOLOGIST'S LOG: X
DATE DRILLED: 05-24-1988 DRILLING METHOD: ROTARY
GROUND SURFACE ELEVATION: 1685.00 T
TOTAL DRILL HOLE DEPTH: 57.0 TEST HOLE NUMBER: CO-88-03
USGS HYDROLOGICAL UNIT CODE: 10170202
ELECTRIC LOG INFORMATION:
SPONTANEOUS POTENTIAL: SINGLE POINT RESISTIVITY:
NATURAL GAMMA: EXTRA:
SAMPLES:

0 - 3.0 SILT, BLACK, CLAYEY; ORGANIC (TOPSOIL)
3.0 - 57.0 CLAY, LIGHT- TO DARK-BROWN, SILTY, SANDY,
PEBBLY; OXIDIZED (TILL)

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COUNTY: BROOKINGS LOCATION: 110N-49W-08DDCA
MAP LOCATION: 59
LEGAL LOCATION: NE SW SE SE SEC. 08, T. 110 N., R. 49 W.
LATITUDE: 44.2032 LONGITUDE: 96.4352
LAND OWNER:
PROJECT: BROOKINGS LANDFILL STUDY
DRILLING COMPANY: SDGS
DRILLER: C. CHRISTENSEN DRILLER'S LOG:
GEOLOGIST: L. FRYKMAN GEOLOGIST'S LOG: X
DATE DRILLED: 04-12-1988 DRILLING METHOD: AUGER
GROUND SURFACE ELEVATION: 1667.00 T
TOTAL DRILL HOLE DEPTH: 48.0 TEST HOLE NUMBER: A1-88-08
USGS HYDROLOGICAL UNIT CODE: 10170202
ELECTRIC LOG INFORMATION:
SPONTANEOUS POTENTIAL: SINGLE POINT RESISTIVITY:
NATURAL GAMMA: EXTRA:
SAMPLES:

0	-	2.0	CLAY, BLACK, SILTY; ORGANIC (TOPSOIL)
2.0	-	11.0	CLAY, YELLOW-BROWN, VERY SILTY, SLIGHTLY SANDY; SATURATED AT 11 FEET
11.0	-	36.0	CLAY, YELLOW-BROWN, SILTY, VERY SANDY, PEBBLY (TILL)
36.0	-	48.0	CLAY, BROWNISH-GRAY, SILTY, PEBBLY, SLIGHTLY SANDY (TILL)

* * * *

COUNTY: BROOKINGS LOCATION: 110N-49W-08DDCD 1
MAP LOCATION: 60
LEGAL LOCATION: SE SW SE SE SEC. 08, T. 110 N., R. 49 W.
LATITUDE: 44.2026 LONGITUDE: 96.4351
LAND OWNER:
PROJECT: BROOKINGS LANDFILL STUDY
DRILLING COMPANY: SDGS
DRILLER: D. GRAU DRILLER'S LOG:
GEOLOGIST: L. FRYKMAN GEOLOGIST'S LOG: X
DATE DRILLED: 05-25-1988 DRILLING METHOD: AUGER
GROUND SURFACE ELEVATION: 1673.34 I
TOTAL DRILL HOLE DEPTH: 18.0 TEST HOLE NUMBER: A2-88-14
WATER RIGHTS WELL: SDGS WELL NAME: A2-88-14
OTHER WELL NAME:
BASIN: BIG SIOUX AQUIFER:
MANAGEMENT UNIT:
SCREEN TYPE: SCREEN LENGTH:
CASING TYPE: PVC, SCH. 80 CASING DIAMETER: 2.0
CASING TOP ELEVATION: 1675.96 I
CASING STICK-UP: 2.62 TOTAL CASING AND SCREEN: 20.6
WELL MAINTENANCE DATE:
USGS HYDROLOGICAL UNIT CODE: 10170202
ELECTRIC LOG INFORMATION:
SPONTANEOUS POTENTIAL: SINGLE POINT RESISTIVITY:

NATURAL GAMMA:
SAMPLES:

EXTRA:

SHELBY-TUBE-CORE-INTAKE WELL, CORE APPROXIMATELY
1 FOOT IN LENGTH AND EXTENDS APPROXIMATELY 1
FOOT BELOW TOTAL DRILL HOLE DEPTH.

0 - 4.0 SILT, BLACK, CLAYEY, SANDY; ORGANIC
(TOPSOIL)
4.0 - 18.0 CLAY, LIGHT-YELLOW-BROWN, SILTY, SANDY,
PEBBLY; OXIDIZED (TILL)

* * * *

COUNTY: BROOKINGS LOCATION: 110N-49W-08DDCD 2
MAP LOCATION: 61
LEGAL LOCATION: SE SW SE SE SEC. 08, T. 110 N., R. 49 W.
LATITUDE: 44.2026 LONGITUDE: 96.4351
LAND OWNER:
PROJECT: BROOKINGS LANDFILL STUDY
DRILLING COMPANY: SDGS
DRILLER: S. PENCE DRILLER'S LOG:
GEOLOGIST: L. FRYKMAN GEOLOGIST'S LOG: X
DATE DRILLED: 05-25-1988 DRILLING METHOD: AUGER
GROUND SURFACE ELEVATION: 1673.32 I
TOTAL DRILL HOLE DEPTH: 18.0 TEST HOLE NUMBER: A2-88-13
WATER RIGHTS WELL: SDGS WELL NAME: A2-88-13
OTHER WELL NAME:
BASIN: BIG SIOUX AQUIFER:
MANAGEMENT UNIT:
SCREEN TYPE: PVC, MFG., SLOT SIZE .020 IN. SCREEN LENGTH: 5.0
CASING TYPE: PVC, SCH. 80 CASING DIAMETER: 2.0
CASING TOP ELEVATION: 1675.95 I
CASING STICK-UP: 2.63 TOTAL CASING AND SCREEN: 19.0
WELL MAINTENANCE DATE:
USGS HYDROLOGICAL UNIT CODE: 10170202
ELECTRIC LOG INFORMATION:
SPONTANEOUS POTENTIAL: SINGLE POINT RESISTIVITY:
NATURAL GAMMA: EXTRA:
SAMPLES:

0 - 4.0 SILT, BLACK, CLAYEY, SANDY; ORGANIC
(TOPSOIL)
4.0 - 18.0 CLAY, LIGHT-YELLOW-BROWN, SILTY, SANDY,
PEBBLY; OXIDIZED (TILL)

* * * *

COUNTY: BROOKINGS LOCATION: 110N-49W-08DDCD 3
MAP LOCATION: 62
LEGAL LOCATION: SE SW SE SE SEC. 08, T. 110 N., R. 49 W.
LATITUDE: 44.2026 LONGITUDE: 96.4351
LAND OWNER:
PROJECT: BROOKINGS LANDFILL STUDY

DRILLING COMPANY: SDGS
 DRILLER: C. PEERY
 GEOLOGIST: L. FRYKMAN
 DATE DRILLED: 05-25-1988
 GROUND SURFACE ELEVATION: 1673.11 I
 TOTAL DRILL HOLE DEPTH: 28.0
 WATER RIGHTS WELL:
 OTHER WELL NAME:
 BASIN: BIG SIOUX
 MANAGEMENT UNIT:
 SCREEN TYPE:
 CASING TYPE: PVC, SCH. 80
 CASING TOP ELEVATION: 1675.64 I
 CASING STICK-UP: 2.53
 WELL MAINTENANCE DATE:
 USGS HYDROLOGICAL UNIT CODE: 10170202
 ELECTRIC LOG INFORMATION:
 SPONTANEOUS POTENTIAL:
 NATURAL GAMMA:
 SAMPLES:

DRILLER'S LOG:
 GEOLOGIST'S LOG: X
 DRILLING METHOD: AUGER
 TEST HOLE NUMBER: A1-88-30
 SDGS WELL NAME: A1-88-30
 AQUIFER:
 SCREEN LENGTH:
 CASING DIAMETER: 2.0
 TOTAL CASING AND SCREEN: 30.5
 SINGLE POINT RESISTIVITY:
 EXTRA:

SHELBY-TUBE-CORE-INTAKE WELL, CORE APPROXIMATELY
 1 FOOT IN LENGTH AND EXTENDS APPROXIMATELY 1
 FOOT BELOW TOTAL DRILL HOLE DEPTH.

0 - 3.0 SILT, BLACK, CLAYEY, SANDY, PEBBLY;
 ORGANIC (TOPSOIL)
 3.0 - 28.0 CLAY, LIGHT-BROWN, SILTY, SANDY, PEBBLY;
 MOIST AT 20 FEET; OXIDIZED (TILL)

* * * *

APPENDIX B
Water-Level Measurements

Well Site 1

Well name with map location (ML) number
and depth to water in feet below land surface

Date	A2-88-01 (ML 51)	A2-88-03 (ML 53)	A2-88-02 (ML 52)	A1-88-23 (ML 50)
05/26/88	dry	14.11	14.54	17.94
06/01/88	dry	15.22	14.00	14.19
06/03/88	dry	14.21	14.03	14.02
06/05/88	dry	14.30	14.13	14.18
06/09/88	dry	14.40	14.20	14.31
06/13/88	dry	14.34	14.16	14.08
06/17/88	dry	14.22	14.10	14.09
06/20/88	dry	14.27	14.14	14.12
06/24/88	dry	14.15	13.98	13.93
06/27/88	dry	14.28	14.11	14.12
07/01/88	14.75	14.48	14.23	14.27
07/08/88	14.61	14.38	14.20	14.29
07/14/88	14.65	14.38	14.29	14.27
07/22/88	14.66	14.65	14.49	14.67
07/29/88	14.55	14.53	14.48	14.59
08/05/88	14.67	14.98	14.77	14.94
08/11/88	14.64	15.02	14.98	14.89
08/19/88	14.81	15.42	15.01	15.28
08/26/88	14.66	15.38	15.20	15.30
09/01/88	14.74	15.45	15.49	15.32
09/09/88	dry	15.58	15.51	15.48
09/15/88	dry	16.13	16.13	15.60
09/21/88	dry	15.95	15.76	15.84
09/30/88	dry	16.21	16.05	16.09

Well Site 2

Well name with map location (ML) number
and depth to water in feet below land surface

Date	A2-88-04 (ML 46)	A2-88-05 (ML 47)	A1-88-24 (ML 45)
05/26/88	10.08	10.14	10.35
06/01/88	10.27	10.25	10.43
06/03/88	10.33	10.38	10.50
06/05/88	10.41	10.34	10.55
06/09/88	11.73	10.68	10.81
06/13/88	10.81	10.68	10.95
06/17/88	10.87	10.84	11.04
06/20/88	11.14	11.24	11.26
06/24/88	11.05	12.22	11.57
06/27/88	11.54	11.56	11.79
07/01/88	11.79	11.68	11.97
07/08/88	12.28	12.06	12.29
07/14/88	12.47	12.46	12.62
07/22/88	13.12	13.13	13.45
07/29/88	13.49	13.62	13.77
08/05/88	14.12	13.99	14.29
08/11/88	14.51	14.53	14.59
08/19/88	15.09	14.88	15.12
08/26/88	15.39	15.44	15.59
09/01/88	15.61	15.62	15.86
09/09/88	16.10	16.10	16.27
09/15/88	16.43	16.64	16.58
09/21/88	16.50	16.55	16.74
09/30/88	16.76	16.78	16.95

Well Site 3

Well name with map location (ML) number
and depth to water in feet below land surface

Date	A1-88-25 (ML 40)	A1-88-26 (ML 39)	A2-88-06 (ML 41)
05/26/88	dry	17.05	28.09
06/01/88	14.17	13.94	24.31
06/03/88	14.22	13.73	23.02
06/05/88	14.15	13.57	22.15
06/09/88	14.31	13.61	20.75
06/13/88	14.77	13.81	19.35
06/17/88	15.19	14.27	18.49
06/20/88	15.29	14.37	17.88
06/24/88	15.63	14.71	17.29
06/27/88	16.01	15.03	17.14
07/01/88	16.40	15.51	17.05
07/08/88	16.88	15.86	16.49
07/14/88	17.11	16.47	16.59
07/22/88	dry	17.11	16.98
07/29/88	dry	17.60	17.15
08/05/88	dry	dry	17.46
08/11/88	dry	dry	17.62
08/19/88	dry	dry	18.19
08/26/88	dry	dry	18.47
09/01/88	dry	dry	18.87
09/09/88	dry	dry	19.25
09/15/88	dry	dry	19.92
09/21/88	dry	dry	19.98
09/30/88	dry	dry	20.35

Well Site 4

Well name with map location (ML) number
and depth to water in feet below land surface

Date	A2-88-08 (ML 31)	A2-88-09 (ML 32)	A1-88-29 (ML 34)	A1-88-28 (ML 33)
05/26/88	13.52	17.26	24.16	36.35
06/01/88	8.55	12.38	14.10	28.18
06/03/88	8.63	11.15	12.39	25.86
06/05/88	8.62	10.58	11.41	27.12
06/09/88	8.95	9.88	10.18	21.02
06/13/88	8.99	9.51	9.65	18.63
06/17/88	8.97	9.31	9.42	16.84
06/20/88	9.30	9.11	9.45	15.48
06/24/88	9.11	9.18	9.61	14.59
06/27/88	10.65	9.43	9.63	13.69
07/01/88	9.81	9.62	9.83	12.92
07/08/88	9.97	9.71	11.07	12.04
07/14/88	10.30	10.07	10.54	11.59
07/22/88	10.69	10.54	10.70	11.24
07/29/88	11.02	10.75	11.25	11.16
08/05/88	11.43	11.07	11.49	11.19
08/11/88	11.62	11.70	11.92	12.41
08/19/88	11.11	11.84	12.18	11.34
08/26/88	12.80	12.33	12.76	12.04
09/01/88	12.85	12.69	13.21	12.42
09/09/88	13.39	13.18	13.42	12.51
09/15/88	13.86	13.63	14.11	12.93
09/21/88	13.94	13.75	14.10	13.17
09/30/88	14.35	14.25	14.56	13.65

Well Site 5

Well name with map location (ML) number
and depth to water in feet below land surface

Date	A2-88-11 (ML 23)	A2-88-10 (ML 24)	A2-88-12 (ML 22)
05/26/88	dry	18.32	28.29
06/01/88	17.53	17.73	24.11
06/03/88	17.31	17.33	22.80
06/05/88	17.03	17.02	23.07
06/09/88	16.83	16.36	20.41
06/13/88	15.96	15.95	19.01
06/17/88	15.43	15.53	18.07
06/20/88	15.12	15.07	17.34
06/24/88	14.88	14.86	16.87
06/27/88	14.83	14.66	16.40
07/01/88	14.61	14.41	15.90
07/08/88	14.15	14.22	15.19
07/14/88	14.11	13.94	14.76
07/22/88	14.14	14.07	14.65
07/29/88	14.20	14.06	14.49
08/05/88	14.32	14.29	14.53
08/11/88	14.50	14.56	14.50
08/19/88	14.64	14.65	14.68
08/26/88	14.70	14.72	14.77
09/01/88	14.92	15.10	14.85
09/09/88	15.17	15.30	15.09
09/15/88	15.27	15.52	15.33
09/21/88	15.49	15.57	15.48
09/30/88	15.70	15.91	15.78

Well Site 6

Well name with map location (ML) number
and depth to water in feet below land surface

Date	A2-88-13 (ML 61)	A2-88-14 (ML 60)	A1-88-30 (ML 62)
05/26/88	6.09	19.20	28.61
06/01/88	6.35	17.26	24.85
06/03/88	6.59	16.68	23.78
06/05/88	6.61	16.28	22.85
06/09/88	6.89	15.50	20.91
06/13/88	7.21	14.62	19.44
06/17/88	7.26	14.06	18.33
06/20/88	7.60	13.60	17.41
06/24/88	7.91	13.06	16.15
06/27/88	8.05	12.79	15.56
07/01/88	7.55	12.42	14.88
07/08/88	8.42	11.77	13.57
07/14/88	8.66	11.58	13.03
07/22/88	8.98	11.18	12.14
07/29/88	9.19	11.02	11.71
08/05/88	9.50	10.79	11.41
08/11/88	9.91	10.72	11.23
08/19/88	9.94	10.62	10.93
08/26/88	10.17	10.42	10.77
09/01/88	10.74	10.74	10.80
09/09/88	10.55	10.46	10.76
09/15/88	10.81	10.54	10.78
09/21/88	11.04	10.63	10.81
09/30/88	11.29	10.76	10.93

Well Site 7

Well name with map location (ML) number
and depth to water in feet below land surface

Date	A1-88-31 (ML 13)	A1-88-32 (ML 14)	A2-88-15 (ML 12)
05/26/88	9.73	18.81	dry
06/01/88	9.85	15.95	28.19
06/03/88	9.86	15.21	28.09
06/05/88	10.01	14.65	28.02
06/09/88	10.08	13.80	27.50
06/13/88	10.12	12.99	27.09
06/17/88	10.08	12.41	26.80
06/20/88	10.41	12.04	26.55
06/24/88	10.18	11.49	26.20
06/27/88	10.46	11.65	25.95
07/01/88	11.69	11.33	25.61
07/08/88	10.76	11.08	24.86
07/14/88	10.95	11.18	24.50
07/22/88	11.08	11.02	24.10
07/29/88	11.18	11.18	23.39
08/05/88	11.43	11.11	23.02
08/11/88	11.48	11.59	22.61
08/19/88	11.60	11.40	22.10
08/26/88	11.72	11.57	21.76
09/01/88	12.12	11.56	21.28
09/09/88	12.04	11.75	21.08
09/15/88	12.28	11.95	20.54
09/21/88	12.38	11.99	20.38
09/30/88	12.60	12.20	20.05

Well Site 8

Well name with map location (ML) number
and depth to water in feet below land surface

Date	A2-88-16 (ML 7)	A2-88-17 (ML 8)	A1-88-33 (ML 6)
05/26/88	dry	dry	dry
06/01/88	dry	dry	26.55
06/03/88	dry	18.57	25.95
06/05/88	dry	18.57	25.51
06/09/88	dry	18.57	24.47
06/13/88	dry	18.52	23.67
06/17/88	dry	18.44	22.78
06/20/88	dry	18.46	22.45
06/24/88	dry	18.38	21.85
06/27/88	dry	18.51	21.61
07/01/88	dry	18.37	21.17
07/08/88	dry	18.40	20.50
07/14/88	dry	18.28	20.10
07/22/88	dry	18.51	19.72
07/29/88	dry	18.40	19.45
08/05/88	dry	18.48	19.28
08/11/88	dry	18.53	19.17
08/19/88	dry	dry	19.13
08/26/88	dry	dry	19.04
09/01/88	dry	dry	19.00
09/09/88	dry	dry	19.14
09/15/88	dry	dry	19.06
09/21/88	dry	dry	19.18
09/30/88	dry	dry	19.20

Well Site 9

Well name with map location (ML) number
and depth to water in feet below land surface

Date	A1-88-35 (ML 18)	A1-88-36 (ML 19)	A2-88-19 (ML 17)
05/26/88	dry	dry	19.25
06/01/88	dry	dry	18.90
06/03/88	dry	dry	18.98
06/05/88	dry	dry	20.09
06/09/88	dry	dry	19.10
06/13/88	dry	dry	18.84
06/17/88	dry	dry	18.87
06/20/88	dry	dry	18.48
06/24/88	dry	dry	18.86
06/27/88	dry	dry	19.06
07/01/88	dry	dry	18.94
07/08/88	dry	dry	18.93
07/14/88	dry	dry	19.03
07/22/88	dry	dry	19.54
07/29/88	dry	dry	19.45
08/05/88	dry	dry	19.63
08/11/88	dry	dry	20.03
08/19/88	dry	dry	20.26
08/26/88	dry	dry	20.43
09/01/88	dry	dry	20.67
09/09/88	dry	dry	20.99
09/15/88	dry	dry	21.10
09/21/88	dry	dry	21.09
09/30/88	dry	dry	21.68

Well Site 10

Well name with map
location (ML) number
and depth to water
in feet below land surface

Date	A1-88-34 (ML 4)
05/26/88	4.76
06/01/88	4.98
06/03/88	5.06
06/05/88	5.35
06/09/88	5.45
06/13/88	5.81
06/17/88	6.11
06/20/88	6.04
06/24/88	6.26
06/27/88	6.42
07/01/88	6.42
07/08/88	6.58
07/14/88	6.99
07/22/88	7.17
07/29/88	7.18
08/05/88	7.19
08/11/88	7.34
08/19/88	7.48
08/26/88	7.46
09/01/88	7.51
09/09/88	7.69
09/15/88	7.59
09/21/88	7.29
09/30/88	7.01

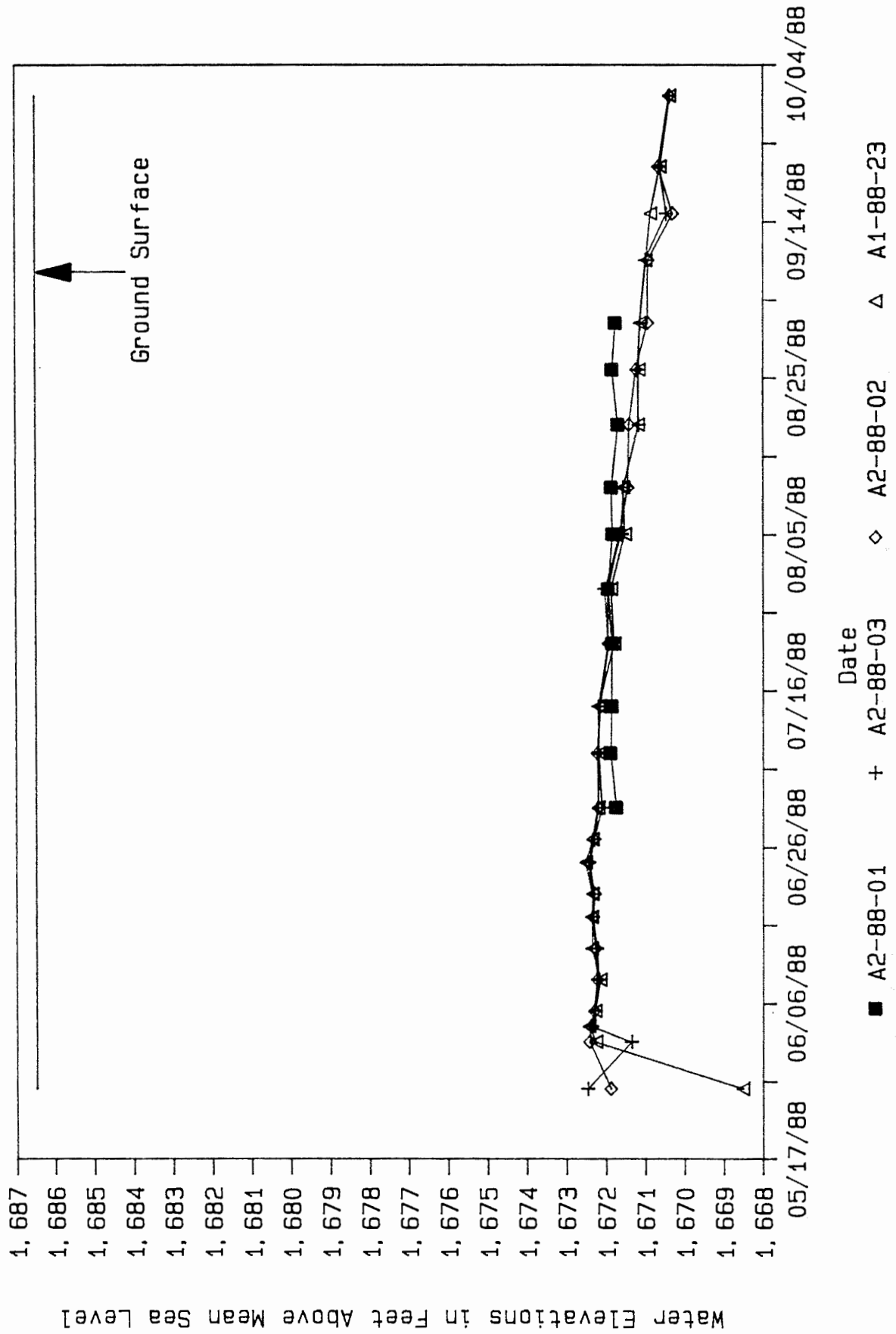
Well Site 11

Well name with map
location (ML) number
and depth to water
in feet below land surface

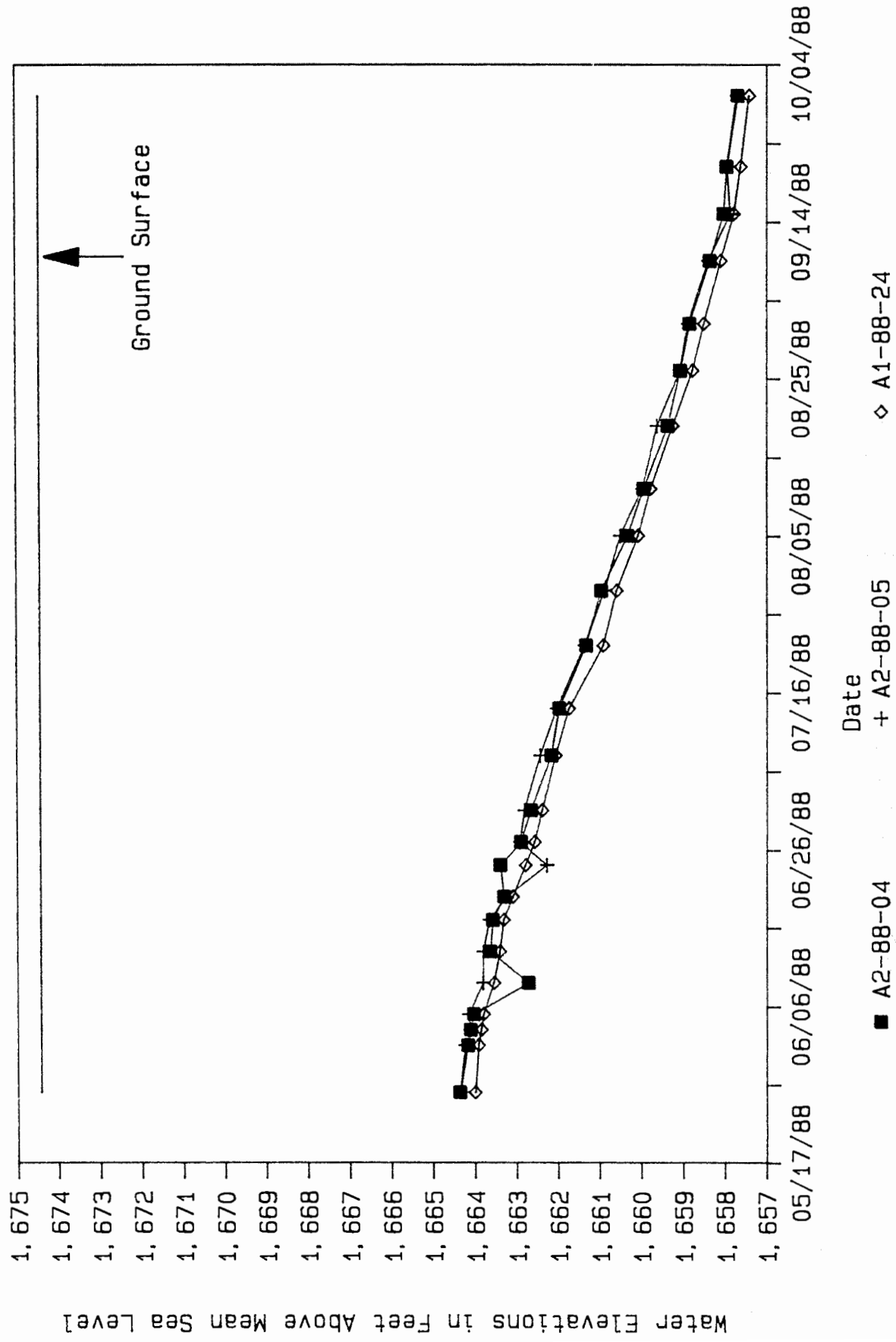
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05/26/88	2.47
06/01/88	2.84
06/03/88	3.16
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06/09/88	3.56
06/13/88	4.06
06/17/88	4.26
06/20/88	4.39
06/24/88	5.05
06/27/88	5.08
07/01/88	5.15
07/08/88	5.57
07/14/88	5.88
07/22/88	6.43
07/29/88	6.66
08/05/88	6.85
08/11/88	7.19
08/19/88	7.48
08/26/88	7.60
09/01/88	7.77
09/09/88	8.19
09/15/88	8.05
09/21/88	7.75
09/30/88	7.46

APPENDIX C
Water-Elevation Graphs

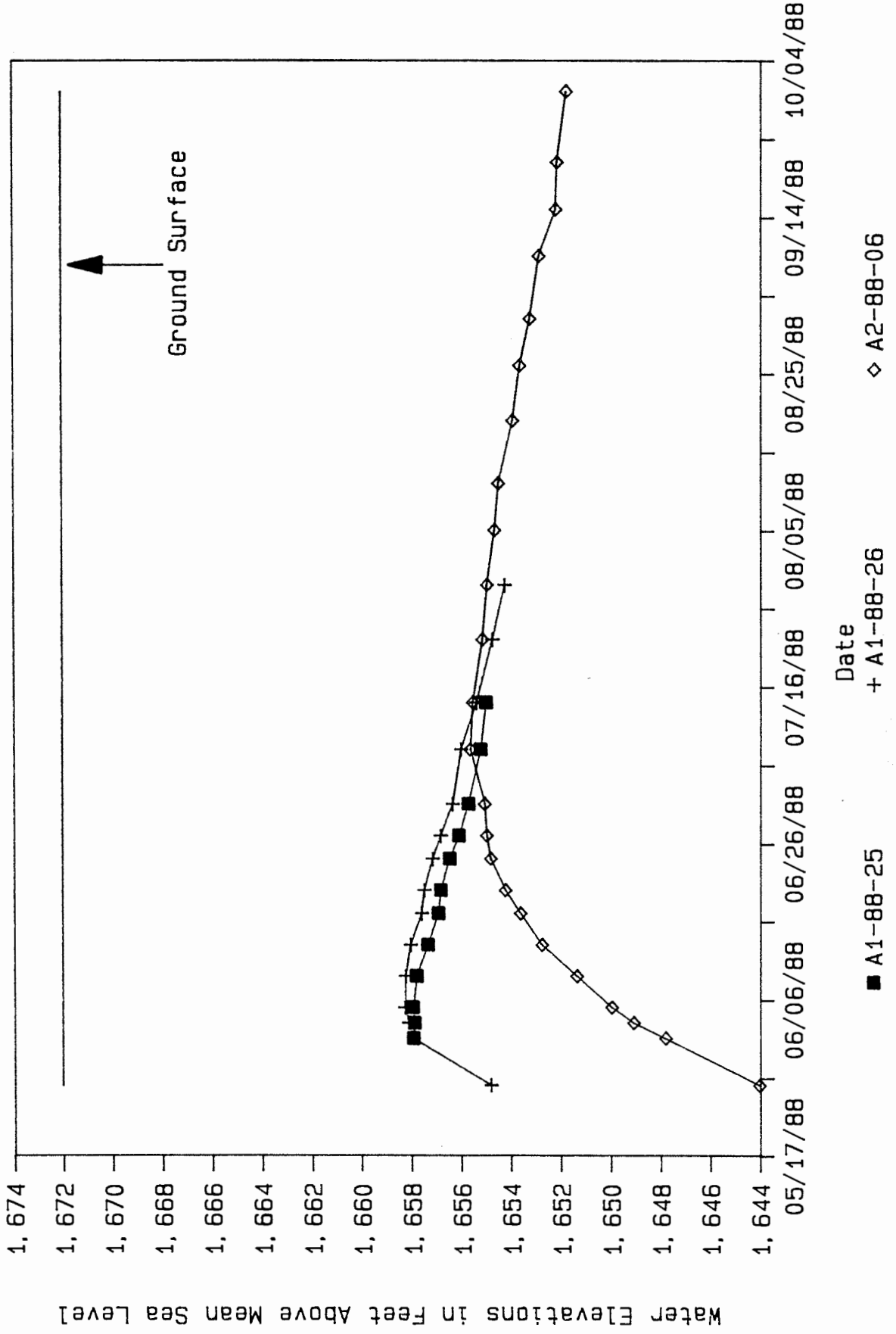
Water Elevations at Well Site 1



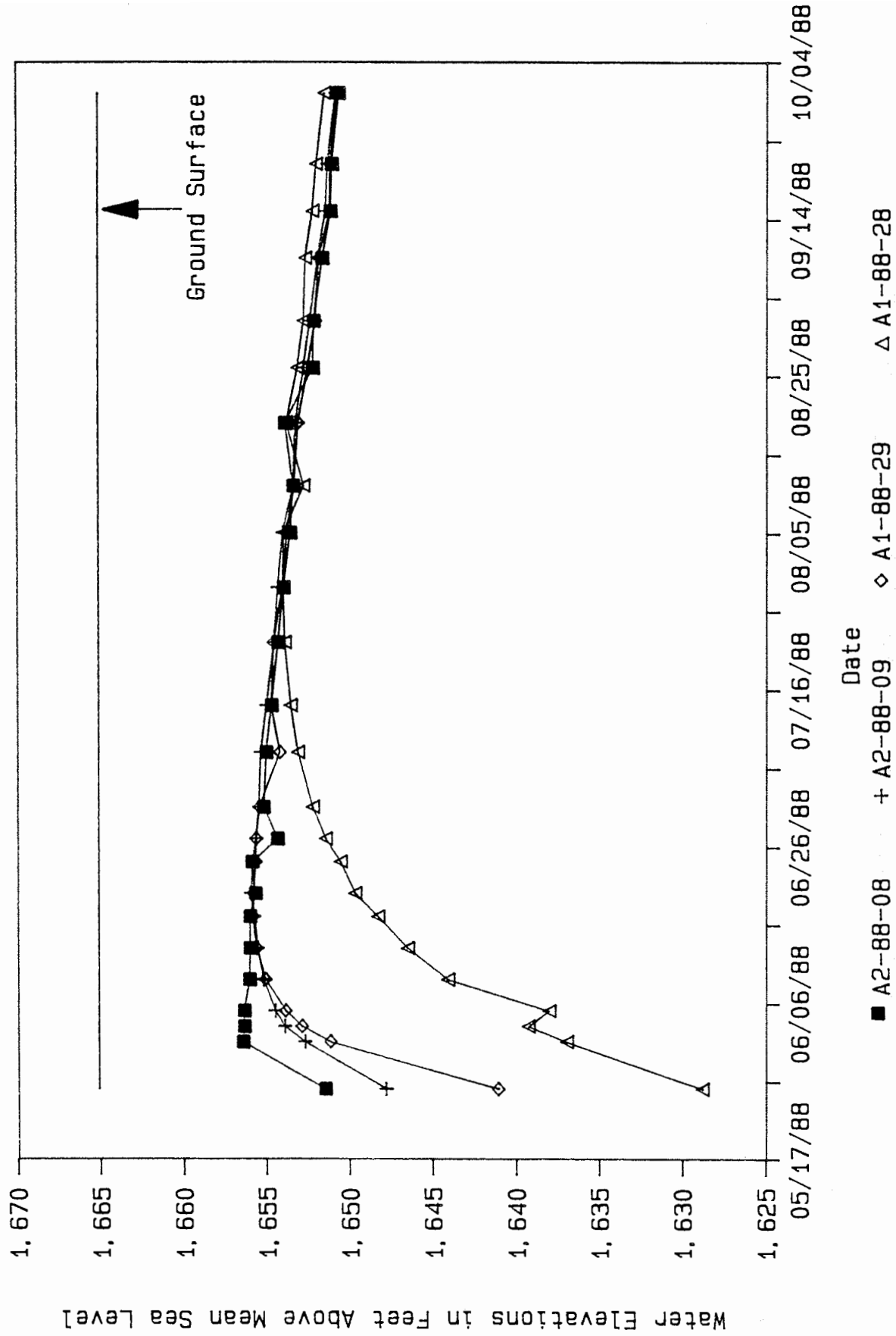
Water Elevations at Well Site 2



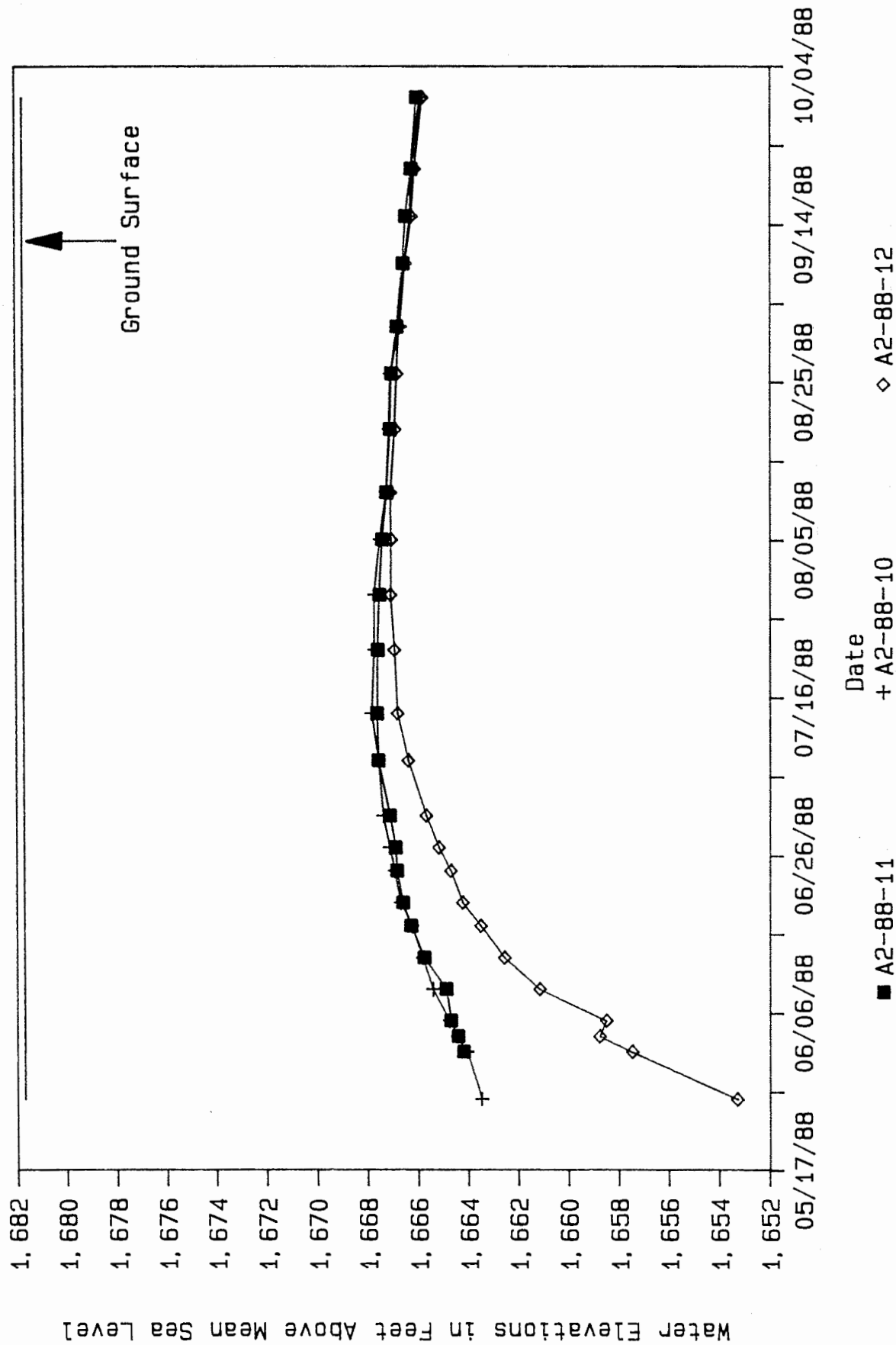
Water Elevations at Well Site 3



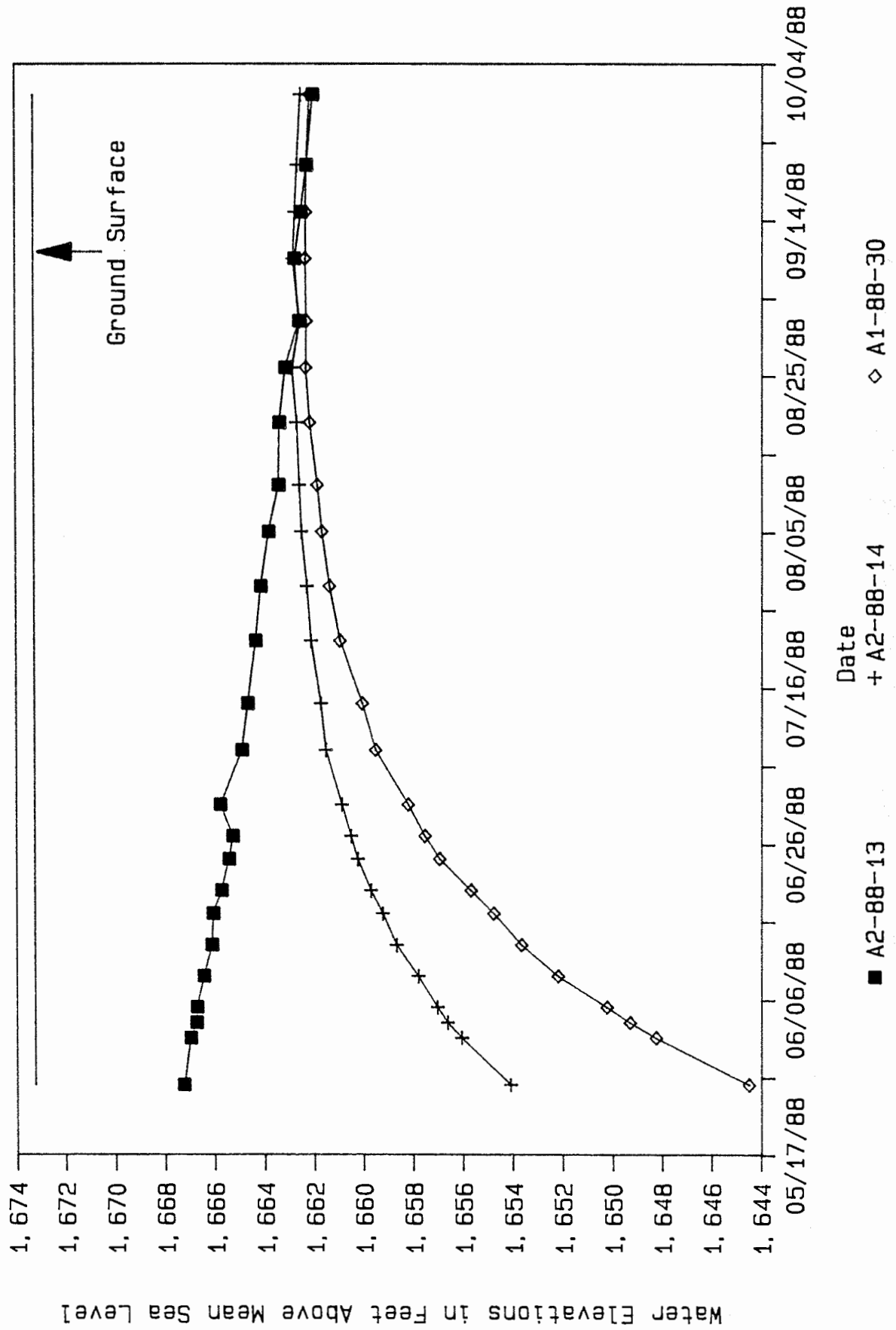
Water Elevations at Well Site 4



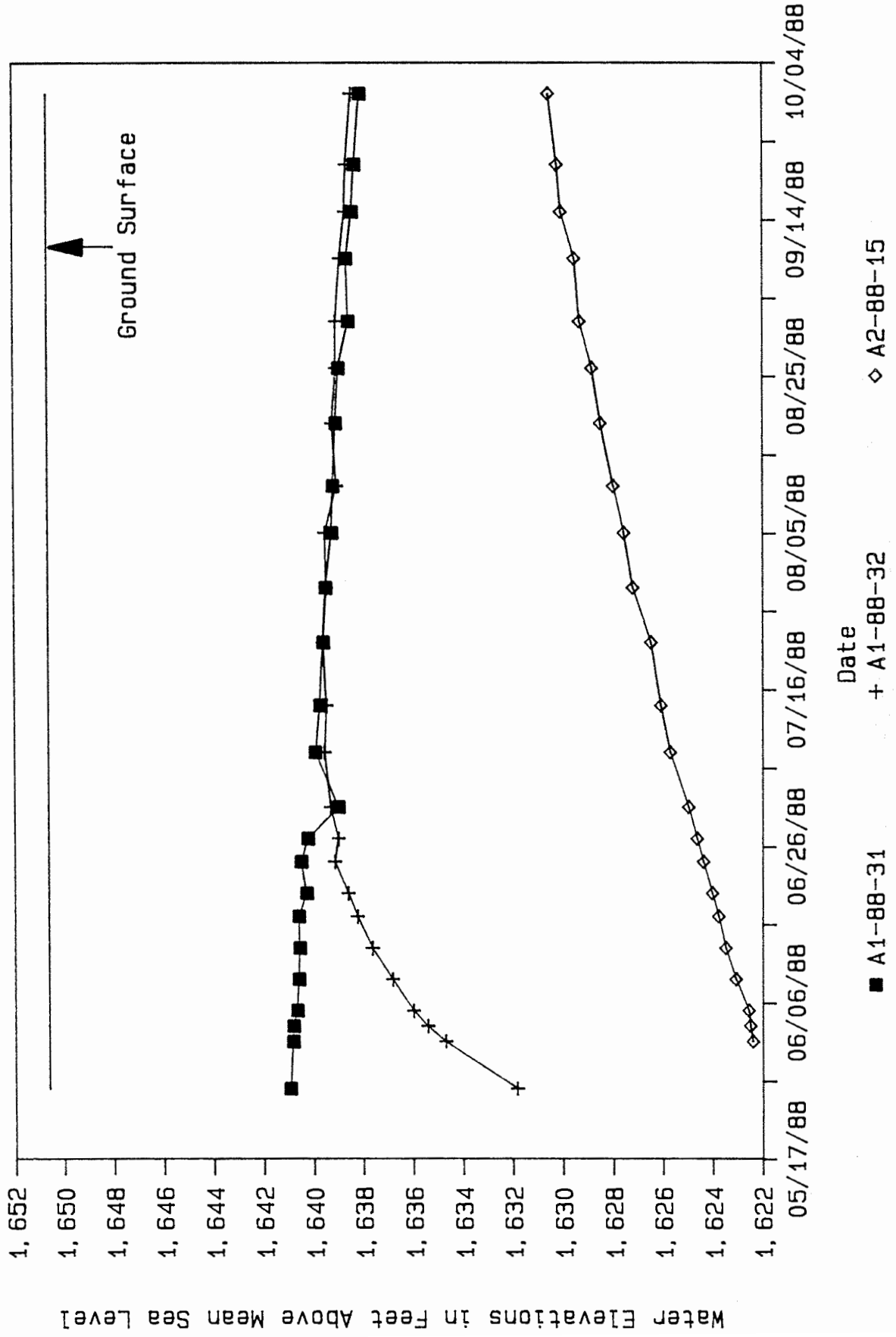
Water Elevations at Well Site 5



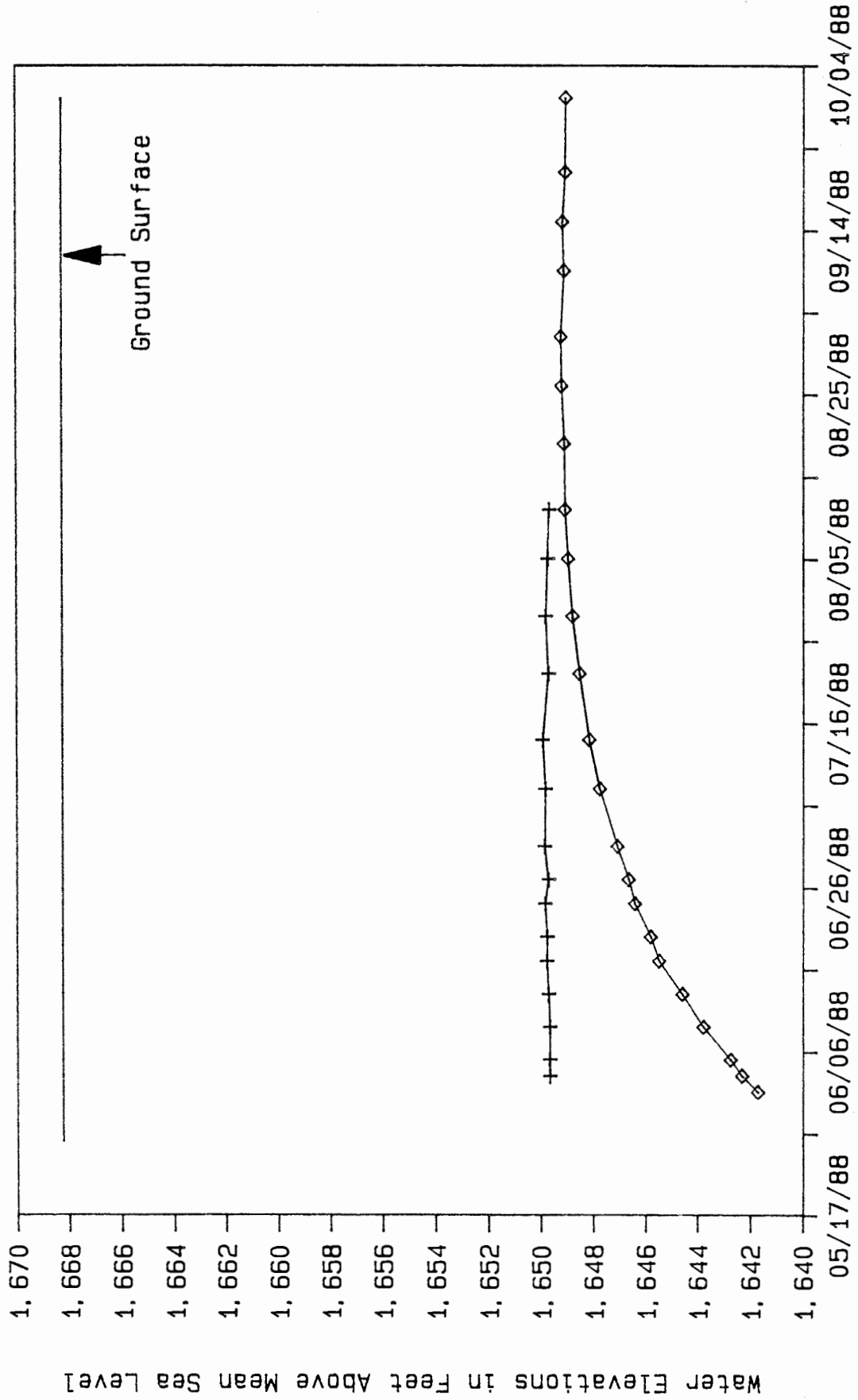
Water Elevations at Well Site 6



Water Elevations at Well Site 7



Water Elevations at Well Site 8

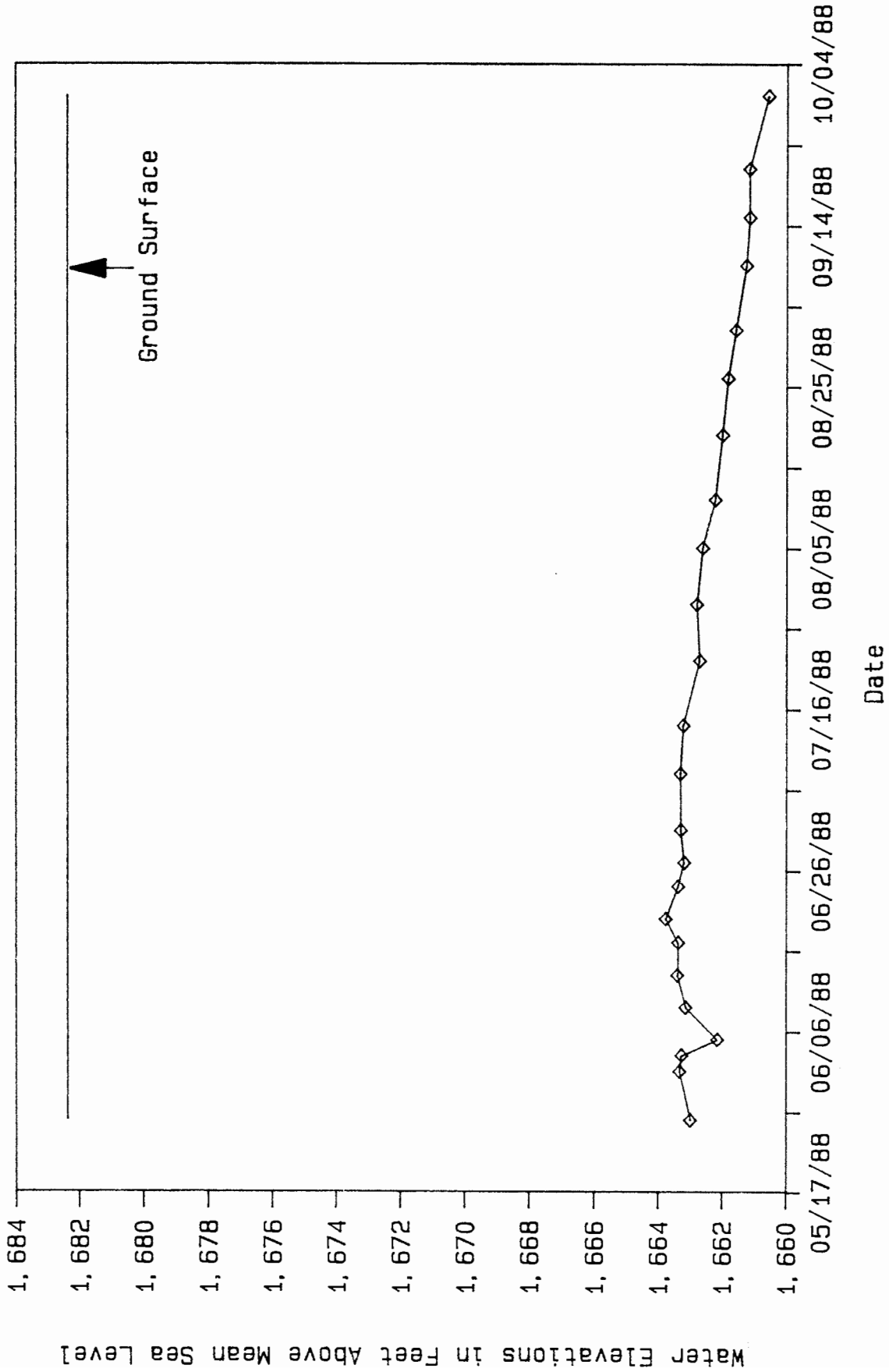


Date

+ A2-88-17

◇ A1-88-33

Water Elevations at Well Site 9



Water Elevations at Well Site 10

