STATE OF SOUTH DAKOTA  
William J. Janklow, Governor

DEPARTMENT OF WATER AND NATURAL RESOURCES  
Warren R. Neufeld, Secretary

GEOLOGICAL SURVEY  
Duncan J. McGregor, State Geologist

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OBSERVATION WELLS IN THE VICINITY OF BROOKINGS, SOUTH DAKOTA  
Constructed in 1979

by

Kelly Carter

Science Center  
University of South Dakota  
Vermillion, South Dakota  
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INTRODUCTION

This study was conducted by the South Dakota Geological Survey for the City of Brookings from June 7 to June 25, 1979. The purpose of the project was to install observation wells in order to monitor the water levels in the aquifers along the Deer Creek and Sixmile Creek.

The project was financed by the City of Brookings, the East Dakota Conservancy Sub-District, and the South Dakota Geological Survey.

Nineteen rotary test holes were drilled (fig. 1 and app. A) and observation wells were constructed in all except Test Hole BK-10-79. The wells are made of 2-inch diameter PVC casings with a 3-foot long sandpoint at the bottom. The casings are slotted for 5 feet above the sandpoints. The wells were back-flushed and posts were placed around them for protection.

The elevations of the drill sites were taken from U.S. Geological Survey topographic maps and the water levels were measured on July 16, 1979 (app. A).

REFERENCES CITED


Figure 1. Map showing the locations of test holes and observation wells construction in 1979.
APPENDIX A

Logs of test holes drilled in the Brookings vicinity in 1979

(for map location, see fig. 1)

All elevations have been estimated using a 7 1/2 minute topographic map and are presented in feet above mean sea level.

Test Hole BK-1-79
Location: NW\(\frac{1}{4}\)NW\(\frac{1}{4}\)SE\(\frac{1}{4}\)NW\(\frac{1}{4}\) sec. 32, T. 110 N., R. 49 W.
Date Drilled: June 12, 1979
Elevation: 1615
Depth to water: 7.4 feet

0-1 Topsoil, black, clayey
1-8 Clay, black to gray, soft
8-22 Sand, fine to gravel, medium, well rounded
22-30 Clay, gray to brown, very sandy, gravelly

Observation well: 22 feet of 2-inch diameter PVC and a 3-foot sandpoint with 5 feet of slots above the sandpoint.

Test Hole BK-2-79
Location: SW\(\frac{1}{4}\)NE\(\frac{1}{4}\)SE\(\frac{1}{4}\)NE\(\frac{1}{4}\) sec. 32, T. 110 N., R. 49 W.
Date Drilled: June 17, 1979
Elevation: 1615
Depth to water: 5.0 feet

0-1 Topsoil, black, clayey
1-9 Clay, black to gray, soft
9-40 Sand, fine to gravel, coarse, well rounded, with some small (\(\frac{1}{4}\)') clay lenses

Observation well: 20 feet of 2-inch diameter PVC and a 3-foot sandpoint with 5 feet of slots above the sandpoint.

Test Hole BK-3-79
Location: NW\(\frac{1}{4}\)SE\(\frac{1}{4}\)NW\(\frac{1}{4}\)NE\(\frac{1}{4}\) sec. 32, T. 110 N., R. 49 W.
Date Drilled: June 13, 1979
Elevation: 1615
Depth to water: 3.1 feet
Test Hole BK-3-78 — continued.

0-1 Topsoil, black, clayey
1-10 Clay, black to brown, soft
10-40 Sand, fine to gravel, medium, well rounded

Observation well: 30 feet of 2-inch diameter PVC and a 3-foot sandpoint with 5 feet of slots above the sandpoint.

Test Hole BK-4-78
Location: SE^NW^NW^NE^sec. 32, T. 110 N., R. 49 W.
Date Drilled: June 12, 1979
Elevation: 1615
Depth to water: 8.98 feet

0-10 Clay, black to gray, soft
10-30 Sand, fine to gravel, medium, well rounded
38-42 Clay, gray, hard
42-63 Sand, fine to coarse, subangular
63-70 Clay, gray to brown, sandy, silty, pebbly (till)

Observation well: 44 feet of 2-inch diameter PVC and a 3-foot sandpoint with 5 feet of slots above the sandpoint.

Test Hole BK-5-78
Location: NW^NW^NE^sec. 32, T. 110 N., R. 49 W.
Date Drilled: June 14, 1979
Elevation: 1613
Depth to water: 7.18 feet

0-1 Topsoil, black, clayey
1-9 Clay, black to gray, soft
9-38 Sand, fine to gravel, angular

Observation well: 20 feet of 2-inch diameter PVC and a 3-foot sandpoint with 5 feet of slots above the sandpoint.

Test Hole BK-6-78
Location: NW^NW^NW^NW^sec. 5, T. 109 N., R. 49 W.
Date Drilled: June 13, 1979
Elevation: 1618
Depth to water: 6.27 feet
Test Hole BK-6-79 -- continued.

0- 2  Topsoil, black, very gravely
2-24  Sand, fine to gravel, medium, well rounded
24-30 Clay, brown to gray, sandy, silty, pebbly
      (till)

Observation well: 20 feet of 2-inch diameter
      PVC and a 3-foot sandpoint with 5 feet of slots above the sandpoint.

Test Hole BK-7-79
Location: NEKNE\NEKNE\sec. 4, T. 109 N., R. 49 W.
Date Drilled: June 13, 1979
Elevation: 1814
Depth to water: 6 feet

0- 1  Topsoil, black, clayey
1-8  Clay, brown to gray, very sandy
8-29  Sand, fine to gravel, well rounded

Observation well: 27 feet of 2-inch diameter
      PVC and a 3-foot sandpoint with 5 feet of slots above the sandpoint.

Test Hole BK-8-79
Location: SEKSEK\SEKSEK\sec. 28, T. 110 N., R. 49 W.
Date Drilled: June 14, 1979
Elevation: 1834
Depth to water: something stuck in well

0- 1  Topsoil, black, clayey
1- 5  Clay, brown, very pebbly
5-28  Sand, fine to gravel, well rounded

Observation well: 17 feet of 2-inch diameter
      PVC and a 3-foot sandpoint with 5 feet of slots above the sandpoint.

Test Hole BK-9-79
Location: NEKNE\NEKNEK\sec. 27, T. 110 N., R. 49 W.
Date Drilled: June 14, 1979
Elevation: 1843
Depth to water: 11.7 feet

0- 2  Topsoil, black, sandy

5
Test Hole BK-9-79 -- continued.

2-35 Sand, fine to gravel, coarse, well rounded
35-40 Clay, brown, sandy, silty, pebbly (till)

Observation well: 27 feet of 2-inch diameter PVC and a 3-foot sandpoint with 5 feet of slots above the sandpoint.

Test Hole BK-10-79
Location: SE\(\frac{1}{4}\)SW\(\frac{1}{4}\)SE\(\frac{1}{4}\) sec. 19, T. 110 N., R. 49 W.
Date Drilled: June 18, 1979
Elevation: 1628
Depth to water: not measured

0-1 Topsoil, black, clayey
1-5 Clay, gray, sandy
5-25 Clay, brown, sandy, pebbly
25-48 Clay, gray, sandy, silty, pebbly (till)

Test Hole BK-11-79
Location: NE\(\frac{1}{4}\)NE\(\frac{1}{4}\)NE\(\frac{1}{4}\)NE\(\frac{1}{4}\) sec. 29, T. 110 N., R. 49 W.
Date Drilled: June 18, 1979
Elevation: 1623
Depth to water: 4.6 feet

0-1 Topsoil, black, clayey
1-18 Sand, fine to gravel, oxidized
18-28 Sand, fine, silty
28-42 Sand, fine to gravel, unoxidized
42-50 Clay, brown to gray, sandy, silty, pebbly (till)

Observation well: 36 feet of 2-inch diameter PVC and a 3-foot sandpoint with 5 feet of slots above the sandpoint.

Test Hole BK-12-79
Location: SE\(\frac{1}{4}\)SE\(\frac{1}{4}\)SE\(\frac{1}{4}\)SE\(\frac{1}{4}\) sec. 21, T. 110 N., R. 49 W.
Date Drilled: June 19, 1979
Elevation: 1638
Depth to water: 18.47 feet

0-1 Topsoil, black, clayey
1-3 Clay, brown, pebbly
3-29 Sand, fine to gravel, angular
29-34 Sand, coarse to gravel, angular
Test Hole BK-12-79 -- continued.

34-46  Clay, gray, silty, sandy, pebbly (till)
46-50  Clay, gray, silty, sandy

Observation well: 32 feet of 2-inch diameter PVC and a 3-foot sandpoint with 5 feet of slots above the sandpoint.

Test Hole BK-13-79
Location: SE4SE4SE4SE4 sec. 22, T. 110 N., R. 49 W.
Date Drilled: June 19, 1979
Elevation: 1653
Depth to water: 11.18 feet

0- 1  Topsoil, black, clayey
1- 8  Clay, brown, sandy, pebbly
8-46  Sand, medium to gravel, angular
46-58  Clay, brown, sandy, pebbly
55-60  Clay, gray, sandy, silty

Observation well: 37 feet of 2-inch diameter PVC and a 3-foot sandpoint with 5 feet of slots above the sandpoint.

Test Hole BK-14-79
Location: SE4SE4SE4SE4 sec. 16, T. 110 N., R. 49 W.
Date Drilled: June 19, 1979
Elevation: 1633
Depth to water: 6.5 feet

0- 1  Topsoil, black, clayey
1- 8  Clay, brown, some pebbles
8-17  Sand, fine to gravel, well rounded
17-28  Clay, brown to tan, sandy, silty, pebbly (till)

Observation well: 17 feet of 2-inch diameter PVC and a 3-foot sandpoint with 5 feet of slots above the sandpoint.

Test Hole BK-15-79
Location: SW4SW4SW4SW4 sec. 11, T. 110 N., R. 49 W.
Date Drilled: June 20, 1979
Elevation: 1645
Depth to water: 8.64 feet

0- 1  Topsoil, black, clayey
Test Hole BK-15-79 -- continued.

1-4 Clay, brown, pebbly
4-28 Sand, fine to gravel, well rounded
28-38 Clay, gray, silty, sandy, pebbly (till)

Observation well: 20 feet of 2-inch diameter PVC and a 3-foot sandpoint with 5 feet of slots above the sandpoint.

Test Hole BK-16-79
Location: NE1/4NW1/4NE1/4 sec. 7, T. 110 N., R. 49 W.
Date Drilled: June 20, 1979
Elevation: 1633
Depth to water: 4.45 feet
0-1 Topsoil, black, clayey
1-6 Clay, brown, pebbly
6-32 Sand, fine to gravel, well rounded
32-58 Clay, brown, sandy, silty, pebbly (till)

Observation well: 20 feet of 2-inch diameter PVC and a 3-foot sandpoint with 5 feet of slots above the sandpoint.

Test Hole BK-17-79
Location: NW1/4NW1/4NW1/4NE1/4 sec. 5, T. 110 N., R. 49 W.
Date Drilled: June 22, 1979
Elevation: 1646
Depth to water: 6.6 feet
0-4 Clay, black, sandy (topsoil)
4-34 Sand, coarse to gravel, coarse, angular
34-45 Sand, coarse to gravel, coarse, very silty and clayey
45-68 Sand, fine to gravel, very coarse, angular to subrounded
68-80 Clay, brown, sandy, silty, pebbly, some large cobbles (oxidized till)

Observation well: 40 feet of 2-inch diameter PVC and a 3-foot sandpoint with 5 feet of slots above the sandpoint.
Test Hole BK-18-79
Location: SE1/4SW1/4SW1/4 sec. 13, T. 110 N., R. 50 W.
Date Drilled: June 22, 1979
Elevation: 1614
Depth to water: 11.65 feet

0-2 Clay, black (topsoil)
2-9 Clay, black to brown, sandy
9-35 Gravel, coarse to sandy, medium, angular to subangular
36-50 Sand, fine and gravel, fine, subangular to rounded
50-60 Clay, gray-green, sandy, pebbly, some large cobbles (till?)

Observation well: 40 feet of 2-inch diameter PVC and a 3-foot sandpoin with 5 feet of slots above the sandpoint.

(Note: see BK-19-79)

Test Hole BK-19-79
Location: SW1/4SW1/4SE1/4NW1/4 sec. 13, T. 110 N., R. 50 W.
Date Drilled: June 22, 1979
Elevation: 1610
Depth to water: 7.65 feet

0-2 Clay, black (topsoil)
2-7 Clay, brown to black, sandy
7-32 Sand, fine to gravel, coarse, angular to subangular
32-50 Clay, gray-green, sandy, pebbly, some large cobbles

Observation well: 20 feet of 2-inch diameter PVC and a 3-foot sandpoin with 5 feet of slots above the sandpoint.

(Note: to get to the observation well one must go in the farm next to the city wells. The observation wells (No. 18 and 19) are next to the fence.)