

**STATE OF SOUTH DAKOTA**  
Richard Kneip, Governor

**SOUTH DAKOTA GEOLOGICAL SURVEY**  
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**Information Pamphlet No. 5**

**SAND AND GRAVEL RESOURCES IN  
McPHERSON COUNTY, SOUTH DAKOTA**

by

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**Prepared in cooperation with  
the United States Geological Survey,  
Oahe Conservancy Sub-District,  
South Dakota Department of Highways,  
and McPherson County**

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## INTRODUCTION

This publication is designed to aid in the exploration and development of the sand and gravel resources of McPherson County, South Dakota. Another publication entitled "Major Ground-Water Aquifers in McPherson County, South Dakota," South Dakota Geological Survey Information Pamphlet No. 8, describes the ground-water possibilities in the county. In addition, a comprehensive report on the technical aspects of the geology, hydrology, and the basic data will be published as a Bulletin at a later date.

The purpose of this report is two-fold: (1) to disseminate information about sand and gravel as quickly as possible, and (2) to express the technical data in a non-technical manner that will be useful to the lay reader. It must be stressed, however, that all of the pertinent geologic data used in compiling the technical reports has also been used in preparing this publication and the accompanying map.

It is recommended that the following publications be used whenever necessary as companion references to this pamphlet:

- (a) Evaluation of exploration methods for coarse aggregate in eastern South Dakota: S. Dak. Geol. Survey Report of Investigations No. 95  
Price ..... \$1.90
- (b) Geology and water resources of McPherson, Edmunds, and Faulk Counties, South Dakota: S. Dak. Geol. Survey Bulletin 26 .....  
..... To be published

The first of the above publications explains how sand and gravel maps are prepared from geologic maps and other data. The second publication contains all the test hole data and other information that was used in compiling this pamphlet.

## GEOLOGIC TERMS

The following brief discussion of geologic terms is presented as an aid in understanding the discussion of sand and gravel deposits.

### Outwash

Glacial outwash is a general term referring to any deposit of clay, silt, sand, gravel, or boulders that has been washed and sorted, and subsequently deposited by water from melting glacial ice. Depending on the amount of washing and sorting action, the material may contain an abundance of silt and clay, or in the other extreme, outwash may consist mostly of boulders. Most outwash is a mixture of material between the two extremes. That is to say an outwash

deposit is usually composed primarily of sand and gravel.

### Till

Till is the term used to define the unsorted and unstratified material lodged by an active glacier at the base of the ice, or let down by a glacier as the ice melted away. This material on the whole has not been subjected to the action of running water and therefore is a mixture of clay and silt-size particles containing a random mixture of sand, gravel, and boulders. This material is locally called "boulder clay" or "blue clay."

The general distribution of the till is widespread throughout the county. However, within the large area of till there may still exist small isolated hills or lenses of outwash material. In some cases these small areas of outwash may consist of useable sand and gravel. The size of the areas may range from a very small knob to an area the size of several acres or several tens of acres. Thickness of the lenses may vary from a thin veneer to over 50 feet; however, in general the thickness will be less than 20 feet.

Because of the complexities in the mechanics of deposition from the ice these small hills and lenses of outwash have a very random occurrence. Their presence cannot generally be determined unless the outwash material is exposed or unless its location has been discovered through the use of hand auger holes, test holes, or other sampling methods.

### Alluvium

Alluvium consists of a mixture of clay, silt, sand, and gravel that has been deposited by streams since the retreat of the glaciers. The size of the deposits will depend primarily on the velocity of the stream and may vary from place to place in the stream valley. Where the deposits consist primarily of sand and gravel they may be mined for construction materials.

### Bedrock Deposits

Bedrock deposits refer to the consolidated rocks underlying the glacial deposits. In McPherson County the bedrock deposits are sedimentary rocks and consist mostly of shale although they are sometimes referred to as slate by the local well drillers and other residents. There is no possibility of finding useable sand and gravel beneath the bedrock of McPherson County.

## ABOUT THE MAP

The map showing sand and gravel deposits of McPherson County is designed to serve two

functions: (1) to express the possibility of finding sand and gravel in general areas within the county, and (2) to portray those areas that have been checked for sand and gravel and to relate those findings, either positive or negative, in a quick and easily understandable manner.

With regard to general information (the first function mentioned above) the map has been divided into three areas expressing the probability of discovering previously unmapped supplies of sand and gravel. The areas colored yellow refer to a relatively high probability, whereas the white areas refer to a low probability and the brown areas refer to no probability.

The second function of the map, as previously stated, is to show the location of all known sand and gravel deposits in the county. This is done by using a series of symbols and two colors (red and green) to represent data of various types.

A red color pattern shows an area that was found to contain sand and gravel, whereas a green color shows an area that was found not to contain sand and gravel. Within these colored areas, spot sampling could show exactly the opposite as expected, however this is highly unlikely.

In addition to the colors, the following symbols are used to show the results of test holes and other types of point sampling.

A (X) indicates the presence of a gravel pit or quarry on the map and no distinction is made between those presently being used and those abandoned. The number that is located beside the gravel pit symbol at many of the locations indicates that additional information is available from that

particular pit. This added information can be found in table 1. Table 2 is a compilation of all known sand, gravel, and filler pits in McPherson County that are listed in the files of the South Dakota Department of Highways District Office in Aberdeen, South Dakota.

A (O) represents a test hole that does not contain any useable amount of sand and gravel in the upper 20 feet.

A (●) refers to a test hole that contains a useable amount of sand and gravel within 10 feet of the surface.

The symbol (Ø) refers to a test hole that contains sand and gravel within 10 to 20 feet of the surface.

Abbreviated logs of all of these test holes showing only the information pertaining to sand and gravel are listed in table 3, and are correspondingly numbered on the map.

### GENERAL HINTS FOR EXPLORATORY PURPOSES

It should be pointed out that the map is a general map to be used only as a guideline for further exploration and development of sand and gravel resources. The development of any specific site would depend upon materials specifications for the desired use, and the economics of further exploration and testing as opposed to the use of known sources of sand and gravel.

In general, further exploration for sand and gravel deposits in McPherson County should be considered in the red and yellow areas shown on the map. Although other areas of gravel do exist, they are widely scattered and difficult to locate.

**TABLE 1 -- List of Sand and Gravel Pits in McPherson County, South Dakota,  
Having Logs on File at the District Highway Office,  
South Dakota Department of Highways, Aberdeen, South Dakota  
(from South Dakota Department of Highways)**

<b>Pit No.</b>	<b>Description</b>	<b>Type</b>	<b>Average Depth in Feet</b>	<b>Average Depth of Stripping in Feet</b>
1	SW¼ 24-128-73	Gravel	10.0	1.8
2	SW¼ 29-128-69	Gravel	15.0	1.0
3	SE¼ 32-128-67	Gravel	8.9	1.0
4	SW¼ 33-128-67	Gravel	7.0	0.8
5	NW¼ 26-127-73	Gravel	9.0	2.4
6	NW¼ 2-127-72	Gravel	6.0	3.0
7	NE¼ 13-127-72	Gravel	7.0	1.3
8	NE¼ 11-127-71	Gravel	8.9	2.2
9	NW¼ 25-127-71	Gravel	6.6	1.6
10	SW¼ 32-127-70	Sand	5.0	2.0
11	NW¼ 3-127-70	Gravel	11.0	1.0
12	NE¼ 3-127-70	Gravel	9.0	1.5
13	SW¼ 2-126-71	Gravel	9.0	0.1
14	NE¼ 14-126-71	Gravel	13.2	1.3
15	SW¼ 36-126-71	Gravel	17.7	2.4
16	NE¼ 7-126-69	Sand	5.0	2.0
17	SE¼ 8-126-69	Gravel	9.1	1.8
18	NE¼ 28-126-69	Gravel	11.0	1.5
19	SW¼ 1-126-69	Gravel	11.1	1.6
20	SW¼ 2-125-73	Gravel	8.5	2.2
21	NW¼ 1-125-73	Gravel	8.4	1.3
22	NW¼ 6-125-69	Gravel	8.0	1.3
23	SW¼ 30-125-66	Gravel	6.0	2.0

**TABLE 2 -- List of Known Sand, Gravel, and Filler Pits in McPherson County, South Dakota,  
Which Are Recorded in the Files at the District Office,  
South Dakota Department of Highways, Aberdeen, South Dakota**

<b>Owner and Address</b>	<b>Description</b>	<b>Type</b>
Jundt, Fred, J. - Leola	SE 33-127-70	Filler
Binder, Julius and Rudy - Leola	SWSW 14-126-69	Filler
Ganser, Leo - Forbes	SW 14-127-66	Filler
Hoffman, Carl - Leola	SW 35-127-69	Filler
Wolf, Fred - Eureka	N½NW¼ 4-126-70	Filler
Morrison, Bruce - Leola	SE 32-128-67	
	SW 32-128-69	Gravel
	NESE 7-128-70	
	SWSE 34-128-70	Gravel
	SE 20-128-71	Gravel
	SE 10-128-73	Gravel
	NE 27-127-73	Gravel
	NW 36-127-71	Gravel
	SENE 25-127-69	Gravel
	SW 15-127-66	Gravel
Hoffman, Carl - Leola	SENE 1-126-69	
	NWNW 1-126-69	Gravel
	SWSW 8-126-69	Gravel
	SESW 17-126-69	Gravel
	SENE 25-126-68	Gravel
	NW 1-126-70	Gravel
	SWNE 13-126-70	Gravel
	NW 6-126-71	Gravel
Ottenbacher, William - Eureka	NW 7-126-73	Gravel
	SESW 4-125-73	Gravel
Christman, Mrs. Arnold - Greenbay, Wisconsin	SE 2-125-73	Gravel
Weller, William, R. - Eureka	NW 1-125-73	Gravel

Table 2 -- continued.

Owner and Address	Description	Type
	NW 11-125-72	Gravel
	SESW 7-125-70	Gravel
Neifer, John - Hosmer	SW 31-125-69	Gravel
Crompton, L. T. - Wetonka	SW 30-125-66	Gravel
	SE 11-128-73	Gravel
	NE 7-126-66	Gravel
	NENW 21-126-68	Gravel
McPherson County - Leola	SW 25-127-71	Gravel
Hausauer, Ed - Eureka	SW 1-127-73	Gravel
	SW 9-128-73	Gravel
	S½NW¼ 26-127-73	Gravel
	W½NE¼ 18-128-67	Gravel
Arnold Bros. - Wetonka	NW 24-125-66	Gravel
Hecked, August - Hillsvie	SWSW 3-125-73	Gravel
Hoffman, John - Leola	SE 1-126-69	Gravel
Hoffman, Ed and Melinda - Eureka	NW 25-127-71	Gravel
Department of School & Public Lands - Pierre	SWSW 2-126-71	Gravel
Ehresmann, Fred - Hosmer	NE 27-125-71	Gravel
Binder, John - Tolstoy	SE 8-126-69	Gravel
Schell, Christ - Leola	N½NE¼ 7-126-69	Sand
Schnable, Edwin G. - Eureka	SW 32-127-70	Sand
Bersch, Jonas - Eureka	NE 1-126-70	Sand
Schnable, Gottfried - Eureka	SE 2-126-71	Sand
Mettler, Edmund - Eureka	SE 2-127-71	Gravel
Rhodes - Aberdeen	NW 22-127-66	Sand-Gravel
Breuening, Joe - Leola	SE 33-128-67	Gravel
Zenker, H. and F. - Leola	SW 33-128-67	Gravel
Houck, Jacob - Leola	NW 6-125-69	Gravel
Thorn, Rudolph - Eureka	SW 35-126-73	Gravel

Table 2 -- continued.

Owner and Address	Description	Type
Thorn, Rudolph - Eureka	E½NW¼ 2-125-73	Gravel
Kusler, Art E. - Eureka	SW 24-128-73	Gravel
Kusler, Harry G. - Eureka	SWNW 24-128-73	Gravel
Kiesz, Samuel and Magdalena	N½NW¼ 26-127-73	Gravel
Dierenfeldt, Otto and Agnes - Eureka	N½ 10-126-73	Gravel
Weber, M. W. and Lena - Eureka	N½NW¼ 26-127-73	Gravel
Jundt, Henry - Ipswich	SE 13-125-69	Gravel
Eureka Airport - Eureka	NE 27-127-73	Sand
	SW 1-125-73	Sand
Nehlich, John - Eureka	NW 27-126-73	Gravel-Sand
Hoffman, Luther - Leola	NE 2-126-69	Filler
Bender, Ervin - Leola	SE 19-127-69	Gravel
Quackenbush, Frank - Long Lake	SW 17-127-69	Gravel
McIntosh, Dr. George - Eureka	NWNE 2-127-72	Gravel
	NENW 2-127-72	
Thorn, Rudolph - Eureka	SW 2-125-73	Gravel
Fischer, Harold - Longlake	SW 29-128-69	Gravel
Schmidt, Gottlieb, Edwin, and Josephine E.	W½NE¼ 3-127-70	
Schmidt, Floyd and Joy Ann - Longlake	NW½ 3-127-70	
Schnable, Johnnie G. - Eureka	N½NE¼ 14-126-71	Gravel
Hoffman, Carl - Leola	SW 1-126-69	Gravel
Brenneise, Jonathan and Olga - Leola	NE 28-126-69	Gravel
Geist, Otto and Claudia - Eureka	E½SW¼ 36-126-71	Gravel
Mettler, Ruben - Eureka	NE 11-127-71	Gravel
Neuharth, Harley - Eureka	N½ 13-127-72	Gravel
Walth, Milbert - Hosmer	SW 19-125-70	Gravel



**TABLE 3 -- List of Test Holes Drilled in McPherson County, South Dakota,  
Which Have Been Found to Contain Sand and/or Gravel  
With Less Than Twenty Feet of Overburden**

Test Hole No.	Location	Geologic Unit	Lithologic Description	From-to Feet
1	SWNWNNW 31-128-73	Gravel	Up to 1-inch size, very impure, silty, sandy, dry	3-6
		Sand	Medium, pebbly, moist	6-19
		Gravel	Up to ½-inch size, sandy, wet	19-34
2	SWSWSW 31-128-73	Sand & Gravel	Grading from fine to coarse	1-24
		Sand & Gravel	Clayey and silty	24-42
3	SWSWSWSE 31-128-73	Sand	Medium to fine, moderately well sorted, moist	5-16
		Gravel	Up to 1-inch size, very impure, clay, silt and sand included, moist	16-24
4	SESENE 31-128-73	Sand & Gravel	Fine sand to fine gravel, some coarse gravel	10-30
5	SWSWSESW 29-128-73	Gravel	Very impure, silty, dry	1-4
		Sand	Coarse, silty, wet	4-9
		Gravel	Up to ½-inch size, sandy, saturated	9-24
6	NWNWWSW 16-128-73	Silt	Gravelly, sandy, dry	0-4
		Sand	Medium to coarse, moderately well sorted, moist	4-7

Locations have been plotted on a map of the area using symbols to indicate extent of the overburden. (● - Sand and/or gravel with less than 10 feet of overburden; Ø - Sand and/or gravel with over 10 feet of overburden). Lithologic descriptions, as listed, have been

condensed from data contained in driller's logs on file at the South Dakota State Geological Survey Office, Vermillion, South Dakota, and contain only information which has been deemed most useful for this study.

Test Hole No.	Location	Geologic Unit	Lithologic Description	From-to Feet
7	NWSWSWNW 27-128-73	Sand	Coarse to fine, wet, saturated at 9 feet	6-19
8	SESESENE 23-128-73	Gravel Silt Gravel	Cobble- to pebble-size, very poorly sorted, silty, dry Dark reddish-brown, sandy Up to 1-inch size, silty, wet below 11 feet	1- 3 3- 6 6-24
9	NWSWNWNE 26-128-73	Gravel	Approximately 1-inch size, very impure, silty and sandy	1-12
10	SWSWNWSW 26-128-73	Gravel	Up to ½-inch size, very silty and sandy, dry	1- 8
11	SWSWSWSE 26-128-73	Gravel Sand	1- to 1½-inch size, very well sorted, cobbly near surface Coarse to fine, poorly sorted, silty, pebbly, moist at 14 feet, wet at 16 feet	1- 8 8-21
12	NENENWNE 35-128-73	Gravel	Up to 1-inch size, poorly sorted, sandy, silty, wet at 10 feet	1-16
13	SWNWNWNE 35-128-73	Gravel	Cobble- to pebble-size, silty, sandy, dry (Driller struck boulder at 17 feet and abandoned test hole)	1-17
14	SESESESE 24-128-73	Gravel	Dry, loose, some fine sand and clay included	1-10
15	NENENWNE 18-128-72	Gravel	Pebble-size, silty, sandy	1- 4
16	NWNWNWSW 19-128-72	Gravel	Cobble- to pebble-size, sandy	0-16
17	NWSWSWNW 20-128-72	Gravel	Up to 1-inch size, silty, sandy, moist at 8 feet, wet at 15 feet, saturated at 17 feet	1-19
		Sand	Coarse, pebbly, silty, poorly sorted, saturated	19-25
18	NENWNENE 16-128-72	Gravel	Very impure, small boulders to clay, dry, gravels are cobble-size	1- 4

19	NESENE 10-128-72	Gravel	Impure, very coarse, sandy, silty	0-7
20	SESEENW 10-128-72	Gravel	Small cobble- to pebble-size, silty, sandy, dry	0-6
21	NENENENE 22-128-72	Gravel	Large cobble- to pebble-size, dry	1-8
22	SESESENE 22-128-72	Gravel	Large cobble- to pebble-size, poorly sorted, some silty layers, dry	0-12
23	NENENENE 12-128-72	Gravel	Coarse	19-23
24	NENESENE 12-128-72	Sand	Medium to fine, slightly silty, moist below 12 feet, wet at 25 feet, saturated at 31 feet	1-37
25	NENESENE 13-128-72	Gravel	Large cobble- to medium pebble-size, clean	0-7
26	SESENE 24-128-72	Gravel	Cobble- to pebble-size, impure, poorly sorted, silty, sandy, dry (Driller struck boulder at 12 feet and abandoned test hole)	2-12
27	SESESESW 31-128-71	Sand	Fine to medium, some pebbles, much clay and silt included	5-10
28	SESWSWNW 21-128-71	Gravel	Pebble-size to small cobbles, sandy, silty, dry	1-12
29	NESENWSW 21-128-71	Gravel	Approximately 1-inch size, silty, sandy, dry	1-12
30	SESESESW 21-128-71	Gravel	½- to 1-inch size, sandy, silty, moist to wet	12-16
31	NWNWNE 12-128-71	Gravel Sand Sand	Small cobble- to pebble-size, silty, sandy, dry	1-9
32	SWNESE 12-128-71	Gravel	Coarse pebble- to 1½-inch cobble-size Coarse, silty, pebbly, saturated Fine, silty, clayey, saturated	1-14 14-19 19-29
			Large cobble- to pebble-size, silty, dry	1-11

Test Hole No.	Location	Geologic Unit	Lithologic Description	From-to Feet
33	NESWSWSE 12-128-71	Gravel	1½-inch cobble- to pebble-size, silty, sandy, dry	1- 8
34	SWSWSWSW 9-128-70	Gravel	Coarse, very impure, silty, dry	2- 4
35	NENENENE 4-128-70	Gravel Sand	Pea-size, sandy, silty Silty, some pebbles included	5-10 10-21
36	SWSWSWSW 33-128-70	Gravel Gravel	Very impure, pebble-size, sandy, dry Coarse cobbles (Driller struck boulder at 21 feet and abandoned test hole)	1-20 20-21
37	NENESESE 3-128-70	Gravel Sand	Small clasts, sandy, dry to moist Buff, moist	1-14 14-18
38	SWSWSWSW 34-128-70	Gravel	Up to 1½-inch size, silty, sandy, dry	1-12
39	SESWSWSW 34-128-70	Gravel	Coarse, dry	0-12
40	NESESESE 34-128-70	Gravel Sand	Very impure, silty, sandy, dry Coarse, pebbly, dry (Driller struck boulder at 12 feet and abandoned test hole)	1- 6 6-12
41	SWSESWSW 11-128-70	Sand Sand	Fine, buff Some pebbles included, moist	1- 7 7-14
42	SESESESE 35-128-70	Gravel Sand Gravel	Coarse, dry Coarse, dry Coarse, dry	1- 5 5- 7 7-30
43	NENENWNW 12-128-70	Gravel Clay Sand	Coarse, very impure, silty, sandy, dry Gray, moist Fine, slightly silty, wet to saturated	0- 9 9-10 10-24
44	SWSWSWSW 12-128-70	Sand Silt Sand	Medium, silty, dry to moist Sandy, dry Coarse to medium, pebbly, wet to saturated	6-10 10-13 13-49

45	SENESE 6-128-69	Sand Sand	Medium to fine, silty, pebbly Medium to fine, very impure, very pebbly, silty, dry	0- 2 2-11
46	SESESE 30-128-69	Gravel Sand Gravel	Small pebbles- to 2-inch cobbles, silty, sandy Coarse to medium, pebbly, silty, wet to saturated Very coarse, sandy, slightly silty, saturated	0-11 11-19 19-24
47	SESESE 5-128-69	Gravel Sand	Coarse Very coarse	2-26 26-48
48	SESWSWNW 8-128-69	Gravel Sand Sand	Pebble-size, very impure, silty, dry Medium to coarse, pebbly, dry Fine, clean, moist	0- 3 3- 7 7-17
49	SWNWNWSW 20-128-69	Sand	Impure, fine to coarse, pebbly, silty	4-13
50	NWNWNWNW 4-128-69	Sand Sand Gravel Sand Silt Sand	Medium to coarse, very pebbly, dry Medium, fairly well sorted, some thin layers of pebble-size gravel included Pebble-size, well sorted Coarse, very impure, silty, very dry Clayey, fine sand included Fine to coarse, very poorly sorted and impure, pebbly, silty, dry	0- 3 3-11 11-13 13-20 20-24 24-29
51	NWNENENW 4-128-69	Sand Gravel Sand	Impure, very pebbly, silty Up to 1-inch size, silty, sandy, dry Impure, pebbly, silty, clayey, moist	1-10 10-19 19-22
52	NENENENE 4-128-69	Sand Gravel	Fine to medium, impure, silty, pebbly, moist Pebble-size, well sorted, dry	3- 9 9-15
53	SWSWSWNW 9-128-69	Gravel Silt	Clasts average approximately 1-inch size, impure, silty, sandy, dry Sandy, pebbly, moist	0-35 35-40

Test Hole No.	Location	Geologic Unit	Lithologic Description	From-to Feet
54	NWNWNE 3-128-69	Gravel Sand	Small pebbles, silty, sandy, dry Coarse to fine, impure, pebbly, very silty, dry	1- 4 4-15
		Gravel Gravel	Up to 1½-inch size, sandy, silty, dry Up to ½-inch size, impure, sandy and silty, dry	15-22 22-29
		Silt Sand	Sandy, clayey, moist Fine, silty, clayey, very impure	29-33 33-35
55	NWNENENW 22-128-69	Gravel Sand	Very coarse, sandy, silty, dry Medium to fine, silty, dry	1- 8 8-15
56	NENENENW 22-128-69	Gravel	Medium to coarse, some clay present, dry (Test hole abandoned at 20 feet due to difficult drilling)	1-20
57	NENWENENW 2-128-69	Gravel	Up to 1½-inch size, impure, silty, sandy, dry	4-16
58	NWNWNE 2-128-69	Gravel	Very coarse, silty, sandy, dry	0- 3
59	SWSWSWSE 14-128-69	Gravel Gravel	Scattered large rocks included Fairly coarse sand included	7-28 28-38
60	SESWSWSE 14-128-69	Sand Gravel Sand	Medium to coarse; pebbly, moist Coarse, sandy, silty Coarse to fine, silty, moist	3- 9 9-11 11-15
61	SESESWSE 26-128-69	Gravel	Medium-size, cobbles present, impure, silty, sandy, dry	2- 7
62	SESESENE 13-128-69	Sand Sand Gravel	Medium, fairly clean Unsorted, with scattered rocks and gravel Medium to coarse	9-16 16-30 30-63
63	NENENESE 13-128-69	Gravel Sand	Cobble- to medium-size, sandy, silty, dry Coarse to fine, silty, moist	0- 8 8-15

63 -- continued		Gravel	Very rocky (Driller struck boulder at 19 feet and abandoned test hole)	15-19
64	SESWSWSE 13-128-69	Gravel Sand	Very coarse sand included Medium, some clay included	5-6 6-7
65	SWNWNWNW 6-128-68	Sand & Gravel	(Not described in driller's log)	0-4
66	SESENEÉ 18-128-68	Gravel Sand	Cobble- to medium-size, sandy, silty Medium, moist, wet below 20 feet	0-14 14-24
67	NWNWSWNE 18-128-68	Gravel Sand	Cobble- to pebble-size, sandy, silty, dry Coarse to fine, moist, wet below 24 feet	1-14 14-29
68	NWNWNE 19-128-68	Gravel Sand	Impure, sandy, silty, dry Coarse to fine, moist	1-19 19-24
69	NWNWNWNE 17-128-68	Gravel Sand	Very impure, coarse, sandy, silty, clayey, dry Fine to medium, silty, moist	0-8 8-17
70	SENNWNE 17-128-68	Gravel Sand & Gravel	Up to 1½-inch size, sandy, silty, dry Interbedded coarse sand and thin gravel stringers	0-12 12-29
71	SESESESE 29-128-68	Gravel	Coarse, sand included	0-12
72	SWSWSWSW 9-128-68	Gravel Sand	Impure, boulders- to medium-size, sandy, silty Medium to fine, silty, moist	0-5 5-16
73	NWNENWNW 5-128-67	Gravel Sand	Large cobble- to medium-size, high per- cent limey clasts, sandy, dry Medium to coarse, dry	0-6 6-8
74	NWNWNE 5-128-67	Gravel	2-inch cobble- to medium-size, clayey, silty, sandy	0-6
75	NESESESE 33-128-67	Gravel	2-inch cobble- to pebble-size, very sandy, some silt and clay	0-8

Test Hole No.	Location	Geologic Unit	Lithologic Description	From-to Feet
76	SWSWSWSW 36-128-66	Gravel	Clasts average approximately 1-inch size, approximately 90 percent shale pebbles present	3-9
77	SESESESE 4-127-73	Gravel	Coarse	3-8
78	NWNWNWSW 2-127-73	Gravel	Fine, mixed with fine sand (Driller struck boulder at 7 feet and abandoned test hole)	2-7
79	NENWNENW 11-127-73	Gravel	Up to ½-inch pebbles, sandy, relatively pure	2-12
80	NWNENENE 11-127-73	Sand Gravel	Medium-grained, pebbly ½- to 1-inch size, sandy, wet at 12 feet	3-4 4-19
81	SESENE 11-127-73	Sand	Medium-grained, very silty	10-15
82	SWNWSWSW 23-127-73	Sand Sand & Gravel	Fine, some clay present Fine sand and coarse gravel mixed, some clay present	1-3 3-20
		Sand Sand & Gravel	Fine Fine sand mixed with coarse gravel	20-30 30-42
83	NWNWNENW 26-127-73	Sand	Medium, silty, saturated at 19 feet	4-24
84	SWSWSWSE 1-127-73	Sand Gravel	Medium, pebbly, dry Up to 1½-inch size, sandy, silty, moist	1-6 6-17
85	SWNWSWNW 12-127-73	Gravel	Up to 1-inch size, silty, saturated below 10 feet, coarser between 10-15 feet	4-29
86	SWSWSWNW 6-127-72	Sand Sand	Fine, well sorted, moist Medium to coarse, coarser with depth, pebbly, saturated at 14 feet	1-7 7-19
87	NWNWNWNE 7-127-72	Gravel	Up to 1-inch size, sandy and silty, saturated at 10 feet	6-16



88	SWSWNWNW 8-127-72	Sand Sand	Fine, some silt present Coarse, fine gravel and some fine sand included	3- 5 5- 7
89	NENENESE 17-127-72	Gravel Clay Sand	Mixed with fine- to coarse-sand, clays, and silts Sandy, very pebbly Fine to medium, much silt and clay included	1- 8 8-11 11-22
90	SWNWNE 4-127-72	Gravel Silt	Up to 1-inch size, very sandy, saturated at 7 feet Very sandy, saturated	5-14 14-24
91	NWNWNWNE 21-127-72	Gravel	Up to 1½-inch size, very impure, silty and sandy	1- 9
92	SWSESWSE 21-127-72	Gravel Sand	Up to 1½-inch size, very impure, silty, sandy, dry Fine to medium, silty, moist	1- 5 5-12
93	NENENESE 3-127-72	Gravel Sand	Cobble- to pebble-size, silty, sandy, dry Coarse, pebbly, wet	2- 7 7-26
94	NWNWNWSE 2-127-72	Gravel Sand Sand	Fine, sand, silt and clay included Fine to medium, fairly clean Very fine, some pebbles present	0- 9 9-12 12-25
95	SWSWNE 26-127-72	Gravel	Very impure, silty, sandy, dry	1- 6
96	NWNWNWNE 19-127-71	Gravel Gravel	½-inch size, silty, sandy Brown, sandy, moist	4- 8 8-16
97	SESESESW 31-127-71	Gravel Sand	Pebble-size, sandy and silty, very impure, dry Coarse to medium, slightly silty, some pebbles, moist	1- 4 4-17
98	NENENESE 32-127-71	Gravel Gravel	Pea-size, fine sand and silt included Fine to coarse, clean	3- 6 6-11
99	SWSWSWSE 16-127-71	Gravel	Fine, medium- to coarse-sand and some clay included	2- 6

Test Hole No.	Location	Geologic Unit	Lithologic Description	From-to Feet
100	NENENENE 28-127-71	Gravel Sand	Cobble- to pebble-size, silty, dry Pebbly, coarse, wet below 17 feet, clay layer at 16 feet	1-13 13-24
101	SESESWSW 15-127-71	Gravel Sand	Pebbly, fine- to medium-sand, much silt and clay present Medium, some clay present	2-12 12-13
102	SESESESW 15-127-71	Gravel Gravel Sand	Coarse, very impure, silty, sandy, dry Coarse, silty, dry Coarse to medium, pebbly, wet	0- 4 4- 9 9-25
103	NENENENE 22-127-71	Sand Gravel Sand	Fine, pebbly, much silt and clay present Pebbly, much fine sand and some clay present Fine to medium, some pebbles and clay present	3- 5 5-12 12-28
104	NENESWSW 27-127-71	Gravel Sand	Large cobble- to pebble-size, slightly silty, saturated at 20 feet, fines downward below 20 feet Coarse to medium, very pebbly, saturated	1-23 23-34
105	NENWSWNW 34-127-71	Gravel	Coarse, silty, sandy	1- 8
106	NENENESE 2-127-71	Gravel Sand	Fine to medium, fine sand and silt included Fine, with some clay and fine gravel present	1- 5 5- 7
107	SESESENE 11-127-71	Gravel Sand Sand	Pea-size, sand and silt present Fine, some silt, clay and pebbles present Fine, no pebbles present	1- 8 8-11 11-16
108	SESENE 14-127-71	Sand Sand Sand	Fine, clean, some pebbles included Fine to medium, some fine gravel included, clean Fine to medium, clean	1- 5 5-10 10-31
109	SWSWSWSE 26-127-71	Gravel	Small cobble- to pebble-size, sandy, silty, dry (Driller struck boulder at 21 feet and abandoned test hole)	1-21

110	NWNWSWNW 25-127-71	Gravel Sand	Pea-size, some larger pebbles, fine sand, and silt included Fine to medium, some silt	1-12 12-18
111	NENENESE 25-127-71	Gravel	Up to ¾-inch size, very impure	0-13
112	SWSWSWSW 30-127-70	Gravel Gravel Sand	Coarse, impure, silty, sandy ½- to 1½-inch size, sandy, slightly silty, moist at 19 feet Medium to coarse, pebbly, silty, wet to saturated	1-6 6-20 20-34
113	SWSESESE 30-127-70	Gravel Sand	Coarse, fairly well sorted, sandy, wet at at 17 feet Medium to fine, very pebbly, silty, highly saturated	1-19 19-29
114	NENENENW 31-127-70	Gravel Gravel	¼- to 1-inch size, few cobbles larger than 1 inch, silty, sandy, dry Large rocks included (Driller struck boulder at 12 feet and abandoned test hole)	1-10 10-12
115	SENESESE 5-127-70	Gravel Sand Sand	Pea-size, fine sand included Fine, clay present, wet Fine to medium, clay present, wet	1-8 8-23 23-29
116	NENENENE 8-127-70	Gravel	Brown, coarse, dry	2-25
117	SESWSWSW 29-127-70	Gravel Sand	Coarse, pebbly, sandy, wet at 7 feet, saturated at 12 feet Coarse, pebbly, saturated	1-16 16-24
118	NWNWNWNW 4-127-70	Gravel Sand Gravel	Sand, some clay and silt present Fine, some pebbles and pea-size gravel included Sand included	0-6 6-15 15-23
119	NENENENE 4-127-70	Gravel	Coarse, silty, sandy, dry	1-12
120	SWSESESW 9-127-70	Sand	Coarse to fine, silty, rocky at 14-16 feet and 17-19 feet	12-19

Test Hole No.	Location	Geologic Unit	Lithologic Description	From-to Feet
121	SENESE 3-127-70	Gravel	Sand included	0-23
122	SWSWSWSW 10-127-70	Sand	Fine, silty, pebbly, moist	3- 7
123	NWNESE 15-127-70	Gravel Sand	Large cobbles to sand, dry Fine, moderately pure, moist	0- 7 7-19
124	SENESE 15-127-70	Sand	Medium, clay present with some pea-size gravel	4-22
		Gravel Sand	Very coarse, rocks present Fine, saturated	22-26 26-44
125	NESESE 15-127-70	Gravel	Small cobble- to pebble-size, silty, sandy, dry	0-10
		Sand Sand	Pebbly, poorly sorted, dry Fine, silty, clayey, dry	10-20 20-35
126	SWSWSWSW 34-127-70	Sand	Fine to coarse, silty, clayey, pebbly, moist below 16 feet	1-19
127	NWSWNWNW 2-127-70	Gravel Sand Gravel	Coarse, with rocks, very coarse sand and clay included Very coarse, clay present Coarse, sand included	3-11 11-21 21-31
128	SWSWSWSW 11-127-70	Gravel Sand Sand	Large cobbles to sand, silty Medium, pebbly, moist Fine, silty, dry	0- 7 7-15 15-19
129	SEWSWSW 11-127-70	Gravel Marl Silt Gravel	Very coarse, silty and sandy White, pure, fossiliferous Pebbly, dry Coarse, well sorted, high percent quartz clasts, dry	0- 5 5- 7 7- 9 9-21
		Silt Gravel	Sand and gravel interbedded ¼- to ¾-inch size, very silty and clayey, wet below 27 feet	21-24 24-29

130	NENWNE 14-127-70	Gravel	Cobble- to pebble-size, poorly sorted, clayey and silty, some sand included, dry	0-27
131	NWNWNWNW 13-127-70	Gravel	Fairly coarse, clay present, dry	5-23
132	SWNWNWNW 13-127-70	Gravel Sand Sand	Pebble- to large cobble-size, silty and sandy interparticulate material present Coarse, moderately pure, wet Medium, grading to fine, fairly pure, saturated	5-26 26-29 29-35
133	NWNWNWSW 19-127-69	Gravel Gravel	Sand and some clay included (Not described in driller's log)	15-30 30-43
134	NENESE 30-127-69	Sand	Fine gravel included, boulders at 10 and 11 feet	0-13
135	NWNWNWNW 5-127-69	Gravel Clay Sand	Coarse, sand included Sandy Medium to coarse	4-10 10-16 16-35
136	NENWNWNW 5-127-69	Gravel	Very impure, silty, sandy, dry, clasts up to 2-inch size	1-12
137	NENWNWNW 34-127-69	Gravel	Coarse, sandy and silty, impure	0-6
138	NENWNE 34-127-69	Gravel Gravel Sand	Coarse, silty and sandy, very impure, dry Coarse, medium- to fine-sand included Fine to medium, very silty	0-4 4-10 10-18
139	NESESE 13-127-69	Sand	Fine, silty, moist	3-9
140	SESENE 24-127-69	Gravel	Coarse, silty and sandy, very impure	0-6
141	NESENE 30-127-68	Gravel	Pea-size, some larger pebbles and clay included	0-13
142	NWSESE 30-127-68	Gravel Gravel Sand	Coarse, silty, sandy, dry Medium cobble- to pebble-size, silty, dry Fine, pure, some pebbles present	0-4 4-9 9-19

Test Hole No.	Location	Geologic Unit	Lithologic Description	From-to Feet
143	SENWNWSE 30-127-68	Sand Silt	Medium to fine, some pebbles included, dry Fine sand included	0- 6 6-24
144	NENESENE 5-127-67	Gravel Sand	Clasts average approximately 1½-inch size, silty, sandy, dry Fine to medium, pebbly	0- 8 8-15
145	SWNWNWNW 16-127-67	Gravel	Large cobble- to pebble-size, sandy, silty, clayey, dry	0- 6
146	NWNWNWNW 35-127-67	Gravel Gravel	Medium, some coarse sand and clay included Medium, saturated	9-13 13-15
147	NWNWNWNW 19-127-66	Gravel	Rocks included	5- 7
148	NENENE 32-127-66	Gravel	Sand included, dry to moist	2-10
149	NWNWNWNW 11-127-66	Gravel	Medium to coarse, clay, some small boulders, and some very coarse sand included	1- 6
150	NESESESW 36-127-66	Sand	Medium to fine, moderately pure	1- 4
151	NENESE 36-127-66	Silt Sand	Slightly sandy, moist Medium to fine, saturated at 13 feet	1- 4 4-19
152	NENESE 18-126-73	Gravel Sand Gravel	Very coarse, sandy Medium to coarse Very coarse, large cobbles included (Driller struck boulder at 17 feet and abandoned test hole)	1- 4 4-13 13-17
153	SESESENE 18-126-73	Gravel Sand Gravel Sand	Up to 1-inch size, sandy, dry, some larger clasts included Medium to coarse, pebbly, dry Coarse, moist Fine to coarse, silty, wet	1- 4 4- 9 9-12 12-24
154	NESESE 18-126-73	Sand	Silty, gravelly, very poorly sorted	1- 3



Test Hole No.	Location	Geologic Unit	Lithologic Description	From-to Feet
164	NWNWENW 17-126-72	Sand	Medium to coarse, pebbly, dry	4-17
165	SWSWNWSW 17-126-72	Sand	Medium to fine, some ¼-inch pebbles included	1-12
166	NENESESE 29-126-72	Sand Sand	Poorly sorted, silty, cobbly Medium, moderately well sorted, slightly silty, wet at 42 feet	1- 4 4-49
167	NESESESE 29-126-72	Sand Sand Gravel Silt Sand	Medium, well sorted, dry Fine, silty, dry Stringer Sandy Medium to fine, silty, moist	0-17 17-22 22-23 23-40 40-76
168	NENENENW 7-126-71	Gravel	Large cobble- to pebble-size, very impure, some sand, silt and clay stringers included	0-14
169	SESWNENE 19-126-71	Sand	Medium, moderately well sorted, some pebbly layers included, moist at 25 feet, silty below 32 feet	1-35
170	NENENENE 5-126-71	Gravel Sand	Pea-size, sand and silt included Fine, much silt included	0- 8 8-20
171	SWSWSWSW 17-126-71	Gravel Sand	Very coarse, sandy, silty, dry Medium to coarse, moist	0- 3 3- 7
172	NWNWNE 32-126-71	Sand	Very poorly sorted, cobbly, silt and clay included	1- 4
173	SESENNWE 32-126-71	Gravel	Cobble-size down to silt, very impure, largely pebbles below 20 feet Coarse, silty and sandy (Driller struck boulder at 12 feet and abandoned test hole)	4-27 0-12
174	NWNWSWNW 4-126-71	Gravel Sand	Very coarse, sandy, dry Coarse to fine, red silt included, moist	1- 4 4- 7



175	NWNWENW 21-126-71	Gravel Sand	Coarse, sandy, dry Medium to coarse, poorly sorted, pebbly, dry Cobble size, clay and silt included, dry	0-9 9-13 13-17
176	NESESENE 34-126-71	Sand	Fine to coarse, pebbles included, poorly sorted	0-12
177	NENENENW 2-126-71	Gravel	Clasts average approximately 1 inch, silty, sandy, saturated below 20 feet	12-35
178	NWNWNE 26-126-71	Sand	Fine, some coarse gravel and silt included Fine to medium, some fine sand and silt included	0-3 3-27
179	NWNEENE 26-126-71	Sand	Poorly sorted, pebbly, silty, moist to wet	11-19
180	NESEENW 26-126-71	Sand	Medium to coarse, pebbly in upper 4 feet (Driller struck boulder at 10 feet and abandoned test hole)	0-10
181	SWSWSW 35-126-71	Sand & Gravel Gravel Sand	Medium to fine, silty, moist Very coarse, very good Pea-size to medium Clay and gravel included	10-15 0-22 22-28 28-34
182	SESWSWE 35-126-71	Sand	Very poorly sorted, silty, gravelly	0-4
183	SWNWSWNW 1-126-71	Gravel Sand Gravel	Up to 2-inch size, silty and sandy, dry Fine to medium, pebbly, moist Up to 2-inch size, sandy, moist	0-7 7-18 18-29
184	SWSWSEW 12-126-71	Gravel	Large cobbles in upper 2 feet, grading to ½- to 1-inch gravel below 10 feet, silty and sandy	0-24
185	SESESEW 12-126-71	Gravel Sand	Medium to coarse, fine sand included Fine to medium, pebbly	0-9 9-26
186	SESEWSE 12-126-71	Gravel	Very coarse, silty and sandy	0-8

Test Hole No.	Location	Geologic Unit	Lithologic Description	From-to Feet
186 -- continued		Sand Silt	Fine, wet to saturated Gray, sandy, alternating with numerous sand stringers, saturated	8-17 17-29
187	NWNWSENE 6-126-70	Gravel	Approximately ½-inch average size, very impure in upper 10 feet, silty, sandy, clayey, dry	0-26
		Sand	Fine to coarse, clayey, silty, pebbly, saturated, very impure	26-31
188	NWNWNWNW 4-126-70	Sand & Gravel Clay Sand & Gravel	(Not described in driller's log)  Pebbly, sandy Good quality	0- 2  2-12 12-22
189	SENEENWNW 4-126-70	Gravel Sand	Coarse, sandy, slightly silty Coarse, very pebbly, dry	2-16 16-19
190	NENENENW 4-126-70	Gravel Sand	Coarse, silty and sandy, dry Coarse to fine, silty and clayey, very clayey below 17 feet	1-12 12-19
191	SENEENENW 4-126-70	Gravel  Sand Sand	Coarse, poorly sorted, sandy, very silty, dry  Coarse, very pebbly Very fine, silty, moist (Driller struck boulder at 17 feet and abandoned test hole)	0- 7  7-16 16-17
192	SESEENENW 4-126-70	Gravel  Sand	Small cobble- to pebble-size, silty, sandy, dry  Medium to coarse, pebbly (Driller struck boulder at 16 feet and abandoned test hole)	0-12  12-16
193	SWSWNWNW 9-126-70	Gravel	Very impure, pebble-size, sandy, silty, clayey, dry	0- 3

193 -- continued.							
194	SWSESENE 11-126-70	Gravel	Clay Gravel	Bouldery, moist Pebble-size, very clayey, moist	3- 7 7-17		
195	NWNWSWSW 1-126-70	Silt Gravel		Pebbly, bouldery Coarse, silty, sandy, wet below 11 feet	1- 6 6-19		
196	NWNWNESE 8-126-69	Gravel		3-inch cobbles to small pebbles, moderately pure, some sand and silt	0-16		
197	NWSENESE 8-126-69	Sand Gravel		White, fine, very pure, dry Coarse, sandy, moist	1- 3 3-14		
198	NWSESWSE 8-126-69	Gravel		Approximately 1-inch size, sandy, silty, dry	1- 5		
199	SWNESESE 8-126-69	Gravel		Very coarse, small pebbles included, sandy, silty, dry, moderately pure	0- 8		
		Gravel		Approximately ½-inch size, well sorted, sandy, dry	8-12		
		Sand		Medium to fine, moist, moderately well sorted	12-19		
200	SWSWSWSW 21-126-69	Gravel Sand		Coarse, silty, sandy Impure, silty, pebbly, dry	0- 5 5- 7		
201	SESESWSW 21-126-69	Gravel Silt		Coarse, silty, sandy, dry Very sandy, dry, light reddish-brown	0- 7 7-11		
202	NENWNWNE 28-126-69	Sand Sand		Fine-grained to pebble-size, contains some clay Gravelly	1- 8 8-12		
203	SENESENE 15-126-69	Sand		Gray, small amount of clay included	18-47		
204	SWSWSWSW 15-126-69	Sand & Gravel		Some clay included	1-12		

Test Hole No.	Location	Geologic Unit	Lithologic Description	From-to Feet
205	SENESENW 22-126-69	Silt Sand	Sandy, pebbly Fine to coarse, poorly sorted, gravelly, silty, dry (Driller struck boulder at 13 feet and abandoned test hole)	1- 6 6-13
206	NENENESW 22-126-69	Gravel	Up to 1-inch size, sandy, dry, numerous medium- to coarse-sand lenses throughout	0-24
207	SWNENESW 22-126-69	Gravel Sand	Coarse, silty, sandy, pebbly Silty, pebbly, medium to fine	1- 4 4-16
208	SWSWSWSW 22-126-69	Silt Sand	Sandy, pebbly, dry Fine to coarse, pebbly, silty	0- 3 3-15
209	SESESESE 1-126-69	Sand Sand	Medium to coarse, pebbly, cobbles included, dry Medium to fine, pebbly, silty, moderately pure, moist	0- 4 4-16
210	NWNENENE 12-126-69	Silt Silt Sand	Sandy, pebbly Moderately pure, some fine sand Coarse to fine, silty, pebbly	0- 5 5- 8 8-17
211	SWNWSWNW 6-126-68	Gravel	Approximately 1½-inch size, very silty and sandy in upper 4 feet, many sand lenses included	0-16
212	SESESESE 33-126-67	Sand	Fine to medium, silty	1- 3
213	SWSWSWSW 34-126-67	Silt Sand	Dry Fine, very silty, moist, clayey	0- 5 5-19
214	SESESESW 2-126-67	Gravel Gravel	Medium, much clay present Pea-size, much clay present	6-12 12-15
215	SWSWSWSW 14-126-67	Gravel	Coarse, impure, coarse sand included, some clay	6-25

216	NWNWNWNW 35-126-67	Sand Silt Gravel	Fine, moist Some pebbles included (Not described in driller's log)	2- 5 5- 8 8- 9
217	NWNEENW 35-126-67	Sand Till Gravel	Fine Sandy Small rocks included	4- 7 7-10 10-13
218	NENENE 35-126-67	Gravel Gravel Gravel	Coarse, not clean Pea-size, coarse sand included Much clay present	3- 5 5- 9 9-11
219	NENENE 36-126-67	Sand Gravel	Very fine, moist (Not described in driller's log)	2- 6 6- 8
220	NWNWNWSW 6-125-73	Sand	Medium to coarse, very gravelly, silty, wet at 7 feet	1-12
221	SWNWNWNW 5-125-73	Gravel Sand	Pebble- to 1-inch size, sandy, dry Medium to fine, silty, moist	0- 8 8-12
222	SENESE 5-125-73	Silt Gravel Sand	Sandy, cobbly, dry Approximately 1-inch size, sandy, moist Medium to coarse, highly oxidized, pebbly, moist to wet	1- 3 3- 6 6-12
223	NWNWNWNW 4-125-73	Silt Gravel	Gravelly, dry Approximately 1-inch size, sandy, silty, dry, saturated below 20 feet	1- 5 5-24
224	SESESEW 4-125-73	Sand Sand	Approximately 50 percent fine gravel Fine, clay included	4- 5 5- 8
225	NENESE 9-125-73	Gravel Sand Gravel	Up to 2½-inch size, sandy, dry Medium to coarse, gravelly Approximately 1-inch size, sandy, silty, wet	0- 7 7-12 12-14
226	NWNWNWNW 3-125-73	Sand Sand Gravel	Medium to coarse, gravelly, saturated Medium to fine, very silty, saturated	14-15 15-19
		Gravel	Up to 2-inch size, sandy, silty, cobbles	1- 8

Test Hole No.	Location	Geologic Unit	Lithologic Description	From-to Feet
226 -- continued.				
227	NESESENE 22-125-73	Gravel	included from 6-8 feet Coarse, pebbly, wet Sandy, silty, wet, pebble-size to small cobbles	8-17 17-45
228	NWNWNWSW 2-125-73	Sand & Gravel	Fine sand, silt, some large gravel included	6-11
229	NESENESE 1-125-73	Gravel	Moderately well sorted, ½- to 1-inch size clasts, slightly silty and sandy	1-19
230	SESESESW 6-125-72	Gravel	Clasts average approximately 1 inch, very silty, sandy below 7 feet, dry to 13 feet, numerous thin sand stringers below 10 feet	2-17
231	SESESESE 6-125-72	Gravel	Approximately 2½-inch average size, silty and sandy, dry	1-16
232	NENENENW 18-125-72	Gravel	Very coarse, sandy, dry	1- 7
233	SWNENENW 18-125-72	Gravel	Boulder- to medium-size, very poorly sorted, sandy and silty (Driller struck boulder at 8 feet and abandoned test hole)	0- 8
234	NENENENW 30-125-72	Gravel Sand	Cobble- to medium-size, sandy, dry Coarse to fine, silty, dry	0- 5 5- 7
235	SESENESE 8-125-72	Gravel Sand	Clasts average approximately 1 inch, very silty and sandy Fine to medium, moist and clean above 13 feet, wet and silty below 13 feet	1- 8 8-16
236	SESENESE 16-125-72	Sand Till Sand	Poorly sorted, cobbly, silty Clayey Poorly sorted, clayey, wet	1-12 12-13 13-15

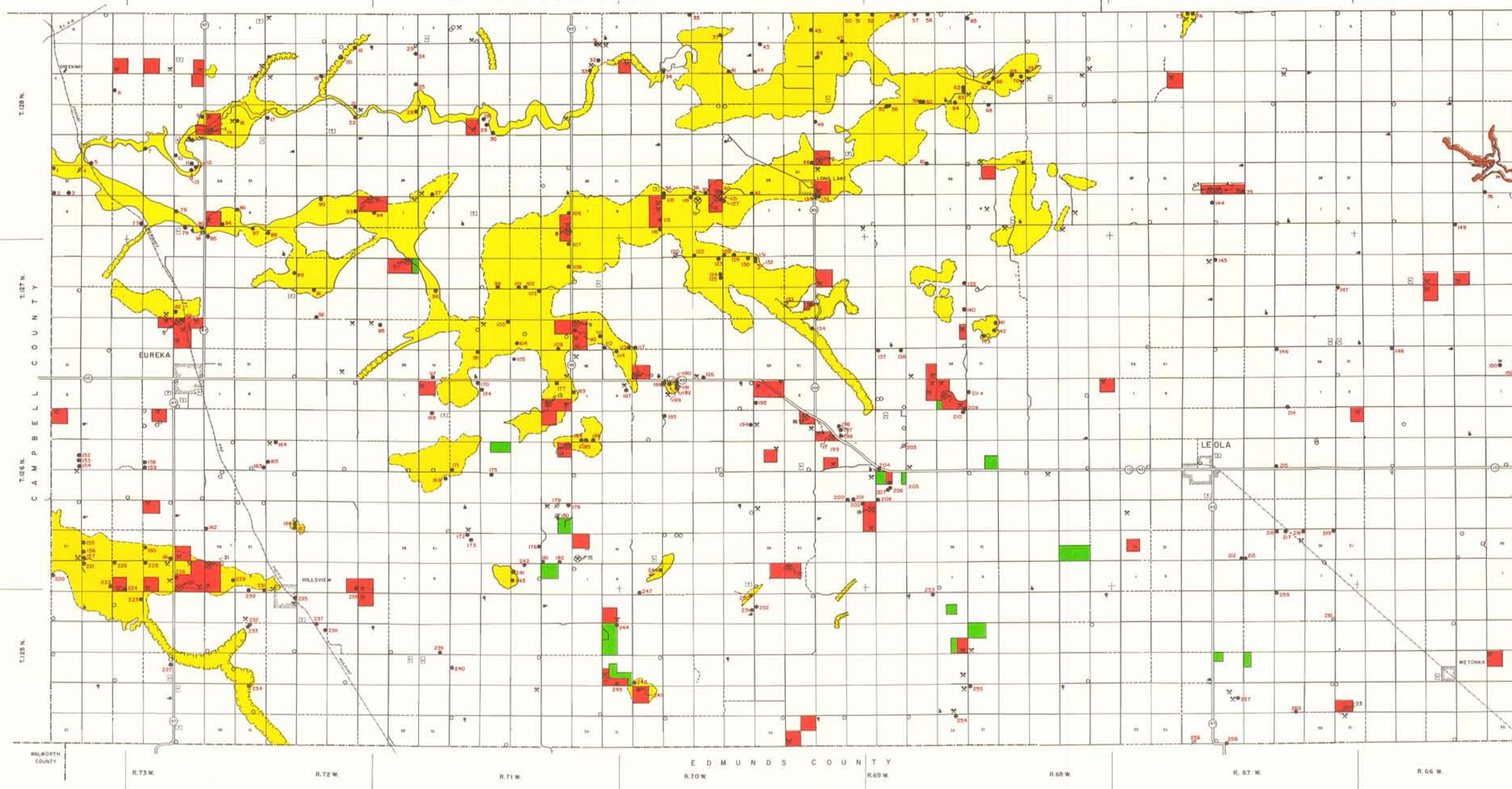
237	NWNWNWNE 16-125-72	Sand Gravel Sand	Fine, silty, dry Cobble- to medium-size, silty and sandy Coarse, granular gravel included, very well sorted, wet, somewhat silty below 25 feet	1- 7 7-12 12-29
238	NESESESE 3-125-72	Gravel	Approximately 2-inch size, poorly sorted, sandy, silty, dry	3- 7
239	SWSESWSE 18-125-71	Gravel	Coarse, sandy, silty, dry	1- 4
240	SWSWSWNW 20-125-71	Gravel	Very coarse, very impure	1-12
241	SWSWNWNW 3-125-71	Sand Gravel	Medium to fine, pebbly, dry Pebble-size, sandy, silty	1-18 18-40
242	NWNEENW 3-125-71	Sand Sand	Fine, dry, clean Medium to coarse, pebbly, moist, wet and silty below 32 feet	1- 6 6-46
243	NWNWNWSW 3-125-71	Gravel	Sandy, silty, up to boulder size, very impure, dry (Driller struck boulder at 15 feet and abandoned test hole)	0-15
244	NENENENW 18-125-70	Sand	Medium to fine, silty, dry	4-13
245	SWSWSWSE 19-125-70	Sand Silt Gravel	Fine, silty, dry Clayey, dry Pebble-size, silty, clayey, very impure	0- 5 5- 7 7-17
246	SESENE 5-125-70	Sand	Medium to fine, pebbly near surface, moist at 7 feet	0-14
247	SESESWSW 5-125-70	Gravel Sand	Pebble-size, sandy, silty, very impure Medium to fine	0- 6 6-21
248	NWSWSWSW 20-125-70	Gravel Sand	Small cobble- to pebble-size, very sandy, dry Medium to coarse, pebbly	0- 4 4-14
249	SENEENWNW 29-125-70	Sand Gravel	Medium to coarse, pebbly, dry Approximately 1-inch size, sandy	1-17 17-20

Test Hole No.	Location	Geologic Unit	Lithologic Description	From-to Feet
250	NWNEENE 11-125-70	Sand	Fine to medium, pebbly in 5-10 foot zone, very fine below 10 feet	3-17
251	NENESE 11-125-70	Sand	Fine, silty, dry, some pebbles included	0-8
252	NWSWNNW 12-125-70	Sand	Medium to coarse, gravelly	0-16
253	NWNEENE 11-125-69	Sand	Medium to coarse	3-13
254	NWNEWNE 36-125-69	Gravel Sand	Approximately 1-inch size Fine to medium, silty, dry	0-6 6-10
255	NWNWNNW 30-125-68	Sand	Fine to medium, silty, wet at 21 feet, saturated at 26 feet	6-34
256	SWSESEW 32-125-67	Sand	Fine, silty, saturated	17-24
257	SEWSENE 28-125-67	Sand	Medium to fine, pebbly, moist	6-12
258	SWSESEW 33-125-67	Sand Clay Sand	Fine, very silty Silty Fine, silty, saturated	2-4 4-17 17-19
259	NWNWNNW 11-125-67	Gravel	Pea-size, to very coarse sand, some clay included	7-14
260	SWSWSESE 26-125-67	Sand	Moist, medium to fine	1-7
261	SESESESE 12-125-67	Gravel	Moist, clay included	11-16



N O R T H D A K O T A

MAP SHOWING SAND AND GRAVEL DEPOSITS OF MSPHERSON COUNTY



- EXPLANATION**
- Good probability of finding sand or gravel deposits
  - Poor probability of finding sand or gravel deposits
  - No probability of finding sand or gravel deposits
  - General areas which have been field checked in part by the South Dakota Dept. of Highways and are known to contain sand and/or gravel deposits within 10 feet of the surface
  - General areas which have been field checked in part by the South Dakota Dept. of Highways and are known not to contain sand and/or gravel deposits in sufficient quantities to be deemed useable according to standards set by the Dept. of Highways. (This is not intended to indicate that sand and/or gravel is not present in these areas; useable amounts for other purposes.)

Data was compiled from information on file at the District Office, S.D. Dept. of Highways, Aberdeen, S.D.

- Test hole — does not contain sand or gravel in upper 20 feet.
- Test hole — contains sand or gravel with less than 10 feet of overburden.
- ⊕ Test hole — contains sand or gravel with 10 to 20 feet of overburden.
- ⊗ Gravel pit — no distinction between those presently used or abandoned (number denotes additional information is available — see Table I)
- Meltwater channel from which sand and gravel has been wholly or partly removed.



by Cleo M. Christensen

6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	32	33
34	35	36	37	38	39	40

Sectionized township