THIS TEST HOLE WAS PLUGGED WITH HIGH SOLIDS BENTONITE GROUT FROM 278 TO 8 FEET, FROM 8 TO 8 FEET WITH CEMENT GROUT AND FROM 3 FEET TO GROUND SURFACE WITH NATIVE SOILS. HOLE LOST AND ABANDONED DUE TO EXCESSIVE WATER LOSS.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2443.00-2391.00</td>
<td>0.0-52.0</td>
<td>SAND, LIGHT-BROWN TO TAN, FINE TO VERY FINE, ROUNDED TO SUBROUNDED; HIGHLY QUARTZOSE, SOME LITHIC AND FELDSPAR FRAGMENTS (DUNE SANDS)</td>
</tr>
<tr>
<td>2391.00-2357.00</td>
<td>52.0-86.0</td>
<td>SANDSTONE AND SILTSTONE, PALE-GREENISH- BROWN, FINE SAND (OGALLALA GROUP)</td>
</tr>
<tr>
<td>2357.00-2352.00</td>
<td>86.0-91.0</td>
<td>SAND, TAN, MEDIUM, ROUNDED TO SUBROUNDED; HIGHLY QUARTZOSE</td>
</tr>
<tr>
<td>2352.00-2313.00</td>
<td>91.0-130.0</td>
<td>SANDSTONE, TAN, FINE, ROUNDED TO SUBROUNDED; QUARTZOSE</td>
</tr>
<tr>
<td>2313.00-2277.00</td>
<td>130.0-166.0</td>
<td>SAND, TAN, FINE TO MEDIUM, ROUNDED TO SUBROUNDED; QUARTZOSE</td>
</tr>
<tr>
<td>2277.00-2271.00</td>
<td>166.0-172.0</td>
<td>SILTSTONE, LIGHT-GREENISH-GRAY, MASSIVE</td>
</tr>
<tr>
<td>2271.00-2257.00</td>
<td>172.0-186.0</td>
<td>SAND, LIGHT-GREENISH-GRAY, FINE TO MEDIUM; QUARTZOSE</td>
</tr>
<tr>
<td>2257.00-2249.00</td>
<td>186.0-194.0</td>
<td>SILTSTONE, LIGHT-GREENISH-GRAY, MASSIVE</td>
</tr>
<tr>
<td>2249.00-2192.00</td>
<td>194.0-251.0</td>
<td>SAND, GREENISH-GRAY, FINE; QUARTZOSE</td>
</tr>
<tr>
<td>2192.00-2165.00</td>
<td>251.0-278.0</td>
<td>SILTSTONE, GREENISH-GRAY TO WHITE; SOFT TO HARD</td>
</tr>
</tbody>
</table>
FILTER PACK CONSISTED OF 500 LBS 0.65-0.75 MM QUARTZ SAND PLACED AT 163 TO 143 FEET. HOLE COLLAPSED AROUND CASING. GRANULAR BENTONITE PLACED FROM 12 TO 10 FEET. CEMENT GROUT PLACED FROM 10 FEET TO SURFACE.
Location Information

Legal Location: SE SE NE SE SEC. 13, T. 035 N., R. 25 W.  
County: TODD  
Basin: KEYA PAHA  
Hydrologic Unit Code: 10150006  
Land Owner:  
Location: 035N-25W-13DADD 2  
Latitude: 43 00' 24"  
Longitude: 100 11' 55"  
Ground Surface Elevation (ft.): 2443 T

Project Information

Project: MELLETTE-TODD CO. STUDY  
Drill Date: 08/24/1993  
Company: SDGS  
Drilling Method: ROTARY  
Test Hole Number: R20-93-55  
Samples:  
Geologist: M. JARRETT  
Geologist's Log: X  
Driller: D. IVERSON  
Driller's Log:  
Total Drill Hole Depth (ft.): 413.0

Geophysical Information

Spontaneous Potential: X  
Natural Gamma: X  
Single Point Resistivity: X  
Extra:  

TEST HOLE PLUGGED WITH HIGH SOLIDS BENTONITE GROUT FROM 413 TO 8 FEET, WITH CEMENT GROUT FROM 8 TO 3 FEET AND WITH NATIVE SOILS FROM 3 FEET TO GROUND SURFACE.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2443.00-2343.00</td>
<td>0.0-100.0</td>
<td>SAND, LIGHT-BROWN TO TAN, FINE TO VERY FINE, SUBROUNDED TO ROUNDED; HIGHLY QUARTZOSE, FEW LITHIC FRAGMENTS</td>
</tr>
<tr>
<td>2343.00-2333.00</td>
<td>100.0-110.0</td>
<td>SAND AND SILTSTONE, TAN SAND TO DARK-GREENISH-BROWN SILTSTONE, FINE TO VERY FINE SILTSTONE</td>
</tr>
<tr>
<td>2333.00-2303.00</td>
<td>110.0-140.0</td>
<td>SAND, LIGHT-BROWN TO TAN, FINE TO VERY FINE, SUBROUNDED TO ROUNDED; HIGHLY QUARTZOSE, FEW LITHIC FRAGMENTS</td>
</tr>
<tr>
<td>2303.00-2293.00</td>
<td>140.0-150.0</td>
<td>SILTSTONE, LIGHT-BROWNISH-TAN, MASSIVE</td>
</tr>
<tr>
<td>2293.00-2277.00</td>
<td>150.0-166.0</td>
<td>SAND, TAN, FINE TO MEDIUM, ROUNDED TO SUBROUNDED; QUARTZOSE</td>
</tr>
<tr>
<td>2277.00-2251.00</td>
<td>166.0-192.0</td>
<td>SILTSTONE, LIGHT-GREENISH-TAN, MASSIVE</td>
</tr>
<tr>
<td>2251.00-2203.00</td>
<td>192.0-240.0</td>
<td>SAND, LIGHT-GREENISH-GRAY, VERY FINE TO FINE; QUARTZOSE, SOME GREENISH-GRAY SILTSTONE FROM 220 TO 240 FEET</td>
</tr>
<tr>
<td>2203.00-2175.00</td>
<td>240.0-268.0</td>
<td>CLAY, LIGHT-GREENISH-GRAY, MASSIVE; SOME SILTSTONE</td>
</tr>
<tr>
<td>2175.00-2138.00</td>
<td>268.0-305.0</td>
<td>SILTSTONE AND CLAYSTONE, LIGHT-GREENISH-GRAY, MASSIVE; SOFT TO HARD</td>
</tr>
</tbody>
</table>
| 2138.00-2103.00 | 305.0-340.0 | CLAYSTONE AND SILTSTONE, LIGHT-GREENISH-GRAY,
MASSIVE; HARD, SANDY AT 305 FEET

2103.00 - 2090.00  340.0 - 353.0  SILTSTONE, LIGHT-GREENISH-GRAY TO RED-BROWN, MASSIVE; SOME CLAY

2090.00 - 2065.00  353.0 - 378.0  SILTSTONE AND CLAYSTONE, LIGHT-GREENISH-GRAY TO GRAY-BROWN, MASSIVE

2065.00 - 2038.00  378.0 - 405.0  CLAYSTONE, ALTERNATING LAYERS OF LIGHT-GREENISH-GRAY, PINKISH-TAN AND WHITE, SILTY, MASSIVE

2038.00 - 2030.00  405.0 - 413.0  CLAY, DARK-GRAY; ORGANIC (PIERRE SHALE)

* * * *

* * * *
**Location Information**

Legal Location: SW NW NW NW Sec. 20, T. 035 N., R. 25 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner: 

Location: 035N-25W-20BBBC
Latitude: 43 00' 00"
Longitude: 100 17' 48"
Ground Surface Elevation (ft.): 2492 T

**Project Information**

Project: MELLETTETODD CO. STUDY
Drill Date: 04/25/1994
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R2-94-02
Samples: 

Geologist: R. HAMMOND
Geologist's Log: X
Driller: G. JENSEN
Driller's Log: 
Total Drill Hole Depth (ft.): 50.0

**Well Information**

SDGS Well Name: R2-94-02
Water Rights Well: 
Other Well Name: 
Casing Type: PVC, SCH. 80
Screen Type: PVC, MFG., 0.010 IN. SLOT
Total Casing and Screen (ft.): 46.5
Well Maintenance Date: 

Casing Top Elevation: 2494.00 T
Casing Diameter (in.): 2.0
Screen Length (ft.): 10.0
Casing Stick-up (ft.): 2.00

**Geophysical Information**

Spontaneous Potential: 
Natural Gamma: 
Single Point Resistivity: 
Extra: 

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2492.00-2452.00</td>
<td>0.0-40.0</td>
<td>SANDSTONE, PALE-GREENISH-YELLOW, WELL-ROUNDED TO ROUNDED, QUARTZOSE; NONCALCAREOUS, VARIABLY CEMENTED, SOME THIN SILTSTONE LENSES, SOME LIGHT-GRAY CHERT NODULES BELOW 20 FEET</td>
</tr>
</tbody>
</table>

| 2452.00-2442.00 | 40.0-50.0 | SANDSTONE, GRAYISH-YELLOW, VERY SILTY, VERY FINE-GRAINED, SUBROUNDED TO SUBANGULAR, QUARTZOSE; SLIGHTLY CALCAREOUS, SOME LIGHT-Olive SILTSTONE NODULES 0.25 INCHES IN DIAMETER, SOME ASH-RICH LENSES, WHITE CHERT LAYER WITH FINE, BLACK, MANGANESE DENDRITES AT 50 FEET |

* * * *
Location Information

Legal Location: SW NW NW NW SEC. 20, T. 035 N., R. 25 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner:
Location: 035N-25W-20BBBC 1
Latitude: 43 00' 00"
Longitude: 100 17' 48"
Ground Surface Elevation (ft.): 2492 T

Project Information

Project: MELLETTE-TODD CO. STUDY
Drill Date: 04/26/1994
Company: SDGS
Drilling Method: ROTARY
Driller: G. JENSEN
Geologist: R. HAMMOND
Geologist's Log: X
Driller's Log: X
Test Hole Number: R2-94-03
Total Drill Hole Depth (ft.): 552.0
Samples:

Geophysical Information

Spontaneous Potential: X
Natural Gamma: X
Extra: X

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2492.00-2452.00</td>
<td>0.0-40.0</td>
<td>SANDSTONE, PALE-GREEISH-YELLOW, WELL-ROUNDED TO ROUNDED, QUARTZOSE; NONCALCAREOUS, VARIABLY CEMENTED, SOME THIN SILTSTONE LENSES, SOME LIGHT-GRAY CHERT NODULES BELOW 20 FEET</td>
</tr>
<tr>
<td>2452.00-2434.00</td>
<td>40.0-58.0</td>
<td>SANDSTONE, GRAYISH-YELLOW, VERY SILTY, VERY FINE-GRAINED, SUBROUNDED TO SUBANGULAR, QUARTZOSE; SLIGHTLY CALCAREOUS, SOME LIGHT-OLIVE SILTSTONE NODULES 0.25 INCHES IN DIAMETER, SOME ASH-RICH LENSES, WHITE CHERT LAYER WITH FINE, BLACK, MANGANESE DENDRITES AT 50 FEET</td>
</tr>
<tr>
<td>2434.00-2317.00</td>
<td>58.0-175.0</td>
<td>SILTSTONE, LIGHT-OLIVE-GRAY; NONCALCAREOUS, MASSIVE WITH SOME NODULES, SOME VERY FINE SAND, VERY SANDY FROM 87 TO 119 FEET, ASH-RICH FROM 94 TO 102 FEET, PALEOSOL AT 130 FEET MOTTLED MODERATE-YELLOW-BROWN TO LIGHT-OLIVE-GRAY</td>
</tr>
<tr>
<td>2317.00-2255.00</td>
<td>175.0-237.0</td>
<td>SILTSTONE, MODERATE-YELLOW-BROWN, CLAYEY; CALCAREOUS AT 220 FEET, SOME SUBHEDRAL GYPSUM CRYSTALS PRESENT, PALEOSOL IN THE FIRST FEW FEET, FINE-GRAINED SANDY LENSES AT 187 TO 198 FEET</td>
</tr>
<tr>
<td>2255.00-2024.00</td>
<td>237.0-468.0</td>
<td>SILTSTONE, MODERATE-YELLOW-BROWN, SANDY, CLAYEY AT 310 TO 344 FEET; CALCAREOUS TO 310 FEET, VERY FINE SAND LAYER WITH ABUNDANT GLASS SHARDS FROM 437 TO 453 FEET</td>
</tr>
<tr>
<td>2024.00-1986.00</td>
<td>468.0-506.0</td>
<td>CLAYSTONE, YELLOWISH-GRAY, SILTY; NONCALCAREOUS, MOTTLED, MANY ASH SHARDS</td>
</tr>
</tbody>
</table>

035N25W20BBBC 1 Page 1 01/31/2005
(CHADRON FORMATION?)

1986.00 - 1940.00  506.0 - 552.0  SHALE, GRAYISH-BLACK; MASSIVE TO POORLY
FISSILE, BENTONITIC, VERY CALCAREOUS; PALEOSOL
FROM 506 TO 510 FEET WHICH IS SLIGHTLY
CALCAREOUS AND SANDY (PIERRE SHALE)

* * * *
### Location Information

- **Legal Location:** SW NW NW NW SEC. 20, T. 035 N., R. 25 W.
- **County:** TODD
- **Basin:** KEYA PAHA
- **Hydrologic Unit Code:** 10150006
- **Land Owner:**
- **Location:** 035N-25W-20BBBC 2
- **Latitude:** 43 00' 00"
- **Longitude:** 100 17' 48"
- **Ground Surface Elevation (ft.):** 2492

### Project Information

- **Project:** MELLETTE-TODD CO. STUDY
- **Drill Date:** 05/02/1994
- **Company:** SDGS
- **Drilling Method:** ROTARY
- **Test Hole Number:** R2-94-04
- **Samples:**
- **Geologist:** R. HAMMOND
- **Driller:** G. JENSEN
- **Geologist's Log:** X
- **Driller's Log:**
- **Total Drill Hole Depth (ft.):** 120.0

### Well Information

- **SDGS Well Name:** R2-94-04
- **Water Rights Well:**
- **Other Well Name:**
- **Casing Type:** PVC, SCH. 80
- **Screen Type:** PVC, MFG., 0.010 IN. SLOT
- **Casing Top Elevation:** 2494.00 T
- **Casing Diameter (in.):** 2.0
- **Screen Length (ft.):** 10.0
- **Total Casing and Screen (ft.):** 120.0
- **Casing Stick-up (ft.):** 2.00
- **Well Maintenance Date:**

### Geophysical Information

- **Spontaneous Potential:**
- **Natural Gamma:**
- **Single Point Resistivity:**
- **Extra:**

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2492.00-2452.00</td>
<td>0.0-40.0</td>
<td>SANDSTONE, PALE-GREENISH-YELLOW, WELL-ROUNDED TO ROUNDED, QUARTZOSE; NONCALCAREOUS, VARIABLY CEMENTED, SOME THIN SILTSTONE LENSES, SOME LIGHT-GRAY CHERT NODULES BELOW 20 FEET</td>
</tr>
<tr>
<td>2452.00-2434.00</td>
<td>40.0-58.0</td>
<td>SANDSTONE, GRAYISH-YELLOW, VERY SILTY, VERY FINE-GRAINED, SUBROUNDED TO SUBANGULAR, QUARTZOSE; SLIGHTLY CALCAREOUS, SOME LIGHT-OLIVE SILTSTONE NODULES 0.25 INCHES IN DIAMETER, SOME ASH-RICH LENSES, WHITE CHERT LAYER WITH FINE, BLACK, MANGANESE DENDRITES AT 50 FEET</td>
</tr>
<tr>
<td>234.00-2372.00</td>
<td>58.0-120.0</td>
<td>SILTSTONE, LIGHT-OLIVE-GRAY; NONCALCAREOUS, MASSIVE WITH SOME NODULES, SOME VERY FINE SAND, VERY SANDY FROM 87 TO 119 FEET, ASH-RICH FROM 94 TO 102 FEET</td>
</tr>
</tbody>
</table>

* * *
**Location Information**

Legal Location: NE NW NW SW SEC. 10, T. 035 N., R. 26 W.

County: TODD  
Basin: KEYA PAHA  
Hydrologic Unit Code: 10150006  
Land Owner:  

Location: 035N-26W-10CBBA  
Latitude: 43 01' 26"  
Longitude: 100 22' 18"  
Ground Surface Elevation (ft.): 2617 T

**Project Information**

Project: MELLETTE-TODD CO. STUDY  
Drill Date: 10/06/1993  
Company: SDGS  
Drilling Method: ROTARY  
Test Hole Number: R2-93-39  
Samples:  

Total Casing and Screen (ft.): 665.0  
Casing Top Elevation: 2620.00 T  
Casing Diameter (in.): 2.0  
Screen Length (ft.): 10.0  
Casing Stick-up (ft.): 3.00  

**Well Information**

SDGS Well Name: R2-93-39  
Water Rights Well:  
Other Well Name:  
Casing Type: PVC, SCH. 80  
Screen Type: PVC, MFG., SLOT SIZE 0.010 IN.  
Total Casing and Screen (ft.): 665.0  
Well Maintenance Date:  

**Geophysical Information**

Spontaneous Potential: X  
Natural Gamma: X  
Single Point Resistivity: X  
Extra:  

20 FEET BLANK CASING PLACED BELOW SCREEN. FILTER PACK OF 0.65-0.75 MM QUARTZ SAND PLACED FROM 677 TO 625 FEET. CENTRALIZERS PLACED AT 645, 600, 550, 450 AND 250 FEET. HIGH SOLIDS BENTONITE GROUT PLACED FROM 625 TO 20 FEET. CEMENT GROUT PLACED FROM 20 FEET TO GROUND SURFACE.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2617.00 - 2552.00</td>
<td>0.0 - 65.0</td>
<td>SANDSTONE, PALE-OLIVE, VERY FINE TO FINE, VERY SILTY, WELL-CEMENTED TO POORLY CEMENTED; ROUNDED TO SUBANGULAR CLEAR FROSTED AND POLISHED QUARTZ GRAINS; CALCAREOUS, SOME CLAY AND ASH BEDS, SOME LITHIC AND PINK FELDSPAR GRAINS, MANY ROOT AND BURROW CASTS</td>
</tr>
<tr>
<td>2552.00 - 2532.00</td>
<td>65.0 - 85.0</td>
<td>SAND, YELLOWISH-GRAY, FINE; PRIMARILY FROSTED AND POLISHED COLORLESS ROUNDED TO SUBANGULAR QUARTZ GRAINS; SOME LITHIC AND REDDISH FELDSPAR GRAINS, SOME SCATTERED BLACK ORGANIC DEBRIS</td>
</tr>
<tr>
<td>2532.00 - 2512.00</td>
<td>85.0 - 105.0</td>
<td>SILT, MODERATE-GREENISH-YELLOW, POORLY FISSILE, SANDY FROM 89 TO 95 FEET; NON-CALCAREOUS TO VERY POORLY CALCAREOUS, POSSIBLY SOME FAINT ROOT TUBULES (LOESS?)</td>
</tr>
<tr>
<td>Depth Range</td>
<td>Interval</td>
<td>Description</td>
</tr>
<tr>
<td>------------------</td>
<td>-----------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>2512.00 - 2119.00</td>
<td>105.0 - 498.0</td>
<td>SILTSTONE, PALE-YELLOWISH-BROWN, SANDY, CLAYEY, POORLY FISSILE TO MASSIVE; NONCALCAREOUS TO POORLY CALCAREOUS, SOME THIN TUBULAR CHERTY CLASTS, VERY SANDY FROM 137 TO 147 FEET AND VERY SANDY WITH HIGH ELECTRICAL RESISTIVITY AT 266 TO 374 FEET (ROSEBUD FORMATION)</td>
</tr>
<tr>
<td>2119.00 - 2076.00</td>
<td>498.0 - 541.0</td>
<td>CLAYSTONE, YELLOWISH-GRAY, SILTY, FISSILE TO POORLY FISSILE; NONCALCAREOUS (BRULE FORMATION?)</td>
</tr>
<tr>
<td>2076.00 - 2018.00</td>
<td>541.0 - 599.0</td>
<td>SILTSTONE, GRAYISH-ORANGE, SANDY, CLAYEY, POORLY FISSILE; NONCALCAREOUS TO VERY POORLY CALCAREOUS (BRULE FORMATION?)</td>
</tr>
<tr>
<td>2018.00 - 1993.00</td>
<td>599.0 - 624.0</td>
<td>SILTSTONE, PALE-OLIVE, CLAYEY, SLIGHTLY SANDY, POORLY FISSILE TO MASSIVE; VERY POORLY CALCAREOUS TO NONCALCAREOUS, HIGHER GAMMA READING FROM 612 TO 624 FEET (CHADRON FORMATION)</td>
</tr>
<tr>
<td>1993.00 - 1975.00</td>
<td>624.0 - 642.0</td>
<td>SAND, LIGHT-OLIVE-GRAY, MEDIUM TO COARSE, SUBROUNDED TO SUBANGULAR; PRIMARILY COLORLESS QUARTZ WITH SOME REDDISH FELDSPAR AND SOME LITHIC AND CHERT FRAGMENTS, NONCALCAREOUS (CHADRON FORMATION)</td>
</tr>
<tr>
<td>1975.00 - 1940.00</td>
<td>642.0 - 677.0</td>
<td>CLAYSTONE, OLIVE-BLACK, POORLY FISSILE; SLIGHTLY CALCAREOUS TO CALCAREOUS (PIERRE SHALE)</td>
</tr>
</tbody>
</table>

* * * *
Location Information

Legal Location: NE NW NW NW SEC. 03, T. 035 N., R. 27 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner:

Location: 035N-27W-03BBBA
Latitude: 43 02' 45"
Longitude: 100 29' 28"
Ground Surface Elevation (ft.): 2670 T

Project Information

Project: MELLETTE-TODD CO. STUDY
Drill Date: 04/20/1994
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R2-94-07
Samples:

Geologist: R. HAMMOND
Driller: G. JENSEN
Driller's Log:
Total Drill Hole Depth (ft.): 202.0

Well Information

SDGS Well Name: R2-94-07
Water Rights Well:
Other Well Name:
Casing Type: PVC
Screen Type: PVC, MFG., 0.010 IN. SLOT
Total Casing and Screen (ft.): 204.0
Well Maintenance Date:

Aquifer: ARIKAREE
Management Unit:
Casing Top Elevation: 2672.00 T
Casing Diameter (in.): 2.0
Screen Length (ft.): 10.0
Casing Stick-up (ft.): 2.00

Geophysical Information

Spontaneous Potential:
Natural Gamma:
Single Point Resistivity:
Extra:

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2670.00 - 2652.00</td>
<td>0.0 - 18.0</td>
<td>SANDSTONE, DUSKY-YELLOW, VERY FINE-TO MEDIUM-GRAINED, SILTY, SUBBONDED TO SUBANGULAR; CALCAREOUS, MOSTLY POLISHED QUARTZ AND LITHIC GRAINS, SOME WHITE CALCITE, WELL CEMENTED</td>
</tr>
<tr>
<td>2652.00 - 2626.00</td>
<td>18.0 - 44.0</td>
<td>SANDSTONE, DUSKY-YELLOW, VERY FINE-GRAINED, VERY SILTY; MODERATELY CEMENTED</td>
</tr>
<tr>
<td>2626.00 - 2593.00</td>
<td>44.0 - 77.0</td>
<td>SILTSTONE, LIGHT-OLIVE-BROWN, SANDY; CALCAREOUS, SOME WHITE TO CREAM COLORED ASH SHARDS, SOME CALCAREOUS NODULES, SOME FINE-GRAINED SANDSTONE LENSES</td>
</tr>
<tr>
<td>2593.00 - 2564.00</td>
<td>77.0 - 106.0</td>
<td>SILTSTONE, MODERATE-YELLOW-BROWN; SLIGHTLY CALCAREOUS, SOME WHITE TO CREAM COLORED ASH SHARDS</td>
</tr>
<tr>
<td>2564.00 - 2503.00</td>
<td>106.0 - 167.0</td>
<td>SILTSTONE, MODERATE-YELLOW-BROWN TO GRAY-ORANGE, CLAYEY, SANDY; SLIGHTLY CALCAREOUS, SANDY LAYERS FROM 145 TO 152 FEET</td>
</tr>
</tbody>
</table>
2503.00–2468.00  167.0–202.0  SILTSTONE, MODERATE–YELLOW–BROWN, VERY SANDY; SLIGHTLY CALCAREOUS, SME CHERTY NODULES AND PEBBLES, SOME CEMENTED SAND BEDS AT 178–O 186 FEET

LITHOLOGY WAS TAKEN FROM TEST HOLE R2–94–01 WHICH WAS DRILLED AT OR VERY NEAR THE SAME LOCATION.

* * * *
FILTER PACK CONSISTED OF 0.65-0.75 MM QUARTZ SAND PLACED AT 49 TO 18 FEET. BENTONITE GROUT WAS PLACED AT 18 TO 5 FEET, AND CEMENT GROUT FROM 5 FEET TO GROUND SURFACE.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
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<tbody>
<tr>
<td>2771.00 - 2769.00</td>
<td>0.0 - 2.0</td>
<td>TOPSOIL, BROWN</td>
</tr>
<tr>
<td>2769.00 - 2761.00</td>
<td>2.0 - 10.0</td>
<td>SANDSTONE, LIGHT-YELLOW-BROWN, FINE, SUBANGULAR TO SUBROUNDED; HIGHLY QUARTZOSE, MANY CALCAREOUS RHIZOLITHS</td>
</tr>
<tr>
<td>2761.00 - 2743.00</td>
<td>10.0 - 28.0</td>
<td>SAND, GRAYISH-WHITE, FINE, SUBANGULAR TO SUBROUNDED; CALCAREOUS, HIGHLY QUARTZOSE, SOME CEMENTED LAYERS</td>
</tr>
<tr>
<td>2743.00 - 2729.00</td>
<td>28.0 - 42.0</td>
<td>SANDSTONE, LIGHT-YELLOW-BROWN, FINE, SUBANGULAR TO SUBROUNDED; HIGHLY QUARTZOSE, CALCAREOUS CEMENTATION, SOME SILTY LAYERS</td>
</tr>
<tr>
<td>2729.00 - 2724.00</td>
<td>42.0 - 47.0</td>
<td>SILT, WHITE TO LIGHT-YELLOW-BROWN, SANDY; NONCALCAREOUS</td>
</tr>
</tbody>
</table>

* * * *
**Location Information**

Legal Location: NW NW NW NW SEC. 03, T. 035 N., R. 27 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner:

<table>
<thead>
<tr>
<th>Location: 035N-27W-03BBBB 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latitude: 43 02' 45&quot;</td>
</tr>
<tr>
<td>Longitude: 100 29' 28&quot;</td>
</tr>
<tr>
<td>Ground Surface Elevation (ft.): 2771 T</td>
</tr>
</tbody>
</table>

**Project Information**

Project: MELLETTE-TODD CO. STUDY
Drill Date: 10/05/1993
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R2-93-38
Samples:

<table>
<thead>
<tr>
<th>Geologist: R. HAMMOND</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driller's Log:</td>
</tr>
<tr>
<td>Driller: G. JENSEN</td>
</tr>
<tr>
<td>Total Drill Hole Depth (ft.): 407.0</td>
</tr>
</tbody>
</table>

**Geophysical Information**

Spontaneous Potential:
Natural Gamma:

Single Point Resistivity:
Extra:

TEST HOLE LOST DUE TO EXCESSIVE WATER LOSS. HOLE PLUGGED WITH HIGH SOLIDS BENTONITE GROUT FROM 407 TO 8 FEET, FROM 8 TO 3 FEET WITH CEMENT GROUT AND FROM 3 FEET TO LAND SURFACE WITH NATIVE SOILS.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2771.00 - 2769.00</td>
<td>0.0 - 2.0</td>
<td>TOPSOIL, BLACK</td>
</tr>
<tr>
<td>2769.00 - 2753.00</td>
<td>2.0 - 18.0</td>
<td>SAND; CEMENTED</td>
</tr>
<tr>
<td>2753.00 - 2736.00</td>
<td>18.0 - 35.0</td>
<td>SAND, FINE</td>
</tr>
<tr>
<td>2736.00 - 2729.00</td>
<td>35.0 - 42.0</td>
<td>SAND; CEMENTED</td>
</tr>
<tr>
<td>2729.00 - 2718.00</td>
<td>42.0 - 53.0</td>
<td>SILTSTONE, TAN</td>
</tr>
<tr>
<td>2718.00 - 2713.00</td>
<td>53.0 - 58.0</td>
<td>SILTSTONE, BROWN AND WHITE</td>
</tr>
<tr>
<td>2713.00 - 2642.00</td>
<td>58.0 - 129.0</td>
<td>SILTSTONE, BROWN</td>
</tr>
<tr>
<td>2642.00 - 2364.00</td>
<td>129.0 - 407.0</td>
<td>SILTSTONE, TAN TO BROWN</td>
</tr>
</tbody>
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* * *
**Location Information**

Legal Location: NW NW NW NW SEC. 03, T. 035 N., R. 27 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner: Location: 035N-27W-03BBBB
Latitude: 43 02' 45"
Longitude: 100 29' 30"
Ground Surface Elevation (ft.): 2673 T

**Project Information**

Project: STATEWIDE MONITORING
Drill Date: 06/27/1994
Company: SDGS
Drilling Method: HOLLOWSTEM
Test Hole Number: R20-94-32

Samples:
Total Drill Hole Depth (ft.): 38.5

**Well Information**

SDGS Well Name: R20-94-32
Water Rights Well: Management Unit:
Other Well Name: Casing Top Elevation: 2675.21 T
Casing Type: PVC, SCH. 40
Screen Type: PVC, SCH. 40, MFG., SLOT=0.010
Total Casing and Screen (ft.): 36.3
Casing Diameter (in.): 4.0
Screen Length (ft.): 5.4
Casing Stick-up (ft.): 2.21

**Geophysical Information**

Spontaneous Potential: Single Point Resistivity:
Natural Gamma: Extra:

WELL INFORMATION: SCREENED INTERVAL FROM 36.27 TO 30.90 FEET BELOW CASING TOP.
NATURAL FILTER PACK FROM 38.5 TO 28.7 FEET BELOW LAND SURFACE. ARTIFICIAL PACK FROM
28.7 TO 26 FEET BELOW LAND SURFACE. BENTONITE SLURRY FROM 26 TO 2.4 FEET BELOW LAND
SURFACE. CEMENT GROUT FROM 2.4 FEET BELOW LAND SURFACE TO GROUND LEVEL. EAST OF TWO.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2673.00 - 2671.00</td>
<td>0.0 - 2.0</td>
<td>TOPSOIL</td>
</tr>
<tr>
<td>2671.00 - 2662.00</td>
<td>2.0 - 11.0</td>
<td>SAND, LIGHT-BROWN, FINE; SOME SMALL PEBBLES</td>
</tr>
<tr>
<td>2662.00 - 2634.50</td>
<td>11.0 - 38.5</td>
<td>SAND, LIGHT-BROWN-GREEN, FINE, SILTY; SOME SANDSTONE PEBBLES LIGHTLY CEMENTED TOWARD THE BOTTOM</td>
</tr>
</tbody>
</table>

* * * *
Location Information

Legal Location: NW NW NW NW SEC. 03, T. 035 N., R. 27 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner: Location: 035N-27W-03BBBB 3
Latitude: 43° 02' 45"
Longitude: 100° 29' 30"
Ground Surface Elevation (ft.): 2673 T

Project Information

Project: STATEWIDE MONITORING
Drill Date: 06/28/1994
Company: SDGS
Drilling Method: HOLLOWSTEM
Test Hole Number: R20-94-33
Geologist: L. SCHULZ
Geologist's Log: X
Driller: M. THOMPSON
Driller's Log: Total Drill Hole Depth (ft.): 23.0

Well Information

SDGS Well Name: R20-94-33
Water Rights Well: Aquifer: OGALLALA
Other Well Name: Management Unit:
Casing Type: PVC, SCH. 40 Casing Top Elevation: 2675.00 T
Screen Type: PVC, SCH. 40, MFG., SLOT=0.010 Casing Diameter (in.): 4.0
Total Casing and Screen (ft.): 22.6 Screen Length (ft.): 10.3
Casing Stick-up (ft.): 2.00
Well Maintenance Date:

Geophysical Information

Spontaneous Potential: Single Point Resistivity: Extra:
Natural Gamma: WELL INFORMATION: SCREENED INTERVAL FROM 22.62 TO 12.27 FEET BELOW CASING TOP.
WELL INFORMATION: SCREENED INTERVAL FROM 22.62 TO 12.27 FEET BELOW CASING TOP. NATURAL FILTER PACK FROM 23 TO 16 FEET BELOW LAND SURFACE. ARTIFICIAL PACK FROM 16 TO 9 FEET BELOW LAND SURFACE. GRANULAR BENTONITE FROM 9 TO 2.3 FEET BELOW LAND SURFACE. CEMENT GROUT FROM 2.3 FEET BELOW LAND SURFACE TO GROUND LEVEL. WEST OF TWO.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2673.00 - 2671.00</td>
<td>0.0 - 2.0</td>
<td>TOPSOIL</td>
</tr>
<tr>
<td>2671.00 - 2662.00</td>
<td>2.0 - 11.0</td>
<td>SAND, LIGHT-BROWN, FINE; SOME SMALL PEBBLES</td>
</tr>
<tr>
<td>2662.00 - 2650.00</td>
<td>11.0 - 23.0</td>
<td>SAND, LIGHT-BROWN-GREEN, FINE, SILTY; SOME SANDSTONE PEBBLES</td>
</tr>
</tbody>
</table>

* * * *
THIS TEST HOLE WAS PLUGGED FROM TOTAL DEPTH TO 8 FEET BELOW LAND SURFACE WITH HIGH-SOLIDS BENTONITE GROUT; 8 FEET TO 3 FEET BELOW LAND SURFACE WITH NEAT CEMENT GROUT; 3 FEET TO LAND SURFACE WITH DRILL CUTTINGS.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2672.00 - 2654.00</td>
<td>0.0 - 18.0</td>
<td>SANDSTONE, DUSKY-YELLOW, VERY FINE- TO MEDIUM-GRAINED, SILTY, SUBBORDERED TO SUBANGULAR; CALCAREOUS, MOSTLY POLISHED QUARTZ AND LITHIC GRAINS, SOME WHITE CALCITE, WELL CEMENTED</td>
</tr>
<tr>
<td>2654.00 - 2628.00</td>
<td>18.0 - 44.0</td>
<td>SANDSTONE, DUSKY-YELLOW, VERY FINE-GRAINED, VERY SILTY; MODERATELY CEMENTED</td>
</tr>
<tr>
<td>2628.00 - 2595.00</td>
<td>44.0 - 77.0</td>
<td>SILTSTONE, LIGHT-OLIVE-BROWN, SANDY; CALCAREOUS, SOME WHITE TO CREAM COLORED ASH SHARDS, SOME CALCAREOUS NODULES, SOME FINE-GRAINED SANDSTONE LENSES</td>
</tr>
<tr>
<td>2595.00 - 2566.00</td>
<td>77.0 - 106.0</td>
<td>SILTSTONE, MODERATE-YELLOW-BROWN; SLIGHTLY CALCAREOUS, SOME WHITE TO CREAM COLORED ASH SHARDS</td>
</tr>
<tr>
<td>2566.00 - 2505.00</td>
<td>106.0 - 167.0</td>
<td>SILTSTONE, MODERATE-YELLOW-BROWN TO GRAY-ORANGE, CLAYEY, SANDY; SLIGHTLY CALCAREOUS, SANDY LAYERS FROM 145 TO 152 FEET</td>
</tr>
<tr>
<td>2505.00 - 2231.00</td>
<td>167.0 - 441.0</td>
<td>SILTSTONE, MODERATE-YELLOW-BROWN, DARK-YELLOW-BROWN FROM 215 TO 230 FEET, VERY SANDY; SLIGHTLY CALCAREOUS, SOME CHERTY NODULES AND PEBBLES, SOME CEMENTED SAND BEDS AT 178 TO 186 FEET, 244 TO 275 FEET, 356 TO 371 FEET, AND 428 TO 437 FEET</td>
</tr>
</tbody>
</table>
2231.00-2210.00  441.0-462.0  Sandstone, moderate-yellow-brown to pale-yellow-brown, very silty, very clayey; many spheroidal clay concretions, slightly calcareous

2210.00-2177.00  462.0-495.0  Siltstone, dark-yellowish-brown, clayey, sandy; some spheroidal clay concretions, some sandy lenses from 470 to 476 feet

2177.00-2087.00  495.0-585.0  Claystone, moderate-yellow-brown to light-brown, silty, slightly sandy; many ash shards below 530 feet, many sandy layers at 535 to 540 feet, 545 to 549 feet, and 562 to 584 feet (Chadron Formation)

2087.00-1982.00  585.0-690.0  Claystone, dark-yellow-brown to medium-dark-gray, silty; very calcareous, many ash shards, distinct greenish-gray and moderate-yellow-brown mottling by 660 feet (Brule Formation)

1982.00-1962.00  690.0-710.0  Siltstone, mottled moderate-yellow-gray to greenish-gray and moderate-yellow-brown; noncalcareous to slightly calcareous (Paleosol)

1962.00-1925.00  710.0-747.0  Shale, grayish-black; moderately calcareous, massive to partly fissile (Pierre Shale)

* * * *
Location Information

Legal Location: SE NW NW NW SEC. 15, T. 035 N., R. 28 W.
County: TODD
Basin: MINNECHADUZA
Hydrologic Unit Code: 10150004
Land Owner: B. COX

Location: 035N-28W-15BBBD
Latitude: 43 00' 55"
Longitude: 100 36' 27"
Ground Surface Elevation (ft.): 2750 T

Project Information

Project: MELLETTE-TODD CO. STUDY
Drill Date: 09/28/1993
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R2-93-35
Samples:

Geologist: M. JARRETT
Driller: G. JENSEN
Driller's Log:

Drill Date: 09/28/1993
Drilling Method: ROTARY
Test Hole Number: R2-93-35
Samples:

Total Drill Hole Depth (ft.): 752.0

Geophysical Information

Spontaneous Potential: X
Natural Gamma: X
Single Point Resistivity: X
Extra:

TEST HOLE PLUGGED FROM 752 TO 8 FEET WITH HIGH SOLIDS BENTONITE GROUT, FROM 8 TO 3 FEET WITH CEMENT GROUT AND FROM 3 FEET TO GROUND SURFACE WITH NATIVE SOILS.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2750.00-2749.00</td>
<td>0.0-1.0</td>
<td>TOPSOIL, BROWN</td>
</tr>
<tr>
<td>2749.00-2736.00</td>
<td>1.0-14.0</td>
<td>SANDSTONE, YELLOWISH-GRAY, FINE; CALCAREOUS CEMENTATION, MANY RHIZOLITHS PRESENT, QUARTZOSE (ASH HOLLOW FORMATION?)</td>
</tr>
<tr>
<td>2736.00-2710.00</td>
<td>14.0-40.0</td>
<td>SANDSTONE, DUSKY-YELLOW, FINE; QUARTZOSE, CALCAREOUS, SOME SILTSTONE BEDS (OGALLALA GROUP)</td>
</tr>
<tr>
<td>2710.00-2668.00</td>
<td>40.0-82.0</td>
<td>SANDSTONE AND SILTSTONE, MODERATE-YELLOW-BROWN; NONCALCAREOUS (OGALLALA GROUP)</td>
</tr>
<tr>
<td>2668.00-2644.00</td>
<td>82.0-106.0</td>
<td>SILTSTONE, DARK-YELLOWISH-BROWN, MASSIVE; NONCALCAREOUS (ARIKAREE FORMATION)</td>
</tr>
<tr>
<td>2644.00-2569.00</td>
<td>106.0-181.0</td>
<td>SILTSTONE AND SANDSTONE, DARK-YELLOWISH-BROWN, VERY FINE SAND; NONCALCAREOUS</td>
</tr>
<tr>
<td>2569.00-2454.00</td>
<td>181.0-296.0</td>
<td>SILTSTONE, DARK-YELLOWISH-BROWN, CLAYEY, MASSIVE; NONCALCAREOUS</td>
</tr>
<tr>
<td>2454.00-2424.00</td>
<td>296.0-326.0</td>
<td>SILTSTONE AND SANDSTONE, DARK-YELLOWISH-BROWN, VERY FINE SAND; NONCALCAREOUS</td>
</tr>
<tr>
<td>2424.00-2330.00</td>
<td>326.0-420.0</td>
<td>SILTSTONE, DARK-YELLOWISH-BROWN, CLAYEY, MASSIVE; CHANGES TO LIGHT-OLIVE-GRAY BELOW 392 FEET, NONCALCAREOUS</td>
</tr>
<tr>
<td>2330.00-2232.00</td>
<td>420.0-518.0</td>
<td>SILTSTONE, DARK-YELLOWISH-BROWN, CLAYEY,</td>
</tr>
<tr>
<td>Depth Range</td>
<td>Interval</td>
<td>Description</td>
</tr>
<tr>
<td>-------------</td>
<td>----------</td>
<td>-------------</td>
</tr>
<tr>
<td>2232.00-2180.00</td>
<td>518.0-570.0</td>
<td>Claystone, Light-Brown, Silty; Non-Calcareous, Bentonitic, Some White and Blue-Green Layers</td>
</tr>
<tr>
<td>2180.00-2108.00</td>
<td>570.0-642.0</td>
<td>Claystone, Pale-Grayish-Orange to Pale-Yellowish-Brown, Silty, Massive; Calcareous to Slightly Calcareous</td>
</tr>
<tr>
<td>2108.00-2065.00</td>
<td>642.0-685.0</td>
<td>Claystone, Light-Bluish-Gray to Medium-Bluish-Gray, Massive; Noncalcareous (Chadron Formation?)</td>
</tr>
<tr>
<td>2065.00-2029.00</td>
<td>685.0-721.0</td>
<td>Claystone, Grayish-Orange, Silty; Non-Calcareous, Some Moderate Red Clays Present</td>
</tr>
<tr>
<td>2029.00-1998.00</td>
<td>721.0-752.0</td>
<td>Clay, Brownish-Black; Greasy, Calcareous (Pierre Shale)</td>
</tr>
</tbody>
</table>

* * * *
Location Information

Legal Location: SE NW NW NW Sec. 15, T. 035 N., R. 28 W.
County: TODD
Basin: MINNECHADUZA
Hydrologic Unit Code: 10150004
Land Owner: B. COX
Location: 035N-28W-15BBBD 1
Latitude: 43 00' 55"
Longitude: 100 36' 27"
Ground Surface Elevation (ft.): 2750 T

Project Information

Project: MELLETTE-TODD CO. STUDY
Drill Date: 09/29/1993
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R2-93-36
Samples: Total Drill Hole Depth (ft.): 76.0

Well Information

SDGS Well Name: R2-93-36
Water Rights Well: Aquifer:
Other Well Name: Management Unit:
Casing Type: PVC, SCH. 80 Casing Top Elevation: 2752.00 T
Screen Type: PVC, MFG., SLOT SIZE 0.018 IN. Casing Diameter (in.): 2.0
Screen Length (ft.): 30.0
Total Casing and Screen (ft.): 78.0 Casing Stick-up (ft.): 2.00
Well Maintenance Date:

Geophysical Information

Spontaneous Potential: Single Point Resistivity: Extra:
Natural Gamma: FILTER PACK COMPRISED OF 850 LBS 0.65-0.75 MM QUARTZ SAND. HIGH SOLIDS BENTONITE GROUT PLACED FROM 45 TO 8 FEET, AND CEMENT GROUT FROM 8 FEET TO SURFACE.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2750.00 - 2749.00</td>
<td>0.0 - 1.0</td>
<td>TOPSOIL, BROWN</td>
</tr>
<tr>
<td>2749.00 - 2736.00</td>
<td>1.0 - 14.0</td>
<td>SANDSTONE, YELLOWISH-GRAY, FINE, QUARTZOSE; CALCAREOUS, RHIZOLITHS PRESENT (ASH HOLLOW FORMATION)</td>
</tr>
<tr>
<td>2736.00 - 2710.00</td>
<td>14.0 - 40.0</td>
<td>SANDSTONE, DUSKY-YELLOW, FINE, QUARTZOSE; CALCAREOUS, SOME SILTSTONE BEDS</td>
</tr>
<tr>
<td>2710.00 - 2674.00</td>
<td>40.0 - 76.0</td>
<td>SANDSTONE AND SILTSTONE, MODERATE-YELLOW-BROWN; NONCALCAREOUS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* * * * *</td>
</tr>
</tbody>
</table>
**Location Information**

Legal Location: NW SW SW NW SEC. 04, T. 035 N., R. 29 W.
County: TODD
Basin: MINNECHADUZA
Hydrologic Unit Code: 10150004
Land Owner: 

Location: 035N-29W-04BCCB 1
Latitude: 43 02' 26"
Longitude: 100 44' 52"
Ground Surface Elevation (ft.): 2845 T

**Project Information**

Project: TODD-MELLETTE STUDY
Drill Date: 07/17/1990
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R20-90-34
Driller: M. THOMPSON
Geologist: P. HAMMOND
Driller's Log: 
Geologist's Log: X
Total Drill Hole Depth (ft.): 117.0

**Well Information**

SDGS Well Name: R20-90-34
Water Rights Well: TD-90B
Casing Type: PVC, SCH. 80
Screen Type: PVC, MFG., SLOT SIZE 0.018 IN.
Total Casing and Screen (ft.): 115.0
Casing Top Elevation: 2847.00 T
Casing Diameter (in.): 2.0
Screen Length (ft.): 5.0
Casing Stick-up (ft.): 2.00

**Geophysical Information**

Spontaneous Potential: X
Natural Gamma: X
Single Point Resistivity: X
Extra: X

RESISTIVITY NOT WORKING PROPERLY. SCREEN INTERVAL FROM 113 TO 108 FEET; FILTER PACK (0.65-0.75 MM QUARTZ SAND) 117 TO 100.5 FEET; BENTONITE 100.5 TO 11 FEET; CEMENT 11 TO 0 FEET; LOCKING STEEL WELL PROTECTOR INSTALLED. SCREEN AND CASING ARE FLUSH THREADED. SOUTH WELL OF THREE.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2845.00 - 2830.00</td>
<td>0.0 - 15.0</td>
<td>SAND AND SANDSTONE, LIGHT-BROWN TO GREEN, FINE</td>
</tr>
<tr>
<td>2830.00 - 2823.00</td>
<td>15.0 - 22.0</td>
<td>SAND AND SILTSTONE, LIGHT-BROWN, FINE; SOMEWHAT CALCAREOUS</td>
</tr>
<tr>
<td>2823.00 - 2819.00</td>
<td>22.0 - 26.0</td>
<td>SILTSTONE, LIGHT-BROWN TO WHITISH-BROWN; CALCAREOUS</td>
</tr>
<tr>
<td>2819.00 - 2789.00</td>
<td>26.0 - 56.0</td>
<td>SAND, LIGHT-BROWN; SOME SILTSTONE, CALCAREOUS</td>
</tr>
<tr>
<td>2789.00 - 2786.00</td>
<td>56.0 - 59.0</td>
<td>SANDSTONE, LIGHT-BROWN TO GREENISH-BROWN; SOME SILTSTONE, SLIGHTLY CALCAREOUS</td>
</tr>
<tr>
<td>2786.00 - 2783.00</td>
<td>59.0 - 62.0</td>
<td>SILTSTONE AND SANDSTONE, BROWN; CALCAREOUS, SOME WHITE PIECES PRESENT</td>
</tr>
<tr>
<td>2783.00 - 2769.00</td>
<td>62.0 - 76.0</td>
<td>SILTSTONE, LIGHT-REDDISH-BROWN; CALCAREOUS, SOME WHITE CALCAREOUS PIECES PRESENT</td>
</tr>
</tbody>
</table>
2769.00 - 2728.00  76.0 - 117.0  SILTSTONE, REDDISH-BROWN, CLAYEY; CALCAREOUS (ARIKAREE GROUP)

* * * *
**Location Information**

Legal Location: NW SW SW NW SEC. 04, T. 035 N., R. 29 W.
County: TODD
Basin: MINNECHADUZA
Hydrologic Unit Code: 10150004
Land Owner:

Location: 035N-29W-04BCCB 2
Latitude: 43 02' 26"
Longitude: 100 44' 52"
Ground Surface Elevation (ft.): 2845 T

**Project Information**

Project: TODD-MELLETTE STUDY
Drill Date: 07/17/1990
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R20-90-35
Samples:

Geologist: P. HAMMOND
Geologist's Log: X
Driller: M. THOMPSON
Driller's Log:
Total Drill Hole Depth (ft.): 53.0

**Well Information**

SDGS Well Name: R20-90-35
Water Rights Well:
Other Well Name:
Casing Type: PVC, SCH. 80
Screen Type: PVC, MFG., SLOT SIZE 0.018 IN.
Total Casing and Screen (ft.): 55.0
Well Maintenance Date:

Aquifer: OGALLALA
Management Unit:
Casing Top Elevation: 2847.00 T
Casing Diameter (in.): 2.0
Screen Length (ft.): 5.0
Casing Stick-up (ft.): 2.00

**Geophysical Information**

Spontaneous Potential:
Natural Gamma:
Single Point Resistivity:
Extra:

WELL DATA: SCREEN INTERVAL FROM 53 TO 48 FEET; FILTER PACK (0.65-0.75 MM QUARTZ SAND) 53 TO 38 FEET; BENTONITE 38 TO 9 FEET; CEMENT 9 TO 0 FEET; LOCKING STEEL WELL PROTECTOR INSTALLED. SCREEN AND CASING ARE FLUSH THREADED. MIDDLE WELL OF THREE.

**Elevation (ft.)** | **Depth (ft.)** | **Description**
--- | --- | ---
2845.00-2830.00 | 0.0-15.0 | SAND, BROWNISH-GREEN, FINE TO MEDIUM; SLIGHTLY CALCAREOUS, ROOT CASTS PRESENT
2830.00-2823.00 | 15.0-22.0 | SAND AND SILTSTONE, BROWN, FINE TO COARSE; CALCAREOUS, ROOT CASTS PRESENT WHICH ARE SLIGHTLY CALCAREOUS
2823.00-2819.00 | 22.0-26.0 | SILTSTONE, LIGHT-BROWN TO WHITISH-BROWN; CALCAREOUS
2819.00-2792.00 | 26.0-53.0 | SAND AND SANDSTONE, LIGHT-BROWN TO GREENISH, FINE TO COARSE; SOME SILTSTONE

* * * *
Location Information

Legal Location: NW SW SW NW SEC. 04, T. 035 N., R. 29 W.
County: TODD
Basin: MINNECHADUZA
Hydrologic Unit Code: 10150004
Land Owner:
Location: 035N-29W-04BCCB 3
Latitude: 43° 02' 26"
Longitude: 100° 44' 52"
Ground Surface Elevation (ft.): 2845 T

Project Information

Project: TODD-MELLETTE STUDY
Drill Date: 07/17/1990
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R20-90-36
Samples: Total Drill Hole Depth (ft.): 27.0

Well Information

SDGS Well Name: R20-90-36
Water Rights Well:
Other Well Name:
Casing Type: PVC, SCH. 80
Screen Type: PVC, MFG., SLOT SIZE 0.018 IN.
Total Casing and Screen (ft.): 30.0
Well Maintenance Date: 07/17/1990

Geophysical Information

Spontaneous Potential:
Natural Gamma: Single Point Resistivity:
Extra:

WELL DATA: SCREEN INTERVAL FROM 27 TO 17 FEET; FILTER PACK (0.65-0.75 MM QUARTZ SAND) 27 TO 12 FEET; BENTONITE 12 TO 7 FEET; CEMENT 7 TO 0 FEET; LOCKING STEEL WELL PROTECTOR INSTALLED. SCREEN AND CASING ARE FLUSH THREADED. NORTH WELL OF THREE.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2845.00-2830.00</td>
<td>0.0-15.0</td>
<td>SAND, BROWNISH-GREEN, FINE TO MEDIUM; SLIGHTLY CALCAREOUS, ROOT CASTS PRESENT</td>
</tr>
<tr>
<td>2830.00-2818.00</td>
<td>15.0-27.0</td>
<td>SAND AND SILTSTONE, BROWNISH-GREEN, FINE TO COARSE; CALCAREOUS, ROOT CASTS</td>
</tr>
</tbody>
</table>

* * * *
Location Information

Legal Location:NW SE SE NE SEC. 05, T. 035 N., R. 29 W.
County:TODD
Basin:MINNECHADUZA
Hydrologic Unit Code:10150004
Land Owner:

Location:035N-29W-05ADDB
Latitude:43 02' 24"
Longitude:100 44' 57"
Ground Surface Elevation (ft.):2845 T

Project Information

Project:TODD-MELLETTE STUDY
Drill Date:07/17/1990
Company:SDGS
Drilling Method:ROTARY
Test Hole Number:R20-90-37
Samples:

Geologist:P. HAMMOND
Geologist's Log:X
Driller:M. THOMPSON
Driller's Log:
Total Drill Hole Depth (ft.):27.0

Well Information

SDGS Well Name:R20-90-37
Water Rights Well:
Other Well Name:
Casing Type:PVC, SCH. 80
Screen Type:PVC, MFG., SLOT SIZE 0.018 IN.
Total Casing and Screen (ft.):30.0
Well Maintenance Date:

Aquifer:OGALLALA
Management Unit:
Casing Top Elevation:2848.00 T
Casing Diameter (in.):2.0
Screen Length (ft.):10.0
Casing Stick-up (ft.):3.00

Geophysical Information

Spontaneous Potential:
Natural Gamma:

Single Point Resistivity:
Extra:

WELL DATA: SCREEN INTERVAL FROM 27 TO 17 FEET; FILTER PACK (0.65-0.75 MM QUARTZ SAND) 27 TO 11.5 FEET; BENTONITE 11.5 TO 7 FEET; CEMENT 7 TO 0 FEET; STEEL WELL PROTECTOR INSTALLED. SCREEN AND CASING ARE FLUSH THREADED.

Elevation (ft.) | Depth (ft.) | Description
---|---|---
2845.00-2830.00 | 0.0 - 15.0 | SAND AND SANDSTONE, GREENISH-BROWN, FINE TO MEDIUM; SLIGHTLY CALCAREOUS, ROOT CASTS PRESENT
2830.00-2818.00 | 15.0 - 27.0 | SAND AND SILTSTONE, LIGHT-BROWN, FINE TO COARSE; CALCAREOUS, ROOT CASTS PRESENT

* * * *

035N29W05ADDB Page 1 01/31/2005
**Location Information**

Legal Location: NE SE SE NW SEC. 05, T. 035 N., R. 29 W.
- County: TODD
- Basin: MINNECHADUZA
- Hydrologic Unit Code: 10150004
- Land Owner:

Location: 035N-29W-05BDDA
- Latitude: 43 02' 24"
- Longitude: 100 45' 31"

Ground Surface Elevation (ft.): 2855 T

**Project Information**

- Project: TODD-MELLETTE STUDY
- Drill Date: 06/24/1991
- Company: SDGS
- Drilling Method: ROTARY
- Test Hole Number: R20-91-27
- Samples: Total Drill Hole Depth (ft.): 47.0

- Geologist: P. HAMMOND
- Geologist's Log: X
- Driller: D. IVERSON
- Driller's Log: Total Casing and Screen (ft.): 45.0

**Well Information**

- SDGS Well Name: R20-91-27
- Water Rights Well: Management Unit:
- Other Well Name: Casing Top Elevation: 2857.00 T
- Casing Type: PVC, SCH. 80
- Screen Type: PVC, MFG., SLOT SIZE 0.010 IN.
- Screen Length (ft.): 10.0
- Total Casing and Screen (ft.): 45.0
- Casing Diameter (in.): 2.0
- Casing Stick-up (ft.): 2.00

**Geophysical Information**

- Spontaneous Potential: Single Point Resistivity: Extra:
- Natural Gamma: WELL DATA: SCREEN INTERVAL FROM 43 TO 33 FEET; FILTER PACK (0.65-0.75 MM QUARTZ SAND) 47 TO 25 FEET; BENTONITE 25 TO 19 FEET; CEMENT 19 TO 0 FEET; LOCKING STEEL WELL PROTECTOR INSTALLED. CASING AND SCREEN ARE FLUSH THREADED.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2855.00 - 2854.00</td>
<td>0.0 - 1.0</td>
<td>TOPSOIL, BLACK, SANDY</td>
</tr>
<tr>
<td>2854.00 - 2838.00</td>
<td>1.0 - 17.0</td>
<td>SAND, GREENISH-BROWN, VERY FINE TO FINE</td>
</tr>
<tr>
<td>2838.00 - 2826.00</td>
<td>17.0 - 29.0</td>
<td>SAND, LIGHT-BROWN, VERY FINE TO FINE; SOME SILT; MANY ROOT CASTS PRESENT; CALCAREOUS</td>
</tr>
<tr>
<td>2826.00 - 2816.00</td>
<td>29.0 - 39.0</td>
<td>SAND AND SANDSTONE, WHITISH-BROWN, VERY FINE TO FINE SAND, VERY SILTY; SOME SILTSTONE; HIGHLY CALCAREOUS</td>
</tr>
<tr>
<td>2816.00 - 2808.00</td>
<td>39.0 - 47.0</td>
<td>SAND AND SILTSTONE, WHITISH-BROWN, VERY FINE TO FINE, VERY SILTY; HIGHLY CALCAREOUS</td>
</tr>
</tbody>
</table>

* * * *
Location Information

Legal Location: SE NE SE NE SEC. 06, T. 035 N., R. 29 W.
County: TODD
Basin: MINNECHADUZA
Hydrologic Unit Code: 10150004
Land Owner:

Location: 035N-29W-06ADAD
Latitude: 43 02' 26"
Longitude: 100 46' 04"
Ground Surface Elevation (ft.): 2895 T

Project Information

Project: TODD-MELLETTE STUDY
Drill Date: 06/25/1991
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R20-91-28
Samples:

Total Casing and Screen (ft.): 75.0
Total Drill Hole Depth (ft.): 74.0

Well Information

SDGS Well Name: R20-91-28
Water Rights Well: R20-91-28
Casing Type: PVC, SCH. 80
Screen Type: PVC, MFG., SLOT SIZE 0.010 IN.
Casing Top Elevation: 2897.00 T
Casing Diameter (in.): 2.0
Screen Length (ft.): 10.0
Casing Stick-up (ft.): 2.00

Well Maintenance Date:

Aquifer: OGALLALA
Management Unit:

Spontaneous Potential:
Natural Gamma:
Geochemical Information

WELL DATA: SCREEN INTERVAL FROM 73 TO 63 FEET; FILTER PACK (0.65-0.75 MM QUARTZ SAND) 74 TO 55 FEET; BENTONITE 55 TO 20 FEET; CEMENT 20 TO 0 FEET; LOCKING STEEL WELL PROTECTOR INSTALLED. CASING AND SCREEN ARE FLUSH THREADED.

Elevation (ft.) | Depth (ft.) | Description
---|---|---
2895.00-2893.00 | 0.0-2.0 | TOPSOIL, BLACK
2893.00-2876.00 | 2.0-19.0 | SAND AND SANDSTONE, LIGHT-BROWN, VERY FINE TO MEDIUM; SOME SILTSTONE; CALCAREOUS
2876.00-2854.00 | 19.0-41.0 | SAND AND SANDSTONE, GREENISH-BROWN, VERY FINE TO FINE; SOME SILTSTONE, CALCAREOUS
2854.00-2847.00 | 41.0-48.0 | SAND AND SANDSTONE, TAN, VERY FINE TO MEDIUM, CLAYEY; SOME SILTSTONE; CALCAREOUS
2847.00-2837.00 | 48.0-58.0 | SAND AND SANDSTONE, GREENISH-BROWN, VERY FINE TO MEDIUM; SOME SILTSTONE; CALCAREOUS
2837.00-2821.00 | 58.0-74.0 | SAND AND SANDSTONE, LIGHT-BROWN, VERY FINE TO MEDIUM; SILTSTONE; ROOT CASTS PRESENT; CALCAREOUS
Location Information

Legal Location: NW NW NW NW SEC. 07, T. 035 N., R. 29 W.
County: TODD
Basin: MINNECHADUZA
Hydrologic Unit Code: 10150004
Land Owner:

Casing Type:
Screen Type:
Casing Stick-up (ft.):
Spontaneous Potential:
Natural Gamma:
Samples:

Longitude: 100 47' 10"
Latitude: 43 01' 48"

Ground Surface Elevation (ft.): 2903 T

Project Information

Project: WATER RIGHTS
Drill Date: 10/05/1959
Company: GRIMSHAW-GROSCH
Drilling Method:
Test Hole Number:
Samples:

Total Casing and Screen (ft.): 84.8
Well Maintenance Date: 06/26/1984

Geological Information

SDGS Well Name: NO WATER RIGHTS
Water Rights Well: TD-59A
Other Well Name: STEEL
Casing Type: UNKNOWN
Screen Type: UNKNOWN
Total Casing and Screen (ft.): 84.8
Ground Surface Elevation (ft.): 2903 T

Casing Top Elevation:
Casing Diameter (in.):
Screen Length (ft.):
Casing Stick-up (ft.):

Geophysical Information

Spontaneous Potential:
Natural Gamma:

Single Point Resistivity:
Extra:

ORIGINAL OBSERVATION WELL NAME NC-4.

Elevation (ft.) | Depth (ft.) | Description
--- | --- | ---
2903.00-2893.00 | 0.0-10.0 | SANDSTONE, FINE TO MEDIUM; CALCAREOUS AND NONCALCAREOUS CEMENTED, FEW PIECES CONTAINING ROOT-LIKE STRUCTURES
2893.00-2843.00 | 10.0-60.0 | SAND, FINE TO COARSE, SUBANGULAR TO ROUNDED; MOSTLY QUARTZ WITH SOME FELDSPAR AND DARK MINERALS, SOME SANDSTONE, FINE TO MEDIUM FROM 50 TO 60 FEET, CALCAREOUS CEMENTED, FEW PIECES BUFF LIMESTONE
2843.00-2813.00 | 60.0-90.0 | SAND, FINE TO COARSE, SUBANGULAR TO ROUNDED; SAME AS INTERVAL FROM 10 TO 60 FEET, WITH INCREASED AMOUNT OF SANDSTONE, SOME SANDSTONE FORMED INTO ROOT-LIKE STRUCTURES
2813.00-2793.00 | 90.0-110.0 | SAND, FINE TO COARSE, SUBANGULAR TO ROUNDED; SAME AS INTERVAL FROM 60 TO 90 FEET, SANDSTONE DARKER COLORED, LARGE AMOUNT OF LOOSE SAND FROM 100 TO 160 FEET
2793.00–2783.00  110.0–120.0  SAND, FINE TO COARSE, WELL-SORTED, SUBANGULAR TO ROUNDED; LOOSE, MOSTLY QUARTZ WITH SOME FELDSPAR AND DARK MINERALS

2783.00–2703.00  120.0–200.0  SANDSTONE, BUFF, VERY FINE, SILTY; NONCALCAREOUS, WITH SOME LOOSE SAND INCREASING FROM 140 TO 150 AND 170 TO 180 FEET, SANDSTONE SILTIER AND FEW PIECES HAVE PINKISH CAST FROM 190 TO 200 FEET

* * * *
### Location Information

- **Legal Location:** SE SE NE NE SEC. 20, T. 035 N., R. 29 W.
- **County:** TODD
- **Basin:** MINNECHADUZA
- **Hydrologic Unit Code:** 10150004
- **Land Owner:**
- **Longitude:** 100 44' 53"
- **Location:** 035N-29W-20AADD
- **Latitude:** 42 59' 57"
- **Ground Surface Elevation (ft.):** 2890

### Project Information

- **Project:** WATER RIGHTS
- **Drill Date:** 11/03/1959
- **Company:** GRIMSHAW-GROSCH
- **Drilling Method:**
- **Test Hole Number:**
- **Samples:**
- **Total Drill Hole Depth (ft.):** 200.0
- **Geologist:** M. TIPTON
- **Driller:** FOX
- **Geologist's Log:** X
- **Driller's Log:**

### Well Information

- **SDGS Well Name:**
- **Water Rights Well:** TD-59B
- **Other Well Name:**
- **Casing Type:** STEEL
- **Screen Type:**
- **Total Casing and Screen (ft.):** 128.9
- **Casing Top Elevation:**
- **Casing Diameter (in.):** 1.3
- **Casing Diameter (in.):** 1.3
- **Screen Length (ft.):**
- **Casing Stick-up (ft.):** 1.30
- **Well Maintenance Date:** 06/26/1984

### Geophysical Information

- **Spontaneous Potential:**
- **Natural Gamma:**
- **Single Point Resistivity:**
- **Extra:**

ORIGINAL OBSERVATION WELL NAME NC-5.

### Table: Elevation, Depth, Description

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2890.00 - 2880.00</td>
<td>0.0 - 10.0</td>
<td>SAND, MEDIUM; LOOSE, MOSTLY QUARTZ WITH FELDSPAR AND DARK MINERALS</td>
</tr>
<tr>
<td>2880.00 - 2870.00</td>
<td>10.0 - 20.0</td>
<td>SAND; LOOSE, WITH INCREASED SANDSTONE</td>
</tr>
<tr>
<td>2870.00 - 2780.00</td>
<td>20.0 - 110.0</td>
<td>SAND; LOOSE, SHALE-LIKE PIECES OF ORGANIC MATTER 60 TO 70 FEET, SOME CALICHIE 70 TO 90 FEET</td>
</tr>
<tr>
<td>2780.00 - 2770.00</td>
<td>110.0 - 120.0</td>
<td>SANDSTONE, FINE TO MEDIUM; LOOSELY CEMENTED WITH A CALCAREOUS CEMENT WITH MUCH LOOSE SAND</td>
</tr>
<tr>
<td>2770.00 - 2690.00</td>
<td>120.0 - 200.0</td>
<td>SAND, SILTY, BUFF-GRAY; WITH OCCASIONAL ASH SHARD, LOOSELY CEMENTED IN PART</td>
</tr>
</tbody>
</table>

* * * *
Location Information

Legal Location: SE SE NE NE Sec. 20, T. 035 N., R. 29 W.
County: TODD
Basin: MENNESHADUZA
Hydrologic Unit Code: 10150004
Land Owner:

Casing Type:
Screen Type:
Casing Stick-up (ft.):
Spontaneous Potential:
Natural Gamma:
Samples:
Longitude:
Latitude:
Hydrologic Unit Code:
SDGS Well Name:
Test Hole Number:
Casing Top Elevation:
Total Casing and Screen (ft.):
Casing Diameter (in.):
Screen Length (ft.):
Well Maintenance Date:
Single Point Resistivity:
Extra:

Project Information

Project: MELLETTE-TODD CO. STUDY
Drill Date: 05/23/1994
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R2-94-08
Samples:

Total Drill Hole Depth (ft.): 106.0

Geologist:
Geologist's Log:
Driller:
Driller's Log:

Well Information

SDGS Well Name: R2-94-08
Water Rights Well:
Other Well Name:
Casing Type: PVC, SCH. 80
Screen Type: PVC, MFG., 0.010 IN. SLOT
Total Casing and Screen (ft.): 105.0
Casing Top Elevation: 2892.00 T
Casing Diameter (in.): 2.0
Screen Length (ft.): 10.0
Casing Stick-up (ft.): 2.00

Geophysical Information

Spontaneous Potential:
Natural Gamma:

Elevation (ft.) Depth (ft.) Description
2890.00 - 2880.00 0.0 - 10.0 SAND, MEDIUM; LOOSE, MOSTLY QUARTZ WITH FELDSPAR AND DARK MINERALS
2880.00 - 2870.00 10.0 - 20.0 SAND; LOOSE, WITH INCREASED SANDSTONE
2870.00 - 2784.00 20.0 - 106.0 SAND; LOOSE, SHALE-LIKE PIECES OF ORGANIC MATTER 60 TO 70 FEET, SOME CALICHE 70 TO 90 FEET

NO GEOLOGIST LOG AVAILABLE FOR THIS WELL. LITHOLOGY WAS TAKEN FROM WATER RIGHTS WELL TD-59B.

* * * *

035N29W20AADD 1 Page 1 01/31/2005
**Location Information**

Legal Location: NW NW NW NW SEC. 21, T. 035 N., R. 29 W.

County: TODD
Basin: MINNECHADUZA
Hydrologic Unit Code: 10150004
Land Owner: 

Longitude: 100°44'52"
Latitude: 43°00'05"

Ground Surface Elevation (ft.): 2875 T

**Project Information**

Project: MELLLETTE-TODD CO. STUDY
Drill Date: 09/22/1993
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R2-93-34

Geologist: R. HAMMOND
Geologist's Log: X
Driller: G. JENSEN
Driller's Log: 

Total Drill Hole Depth (ft.): 977.0

**Geophysical Information**

Spontaneous Potential: X
Natural Gamma: X

Extra:

THIS HOLE WAS PLUGGED FORM 977 TO 8 FEET WITH HIGH SOLIDS BENTONITE GROUT, FROM 8 TO 3 FEET WITH CEMENT GROUT AND FROM 3 FEET TO LAND SURFACE WITH NATIVE SOILS.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2875.00 - 2822.00</td>
<td>0.0 - 53.0</td>
<td>SANDSTONE, YELLOWISH-GRAY TO WHITE, VERY FINE TO FINE, VERY SILTY; VERY CALCAREOUS, LARGELY CLEAR TO WHITE SUBROUNDED TO SUBANGULAR QUARTZ WITH COMMON LITHIC, CHERT AND PINK FELDSPAR CLASTS, ABUNDANT WHITE ROOT OR BURROW CASTS (OGALLALA GROUP)</td>
</tr>
<tr>
<td>2822.00 - 2792.00</td>
<td>53.0 - 83.0</td>
<td>SAND, YELLOWISH-GRAY, VERY FINE TO MEDIUM GRAINED, SILTY; CALCAREOUS, MOSTLY CLEAR TO WHITE, FROSTED AND POLISHED SUBROUNDED TO SUBANGULAR QUARTZ, SOME LITHIC CLASTS, POOR TO NO CEMENTATION, ABUNDANT ROOT OR BURROW CASTS, WHITE ASH BEDS AT 70-73 FEET (OGALLALA GROUP)</td>
</tr>
<tr>
<td>2792.00 - 2768.00</td>
<td>83.0 - 107.0</td>
<td>SANDSTONE, YELLOWISH-GRAY, VERY FINE TO MEDIUM, SILTY; CALCAREOUS, MOSTLY CLEAR TO WHITE POLISHED AND FROSTED QUARTZ, SUBROUNDED TO SUBANGULAR, SOME LITHIC AND REDDISH FELDSPAR CLASTS, CEMENTED TO POORLY CEMENTED, ABUNDANT ROOT AND BURROW CASTS (OGALLALA GROUP)</td>
</tr>
<tr>
<td>2768.00 - 2687.00</td>
<td>107.0 - 188.0</td>
<td>SILTSTONE, PALE-YELLOWISH-BROWN, SLIGHTLY SANDY AND CLAYEY, POORLY FISSILE TO MASSIVE (ARIKAREE GROUP)</td>
</tr>
<tr>
<td>2687.00 - 2640.00</td>
<td>188.0 - 235.0</td>
<td>SILTSTONE, LIGHT-BROWN, VERY SANDY; SLIGHTLY CALCAREOUS (ROSEBUD FORMATION)</td>
</tr>
<tr>
<td>2640.00 - 2359.00</td>
<td>235.0 - 516.0</td>
<td>SILTSTONE, LIGHT-BROWN, CLAYEY, SLIGHTLY SANDY,</td>
</tr>
</tbody>
</table>
POORLY FISSILE TO MASSIVE; SLIGHTLY CALCAREOUS, SANDY BELOW 450 FEET, HIGHER GAMMA LOG VALUES FROM 480 TO 500 FEET (ROSEBUD FORMATION?)

2359.00-2350.00 516.0-525.0 SAND, LIGHT-BROWN, VERY FINE; LARGELY SUBANGULAR TO SUBROUNDED CLEAR QUARTZ WITH ABUNDANT LITHIC, CHERT AND DARK ORGANIC CLASTS, SLIGHTLY CALCAREOUS, POOR TO NO CEMENTATION (ARIKAREE GROUP)

2350.00-2207.00 525.0-668.0 SILTSTONE, PALE-YELLOWISH-BROWN, SANDY, CLAYEY, POORLY FISSILE TO MASSIVE; POORLY CALCAREOUS (ROSEBUD FORMATION?)

2207.00-2079.00 668.0-796.0 SILTSTONE, PALE-YELLOWISH-BROWN, CLAYEY, SANDY; SLIGHTLY CALCAREOUS

2079.00-1998.00 796.0-877.0 SILTSTONE, PALE-OLIVE TO GRAYISH-ORANGE, SANDY, CLAYEY, MASSIVE TO POORLY FISSILE; CALCAREOUS, OXIDIZED INTERVALS MAY BE PALEOSOLS (BRULE FORMATION?)

1998.00-1940.00 877.0-935.0 SILTSTONE, DARK-YELLOW-ORANGE TO DUSKY-YELLOW, CLAYEY, SLIGHTLY SANDY

1940.00-1898.00 935.0-977.0 CLAYSTONE, OLIVE-BLACK, SOMEWHAT FISSILE; CALCAREOUS (PIERRE SHALE)

* * * *
Location Information

Legal Location: SW SW SE SE SEC. 05, T. 035 N., R. 30 W.
County: TODD
Basin: MINECHADUZA
Hydrologic Unit Code: 10150004
Land Owner:

Location: 035N-30W-05DDCC
Latitude: 43 01' 53"
Longitude: 100 52' 13"
Ground Surface Elevation (ft.): 2842

Project Information

Project: MELLETTE-TODD CO. STUDY
Drill Date: 09/15/1993
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R2-93-33

Samples:

Driller: G. JENSEN
Geologist: R. HAMMOND
Geologist's Log: X
Driller's Log: 
Total Drill Hole Depth (ft.): 1022.0

Geophysical Information

Spontaneous Potential: X
Natural Gamma: X

Extra:

THIS TEST WAS PLUGGED WITH BENTONITE GROUT FROM 1022 TO 8 FEET, WITH CEMENT GROUT FROM 8 TO 3 FEET AND NATIVE SOIL FROM 3 FEET TO LAND SURFACE.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2842.00 - 2840.00</td>
<td>0.0 - 2.0</td>
<td>TOPSOIL, BLACK, VERY SANDY; CALCCREOUS</td>
</tr>
<tr>
<td>2840.00 - 2799.00</td>
<td>2.0 - 43.0</td>
<td>SANDSTONE, GRAYISH-YELLOW-GREEN, FINE, SUBROUNDED TO SUBANGULAR; CALCITE CEMENT, PRIMARILY QUARTZ GRAINS, SOME LAYERS VERY TIGHTLY CEMENTED, ABUNDANT CALCITE ROOT CASTS OR ANIMAL BURROWS FROM 10 TO 43 FEET (ASH HOLLOW FORMATION?)</td>
</tr>
<tr>
<td>2799.00 - 2735.00</td>
<td>43.0 - 107.0</td>
<td>SANDSTONE, YELLOWISH-GRAY, FINE, PRIMARILY ROUNDED TO SUBANGULAR QUARTZ GRAINS; CALCAREOUS TO POORLY CALCAREOUS, SOME SILTY BEDS (VALENTINE FORMATION)</td>
</tr>
<tr>
<td>2735.00 - 2719.00</td>
<td>107.0 - 123.0</td>
<td>SILTSTONE, PALE-YELLOWISH-BROWN, MASSIVE(?) \ SLIGHTLY CALCAREOUS (LOESS?)</td>
</tr>
<tr>
<td>2719.00 - 2560.00</td>
<td>123.0 - 282.0</td>
<td>SILTSTONE, MODERATE-YELLOWISH-BROWN, SLIGHTLY SANDY; HARD, SLIGHTLY CALCAREOUS TO NONCALCAREOUS, SANDY FROM 210 TO 240 FEET, HARD CHERTY BED AT 210 FEET, HIGH GAMMA READING FROM 240 TO 263 FEET (ROSEBUD FORMATION?)</td>
</tr>
<tr>
<td>2560.00 - 2505.00</td>
<td>282.0 - 337.0</td>
<td>SILTSTONE, PALE-YELLOWISH-BROWN, VERY SANDY; SLIGHTLY CALCAREOUS TO NON- CALCAREOUS (ROSEBUD FORMATION?)</td>
</tr>
<tr>
<td>2505.00 - 2470.00</td>
<td>337.0 - 372.0</td>
<td>SILTSTONE, PALE-YELLOWISH-BROWN, SLIGHTLY SANDY; SLIGHTLY CALCAREOUS (ROSEBUD FORMATION)</td>
</tr>
<tr>
<td>Depth Range</td>
<td>Gamma</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>2470.00-2455.00</td>
<td>372.0-387.0</td>
<td>SANDSTONE, GRAYISH-ORANGE, VERY FINE, SILTY; NONCALCAREOUS, VERY POORLY CEMENTED (ROSEBUD FORMATION)</td>
</tr>
<tr>
<td>2455.00-2445.00</td>
<td>387.0-397.0</td>
<td>SILTSTONE, LIGHT-BROWN, SANDY; NON- CALCAREOUS (ROSEBUD FORMATION)</td>
</tr>
<tr>
<td>2445.00-2436.00</td>
<td>397.0-406.0</td>
<td>SILTSTONE, VERY PALE-ORANGE, CLAYEY; CALCAREOUS, BLOCKY STRUCTURE</td>
</tr>
<tr>
<td>2436.00-2358.00</td>
<td>406.0-484.0</td>
<td>SILTSTONE, LIGHT-BROWN, SLIGHTLY CLAYEY, SANDY TO VERY SANDY FROM 435 TO 445 FEET; VERY POORLY CALCAREOUS TO NON- CALCAREOUS (ROSEBUD FORMATION)</td>
</tr>
<tr>
<td>2358.00-2337.00</td>
<td>484.0-505.0</td>
<td>SILTSTONE, PALE-YELLOWISH-BROWN, CLAYEY; CALCAREOUS, HIGH GAMMA TRACE (ROSEBUD FORMATION)</td>
</tr>
<tr>
<td>2337.00-2281.00</td>
<td>505.0-561.0</td>
<td>SANDSTONE, PALE-YELLOWISH-BROWN, VERY FINE, SILTY; SILTSTONE LENS AT 526 TO 536 FEET (ROSEBUD FORMATION?)</td>
</tr>
<tr>
<td>2281.00-2062.00</td>
<td>561.0-780.0</td>
<td>SILTSTONE, GRAYISH-YELLOW, CLAYEY, SANDY; SLIGHTLY CALCAREOUS, SOME INTERVALS OXIDIZED TO LIGHT-BROWN, SEVERAL HARD ASHY BEDS (BRULE FORMATION?)</td>
</tr>
<tr>
<td>2062.00-2009.00</td>
<td>780.0-833.0</td>
<td>SILTSTONE, LIGHT-OLIVE-GRAY, SANDY, CLAYEY; SLIGHTLY CALCAREOUS (BRULE FORMATION?)</td>
</tr>
<tr>
<td>2009.00-1933.00</td>
<td>833.0-909.0</td>
<td>CLAYSTONE, PALE-OLIVE, VERY SILTY, SANDY; SOME INTERVALS WEATHERED TO DUSKY- YELLOW (CHADRON FORMATION?)</td>
</tr>
<tr>
<td>1933.00-1884.00</td>
<td>909.0-958.0</td>
<td>CLAYSTONE, GRAYISH-GREEN, VERY SILTY, SOMewhat FISSILE; SLIGHTLY CALCAREOUS TO NONCALCAREOUS (CHADRON FORMATION)</td>
</tr>
<tr>
<td>1884.00-1846.00</td>
<td>958.0-996.0</td>
<td>CLAYSTONE, DUSKY-YELLOW, SLIGHTLY SILTY; VERY CALCAREOUS (CHADRON FORMATION)</td>
</tr>
<tr>
<td>1846.00-1820.00</td>
<td>996.0-1022.0</td>
<td>CLAYSTONE, GRAYISH-BLACK, SLIGHTLY FISSILE; SLIGHTLY CALCAREOUS (PIERRE SHALE)</td>
</tr>
</tbody>
</table>

* * * *
THIS WELL WAS FILTER PACKED FROM 322 TO 294 FEET; THE ANNULAR SPACE WAS FILLED WITH BENTONITE GROUT FROM 294 TO 20 FEET; CEMENT GROUT FROM 20 FEET TO LAND SURFACE.
NONCALCAREOUS, SANDY FROM 210 TO 240 FEET, HARD
CHERTY BED AT 210 FEET (ROSEBUD FORMATION?)

2560.00 - 2520.00  282.0 - 322.0  SILTSTONE, PALE-YELLOWISH-BROWN, VERY SANDY;
SLIGHTLY CALCAREOUS TO NONCALCAREOUS (ROSEBUD
FORMATION)

* * * *
Location Information

Legal Location: SW SW SE SE SEC. 05, T. 035 N., R. 30 W.
County: TODD
Basin: MINNECHADUZA
Hydrologic Unit Code: 10150004
Land Owner: 

Location: 035N-30W-05DDCC 2
Latitude: 43 01' 53"
Longitude: 100 52' 13"
Ground Surface Elevation (ft.): 2842 T

Project Information

Project: MELLETTE-TODD CO. STUDY
Drill Date: 07/16/1996
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R2-96-38
Samples: 

Geologist: R. HAMMOND
Geologist's Log: X
Driller: G. JENSEN
Driller's Log: 

Total Drill Hole Depth (ft.): 108.0

Well Information

SDGS Well Name: R2-96-38
Water Rights Well: 
Other Well Name: 
Casing Type: PVC
Screen Type: PVC, MFG., 0.010 IN. SLOT
Total Casing and Screen (ft.): 110.0
Well Maintenance Date: 

Aquifer: OGALLALA
Management Unit: 
Casing Top Elevation: 2844.00 T
Casing Diameter (in.): 2.0
Screen Length (ft.): 10.0
Casing Stick-up (ft.): 2.00

Geophysical Information

Spontaneous Potential: 
Natural Gamma: 
Single Point Resistivity: 
Extra: 

THIS WELL WAS FILTER PACKED FROM 108 TO 90 FEET; THE ANNULAR SPACE WAS FILLED WITH BENTONITE GROUT FROM 90 TO 20 FEET; CEMENT GROUT FROM 20 FEET TO LAND SURFACE.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2842.00-2840.00</td>
<td>0.0-2.0</td>
<td>TOPSOIL, BLACK, VERY SANDY; CALCAREOUS</td>
</tr>
<tr>
<td>2840.00-2799.00</td>
<td>2.0-43.0</td>
<td>SANDSTONE, GRAYISH-YELLOW-GREEN, FINE, SUBROUNDED TO SUBANGULAR; CALCITE CEMENT, PRIMARILY QUARTZ GRAINS, SOME LAYERS VERY TIGHTLY CEMENTED, ABUNDANT CALCITE ROOT CASTS OR ANIMAL BURROWS FROM 10 TO 43 FEET (ASH HOLLOW FORMATION?)</td>
</tr>
<tr>
<td>2799.00-2734.00</td>
<td>43.0-108.0</td>
<td>SANDSTONE, YELLOWISH-GRAY, FINE, PRIMARILY ROUNDED TO SUBANGULAR QUARTZ GRAINS; CALCAREOUS TO POORLY CALCAREOUS, SOME SILTY BEDS (VALENTINE FORMATION)</td>
</tr>
</tbody>
</table>

* * * *
Location Information

Legal Location: SE SE SE SEC. 06, T. 035 N., R. 30 W.
County: TODD
Basin: MINNECHADUZA
Hydrologic Unit Code: 10150004
Land Owner: Location: 035N-30W-06DDDD
Latitude: 43 01' 53"
Longitude: 100 53' 11"
Ground Surface Elevation (ft.): 2855 T

Project Information

Project: STATEWIDE MONITORING
Drill Date: 07/05/1994
Company: SDGS
Drilling Method: HOLLOWSTEM
Test Hole Number: R20-94-36
Geologist's Log: X
Driller: D. IVESERON
Driller's Log: Total Drill Hole Depth (ft.): 55.0

Well Information

SDGS Well Name: R20-94-36
Water Rights Well: Ogallala
Other Well Name: Management Unit:
Casing Type: PVC, SCH. 40
Screen Type: PVC, SCH. 40, MFG., SLOT=0.010
Total Casing and Screen (ft.): 48.3
Casing Top Elevation: 2857.20 T
Casing Diameter (in.): 4.0
Casing Stick-up (ft.): 2.20

Well Maintenance Date: 01/31/2005

Geophysical Information

Spontaneous Potential:
Natural Gamma: Single Point Resistivity:
Extra:

WELL INFORMATION: SCREENED INTERVAL FROM 48.31 TO 43.08 FEET BELOW CASING TOP.
NATURAL FILTER PACK FROM 48 TO 33.5 FEET BELOW LAND SURFACE. GRANULAR BENTONITE FROM
33.5 TO 2.1 FEET BELOW LAND SURFACE. CEMENT GROUT FROM 2.1 FEET TO GROUND LEVEL. ONE
STEEL WELL PROTECTOR INSTALLED. EAST WELL OF TWO.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2855.00-2853.00</td>
<td>0.0 - 2.0</td>
<td>TOPSOIL</td>
</tr>
<tr>
<td>2853.00-2851.00</td>
<td>2.0 - 4.0</td>
<td>SAND, LIGHT-BROWN-GREEN, FINE; CLEAN</td>
</tr>
<tr>
<td>2851.00-2850.00</td>
<td>4.0 - 5.0</td>
<td>SANDSTONE, LIGHT-GREEN, FINE; LIGHTLY CEMENTED; HARD DRILLING</td>
</tr>
<tr>
<td>2850.00-2845.00</td>
<td>5.0 - 10.0</td>
<td>SAND, LIGHT-GREEN-BROWN, FINE; CLEAN, LIGHTLY CEMENTED AT 9 FEET</td>
</tr>
<tr>
<td>2845.00-2820.00</td>
<td>10.0 - 35.0</td>
<td>SAND AND SILT, LIGHT-GREEN, FINE SAND; HARD DRILLING</td>
</tr>
<tr>
<td>2820.00-2800.00</td>
<td>35.0 - 55.0</td>
<td>SAND, LIGHT-GREEN, FINE, SILTY; CLEAN, LOOSE, EASY DRILLING</td>
</tr>
</tbody>
</table>
Location Information

Legal Location: SE SE SE SE SEC. 06, T. 035 N., R. 30 W.
County: TODD
Basin: MINNECHADUZA
Hydrologic Unit Code: 10150004
Land Owner: Location: 035N–30W–06DDDD 1
Latitude: 43° 01' 53"
Longitude: 100° 53' 11"
Ground Surface Elevation (ft.): 2855 T

Project Information

Project: STATEWIDE MONITORING
Drill Date: 07/12/1994
Company: SDGS
Drilling Method: HOLLOWSTEM
Test Hole Number: R20-94-37
SDGS Well Name: R20-94-37
Water Rights Well: Aquifer: OGALLALA
Other Well Name: Management Unit:
Casing Type: PVC, SCH. 40
Screen Type: PVC, SCH. 40, MFG., SLOT=0.010
Total Casing and Screen (ft.): 30.9
Casing Top Elevation: 2857.27 T
Casing Diameter (in.): 4.0
Casing Stick-up (ft.): 2.27
Screen Length (ft.): 10.3
Well Maintenance Date:

Well Information

Spontaneous Potential: Single Point Resistivity:
Natural Gamma: Extra:

WELL INFORMATION: SCREENED INTERVAL FROM 30.98 TO 20.65 FEET BELOW CASING TOP. NATURAL FILTER PACK FROM 30 TO 22.6 FEET BELOW LAND SURFACE. ARTIFICIAL PACK FROM 22.6 TO 15.2 FEET BELOW LAND SURFACE. GRANULAR BENTONITE FROM 15.2 TO 1.9 FEET BELOW LAND SURFACE. CEMENT GROUT FROM 1.9 FEET TO GROUND LEVEL. WEST WELL OF TWO.

Geophysical Information

Elevation (ft.) | Depth (ft.) | Description
--- | --- | ---
2855.00–2853.00 | 0.0–2.0 | TOPSOIL
2853.00–2851.00 | 2.0–4.0 | SAND, LIGHT-BROWN-GREEN, FINE; CLEAN
2851.00–2850.00 | 4.0–5.0 | SANDSTONE, LIGHT-GREEN, FINE; LIGHTLY CEMENTED; HARD DRILLING
2850.00–2845.00 | 5.0–10.0 | SAND, LIGHT-GREEN-BROWN, FINE; CLEAN, LIGHTLY CEMENTED AT 9 FEET
2845.00–2825.00 | 10.0–30.0 | SAND AND SILT, LIGHT-GREEN, FINE SAND; HARD DRILLING
* * * *
Location Information
Legal Location: SW NW NW SW SEC. 10, T. 035 N., R. 31 W.
County: TODD
Basin: MINNECHADUZA
Hydrologic Unit Code: 10150004
Land Owner:
Location: 035N-31W-10CBBC
Latitude: 43° 01' 20"
Longitude: 100° 57' 49"
Ground Surface Elevation (ft.): 2823 T

Project Information
Project: MELLETTE-TODD CO. STUDY
Drill Date: 09/01/1993
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R2-93-31
Samples:
SDGS Well Name: R2-93-31
Geologist's Log: X
Geologist: M. JARRETT
Driller: G. JENSEN
Driller's Log:
Total Drill Hole Depth (ft.): 57.0

Well Information
SDGS Well Name: R2-93-31
Water Rights Well: 
Other Well Name: 
Casing Type: PVC, SCH. 80
Screen Type: PVC, MFG., SLOT SIZE 0.010 IN.
Total Casing and Screen (ft.): 57.0
Well Maintenance Date:
Casing Top Elevation: 2825.00 T
Casing Diameter (in.): 2.0
Screen Length (ft.): 20.0
Casing Stick-up (ft.): 2.00

Geophysical Information
Spontaneous Potential: 
Natural Gamma:
Single Point Resistivity: 
Extra:
FILTER PACK CONSISTED OF 0.65-0.75 MM QUARTZ SAND, CEMENT GROUT PLACED FROM 30 FEET TO GROUND SURFACE.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2823.00-2821.00</td>
<td>0.0-2.0</td>
<td>TOPSOIL, BLACK</td>
</tr>
<tr>
<td>2821.00-2766.00</td>
<td>2.0-57.0</td>
<td>SAND, PALE-YELLOW-BROWN, MEDIUM TO FINE; PRIMARILY SUBROUNDED TO SUBANGULAR CLEAR QUARTZ GRAINS WITH SOME LITHIC AND FELDSPAR GRAINS, NONCALCAREOUS, SOME THIN SILTY LENSES (VALENTINE FORMATION)</td>
</tr>
</tbody>
</table>

* * * *
**Location Information**

Legal Location: SW NW NW SW SEC. 10, T. 035 N., R. 31 W.  
County: TOIDD  
Basin: MINNECHADUZA  
Hydrologic Unit Code: 10150004  
Land Owner:  

Location: 035N-31W-10CBBC 1  
Latitude: 43 01' 20"  
Longitude: 100 57' 49"  
Ground Surface Elevation (ft.): 2823  

**Project Information**

Project: MELLETTE-TODD CO. STUDY  
Drill Date: 09/07/1993  
Company: SDGS  
Drilling Method: ROTARY  
Test Hole Number: R2-93-32  
Driller: G. JENSEN  
Geologist: M. JARRETT  
Geologist's Log: X  
Driller's Log:  
Total Drill Hole Depth (ft.): 962.0  

**Geophysical Information**

Spontaneous Potential: X  
Natural Gamma: X  
Single Point Resistivity: X  
Extra:  

HOLE PLUGGED WITH HIGH SOLIDS BENTONITE FROM 962 FEET TO SURFACE. AFTER ALLOWING TIME FOR SETTLEMENT, REMAINING OPEN HOLE WAS PLUGGED WITH CEMENT GROUT. EXPERIENCED PROBLEMS WITH LOGGER ON ORIGINAL LOG OBTAINING GOOD DATA FROM 961 TO 188 FEET. RAN SECOND LOG 09-13-1993 FROM 354 FEET TO SURFACE.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2823.00-2813.00</td>
<td>0.0-10.0</td>
<td>SAND, PALE-YELLOWISH-BROWN AND DUSKY- BROWN, VERY FINE, VERY SILTY; CALCAREOUS, SOME ORGANICS (ALLUVIUM)</td>
</tr>
<tr>
<td>2813.00-2770.00</td>
<td>10.0-53.0</td>
<td>SAND, PALE-YELLOWISH-BROWN, MEDIUM TO FINE, PRIMARILY SUBROUNDED TO SUBANGULAR; MOSTLY CLEAR QUARTZ GRAINS WITH SOME LITHIC AND FELDSPAR GRAINS, NONCALCAREOUS, SOME NODULES AND ROOT CASTS, EQUID TOOTH IN 30-40 FOOT SAMPLE (VALENTINE FORMATION)</td>
</tr>
<tr>
<td>2770.00-2701.00</td>
<td>53.0-122.0</td>
<td>SANDSTONE, GRAYISH-ORANGE-PINK, VERY FINE, VERY SILTY; NONCALCAREOUS TO VERY POORLY CALCAREOUS, SOME CLAYEY SILT- STONE BEDS AT 75 TO 78 FEET (ROSEBUD FORMATION?)</td>
</tr>
<tr>
<td>2701.00-2533.00</td>
<td>122.0-290.0</td>
<td>SILTSTONE, MODERATE-YELLOWISH-BROWN, SANDY, CLAYEY; SLIGHTLY CALCAREOUS TO NONCALCAREOUS, MODERATE CEMENTING, MORE CLAYEY BELOW 180 FEET, SANDY LENSES FROM 215 TO 228 FEET (ROSEBUD FORMATION?)</td>
</tr>
<tr>
<td>2533.00-2489.00</td>
<td>290.0-334.0</td>
<td>SANDSTONE, LIGHT-BROWN, VERY FINE, SILTY; QUARTZOSE WITH SOME LITHIC AND ORGANIC CLASTS; NONCALCAREOUS TO VERY POORLY CALCAREOUS, SILTSTONE FROM 299 TO 308 FEET AND 317 TO 322 FEET (ROSEBUD FORMATION)</td>
</tr>
</tbody>
</table>
2489.00-2349.00  334.0-474.0  SILTSTONE, LIGHT-BROWN, SANDY, CLAYEY, POORLY
FISSILE TO MASSIVE; VERY POORLY CALCAREOUS,
MODERATE CEMENTING

2349.00-2327.00  474.0-496.0  SANDSTONE, PALE-YELLOWISH-BROWN, VERY FINE,
VERY SILTY; CALCAREOUS

2327.00-2314.00  496.0-509.0  SILTSTONE, LIGHT-BROWN, SANDY, CLAYEY, POORLY
FISSILE TO MASSIVE; SLIGHTLY CALCAREOUS,
MODERATE CEMENTING

2314.00-2283.00  509.0-540.0  SANDSTONE, PALE-YELLOWISH-BROWN, MEDIUM TO
COARSE GRAINED, SUBROUNDED TO SUB- ANGULAR;
PRIMARILY FROSTED QUARTZ GRAINS WITH SOME PLATY
LITHIC AND CHERT CLASTS, SOME FINE WHITE ASH
SHARDS, SILTSTONE LAYER AT 516 TO 523 FEET
(BRULE FORMATION?)

2283.00-2217.00  540.0-606.0  SILTSTONE, LIGHT-BROWN, CLAYEY, SANDY, POORLY
TO MODERATELY FISSILE; CALCAREOUS, ABUNDANT
HARD ANGULAR WHITE ASH FRAGMENTS

2217.00-1970.00  606.0-853.0  SILTSTONE, PALE-OLIVE TO GRAYISH-WHITE, VERY
CLAYEY, SLIGHTLY SANDY; CALCAREOUS TO POORLY
CALCAREOUS, SOME TABULAR CALCITE LENSES OR
FRACTURE FILL; SOME PALEOSOLS(?) OXIDIZED TO
PALE-YELLOWISH-BROWN WITH CORRESPONDING HIGH
GAMMA SPIKE, MANY ASH SHARDS (BRULE FM.?)

1970.00-1903.00  853.0-920.0  CLAYSTONE, PALE-OLIVE TO LIGHT-OLIVE- GRAY,
SILTY, FISSILE TO MASSIVE; CALCAREOUS TO
NONCALCAREOUS, SOME OXIDIZED INTERVALS (CHADRON
FORMATION?)

1903.00-1861.00  920.0-962.0  CLAYSTONE, BROWNISH-BLACK; SLIGHTLY CALCAREOUS,
HARD (PIERRE SHALE)

* * * *
Location Information
Legal Location: NW NW NE NW SEC. 09, T. 035 N., R. 32 W.
County: TODD
Basin: WHITE
Hydrologic Unit Code: 10140203
Land Owner: MUSTANG MEADOWS

Project Information
Project: MELLETTE-TODD CO. STUDY
Drill Date: 10/27/1992
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R2-92-56

Well Information
SDGS Well Name: R2-92-56
Casing Type: PVC, SCH. 80
Screen Type: PVC, MFG., SLOT SIZE 0.010 IN.
Total Casing and Screen (ft.): 680.0

Geophysical Information
Spontaneous Potential: X
Natural Gamma: X
Single Point Resistivity: X
Extra: X

40 FEET OF OPEN BOTTOMED BLANK CASING BELOW SCREEN. FILTER PACK FROM 680 TO 600 FEET, GRAIN SIZE 0.030 IN. CONDUCTIVITY TRACE ALSO AVAILABLE AS 'E' LOG.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2926.00 - 2905.00</td>
<td>0.0 - 21.0</td>
<td>SAND, PALE-YELLOWISH-BROWN, FINE, SLIGHTLY SILTY, WELL-SORTED; QUARTZOSE</td>
</tr>
<tr>
<td>2905.00 - 2893.00</td>
<td>21.0 - 33.0</td>
<td>SILT, DARK-YELLOWISH-BROWN INTERBEDDED WITH OLIVE-BLACK; MICACEOUS(?), VERY CALCAREOUS, LOW DENSITY, SOME SANDY BEDS, SOME GASTROPOD SHELLS</td>
</tr>
<tr>
<td>2893.00 - 2864.00</td>
<td>33.0 - 62.0</td>
<td>SAND, PALE-YELLOW-BROWN, VERY FINE, SLIGHTLY SILTY, WELL-SORTED; QUARTZOSE</td>
</tr>
<tr>
<td>2864.00 - 2854.00</td>
<td>62.0 - 72.0</td>
<td>SAND, DARK-YELLOWISH-BROWN, VERY FINE TO FINE, SLIGHTLY SILTY; MODERATELY CEMENTED</td>
</tr>
<tr>
<td>2854.00 - 2773.00</td>
<td>72.0 - 153.0</td>
<td>SILTSTONE, YELLOWISH-BROWN, SANDY; SOME PALE-OLIVE BEDS, MASSIVE(?), NON- CALCAREOUS WITH SOME THIN CALCAREOUS BEDS, VERY CLAYEY AT 135 TO 153 FEET</td>
</tr>
</tbody>
</table>
| 2773.00 - 2746.00 | 153.0 - 180.0 | SAND, YELLOWISH-BROWN, VERY FINE, VERY SILTY;
NONCALCAREOUS

2746.00-2720.00  180.0-206.0  Siltstone, yellowish-brown, clayey, slightly sandy; massive(?), non-calcareous

2720.00-2629.00  206.0-297.0  Siltstone, light-brown, very clayey; noncalcareous, massive(?), grades to yellowish-brown below 220 feet, sandy from 260 to 276 feet

2629.00-2536.00  297.0-390.0  Siltstone, light-brown, very clayey; noncalcareous, massive(?), grades to yellow-brown below 330 feet, some thin limestone beds at 385 to 390 feet

2536.00-2500.00  390.0-426.0  Siltstone, dark-yellowish-orange, clayey, slightly sandy; somewhat nodular, noncalcareous, massive(?)

2500.00-2453.00  426.0-473.0  Sand, grayish-orange, very fine, silty; siltstone lens at 452 to 462 feet

2453.00-2330.00  473.0-596.0  Siltstone, light-brown, sandy; non-calcareous

2330.00-2310.00  596.0-616.0  Siltstone, brown grading to light-brown, clayey; noncalcareous

2310.00-2287.00  616.0-639.0  Sandstone, light-brown, very fine, silty; thin and hard well-cemented bed at 630 feet

2287.00-2246.00  639.0-680.0  Siltstone, light-brown, clayey, sandy at 660 to 680 feet; noncalcareous

2246.00-2156.00  680.0-770.0  Siltstone, pale-olive, clayey; some hard beds, noncalcareous, very poor cuttings below 700 feet due to borehole washout at surface, abandoned hole at 770 feet (brule formation?)

* * * *
**Location Information**

Legal Location: NW NW NE NW SEC. 09, T. 035 N., R. 32 W.
County: TODD  
Basin: WHITE  
Hydrologic Unit Code: 10140203  
Land Owner: MUSTANG MEADOWS

Location: 035N-32W-09BABB 1  
Latitude: 43 01' 52"  
Longitude: 101 05' 47"

Ground Surface Elevation (ft.): 2928 T

**Project Information**

Project: MELLETTE-TODD CO. STUDY  
Drill Date: 08/03/1993  
Company: SDGS  
Drilling Method: ROTARY  
Test Hole Number: R2-93-21

Driller: G. JENSEN  
Geologist: R. HAMMOND  
Geologist's Log: X  
Driller's Log: 
Total Drill Hole Depth (ft.): 457.0

Location:

**Geophysical Information**

Spontaneous Potential: 
Natural Gamma: 
Single Point Resistivity: 
Extra:

HOLE COLLAPSED WITH RESULTANT LOSS OF HOLE.

**Elevation (ft.)** | **Depth (ft.)** | **Description**
--- | --- | ---
2928.00 - 2900.00 | 0.0 - 28.0 | SAND, PALE-YELLOWISH-BROWN, FINE, SLIGHTLY SILTY, WELL-SORTED, SUBANGULAR TO SUBROUNDED; NONCALCAREOUS, QUARTZOSE, SOME LITHI FRAGMENTS
2900.00 - 2886.00 | 28.0 - 42.0 | SILT, DARK-YELLOWISH-BROWN TO GRAYISH- BROWN, MICACEOUS(?); VERY CALCAREOUS, SOME SANDY BEDS, FEW SCATTERED GASTROPOD SHELLS (ORGANIC LAKE SILTS?)
2886.00 - 2856.00 | 42.0 - 72.0 | SAND, PALE-OLIVE, VERY FINE, SLIGHTLY SILTY TO SILTY, FAIR SORTING, SUB-ROUNDED TO SUBANGULAR, QUARTZOSE; ABUNDANT LITHIC FRAGMENTS, WHITE ROOT CASTS OR FINE BURROWS TO 5 MM IN DIA. AT 50 TO 65 FEET, CALCAREOUS, MODERATE CEMENTING (ASH HOLLOW FORMATION)
2856.00 - 2802.00 | 72.0 - 126.0 | SILTSTONE, DARK-YELLOWISH-BROWN, VERY SANDY, WELL CEMENTED; NONCALCAREOUS TO VERY SLIGHTLY CALCAREOUS
2802.00 - 2746.00 | 126.0 - 182.0 | SILTSTONE, DARK-YELLOWISH-BROWN TO MODERATE-BROWN, VERY SANDY, MODERATELY CEMENTED, MASSIVE(?); NONCALCAREOUS, SEVERAL SANDY LAYERS (ARIKAREE GROUP?)
2746.00 - 2650.00 | 182.0 - 278.0 | SILTSTONE, MODERATE-BROWN, CLAYEY, SLIGHTLY SANDY, MASSIVE(?); NONCALCAREOUS TO SLIGHTLY CALCAREOUS, VERY SANDY AT 246 TO 256 FEET AND 262 TO 274 FEET
<table>
<thead>
<tr>
<th>Depth Range</th>
<th>Interval</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2650.00–2544.00</td>
<td>278.0–384.0</td>
<td>SILTSTONE, LIGHT-BROWN, CLAYEY, MASSIVE; NONCALCAREOUS</td>
</tr>
<tr>
<td>2544.00–2501.00</td>
<td>384.0–427.0</td>
<td>SILTSTONE, DARK-YELLOWISH-ORANGE, CLAYEY, SLIGHTLY SANDY; NONCALCAREOUS TO VERY SLIGHTLY CALCAREOUS, SOME NODULES TO 7 MM IN DIAMETER</td>
</tr>
<tr>
<td>2501.00–2471.00</td>
<td>427.0–457.0</td>
<td>SAND, GRAYISH-ORANGE, VERY FINE, SILTY; SLIGHTLY CALCAREOUS</td>
</tr>
</tbody>
</table>

* * * *
### Location Information

- County: TODD
- Basin: WHITE
- Hydrologic Unit Code: 10140203
- Land Owner: MUSTANG MEADOWS

### Project Information

- Project: MELLETTE-TODD CO. STUDY
- Company: SDGS
- Drill Date: 08/11/1993
- Drilling Method: ROTARY
- Test Hole Number: R2-93-24
- Driller: G. JENSEN
- Geologist: R. HAMMOND

### Geophysical Information

- Spontaneous Potential: X
- Natural Gamma: X

### Geophysical Information

- Single Point Resistivity: X
- Extra:

This hole was plugged from 1092 to 9 feet with bentonite grout (30% solids, 9.7 pounds per gallon), from 8 to 3 feet with cement grout and from 3 feet to land surface with native materials.

### Elevation (ft.) Depth (ft.) Description

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2928.00 - 2900.00</td>
<td>0.0 - 28.0</td>
<td>SAND, PALE-YELLOWISH-BROWN, FINE, SLIGHTLY SILTY, WELL-SORTED, SUBANGULAR TO SUBROUNDED; NONCALCAREOUS, QUARTZOSE, SOME LITHIC FRAGMENTS</td>
</tr>
<tr>
<td>2900.00 - 2886.00</td>
<td>28.0 - 42.0</td>
<td>SILT, DARK-YELLOWISH-BROWN TO GRAYISH-BROWN; MICACEOUS(?), VERY CALCAREOUS, SOME SANDY BEDS, FEW SCATTERED GASTROPOD SHELLS (ORGANIC LAKE SILTS?)</td>
</tr>
<tr>
<td>2886.00 - 2856.00</td>
<td>42.0 - 72.0</td>
<td>SAND, PALE-OLIVE, VERY FINE, SLIGHTLY SILTY TO SILTY, FAIR SORTING, SUB-ROUNDED TO SUBANGULAR, QUARTZOSE; ABUNDANT LITHIC FRAGMENTS, WHITE ROOT CASTS OR FINE BURROWS TO 5 MM IN DIA. AT 50 TO 65 FEET, CALCAREOUS, MODERATE CEMENTING (ASH HOLLOW FORMATION)</td>
</tr>
<tr>
<td>2856.00 - 2802.00</td>
<td>72.0 - 126.0</td>
<td>SILTSTONE, DARK-YELLOWISH-BROWN, VERY SANDY, WELL CEMENTED; NONCALCAREOUS TO VERY SLIGHTLY CALCAREOUS</td>
</tr>
<tr>
<td>2802.00 - 2746.00</td>
<td>126.0 - 182.0</td>
<td>SILTSTONE, DARK-YELLOWISH-BROWN TO MODERATE-BROWN, VERY SANDY, MODERATELY CEMENTED, MASSIVE(?); NONCALCAREOUS, SEVERAL SANDY LAYERS (ARIKAREE GROUP?)</td>
</tr>
<tr>
<td>2746.00 - 2650.00</td>
<td>182.0 - 278.0</td>
<td>SILTSTONE, MODERATE-BROWN, CLAYEY, SLIGHTLY SANDY, MASSIVE(?); NON- CALCAREOUS TO SLIGHTLY CALCAREOUS, VERY SANDY AT 246 TO 256 FEET AND</td>
</tr>
</tbody>
</table>
262 TO 274 FEET

2650.00 - 2544.00  278.0 - 384.0  Siltstone, light-brown, clayey, massive; noncalcareous

2544.00 - 2501.00  384.0 - 427.0  Siltstone, dark-yellowish-orange, clayey, slightly sandy; noncalcareous to very slightly calcareous, some nodules to 7 mm in diameter

2501.00 - 2454.00  427.0 - 474.0  Sand, grayish-orange, very fine, silty; slightly calcareous, siltstone lens at 454 to 463 feet

2454.00 - 2343.00  474.0 - 585.0  Siltstone, light-brown, sandy, clayey; slightly calcareous to noncalcareous

2343.00 - 2311.00  585.0 - 617.0  Siltstone, pale-yellowish-brown, clayey, slightly sandy; slightly calcareous

2311.00 - 2288.00  617.0 - 640.0  Sandstone, pale-yellowish-brown, very fine, very silty, quartzose; slightly calcareous to calcareous

2288.00 - 2248.00  640.0 - 680.0  Siltstone, light-brown, clayey, sandy at 663 to 680 feet; slightly calcareous to noncalcareous

2248.00 - 2056.00  680.0 - 872.0  Siltstone, pale-olive, very clayey; noncalcareous, some hard and thin ash layers, highly variable gamma trace (Brule formation?)

2056.00 - 2000.00  872.0 - 928.0  Claystone, light-olive-gray to pale-olive, silty; noncalcareous to poorly calcareous (Chadron formation?)

2000.00 - 1943.00  928.0 - 985.0  Claystone, light-olive-gray, silty, somewhat fissile; calcareous

1943.00 - 1860.00  985.0 - 1068.0  Claystone, dark-yellowish-orange, silty; slightly calcareous

1860.00 - 1836.00  1068.0 - 1092.0  Claystone, greenish-black, fissile; slightly calcareous (Pierre shale)

* * * *
FILTER PACK COMPRISED OF 600 LBS OF 0.65-0.75 MM QUARTZ SAND. HIGH SOLIDS BENTONITE GROUT PLACED IN REMAINDER OF HOLE. AFTER ALLOWING FOR SETTLEMENT TIME, TOP FEW FEET OF HOLE WAS FILLED WITH CEMENT GROUT.
2802.00-2746.00  126.0-182.0  Siltstone, dark-yellowish-brown to moderate-brown, very sandy, moderately cemented, massive(?); noncalcareous, several sandy layers (Arikaree Group?)

2746.00-2650.00  182.0-278.0  Siltstone, moderate-brown, clayey, slightly sandy, massive(?); non-calcareous to slightly calcareous, very sandy at 246 to 256 and 262 to 274 feet

2650.00-2544.00  278.0-384.0  Siltstone, light-brown, clayey, massive; noncalcareous

2544.00-2501.00  384.0-427.0  Siltstone, dark-yellowish-orange, clayey, slightly sandy; noncalcareous to very slightly calcareous, some nodules to 7 mm in diameter

2501.00-2476.00  427.0-452.0  Sand, grayish-orange, very fine, silty; slightly calcareous

* * * *

* * * *
Location Information

Legal Location: NW NW NE NW SEC. 09, T. 035 N., R. 32 W.
County: TODD          Location: 035N-32W-09BABB 4
Basin: WHITE          Latitude: 43 01' 52"
Hydrologic Unit Code: 10140203 Longitude: 101 05' 47"
Land Owner: MUSTANG MEADOWS Ground Surface Elevation (ft.): 2928 T

Project Information

Project: MELLETTE-TODD CO. STUDY
Drill Date: 08/04/1993
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R2-93-22
Samples: Total Drill Hole Depth (ft.): 67.0

Well Information

SDGS Well Name: R2-93-22
Water Rights Well: Aquifer:
Other Well Name: Management Unit:
Casing Type: PVC, SCH. 80 Casing Top Elevation: 2930.00 T
Screen Type: PVC, MFG., SLOT SIZE 0.010 IN. Casing Diameter (in.): 2.0
Total Casing and Screen (ft.): 69.0 Screen Length (ft.): 20.0
Well Maintenance Date: Casing Stick-up (ft.): 2.00

Geophysical Information

Spontaneous Potential: Single Point Resistivity:
Natural Gamma: Extra:
FILTER PACK COMPRISED OF 800 LBS OF 0.65-0.75 MM QUARTZ SAND. REMAINDER OF OPEN HOLE FILLED WITH HIGH SOLIDS BENTONITE GROUT. AFTER ALLOWING FOR SETTLEMENT, TOP FEW FEET FILLED WITH CEMENT GROUT.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2928.00-2900.00</td>
<td>0.0-28.0</td>
<td>SAND, PALE-YELLOWISH-BROWN, FINE, SLIGHTLY SILTY, WELL-SORTED, SUBANGULAR TO SUBROUNDED; NONCALCAREOUS, QUARTZOSE, SOME LITHIC FRAGMENTS</td>
</tr>
<tr>
<td>2900.00-2886.00</td>
<td>28.0-42.0</td>
<td>SILT, DARK-YELLOWISH-BROWN TO GRAYISH-BROWN; MICACEOUS(?), VERY CALCAREOUS, SOME SANDY BEDS (ORGANIC LAKE SILTS?)</td>
</tr>
<tr>
<td>2886.00-2861.00</td>
<td>42.0-67.0</td>
<td>SAND, PALE-OLIVE, VERY FINE, SLIGHTLY SILTY TO SILTY, FAIR SORTING, SUB- ROUNDED TO SUBANGULAR, QUARTZOSE; ABUNDANT LITHIC FRAGMENTS, WHITE ROOT CASTS OR FINE BURROWS TO 5 MM IN DIA. AT 50 TO 65 FEET, CALCAREOUS, MODERATE CEMENTING (ASH HOLLOW FORMATION)</td>
</tr>
</tbody>
</table>

* * * *
Location Information

Legal Location:SE SE SE NE SEC. 12, T. 036 N., R. 25 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner:

Location: 036N-25W-12ADDD
Latitude: 43 06' 40"
Longitude: 100 11' 54"
Ground Surface Elevation (ft.): 2360 T

Project Information

Project: MELLETTE-TODD CO. STUDY
Drill Date: 08/10/1993
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R20-93-50
Samples:

Geologist: M. JARRETT
Driller's Log: X
Geologist's Log: X
Driller: D. IVESON

Total Drill Hole Depth (ft.): 48.0

Geophysical Information

Spontaneous Potential: Extra:
Natural Gamma: Single Point Resistivity:

DRILL HOLE ABANDONED DUE TO EXCESSIVE WATER LOSS. HOLE PLUGGED WITH HIGH SOLIDS BENTONITE FROM 48 FEET TO GROUND SURFACE.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2360.00-2354.00</td>
<td>0.0 - 6.0</td>
<td>SAND, PALE-YELLOWISH-BROWN, FINE TO MEDIUM</td>
</tr>
<tr>
<td>2354.00-2346.00</td>
<td>6.0 - 14.0</td>
<td>SILTSTONE, GRAYISH-ORANGE</td>
</tr>
<tr>
<td>2346.00-2332.00</td>
<td>14.0 - 28.0</td>
<td>SANDSTONE AND SILTSTONE, GRAYISH-ORANGE, FINE-GRAINED SANDSTONE</td>
</tr>
<tr>
<td>2332.00-2328.00</td>
<td>28.0 - 32.0</td>
<td>SAND, FINE TO MEDIUM</td>
</tr>
<tr>
<td>2328.00-2312.00</td>
<td>32.0 - 48.0</td>
<td>SILTSTONE, PALE-YELLOWISH-BROWN; SOME CLAY</td>
</tr>
</tbody>
</table>

* * * *
INDUCTION LOG WAS RUN ON THIS TEST HOLE; NATURAL GAMMA, CONDUCTIVITY, AND RESISTIVITY. THIS HOLE WAS PLUGGED FROM 507 TO 8 FEET BELOW LAND SURFACE WITH HIGH-SOLIDS BENTONITE GROUT, 8 TO 2 FEET BELOW LAND SURFACE WITH NEAT CEMENT GROUT, AND 2 FEET TO LAND SURFACE WITH NATIVE SEDIMENT.
BEDS; SOME COARSE SAND AND GRANULES COMPOSED OF CLEAR QUARTZ AND CHERT IN LOWER 10 FEET OF THIS INTERVAL (CHADRON FORMATION)

<table>
<thead>
<tr>
<th>Depth Interval</th>
<th>Interval</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2070.00-2059.00</td>
<td>477.0 - 488.0</td>
<td>CLAYSTONE, DARK-GRAY; POORLY CALCAREOUS, FISSILE (PIERRE SHALE)</td>
</tr>
<tr>
<td>2059.00-2040.00</td>
<td>488.0 - 507.0</td>
<td>CLAYSTONE, DARK-GRAY-BROWN; CALCAREOUS, POORLY FISSILE, ABUNDANT LIGHT-GRAY CALCAREOUS SPECKS-FORAM DEBRIS(?) (PIERRE SHALE)</td>
</tr>
</tbody>
</table>

* * * *
Location Information

Legal Location: NE NE NE NE SEC. 18, T. 036 N., R. 26 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner:

Location: 036N-26W-18AAAA 1
Latitude: 43 06' 14"
Longitude: 100 24' 48"
Ground Surface Elevation (ft.): 2547 T

Project Information

Project: MELLETTE-TODD CO. STUDY
Drill Date: 07/30/1996
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R2-96-44
Samples:

Geologist: R. HAMMOND
Geologist's Log: X
Driller: G. JENSEN
Driller's Log:
Total Drill Hole Depth (ft.): 233.0

Well Information

SDGS Well Name: R2-96-44
Water Rights Well:
Other Well Name:
Casing Type: PVC, SCH. 80
Screen Type: PVC, MFG., 0.010 IN. SLOT
Total Casing and Screen (ft.): 235.0
Well Maintenance Date:

Casing Top Elevation: 2549.00 T
Casing Diameter (in.): 2.0
Screen Length (ft.): 10.0
Casing Stick-up (ft.): 2.00

Geophysical Information

Spontaneous Potential:
Natural Gamma:
Single Point Resistivity:
Extra:

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2547.00 - 2546.00</td>
<td>0.0 - 1.0</td>
<td>TOPSOIL, DARK-BROWN, SILTY</td>
</tr>
<tr>
<td>2546.00 - 2543.00</td>
<td>1.0 - 4.0</td>
<td>SAND, PALE-OLIVE, MODERATE- TO FINE-GRAINED; COMPOSED PRIMARILY OF CLEAN, YELLOW-GRAY QUARTZ AND FELDSPAR GRAINS WITH SOME LITHIC CLASTS</td>
</tr>
<tr>
<td>2543.00 - 2513.00</td>
<td>4.0 - 34.0</td>
<td>SILTSTONE, LIGHT-BROWN, SANDY; NONCALCAREOUS TO POORLY CALCAREOUS, MASSIVE TO POORLY BEDDED (ROSEBUD FORMATION?)</td>
</tr>
<tr>
<td>2513.00 - 2484.00</td>
<td>34.0 - 63.0</td>
<td>SILTSTONE, GRAYISH-ORANGE, VERY SANDY; NONCALCAREOUS, SOME PALE-YELLOWISH-BROWN, WELL-CEMENTED ASHY BEDS FROM 34 TO 38 FEET AND 48 TO 55 FEET (ROSEBUD FORMATION)</td>
</tr>
<tr>
<td>2484.00 - 2314.00</td>
<td>63.0 - 233.0</td>
<td>SILTSTONE, MODERATE-YELLOWISH-BROWN, SANDY, CLAYEY; NONCALCAREOUS TO 90 FEET, SANDY LAYERS AT 102 TO 124 FEET, 180 TO 233 FEET (ROSEBUD FORMATION)</td>
</tr>
</tbody>
</table>
**Location Information**

Legal Location: NE NE SE SE SEC. 31, T. 036 N., R. 26 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner:
Location: 036N-26W-31DDAA
Latitude: 43 02' 58"
Longitude: 100 24' 49"
Ground Surface Elevation (ft.): 2620 T

**Project Information**

Project: USGS HIGH PLAINS PROJECT
Drill Date: 09/25/1980
Company: GRIMSHAW DRILLING
Drilling Method: ROTARY
Test Hole Number:
Samples:
Geologist:
Geologist's Log:
Driller: L. WOLD
Driller's Log: X
Total Drill Hole Depth (ft.): 360.0

**Well Information**

SDGS Well Name:  
Water Rights Well: TD-80E
Other Well Name: TD 80-4
Casing Type: PVC
Screen Type: PVC, MFG.
Total Casing and Screen (ft.): 121.5
Well Maintenance Date: 06/27/1984
Casing Top Elevation:
Casing Diameter (in.): 2.0
Screen Length (ft.): 45.0
Casing Stick-up (ft.): 2.00
Aquifer: OGALLALA
Management Unit:

**Geophysical Information**

Spontaneous Potential: X
Natural Gamma: X
Single Point Resistivity: X
Extra:

BOTTOM SECTION OF CASING WAS ATTACHED SANDPOINT. WELL GRAVEL PACKED, STAKED AND WIRE SECURED. BACKFILLED WITH MUD. CASING SLOTTED BETWEEN 60 AND 100 FEET. SOURCE OF DATA: USGS OPEN-FILE REPORT 84-148. SANDPOINT SLOTTED 120 TO 125 FEET.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2620.00 - 2560.00</td>
<td>0.0 - 60.0</td>
<td>SANDSTONE, LIGHT-TAN; LAYERS OF SILT</td>
</tr>
<tr>
<td>2560.00 - 2540.00</td>
<td>60.0 - 80.0</td>
<td>SANDSTONE, TAN; CARBONATE, GREENISH SILT, AND SAND</td>
</tr>
<tr>
<td>2540.00 - 2520.00</td>
<td>80.0 - 100.0</td>
<td>SILTSTONE, LIGHT-BROWN; BROWN, FINE-GRAINED SAND BEGINS AT ABOUT 90 FEET</td>
</tr>
<tr>
<td>2520.00 - 2500.00</td>
<td>100.0 - 120.0</td>
<td>SILTSTONE, LIGHT-BROWN; BROWN, FINE-GRAINED SAND</td>
</tr>
<tr>
<td>2500.00 - 2495.00</td>
<td>120.0 - 125.0</td>
<td>SAND POINT SLOTTED 120 TO 125 FEET</td>
</tr>
<tr>
<td>2495.00 - 2440.00</td>
<td>125.0 - 180.0</td>
<td>SILTSTONE, LIGHT-BROWN TO TAN</td>
</tr>
<tr>
<td>2440.00 - 2380.00</td>
<td>180.0 - 240.0</td>
<td>SITLSTONE, BROWN; GREEN, BLACK, AND TAN SANDS, SOME WHITE ASH, HARD DRILLING</td>
</tr>
<tr>
<td>2380.00 - 2360.00</td>
<td>240.0 - 260.0</td>
<td>SILT AND SITLSTONE, BROWN; SOME GRAY SITLSTONE</td>
</tr>
</tbody>
</table>
2360.00 - 2320.00  260.0 - 300.0  SILTSTONE, BROWN; WHITE CLAY

2320.00 - 2260.00  300.0 - 360.0  SILTSTONE, BROWN; GRAY CLAY, SOME PINK CLAY

* * * *
Location Information
Legal Location: NW NW NW NW SEC. 10, T. 036 N., R. 28 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner:
Location: 036N-28W-10BBBB
Latitude: 43 12' 05"
Longitude: 100 37' 49"
Ground Surface Elevation (ft.): 2823 T

Project Information
Project: WATER RIGHTS
Drill Date: 12/10/1976
Company: COATS WELL DRILLING
Drilling Method: ROTARY
Test Hole Number:
Samples:
Total Casing and Screen (ft.): 185.2
Well Maintenance Date: 06/25/1984
SDGS Well Name:
Water Rights Well: TD-76J
Other Well Name:
Casing Type: PVC
Screen Type: PVC
Total Drill Hole Depth (ft.): 230.0
Casing Top Elevation:
Casing Diameter (in.): 2.0
Screen Length (ft.): 5.0
Casing Stick-up (ft.): 2.70

Well Information
Aquifer: OGALLALA
Management Unit:

Geophysical Information
Spontaneous Potential:
Natural Gamma:
Single Point Resistivity:
Extra:

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2823.00 - 2822.00</td>
<td>0.0 - 1.0</td>
<td>TOPSOIL</td>
</tr>
<tr>
<td>2822.00 - 2800.00</td>
<td>1.0 - 23.0</td>
<td>SAND, BROWN, FINE</td>
</tr>
<tr>
<td>2800.00 - 2797.00</td>
<td>23.0 - 26.0</td>
<td>SILTSTONE, WHITE</td>
</tr>
<tr>
<td>2797.00 - 2793.00</td>
<td>26.0 - 30.0</td>
<td>SAND, BROWN, FINE</td>
</tr>
<tr>
<td>2793.00 - 2792.00</td>
<td>30.0 - 31.0</td>
<td>SILTSTONE, WHITE; VERY HARD</td>
</tr>
<tr>
<td>2792.00 - 2761.00</td>
<td>31.0 - 62.0</td>
<td>SAND, BROWN, FINE</td>
</tr>
<tr>
<td>2761.00 - 2759.00</td>
<td>62.0 - 64.0</td>
<td>SILTSTONE, WHITE</td>
</tr>
<tr>
<td>2759.00 - 2745.00</td>
<td>64.0 - 78.0</td>
<td>SAND, BROWN, FINE</td>
</tr>
<tr>
<td>2745.00 - 2744.00</td>
<td>78.0 - 79.0</td>
<td>SILTSTONE, WHITE; VERY HARD</td>
</tr>
<tr>
<td>2744.00 - 2739.00</td>
<td>79.0 - 84.0</td>
<td>SAND, BROWN, FINE</td>
</tr>
<tr>
<td>2739.00 - 2738.00</td>
<td>84.0 - 85.0</td>
<td>SILTSTONE, WHITE; VERY HARD DRILLING</td>
</tr>
<tr>
<td>2738.00 - 2727.00</td>
<td>85.0 - 96.0</td>
<td>SAND, BROWN, FINE; TRACES OF CLAY</td>
</tr>
<tr>
<td>Depth Range</td>
<td>Thickness</td>
<td>Description</td>
</tr>
<tr>
<td>------------------</td>
<td>-----------</td>
<td>--------------------------------------</td>
</tr>
<tr>
<td>2727.00 - 2726.00</td>
<td>96.0 - 97.0</td>
<td>SILTSTONE, WHITE; HARD</td>
</tr>
<tr>
<td>2726.00 - 2719.00</td>
<td>97.0 - 104.0</td>
<td>CLAY, WHITE TO GRAY</td>
</tr>
<tr>
<td>2719.00 - 2674.00</td>
<td>104.0 - 149.0</td>
<td>SAND, BROWN, FINE</td>
</tr>
<tr>
<td>2674.00 - 2670.00</td>
<td>149.0 - 153.0</td>
<td>SILTSTONE, GREENISH-WHITE</td>
</tr>
<tr>
<td>2670.00 - 2657.00</td>
<td>153.0 - 166.0</td>
<td>SAND, BROWN, FINE</td>
</tr>
<tr>
<td>2657.00 - 2654.00</td>
<td>166.0 - 169.0</td>
<td>SAND, BROWN, FINE; TRACES OF CLAY</td>
</tr>
<tr>
<td>2654.00 - 2628.00</td>
<td>169.0 - 195.0</td>
<td>SAND, BROWN, FINE</td>
</tr>
<tr>
<td>2628.00 - 2606.00</td>
<td>195.0 - 217.0</td>
<td>CLAY, RED, SILTY</td>
</tr>
<tr>
<td>2606.00 - 2598.00</td>
<td>217.0 - 225.0</td>
<td>CLAY; MIXED WITH SAND; RED ROCK AT 225 FEET (ARIKAREE GROUP)</td>
</tr>
</tbody>
</table>

* * * *
### Location Information

Legal Location: NE NW NE NW SEC. 15, T. 036 N., R. 28 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner:

Location: 036N-28W-15BABA
Latitude: 43° 06' 13"
Longitude: 100° 36' 25"
Ground Surface Elevation (ft.): 2778

### Project Information

Project: MELLETTE-TODD CO. STUDY
Drill Date: 07/23/1996
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R2-96-40
Samples:

Driller: G. JENSEN
Geologist: R. HAMMOND
Geologist's Log: X
Driller's Log:
Total Drill Hole Depth (ft.): 867.0

### Geophysical Information

Spontaneous Potential: X
Natural Gamma: X
Single Point Resistivity: X
Extra: X

Induction log was run on this test hole; natural gamma, conductivity, and resistivity. This hole was plugged from 867 to 8 feet below land surface with high-solids bentonite grout, 8 to 3 feet below land surface with neat cement grout, and 2 feet to land surface with native sediment.

### Elevation (ft.) Depth (ft.) Description

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2778.00-2765.00</td>
<td>0.0-13.0</td>
<td>Sand, pale-yellowish-brown, fine- to very fine-grained, well-rounded to subrounded; noncalcereous, composed of colorless to pink and light-green quartz, feldspar, and siltstone clasts (SAND HILLS FORMATION)</td>
</tr>
<tr>
<td>2765.00-2717.00</td>
<td>13.0-61.0</td>
<td>Sandstone, pale-yellowish-brown, fine- to very fine-grained, well-rounded to subrounded; well cemented, calcareous, composed of similar clast as above, white tubular root casts are common (ASH HOLLOW FORMATION?)</td>
</tr>
<tr>
<td>2717.00-2690.00</td>
<td>61.0-88.0</td>
<td>Sandstone, grayish-orange-pink, very fine- to fine-grained, subrounded, silty; variably cemented, calcareous; primarily quartz, feldspar, and white siltstone grains</td>
</tr>
<tr>
<td>2690.00-2564.00</td>
<td>88.0-214.0</td>
<td>Sandstone, dark-yellowish-orange, very fine-grained, very silty; variably cemented; noncalcereous to poorly calcareous below 130 feet (ROSEBUD FORMATION)</td>
</tr>
<tr>
<td>2564.00-2414.00</td>
<td>214.0-364.0</td>
<td>Siltstone, light-brown, sandy; moderately cemented, noncalcereous to poorly calcareous; several thin very fine-grained sand lenses below 240 feet (ROSEBUD FORMATION)</td>
</tr>
<tr>
<td>2414.00-2321.00</td>
<td>364.0-457.0</td>
<td>Siltstone, light-brown, very sandy, very</td>
</tr>
</tbody>
</table>

R. 28 W.T. 036 N.,15,SEC.NWNENWNE
Elevation (ft.)
Depth (ft.)
Description
<table>
<thead>
<tr>
<th>Depth Range</th>
<th>Gamma Range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2321.00-2270.00</td>
<td>457.0-508.0</td>
<td>Fine-grained; poorly to moderately cemented, noncalcereous (Rosebud Formation?) Siltstone, grayish-orange-pink, clayey; calcereous, abundant medium- to coarse-grained quartz and lithic sand grains which are matrix supported (Rosebud Formation?)</td>
</tr>
<tr>
<td>2270.00-2257.00</td>
<td>508.0-521.0</td>
<td>Siltstone, pale-olive; slightly calcereous, massive (Loess?)</td>
</tr>
<tr>
<td>2257.00-2220.00</td>
<td>521.0-558.0</td>
<td>Siltstone, light-brown with some pale-olive beds, sandy; noncalcereous grading to calcereous below 540 feet (Rosebud Formation?)</td>
</tr>
<tr>
<td>2220.00-2014.00</td>
<td>558.0-764.0</td>
<td>Siltstone, grayish-orange-pink to olive, clayey; noncalcereous to poorly calcereous; poorly fissile; high gamma count from 609 to 612 feet (Brule Formation?)</td>
</tr>
<tr>
<td>2014.00-1958.00</td>
<td>764.0-820.0</td>
<td>Siltstone, grayish-olive, clayey; well indurated; poorly calcereous; poor samples below 750 feet (Chadron Formation?)</td>
</tr>
<tr>
<td>1958.00-1940.00</td>
<td>820.0-838.0</td>
<td>Sandstone, yellowish-gray, silty, fine-grained; composed mainly of subangular to rounded quartz grains (Chadron Formation)</td>
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<tr>
<td>1940.00-1911.00</td>
<td>838.0-867.0</td>
<td>Claystone, dark-olive-gray; poorly calcereous (Pierre Shale)</td>
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* * * *
## Location Information

<table>
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<tr>
<th>Parameter</th>
<th>Value</th>
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<td>Legal Location:</td>
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<tr>
<td>County:</td>
<td>TODD</td>
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<tr>
<td>Basin:</td>
<td>KEYA PAHA</td>
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<tr>
<td>Hydrologic Unit Code:</td>
<td>10150006</td>
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<tr>
<td>Land Owner:</td>
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## Project Information

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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<tbody>
<tr>
<td>Project:</td>
<td>MELLETTE-TODD CO. STUDY</td>
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<tr>
<td>Drill Date:</td>
<td>07/24/1996</td>
</tr>
<tr>
<td>Company:</td>
<td>SDGS</td>
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<tr>
<td>Drilling Method:</td>
<td>ROTARY</td>
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<tr>
<td>Test Hole Number:</td>
<td>R2-96-41</td>
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<td>Ground Surface Elevation (ft.):</td>
<td>2778 T</td>
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## Geophysical Information

### Spontaneous Potential:
- Extra:

### Natural Gamma:
- Single Point Resistivity:
- Extra:

### Elevation (ft.) Depth (ft.) Description

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<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2778.00 - 2765.00</td>
<td>0.0 - 13.0</td>
<td>SAND, PALE-YELLOWISH-BROWN, FINE- TO VERY FINE-GRAINED, WELL-ROUNDED TO SUBROUNDED; NONCALCAREOUS, COMPOSED OF COLORLESS TO PINK AND LIGHT-GREEN QUARTZ, FELDSPAR, AND SILTSTONE CLASTS (SAND HILLS FORMATION)</td>
</tr>
<tr>
<td>2765.00 - 2717.00</td>
<td>13.0 - 61.0</td>
<td>SANDSTONE, PALE-YELLOWISH-BROWN, FINE- TO VERY FINE-GRAINED, WELL-ROUNDED T SUBROUNDED; WELL CEMENTED, CALCAREOUS, COMPOSED OF SIMILAR CLASTS AS ABOVE, WHITE TUBULAR ROOT CASTS ARE COMMON (ASH HOLLOW FORMATION?)</td>
</tr>
<tr>
<td>2717.00 - 2690.00</td>
<td>61.0 - 88.0</td>
<td>SANDSTONE, GRAYISH-ORANGE-PINK, VERY FINE- TO FINE-GRAINED, SUBROUNDED, SILTY; VARIABLY CEMENTED, CALCAREOUS; PRIMARILY QUARTZ, FELDSPAR, AND WHITE SILTSTONE GRAINS</td>
</tr>
<tr>
<td>2690.00 - 2564.00</td>
<td>88.0 - 214.0</td>
<td>SANDSTONE, DARK-YELLOWISH-ORANGE, VERY FINE-GRAINED, VERY SILTY; VARIABLY CEMENTED; NONCALCAREOUS BELOW 130 FEET (ROSEBUD FORMATION)</td>
</tr>
<tr>
<td>2564.00 - 2414.00</td>
<td>214.0 - 364.0</td>
<td>SILTSTONE, LIGHT-BROWN, SANDY; MODERATELY CEMENTED, NONCALCAREOUS TO POORLY CALCAREOUS; SEVERAL THIN TO VERY FINE-GRAINED SAND LENSES BELOW 240 FEET (ROSEBUD FORMATION)</td>
</tr>
<tr>
<td>2414.00 - 2384.00</td>
<td>364.0 - 394.0</td>
<td>SILTSTONE, LIGHT-BROWN, VERY SANDY, VERY FINE-GRAINED; POORLY TO MODERATELY CEMENTED, NONCALCAREOUS (ROSEBUD FORMATION?)</td>
</tr>
</tbody>
</table>
### Location Information

- **Legal Location:** NE NW NE NW SEC. 15, T. 036 N., R. 28 W.
- **County:** TODD
- **Basin:** KEYA PAHA
- **Hydrologic Unit Code:** 10150006
- **Land Owner:**
- **Ground Surface Elevation (ft.):** 2778 T
- **Location:** 036N-28W-15BABA 2
- **Latitude:** 43 06' 13"
- **Longitude:** 100 36' 25"

### Project Information

- **Project:** MELLETTE-TODD CO. STUDY
- **Drill Date:** 07/29/1996
- **Company:** SDGS
- **Drilling Method:** ROTARY
- **Test Hole Number:** R2-96-42
- **Samples:**
- **Geologist:** R. HAMMOND
- **Geologist's Log:** X
- **Driller:** G. JENSEN
- **Driller's Log:**
- **Total Drill Hole Depth (ft.):** 76.0

### Well Information

- **SDGS Well Name:** R2-96-42
- **Water Rights Well:**
- **Other Well Name:**
- **Casing Type:** PVC, SCH. 80
- **Screen Type:** PVC, MFG., 0.010 IN. SLOT
- **Total Casing and Screen (ft.):** 78.0
- **Casing Top Elevation:** 2780.00 T
- **Casing Diameter (in.):** 2.0
- **Screen Length (ft.):** 10.0
- **Casing Stick-up (ft.):** 2.00
- **Well Maintenance Date:**

### Geophysical Information

- **Spontaneous Potential:**
- **Natural Gamma:**
- **Single Point Resistivity:**
- **Extra:**

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2778.00 - 2765.00</td>
<td>0.0 - 13.0</td>
<td>SAND, PALE-YELLOWISH-BROWN, FINE- TO VERY FINE-GRAINED, WELL-ROUNDED TO SUBROUNDED; NONCALCAREOUS, COMPOSED OF COLORLESS TO PINK AND LIGHT-GREEN QUARTZ, FELDSPAR, AND SILTSTONE CLASTS (SAND HILLS FORMATION)</td>
</tr>
<tr>
<td>2765.00 - 2717.00</td>
<td>13.0 - 61.0</td>
<td>SANDSTONE, PALE-YELLOWISH-BROWN, FINE TO VERY FINE-GRAINED, WELL-ROUNDED TO SUBROUNDED; WELL CEMENTED, CALCAREOUS, COMPOSED OF SIMILAR CLAST AS ABOVE, WHITE TUBULAR ROOT CASTS ARE COMMON (ASH HOLLOW FORMATION?)</td>
</tr>
<tr>
<td>2717.00 - 2702.00</td>
<td>61.0 - 76.0</td>
<td>SANDSTONE, GRAYISH-ORANGE-PINK, VERY FINE- TO FINE-GRAINED, SUBROUNDED, SILTY; VARIABLY CEMENTED, CALCAREOUS; PRIMARILY QUARTZ, FELDSPAR, AND WHITE SILTSTONE GRAINS</td>
</tr>
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* * * *
**Location Information**

Legal Location: NW NE NE SEC. 08, T. 036 N., R. 29 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner:

Location: 036N-29W-08AAAB
Latitude: 43° 07' 05"
Longitude: 100° 45' 05"
Ground Surface Elevation (ft.): 2870 T

**Project Information**

Project: MELLETTE-TODD CO. STUDY
Drill Date: 08/02/1994
Company: SDGS
Drilling Method: HOLLOWSTEM
Test Hole Number: R20-94-48
Samples:

Geologist: R. HAMMOND
Geologist's Log:
Driller: D. IVerson
Driller's Log: X
Total Drill Hole Depth (ft.): 78.0

**Well Information**

SDGS Well Name: R20-94-48
Water Rights Well: Management Unit:
Other Well Name: Casing Top Elevation: 2872.00 T
Casing Type: PVC
Casing Diameter (in.): 2.0
Screen Type: PVC, MFG., 0.010 IN. SLOT
Screen Length (ft.): 10.0
Total Casing and Screen (ft.): 79.0
Casing Stick-up (ft.): 2.00
Well Maintenance Date: 

Aquifer: OGALLALA

**Geophysical Information**

Spontaneous Potential:
Natural Gamma:
Single Point Resistivity:
Extra:

NO GEOLOGIST LOG AVAILABLE; DRILLERS LOG ONLY.

**Elevation (ft.)** | **Depth (ft.)** | **Description**
--- | --- | ---
2870.00 - 2861.00 | 0.0 - 9.0 | SAND, TAN, FINE-GRAINED
2861.00 - 2792.00 | 9.0 - 78.0 | SAND AND SANDSTONE, TAN TO DARK-TAN, FINE-GRAINED; SOME SILT (SANDHILLS FORMATION?)
Location Information

Legal Location: SE SE SE SE SEC. 14, T. 036 N., R. 29 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner:

Location: 036N-29W-14DDDD
Latitude: 43° 05' 22"
Longitude: 100° 41' 19"
Ground Surface Elevation (ft.): 2885 T

Project Information

Project: MELLETTE-TODD CO. STUDY
Drill Date: 06/01/1994
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R2-94-11
Samples:

Geologist: R. HAMMOND
Geologist's Log: X
Driller: G. JENSEN
Driller's Log: 
Total Drill Hole Depth (ft.): 972.0

Geophysical Information

Spontaneous Potential: X
Natural Gamma: X
Single Point Resistivity: X
Extra:

Elevation (ft.) | Depth (ft.) | Description
--- | --- | ---
2885.00 - 2883.00 | 0.0 - 2.0 | TOPSOIL, GRAYISH-BROWN (5YR 3/2)
2883.00 - 2880.00 | 2.0 - 5.0 | SAND, DARK-YELLOWISH-BROWN (10YR 4/2), FINE- TO VERY FINE-GRAINED, SUBROUNDED; MOSTLY QUARTZ WITH ABUNDANT DARK, ORGANIC CLAY IN MATRIX, SLIGHTLY CALCAREOUS
2880.00 - 2834.00 | 5.0 - 51.0 | SANDSTONE, PALE-OLIVE (10Y 6/2), MEDIUM- TO VERY FINE-GRAINED, SILTY, VERY SILTY AND CLAYEY FROM 42 TO 51 FEET; WELL CEMENTED TO FRIABLE, CALCAREOUS, ABUNDANT WHITE RHIZOLITHS AND ROOT CASTS FROM 10 TO 40 FEET; PREDOMINANTLY QUARTZ AND FELDSPAR GRAINS WITH FROSTED AND POLISHED SURFACES; SOME SCATTERED GRAYISH-BROWN (5YR 3/2) ORGANIC BEDS
2834.00 - 2824.00 | 51.0 - 61.0 | SILTSTONE, LIGHT-OLIVE-GRAY (5Y 5/2), SANDY; POORLY CALCAREOUS; MODERATE-REDDISH-BROWN (10R 4/6) CLAY SEAM NEAR 55 FEET
2824.00 - 2661.00 | 61.0 - 224.0 | SANDSTONE, LIGHT-OLIVE-GRAY (5Y 5/2) TO PALE-YELLOWISH-BROWN (10YR 6/2), MEDIUM- TO VERY FINE-GRAINED; VARIABLY CEMENTED FROM UNCONSOLIDATED TO TIGHT ARGILLACEOUS CEMENTED SANDSTONE; TIGHTLY CEMENTED AT 155 TO 190 FEET; NONCALCAREOUS; PRIMARILY QUARTZ AND FELDSPAR GRAINS BOTH FROSTED AND POLISHED SURFACES, SOME LITHIC AND CHERT CLASTS; ABUNDANT WHITE RHIZOLITHS; SOME WHITE TUFFACEOUS BEDS AT 90 AND 115 FEET, SOME CLEAN QUARTZ SAND FROM 192 TO 224 FEET (OGALLALA GROUP)
SILTSTONE, PALE-OLIVE (10Y 6/2) TO MODERATE-YELLOW-BROWN (10YR 5/4), SLIGHTLY SANDY, CLAYEY; NONCALCAREOUS TO POORLY CALCAREOUS, POORLY LAMINATED TO MASSIVE; BECOMING VERY SANDY AT 395 TO 402 FEET, 525 TO 537 FEET, 542 TO 548 FEET, AND 618 TO 625 FEET; TUFFACEOUS BEDS AT 505 TO 515 FEET; BLACK ORGANIC SILTSTONE LENS NEAR 655 FEET (ARIKAREE GROUP?)

CLAYSTONE, GRAYISH-ORANGE (10YR 7/4) TO GRAYISH-GREEN (10GY 5/2), SILTY, SLIGHTLY SANDY; NONCALCAREOUS TO SLIGHTLY CALCAREOUS (BRULE FORMATION?)

SILTSTONE, GRAYISH-OLIVE-GRAY (5GY 3/2) TO LIGHT-BROWN (5YR 6/4), VERY CLAYEY, SLIGHTLY SANDY; POORLY CALCAREOUS; SOME TAN TO DARK-OLIVE BANDED CHERT BEDS (CHADRON FORMATION?)

SAND, WHITE, COARSE- TO MEDIUM-GRAINED, SUBANGULAR TO WELL-ROUNDED; UNCONSOLIDATED; NONCALCAREOUS, MAINLY POLISHED QUARTZ, FELDSPAR, AND CHERT WITH SOME LITHIC AND DARKER MAFIC CLASTS (CHADRON FORMATION)

CLAYSTONE, DARK-YELLOWISH-ORANGE (10YR 6/6); NONCALCAREOUS; APPEARS WEATHERED (PIERRE SHALE)

CLAYSTONE, BROWNISH-BLACK (5YR 2/1); SLIGHTLY CALCAREOUS; POORLY FISSILE (PIERRE SHALE)

OGALLALA GROUP TO 224 FEET.

* * * *
**Location Information**

Legal Location:SE SE SE SE SEC. 14, T. 036 N., R. 29 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner: Ground Surface Elevation (ft.): 2885 T

**Project Information**

Project: MELLETTE-TODD CO. STUDY
Drill Date: 06/01/1994
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R2-94-12
Samples: Total Drill Hole Depth (ft.): 225.0

**Well Information**

SDGS Well Name: R2-94-12
Water Rights Well: Aquifer: HIGH PLAINS
Other Well Name: Management Unit:
Casing Type: PVC, SCH. 80 Casing Top Elevation: 2887.00 T
Screen Type: PVC, MFG., 0.010 IN. SLOT Casing Diameter (in.): 2.0
Total Casing and Screen (ft.): 227.0 Screen Length (ft.): 10.0
Well Maintenance Date: Casing Stick-up (ft.): 2.00

**Geophysical Information**

Spontaneous Potential: Single Point Resistivity: Extra:
Natural Gamma: Extra:

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>2885.00-2883.00</td>
<td>0.0-2.0</td>
<td>TOPSOIL, GRAYISH-BROWN (5YR 3/2)</td>
</tr>
<tr>
<td>2883.00-2880.00</td>
<td>2.0-5.0</td>
<td>SAND, DARK-YELLOWISH-BROWN (10YR 4/2), FINE- TO VERY FINE-GRAINED, SUBROUNDED; MOSTLY QUARTZ WITH ABUNDANT DARK, ORGANIC CLAY IN MATRIX, SLIGHTLY CALCAREOUS</td>
</tr>
<tr>
<td>2880.00-2834.00</td>
<td>5.0-51.0</td>
<td>SANDSTONE, PALE-OLIVE (10Y 6/2), MEDIUM- TO VERY FINE-GRAINED, SILTY, VERY SILTY AND CLAYEY FROM 42 TO 51 FEET; WELL CEMENTED TO FRIABLE, CALCAREOUS; ABUNDANT WHITE RHIZOLITHS AND ROOT CASTS FROM 10 TO 40 FEET; PREDOMINANTLY QUARTZ AND FELDSPAR GRAINS WITH FROSTED AND POLISHED SURFACES; SOME SCATTERED GRAYISH-BROWN (5YR 3/2) ORGANIC BEDS</td>
</tr>
<tr>
<td>2834.00-2824.00</td>
<td>51.0-61.0</td>
<td>SILTSTONE, LIGHT-OLIVE-GRAY (5Y 5/2), SANDY; POORLY CALCAREOUS; MODERATE-REDDISH-BROWN (10R 4/6) CLAY SEAM NEAR 55 FEET</td>
</tr>
<tr>
<td>2824.00-2660.00</td>
<td>61.0-225.0</td>
<td>SANDSTONE, LIGHT-OLIVE-GRAY (5Y 5/2) TO PALE-YELLOWISH-BROWN (10YR 6/2), MEDIUM- TO...</td>
</tr>
</tbody>
</table>
VERY FINE-GRAINED; VARIABLY CEMENTED FROM UNCONSOLIDATED TO TIGHT ARGILLACEOUS CEMENTED SANDSTONE; TIGHTLY CEMENTED AT 155 TO 190 FEET; NONCALCAREOUS; PRIMARILY QUARTZ AND FELDSPAR GRAINS BOTH FROSTED AND POLISHED SURFACE, SOME LITHIC AND CHERT CLASTS; ABUNDANT WHITE RHIZOLITHS; SOME WHITE TUFFACEOUS BEDS AT 90 AND 115 FEET, SOME CLEAN QUARTZ SAND FROM 192 TO 224 FEET (OGALLALA GROUP)

* * * *
Location Information

Legal Location:SE SE SE SE SEC. 14, T. 036 N., R. 29 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner:
Location: 036N-29W-14DDDD 2
Latitude: 43 05' 22"
Longitude: 100 41' 19"
Ground Surface Elevation (ft.): 2885 T

Project Information

Project: MELLETTE-TODD CO. STUDY
Drill Date: 06/01/1994
Company: SDGS
Drilling Method: CORE
Test Hole Number: R20-94-44
Samples:

Geophysical Information

Spontaneous Potential: 
Natural Gamma: 
Single Point Resistivity: 
Extra:

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<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
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<tr>
<td>2885.00-2883.00</td>
<td>0.0 - 2.0</td>
<td>TOPSOIL, GRAYISH-BROWN (5YR 3/2)</td>
</tr>
<tr>
<td>2883.00-2880.00</td>
<td>2.0 - 5.0</td>
<td>SAND, DARK-YELLOWISH-BROWN (10YR 4/2), FINE- TO VERY FINE-GRAINED, SUBROUNDED; MOSTLY QUARTZ WITH ABUNDANT DARK, ORGANIC CLAY IN MATRIX, SLIGHTLY CALCAREOUS</td>
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<tr>
<td>2880.00-2845.00</td>
<td>5.0 - 40.0</td>
<td>SANDSTONE, PALE-OLIVE (10Y 6/2), MEDIUM- TO VERY FINE-GRAINED, SILTY, VERY SILTY AND CLAYEY, WELL CEMENTED TO FRIABLE; CALCAREOUS; ABUNDANT WHITE RHIZOLITHS AND ROOT CASTS FROM 10 TO 40 FEET; PREDOMINANTLY QUARTZ AND FELDSPAR GRAINS WITH FROSTED AND POLISHED SURFACES; SOME SCATTERED GRAYISH-BROWN (5YR 3/2) ORGANIC BEDS (OGALLALA GROUP)</td>
</tr>
</tbody>
</table>

CORE LOCATION IS LISTED AS 036N-29W-14CC IN THE SDGS CORE AND CUTTINGS DATABASE. NO DETAILED DESCRIPTION HAS BEEN FOUND FOR THIS CORE. THE LITHOLOGIC DESCRIPTIONS ARE FROM TEST HOLE R2-94-11 WHICH WAS DRILLED AT OR NEAR THE SAME LOCATION.

* * * *
Location Information

Legal Location: NE NE NE NE SEC. 16, T. 036 N., R. 29 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner: 

Location: 036N-29W-16AAAA
Latitude: 43 06' 13"
Longitude: 100 43' 43"
Ground Surface Elevation (ft.): 2862 T

Project Information

Project: WATER RIGHTS
Drill Date: 12/08/1976
Company: COATS WELL DRILLING
Drilling Method: ROTARY
Test Hole Number: 

SDGS Well Name: 
Water Rights Well: TD-76F
Other Well Name: 
Casing Type: PVC
Screen Type: PVC
Total Casing and Screen (ft.): 226.6
Well Maintenance Date: 06/24/1984

Casing Top Elevation: 
Casing Diameter (in.): 2.0
Screen Length (ft.): 
Casing Stick-up (ft.): 2.10

Geologist: G. SELKEN
Geologist's Log: X
Driller: C. COATS
Driller's Log: 
Total Drill Hole Depth (ft.): 245.0

Well Information

Aquifer: OGALLALA
Management Unit: 
Casing Top Elevation: 
Casing Diameter (in.): 2.0
Screen Length (ft.): 
Casing Stick-up (ft.): 2.10

Spontaneous Potential: 
Natural Gamma: 
Single Point Resistivity: 
Extra: 

Geophysical Information

Elevation (ft.)  Depth (ft.)  Description
2862.00-2861.00  0.0-1.0  TOPSOIL, BLACK
2861.00-2837.00  1.0-25.0  SAND, GREENISH-BROWN, FINE; ROCK AT 9 FEET
2837.00-2785.00  25.0-77.0  SAND, BROWN, FINE
2785.00-2784.00  77.0-78.0  SILTSTONE, WHITE; HARD DRILLING
2784.00-2766.00  78.0-96.0  SAND, BROWN, VERY FINE; HIT ROCK AT 96 FEET, VERY HARD DRILLING
2766.00-2761.00  96.0-101.0  SILTSTONE, WHITE TO GRAY
2761.00-2709.00  101.0-153.0  SAND, BROWN, FINE
2709.00-2701.00  153.0-161.0  SAND, FINE; MIXED WITH GRAYISH CLAY
2701.00-2690.00  161.0-172.0  CLAY, YELLOWISH-BROWN; MIXED WITH BROWN SAND
2690.00-2674.00  172.0-188.0  SAND, BROWN, FINE
2674.00-2669.00  188.0-193.0  SAND, BROWN, FINE; MIXED WITH YELLOWISH-BROWNISH CLAY
<table>
<thead>
<tr>
<th>Depth Range</th>
<th>Footage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2669.00-2654.00</td>
<td>193.0-208.0</td>
<td>SAND, BROWN, FINE</td>
</tr>
<tr>
<td>2654.00-2651.00</td>
<td>208.0-211.0</td>
<td>SILTSTONE, WHITE; HARD</td>
</tr>
<tr>
<td>2651.00-2626.00</td>
<td>211.0-236.0</td>
<td>SAND, BROWN, FINE</td>
</tr>
<tr>
<td>2626.00-2620.00</td>
<td>236.0-242.0</td>
<td>SILTSTONE LAYERS WITH SAND LAYERS</td>
</tr>
<tr>
<td>2620.00-2617.00</td>
<td>242.0-245.0</td>
<td>SANDSTONE, RED (ARIKAREE GROUP)</td>
</tr>
</tbody>
</table>

* * * *
Location Information
Legal Location:NW NE NE NE SEC. 17, T. 036 N., R. 29 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner:

Project Information
Project: MELLETTE-TODD CO. STUDY
Drill Date: 08/02/1994
Company: SDGS
Drilling Method: HOLLOWSTEM
Test Hole Number: R20-94-47

Well Information
SDGS Well Name: R20-94-47
Water Rights Well: 
Other Well Name: 
Casing Type: PVC
Screen Type: PVC, MFG., 0.010 IN. SLOT
Total Casing and Screen (ft.): 71.0
Well Maintenance Date:

Geophysical Information
Spontaneous Potential: 
Natural Gamma: 

NO GEOLOGISTS LOG AVAILABLE; DRILLERS LOG ONLY.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2885.00-2880.00</td>
<td>0.0 - 5.0</td>
<td>SAND, TAN, FINE-GRAINED</td>
</tr>
<tr>
<td>2880.00-2865.00</td>
<td>5.0 - 20.0</td>
<td>SANDSTONE, DARK-TAN, FINE-GRAINED; SOME WHITE SILT</td>
</tr>
<tr>
<td>2865.00-2863.00</td>
<td>20.0 - 22.0</td>
<td>SILTSTONE AND SANDSTONE, WHITE SILTSTONE, TAN SANDSTONE</td>
</tr>
<tr>
<td>2863.00-2855.00</td>
<td>22.0 - 30.0</td>
<td>CLAY, CREAM-WHITE, SILTY</td>
</tr>
<tr>
<td>2855.00-2829.00</td>
<td>30.0 - 56.0</td>
<td>SANDSTONE, DARK-TAN, FINE-GRAINED</td>
</tr>
<tr>
<td>2829.00-2826.00</td>
<td>56.0 - 59.0</td>
<td>CLAY, TAN, SANDY, SILTY</td>
</tr>
<tr>
<td>2826.00-2814.00</td>
<td>59.0 - 71.0</td>
<td>SANDSTONE, DARK-TAN TO OLIVE-TAN, FINE-GRAINED</td>
</tr>
</tbody>
</table>

* * * *
**Location Information**

Legal Location: SE SE NE NE SEC. 17, T. 036 N., R. 29 W.
County: TODD  
Location: 036N-29W-17AADD 1
Basin: KEYA PAHA  
Latitude: 43 06' 04"
Hydrologic Unit Code: 10150006  
Longitude: 100 44' 54"
Land Owner:  
Ground Surface Elevation (ft.): 2890 T

**Project Information**

Project: TODD-MELLETTE STUDY  
Drill Date: 07/10/1990  
Geologist: P. HAMMOND
Company: SDGS  
Geologist's Log: X
Driller: D. IVERSON  
Driller's Log:  
Test Hole Number: R20-90-30  
Total Drill Hole Depth (ft.): 247.0
Samples:

**Well Information**

SDGS Well Name: R20-90-30  
Aquifer: OGALLALA
Water Rights Well: TD-90A  
Management Unit:  
Other Well Name:  
Casing Type: PVC, SCH. 80  
Casing Top Elevation: 2892.00 T
Screen Type: PVC, MFG., SLOT SIZE 0.018 IN.  
Casing Diameter (in.): 2.0
Total Casing and Screen (ft.): 245.0  
Screen Length (ft.): 5.0
Casing Stick-up (ft.): 2.00  
Well Maintenance Date:

**Geophysical Information**

Spontaneous Potential:  
Natural Gamma: X  
Single Point Resistivity: X  
Extra: X

RESISTIVITY NOT WORKING PROPERLY. 40 FT OF BLANK CASING (CLOSED AT BOTTOM, OPEN TO SCREEN) 243 TO 203 FT; SCREEN 203 TO 198 FT; FILTER PACK (NATIVE SEDIMENT) 247 TO 243 FT, (VERY COARSE QUARTZ SAND) 243 TO 181 FT; BENTONITE 181 TO 3 FT; CEMENT 3 TO 0 FT; LOCKING STEEL WELL PROTECTOR. SCREEN AND CASING ARE FLUSH THREADED.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2890.00–2867.00</td>
<td>0.0–23.0</td>
<td>SAND AND SANDSTONE, GREENISH TO WHITISH–BROWN, MEDIUM TO COARSE</td>
</tr>
<tr>
<td>2867.00–2856.00</td>
<td>23.0–34.0</td>
<td>SAND, GREENISH-BROWN, FINE</td>
</tr>
<tr>
<td>2856.00–2854.00</td>
<td>34.0–36.0</td>
<td>SILTSTONE, GREENISH TO WHITE; CALCAREOUS</td>
</tr>
<tr>
<td>2854.00–2849.00</td>
<td>36.0–41.0</td>
<td>SANDSTONE AND SAND, GREENISH TO WHITISH; CEMENTED SANDSTONE TO SAND</td>
</tr>
<tr>
<td>2849.00–2818.00</td>
<td>41.0–72.0</td>
<td>SAND, GREENISH-BROWN, FINE TO MEDIUM; HARDER CEMENT LAYER FROM 60 TO 61 FEET</td>
</tr>
<tr>
<td>2818.00–2810.00</td>
<td>72.0–80.0</td>
<td>SAND AND SILTSTONE, TAN, FINE TO MEDIUM</td>
</tr>
<tr>
<td>2810.00–2796.00</td>
<td>80.0–94.0</td>
<td>SAND, GREENISH-BROWN, FINE TO MEDIUM</td>
</tr>
<tr>
<td>2796.00–2788.00</td>
<td>94.0–102.0</td>
<td>SAND AND SILTSTONE, LIGHT-TAN TO WHITISH, FINE</td>
</tr>
<tr>
<td>Interval</td>
<td>Depth Range</td>
<td>Description</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>2788.00-2782.00</td>
<td>102.0-108.0</td>
<td>Sand and siltstone, greenish-brown, fine to medium; calcareous</td>
</tr>
<tr>
<td>2782.00-2775.00</td>
<td>108.0-115.0</td>
<td>Sand and sandstone, greenish-brown, fine to coarse; calcareous</td>
</tr>
<tr>
<td>2775.00-2750.00</td>
<td>115.0-140.0</td>
<td>Sand and sandstone, greenish-brown, fine to medium; calcareous</td>
</tr>
<tr>
<td>2750.00-2746.00</td>
<td>140.0-144.0</td>
<td>Sand and sandstone, greenish-brown, fine to coarse; calcareous, small root casts present</td>
</tr>
<tr>
<td>2746.00-2738.00</td>
<td>144.0-152.0</td>
<td>Sand and sandstone, greenish-brown, fine to coarse; calcareous</td>
</tr>
<tr>
<td>2738.00-2731.00</td>
<td>152.0-159.0</td>
<td>Sand, greenish-brown, fine to medium; noncalcareous</td>
</tr>
<tr>
<td>2731.00-2678.00</td>
<td>159.0-212.0</td>
<td>Sand, brown to greenish-brown, fine to medium; very clean quartz sand, some very fine gravel at bottom of interval</td>
</tr>
<tr>
<td>2678.00-2660.00</td>
<td>212.0-230.0</td>
<td>Siltstone and clay, brownish-pink</td>
</tr>
<tr>
<td>2660.00-2643.00</td>
<td>230.0-247.0</td>
<td>Clay, brown-red, sandy (Arikaree Group)</td>
</tr>
</tbody>
</table>

* * * *
Location Information

Legal Location:SE SE NE NE SEC. 17, T. 036 N., R. 29 W.
County:TODD
Basin:KEYA PAHA
Hydrologic Unit Code:10150006
Land Owner:

Location:036N-29W-17AADD 2
Latitude:43 06' 04"
Longitude:100 44' 54"
Ground Surface Elevation (ft.):2890 T

Project Information

Project:TODD-MELLETTE STUDY
Drill Date:07/11/1990
Company:SDGS
Drilling Method:ROTARY
Test Hole Number:R20-90-31
Samples: Total Casing and Screen (ft.):125.0

Geologist:P. HAMMOND
Geologist's Log:X
Driller:D. IVerson
Driller's Log:

Well Information

SDGS Well Name:R20-90-31
Water Rights Well: Aquifer:OGALLALA
Other Well Name: Management Unit:
Casing Type:PVC, SCH. 80 Casing Top Elevation:2892.00 T
Screen Type:PVC, MFG., SLOT SIZE 0.018 IN. Casing Diameter (in.):2.0
Total Casing and Screen (ft.):125.0 Screen Length (ft.):5.0
Well Maintenance Date:

Casing Stick-up (ft.):2.00

Geophysical Information

Spontaneous Potential: Single Point Resistivity:
Natural Gamma: Extra:

WELL DATA: SCREENED INTERVAL FROM 123 TO 118 FEET; FILTER PACK (VERY COARSE QUARTZ SAND) 124 TO 112 FEET; BENTONITE 112 TO 3 FEET; CEMENT 3 TO 0 FEET; LOCKING STEEL WELL PROTECTOR INSTALLED. SCREEN AND CASING ARE FLUSH THREADED. MIDDLE WELL OF THREE.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2890.00-2864.00</td>
<td>0.0-26.0</td>
<td>SAND AND SANDSTONE, GREENISH TO WHITISH- BROWN, MEDIUM TO COARSE</td>
</tr>
<tr>
<td>2864.00-2858.00</td>
<td>26.0-32.0</td>
<td>SILTSTONE, GREENISH TO WHITE; CALCAREOUS</td>
</tr>
<tr>
<td>2858.00-2850.00</td>
<td>32.0-40.0</td>
<td>SAND AND SANDSTONE, GREENISH TO WHITISH- BROWN, MEDIUM TO COARSE</td>
</tr>
<tr>
<td>2850.00-2830.00</td>
<td>40.0-60.0</td>
<td>SAND, GREENISH TO WHITISH-BROWN, MEDIUM TO COARSE, COARSE AT TOP OF INTERVAL</td>
</tr>
<tr>
<td>2830.00-2816.00</td>
<td>60.0-74.0</td>
<td>SAND, GREENISH-BROWN, FINE TO MEDIUM</td>
</tr>
<tr>
<td>2816.00-2791.00</td>
<td>74.0-99.0</td>
<td>SAND AND SANDSTONE, GREENISH, FINE TO COARSE</td>
</tr>
<tr>
<td>2791.00-2789.00</td>
<td>99.0-101.0</td>
<td>SAND, LIGHT-TAN TO WHITISH, FINE TO COARSE; SOME CLAY</td>
</tr>
</tbody>
</table>
2789.00-2782.00  101.0-108.0  SAND AND SANDSTONE, LIGHT-GREENISH-BROWN, FINE TO COARSE

2782.00-2766.00  108.0-124.0  SAND AND SANDSTONE, GREENISH-BROWN, FINE TO COARSE

* * * *
**Location Information**

Legal Location:SE SE NE NE SEC. 17, T. 036 N., R. 29 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner: 

**Project Information**

Project: TODD-MELLETTE STUDY
Drill Date: 07/11/1990
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R20-90-32
Geologist: P. HAMMOND
Driller: D. IVERSO
Driller's Log: X
Total Casing and Screen (ft.): 80.0
Total Drill Hole Depth (ft.): 78.0

**Well Information**

SDGS Well Name: R20-90-32
Water Rights Well: 
Other Well Name: 
Casing Type: PVC, SCH. 80
Screen Type: PVC, MFG., SLOT SIZE 0.018 IN.
Casing Top Elevation: 2892.00 T
Casing Diameter (in.): 2.0
Screen Length (ft.): 10.0
Casing Stick-up (ft.): 2.00

**Geophysical Information**

Spontaneous Potential: 
Natural Gamma: 
Single Point Resistivity: 
Extra: 

WELL DATA: SCREENED INTERVAL FROM 78 TO 68 FEET; FILTER PACK (VERY COARSE QUARTZ SAND) 78 TO 60 FEET; BENTONITE 60 TO 11 FEET; CEMENT 11 TO 0 FEET; LOCKING STEEL WELL PROTECTOR INSTALLED. SCREEN AND CASING ARE FLUSH THREADED. NORTH WELL OF THREE.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2890.00-2864.00</td>
<td>0.0-26.0</td>
<td>SAND AND SANDSTONE, GREENISH-BROWN, MEDIUM TO COARSE; SOME WHITE PIECES LOWER 8 FEET</td>
</tr>
<tr>
<td>2864.00-2857.00</td>
<td>26.0-33.0</td>
<td>SILTSTONE, GREEN TO WHITE; CALCAREOUS</td>
</tr>
<tr>
<td>2857.00-2850.00</td>
<td>33.0-40.0</td>
<td>SAND AND SANDSTONE, GREENISH-BROWN, VERY FINE TO MEDIUM SAND</td>
</tr>
<tr>
<td>2850.00-2845.00</td>
<td>40.0-45.0</td>
<td>SAND AND SANDSTONE, GREENISH-BROWN, MEDIUM TO COARSE</td>
</tr>
<tr>
<td>2845.00-2812.00</td>
<td>45.0-78.0</td>
<td>SAND, GREENISH-BROWN, FINE TO MEDIUM</td>
</tr>
</tbody>
</table>

* * * *
WELL DATA: SCREENED INTERVAL FROM 107 TO 97 FEET; FILTER PACK (0.65-0.75 MM QUARTZ SAND) 107 TO 80 FEET; BENTONITE 80 TO 22 FEET; CEMENT 22 TO 0 FEET; LOCKING STEEL WELL PROTECTOR INSTALLED. SCREEN AND CASING ARE FLUSH THREADED.
Location Information

Legal Location: SW NW SW NE SEC. 17, T. 036 N., R. 29 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner: 
Location: 036N-29W-17ACBC
Latitude: 43° 05' 56"
Longitude: 100° 45' 25"
Ground Surface Elevation (ft.): 2925 T

Project Information

Project: TODD-MELLETTE STUDY
Drill Date: 06/19/1991
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R20-91-25
Samples: 
Total Casing and Screen (ft.): 110.0
Well Maintenance Date: 
Casing Diameter (in.): 2.0
Casing Stick-up (ft.): 2.00
Casing Top Elevation: 2927.00 T
Screen Length (ft.): 10.0
Total Drill Hole Depth (ft.): 110.0

Well Information

SDGS Well Name: R20-91-25
Water Rights Well: 
Other Well Name: 
Casing Type: PVC, SCH. 80
Screen Type: PVC, MFG., SLOT SIZE 0.010 IN.
Total Casing and Screen (ft.): 110.0
Well Maintenance Date: 
Casing Top Elevation: 2927.00 T
Casing Diameter (in.): 2.0
Screen Length (ft.): 10.0
Extra:

Geophysical Information

Spontaneous Potential: 
Natural Gamma: 
Single Point Resistivity: 
WELL DATA: SCREEN INTERVAL FROM 108 TO 98 FEET; FILTER PACK (0.65-0.75 MM QUARTZ SAND) 110 TO 90 FEET; BENTONITE 90 TO 20 FEET; CEMENT 20 TO 0 FEET; LOCKING STEEL WELL PROTECTOR INSTALLED. CASING AND SCREEN ARE FLUSH THREADED.

Elevation (ft.) | Depth (ft.) | Description
--- | --- | ---
2925.00 - 2924.00 | 0.0 - 1.0 | TOPSOIL, BLACK
2924.00 - 2903.00 | 1.0 - 22.0 | SAND AND SANDSTONE, WHITISH-GREENISH-BROWN, VERY FINE TO FINE, SILTY
2903.00 - 2895.00 | 22.0 - 30.0 | SAND AND SANDSTONE, GREENISH-BROWN, VERY FINE TO FINE; SMALL AMOUNT OF WHITE CLAY PRESENT; NONCALCAREOUS
2895.00 - 2887.00 | 30.0 - 38.0 | SAND AND SANDSTONE, GREENISH-GRAY, VERY FINE TO FINE; SOME CLAY
2887.00 - 2876.00 | 38.0 - 49.0 | SAND AND SANDSTONE, GREEN-BROWN, VERY FINE TO FINE
2876.00 - 2866.00 | 49.0 - 59.0 | SILTSTONE, LIGHT-WHITISH-BROWN; CALCAREOUS
2866.00 - 2853.00 | 59.0 - 72.0 | SAND, GREENISH-BROWN, FINE TO MEDIUM; ROOT CASTS PRESENT
2853.00 - 2815.00  72.0 - 110.0  SAND, BROWN, FINE TO MEDIUM; ROOT CASTS PRESENT

* * * *
Location Information

Legal Location: SE SE NE NE Sec. 18, T. 036 N., R. 29 W.
County: TODD
Basin: MINNECHADUZA
Hydrologic Unit Code: 10150004
Land Owner: 
Location: 036N-29W-18AADD
Latitude: 43 06' 03"
Longitude: 100 46' 05"
Ground Surface Elevation (ft.): 2940 T

Project Information

Project: TODD-MELLETTE STUDY
Drill Date: 06/19/1991
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R20-91-26
Samples: 
Total Casing and Screen (ft.): 125.0
Total Drill Hole Depth (ft.): 127.0

Well Information

SDGS Well Name: R20-91-26
Water Rights Well: 
Other Well Name: 
Casing Type: PVC, SCH. 80
Screen Type: PVC, MFG., SLOT SIZE 0.010 IN.
Casing Top Elevation: 2942.00 T
Casing Diameter (in.): 2.0
Screen Length (ft.): 10.0
Casing Stick-up (ft.): 2.00

Geophysical Information

Spontaneous Potential: 
Natural Gamma: 
Single Point Resistivity: 
Extra: 
WELL DATA: SCREEN INTERVAL FROM 123 TO 113 FEET; FILTER PACK (0.65-0.75 MM QUARTZ SAND) 127 TO 97 FEET; BENTONITE 97 TO 22 FEET; CEMENT 22 TO 0 FEET; LOCKING STEEL WELL PROTECTOR INSTALLED. CASING AND SCREEN ARE FLUSH THREADED.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2940.00-2913.00</td>
<td>0.0-27.0</td>
<td>SAND AND SANDSTONE, GREENISH-BROWN, VERY FINE TO FINE, CLAYEY</td>
</tr>
<tr>
<td>2913.00-2901.00</td>
<td>27.0-39.0</td>
<td>SAND AND SANDSTONE, GREENISH-GRAY, VERY FINE TO FINE; WITH GREEN CLAY</td>
</tr>
<tr>
<td>2901.00-2895.00</td>
<td>39.0-45.0</td>
<td>SAND AND SANDSTONE, GREENISH-BROWN, VERY FINE TO FINE, SILTY; CALCAREOUS</td>
</tr>
<tr>
<td>2895.00-2878.00</td>
<td>45.0-62.0</td>
<td>SILTSTONE, LIGHT-WHITISH-GRAY; CALCAREOUS</td>
</tr>
<tr>
<td>2878.00-2845.00</td>
<td>62.0-95.0</td>
<td>SAND AND SANDSTONE, GREENISH-BROWN, FINE TO MEDIUM; SOME SILT</td>
</tr>
<tr>
<td>2845.00-2822.00</td>
<td>95.0-118.0</td>
<td>SAND, LIGHT-GREENISH-BROWN</td>
</tr>
<tr>
<td>2822.00-2813.00</td>
<td>118.0-127.0</td>
<td>SAND AND SANDSTONE, GREENISH-BROWN, FINE TO MEDIUM; MANY ROOT CASTS PRESENT</td>
</tr>
</tbody>
</table>
Location Information

Legal Location:SE SE SE NE SEC. 29, T. 036 N., R. 29 W.
County:TODD
Basin:MINNECHADUZA
Hydrologic Unit Code:10150004
Land Owner:

Location:036N-29W-29ADDD
Latitude:43 04' 04"
Longitude:100 44' 53"
Ground Surface Elevation (ft.):2855 T

Project Information

Project:STATEWIDE MONITORING
Drill Date:06/29/1994
Company:SDGS
Drilling Method:HOLLOWSTEM
Test Hole Number:R20-94-34
Samples:

Geologist:L. SCHULZ
Driller:M. THOMPSON
Total Drill Hole Depth (ft.):44.0

Well Information

SDGS Well Name:R20-94-34
Water Rights Well:
Other Well Name:
Casing Type:PVC, SCH. 40
Screen Type:PVC, SCH. 40, MFG., SLOT=0.010
Total Casing and Screen (ft.):44.6
Well Maintenance Date:

Casing Top Elevation:2857.23 T
Casing Diameter (in.):4.0
Screen Length (ft.):5.4
Casing Stick-up (ft.):2.23

Aquifer:OGALLALA
Management Unit:
Casing Top Elevation:2857.23 T
Casing Diameter (in.):4.0
Screen Length (ft.):5.4
Casing Stick-up (ft.):2.23

Geophysical Information

Spontaneous Potential:
Natural Gamma:

WELL INFORMATION: SCREENED INTERVAL FROM 44.57 TO 39.20 FEET BELOW CASING TOP. NATURAL FILTER PACK FROM 44 TO 18 FEET BELOW LAND SURFACE. GRANULAR BENTONITE FROM 18 TO 1.3 FEET BELOW LAND SURFACE. CEMENT GROUT FROM 1.3 FEET TO GROUND LEVEL. ONE STEEL WELL PROTECTOR INSTALLED. SOUTH WELL OF TWO.

Elevation (ft.) | Depth (ft.) | Description
--- | --- | ---
2855.00–2851.00 | 0.0–4.0 | TOPSOIL
2851.00–2812.00 | 4.0–43.0 | SAND, LIGHT-BROWN, FINE; SOME SILT; WET AT 18 FEET; HARD DRILLING AT 19 FEET
2812.00–2811.00 | 43.0–44.0 | SILTSTONE(?); NO RETURN, TOUGH DRILLING
* * * *
Location Information

Legal Location: SE SE SE NE SEC. 29, T. 036 N., R. 29 W.
County: TODD
Basin: MINNECHADUZA
Hydrologic Unit Code: 10150004
Land Owner: Location: 036N-29W-29ADDD 1

Project Information

Project: STATEWIDE MONITORING
Drill Date: 06/29/1994
Company: SDGS
Drilling Method: HOLLOWSTEM
Test Hole Number: R20-94-35
Samples: Driller's Log: X
Geologist: L. SCHULZ
Geologist's Log:
Driller: M. THOMPSON
Well Maintenance Date:
Total Drill Hole Depth (ft.): 25.0

Well Information

SDGS Well Name: R20-94-35
Water Rights Well:
Other Well Name: Aquifer: OGALLALA
Casing Type: PVC, SCH. 40
Screen Type: PVC, SCH. 40, MFG., SLOT=0.010
Total Casing and Screen (ft.): 25.2
Well Maintenance Date:
Casing Diameter (in.): 4.0
Screen Length (ft.): 10.3
Casing Stick-up (ft.): 1.40

Geophysical Information

Spontaneous Potential: Single Point Resistivity:
Natural Gamma: Extra:

WELL INFORMATION: SCREENED INTERVAL FROM 25.23 TO 14.90 FEET BELOW CASING TOP. NATURAL FILTER PACK FROM 25 TO 20 FEET BELOW LAND SURFACE. ARTIFICIAL PACK FROM 20 TO 12 FEET BELOW LAND SURFACE. GRANULAR BENTONITE FROM 12 TO 2.5 FEET BELOW LAND SURFACE. CEMENT GROUT FROM 2.5 FEET TO GROUND LEVEL. NORTH WELL OF TWO.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2855.00-2851.00</td>
<td>0.0-4.0</td>
<td>TOPSOIL</td>
</tr>
<tr>
<td>2851.00-2830.00</td>
<td>4.0-25.0</td>
<td>SAND, LIGHT-BROWN, FINE; SOME SILT; WET AT 18 FEET; HARD DRILLING AT 19 FEET</td>
</tr>
</tbody>
</table>

* * * *
Location Information

Legal Location: NW NW NW NW SEC. 13, T. 036 N., R. 30 W.
County: TODD
Basin: MINNECHADUZA
Hydrologic Unit Code: 10150004
Land Owner: 

Location: 036N-30W-13BBBB
Latitude: 43 06' 12"
Longitude: 100 48' 21"
Ground Surface Elevation (ft.): 2916 T

Project Information

Project: WATER RIGHTS
Drill Date: 12/06/1976
Company: COATS WELL DRILLING
Drilling Method: ROTARY
Test Hole Number: 
Samples: 

Geologist: G. SELKEN
Geologist's Log: X
Driller: C. COATS
Driller's Log: 
Total Drill Hole Depth (ft.): 245.0

Well Information

SDGS Well Name: 
Water Rights Well: TD-76E
Other Well Name: 
Casing Type: PVC
Screen Type: PVC
Total Casing and Screen (ft.): 226.6
Well Maintenance Date: 06/26/1984

Aquifer: OGALLALA
Management Unit: 
Casing Top Elevation: 
Casing Diameter (in.): 2.0
Screen Length (ft.): 5.0
Casing Stick-up (ft.): 2.40

Geophysical Information

Spontaneous Potential: 
Natural Gamma: 
Single Point Resistivity: 
Extra: 

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2916.00 - 2915.00</td>
<td>0.0 - 1.0</td>
<td>TOPSOIL</td>
</tr>
<tr>
<td>2915.00 - 2836.00</td>
<td>1.0 - 80.0</td>
<td>SAND, BROWN, FINE</td>
</tr>
<tr>
<td>2836.00 - 2816.00</td>
<td>80.0 - 100.0</td>
<td>SAND, BROWN, FINE; LAYERS OF WHITE SILTSTONE</td>
</tr>
<tr>
<td>2816.00 - 2806.00</td>
<td>100.0 - 110.0</td>
<td>SAND, BROWN, FINE</td>
</tr>
<tr>
<td>2806.00 - 2795.00</td>
<td>110.0 - 121.0</td>
<td>SAND, BROWN, FINE; WITH LAYERS OF WHITE SILTSTONE</td>
</tr>
<tr>
<td>2795.00 - 2791.00</td>
<td>121.0 - 125.0</td>
<td>SILTSTONE, WHITE; HARD DRILLING</td>
</tr>
<tr>
<td>2791.00 - 2730.00</td>
<td>125.0 - 186.0</td>
<td>SAND, BROWN, FINE; WITH WHITE SILTSTONE LAYERS AT 128 TO 129, 147 TO 178 AND 176 TO 179 FEET, HARD DRILLING</td>
</tr>
<tr>
<td>2730.00 - 2726.00</td>
<td>186.0 - 190.0</td>
<td>SILTSTONE, GRAY TO GREEN; HARD DRILLING</td>
</tr>
<tr>
<td>2726.00 - 2716.00</td>
<td>190.0 - 200.0</td>
<td>SAND, BROWN, FINE</td>
</tr>
<tr>
<td>2716.00 - 2712.00</td>
<td>200.0 - 204.0</td>
<td>SILTSTONE, GRAY TO WHITE</td>
</tr>
</tbody>
</table>
2712.00 – 2698.00  204.0 – 218.0  SAND, BROWN, FINE

2698.00 – 2696.00  218.0 – 220.0  SILTSTONE, GRAY TO GREEN; VERY HARD DRILLING

2696.00 – 2694.00  220.0 – 222.0  SAND, BROWN, FINE

2694.00 – 2671.00  222.0 – 245.0  SILTSTONE, GRAY, GREEN; 2 FOOT LAYERS MIXED WITH FINE, BROWN SAND (ARIKAREE GROUP)

* * * *
THIS TEST HOLE WAS PLUGGED WITH HIGH SOLIDS BENTONITE FROM 767 TO 8 FEET, AND FROM 8 TO 3 FEET WITH CEMENT GROUT AND FROM 3 FEET TO GROUND SURFACE WITH NATIVE SOILS.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2612.00-2600.00</td>
<td>0.0-12.0</td>
<td>SAND, GRAYISH-ORANGE, VERY FINE TO COARSE, PEBBLY, VERY POORLY SORTED, ANGULAR TO ROUNDED; QUARTZOSE WITH ABUNDANT LITHIC GRAINS, NONCALCAREOUS (TERRACE SANDS)</td>
</tr>
<tr>
<td>2600.00-2574.00</td>
<td>12.0-38.0</td>
<td>SAND, PALE-YELLOWISH-BROWN, FINE TO MEDIUM, SUBANGULAR TO ROUNDED; QUARTZOSE, SOME LITHIC GRAINS, NON-CALCAREOUS</td>
</tr>
<tr>
<td>2574.00-2562.00</td>
<td>38.0-50.0</td>
<td>SILTSTONE, DARK-YELLOWISH-BROWN, CLAYEY; NONCALCAREOUS (ROSEBUD FORMATION?)</td>
</tr>
<tr>
<td>2562.00-2498.00</td>
<td>50.0-114.0</td>
<td>SANDSTONE, LIGHT-BROWN, MEDIUM TO VERY COARSE, SUBROUNDED TO ANGULAR, POORLY SORTED, MODERATELY WELL CEMENTED; POORLY CALCAREOUS, PRIMARILY LOCAL LITHIC FRAGMENTS WITH COMMON TO ABUNDANT MEDIUM TO FINE QUARTZ SAND</td>
</tr>
<tr>
<td>2498.00-2470.00</td>
<td>114.0-142.0</td>
<td>SILTSTONE, MODERATE YELLOWISH-BROWN, SANDY, MASSIVE; NONCALCAREOUS (ROSEBUD FORMATION)</td>
</tr>
<tr>
<td>2470.00-2445.00</td>
<td>142.0-167.0</td>
<td>SAND, GRAYISH-ORANGE, FINE TO VERY FINE, SILTY; NONCALCAREOUS</td>
</tr>
<tr>
<td>2445.00-2343.00</td>
<td>167.0-269.0</td>
<td>SILTSTONE, MODERATE-YELLOWISH-BROWN, CLAYEY; NONCALCAREOUS TO POORLY CALCAREOUS, SOME CHERT CHIPS, HIGH GAMMA VALUES IN POSSIBLE ASH BED AT 228 TO 232 FEET, SANDY AND CALCAREOUS AT 238 TO 269 FEET</td>
</tr>
<tr>
<td>Depth Range</td>
<td>Interval</td>
<td>Description</td>
</tr>
<tr>
<td>-------------</td>
<td>----------</td>
<td>-------------</td>
</tr>
<tr>
<td>2343.00 - 2251.00</td>
<td>269.0 - 361.0</td>
<td>Siltstone, moderate-brown, sandy; calcareous, interbedded with pale-olive, clayey siltstone below 310 feet, some well bedded intervals</td>
</tr>
<tr>
<td>2251.00 - 2223.00</td>
<td>361.0 - 389.0</td>
<td>Siltstone, pale-olive interbedded with light-brown, very clayey; several fissile intervals, high gamma spikes near 360 feet, noncalcareous (Brule Formation?)</td>
</tr>
<tr>
<td>2223.00 - 2163.00</td>
<td>389.0 - 449.0</td>
<td>Siltstone, grayish-orange to pale-olive, sandy, slightly clayey, fissile to massive; slightly calcareous to non-calcareous, high gamma spike at 409 to 412 feet (Brule Formation?)</td>
</tr>
<tr>
<td>2163.00 - 2014.00</td>
<td>449.0 - 598.0</td>
<td>Siltstone, grayish-orange to pale-olive, sandy, slightly clayey, fissile to massive; slightly calcareous to non-calcareous, grayish-orange paleosols(?) at 449 to 460 feet, 481 to 486 feet, 516 to 532 feet, 540 to 552 feet and 560 to 573 feet (Brule Formation?)</td>
</tr>
<tr>
<td>2014.00 - 1897.00</td>
<td>598.0 - 715.0</td>
<td>Siltstone, yellowish-gray interbedded with dark-yellowish-orange, clayey, sandy, massive; poorly calcareous to noncalcaceous (Chadron Formation?)</td>
</tr>
<tr>
<td>1897.00 - 1876.00</td>
<td>715.0 - 736.0</td>
<td>Siltstone, pale-yellowish-orange, very clayey, sandy; calcareous (Chadron Formation?)</td>
</tr>
<tr>
<td>1876.00 - 1845.00</td>
<td>736.0 - 767.0</td>
<td>Claystone, olive-gray, massive to poorly fissile; slightly calcareous to calcareous (Pierre Shale)</td>
</tr>
</tbody>
</table>

* * * *
Location Information

Legal Location: SE SW SW SE SEC. 12, T. 036 N., R. 31 W.
County: TODD
Basin: MINNECHADUZA
Hydrologic Unit Code: 10150004
Land Owner: Location: 036N-31W-12DCCD
Latitude: 43 06' 13"
Longitude: 100 54' 50"
Ground Surface Elevation (ft.): 2899 T

Project Information

Project: MELLETTE-TODD CO. STUDY
Drill Date: 07/16/1996
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R2-96-39
Samples: Total Drill Hole Depth (ft.): 202.0

Well Information

SDGS Well Name: R2-96-39
Water Rights Well: Aquifer: ARIKAREE
Other Well Name: Management Unit:
Casing Type: PVC, SCH. 80
Screen Type: PVC, MFG., 0.018 IN. SLOT
Total Casing and Screen (ft.): 196.0
Well Maintenance Date:
Casing Top Elevation: 2902.00 T
Casing Diameter (in.): 2.0
Screen Length (ft.): 10.0
Casing Stick-up (ft.): 3.00

Geophysical Information

Spontaneous Potential: Single Point Resistivity:
Natural Gamma: X Extra: X

INDUCTION LOG WAS RUN ON THIS WELL; NATURAL GAMMA, CONDUCTIVITY, AND RESISTIVITY.
WELL WAS FILTER PACKED FROM 202 TO 172 FEET BELOW LAND SURFACE; BENTONITE GROUT FROM
172 TO 20 FEET BELOW LAND SURFACE; NEAT CEMENT GROUT FROM 20 FEET TO LAND SURFACE.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2899.00-2897.00</td>
<td>0.0-2.0</td>
<td>TOPSOIL</td>
</tr>
<tr>
<td>2897.00-2865.00</td>
<td>2.0-34.0</td>
<td>SAND, FINE</td>
</tr>
<tr>
<td>2865.00-2814.00</td>
<td>34.0-85.0</td>
<td>SANDSTONE, TAN-OLIVE-GREEN</td>
</tr>
<tr>
<td>2814.00-2697.00</td>
<td>85.0-202.0</td>
<td>SILT, BROWN</td>
</tr>
</tbody>
</table>

NO GEOLOGISTS LOG WAS AVAILABLE FOR THIS WELL; DRILLERS LOG ONLY. BOTTOM HOLE FORMATION IS BELIEVED TO BE ARIKAREE(?)

* * * *
Spontaneous Potential: Natural Gamma:
Samples:
Longitude: Hydrologic Unit Code:
Test Hole Number:
Single Point Resistivity:
Latitude:
County:
Project:
Company:
Driller:
Geologist:
Basin:
Ground Surface Elevation (ft.): 2899 T
Location:
Land Owner:
Drill Date:
Drilling Method: ROTARY
Test Hole Number: R2-96-46
Samples: X

**Location Information**

- **Legal Location:** SE SW SW SE SEC. 12, T. 036 N., R. 31 W.
- **County:** TODD
- **Basin:** MINNECHADUZA
- **Hydrologic Unit Code:** 10150004
- **Land Owner:**
- **Location:** 036N-31W-12DCCD 1
- **Latitude:** 43° 06' 13"
- **Longitude:** 100° 54' 50"

**Project Information**

- **Project:** MELLETTE-TODD CO. STUDY
- **Drill Date:** 08/07/1996
- **Company:** SDGS
- **Drilling Method:** ROTARY
- **Test Hole Number:** R2-96-46
- **Samples:** X
- **Geologist:** R. HAMMOND
- **Geologist's Log:** X
- **Driller:** G. JENSEN
- **Driller's Log:**
- **Total Drill Hole Depth (ft.):** 715.0

**Geophysical Information**

- **Spontaneous Potential:**
- **Natural Gamma:**
- **Single Point Resistivity:**
- **Extra:**

THIS HOLE WAS PLUGGED FROM 715 TO 8 FEET WITH HIGH SOLIDS BENTONITE GROUT; 8 TO 2 FEET WITH NEAT CEMENT GROUT; 2 FEET TO LAND SURFACE WITH NATIVE SEDIMENTS.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2899.00 - 2895.00</td>
<td>0.0 - 4.0</td>
<td>SAND, DUSKY-YELLOW, MEDIUM- TO FINE-GRAINED, SUBROUNDED; PRIMARILY YELLOWISH AND CLEAN QUARTZ GRAINS, SOME LITHIC AND FELDSPAR GRAINS; ABUNDANT BONE-WHITE SILTSTONE RHIZOLITHS</td>
</tr>
<tr>
<td>2895.00 - 2805.00</td>
<td>4.0 - 94.0</td>
<td>SILTSTONE, YELLOWISH-GRAY TO WHITE, SANDY; CALCAREOUS; ALTERNATING BEDS OF HARD WELL CEMENTED AND SOFTER UNCONSOLIDATED INTERVALS</td>
</tr>
<tr>
<td>2805.00 - 2797.00</td>
<td>94.0 - 102.0</td>
<td>SILTSTONE, PALE-OLIVE, SANDY; POORLY CALCAREOUS TO NONCALCAREOUS; WELL CEMENTED ASH BED AT 98 FEET (ROSEBUD FORMATION)</td>
</tr>
<tr>
<td>2797.00 - 2364.00</td>
<td>102.0 - 535.0</td>
<td>SILTSTONE, GRAYISH-ORANGE-PINK, SANDY, VERY SANDY FROM 144 TO 195 FEET AND 275 TO 360 FEET; POORLY CALCAREOUS TO NONCALCAREOUS BELOW 340 FEET; SEVERAL LIGHT-BROWN, NONCALCAREOUS PALEOSOLS(?)</td>
</tr>
<tr>
<td>2364.00 - 2209.00</td>
<td>535.0 - 690.0</td>
<td>SILTSTONE, LIGHT-BROWN, CLAYEY, WELL CEMENTED; POORLY CALCAREOUS; ABUNDANT WHITE, WELL CEMENTED ASH(?) BEDS; MODERATE-BROWN PALEOSOL(?) AT 645 TO 650 FEET (BRULE FORMATION?)</td>
</tr>
<tr>
<td>2209.00 - 2184.00</td>
<td>690.0 - 715.0</td>
<td>SILTSTONE, LIGHT-OLIVE-GRAY TO LIGHT-BROWN, CLAYEY; POORLY CALCAREOUS (CHADRON FORMATION)</td>
</tr>
</tbody>
</table>
THIS HOLE WAS ABANDONED PREMATURELY DUE TO ENGINE PROBLEMS. NO ELECTRIC LOG WAS ATTEMPTED. POOR RETURN OF CUTTINGS BELOW 350 FEET. DESCRIPTIONS BELOW 350 FEET ARE SUSPECT.

* * * *
Location Information

Legal Location: NE NE NE NW SEC. 14, T. 036 N., R. 31 W.
County: TODD
Basin: WHITE
Hydrologic Unit Code: 10140203
Land Owner:

County: TODD
Location: 036N-31W-14BAAA
Latitude: 43° 06' 12"
Longitude: 100° 56' 05"
Ground Surface Elevation (ft.): 2980 T

Project Information

Project: USGS HIGH PLAINS PROJECT
Drill Date: 10/16/1979
Company: MIDLAND DRILLING
Drilling Method: ROTARY
Test Hole Number:
Samples:

Drill Date: 06/26/1984
Geologist: ARIKAREE
Management Unit:
Casing Top Elevation:
Casing Diameter (in.): 1.5
Screen Length (ft.): 40.0
Casing Stick-up (ft.): 2.00

Well Information

SDGS Well Name: TD-79B
Water Rights Well: TD-79-2
Casing Type: PVC
Screen Type: PVC, HM.
Total Casing and Screen (ft.): 141.0
Well Maintenance Date: 06/26/1984

Geophysical Information

Spontaneous Potential: X
Natural Gamma: X
Extra:


<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2980.00 - 2961.00</td>
<td>0.0 - 19.0</td>
<td>SANDSTONE, LIGHT-COLORED, FINE-GRAINED; SOME DARK-COLORED PARTICLES</td>
</tr>
<tr>
<td>2961.00 - 2946.00</td>
<td>19.0 - 34.0</td>
<td>SANDSTONE, LIGHT-COLORED, FINE-GRAINED; SOME DARK-COLORED SANDSTONE</td>
</tr>
<tr>
<td>2946.00 - 2931.00</td>
<td>34.0 - 49.0</td>
<td>CLAY, LIGHT-COLORED; FINE-GRAINED SANDSTONE AT 40 FEET</td>
</tr>
<tr>
<td>2931.00 - 2916.00</td>
<td>49.0 - 64.0</td>
<td>CLAY AND SILT, CLAY IS STICKY, SILT IS LIGHT-COLORED; FINE-GRAINED SANDSTONE</td>
</tr>
<tr>
<td>2916.00 - 2901.00</td>
<td>64.0 - 79.0</td>
<td>CLAY, SILT, AND FINE-GRAINED SANDSTONE, LIGHT-COLORED; WHITE STICKY CLAY</td>
</tr>
<tr>
<td>2901.00 - 2881.00</td>
<td>79.0 - 99.0</td>
<td>CLAY, SILT, SAND, AND FINE-GRAINED SANDSTONE, LIGHT-COLORED; WHITE, STICKY CLAY</td>
</tr>
<tr>
<td>Depth Range</td>
<td>Interval</td>
<td>Description</td>
</tr>
<tr>
<td>-------------</td>
<td>----------</td>
<td>-------------</td>
</tr>
<tr>
<td>2881.00-2861.00</td>
<td>99.0 - 119.0</td>
<td>Silty sand, fine-grained sandstone, light-colored; sandier than interval from 79 to 99 feet</td>
</tr>
<tr>
<td>2861.00-2841.00</td>
<td>119.0 - 139.0</td>
<td>Silty sand, fine-grained sandstone, light-colored; some dark grains</td>
</tr>
<tr>
<td>2841.00-2823.00</td>
<td>139.0 - 157.0</td>
<td>Silty sand, light-colored; some sandstone and some dark mineral grains</td>
</tr>
<tr>
<td>2823.00-2803.00</td>
<td>157.0 - 177.0</td>
<td>Clay and silt, white; some white sticky clay, small fragments of green mudstone begin about 170 feet</td>
</tr>
<tr>
<td>2803.00-2783.00</td>
<td>177.0 - 197.0</td>
<td>Clay, sand, and siltstone, light-colored; small fragments of green mudstone</td>
</tr>
<tr>
<td>2783.00-2762.00</td>
<td>197.0 - 218.0</td>
<td>Silty sand, light-colored, fine-grained</td>
</tr>
<tr>
<td>2762.00-2721.00</td>
<td>218.0 - 259.0</td>
<td>Clay and silt, red; white clay, some sandstone pieces</td>
</tr>
</tbody>
</table>

* * * *
### Location Information

- **Legal Location:** SE NW SE SW SEC. 02, T. 036 N., R. 32 W.
- **County:** TODD
- **Basin:** WHITE
- **Hydrologic Unit Code:** 10140203
- **Land Owner:**
- **Location:** 036N-32W-02CDBD
- **Latitude:** 43 07' 15"
- **Longitude:** 101 03' 19"
- **Ground Surface Elevation (ft.):** 2655 T

### Project Information

- **Project:** MELLETTE-TODD CO. STUDY
- **Drill Date:** 08/04/1993
- **Company:** SDGS
- **Drilling Method:** ROTARY
- **Test Hole Number:** R2-93-23
- **Samples:**
- **Geologist:** R. HAMMOND
- **Geologist's Log:** X
- **Driller:** G. JENSEN
- **Driller's Log:**
- **Total Drill Hole Depth (ft.):** 45.0

### Well Information

- **SDGS Well Name:** R2-93-23
- **Water Rights Well:**
- **Other Well Name:**
- **Casing Type:** PVC, SCH. 80
- **Screen Type:** PVC, MFG., SLOT SIZE 0.010 IN.
- **Total Casing and Screen (ft.):** 45.0
- **Casing Top Elevation:** 2657.00 T
- **Casing Diameter (in.):** 2.0
- **Cement Grout:**
- **Screen Length (ft.):** 10.0
- **Casing Stick-up (ft.):** 2.00
- **Well Maintenance Date:**

### Geophysical Information

- **Spontaneous Potential:**
- **Natural Gamma:**
- **Single Point Resistivity:**
- **Extra:**
- **FILTER PACK CONSISTED OF 350 LBS OF 0.65-0.75 MM QUARTZ SAND PLACED AT 43 TO 30 FEET. CEMENT GROUT WAS PLACED FROM 30 FEET TO LAND SURFACE.**

### Elevation (ft.)

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2655.00-2653.00</td>
<td>0.0-2.0</td>
<td>TOPSOIL, DARK-BROWN, SANDY</td>
</tr>
<tr>
<td>2653.00-2625.00</td>
<td>2.0-30.0</td>
<td>SAND, PALE-YELLOWISH-BROWN, FINE, SILTY</td>
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<tr>
<td>2625.00-2620.00</td>
<td>30.0-35.0</td>
<td>SAND, MODERATE-YELLOWISH-BROWN, FINE TO MEDIUM, SILTY</td>
</tr>
<tr>
<td>2620.00-2610.00</td>
<td>35.0-45.0</td>
<td>SAND, MODERATE-YELLOWISH-BROWN, FINE TO MEDIUM; CEMENTED</td>
</tr>
</tbody>
</table>

* * * *
Location Information

Legal Location: SE SE SE SE SEC. 25, T. 036 N., R. 32 W.
County: TODD
Basin: WHITE
Hydrologic Unit Code: 10140203
Land Owner: Location: 036N-32W-25DDDD
Latitude: 43° 03' 38"
Longitude: 101° 01' 14"
Ground Surface Elevation (ft.): 2841 T

Project Information

Project: USGS HIGH PLAINS PROJECT
Drill Date: 09/23/1980
Company: GRIMSHAW DRILLING
Drilling Method: ROTARY
Test Hole Number: Total Drill Hole Depth (ft.): 500.0
Samples: Driller:

Well Information

SDGS Well Name: Aquifer: OGALLALA
Water Rights Well: TD-80B
Management Unit: Casing Top Elevation:
Other Well Name: TD 80-2
Casing Type: PVC
Screen Type: PVC, HM.
Screen Length (ft.): 45.0
Total Casing and Screen (ft.): 123.5
Casing Diameter (in.): 2.0
Casing Stick-up (ft.): 3.00
Well Maintenance Date: 06/26/1984

Geophysical Information

Spontaneous Potential: X
Natural Gamma: X
Single Point Resistivity: X
Extra:


<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2841.00-2821.00</td>
<td>0.0 - 20.0</td>
<td>CLAY AND SAND, LIGHT-TAN, SILTY SAND, VERY FINE- TO FINE-GRAINED</td>
</tr>
<tr>
<td>2821.00-2761.00</td>
<td>20.0 - 80.0</td>
<td>SAND, GRAY, MEDIUM-GRAINED</td>
</tr>
<tr>
<td>2761.00-2741.00</td>
<td>80.0 - 100.0</td>
<td>SAND, GRAY, MEDIUM-GRAINED; BECOMING SOMEWHAT CONSOLIDATED AT 95 FEET</td>
</tr>
<tr>
<td>2741.00-2721.00</td>
<td>100.0 - 120.0</td>
<td>SAND, GRAY, MEDIUM-GRAINED; LIGHT-TAN CLAY, FINE-GRAINED SANDSTONE, AND Siltstone</td>
</tr>
<tr>
<td>2721.00-2701.00</td>
<td>120.0 - 140.0</td>
<td>SAND, BROWN, COARSE-GRAINED; HARD DRILLING</td>
</tr>
<tr>
<td>2701.00-2681.00</td>
<td>140.0 - 160.0</td>
<td>SAND, BROWN, FINE TO VERY COARSE-GRAINED</td>
</tr>
<tr>
<td>2681.00-2481.00</td>
<td>160.0 - 360.0</td>
<td>Siltstone, Brown</td>
</tr>
<tr>
<td>2481.00-2461.00</td>
<td>360.0 - 380.0</td>
<td>Siltstone, Brown; Fine-Grained Sand</td>
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</tbody>
</table>
2461.00-2441.00  380.0-400.0  SILT, SAND, AND SILTSTONE, BROWN; SAND IS FINE-GRAINED

2441.00-2421.00  400.0-420.0  SAND AND SILTSTONE, BROWN AND TAN, SAND IS VERY FINE-GRAINED

2421.00-2401.00  420.0-440.0  SILTSTONE, BROWN AND TAN

2401.00-2341.00  440.0-500.0  SILTSTONE, BROWN AND TAN; SOME MULTI-COLORED, COARSE-GRAINED, QUARTZ SAND

* * * *
THIS HOLE WAS PLUGGED WITH HIGH SOLIDS BENTONITE GROUT FROM 347 FEET TO 8 FEET; WITH CEMENT GROUT FROM 8 FEET TO 3 FEET AND BACKFILLED WITH DRILL CUTTINGS FROM 3 FEET TO GROUND SURFACE.

### Geophysical Information

<table>
<thead>
<tr>
<th>Spontaneous Potential:</th>
<th>Natural Gamma:</th>
<th>Single Point Resistivity:</th>
<th>Extra:</th>
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<tbody>
<tr>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
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</table>

### Location Information

- **Legal Location:** NE NE NE NE SEC. 02, T. 037 N., R. 25 W.
- **County:** TODD
- **Basin:** KEYA PAHA
- **Hydrologic Unit Code:** 10150006
- **Land Owner:**
- **Longitude:** 100 14' 00"
- **Latitude:** 43 12' 55"
- **Ground Surface Elevation (ft.):** 2497

### Project Information

<table>
<thead>
<tr>
<th>Project:</th>
<th>MELLETTE-TODD CO. STUDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geologist:</td>
<td>R. HAMMOND</td>
</tr>
<tr>
<td>Drill Date:</td>
<td>07/20/1993</td>
</tr>
<tr>
<td>Company:</td>
<td>SDGS</td>
</tr>
<tr>
<td>Drilling Method:</td>
<td>ROTARY</td>
</tr>
<tr>
<td>Test Hole Number:</td>
<td>R20-93-41</td>
</tr>
<tr>
<td>Driller:</td>
<td>M. THOMPSON</td>
</tr>
<tr>
<td>Total Drill Hole Depth (ft.):</td>
<td>347.0</td>
</tr>
</tbody>
</table>

### Geophysical Information

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2497.00 – 2445.00</td>
<td>0.0 – 52.0</td>
<td>SAND, DUSKY-YELLOW IN UPPER 10 FEET TO GRAYISH-ORANGE; WELL-SORTED, SUB-ANGULAR TO WELL-ROUNDED; BOTH POLISHED AND FROSTED GRAINS, HIGHLY QUARTZOSE; POORLY CEMENTED, SILTY INTERVAL WITH FINE CARBONACEOUS DEBRIS FROM 28 TO 32 FEET (VALENTINE FORMATION)</td>
</tr>
<tr>
<td>2445.00 – 2439.00</td>
<td>52.0 – 58.0</td>
<td>SILTSTONE, GRAYISH-YELLOW-GREEN, NODULAR TO MASSIVE; VERY HARD, NONCALCAREOUS</td>
</tr>
<tr>
<td>2439.00 – 2401.00</td>
<td>58.0 – 96.0</td>
<td>SILTSTONE, PALE-YELLOWISH-BROWN TO GRAYISH-ORANGE, NODULAR TO MASSIVE; VERY HARD, NONCALCAREOUS TO POORLY CALCAREOUS, SOME VERY HARD YELLOWISH-GRAY VERY CALCAREOUS TABULAR CLASTS PROBABLY CALCITE-RICH BURROW OR FRACTURE FILLS?</td>
</tr>
<tr>
<td>2401.00 – 2310.00</td>
<td>96.0 – 187.0</td>
<td>SILTSTONE, LIGHT-BROWN, SLIGHTLY SANDY, GRANULAR TO MASSIVE; SLIGHTLY CALCAREOUS TO NONCALCAREOUS, VERY SANDY FROM 120 TO 147 FEET, WELL-CEMENTED FROM 147 TO 187 FEET</td>
</tr>
<tr>
<td>2310.00 – 2219.00</td>
<td>187.0 – 278.0</td>
<td>SILTSTONE, LIGHT-BROWN TO PALE-YELLOWISH-BROWN, CLAYEY, MASSIVE TO NODULAR; SLIGHTLY CALCAREOUS TO NONCALCAREOUS, SOME BLACK CLAY ARMORED 5 TO 10 MM SPHERICLES AT 220 TO 240 FEET, SOME WELL-CEMENTED LAYERS AT 238 TO 278 FEET (ROSEBUD FORMATION?)</td>
</tr>
</tbody>
</table>
2219.00-2190.00  278.0 - 307.0  CLAYSTONE, GREENISH-GRAY TO LIGHT-OLIVE-GRAY, SILTY, SOME SANDY BEDS; STRONG GAMMA LOG KICK AT 278 TO 283 FEET, SOME ANGULAR CHERT CLASTS, NON-CALCAREOUS, YELLOWISH-ORANGE INTERVAL AT 300 TO 303 FEET

2190.00-2184.00  307.0 - 313.0  SAND, PALE-YELLOWISH-BROWN, FINE, SOMEWHAT SILTY, FAIR TO POOR SORTING, SUBANGULAR TO SUBROUNDLED; SLIGHTLY CALCAREOUS, LARGELY QUARTZ CLASTS WITH MINOR LITHIC CLASTS AND CARBONACEOUS DEBRIS

2184.00-2150.00  313.0 - 347.0  CLAYSTONE, BROWNISH-BLACK, SLIGHTLY SILTY; SLIGHTLY CALCAREOUS TO CALCAREOUS, POORLY FISSILE, SOME THIN SOFT WHITE BENTONITE BEDS (PIERRE SHALE)

* * * *
Location Information

Legal Location: NW NW NW NW SEC. 12, T. 037 N., R. 25 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner: Location: 037N-25W-12BBBB

Spontaneous Potential: X
Natural Gamma: X
Samples: Ground Surface Elevation (ft.): 2403 T

Project Information

Project: MELLETTE-TODD CO. STUDY
Drill Date: 08/04/1993
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R20-93-48
Samples: Total Drill Hole Depth (ft.): 243.0

Geophysical Information

Spontaneous Potential: X
Natural Gamma: X
Extra:

HOLE PLUGGED WITH HIGH SOLIDS BENTONITE FROM 243 FEET TO SURFACE. AFTER ALLOWING FOR SETTLEMENT, TOP 10 FEET WAS PLUGGED WITH CEMENT GROUT.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2403.00-2385.00</td>
<td>0.0-18.0</td>
<td>SAND, MODERATE-YELLOW-BROWN, FINE, SILTY, SUBANGULAR TO SUBROUNDED, WELL-SORTED; HIGHLY QUARTZOSE (VALENTINE FORMATION?)</td>
</tr>
<tr>
<td>2385.00-2378.00</td>
<td>18.0-25.0</td>
<td>SILTSTONE, DARK-YELLOWISH-ORANGE TO DARK-YELLOWISH-BROWN, SANDY, MASSIVE TO NODULAR; NONCALCAREOUS</td>
</tr>
<tr>
<td>2378.00-2351.00</td>
<td>25.0-52.0</td>
<td>SILTSTONE, DARK-YELLOWISH-BROWN TO REDDISH-BROWN, MASSIVE TO NODULAR; NONCALCAREOUS TO SLIGHTLY CALCAREOUS</td>
</tr>
<tr>
<td>2351.00-2304.00</td>
<td>52.0-99.0</td>
<td>SILTSTONE TO CLAYSTONE, PALE-YELLOWISH- BROWN, CLAYEY, MASSIVE; NONCALCAREOUS</td>
</tr>
<tr>
<td>2304.00-2275.00</td>
<td>99.0-128.0</td>
<td>SILTSTONE, PALE-YELLOWISH-BROWN, MASSIVE TO GRANULAR; NONCALCAREOUS TO SLIGHTLY CALCAREOUS</td>
</tr>
<tr>
<td>2275.00-2244.00</td>
<td>128.0-159.0</td>
<td>SILTSTONE TO CLAYSTONE, PALE-YELLOWISH- BROWN, CLAYEY, NODULAR TO MASSIVE; CALCAREOUS</td>
</tr>
<tr>
<td>2244.00-2218.00</td>
<td>159.0-185.0</td>
<td>SILTSTONE, MODERATE-YELLOWISH-BROWN TO DARK-YELLOW-BROWN, NODULAR TO MASSIVE; NONCALCAREOUS</td>
</tr>
<tr>
<td>2218.00-2204.00</td>
<td>185.0-199.0</td>
<td>SILTSTONE, MEDIUM-DARK-GRAY, NODULAR TO MASSIVE; NONCALCAREOUS, SLIGHTLY GREASY</td>
</tr>
<tr>
<td>2204.00-2201.00</td>
<td>199.0-202.0</td>
<td>SAND, GRAY, FINE TO VERY FINE, WELL-SORTED; QUARTZOSE</td>
</tr>
</tbody>
</table>
2201.00-2160.00  202.0-243.0  CLAY, GRAYISH-BLACK; HIGHLY CALCAREOUS (PIERRE SHALE)

* * * *
### Location Information

- **Casing Type:**
- **Screen Type:**
- **Casing Stick-up (ft.):**
- **Spontaneous Potential:**
- **Natural Gamma:**
- **Samples:**
- **Longitude:**
- **Hydrologic Unit Code:**
- **Land Owner:**
- **County:**
- **Basin:**
- **Project:**
- **Company:**
- **Driller:**
- **Geologist:**
- **Driller's Log:**
- **Geologist's Log:**
- **TODD MELLETTE-TODD CO. STUDY**
- **SDGS D. IVERSON**
- **KEYA PAHA**
- **M. JARRETT**
- **037N-25W-12BBBB 1**
- **Latitude:**
- **Ground Surface Elevation (ft.):**
- **County:**
- **Company:**
- **Driller:**
- **Geologist:**
- **Aquifer:**
- **Management Unit:**
- **Casing Top Elevation:**
- **Casing Diameter (in.):**
- **Screen Length (ft.):**
- **Casing Stick-up (ft.):**
- **Total Drill Hole Depth (ft.):**
- **Well Maintenance Date:**
- **Test Hole Number:**
- **Casing Diameter (in.):**
- **Screen Length (ft.):**
- **Total Casing and Screen (ft.):**
- **Well Maintenance Date:**
- **Test Hole Number:**
- **Casing Diameter (in.):**
- **Screen Length (ft.):**
- **Total Casing and Screen (ft.):**
- **Well Maintenance Date:**
- **Test Hole Number:**
- **Casing Diameter (in.):**
- **Screen Length (ft.):**
- **Total Casing and Screen (ft.):**
- **Well Maintenance Date:**

### Project Information

- **Project:** MELLETTE-TODD CO. STUDY
- **Drill Date:** 08/09/1993
- **Company:** SDGS
- **Drilling Method:** ROTARY
- **Test Hole Number:** R20-93-49
- **Samples:**
- **Total Drill Hole Depth (ft.):** 52.0

### Well Information

- **SDGS Well Name:** R20-93-49
- **Water Rights Well:**
- **Other Well Name:**
- **Casing Type:** PVC, SCH. 80
- **Screen Type:** PVC, SLOT SIZE 0.010 IN.
- **Total Casing and Screen (ft.):** 50.0
- **Well Maintenance Date:**

### Geophysical Information

- **Spontaneous Potential:**
- **Natural Gamma:**
- **Single Point Resistivity:**
- **Extra:**

**CASING THREADED TO SCREEN. FILTER PACK FROM 52 FEET TO 33 FEET OF 0.65 TO 0.75 MM QUARTZ SAND. BENTONITE GROUT FROM 33 FEET TO 3 FEET. METAL WELL PROTECTOR SUPPORTED BY CEMENT GROUT IN TOP 3 FEET OF HOLE.**

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2403.00-2385.00</td>
<td>0.0-18.0</td>
<td>SAND, MODERATE-YELLOW-BROWN, FINE, SILTY, SUBANGULAR TO SUBROUNDED, WELL-SORTED; HIGHLY QUARTZOSE (VALENTINE FORMATION?)</td>
</tr>
<tr>
<td>2385.00-2378.00</td>
<td>18.0-25.0</td>
<td>SILTSTONE, DARK-YELLOWISH-ORANGE TO DARK-YELLOWISH-BROWN, SANDY, MASSIVE TO NODULAR; NONCALCAREOUS</td>
</tr>
<tr>
<td>2378.00-2351.00</td>
<td>25.0-52.0</td>
<td>SILTSTONE, DARK-YELLOWISH-BROWN TO REDDISH-BROWN, MASSIVE TO NODULAR; NONCALCAREOUS TO SLIGHTLY CALCAREOUS</td>
</tr>
</tbody>
</table>

* * *
Location Information

Legal Location:NE SE SE NE SEC. 23, T. 037 N., R. 25 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner: 

Location: 037N-25W-23ADDA
Latitude: 43 09' 56"
Longitude: 100 14' 01"
Ground Surface Elevation (ft.): 2300 T

Project Information

Project: WATER RIGHTS
Drill Date: 08/09/1957
Company: GRIMSHAW DRILLING
Drilling Method: 
Test Hole Number: 
Samples: 

Geologist: D. DRISCOLL
Driller: J. HUTMACHER
Driller's Log: 
Total Drill Hole Depth (ft.): 35.0

Well Information

SDGS Well Name: 
Water Rights Well: TD-57C
Other Well Name: K-3
Casing Type: STEEL
Screen Type: UNKNOWN
Total Casing and Screen (ft.): 29.9
Well Maintenance Date: 06/27/1984

Aquifer: ALLUVIUM
Management Unit: 
Casing Top Elevation: 
Casing Diameter (in.): 1.3
Screen Length (ft.): 
Casing Stick-up (ft.): 1.90

Geophysical Information

Spontaneous Potential: 
Natural Gamma: 
Single Point Resistivity: 
Extra: 

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2300.00 - 2286.00</td>
<td>0.0 - 14.0</td>
<td>SAND, FINE</td>
</tr>
<tr>
<td>2286.00 - 2265.00</td>
<td>14.0 - 35.0</td>
<td>SAND; VERY FIRM, HARD LAYER 2 FEET THICK, CEMENTED, ALTERNATING HARD AND SOFT CLAY, SAND LAYERS TO 35 FEET, SOME VERY HARD 1 FOOT THICK LAYERS</td>
</tr>
</tbody>
</table>

* * * *
Location Information

Legal Location: NW NW SW NW SEC. 24, T. 037 N., R. 25 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner: 
Location: 037N-25W-24BCBB
Latitude: 43 10' 04"
Longitude: 100 14' 00"
Ground Surface Elevation (ft.): 2291 T

Project Information

Project: MELLETTE-TODD CO. STUDY
Drill Date: 07/19/1993
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R20-93-38
Samples: 
Total Drill Hole Depth (ft.): 67.0

Well Information

SDGS Well Name: R20-93-38
Water Rights Well: 
Other Well Name: 
Casing Type: PVC, SCH. 80
Screen Type: PVC, SLOT SIZE 0.010 IN.
Total Casing and Screen (ft.): 62.0
Casing Top Elevation: 2294.00 T
Casing Diameter (in.): 2.0
Screen Length (ft.): 30.0
Casing Stick-up (ft.): 3.00
Well Maintenance Date: 01/31/2005

Geophysical Information

Spontaneous Potential: 
Natural Gamma: 
Single Point Resistivity: 
Extra: 
550 LBS OF 0.65 - 0.75 MM QUARTZ SAND USED AS FILTER PACK. WELL DEVELOPED BY BACKFLUSHING WITH 500 GALLONS.

Elevation (ft.) Depth (ft.) Description
2291.00 - 2282.00 0.0 - 9.0 SAND, GRAYISH-ORANGE-PINK, MEDIUM TO COARSE, WELL-ROUNDED TO SUBANGULAR; LARGELY POLISHED QUARTZ AND LITHIC GRAINS, NONCALCAREOUS, UNCemented (ALLUVIUM)
2282.00 - 2263.00 9.0 - 28.0 GRAVEL, LIGHT-BROWN, FINE TO 7 MM. IN DIAMETER, VERY SANDY, POORLY SORTED, SUBROUNDED TO SUBANGULAR; LARGELY SILTSTONE AND SANDSTONE PEBBLES, SOME FINER QUARTZ CLASTS, SLIGHTLY CALCAREOUS, SOME SLIGHTLY CEMENTED BEDS (ROSEBUD FORMATION?)
2263.00 - 2249.00 28.0 - 42.0 SILTSTONE, LIGHT-BROWN, CLAYEY, BLOCKY TO MASSIVE; SLIGHTLY CALCAREOUS, HARD (ROSEBUD FORMATION?)
2249.00 - 2233.00 42.0 - 58.0 SILTSTONE, PALE-YELLOWISH-BROWN, SANDY; APPEARS TO BE REWORKED INTO SUBROUNDED CLASTS UP TO 8 MM. IN DIAMETER, POOR RESISTIVITY RESPONSE,
CALCAREOUS TO SLIGHTLY CALCAREOUS (ROSEBUD FORMATION?)

2233.00 - 2224.00  58.0 - 67.0  SILTSTONE, GRAYISH-ORANGE TO LIGHT-GREENISH-GRAY, VERY CLAYEY; VERY SLIGHTLY CALCAREOUS, SOME VERY HARD CHERTY BEDS (CHADRON FORMATION?)

* * * *
Location Information

Legal Location: NW NW SW NW SEC. 24, T. 037 N., R. 25 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner: 
Location: 037N-25W-24BCBB 1
Latitude: 43 10' 04"
Longitude: 100 14' 00"
Ground Surface Elevation (ft.): 2291 T

Project Information

Project: MELLETTE-TODD CO. STUDY
Drill Date: 07/19/1993
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R20-93-39
Samples: 
Geologist: R. HAMMOND
Driller: M. THOMPSON
Driller's Log: X
Total Drill Hole Depth (ft.): 123.0

Well Information

SDGS Well Name: R20-93-39
Water Rights Well: 
Other Well Name: 
Casing Type: PVC, SCH. 80
Screen Type: PVC, SLOT SIZE 0.010 IN.
Total Casing and Screen (ft.): 110.0
Casing Top Elevation: 2298.50 T
Casing Diameter (in.): 2.0
Screen Length (ft.): 20.0
Casing Stick-up (ft.): 7.50
Well Maintenance Date: 

Geophysical Information

Spontaneous Potential: X
Natural Gamma: X
Single Point Resistivity: X
Extra: 
FILTER PACK FOR THIS WELL COMPRISED OF 500 LBS OF 0.65 - 0.75 MM QUARTZ SAND. REMAINDER OF HOLE WAS GROUTED WITH HIGH SOLIDS BENTONITE GROUT FROM 80 FEET TO 23 FEET, AND CEMENT GROUT FROM 23 FEET TO LAND SURFACE. THIS WELL FLOWS; HEAD ON 07-20-1993 WAS 5.2 FEET ABOVE LAND SURFACE.

Elevation (ft.)

<table>
<thead>
<tr>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>2291.00 - 2282.00</td>
<td>0.0 - 9.0</td>
</tr>
<tr>
<td>2282.00 - 2263.00</td>
<td>9.0 - 28.0</td>
</tr>
<tr>
<td>2263.00 - 2249.00</td>
<td>28.0 - 42.0</td>
</tr>
</tbody>
</table>
| 2249.00 - 2233.00 | 42.0 - 58.0 | SILTSTONE, PALE-YELLOWISH-BROWN, SANDY; APPEARS
TO BE REWORKED INTO SUBROUNDED CLASTS UP TO 8 MM IN DIAMETER, POOR RESISTIVITY RESPONSE, CALCAREOUS TO SLIGHTLY CALCAREOUS (ROSEBUD FORMATION?)

<table>
<thead>
<tr>
<th>Depth Range</th>
<th>Measurement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2233.00-2206.00</td>
<td>58.0-85.0</td>
<td>SILTSTONE, GRAYISH-ORANGE TO LIGHT-GREENISH-GRAY, VERY CLAYEY; VERY SLIGHTLY CALCAREOUS, SOME VERY HARD CHERTY BEDS (CHADRON FORMATION?)</td>
</tr>
<tr>
<td>2206.00-2181.00</td>
<td>85.0-110.0</td>
<td>SAND, PINKISH-GRAY, MEDIUM TO COARSE, SUBROUNDED TO SUBANGULAR; LARGELY FROSTED GRAINS, SOME CHERT AND SILTSTONE CLASTS, SOME SLIGHTLY CEMENTED BEDS, SLIGHTLY CALCAREOUS (CHADRON FORMATION?)</td>
</tr>
<tr>
<td>2181.00-2168.00</td>
<td>110.0-123.0</td>
<td>CLAYSTONE, OLIVE-BLACK, POORLY FISSILE; SOME FORAMINIFERA TESTS, CALCAREOUS, SOME LIGHT-GREENISH-GRAY BENTONITE BEDS</td>
</tr>
</tbody>
</table>

* * * *
Location Information

Legal Location: NW NW SW NW SEC. 24, T. 037 N., R. 25 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner:

Location: 037N-25W-24BCBB 2
Latitude: 43° 10' 04"
Longitude: 100° 14' 00"
Ground Surface Elevation (ft.): 2291 T

Well Information

SDGS Well Name: R20-93-40
Water Rights Well: 
Other Well Name: 
Casing Type: PVC, SCH. 80
Screen Type: PVC, SLOT SIZE 0.010 IN.
Total Casing and Screen (ft.): 30.0

Casing Top Elevation: 2294.00 T
Casing Diameter (in.): 2.0
Screen Length (ft.): 10.0
Casing Stick-up (ft.): 3.00

Well Maintenance Date: 07/20/1993
Well Maintenance Date: WELL DESTROYED IN SEPTEMBER 1993. HOLE PLUGGED WITH HIGH SOLIDS BENTONITE.

Geophysical Information

Spontaneous Potential: 
Single Point Resistivity: 
Natural Gamma: 
Extra: 

WELL DESTROYED IN SEPTEMBER 1993. HOLE PLUGGED WITH HIGH SOLIDS BENTONITE.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2291.00 - 2282.00</td>
<td>0.0 - 9.0</td>
<td>SAND, GRAYISH-ORANGE-PINK, MEDIUM TO COARSE, WELL-ROUNDED TO SUBANGULAR; LARGELY POLISHED QUARTZ, ABUNDANT FROSTED QUARTZ AND LITHIC GRAINS, NONCALCAREOUS, UNCEMENTED (ALLUVIUM)</td>
</tr>
<tr>
<td>2282.00 - 2263.00</td>
<td>9.0 - 28.0</td>
<td>GRAVEL, LIGHT-BROWN, FINE TO 7 MM IN DIAMETER, VERY SANDY, POORLY SORTED, SUBROUNDED TO ANGULAR; LARGELY SILT-STONE AND SANDSTONE PEBBLES, SOME FINER QUARTZ CLASTS, SLIGHTLY CALCAREOUS, SOME LIGHTLY CEMENTED BEDS (ROSEBUD FORMATION?)</td>
</tr>
<tr>
<td>2263.00 - 2258.00</td>
<td>28.0 - 33.0</td>
<td>SILTSTONE, LIGHT-BROWN, CLAYEY, BLOCKY TO MASSIVE; SLIGHTLY CALCAREOUS, HARD (ROSEBUD FORMATION?)</td>
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* * *
**Location Information**

Legal Location: NW NW SW SW SEC. 16, T. 037 N., R. 26 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner: 

Location: 037N-26W-16CCBB
Latitude: 43 10' 37"
Longitude: 100 24' 42"
Ground Surface Elevation (ft.): 2530 T

**Project Information**

Project: USGS HIGH PLAINS PROJECT
Drill Date: 10/12/1979
Company: MIDLAND DRILLING
Drilling Method: ROTARY
Test Hole Number: 
Samples:

Geologist:
Geologist's Log:
Driller:
Driller's Log:
Total Drill Hole Depth (ft.): 137.0

**Well Information**

SDGS Well Name: 
Water Rights Well: TD-79A
Other Well Name: TD 79-1
Casing Type: PVC
Screen Type: PVC, HM.
Total Casing and Screen (ft.): 28.6
Well Maintenance Date: 06/28/1984

Casing Top Elevation: 
Casing Diameter (in.): 1.5
Screen Length (ft.): 30.0
Casing Stick-up (ft.): 

Aquifer: ARIKAREE
Management Unit:

**Geophysical Information**

Spontaneous Potential: X
Natural Gamma: X
Extra:

CASING SLOTTED FROM 97 TO 137 FEET. BOTTOM SECTION OF CASING CAPPED. WELL GRAVEL PACKED, STAKED AND WIRE SECURED. BACKFILLED WITH MUD. SLOTTED CASING WAS GENERALLY PLACED OPPOSITE THE DEEPEST BEST SANDS IN THE ARIKAREE. SOURCE OF DATA: USGS OPEN-FILE REPORT 84-148. CASING APPARENTLY CAME APART.

**Elevation (ft.)** | **Depth (ft.)** | **Description**
--- | --- | ---
2530.00 - 2511.00 | 0.0 - 19.0 | SANDSTONE, WHITISH-GRAY
2511.00 - 2496.00 | 19.0 - 34.0 | SAND AND SANDSTONE, FINE-GRAINED; SOME WHITE FINE-GRAINED SANDSTONE AND DARK-COLORED MINERALS
2496.00 - 2466.00 | 34.0 - 64.0 | CLAY, LIGHT-BROWN, PARTIALLY INTERGRATED; PIECE OF LIMESTONE
2466.00 - 2431.00 | 64.0 - 99.0 | CLAY AND MUDSTONE, BROWN AND GRAY; BUFF-COLORED CLAY
2431.00 - 2393.00 | 99.0 - 137.0 | CLAY AND SILTSTONE, BROWN AND SOME WHITE

* * * *
Location Information

Legal Location: SW NW NW NW SEC. 07, T. 037 N., R. 28 W.
County: TODD  Location: 037N-28W-07BBBC
Basin: KEYA PAHA  Latitude: 43 11' 59"
Hydrologic Unit Code: 10150006  Longitude: 100 41' 22"
Land Owner:  Ground Surface Elevation (ft.): 2797

Project Information

Project: MELLETTE-TODD CO. STUDY  Geologist: R. HAMMOND
Drill Date: 06/15/1994  Geologist's Log: X
Company: SDGS  Driller: G. JENSEN
Drilling Method: ROTARY  Driller's Log:
Test Hole Number: R2-94-15  Total Drill Hole Depth (ft.): 867.0
Samples:

Spontaneous Potential: X  Single Point Resistivity: X
Natural Gamma: X  Extra:

Geophysical Information

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<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>2797.00-2759.00</td>
<td>0.0-38.0</td>
<td>SAND, MODERATE-YELLOWISH-BROWN (10YR 5/4), FINE- TO VERY FINE-GRAINED, ROUNDED TO SUBANGULAR; PRIMARILY QUARTZ AND FELDSPAR WITH SOME LITHIC AND OTHER DARK GRAINS; NONCALCAREOUS (SAND HILLS FORMATION)</td>
</tr>
<tr>
<td>2759.00-2745.00</td>
<td>38.0-52.0</td>
<td>SILTSTONE, PALE-YELLOWISH-GRAY (5Y 7/2), CLAYEY, SLIGHTLY SANDY; POORLY LAMINATED TO MASSIVE; SLIGHTLY CALCAREOUS TO NONCALCAREOUS (ASH HOLLOW FORMATION)</td>
</tr>
<tr>
<td>2745.00-2550.00</td>
<td>52.0-247.0</td>
<td>SANDSTONE, PALE-OLIVE (10Y 6/2), FINE- TO VERY FINE-GRAINED, VERY SILTY, WELL CEMENTED TO MODERATELY CEMENTED; MODERATELY TO SLIGHTLY CALCAREOUS; SEVERAL ASHY LENSES OR THIN BEDS, ABUNDANT BONE-WHITE RHIZOLITHS; SOME MODERATE-BROWN (5YR 3/4) ORGANIC RICH BEDS SCATTERED BELOW 70 FEET; BECOMING LESS SILTY AND ASHY BELOW 190 FEET</td>
</tr>
<tr>
<td>2550.00-2236.00</td>
<td>247.0-561.0</td>
<td>SILTSTONE, LIGHT-BROWN (5YR 5/6) TO YELLOWISH-GRAY (57 7/2), SANDY, VERY SANDY FROM 463 TO 478 FEET, 504 TO 518 FEET, AND FROM 544 TO 557 FEET, SLIGHTLY CLAYEY; POORLY CALCAREOUS TO NONCALCAREOUS; POORLY FISSILE TO MASSIVE; MORE CLAY CONTENT FROM 364 TO 385 FEET; SOME SCATTERED WHITE ASH LENSES</td>
</tr>
<tr>
<td>2236.00-2037.00</td>
<td>561.0-760.0</td>
<td>SILTSTONE, PALE-OLIVE (10Y 6/2) TO GRAYISH-GREEN (5Y 5/2), VERY CLAYEY, SLIGHTLY SANDY; NONCALCAREOUS TO SLIGHTLY CALCAREOUS; MODERATELY FISSILE TO MASSIVE; SOME THIN WHITE</td>
</tr>
</tbody>
</table>
ASH BEDS (BRULE FORMATION?)

2037.00 - 1974.00  760.0 - 823.0  CLAYSTONE, GRAYISH-ORANGE-PINK (5YR 7/2) TO GRAYISH-GREEN (10GY 5/2), SILTY, SLIGHTLY SANDY; SLIGHTLY CALCAREOUS TO NONCALCAREOUS (CHADRON FORMATION?)

1974.00 - 1954.00  823.0 - 843.0  CLAYSTONE, GRAYISH-BLACK (N2), SLIGHTLY SILTY; NONCALCAREOUS, FISSILE TO POORLY FISSILE (PIERRE SHALE)

1954.00 - 1930.00  843.0 - 867.0  CLAYSTONE, BROWNISH-BLACK (5YR 2/1), SILTY; SLIGHTLY CALCAREOUS; POORLY FISSILE TO MASSIVE (PIERRE SHALE)

* * * *
Location Information

Legal Location: SW NW NW NW SEC. 07, T. 037 N., R. 28 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner:

Location: 037N-20W-07BBBC 1
Latitude: 43 11' 59"
Longitude: 100 41' 22"
Ground Surface Elevation (ft.): 2793 T

Project Information

Project: MELLETTE-TODD CO. STUDY
Drill Date: 07/27/1994
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R20-94-45
Samples:

Geologist: R. HAMMOND
Geologist's Log: X
Driller: D. IVerson
Driller's Log:
Total Drill Hole Depth (ft.): 244.0

Well Information

SDGS Well Name: R20-94-45
Water Rights Well:
Other Well Name:
Casing Type: PVC, SCH. 80
Casing Diameter (in.): 2.0
Screen Type: PVC, MFG., 0.010 IN. SLOT
Screen Length (ft.): 10.0
Total Casing and Screen (ft.): 244.0
Casing Stick-up (ft.): 2.00
Well Maintenance Date:

Geophysical Information

Spontaneous Potential:
Natural Gamma:
Single Point Resistivity:
Extra:

NORTH WELL OF TWO.

<table>
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<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>2793.00 - 2755.00</td>
<td>0.0 - 38.0</td>
<td>SAND, MODERATE-YELLOWISH-BROWN (10YR 5/4), FINE- TO VERY FINE-GRAINED, ROUNDED TO SUBANGULAR; PRIMARILY QUARTZ AND FELDSPAR WITH SOME LITHIC AND OTHER DARK GRAINS; NONCALCAREOUS (SAND HILLS FORMATION)</td>
</tr>
<tr>
<td>2755.00 - 2741.00</td>
<td>38.0 - 52.0</td>
<td>SILTSTONE, PALE-YELLOWISH-GRAY (5Y 7/2), CLAYEY, SLIGHTLY SANDY, POORLY LAMINATED TO MASSIVE; SLIGHTLY CALCAREOUS TO NONCALCAREOUS (ASH HOLLOW FORMATION)</td>
</tr>
<tr>
<td>2741.00 - 2549.00</td>
<td>52.0 - 244.0</td>
<td>SANDSTONE, PALE-OLIVE (10Y 6/2), FINE- TO VERY FINE-GRAINED, VERY SILTY, WELL CEMENTED TO MODERATELY CEMENTED; MODERATELY TO SLIGHTLY CALCAREOUS; SEVERAL ASHY LENSES OR THIN BEDS, ABUNDANT BONE-WHITE RHIZOLITHS; SOME MODERATE-BROWN (5YR 3/4) ORGANIC RICH BEDS SCATTERED BELOW 70 FEET; BECOMING LESS SILTY AND ASHY BELOW 190 FEET</td>
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</tbody>
</table>
Location Information

Legal Location: SW NW NW NW SEC. 07, T. 037 N., R. 28 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner: 

Location: 037N-28W-07BBBC 2
Latitude: 43 11' 59"
Longitude: 100 41' 22"
Ground Surface Elevation (ft.): 2793 T

Project Information

Project: MELLETTE-TODD CO. STUDY
Drill Date: 08/01/1994
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R20-94-46
Samples: 

Geologist: R. HAMMOND
Driller: D. IVerson
Driller's Log: 

Total Drill Hole Depth (ft.): 98.0

Well Information

SDGS Well Name: R20-94-46
Water Rights Well: 
Other Well Name: 
Casing Type: PVC, SCH. 80
Screen Type: PVC, MFG., 0.010 IN. SLOT
Total Casing and Screen (ft.): 100.0
Well Maintenance Date: 

Casing Top Elevation: 2795.00 T
Casing Diameter (in.): 2.0
Screen Length (ft.): 10.0
Casing Stick-up (ft.): 2.00

Aquifer: HIGH PLAINS
Management Unit: 

Geophysical Information

Spontaneous Potential: 
Natural Gamma: 

Single Point Resistivity: 
Extra: 

SOUTH WELL OF TWO.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
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<th>Description</th>
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</thead>
<tbody>
<tr>
<td>2793.00 - 2755.00</td>
<td>0.0 - 38.0</td>
<td>SAND, MODERATE-YELLOWISH-BROWN (10YR 5/4), FINE- TO VERY FINE-GRAINED, ROUNDED TO SUBANGULAR; PRIMARILY QUARTZ AND FELDSPAR WITH SOME LITHIC AND OTHER DARK GRAINS; NONCALCAREOUS (SAND HILLS FORMATION)</td>
</tr>
<tr>
<td>2755.00 - 2741.00</td>
<td>38.0 - 52.0</td>
<td>SILTSTONE, PALE-YELLOWISH-GRAY (5Y 7/2), CLAYEY, SLIGHTLY SANDY, POORLY LAMINATED TO MASSIVE; SLIGHTLY CALCAREOUS TO NONCALCAREOUS (ASH HOLLOW FORMATION)</td>
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<tr>
<td>2741.00 - 2695.00</td>
<td>52.0 - 98.0</td>
<td>SANDSTONE, PALE-OLIVE (10Y 6/2), FINE- TO VERY FINE-GRAINED, VERY SILTY, WELL CEMENTED TO MODERATELY CEMENTED; MODERATELY TO SLIGHTLY CALCAREOUS; SEVERAL ASHY LENSES OR THIN BEDS, ABUNDANT BONE-WHITE RHIZOLITHS; SOME MODERATE-BROWN (5YR 3/4) ORGANIC RICH BEDS SCATTERED BELOW 70 FEET</td>
</tr>
</tbody>
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Location Information
Legal Location: SW SW SW SW SEC. 21, T. 037 N., R. 28 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner:  
Location: 037N-28W-21CCCC
Latitude: 43 09' 30"
Longitude: 100 38' 56"
Ground Surface Elevation (ft.): 2772 T

Project Information
Project: WATER RIGHTS
Drill Date: 12/09/1976
Company: COATS WELL DRILLING
Drilling Method: ROTARY
Test Hole Number:
Samples:
Geologist: G. SELKEN
Geologist's Log: X
Driller: C. COATS
Driller's Log:
Total Casing and Screen (ft.): 166.3
Well Maintenance Date: 06/25/1984

Well Information
SDGS Well Name:  
Water Rights Well: TD-76H
Other Well Name:
Casing Type: PVC
Screen Type: PVC
Total Casing and Screen (ft.): 166.3
Casing Top Elevation:
Casing Diameter (in.): 2.0
Screen Length (ft.): 5.0
Casing Stick-up (ft.): 2.70
Well Maintenance Date: 06/25/1984
Aquifer: OGALLALA
Management Unit:

Geophysical Information
Spontaneous Potential:
Natural Gamma:
Spontaneous Potential:
Natural Gamma:
Single Point Resistivity:
Extra:

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<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
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<td>TOPSOIL</td>
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<td>1.0 - 23.0</td>
<td>SAND, BROWN, FINE</td>
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<tr>
<td>2749.00 - 2726.00</td>
<td>23.0 - 46.0</td>
<td>SAND, BROWN, VERY FINE</td>
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<tr>
<td>2726.00 - 2719.00</td>
<td>46.0 - 53.0</td>
<td>SILTSTONE, WHITE; VERY HARD DRILLING</td>
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<tr>
<td>2719.00 - 2706.00</td>
<td>53.0 - 66.0</td>
<td>SAND, BROWN, FINE</td>
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<td>2706.00 - 2704.00</td>
<td>66.0 - 68.0</td>
<td>SILTSTONE, WHITE; HARD</td>
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<td>2704.00 - 2695.00</td>
<td>68.0 - 77.0</td>
<td>SAND, BROWN, FINE</td>
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<td>2695.00 - 2694.00</td>
<td>77.0 - 78.0</td>
<td>SILTSTONE, WHITE TO GREEN; HARD</td>
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<tr>
<td>2694.00 - 2678.00</td>
<td>78.0 - 94.0</td>
<td>SAND, BROWN, FINE; SOME CLAY</td>
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<td>2678.00 - 2662.00</td>
<td>94.0 - 110.0</td>
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<td>2662.00 - 2615.00</td>
<td>110.0 - 157.0</td>
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<td>157.0 - 160.0</td>
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<td>Depth Range</td>
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<tr>
<td>2612.00 - 2602.00</td>
<td>160.0 - 170.0</td>
<td>SAND, BROWN, FINE; HIT A ROCK AT 170 FEET</td>
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<tr>
<td>2602.00 - 2596.00</td>
<td>170.0 - 176.0</td>
<td>SAND, BROWN, FINE</td>
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<tr>
<td>2596.00 - 2587.00</td>
<td>176.0 - 185.0</td>
<td>SILTSTONE, WHITE TO GREEN; WITH SAND LAYERS</td>
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* * * *
Location Information

Legal Location: SW SW SW SW SEC. 27, T. 037 N., R. 28 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner:
Location: 037N-28W-27CCCCC
Latitude: 43°08'39"
Longitude: 100°37'43"
Ground Surface Elevation (ft.): 2805 T

Project Information

Project: WATER RIGHTS
Drill Date: 12/10/1976
Company: COATS WELL DRILLING
Drilling Method: ROTARY
Test Hole Number:
Samples:
Geologist: G. SELKEN
Geologist's Log: X
Driller: C. COATS
Driller's Log:
Total Drill Hole Depth (ft.): 185.0

Well Information

SDGS Well Name: OLSONVILLE NW, SD QUAD.
Water Rights Well: TD-76I
Other Well Name:
Casing Type: PVC
Screen Type: PVC
Total Casing and Screen (ft.): 186.5
Well Maintenance Date: 06/26/1984
Aquifer: OGALLALA
Management Unit:
Casing Top Elevation:
Casing Diameter (in.): 2.0
Screen Length (ft.): 5.0
Casing Stick-up (ft.): 4.20

Geophysical Information

Spontaneous Potential:
Natural Gamma:
Single Point Resistivity:
Extra:

Elevation (ft.)

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<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
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<tr>
<td>2805.00 - 2804.00</td>
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<td>2794.00 - 2792.00</td>
<td>11.0 - 13.0</td>
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<td>13.0 - 17.0</td>
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<tr>
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<td>79.0 - 88.0</td>
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<td>163.0 - 184.0</td>
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<tr>
<td>2621.00 - 2620.00</td>
<td>184.0 - 185.0</td>
<td>SILTSTONE, WHITE TO GREEN</td>
</tr>
</tbody>
</table>

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**Location Information**

Legal Location: NE NE NW NW Sec. 30, T. 037 N., R. 28 W.

County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner: TODD MELLETTE-TODD CO.
Ground Surface Elevation (ft.): 2818 T

**Project Information**

Project: MELLETTE-TODD CO. STUDY
Drill Date: 06/07/1994
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R2-94-13
Samples: TODD MELLETTE-TODD CO. STUDY

**Geophysical Information**

Spontaneous Potential: X
Natural Gamma: X
Extra: R2-94-13

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<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
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<td>2818.00-2792.00</td>
<td>0.0-26.0</td>
<td>SAND, YELLOWISH-GRAY, FINE-GRAINED, SILTY, SUBROUNDED; PRIMARILY HIGHLY QUARTZOSE GRAINS BOTH FROSTED AND POLISHED; SOME WHITE CALICHE</td>
</tr>
<tr>
<td>2792.00-2767.00</td>
<td>26.0-51.0</td>
<td>CLAY, WHITE, SLIGHTLY SILTY; SLIGHTLY CALCAREOUS; MASSIVE</td>
</tr>
<tr>
<td>2767.00-2757.00</td>
<td>51.0-61.0</td>
<td>SANDSTONE, LIGHT-OLIVE-GRAY, FINE- TO MEDIUM-GRAINED; HIGHLY QUARTZOSE; FRIABLE</td>
</tr>
<tr>
<td>2757.00-2733.00</td>
<td>61.0-85.0</td>
<td>SAND AND SANDSTONE, MODERATE-OLIVE-BROWN, FINE- TO MEDIUM-GRAINED; QUARTZOSE GRAINS WITH BOTH FROSTED AND POLISHED SURFACES; NONCALCAREOUS; SOME WHITE SILTY LAYERS</td>
</tr>
<tr>
<td>2733.00-2696.00</td>
<td>85.0-122.0</td>
<td>SILTSTONE AND CLAYSTONE, WHITE; CALCAREOUS; MASSIVE</td>
</tr>
<tr>
<td>2696.00-2587.00</td>
<td>122.0-231.0</td>
<td>SAND, MODERATE-OLIVE-BROWN, FINE- TO MEDIUM-GRAINED, SUBANGULAR TO SUBROUNDED; HIGHLY QUARTZOSE; NONCALCAREOUS; SOME YELLOWISH-GRAY CLAYEY BEDS IN UPPER 30 FEET AND LOWER 20 FEET OF THIS INTERVAL</td>
</tr>
<tr>
<td>2587.00-2563.00</td>
<td>231.0-255.0</td>
<td>CLAY, YELLOWISH-GRAY, SILTY, SANDY; NONCALCAREOUS (OGALLALA GROUP)</td>
</tr>
<tr>
<td>2563.00-2513.00</td>
<td>255.0-305.0</td>
<td>SILTSTONE, MODERATE-BROWN, CLAYEY, SANDY; NONCALCAREOUS; MASSIVE; SOME BENTONITIC HORIZONS</td>
</tr>
</tbody>
</table>
| 2513.00-2501.00 | 305.0-317.0 | SANDSTONE, MODERATE-BROWN, FINE- TO
MEDIUM-GRAINED, FAIRLY WELL CEMENTED; SOME THIN INTERBEDDED CLAY LAYERS

2501.00 - 2301.00  317.0 - 517.0  SILTSTONE, MODERATE-BROWN, CLAYEY, SANDY; NONCALCAREOUS, MASSIVE; SOME BENTONITIC LAYERS AT 410 TO 420 FEET, SOME WHITISH-BLACK STREAKED ORGANIC AND CALCAREOUS CLAY AT 435 TO 450 FEET; BECOMING MORE SANDY FROM 390 TO 410 FEET; SOME BLACK ORGANIC LAYERS FROM 470 TO 480 FEET

2301.00 - 2278.00  517.0 - 540.0  CLAY, DARK-YELLOWISH-ORANGE, SILTY; NONCALCAREOUS, MASSIVE; BENTONITIC CLAYS FROM 520 TO 530 FEET

2278.00 - 2238.00  540.0 - 580.0  SILTSTONE, DARK-YELLOWISH-ORANGE, CLAYEY; NONCALCAREOUS; SOME SAND (ARIKAREE GROUP?)

2238.00 - 2208.00  580.0 - 610.0  CLAYSTONE, DUSK-YELLOWISH-BROWN; NONCALCAREOUS; SOME SILTY LAYERS; NODULAR (BRULE FORMATION?)

2208.00 - 2133.00  610.0 - 685.0  CLAY AND CLAYSTONE, DUSK-YELLOWISH-BROWN, SILTY; GREASY, NONCALCAREOUS TO MODERATELY CALCAREOUS; SOME GREENISH-GRAY BEDS PRESENT

2133.00 - 2016.00  685.0 - 802.0  CLAY AND CLAYSTONE, PALE-YELLOWISH-BROWN TO MODERATE-BROWN TO WHITE AND GREENISH-GRAY, MASSIVE; MODERATELY CALCAREOUS TO HIGHLY CALCAREOUS (CHADRON FORMATION?)

2016.00 - 1971.00  802.0 - 847.0  CLAYSTONE, DUSKY-YELLOW-GREEN AND PALE-BROWN, MASSIVE; NONCALCAREOUS; SOME WHITE BENTONITIC CLAY LAYERS

1971.00 - 1963.00  847.0 - 855.0  SAND, CLEAR, MEDIUM- TO COARSE-GRAINED, SUBANGULAR TO SUBROUNDED, CLEAN; HIGHLY QUARTZOSE; A FEW LITHIC GRAINS

1963.00 - 1936.00  855.0 - 882.0  CLAY, DUSK-GRAY; GREASY, NONCALCAREOUS TO SLIGHTLY CALCAREOUS (PIERRE SHALE)

BASE OF THE OGALLALA GROUP AT 255 (?) FEET; BASE OF ARIKAREE FORMATION AT 580 (?) FEET.

* * * *

BASE OF THE OGALLALA GROUP AT 255 (?) FEET; BASE OF ARIKAREE FORMATION AT 580 (?) FEET.
### Location Information

- **Legal Location:** NE NE NW NW SEC. 30, T. 037 N., R. 28 W.
- **County:** TODD
- **Basin:** KEYA PAHA
- **Hydrologic Unit Code:** 10150006
- **Land Owner:**
- **Location:** 037N-28W-30BBAA 1
- **Latitude:** 43° 09' 05"
- **Longitude:** 100° 41' 03"
- **Ground Surface Elevation (ft.):** 2818 T

### Project Information

- **Project:** MELLETTE-TODD CO. STUDY
- **Drill Date:** 06/14/1994
- **Company:** SDGS
- **Drilling Method:** ROTARY
- **Test Hole Number:** R2-94-14
- **Samples:**
- **SDGS Well Name:** R2-94-14
- **Water Rights Well:**
- **Other Well Name:**
- **Casing Type:** PVC
- **Screen Type:**
- **Total Casing and Screen (ft.):** 315.0
- **Well Maintenance Date:**
- **Casing Top Elevation:** 2820.00 T
- **Casing Diameter (in.):**
- **Screen Length (ft.):**
- **Casing Stick-up (ft.):** 2.00
- **Total Drill Hole Depth (ft.):** 317.0

### Well Information

- **Aquifer:** ARIKAREE
- **Management Unit:**
- **Casing Top Elevation:** 2820.00 T
- **Casing Diameter (in.):**
- **Screen Length (ft.):**
- **Casing Stick-up (ft.):** 2.00
- **Total Drill Hole Depth (ft.):** 317.0

### Geophysical Information

- **Spontaneous Potential:**
- **Natural Gamma:**
- **Single Point Resistivity:**
- **Extra:**

This is assumed to be a monitoring well drilled for the Mellett-Todd Co. Study. Driller reported 315 feet of plastic. No other well information is available. The stick-up is assumed to be 2 feet.

### Elevation (ft.)

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2818.00-2792.00</td>
<td>0.0-26.0</td>
<td>SAND, YELLOWISH-GRAY, FINE-GRAINED, SILTY, SUBROUNDED; PRIMARILY HIGHLY QUARTZOSE GRAINS BOTH FROSTED AND POLISHED; SOME WHITE CALICHE</td>
</tr>
<tr>
<td>2792.00-2767.00</td>
<td>26.0-51.0</td>
<td>CLAY, WHITE, SLIGHTLY SILTY; SLIGHTLY CALCAREOUS; MASSIVE</td>
</tr>
<tr>
<td>2767.00-2757.00</td>
<td>51.0-61.0</td>
<td>SANDSTONE, LIGHT-OLIVE-GRAY, FINE- TO MEDIUM-GRAINED; HIGHLY QUARTZOSE; FRIABLE</td>
</tr>
<tr>
<td>2757.00-2733.00</td>
<td>61.0-85.0</td>
<td>SAND AND SANDSTONE, MODERATE-OLIVE-BROWN, FINE- TO MEDIUM-GRAINED; QUARTZOSE GRAINS WITH BOTH FROSTED AND POLISHED SURFACES; NONCALCAREOUS; SOME WHITE SILTY LAYERS</td>
</tr>
<tr>
<td>2733.00-2696.00</td>
<td>85.0-122.0</td>
<td>SILTSTONE AND CLAYSTONE, WHITE; CALCAREOUS; MASSIVE</td>
</tr>
<tr>
<td>2696.00-2587.00</td>
<td>122.0-231.0</td>
<td>SAND, MODERATE-OLIVE-BROWN, FINE- TO</td>
</tr>
</tbody>
</table>
MEDIUM-GRAINED, SUBANGULAR TO SUBROUNDED; HIGHLY QUARTZOSE; NONCALCAREOUS; SOME YELLOWISH-GRAY CLAYEY BEDS IN UPPER 30 FEET AND LOWER 20 FEET OF THIS INTERVAL

<table>
<thead>
<tr>
<th>Interval</th>
<th>Depth Range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2587.00-2563.00</td>
<td>231.0-255.0</td>
<td>CLAY, YELLOWISH-GRAY, SILTY, SANDY; NONCALCAREOUS (OGALLALA GROUP)</td>
</tr>
<tr>
<td>2563.00-2513.00</td>
<td>255.0-305.0</td>
<td>SILTSTONE, MODERATE-BROWN, CLAYEY, SANDY; NONCALCAREOUS; MASSIVE; SOME BENTONITIC HORIZONS</td>
</tr>
<tr>
<td>2513.00-2501.00</td>
<td>305.0-317.0</td>
<td>SANDSTONE, MODERATE-BROWN, FINE- TO MEDIUM-GRAINED; FAIRLY WELL CEMENTED; SOME THIN INTERBEDDED CLAY LAYERS</td>
</tr>
</tbody>
</table>

NO GEOLOGISTS LOG WAS AVAILABLE FOR THIS WELL. LITHOLOGY IS TAKEN FROM TEST-HOLE R2-94-13 WHICH WAS DRILLED AT OR NEAR THE SAME LOCATION. THE BASE OF THE OGALLALA GROUP AT 255(?) FEET.

* * * *
**Location Information**

Legal Location: NW SW SW SW SEC. 30, T. 037 N., R. 28 W.

County: TODD

Basin: KEYA PAHA

Hydrologic Unit Code: 10150006

Land Owner:

Location: 037N-28W-30CCCB

Latitude: 43 08' 42"

Longitude: 100 41' 17"

Ground Surface Elevation (ft.): 2770 T

**Project Information**

Project: WATER RIGHTS

Drill Date: 12/09/1976

Company: COATS WELL DRILLING

Drilling Method: ROTARY

Test Hole Number: 

Samples:

SDGS Well Name: 

Water Rights Well: TD-76G

Other Well Name: 

Casing Type: PVC

Screen Type: PVC

Total Casing and Screen (ft.): 186.4

Well Maintenance Date: 06/25/1984

Geologist: G. SELKEN

Geologist's Log: X

Driller: C. COATS

Driller's Log: 

Total Drill Hole Depth (ft.): 200.0

**Well Information**

Aquifer: OGALLALA

Management Unit: 

Casing Top Elevation: 

Casing Diameter (in.): 2.0

Screen Length (ft.): 5.0

Casing Stick-up (ft.): 2.30

**Geophysical Information**

Spontaneous Potential: 

Natural Gamma: 

Single Point Resistivity: 

Extra:

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2770.00 - 2769.00</td>
<td>0.0 - 1.0</td>
<td>TOPSOIL, BLACK</td>
</tr>
<tr>
<td>2769.00 - 2744.00</td>
<td>1.0 - 26.0</td>
<td>SAND, BROWN, FINE</td>
</tr>
<tr>
<td>2744.00 - 2733.00</td>
<td>26.0 - 37.0</td>
<td>CLAY, GRAYISH-WHITE; MIXED WITH SAND</td>
</tr>
<tr>
<td>2733.00 - 2729.00</td>
<td>37.0 - 41.0</td>
<td>SAND, BROWN, FINE</td>
</tr>
<tr>
<td>2729.00 - 2723.00</td>
<td>41.0 - 47.0</td>
<td>CLAY, GRAYISH-WHITE; WITH SAND</td>
</tr>
<tr>
<td>2723.00 - 2712.00</td>
<td>47.0 - 58.0</td>
<td>SAND, BROWN, FINE</td>
</tr>
<tr>
<td>2712.00 - 2710.00</td>
<td>58.0 - 60.0</td>
<td>SILTSTONE, WHITE; HARD</td>
</tr>
<tr>
<td>2710.00 - 2664.00</td>
<td>60.0 - 106.0</td>
<td>SAND, BROWN, FINE</td>
</tr>
<tr>
<td>2664.00 - 2662.00</td>
<td>106.0 - 108.0</td>
<td>SILTSTONE, WHITE; HARD</td>
</tr>
<tr>
<td>2662.00 - 2630.00</td>
<td>108.0 - 140.0</td>
<td>SAND, BROWN, FINE</td>
</tr>
<tr>
<td>2630.00 - 2574.00</td>
<td>140.0 - 196.0</td>
<td>SAND, BROWN, VERY FINE</td>
</tr>
<tr>
<td>2574.00 - 2572.00</td>
<td>196.0 - 198.0</td>
<td>SILTSTONE, WHITE TO GREEN; HARD</td>
</tr>
</tbody>
</table>
2572.00 - 2570.00  198.0 - 200.0  SILTSTONE, RED (ARIKAREE GROUP)

* * * *

037N28W30CCCB  01/31/2005
Location Information

Legal Location:NE NE NE NE SEC. 16, T. 037 N., R. 29 W.
County: TODD
Basin: WHITE
Hydrologic Unit Code: 10140203
Land Owner:

Location: 037N-29W-16AAAA
Latitude: 43 11' 10"
Longitude: 100 44' 56"
Ground Surface Elevation (ft.): 2857 T

Project Information

Project: WATER RIGHTS
Drill Date: 11/30/1976
Company: COATS WELL DRILLING
Drilling Method: ROTARY
Test Hole Number:
Samples:
Total Casing and Screen (ft.): 186.8
Well Maintenance Date: 06/26/1984

SDGS Well Name: 
Water Rights Well: TD-76A
Other Well Name:
Casing Type: PVC
Screen Type: PVC
Total Drill Hole Depth (ft.): 200.0
Casing Diameter (in.): 2.0
Screen Length (ft.): 5.0
Casing Top Elevation: 2.0
Casing Stick-up (ft.): 3.00

Well Information

Aquifer: OGALLALA
Management Unit:
Casing Top Elevation:
Casing Diameter (in.):
Screen Length (ft.):
Casing Stick-up (ft.):

Spontaneous Potential: 
Natural Gamma: 
Single Point Resistivity: 
Extra:

Geophysical Information

Elevation (ft.) | Depth (ft.) | Description
---|---|---
2857.00 - 2856.00 | 0.0 - 1.0 | TOPSOIL, BLACK
2856.00 - 2842.00 | 1.0 - 15.0 | SILTSTONE, BROWN-TAN
2842.00 - 2817.00 | 15.0 - 40.0 | SILTSTONE (GREEN-WHITE)
2817.00 - 2767.00 | 40.0 - 90.0 | SAND, GRAY-BROWN, VERY FINE; WITH WHITE, CARBONATE(?) SILTSTONE LAYERS INTERBEDDED
2767.00 - 2702.00 | 90.0 - 155.0 | SAND, BROWN, FINE, ROUNDED; CLEAN
2702.00 - 2680.00 | 155.0 - 177.0 | SAND, BROWN, FINE, ROUNDED
2680.00 - 2665.00 | 177.0 - 192.0 | SAND, REDDISH-BROWN, FINE; CLEAN
2665.00 - 2657.00 | 192.0 - 200.0 | SILTSTONE, GREEN TO WHITE; SOME RED SILT, PROBABLY ON BEDROCK (ARIKAREE GROUP)

* * * *
<table>
<thead>
<tr>
<th>Depth Range</th>
<th>Measurement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2601.00-2581.00</td>
<td>280.0 - 300.0</td>
<td>Siltstone, reddish-brown and some tan</td>
</tr>
<tr>
<td>2581.00-2561.00</td>
<td>300.0 - 320.0</td>
<td>Siltstone, reddish-brown; some clay</td>
</tr>
<tr>
<td>2561.00-2541.00</td>
<td>320.0 - 340.0</td>
<td>Siltstone, brown; multi-colored, coarse sand</td>
</tr>
<tr>
<td>2541.00-2501.00</td>
<td>340.0 - 380.0</td>
<td>Sand and siltstone, brown, very fine sand; some multi-colored, coarse sand</td>
</tr>
<tr>
<td>2501.00-2461.00</td>
<td>380.0 - 420.0</td>
<td>Siltstone, buff-colored; tan sandstone</td>
</tr>
<tr>
<td>2461.00-2441.00</td>
<td>420.0 - 440.0</td>
<td>Siltstone, buff-colored, pink and green; coarse sand, small clay or ash balls</td>
</tr>
<tr>
<td>2441.00-2421.00</td>
<td>440.0 - 460.0</td>
<td>Siltstone, buff-colored; greenish-gray limestone layer at about 452 feet, small particles of light-colored ash</td>
</tr>
<tr>
<td>2421.00-2401.00</td>
<td>460.0 - 480.0</td>
<td>Siltstone, buff-colored; ash, multi-colored, coarse sand</td>
</tr>
<tr>
<td>2401.00-2361.00</td>
<td>480.0 - 520.0</td>
<td>Sand, multi-colored, medium to very coarse; limestone, siltstone, very fine sand</td>
</tr>
</tbody>
</table>

* * * *
Location Information

Legal Location: SW NW NW SW SEC. 27, T. 037 N., R. 29 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner: 

Location: 037N-29W-27CBBC 1
Latitude: 43 08' 58"
Longitude: 100 44' 55"
Ground Surface Elevation (ft.): 2850 T

Project Information

Project: TODD-MELLETTE STUDY
Drill Date: 07/23/1990
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R20-90-38
Samples: 

SDGS Well Name: R20-90-38
Water Rights Well: 
Other Well Name: 
Casing Type: PVC, SCH. 80
Screen Type: PVC, MFG., SLOT SIZE 0.018 IN.
Total Casing and Screen (ft.): 185.0
Well Maintenance Date:

Casing Top Elevation: 2852.00 T
Casing Diameter (in.): 2.0
Screen Length (ft.): 5.0
Casing Stick-up (ft.): 2.00

Well Information

Spontaneous Potential: RESISTIVITY NOT WORKING PROPERLY. SCREEN INTERVAL FROM 183 TO 178 FEET; FILTER PACK (0.65-0.75 MM QUARTZ SAND) 192 TO 164 FEET; BENTONITE 164 TO 3 FEET; CEMENT 3 TO 0 FEET; LOCKING STEEL WELL PROTECTOR INSTALLED. SCREEN AND CASING ARE FLUSH THREADED. NORTH WELL OF THREE.
Natural Gamma: X

Single Point Resistivity: X
Extra: X

Geophysical Information

Elevation (ft.) | Depth (ft.) | Description
--- | --- | ---
2850.00 - 2841.00 | 0.0 - 9.0 | SAND AND SANDSTONE, LIGHT-YELLOW-BROWN, FINE TO MEDIUM
2841.00 - 2821.00 | 9.0 - 29.0 | SAND AND SANDSTONE, LIGHT-BROWN, FINE TO MEDIUM; SOME WHITE PIECES PRESENT
2821.00 - 2814.00 | 29.0 - 36.0 | SILTSTONE AND SAND, BROWNISH-GREEN
2814.00 - 2790.00 | 36.0 - 60.0 | SAND, LIGHT-BROWN, FINE; SOME WHITE PIECES PRESENT
2790.00 - 2769.00 | 60.0 - 81.0 | SAND AND SILTSTONE, REDDISSH-BROWN, FINE TO COARSE; CALCAREOUS
2769.00 - 2756.00 | 81.0 - 94.0 | SAND, BROWN, FINE TO MEDIUM
2756.00 - 2727.00 | 94.0 - 123.0 | SAND, BROWNISH-GREEN, FINE TO MEDIUM
2727.00-2705.00  123.0-145.0  SAND, BROWNISH-GREEN, FINE
2705.00-2688.00  145.0-162.0  SAND AND SILTSTONE, BROWNISH-GREEN, FINE TO COARSE; CALCAREOUS
2688.00-2686.00  162.0-164.0  SAND, BROWNISH-GREEN, FINE TO COARSE
2686.00-2674.00  164.0-176.0  SAND, BROWNISH-GREEN, FINE TO MEDIUM
2674.00-2666.00  176.0-184.0  SAND, BROWN, FINE
2666.00-2658.00  184.0-192.0  SILTSTONE, RED-BROWN, SOMEWHAT CLAYEY; CALCAREOUS (ARIKAREE GROUP)

* * * *
Location Information

Legal Location: SW NW NW SW SEC. 27, T. 037 N., R. 29 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner: 

Location: 037N-29W-27CBBC 2
Latitude: 43 08' 58"
Longitude: 100 44' 55"
Ground Surface Elevation (ft.): 2850 T

Project Information

Project: TODD-MELLETTE STUDY
Drill Date: 07/24/1990
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R20-90-39
Samples: 

SDGS Well Name: R20-90-39
Water Rights Well: 
Other Well Name: 
Casing Type: PVC, SCH. 80
Screen Type: PVC, MFG., SLOT SIZE 0.018 IN.
Total Casing and Screen (ft.): 135.0
Well Maintenance Date: 

Casing Top Elevation: 2852.00 T
Casing Diameter (in.): 2.0
Screen Length (ft.): 5.0
Casing Stick-up (ft.): 2.00
Total Drill Hole Depth (ft.): 133.0

Well Information

SDGS Well Name: R20-90-39
Aquifer: OGAALLALA
Management Unit: 

Well Maintenance Date: 

Spontaneous Potential: 
Natural Gamma: 
Extra: 

Well Data: Screen interval from 133 to 128 feet; Filter pack (0.65-0.75 mm quartz sand) 133 to 118 feet; Bentonite 118 to 3 feet; Cement 3 to 0 feet; Locking steel well protector installed. Screen and casing are flush threaded. Middle well of three.

Geophysical Information

Single Point Resistivity: 
Extra: 

Elevation (ft.)  Depth (ft.)  Description
2850.00-2841.00  0.0-9.0  SAND, SANDSTONE, AND SILTSTONE, BROWNISH-GREEN, FINE TO COARSE; CALCAREOUS
2841.00-2821.00  9.0-29.0  SAND AND SANDSTONE, BROWNISH-GREEN, FINE TO COARSE; SOME SILTSTONE, SLIGHTLY CALCAREOUS
2821.00-2814.00  29.0-36.0  SAND, BROWN, FINE
2814.00-2790.00  36.0-60.0  SAND, GREENISH-BROWN, FINE; SOME SILT IN THE LOWER 5 FEET; SLIGHTLY CALCAREOUS
2790.00-2772.00  60.0-78.0  SAND AND SILTSTONE, BROWN, FINE TO COARSE; CALCAREOUS
2772.00-2768.00  78.0-82.0  SILTSTONE, GREENISH-BROWN; SOME WHITE PIECES PRESENT; CALCAREOUS
2768.00-2760.00  82.0-90.0  SAND AND SILTSTONE, GREENISH-BROWN, FINE TO
2760.00 - 2756.00  90.0 - 94.0  Sand, greenish-brown, fine to medium
2756.00 - 2717.00  94.0 - 133.0  Sand, dark-greenish-brown, fine to medium
* * * *
Location Information

Legal Location: SW NW NW SW SEC. 27, T. 037 N., R. 29 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner:

Location: 037N-29W-27CBBC 3
Latitude: 43 06' 58"
Longitude: 100 44' 55"
Ground Surface Elevation (ft.): 2850 T

Project Information

Project: TODD-MELLETTE STUDY
Drill Date: 07/24/1990
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R20-90-40
Samples:

Total Casing and Screen (ft.): 80.0
Well Maintenance Date:

Geologist: P. HAMMOND
Geologist's Log: X
Driller: D. IVerson
Driller's Log: 

Well Information

SDGS Well Name: R20-90-40
Water Rights Well: 
Other Well Name: 
Casing Type: PVC, SCH. 80
Screen Type: PVC, MFG., SLOT SIZE 0.018 IN.
Total Casing and Screen (ft.): 80.0

Casing Diameter (in.): 2.0
Casing Top Elevation: 2852.00 T
Casing Length (ft.): 10.0
Casing Stick-up (ft.): 2.00

Aquifer: OGALLALA
Management Unit: 

Well Maintenance Date:

Spontaneous Potential: 
Natural Gamma: 
Spontaneous Potential: 
Natural Gamma: 

Single Point Resistivity: 
Extra: 

WELL DATA: SCREEN INTERVAL FROM 78 TO 68 FEET; FILTER PACK (0.65-0.75 MM QUARTZ SAND AND VERY COARSE QUARTZ SAND) 80 TO 58 FEET; BENTONITE 58 TO 4 FEET; CEMENT 4 TO 0 FEET; LOCKING STEEL WELL PROTECTOR INSTALLED. SCREEN AND CASING ARE FLUSH THREADED SOUTH WELL OF THREE.

Geophysical Information

SAND AND SANDSTONE, GREENISH-BROWN, FINE TO COARSE; SLIGHTLY CALCAREOUS; ROOT CASTS PRESENT

Elevation (ft.) | Depth (ft.) | Description
--- | --- | ---
2850.00-2821.00 | 0.0-29.0 | SAND AND SANDSTONE, GREENISH-BROWN, FINE TO COARSE; SLIGHTLY CALCAREOUS; ROOT CASTS PRESENT
2821.00-2814.00 | 29.0-36.0 | SAND, BROWN, FINE TO MEDIUM
2814.00-2808.00 | 36.0-42.0 | SAND, BROWN, FINE TO COARSE
2808.00-2790.00 | 42.0-60.0 | SAND, GREENISH-BROWN, FINE TO COARSE
2790.00-2784.00 | 60.0-66.0 | SAND, BROWN, FINE TO COARSE
2784.00-2770.00 | 66.0-80.0 | SAND AND SILTSTONE, BROWN TO GREENISH-BROWN, FINE TO COARSE; VERY CALCAREOUS

* * * *
Location Information

Legal Location: SW SW SW SW SEC. 28, T. 037 N., R. 29 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner: Location: 037N-29W-28CCCCC
Latitude: 43 08' 38"
Longitude: 100 46' 02"
Ground Surface Elevation (ft.): 2877 T

Project Information

Project: TODD-MELLETTE STUDY
Drill Date: 06/25/1991
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R20-91-29
Samples: Total Drill Hole Depth (ft.): 90.0
SDGS Well Name: R20-91-29
Water Rights Well: Aquifer: OGALLALA
Other Well Name: Management Unit: Casing Top Elevation: 2879.00 T
Casing Type: PVC, SCH. 80 Casing Diameter (in.): 2.0
Screen Type: PVC, MFG., SLOT SIZE 0.010 IN. Screen Length (ft.): 10.0
Total Casing and Screen (ft.): 90.0 Casing Stick-up (ft.): 2.00
Well Maintenance Date:

Geophysical Information

Spontaneous Potential:
Natural Gamma:
Single Point Resistivity:
Extra:

WELL DATA: SCREEN INTERVAL FROM 88 TO 78 FEET; FILTER PACK (0.65-0.75 MM QUARTZ SAND) 90 TO 64 FEET; BENTONITE 64 TO 20 FEET; CEMENT 20 TO 0 FEET; LOCKING STEEL WELL PROTECTOR INSTALLED. CASING AND SCREEN ARE FLUSH THREADED.

Elevation (ft.) | Depth (ft.) | Description
--- | --- | ---
2877.00 – 2875.00 | 0.0 – 2.0 | TOPSOIL, BLACK
2875.00 – 2867.00 | 2.0 – 10.0 | SAND AND SANDSTONE, GREENISH-BROWN, VERY FINE TO FINE; SOME SILT; CALCAREOUS
2867.00 – 2848.00 | 10.0 – 29.0 | SAND AND SANDSTONE, LIGHT-BROWN, VERY FINE TO FINE; SOME SILT; CALCAREOUS
2848.00 – 2840.00 | 29.0 – 37.0 | SAND AND SANDSTONE, TAN, VERY FINE TO MEDIUM; SOME Siltstone; VERY CALCAREOUS
2840.00 – 2812.00 | 37.0 – 65.0 | SAND, LIGHT-GREENISH-BROWN, VERY FINE TO COARSE, CLAYEY; SMALL AMOUNT OF SILT
2812.00 – 2787.00 | 65.0 – 90.0 | SAND, GREENISH-BROWN, VERY FINE TO MEDIUM; SOME COARSE SAND; ROOT CASTS PRESENT
**Location Information**

Legal Location: SE SE SE SEC. 28, T. 037 N., R. 29 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner: Location: 037N-29W-28DDDD
Latitude: 43 08' 37"
Longitude: 100 44' 54"
Ground Surface Elevation (ft.): 2858 T

**Project Information**

Project: WATER RIGHTS
Drill Date: 11/03/1976
Company: COATS WELL DRILLING
Drilling Method: ROTARY
Test Hole Number: Total Drill Hole Depth (ft.): 215.0
Samples:

**Well Information**

SDGS Well Name: Aquifer: OGALLALA
Water Rights Well: TD-76D
Other Well Name: TD-76-4
Casing Type: PVC
Screen Type: PVC
Total Casing and Screen (ft.): 196.1
Well Maintenance Date: 06/26/1984
Casing Top Elevation: Casing Diameter (in.): 2.0
Casing Stick-up (ft.): 1.40
Screen Length (ft.): 5.0

**Geophysical Information**

Spontaneous Potential: Single Point Resistivity: Extra:
Natural Gamma:  

<table>
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<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
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<tbody>
<tr>
<td>2858.00 - 2857.00</td>
<td>0.0 - 1.0</td>
<td>TOPSOIL, BLACK</td>
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<tr>
<td>2857.00 - 2849.00</td>
<td>1.0 - 9.0</td>
<td>SAND, BROWN, FINE</td>
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<tr>
<td>2849.00 - 2842.00</td>
<td>9.0 - 16.0</td>
<td>SILTSTONE, GRAY-GREEN, SANDY</td>
</tr>
<tr>
<td>2842.00 - 2839.00</td>
<td>16.0 - 19.0</td>
<td>SILTSTONE, WHITE; CARBONATE(?)</td>
</tr>
<tr>
<td>2839.00 - 2812.00</td>
<td>19.0 - 46.0</td>
<td>SAND, BROWN, FINE; HARD DRILLING FROM 25 TO 30 FEET, WHITE SILTSTONE</td>
</tr>
<tr>
<td>2812.00 - 2810.00</td>
<td>46.0 - 48.0</td>
<td>SILTSTONE, GRAY-WHITE</td>
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<td>2810.00 - 2800.00</td>
<td>48.0 - 58.0</td>
<td>SAND, BROWN, FINE</td>
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<tr>
<td>2800.00 - 2793.00</td>
<td>58.0 - 65.0</td>
<td>SAND AND SILTSTONE, GRAY AND WHITE</td>
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<tr>
<td>2793.00 - 2767.00</td>
<td>65.0 - 91.0</td>
<td>SAND, BROWN, FINE</td>
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<tr>
<td>2767.00 - 2759.00</td>
<td>91.0 - 99.0</td>
<td>SILTSTONE, GRAY-WHITE; HARD DRILLING</td>
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<tr>
<td>2759.00 - 2680.00</td>
<td>99.0 - 178.0</td>
<td>SAND, BROWN, FINE; HARD LAYER AT 155 FEET</td>
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2680.00 - 2653.00  178.0 - 205.0  SAND AND SILTSTONE ALTERNATING

2653.00 - 2643.00  205.0 - 215.0  SILTSTONE, GRAY-WHITE, SOME GREEN; MUCH HARDER DRILLING THAN INTERVAL FROM 178 TO 205 FEET

* * * *
Legal Location:NE NE NE NE SEC. 29, T. 037 N., R. 29 W.
County: TODD
Basin: WHITE
Hydrologic Unit Code: 10140203
Land Owner: 

Location: 037N-29W-29AAAA
Latitude: 43 09' 27"
Longitude: 100 46' 08"
Ground Surface Elevation (ft.): 2860 T

Project: WATER RIGHTS
Drill Date: 12/02/1976
Company: COATS WELL DRILLING
Drilling Method: ROTARY
Test Hole Number: 

Casing Type: PVC
Screen Type: PVC
Casing Diameter (in.): 2.0
Screen Length (ft.): 5.0
Total Casing and Screen (ft.): 206.9
Casing Top Elevation: 2.60
Casing Stick-up (ft.): 2.60

Well Maintenance Date: 06/26/1984

Samples:

Legal Location:
R. 29 W.T. 037 N., 29, SEC. NENENENE

037N29W29AAAA 01/31/2005
<table>
<thead>
<tr>
<th>Depth Range</th>
<th>Interval</th>
<th>Description</th>
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<tr>
<td>2738.00 - 2720.00</td>
<td>122.0 - 140.0</td>
<td>SAND, BROWN, FINE; WITH ALTERNATING LAYERS OF WHITE AND GREEN SILTSTONE</td>
</tr>
<tr>
<td>2720.00 - 2685.00</td>
<td>140.0 - 175.0</td>
<td>SAND, BROWN, FINE; CLEAN</td>
</tr>
<tr>
<td>2685.00 - 2653.00</td>
<td>175.0 - 207.0</td>
<td>SAND, BROWN, FINE TO MEDIUM; CLEAN</td>
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<tr>
<td>2653.00 - 2644.00</td>
<td>207.0 - 216.0</td>
<td>SILTSTONE, WHITE</td>
</tr>
<tr>
<td>2644.00 - 2634.00</td>
<td>216.0 - 226.0</td>
<td>SILTSTONE, BROWNISH-RED; SLOWER DRILLING THEN INTERVAL FROM 207 TO 216 FEET</td>
</tr>
<tr>
<td>2634.00 - 2630.00</td>
<td>226.0 - 230.0</td>
<td>CLAY, RED, SILTY (ARIKAREE GROUP)</td>
</tr>
</tbody>
</table>

* * * *
WELL DATA: SCREEN INTERVAL FROM 88 TO 78 FEET; FILTER PACK (0.65-0.75 MM QUARTZ SAND) 90 TO 67 FEET; BENTONITE 67 TO 20 FEET; CEMENT 20 TO 0 FEET; LOCKING STEEL WELL PROTECTOR INSTALLED. CASING AND SCREEN ARE FLUSH THREADED.
Location Information

Legal Location: SW SW SW SW SEC. 33, T. 037 N., R. 29 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner: 

Project Information

Project: WATER RIGHTS
Drill Date: 11/04/1976
Company: COATS WELL DRILLING
Drilling Method: ROTARY
Test Hole Number: 
Samples: 

Well Information

SDGS Well Name: 
Water Rights Well: TD-76C
Other Well Name: 
Casing Type: PVC
Screen Type: PVC
Total Casing and Screen (ft.): 206.1
Casing Top Elevation: 
Casing Diameter (in.): 2.0
Screen Length (ft.): 5.0
Casing Stick-up (ft.): 3.00
Casing Maintenance Date: 06/26/1984

Geophysical Information

Spontaneous Potential: 
Natural Gamma: 
Single Point Resistivity: 
Extra: 

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<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
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<tbody>
<tr>
<td>2909.00 - 2908.00</td>
<td>0.0 - 1.0</td>
<td>TOPSOIL, BLACK</td>
</tr>
<tr>
<td>2908.00 - 2883.00</td>
<td>1.0 - 26.0</td>
<td>SAND, BROWN, FINE</td>
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<tr>
<td>2883.00 - 2875.00</td>
<td>26.0 - 34.0</td>
<td>SILTSTONE, WHITE-GRAY; CARBONATE(?)</td>
</tr>
<tr>
<td>2875.00 - 2863.00</td>
<td>34.0 - 46.0</td>
<td>SILTSTONE, GRAY-WHITE; HARD DRILLING</td>
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<tr>
<td>2863.00 - 2854.00</td>
<td>46.0 - 55.0</td>
<td>SAND, BROWN, FINE</td>
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<tr>
<td>2854.00 - 2852.00</td>
<td>55.0 - 57.0</td>
<td>SILTSTONE, WHITE; HARDER DRILLING THAN INTERVAL FROM 46 TO 57 FEET</td>
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<tr>
<td>2852.00 - 2834.00</td>
<td>57.0 - 75.0</td>
<td>SAND, BROWN, FINE</td>
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<tr>
<td>2834.00 - 2828.00</td>
<td>75.0 - 81.0</td>
<td>SAND, BROWN, FINE; WITH INTERBEDDED GREEN SILTSTONE</td>
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<tr>
<td>2828.00 - 2788.00</td>
<td>81.0 - 121.0</td>
<td>SAND, BROWN, FINE; CLEAN</td>
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<tr>
<td>2788.00 - 2785.00</td>
<td>121.0 - 124.0</td>
<td>SILTSTONE, WHITE; HARD DRILLING</td>
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<tr>
<td>2785.00 - 2773.00</td>
<td>124.0 - 136.0</td>
<td>SAND, BROWN, FINE; WITH WHITE-GRAY SILTSTONE</td>
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</table>
2773.00-2694.00 136.0-215.0  SAND, BROWN, FINE; CLEAN, SILTSTONE LAYERS AT 200 FEET

2694.00-2689.00 215.0-220.0  SILTSTONE, RED (ARIKAREE GROUP)

* * * *
Location Information

Legal Location: NE NE NE SEC. 26, T. 037 N., R. 33 W.
County: TODD
Basin: WHITE
Hydrologic Unit Code: 10140203
Land Owner:

Location: 037N-33W-26AAAA
Latitude: 43 09' 24"
Longitude: 101 10' 42"
Ground Surface Elevation (ft.): 2952 T

Project Information

Project: MELLETTE-TODD CO. STUDY
Drill Date: 09/29/1992
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R2-92-49
Driller's Log: X
Geologist's Log: X

Geologist: R. HAMMOND
Geologist's Log: X
Driller: G. JENSEN
Driller's Log: X
Total Drill Hole Depth (ft.): 1027.0

Samples:
PLUGGED FROM TOTAL DEPTH TO TOP WITH HIGH SOLIDS BENTONITE PLUGGING FLUID, SETTLED TWO DAYS, FILLED WITH BENTONITE CRUMBLES TO 8 FEET BELOW LAND SURFACE, CEMENT FROM 8 FEET TO SURFACE.

Geophysical Information

Spontaneous Potential: X
Natural Gamma: X
Single Point Resistivity: X
Extra:

<table>
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<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2952.00 - 2929.00</td>
<td>0.0 - 23.0</td>
<td>SAND, LIGHT-OLIVE-GRAY, FINE, SLIGHTLY SILTY, WELL-ROUNDED, WELL-SORTED; QUARTZOSE, SOME BLACK ORGANIC DEBRIS IN UPPER 10 FEET, NONCALCAREOUS</td>
</tr>
<tr>
<td>2929.00 - 2917.00</td>
<td>23.0 - 35.0</td>
<td>SILT, YELLOWISH-GRAY TO VERY PALE-ORANGE, CLAYEY, SANDY; MASSIVE TO POORLY FISSILE, NONCALCAREOUS</td>
</tr>
<tr>
<td>2917.00 - 2832.00</td>
<td>35.0 - 120.0</td>
<td>SAND, YELLOWISH-GRAY, FINE, WELL-ROUNDED, WELL-SORTED; QUARTZOSE WITH SOME MINOR DARK FELDSPAR CLASTS, SOME THIN SILT BEDS, DARK-BROWN SILTSTONES AT 80 TO 96 FEET</td>
</tr>
<tr>
<td>2832.00 - 2811.00</td>
<td>120.0 - 141.0</td>
<td>SILT, PALE-OLIVE, SANDY; NONCALCAREOUS</td>
</tr>
<tr>
<td>2811.00 - 2715.00</td>
<td>141.0 - 237.0</td>
<td>SAND, LIGHT-OLIVE-GRAY, FINE, WELL-ROUNDED, WELL-SORTED; QUARTZOSE, SOME MINOR DARK CLASTS</td>
</tr>
<tr>
<td>2715.00 - 2580.00</td>
<td>237.0 - 372.0</td>
<td>SILTSTONE, YELLOW-BROWN, CLAYEY; HARD, NONCALCAREOUS, MASSIVE TO POORLY BEDDED, LESS CLAYEY BELOW 330 FEET</td>
</tr>
<tr>
<td>2580.00 - 2556.00</td>
<td>372.0 - 396.0</td>
<td>SAND, LIGHT-BROWN, FINE TO VERY FINE, SUBROUNDED, SLIGHTLY SILTY, FAIR TO POORLY SORTED; QUARTZOSE, NONCALCAREOUS</td>
</tr>
</tbody>
</table>
| 2556.00 - 2494.00 | 396.0 - 458.0 | SILTSTONE, PALE-YELLOWISH-BROWN, CLAYEY, SLIGHTLY SANDY; SLIGHTLY CALCAREOUS, MASSIVE TO
POORLY BEDDED, VERY FINE SAND LENSES AT 437 TO 446 FEET

<table>
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<tr>
<th>Depth (ft)</th>
<th>Range (ft)</th>
<th>Description</th>
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<tr>
<td>2494.00-2467.00</td>
<td>458.0-485.0</td>
<td>SAND, YELLOWISH-BROWN, VERY FINE, SILTY; QUARTZOSE, SILTSTONE BED AT 479 TO 482 FEET</td>
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<tr>
<td>2467.00-2455.00</td>
<td>485.0-497.0</td>
<td>SILTSTONE, PALE-YELLOWISH-BROWN, CLAYEY; NONCALCAREOUS</td>
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<tr>
<td>2455.00-2446.00</td>
<td>497.0-506.0</td>
<td>SAND, YELLOWISH-BROWN, VERY FINE, SILTY; QUARTZOSE, NONCALCAREOUS</td>
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<tr>
<td>2446.00-2312.00</td>
<td>506.0-640.0</td>
<td>SILTSTONE, YELLOWISH-BROWN, CLAYEY; NONCALCAREOUS TO 530 FEET, YELLOWISH-GRAY AND MODERATELY CALCAREOUS BELOW 530 FEET</td>
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<tr>
<td>2312.00-2278.00</td>
<td>640.0-674.0</td>
<td>CLAYSTONE, YELLOWISH-GRAY, SILTY; POORLY FISSILE, MODERATELY TO VERY CALCAREOUS</td>
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<tr>
<td>2278.00-2225.00</td>
<td>674.0-727.0</td>
<td>CLAYSTONE, PALE-OLIVE, SLIGHTLY SILTY; MASSIVE(?), NONCALCAREOUS, SOME OLIVE-GRAY SILTSTONE NEAR 710 FEET</td>
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<tr>
<td>2225.00-1925.00</td>
<td>727.0-1027.0</td>
<td>SILTSTONE, GRAYISH-YELLOW MOTTLED WITH PALE-OLIVE; ALTERNATING HARD CLAYEY AND SOFTER SANDY BEDS, VERY POOR CUTTINGS FROM 750 TO 1027 FEET, APPARENTLY ALL WHITE RIVER GROUP SEDIMENTS</td>
</tr>
</tbody>
</table>

* * * *
Location Information

Legal Location: NE NE NE NE SEC. 26, T. 037 N., R. 33 W.
County: TODD
Basin: WHITE
Hydrologic Unit Code: 10140203
Land Owner: 

Location: 037N-33W-26AAAA 1
Latitude: 43 09' 24"
Longitude: 101 10' 42"
Ground Surface Elevation (ft.): 2952 T

Project Information

Project: MELLETTE-TODD CO. STUDY
Drill Date: 10/06/1992
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R2-92-51
Samples: 

Geologist: R. HAMMOND
Driller's Log: X
Driller: G. JENSEN
Geologist's Log: 

Total Drill Hole Depth (ft.): 397.0

Well Information

SDGS Well Name: R2-92-51
Water Rights Well: 
Other Well Name: 
Casing Type: PVC, SCH. 80
Screen Type: PVC, MFG., SLOT SIZE 0.010 IN.
Total Casing and Screen (ft.): 397.0
Well Maintenance Date: 

Casing Top Elevation: 2954.00 T
Casing Diameter (in.): 2.0
Screen Length (ft.): 10.0
Casing Stick-up (ft.): 2.00

Geophysical Information

Spontaneous Potential: 
Natural Gamma: 

Single Point Resistivity: 
Extra: 

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<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
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<td>2952.00-2929.00</td>
<td>0.0-23.0</td>
<td>SAND, LIGHT-OLIVE-GRAY, FINE, SLIGHTLY SILTY, WELL-ROUNDED, WELL-SORTED; QUARTZOSE, SOME BLACK ORGANIC DEBRIS IN UPPER 10 FEET, NONCALCAREOUS</td>
</tr>
<tr>
<td>2929.00-2917.00</td>
<td>23.0-35.0</td>
<td>SILT, YELLOWISH-GRAY TO VERY PALE-ORANGE, SANDY, CLAYEY; MASSIVE TO POORLY FISSILE, NONCALCAREOUS</td>
</tr>
<tr>
<td>2917.00-2832.00</td>
<td>35.0-120.0</td>
<td>SAND, YELLOWISH-GRAY, FINE, WELL-ROUNDED, WELL-SORTED; QUARTZOSE WITH SOME MINOR DARK FELDSPATIC CLASTS, SOME THIN SILT BEDS, DARK-BROWN SILTSTONE AT 80 TO 96 FEET</td>
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<tr>
<td>2832.00-2811.00</td>
<td>120.0-141.0</td>
<td>SILT, PALE-OLIVE, SANDY; NONCALCAREOUS</td>
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<tr>
<td>2811.00-2715.00</td>
<td>141.0-237.0</td>
<td>SAND, LIGHT-OLIVE-GRAY, FINE, WELL-ROUNDED, WELL-SORTED; QUARTZOSE, SOME MINOR DARK CLASTS</td>
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<tr>
<td>2715.00-2580.00</td>
<td>237.0-372.0</td>
<td>SILTSTONE, YELLOWISH-BROWN, CLAYEY; HARD, NONCALCAREOUS, MASSIVE TO POORLY BEDDED, LESS CLAYEY BELOW 330 FEET</td>
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</table>
2580.00–2556.00 372.0–396.0 SAND, LIGHT-BROWN, FINE TO VERY FINE, SLIGHTLY SILTY, SUBROUNDED, FAIR TO POORLY SORTED; QUARTZOSE, NONCALCAREOUS

2556.00–2555.00 396.0–397.0 SILTSTONE, PALE-YELLOWISH-BROWN, CLAYEY, SLIGHTLY SANDY

* * * *
**Location Information**

Legal Location: NE NE NE NE SEC. 26, T. 037 N., R. 33 W.  
County: TODD  
Basin: WHITE  
Hydrologic Unit Code: 10140203  
Land Owner:  
Location: 037N-33W-26AAAA 2  
Latitude: 43° 09' 24"  
Longitude: 101° 10' 42"  
Ground Surface Elevation (ft.): 2952 T

**Project Information**

Project: MELLETTE-TODD CO. STUDY  
Drill Date: 10/07/1992  
Company: SDGS  
Drilling Method: ROTARY  
Test Hole Number: R2-92-52  
Samples:  
Geologist: R. HAMMOND  
Geologist's Log: X  
Driller: G. JENSEN  
Driller's Log:  
Total Drill Hole Depth (ft.): 237.0

**Well Information**

SDGS Well Name: R2-92-52  
Water Rights Well:  
Other Well Name:  
Casing Type: PVC, SCH. 80  
Screen Type: PVC, MFG., SLOT SIZE 0.010 IN.  
Total Casing and Screen (ft.): 238.0  
Well Maintenance Date:  
Casing Top Elevation: 2954.00 T  
Casing Diameter (in.): 2.0  
Screen Length (ft.): 10.0  
Casing Stick-up (ft.): 2.00

**Geophysical Information**

Spontaneous Potential:  
Natural Gamma:  
Single Point Resistivity:  
Extra:  
13 BAGS OF #50 SAND USED FOR FILTER PACK.

<table>
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<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
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<tbody>
<tr>
<td>2952.00 - 2929.00</td>
<td>0.0 - 23.0</td>
<td>SAND, LIGHT-OLIVE-GRAY, FINE, SLIGHTLY SILTY, WELL-ROUNDED, WELL-SORTED; QUARTZOSE, SOME BLACK ORGANIC DEBRIS IN UPPER 10 FEET, NONCALCAREOUS</td>
</tr>
<tr>
<td>2929.00 - 2917.00</td>
<td>23.0 - 35.0</td>
<td>SILT, YELLOWISH-GRAY TO VERY PALE-ORANGE, CLAYEY, SANDY; MASSIVE TO POORLY FISSILE, NONCALCAREOUS</td>
</tr>
<tr>
<td>2917.00 - 2832.00</td>
<td>35.0 - 120.0</td>
<td>SAND, YELLOWISH-GRAY, FINE, WELL-ROUNDED, WELL-SORTED; QUARTZOSE WITH SOME MINOR DARK FELDSPAR CLASTS, SOME THIN SILT BEDS, DARK-BROWN SILTSTONE AT 80 TO 96 FEET</td>
</tr>
<tr>
<td>2832.00 - 2811.00</td>
<td>120.0 - 141.0</td>
<td>SILT, PALE-OLIVE, SANDY; NONCALCAREOUS</td>
</tr>
<tr>
<td>2811.00 - 2715.00</td>
<td>141.0 - 237.0</td>
<td>SAND, LIGHT-OLIVE-GRAY, FINE, WELL-ROUNDED, WELL-SORTED; QUARTZOSE, SOME MINOR DARK CLASTS</td>
</tr>
</tbody>
</table>
**Location Information**

Legal Location:SE SE SW NE SEC. 01, T. 038 N., R. 25 W.  
County: TODD  
Basin: WHITE  
Hydrologic Unit Code: 10140204  
Land Owner: E. ASSMAN  
Location: 038N-25W-01ACDD  
Latitude: 43 17' 47"  
Longitude: 100 13' 13"  
Ground Surface Elevation (ft.): 2438 T

**Project Information**

Project: MELLETTE-TODD CO. STUDY  
Drill Date: 07/26/1993  
Company: SDGS  
Drilling Method: ROTARY  
Test Hole Number: R20-93-42  
Driller: M. THOMPSON  
Geologist: R. HAMMOND  
Geologist's Log: X  
Driller's Log: X  
Total Drill Hole Depth (ft.): 247.0

**Geophysical Information**

Spontaneous Potential: X  
Natural Gamma: X  
Single Point Resistivity: X  
Extra:

THIS HOLE WAS PLUGGED WITH HIGH SOLIDS BENTONITE GROUT FROM 247 TO 10 FEET, CEMENT GROUT FROM 10 TO 3 FEET AND LOCAL SEDIMENTS FROM 3 TO 0 FEET.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2438.00 - 2429.00</td>
<td>0.0 - 9.0</td>
<td>SAND, GRAYISH-ORANGE, VERY FINE TO COARSE, VERY SILTY; EQUAL PROPORTIONS OF LITHIC AND QUARTZ CLAST, ABUNDANT CALCAREOUS NODULES AND GRANULES, VERY CALCAREOUS</td>
</tr>
<tr>
<td>2429.00 - 2419.00</td>
<td>9.0 - 19.0</td>
<td>SAND, GRAYISH-ORANGE, SILTY, VERY FINE TO COARSE; LARGELY FROSTED AND POLISHED QUARTZ CLASTS, SOME LITHIC GRAINS, VERY CALCAREOUS</td>
</tr>
<tr>
<td>2419.00 - 2378.00</td>
<td>19.0 - 60.0</td>
<td>SILTSTONE, LIGHT-BROWN, SANDY; POORLY LITHIFIED, POORLY CALCAREOUS TO NON-CALCAREOUS, WITH SOME HARD CEMENTED LAYERS</td>
</tr>
<tr>
<td>2378.00 - 2361.00</td>
<td>60.0 - 77.0</td>
<td>GRAVEL, LIGHT-BROWN, FINE TO 8 MM IN DIAMETER, VERY SANDY AND SILTY, SUB-ROUND TO ANGULAR; LITHIC CLASTS WITH SOME SMALLER FROSTED POLISHED QUARTZ CLASTS, CALCAREOUS</td>
</tr>
<tr>
<td>2361.00 - 2326.00</td>
<td>77.0 - 112.0</td>
<td>SANDSTONE, LIGHT-BROWN, VERY FINE TO MEDIUM, SILTY, SUBANGULAR TO ROUNDED; SUB-EQUAL QUARTZ AND LITHIC GRAINS, BOTH POLISHED AND FROSTED QUARTZ GRAINS, MODERATE TO FIRM CALCITE CEMENT</td>
</tr>
<tr>
<td>2326.00 - 2271.00</td>
<td>112.0 - 167.0</td>
<td>SILTSTONE, LIGHT-GREENISH-GRAY TO GREENISH-GRAY, CLAYEY; PLATY TO TABULAR FRAGMENTS, SLIGHTLY CALCAREOUS TO NON-CALCAREOUS, VERY SANDY FROM 156 FEET TO 167 FEET (WHITE RIVER GROUP?)</td>
</tr>
</tbody>
</table>
2271.00–2265.00  167.0–173.0  Clay, light-brown to very pale-orange; soft, massive, poorly calcareous to noncalcareous (weathered Pierre Shale)

2265.00–2229.00  173.0–209.0  Shale, dark-yellowish-orange to very pale-orange; mottled, very calcareous, fissile (weathered Pierre Shale)

2229.00–2191.00  209.0–247.0  Shale, olive-gray; platy to fissile, some scattered foraminifera tests on bedding surfaces, calcareous (Pierre Shale)

* * * *
**Location Information**

Legal Location: NW NW NW NW SEC. 30, T. 038 N., R. 25 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner:

Location: 038N-25W-30BBBB
Latitude: 43 14' 42"
Longitude: 100 19' 55"
Ground Surface Elevation (ft.): 2484 T

**Project Information**

Project: USGS HIGH PLAINS PROJECT
Drill Date: 09/25/1980
Company: GRIMSHAW DRILLING
Drilling Method: ROTARY
Test Hole Number:
Samples:

Geologist: 
Driller: L. WOLD
Driller's Log:

Total Drill Hole Depth (ft.): 340.0

**Well Information**

SDGS Well Name:
Water Rights Well: TD-60D
Other Well Name: TD 80-5
Casing Type: PVC
Screen Type: PVC
Total Casing and Screen (ft.): 144.7
Well Maintenance Date: 06/27/1984

Casing Top Elevation:
Casing Diameter (in.):
Screen Length (ft.):
Casing Stick-up (ft.):

Aquifer: ARIKAREE
Management Unit:
Casing Top Elevation:
Casing Diameter (in.):
Screen Length (ft.):
Casing Stick-up (ft.):

**Geophysical Information**

Spontaneous Potential: X
Natural Gamma: X
Single Point Resistivity: X
Extra:

CASING IS SLOTTED FROM 80 TO 120 FEET. BOTTOM SECTION OF CASING HAS A 5-FOOT SANDPOINT ATTACHED. WELL GRAVEL PACKED, STAKED AND WIRE SECURED, BACKFILLED WITH MUD. SLOTTED CASING WAS GENERALLY PLACED OPPOSITE THE DEEPEST BEST SANDS IN THE ARIKAREE. SOURCE OF DATA: USGS OPEN-FILE REPORT 84-148.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2484.00-2464.00</td>
<td>0.0-20.0</td>
<td>TOPSOIL; SAND, SOME SANDSTONE</td>
</tr>
<tr>
<td>2464.00-2424.00</td>
<td>20.0-60.0</td>
<td>SANDSTONE; GRAY, SILTY CLAY LUMPS</td>
</tr>
<tr>
<td>2424.00-2364.00</td>
<td>60.0-120.0</td>
<td>SILT AND SILTSTONE, BROWN; GRAY CLAY</td>
</tr>
<tr>
<td>2364.00-2344.00</td>
<td>120.0-140.0</td>
<td>SILTSTONE, BROWN; GRAY CLAY, SOME BROWN SAND</td>
</tr>
<tr>
<td>2344.00-2304.00</td>
<td>140.0-180.0</td>
<td>SILTSTONE, LIGHT- TO DARK-BROWN</td>
</tr>
<tr>
<td>2304.00-2204.00</td>
<td>180.0-280.0</td>
<td>SILTSTONE, LIGHT- TO DARK-BROWN; WHITE CLAY LUMPS</td>
</tr>
<tr>
<td>2204.00-2184.00</td>
<td>280.0-300.0</td>
<td>SHALE, GRAY AND GREEN: BROWN SILTSTONE</td>
</tr>
<tr>
<td>2184.00-2144.00</td>
<td>300.0-340.0</td>
<td>SHALE, GRAY AND GREEN</td>
</tr>
</tbody>
</table>
AN INDUCTION LOG WAS RUN ON THIS HOLE; NATURAL GAMMA, CONDUCTIVITY, AND RESISTIVITY. THIS HOLE WAS PLUGGED FROM 262 TO 12 FEET BELOW LAND SURFACE WITH HIGH SOLIDS BENTONITE; 12 TO 2 FEET WITH NEAT CEMENT GROUT; AND FROM 2 FEET TO LAND SURFACE WITH NATIVE SEDIMENT.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2493.00-2491.00</td>
<td>0.0 - 2.0</td>
<td>TOPSOIL, DARK-BROWN, SILTY</td>
</tr>
<tr>
<td>2491.00-2468.00</td>
<td>2.0 - 25.0</td>
<td>SILTSTONE, GRAYISH-ORANGE TO LIGHT-BROWN, SLIGHTLY SANDY; CALCAREOUS (ROSEBUD FORMATION?)</td>
</tr>
<tr>
<td>2468.00-2445.00</td>
<td>25.0 - 48.0</td>
<td>SILTSTONE, MODERATE-ORANGE-PINK, SANDY; CALCAREOUS; SOME HARD CHERTY BEDS WITH SMALL VUGS (ROSEBUD FORMATION?)</td>
</tr>
<tr>
<td>2445.00-2407.00</td>
<td>48.0 - 86.0</td>
<td>SILTSTONE, GRAYISH-ORANGE, CLAYEY; NONCALCAREOUS (ROSEBUD FORMATION?)</td>
</tr>
<tr>
<td>2407.00-2329.00</td>
<td>86.0 - 164.0</td>
<td>SILTSTONE, GRAYISH-ORANGE, SANDY; VERY CALCAREOUS; SEVERAL THIN, MASSIVE SILTSTONE BEDS (ROSEBUD FORMATION?)</td>
</tr>
<tr>
<td>2329.00-2302.00</td>
<td>164.0 - 191.0</td>
<td>SILTSTONE, PALE-OLIVE, CLAYEY, SANDY; NONCALCAREOUS; POORLY FISSILE TO MASSIVE (BRULE FORMATION?)</td>
</tr>
<tr>
<td>2302.00-2271.00</td>
<td>191.0 - 222.0</td>
<td>CLAYSTONE, LIGHT-OLIVE-GRAY GRADING DOWNWARD TO LIGHT-BROWN, SILTY; POORLY CALCAREOUS (CHADRON FORMATION?)</td>
</tr>
<tr>
<td>2271.00-2262.00</td>
<td>222.0 - 231.0</td>
<td>CLAYSTONE, BLACK; CALCAREOUS TO POORLY CALCAREOUS; POORLY FISSILE (PIERRE SHALE)</td>
</tr>
<tr>
<td>2262.00-2231.00</td>
<td>231.0 - 262.0</td>
<td>CLAYSTONE, DARK-BROWNISH-GRAY; CALCAREOUS; SOME</td>
</tr>
</tbody>
</table>
SMALL WHITE SPECKS (PIERRE SHALE)

* * * *

038N27W07DDDD 01/31/2005
**Location Information**

- **Legal Location:** SW NW SW SW SEC. 24, T. 038 N., R. 27 W.
- **County:** TODD
- **Basin:** KEYA PAHA
- **Hydrologic Unit Code:** 10150006
- **Land Owner:**
- **Location:** 038N-27W-24CCBC
- **Latitude:** 43 15' 16"
- **Longitude:** 100 28' 15"
- **Ground Surface Elevation (ft.):** 2428 T

**Project Information**

- **Project:** WATER RIGHTS
- **Drill Date:** 01/01/1957
- **Company:** GRIMSHAW DRILLING
- **Drilling Method:** ROTARY
- **Test Hole Number:**
- **Samples:**
- **Geologist:** D. DRISCOLL
- **Driller:** J. HUTMACHER
- **Driller's Log:**
- **Total Drill Hole Depth (ft.):** 35.0

**Well Information**

- **SDGS Well Name:**
- **Water Rights Well:** TD-57B
- **Other Well Name:**
- **Casing Type:** STEEL
- **Screen Type:** UNKNOWN
- **Total Casing and Screen (ft.):** 20.7
- **Casing Top Elevation:**
- **Casing Diameter (in.):** 1.3
- **Screen Length (ft.):**
- **Casing Stick-up (ft.):**
- **Well Maintenance Date:** 06/27/1984

**Geophysical Information**

- **Spontaneous Potential:**
- **Natural Gamma:**
- **Single Point Resistivity:**
- **Extra:**

**ORIGINAL OBSERVATION WELL NAME K-2.**

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>2428.00-2412.00</td>
<td>0.0-16.0</td>
<td>SAND, FINE</td>
</tr>
<tr>
<td>2412.00-2393.00</td>
<td>16.0-35.0</td>
<td>CLAY AND SAND LAYER</td>
</tr>
</tbody>
</table>

* * *
Location Information

Legal Location:SE SE SE SW SEC. 03, T. 038 N., R. 28 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner: TODD
Location: 038N-20W-03CDDD
Latitude: 43 17' 20"
Longitude: 100 37' 22"
Ground Surface Elevation (ft.): 2540 T

Project Information

Project: MISSION WATER PROJECT
Drill Date: 06/14/1966
Company: SDGS
Drilling Method: AUGER
Test Hole Number: 3
Samples: 

Geologist: A. BARARI
Driller: BRINKLEY/GANN
Driller's Log: X
Total Drill Hole Depth (ft.): 69.0

Geophysical Information

Spontaneous Potential:
Natural Gamma: 
Single Point Resistivity: 
Extra: 

SPECIAL REPORT 41.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2540.00 - 2536.00</td>
<td>0.0 - 4.0</td>
<td>SAND, WHITE, FINE; POWDERY, DRY</td>
</tr>
<tr>
<td>2536.00 - 2533.00</td>
<td>4.0 - 7.0</td>
<td>SAND, GREENISH-BROWN, FINE, CLAYEY; HARD</td>
</tr>
<tr>
<td>2533.00 - 2526.00</td>
<td>7.0 - 14.0</td>
<td>SILT, GREENISH-BROWN; SOME SAND, MOIST</td>
</tr>
<tr>
<td>2526.00 - 2503.00</td>
<td>14.0 - 37.0</td>
<td>CLAY, BROWN, SILTY, SANDY; MOIST</td>
</tr>
<tr>
<td>2503.00 - 2493.00</td>
<td>37.0 - 47.0</td>
<td>SILT, GREENISH-BROWN, CLAYEY; WITH FINE TO MEDIUM SAND, MOIST</td>
</tr>
<tr>
<td>2493.00 - 2476.00</td>
<td>47.0 - 64.0</td>
<td>SILT, BUFF-BROWN, SANDY; SATURATED</td>
</tr>
<tr>
<td>2476.00 - 2471.00</td>
<td>64.0 - 69.0</td>
<td>CLAY, DARK-BROWN, SILTY, SANDY; HARD</td>
</tr>
</tbody>
</table>

DEPTH TO WATER - 47 FEET.

***

038N28W03CDDD  Page 1  01/31/2005
Location Information

Legal Location: SW SW NW NE SEC. 04, T. 038 N., R. 28 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner: 
Longitude: 100 38' 31"
Latitude: 43 17' 58"
Ground Surface Elevation (ft.): 2545

Project Information

Project: MISSION WATER PROJECT
Drill Date: 07/06/1966
Company: SDGS
Drilling Method: AUGER
Test Hole Number: 7
Samples: 
Geologist: A. BARARI
Driller: BRINKLEY/GANN
Geologist's Log: 
Driller's Log: X
Total Drill Hole Depth (ft.): 39.0

Geophysical Information

Spontaneous Potential: 
Natural Gamma: 
Single Point Resistivity: 
Extra: 

SPECIAL REPORT 41.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2545.00 - 2541.00</td>
<td>0.0 - 4.0</td>
<td>SAND, BUFF-BROWNISH-TAN; MOIST</td>
</tr>
<tr>
<td>2541.00 - 2536.00</td>
<td>4.0 - 9.0</td>
<td>SAND, TANNISH-BROWN, COARSE; SATURATED</td>
</tr>
<tr>
<td>2536.00 - 2532.00</td>
<td>9.0 - 13.0</td>
<td>SAND, BLACKISH- TO BROWNISH-GRAY, MEDIUM TO COARSE; SATURATED</td>
</tr>
<tr>
<td>2532.00 - 2514.00</td>
<td>13.0 - 31.0</td>
<td>CLAY, TANNISH-BROWN; WITH SAND AND SILT, SATURATED</td>
</tr>
<tr>
<td>2514.00 - 2506.00</td>
<td>31.0 - 39.0</td>
<td>CLAY, GREENISH- TO TANNISH-BROWN; DRY</td>
</tr>
</tbody>
</table>

DEPTH TO WATER - 4 FEET.

* * * *
**Location Information**

Legal Location: SE SE NW NW SEC. 04, T. 038 N., R. 28 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner:

Location: 038N-28W-04BBDD
Latitude: 43 17' 57"
Longitude: 100 38' 50"
Ground Surface Elevation (ft.): 2550 T

**Project Information**

Project: MISSION WATER PROJECT
Drill Date: 07/05/1966
Company: SDGS
Drilling Method: AUGER
Test Hole Number: 6
Samples:

Geologist: A. BARARI
Geologist's Log:
Driller: BRINKLEY/GANN
Driller's Log: X
Total Drill Hole Depth (ft.): 44.0

**Geophysical Information**

Spontaneous Potential:
Natural Gamma:
Single Point Resistivity:
Extra:

SPECIAL REPORT 41.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2550.00-2547.00</td>
<td>0.0-3.0</td>
<td>SILT, LIGHT-BROWN; SOME SAND, DRY</td>
</tr>
<tr>
<td>2547.00-2545.00</td>
<td>3.0-5.0</td>
<td>SAND, LIGHT-BROWN, FINE TO COARSE; DRY</td>
</tr>
<tr>
<td>2545.00-2541.00</td>
<td>5.0-9.0</td>
<td>SAND, DARK-GRAY, FINE TO COARSE; HIGHLY SATURATED</td>
</tr>
<tr>
<td>2541.00-2537.00</td>
<td>9.0-13.0</td>
<td>SAND, DARK-BROWNISH-GRAY, FINE TO MEDIUM; HIGHLY SATURATED</td>
</tr>
<tr>
<td>2537.00-2531.00</td>
<td>13.0-19.0</td>
<td>CLAY, LIGHT-TANNISH-YELLOW; SOME FINE SAND, HARD, SATURATED</td>
</tr>
<tr>
<td>2531.00-2506.00</td>
<td>19.0-44.0</td>
<td>CLAY, LIGHT-TAN TO WHITISH-GRAY; MOIST TO DRY</td>
</tr>
</tbody>
</table>

DEPTH TO WATER – 5 FEET.

* * * *
Location Information

Legal Location: SW SW SW SE SEC. 06, T. 038 N., R. 28 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner: 

Location: 038N-28W-06DCCC
Latitude: 43° 17' 19"
Longitude: 100° 40' 53"
Ground Surface Elevation (ft.): 2578 T

Project Information

Project: MISSION WATER PROJECT
Drill Date: 07/06/1966
Company: SDGS
Drilling Method: AUGER
Test Hole Number: 5
Samples: 

Geologist: A. BARARI
Driller: BRINKLEY/GANN
Driller's Log: X
Total Drill Hole Depth (ft.): 54.0

Geophysical Information

Spontaneous Potential: 
Natural Gamma: 
Single Point Resistivity: 
Extra: 

SPECIAL REPORT 41.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>2578.00-2577.00</td>
<td>0.0-1.0</td>
<td>TOPSOIL</td>
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<tr>
<td>2577.00-2564.00</td>
<td>1.0-14.0</td>
<td>SAND, BLACKISH-GRAY; SATURATED</td>
</tr>
<tr>
<td>2564.00-2558.00</td>
<td>14.0-20.0</td>
<td>SAND, BROWNISH-TAN, FINE TO COARSE; SATURATED</td>
</tr>
<tr>
<td>2558.00-2549.00</td>
<td>20.0-29.0</td>
<td>CLAY, BROWNISH-TAN; MOIST</td>
</tr>
<tr>
<td>2549.00-2529.00</td>
<td>29.0-49.0</td>
<td>CLAY, BROWNISH-TAN; SATURATED</td>
</tr>
<tr>
<td>2529.00-2524.00</td>
<td>49.0-54.0</td>
<td>CLAY, BROWNISH-TAN; HARD, DRY</td>
</tr>
</tbody>
</table>

DEPTH TO WATER - 1 FOOT.

* * * *
Location Information

Legal Location: SE SE NE NE Sec. 08, T. 038 N., R. 28 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner:
Location: 038N-28W-08AADD
Latitude: 43° 17' 06"
Longitude: 100° 39' 08"
Ground Surface Elevation (ft.): 2610 T

Project Information

Project: MISSION WATER PROJECT
Drill Date: 06/13/1966
Company: SDGS
Drilling Method: AUGER
Test Hole Number: 10
Samples:
Geologist: A. BARARI
Geologist's Log:
Driller: BRINKLEY/GANN
Driller's Log: X
Total Drill Hole Depth (ft.): 84.0

Geophysical Information

Spontaneous Potential: Extra:
Natural Gamma: Single Point Resistivity:

SPECIAL REPORT 41.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2610.00-2608.00</td>
<td>0.0-2.0</td>
<td>TOPSOIL</td>
</tr>
<tr>
<td>2608.00-2600.00</td>
<td>2.0-10.0</td>
<td>CLAY, WHITISH-GRAY, SILTY; SOME SAND, DRY</td>
</tr>
<tr>
<td>2600.00-2596.00</td>
<td>10.0-14.0</td>
<td>CLAY, LIGHT-GRAY, SILTY, SANDY; MOIST</td>
</tr>
<tr>
<td>2596.00-2571.00</td>
<td>14.0-39.0</td>
<td>CLAY, LIGHT-TANNISH-BUFF, SILTY; SOME FINE SAND, DRY</td>
</tr>
<tr>
<td>2571.00-2551.00</td>
<td>39.0-59.0</td>
<td>CLAY, BUFFISH-TAN, SILTY, SANDY; SOME COARSE SAND, MOIST</td>
</tr>
<tr>
<td>2551.00-2531.00</td>
<td>59.0-79.0</td>
<td>SAND, LIGHT-TANNISH-BUFF, FINE TO MEDIUM; NEARLY SATURATED</td>
</tr>
<tr>
<td>2531.00-2526.00</td>
<td>79.0-84.0</td>
<td>CLAY, BUFFISH-TAN, SILTY, SANDY; HARD, DRY</td>
</tr>
</tbody>
</table>

DEPTH TO WATER - 59 FEET.

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038N28W08AADD  Page 1  01/31/2005
### Location Information

Legal Location: SE SE SE SW SEC. 08, T. 038 N., R. 28 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner:

- Location: 038N-28W-08CDDD
- Latitude: 43 16' 26"
- Longitude: 100 39' 43"
- Ground Surface Elevation (ft.): 2680 T

### Project Information

- Project: MISSION WATER PROJECT
- Drill Date: 06/13/1966
- Company: SDGS
- Drilling Method: AUGER
- Test Hole Number: 9
- Samples:

  - Geologist: A. BARARI
  - Geologist's Log:
  - Driller: BRINKLEY/GANN
  - Driller's Log: X
  - Total Drill Hole Depth (ft.): 74.0

### Geophysical Information

- Spontaneous Potential:
- Natural Gamma:
- Single Point Resistivity:
- Extra:

SPECIAL REPORT 41.

### Geophysical Information Table

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
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<tr>
<td>2680.00 - 2678.00</td>
<td>0.0 - 2.0</td>
<td>TOPSOIL</td>
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<tr>
<td>2678.00 - 2671.00</td>
<td>2.0 - 9.0</td>
<td>SAND, LIGHT-YELLOWISH-BROWN, FINE, SILTY; MOIST</td>
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<tr>
<td>2671.00 - 2661.00</td>
<td>9.0 - 19.0</td>
<td>SAND, LIGHT-TANNISH-GREEN, FINE, SILTY, CLAYEY; MOIST</td>
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<td>42.0 - 54.0</td>
<td>SAND, LIGHT-TANNISH-GREEN, FINE; INTERMIXED WITH SILT AND CLAY, DRY TO SLIGHTLY MOIST, HARD</td>
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<tr>
<td>2626.00 - 2606.00</td>
<td>54.0 - 74.0</td>
<td>CLAY, LIGHT-OLIVE-GREEN, SILTY; SOME FINE SAND</td>
</tr>
</tbody>
</table>

DEPTH TO WATER - DRY.

* * * *
### Location Information

- **Legal Location:** SE SE SW SE SEC. 10, T. 038 N., R. 28 W.
- **County:** TODD
- **Basin:** KEYA PAHA
- **Hydrologic Unit Code:** 10150006
- **Land Owner:**
- **Location:** 038N-28W-10DCDD
- **Latitude:** 43 16' 27"
- **Longitude:** 100 37' 02"
- **Ground Surface Elevation (ft.):** 2640 T

### Project Information

- **Project:** MISSION WATER PROJECT
- **Drill Date:** 06/20/1966
- **Company:** SDGS
- **Drilling Method:** AUGER
- **Test Hole Number:** 11
- **Samples:**
- **Geologist:** A. BARARI
- **Driller:** BRINKLEY/GANN
- **Driller's Log:** X
- **Total Drill Hole Depth (ft.):** 34.0

### Geophysical Information

- **Spontaneous Potential:**
- **Natural Gamma:**
- **Single Point Resistivity:**
- **Extra:**

SPECIAL REPORT 41.

---

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
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<tr>
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<td>SAND, BROWNISH-TAN, FINE TO MEDIUM; SOME SILT, MOIST</td>
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<tr>
<td>2631.00 - 2626.00</td>
<td>9.0 - 14.0</td>
<td>SAND, LIGHT-BROWNISH-TAN, FINE TO MEDIUM; SOME SILT, MOIST</td>
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<tr>
<td>2626.00 - 2613.00</td>
<td>14.0 - 27.0</td>
<td>SILT, TANNISH-BROWN, CLAYEY; SOME FINE TO MEDIUM SAND, MOIST</td>
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<tr>
<td>2613.00 - 2611.00</td>
<td>27.0 - 29.0</td>
<td>CLAY, TANNISH-BROWN, SILTY; SOME FINE TO MEDIUM SAND, DRY</td>
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<tr>
<td>2611.00 - 2606.00</td>
<td>29.0 - 34.0</td>
<td>CLAY, DARK-TANNISH-BROWN, SILTY; SOME FINE TO MEDIUM SAND, HARD, MOIST</td>
</tr>
</tbody>
</table>

DEPTH TO WATER - DRY.

* * * *
Location Information

Legal Location: SW SW SW SW SEC. 13, T. 038 N., R. 28 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner: 

Location: 038N-28W-13CCCC
Latitude: 43 15' 35"
Longitude: 100 35' 30"
Ground Surface Elevation (ft.): 2577 T

Project Information

Project: MISSION WATER PROJECT
Drill Date: 06/20/1966
Company: SDGS
Drilling Method: AUGER
Test Hole Number: 19
Samples: 

Geologist: A. BARARI
Geologist's Log: 
Driller: BRINKLEY/GANN
Driller's Log: X
Total Drill Hole Depth (ft.): 64.0

Geophysical Information

Spontaneous Potential: 
Natural Gamma: 

Single Point Resistivity: 
Extra: 

SPECIAL REPORT 41.

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<th>Elevation (ft.)</th>
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<th>Description</th>
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<td>2573.00 - 2568.00</td>
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<td>2568.00 - 2563.00</td>
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<td>14.0 - 22.0</td>
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<td>2555.00 - 2553.00</td>
<td>22.0 - 24.0</td>
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<td>24.0 - 29.0</td>
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<td>2548.00 - 2543.00</td>
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<tr>
<td>2543.00 - 2538.00</td>
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<td>2538.00 - 2530.00</td>
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<td>CLAY, LIGHT-TAN, SILTY; SOME VERY FINE SAND, SLIGHTLY SATURATED</td>
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<td>2530.00 - 2528.00</td>
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<td>CLAY, TANNISH-BROWN, SILTY; SOME FINE TO COARSE SAND, DRY</td>
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<tr>
<td>2528.00 - 2513.00</td>
<td>49.0 - 64.0</td>
<td>CLAY, TANNISH-BROWN, SILTY; SOME FINE TO COARSE SAND, VERY HARD, DRY</td>
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</table>
DEPTH TO WATER - 39 FEET.

* * * *

* * * *
Location Information

Legal Location: SE SE SW NW SEC. 15, T. 038 N., R. 28 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner:

Location: 038N-28W-15BCDD
Latitude: 43 16' 02"
Longitude: 100 37' 36"
Ground Surface Elevation (ft.): 2700 T

Project Information

Project: MISSION WATER PROJECT
Drill Date: 06/21/1966
Company: SDGS
Drilling Method: AUGER
Test Hole Number: 18
Geologist: A. BARARI
Driller: BRINKLEY/GANN
Driller's Log: X
Total Drill Hole Depth (ft.): 69.0

Samples:
Spontaneous Potential:
Natural Gamma:
Single Point Resistivity:
Extra:

Geophysical Information

SPECIAL REPORT 41.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
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<th>Description</th>
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</thead>
<tbody>
<tr>
<td>2700.00 - 2699.00</td>
<td>0.0 - 1.0</td>
<td>TOPSOIL</td>
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<tr>
<td>2699.00 - 2691.00</td>
<td>1.0 - 9.0</td>
<td>SILT, BROWN; WITH SOME FINE SAND</td>
</tr>
<tr>
<td>2691.00 - 2684.00</td>
<td>9.0 - 16.0</td>
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<td>2684.00 - 2681.00</td>
<td>16.0 - 19.0</td>
<td>SAND, BROWNISH-TAN, FINE, SILTY; DRY</td>
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<td>2681.00 - 2673.00</td>
<td>19.0 - 27.0</td>
<td>SAND, GREENISH-BROWN, FINE TO MEDIUM, SILTY; MOIST</td>
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<td>2673.00 - 2666.00</td>
<td>27.0 - 34.0</td>
<td>SILT, TANNISH-BROWN, CLAYEY; WITH FINE TO MEDIUM SAND, MOIST</td>
</tr>
<tr>
<td>2666.00 - 2646.00</td>
<td>34.0 - 54.0</td>
<td>SILT, TANNISH-BROWN; WITH LITTLE TO NO SAND, SATURATED</td>
</tr>
<tr>
<td>2646.00 - 2631.00</td>
<td>54.0 - 69.0</td>
<td>CLAY, TANNISH-BROWN, SILTY; LITTLE SAND, HARD</td>
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</tbody>
</table>

DEPTH TO WATER – 34 FEET.

* * * *
Location Information

Legal Location: SE SE NE NE SEC. 17, T. 038 N., R. 28 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner: 
Location: 038N-28W-17AADD
Latitude: 43 16' 15"
Longitude: 100 39' 07"
Ground Surface Elevation (ft.): 2665 T

Project Information

Project: MISSION WATER PROJECT
Drill Date: 06/13/1966
Company: SDGS
Drilling Method: AUGER
Test Hole Number: 17
Samples: 
Geologist: A. BARARI
Geologist's Log: 
Driller: BRINKLEY/GANN
Driller's Log: 
Total Drill Hole Depth (ft.): 74.0

Geophysical Information

Spontaneous Potential: 
Natural Gamma: 
Single Point Resistivity: 
Extra: 

SPECIAL REPORT 41.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
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<tbody>
<tr>
<td>2665.00 - 2651.00</td>
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<td>SAND, OLIVE TO GREENISH-BROWN, FINE, SILTY; MOIST</td>
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<td>2646.00 - 2631.00</td>
<td>19.0 - 34.0</td>
<td>SAND, LIGHT-BROWN WITH A GREENISH TINGE, FINE TO MEDIUM; ROCK AT 20 FEET, DRY</td>
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<td>34.0 - 52.0</td>
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<tr>
<td>2613.00 - 2598.00</td>
<td>52.0 - 67.0</td>
<td>CLAY, KHAKI-TAN, SILTY, VERY SANDY; SATURATED</td>
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<td>2598.00 - 2596.00</td>
<td>67.0 - 69.0</td>
<td>CLAY, BROWN; HARD, COMPACT</td>
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<td>2596.00 - 2591.00</td>
<td>69.0 - 74.0</td>
<td>SILT, BROWN, SANDY; DRY TO MOIST</td>
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DEPTH TO WATER - 52 FEET.

* * * *
### Location Information

- **Legal Location:** NE NW NW NW SEC. 18, T. 038 N., R. 28 W.
- **County:** TODD
- **Basin:** KEYA PAHA
- **Hydrologic Unit Code:** 10150006
- **Land Owner:**
- **Location:** 038N-28W-18BBBA
- **Latitude:** 43 16' 25"
- **Longitude:** 100 41' 18"
- **Ground Surface Elevation (ft.):** 2598

### Project Information

- **Project:** MISSION WATER PROJECT
- **Drill Date:** 06/15/1966
- **Company:** SDGS
- **Drilling Method:** AUGER
- **Test Hole Number:** 16
- **Samples:**
- **Geologist:** A. BARARI
- **Driller:** BRINKLEY/GANN
- **Driller's Log:** X
- **Total Drill Hole Depth (ft.):** 104.0

### Geophysical Information

- **Spontaneous Potential:**
- **Natural Gamma:**
- **Single Point Resistivity:**
- **Extra:**

SPECIAL REPORT 41.

### Geophysical Information Table

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<td>2574.00 - 2547.00</td>
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<td>2547.00 - 2539.00</td>
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DEPT TO WATER - 15 FEET.
Location Information

Legal Location: SE SW SE NE SEC. 19, T. 038 N., R. 28 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner:
Location: 038N-28W-19ADCD
Latitude: 43 15' 08"
Longitude: 100 40' 26"
Ground Surface Elevation (ft.): 2675 T

Project Information

Project: MISSION WATER PROJECT
Drill Date: 06/27/1966
Company: SDGS
Drilling Method: AUGER
Test Hole Number: 25
Samples:
Geologist: A. BARARI
Driller: BRINKLEY/GANN
Driller's Log: X
Total Drill Hole Depth (ft.): 69.0

Geophysical Information

Spontaneous Potential:
Natural Gamma:
Single Point Resistivity:
Extra:

SPECIAL REPORT 41.

<table>
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<td>2674.00 - 2671.00</td>
<td>1.0 - 4.0</td>
<td>CLAY, BROWN, SILTY; DRY</td>
</tr>
<tr>
<td>2671.00 - 2666.00</td>
<td>4.0 - 9.0</td>
<td>CLAY, WHITISH-TAN, SILTY; VERY DRY</td>
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<tr>
<td>2666.00 - 2661.00</td>
<td>9.0 - 14.0</td>
<td>CLAY, LIGHT-TAN; DRY</td>
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<tr>
<td>2661.00 - 2656.00</td>
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<td>CLAY, LIGHT-GRAY, SILTY; DRY</td>
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<td>29.0 - 34.0</td>
<td>CLAY, LIGHT-TANNISH-BROWN; MOIST</td>
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<td>CLAY, LIGHT-GRAY, SILTY; SATURATED</td>
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<td>CLAY, REDDISH-TAN; MOIST TO DRY</td>
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DEPTH TO WATER - 34 FEET.

* * * *
**Location Information**

Legal Location: NW SW NE NW SEC. 19, T. 038 N., R. 28 W.
County: TODD  
Basin: KEYA PAHA  
Hydrologic Unit Code: 10150006  
Land Owner:  

Longitude: 038N-28W-19BACB  
Latitude: 43 15' 25"  
Longitude: 100 41' 06"  
Ground Surface Elevation (ft.): 2620 T

**Project Information**

Project: MISSION WATER PROJECT  
Drill Date: 06/15/1966  
Company: SDGS  
Drilling Method: AUGER  
Test Hole Number: 23  
Samples:  

Geologist: A. BARARI  
Geologist's Log:  
Driller: BRINKLEY/GANN  
Driller's Log: X  
Total Drill Hole Depth (ft.): 44.0

**Geophysical Information**

Spontaneous Potential:  
Natural Gamma:  
Single Point Resistivity:  
Extra:  

SPECIAL REPORT 41.

<table>
<thead>
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<th>Elevation (ft.)</th>
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<th>Description</th>
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<td>SAND, DARK-GRAY, FINE TO MEDIUM, SILTY; SATURATED</td>
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<td>2579.00 - 2576.00</td>
<td>41.0 - 44.0</td>
<td>CLAY, LIGHT-TANNISH-BROWN TO BUFF, SILTY; WITH SOME FINE TO MEDIUM TO COARSE SAND, HARD, DRY</td>
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</table>

DEPTH TO WATER - 9 FEET.

* * * *
## Location Information

- **Legal Location:** SE SE SE NW SEC. 19, T. 038 N., R. 28 W.
- **County:** TODD
- **Basin:** KEYA PAHA
- **Hydrologic Unit Code:** 10150006
- **Land Owner:**
- **Location:** 038N-28W-19BDDD
- **Latitude:** 43 15' 08"
- **Longitude:** 100 40' 50"
- **Ground Surface Elevation (ft.):** 2640 T

## Project Information

- **Project:** MISSION WATER PROJECT
- **Drill Date:** 06/16/1966
- **Company:** SDGS
- **Drilling Method:** AUGER
- **Test Hole Number:** 24
- **Driller:** BRINKLEY/GANN
- **Geologist:** A. BARARI
- **Driller's Log:** X
- **Geologist's Log:**
- **Total Drill Hole Depth (ft.):** 44.0

## Geophysical Information

- **Spontaneous Potential:**
- **Natural Gamma:**
- **Single Point Resistivity:**
- **Extra:**

SPECIAL REPORT 41.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
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<tr>
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<td>0.0 - 21.0</td>
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<tr>
<td>2619.00 - 2609.00</td>
<td>21.0 - 31.0</td>
<td>SAND, DARK-GRAY, FINE TO MEDIUM, SILTY; SATURATED</td>
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<tr>
<td>2609.00 - 2598.00</td>
<td>31.0 - 42.0</td>
<td>CLAY, GRAYISH- TO BLACKISH-BROWN, SILTY; WITH SOME FINE TO MEDIUM SAND, SATURATED</td>
</tr>
<tr>
<td>2598.00 - 2596.00</td>
<td>42.0 - 44.0</td>
<td>CLAY, TANNISH-BROWN, SILTY; WITH FINE TO MEDIUM SAND, SOME GRAVEL, DRY</td>
</tr>
</tbody>
</table>

DEPTH TO WATER - 4 FEET.

* * * *
Location Information

Legal Location: SE NE NE NE Sec. 20, T. 038 N., R. 28 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner:

Location: 038N-28W-20AAAD
Latitude: 43 15' 29"
Longitude: 100 39' 05"
Ground Surface Elevation (ft.): 2700 T

Project Information

Project: MISSION WATER PROJECT
Drill Date: 06/20/1966
Company: SDGS
Drilling Method: AUGER
Test Hole Number: 26
Samples:

Geologist: A. BARARI
Driller: BRINKLEY/GANN
Driller's Log: X
Total Drill Hole Depth (ft.): 84.0

Geophysical Information

Spontaneous Potential:
Natural Gamma:
Single Point Resistivity:
Extra:

SPECIAL REPORT 41.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2700.00 - 2699.00</td>
<td>0.0 - 1.0</td>
<td>TOPSOIL</td>
</tr>
<tr>
<td>2699.00 - 2696.00</td>
<td>1.0 - 4.0</td>
<td>SAND, BLACKISH-BROWN, FINE; SOME SILT AND CLAY, DRY</td>
</tr>
<tr>
<td>2696.00 - 2691.00</td>
<td>4.0 - 9.0</td>
<td>SAND, TANNISH-BROWN, FINE TO COARSE, SILTY; SOME FINE GRAVEL, SOME CLAY, MOIST</td>
</tr>
<tr>
<td>2691.00 - 2681.00</td>
<td>9.0 - 19.0</td>
<td>SAND, TANNISH-YELLOW, FINE; SOME SILT, MOIST</td>
</tr>
<tr>
<td>2681.00 - 2676.00</td>
<td>19.0 - 24.0</td>
<td>CLAY, GREENISH-TAN, SILTY, SANDY; MOIST</td>
</tr>
<tr>
<td>2676.00 - 2666.00</td>
<td>24.0 - 34.0</td>
<td>SAND, LIGHT-YELLOW, FINE, VERY SILTY; MOIST</td>
</tr>
<tr>
<td>2666.00 - 2656.00</td>
<td>34.0 - 44.0</td>
<td>SAND, LIGHT-YELLOW, COARSE; MOIST</td>
</tr>
<tr>
<td>2656.00 - 2646.00</td>
<td>44.0 - 54.0</td>
<td>SAND, YELLOWISH-TAN, FINE TO COARSE; MOIST</td>
</tr>
<tr>
<td>2646.00 - 2633.00</td>
<td>54.0 - 67.0</td>
<td>SAND, YELLOWISH-TAN, FINE TO COARSE; SATURATED</td>
</tr>
<tr>
<td>2633.00 - 2616.00</td>
<td>67.0 - 84.0</td>
<td>CLAY, GREENISH-TAN, SILTY; SOME FINE SAND, DRY</td>
</tr>
</tbody>
</table>

DEPTH TO WATER - 54 FEET.

* * * *
Location Information
Legal Location: NE NE NW NE SEC. 21, T. 038 N., R. 28 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner:
Location: 038N-28W-21ABAA
Latitude: 43 15' 34"
Longitude: 100 38' 13"
Ground Surface Elevation (ft.): 2760 T

Project Information
Project: MISSION WATER PROJECT
Drill Date: 07/07/1966
Company: SDGS
Drilling Method: AUGER
Test Hole Number: 30
Samples:
Geologist's Log: A. BARARI
Driller's Log: BRINKLEY/GANN
Geologist: A. BARARI
Driller: BRINKLEY/GANN
Total Drill Hole Depth (ft.): 14.0

Geophysical Information
Spontaneous Potential:
Natural Gamma:
Single Point Resistivity:
Extra:

SPECIAL REPORT 41.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2760.00 - 2751.00</td>
<td>0.0 - 9.0</td>
<td>SILT, BLACKISH-BROWN; DRY</td>
</tr>
<tr>
<td>2751.00 - 2746.00</td>
<td>9.0 - 14.0</td>
<td>SILT; DRY (VOLCANIC ASH?)</td>
</tr>
</tbody>
</table>

DEPTH TO WATER - DRY.

* * * *
**Location Information**

- Legal Location: SE NE SW NE SEC. 21, T. 038 N., R. 28 W.
- County: TODD
- Basin: KEYA PAHA
- Hydrologic Unit Code: 10150006
- Land Owner:  
- Location: 038N-28W-21ACAD
- Latitude: 43 15' 15"
- Longitude: 100 38' 13"
- Ground Surface Elevation (ft.): 2770 T

**Project Information**

- Project: MISSION WATER PROJECT
- Drill Date: 06/22/1966
- Company: SDGS
- Drilling Method: AUGER
- Test Hole Number: 31
- Samples:  
- Geologist: A. BARARI
- Driller's Log: BRINKLEY/GANN
- Driller's Log: X
- Total Drill Hole Depth (ft.): 114.0

**Geophysical Information**

- Spontaneous Potential:  
- Natural Gamma:  
- Single Point Resistivity:  
- Extra:  

**SPECIAL REPORT 41.**

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2770.00 - 2769.00</td>
<td>0.0 - 1.0</td>
<td>TOPSOIL</td>
</tr>
<tr>
<td>2769.00 - 2766.00</td>
<td>1.0 - 4.0</td>
<td>CLAY, DARK-BROWN, SILTY; DRY</td>
</tr>
<tr>
<td>2766.00 - 2761.00</td>
<td>4.0 - 9.0</td>
<td>CLAY, TANNISH-YELLOW, SILTY; SOME FINE SAND, MOIST</td>
</tr>
<tr>
<td>2761.00 - 2756.00</td>
<td>9.0 - 14.0</td>
<td>CLAY, GREENISH-TAN, SILTY; SOME FINE TO COARSE SAND, MOIST</td>
</tr>
<tr>
<td>2756.00 - 2751.00</td>
<td>14.0 - 19.0</td>
<td>SAND, WHITISH-TAN, FINE TO MEDIUM; MOIST</td>
</tr>
<tr>
<td>2751.00 - 2746.00</td>
<td>19.0 - 24.0</td>
<td>SAND, TANNISH-BROWN, FINE TO MEDIUM, SILTY; MOIST</td>
</tr>
<tr>
<td>2746.00 - 2721.00</td>
<td>24.0 - 49.0</td>
<td>SAND, WHITISH-TAN, FINE TO MEDIUM; MOIST</td>
</tr>
<tr>
<td>2721.00 - 2702.00</td>
<td>49.0 - 68.0</td>
<td>SAND, LIGHT-TANNISH-WHITE, FINE TO MEDIUM; SATURATED</td>
</tr>
<tr>
<td>2702.00 - 2691.00</td>
<td>68.0 - 79.0</td>
<td>CLAY, LIGHT-YELLOWISH-TAN, SILTY; SOME FINE SAND, SATURATED</td>
</tr>
<tr>
<td>2691.00 - 2656.00</td>
<td>79.0 - 114.0</td>
<td>CLAY, BROWNISH-PINK TO TAN, SILTY; NO SAND, MOIST TO DRY</td>
</tr>
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</table>

DEPTH TO WATER - 49 FEET.
**Location Information**

Legal Location: NW NW NE NW SEC. 21, T. 038 N., R. 28 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner:

Location: 038N-28W-21BABB
Latitude: 43 15' 33"
Longitude: 100 38' 46"
Ground Surface Elevation (ft.): 2680 T

**Project Information**

Project: MISSION WATER PROJECT
Drill Date: 07/07/1966
Company: SDGS
Drilling Method: AUGER
Test Hole Number: 29
Samples:

Geologist: A. BARARI
Driller: BRINKLEY/GANN
Driller's Log: X
Total Drill Hole Depth (ft.): 34.0

**Geophysical Information**

Spontaneous Potential: 
Natural Gamma: 
Single Point Resistivity: 
Extra:

SPECIAL REPORT 41.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>2680.00-2679.00</td>
<td>0.0-1.0</td>
<td>TOPSOIL</td>
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<tr>
<td>2679.00-2676.00</td>
<td>1.0-4.0</td>
<td>SAND, BROWNISH-TAN; SOME SILT, DRY</td>
</tr>
<tr>
<td>2676.00-2671.00</td>
<td>4.0-9.0</td>
<td>SILT, TANNISH-BROWN; DRY</td>
</tr>
<tr>
<td>2671.00-2666.00</td>
<td>9.0-14.0</td>
<td>SILT, TANNISH-BUFF-BROWN; WITH FINE SAND, MOIST</td>
</tr>
<tr>
<td>2666.00-2646.00</td>
<td>14.0-34.0</td>
<td>SILT, BUFFISH- TO TANNISH-BROWN; WITH FINE SAND, MOIST, TEST HOLE CAVING, ABANDONED</td>
</tr>
</tbody>
</table>

DEPTH TO WATER - DRY.

* * * *
**Location Information**

Legal Location: SW SW NW NW SEC. 21, T. 038 N., R. 28 W.  
County: TODD  
Basin: KEYA PAHA  
Hydrologic Unit Code: 10150006  
Land Owner:  
Location: 038N-28W-21BBCC  
Latitude: 43 15' 21"  
Longitude: 100 39' 04"  
Ground Surface Elevation (ft.): 2720 T

**Project Information**

Project: MISSION WATER PROJECT  
Drill Date: 06/17/1966  
Company: SDGS  
Drilling Method: AUGER  
Test Hole Number: 27  
Samples:  
Geologist: A. BARARI  
Driller: BRINKLEY/GANN  
Driller's Log: X  
Total Drill Hole Depth (ft.): 84.0

**Geophysical Information**

Spontaneous Potential:  
Natural Gamma:  
Single Point Resistivity:  
Extra:

SPECIAL REPORT 41.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>2720.00-2719.00</td>
<td>0.0-1.0</td>
<td>TOPSOIL</td>
</tr>
<tr>
<td>2719.00-2716.00</td>
<td>1.0-4.0</td>
<td>SAND, BLACKISH-BROWN, FINE, SILTY; SOME CLAY</td>
</tr>
<tr>
<td>2716.00-2711.00</td>
<td>4.0-9.0</td>
<td>SAND, BROWNISH-BLACK, FINE, SILTY; MOIST</td>
</tr>
<tr>
<td>2711.00-2706.00</td>
<td>9.0-14.0</td>
<td>CLAY, TANNISH-BROWN, SILTY; WITH SOME FINE SAND, SATURATED</td>
</tr>
<tr>
<td>2706.00-2701.00</td>
<td>14.0-19.0</td>
<td>SAND, BROWNISH-TAN, FINE TO MEDIUM, SILTY; SOME CLAY, SATURATED</td>
</tr>
<tr>
<td>2701.00-2681.00</td>
<td>19.0-39.0</td>
<td>SAND, TANNISH-BROWN, FINE TO MEDIUM; SOME SILT, SATURATED</td>
</tr>
<tr>
<td>2681.00-2666.00</td>
<td>39.0-54.0</td>
<td>CLAY, GREENISH- TO TANNISH-BROWN, SILTY; WITH SOME FINE SAND, MOIST</td>
</tr>
<tr>
<td>2666.00-2636.00</td>
<td>54.0-84.0</td>
<td>CLAY, TANNISH-BROWN, SILTY; WITH SOME FINE SAND, DRY</td>
</tr>
</tbody>
</table>

DEPTH TO WATER - 9 FEET.

* * * *
**Location Information**

<table>
<thead>
<tr>
<th>Legal Location: NW SE SW NW SEC. 21, T. 038 N., R. 28 W.</th>
</tr>
</thead>
<tbody>
<tr>
<td>County: TODD</td>
</tr>
</tbody>
</table>
| Basin: KEYA PAHA | Latitude: 43' 15' 13"
| Hydrologic Unit Code: 10150006 | Longitude: 100' 38' 55"
| Land Owner: | Ground Surface Elevation (ft.): 2690 T |

**Project Information**

<table>
<thead>
<tr>
<th>Project: MISSION WATER PROJECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drill Date: 06/20/1966</td>
</tr>
<tr>
<td>Company: SDGS</td>
</tr>
<tr>
<td>Drilling Method: AUGER</td>
</tr>
<tr>
<td>Test Hole Number: 28</td>
</tr>
<tr>
<td>Driller: BRINKLEY/GANN</td>
</tr>
<tr>
<td>Geologist: A. BARARI</td>
</tr>
<tr>
<td>Driller's Log: X</td>
</tr>
<tr>
<td>Geologist's Log:</td>
</tr>
<tr>
<td>Total Drill Hole Depth (ft.): 84.0</td>
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</table>

**Geophysical Information**

<table>
<thead>
<tr>
<th>Spontaneous Potential:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Gamma:</td>
</tr>
<tr>
<td>Single Point Resistivity:</td>
</tr>
<tr>
<td>Extra:</td>
</tr>
</tbody>
</table>

SPECIAL REPORT 41.

**Elevation (ft.)** | **Depth (ft.)** | **Description**
--- | --- | ----
2690.00 - 2689.00 | 0.0 - 1.0 | TOPSOIL
2689.00 - 2686.00 | 1.0 - 4.0 | SILT, DARK-BROWN; DRY
2686.00 - 2681.00 | 4.0 - 9.0 | SILT, TANNISH-BROWN; DRY
2681.00 - 2676.00 | 9.0 - 14.0 | SAND, LIGHT-TANNISH-BROWN, FINE TO MEDIUM TO COARSE, SILTY; DRY
2676.00 - 2671.00 | 14.0 - 19.0 | SAND, TANNISH-BROWN, FINE TO COARSE; WITH SILT AND CLAY, MOIST
2671.00 - 2666.00 | 19.0 - 24.0 | CLAY, GREENISH- TO TANNISH-BROWN, SILTY; WITH FINE SAND, MOIST
2666.00 - 2654.00 | 24.0 - 36.0 | SAND, LIGHT-TANNISH-BROWN, FINE TO MEDIUM; WITH SILT
2654.00 - 2628.00 | 36.0 - 62.0 | SAND, TANNISH-BROWN, FINE TO MEDIUM; SATURATED
2628.00 - 2606.00 | 62.0 - 84.0 | CLAY, TANNISH-BROWN, SILTY; ALMOST NO SAND, MOIST TO DRY

DEPTH TO WATER - 36 FEET.

* * * *

038N28W21BCDB Page 1 01/31/2005
Location Information

Legal Location: NE NE SW SE Sec. 21, T. 038 N., R. 28 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner:

Location: 038N-28W-21DCAA
Latitude: 43 14' 55"
Longitude: 100 38' 10"
Ground Surface Elevation (ft.): 2750 T

Project Information

Project: MISSION WATER PROJECT
Drill Date: 06/23/1966
Company: SDGS
Drilling Method: AUGER
Test Hole Number: 32A
Samples:

Geologist: A. BARARI
Geologist's Log:
Driller: BRINKLEY/GANN
Driller's Log: X
Total Drill Hole Depth (ft.): 59.0

Geophysical Information

Spontaneous Potential:
Natural Gamma:

Single Point Resistivity:
Extra:

SPECIAL REPORT 41 (NOT USED).

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2750.00-2746.00</td>
<td>0.0-4.0</td>
<td>SAND, BROWNISH-TAN, FINE TO MEDIUM TO COARSE; MOIST</td>
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<tr>
<td>2746.00-2741.00</td>
<td>4.0-9.0</td>
<td>SAND, LIGHT-GREENISH-TAN, FINE TO MEDIUM, SILTY</td>
</tr>
<tr>
<td>2741.00-2733.00</td>
<td>9.0-17.0</td>
<td>SAND, TANNISH-BROWN, FINE, SILTY</td>
</tr>
<tr>
<td>2733.00-2706.00</td>
<td>17.0-44.0</td>
<td>SAND, BUFF- TO TANNISH-BROWN, FINE TO MEDIUM, SILTY; WET</td>
</tr>
<tr>
<td>2706.00-2691.00</td>
<td>44.0-59.0</td>
<td>SAND, TANNISH-BROWN, FINE TO MEDIUM; SATURATED, GOT STUCK AND ABANDONED HOLE</td>
</tr>
</tbody>
</table>

DEPTH TO WATER - 44 FEET.

* * * *
**Location Information**

Legal Location: NE NW SW SE SEC. 21, T. 038 N., R. 28 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner: 

Longitude: 03N-28W-21DCBA
Latitude: 43 14' 55"
Ground Surface Elevation (ft.): 2730 T

**Project Information**

Project: MISSION WATER PROJECT
Drill Date: 07/06/1966
Company: SDGS
Drilling Method: AUGER
Test Hole Number: 32
Samples: 

Geologist: A. BARARI
Geologist's Log: 
Driller: BRINKLEY/GANN
Driller's Log: X
Total Drill Hole Depth (ft.): 99.0

**Geophysical Information**

Spontaneous Potential: 
Natural Gamma: 
Single Point Resistivity: 
Extra: 

SPECIAL REPORT 41.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2730.00 - 2721.00</td>
<td>0.0 - 9.0</td>
<td>SAND, YELLOWISH-TAN, FINE; DRY</td>
</tr>
<tr>
<td>2721.00 - 2711.00</td>
<td>9.0 - 19.0</td>
<td>SAND, YELLOW, FINE TO COARSE</td>
</tr>
<tr>
<td>2711.00 - 2706.00</td>
<td>19.0 - 24.0</td>
<td>SAND, TANNISH-BROWN, SILTY; MOIST</td>
</tr>
<tr>
<td>2706.00 - 2649.00</td>
<td>24.0 - 81.0</td>
<td>SAND, TANNISH-GRAY, FINE TO MEDIUM; SATURATED AT 40 FEET</td>
</tr>
<tr>
<td>2649.00 - 2636.00</td>
<td>81.0 - 94.0</td>
<td>CLAY, GREENISH-GRAY; SOME FINE SAND, MOIST</td>
</tr>
<tr>
<td>2636.00 - 2631.00</td>
<td>94.0 - 99.0</td>
<td>CLAY, PINKISH-TAN; HARD, DRY</td>
</tr>
</tbody>
</table>

DEPTH TO WATER - 40 FEET.

* * * *
Location Information

Legal Location: SW SW SW SE SEC. 21, T. 038 N., R. 28 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner: Location: 038N-28W-21DCCC 1
Latitude: 43 14' 43"
Longitude: 100 38' 27"
Ground Surface Elevation (ft.): 2700 T

Project Information

Project: MISSION WATER PROJECT
Drill Date: 07/11/1966
Company: SDGS
Drilling Method: AUGER
Test Hole Number: 33
Samples: Geologist: A. BARARI
Company's Log: Driller: BRINKLEY/GANN
Driller's Log: X
Total Drill Hole Depth (ft.): 79.0

Geophysical Information

Spontaneous Potential: Single Point Resistivity: Extra:
Natural Gamma: Extra:

SPECIAL REPORT 41.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2700.00-2699.00</td>
<td>0.0-1.0</td>
<td>TOPSOIL</td>
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<tr>
<td>2699.00-2696.00</td>
<td>1.0-4.0</td>
<td>SAND, LIGHT-GRAYISH-TAN, FINE; MOIST</td>
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<tr>
<td>2696.00-2691.00</td>
<td>4.0-9.0</td>
<td>SAND, WHITISH-GRAY, FINE TO MEDIUM; MOIST</td>
</tr>
<tr>
<td>2691.00-2686.00</td>
<td>9.0-14.0</td>
<td>SAND, LIGHT-GRAYISH-GREEN, SILTY; MOIST</td>
</tr>
<tr>
<td>2686.00-2681.00</td>
<td>14.0-19.0</td>
<td>SILT, LIGHT-GREEN TO GRAY; WITH FINE SAND, MOIST</td>
</tr>
<tr>
<td>2681.00-2656.00</td>
<td>19.0-44.0</td>
<td>SAND, WHITE; MOIST TO DRY</td>
</tr>
<tr>
<td>2656.00-2621.00</td>
<td>44.0-79.0</td>
<td>SAND, LIGHT-TANNISH-BROWN, FINE TO MEDIUM; SATURATED</td>
</tr>
</tbody>
</table>

DEPTH TO WATER - 44 FEET.

* * * *
**Location Information**

<table>
<thead>
<tr>
<th>Legal Location:</th>
<th>SW SW SW SE SEC. 21, T. 038 N., R. 28 W.</th>
</tr>
</thead>
<tbody>
<tr>
<td>County:</td>
<td>TODD</td>
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<tr>
<td>Basin:</td>
<td>KEYA PAHA</td>
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<tr>
<td>Hydrologic Unit Code:</td>
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<tr>
<td>Land Owner:</td>
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<tr>
<td>Location:</td>
<td>038N-20W-21DCCC 2</td>
</tr>
<tr>
<td>Latitude:</td>
<td>43 14' 43&quot;</td>
</tr>
<tr>
<td>Longitude:</td>
<td>100 38' 27&quot;</td>
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<tr>
<td>Ground Surface Elevation (ft.):</td>
<td>2700 T</td>
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**Project Information**

<table>
<thead>
<tr>
<th>Project:</th>
<th>MISSION WATER PROJECT</th>
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</thead>
<tbody>
<tr>
<td>Drill Date:</td>
<td>06/24/1966</td>
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<tr>
<td>Company:</td>
<td>SDGS</td>
</tr>
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<td>Drilling Method:</td>
<td>AUGER</td>
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<td>Test Hole Number:</td>
<td>33A</td>
</tr>
<tr>
<td>Samples:</td>
<td></td>
</tr>
<tr>
<td>Geologist:</td>
<td>A. BARARI</td>
</tr>
<tr>
<td>Driller:</td>
<td>BRINKLEY/GANN</td>
</tr>
<tr>
<td>Driller's Log:</td>
<td>X</td>
</tr>
<tr>
<td>Total Drill Hole Depth (ft.):</td>
<td>49.0</td>
</tr>
</tbody>
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**Geophysical Information**

<table>
<thead>
<tr>
<th>Spontaneous Potential:</th>
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<tbody>
<tr>
<td>Natural Gamma:</td>
<td></td>
</tr>
<tr>
<td>Single Point Resistivity:</td>
<td>Extra:</td>
</tr>
</tbody>
</table>

SPECIAL REPORT 41.

**Elevation (ft.)** | **Depth (ft.)** | **Description**
---------------------|-----------------|-----------------|
2700.00 - 2699.00   | 0.0 - 1.0       | TOPSOIL         |
2699.00 - 2696.00   | 1.0 - 4.0       | SAND, BROWNISH-TAN; MOIST |
2696.00 - 2691.00   | 4.0 - 9.0       | SAND, LIGHT-TANNISH-BROWN, FINE TO MEDIUM, SILTY; MOIST |
2691.00 - 2686.00   | 9.0 - 14.0      | SAND, LIGHT-BUFF TO TANNISH-BROWN, FINE, SILTY; MOIST |
2686.00 - 2681.00   | 14.0 - 19.0     | SILT, GREENISH- TO TANNISH-BROWN, CLAYEY; WITH FINE SAND, WET |
2681.00 - 2656.00   | 19.0 - 44.0     | SAND, BUFF TO TANNISH-BROWN, FINE TO MEDIUM; SOME SILT, WET |
2656.00 - 2651.00   | 44.0 - 49.0     | SAND, TANNISH-BROWN, FINE TO COARSE; SATURATED, TEST HOLE CAVING, ABANDONED DRILLING |

DEPTH TO WATER - 44 FEET.

* * * *
**Location Information**

- **Legal Location:** SW SW NW SW SEC. 22, T. 038 N., R. 28 W.
- **County:** TODD
- **Basin:** KEYA PAHA
- **Hydrologic Unit Code:** 10150006
- **Land Owner:**
- **Location:** 038N-20W-22CBCC
- **Latitude:** 41° 14' 56"
- **Longitude:** 100° 37' 51"
- **Ground Surface Elevation (ft.):** 2775 T

**Project Information**

- **Project:** MISSION WATER PROJECT
- **Drill Date:** 06/21/1966
- **Company:** SDGS
- **Drilling Method:** AUGER
- **Test Hole Number:** 28A
- **Driller:** BRINKLEY/GANN
- **Geologist:** BARARI
- **Geologist's Log:**
- **Driller's Log:** X
- **Total Drill Hole Depth (ft.):** 20.0

**Geophysical Information**

- **Spontaneous Potential:**
- **Natural Gamma:**
- **Single Point Resistivity:**
- **Extra:**

SPECIAL REPORT 41 (NOT USED).

**Elevation (ft.)** | **Depth (ft.)** | **Description**
--- | --- | ---
2775.00-2773.00 | 0.0-2.0 | TOPSOIL
2773.00-2761.00 | 2.0-14.0 | SILT, BROWNISH-TAN, FINE; WITH FINE SAND, HARD, DRY
2761.00-2755.00 | 14.0-20.0 | SILT, LIGHT-BROWNISH-TAN, VERY CLAYEY; VERY HARD, VERY DRY, ABANDONED HOLE

DEPTH TO WATER - DRY.

* * *

---

038N28W22CBCC  Page 1  01/31/2005
Location Information

Legal Location: NW SW NW NW SEC. 23, T. 038 N., R. 28 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner: 

Location: 038N-28W-23BBCB
Latitude: 43 15' 27"
Longitude: 100 36' 41"
Ground Surface Elevation (ft.): 2625 T

Project Information

Project: MISSION WATER PROJECT
Drill Date: 06/22/1966
Company: SDGS
Drilling Method: AUGER
Test Hole Number: 34
Samples:

Geologist: A. BARARI
Geologist's Log: 
Driller: BRINKLEY/GANN
Driller's Log: X
Total Drill Hole Depth (ft.): 79.0

Geophysical Information

Spontaneous Potential: 
Natural Gamma: 
Single Point Resistivity: 
Extra: 

SPECIAL REPORT 41.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>2625.00 - 2624.00</td>
<td>0.0 - 1.0</td>
<td>TOSPOIL</td>
</tr>
<tr>
<td>2624.00 - 2621.00</td>
<td>1.0 - 4.0</td>
<td>CLAY, BROWN, SILTY; WITH FINE SAND, MOIST</td>
</tr>
<tr>
<td>2621.00 - 2616.00</td>
<td>4.0 - 9.0</td>
<td>CLAY, BROWN, SILTY; SATURATED</td>
</tr>
<tr>
<td>2616.00 - 2611.00</td>
<td>9.0 - 14.0</td>
<td>CLAY, LIGHT-TANNISH-BROWN, SILTY; SOME GREEN LAYERS, SATURATED</td>
</tr>
<tr>
<td>2611.00 - 2596.00</td>
<td>14.0 - 29.0</td>
<td>CLAY, LIGHT-TANNISH-GREEN, SILTY; SOME FINE SAND, SATURATED</td>
</tr>
<tr>
<td>2596.00 - 2566.00</td>
<td>29.0 - 59.0</td>
<td>CLAY, GREENISH-GRAY AND TANNISH-BROWN, SILTY; SATURATED</td>
</tr>
<tr>
<td>2566.00 - 2561.00</td>
<td>59.0 - 64.0</td>
<td>CLAY, LIGHT-GREEN, SILTY; MOIST</td>
</tr>
<tr>
<td>2561.00 - 2546.00</td>
<td>64.0 - 79.0</td>
<td>CLAY, LIGHT-PINKISH-BROWN, SILTY; SOME COARSE SAND TO FINE GRAVEL, DRY</td>
</tr>
</tbody>
</table>

DEPTH TO WATER - 4 FEET.

* * * *
### Location Information

- **Legal Location:** NW NW NW SW SEC. 23, T. 038 N., R. 28 W.
- **County:** TODD
- **Basin:** KEYA PAHA
- **Hydrologic Unit Code:** 10150006
- **Land Owner:** Location: 038N-28W-23CBBB
- **Latitude:** 43 15' 07"
- **Longitude:** 100 36' 40"
- **Ground Surface Elevation (ft.):** 2640 T

### Project Information

- **Project:** MISSION WATER PROJECT
- **Drill Date:** 07/05/1966
- **Company:** SDGS
- **Drilling Method:** AUGER
- **Test Hole Number:** 35
- **Samples:**
  - **Geologist:** A. BARARI
  - **Geologist's Log:**
  - **Driller:** BRINKLEY/GANN
  - **Driller's Log:** X
  - **Total Drill Hole Depth (ft.):** 84.0

### Geophysical Information

- **Spontaneous Potential:**
- **Natural Gamma:**
- **Single Point Resistivity:**
- **Extra:**

SPECIAL REPORT 41.

### Geophysical Information Table

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>2640.00 - 2639.00</td>
<td>0.0 - 1.0</td>
<td>TOPSOIL</td>
</tr>
<tr>
<td>2639.00 - 2631.00</td>
<td>1.0 - 9.0</td>
<td>SILT, LIGHT-BLACKISH-BROWN; MOIST</td>
</tr>
<tr>
<td>2631.00 - 2621.00</td>
<td>9.0 - 19.0</td>
<td>SAND, LIGHT- TO DARK-GRAY, FINE TO MEDIUM; SOME SILT, SATURATED</td>
</tr>
<tr>
<td>2621.00 - 2578.00</td>
<td>19.0 - 62.0</td>
<td>CLAY, LIGHT-TANNISH-BROWN; SOME FINE SAND, SATURATED</td>
</tr>
<tr>
<td>2578.00 - 2556.00</td>
<td>62.0 - 84.0</td>
<td>CLAY, LIGHT-TANNISH-BROWN; MOIST TO DRY</td>
</tr>
</tbody>
</table>

DEPT TO WATER - 9 FEET.

* * * *

038N28W23CBBB  Page 1 01/31/2005
**Location Information**

- Legal Location:SE SE NE NE SEC. 24, T. 038 N., R. 28 W.
- County: TODD
- Basin: KEYA PAHA
- Hydrologic Unit Code: 10150006
- Land Owner:
- Longitude: 100 34' 20"
- Latitude: 43 15' 22"
- Ground Surface Elevation (ft.): 2535 T

**Project Information**

- Project: MISSION WATER PROJECT
- Drill Date: 06/20/1966
- Company: SDGS
- Drilling Method: AUGER
- Test Hole Number: 36
- Samples:
- Driller: BRINKLEY/GANN
- Geologist: A. BARARI
- Driller's Log: X
- Geologist's Log:
- Total Drill Hole Depth (ft.): 44.0

**Geophysical Information**

- Spontaneous Potential:
- Natural Gamma:
- Single Point Resistivity:
- Extra:

SPECIAL REPORT 41.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
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</thead>
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<tr>
<td>2535.00 - 2534.00</td>
<td>0.0 - 1.0</td>
<td>TOPSOIL</td>
</tr>
<tr>
<td>2534.00 - 2531.00</td>
<td>1.0 - 4.0</td>
<td>SILT, TANNISH-BROWN, CLAYEY; WITH SOME FINE TO MEDIUM SAND, DRY</td>
</tr>
<tr>
<td>2531.00 - 2521.00</td>
<td>4.0 - 14.0</td>
<td>SILT, TANNISH-BROWN, CLAYEY; WITH SOME FINE TO MEDIUM TO COARSE SAND, MOIST</td>
</tr>
<tr>
<td>2521.00 - 2514.00</td>
<td>14.0 - 21.0</td>
<td>SILT, TANNISH-BROWN, CLAYEY; WITH A MINUTE AMOUNT OF FINE SAND, MOIST</td>
</tr>
<tr>
<td>2514.00 - 2506.00</td>
<td>21.0 - 29.0</td>
<td>SILT, TANNISH-BROWN; LITTLE SAND, SATURATED</td>
</tr>
<tr>
<td>2506.00 - 2491.00</td>
<td>29.0 - 44.0</td>
<td>CLAY, TANNISH-BROWN, SILTY; SOME FINE TO MEDIUM SAND, DRY</td>
</tr>
</tbody>
</table>

DEPTH TO WATER - 21 FEET.

* * *
**Location Information**

Legal Location: SE SE SE NW SEC. 26, T. 038 N., R. 28 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner:

Location: 038N-28W-26BDDD
Latitude: 43° 14' 16"
Longitude: 100° 36' 06"
Ground Surface Elevation (ft.): 2640

**Project Information**

Project: MISSION WATER PROJECT
Drill Date: 06/21/1966
Company: SDGS
Drilling Method: AUGER
Test Hole Number: 45
Samples:

Geologist: A. BARARI
Driller: BRINKLEY/GANN
Driller's Log: X
Total Drill Hole Depth (ft.): 64.0

**Geophysical Information**

Spontaneous Potential:
Natural Gamma:
Single Point Resistivity:
Extra:

SPECIAL REPORT 41.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
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<tr>
<td>2640.00 - 2639.00</td>
<td>0.0 - 1.0</td>
<td>TOPSOIL</td>
</tr>
<tr>
<td>2639.00 - 2636.00</td>
<td>1.0 - 4.0</td>
<td>CLAY, DARK-BROWN, SILTY; DRY</td>
</tr>
<tr>
<td>2636.00 - 2631.00</td>
<td>4.0 - 9.0</td>
<td>CLAY, DARK-BROWN, SILTY; MOIST</td>
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<tr>
<td>2631.00 - 2626.00</td>
<td>9.0 - 14.0</td>
<td>SAND, LIGHT-TAN, FINE TO MEDIUM; SOME SILT AND CLAY, MOIST</td>
</tr>
<tr>
<td>2626.00 - 2611.00</td>
<td>14.0 - 29.0</td>
<td>SAND, GRAY, FINE TO MEDIUM; SOME CLAY, SATURATED</td>
</tr>
<tr>
<td>2611.00 - 2596.00</td>
<td>29.0 - 44.0</td>
<td>SAND, LIGHT-TANNISH-BROWN, FINE TO MEDIUM; SATURATED</td>
</tr>
<tr>
<td>2596.00 - 2586.00</td>
<td>44.0 - 54.0</td>
<td>CLAY, LIGHT-TAN, SILTY; ALTERNATING HARD AND SOFT DRILLING</td>
</tr>
<tr>
<td>2586.00 - 2576.00</td>
<td>54.0 - 64.0</td>
<td>CLAY, REDDISH- TO TANNISH-BROWN, SILTY; WITH SOME FINE TO COARSE SAND, HARD, DRY</td>
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</table>

DEPTH TO WATER - 14 FEET.

* * * *
Location Information

Legal Location: NE NE SE SE SEC. 26, T. 038 N., R. 28 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner: 

Longitude: 038N-28W-26DDAA
Latitude: 43 14' 03"
Longitude: 100 35' 30"

Ground Surface Elevation (ft.): 2615 T

Project Information

Project: MISSION WATER PROJECT
Drill Date: 07/07/1966
Company: SDGS
Drilling Method: AUGER
Test Hole Number: 46
Samples:

Geologist: A. BARARI
Driller: BRINKLEY/GANN
Driller's Log: X
Total Drill Hole Depth (ft.): 49.0

Geophysical Information

Spontaneous Potential: 
Natural Gamma: 

Single Point Resistivity:
Extra:

SPECIAL REPORT 41.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
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<th>Description</th>
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<td>0.0 - 4.0</td>
<td>SAND, LIGHT-GRAY; SATURATED</td>
</tr>
<tr>
<td>2611.00 - 2603.00</td>
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<td>2603.00 - 2601.00</td>
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<td>2601.00 - 2591.00</td>
<td>14.0 - 24.0</td>
<td>CLAY, YELLOWISH-TAN; SATURATED</td>
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<tr>
<td>2591.00 - 2586.00</td>
<td>24.0 - 29.0</td>
<td>CLAY, LIGHT-TANNISH-YELLOW; SATURATED</td>
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<tr>
<td>2586.00 - 2566.00</td>
<td>29.0 - 49.0</td>
<td>CLAY, REDDISH-TAN; MOIST</td>
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DEPTH TO WATER - 4 FEET.

* * * *
Location Information
Legal Location: SW SW SE SW SEC. 27, T. 038 N., R. 28 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner: Location: 038N-28W-27CDCC
Latitude: 43 13' 51"
Longitude: 100 37' 34"
Ground Surface Elevation (ft.): 2765 T

Project Information
Project: MISSION WATER PROJECT
Drill Date: 06/21/1966
Company: SDGS
Drilling Method: AUGER
Test Hole Number: 27A
Samples: Geologist: A. BARARI
Driller: BRINKLEY/GANN
Driller's Log: X
Total Drill Hole Depth (ft.): 49.0

Geophysical Information
Spontaneous Potential: Single Point Resistivity:
Natural Gamma: Extra:

SPECIAL REPORT 41 (NOT USED).

<table>
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<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
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<tbody>
<tr>
<td>2765.00-2763.00</td>
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<tr>
<td>2763.00-2751.00</td>
<td>2.0-14.0</td>
<td>SAND, YELLOWISH-GREEN, SILTY, VERY CLAYEY; MOIST</td>
</tr>
<tr>
<td>2751.00-2736.00</td>
<td>14.0-29.0</td>
<td>SAND, GREEN, FINE TO MEDIUM, SILTY; DRY TO SLIGHTLY MOIST</td>
</tr>
<tr>
<td>2736.00-2726.00</td>
<td>29.0-39.0</td>
<td>SAND, LIGHT-YELLOWISH-TAN, FINE TO MEDIUM; MOIST</td>
</tr>
<tr>
<td>2726.00-2716.00</td>
<td>39.0-49.0</td>
<td>SILT, GREENISH-TAN, VERY CLAYEY; SOME VERY FINE SAND, TEST HOLE CAVING AND THUS ABANDONED</td>
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</table>

DEPTH TO WATER - DRY.

* * * *
Location Information

Legal Location: SW SW NE SE SEC. 27, T. 038 N., R. 28 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner:
Location: 038N-28W-27DACC
Latitude: 43 14' 04"
Longitude: 100 36' 56"
Ground Surface Elevation (ft.): 2680 T

Project Information

Project: MISSION WATER PROJECT
Drill Date: 06/21/1966
Company: SDGS
Drilling Method: AUGER
Test Hole Number: 44
Samples:

Geologist: A. BARARI
Geologist's Log:
Driller: BRINKLEY/GANN
Driller's Log:
Total Drill Hole Depth (ft.): 114.0

Geophysical Information

Spontaneous Potential:
Natural Gamma:
Single Point Resistivity:
Extra:

SPECIAL REPORT 41.

<table>
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<th>Elevation (ft.)</th>
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<th>Description</th>
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<tr>
<td>2680.00 - 2679.00</td>
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<td>TOPSOIL</td>
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<tr>
<td>2679.00 - 2676.00</td>
<td>1.0 - 4.0</td>
<td>SAND, DARK-TANNISH-BROWN, FINE; SOME SILT</td>
</tr>
<tr>
<td>2676.00 - 2666.00</td>
<td>4.0 - 14.0</td>
<td>SAND, BROWNISH-TAN, FINE TO MEDIUM, SILTY, CLAYEY</td>
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<tr>
<td>2666.00 - 2653.00</td>
<td>14.0 - 27.0</td>
<td>SILT, BROWNISH-TAN, CLAYEY; WITH FINE TO MEDIUM SAND</td>
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<td>2653.00 - 2646.00</td>
<td>27.0 - 34.0</td>
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<tr>
<td>2646.00 - 2632.00</td>
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<td>SAND, TANNISH-BROWN, FINE TO MEDIUM; LITTLE SILT, SATURATED</td>
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<td>2632.00 - 2622.00</td>
<td>48.0 - 58.0</td>
<td>CLAY, TANNISH-BROWN, SILTY; WITH FINE TO MEDIUM SAND, HARD, SATURATED</td>
</tr>
<tr>
<td>2622.00 - 2566.00</td>
<td>58.0 - 114.0</td>
<td>CLAY, GREEN; WITH SOME SILT, HARD, DRY</td>
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DEPTH TO WATER - 27 FEET.

* * * *
**Location Information**

Legal Location: SW SE SE SE SEC. 27, T. 038 N., R. 28 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner: 

<table>
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<th>Location:</th>
<th>038N-28W-27DDDC</th>
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<tbody>
<tr>
<td>Latitude:</td>
<td>43 13' 51&quot;</td>
</tr>
<tr>
<td>Longitude:</td>
<td>100 36' 47&quot;</td>
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Ground Surface Elevation (ft.): 2680 T

**Project Information**

Project: MISSION WATER PROJECT
Drill Date: 06/28/1966
Company: SDGS
Drilling Method: AUGER
Test Hole Number: 40A

<table>
<thead>
<tr>
<th>Project Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geologist: A. BARARI</td>
</tr>
<tr>
<td>Geologist's Log:</td>
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<tr>
<td>Driller: BRINKLEY/GANN</td>
</tr>
<tr>
<td>Driller's Log: X</td>
</tr>
<tr>
<td>Total Drill Hole Depth (ft.): 79.0</td>
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</table>

**Geophysical Information**

Spontaneous Potential: 
Natural Gamma: 

SPECIAL REPORT 41 (NOT USED).

**Elevation (ft.)** | **Depth (ft.)** | **Description**
---|---|---
2680.00 - 2676.00 | 0.0 - 4.0 | SILT, BLACKISH-BROWN; DRY
2676.00 - 2672.00 | 4.0 - 8.0 | CLAY, TANNISH-BROWN
2672.00 - 2666.00 | 8.0 - 14.0 | SAND, BUFF- TO TANNISH-BROWN, FINE TO MEDIUM; MOIST
2666.00 - 2661.00 | 14.0 - 19.0 | SAND, BUFF- TO TANNISH-BROWN, FINE TO MEDIUM; SOME CLAY, MOIST
2661.00 - 2656.00 | 19.0 - 24.0 | CLAY, BROWNISH-TAN, SANDY; MOIST
2656.00 - 2626.00 | 24.0 - 54.0 | SAND, BUFF- TO BROWNISH-TAN; SATURATED AT 29 FEET
2626.00 - 2601.00 | 54.0 - 79.0 | SAND, BROWNISH-TAN, FINE TO MEDIUM; SATURATED

DEPTH TO WATER - 29 FEET.

* * * *
Location Information

Legal Location: NW NW NE SW SEC. 28, T. 038 N., R. 28 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner: Location: 038N-28W-28CABB

Latitude: 43 14' 15"
Longitude: 100 38' 46"
Ground Surface Elevation (ft.): 2745 T

Project Information

Project: MISSION WATER PROJECT
Drill Date: 06/17/1966
Company: SDGS
Drilling Method: AUGER
Test Hole Number: 43
Samples:
Geologist: A. BARARI
Driller's Log: Geologist's Log:
Driller: BRINKLEY/GANN
Driller's Log: X
Total Drill Hole Depth (ft.): 67.0

Geophysical Information

Spontaneous Potential: Single Point Resistivity:
Natural Gamma: Extra:

SPECIAL REPORT 41.

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<th>Elevation (ft.)</th>
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<td>2744.00 - 2731.00</td>
<td>1.0 - 14.0</td>
<td>CLAY, GREENISH-YELLOW, SILTY; MOIST</td>
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<td>14.0 - 19.0</td>
<td>SAND, TANNISH-GREEN, FINE; SOME SILT, DRY TO SLIGHTLY MOIST</td>
</tr>
<tr>
<td>2726.00 - 2716.00</td>
<td>19.0 - 29.0</td>
<td>SAND, LIGHT-TANNISH-BUFF, VERY FINE, SILTY; DRY</td>
</tr>
<tr>
<td>2716.00 - 2711.00</td>
<td>29.0 - 34.0</td>
<td>SAND, WHITISH-TAN, FINE TO MEDIUM; DRY TO SLIGHTLY MOIST</td>
</tr>
<tr>
<td>2711.00 - 2706.00</td>
<td>34.0 - 39.0</td>
<td>SAND, LIGHT-TANNISH-BUFF, FINE TO MEDIUM; GRAVEL STRINGERS AT 37 AND 38 FEET, SLIGHTLY MOIST</td>
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<td>2706.00 - 2698.00</td>
<td>39.0 - 47.0</td>
<td>SAND, LIGHT-TANNISH-BUFF, FINE TO COARSE; SOME SILT, DRY</td>
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<tr>
<td>2698.00 - 2678.00</td>
<td>47.0 - 67.0</td>
<td>SAND, LIGHT-TANNISH-BUFF TO PINK, FINE TO MEDIUM; DRY</td>
</tr>
</tbody>
</table>

DEPTH TO WATER - DRY.

* * * *
Location Information

Legal Location: SE SW NW SE SEC. 29, T. 038 N., R. 28 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner:

Location: 038N-28W-29DBCD
Latitude: 43 14' 04"
Longitude: 100 39' 32"
Ground Surface Elevation (ft.): 2720 T

Project Information

Project: MISSION WATER PROJECT
Drill Date: 06/27/1966
Company: SDGS
Drilling Method: AUGER
Test Hole Number: 42
Samples:

Geologist: A. BARARI
Geologist's Log:
Driller: BRINKLEY/GANN
Driller's Log: X
Total Drill Hole Depth (ft.): 29.0

Geophysical Information

Spontaneous Potential:
Natural Gamma:
Single Point Resistivity:
Extra:

SPECIAL REPORT 41.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
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</thead>
<tbody>
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<td>TOPSOIL</td>
</tr>
<tr>
<td>2719.00-2716.00</td>
<td>1.0-4.0</td>
<td>SAND, BROWNISH-TAN, SILTY; DRY</td>
</tr>
<tr>
<td>2716.00-2711.00</td>
<td>4.0-9.0</td>
<td>SAND, LIGHT-BROWN, FINE TO MEDIUM; MOIST</td>
</tr>
<tr>
<td>2711.00-2706.00</td>
<td>9.0-14.0</td>
<td>SAND, LIGHT-TAN, SILTY; MOIST</td>
</tr>
<tr>
<td>2706.00-2696.00</td>
<td>14.0-24.0</td>
<td>SAND, BROWN, SILTY; MOIST</td>
</tr>
<tr>
<td>2696.00-2691.00</td>
<td>24.0-29.0</td>
<td>SAND, LIGHT-BROWN, SILTY, CLAYEY; SOME FINE GRAVEL, HARD, DRY, CAVING SO HOLE WAS ABANDONED</td>
</tr>
</tbody>
</table>

DEPTH TO WATER - DRY.

* * * *
Location Information

Legal Location: NE NE NE NW SEC. 30, T. 038 N., R. 28 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner:

Location: 038N-28W-30BAAA
Latitude: 43°14'41"
Longitude: 100°40'50"
Ground Surface Elevation (ft.): 2638 T

Project Information

Project: MISSION WATER PROJECT
Drill Date: 06/16/1966
Company: SDGS
Drilling Method: AUGER
Test Hole Number: 40

Samples:

Spontaneous Potential:
Natural Gamma:

Geophysical Information

Single Point Resistivity:
Extra:

SPECIAL REPORT 41.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2638.00 - 2636.00</td>
<td>0.0 - 2.0</td>
<td>TOPSOIL</td>
</tr>
<tr>
<td>2636.00 - 2634.00</td>
<td>2.0 - 4.0</td>
<td>CLAY, DARK-BLACKISH-BROWN, SILTY; SOME FINE SAND</td>
</tr>
<tr>
<td>2634.00 - 2629.00</td>
<td>4.0 - 9.0</td>
<td>CLAY, GRAYISH-BROWN, SILTY; WITH FINE SAND, WET</td>
</tr>
<tr>
<td>2629.00 - 2624.00</td>
<td>9.0 - 14.0</td>
<td>SAND, GRAYISH-BROWN; WITH SILT AND CLAY, SATURATED</td>
</tr>
<tr>
<td>2624.00 - 2619.00</td>
<td>14.0 - 19.0</td>
<td>SAND, DARK-GRAYISH-BROWN; WITH SILT, SATURATED</td>
</tr>
<tr>
<td>2619.00 - 2612.00</td>
<td>19.0 - 26.0</td>
<td>SAND, GRAYISH-BROWN, COARSE; SOME SILT, SATURATED</td>
</tr>
<tr>
<td>2612.00 - 2582.00</td>
<td>26.0 - 56.0</td>
<td>CLAY, TANNISH-BROWN, SILTY; WITH SOME FINE TO COARSE SAND, SATURATED</td>
</tr>
<tr>
<td>2582.00 - 2559.00</td>
<td>56.0 - 79.0</td>
<td>CLAY, TANNISH-BROWN, SILTY; WITH SOME FINE TO COARSE SAND, COMPACT, DRY</td>
</tr>
</tbody>
</table>

DEPTH TO WATER - 4 FEET.

* * * *
Location Information

Legal Location: SE SE NW SEC. 30, T. 038 N., R. 28 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner:

Location: 038N-28W-30BDDD
Latitude: 43° 14' 18"
Longitude: 100° 40' 52"
Ground Surface Elevation (ft.): 2645.0

Project Information

Project: MISSION WATER PROJECT
Drill Date: 06/16/1966
Company: SDGS
Drilling Method: AUGER
Test Hole Number: 41
Samples:

Geologist: A. BARARI
Driller: BRINKLEY/GANN
Driller's Log: X
Total Drill Hole Depth (ft.): 49.0

Geophysical Information

Spontaneous Potential:
Natural Gamma:
Single Point Resistivity:
Extra:

SPECIAL REPORT 41.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2645.00-2644.00</td>
<td>0.0-1.0</td>
<td>TOPSOIL</td>
</tr>
<tr>
<td>2644.00-2641.00</td>
<td>1.0-4.0</td>
<td>SAND, DARK-GRAYISH-BROWN, VERY FINE, SILTY, CLAYEY; MOIST</td>
</tr>
<tr>
<td>2641.00-2636.00</td>
<td>4.0-9.0</td>
<td>SAND, DARK-GRAY, VERY FINE, SILTY; SOME CLAY, SATURATED</td>
</tr>
<tr>
<td>2636.00-2631.00</td>
<td>9.0-14.0</td>
<td>SAND, DARK-GRAY, VERY FINE, SILTY; MORE CLAY THAN ABOVE, SATURATED</td>
</tr>
<tr>
<td>2631.00-2624.00</td>
<td>14.0-21.0</td>
<td>SAND, DARK-BROWNISH-BLACK, VERY FINE, SILTY; WITH CLAY, SATURATED</td>
</tr>
<tr>
<td>2624.00-2610.00</td>
<td>21.0-35.0</td>
<td>CLAY, LIGHT-TANNISH-BROWN, SILTY, SANDY; SATURATED</td>
</tr>
<tr>
<td>2610.00-2596.00</td>
<td>35.0-49.0</td>
<td>CLAY, TAN, SILTY; SOME MEDIUM TO COARSE SAND, DRY TO SLIGHTLY MOIST</td>
</tr>
</tbody>
</table>

DEPTH TO WATER - 4 FEET.

* * * *
Location Information

Legal Location: NE NE NW NW SEC. 31, T. 038 N., R. 28 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner: 

Location: 038N-28W-31BBAA
Latitude: 43 13' 48"
Longitude: 100 41' 05"
Ground Surface Elevation (ft.): 2680 T

Project Information

Project: MISSION WATER PROJECT
Drill Date: 06/17/1966
Company: SDGS
Drilling Method: AUGER
Test Hole Number: 47
Driller: BRINKLEY/GANN
Geologist: A. BARARI
Geologist's Log:
Driller's Log: X
Total Drill Hole Depth (ft.): 49.0

Samples:

Geophysical Information

Spontaneous Potential: 
Natural Gamma: 
Single Point Resistivity: 
Extra: 

SPECIAL REPORT 41.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
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<tbody>
<tr>
<td>2680.00 - 2679.00</td>
<td>0.0 - 1.0</td>
<td>TOPSOIL</td>
</tr>
<tr>
<td>2679.00 - 2676.00</td>
<td>1.0 - 4.0</td>
<td>SAND, BROWN, FINE TO MEDIUM; SOME SILT, SATURATED</td>
</tr>
<tr>
<td>2676.00 - 2671.00</td>
<td>4.0 - 9.0</td>
<td>SAND, BROWN, FINE TO MEDIUM; SATURATED</td>
</tr>
<tr>
<td>2671.00 - 2661.00</td>
<td>9.0 - 19.0</td>
<td>CLAY, LIGHT-GREENISH-GRAY, SILTY; NO SAND, MOIST</td>
</tr>
<tr>
<td>2661.00 - 2643.00</td>
<td>19.0 - 37.0</td>
<td>SAND, LIGHT-TANNISH-YELLOW, FINE TO MEDIUM; SATURATED</td>
</tr>
<tr>
<td>2643.00 - 2631.00</td>
<td>37.0 - 49.0</td>
<td>CLAY, LIGHT-GREENISH-YELLOW, SILTY; SOME COARSE SAND, DRY</td>
</tr>
</tbody>
</table>

DEPTH TO WATER - 1 FOOT.

* * * *
**Location Information**

Legal Location: NE NW NW NW SEC. 32, T. 038 N., R. 28 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner: 
Location: 038N-28W-32BBBA
Latitude: 43° 13' 49"
Longitude: 100° 40' 08"
Ground Surface Elevation (ft.): 2660 T

**Project Information**

Project: MISSION WATER PROJECT
Drill Date: 06/17/1966
Company: SDGS
Drilling Method: AUGER
Test Hole Number: 48
Samples: 
Geologist: A. BARARI
Driller: BRINKLEY/GANN
Driller's Log: X
Total Drill Hole Depth (ft.): 59.0

**Geophysical Information**

Spontaneous Potential: 
Natural Gamma: 
Single Point Resistivity: 
Extra: 
SPECIAL REPORT 41.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2660.00 - 2656.00</td>
<td>0.0 - 4.0</td>
<td>SAND, DARK-TANNISH-BROWN, SILTY; SOME CLAY, MOIST</td>
</tr>
<tr>
<td>2656.00 - 2651.00</td>
<td>4.0 - 9.0</td>
<td>SAND, GRAYISH- TO TANNISH-BROWN, SILTY, CLAYEY; SATURATED</td>
</tr>
<tr>
<td>2651.00 - 2646.00</td>
<td>9.0 - 14.0</td>
<td>SAND, TANNISH-BROWN, FINE TO COARSE; WITH SOME SILT, SATURATED</td>
</tr>
<tr>
<td>2646.00 - 2636.00</td>
<td>14.0 - 24.0</td>
<td>SAND AND GRAVEL, BROWNISH-TAN, COARSE SAND TO MEDIUM GRAVEL; GRAVEL STRINGERS AT 15 AND 17 FEET, SATURATED</td>
</tr>
<tr>
<td>2636.00 - 2626.00</td>
<td>24.0 - 34.0</td>
<td>CLAY, GREEN, SILTY; SOME SAND, MOIST</td>
</tr>
<tr>
<td>2626.00 - 2601.00</td>
<td>34.0 - 59.0</td>
<td>CLAY, PINKISH- TO BUFFISH-TAN, SILTY; SOME VERY FINE SAND, MOIST</td>
</tr>
</tbody>
</table>

DEPTH TO WATER - 4 FEET.

* * * *
Location Information

Legal Location: NW NW NW NW SEC. 32, T. 038 N., R. 28 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner:

Location: 038N-20W-32BBBB
Latitude: 43 13' 47"
Longitude: 100 40' 16"
Ground Surface Elevation (ft.): 2657 T

Project Information

Project: WATER RIGHTS
Drill Date: 08/09/1957
Company: GRIMSHAW DRILLING
Drilling Method: X
Test Hole Number: 
Samples: 

Geologist: D. DRISCOLL
Geologist's Log:
Driller: J. HUTMACHER
Driller's Log: X
Total Drill Hole Depth (ft.): 40.0

Well Information

SDGS Well Name: 
Water Rights Well: TD-57A
Other Well Name: 
Casing Type: STEEL
Screen Type: UNKNOWN
Total Casing and Screen (ft.): 25.8
Well Maintenance Date: 06/26/1984

Aquifer: ALLUVIUM
Management Unit: 
Casing Top Elevation: 
Casing Diameter (in.): 1.5
Screen Length (ft.): 
Casing Stick-up (ft.): 2.00

Geophysical Information

Spontaneous Potential: 
Natural Gamma: 
Single Point Resistivity: 
Extra:

CASING DIAMETER 1 1/4-INCH AND 1 1/2-INCH. ORIGINAL OBSERVATION WELL NAME K-1.

<table>
<thead>
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<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>2657.00 - 2655.00</td>
<td>0.0 - 2.0</td>
<td>LOAM</td>
</tr>
<tr>
<td>2655.00 - 2645.00</td>
<td>2.0 - 12.0</td>
<td>SAND AND CLAY, FINE SAND</td>
</tr>
<tr>
<td>2645.00 - 2629.00</td>
<td>12.0 - 28.0</td>
<td>SAND, FINE; CLEAN, SAMPLED AT 25 FEET</td>
</tr>
<tr>
<td>2629.00 - 2617.00</td>
<td>28.0 - 40.0</td>
<td>SAND; FIRM, WITH CLAY LAYERS</td>
</tr>
</tbody>
</table>

* * * *
**Location Information**

Legal Location: SW SW SW SE SEC. 02, T. 038 N., R. 29 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner:

Location: 038N-29W-02DCCC
Latitude: 43° 17' 19"
Longitude: 100° 43' 11"
Ground Surface Elevation (ft.): 2680 T

**Project Information**

Project: MISSION WATER PROJECT
Drill Date: 06/14/1966
Company: SDGS
Drilling Method: AUGER
Test Hole Number: 4

Geologist: A. BARARI
Geologist's Log:
Driller: BRINKLEY/GANN
Driller's Log: X
Total Drill Hole Depth (ft.): 29.0

**Geophysical Information**

Spontaneous Potential:
Natural Gamma:

Single Point Resistivity:
Extra:

SPECIAL REPORT 41.

**Elevation (ft.)** | **Depth (ft.)** | **Description**
--- | --- | ---
2680.00 - 2678.00 | 0.0 - 2.0 | TOPSOIL, BLACK
2678.00 - 2676.00 | 2.0 - 4.0 | CLAY, BROWN, SILTY; WITH FINE SAND (ROADBED)
2676.00 - 2666.00 | 4.0 - 14.0 | CLAY, BROWNISH-TAN, SILTY; SOME FINE SAND
2666.00 - 2661.00 | 14.0 - 19.0 | SAND, WHITISH-TAN; DRY
2661.00 - 2656.00 | 19.0 - 24.0 | SAND, GREENISH-TAN; SOME MOISTURE
2656.00 - 2651.00 | 24.0 - 29.0 | CLAY, LIGHT-BROWN, SILTY; HARD, DRY

DEPTH TO WATER - DRY.

* * * *
**Location Information**

Legal Location: NE NE NE SW SEC. 09, T. 038 N., R. 29 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner:

Location: 038N-29W-09CAAA
Latitude: 43 16' 51"
Longitude: 100 45' 35"
Ground Surface Elevation (ft.): 2690 T

**Project Information**

Project: MISSION WATER PROJECT
Drill Date: 06/14/1966
Company: SDGS
Drilling Method: AUGER
Test Hole Number: 7A
Samples:

Driller: BRINKLEY/GANN
Driller's Log: X
Geologist: A. BARARI
Geologist's Log:
Total Drill Hole Depth (ft.): 69.0

**Geophysical Information**

Spontaneous Potential:
Natural Gamma:

Single Point Resistivity:
Extra:

SPECIAL REPORT 41 (NOT USED).

<table>
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<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2690.00-2686.00</td>
<td>0.0-4.0</td>
<td>SAND, LIGHT-YELLOWISH-TAN; SOME SILT, DRY</td>
</tr>
<tr>
<td>2686.00-2681.00</td>
<td>4.0-9.0</td>
<td>SAND, YELLOWISH-TAN, FINE; DRY</td>
</tr>
<tr>
<td>2681.00-2678.00</td>
<td>9.0-12.0</td>
<td>SAND, LIGHT-TANNISH-BROWN; DRY</td>
</tr>
<tr>
<td>2678.00-2676.00</td>
<td>12.0-14.0</td>
<td>SAND, LIGHT-YELLOWISH- TO BROWNISH-RED; SOME GRAVEL, DRY</td>
</tr>
<tr>
<td>2676.00-2661.00</td>
<td>14.0-29.0</td>
<td>SILT, LIGHT-TANNISH-GRAY, VERY CLAYEY; SOME FINE SAND, SLIGHTLY MOIST</td>
</tr>
<tr>
<td>2661.00-2651.00</td>
<td>29.0-39.0</td>
<td>CLAY, LIGHT-TANNISH-BUFF, SILTY; HARDLY ANY SAND, SLIGHTLY MOIST</td>
</tr>
<tr>
<td>2651.00-2633.00</td>
<td>39.0-57.0</td>
<td>CLAY, LIGHT-GRAYISH-BROWN, SILTY; SOME FINE SAND, SATURATED</td>
</tr>
<tr>
<td>2633.00-2621.00</td>
<td>57.0-69.0</td>
<td>CLAY, BROWNISH-TAN, SILTY; SOME SAND, VERY HARD, DRY</td>
</tr>
</tbody>
</table>

DEPTH TO WATER - 39 FEET.

* * * *

038N29W09CAAA  Page 1  01/31/2005
Location Information

Legal Location: SW SW SW SW SEC. 11, T. 038 N., R. 29 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner: Location: 038N-29W-11CCCCC
Latitude: 43 16' 29"
Longitude: 100 43' 47"
Ground Surface Elevation (ft.): 2678 T

Project Information

Project: MISSION WATER PROJECT
Drill Date: 06/14/1966
Company: SDGS
Drilling Method: AUGER
Test Hole Number: 8
Samples: Geologist: A. BARARI
Driller: BRINKLEY/GANN
Driller's Log: X
Total Drill Hole Depth (ft.): 84.0

Geophysical Information

Spontaneous Potential: Single Point Resistivity:
Natural Gamma: Extra:

SPECIAL REPORT 41.

Elevation (ft.) Depth (ft.) Description
2678.00 - 2669.00 0.0 - 9.0 SAND, LIGHT-YELLOWISH-TAN, FINE, SILTY; DRY
2669.00 - 2649.00 9.0 - 29.0 CLAY, LIGHT-TANNISH-BROWN, SILTY; SOME SAND, MOIST
2649.00 - 2637.00 29.0 - 41.0 CLAY, LIGHT-TANNISH-BROWN, SILTY, SANDY; SATURATED
2637.00 - 2616.00 41.0 - 62.0 CLAY, LIGHT-TANNISH-BROWN TO BUFF, SILTY; SOME SAND, HARD, DRY
2616.00 - 2501.00 62.0 - 77.0 CLAY, LIGHT-TANNISH-BROWN TO BUFF, SILTY; WITH MOIST SAND TO FINE GRAVEL
2501.00 - 2594.00 77.0 - 84.0 CLAY, LIGHT-TANNISH-BROWN, SILTY; SOME SAND, HARD, DRY

DEPTH TO WATER - 29 FEET.

* * * *
Location Information

Legal Location: SW SE SE NE SEC. 13, T. 038 N., R. 29 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner:

Location: 038N-29W-13ADDC
Latitude: 43 15' 50"
Longitude: 100 41' 25"
Ground Surface Elevation (ft.): 2610 T

Project Information

Project: MELLETTE-TODD CO. STUDY
Drill Date: 09/13/1994
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R2-94-68
Samples: 038N29W13ADDC 01/31/2005

Geologist: M. JARRETT
Geologist's Log: X
Driller: G. JENSEN
Driller's Log:
Total Drill Hole Depth (ft.): 162.0

Samples:

NO GEOLOGISTS LOG AVAILABLE FROM THIS TEST-HOLE. LITHOLOGY WAS TAKEN FROM R2-94-69 WHICH WAS DRILLED AT OR NEAR THE SAME LOCATION.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2610.00-2600.00</td>
<td>0.0-10.0</td>
<td>SILT, GRAYISH-ORANGE, SLIGHTLY CLAYEY; NONCALCAREOUS, MASSIVE</td>
</tr>
<tr>
<td>2600.00-2448.00</td>
<td>10.0-162.0</td>
<td>SILTSTONE, LIGHT-BROWN TO PALE-YELLOW-BROWN, CLAYEY; NONCALCAREOUS; A FEW WHITE BENTONITIC LAYERS; BRITTLE; BECOMING CALCAREOUS AT 90 FEET</td>
</tr>
</tbody>
</table>

* * * *
Location Information

Legal Location: SW SE SE NE SEC. 13, T. 038 N., R. 29 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner: 

Longitude: 100 41' 25"
Latitude: 43 15' 50"
Ground Surface Elevation (ft.): 2610 T

Project Information

Project: MELLETTE-TODD CO. STUDY
Drill Date: 09/14/1994
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R2-94-69
Samples: 

Geologist: M. JARRETT
Geologist's Log: X
Driller: G. JENSEN
Driller's Log: 
Total Drill Hole Depth (ft.): 447.0

Location Information

Location: 038N-29W-13ADDC 1

Project Information

Project: MELLETTE-TODD CO. STUDY
Drill Date: 09/14/1994
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R2-94-69
Samples: 

Geologist: M. JARRETT
Geologist's Log: X
Driller: G. JENSEN
Driller's Log: 
Total Drill Hole Depth (ft.): 447.0

Geophysical Information

Spontaneous Potential: X
Natural Gamma: X

Elevation (ft.)

Depth (ft.)

Description

2610.00 - 2600.00
0.0 - 10.0
SILT, GRAYISH-ORANGE, SLIGHTLY CLAYEY; NONCALCAREOUS, MASSIVE

2600.00 - 2450.00
10.0 - 160.0
SILTSTONE, LIGHT-BROWN TO PALE-YELLOW-BROWN, CLAYEY; NONCALCAREOUS; A FEW WHITE BENTONITIC LAYERS; BRITTLE; BECOMING CALCAREOUS AT 90 FEET

2450.00 - 2270.00
160.0 - 340.0
SILT AND SILTSTONE, GRAYISH-ORANGE TO PALE-ORANGE, CLAYEY; NONCALCAREOUS TO MODERATELY CALCAREOUS FROM 260 TO 340 FEET; MASSIVE SILTSTONE (ARIKAREE GROUP?)

2270.00 - 2240.00
340.0 - 370.0
SILTSTONE, LIGHT-OLIVE-GRAY; NONCALCAREOUS; SOME VERY FINE-GRAINED SANDSTONE (WHITE RIVER GROUP?)

2240.00 - 2200.00
370.0 - 410.0
CLAYSTONE, GRAYISH-GREEN TO YELLOW-GRAY AND WHITE; SLIGHTLY CALCAREOUS; MASSIVE; BENTONITIC

2200.00 - 2180.00
410.0 - 430.0
CLAY, MOTTLED DARK-YELLOWISH-ORANGE AND GRAY; GREASY, SLIGHTLY CALCAREOUS; WEATHERED (PIERRE SHALE)

2180.00 - 2163.00
430.0 - 447.0
CLAY, GRAYISH-BLACK; GREASY, NONCALCAREOUS (PIERRE SHALE)

ARIKAREE FORMATION TO 340 FEET; WHITE RIVER GROUP FROM 340 TO 410 FEET.

* * * *

038N29W13ADDC 1 Page 1 01/31/2005
**Location Information**

Legal Location: SW SE SE NE SEC. 13, T. 038 N., R. 29 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner:  

Location: 038N-29W-13ADDC 2
Latitude: 43 15' 50"
Longitude: 100 41' 25"
Ground Surface Elevation (ft.): 2610 T

**Project Information**

Project: MELLETTE-TODD CO. STUDY
Drill Date: 09/19/1994
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R2-94-70

Geologist: M. JARRETT
Geologist's Log: X
Driller: G. JENSEN
Driller's Log:
Total Drill Hole Depth (ft.): 113.0

**Well Information**

SDGS Well Name: R2-94-70
Water Rights Well:  
Other Well Name:  
Casing Type: PVC, SCH. 80
Screen Type: PVC, MFG., 0.010 IN. SLOT
Total Casing and Screen (ft.): 115.0
Well Maintenance Date:

Casing Top Elevation: 2612.00 T
Casing Diameter (in.): 2.0
Screen Length (ft.): 20.0
Casing Stick-up (ft.): 2.00

**Geophysical Information**

Spontaneous Potential:  
Natural Gamma:  
Single Point Resistivity:  
Extra:  

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2610.00-2600.00</td>
<td>0.0-10.0</td>
<td>SILT, GRAYISH-ORANGE, SLIGHTLY CLAYEY; NONCALCAREOUS, MASSIVE</td>
</tr>
<tr>
<td>2600.00-2497.00</td>
<td>10.0-113.0</td>
<td>SILTSTONE, LIGHT-BROWN TO PALE-YELLOW-BROWN, CLAYEY; NONCALCAREOUS; A FEW WHITE BENTONITIC LAYERS; BRITTLE; BECOMING CALCAREOUS AT 90 FEET</td>
</tr>
</tbody>
</table>

NO GEOLOGIST LOG AVAILABLE FOR THIS OBSERVATION WELL. LITHOLOGY WAS TAKEN FROM R2-94-69 WHICH WAS DRILLED AT OR NEAR THE SAME LOCATION.

* * * *
**Location Information**

- Legal Location: SE SE SE SW SEC. 13, T. 038 N., R. 29 W.
- County: TODD
- Basin: KEYA PAHA
- Hydrologic Unit Code: 10150006
- Land Owner: 

<table>
<thead>
<tr>
<th>Ground Surface Elevation (ft.)</th>
<th>2648 T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location:</td>
<td>038N-29W-13CDDD</td>
</tr>
<tr>
<td>Latitude:</td>
<td>43 15' 35&quot;</td>
</tr>
<tr>
<td>Longitude:</td>
<td>100 42' 00&quot;</td>
</tr>
</tbody>
</table>

**Project Information**

- Project: MISSION WATER PROJECT
- Drill Date: 06/16/1966
- Company: SDGS
- Drilling Method: AUGER
- Test Hole Number: 13
- Samples:

| Driller: | BRINKELY/GANN |
| Geologist: | A. BARARI |
| Driller's Log: | X |
| Total Drill Hole Depth (ft.): | 54.0 |

**Geophysical Information**

<table>
<thead>
<tr>
<th>Spontaneous Potential</th>
<th>Single Point Resistivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Gamma</td>
<td>Extra:</td>
</tr>
</tbody>
</table>

SPECIAL REPORT 41.

**Elevation (ft.)** | **Depth (ft.)** | **Description**
--- | --- | ---
2648.00-2646.00 | 0.0-2.0 | TOPSOIL
2646.00-2643.00 | 2.0-5.0 | SAND, DARK-BLACKISH-BROWN, FINE, VERY SILTY; DRY
2643.00-2634.00 | 5.0-14.0 | SAND, WHITISH-TAN, FINE, SILTY; DRY
2634.00-2629.00 | 14.0-19.0 | CLAY, PINKISH-BROWN, SILTY; SOME VERY FINE SAND, DRY
2629.00-2614.00 | 19.0-34.0 | CLAY, LIGHT-GRAY, SILTY; SOME VERY FINE TO FINE SAND, SLIGHTLY MOIST
2614.00-2609.00 | 34.0-39.0 | CLAY, PINKISH-TAN, SILTY; SOME VERY FINE SAND, MOIST
2609.00-2594.00 | 39.0-54.0 | CLAY, PINKISH- TO TANNISH-BROWN, SILTY; WITH A LITTLE FINE SAND, MOIST

DEPTH TO WATER - DRY.

* * *
Location Information

Legal Location: NE NE NE SE SEC. 13, T. 038 N., R. 29 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner: Location: 038N-29W-13DAAA
Latitude: 43 15' 58"
Longitude: 100 41' 25"
Ground Surface Elevation (ft.): 2616 T

Project Information

Project: MISSION WATER PROJECT
Drill Date: 06/15/1966
Company: SDGS
Drilling Method: AUGER
Test Hole Number: 15
Samples: Geologist: A. BARARI
Driller: BRINKLEY/GANN
Driller's Log: Geologist's Log:
Total Drill Hole Depth (ft.): 69.0

Geophysical Information

Spontaneous Potential: Single Point Resistivity: Extra:
Natural Gamma: Special Report 41.

SPECIAL REPORT 41.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2616.00 - 2607.00</td>
<td>0.0 - 9.0</td>
<td>SAND, LIGHT-BROWN, FINE; WITH SOME SILT AND CLAY, MOIST</td>
</tr>
<tr>
<td>2607.00 - 2602.00</td>
<td>9.0 - 14.0</td>
<td>SAND, LIGHT-TANNISH-BROWN, FINE, SILTY, CLAYEY; SATURATED</td>
</tr>
<tr>
<td>2602.00 - 2563.00</td>
<td>14.0 - 53.0</td>
<td>CLAY, TANNISH-BUFF, SILTY, SANDY; SATURATED</td>
</tr>
<tr>
<td>2563.00 - 2557.00</td>
<td>53.0 - 59.0</td>
<td>CLAY, BROWNISH-TAN, SILTY; WITH FINE TO MEDIUM SAND, SLIGHTLY MOIST</td>
</tr>
<tr>
<td>2557.00 - 2552.00</td>
<td>59.0 - 64.0</td>
<td>CLAY, BROWNISH-TAN, SILTY; WITH FINE TO MEDIUM SAND, DRY</td>
</tr>
<tr>
<td>2552.00 - 2547.00</td>
<td>64.0 - 69.0</td>
<td>CLAY, BROWNISH-TAN, SILTY; WITH SOME FINE TO MEDIUM SAND, HARD, DRY</td>
</tr>
</tbody>
</table>

DEPTH TO WATER - 9 FEET.

* * * *
Location Information

Legal Location: SE SE SE SEC. 13, T. 038 N., R. 29 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner: 

Longitude: 100 41' 25"
Latitude: 43 15' 34"
Ground Surface Elevation (ft.): 2618 T

Project Information

Project: MISSION WATER PROJECT
Drill Date: 06/15/1966
Company: SDGS
Drilling Method: AUGER
Test Hole Number: 14
Samples: 

Geologist: A. BARARI
Driller: BRINKLEY/GANN
Driller's Log: X
Total Drill Hole Depth (ft.): 49.0

Samples:

Spontaneous Potential: 
Natural Gamma: 

Single Point Resistivity: 
Extra: 

SPECIAL REPORT 41.

Geophysical Information

Elevation (ft.)  | Depth (ft.)  | Description
----------------|-------------|-----------------|
2618.00 - 2614.00 | 0.0 - 4.0 | SAND, DARK-BROWN; WITH CLAYEY SILT
2614.00 - 2609.00 | 4.0 - 9.0 | SAND, TANNISH-BROWN, FINE, SILTY, CLAYEY; ALMOST SATURATED
2609.00 - 2604.00 | 9.0 - 14.0 | SAND, GRAYISH-BROWN, FINE; SOME SILTY CLAY, SATURATED
2604.00 - 2597.00 | 14.0 - 21.0 | CLAY, TANNISH-BROWN, SILTY; WITH SOME FINE SAND, SATURATED
2597.00 - 2583.00 | 21.0 - 35.0 | CLAY, TANNISH-BROWN, SILTY; WITH FINE TO MEDIUM SAND, MOIST
2583.00 - 2574.00 | 35.0 - 44.0 | CLAY, TANNISH-BROWN, SILTY; WITH SOME FINE SAND, DRY
2574.00 - 2569.00 | 44.0 - 49.0 | CLAY, BROWN, VERY SILTY; WITH SOME FINE SAND, HARD, DRY

DEPTH TO WATER - 4 FEET.

* * *
Location Information

Legal Location: SE SW NW SE SEC. 15, T. 038 N., R. 29 W.
Location: 038N-29W-15DBCD
County: TODD
Latitude: 43 15' 50"
Basin: KEYA PAHA
Longitude: 100 44' 15"
Hydrologic Unit Code: 10150006
Land Owner: Ground Surface Elevation (ft.): 2690 T

Project Information

Project: MISSION WATER PROJECT
Drill Date: 07/08/1966
Geologist: A. BARARI
Company: SDGS
Geologist's Log:
Drilling Method: AUGER
Driller: BRINKLEY/GANN
Test Hole Number: 12
Driller's Log: X
Samples:
Total Drill Hole Depth (ft.): 74.0

Geophysical Information

Spontaneous Potential:
Natural Gamma: Single Point Resistivity:
Extra:

SPECIAL REPORT 41.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2690.00-2686.00</td>
<td>0.0-4.0</td>
<td>SILT, BLACKISH-GRAY; MOIST</td>
</tr>
<tr>
<td>2686.00-2681.00</td>
<td>4.0-9.0</td>
<td>SAND, LIGHT-BROWN; SATURATED</td>
</tr>
<tr>
<td>2681.00-2674.00</td>
<td>9.0-16.0</td>
<td>SILT, BLACK; SATURATED</td>
</tr>
<tr>
<td>2674.00-2666.00</td>
<td>16.0-24.0</td>
<td>CLAY, BLACKISH-BROWN TO LIGHT-GRAY; SOME FINE SAND, SATURATED</td>
</tr>
<tr>
<td>2666.00-2646.00</td>
<td>24.0-44.0</td>
<td>CLAY, WHITISH-TAN; SATURATED</td>
</tr>
<tr>
<td>2646.00-2621.00</td>
<td>44.0-69.0</td>
<td>CLAY, BROWNISH-BUFF; MOIST</td>
</tr>
<tr>
<td>2621.00-2616.00</td>
<td>69.0-74.0</td>
<td>CLAY, GREEN; MOIST TO DRY</td>
</tr>
</tbody>
</table>

DEPTH TO WATER - 4 FEET.

* * * *
Location Information

Legal Location: SW SW NW NE SEC. 22, T. 038 N., R. 29 W.
County: TODD  Location: 038N-29W-22ABCC
Basin: KEYA PAHA  Latitude: 43 15' 24"
Hydrologic Unit Code: 10150006  Longitude: 100 44' 22"
Land Owner:
Ground Surface Elevation (ft.): 2720 T

Project Information

Project: MISSION WATER PROJECT  Geologist: A. BARARI
Drill Date: 07/08/1966  Geologist's Log:
Company: SDGS  Driller: BRINKLEY/GANN
Drilling Method: AUGER  Driller's Log: X
Test Hole Number: 20  Total Drill Hole Depth (ft.): 24.0
Samples:

Geophysical Information

Spontaneous Potential:
Natural Gamma:  Single Point Resistivity:

Extra:

SPECIAL REPORT 41.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2720.00 - 2711.00</td>
<td>0.0 - 9.0</td>
<td>SILT, BLACKISH-BROWN; DRY</td>
</tr>
<tr>
<td>2711.00 - 2696.00</td>
<td>9.0 - 24.0</td>
<td>SILT, ASH-WHITE; SOME HARD CONCRETIONS(?) (VOLCANIC ASH?)</td>
</tr>
</tbody>
</table>

* * * *
Location Information

Legal Location: NE NE NE SE SEC. 23, T. 038 N., R. 29 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner: 

Location: 038N-29W-23DAAA
Latitude: 43 15' 07"
Longitude: 100 42' 35"
Ground Surface Elevation (ft.): 2670 T

Project Information

Project: MISSION WATER PROJECT
Drill Date: 07/07/1966
Company: SDGS
Drilling Method: AUGER
Test Hole Number: 21
Samples: 

Geologist: A. BARARI
Driller: BRINKLEY/GANN
Driller's Log: X
Total Drill Hole Depth (ft.): 104.0

Geophysical Information

Spontaneous Potential: 
Natural Gamma: 
Single Point Resistivity: 
Extra: 

SPECIAL REPORT 41.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2670.00-2669.00</td>
<td>0.0-1.0</td>
<td>TOPSOIL</td>
</tr>
<tr>
<td>2669.00-2666.00</td>
<td>1.0-4.0</td>
<td>SILT, LIGHT-BROWNISH-TAN; VERY DRY</td>
</tr>
<tr>
<td>2666.00-2651.00</td>
<td>4.0-19.0</td>
<td>CLAY, LIGHT-GREEN; MOIST</td>
</tr>
<tr>
<td>2651.00-2646.00</td>
<td>19.0-24.0</td>
<td>SAND, LIGHT-TANISH-GREEN; SATURATED</td>
</tr>
<tr>
<td>2646.00-2601.00</td>
<td>24.0-69.0</td>
<td>CLAY, GREENISH-TAN; SATURATED</td>
</tr>
<tr>
<td>2601.00-2598.00</td>
<td>69.0-72.0</td>
<td>GRAVEL, VARIOUS COLORS; SATURATED</td>
</tr>
<tr>
<td>2598.00-2581.00</td>
<td>72.0-89.0</td>
<td>CLAY, LIGHT-WHITISH-GRAY; SATURATED</td>
</tr>
<tr>
<td>2581.00-2566.00</td>
<td>89.0-104.0</td>
<td>CLAY, REDDISH-TAN; MOIST</td>
</tr>
</tbody>
</table>

DEPTH TO WATER - 19 FEET.

* * * *
**Location Information**

Legal Location: SW NW SE SE SEC. 24, T. 038 N., R. 29 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner:  
Location: 038N-29W-24DDBC
Latitude: 43 14' 49"
Longitude: 100 41' 40"
Ground Surface Elevation (ft.): 2658 T

**Project Information**

Project: MISSION WATER PROJECT
Drill Date: 07/07/1966
Company: SDGS
Drilling Method: AUGER
Test Hole Number: 22
Samples:

Geologist: A. BARARI
Driller: BRINKLEY/GANN
Total Drill Hole Depth (ft.): 94.0

**Geophysical Information**

Spontaneous Potential:  
Natural Gamma:  
Single Point Resistivity:  
Extra:  

SPECIAL REPORT 41.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>2658.00-2657.00</td>
<td>0.0-1.0</td>
<td>TOPSOIL</td>
</tr>
<tr>
<td>2657.00-2654.00</td>
<td>1.0-4.0</td>
<td>CLAY, BLACKISH-BROWN; SOME SILT, MOIST</td>
</tr>
<tr>
<td>2654.00-2649.00</td>
<td>4.0-9.0</td>
<td>SILT, LIGHT-BROWNISH-TAN; WET</td>
</tr>
<tr>
<td>2649.00-2643.00</td>
<td>9.0-15.0</td>
<td>CLAY, GRAYISH-BROWN; ALMOST SATURATED</td>
</tr>
<tr>
<td>2643.00-2619.00</td>
<td>15.0-39.0</td>
<td>CLAY, BROWNISH-TAN; SATURATED</td>
</tr>
<tr>
<td>2619.00-2586.00</td>
<td>39.0-72.0</td>
<td>CLAY, TANNISH-BROWN; SATURATED</td>
</tr>
<tr>
<td>2586.00-2574.00</td>
<td>72.0-84.0</td>
<td>CLAY; WITH THIN GRAVEL STRINGERS AT 72, 74, 75, 76 AND 79 FEET, HIT ROCK AT 83 FEET</td>
</tr>
<tr>
<td>2574.00-2564.00</td>
<td>84.0-94.0</td>
<td>CLAY, BROWNISH-TAN; HARD, DRY</td>
</tr>
</tbody>
</table>

DEPTH TO WATER - 15 FEET.

* * * *
Location Information

Legal Location: NW SW NE NE SEC. 25, T. 038 N., R. 29 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner:

Location: 038N-29W-25AACB
Latitude: 43 14' 34"
Longitude: 100 41' 40"
Ground Surface Elevation (ft.): 2680 T

Project Information

Project: MISSION WATER PROJECT
Drill Date: 06/27/1966
Company: SDGS
Drilling Method: AUGER
Test Hole Number: 38
Samples:

Geologist: A. BARARI
Geologist's Log:
Driller: BRINKLEY/GANN
Driller's Log: X
Total Drill Hole Depth (ft.): 109.0

Geophysical Information

Spontaneous Potential:
Natural Gamma:
Single Point Resistivity:
Extra:

SPECIAL REPORT 41.

Elevation (ft.) | Depth (ft.) | Description
--- | --- | ---
2680.00 - 2679.00 | 0.0 - 1.0 | TOPSOIL
2679.00 - 2673.00 | 1.0 - 7.0 | SILT, BROWNISH-TAN, FINE; A LITTLE FINE SAND, DRY
2673.00 - 2666.00 | 7.0 - 14.0 | SILT, GRAYISH-BROWN, SANDY; WITH CLAY
2666.00 - 2661.00 | 14.0 - 19.0 | SAND, TANNISH-BROWN; MOIST
2661.00 - 2646.00 | 19.0 - 34.0 | SAND, BUFF TO TANNISH-BROWN, FINE TO MEDIUM; SATURATED
2646.00 - 2636.00 | 34.0 - 44.0 | SAND, BUFF TO TANNISH-BROWN, COARSE; SATURATED
2636.00 - 2590.00 | 44.0 - 90.0 | CLAY, TANNISH-BROWN; SATURATED
2590.00 - 2586.00 | 90.0 - 94.0 | GRAVEL; SATURATED
2586.00 - 2571.00 | 94.0 - 109.0 | CLAY, GREENISH- TO GRAYISH-BROWN; WET

DEPTH TO WATER - 19 FEET.

* * * *
Location Information
Legal Location: SW SW SE NE SEC. 25, T. 038 N., R. 29 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner: 

Location: 038N-29W-25ADCC
Latitude: 43° 14' 15"
Longitude: 100° 41' 40"
Ground Surface Elevation (ft.): 2700 T

Project Information
Project: MISSION WATER PROJECT
Drill Date: 06/28/1966
Company: SDGS
Drilling Method: AUGER
Test Hole Number: 39
Driller: BRINKLEY/GANN
Geologist: A. BARARI
Driller's Log: X
Geologist's Log: 

Total Drill Hole Depth (ft.): 124.0

Samples:

Spontaneous Potential:
Natural Gamma:

Geophysical Information
Spontaneous Potential:
Natural Gamma:

Single Point Resistivity:
Extra:

SPECIAL REPORT 41.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2700.00-2691.00</td>
<td>0.0-9.0</td>
<td>SILT, BROWNISH-TAN; DRY</td>
</tr>
<tr>
<td>2691.00-2686.00</td>
<td>9.0-14.0</td>
<td>SILT, BUFF TO BROWNISH-TAN</td>
</tr>
<tr>
<td>2686.00-2681.00</td>
<td>14.0-19.0</td>
<td>SILT, DARK-BROWN; WETTER</td>
</tr>
<tr>
<td>2681.00-2675.00</td>
<td>19.0-25.0</td>
<td>CLAY, GRAYISH- TO TANNISH-BROWN, SILTY; ALMOST SATURATED, GRAVEL STRINGER AT 21 FEET</td>
</tr>
<tr>
<td>2675.00-2671.00</td>
<td>25.0-29.0</td>
<td>SAND, BUFF TO TANNISH-BROWN, SILTY; SATURATED</td>
</tr>
<tr>
<td>2671.00-2666.00</td>
<td>29.0-34.0</td>
<td>SAND, GRAYISH- TO TANNISH-BROWN, FINE TO MEDIUM TO COARSE; SOME FINE GRAVEL, SOME SILT, SATURATED</td>
</tr>
<tr>
<td>2666.00-2639.00</td>
<td>34.0-61.0</td>
<td>SAND, BROWNISH-TAN, FINE TO MEDIUM; SATURATED</td>
</tr>
<tr>
<td>2639.00-2594.00</td>
<td>61.0-106.0</td>
<td>CLAY, GREENISH-BROWN; SATURATED</td>
</tr>
<tr>
<td>2594.00-2592.00</td>
<td>106.0-108.0</td>
<td>GRAVEL</td>
</tr>
<tr>
<td>2592.00-2576.00</td>
<td>108.0-124.0</td>
<td>CLAY, BROWNISH-TAN; HARD, DRY</td>
</tr>
</tbody>
</table>

DEPTH TO WATER - 19 FEET.

* * * *
Legal Location: NE NE NE NE SEC. 26, T. 038 N., R. 29 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner: 
Location: 038N-29W-26AAAA
Latitude: 43 14' 41"
Longitude: 100 42' 35"
Ground Surface Elevation (ft.): 2690 T

Project Information
Project: MISSION WATER PROJECT
Drill Date: 06/28/1966
Company: SDGS
Drilling Method: AUGER
Test Hole Number: 37
Samples:
Geologist: A. BARARI
Geologist's Log:
Driller: BRINKLEY/GANN
Driller's Log: X
Total Drill Hole Depth (ft.): 24.0

Geophysical Information
Spontaneous Potential: 
Natural Gamma: 
Single Point Resistivity: 
Extra: 

SPECIAL REPORT 41.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2690.00-2689.00</td>
<td>0.0-1.0</td>
<td>TOPSOIL</td>
</tr>
<tr>
<td>2689.00-2676.00</td>
<td>1.0-14.0</td>
<td>CLAY, BROWN, SILTY; DRY</td>
</tr>
<tr>
<td>2676.00-2671.00</td>
<td>14.0-19.0</td>
<td>CLAY, WHITISH-TAN, SILTY; DRY</td>
</tr>
<tr>
<td>2671.00-2666.00</td>
<td>19.0-24.0</td>
<td>SAND, LIGHT-BUFFISH-TAN, SILTY; SOME FINE GRAVEL, HARD, DRY</td>
</tr>
</tbody>
</table>

DEPTH TO WATER - DRY.

* * * *
Location Information

Legal Location: SE SW NW SE SEC. 18, T. 038 N., R. 30 W.
County: TODD
Basin: WHITE
Hydrologic Unit Code: 10140203
Land Owner: 

Location: 038N-30W-18DBCD
Latitude: 43° 15' 28"
Longitude: 100° 55' 03"
Ground Surface Elevation (ft.): 2480 T

Project Information

Project: WATER RIGHTS
Drill Date: 08/08/1957
Company: GRIMSHAW DRILLING
Drilling Method: 
Test Hole Number: 
Samples: 

Geologist: D. DRISCOLL
Driller: J. HUTMACHER
Driller's Log: X
Total Drill Hole Depth (ft.): 39.0

Well Information

SDGS Well Name: 
Water Rights Well: TD-57D
Other Well Name: 
Casing Type: 
Screen Type: 
Total Casing and Screen (ft.): 
Well Maintenance Date: 

Aquifer: ALLUVIUM
Management Unit: 
Casing Top Elevation: 
Casing Diameter (in.): 
Screen Length (ft.): 
Casing Stick-up (ft.): 

Geophysical Information

Spontaneous Potential: 
Natural Gamma: 
Single Point Resistivity: 
Extra: 

ORIGINAL OBSERVATION WELL NAME W-2. WELL DESTROYED.

Elevation (ft.) Depth (ft.) Description
2480.00-2450.00 0.0-30.0 TOPSOIL; FINE SAND
2450.00-2447.00 30.0-33.0 SAND, FINE; HARD-PACKED
2447.00-2441.00 33.0-39.0 SAND; WITH CLAY MIXED IN

* * * *
**Location Information**

- Legal Location: NE NW SW NW SEC. 19, T. 038 N., R. 30 W.
- County: TODD
- Basin: WHITE
- Hydrologic Unit Code: 10140203
- Land Owner: Ground Surface Elevation (ft.): 2662 T

**Project Information**

- Project: MELLETTE-TODD CO. STUDY
- Drill Date: 08/22/1995
- Company: SDGS
- Drilling Method: ROTARY
- Test Hole Number: R2-95-34
- Total Drill Hole Depth (ft.): 284.0
- Single Point Resistivity: X
- Geologist: R. HAMMOND
- Driller: G. JENSEN
- Driller's Log: X
- Geologist's Log: X
- SDGS Well Name: R2-95-34
- Aquifer: ARIKAREE
- Well Maintenance Date: 01/31/2005

**Well Information**

- SDGS Well Name: R2-95-34
- Water Rights Well: Management Unit:
- Other Well Name: Casing Top Elevation: 2664.00 T
- Casing Type: PVC, SCH. 80
- Screen Type: PVC, MFG., 0.010 IN. SLOT
- Total Casing and Screen (ft.): 286.0
- Casing Diameter (in.): 2.0
- Screen Length (ft.): 10.0
- Casing Stick-up (ft.): 2.00

**Geophysical Information**

- Spontaneous Potential: X
- Natural Gamma: Extra:
- Single Point Resistivity: X

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2662.00 - 2595.00</td>
<td>0.0 - 67.0</td>
<td>SAND, PALE-YELLOWISH-BROWN (10YR 6/2), MEDIUM-TO COARE-GRAINED, WELL-ROUNDED, SILTY; NONCALCAREOUS, COMPOSED OF QUARTZ WITH SOME FELDSPAR AND LITHIC GRAINS; MOSTLY POLISHED WITH SOME FROSTED GRAINS; SOME WHITE IRREGULAR SHAPED CONCRETIONS AND RHIZOLITHS</td>
</tr>
<tr>
<td>2595.00 - 2542.00</td>
<td>67.0 - 120.0</td>
<td>SILTSTONE, LIGHT-BROWN (5YR 6/4), CLAYEY; NONCALCAREOUS TO POORLY CALCAREOUS (ROSEBUD FORMATION)</td>
</tr>
<tr>
<td>2542.00 - 2466.00</td>
<td>120.0 - 196.0</td>
<td>SILTSTONE, GRAYISH-ORANGE-PINK (5YR 7/2), CLAYEY, VERY CLAYEY FROM 182 TO 198 FEET, SANDY FROM 148 TO 154 FEET (ROSEBUD FORMATION)</td>
</tr>
<tr>
<td>2466.00 - 2398.00</td>
<td>196.0 - 264.0</td>
<td>SILTSTONE, LIGHT-BROWN (5YR 6/4), CLAYEY; NONCALCAREOUS TO VERY POORLY CALCAREOUS; SOME VOLCANIC ASH(?) FROM 248 TO 252 FEET AS DETERMINED FROM THE HIGH GAMMA VALUES FOR THIS INTERVAL</td>
</tr>
<tr>
<td>2398.00 - 2378.00</td>
<td>264.0 - 284.0</td>
<td>SILTSTONE, GRAYISH-ORANGE-PINK (5YR 7/2), VERY</td>
</tr>
</tbody>
</table>
SANDY; NONCALCAREOUS (ROSEBUD FORMATION)

* * * *
Location Information

Legal Location: NE NW NE SE SEC. 14, T. 038 N., R. 31 W.
County: TODD
Basin: WHITE
Hydrologic Unit Code: 10140203
Land Owner:

Longitude: Hydrolgic Unit Code: 10140203
Latitude: 43 15' 53"
Longitude: 100 56' 34"
Ground Surface Elevation (ft.): 2581 T

Project Information

Project: MELLETTE-TODD CO. STUDY
Drill Date: 07/26/1995
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R2-95-24
Samples:

Geologist: R. HAMMOND
Geologist's Log:
Driller: G. JENEN
Driller's Log: X
Total Drill Hole Depth (ft.): 582.0

Geophysical Information

Spontaneous Potential: X
Natural Gamma: X
Single Point Resistivity: X
Extra: X

INDUCTION LOG WAS RUN TO 415 FEET FOR THIS TEST HOLE; NATURAL GAMMA, CONDUCTIVITY,
AND RESISTIVITY. NO GEOLOGISTS LOG IS AVAILABLE FOR THIS TEST HOLE. DRILLERS LOG
ONLY.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2581.00-2579.00</td>
<td>0.0-2.0</td>
<td>TOPSOIL</td>
</tr>
<tr>
<td>2579.00-2491.00</td>
<td>2.0-90.0</td>
<td>SILTSTONE, BROWN</td>
</tr>
<tr>
<td>2491.00-2384.00</td>
<td>90.0-197.0</td>
<td>SILT AND SILTSTONE, TAN TO BROWN</td>
</tr>
<tr>
<td>2384.00-2347.00</td>
<td>197.0-234.0</td>
<td>CLAY, TAN, SOME GREEN</td>
</tr>
<tr>
<td>2347.00-2234.00</td>
<td>234.0-347.0</td>
<td>SILT, LIGHT-GRAY TO TAN-BROWN AND GREEN</td>
</tr>
<tr>
<td>2234.00-2091.00</td>
<td>347.0-490.0</td>
<td>SILT, GRAY</td>
</tr>
<tr>
<td>2091.00-2041.00</td>
<td>490.0-540.0</td>
<td>SILTSTONE, TAN AND GREEN</td>
</tr>
<tr>
<td>2041.00-2025.00</td>
<td>540.0-556.0</td>
<td>CLAY, YELLOWISH-BROWN AND PURPLE</td>
</tr>
<tr>
<td>2025.00-1999.00</td>
<td>556.0-582.0</td>
<td>SHALE, BLACK (PIERRE SHALE?)</td>
</tr>
</tbody>
</table>

* * * *
Location Information

Legal Location: NW NE NE NE SEC. 23, T. 038 N., R. 31 W.
County: TODD
Basin: WHITE
Hydrologic Unit Code: 10140203
Land Owner:

Location: 038N-31W-23AAAB
Latitude: 43 15' 26"
Longitude: 100 56' 32"
Ground Surface Elevation (ft.): 2438 T

Project Information

Project: MELLETTE-TODD CO. STUDY
Drill Date: 08/23/1995
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R2-95-35
Samples:

Geologist: R. HAMMOND
Driller's Log: X
Driller: G. JENSEN
Total Drill Hole Depth (ft.): 62.0

Well Information

SDGS Well Name: R2-95-35
Water Rights Well:
Other Well Name:
Casing Type: PVC, SCH. 80
Casing Diameter (in.): 2.0
Casing Top Elevation: 2440.00 T
Casing Stick-up (ft.): 2.00
Screen Type: PVC, MFG., 0.010 IN. SLOT
Screen Length (ft.): 10.0
Total Casing and Screen (ft.): 63.0
Well Maintenance Date:

Aquifer: ARIKAREE
Management Unit:
Casing Top Elevation:
Casing Diameter (in.):
Casing Stick-up (ft.):
Screen Length (ft.):
Total Casing and Screen (ft.):
Well Maintenance Date:

Geophysical Information

Spontaneous Potential:
Natural Gamma:
Single Point Resistivity:
Extra:

<table>
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<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2438.00 - 2437.00</td>
<td>0.0 - 1.0</td>
<td>TOPSOIL, DARK-BROWN</td>
</tr>
<tr>
<td>2437.00 - 2428.00</td>
<td>1.0 - 10.0</td>
<td>SAND, GRAYISH-ORANGE-PINK (5YR 7/2), MEDIUM-TO FINE-GRAINED, SUBROUNDED TO ROUNDED; PRIMARILY QUARTZ WITH SOME LITHIC FRAGMENTS (ALLUVIUM)</td>
</tr>
<tr>
<td>2428.00 - 2403.00</td>
<td>10.0 - 35.0</td>
<td>SAND, PALE-YELLOWISH-BROWN (10YR 6/2), MEDIUM-TO COARSE-GRAINED, SUBROUNDED TO ROUNDED; PRIMARILY QUARTZ WITH SOME LITHIC FRAGMENTS; SOME WHITE CALCAREOUS SILTSTONE PEBBLES; ABUNDANT LIGHT-BROWN SILTSTONE NODULES AND PEBBLES FROM 30 TO 35 FEET (ALLUVIUM)</td>
</tr>
<tr>
<td>2403.00 - 2376.00</td>
<td>35.0 - 62.0</td>
<td>SILTSTONE, LIGHT-BROWN (5YR 6/5), CLAYEY, SANDY FROM 50 TO 60 FEET; SLIGHTLY CALCAREOUS; SOME WHITE ASH CUTTINGS FROM 30 TO 40 FEET (ROSEBUD FORMATION)</td>
</tr>
</tbody>
</table>

* * * *
**Location Information**

Legal Location: NW NE NE NE SEC. 23, T. 038 N., R. 31 W.
County: TODD  Location: 038N-31W-23AAAB 1
Basin: WHITE  Latitude: 43 15' 26"
Hydrologic Unit Code: 10140203  Longitude: 100 56' 32"
Land Owner: Ground Surface Elevation (ft.): 2438 T

**Project Information**

Project: MELLETTE-TODD CO. STUDY  Geologist: R. HAMMOND
Drill Date: 08/23/1995  Geologist's Log: X
Company: SDGS  Driller: G. JENSEN
Drilling Method: ROTARY  Driller's Log:
Test Hole Number: R2-95-36  Total Drill Hole Depth (ft.): 35.0
Samples:

**Well Information**

SDGS Well Name: R2-95-36  Aquifer: ALLUVIUM
Water Rights Well:  Management Unit:
Other Well Name:  Casing Top Elevation: 2440.00 T
Casing Type: PVC, SCH. 80  Casing Diameter (in.): 2.0
Screen Type: PVC, MFG., 0.010 IN. SLOT  Screen Length (ft.): 10.0
Total Casing and Screen (ft.): 37.0  Casing Stick-up (ft.): 2.00
Well Maintenance Date:

**Geophysical Information**

Spontaneous Potential:  Single Point Resistivity:
Natural Gamma:  Extra:

<table>
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<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2438.00–2437.00</td>
<td>0.0–1.0</td>
<td>TOPSOIL, DARK-BROWN</td>
</tr>
<tr>
<td>2437.00–2428.00</td>
<td>1.0–10.0</td>
<td>SAND, GRAYISH-ORANGE-PINK (5YR 7/2), MEDIUM-TO FINE-GRAINED, SUBROUNDED TO ROUNDED; PRIMARILY QUARTZ WITH SOME LITHIC FRAGMENTS (ALLUVIUM)</td>
</tr>
<tr>
<td>2428.00–2403.00</td>
<td>10.0–35.0</td>
<td>SAND, PALE-YELLOWISH-BROWN (10YR 6/2), MEDIUM-TO COARSE-GRAINED, SUBROUNDED TO ROUNDED; PRIMARILY QUARTZ WITH SOME LITHIC FRAGMENTS; SOME WHITE CALCAROUS SILTSTONE PEBBLES; ABUNDANT LIGHT-BROWN SILTSTONE NODULES AND PEBBLES FROM 30 TO 35 FEET (ALLUVIUM)</td>
</tr>
</tbody>
</table>

* * * *
Location Information

Legal Location: SE SW NE NE SEC. 23, T. 038 N., R. 31 W.
County: TODD
Basin: WHITE
Hydrologic Unit Code: 10140203
Land Owner: 

Location: 038N-31W-23AACD
Latitude: 43 15' 05"
Longitude: 100 56' 58"
Ground Surface Elevation (ft.): 2455 T

Project Information

Project: MELLETTE-TODD CO. STUDY
Drill Date: 08/23/1995
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R2-95-37
Samples: 

Geologist: R. HAMMOND
Geologist's Log: X
Driller: G. JENSEN
Driller's Log: 
Total Drill Hole Depth (ft.): 71.0

Well Information

SDGS Well Name: R2-95-37
Water Rights Well: 
Other Well Name: 
Casing Type: PVC, SCH. 80
Screen Type: PVC, MFG., 0.010 IN. SLOT
Casing Top Elevation: 2457.00 T
Casing Diameter (in.): 2.0
Casing Stick-up (ft.): 2.00
Screen Length (ft.): 10.0
Total Casing and Screen (ft.): 74.0
Well Maintenance Date: 

Aquifer: ARIKAREE
Management Unit: 

Extra: 

Geophysical Information

Spontaneous Potential: 
Natural Gamma: 

Single Point Resistivity: 
Extra: 

<table>
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<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2455.00 - 2437.00</td>
<td>0.0 - 18.0</td>
<td>SAND, YELLOWISH-GRAY (5YR 7/2), MEDIUM-TO COARSE-GRAINED, ROUNDED TO SUBROUNDED; PRIMARILY QUARTZ, SOME FELDSPAR, FEW LITHIC FRAGMENTS; SOME SILTSTONE PEBBLES (ALLUVIUM)</td>
</tr>
<tr>
<td>2437.00 - 2396.00</td>
<td>18.0 - 59.0</td>
<td>SILTSTONE, LIGHT-BROWN (5YR 6/5) AND GRAYISH-ORANGE-PINK (5YR 7/2) FROM 40 TO 50 FEET AND MODERATE-ORANGE-PINK (5YR 8/4) FROM 50 TO 59 FEET, CLAYEY, SLIGHTLY SANDY; NONCALCAREOUS TO SLIGHTLY CALCAREOUS; SOME WHITE RHIZOLITHS (ROSEBUD FORMATION)</td>
</tr>
<tr>
<td>2396.00 - 2384.00</td>
<td>59.0 - 71.0</td>
<td>SANDSTONE, GRAYISH-ORANGE (10YR 7/4), VERY FINE-GRAINED, POORLY CEMENTED; CALCAREOUS; SOME WELL CEMENTED CALCAREOUS SILTSTONE NODULES (ROSEBUD FORMATION)</td>
</tr>
</tbody>
</table>

* * * *
### Location Information

- **Legal Location:** NW SE NE NW SEC. 24, T. 038 N., R. 31 W.
- **County:** TODD
- **Basin:** WHITE
- **Hydrologic Unit Code:** 10140203
- **Land Owner:**

  - **Location:** 038N-31W-24BADB
  - **Latitude:** 43 15' 17"
  - **Longitude:** 100 56' 23"
  - **Ground Surface Elevation (ft.):** 2560 T

### Project Information

- **Project:** MELLETTE-TODD CO. STUDY
- **Drill Date:** 07/25/1995
- **Company:** SDGS
- **Drilling Method:** ROTARY
- **Test Hole Number:** R2-95-22
- **Samples:**

  - **Geologist:** R. HAMMOND
  - **Driller:** G. JENSEN
  - **Driller's Log:** X
  - **Total Drill Hole Depth (ft.):** 262.0

### Well Information

- **SDGS Well Name:** R2-95-22
- **Water Rights Well:**
- **Other Well Name:**
- **Casing Type:** PVC, SCH. 80
- **Screen Type:** PVC, MFG., 0.010 IN. SLOT
- **Total Casing and Screen (ft.):** 264.0
- **Well Maintenance Date:**

  - **Casing Top Elevation:** 2562.00 T
  - **Casing Diameter (in.):** 2.0
  - **Screen Length (ft.):** 10.0
  - **Casing Stick-up (ft.):** 2.00

### Geophysical Information

- **Spontaneous Potential:** X
- **Natural Gamma:** X
- **Single Point Resistivity:** X
- **Extra:**

  - NO GEOLOGISTS LOG IS AVAILABLE FOR THIS TEST HOLE. DRILLERS LOG ONLY.

### Elevation (ft.)

<table>
<thead>
<tr>
<th>Description</th>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOPSOIL</td>
<td>2560.00-2558.00</td>
<td>0.0-2.0</td>
</tr>
<tr>
<td>SILTSTONE, BROWN; SOME GREEN SILTSTONE</td>
<td>2558.00-2340.00</td>
<td>2.0-220.0</td>
</tr>
<tr>
<td>SAND, FINE-GRAINED</td>
<td>2340.00-2316.00</td>
<td>220.0-244.0</td>
</tr>
<tr>
<td>SILTSTONE, BROWN</td>
<td>2316.00-2298.00</td>
<td>244.0-262.0</td>
</tr>
<tr>
<td>* * * *</td>
<td></td>
<td></td>
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</tbody>
</table>
**Location Information**

Legal Location: SE NE SE NW SEC. 24, T. 038 N., R. 31 W.

County: TODD
Basin: WHITE
Hydrologic Unit Code: 10140203
Land Owner:

Location: 038N-31W-24BDAD
Latitude: 43 15' 08"
Longitude: 100 56' 21"
Ground Surface Elevation (ft.): 2600 T

**Project Information**

Project: MELLETTE-TODD CO. STUDY
Drill Date: 07/25/1995
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R2-95-23
Samples:

Geologist: R. HAMMOND
Geologist's Log: X
Driller: G. JENSEN
Driller's Log:
Total Drill Hole Depth (ft.): 282.0

**Well Information**

SDGS Well Name: R2-95-23
Water Rights Well:
Other Well Name:
Casing Type: PVC, SCH. 80
Screen Type: PVC, MFG., 0.010 IN. SLOT
Total Casing and Screen (ft.): 284.0
Well Maintenance Date:

Casing Top Elevation: 2602.00 T
Casing Diameter (in.): 2.0
Screen Length (ft.): 10.0
Casing Stick-up (ft.): 2.00

**Geophysical Information**

Spontaneous Potential: X
Natural Gamma: X
Single Point Resistivity: X
Extra:

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2600.00 - 2561.00</td>
<td>0.0 - 39.0</td>
<td>Siltstone, grayish-orange-pink (5YR 7/2) to light-brown (5YR 6/4), sandy; noncalcareous; ash layer(?) at 33 to 36 feet as indicated by high gamma values for this interval (Rosebud formation)</td>
</tr>
<tr>
<td>2561.00 - 2501.00</td>
<td>39.0 - 99.0</td>
<td>Siltstone, light-brown (5YR 5/6), clayey; noncalcareous</td>
</tr>
<tr>
<td>2501.00 - 2436.00</td>
<td>99.0 - 164.0</td>
<td>Siltstone, grayish-orange-pink, sandy; calcareous; volcanic ash(?) at 118 to 134 feet as indicated by high gamma values; some hard, well cemented beds (Rosebud formation)</td>
</tr>
<tr>
<td>2436.00 - 2396.00</td>
<td>164.0 - 204.0</td>
<td>Siltstone, light-brown (5YR 6/4), clayey, slightly sandy; poorly calcareous with some very calcareous beds (Rosebud formation)</td>
</tr>
<tr>
<td>2396.00 - 2369.00</td>
<td>204.0 - 231.0</td>
<td>Siltstone, light-brown (5YR 6/4), sandy; slightly calcareous with some calcareous beds (Rosebud formation)</td>
</tr>
</tbody>
</table>
2369.00 - 2355.00  231.0 - 245.0  Siltstone, light-brown (5YR 6/4), clayey; noncalcareous (Rosebud Formation)

2355.00 - 2338.00  245.0 - 262.0  Siltstone, light-brown (5YR 6/4), very sandy; noncalcareous (Rosebud Formation)

2338.00 - 2318.00  262.0 - 282.0  Siltstone, grayish-orange-pink (5YR 7/2), clayey; noncalcareous to poorly calcareous; some fissile beds; some very sandy beds from 270 to 276 feet (Rosebud Formation)

* * * *
### Location Information

Legal Location: SW SW NE NE SEC. 09, T. 038 N., R. 32 W.
- County: TODD
- Basin: WHITE
- Hydrologic Unit Code: 10140203
- Land Owner:
- Location: 038N-32W-09AACC
- Longitude: 100 06' 15"
- Ground Surface Elevation (ft.): 2800 T

### Project Information

- Project: MELLETTE-TODD CO. STUDY
- Drill Date: 07/24/1993
- Company: SDGS
- Drilling Method: ROTARY
- Test Hole Number: R2-93-04
- Samples:
- SDGS Well Name: R2-93-04
- Geologist: R. HAMMOND
- Driller: G. JENSEN
- Geologist's Log: X
- Driller's Log:
- Total Drill Hole Depth (ft.): 326.0

### Well Information

- Aquifer: ARIKAREE
- Management Unit:
- Casing Type: PVC, SCH. 80
- Casing Diameter (in.): 2.0
- Screen Type: PVC, MFG., 0.010 IN. SLOT
- Screen Length (ft.): 10.0
- Total Casing and Screen (ft.): 327.0
- Casing Stick-up (ft.): 2.00
- Well Maintenance Date:

### Geophysical Information

- Spontaneous Potential:
- Natural Gamma:
- Single Point Resistivity:
- Extra:

NO GEOLOGIST LOG IS AVAILABLE FOR THIS TEST HOLE. DRILLER'S LOG ONLY. LITHOLOGY IS FROM TEST-HOLE R2-92-48 WHICH WAS DRILLED AT OR NEAR THE SAME LOCATION.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2800.00-2786.00</td>
<td>0.0-14.0</td>
<td>SAND, GRAYISH-ORANGE, FINE, WELL-SORTED, SUBROUNDED TO SUBANGULAR; CLEAN, SLIGHTLY CALCAREOUS, FEW ORANGE-PINK SILT AND SILTY SAND LENSES BELOW 10 FEET</td>
</tr>
<tr>
<td>2786.00-2757.00</td>
<td>14.0-43.0</td>
<td>SILT, LIGHT-BROWN, SANDY; SLIGHTLY CALCAREOUS, MASSIVE(?) NONCALCAREOUS BELOW 30 FEET</td>
</tr>
<tr>
<td>2757.00-2735.00</td>
<td>43.0-65.0</td>
<td>SAND, ORANGE-PINK, VERY FINE, SUBROUNDED TO SUBANGULAR; QUARTZOSE WITH MINOR FELDSPAR CONTENT, SLIGHTLY CALCAREOUS</td>
</tr>
<tr>
<td>2735.00-2727.00</td>
<td>65.0-73.0</td>
<td>SILTSTONE, LIGHT-BROWN, SLIGHTLY SANDY; NONCALCAREOUS, MASSIVE(?) (ARIKAREE GROUP)</td>
</tr>
<tr>
<td>2727.00-2658.00</td>
<td>73.0-142.0</td>
<td>SILTSTONE, LIGHT-YELLOWISH-BROWN, SLIGHTLY SANDY, SLIGHTLY CLAYEY, NONCALCAREOUS, INTERBEDDED POORLY AND WELL-CEMENTED BEDS; SOME THIN, CLAYEY ASH(?) BEDS; GRADES TO</td>
</tr>
</tbody>
</table>
PALE-GRAYISH-ORANGE BELOW 110 FEET

2658.00 - 2596.00  142.0 - 204.0  Siltstone, dark-yellowish-orange, slightly sandy, slightly silty; noncalcareous to very slightly calcareous, massive, grades to a pale-grayish-orange below 160 feet

2596.00 - 2530.00  204.0 - 270.0  Siltstone, dark-yellowish-orange, sandy to slightly sandy, clayey; noncalcareous, massive, grades to grayish-orange below 250 feet

2530.00 - 2493.00  270.0 - 307.0  Siltstone, mottled yellowish-gray and light-olive-gray; slightly calcareous, more clayey at 290 to 300 feet, very sandy at 300 to 307 feet

2493.00 - 2474.00  307.0 - 326.0  Siltstone, grayish-orange, sandy; calcareous, massive, clayey at 320 to 326 feet, very well-cemented bed at 312 to 313 feet

* * * *
Location Information

Legal Location: SW SW NE NE SEC. 09, T. 038 N., R. 32 W.
County: TODD
Basin: WHITE
Hydrologic Unit Code: 10140203
Land Owner:

Location: 038N-32W-09AACC 1
Latitude: 43 16' 54"
Longitude: 100 06' 15"
Ground Surface Elevation (ft.): 2800 T

Project Information

Project: MELLETTE-TODD CO. STUDY
Drill Date: 07/24/1993
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R2-93-05
Samples:

Geologist: M. JARRETT
Geologist's Log: X
Driller: G. JENSEN
Driller's Log: 
Total Drill Hole Depth (ft.): 62.0

Well Information

SDGS Well Name: R2-93-05
Water Rights Well: 
Other Well Name: 
Casing Type: PVC, SCH. 80
Screen Type: PVC, MFG., 0.010 IN. SLOT
Total Casing and Screen (ft.): 62.0
Casing Top Elevation: 2802.00 T
Casing Diameter (in.): 2.0
Screen Length (ft.): 5.0
Casing Stick-up (ft.): 2.00
Well Maintenance Date:

Aquifer: ARIKAREE
Management Unit: 
Casing Top Elevation: 2802.00 T
Casing Diameter (in.): 2.0
Screen Length (ft.): 5.0
Casing Stick-up (ft.): 2.00

Geophysical Information

Spontaneous Potential: 
Natural Gamma: 
Single Point Resistivity: 
Extra: 

NO GEOLOGISTS LOG IS AVAILABLE FOR THIS TEST HOLE. DRILLERS LOG ONLY. LITHOLOGY IS FROM TEST-HLE R2-92-48 WHICH WAS DRILLED AT OR NEAR THE SAME LOCATION.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2800.00-2786.00</td>
<td>0.0-14.0</td>
<td>SAND, GRAYISH-ORANGE, FINE, WELL-SORTED, SUBROUNDED TO SUBANGULAR; CLEAN, SLIGHTLY CALCAREOUS, FEW ORANGE-PINK SILT AND SILTY SAND LENSES BELOW 10 FEET</td>
</tr>
<tr>
<td>2786.00-2757.00</td>
<td>14.0-43.0</td>
<td>SILT, LIGHT-BROWN, SANDY; SLIGHTLY CALCAREOUS, MASSIVE(?), NONCALCAREOUS BELOW 30 FEET</td>
</tr>
<tr>
<td>2757.00-2738.00</td>
<td>43.0-62.0</td>
<td>SAND, ORANGE-PINK, VERY FINE, SUBROUNDED TO SUBANGULAR; QUARTZOSE WITH MINOR FELDSPAR CONTENT, SLIGHTLY CALCAREOUS</td>
</tr>
</tbody>
</table>

* * *
Spontaneous Potential: X
Natural Gamma: X

Location Information
Legal Location: NE SW SW NE SEC. 09, T. 038 N., R. 32 W.
County: TODD
Basin: WHITE
Hydrologic Unit Code: 10140203
Land Owner: TODD

Latitude: 43° 16' 55"
Longitude: 101° 06' 24"
Ground Surface Elevation (ft.): 2800 T

Project Information
Project: MELLETTE-TODD CO. STUDY
Drill Date: 09/23/1992
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R2-92-48
Driller: G. JENSEN
Geologist: R. HAMMOND
Geologist's Log: X
Driller's Log: X
Total Drill Hole Depth (ft.): 807.0

Geophysical Information
Spontaneous Potential: X
Single Point Resistivity: X
Extra: Hole plugged with 32 sacks of Econoplug grout from total depth to surface; settled and filled with neat cement grout from 8 to 3 feet; backfilled with native materials from 3 feet to ground surface.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2800.00 - 2786.00</td>
<td>0.0 - 14.0</td>
<td>Sand, grayish-orange, fine, well-sorted, subrounded to subangular; clean, slightly calcareous, few orange-pink silt and silty sand lenses below 10 feet</td>
</tr>
<tr>
<td>2786.00 - 2757.00</td>
<td>14.0 - 43.0</td>
<td>Silt, light-brown, sandy; slightly calcareous, massive(?) noncalcareous below 30 feet</td>
</tr>
<tr>
<td>2757.00 - 2735.00</td>
<td>43.0 - 65.0</td>
<td>Sand, orange-pink, very fine, subrounded to subangular; quartzose with minor feldspar content, slightly calcareous</td>
</tr>
<tr>
<td>2735.00 - 2727.00</td>
<td>65.0 - 73.0</td>
<td>Siltstone, light-brown, slightly sandy; noncalcareous, massive(?) (Arikaree Group)</td>
</tr>
<tr>
<td>2727.00 - 2658.00</td>
<td>73.0 - 142.0</td>
<td>Siltstone, light-yellowish-brown, slightly sandy, slightly clayey; non-calcareous, interbedded poorly and well-cemented beds; some thin, clayey ash(?) beds; grades to pale-grayish-orange below 110 feet</td>
</tr>
<tr>
<td>2658.00 - 2596.00</td>
<td>142.0 - 204.0</td>
<td>Siltstone, dark-yellowish-orange, slightly sandy, slightly silty; non-calcareous to very slightly calcareous, massive, grades to a pale-grayish-orange below 160 feet</td>
</tr>
<tr>
<td>2596.00 - 2530.00</td>
<td>204.0 - 270.0</td>
<td>Siltstone, dark-yellowish-orange, sandy to slightly sandy, clayey; non-calcareous, massive, grades to grayish-orange below 250 feet</td>
</tr>
</tbody>
</table>
FEET

2530.00 - 2493.00  270.0 - 307.0  Siltstone, mottled yellowish-gray and light-olive-gray; slightly calcareous, more clayey at 290 to 300 feet, very sandy at 300 to 307 feet

2493.00 - 2474.00  307.0 - 326.0  Siltstone, grayish-orange, sandy; calcareous, massive, clayey at 320 to 326 feet, very well-cemented bed at 312 to 313 feet

2474.00 - 2460.00  326.0 - 340.0  Siltstone, light-brown, clayey, slightly sandy; calcareous, massive (Brule Formation?)

2460.00 - 2440.00  340.0 - 360.0  Siltstone, grayish-orange, sandy; massive, calcareous, clayey at 350 to 360 feet

2440.00 - 2388.00  360.0 - 412.0  Siltstone, dark-yellowish-orange, clayey; slightly sandy 360 to 380 ft, slightly calcareous above 380 ft, massive, some thin olive-black noncalcareous siltstone beds at 375 and 395 ft, grades to a yellowish-gray to light-olive-gray by 390 ft, sand lens at 405 and 412 ft

2388.00 - 2348.00  412.0 - 452.0  Siltstone, light-brown, clayey, slightly sandy; noncalcareous, massive, grades to light-olive-gray below 420 feet

2348.00 - 2322.00  452.0 - 478.0  Siltstone, light-brown, clayey, slightly sandy to sandy; calcareous, massive, grades to light-olive-gray below 460 feet

2322.00 - 2238.00  478.0 - 562.0  Siltstone, light-brown, very clayey; calcareous, poorly fissile, grades to yellowish-gray by 500 feet (Chadron Formation?)

2238.00 - 2108.00  562.0 - 692.0  Claystone, yellowish-brown, silty; hard, calcareous, poorly fissile, grades to light-olive-gray by 670 feet, several thin ash beds

2108.00 - 2028.00  692.0 - 772.0  Claystone, pale-yellowish-orange, silty; poorly to non-fissile, calcareous, mottled with pale-olive by 700 feet, primarily pale-olive by 730 feet, very silty at 730 to 770 feet

2028.00 - 1993.00  772.0 - 807.0  Shale, olive-black; hard, fissile, non-calcareous (Pierre Shale)

* * * *
Location Information

Legal Location: NW NW SE NE SEC. 21, T. 038 N., R. 32 W.
County: TODD
Basin: WHITE
Hydrologic Unit Code: 10140203
Land Owner: 

Location: 038N-32W-21ADBB
Latitude: 43° 15' 14"
Longitude: 101° 06' 09"
Ground Surface Elevation (ft.): 2850 T

Project Information

Project: USGS HIGH PLAINS PROJECT
Drill Date: 10/17/1979
Company: MIDLAND DRILLING
Drilling Method: ROTARY
Test Hole Number: 
Samples: 

Geologist: 
Geologist's Log: X
Driller: 
Driller's Log: 
Total Drill Hole Depth (ft.): 79.0

Well Information

SDGS Well Name: 
Water Rights Well: TD-79C
Other Well Name: TD 79-3
Casing Type: PVC
Screen Type: PVC, HM.
Total Casing and Screen (ft.): 58.3
Well Maintenance Date: 06/24/1984

Casing Top Elevation: 
Casing Diameter (in.): 1.5
Screen Length (ft.): 20.0
Casing Stick-up (ft.): 

Aquifer: ARIKAREE
Management Unit: 
Casing Top Elevation: 
Casing Diameter (in.): 1.5
Screen Length (ft.): 20.0
Casing Stick-up (ft.): 

Geophysical Information

Spontaneous Potential: X
Natural Gamma: X
Single Point Resistivity: X
Extra: 

CASING IS SLOTTED FROM 20 TO 40 FEET. WELL GRAVEL PACKED, STAKED AND WIRE SECURED, BACKFILLED WITH MUD. SLOTTED CASING WAS GENERALLY PLACED OPPOSITE THE DEEPEST BEST SANDS IN THE ARIKAREE. BOTTOM SECTION OF CASING IS CAPPED. SOURCE OF DATA: USGS OPEN-FILE REPORT 84-148. WELL DESTROYED.

Elevation (ft.)
Depth (ft.)
Description
2850.00 - 2831.00
0.0 - 19.0
SILT AND SAND, LIGHT-COLORED; DARK MINERAL GRAINS.
2831.00 - 2801.00
19.0 - 49.0
SANDSTONE, FINE-GRAINED; RED CLAY, WHITISH SANDSTONE, SOME LIMESTONE
2801.00 - 2771.00
49.0 - 79.0
CLAY, REDDISH-BROWN; SOME FINE-GRAINED SANDSTONE
* * *
**Location Information**

Legal Location: NW NW NE NW SEC. 36, T. 039 N., R. 26 W.

- County: TODD
- Basin: WHITE
- Hydrologic Unit Code: 10140204
- Land Owner:
- Location: 039N-26W-36BABB
- Latitude: 43 19' 02"
- Longitude: 100 20' 49"
- Ground Surface Elevation (ft.): 2380 T

**Project Information**

- Project: MELLETTE-TODD CO. STUDY
- Drill Date: 07/27/1993
- Company: SDGS
- Drilling Method: ROTARY
- Test Hole Number: R20-93-44
- Drill Date: 07/27/1993
- Geologist: R. HAMMOND
- Geologist's Log: X
- Driller: M. THOMPSON
- Driller's Log: 
- Total Drill Hole Depth (ft.): 187.0

**Geophysical Information**

- Spontaneous Potential: X
- Natural Gamma: X
- Single Point Resistivity: X
- Extra:

This test hole was plugged with high-solids bentonite grout from 187 feet to 10 feet, from 10 feet to 3 feet with cement and from 3 feet to 0 feet with native soils.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2380.00 - 2363.00</td>
<td>0.0 - 17.0</td>
<td>SAND, LIGHT-BROWN, VERY FINE, VERY SILTY; POORLY TO NONCALCAREOUS (ROSEBUD FORMATION?)</td>
</tr>
<tr>
<td>2363.00 - 2316.00</td>
<td>17.0 - 64.0</td>
<td>SILTSTONE, LIGHT-BROWN, CLAYEY; SOME SANDY LAYERS, BLOCKY TO TABULAR CUTTINGS, SLIGHTLY CALCAREOUS, SOME WHITE VERY CALCAREOUS CHALKY BEDS (ROSEBUD FORMATION?)</td>
</tr>
<tr>
<td>2316.00 - 2284.00</td>
<td>64.0 - 96.0</td>
<td>SILTSTONE, GRAYISH-GREEN, CLAYEY FROM 64 FEET TO 72 FEET, SANDY AND CALCAREOUS FROM 72 FEET TO 96 FEET; ALTERNATING HARD AND SOFT BEDS (BRULE FORMATION?)</td>
</tr>
<tr>
<td>2284.00 - 2249.00</td>
<td>96.0 - 131.0</td>
<td>SILTSTONE, YELLOWISH-GRAY, SANDY, VERY CLAYEY; POORLY FISSILE TO FISSILE, NON-CALCAREOUS TO VERY POORLY CALCAREOUS (CHADRON FORMATION?)</td>
</tr>
<tr>
<td>2249.00 - 2231.00</td>
<td>131.0 - 149.0</td>
<td>SHALE, DARK-YELLOWISH-ORANGE TO GRAYISH- BROWN; FISSILE, POORLY CALCAREOUS (WEATHERED PIERRE SHALE)</td>
</tr>
<tr>
<td>2231.00 - 2193.00</td>
<td>149.0 - 187.0</td>
<td>SHALE, OLIVE-BLACK; FISSILE TO POORLY FISSILE, CALCAREOUS, SOME GREENISH BENTONITE BEDS</td>
</tr>
</tbody>
</table>

* * *
Location Information

Legal Location: NW NW NE NW SEC. 36, T. 039 N., R. 26 W.
County: TODD
Basin: WHITE
Hydrologic Unit Code: 10140204
Land Owner:

Location: 039N-26W-36BABB 1
Latitude: 43 19' 02"
Longitude: 100 20' 49"
Ground Surface Elevation (ft.): 2380 T

Project Information

Project: MELLETTE-TODD CO. STUDY
Drill Date: 08/03/1993
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R20-93-47
Samples:

Geologist: M. JARRETT
Geologist's Log: X
Driller: D. IVerson
Driller's Log:
Total Drill Hole Depth (ft.): 153.0

Well Information

SDGS Well Name: R20-93-47
Water Rights Well:
Other Well Name:
Casing Type: PVC, SCH. 80
Screen Type: PVC, SLOT SIZE 0.010 IN.
Total Casing and Screen (ft.): 155.0
Well Maintenance Date:

Casing Top Elevation: 2382.00 T
Casing Diameter (in.): 2.0
Screen Length (ft.): 15.0
Casing Stick-up (ft.): 2.00

Geophysical Information

Spontaneous Potential: X
Natural Gamma: X
Single Point Resistivity: X
Extra:

FILTER PACK COMPRISED OF 450 LBS OF 0.65 - 0.75 MM QUARTZ SAND, PLACED FROM 153 FEET TO 135 FEET. HIGH SOLIDS BENTONITE PLACED FROM 135 FEET TO SURFACE. AFTER SETTLEMENT, OPEN HOLE WAS CEMENT GROUTED TO SURFACE.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2380.00 - 2363.00</td>
<td>0.0 - 17.0</td>
<td>SAND, LIGHT-BROWN, VERY FINE, VERY SILTY; POORLY TO WELL-CEMENTED, POORLY TO NONCALCAREOUS (ROSEBUD FORMATION?)</td>
</tr>
<tr>
<td>2363.00 - 2316.00</td>
<td>17.0 - 64.0</td>
<td>SILTSTONE, LIGHT-BROWN, CLAYEY; SOME SANDY LAYERS, BLOCKY TO TABULAR CUTTINGS, SLIGHTLY CALCAREOUS, SOME WHITE VERY CALCAREOUS CHALKY BEDS (ROSEBUD FORMATION?)</td>
</tr>
<tr>
<td>2316.00 - 2284.00</td>
<td>64.0 - 96.0</td>
<td>SILTSTONE, GRAYISH-GREEN, CLAYEY FROM 64 FEET TO 72 FEET, SANDY AND CALCAREOUS FROM 72 FEET TO 96 FEET; ALTERNATING HARD AND SOFT BEDS (BRULE FORMATION?)</td>
</tr>
<tr>
<td>2284.00 - 2251.00</td>
<td>96.0 - 129.0</td>
<td>SILTSTONE, YELLOWISH-GRAY, SANDY, VERY CLAYEY; POORLY FISSLILE TO FISSLILE, NON- CALCAREOUS TO VERY POORLY CALCAREOUS, SANDY FROM 117 FEET TO 125 FEET (CHADRON FORMATION?)</td>
</tr>
</tbody>
</table>
SHALE, DARK-YELLOWISH-ORANGE TO GRAYISH- BROWN; FISSILE, POORLY CALCAREOUS (WEATHERED PIERRE SHALE)

* * * *
Location Information

Legal Location: NE SE SE NE SEC. 02, T. 039 N., R. 27 W.
County: TODD
Basin: WHITE
Hydrologic Unit Code: 10140204
Land Owner:  
Location: 039N-27W-02ADDA
Latitude: 43° 23' 08"
Longitude: 100° 28' 18"
Ground Surface Elevation (ft.): 2549 T

Project Information

Project: MELLETTE-TODD CO. STUDY
Drill Date: 08/10/1995
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R2-95-28
Samples:

Geophysical Information

Spontaneous Potential: X
Natural Gamma: X
Single Point Resistivity: X
Extra:

DRILLERS LOG ONLY.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2549.00 - 2548.00</td>
<td>0.0 - 1.0</td>
<td>TOPSOIL, SILTY</td>
</tr>
<tr>
<td>2548.00 - 2449.00</td>
<td>1.0 - 100.0</td>
<td>SILTSTONE AND SANDSTONE (ARIKAREE FORMATION)</td>
</tr>
<tr>
<td>2449.00 - 2387.00</td>
<td>100.0 - 162.0</td>
<td>SILTSTONE, LIGHT-GRAY TO GREENISH-GRAY, SANDY, CLAYEY (BRULE FORMATION?)</td>
</tr>
<tr>
<td>2387.00 - 2207.00</td>
<td>162.0 - 342.0</td>
<td>SILTSTONE, GREEN TO GREENISH-GRAY; SOME HARD SPOTS (CHADRON FORMATION?)</td>
</tr>
<tr>
<td>2207.00 - 2198.00</td>
<td>342.0 - 351.0</td>
<td>SAND(?) (CHAMBERLAIN PASS FORMATION?)</td>
</tr>
<tr>
<td>2198.00 - 2187.00</td>
<td>351.0 - 362.0</td>
<td>SHALE, BLACK; GREASY (PIERRE SHALE)</td>
</tr>
</tbody>
</table>

FORMATION TOPS WERE PICKED FROM GEOPHYSICAL LOG BY R.H. HAMMOND.

* * * *
Location Information
Legal Location: SE SE SE SW SEC. 20, T. 039 N., R. 27 W.
County: TODD
Location: 039N-27W-20CDDD
Basin: KEYA PAHA
Latitude: 43 19' 57"
Hydrologic Unit Code: 10150006
Longitude: 100 32' 26"
Land Owner:
Ground Surface Elevation (ft.): 2710 T

Project Information
Project: MISSION WATER PROJECT
Drill Date: 07/06/1966
Drill Date: 07/06/1966
Geologist: A. BARARI
Company: SDGS
Driller: BRINKLEY/GANN
Drilling Method: AUGER
Driller's Log: X
Test Hole Number: 47A
Total Drill Hole Depth (ft.): 29.0
Samples:
SPECIAL REPORT 41 (NOT USED).

Geophysical Information
Spontaneous Potential:
Natural Gamma:
Single Point Resistivity:
Extra:

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2710.00-2709.00</td>
<td>0.0-1.0</td>
<td>TOPSOIL</td>
</tr>
<tr>
<td>2709.00-2706.00</td>
<td>1.0-4.0</td>
<td>SILT, BROWNISH-BLACK; WITH FINE SAND, DRY</td>
</tr>
<tr>
<td>2706.00-2699.00</td>
<td>4.0-11.0</td>
<td>SAND, TANNISH-BROWN, SILTY; MOIST</td>
</tr>
<tr>
<td>2699.00-2696.00</td>
<td>11.0-14.0</td>
<td>CLAY, LIGHT-OLIVE-GREEN, SILTY; MOIST</td>
</tr>
<tr>
<td>2696.00-2691.00</td>
<td>14.0-19.0</td>
<td>CLAY, WHITISH-GRAY; MOIST TO DRY</td>
</tr>
<tr>
<td>2691.00-2681.00</td>
<td>19.0-29.0</td>
<td>CLAY, LIGHT-PINKISH-TAN; HARD, DRY</td>
</tr>
</tbody>
</table>

DEPTH TO WATER - DRY.

* * * *
Location Information

Legal Location: NW NE NE NE SEC. 35, T. 039 N., R. 27 W.
County: TODD
Basin: WHITE
Hydrologic Unit Code: 10140204
Land Owner: 
Location: 039N-27W-35AAAB
Latitude: 43 19' 03"
Longitude: 100 28' 20"
Ground Surface Elevation (ft.): 2600 T

Project Information

Project: MELLETTE-TODD CO. STUDY
Drill Date: 07/28/1993
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R20-93-45
Driller: M. THOMPSON
Geologist: R. HAMMOND
Driller's Log: X
Geologist's Log: X
Total Drill Hole Depth (ft.): 417.0

Geophysical Information

Spontaneous Potential: X
Natural Gamma: X
Single Point Resistivity: X
Extra: 

HOLE WAS PLUGGED WITH HIGH SOLIDS BENTONITE FROM 417 FEET TO SURFACE. AFTER SETTLEMENT, OPEN HOLE REMAINING WAS PLUGGED WITH CEMENT GROUT.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2600.00 - 2577.00</td>
<td>0.0 - 23.0</td>
<td>SAND, DUSKY-YELLOW TO GRAYISH-YELLOW, FINE, SUBANGULAR TO SUBROUNDED; HIGHLY QUARTZOSE</td>
</tr>
<tr>
<td>2577.00 - 2561.00</td>
<td>23.0 - 39.0</td>
<td>CLAY, LIGHT-OLIVE, VERY SILTY, SANDY; CALCAREOUS</td>
</tr>
<tr>
<td>2561.00 - 2544.00</td>
<td>39.0 - 56.0</td>
<td>CLAY, LIGHT-OLIVE, VERY SILTY; FINE SAND AT 50 FEET TO 54 FEET, CALCAREOUS</td>
</tr>
<tr>
<td>2544.00 - 2478.00</td>
<td>56.0 - 122.0</td>
<td>CLAY, REDDISH-BROWN, VERY SILTY, MASSIVE; SOME FINE SAND AT 66 FEET TO 70 FEET, CALCAREOUS AT 80 FEET AND 110 FEET TO 120 FEET</td>
</tr>
<tr>
<td>2478.00 - 2410.00</td>
<td>122.0 - 190.0</td>
<td>CLAY AND SILT, LIGHT-BROWNISH-GRAY; NON-CALCAREOUS</td>
</tr>
<tr>
<td>2410.00 - 2325.00</td>
<td>190.0 - 275.0</td>
<td>CLAYSTONE, REDDISH-BROWN, SILTY, MASSIVE; CALCAREOUS</td>
</tr>
<tr>
<td>2325.00 - 2300.00</td>
<td>275.0 - 300.0</td>
<td>CLAYSTONE, LIGHT-BROWNISH-GRAY, SILTY, MASSIVE; HIGHLY CALCAREOUS</td>
</tr>
<tr>
<td>2300.00 - 2230.00</td>
<td>300.0 - 370.0</td>
<td>CLAYSTONE, LIGHT-BLUISH-GRAY, MASSIVE; CALCAREOUS, SLIGHTLY GREASY</td>
</tr>
<tr>
<td>2230.00 - 2201.00</td>
<td>370.0 - 399.0</td>
<td>SILTSTONE, LIGHT-BLUISH-GRAY TO YELLOW-BROWN; HIGHLY CALCAREOUS</td>
</tr>
<tr>
<td>2201.00 - 2183.00</td>
<td>399.0 - 417.0</td>
<td>CLAY, DARK-GRAY; GREASY, CALCAREOUS (PIERRE SHALE)</td>
</tr>
</tbody>
</table>
Location Information

Legal Location: NW NE NE NE SEC. 35, T. 039 N., R. 27 W.
County: TODD
Basin: WHITE
Hydrologic Unit Code: 10140204
Land Owner: Location: 039N-27W-35AAAB 1
Latitude: 43 19' 03"
Longitude: 100 28' 20"
Ground Surface Elevation (ft.): 2600 T

Project Information

Project: MELLETTE-TODD CO. STUDY
Drill Date: 08/02/1993
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R20-93-46
Driller: D. IVerson
Geologist: M. JARRETT
Geologist's Log: X
Driller's Log: X
Total Drill Hole Depth (ft.): 92.0

Well Information

SDGS Well Name: R20-93-46
Water Rights Well: Aquifer:
Other Well Name: Management Unit:
Casing Type: PVC, SCH. 80
Casing Top Elevation: 2602.00 T
Screen Type: PVC, SLOT SIZE 0.010 IN.
Casing Diameter (in.): 2.0
Screen Length (ft.): 15.0
Total Casing and Screen (ft.): 89.0
Casing Stick-up (ft.): 2.00
Well Maintenance Date:

Geophysical Information

Spontaneous Potential: X
Natural Gamma: X
Single Point Resistivity: X
Extra: X

10 FEET OF BLANK CASING PLACED BELOW SCREEN AT 87 FEET TO 77 FEET. FILTER PACK
COMPRISED OF 800 LBS OF 0.65 - 0.75 MM QUARTZ SAND PLACED FROM 92 FEET TO 53 FEET.
REMAINDER OF HOLE FILLED WITH HIGH SOLIDS BENTONITE GROUT. AFTER SETTLEMENT TIME
UPPER FEW FEET OF HOLE PLUGGED WITH CEMENT GROUT.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2600.00 - 2577.00</td>
<td>0.0 - 23.0</td>
<td>SAND, DUSKY-YELLOW-BROWN TO GRAYISH-YELLOW, FINE, SUBANGULAR TO SUB-ROUNDED; HIGHLY QUARTZOSE</td>
</tr>
<tr>
<td>2577.00 - 2562.00</td>
<td>23.0 - 38.0</td>
<td>CLAY, LIGHT-OLIVE, VERY SILTY, SANDY; CALCAREOUS</td>
</tr>
<tr>
<td>2562.00 - 2544.00</td>
<td>38.0 - 56.0</td>
<td>SILTSTONE AND SANDSTONE, LIGHT-OLIVE TO TAN, FINE- TO MEDIUM-GRAINED SANDSTONE; SOME HARD WHITE CALCAREOUS LAYERS</td>
</tr>
<tr>
<td>2544.00 - 2534.00</td>
<td>56.0 - 66.0</td>
<td>CLAYSTONE, REDDISH-BROWN, VERY SILTY, MASSIVE; CALCAREOUS</td>
</tr>
<tr>
<td>2534.00 - 2527.00</td>
<td>66.0 - 73.0</td>
<td>SILTSTONE, OLIVE-GREEN TO CREAMY WHITE; SOFT, CALCAREOUS</td>
</tr>
<tr>
<td>2527.00 - 2508.00</td>
<td>73.0 - 92.0</td>
<td>SILTSTONE, REDDISH-BROWN, CLAYEY, MASSIVE;</td>
</tr>
</tbody>
</table>
CALCAREOUS

* * * *

039N27W35AAAB 1  01/31/2005 Page 2
**Location Information**

Legal Location: SW SE SE SE SEC. 30, T. 039 N., R. 28 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner:

Location: 039N-28W-30DDDC
Latitude: 43 19' 03"
Longitude: 100 40' 26"
Ground Surface Elevation (ft.): 2618 T

**Project Information**

Project: MISSION WATER PROJECT
Drill Date: 07/05/1966
Company: SDGS
Drilling Method: AUGER
Test Hole Number: 1
Samples:

Geologist: A. BARARI
Geologist's Log:
Driller: BRINKLEY/GANN
Driller's Log: X
Total Drill Hole Depth (ft.): 74.0

**Geophysical Information**

Spontaneous Potential:
Natural Gamma:
Single Point Resistivity:
Extra:

SPECIAL REPORT 41.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2618.00 - 2617.00</td>
<td>0.0 - 1.0</td>
<td>TOPSOIL</td>
</tr>
<tr>
<td>2617.00 - 2604.00</td>
<td>1.0 - 14.0</td>
<td>CLAY, BROWNISH-TAN; SOME SILT, MOIST</td>
</tr>
<tr>
<td>2604.00 - 2579.00</td>
<td>14.0 - 39.0</td>
<td>CLAY, BROWNISH- TO GRAYISH-TAN; MOIST, WETTER FROM 24 TO 39 FEET</td>
</tr>
<tr>
<td>2579.00 - 2565.00</td>
<td>39.0 - 53.0</td>
<td>SAND, GRAYISH- TO TANNISH-BROWN, FINE TO MEDIUM TO COARSE; SATURATED</td>
</tr>
<tr>
<td>2565.00 - 2555.00</td>
<td>53.0 - 63.0</td>
<td>CLAY, BROWNISH- TO GRAYISH-TAN</td>
</tr>
<tr>
<td>2555.00 - 2544.00</td>
<td>63.0 - 74.0</td>
<td>CLAY, BUFF TO TANNISH-BROWN; DRY, SOME COARSE SAND</td>
</tr>
</tbody>
</table>

DEPTH TO WATER - 39 FEET.

* * * *
Location Information

Legal Location: NW NW NW NW SEC. 31, T. 039 N., R. 28 W.
County: TODD
Basin: KEYA PAHA
Hydrologic Unit Code: 10150006
Land Owner:
Location: 039N-28W-31BBBBB
Latitude: 43 19' 02"
Longitude: 100 41' 25"
Ground Surface Elevation (ft.): 2600 T

Project Information

Project: MISSION WATER PROJECT
Drill Date: 07/06/1966
Company: SDGS
Drilling Method: AUGER
Test Hole Number: 2
Samples:
Geologist: A. BARARI
Geologist's Log:
Driller: BRINKLEY/GANN
Driller's Log:
Total Drill Hole Depth (ft.): 69.0

Geophysical Information

Spontaneous Potential:
Natural Gamma:
Single Point Resistivity:
Extra:

SPECIAL REPORT 41.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2600.00-2599.00</td>
<td>0.0-1.0</td>
<td>TOPSOIL</td>
</tr>
<tr>
<td>2599.00-2596.00</td>
<td>1.0-4.0</td>
<td>SILT, LIGHT-TANNISH-YELLOW; SOME FINE SAND, DRY</td>
</tr>
<tr>
<td>2596.00-2591.00</td>
<td>4.0-9.0</td>
<td>CLAY, LIGHT-TANNISH-BROWN; DRY</td>
</tr>
<tr>
<td>2591.00-2581.00</td>
<td>9.0-19.0</td>
<td>CLAY, REDDISH-TAN, SILTY; MOIST</td>
</tr>
<tr>
<td>2581.00-2556.00</td>
<td>19.0-44.0</td>
<td>CLAY, REDDISH-TAN, SILTY; SOME FINE SAND, SATURATED</td>
</tr>
<tr>
<td>2556.00-2546.00</td>
<td>44.0-54.0</td>
<td>CLAY, LIGHT-TANNISH-PINK; MOIST</td>
</tr>
<tr>
<td>2546.00-2531.00</td>
<td>54.0-69.0</td>
<td>CLAY, LIGHT-TANNISH-GRAY; DRY</td>
</tr>
</tbody>
</table>

DEPTH TO WATER - 19 FEET.

* * * *
Location Information

Legal Location: NW NE NW SE SEC. 01, T. 039 N., R. 29 W.
County: TODD
Longitude: 100 41' 50"
Land Owner: TODD
Basin: WHITE
Latitude: 43 22' 55"
Hydrologic Unit Code: 10140204
Location: 039N-29W-01DBAB
Land Owner: TODD

Project Information

Project: MELLETTE-TODD CO. STUDY
Drill Date: 09/21/1994
Geologist: M. JARRETT
Company: SDGS
Driller's Log: X
Geologist's Log: X
Drilling Method: ROTARY
Driller: G. JENSEN
Drill Date: 09/21/1994
Test Hole Number: R2-94-73
Total Drill Hole Depth (ft.): 182.0

Samples:

Geophysical Information

Spontaneous Potential: X
Single Point Resistivity: X
Natural Gamma: X
Extra: X

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2420.00 - 2418.00</td>
<td>0.0 - 2.0</td>
<td>TOPSOIL, BROWN</td>
</tr>
<tr>
<td>2418.00 - 2407.00</td>
<td>2.0 - 13.0</td>
<td>CLAY, GREENISH-GRAY TO TAN-BROWN; MASSIVE, NONCALCAREOUS</td>
</tr>
<tr>
<td>2407.00 - 2308.00</td>
<td>13.0 - 112.0</td>
<td>SILTSTONE, PALE-YELLOWISH-BROWN TO GREENISH-GRAY, CLAYEY; NONCALCAREOUS TO MODERATELY CALCAREOUS</td>
</tr>
<tr>
<td>2308.00 - 2254.00</td>
<td>112.0 - 166.0</td>
<td>SILTSTONE, DUSKY-YELLOW TO GREENISH-GRAY, CLAYEY; NONCALCAREOUS; SOME CLAYSTONE AND CLAY LAYERS</td>
</tr>
<tr>
<td>2254.00 - 2238.00</td>
<td>166.0 - 182.0</td>
<td>SHALE, GRAYISH-BLACK; NONCALCAREOUS (PIERRE SHALE)</td>
</tr>
</tbody>
</table>

* * * *
**Location Information**

Legal Location: NE NE NW SE Sec. 26, T. 039 N., R. 29 W.
County: TODD
Basin: WHITE
Hydrologic Unit Code: 10140203
Land Owner: 

Location: 039N-29W-26DBAA
Latitude: 43 19' 28"
Longitude: 100 43' 00"
Ground Surface Elevation (ft.): 2629 T

**Project Information**

Project: MELLETTE-TODD CO. STUDY
Drill Date: 09/20/1994
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R2-94-71

Geologist: M. JARRETT
Geologist's Log: X
Driller: G. JENSEN
Driller's Log: 
Total Drill Hole Depth (ft.): 402.0

**Geophysical Information**

Spontaneous Potential: X
Natural Gamma: X
Single Point Resistivity: X
Extra: 

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2629.00-2580.00</td>
<td>0.0-49.0</td>
<td>SILTSTONE, MODERATE-YELLOWISH-BROWN, SLIGHTLY CLAYEY; FISSILE, NONCALCAREOUS; BECOMING SANDY WITH DEPTH (ARIKAREE FORMATION)</td>
</tr>
<tr>
<td>2580.00-2567.00</td>
<td>49.0-62.0</td>
<td>SAND, MODERATE-YELLOW-BROWN, VERY FINE-GRAINED, SILTY; NONCALCAREOUS</td>
</tr>
<tr>
<td>2567.00-2554.00</td>
<td>62.0-75.0</td>
<td>SAND, MEDIUM-YELLOW-BROWN, COARSE-GRAINED, ROUNDED; SOME GRAVEL; MOST OF THE SAND APPEARS TO BE REWORKED ARIKAREE SILTSTONE</td>
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<tr>
<td>2554.00-2505.00</td>
<td>75.0-124.0</td>
<td>SILTSTONE, LIGHT-BROWN, CLAYEY; FISSILE, NONCALCAREOUS</td>
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<tr>
<td>2505.00-2457.00</td>
<td>124.0-172.0</td>
<td>CLAYSTONE AND SILTSTONE, GRAYISH-ORANGE; NONCALCAREOUS</td>
</tr>
<tr>
<td>2457.00-2425.00</td>
<td>172.0-204.0</td>
<td>SILTSTONE, GRAYISH-ORANGE, CLAYEY; MASSIVE, MODERATELY CALCAREOUS</td>
</tr>
<tr>
<td>2425.00-2417.00</td>
<td>204.0-212.0</td>
<td>SANDSTONE AND SILTSTONE, DARK-YELLOWISH-BROWN TO GRAYISH-BROWN; NONCALCAREOUS; MORE SILT CONTENT WITH DEPTH (WHITE RIVER GROUP)</td>
</tr>
<tr>
<td>2417.00-2371.00</td>
<td>212.0-258.0</td>
<td>CLAY, GRAYISH-ORANGE TO PALE-YELLOWISH-BROWN, SILTY; MASSIVE, NONCALCAREOUS</td>
</tr>
<tr>
<td>2371.00-2327.00</td>
<td>258.0-302.0</td>
<td>CLAYSTONE, GRAYISH-ORANGE; FISSILE, SOME SILTSTONE, MODERATELY CALCAREOUS AT 280 FEET</td>
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<tr>
<td>2327.00-2300.00</td>
<td>302.0-329.0</td>
<td>CLAY, GREENISH-GRAY TO DARK-GREENISH-GRAY; NONCALCAREOUS TO MODERATELY CALCAREOUS</td>
</tr>
<tr>
<td>Depth Range</td>
<td>Depth Range</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>2300.00-2285.00</td>
<td>329.0-344.0</td>
<td>SILT, GRAYISH-GREEN; SOFT, SOME FINE SAND, NONCALCAREOUS</td>
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<tr>
<td>2285.00-2276.00</td>
<td>344.0-353.0</td>
<td>SAND, MEDIUM- TO COARSE-GRAINED, ANGULAR; SOME FINE GRAVEL, SOME SILT; MOSTLY LITHIC GRAINS</td>
</tr>
<tr>
<td>2276.00-2249.00</td>
<td>353.0-380.0</td>
<td>SHALE, OLIVE-GRAY, SOME YELLOWISH-ORANGE INCLUSIONS; NONCALCAREOUS, WEATHERED (PIERRE SHALE)</td>
</tr>
<tr>
<td>2249.00-2227.00</td>
<td>380.0-402.0</td>
<td>SHALE, GRAYISH-BLACK; NONCALCAREOUS (PIERRE SHALE)</td>
</tr>
</tbody>
</table>

* * * *
Location Information

Legal Location: NE NE NW SE SEC. 26, T. 039 N., R. 29 W.
County: TODD
Basin: WHITE
Hydrologic Unit Code: 10140203
Land Owner: 

Location: 039N-29W-26DBAA 1
Latitude: 43° 19' 28"
Longitude: 100° 43' 00"
Ground Surface Elevation (ft.): 2629 T

Project Information

Project: MELLETTE-TODD CO. STUDY
Drill Date: 09/20/1994
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R2-94-72
Samples:

Geologist: M. JARRETT
Geologist's Log: X
Driller: G. JENSEN
Driller's Log: 
Total Drill Hole Depth (ft.): 74.0

Well Information

SDGS Well Name: R2-94-72
Water Rights Well: 
Other Well Name: 
Casing Type: PVC, SCH. 80
Screen Type: PVC, MFG., 0.010 IN. SLOT
Total Casing and Screen (ft.): 77.0

Casing Top Elevation: 2671.00 T
Casing Diameter (in.): 2.0
Screen Length (ft.): 10.0
Casing Stick-up (ft.): 2.00

Well Maintenance Date: 01/31/2005

Geophysical Information

Spontaneous Potential: 
Natural Gamma: 

Single Point Resistivity: 
Extra: 

OBSERVATION WELL DRILLED FOR MELLETTE-TODD CO. STUDY. NO GEOLOGISTS LOG AVAILABLE FOR THIS WELL. LITHOLOGY IS TAKEN FROM R2-94-71 WHICH WAS DRILLED AT OR NEAR THE SAME LOCATION.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2629.00-2580.00</td>
<td>0.0-49.0</td>
<td>SILTSTONE, MODERATE-YELLOWISH-BROWN, SLIGHTLY CLAYEY; FISSILE, NONCALCAREOUS; BECOMING SANDY WITH DEPTH (ARIKAREE FORMATION)</td>
</tr>
<tr>
<td>2580.00-2567.00</td>
<td>49.0-62.0</td>
<td>SAND, MODERATE-YELLOW-BROWN, VERY FINE-GRAINED, SILTY; NONCALCAREOUS</td>
</tr>
<tr>
<td>2567.00-2555.00</td>
<td>62.0-74.0</td>
<td>SAND, MEDIUM-YELLOW-BROWN, COARSE-GRAINED, ROUNDED; SOME GRAVEL; MOST OF THE SAND APPEARS TO BE REWORKED ARIKAREE SILTSTONE</td>
</tr>
</tbody>
</table>

* * * *
Location Information

Legal Location: SE NE NE SE SEC. 20, T. 039 N., R. 30 W.
County: TODD
Basin: WHITE
Hydrologic Unit Code: 10140203
Land Owner:
Location: 039N-30W-20DAAD
Latitude: 43 20' 14"
Longitude: 100 53' 16"
Ground Surface Elevation (ft.): 2317 T

Project Information

Project: MELLETTE-TODD CO. STUDY
Drill Date: 08/02/1995
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R2-95-25
Samples:

Geologist: R. HAMMOND
Driller: G. JENSEN
Driller's Log:

Total Drill Hole Depth (ft.): 202.0

Geophysical Information

Spontaneous Potential:
Natural Gamma:
Single Point Resistivity:
Extra:

INDUCTION LOG ON THIS TEST HOLE; NATURAL GAMMA, CONDUCTIVITY; AND RESISTIVITY.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2317.00 - 2315.00</td>
<td>0.0 - 2.0</td>
<td>TOPSOIL</td>
</tr>
<tr>
<td>2315.00 - 2220.00</td>
<td>2.0 - 97.0</td>
<td>SILT AND SILTSTONE, TAN-BROWN TO GRAYISH-BROWN (ROSEBUD FORMATION)</td>
</tr>
<tr>
<td>2220.00 - 2163.00</td>
<td>97.0 - 154.0</td>
<td>SILT AND SILTSTONE, GRAY TO GRAYISH-GREEN; SOME BROWN AND WHITE BEDS (BRULE FORMATION?)</td>
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<tr>
<td>2163.00 - 2153.00</td>
<td>154.0 - 164.0</td>
<td>SAND, FINE- TO COARSE-GRAINED</td>
</tr>
<tr>
<td>2153.00 - 2115.00</td>
<td>164.0 - 202.0</td>
<td>SHALE, BLACK (PIERRE SHALE)</td>
</tr>
</tbody>
</table>

* * * *
**Location Information**

Legal Location: NW NW NW NW SEC. 27, T. 039 N., R. 31 W.
County: TODD
Basin: WHITE
Hydrologic Unit Code: 10140203
Land Owner: 

Location: 039N-31W-27BBBB
Latitude: 43 19' 49"
Longitude: 100 58' 46"
Ground Surface Elevation (ft.): 2622 T

**Project Information**

Project: MELLETTE-TODD CO. STUDY
Drill Date: 08/08/1995
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R2-95-26
Samples: 

SDGS Well Name: R2-95-26
Water Rights Well: 
Other Well Name: 
Casing Type: PVC, SCH. 80
Screen Type: PVC, MFG., 0.010 IN. SLOT
Total Casing and Screen (ft.): 567.0
Well Maintenance Date:

Geologist: R. HAMMOND
Geologist's Log: X
Driller: M. THOMPSON
Driller's Log:
Total Drill Hole Depth (ft.): 565.0

**Well Information**

SDGS Well Name: R2-95-26
Water Rights Well: 
Other Well Name: 
Casing Type: PVC, SCH. 80
Casing Diameter (in.): 2.0
Screen Length (ft.): 10.0
Casing Stick-up (ft.): 2.00

Well Maintenance Date:

Aquifer: WHITE RIVER GROUP
Management Unit: 
Casing Top Elevation: 2624.00 T
Casing Diameter (in.): 2.0
Screen Length (ft.): 10.0
Casing Stick-up (ft.): 2.00

**Geophysical Information**

Spontaneous Potential: X
Natural Gamma: X
Single Point Resistivity: X
Extra:

WELL HAS 20 FEET OF BLANK CASING ON THE BOTTOM AND IS SCREENED FROM 537 TO 547 FEET BELOW CASING TOP.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2622.00-2552.00</td>
<td>0.0 - 70.0</td>
<td>SANDSTONE AND SILTSTONE; POORLY CEMENTED</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SANDSTONE WITH A SILTY CLAY MATRIX, SOME ASH LAYERS THROUGHOUT (ARIKAREE FORMATION)</td>
</tr>
<tr>
<td>2552.00-2482.00</td>
<td>70.0 - 140.0</td>
<td>SANDSTONE, CEMENTED; CONTAINS SOME CLAY; SOME ASH AT 130 FEET (ARIKAREE FORMATION)</td>
</tr>
<tr>
<td>2482.00-2462.00</td>
<td>140.0 - 160.0</td>
<td>SILT AND CLAY; SOME DARK-GRAY TO BLACK FRAGMENTS OF CLAY OR CHERT (ARIKAREE FORMATION)</td>
</tr>
<tr>
<td>2462.00-2402.00</td>
<td>160.0 - 220.0</td>
<td>SANDSTONE AND SILTSTONE, TAN TO BUFF, WELL CEMENTED TO POORLY CEMENTED; SOME INTERBEDDED CLAY (ARIKAREE FORMATION)</td>
</tr>
<tr>
<td>2402.00-2392.00</td>
<td>220.0 - 230.0</td>
<td>SANDSTONE AND SILTSTONE, DARK-RED; SOME CLAY LAYERS (ARIKAREE FORMATION)</td>
</tr>
<tr>
<td>2392.00-2354.00</td>
<td>230.0 - 268.0</td>
<td>SANDSTONE AND SILTSTONE; SOME CLAY; MORE ASH CONTENT WITH DEPTH (ARIKAREE FORMATION)</td>
</tr>
</tbody>
</table>
2354.00-2182.00  268.0-440.0  SANDSTONE AND SILTSTONE, GREEN, SLIGHTLY SILTY; SOME CLAY (WHITE RIVER GROUP)

2182.00-2080.00  440.0-542.0  SAND, GREENISH, MEDIUM TO COARSE, MEDIUM ROUNDED; SOME CLAY; SOME ASH; MOSTLY QUARTZOSE CLASTS (WHITE RIVER GROUP)

2080.00-2057.00  542.0-565.0  SHALE, BLACK (PIERRE SHALE)

Descriptions of lithologic units were provided by the USGS in Huron, South Dakota. Pierre Shale was picked from the geophysical log at 542 feet.

* * * *
Location Information
Legal Location: NW NW NW NW SEC. 27, T. 039 N., R. 31 W.
County: TODD
Basin: WHITE
Hydrologic Unit Code: 10140203
Land Owner: 
Location: 039N-31W-27BBBB 1
Latitude: 43 19' 49"
Longitude: 100 58' 46"
Ground Surface Elevation (ft.): 2622 T

Project Information
Project: MELLETTE-TODD CO. STUDY
Drill Date: 08/08/1995
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R2-95-26
Samples: 
Total Drill Hole Depth (ft.): 100.0

Well Information
SDGS Well Name: R2-95-26
Water Rights Well: 
Other Well Name: 
Casing Type: PVC, SCH. 80
Screen Type: PVC, MFG., 0.010 IN. SLOT
Total Casing and Screen (ft.): 90.0
Casing Top Elevation: 2624.00 T
Casing Diameter (in.): 2.0
Screen Length (ft.): 10.0
Casing Stick-up (ft.): 2.00
Well Maintenance Date: 

Geophysical Information
Spontaneous Potential: 
Natural Gamma: 
Single Point Resistivity: 
Extra: 

Elevation (ft.) | Depth (ft.) | Description
--- | --- | ---
2622.00 - 2552.00 | 0.0 - 70.0 | SANDSTONE AND SILTSTONE; POORLY CEMENTED SANDSTONE WITH A SILTY CLAY MATRIX, SOME ASH LAYERS THROUGHOUT (ARIKAREE FORMATION)
2552.00 - 2522.00 | 70.0 - 100.0 | SANDSTONE, CEMENTED; CONTAINS SOME CLAY (ARIKAREE FORMATION)

Descriptions of lithologic units were provided by the USGS in Huron, South Dakota.

* * * *
CASING IS SLOTTED FROM 80 TO 120 FEET. BOTTOM SECTION OF CASING HAS 5-FOOT ATTACHED SANDPOINT. WELL GRAVEL PACKED, STAKED AND WIRE SECURED. BACKFILLED WITH MUD. SLOTTED CASING WAS GENERALLY PLACED OPPOSITE THE DEEPEST BEST SANDS IN THE ARIKAREE. SOURCE OF DATA: USGS OPEN-FILE REPORT 84-148.
BELOW 150 FEET CHANGES TO LIGHT-BROWN TO BUFF-COLORED CLAY CONTAINING BLACK PARTICLES

2450.00-2410.00 160.0-200.0 CLAY, TAN; LAYERS OF BUFF-COLORED SILTSTONE

2410.00-2390.00 200.0-220.0 SILTSTONE, LIGHT-BROWN TO BUFF-COLORED; CLAY LAYERS

2390.00-2330.00 220.0-280.0 SHALE, MULTI-COLORED; ALTERNATING HARD AND SOFT LAYERS

* * * *
### Location Information

- **Legal Location:** NE NE NE NE SEC. 03, T. 039 N., R. 32 W.
- **County:** TODD
- **Basin:** WHITE
- **Hydrologic Unit Code:** 10140203
- **Land Owner:**
- **Location:** 039N-32W-03AAAA 1
- **Latitude:** 43° 23' 20"
- **Longitude:** 101° 04' 44"
- **Ground Surface Elevation (ft.):** 2607 T

### Project Information

- **Project:** MELLETTE-TODD CO. STUDY
- **Drill Date:** 09/15/1992
- **Company:** SDGS
- **Drilling Method:** ROTARY
- **Test Hole Number:** R2-92-45
- **Samples:**
- **Geologist:** R. HAMMOND
- **Driller:** G. JENSEN
- **Geologist's Log:** X
- **Driller's Log:**
- **Total Drill Hole Depth (ft.):** 552.0

### Well Information

- **SDGS Well Name:** R2-92-45
- **Water Rights Well:**
- **Other Well Name:**
- **Casing Type:** PVC
- **Screen Type:** PVC, MFG., SLOT SIZE 0.010 IN.
- **Total Casing and Screen (ft.):** 530.0
- **Casing Top Elevation:** 2609.50 T
- **Casing Diameter (in.):** 2.0
- **Screen Length (ft.):** 10.0
- **Casing Stick-up (ft.):** 2.50
- **Well Maintenance Date:**

### Geophysical Information

- **Spontaneous Potential:** X
- **Natural Gamma:** X
- **Single Point Resistivity:** X
- **Extra:**

### Elevation (ft.)

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2607.00-2593.00</td>
<td>0.0-14.0</td>
<td>SILT, BROWN, VERY SANDY, CLAYEY; ABUNDANT WHITE NONCALCAREOUS NODULES, NONCALCAREOUS, MASSIVE</td>
</tr>
<tr>
<td>2593.00-2578.00</td>
<td>14.0-29.0</td>
<td>SILTSTONE, LIGHT-BROWN, SANDY, VERY CLAYEY; SLIGHTLY CALCAREOUS, MASSIVE</td>
</tr>
<tr>
<td>2578.00-2570.00</td>
<td>29.0-37.0</td>
<td>SANDSTONE, DARK-BROWN, VERY FINE, CLAYEY; SLIGHTLY CALCAREOUS, WELL-CEMENTED</td>
</tr>
<tr>
<td>2570.00-2524.00</td>
<td>37.0-83.0</td>
<td>SILTSTONE, LIGHT-BROWN, VERY CLAYEY; MASSIVE, NONCALCAREOUS FROM 37 TO 50 FEET, CALCAREOUS FROM 50 TO 83 FEET (ARIKAREE GROUP?)</td>
</tr>
<tr>
<td>2524.00-2505.00</td>
<td>83.0-102.0</td>
<td>SILTSTONE, YELLOWISH-BROWN, VERY SANDY; CALCAREOUS, MASSIVE TO POORLY BEDDED, (BRULE FORMATION?)</td>
</tr>
<tr>
<td>2505.00-2468.00</td>
<td>102.0-139.0</td>
<td>SILTSTONE, YELLOWISH-BROWN; CALCAREOUS, POORLY FISSILE, SOME THIN WHITE ASH BEDS</td>
</tr>
<tr>
<td>2468.00-2454.00</td>
<td>139.0-153.0</td>
<td>CLAYSTONE, GRAYISH-ORANGE, VERY SILTY; NONCALCAREOUS, MODERATELY TO POORLY FISSILE</td>
</tr>
<tr>
<td>Depth Range</td>
<td>Interval</td>
<td>Description</td>
</tr>
<tr>
<td>-------------</td>
<td>----------</td>
<td>-------------</td>
</tr>
<tr>
<td>2454.00 - 2379.00</td>
<td>153.0 - 228.0</td>
<td>Silty sandstone, grayish-orange, clayey; non-calcareous to slightly calcareous, moderately to poorly fissile; very calcareous and slightly sandy from 208 to 222 feet</td>
</tr>
<tr>
<td>2379.00 - 2351.00</td>
<td>228.0 - 256.0</td>
<td>Silty sandstone, grayish-orange, very clayey; poorly fissile, noncalcareous, light-olive from 238 to 256 feet</td>
</tr>
<tr>
<td>2351.00 - 2301.00</td>
<td>256.0 - 306.0</td>
<td>Silty sandstone, light-brown, clayey; few slightly calcareous beds, fissile, light-olive mottling below 272 feet</td>
</tr>
<tr>
<td>2301.00 - 2217.00</td>
<td>306.0 - 390.0</td>
<td>Silty sandstone, grayish-orange, sandy, clayey; noncalcareous to slightly calcareous, poorly to moderately fissile, light-olive below 320 feet, sandy, very fine, 320 to 350 feet, clayey from 370 to 380 feet</td>
</tr>
<tr>
<td>2217.00 - 2133.00</td>
<td>390.0 - 474.0</td>
<td>Silty sandstone, grayish-orange, clayey; poorly fissile, slightly calcareous, light-olive between 400 to 448 feet and 460 to 474 feet</td>
</tr>
<tr>
<td>2133.00 - 2089.00</td>
<td>474.0 - 518.0</td>
<td>Silty sandstone, grayish-orange, mottled with olive to light-olive, sandy, very fine, noncalcareous; very fine cuttings</td>
</tr>
<tr>
<td>2089.00 - 2078.00</td>
<td>518.0 - 529.0</td>
<td>Sand, white to light-green, medium to coarse, subrounded</td>
</tr>
<tr>
<td>2078.00 - 2055.00</td>
<td>529.0 - 552.0</td>
<td>Shale, olive-black; slightly calcareous, fissile (Moberidge Member - Pierre Shale)</td>
</tr>
</tbody>
</table>

* * * *
Location Information

Legal Location: NW NW NW NW SEC. 19, T. 039 N., R. 32 W.
County: TODD
Basin: WHITE
Hydrologic Unit Code: 10140203
Land Owner:

Location: 039N-32W-19BBBB
Latitude: 43 20' 42"
Longitude: 100 09' 26"
Ground Surface Elevation (ft.): 2798 T

Project Information

Project: MELLETTE-TODD CO. STUDY
Drill Date: 09/27/1994
Company: SDGS
Drilling Method: ROTARY
Test Hole Number: R2-94-75
Driller: G. JENSEN
Geologist: R. HAMMOND
Driller's Log:
Geologist's Log:
Total Drill Hole Depth (ft.): 772.0

Samples:

Extra:

Geophysical Information

Spontaneous Potential: X
Natural Gamma: X
Single Point Resistivity: X

AN INDUCTION LOG WAS ALSO RUN ON THIS TEST HOLE; NATURAL GAMMA, CONDUCTIVITY, AND RESISTIVITY.

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Depth (ft.)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2798.00 - 2796.00</td>
<td>0.0 - 2.0</td>
<td>TOPSOIL, BROWN, SILTY</td>
</tr>
<tr>
<td>2796.00 - 2493.00</td>
<td>2.0 - 305.0</td>
<td>SILTSTONE, MODERATE-YELLOWISH-BROWN (10YR 5/4), SANDY, CLAYEY; NONCALCAREOUS; MANY VERY SANDY LAYERS AT 85 TO 92 FEET, 205 TO 222 FEET, 230 TO 234 FEET, 268 TO 277 FEET, AND 282 TO 302 FEET; TUFFACEOUS FROM 229 TO 255 FEET (ROSEBUD FORMATION)</td>
</tr>
<tr>
<td>2493.00 - 2291.00</td>
<td>305.0 - 507.0</td>
<td>SILTSTONE, GRAYISH-ORANGE (10YR 7/4) TO YELLOWISH-GRAY (5Y 7/2), CLAYEY, SANDY; SLIGHTLY CALCAREOUS (ROSEBUD FORMATION)</td>
</tr>
<tr>
<td>2291.00 - 2178.00</td>
<td>507.0 - 620.0</td>
<td>SILTSTONE, PALE-OLIVE (10Y 6/2) AND YELLOWISH-GRAY (5Y 7/2), VERY CLAYEY, SLIGHTLY SANDY; VERY CALCAREOUS; ABUNDANT THIN, HARD, BROWN CALCITE BEDS; SEVERAL WHITE CLAY BEDS (BRULE FORMATION)</td>
</tr>
<tr>
<td>2178.00 - 2116.00</td>
<td>620.0 - 682.0</td>
<td>CLAYSTONE, GRAYISH-GREEN (10GY 5/2) AND LIGHT-BROWN (5YR 5/6), VERY SILTY, SANDY; CALCAREOUS TO POORLY CALCAREOUS; LESS SAND CONTENT BELOW 645 FEET (CHADRON FORMATION)</td>
</tr>
<tr>
<td>2116.00 - 2096.00</td>
<td>682.0 - 702.0</td>
<td>SILTSTONE, PALE-YELLOWISH-BROWN (10YR 6/2) TO LIGHT-BROWN (5YR 5/6), VERY SANDY; SLIGHTLY CALCAREOUS; THIN LIGHT-GREEN CLAYSTONE AT 688 TO 692 FEET (CHADRON FORMATION)</td>
</tr>
</tbody>
</table>
2096.00 - 2059.00  702.0 - 739.0  SAND, YELLOW-GRAY, FINE-GRAINED IN UPPER PORTION, COARSE TO VERY VERY COARSE-GRAINED BELOW 720 FEET, WELL-SORTED, SUBROUNDED TO SUBANGULAR; SLIGHTLY CALCAREOUS; PRIMARILY QUARTZ WITH MINOR AMOUNTS OF CHERT, FELDSPAR AND OTHER GRAINS (CHADRON FORMATION)

2059.00 - 2026.00  739.0 - 772.0  CLAYSTONE, OLIVE-BLACK TO BROWNISH-BLACK; SLIGHTLY CALCAREOUS; SOMewhat FISSILE (PIERRE SHALE)

* * * *
**Location Information**

Legal Location: NE NE NE NE SEC. 27, T. 039 N., R. 32 W.
County: TODD
Basin: WHITE
Hydrologic Unit Code: 10140203
Land Owner: 

Location: 039N-32W-27AAAA
Latitude: 43° 19' 47"
Longitude: 101° 04' 45"
Ground Surface Elevation (ft.): 2675 T

**Project Information**

Project: MELLETTE-TODD CO. STUDY
Drill Date: 06/01/1993
Company: SDGS
Drilling Method: ROTARY

Test Hole Number: R2-93-08
Samples: X

Geologist: R. HAMMOND
Geologist's Log: X
Driller: G. JENSEN
Driller's Log: 
Total Drill Hole Depth (ft.): 592.0

**Well Information**

SDGS Well Name: R2-93-08
Water Rights Well: 
Other Well Name: 
Casing Type: PVC, SCH. 80
Screen Type: PVC, SLOT SIZE 0.010 IN.

Casing Top Elevation: 2677.80 T
Casing Diameter (in.): 2.0
Screen Length (ft.): 10.0
Casing Stick-up (ft.): 2.80

Well Maintenance Date: 

**Geophysical Information**

Spontaneous Potential: X
Natural Gamma: X
Single Point Resistivity: X
Extra:

FILTER PACK COMPRISSED OF 0.65-0.75 MM QUARTZ SAND PLACED FROM 559 FEET TO 500 FEET. REMAINDER OF HOLE PLUGGED WITH HIGH SOLIDS BENTONITE GROUT. AFTER SETTLEMENT, CEMENT GROUT WAS PLACED FROM 20 FEET TO LAND SURFACE.

**Elevation (ft.)** | **Depth (ft.)** | **Description**
--- | --- | ---
2675.00 - 2673.00 | 0.0 - 2.0 | TOPSOIL, BLACK
2673.00 - 2664.00 | 2.0 - 11.0 | SANDSTONE, REDDISH-BROWN, FINE TO VERY FINE, VERY SILTY, MASSIVE; NON-CALCAREOUS (ROSEBUD FORMATION)
2664.00 - 2654.00 | 11.0 - 21.0 | SILTSTONE, REDDISH-BROWN, SLIGHTLY SANDY, MASSIVE (ROSEBUD FORMATION)
2654.00 - 2633.00 | 21.0 - 42.0 | CLAYSTONE, LIGHT-REDDISH-BROWN TO REDDISH-BROWN, SANDY, SILTY; NONCALCAREOUS (ROSEBUD FORMATION)
2633.00 - 2599.00 | 42.0 - 76.0 | SILTSTONE, GRAYISH-ORANGE, SANDY TO VERY SANDY, MASSIVE(?); CALCAREOUS TO NON-CALCAREOUS (ROSEBUD FORMATION)
2599.00 - 2511.00 | 76.0 - 164.0 | SILTSTONE, MODERATE-ORANGE-PINK TO DARK-YELLOWISH-ORANGE, SANDY; CALCAREOUS, HIGH GAMMA
KICK AT 97 TO 113 FEET, SOME FINE MICA AND MEDIUM WELL-ROUNDED QUARTZ SAND, SOME DARK VERY SMALL BONES AT 90 FEET TO 100 FEET

2511.00-2483.00  164.0-192.0  SILTSTONE, LIGHT-BROWN, VERY SANDY; SLIGHTLY CALCAREOUS, NONCALCAREOUS AT 164 FEET TO 170 FEET, SAND IS FINE TO MEDIUM AND SUBHEDRAL TO SUBROUNDED QUARTZ AND LITHIC CLASTS, MINOR MAFIC AND MICA GRAINS, SOME WELL-ROUNDED NONCALCAREOUS WHITE CLAYSTONE GRAINS

2483.00-2452.00  192.0-223.0  SANDSTONE, VERY-PALE-ORANGE TO GRAYISH-ORANGE, VERY FINE, VERY SILTY, POORLY TO WELL-ROUNDED, POORLY SORTED, MASSIVE TO POORLY BEDDED; SLIGHTLY CALCAREOUS

2452.00-2406.00  223.0-269.0  SILTSTONE, DARK-YELLOWISH-BROWN TO YELLOWISH-BROWN, SANDY; CALCAREOUS, FINE SAND CONSISTS OF QUARTZ, LITHIC AND SOME MICA

2406.00-2385.00  269.0-290.0  SILTSTONE, LIGHT-BROWN, CLAYEY, SANDY, VERY SANDY AT 280 FEET TO 287 FEET, MASSIVE(?)

2385.00-2352.00  290.0-323.0  SILTSTONE, GRAYISH-ORANGE, CLAYEY, VERY SANDY; SAND IS VERY FINE TO FINE AND WELL-ROUNDED QUARTZ GRAINS; NON- CALCAREOUS

2352.00-2320.00  323.0-355.0  CLAYSTONE, GRAYISH-ORANGE, SILTY, SANDY, MASSIVE; NONCALCAREOUS

2320.00-2303.00  355.0-372.0  SILTSTONE, GRAYISH-ORANGE, CLAYEY, SANDY, MASSIVE TO POORLY BEDDED; NONCALCAREOUS

2303.00-2278.00  372.0-397.0  SILTSTONE, GRAYISH-ORANGE-PINK, CLAYEY, SANDY; CALCAREOUS (BRULE FORMATION)

2278.00-2203.00  397.0-472.0  CLAYSTONE, YELLOWISH-GRAY, SILTY; CALCAREOUS TO POORLY CALCAREOUS, SOME HARD CHERTY BEDS

2203.00-2185.00  472.0-490.0  SAND, GRAYISH-ORANGE-PINK, VERY FINE, SILTY; NONCALCAREOUS

2185.00-2178.00  490.0-497.0  CLAYSTONE, PALE-OLIVE TO YELLOWISH-GRAY, SILTY; NONCALCAREOUS

2178.00-2133.00  497.0-542.0  SILTSTONE, YELLOWISH-GRAY; SLIGHTLY CALCAREOUS, NUMEROUS ASHY LAYERS, HIGH GAMMA SPIKE AT 525 FEET TO 526 FEET SUGGESTING ASH BED, GRADATION TO SANDY SILTSTONE BELOW 530 FEET (CHADRON FORMATION?)

2133.00-2123.00  542.0-552.0  SILTSTONE, YELLOWISH-GRAY, CLAYEY; NONCALCAREOUS, SOME SANDY BEDS

2123.00-2110.00  552.0-565.0  SAND, YELLOWISH-GRAY, FINE TO MEDIUM, SUBANGULAR TO SUBROUNDED; QUARTZOSE WITH SOME LITHIC MICACEOUS AND MAFIC CLASTS
CLAYSTONE, OLIVE-GRAY, MASSIVE TO POORLY BEDDED; NONCALCAREOUS (PIERRE SHALE)

* * * *

039N32W27AAAA  01/31/2005
Location Information

Legal Location: SE SE SE SE SEC. 15, T. 039 N., R. 33 W.
County: TODD
Basin: WHITE
Hydrologic Unit Code: 10140202
Land Owner: TODD

Location: 039N-33W-15DDDD
Longitude: 101 11' 53"
Latitude: 43 20' 44"
Ground Surface Elevation (ft.): 2800 T

Project Information

Project: USGS HIGH PLAINS PROJECT
Drill Date: 10/18/1979
Drill Date: 10/18/1979
Company: MIDLAND DRILLING
Company: MIDLAND DRILLING
Drilling Method: ROTARY
Drilling Method: ROTARY
Test Hole Number: TD-79D
Test Hole Number: TD-79-4
Samples: SDGS Well Name: TD-79D
SDGS Well Name: TD-79-4
Casing Type: PVC
Casing Type: PVC
Screen Type: PVC, HM
Screen Type: PVC, HM
Total Casing and Screen (ft.): 360.0
Total Casing and Screen (ft.): 360.0
Well Maintenance Date: 06/25/1984
Well Maintenance Date: 06/25/1984

Geologist: ARIKAREE
Geologist: ARIKAREE
Geologist's Log: X
Geologist's Log: X
Driller: MIDLAND DRILLING
Driller: MIDLAND DRILLING
Driller's Log: X
Driller's Log: X
Total Drill Hole Depth (ft.): 426.0
Total Drill Hole Depth (ft.): 426.0

Well Information

SDGS Well Name: TD-79D
SDGS Well Name: TD-79-4
Water Rights Well: TD-79D
Water Rights Well: TD-79-4
Other Well Name: TD-79-4
Other Well Name: TD-79-4
Casing Type: PVC
Casing Type: PVC
Screen Type: PVC, HM
Screen Type: PVC, HM
Casing Top Elevation: 360.0
Casing Top Elevation: 360.0
Casing Diameter (in.): 1.5
Casing Diameter (in.): 1.5
Screen Length (ft.): 40.0
Screen Length (ft.): 40.0
Casing Stick-up (ft.):
Casing Stick-up (ft.):

Well Maintenance Date: 06/25/1984
Well Maintenance Date: 06/25/1984

Geophysical Information

Spontaneous Potential: X
Spontaneous Potential: X
Natural Gamma: X
Natural Gamma: X
Single Point Resistivity: X
Single Point Resistivity: X

Elevation (ft.)

Depth (ft.)

Description

2800.00 - 2781.00

0.0 - 19.0

CLAY AND SILT, LIGHT-BROWN; FINE SANDSTONE

2781.00 - 2766.00

19.0 - 34.0

CLAY, SILT, AND SAND, LIGHT-REDDISH- BROWN; CHANGES TO SANDSTONE AND BROWN CLAY BELOW

2766.00 - 2736.00

34.0 - 64.0

SANDSTONE; WHITE CLAY

2736.00 - 2721.00

64.0 - 79.0

CLAY, SILT, AND SAND, BROWN; CLAY LUMPS, FRIABLE SANDSTONE

2721.00 - 2701.00

79.0 - 99.0

CLAY, SILT, AND SAND, LIGHT BROWN; SOME CLAY LUMPS

2701.00 - 2681.00

99.0 - 119.0

CLAY, SILT, SAND, AND SANDSTONE, LIGHT- BROWN; SOME CLAY LUMPS

2681.00 - 2661.00

119.0 - 139.0

CLAY, SILT, AND SAND, BROWN; SOME CLAY LUMPS, SOME SANDSTONE
<table>
<thead>
<tr>
<th>Depth Interval</th>
<th>Depth Range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2661.00-2641.00</td>
<td>139.0-159.0</td>
<td>Clay, silt, and sand, brown; clay lumps</td>
</tr>
<tr>
<td>2641.00-2583.00</td>
<td>159.0-217.0</td>
<td>Clay, silt, and sand, light-brown; white clay lumps, some sandstone</td>
</tr>
<tr>
<td>2583.00-2562.00</td>
<td>217.0-238.0</td>
<td>Clay, silt, sand, and sandstone, light-brown; white clay lumps, some brown, sticky clay</td>
</tr>
<tr>
<td>2562.00-2542.00</td>
<td>238.0-258.0</td>
<td>Clay, silt, and sand, light-brown; white, sticky clay, brown clay, some sandstone pieces</td>
</tr>
<tr>
<td>2542.00-2522.00</td>
<td>258.0-278.0</td>
<td>Siltstone; sandstone, sticky clay lumps</td>
</tr>
<tr>
<td>2522.00-2502.00</td>
<td>278.0-298.0</td>
<td>Clay, silt, and mudstone, light-colored; white clay</td>
</tr>
<tr>
<td>2502.00-2463.00</td>
<td>298.0-337.0</td>
<td>Clay, silt, and siltstone, light-colored; brown and white clay lumps, some stream gravels</td>
</tr>
<tr>
<td>2463.00-2423.00</td>
<td>337.0-377.0</td>
<td>Clay, silt, and sand, light-brown to reddish-colored; sticky clay lumps, some siltstone, possibly some red feldspar particles</td>
</tr>
<tr>
<td>2423.00-2403.00</td>
<td>377.0-397.0</td>
<td>Shale, silty at top of joint; changes to brownish-green clay below, white, sticky clay, some sand particles</td>
</tr>
<tr>
<td>2403.00-2374.00</td>
<td>397.0-426.0</td>
<td>Clay, green to greenish-brown, poorly sorted; some silt, fine sand, and red shale particles</td>
</tr>
</tbody>
</table>

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