

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

HYDROLOGIC DATA FOR THE PELICAN RIVER
SAND-PLAIN AQUIFER, WESTERN MINNESOTA

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CONVERSION FACTORS

<u>Multiply</u> <u>inch-pound unit</u>	<u>By</u>	<u>To obtain SI unit</u>
inch (in)	25.4	millimeter (mm)
foot (ft)	0.3048	meter (m)
mile (mi)	1.609	kilometer (km)
gallon per minute (gal/min)	0.06309	liter per second (L/s)

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ABSTRACT

Hydrogeologic data for the Pelican River sands aquifer have been compiled in this report for use by the public and by State and local officials in making water development and management decisions. This report will supplement an interpretive report on the hydrogeology of the Pelican River sands aquifer that is scheduled for publication in 1982. The data, which were collected in 1965, 1972, and 1978-79, include results of chemical analyses of water from selected wells, water-level measurements in wells, logs of test holes and observation wells, and results of aquifer tests.

PURPOSE AND SCOPE

Hydrogeologic data for the Pelican River sands aquifer have been compiled in this report for use by the public and by State and local officials in making water development and management decisions. This report supplements an interpretive report on the hydrogeology of the Pelican River sands aquifer that is scheduled for publication in 1982.

This report contains previously unpublished ground-water data collected by the U.S. Geological Survey as part of other water-resources investigations in the Pelican River sands area. The previous investigations were conducted by Larson, McBride, and Wolf (1975), and Winter, Bidwell, and Maclay (1969). Most of the data presented were collected from October 1978 to January 1979 as part of an interpretive hydrogeologic study in cooperation with the Minnesota Department of Natural Resources and the Western Minnesota Resources Conservation and Development Commission.

WELL-NUMBERING SYSTEM

The test holes and observation wells have been arbitrarily numbered in this report. Test holes and observation wells were assigned a number that relates to the year the holes were drilled. Numbers 1 to 253 were drilled during 1978-79 specifically for the Pelican River aquifer study. Numbers 253 to 353 were drilled as part of previous studies within the project area.

In addition to the arbitrary numbering system, a location number is given for each data point. The location number is based on the U.S. Bureau of Land Management's system of land subdivision (township, range, and section). Figure 1 illustrates the system of numbering data-collection points for location.

The first numeral of a location number indicates the township, the second the range, and the third the section in which the point is located. Lowercase letters after the section number indicate the location within the section; the first letter denotes the 160-acre tract, the second the 40-acre tract, and the third the 10-acre tract. The letters a, b, c, and d are assigned in a counterclockwise direction, beginning in the northeast corner of each tract. The number of lowercase letters indicates the accuracy of the

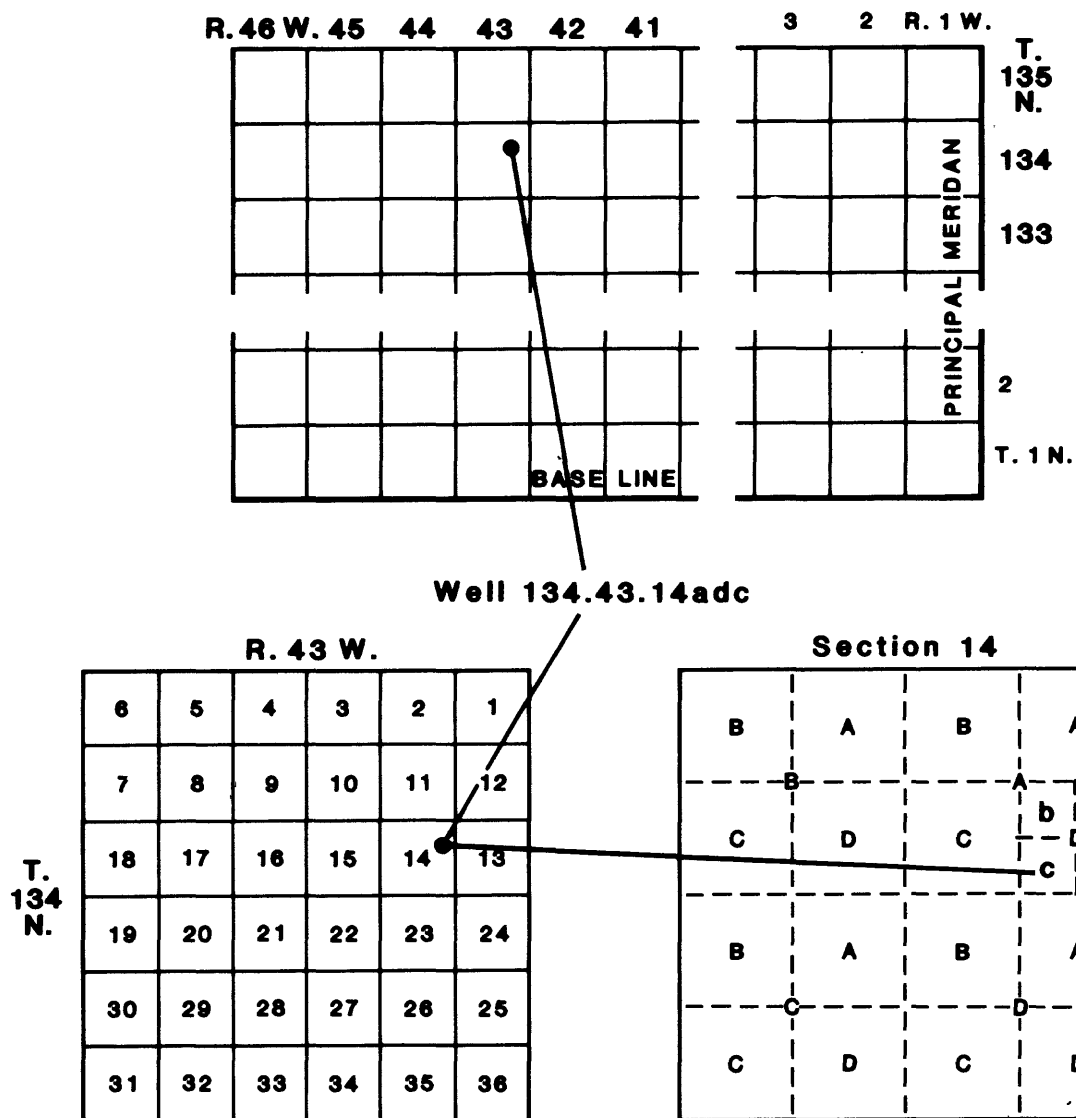


Figure 1.--Test-hole and well-numbering system

location number; if a point can be located within a 10-acre tract, three lowercase letters are shown in the location number. For example, data-collection point 300 (an observation well) located in the SW $\frac{1}{4}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$, sec. 14, T. 134 N., R. 43 W., would have the location number 134.43.14adc.

DESCRIPTION OF DATA

The report is divided into four sections; logs of test holes and observation wells, water-level data and selected hydrographs, aquifer-test data, and results of water-quality analyses.

Table 1 contains both logs of test holes drilled specifically for the Pelican River sands aquifer study and logs of test holes and wells drilled for previous investigations. The new logs include grain-size descriptors as follows: "trace", 0 to 15 percent; "little", 15 to 25 percent; "some", 25 to 35 percent; "and", 35 to 50 percent.

Altitude of land surface in feet above NGVD (National Geodetic Vertical Datum of 1929) is estimated from topographic maps at a scale of 1:24,000. Altitude of water table was computed by subtracting the depth to the water table from the estimated land-surface altitude on the day the hole was drilled.

Table 2 contains water-level measurements made in 33 observation wells at least once monthly, as part of the current study. Dates of measurement and depths to water level, in feet below land-surface datum, are given for each well in the table. The observation well number coincides with the hole number given in table .

Hydrographs of eight selected wells are shown on plates 1 and 2 with altitude of water level in feet above NGVD.

Table 3 includes aquifer test data. The test was designed to examine water-level drawdown and recovery due to pumping from a lower confined aquifer. Distances between wells are rounded to the nearest one-tenth of a foot, and water-level measurements are rounded to the nearest one-hundredth of a foot. An analysis of the aquifer test will be discussed in the interpretive report.

Table 4 contains results of chemical analyses of water samples from the Pelican River and from 33 wells. Chemical constituents are given in milligrams per liter (mg/L) and micrograms per liter (ug/L). The location of sampling sites and wells is shown on plates 1 and 2.

REFERENCES

- Larson, S. P., McBride, M. S., and Wolf, R. J., 1975, Digital models of a glacial outwash aquifer in the Pearl-Sallie Lakes area, west-central Minnesota: U.S. Geological Survey Water-Resources Investigations 40-75, 39 p.
- Winter, T. C., Bidwell, L. E., and Maclay, R. W., 1969, Water resources of the Otter Tail River watershed, west-central Minnesota: U.S. Geological Survey Hydrologic Investigations Atlas, HA-296.

Table 1.--Logs of test holes and observation wells

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 1 Date drilled: 6- 4-79 Location: 139.41.24bad Township name: Detroit Alt: 1370 Alt. water table: 1361					
Topsoil.....	2	2	Sand; fine to very fine,		
Sand, fine to medium; trace			some silt.....	51	60
coarse sand	7	9	Till.....	2	62
Hole no: 2 Date drilled: 6- 5-79 Location: 139.41.11ddc Township name: Detroit Alt: 1390 Alt. water table: 1379					
Topsoil.....	2	2	Sand, medium to coarse.....	24	70
Sand, fine to medium, trace			Sand, medium; some fine sand;		
coarse sand.....	9	11	trace coarse sand.....	46	116
Sand, medium to coarse; some			Sand, medium to coarse; and		
very coarse sand.....	35	46	gravel, medium to coarse....	6	122
Hole no: 3 Date drilled: 6- 5-79 Location: 138.40.20bbc Township name: Burlington Alt: 1390 Alt. water table: 1378					
Topsoil.....	2	2	Sand, fine to medium; trace		
Sand, medium to coarse.....	5.5	7.5	coarse sand.....	15	70
Sand, coarse to very coarse;			Sand, fine to medium.....	43	113
some fine gravel.....	15.5	23	Till, silty, gray.....	4	117
Sand, medium to coarse; and					
gravel, medium to coarse....	32	55			
Hole no: 4 Date drilled: 6- 5-79 Location: 138.42.23bbb Township name: Lake Eunice Alt: 1380 Alt. water table: 1345					
Roadfill.....	3	3	Sand, fine to medium; trace		
Sand, medium to coarse; and			coarse to very coarse sand..	60	91
gravel, fine to medium.....	28	31	Till.....	1	92
Hole no: 5 Date drilled: 6- 6-79 Location: 138.43.25cbb Township name: Cormorant Alt: 1375 Alt. water table: 1351					
Topsoil.....	2	2	Sand, fine to medium.....	23	85
Till, silty, brown.....	28	30	Sand, very fine to fine.....	15	90
Sand, fine to medium; some			Till.....	2	92
coarse sand.....	20	50			
Sand, medium to very coarse;					
some fine sand.....	12	62			

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 6 Date drilled: 6- 6-79 Location: 140.41.13baa Township name: Richwood Alt: 1470 Alt. water table: 1439					
Topsoil.....	2	2	Sand, fine to medium, some		
Sand; medium to coarse; and			coarse sand; trace silt.....	21	67
Sand, fine to medium; trace			Till.....	1	68
Sand, fine to medium; trace					
silt.....	15	46			
Hole no: 7 Date drilled: 6- 6-79 Location: 140.41.14aaa Township name: Richwood Alt: 1450 Alt. water table: dry					
Roadfill.....	2	2	Till, sand, brown.....	15	17
Hole no: 8 Date drilled: 6- 6-79 Location: 140.41.13dbb Township name: Richwood Alt: 1450 Alt. water table: dry					
Roadfill.....	2	2	Sand, medium to very coarse;		
Sand, medium to coarse; and			and gravel, fine to medium..	25	58
gravel, coarse.....	10.5	12.5	Sand, fine; and silt.....	9	67
Sand, medium to coarse; some			Sand medium to coarse.....	11	78
fine sand.....	20.5	33	Till, sandy, gray.....	10	88
Hole no: 9 Date drilled: 6- 6-79 Location: 140.41.13daa Township name: Richwood Alt: 1480 Alt. water table: dry					
Roadfill.....	6	6	Till sandy.....	11	17
Hole no: 10 Date drilled: 6- 6-79 Location: 140.40.7ccc Township name: Holmsville Alt: 1460 Alt. water table: dry					
Roadfill.....	2	2	Till.....	5	7
Hole no: 11 Date drilled: 6- 7-79 Location: 140.41.24baa Township name: Richwood Alt: 1450 Alt. water table: 1416					
Roadfill.....	2	2	Sand, medium to very coarse;		
Sand, medium to coarse; and			some fine to medium gravel;		
gravel, fine; some silt.....	19	21	trace silt.....	10	40
Sand, medium to coarse; some			Till.....	2	42
very coarse sand; trace					
silt.....	9	30			

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 12 Date drilled: 6- 7-79 Location: 140.41.13dcd Township name: Richwood Alt: 1450 Alt. water table: dry					
Roadfill.....	2	2	Till.....	9	17
Sand and gravel.....	6	8			
Hole no: 13 Date drilled: 6- 7-79 Location: 140.41.13cca Township name: Richwood Alt: 1430 Alt. water table: 1421					
Topsoil.....	2	2	Till.....	2	52
Sand and gravel.....	7	9			
Sand, medium to very coarse; some fine gravel, trace medium gravel.....	41	50			
Hole no: 14 Date drilled: 6- 7-79 Location: 140.41.24bcc Township name: Richwood Alt: 1430 Alt. water table: 1426					
Roadfill.....	2	2	Sand, fine; trace medium to		
Sand, and silt.....	2	4	coarse sand.....	20	45
Sand, fine to medium; some			Till.....	2	47
coarse sand.....	10	14			
Sand, medium to coarse; trace fine gravel.....	11	25			
Hole no: 15 Date drilled: 6- 7-79 Location: 140.41.26baa Township name: Richwood Alt: 1480 Alt. water table: dry					
Topsoil.....	7	7	Till, silty brown.....	5	12
Hole no: 16 Date drilled: 6- 7-79 Location: 140.41.26bbb Township name: Richwood Alt: 1420 Alt. water table: dry					
Roadfill.....	3	3	Till.....	9	12
Hole no: 17 Date drilled: 6- 7-79 Location: 140.41.15ddc Township name: Richwood Alt: 1440 Alt. water table: dry					
Topsoil.....	2	2	Till.....	10	12

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 18 Date drilled: 6- 7-79 Location: 140.41.14bdc Township name: Richwood Alt: 1440 Alt. water table: 1417.5					
Topsoil.....	3	3	Sand, medium to coarse; trace		
Sand, medium to coarse; and			fine to medium gravel.....	27.5	50
gravel, fine to medium.....	19.5	22.5	Till.....	2	52
Hole no: 19 Date drilled: 6- 7-79 Location: 140.41.11ccc Township name: Richwood Alt: 1475 Alt. water table: dry					
Roadfill.....	2	2	Till, silty, brown.....	10	12
Hole no: 20 Date drilled: 6- 7-79 Location: 139.41.14bbb Township name: Detroit Alt: 1350 Alt. water table: 1349.5					
Roadfill.....	2	2	Till.....	2	87
Swamp deposits.....	24	26			
Sand, medium to very coarse; some fine to medium gravel; trace very coarse gravel....	59	85			
Hole no: 21 Date drilled: 6- 8-79 Location: 139.41.14baa Township name: Detroit Alt: 1355 Alt. water table: 1350					
Roadfill.....	2	2	Till.....	2	87
Swamp deposits.....	24	26			
Sand, medium to very coarse; trace fine gravel.....	175	59			
Hole no: 22 Date drilled: 6- 8-79 Location: 139.41.13abb Township name: Detroit Alt: 1380 Alt. water table: 1375					
Roadfill.....	2	2	Till.....	17	36
Swamp deposits.....	17	19			
Hole no: 23 Date drilled: 6- 8-79 Location: 139.41.15baa Township name: Detroit Alt: 1375 Alt. water table: 1360					
Roadfill.....	2	2	Sand, fine to medium, some		
Sand, medium to coarse; and			coarse to very coarse sand..	31.5	65.5
gravel, fine to medium.....	23	25	Sand, fine to medium; trace		
Sand, medium to coarse; trace			coarse to very coarse sand..	12.5	78
fine to medium gravel.....	9	34	Till.....	4	82

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 24 Date drilled: 6-26-79 Location: 137.41.9cba Township name: Candor Alt: 1390 Alt. water table: 1362					
Topsoil.....	2	2	Sand, fine to medium; some		
Sand, medium to coarse.....	5	7	very fine sand; trace		
Sand, very fine to fine.....	5	12	coarse sand.....	12	63
Sand, very fine to fine; trace medium sand.....	27	39	Sand, medium to coarse; some fine sand.....	42	105
Sand, fine to medium; some very fine sand.....	12	51	Till.....	2	107
Hole no: 25 Date drilled: 6-26-79 Location: 136,43,4baa Township name: Scambler Alt: 1400 Alt. water table: dry					
Topsoil.....	2	2	Till, sand.....	40	42
Hole no: 26 Date drilled: 6-26-79 Location: 134.43.16dad Township name: Elizabeth Alt: 1290 Alt. water table: 1248					
Topsoil.....	2	2	Sand, medium to very coarse; trace fine to medium gravel..	7.5	74
Till, sandy, brown.....	33	35	Sand, medium; some fine sand..	12	86
Till, sandy, gray.....	5	40	Till, silty, gray.....	1	87
Sand, very fine; some silt....	5.5	45.5			
Sand, coarse to very coarse; some fine to medium gravel..	6.5	52			
Hole no: 27 Date drilled: 6-27-79 Location: 134.43.34bbb Township name: Elizabeth Alt: 1305 Alt. water table: 1239					
Topsoil.....	2	2	Sand, fine to medium; some		
Till, sandy, brown.....	29	31	coarse sand.....	39	122
Till, sandy, gray.....	52	83	Till, silty, gray.....	1	123
Hole no: 28 Date drilled: 6-27-79 Location: 139.41.8dda Township name: Detroit Alt: 1380 Alt. water table: 1357					
Roadfill.....	2	2	Sand, medium to very coarse; trace fine to medium gravel..	24	60
Sand, fine to medium; and gravel, fine to medium.....	21	23	Sand, medium to very coarse...	8.5	68.5
Sand, medium to very coarse...	13	26	Till, silty, gray.....	3.5	72

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 29 Date drilled: 6-27-79 Location: 139.41.8aad Township name: Detroit Alt: 1390 Alt. water table: dry					
Roadfill.....	2	2	Till, silty, brown.....	15	17
Hole no: 30 Date drilled: 7- 2-79 Location: 139.41.8cdd Township name: Detroit Alt: 1380 Alt. water table: dry					
Roadfill.....	2	2	Till, sandy, brown.....	7	17
Swamp deposits	8	10			
Hole no: 31 Date drilled: 7- 2-79 Location: 139.41.19aab Township name: Detroit Alt: 1382 Alt. water table: dry					
Roadfill.....	2	2	Till, sandy, brown.....	10	12
Hole no: 32 Date drilled: 7- 2-79 Location: 139.41.20bcd Township name: Detroit Alt: 1360 Alt. water table: dry					
Roadfill.....	2	2	Till, sandy, brown.....	10	12
Hole no: 33 Date drilled: 7- 2-79 Location: 139.41.27bbd Township name: Detroit Alt: 1360 Alt. water table: 1343					
Roadfill.....	2	2	Sand, fine to medium; some		
Sand, fine to coarse; and			coarse sand.....	9	50
gravel, fine to medium.....	21	23	Sand, fine; some medium sand..	7	57
Sand, medium to coarse; trace			Sand, very fine to fine.....	13	70
fine gravel.....	18	41	Till, silty, gray.....	2	72
Hole no: 34 Date drilled: 7- 2-79 Location: 139.41.27aab Township name: Detroit Alt: 1355 Alt. water table: 1351					
Sand, medium to coarse; and			Sand, fine to medium; trace		
gravel, fine to coarse.....	5	5	coarse sand.....	50	60
Sand, medium to very coarse;			Till, silty, gray.....	2	62
trace fine sand.....	5	10			
Hole no: 35 Date drilled: 7- 2-79 Location: 139.41.23ddd Township name: Detroit Alt: 1358 Alt. water table: dry					
Roadfill.....	2	2	Till, silty, brown.....	10	12

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 36 Date drilled: 7- 3-79 Location: 138.41.1baa Township name: Lakeview Alt: 1340 Alt. water table: 1335					
Roadfill.....	2	2	Silt and sand, very fine;		
Sand, coarse to very coarse;			trace coarse sand.....	10	30
some silt.....	9	11	Till, silty, gray.....	2	32
Sand, coarse to very coarse;					
trace fine to medium gravel.	9	20			
Hole no: 37 Date drilled: 7- 3-79 Location: 138.41.1aba Township name: Lakeview Alt: 1410 Alt. water table: dry					
Till, sandy, brown.....	12	12			
Hole no: 38 Date drilled: 7- 3-79 Location: 138.41.1aaa Township name: Lakeview Alt: 1394 Alt. water table: 1378					
Roadfill.....	2	2	Rock.....	0.5	20.5
Sand, fine to medium; and					
gravel, fine.....	18	20			
Hole no: 39 Date drilled: 7- 3-79 Location: 138.41.1aaa Township name: Lakeview Alt: 1394 Alt. water table: dry					
Roadfill.....	2	2	Till.....	1	13
Sand, fine to medium; and					
gravel, fine.....	10	12			
Hole no: 40 Date drilled: 7- 3-79 Location: 138.40.6aba Township name: Burlington Alt: 1405 Alt. water table: 1382					
Sand, fine to medium; some			Sand, very fine to fine; some		
coarse sand; trace fine			medium sand.....	12	76
gravel.....	15	15	Silt and sand, very fine.....	9	85
Sand, medium to coarse; some			Till, silty, gray.....	2	87
fine gravel.....	18	33			
Sand, fine to medium; some					
coarse sand; trace fine					
gravel.....	31	64			

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 41 Date drilled: 7- 3-79 Location: 138.40.17ccc Township name: Burlington Alt: 1400 Alt. water table: 1378.5					
Topsoil.....	2	2	Sand, coarse to very coarse;		
Sand, coarse to very coarse...	18	20	trace medium sand; trace		
Sand, medium to coarse; trace			fine to medium gravel.....	22	107
very coarse sand.....	65	85			
Hole no: 42 Date drilled: 7- 4-79 Location: 138.40.18cdd Township name: Burlington Alt: 1360 Alt. water table: 1350					
Roadfill.....	1	1	Sand, fine to medium; some		
Sand, medium to very coarse;			coarse sand.....	27	67
trace fine to medium gravel.	23	24	Till.....	5	72
Sand, fine to medium; trace					
coarse sand.....	16	40			
Hole no: 43 Date drilled: 7- 4-79 Location: 138.41.13ccc Township name: Lakeview Alt: 1360 Alt. water table: 1350					
Roadfill.....	2	2	Sand, fine to medium; some		
Sand, fine to medium; some			coarse to very coarse sand;		
coarse sand.....	13	15	trace fine gravel.....	20	40
Sand, fine to medium; some			Sand, fine; some medium sand..	16	56
coarse sand; trace fine			Sand, fine to medium; trace		
gravel.....	5	20	coarse sand.....	21	77
Hole no: 44 Date drilled: 7- 4-79 Location: 138.41.26aaa Township name: Lakeview Alt: 1398 Alt. water table: dry					
Roadfill.....	2	2	Rock.....	0.5	12.5
Sand, medium to coarse; and					
gravel, medium to coarse....	10	12			
Hole no: 45 Date drilled: 7- 4-79 Location: 138.41.24ccb Township name: Lakeview Alt: 1380 Alt. water table: 1345.5					
Roadfill.....	2	2	Sand, fine to medium; and		
Sand, fine to medium; trace			gravel, medium to coarse....	18.5	36.5
coarse to very coarse			Sand, medium to very coarse;		
sand.....	15	17	trace fine gravel.....	40.5	77

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 46 Date drilled: 7- 4-79 Location: 138.41.34acd Township name: Lakeview Alt: 1345 Alt. water table: dry					
Till, sandy, brown.....	12	12			
Hole no: 47 Date drilled: 7- 4-79 Location: 138.41.34bdd Township name: Lakeview Alt: 1380 Alt. water table: dry					
Roadfill.....	2	2	Sand, very fine; some silt....	3	12
Sand, fine to medium, some			Till, sandy, brown.....	5	17
coarse sand.....	7	9			
Hole no: 48 Date drilled: 7- 4-79 Location: 138.41.34bcc Township name: Lakeview Alt: 1340 Alt. water table: 1327					
Roadfill.....	1	1	Sand, medium to very coarse;		
Swamp deposits.....	21	22	trace fine gravel; trace		
Sand, medium to very coarse;			silt.....	10	70
trace fine gravel.....	38	60	Till, sandy, gray.....	7	77
Hole no: 49 Date drilled: 7- 5-79 Location: 138.41.27acb Township name: Lakeview Alt: 1353 Alt. water table: 1334					
Sand, medium to very coarse;			Sand, medium to very coarse;		
trace very coarse sand; trace			trace fine to medium gravel.	33.5	76.5
fine to medium gravel.....	40	40	Till, sandy, gray.....	0.5	77
Hole no: 50 Date drilled: 7- 5-79 Location: 137.41.9aad Township name: Candor Alt: 1370 Alt. water table: dry					
Roadfill.....	2	2	Till, sandy, brown.....	15	17
Hole no: 51 Date drilled: 7- 5-79 Location: 137.41.9aaa Township name: Candor Alt: 1380 Alt. water table: dry					
Roadfill.....	2	2	Till, silty, brown.....	5	7
Hole no: 52 Date drilled: 7- 5-79 Location: 137.41.16ccc Township name: Candor Alt: 1390 Alt. water table: dry					
Roadfill.....	2	2	Till.....	5	22
Sand, medium to coarse; trace					
fine gravel.....	15	17			

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 53 Date drilled: 7- 5-79 Location: 137.41.20baa Township name: Candor Alt: 1460 Alt. water table: dry					
Roadfill.....	2	2	Sand, coarse; gravel, medium..	2	15
Sand; fine to medium.....	11	13	Till, sandy, brown.....	2	17
Hole no: 54 Date drilled: 7- 5-79 Location: 137.41.20bbb Township name: Candor Alt: 1453 Alt. water table: dry					
Roadfill.....	2	2	Till, silty, brown.....	10	12
Hole no: 55 Date drilled: 7- 5-79 Location: 137.41.18dbd Township name: Candor Alt: 1500 Alt. water table: dry					
Roadfill.....	2	2	Till, sandy, brown.....	10	12
Hole no: 56 Date drilled: 7- 5-79 Location: 137.41.18bad Township name: Candor Alt: 1430 Alt. water table: 1428					
Roadfill.....	2	2	Till, sandy, brown.....	10	12
Hole no: 57A Date drilled: 7- 5-79 Location: 137.41.7dba Township name: Candor Alt: 1410 Alt. water table: 1410					
Till, sandy, brown.....	12	12			
Hole no: 57B Date drilled: 7- 5-79 Location: 137.41.8bcd Township name: Candor Alt: 1420 Alt. water table: 1418					
Sand, fine to medium; trace coarse sand.....	2	2	Till, sandy, green.....	10	12
Hole no: 58 Date drilled: 7- 5-79 Location: 137.41.8baa Township name: Candor Alt: 1398 Alt. water table: 1396					
Roadfill.....	2	2	Till, silty, brown.....	5	17
Till; sandy, brown.....	10	12			
Hole no: 59 Date drilled: 7- 5-79 Location: 137.41.7bdb Township name: Candor Alt: 1390 Alt. water table: 1388					
Roadfill.....	2	2	Till, sandy, brown.....	10	12

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 60 Date drilled: 7- 5-79 Location: 137.41.6caa Township name: Candor Alt: 1370 Alt. water table: 1368					
Roadfill.....	2	2	Till, silty, gray.....	56	62
Till, sandy, brown.....	4	6			
Hole no: 61 Date drilled: 7- 6-79 Location: 137.41.6abb Township name: Candor Alt: 1350 Alt. water table: 1289					
Sand, fine to medium, trace coarse sand.....	2	2	Sand, medium to coarse, some fine sand.....	5	7
Sand, medium to coarse, trace very coarse sand, trace fine gravel.....	14	21	Sand, medium, some coarse sand..... Till, silty, gray.....	40 11	61 72
Hole no: 62 Date drilled: 7- 6-79 Location: 137.42.12abc Township name: Dunn Alt: 1340 Alt. water table: 1314					
Roadfill.....	2	2	Till, silty, gray.....	1	27
Sand, medium to coarse; some very coarse sand.....	24	26			
Hole no: 63 Date drilled: 7-12-79 Location: 138.43.36aad Township name: Cormorant Alt: 1370 Alt. water table: 1347					
Topsoil.....	1	1	Sand, medium to coarse; trace fine gravel.....	34	70
Sand, medium; trace coarse sand.....	35	36	Till, silty, gray.....	2	72
Hole no: 65 Date drilled: 7-13-79 Location: 137.42.12caa Township name: Dunn Alt: 1390 Alt. water table: 1388					
Roadfill.....	2	2	Till, sandy, brown.....	15	17
Hole no: 66 Date drilled: --- Location: 137.42.10aab Township name: Dunn Alt: 1330 Alt. water table: 1328					
Roadfill.....	2	2	Till, silty, gray.....	6	26
Till, sandy, brown.....	18	20			

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 67 Date drilled: 7-13-79 Location: 137.42.3ddd Township name: Dunn Alt: 1330 Alt. water table: 1290					
Roadfill.....	2	2	Till, sandy, gray.....	1	51
Sand, medium; trace coarse to very coarse sand.....	23	25	Sand, medium; trace coarse sand.....	26	77
Sand, medium to coarse; and silt.....	25	50			
Hole no: 68 Date drilled: 7-13-79 Location: 137.42.9dbb Township name: Dunn Alt: 1330 Alt. water table: 1314					
Sand, medium to coarse; trace silt.....	16	16	Silt; and sand, medium..... Till, sandy, gray.....	22 34	38 72
Hole no: 69 Date drilled: 7-16-79 Location: 137.42.20daa Township name: Dunn Alt: 1350 Alt. water table: dry					
Roadfill.....	2	2	Till, silty, brown.....	12	22
Till, sandy, brown.....	8	10			
Hole no: 70 Date drilled: 7-16-79 Location: 137.42.20cab Township name: Dunn Alt: 1340 Alt. water table: 1330					
Sand, fine to medium; trace coarse sand.....	3	3	Silt.....	12	22
Sand, very fine to fine; and silt.....	7	10			
Hole no: 71 Date drilled: 7-16-79 Location: 137.42.20beb Township name: Dunn Alt: 1320 Alt. water table: 1310					
Sand, fine to medium; trace coarse sand.....	13	13	Till, silty, gray.....	1	37
Sand, fine to medium; some very coarse sand; trace coarse sand.....	23	36			

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 72 Date drilled: 7-16-79 Location: 137.42.19aaa Township name: Dunn Alt: 1330 Alt. water table: 1321					
Roadfill.....	3	3	Sand, medium to coarse; some		
Sand, medium; and silt.....	12	15	very coarse sand; trace		
Sand, medium to coarse;			silt.....	13	33
some silt.....	5	20	Till, sandy, gray.....	9	42
Hole no: 73 Date drilled: 7-16-79 Location: 137.42.18cdd Township name: Dunn Alt: 1395 Alt. water table: dry					
Roadfill.....	2	2	Rock.....	0.5	25.5
Sand, very fine; trace silt...	15	17			
Gravel, fine to medium; and					
sand, medium to coarse.....	7	25			
Hole no: 74 Date drilled: 7-16-79 Location: 137.42.18ccc Township name: Dunn Alt: 1330 Alt. water table: 1327					
Roadfill.....	3	3	Sand, medium to coarse; some		
Swamp deposits.....	14	17	very coarse sand; trace		
Sand, medium to coarse; some			fine gravel; little silt....	13	73
very coarse sand; trace			Till, sandy, gray.....	5	78
fine gravel.....	43	60			
Hole no: 75 Date drilled: 7-16-79 Location: 137.43.7ccc Township name: Dunn Alt: 1330 Alt. water table: 1324					
Roadfill.....	1	1	Till, silty, gray.....	2	62
Sand, medium to coarse; trace					
very coarse sand.....	19	20			
Sand, medium to coarse; trace					
very coarse sand; trace					
fine gravel.....	40	60			
Hole no: 76 Date drilled: 7-17-79 Location: 137.43.13bba Township name: Scambler Alt: 1340 Alt. water table: 1329					
Roadfill.....	2	2	Silt; and clay.....	7	25
Sand, medium to very coarse;			Till, silty, gray.....	2	27
trace fine to medium					
gravel.....	16	18			

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 77 Date drilled: 7-17-79 Location: 137.43.14aaa Township name: Scambler Alt: 1325 Alt. water table: 1320					
Roadfill.....	1.5	1.5	Till, sandy, gray.....	7	27
Sand, coarse to very coarse...	18.5	20			
Hole no: 78 Date drilled: 7-17-79 Location: 137.43.4ddd Township name: Scambler Alt: 1370 Alt. water table: ---					
Roadfill.....	2	2	Silt; and sand; very fine.....	11	27
Till, sandy, brown.....	14	16			
Hole no: 79 Date drilled: 7-17-79 Location: 137.43.14cdd Township name: Scambler Alt: 1345 Alt. water table: 1336					
Roadfill.....	2.5	2.5	Sand, fine to medium; trace		
Sand, fine to medium; trace			coarse to very coarse sand..	16	56
coarse sand.....	14.5	17	Till, sandy, gray.....	1	57
Sand, medium to coarse;					
trace very coarse sand.....	13	30			
Hole no: 80 Date drilled: 7-17-79 Location: 137.43.15dda Township name: Scambler Alt: 1350 Alt. water table: 1338					
Roadfill.....	2	2	Sand, very fine; and silt.....	20	42
Sand, medium to coarse; some			Silt and clay.....	6	48
very coarse sand; trace fine			Till, sandy, gray.....	1	49
gravel.....	9	11			
Sand, fine to medium; trace					
coarse sand.....	11	22			
Hole no: 81 Date drilled: 7-17-79 Location: 137.43.15ded Township name: Scambler Alt: 1355 Alt. water table: 1335					
Roadfill.....	1	1	Sand, very fine to fine.....	40	62
Sand, medium; trace coarse to					
very coarse sand; trace					
fine gravel.....	21	22			

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 82 Date drilled: 7-17-79 Location: 137.43.15cdd Township name: Scambler Alt: 1370 Alt. water table: 1352					
Sand, fine to medium.....	13	13	Sand, fine to medium.....	7	28
Sand, fine to medium; trace			Sand, fine; and silt.....	42	70
coarse sand.....	8	21	Till.....	2	72
Hole no: 83 Date drilled: 7-17-79 Location: 137.43.16ddd Township name: Scambler Alt: 1395 Alt. water table: dry					
Topsoil.....	4	4	Sand, fine.....	12	32
Sand, fine to medium.....	16	20			
Hole no: 84 Date drilled: 7-17-79 Location: 137.43.21abb Township name: Scambler Alt: 1430 Alt. water table: dry					
Sand, fine to medium; trace			Sand, fine to medium; some		
coarse sand.....	25	25	coarse sand; trace very		
			coarse sand.....	25	50
Hole no: 85 Date Drilled: 7-17-79 Location: 137.43.23bad Township name: Scambler Alt: 1345 Alt. water table: 1333					
Topsoil.....	3	3	Sand, medium to very coarse;		
Sand, medium; trace coarse to			trace fine gravel.....	19	45
very coarse sand.....	23	26	Till, silty, gray.....	2	47
Hole no: 86 Date drilled: 7-18-79 Location: 137.42.30ddc Township name: Dunn Alt: 1350 Alt. water table: dry					
Roadfill.....	2	2	Till, silty, brown.....	10	22
Sand, fine; and silt.....	10	12			
Hole no: 87 Date drilled: 7-18-79 Location: 137.42.30ccd Township name: Dunn Alt: 1350 Alt. water table: dry					
Roadfill.....	1	1	Till, sandy, gray.....	2	42
Sand, fine to medium.....	12	13			
Sand, coarse to very coarse;					
and gravel, fine to coarse..	27	40			

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 88 Date drilled: 7-18-79 Location: 137.43.25cdd Township name: Scambler Alt: 1338 Alt. water table: 1326					
Roadfill.....	2	2	Sand, coarse to very coarse;		
Sand, coarse to very coarse;			trace fine to medium		
and gravel, fine to medium..	13	15	gravel.....	14.5	39.5
Sand, very coarse; some coarse			Sand, fine to medium; trace		
sand.....	7	22	coarse sand.....	3.5	43
Sand, very fine to fine.....	3	25	Till.....	9	52
Hole no: 89 Date drilled: 7-18-79 Location: 137.43.26ccc Township name: Scambler Alt: 1355 Alt. water table: 1342					
Roadfill.....	1	1	Sand, fine to medium; and		
Sand, medium.....	9	10	silt.....	14	36
Sand, fine to medium; and			Till, sandy, gray.....	1	37
silt.....	7	17			
Sand, coarse to very coarse;					
some silt.....	5	22			
Hole no: 90 Date drilled: 7-18-79 Location: 138.41.15cdd Township name: Lakeview Alt: 1345 Alt. water table: 1389					
Roadfill.....	2	2	Sand, medium to coarse; trace		
Sand, medium; trace coarse			very coarse sand; trace		
to very coarse sand.....	18	20	fine gravel.....	20	56
Sand, medium to coarse; trace			Till, sandy, gray.....	6	62
very coarse sand.....	16	36			
Hole no: 91 Date drilled: 7-18-79 Location: 138.41.16dcc Township name: Lakeview Alt: 1350 Alt. water table: 1338					
Roadfill.....	7	7	Sand; fine to medium;		
Sand, medium to coarse; trace			trace coarse sand.....	5	36
fine sand.....	23	30	Sand, fine; some medium sand..	1	50
Sand, medium to coarse; trace			Sand, fine; some medium sand;		
fine sand; trace coarse			trace coarse sand.....	8.5	45.5
sand.....	1	31	Till, silty, gray.....	6.5	52

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 92 Date drilled: 7-18-79 Location: 138.41.30bbb Township name: Lakeview Alt: 1365 Alt. water table: 1331.5					
Sand, medium to coarse; trace very coarse sand.....	37	37	Sand, fine to medium; trace very fine sand; trace coarse sand.....	9	69
Sand, medium to coarse; trace fine sand; trace very coarse sand.....	11	48	Till, sandy, gray.....	3	72
Sand, fine to medium; trace coarse sand.....	12	60			
Hole no: 93 Date drilled: 7-18-79 Location: 138.42.24cdd Township name: Lake Eunice Alt: 1350 Alt. water table: 1339					
Roadfill.....	9	9	Sand, fine to medium; trace coarse sand.....	14	56
Sand, fine to medium; trace coarse sand.....	30	39	Sand, medium to coarse; trace fine sand; trace coarse sand.....	16	72
Sand, medium to coarse; trace fine sand; trace very coarse sand.....	3	42			
Hole no: 94 Date drilled: 7-19-79 Location: 138.42.26abb Township name: Lake Eunice Alt: 1350 Alt. water table: 1334					
Roadfill.....	1	1	Sand, medium to coarse; some very coarse sand.....	23.5	53.5
Sand, medium to very coarse...	6	7	Sand, medium to coarse; some very coarse sand; trace fine sand.....	16.5	70
Sand, medium to coarse; and gravel, fine to medium.....	5	12	Sand, fine to medium.....	7	140
Sand, medium to coarse; trace very coarse sand; trace fine gravel.....	18	30			
Hole no: 95 Date drilled: 7-19-79 Location: 138.42.20ddd Township name: Lake Eunice Alt: 1355 Alt. water table: dry					
Roadfill.....	1	1	Till, sandy, brown.....	21	22

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 96 Date drilled: 9-19-79 Location: 138.42.30caa Township name: Lake Eunice Alt: 1370 Alt. water table: 1347					
Roadfill.....	1.5	1.5	Sand, medium to coarse; some		
Sand, coarse to very coarse;			very coarse sand; trace		
little medium sand; trace			fine sand.....	75.5	30
fine gravel.....	30.5	32	Till, sandy, gray.....	1.5	77
Sand, coarse to very coarse;					
little medium sand; trace					
fine to medium gravel.....	13.5	45.5			
Hole no: 97 Date drilled: 7-19-79 Location: 138.43.25acc Township name: Cormorant Alt: 1360 Alt. water table: 1353					
Roadfill.....	2	2	Sand, coarse; trace very		
Sand, coarse to very coarse;			coarse sand; some medium		
and gravel; fine to			sand.....	34.5	66
medium.....	17	19	Sand, medium to coarse;		
Sand, coarse to very coarse;			trace fine sand.....	10.5	76.5
some fine gravel.....	12.5	31.5	Till.....	0.5	77
Hole no: 98 Date drilled: 7-19-79 Location: 138.43.25cbb Township name: Cormorant Alt: 1370 Alt. water table: dry					
Till, silty, gray.....	27	27			
Hole no: 99 Date drilled: 7-19-79 Location: 138.43.27bcc Township name: Cormorant Alt: 1370 Alt. water table: dry					
Roadfill.....	1	1	Till, sandy, gray.....	1	17
Sand, medium; some coarse					
sand; trace very coarse					
sand; little fine to medium					
gravel.....	15	16			
Hole no: 100 Date drilled: 7-19-79 Location: 138.43.17baa Township name: Cormorant Alt: 1370 Alt. water table: 1362					
Roadfill.....	2	2	Sand, medium; some coarse sand;		
Sand, medium to very coarse;			trace very coarse sand.....	15	40
and gravel, fine to			Sand, fine to medium; trace		
coarse.....	17.5	19.5	coarse sand.....	6	46
Sand, medium; some fine sand;			Sand, fine; some medium sand..	24	70
little coarse sand.....	5.5	25	Sand; very fine.....	7	77

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 101 Date drilled: 7-20-79 Location: 138.43.7cdd Township name: Cormorant Alt: 1375 Alt. water table: 1357					
Roadfill.....	7	7	Sand; fine to medium; trace		
Sand, fine; some medium sand; trace very fine sand.....	11	18	coarse sand.....	18	48
Sand, medium; little fine sand; some coarse sand.....	12	30	Sand, very fine; trace medium to coarse sand.....	23	71
			Till, silty, gray.....	1	72
Hole no: 102 Date drilled: 7-20-79 Location: 138.44.12ddd Township name: Parke Alt: 1395 Alt. water table: 1365					
Roadfill.....	5	5	Sand, medium to coarse; trace		
Sand, very fine.....	10.5	15.5	very coarse sand.....	27.5	65.5
Sand, very fine; some fine sand.....	22.5	38	Sand, coarse; some very coarse sand; little medium sand; trace fine gravel.....	11.5	77
Hole no: 103 Date drilled: 7-23-79 Location: 138.44.1cdd Township name: Parke Alt: 1370 Alt. water table: dry					
Roadfill.....	4	4	Till, gravelly, gray.....	5	27
Silt.....	18	22			
Hole no: 105 Date drilled: 7-23-79 Location: 138.44.1cdd Township name: Parke Alt: 1374 Alt. water table: 1364					
Roadfill.....	3	3	Sand, medium; some coarse		
Sand, medium; some coarse sand; trace very coarse sand; trace fine sand.....	37	40	sand; trace very coarse sand.....	37	77
Hole no: 106 Date drilled: 7-23-79 Location: 138.44.1cdd Township name: Parke Alt: 1374 Alt. water table: dry					
Roadfill.....	2	2	Till, sandy, brown.....	13	32
Silt and clay.....	17	19			

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 107 Date drilled: 7-24-79 Location: 137.44.2baa Township name: --- Alt: 1420 Alt. water table: 1357					
Roadfill.....	6	6	Sand, medium to coarse; trace		
Sand, medium; little coarse			very coarse sand; trace fine		
sand; trace very coarse			gravel.....	11	31
sand.....	7	13	Sand, medium to coarse; trace		
Sand, fine.....	7	20	very coarse sand; trace fine		
			to medium gravel.....	46	77
Hole no: 108 Date drilled: 7-24-79 Location: 137.42.5abb Township name: Dunn Alt: 1330 Alt. water table: 1322					
Roadfill.....	2	2	Sand, medium to coarse;		
Sand, medium; trace silt.....	18	20	trace very coarse sand.....	25	51
Sand, coarse to very coarse;			Sand, fine; little medium		
trace medium sand; trace			sand.....	6	57
fine gravel.....	6	26			
Hole no: 109 Date drilled: 7-24-79 Location: 137.42.4bbb Township name: Dunn Alt: 1340 Alt. water table: 1322					
Roadfill.....	2	2	Sand, medium to coarse;		
Sand, medium; trace fine			little very coarse sand;		
sand; trace coarse sand.....	20.5	22.5	trace fine sand.....	10	73
Sand, medium to coarse;			Till, silty, gray.....	1	74
gravel, fine.....	7.5	30			
Sand, medium to coarse;					
little very coarse sand.....	33	63			
Hole no: 110 Date drilled: 7-24-79 Location: 137.42.4baa Township name: Dunn Alt: 1360 Alt. water table: 1333.5					
Roadfill.....	5	5	Sand, coarse; little medium		
Sand, coarse to very coarse;			sand; trace very coarse		
trace fine to medium			sand.....	43	63
gravel.....	15	20	Till, silty, gray.....	9	72

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 111 Date drilled: 7-24-79 Location: 137.42.3abb Township name: Dunn Alt: 1320 Alt. water table: 1315					
Roadfill.....	4	4	Sand, fine to medium.....	35	61
Sand, coarse to very coarse; trace fine gravel.....	12	16	Sand, fine to very fine.....	5	66
Sand, medium to coarse; trace very coarse sand.....	10	26	Sand, fine to very fine; and silt.....	2	67
Hole no: 112 Date drilled: 7-24-79 Location: 137.42.1abb Township name: Dunn Alt: 1330 Alt. water table: 1318.5					
Roadfill.....	4	4	Sand, coarse; some medium sand; trace very coarse sand.....	6.5	31.5
Sand, coarse; some medium sand; little silt.....	13	17	Till, sandy, gray.....	5.5	37
Sand, medium to coarse; trace very coarse sand.....	8	25			
Hole no: 113 Date drilled: 7-25-79 Location: 138.42.36ccd Township name: Lake Eunice Alt: 1330 Alt. water table: 1318.5					
Roadfill.....	6	6	Sand, medium; little coarse sand; trace silt.....	20	70
Sand, coarse to very coarse; some medium sand; trace silt.....	23	29	Till, silty, gray.....	2	72
Sand, medium to coarse; trace very coarse sand.....	21	50			
Hole no: 114 Date drilled: 7-25-79 Location: 138.42.35dcc Township name: Lake Eunice Alt: 1335 Alt. water table: 1321.5					
Roadfill.....	3	3	Sand, fine to medium; trace very fine sand.....	15	52
Sand, coarse; trace medium sand; trace fine gravel.....	10.5	13.5	Sand, very fine; trace silt...	18	70
Sand, coarse to very coarse; trace fine gravel...13.....	26.5		Till, silty, gray.....	2	72
Sand, coarse; little very coarse sand; trace medium sand.....	10.5	37			

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 115 Date drilled: 7-26-79 Location: 137.42.30bbb Township name: Dunn Alt: 1350 Alt. water table: 1325.5					
Topsoil.....	3	3	Sand, coarse to very coarse; little fine gravel; trace		
Sand, medium to coarse; trace very coarse sand.....	14	17	medium gravel.....	33	60
Sand, medium to coarse; trace very coarse sand; trace fine gravel.....	10	27	Sand, coarse to very coarse; trace fine gravel.....	10	70
Hole no: 116 Date drilled: 7-26-79 Location: 136.43.12dda Township name: Pelican Alt: 1335 Alt. water table: dry					
Roadfill.....	2	2	Silt.....	5	17
Sand, fine; and silt.....	10	12			
Hole no: 117 Date drilled: 7-26-79 Location: 136.43.12dcc Township name: Pelican Alt: 1370 Alt. water table: dry					
Roadfill.....	2	2	Till, sandy, brown.....	2	22
Sand, very fine to fine.....	18	20			
Hole no: 118 Date drilled: 7-26-79 Location: 136.43.14aaa Township name: Pelican Alt: 1360 Alt. water table: dry					
Sand, fine.....	12	12	Till, silty, gray.....	25	37
Hole no: 119 Date drilled: 7-26-79 Location: 136.43.11ddc Township name: Pelican Alt: 1340 Alt. water table: 1295					
Sand, fine; and silt.....	10	10	Sand, medium.....	19	52
Till, silty, brown.....	23	33			
Hole no: 120 Date drilled: 7-26-79 Location: 136.43.14baa Township name: Pelican Alt: 1315 Alt. water table: 1305					
Roadfill.....	3	3	Silt and clay.....	6	47
Sand, medium to coarse; trace fine sand; trace very fine sand.....	38	41			

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 121 Date drilled: 7-27-79 Location: 136.43.10cdc Township name: Pelican Alt: 1315 Alt. water table: 1311					
Sand, fine to medium.....	21	21	Sand, medium.....	16	42
Sand, fine; some very fine sand.....	5	26			
Hole no: 122 Date drilled: 7-31-79 Location: 138.40.7ada Township name: Burlington Alt: 1480 Alt. water table: dry					
Roadfill.....	3	3	Sand, fine to very fine; trace silt.....	16	37
Sand, medium; trace coarse to very coarse sand; trace fine to medium gravel.....	18	21			
Hole no: 123 Date drilled: 7-31-79 Location: 138.40.7dad Township name: Burlington Alt: 1500 Alt. water table: 1498+					
Roadfill.....	3	3	Sand, fine to medium; trace coarse sand.....	15	52
Sand, medium; trace coarse sand; some silt.....	19	22			
Sand, medium; trace coarse sand; trace fine to medium gravel.....	15	37			
Hole no: 124 Date drilled: 7-31-79 Location: 138.40.18abd Township name: Burlington Alt: 1450 Alt. water table: 1439					
Roadfill.....	1.5	1.5	Sand, medium to coarse; trace very coarse sand.....	116	127
Sand, medium to coarse.....	9.5	11			
Hole no: 125 Date drilled: 7-31-79 Location: 138.40.7caa Township name: Burlington Alt: 1385 Alt. water table: 1376					
Roadfill.....	2	2	Sand, coarse; some medium sand; little very coarse sand; trace fine gravel.....	25	65
Sand, medium; and silt.....	33	35			
Sand, fine; trace coarse sand.....	5	40	Rock.....	0.5	65.5
Hole no: 126 Date drilled: 7-31-79 Location: 140.41.29dcc Township name: Richwood Alt: 1420 Alt. water table: dry					
Roadfill.....	1.5	1.5	Till, sandy, brown.....	10.5	12

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 127 Date drilled: 8- 1-79 Location: 136.43.10cdd Township name: Pelican Alt: 1330 Alt. water table: 1315.5					
Roadfill.....	2	2	Sand, medium to coarse; some		
Sand, very fine to fine.....	28	30	fine sand.....	17	70
Sand, fine to medium; trace			Sand, medium to coarse; trace		
coarse sand.....	10	40	very coarse sand; trace		
Sand, medium to coarse; trace			fine gravel.....	46	116
very coarse sand; trace			Sand, very fine.....	4.5	120.5
fine sand.....	17	57	Till.....	1.5	122
Hole no: 128 Date drilled: 8- 1-79 Location: 136.43.9dcd Township name: Pelican Alt: 1430 Alt. water table: dry					
Topsoil.....	2.5	2.5	Till, sandy, brown.....	9.5	12
Hole no: 129 Date drilled: 8- 1-79 Location: 136.43.9ddd Township name: Pelican Alt: 1375 Alt. water table: 1323					
Roadfill.....	3	3	Sand, medium to coarse; trace		
Sand, fine to very fine.....	19	22	very coarse sand.....	19	97
Sand, medium; trace fine			Sand, coarse to very coarse;		
sand.....	10	32	some medium sand; trace silt	27	124
Sand, medium.....	46	78	Till, silty, gray.....	3	127
Hole no: 130 Date drilled: 8- 1-79 Location: 136.43.24ccc Township name: Pelican Alt: 1335 Alt. water table: dry					
Roadfill.....	1	1	Till, sandy, brown.....	11	12
Hole no: 131 Date drilled: 8- 1-79 Location: 136.43.26abb Township name: Pelican Alt: 1325 Alt. water table: 1315					
Roadfill.....	2	2	Sand, coarse to very coarse;		
Sand, fine to medium; trace			little medium sand; trace		
silt; trace coarse sand.....	33	35	fine gravel.....	26	66
Sand, medium to coarse; trace			Till.....	1	67
silt; trace very coarse					
sand.....	5	40			

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 132 Date drilled: 8- 1-79 Location: 136.43.27aaa Township name: Pelican Alt: 1270 Alt. water table: 1262					
Roadfill.....	2	2	Sand, medium to coarse; trace		
Sand, medium.....	15	17	very coarse sand.....	17	63
Sand, coarse to very coarse; little medium sand.....	23	40	Till.....	9	72
Sand, coarse to very coarse; little medium sand; trace fine gravel.....	6	46			
Hole no: 133 Date drilled: 8- 1-79 Location: 136.43.21ddd Township name: Pelican Alt: 1318 Alt. water table: dry					
Roadfill.....	2	2	Till, sandy, brown.....	15	17
Hole no: 134 Date drilled: 8- 1-79 Location: 136.43.32aaa Township name: Pelican Alt: 1300 Alt. water table: 1295					
Roadfill.....	3	3	Sand, medium; trace coarse		
Sand, coarse to very coarse; trace medium sand.....	27	30	sand; trace fine sand.....	40	96
Sand, coarse; little very coarse sand; trace medium sand.....	26	56	Sand, fine to medium.....	4	100
			Till, silty, gray.....	2	102
Hole no: 135 Date drilled: 8- 1-79 Location: 136.43.32dad Township name: Pelican Alt: 1300 Alt. water table: dry					
Roadfill.....	1	1	Till, sandy, brown gray.....	5	27
Hole no: 136 Date drilled: 8- 1-79 Location: 136.43.28cca Township name: Pelican Alt: 1300 Alt. water table: 1290					
Roadfill.....	3	3	Sand, medium to coarse; trace		
Sand, coarse to very coarse; trace medium sand.....	19	22	very coarse sand.....	27	65
Sand, medium to coarse.....	16	38	Till, silty, gray.....	2	67

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 137 Date drilled: 8- 2-79 Location: 135.43.4cdc Township name: Erhards Grove Alt: 1295 Alt. water table: dry					
Roadfill.....	1.5	1.5	Till, sandy, gray.....	7	17
Till, sandy, brown.....	8.5	10			
Hole no: 138 Date drilled: 8- 2-79 Location: 135.43.9ddd Township name: Erhards Grove Alt: 1290 Alt. water table: dry					
Roadfill.....	2	2	Till, sandy, gray.....	17	22
Till, sandy, brown.....	3	5			
Hole no: 139 Date drilled: 8- 2-79 Location: 136.43.34cdd Township name: Pelican Alt: 1330 Alt. water table: dry					
Roadfill.....	2	2	Till, silty, gray.....	16	42
Swamp deposits.....	24	26			
Hole no: 140 Date drilled: 8- 2-79 Location: 135.43.22baa Township name: Erhards Grove Alt: 1300 Alt. water table: dry					
Roadfill.....	2	2	Till, silty, gray.....	12	22
Swamp deposits.....	8	10			
Hole no: 141 Date drilled: 8- 2-79 Location: 135.43.22bba Township name: Erhards Grove Alt: 1285 Alt. water table: dry					
Roadfill.....	1	1	Till, silty, gray.....	10	22
Till, sandy, brown.....	11	12			
Hole no: 142 Date drilled: 8- 2-79 Location: 135.43.22bbb Township name: Erhards Grove Alt: 1280 Alt. water table: 1278					
Roadfill.....	2	2	Sand, fine to medium.....	15	60
Sand, coarse to very coarse; trace medium sand.....	20	22	Sand, fine; little medium sand.....	21	81
Sand, coarse to very coarse; trace medium sand; trace fine gravel.....	8	30	Sand, fine.....	5	86
Sand, coarse to very coarse; trace medium sand; trace fine sand; trace fine gravel.....	15	45	Till, silty, gray.....	1	87

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 143 Date drilled: 8- 2-79 Location: 135.43.33bcc Township name: Erhards Grove Alt: 1277 Alt. water table: 1266					
Roadfill.....	1	1	Sand, coarse to very coarse;		
Sand, medium; some coarse sand;			trace fine gravel.....	13	35
trace very coarse sand.....	17	18	Till, silty, gray.....	2	37
Sand, medium to coarse; trace					
very coarse sand.....	4	22			
Hole no: 144 Date drilled: 8- 2-79 Location: 135.43.33bdc Township name: Erhards Grove Alt: 1250 Alt. water table: 1242					
Roadfill.....	2	2	Sand, fine to medium; trace		
Sand, coarse to very coarse;			coarse sand.....	20.5	55.5
trace fine to medium gravel.	19	21	Sand, fine; trace medium		
Sand, very coarse; some coarse			sand.....	5.5	61
sand; trace fine to medium			Till, silty, gray.....	65	4
gravel.....	14	35			
Hole no: 145 Date drilled: 8- 2-79 Location: 134.43.8acdd Township name: Elizabeth Alt: 1250 Alt. water table: 1245					
Roadfill.....	3.5	3.5	Sand, coarse to very coarse;		
Sand, coarse to very coarse;			trace silt; trace fine		
trace fine gravel.....	69.5	73	gravel.....	23	96
			Till, sandy, gray.....	8	104
Hole no: 146 Date drilled: 8- 2-79 Location: 134.43.17aad Township name: Elizabeth Alt: 1250 Alt. water table: dry					
Roadfill.....	2	2	Till, silty, brown.....	10	12
Hole no: 147 Date drilled: 8- 2-79 Location: 134.43.16aaa Township name: Elizabeth Alt: 1280 Alt. water table: 1267					
Roadfill.....	3	3	Sand, fine to medium; trace		
Sand, coarse to very coarse;			coarse sand.....	40	90
some fine gravel.....	12	15	Sand, medium to coarse; some		
Sand, very coarse; some coarse			fine sand; trace silt.....	10	100
sand; trace fine to coarse			Till, silty, gray.....	2	102
gravel.....	35	50			

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 148 Date drilled: 8- 3-79 Location: 134.43.15bdc Township name: Elizabeth Alt: 1285 Alt. water table: 1265					
Roadfill.....	6	5	Sand, coarse; some very coarse		
Sand, coarse; some very			sand; little medium sand;		
coarse sand; little medium			trace fine sand; trace silt.	28	60
sand; trace fine sand.....	26	32	Sand, fine.....	26	86
			Till.....	1	87
Hole no: 149 Date drilled: 8- 3-79 Location: 134.43.23bbd Township name: Elizabeth Alt: 1295 Alt. water table: 1250+					
Roadfill.....	2.5	2.5	Till, sandy, brown.....	12	30
Sand, medium to coarse; trace			Till, silty, gray.....	17	47
very coarse sand.....	15.5	18			
Hole no: 150 Date drilled: 8- 6-79 Location: 134.43.23cba Township name: Elizabeth Alt: 1300 Alt. water table: 1273.5					
Roadfill.....	2	2	Sand, medium to coarse; trace		
Sand, medium to coarse; trace			very coarse sand.....	30	40
very coarse sand; trace			Sand, fine to medium; trace		
fine to medium gravel.....	8	10	silt.....	6.5	46.5
			Till, silty, gray.....	0.5	47
Hole no: 151 Date drilled: 8- 6-79 Location: 134.43.23ccd Township name: Elizabeth Alt: 1300 Alt. water table: dry					
Roadfill.....	3	3	Till, silty, black.....	9	12
Hole no: 152 Date drilled: 8- 6-79 Location: 134.43.24ddd Township name: Elizabeth Alt: 1350 Alt. water table: dry					
Roadfill.....	3	3	Till, silty, brown.....	14	17
Hole no: 153 Date drilled: 8- 6-79 Location: 136.43.24abd Township name: Elizabeth Alt: 1300 Alt. water table: dry					
Roadfill.....	2	2	Till, sandy, brown.....	15	17

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 154 Date drilled: 8- 6-79 Location: 134.43.27aab Township name: Elizabeth Alt: 1295 Alt. water table: 1287					
Roadfill.....	2	2	Till, silty, gray.....	2	27
Silt and clay.....	23	25			
Hole no: 155 Date drilled: 8- 6-79 Location: 134.43.27cab Township name: Elizabeth Alt: 1290 Alt. water table: dry					
Roadfill.....	1.5	1.5	Till, sandy, brown.....	10.5	12
Hole no: 156 Date drilled: 8- 6-79 Location: 134.43.33add Township name: Elizabeth Alt: 1260 Alt. water table: 1222					
Roadfill.....	1	1	Sand, fine to medium.....	13	49
Till, sandy, brown.....	11	12	Till.....	3	52
Sand, fine.....	24	36			
Hole no: 157 Date drilled: 8- 6-79 Location: 134.43.33add Township name: Elizabeth Alt: 1250 Alt. water table: 1226					
Roadfill.....	2	2	Sand, medium; trace coarse		
Sand, very coarse; and			sand; little fine sand.....	5	60
gravel fine.....	13	15	Sand, fine to medium.....	20	80
Sand, medium to coarse;			Silt.....	2	82
trace silt.....	40	55			
Hole no: 158 Date drilled: 8- 6-79 Location: 134.43.33bca Township name: Elizabeth Alt: 1250 Alt. water table: 1241					
Roadfill.....	2	2	Till, silty, gray.....	1	35
Silt; and gravel, fine to					
medium.....	32	34			
Hole no: 159 Date drilled: 8- 6-79 Location: 134.43.32abb Township name: Elizabeth Alt: 1240 Alt. water table: dry					
Roadfill.....	1.5	1.5	Till, sandy, gray.....	18	32
Sand, fine.....	12.5	14			

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 160 Date drilled: 8- 7-79 Location: 134.43.29dbb Township name: Elizabeth Alt: 1255 Alt. water table: 1235					
Roadfill.....	2	2	Till, sandy, brown.....	2	37
Sand, fine.....	33	35			
Hole no: 161 Date drilled: 8- 7-79 Location: 134.43.29daa Township name: Elizabeth Alt: 1265 Alt. water table: 1243+					
Roadfill.....	1.5	1.5	Silt and clay.....	7	22
Sand, very fine to fine; trace silt.....	13.5	15			
Hole no: 162 Date drilled: 8- 7-79 Location: 134.43.28bbb Township name: Elizabeth Alt: 1250 Alt. water table: 1233+					
Roadfill.....	3	3	Silt and clay.....	7	17
Swamp deposits.....	7	10			
Hole no: 163 Date drilled: 8- 7-79 Location: 134.43.21cac Township name: Elizabeth Alt: 1270 Alt. water table: 1238					
Roadfill.....	1.5	1.5	Till, silty, gray.....	5	32
Till, silty, brown.....	25.5	27			
Hole no: 164 Date drilled: 8- 7-79 Location: 134.43.21adc Township name: Elizabeth Alt: 1270 Alt. water table: 1261					
Roadfill.....	1	1	Till, sandy, gray.....	19	27
Sand, fine.....	8	7			
Hole no: 165 Date drilled: 8- 7-79 Location: 134.43.16ddc Township name: Elizabeth Alt: 1260 Alt. water table: 1257					
Roadfill.....	2	2	Sand, coarse to very coarse; trace fine gravel.....	10.5	60
Sand, medium to coarse; trace very coarse; trace fine gravel; trace fine sand.....	46.5	49.5	Till, sandy, gray.....	2	62

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 166 Date drilled: 8- 7-79 Location: 133.43.34aaa Township name: Elizabeth Alt: 1285 Alt. water table: dry					
Roadfill.....	2	2	Till, silty, brown.....	7	32
Silt and clay.....	23	25			
Hole no: 167 Date drilled: 8- 7-79 Location: 134.43.13add Township name: Elizabeth Alt: 1370 Alt. water table: 1360					
Roadfill.....	5	5	Sand, fine to medium; trace		
Sand, fine to medium; trace			very fine sand.....	21	51
coarse sand; trace fine			Sand, very fine; and silt.....	9	60
sand.....	15	20	Till, silty, gray.....	2	62
Sand, fine to medium; little					
coarse sand; trace fine					
sand.....	10	30			
Hole no: 168 Date drilled: 8- 7-79 Location: 133.43.3aba Township name: Fergus Falls Alt: 1240 Alt. water table: 1225					
Roadfill.....	2	2	Till, silty, gray.....	2	32
Sand, coarse; trace very					
coarse sand; some medium					
sand.....	18	30			
Hole no: 169 Date drilled: 8- 7-79 Location: 133.43.9aaa Township name: Fergus Falls Alt: 1240 Alt. water table: 1240+					
Roadfill.....	3	3	Till, silty, gray.....	2	27
Sand, fine.....	15	12			
Sand, medium to coarse; trace					
very coarse sand; trace fine					
to medium gravel.....	10	25			
Hole no: 170 Date drilled: 8- 7-79 Location: 133.43.9daa Township name: Fergus Falls Alt: 1245 Alt. water table: 1212.5					
Roadfill.....	1.5	1.5	Till, sandy, gray.....	4	67
Sand, medium.....	48.5	50			
Sand, medium to coarse; trace					
very coarse sand; trace					
silt.....	13	63			

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 171 Date drilled: 8- 8-79 Location: 133.43.8abb Township name: Fergus Falls Alt: 1273 Alt. water table: dry					
Roadfill.....	2	2	Till, silty, brown.....	10	12
Hole no: 172 Date drilled: 8- 8-79 Location: 133.43.5ddd Township name: Fergus Falls Alt: 1240 Alt. water table: 1223+					
Till, silty, brown.....	1.5	1.5	Till, sandy, brown.....	15.5	17
Hole no: 173 Date drilled: 8- 8-79 Location: 133.43.4cadd Township name: Fergus Falls Alt: 1210 Alt. water table: 1188+					
Topsoil.....	3	3	Till, silty, gray.....	19	22
Hole no: 174 Date drilled: 8- 8-79 Location: 133.43.4bdd Township name: Fergus Falls Alt: 1210 Alt. water table: 1183+					
Topsoil.....	1	1	Till, silty, brown.....	26	27
Hole no: 175 Date drilled: 8- 8-79 Location: 134.43.20cbd Township name: Elizabeth Alt: 1260 Alt. water table: 1258+					
Roadfill.....	1	1	Till, silty, brown.....	21	22
Hole no: 176 Date drilled: 8- 8-79 Location: 134.43.8bdd Township name: Elizabeth Alt: 1270 Alt. water table: 1348					
Roadfill.....	2	2	Sand, coarse to very coarse; little medium sand; trace fine sand.....	15	45
Sand, medium.....	17	19			
Sand, medium; trace coarse to very coarse sand.....	2	21			
Sand, medium; trace silt.....	9	30			
			Till, silty, gray.....	2	47
Hole no: 177 Date drilled: 8- 8-79 Location: 135.43.35ddd Township name: Erhards Grove Alt: 1330 Alt. water table: 1313+					
Roadfill.....	2	2	Till, silty, brown.....	15	17

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 178 Date drilled: 8- 8-79 Location: 134.43.5abb Township name: Elizabeth Alt: 1290 Alt. water table: 1353+					
Roadfill.....	4	4	Sand, fine; and silt.....	7	32
Sand, fine.....	1	25	Till, silty, gray.....	5	37
Hole no: 179 Date drilled: 8- 8-79 Location: 135.43.16cdd Township name: Erhards Grove Alt: 1280 Alt. water table: 1267+					
Roadfill.....	5	5	Till, silty, gray.....	5	17
Swamp deposits.....	7	12			
Hole no: 180 Date drilled: 8- 8-79 Location: 135.43.22bbb Township name: Erhards Grove Alt: 1274 Alt. water table: 1264					
Roadfill.....	3	3	Sand, coarse to very coarse;		
Swamp deposits.....	9	12	trace fine gravel.....	30	60
Sand, coarse to very coarse;			Till, sandy, gray.....	2	62
little silt.....	18	30			
Hole no: 181 Date drilled: 8- 8-79 Location: 136.43.27ccc Township name: Pelican Alt: 1302 Alt. water table: 1297					
Roadfill.....	2	2	Sand, fine to medium.....	25	46
Sand, medium to coarse; trace			Till, silty, gray.....	11.5	57.5
very coarse sand; trace			Till, silty, gray.....	1.5	59
fine gravel.....	17	19			
Sand, medium to coarse; trace					
very coarse sand; trace fine					
sand; trace fine gravel.....	2	21			
Hole no: 182 Date drilled: 8- 8-79 Location: 136.43.28cdd Township name: Pelican Alt: 1300 Alt. water table: 1293					
Roadfill.....	1	1	Sand, medium to coarse; trace		
Sand, medium.....	12	13	very coarse sand; trace		
Sand, coarse; trace medium			fine sand.....	13	60
sand; trace very coarse			Sand, fine to medium; trace		
sand.....	32.5	45.5	coarse sand.....	68	128
Sand, coarse; little very					
coarse sand; trace medium					
sand.....	1.5	47			

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 183 Date Drilled: 8- 9-79 Location: 137.43.11baa Township name: Scambler Alt: 1325 Alt. water table: 1323					
Roadfill.....	1.5	1.5	Sand, coarse to very coarse;		
Sand, medium to coarse; some			trace fine to medium		
very coarse sand.....	18.5	20	gravel.....	54	74
			Till, silty, gray.....	3	77
Hole no: 184 Date drilled: 8- 9-79 Location: 137.43.2ccc Township name: Scambler Alt: 1330 Alt. water table: 1324					
Roadfill.....	1.5	1.5	Sand, coarse to very coarse;		
Swamp deposits.....	9.5	11	trace fine sand; trace		
Sand, medium to coarse; trace			fine to medium gravel.....	50	70
very coarse sand; some			Sand, fine.....	6	76
fine sand.....	9	20	Sand, fine; and silt.....	1	77
Hole no: 185 Date drilled: 8- 9-79 Location: 137.43.3dcc Township name: Scambler Alt: 1370 Alt. water table: 1324					
Roadfill.....	2	2	Sand, fine to medium; trace		
Sand, fine to medium.....	19	21	coarse sand; trace silt.....	18	103
Sand, coarse; little very			Sand, fine to very fine.....	9	112
coarse sand; some medium to					
coarse gravel.....	64	85			
Hole no: 186 Date drilled: 8- 9-79 Location: 137.43.10bbc Township name: Scambler Alt: 1335 Alt. water table: 1333.5					
Roadfill.....	1.5	1.5	Sand, fine to medium.....	17	83
Sand, very coarse; little			Sand, fine.....	32	115
fine to medium gravel.....	23.5	25	Till, silty, gray.....	2	117
Sand, coarse to very coarse;					
trace fine to medium gravel.	41	66			
Hole no: 187 Date drilled: 8- 9-79 Location: 137.43.9daa Township name: Scambler Alt: 1340 Alt. water table: 1329.5					
Roadfill.....	1.5	1.5	Sand, fine to medium; trace		
Sand, fine to medium; trace			coarse sand.....	14	80
coarse sand.....	11.5	13	Sand, fine.....	25	105
Sand, medium to coarse; trace					
very coarse sand; trace fine					
gravel; trace fine sand.....	53	66			

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 188 Date drilled: 8- 9-79 Location: 137.43.9acc Township name: Scambler Alt: 1350 Alt. water table: 1299					
Roadfill.....	1	1	Sand, fine.....	44	95
Swamp deposits.....	5	6	Sand, very fine to fine.....	11	106
Sand, medium; little fine sand; trace coarse sand.....	45	51	Till, silty, gray.....	1	107
Hole no: 189 Date drilled: 8- 9-79 Location: 137.43.9bcc Township name: Scambler Alt: 1400 Alt. water table: 1361					
Roadfill.....	2	2	Sand, fine to medium; trace silt.....	26	116
Sand, medium to coarse; and gravel, fine to medium.....	20	22	Sand, fine.....	9	125
Sand, medium; trace coarse to very coarse sand.....	33	55	Till, silty, gray.....	2	127
Sand, medium to coarse; trace very coarse sand; trace fine sand; trace fine gravel.....	35	90			
Hole no: 190 Date drilled: 8-10-79 Location: 137.42.2bbb Township name: Dunn Alt: 1340 Alt. water table: 1300					
Roadfill.....	2	2	Sand, fine to medium; trace coarse sand.....	45.5	60
Sand, fine to medium.....	11.5	13.5	Till, silty, gray.....	2	62
Hole no: 191 Date drilled: 8-10-79 Location: 138.42.34ccc Township name: Lake Eunice Alt: 1340 Alt. water table: 1329					
Roadfill.....	3	3	Sand, medium; trace fine sand; trace coarse sand.....	55	106
Sand, medium to coarse; trace fine sand.....	33	36	Sand, fine to medium; trace coarse sand.....	9	115
Sand, medium to coarse; trace fine sand; trace very coarse sand.....	15	51	Till, silty, gray.....	2	117

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 192 Date drilled: 8-10-79 Location: 138.42.23dcc Township name: Lake Eunice Alt: 1385 Alt. water table: 1375					
Roadfill.....	2	2	Sand, coarse; trace fine		
Sand, medium to coarse; little very coarse sand.....	23	25	sand; trace very coarse sand; trace fine gravel.....	20	86
Sand, medium to coarse; trace fine sand.....	30	5	Till, sandy, gray.....	1	87
Sand, coarse; trace medium sand; trace very coarse sand.....	36	66			
Hole no: 193 Date drilled: 8-13-79 Location: 137.43.4bbb Township name: Scambler Alt: 1360 Alt. water table: 1352					
Roadfill.....	3	3	Sand, fine; little very fine		
Sand, fine to medium; trace very fine sand.....	29	32	sand; trace medium sand..... Sand, very fine to fine..... Till, sandy, gray.....	4 4 2	36 40 42
Hole no: 194 Date drilled: 8-13-79 Location: 137.43.5baa Township name: Scambler Alt: 1382 Alt. water table: 1356.5					
Roadfill.....	2	2	Sand, fine; trace very fine		
Sand, coarse to very coarse; and gravel, fine to coarse..	32	34	sand; trace medium sand..... Sand, coarse; little medium	10	56
Sand, fine to medium; trace coarse sand.....	12	46	sand; trace fine sand; trace very coarse sand..... Till, silty, gray.....	7 4	63 67
Hole no: 195 Date drilled: 6-13-79 Location: 138.43.31cdd Township name: Cormorant Alt: 1425 Alt. water table: 1399					
Roadfill.....	1.5	1.5	Sand, medium; trace fine		
Sand, medium to coarse; and gravel; fine to medium.....	41.5	43	sand..... Sand, very fine..... Till.....	12 20 2	60 80 82
Sand, medium to coarse; trace very coarse sand.....	5	48			

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 196 Date drilled: 8-13-79 Location: 138.44.36ddd Township name: Parke Alt: 1400 Alt. water table: 1368					
Roadfill.....	2	2	Sand, medium to coarse; trace		
Sand, coarse; trace very			fine sand.....	14.5	60
coarse sand; trace medium			Sand, coarse to very coarse;		
sand; trace fine to medium			trace medium sand; trace		
gravel.....	18	20	silt.....	24	84
Sand, fine to medium; trace			Till, silty, gray.....	3	87
coarse sand.....	6	26			
Sand, fine to medium; trace					
very coarse sand; trace					
fine gravel.....	45.5	19.5			
Hole no: 197 Date drilled: 8-13-79 Location: 138.44.36cdd Township name: Parke Alt: 1415 Alt. water table: 1372					
Roadfill.....	2	2	Sand, medium to coarse; trace		
Sand, medium to coarse; and			very coarse sand.....	21	61
gravel, fine to coarse.....	16	18	Sand, fine.....	15.5	76.5
Sand, coarse; little very			Till, silty, gray.....	0.5	77
coarse sand; trace medium					
sand.....	22	40			
Hole no: 198 Date drilled: 8-13-79 Location: 138.44.36ccc Township name: Parke Alt: 1405 Alt. water table: 1368					
Roadfill.....	2.5	2.5	Sand, coarse; little very		
Sand, medium to coarse; and			coarse sand; trace silt.....	15	75
gravel; fine sand; medium to coarse; trace					
Sand, medium to coarse; and			very coarse sand; little		
gravel, fine to coarse.....	3.5	27	fine sand.....	34	109
Sand, very coarse; some			Sand, fine.....	21	130
medium to coarse sand;			Till.....	2	132
trace fine gravel.....	33	60			
Hole no: 199 Date drilled: 8-14-79 Location: 138.43.29caa Township name: Cormorant Alt: 1390 Alt. water table: 1373					
Roadfill.....	1.5	1.5	Sand, coarse to very coarse;		
Swamp deposits.....	2.5	4	and gravel, fine to medium..	16	41
Sand, medium to coarse; and			Till, silty, gray.....	1	42
gravel, fine to medium.....	19	25			

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 200 Date drilled: 8-14-79 Location: 138.43.28dad Township name: Cormorant Alt: 1360 Alt. water table: 1355					
Roadfill.....	2	2	Sand, medium to coarse; trace		
Sand, coarse; trace very			fine sand; trace very		
coarse sand; some fine to			coarse sand.....	9	39
medium sand.....	28	30	Till, silty, gray.....	1	40
Hole no: 201 Date drilled: 8-14-79 Location: 138.43.34bbc Township name: Cormorant Alt: 1355 Alt. water table: 1333					
Roadfill.....	2.5	2.5	Sand, medium to coarse; trace		
Sand, fine to medium; trace			fine sand; trace very		
coarse sand.....	10.5	13	coarse sand.....	48	96
Sand, fine to medium; trace			Sand, medium; some coarse		
coarse sand; trace very			sand; trace very coarse		
coarse sand; trace fine			sand.....	15	111
gravel.....	5	17	Till, silty, gray.....	1	112
Sand, coarse; trace very					
coarse sand; trace medium					
sand.....	31	48			
Hole no: 202 Date drilled: 8-14-79 Location: 138.43.33ddd Township name: Cormorant Alt: 1395 Alt. water table: 1355					
Roadfill.....	2	2	Sand, coarse to very coarse;		
Sand, coarse to very coarse;			trace fine to medium sand;		
some medium sand; trace			trace fine gravel.....	12	90
fine gravel.....	53	55	Till, silty, gray.....	2	92
Sand, coarse; trace very					
coarse sand; trace medium					
sand; trace silt.....	23	78			
Hole no: 203 Date drilled: 8-14-79 Location: 137.43.3acc Township name: Scambler Alt: 1370 Alt. water table: 1357.5					
Roadfill.....	1.5	1.5	Sand, medium; trace fine		
Sand, medium to coarse; and			sand; trace coarse sand.....	19	70
gravel, fine to medium.....	18.5	20	Sand, fine to medium.....	30	100
Sand, coarse; trace very			Sand, fine to medium; trace		
coarse sand; trace medium			coarse sand.....	30	130
sand; trace fine sand.....	15	35	Sand, fine; little medium		
Sand, medium to coarse; trace			sand.....	20	150
very coarse sand.....	16	51	Till, silty, gray.....	2	152

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 204 Date drilled: 8-14-79 Location: 138.43.35bcb Township name: Cormorant Alt: 1360 Alt. water table: 1353.5					
Roadfill.....	1	1	Sand, very fine.....	16	52
Sand, coarse to very coarse; trace fine to medium sand; trace fine gravel.....	35	36	Sand, very fine; and silt..... Till, silty, gray.....	7 3	59 62
Hole no: 205 Date drilled: 8-14-79 Location: 138.43.7abb Township name: Cormorant Alt: 1370 Alt. water table: 1355					
Roadfill.....	3	3	Sand, fine to medium; trace coarse to very coarse sand..	25	46
Sand, medium to very coarse; trace fine gravel.....	18	21	Till, silty, gray.....	1	47
Hole no: 206 Date drilled: 8-14-79 Location: 138.44.12aad Township name: Parke Alt: 1370 Alt. water table: 1357.5					
Roadfill.....	1	1	Sand, very fine to fine.....	21	51
Sand, fine to medium; trace fine to medium gravel.....	19	20	Till, silty, gray.....	1	52
Sand, medium to coarse; trace fine sand; trace very coarse sand.....	10	30			
Hole no: 207 Date drilled: 8-15-79 Location: 138.42.23ddc Township name: Lake Eunice Alt: 1390 Alt. water table: 1342					
Roadfill.....	2	2	Sand, medium; trace coarse sand; trace fine sand.....	7.5	56.5
Sand, medium to coarse; trace very coarse sand.....	24	26	Sand, fine to medium.....	9.5	66
Sand, medium to coarse; trace fine gravel.....	9	35	Sand, medium; little coarse sand; trace fine sand.....	24	90
Sand, medium to coarse; trace fine sand; trace very coarse sand.....	14	49	Till, silty, gray.....	2	92

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 208 Date drilled: 8-15-79 Location: 138.43.36aaa Township name: Cormorant Alt: 1365 Alt. water table: 1350					
Roadfill.....	3	3	Sand, coarse to very coarse;		
Sand, medium to coarse; trace			trace fine to medium sand...	19.5	51
very coarse sand.....	13	16	Sand, medium to coarse; trace		
Sand, coarse; trace fine sand;			fine sand; trace very		
trace very coarse sand.....	15.5	31.5	coarse sand.....	23	74
			Till, silty, gray.....	3	77
Hole no: 209 Date drilled: 8-15-79 Location: 138.42.19ddc Township name: Lake Eunice Alt: 1380 Alt. water table: dry					
Roadfill.....	1	1	Till, sandy, brown.....	16	17
Hole no: 210 Date drilled: 8-15-79 Location: 138.43.6daa Township name: Cormorant Alt: 1410 Alt. water table: 1398+					
Roadfill.....	1	1	Till, silty, brown.....	11	12
Hole no: 211 Date drilled: 8-15-79 Location: 138.43.18cbb Township name: Cormorant Alt: 1380 Alt. water table: 1364					
Roadfill.....	3	3	Sand, coarse to very coarse;		
Swamp deposits.....	9	12	trace fine to medium		
Sand, medium to coarse; and			gravel.....	6	37
silt.....	19	31	Sand, very fine to fine.....	3	40
Hole no: 212 Date drilled: 8-15-79 Location: 138.44.13add Township name: Parke Alt: 1410 Alt. water table: 1364.5					
Roadfill.....	2	2	Sand, coarse; trace medium		
Sand, medium to coarse; and			sand.....	18	55
gravel, fine to medium.....	18	20	Till.....	2	57
Sand, fine to medium; trace					
very fine sand.....	7	37			

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 213 Date drilled: 8-16-79 Location: 137.43.16abc Township name: Scambler Alt: 1390 Alt. water table: 1357					
Topsoil.....	3	3	Sand, fine; trace medium		
Sand, medium to coarse; trace			sand; trace very fine sand..	35	95
very coarse sand; trace			Sand, very fine to fine;		
fine to medium gravel.....	34	37	trace medium sand.....	15	110
Sand, fine to medium; little			Silt; and sand, very fine.....	14	124
coarse sand.....	23	60	Till, silty, gray.....	3	127
Hole no: 214 Date drilled: 8-16-79 Location: 137.43.17bdc Township name: Scambler Alt: 1380 Alt. water table: 1375					
Roadfill.....	1.5	1.5	Till, silty, gray.....	2	42
Sand, medium to coarse; trace					
fine sand; trace very					
coarse sand.....	38.5	40			
Hole no: 215 Date drilled: 8-16-79 Location: 137.43.17bcc Township name: Scambler Alt: 1388 Alt. water table: 1378					
Roadfill.....	5	5	Sand, fine to medium; some		
Sand, medium to coarse; some			coarse sand.....	35	80
very coarse sand.....	17	23	Sand, fine.....	21	101
Sand, fine to medium; little			Till.....	2	103
coarse sand.....	20	43			
Sand, fine to medium; little					
coarse sand; trace very					
coarse sand.....	2	45			
Hole no: 216 Date drilled: 8-16-79 Location: 137.43.18dbc Township name: Scambler Alt: 1400 Alt. water table: 1386					
Roadfill.....	2	2	Sand, fine to medium; trace		
Sand, medium to coarse; trace			silt; trace very fine sand;		
very coarse sand.....	18	20	little coarse to very		
Sand, fine to medium; trace			coarse sand.....	38	95
coarse to very coarse sand..	20	40	Till, silty, gray.....	2	97
Sand, fine to medium; trace					
silt; trace coarse to very					
coarse sand.....	17	57			

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 217 Date drilled: 8-16-79 Location: 137.43.18cbc Township name: Scambler Alt: 1390 Alt. water table: 1384					
Roadfill.....	1	1	Sand, medium; trace coarse		
Sand, coarse to very coarse; trace fine to medium sand...	29	30	sand; trace very fine to fine sand.....	30	127
Sand, medium to coarse; trace very coarse sand; trace fine sand.....	67	97			
Hole no: 218 Date drilled: 8-16-79 Location: 138.43.21acd Township name: Cormorant Alt: 1370 Alt. water table: 1354					
Roadfill.....	2	2	Sand, coarse to very coarse; little fine gravel; trace fine to medium sand.....	13	45
Sand, medium to coarse; trace very coarse sand; trace fine gravel.....	15	17	Sand, fine to medium.....	10	55
Sand, coarse to very coarse; and fine sand.....	15	32	Sand, fine.....	5	60
			Till, silty, gray.....	2	62
Hole no: 219 Date drilled: 8-17-79 Location: 138.41.13aad Township name: Lakeview Alt: 1350 Alt. water table: 1342					
Roadfill.....	1	1	Sand, coarse; little medium sand; trace very coarse sand.....	22	58
Sand, coarse; trace very fine sand.....	29	30	Sand, medium to coarse; trace very coarse sand; trace fine sand.....	22	80
Sand, medium to coarse; trace very coarse sand; trace fine sand.....	6	36	Till, sandy, gray.....	2	82
Hole no: 220 Date drilled: 8-17-79 Location: 138.41.24aaa Township name: Lakeview Alt: 1360 Alt. water table: 1357					
Roadfill.....	2	2	Till, silty, gray.....	4	55
Sand, coarse to very coarse; little medium sand; trace fine sand.....	49	51			

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 221 Date drilled: 8-17-79 Location: 138.40.20abd Township name: Burlington Alt: 1400 Alt. water table: 1380					
Roadfill.....	4	4	Sand, medium to coarse; trace		
Sand, coarse; some medium			very coarse sand; trace		
sand; trace very coarse			fine gravel.....	10	60
sand.....	28	32	Sand, fine to medium; trace		
Sand, medium to coarse.....	18	50	coarse sand.....	8	68
			Till.....	4	72
Hole no: 222 Date drilled: 8-17-79 Location: 139.41.26ddd Township name: Detroitnt Alt: 1350 Alt. water table: dry					
Roadfill.....	3	3	Till, silty, gray.....	2	17
Swamp deposits.....	12	15			
Hole no: 223 Date drilled: 8-17-79 Location: 139.41.25cdc Township name: Detroit Alt: 1370 Alt. water table: 1368					
Roadfill.....	1.5	1.5	Sand, medium to coarse.....	16	36
Swamp deposits.....	18.5	20	Till.....	3	39
Hole no: 224 Date drilled: 9-26-78 Location: 139.41.22dad Township name: Detroit Alt: 1355 Alt. water table: 1352					
Topsoil.....	2	2	Sand, very fine to fine.....	25	65
Sand, fine to coarse; and			Till, sandy, brown.....	2	67
gravel, fine to coarse.....	38	40			
Hole no: 225 Date drilled: 9-26-78 Location: 139.41.3abb Township name: Detroit Alt: 1421 Alt. water table: dry					
Topsoil.....	2	2	Till.....	15	17
Hole no: 226 Date drilled: 9-26-78 Location: 139.41.3aaa Township name: Detroit Alt: 1380 Alt. water table: 1368					
Topsoil.....	2	2	Sand, medium to coarse; and		
Sand, fine to medium; trace			gravel, fine to medium.....	21	51
very coarse sand.....	28	30	Till.....	1	52

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 227 Date drilled: 9-28-78 Location: 139.41.1aaa Township name: Detroit Alt: 1455 Alt. water table: dry					
Topsoil.....	2	2	Till.....	10	12
Hole no: 228 Date drilled: 9-28-78 Location: 139.41.3acc Township name: Detroit Alt: 1390 Alt. water table: dry					
Topsoil.....	2	2	Till.....	9	22
Sand, fine.....	11	13			
Hole no: 229 Date drilled: 9-28-78 Location: 139.41.3acc Township name: Detroit Alt: 1390 Alt. water table: 1364					
Topsoil.....	2	2	Sand, fine to medium; trace		
Sand, medium to coarse.....	9	11	coarse sand.....	9	35
Till, sandy, brown.....	15	26	Till.....	2	37
Hole no: 230 Date drilled: 9-27-78 Location: 139.40.18baa Township name: Erie Alt: 1425 Alt. water table: dry					
Topsoil.....	1	1	Till.....	31	32
Hole no: 231 Date drilled: 9-27-78 Location: 139.41.13aaa Township name: Detroit Alt: 1380 Alt. water table: dry					
Topsoil.....	2	2	Till, sandy, brown.....	15	17
Hole no: 232 Date drilled: 9-27-78 Location: 139.40.30bdd Township name: Erie Alt: 1400 Alt. water table: dry					
Topsoil.....	2	2	Silt; and sand, medium to		
Till, sandy, gray.....	8	10	coarse.....	13	23
			Till.....	1	24
Hole no: 233 Date drilled: 9-27-78 Location: 138.41.1aca Township name: Lakeview Alt: 1395 Alt. water table: dry					
Topsoil.....	1	1	Till.....	6	7

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 234 Date drilled: 9-27-78 Location: 138.40.19bcc Township name: Burlington Alt: 1390 Alt. water table: 1362					
Roadfill.....	2	2	Sand, fine to medium; trace		
Sand, medium; and gravel,			coarse sand.....	19	44
medium to coarse.....	25	23	Till.....	3	47
Hole no: 235 Date drilled: 9-28-78 Location: 138.41.22bbb Township name: Lakeview Alt: 1353 Alt. water table: 1334					
Topsoil.....	2	2	Sand, fine; some medium sand;		
Sand, medium to coarse; trace			trace coarse sand.....	19	55
very fine sand; trace very			Sand, fine; trace medium		
coarse sand; trace fine			sand.....	5	60
gravel.....	20	22	Sand, fine; some very fine		
Sand, fine to coarse; trace			sand.....	20	80
very coarse sand; trace			Sand, fine to medium.....	5	85
fine gravel.....	14	36	Till.....	2	87
Hole no: 236 Date drilled: 9-28-78 Location: 138.42.29dda Township name: Lake Eunice Alt: 1420 Alt. water table: 1335					
Topsoil.....	1	1	Sand, medium to coarse;		
Sand, fine to medium; some			trace fine sand.....	46	131
coarse to very coarse sand;			Till.....	1	132
trace fine gravel.....	84	85			
Hole no: 237 Date drilled: 10- 3-78 Location: 138.43.26bda Township name: Cormorant Alt: 1380 Alt. water table: dry					
Topsoil.....	2	2	Till.....	2	17
Sand, fine to coarse; trace					
coarse gravel.....	13	15			
Hole no: 238 Date drilled: 10- 3-78 Location: 138.43.26bdd Township name: Cormorant Alt: 1360 Alt. water table: dry					
Topsoil.....	2	2	Till, sandy, brown.....	21	23

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 239 Date drilled: 10- 3-78 Location: 138.43.26bca Township name: Cormorant Alt: 1380 Alt. water table: dry					
Topsoil.....	2	2	Till.....	2	27
Sand, fine to medium; some fine gravel.....	23	25			
Hole no: 240 Date drilled: 10- 3-78 Location: 137.43.6aaa Township name: Scambler Alt: 1385 Alt. water table: 1358.5					
Roadfill.....	2	2	Sand, medium to very coarse; trace fine to medium gravel.	25	66
Sand, medium to coarse; and gravel, medium to coarse....	39	41	Till.....	2	68
Hole no: 241 Date drilled: 10- 4-78 Location: 137.43.27acb Township name: Scambler Alt: 1340 Alt. water table: 1326.5					
Topsoil.....	2	2	Sand, fine.....	37	49
Sand, fine; some medium to coarse sand.....	10	12	Till.....	3	52
Hole no: 242 Date drilled: 10- 4-78 Location: 137.43.17dda Township name: Scambler Alt: 1390 Alt. water table: 1364.5					
Swamp deposits.....	2	2	Sand, medium to very coarse; trace fine sand.....	40	90
Sand, fine to medium; trace coarse sand.....	24	26	Till.....	2	92
Sand, medium to coarse.....	24	50			
Hole no: 243 Date drilled: 10- 5-78 Location: 135.43.10cab Township name: Erhards Grove Alt: 1310 Alt. water table: dry					
Topsoil.....	2	2	Till, sandy, brown.....	15	17
Hole no: 244 Date drilled: 10- 5-78 Location: 135.43.9bdd Township name: Erhards Grove Alt: 1291 Alt. water table: 1274.5					
Topsoil.....	2	2	Till.....	1	87
Sand, medium to very coarse; and gravel, fine to very coarse.....	84	86			

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 245 Date drilled: 10- 5-78 Location: 135.43.16cdc Township name: Erhards Grove Alt: 1300 Alt. water table: 1292					
Topsoil.....	2	2	Sand, medium to very coarse...	14	26
Clay.....	5	7	Sand, fine to medium.....	19	45
Silt and sand, fine.....	5	12	Till.....	2	47
Hole no: 246 Date drilled: 10-24-78 Location: 139.41.15dca Township name: Detroit Alt: 1360 Alt. water table: 1346					
Topsoil.....	2	2	Sand, fine to medium.....	20	47
Sand, medium to coarse; trace very coarse sand.....	25	27	Silt and clay.....	10	57
Hole no: 247 Date drilled: 10-24-78 Location: 138.43.36cdc Township name: Cormorant Alt: 1350 Alt. water table: 1349.5					
Topsoil.....	2	2	Till.....	2	27
Sand, fine to medium; trace coarse sand; some medium to coarse gravel.....	23	25			
Hole no: 248 Date drilled: 10-24-78 Location: 135.43.4bbb Township name: Erhards Grove Alt: 1320 Alt. water table: dry					
Topsoil.....	2	2	Till.....	15	17
Hole no: 249 Date drilled: 10-24-78 Location: 136.43.33ddd Township name: Pelican Alt: 1290 Alt. water table: 1285					
Swamp deposits.....	2	2	Sand, medium to very coarse; and gravel, fine.....	54	76
Sand, medium to coarse.....	20	22	Till.....	1	77
Hole no: 250 Date drilled: 10-25-78 Location: 136.43.23dbb Township name: Pelican Alt: 1325 Alt. water table: 1310					
Topsoil.....	2	2	Till.....	2	62
Sand, fine to very coarse; trace fine to medium gravel.....	58	60			

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 251 Date drilled: 10-25-78 Location: 134.43.33add Township name: Erhards Grove Alt: 1300 Alt. water table: 1279.5					
Topsoil.....	7	7	Sand, fine to medium.....	52	70
Till, sandy, brown.....	11	18	Till.....	2	72
Hole no: 252 Date drilled: 10-25-78 Location: 134.43.8daa Township name: Elizabeth Alt: 1267 Alt. water table: 1247					
Topsoil.....	2	2	Till.....	2	37
Sand, medium to very coarse; trace fine grave.....	33	35			
Hole no: 253 Date drilled: 10-26-78 Location: 134.43.17ddd Township name: --- Alt: 1290 Alt. water table: dry					
Topsoil.....	2	2	Till.....	1	17
Sand, medium to coarse.....	14	16			
Hole no: 254 Date drilled: 7-29-71 Location: 139.41.33ccc Township name: Detroit Alt: 1354 Alt. water table: 1339					
Sand and gravel.....	20	20	Till.....	4	24
Hole no: 255 Date drilled: 7-28-71 Location: 139.41.29bbc Township name: Detroit Alt: 1380 Alt. water table: 1351					
Silt; and sand, very fine.....	4	4	Sand, fine to medium; some coarse sand and fine gravel.....	35	39
Hole no: 256 Date drilled: 9-23-70 Location: 139.41.29bbd Township name: Detroit Alt: 1365 Alt. water table: 1353					
Topsoil.....	1	1	Sand, coarse, slightly dirty, orange.....	6	19
Sand, coarse, silty, orange-brown.....	12	13			

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 257 Date drilled: 10-25-72 Location: 139.41.32aaa Township name: Detroit Alt: 1361 Alt. water table: 1349					
Topsoil, black-brown.....	2	2	Sand and gravel; fine to		
Sand and gravel.....	2	4	moderately coarse.....	9.5	17.5
Silt, sandy, dirty, beige.....	4	8	Till, clayey, gray...5.....	22.5	
Hole no: 258 Date drilled: 8- 5-65 Location: 137.43.27dcc Township name: Scambler Alt: 1360 Alt. water table: 1331					
Sand, fine to medium.....	6	6	Sand, fine.....	30	57
Sand, coarse.....	21	27			
Hole no: 259 Date drilled: 8- 5-65 Location: 137.43.27dcc Township name: Scambler Alt: 1360 Alt. water table: 1331					
Sand, medium.....	7	7	Sand, very fine.....	33	57
Sand, fine.....	17	24			
Hole no: 260 Date drilled: 8- 4-65 Location: 137.43.27ccb Township name: Scambler Alt: 1392 Alt. water table: 1338					
Till.....	7	7	Sand, medium.....	15	37
Sand, fine.....	5	12	Sand, coarse.....	10	47
Sand, coarse.....	10	22	Sand, medium.....	10	57
Hole no: 261 Date drilled: 8- 4-65 Location: 137.43.28cda Township name: Scambler Alt: 1390 Alt. water table: 1335					
Topsoil.....	2	2	Sand, fine.....	27	57
Clay, silty.....	28	30			
Hole no: 262 Date drilled: 8- 4-65 Location: 137.43.27dad Township name: Scambler Alt: 1398 Alt. water table: 1340					
Till, silty.....	57	57			
Hole no: 263 Date drilled: 8- 4-65 Location: 137.43.26dcc Township name: Scambler Alt: 1375 Alt. water table: dry					
Sand, fine.....	52	52	Sand and gravel.....	5	57

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 264 Date drilled: 8- 4-65 Location: 137.43.36bbb Township name: Scambler Alt: 1374 Alt. water table: 1365					
Sand, fine.....	12	12	Till, sandy.....	26	48
Clayey sand.....	5	17	Sand, coarse; and gravel.....	9	57
Sand, fine.....	5	22			
Hole no: 265 Date drilled: 8- 4-65 Location: 137.43.25adc Township name: Scambler Alt: 1340 Alt. water table: 1335					
Sand, coarse; and gravel.....	42	42	Till.....	15	57
Hole no: 266 Date drilled: 8- 5-65 Location: 137.43.36aaa Township name: Scambler Alt: 1339 Alt. water table: 1325					
Till.....	7	7	Sand, coarse; and medium		
Sand, coarse.....	5	12	gravel.....	25	42
Gravel, medium.....	5	17	Till.....	15	57
Hole no: 267 Date drilled: 8- 4-65 Location: 137.42.31aab Township name: Dunn Alt: 1340 Alt. water table: dry					
Till, silty and clayey, brown..	22	22			
Hole no: 268 Date drilled: 8- 6-65 Location: 137.42.6aaa Township name: Dunn Alt: 1371 Alt. water table: 1329					
Sand, coarse.....	27	27	Sand, medium.....	30	57
Hole no: 269 Date drilled: 8- 6-65 Location: 137.43.1ada Township name: Scambler Alt: 1340 Alt. water table: 1322					
Till.....	17	17	Sand, fine clean.....	20	57
Silt, gray.....	20	37			
Hole no: 270 Date drilled: 8- 6-65 Location: 137.43.3aad Township name: Scambler Alt: 1350 Alt. water table: dry					
Sand, medium.....	12	12	Sand, coarse.....	57	45

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 271 Date drilled: 8- 7-65 Location: 136.43.1ccc Township name: Pelican Alt: 1355 Alt. water table: 1325					
Sand, coarse.....	20	20	Sand, coarse.....	18	40
Sand, medium.....	2	22	Silt.....	17	57
Hole no: 272 Date drilled: 8- 7-65 Location: 136.43.4ddd Township name: Pelican Alt: 1390 Alt. water table: 1374					
Sand, fine.....	42	42	Silt.....	10	57
Sand, silty.....	5	47			
Hole no: 273 Date drilled: 8-16-65 Location: 134.43.32bbd Township name: Elizabeth Alt: 1320 Alt. water table: 1290					
Sand, fine.....	15	15	Till.....	32	47
Hole no: 274 Date drilled: 8-10-65 Location: 133.43.3aad Township name: Fergus Falls Alt: 1320 Alt. water table: 1293					
Till, brown.....	27	27	Till, gray.....	10	37
Hole no: 275 Date drilled: 8-10-65 Location: 133.43.14cbc Township name: Fergus Falls Alt: 1247 Alt. water table: dry					
Rock.....	17	17			
Hole no: 276 Date drilled: 8-10-65 Location: 134.42.32ccc Township name: Friberg Alt: 1375 Alt. water table: 1330					
Sand, fine.....	7	7	Sand, coarse.....	33	45
Sand, medium.....	5	12			
Hole no: 277 Date drilled: 8-11-65 Location: 134.43.13acd Township name: Elizabeth Alt: 1320 Alt. water table: dry					
Sand, fine.....	22	22	Till, sandy.....	21	47
Sand, clayey.....	6	28			

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 278 Date drilled: 8-11-65 Location: 134.43.14bbb Township name: Elizabeth Alt: 1300 Alt. water table: 1260					
Sand, coarse.....	30	30	Sand, coarse.....	27	62
Sand, coarse; and gravel.....	5	35	Sand, coarse; and gravel.....	28	90
Hole no: 279 Date drilled: 8-12-65 Location: 133.42.30cca Township name: Aurdal Alt: 1278 Alt. water table: dry					
Sand, medium to coarse.....	8	8	Silt.....	18	20
Sand, fine, silty.....	4	12	Till.....	32	12
Hole no: 280 Date drilled: 8-12-65 Location: 133.42.29bbb Township name: Aurdal Alt: 1260 Alt. water table: 1250					
Sand, medium.....	12	12	Sand, silty.....	4	32
Sand, coarse; and gravel.....	14	26	Till, gray.....	20	52
Sand, fine.....	2	28			
Hole no: 281 Date drilled: 8-17-65 Location: 133.42.20bbb Township name: Aurdal Alt: 1288 Alt. water table: 1240					
Sand, medium.....	8	8	Sand, coarse.....	10	42
Sand, medium to coarse.....	2	10	Sand, medium.....	5	47
Sand, fine.....	5	15	Sand, coarse; and gravel.....	40	87
Sand, medium.....	17	32			
Hole no: 282 Date drilled: 7-19-77 Location: 140.41.34baa Township name: Richwood Alt: 1435 Alt. water table: 1410					
Topsoil, black.....	2	2	Sand, medium to coarse; much clay and silt.....	30	82
Till, sandy, brown.....	15	17	Till, sandy, gray.....	15	97
Till, sandy, gray.....	35	52			
Hole no: 283 Date drilled: 7-19-77 Location: 140.41.26ccd Township name: Richwood Alt: 1422 Alt. water table: 1391					
Sand, coarse; and medium to coarse gravel.....	7	7	Sand, medium, clean.....	26	47
Sand, fine; clayey; some gravel.....	5	12	Sand, coarse to medium; some gravel layers.....	34	81
Sand, fine to medium; some gravel.....	5	17	Sand, clayey, soupy to sandy clay.....	21	102
Sand, fine to very fine; some gravel.....	5	21	Clay, sandy, stiff.....	22	124
			Till, clayey, gray.....	8	132

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 284 Date drilled: 7-20-77 Location: 140.41.35ada Township name: Richwood Alt: 1400 Alt. water table: 1395					
Topsoil, brownish-gray.....	2	2	Sand, coarse to very coarse;		
Sand, coarse.....	10	12	much clay.....	11	47
Sand, coarse to very coarse;			Clay, sandy with thin layers		
slightly clayey.....	24	36	of coarse sand.....	16	63
			Till.....	9	72
Hole no: 285 Date drilled: 7-20-77 Location: 138.40.20bbc Township name: Burlington Alt: 1380 Alt. water table: 1359					
Sand, coarse; and gravel,			Sand, coarse to very coarse;		
very coarse, brown.....	17	17	gray.....	10	47
Sand, coarse to very coarse;			Sand, coarse, clayey.....	9	56
brown.....	20	37	Clay, silty, gray.....	4	60
			Silt; and sand, very fine.....	2	62
Hole no: 286 Date drilled: 7-20-77 Location: 138.41.22aaa Township name: Detroit Lakes Alt: 1385 Alt. water table: 1338					
Sand, very fine, silty; some			Sand, fine to coarse, clayey..	7	59
gravel, dark brown.....	14	14	Sand, coarse, much clay.....	8	67
Sand, medium to coarse; clean;			Clay, silty, with sandy		
gravel layers at 30 and			layers; coarse sand layer		
34 feet.....	38	52	at bottom.....	50	117
Hole no: 287 Date drilled: 7-21-77 Location: 138.42.26cda Township name: Lake Eunice Alt: 1390 Alt. water table: 1336					
Sand, medium to coarse; some			Sand, coarse to very coarse;		
gravel layers, brown.....	20	20	slightly silty.....	45	97
Sand, medium to coarse;			Sand, coarse, clean.....	10	107
clayey, gray.....	12	32	Sand, coarse to very coarse;		
Sand, coarse, clean, gray.....	10	42	a little clay.....	15	122
Sand, coarse to medium; some			Clay, gray.....	5	127
gravel, gray.....	10	52			

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 288 Date drilled: 7-21-77 Location: 138.42.29dda Township name: Lake Eunice Alt: 1420 Alt. water table: 1350					
Topsoil.....	2	2	Sand, medium to coarse, gray..	25	97
Sand, medium to very coarse; brown.....	50	52	Sand, fine to coarse, gray....	10	107
Sand, medium, brown.....	10	62	Sand, fine to very fine, gray.	10	117
Sand, medium to very coarse; brown.....	10	72	Sand, fine to very fine, silty.....	15	132
			Sand, very fine, silty.....	15	147
Hole no: 289 Date drilled: 7-21-77 Location: 138.43.26dba Township name: Cormorant Alt: 1361 Alt. water table: 1327					
Topsoil, gravelly.....	2	2	Sand; and gravel, coarse		
Silt, clayey, sandy, brown....	10	12	to fine.....	2	41
Till, gray; thin medium gravel layers at 30 feet....	27	39	Till, gray.....	6	47
Hole no: 290 Date drilled: 7-22-77 Location: 138.43.29dad Township name: Cormorant Alt: 1280 Alt. water table: 1364					
Soil, silty, black.....	2	2	Sand; gravel, very coarse to fine, clean.....	10	32
Sand, medium to coarse; and gravel.....	10	12	Sand; gravel, very coarse to fine; some silt and clay, gray.....	10	42
Sand, coarse; and coarse gravel.....	5	17	Clay, gravel, and sand.....	9	51
Sand, coarse, clean.....	5	22	Till, gray.....	11	62
Hole no: 291 Date drilled: 7-25-77 Location: 138.43.18cda Township name: Cormorant Alt: 1420 Alt. water table: 1359					
Topsoil, silty, black.....	3	3	Sand, medium to coarse; brown.....	25	77
Gravel, fine to medium.....	2	5	Sand, medium to very coarse; brown.....	15	92
Sand, medium to coarse; gravel, fine to medium; coarse gravel below 20 feet.	22	27	No sample (drills like clay, but no clay on bit).....	10	102
Sand, medium, clean, brown....	25	52			

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 292 Date drilled: 7-25-77 Location: 138.44.34ddd Township name: Tansem Alt: 1400 Alt. water table: 1356					
Topsoil, sandy; some gravel, dark brown.....	2	2	Sand, medium to fine; thin gravel layers at 42, 47, and 55 feet.....	20	57
Sand, fine to fine gravel; some cobbles.....	5	7	Sand, medium to very coarse; some gravel, gray.....	15	72
Sand, medium to coarse; some coarse gravel.....	10	17	Sand, coarse to very coarse; clean.....	25	97
Sand, fine to very coarse; and medium gravel.....	20	37	Sand, fine, dirty.....	25	122
Hole no: 293 Date Drilled: 7-26-77 Location: 138.44.24bca Township name: Tansem Alt: 1382 Alt. water table: 1366					
Clay, silty, sandy, brown.....	7	7	Sand, fine to medium; silty, dirty, gray.....	15	32
Sand, very fine, silty, brown.....	10	17	Till with sandy layers, gray..	10	42
Hole no: 294 Date drilled: 7-26-77 Location: 136.43.10aaa Township name: Pelican Alt: 1322 Alt. water table: 1314					
Topsoil, black.....	2	2	Gravel; and coarse sand, clean.....	14	72
Sand, medium to coarse, brown.	4	6	Sand, coarse; and fine gravel.....	10	82
Sand, coarse to very coarse; dirty, brown.....	16	22	Sand and coarse gravel, clayey, gray.....	7	89
Sand, coarse to fine gravel, brown.....	25	47	Clay, gray.....	8	97
Sand, coarse to very coarse, clean.....	11	58			
Hole no: 295 Date drilled: 7-27-77 Location: 136.43.4dba Township name: Pelican Alt: 1380 Alt. water table: 1361					
Topsoil, dark brown.....	2	2	Sand, medium to very coarse; clean brown.....	17	42
Sand, fine to medium; dark brown.....	5	7	Sand, very fine to fine; gray.	3	45
Sand, very fine to fine with clay.....	10	17	Clay, silty, gray.....	16	61
Sand, fine to coarse, dirty...	8	25	Clay, gray.....	6	67

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 296 Date drilled: 7-27-77 Location: 136.43.13ccb Township name: Pelican Alt: 1350 Alt. water table: 1318					
Topsoil, dark brown.....	2	2	Sand, medium to very coarse; well sorted, brown.....	15	37
Clay, clean, brown.....	5	7	Sand, coarse to very coarse, clean.....	20	57
Sand, fine to medium; light brown.....	5	12	Sand, coarse to very coarse; a little silt and clay.....	8	65
Sand, medium, well sorted, brown.....	10	22	Silt, gray.....	2	67
Hole no: 297 Date drilled: 7-27-77 Location: 135.43.33acd Township name: Erhards Grove Alt: 1270 Alt. water table: 1261					
Topsoil.....	0	2	Sand and gravel, slightly dirty.....	5	32
Sand, medium to very coarse; some gravel layers.....	1	12	Sand, coarse to very coarse; very dirty.....	5	37
Gravel, fine to medium; clean, coarser towards base.....	15	27	Silt, clean, clayey towards base.....	10	47
Hole no: 298 Date drilled: 7-28-77 Location: 135.43.32cad1 Township name: Erhards Grove Alt: 1275 Alt. water table: 1266					
Topsoil, sandy.....	2	2	Sand, medium to very coarse; gravel, slightly dirty; cobble layers; and boulder at 39 feet.....	27	39
Sand, medium to fine.....	3	5			
Gravel, medium; and sand, medium to very coarse.....	7	12			
Hole no: 299 Date drilled: 7-28-77 Location: 135.43.32cad2 Township name: Erhards Grove Alt: 1275 Alt. water table: dry					
Topsoil.....	2	2	Boulder.....	0	8
Sand and gravel.....	6	8			
Hole no: 300 Date drilled: 7-28-77 Location: 134.43.14adb Township name: Elizabeth Alt: 1280 Alt. water table: 1253					
Topsoil.....	2	2	Sand, coarse to fine grained; clean gray.....	30	61
Silt; and sand, very fine.....	5	7	Silt, clean.....	2	63
Sand, fine to very coarse; and much clay.....	10	17	Silt and clay, soupy.....	7	70
Sand, mostly fine; some silt and clay.....	8	25	Silt and very fine sand, dirty.....	22	92
Sand, mostly medium; some gravel; some silt.....	4	31	Silt and very fine sand, clean.....	20	112

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 301 Date drilled: 7-28-77 Location: 134.43.21dbb Township name: Elizabeth Alt: 1262 Alt. water table: 1246					
Silt, sand, and gravel.....	2	2	Silt and fine sand.....	4	27
Sand, fine to medium; gravel and boulders; thin silty layer at 15 feet.....	21	23	Silt and clay.....	10	37
			Clay and silt; layers of very coarse sand and gravel.....	10	47
Hole no: 302 Date drilled: 7-28-77 Location: 134.43.30acd Township name: Elizabeth Alt: 1255 Alt. water table: 1238					
Topsoil.....	2	2	Till, brownish-gray.....	5	27
Till, silty, light brown.....	20	22			
Hole no: 303 Date drilled: 7-29-77 Location: 134.43.30add Township name: Elizabeth Alt: 1259 Alt. water table: 1240					
Topsoil, sandy.....	0	2	Sand, coarse to very coarse; well sorted, brown.....	13	33
Sand, fine to medium; some gravel, brown.....	0	12	Silt, some clay.....	2	35
Sand, medium to coarse with gravel layers, brown.....	1	20	Clay, silty with layers of clean very coarse sand.....	7	42
Hole no: 304 Date drilled: 10- 4-71 Location: 138.41.7bbb Township name: Lakeview Alt: 1410 Alt. water table: not reported					
Till, yellow-brown, silty.....	25	25	Till, dark gray, sandy, silty.	2	82
Sand, and gravel, clean, becomes coarse with depth; clay-silt lens about 5 feet above till.....	55	80			
Hole no: 305 Date drilled: 10- 4-71 Location: 138.42.11dda Township name: Lake Eunice Alt: 1368 Alt. water table: not reported					
Till, brown.....	10	10	Till, blue-gray.....	10	47
Sand, brown, mostly fine to medium, coarse near bottom 5 feet.....	27	37			

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 306 Date drilled: 10- 4-71 Location: 138.42.11cdc Township name: Lake Eunice Alt: 1408 Alt. water table: not reported					
Till, yellow-brown, silty.....	30	30	Sand, gray, fine, uniform.....	9	81
Sand, fine to medium; gravel, fine, some small clay layers present.....	42	72	Clay, gray, laminated, interbedded with silt.....	6	87
Hole no: 307 Date drilled: 10 -4-71 Location: 138.42.14aba Township name: Lake Eunice Alt: 1391.6 Alt. water table: not reported					
Till, light brown, silty.....	24	24	Sand, gray, very fine, uniform.....	7	74
Sand, brown to 47 feet, gray below, fine to coarse with some fine gravel.....	43	67			
Hole no: 308 Date drilled: 10- 5-71 Location: 138.41.6dbd Township name: Lakeview Alt: 1375 Alt. water table: not reported					
Gravel, brown, very coarse to medium; and sand, fine to coarse.....	7	7	Sand, gray, very fine, uniform, silty toward bottom.....	17	64
Sand, brown, fine to coarse, gravel, fine; sand becomes coarse with depth.....	40	47	Clay, gray, silty, becomes sandy at bottom.....	10	74
Hole no: 309 Date drilled: 10- 6-71 Location: 138.41.6aac Township name: Lakeview Alt: 1418 Alt. water table: not reported					
Gravel, brown, medium to coarse.....	5	5	Sand, gray, very fine to fine, uniform.....	20	59
Sand, brown, fine to coarse, with some fine gravel, sand becomes finer and clean with no gravel near bottom..	34	39	Silt, gray, becomes clayey towards bottom.....	15	74
Hole no: 310 Date drilled: 10- 6-71 Location: 138.41.12bda Township name: Lake Eunice Alt: 1385 Alt. water table: not reported					
Till, light brown, silty.....	14	14	Sand, gray-brown, fine to coarse, with fine gravel....	17	71
Till, gray-brown, silty.....	40	54	Till, gray, silty.....	3	74

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 311 Date drilled: 10-12-73 Location: 138.42.11caa Township name: Lake Eunice Alt: 1412 Alt. water table: not reported					
Till, yellow-brown, silty, gray-brown near bottom.....	20	20	Sand, brown to light brown, very fine to fine, uniform, gray near bottom.....	20	60
Sand, brown, fine to coarse, with some fine gravel.....	20	40	Clay, gray, very hard, with some interbedded fine sand..	10	70
Hole no: 312 Date drilled: 10-18-71 Location: 138.42.13abd Township name: Lake Eunice Alt: 1402 Alt. water table: not reported					
Sand, brown, medium to coarse, fairly uniform.....	8	8	Sand, gray, very fine to fine, uniform.....	24	92
Till, light brown, clayey.....	19	27	Clay, gray, sandy.....	5	97
Till, gray, silty.....	10	37			
Sand, brown, fine to coarse; much fine gravel; sand gray in bottom 10 feet.....	31	68			
Hole no: 313 Date drilled: 10-20-71 Location: 138.41.5caad Township name: Lakeview Alt: 1365 Alt. water table: not reported					
Sand, brown, fine to coarse; mostly medium with fine gravel and a few small lay- ers of medium to coarse gravel; sand becomes gray- brown near bottom.....	57	57	Sand, gray, fine to medium, uniform, silty.....	10	67
			Clay, gray, very sticky, very few pebbles.....	30	97
Hole no: 314 Date drilled: 10-20-71 Location: 138.42.1dbb Township name: Lake Eunice Alt: 1370 Alt. water table: not reported					
Till, light brown, silty.....	42	42	Till, gray, silty, clayey.....	17	97
Sand, brown, fine near top, becomes gray-brown and medi- um in lower part; gravel, mostly fine, becomes medi- um to coarse near bottom....	38	80			

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 315 Date drilled: 10-21-71 Location: 138.42.1dcd Township name: Lake Eunice Alt: 1422 Alt. water table: not reported					
Till, brown, silty.....	32	32	Til, blue-gray, silty,		
Till, gray-brown, silty.....	12	44	clayey.....	9	92
Sand, brown, fine to coarse; mostly medium, becomes gray- brown toward bottom; gravel, fine to coarse, mostly fine.	39	83	Clay, gray, sticky; inter- bedded with sand, gray, fine to coarse.....	5	97
Hole no: 316 Date drilled: 10-21-71 Location: 138.42.13abc Township name: Lake Eunice Alt: 1406 Alt. water table: not reported					
Till, brown silty.....	42	42	Clay, gray.....	4	79
Sand, brown, fine to coarse; some fine gravel; sand becomes gray-brown to gray toward bottom.....	25	67	Sand, gray, very fine to fine, uniform with interbedded gray clay.....	13	92
Sand, gray, very fine to fine, uniform.....	8	75	Till, gray, silty.....	5	97
Hole no: 317 Date drilled: 5- 8-72 Location: 138.41.5ccb Township name: Lakeview Alt: 1343.2 Alt. water table: not reported					
Sand, dark brown, very dirty, coarse, with some gravel....	9	9	Sand, gray, very fine to fine, uniform, silty.....	26	80
Sand and gravel, gray, dirty..	5	14	Till, gray.....	17	97
Sand, gray, medium, moderately clean, with some coarser and finer lenses.....	40	54			
Hole no: 318 Date drilled: 5- 8-72 Location: 138.41.6ccb Township name: Lakeview Alt: 1408.4 Alt. water table: not reported					
Soil, dark.....	2	2	Sand, brown, coarse, with some fine gravel.....	12	69
Silty, light brown, with some sand and gravel.....	10	12	Sand, gray, coarse, uniform, very clean.....	18	87
Till, brown.....	18	30	Sand, gray, fine to medium, silty.....	4	91
Sand and gravel, brown, dirty.	18	48	Till, gray.....	6	97
Sand, brown, medium, with little gravel.....	9	57			

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 319 Date drilled: 5- 9-72 Location: 138.42.1daa Township name: Lake Eunice Alt: 1416.4 Alt. water table: not reported					
Soil.....	2	2	Sand, brown, medium, uniform..	15	57
Sand, brown, medium, moderately clean.....	8	10	Sand, gray, poorly sorted.....	13	70
Till, brown.....	7	17	Clay.....	3	73
Sand, brown, medium to coarse, dirty at top, some gravel lenses.....	25	42	Sand and gravel.....	10	83
			Till, gray, clayey.....	14	97
Hole no: 320 Date drilled: 5-10-72 Location: 138.41.18baa Township name: Lakeview Alt: 1344.4 Alt. water table: not reported					
Fill and soil.....	5	5	Gravel, coarse.....	1	31
Sand, brown, medium to coarse, with some fine gravel.....	16	21	Sand, coarse, gray, with some fine gravel.....	35	66
Sand, gray, coarse, with some fine gravel.....	9	30	Till, gray.....	23	89
			Clay, gray.....	9	98
Hole no: 321 Date drilled: 5-11-72 Location: 138.41.5bba Township name: Lakeview Alt: 1392 Alt. water table: not reported					
Soil, black.....	1	1	Till, gray.....	26	56
Sand, brown, medium, some fine gravel near top, sand fairly uniform toward bottom.....	29	30			
Hole no: 322 Date drilled: 5-11-72 Location: 138.41.6aad Township name: Lakeview Alt: 1410 Alt. water table: not reported					
Soil.....	1	1	Sand, brown above, gray at very bottom, fine above to very fine and silty below...	19	70
Gravel, with sand and cobbles.	56		Till, gray.....	26	96
Sand and gravel, light brown, dirty, very dry.....	15	21			
Sand, brown, medium, some fine gravel above, light brown and fairly uniform below....	30	51			

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 323 Date drilled: 5-11-72 Location: 138.42.12dda Township name: Lake Eunice Alt: 1399.8 Alt. water table: not reported					
Soil.....	1	1	Gravel, coarse.....	2	52
Till, brown.....	31	32	Sand, gray, clean, medium at top, coarse in middle and bottom.....	17	69
Sand, and gravel, brown; sand coarse, gravel fine to medium.....	18	50	Till, gray, clayey.....	28	97
Hole no: 324 Date drilled: 5-12-72 Location: 138.42.12cba Township name: Lake Eunice Alt: 14-2 Alt. water table: not reported					
Soil, black.....	1	1	Till, brown.....	4	38
Till, brown.....	25	26	Sand and gravel, brown, dirty.....	15	53
Sand and gravel, brown, dirty.....	8	34	Till, gray-brown.....	9	62
Hole no: 325 Date drilled: 5-15-72 Location: 138.41.6cbd Township name: Lakeview Alt: 1402 Alt. water table: not reported					
Fill, mostly sand, brown, medium to coarse.....	20	20	Till, dark gray.....	11	47
Gravel.....	2	22	Sand, gray, medium to coarse..	7	54
Sand, brown, coarse above, medium to fine near bottom, light brown.....	14	36	Till, gray.....	13	67
Hole no: 326 Date drilled: 5-15-72 Location: 138.41.6ada Township name: Lakeview Alt: 1370.8 Alt. water table: not reported					
Soil.....	1	1	Soil, very fine.....	2	22
Sand and gravel, brown, dirty.	6	7	Sand, with fine gravel, brown and coarse above, gray and very coarse below.....	32	54
Sand, brown, coarse with fine to medium gravel above, medium below.....	13	20	Till, gray.....	13	67
Hole no: 327 Date drilled: 5-16-72 Location: 138.42.12bdc Township name: Lake Eunice Alt: 1390.9 Alt. water table: not reported					
Soil, black.....	2	2	Gravel.....	1	40
Till, brown above, gray-brown near bottom.....	27	29	Sand, brown above, gray below, fine to medium.....	25	65
Sand and gravel, brown, very dirty.....	10	39	Till, gray.....	17	82

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 328 Date drilled: 5-17-72 Location: 138.41.6bda Township name: Lakeview Alt: 1430 Alt. water table: not reported					
Soil, black.....	1	1	Sand, gray-brown to gray,		
Gravel, coarse, with sand,			coarse.....	13	57
brown, coarse, dirty.....	36	37	Sand, gray, medium.....	20	77
Sand, brown, medium to coarse,			Sand, gray, very fine.....	7	84
with fine gravel.....	7	44	Till, gray.....	3	87
Hole no: 329 Date drilled: 5-18-72 Location: 138.41.6bda Township name: Lakeview Alt: 1385.4 Alt. water table: not reported					
Soil, dark.....	2	2	Sand, light brown, fine to		
Gravel, brown, medium to			medium, with fine gravel		
coarse, with sand, brown,			toward bottom.....	37	67
medium, dirty.....	16	18	Sand, brown, fine moderately		
Sand, brown, medium to coarse,			clean.....	20	87
dirty, with fine gravel.....	12	30	Sand, gray, very fine, silty..	10	97
Hole no: 330 Date drilled: 5-18-72 Location: 138.42.13cba Township name: Lake Eunice Alt: 1371.9 Alt. water table: not reported					
Soil, black.....	1	1	Sand, fine to medium near top,		
Till, brown.....	16	17	coarse with fine.....	40	72
Till, gray-brown.....	10	27	Sand, gray, very fine to fine,		
Till, gray.....	5	32	silty.....	20	92
			Silt, gray, clayey.....	5	97
Hole no: 331 Date drilled: 5-19-72 Location: 138.42.14cab Township name: Lake Eunice Alt: 1392 Alt. water table: not reported					
Soil.....	1	1	Sand, gray, coarse above to		
Sand, brown, medium, fairly			medium below, with fine		
clean at top, fine and			gravel.....	20	87
silty toward bottom.....	11	12	Sand, gray, very fine to fine,		
Till, brown.....	30	42	silty.....	10	97
Sand, brown, fine to medium,					
fine gravel near top, sand					
coarse to very coarse with					
fine to coarse gravel near					
bottom.....	25	67			

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 332 Date drilled: 5-23-72 Location: 138.41.7dbd Township name: Lake Eunice Alt: 1378 Alt. water table: not reported					
Soil, dark, sandy.....	1	1	Sand, gray, fine above to		
Sand, brown, fine to medium,			very fine below.....	13	60
with some fine gravel.....	41	42	Clay, gray.....	27	87
Sand, brown, very fine to					
fine.....	5	47			
Hole no: 333 Date drilled: 5-22-72 Location: 138.41.19dbb Township name: Lakeview Alt: 1334.9 Alt. water table: not reported					
Sand, brown, medium, with			Sand, gray, fine, silty.....	5	50
fine gravel.....	6	6	Clay, gray.....	15	65
Sand, gray-brown, medium,			Till, gray.....	2	67
with fine and some coarse					
gravel.....	7	13			
Sand, gray, fine to coarse,					
mostly medium, with fine					
gravel, sand, becomes very					
dark gray towards bottom....	32	45			
Hole no: 334 Date drilled: 5-22-72 Location: 138.41.19bac Township name: Lakeview Alt: 1333.1 Alt. water table: not reported					
Soil, dark.....	1	1	Sand, gray, medium to coarse..	2	33
Sand, dark gray, fine to			Sand, gray, fine to very		
coarse, mostly medium, with			fine, silty.....	8	41
fine to medium gravel.....	16	17	Clay, gray, with fine sand		
Sand, brown, medium.....	9	26	lenses.....	10	51
Sand, gray-brown, medium to					
coarse.....	5	31			
Hole no: 335 Date drilled: 5-23-72 Location: 138.41.7bdb Township name: Lakeview Alt: 1371.7 Alt. water table: not reported					
Soil, black.....	1	1	Gravel and sand, brown,		
Gravel and sand, brown, dirty,			gravel very coarse, sand		
gravel coarse, sand fine			fine to coarse.....	7	31
to coarse.....	6	7	Sand, brown, coarse, with fine		
Sand, light brown, fine to			to medium gravel above.....	33	64
medium, with fine to medium			Till, gray.....	7	71
gravel.....	10	17			
Sand, brown, fine to coarse,					
mostly medium, with fine to					
coarse gravel.....	7	24			

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 336 Date drilled: 5-24-72 Location: 138.41.18bdb Township name: Lakeview Alt: 1384.5 Alt. water table: not reported					
Soil.....	1	1	Sand, brown, fine to medium above, sand fine to coarse, fine to medium gravel below.	17	39
Sand, brown, fine to coarse, dirty, with fine to medium gravel.....	11	12	Gravel.....	2	41
Sand, brown, fine to medium, clean, some fine to medium gravel.....	10	22	Sand, gray, fine to medium, with fine gravel, sand becomes fine below.....	18	59
			Clay, gray.....	38	97
Hole no: 337 Date drilled: 5-24-72 Location: 138.42.13aba Township name: Lake Eunice Alt: 1381.7 Alt. water table: not reported					
Soil, black.....	1	1	Sand, gray, fine above, fine to coarse with fine gravel below.....	45	87
Till, brown, becomes gray- brown with depth and gray near bottom.....	41	42	Sand, gray, fine.....	10	97
Hole no: 338 Date drilled: 5-25-72 Location: 138.41.5bcc Township name: Lakeview Alt: 1356.6 Alt. water table: not reported					
Sand and gravel, brown, dirty, sand fine to coarse, gravel fine to coarse.....	10	10	Sand, gray, fine to coarse, with fine gravel.....	5	41
Sand, brown, medium to coarse, with fine to coarse gravel..	26	36	Sand, gray, very fine to fine.....	21	62
Hole no: 339 Date drilled: 7-30-73 Location: 138.41.6ccc Township name: Lakeview Alt: 1415 Alt. water table: not reported					
Till, brown.....	27	27	Till, gray.....	18	91
Sand and gravel.....	46	73			
Hole no: 340 Date drilled: 7-30-73 Location: 138.41.6ccd Township name: Lakeview Alt: 1404 Alt. water table: not reported					
Till, brown.....	27	27	Till, gray.....	4	97
Sand and gravel.....	66	93			

Table 1.--Logs of test holes and observation wells--Continued

Material	Thick- ness (feet)	Depth (feet)	Material	Thick- ness (feet)	Depth (feet)
Hole no: 341 Date drilled: 7-31-73 Location: 138.41.5bbb Township name: Lakeview Alt: 1370 Alt. water table: not reported					
Sand and gravel, brown, gravel very coarse.....	6	6	Sand and gravel, brown above, gray below.....	14	40
Sand, brown, medium to coarse, with fine to medium sand....	20	26	Sand, gray, fine to coarse... Till, gray.....	20 20	60 80
Hole no: 342 Date drilled: 8- 2-73 Location: 138.42.11 Township name: Lake Eunice Alt: 1368 Alt. water table: not reported					
Clay, gray-brown.....	9	9	Till, gray.....	11	61
Sand, gray, fine to medium above, coarse below.....	41	50			
Hole no: 343 Date drilled: 8- 2-73 Location: 138.41.6dbc Township name: Lakeview Alt: 1344 Alt. water table: not reported					
Soil, dark.....	1	1	Sand and gravel, brown, coarse.....	24	60
Sand, brown, fine to coarse, with fine to medium gravel..	35	36	Sand, gray, very fine, uniform.....	7	67
Hole no: 344 Date drilled: 8- 2-73 Location: 138.42.13bcb1 Township name: Lake Eunice Alt: 1359 Alt. water table: not reported					
Till, brown.....	19	19	Sand, gray, very fine, uniform.....	17	106
Sand, gray, medium to coarse..	70	89			
Hole no: 345 Date drilled: 8- 2-73 Location: 138.42.13bcb2 Township name: Lake Eunice Alt: 1359 Alt. water table: not reported					
Till, brown.....	11	11			
Hole no: 346 Date drilled: 8- 3-73 Location: 138.42.1dca Township name: Lake Eunice Alt: 1364 Alt. water table: not reported					
Till, very light to tan above, gray below.....	41	41	Till, gray.....	21	111
Sand, mostly coarse, gray near top, brown in middle, gray- brown toward bottom.....	49	90			

Table 2.--Water levels in observation wells

[Depth to water is in feet below land-surface datum]

Date	Depth	Date	Depth	Date	Depth
<hr/>					
Observation well number: 1		Location: 139.41.24bad			
Township name: Detroit		Diameter: 1 $\frac{1}{4}$ "		Land-surface altitude: 1370	
7- 1-79	3.28	12- 1-79	4.35	3-15-80	4.60
8- 1-79	3.28	12-29-79	4.44	3-29-80	4.47
9- 1-79	4.48	2- 2-80	4.61	4-12-80	3.68
10- 1-79	4.80	3- 1-80	4.76	4-26-80	3.97
11- 2-79	4.51				
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Observation well number: 2		Location: 139.41.11ddc			
Township name: Detroit		Diameter: 1 $\frac{1}{4}$ "		Land-surface altitude: 1390	
7- 1-79	13.00	12- 1-79	13.22	13-15-80	13.19
8- 1-79	13.35	12-29-79	13.25	3-29-80	13.04
9- 1-79	13.54	2- 2-80	13.25	4-12-80	12.55
10- 1-79	13.80	3- 1-80	13.18	4-26-80	12.83
11- 2-79	13.30				
<hr/>					
Observation well number: 3		Location: 138.40.20bbc			
Township name: Burlington		Diameter: 1 $\frac{1}{4}$ "		Land-surface altitude: 1390	
7- 1-79	6.28	12- 1-79	6.60	3-15-80	6.66
8- 1-79	6.16	12-29-79	6.63	3-29-80	6.54
9- 1-79	6.45	2- 2-80	6.65	4-12-80	6.12
10- 1-79	6.67	3- 1-80	6.65	4-26-80	6.32
11- 3-79	6.43				
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Observation well number: 4		Location: 138.42.23bbb			
Township name: Lake Eunice		Diameter: 1 $\frac{1}{4}$ "		Land-surface altitude: 1380	
7- 1-79	37.20	12- 1-79	37.22	3-15-80	37.23
8- 1-79	36.69	12-29-79	37.28	3-29-80	37.21
9- 1-79	36.66	2- 2-80	37.27	4-12-80	36.98
10- 1-79	37.02	3- 1-80	37.22	4-26-80	36.96
11- 3-79	37.19				
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Table 2.--Water levels in observation wells--Continued

[Depth to water is in feet below land-surface datum]

Date	Depth	Date	Depth	Date	Depth
Observation well number: 5 Location: 138.43.25cbb Township name: Cormorant Diameter: 1 $\frac{1}{4}$ " Land-surface altitude: 1375					
8- 1-79	26.28	12- 1-79	27.76	4- 1-80	27.24
9- 2-79	26.65	1- 2-80	27.21	4-16-80	26.89
10- 1-79	26.87	2- 2-80	27.22	5- 2-80	26.92
11- 2-79	27.02	3- 2-80	27.16		
Observation well number: 24 Location: 137.41.9cba Township name: Candor Diameter: 1 $\frac{1}{4}$ " Land-surface altitude: 1390					
7- 1-79	35.87	12- 1-79	36.13	3-15-80	36.38
8- 1-79	35.64	12-29-79	36.20	3-29-80	36.12
9- 1-79	35.71	2- 2-80	36.28	4-12-80	36.98
10- 1-79	35.95	3- 1-80	36.34	4-26-80	35.85
11- 3-79	36.07				
Observation well number: 26 Location: 134.43.16dad Township name: Elizabeth Diameter: 1 $\frac{1}{4}$ " Land-surface altitude: 1290					
8- 2-79	41.22	12- 2-79	42.88	4- 2-80	43.15
9- 3-79	42.53	1- 3-80	42.89	4-17-80	42.95
10- 1-79	42.65	2- 2-80	42.98	5- 2-80	42.60
11- 2-79	42.77	3- 3-80	43.07		
Observation well number: 27 Location: 134.43.34bbb Township name: Elizabeth Diameter: 1 $\frac{1}{4}$ " Land-surface altitude: 1305					
8- 2-79	64.78	12- 2-79	61.11	4- 2-80	64.19
9- 3-79	64.36	1- 3-80	61.09	4-17-80	64.18
10- 1-79	63.80	2- 3-80	64.20	5- 2-80	64.16
11- 2-79	64.04	3- 3-80	63.94		
Observation well number: 64 Location: 139.41.27bbd Township name: Detroit Diameter: 1 $\frac{1}{4}$ " Land-surface altitude: 1360					
9- 1-79	23.79	12-29-79	24.16	3-29-80	24.29
10- 1-79	24.17	2- 2-80	24.25	4-12-80	23.92
11- 3-79	24.19	3- 1-80	24.30	4-26-80	23.79
12- 1-79	24.43	3-15-80	24.30		

Table 2.--Water levels in observation wells--Continued

[Depth to water is in feet below land-surface datum]

Date	Depth	Date	Depth	Date	Depth
Observation well number: 115 Location: 137.42.30bbb Township name: Dunn Diameter: 1 $\frac{1}{4}$ " Land-surface altitude: 1350					
8- 1-79	26.85	12- 2-79	27.44	4- 1-80	27.68
9- 1-79	27.01	1- 2-80	27.55	4-16-80	26.99
10- 1-79	27.27	2- 2-80	27.43	5- 2-80	26.66
11- 2-79	27.41	3- 2-80	27.44		
Observation well number: 247 Location: 138.43.36cdc Township name: Cormornt Diameter: 1 $\frac{1}{4}$ " Land-surface altitude: 1350					
12-13-78	14.38	6- 1-79	11.93	1- 2-80	13.45
1-22-79	14.67	7- 1-79	11.77	2- 2-80	13.98
3-20-79	14.76	8- 2-79	11.36	3- 2-80	13.79
4- 1-79	14.71	9- 2-79	12.45	4- 1-80	13.77
4-17-79	14.14	10- 1-79	12.94	4-16-80	12.34
5- 2-79	11.46	11- 2-79	13.29	5- 2-80	12.00
5-16-79	11.65	12- 1-79	13.30		
Observation well number: 249 Location: 136.43.33ddd Township name: Pelican Diameter: 1 $\frac{1}{4}$ " Land-surface altitude: 1290					
12-13-78	3.79	7 2-79	1.91	12- 2-79	2.81
1-22-79	3.79	8- 2-79	1.76	1- 2-80	3.04
5- 3-79	1.85	9- 3-79	2.10	4-16-80	2.27
5-16-79	1.95	10- 1-79	2.67	5- 2-80	2.31
6- 2-79	2.15	11- 2-79	2.44		
Observation well number: 250 Location: 136.43.23dbb Township name: Pelican Diameter: 1 $\frac{1}{4}$ " Land-surface altitude: 1325					
12-13-78	11.69	6- 2-79	10.25	12- 2-79	10.62
1-22-79	11.63	7- 2-79	9.90	1- 2-80	10.80
3-20-79	11.09	8- 2-79	10.30	3- 2-80	10.80
4- 2-79	11.29	9- 3-79	10.60	4- 1-80	10.61
4-17-79	10.05	10- 1-79	11.06	4-16-80	10.05
5- 2-79	10.30	11- 2-79	10.44	5- 2-80	10.21
5-16-79	9.10				

Table 2.--Water levels in observation wells--Continued

[Depth to water is in feet below land-surface datum]

Date	Depth	Date	Depth	Date	Depth
Observation well number: 251 Location: 135.43.33add Township name: Erhards Grove Diameter: 1½" Land-surface altitude: 1300					
12-13-78	17.97	6- 2-79	16.56	1- 2-80	17.86
1-22-79	18.07	7- 2-79	16.86	2- 3-80	17.90
3-20-79	18.15	8- 2-79	17.06	3- 3-80	17.93
4- 2-79	18.02	9- 3-79	17.36	4- 1-80	17.42
4-17-79	17.85	10- 1-79	17.71	4-16-80	17.49
5- 2-79	16.99	11- 2-79	17.84	5- 2-80	17.33
5-16-79	16.75	12- 1-79	17.76		
Observation well number: 252 Location: 134.43.8daa Township name: Elizabeth Diameter: 1½" Land-surface altitude: 1267					
12-13-78	17.06	6- 1-79	15.12	1- 3-80	16.59
1-22-79	17.52	7- 2-79	16.66	2- 3-80	16.69
3-20-79	17.19	8- 2-79	16.86	3- 3-80	16.16
4- 2-79	16.68	9- 3-79	17.16	4- 1-80	16.20
4-17-79	15.54	10- 1-79	17.51	4-16-80	15.34
5- 3-79	14.69	11- 2-79	16.34	5- 2-80	15.15
5-16-79	14.81	12- 2-80	16.34		
Observation well number: 224 Location: 139.41.22dad Township name: Detroit Diameter: 1½" Land-surface altitude: 1355					
12-12-78	3.22	7- 1-79	1.22	2- 2-80	2.96
1-22-79	3.66	8- 1-79	1.60	3- 1-80	3.06
4- 7-79	2.91	9- 1-79	1.93	3-15-80	3.12
4-21-79	1.24	10- 1-79	2.62	3-29-80	2.61
5- 4-79	3.19	11- 2-79	1.93	4-12-80	1.95
5-18-79	1.31	12- 1-79	2.43	4-26-80	1.96
6- 1-79	1.43	12-29-79	2.65		
Observation well number: 226 Location: 139.41.3aaa Township name: Detroit Diameter: 1½" Land-surface altitude: 1380					
12-12-78	7.23	7- 1-79	6.56	2- 2-80	7.07
1-22-79	7.30	8- 1-79	6.58	3- 1-80	7.16
4- 7-79	7.29	9- 1-79	6.76	3-15-80	7.16
4-21-79	6.52	10- 1-79	6.92	3-29-80	7.04
5- 4-79	6.57	11- 2-79	6.79	4-12-80	6.74
5-18-79	6.53	12- 1-79	6.96	4-26-80	6.73
6- 1-79	6.57	12-29-79	7.02		

Table 2.--Water levels in observation wells--Continued

[Depth to water is in feet below land-surface datum]

Date	Depth	Date	Depth	Date	Depth
Observation well number: 229 Location: 139.41.3acc Township name: Detroit Diameter: 1 $\frac{1}{4}$ " Land-surface altitude: 1390					
12-12-78	21.83	7- 1-79	20.40	2- 2-80	21.64
1- 2-79	22.17	8- 1-79	19.90	3- 1-80	22.02
4- 7-79	23.06	9- 1-79	19.97	3-15-80	21.90
4-21-79	22.24	10- 1-79	20.76	3-29-80	21.89
5- 4-79	21.48	11- 2-79	21.17	4-12-80	21.62
5-18-79	20.66	12- 1-79	21.43	4-26-80	21.28
6- 1-79	20.81	12-29-79	21.54		
Observation well number: 234 Location: 138.40.19bcc Township name: Burlington Diameter: 1 $\frac{1}{4}$ " Land-surface altitude: 1390					
12-12-78	25.01	7- 1-79	24.29	2- 2-80	24.22
1-22-79	25.15	8- 1-79	23.84	3- 1-80	24.29
4- 7-79	25.22	9- 1-79	23.85	3-15-80	24.29
4-21-79	24.51	10- 1-79	23.93	3-29-80	24.26
5- 4-79	24.44	11- 3-79	23.96	4-12-80	23.63
5-18-79	24.37	12- 1-79	23.97	4-26-80	23.72
6- 1-79	24.33	12-29-79	24.10		
Observation well number: 235 Location: 138.41.22bbb Township name: Lakeview Diameter: 1 $\frac{1}{4}$ " Land-surface altitude: 1353					
12-12-78	17.26	7- 1-79	15.62	2- 2-80	16.60
1-22-79	17.46	8- 1-79	15.42	3- 1-80	16.71
4- 7-79	16.67	9- 1-79	15.72	3-15-80	16.74
4-21-79	15.80	10- 1-79	16.07	3-29-80	16.64
5- 4-79	15.75	11- 3-79	15.95	4-12-80	15.76
5-18-79	15.75	12- 1-79	16.22	4-26-80	15.90
6- 1-79	15.83	12-29-79	16.38		
Observation well number: 240 Location: 247.43.6aaa Township name: Scambler Diameter: 1 $\frac{1}{4}$ " Land-surface altitude: 1385					
12-12-78	25.38	6- 1-79	24.53	1- 2-80	25.36
1-22-79	25.54	7- 2-79	24.59	2- 2-80	25.50
3-20-79	25.69	8- 1-79	24.66	3- 2-80	25.59
4- 1-79	25.59	9- 2-79	24.35	4- 1-80	25.53
4-17-79	25.09	10- 1-79	25.03	4-16-80	24.73
5- 2-79	24.49	11- 2-79	24.73	5- 2-80	24.85
5-16-79	24.53	12- 1-79	25.20		

Table 2.--Water levels in observation wells--Continued

[Depth to water is in feet below land-surface datum]

Date	Depth	Date	Depth	Date	Depth
Observation well number: 241 Location: 137.43.27acb Township name: Scambler Diameter: 1½" Land-surface altitude: 1340					
12-12-78	8.57	6- 1-79	7.42	1- 2-80	7.94
1-22-79	8.68	7- 2-79	7.31	2- 2-80	8.03
3-29-79	7.90	8- 1-79	8.43	3- 2-80	7.98
4- 2-79	7.64	9- 3-79	7.86	4- 1-80	7.53
4-17-79	7.16	10- 1-79	8.21	4-16-80	7.18
5- 3-79	7.23	11- 2-79	7.57	5- 2-80	7.24
5-16-79	7.26	12- 2-79	7.89		
Observation well number: 242 Location: 137.43.17dda Township name: Scambler Diameter: 1½" Land-surface altitude: 1390					
12-12-78	19.62	6- 1-79	18.96	1- 2-80	19.31
1-22-79	19.82	7- 2-79	18.89	2- 2-80	19.38
3-20-79	19.98	8- 1-79	18.81	3- 2-80	19.40
4- 1-79	19.92	9- 2-79	18.86	4- 1-80	19.06
4-17-79	20.72	10- 1-79	19.02	4-16-80	17.71
5- 2-79	19.18	11- 2-79	18.82	5- 2-80	19.61
5-16-79	19.76	12- 1-79	19.17		
Observation well number: 244 Location: 135.43.9bdd Township name: Erhards Grove Diameter: 1½" Land-surface altitude: 1291					
12-13-78	14.71	6- 2-79	12.51	1- 2-80	14.03
1-22-79	13.19	7- 2-79	13.35	2- 2-80	13.06
3-20-79	11.67	8- 2-79	12.15	3- 2-80	12.56
4- 2-79	11.53	9- 3-79	12.53	4- 1-80	12.47
4-17-79	10.81	10- 1-79	13.21	4-17-80	13.06
5- 3-79	11.71	11- 2-79	13.17	5- 2-80	13.27
5-16-79	12.28	12- 2-79	13.67		
Observation well number: 245 Location: 135.43.16cdc Township name: Erhards Grove Diameter: 1½" Land-surface altitude: 1300					
12-13-78	5.32	6- 2-79	3.39	1- 2-80	4.56
1-22-79	4.80	7- 2-79	3.84	2- 2-80	4.29
3-20-79	3.15	8- 2-79	3.09	3- 3-80	3.64
4- 2-79	3.11	9- 3-79	3.44	4- 1-80	3.00
4-17-79	1.85	10- 1-79	4.01	4-17-80	3.31
5- 3-79	2.76	11- 2-79	3.61	5- 2-80	3.90
5-16-79	3.10	12- 2-79	4.51		

Table 2.--Water levels in observation wells--Continued

[Depth to water is in feet below land-surface datum]

Date	Depth	Date	Depth	Date	Depth
Observation well number: 246 Location: 139.41.15dca Township name: Detroit Diameter: 1 $\frac{1}{4}$ " Land-surface altitude: 1360					
12-13-78	11.45	7- 1-79	9.38	2- 1-80	11.09
1-22-79	11.70	8- 1-79	9.28	3- 1-80	11.16
4- 7-79	11.23	9- 1-79	10.42	3-15-80	11.19
4-21-79	9.72	10- 1-79	10.84	3-29-80	11.04
5- 4-79	9.75	11- 2-79	10.62	4-12-80	10.36
5-18-79	9.80	12- 1-79	10.76	4-26-80	10.39
6- 1-79	9.94	12-29-79	10.89		
Observation well number: 283 Location: 140.41.26ccd Township name: Richwood Diameter: 1 $\frac{1}{4}$ " Land-surface altitude: 1422					
12-12-78	31.35	7- 1-79	31.12	2- 2-80	31.33
1-22-79	31.62	8- 1-79	30.99	3- 1-80	31.47
4- 7-79	31.96	9- 1-79	32.12	3-15-80	31.49
4-21-79	31.39	10- 1-79	30.83	4- 1-80	31.58
5- 4-79	31.08	11- 2-79	30.83	4-12-80	31.10
5-18-79	31.12	12- 1-79	31.02	4-26-80	31.24
6- 1-79	31.14	1- 1-80	31.16		
Observation well number: 287 Location: 138.42.26cda Township name: Lake Eunice Diameter: 1 $\frac{1}{4}$ " Land-surface altitude: 1390					
12-12-79	53.07	7- 1-79	53.27	2- 2-80	52.79
1-22-79	53.99	8- 1-79	53.03	3- 1-80	53.30
4- 7-79	53.43	9- 1-79	52.77	3-15-80	53.02
4-21-79	53.76	10- 1-79	53.28	3-29-80	52.64
5- 4-79	53.62	11- 3-79	53.52	4-12-80	52.96
5-18-79	53.54	12- 1-79	53.41	4-26-80	52.92
6- 1-79	53.40	12-29-79	53.11		
Observation well number: 291 Location: 138.43.18cda Township name: Cormorant Diameter: 1 $\frac{1}{4}$ " Land-surface altitude: 1420					
12-12-78	59.15	6- 1-79	58.97	1- 2-80	59.07
1-22-79	59.35	7- 2-79	58.93	2- 2-80	58.94
3-20-79	59.54	8- 1-79	58.81	3- 2-80	59.08
4- 1-79	59.52	9- 2-79	58.77	4- 1-80	59.24
4-17-79	59.44	10- 1-79	58.87	4-16-80	58.83
5- 3-79	59.11	11- 2-79	58.73	5- 2-80	58.73
5-16-79	58.91	12- 1-79	58.73		

Table 2.--Water levels in observation wells--Continued

[Depth to water is in feet below land-surface datum]

Date	Depth	Date	Depth	Date	Depth
Observation well number: 294 Location: 136.43.10aaa Township name: Pelican Diameter: 1 $\frac{1}{4}$ " Land-surface altitude: 1322					
12-13-78	8.61	6- 2-79	7.55	1- 2-80	7.68
1-22-79	8.58	7- 2-79	7.53	2- 2-80	8.16
3-20-79	8.40	8- 1-79	7.84	3- 3-80	8.08
4- 1-79	8.36	9- 3-79	8.01	4- 1-80	7.84
4-17-79	7.72	10- 1-79	8.18	4-16-80	6.89
5- 3-79	7.39	11- 2-79	7.97	5- 2-80	7.69
5-16-79	7.37	12- 2-79	8.19		
Observation well number: 300 Location: 134.43.21dbb Township name: Elizabeth Diameter: 1 $\frac{1}{4}$ " Land-surface altitude: 1280					
12-13-78	26.13	6- 2-79	24.67	1- 3-80	25.84
1-22-79	25.31	7- 2-79	24.66	2- 2-80	25.96
3-20-79	26.18	8- 2-79	24.97	3- 2-80	25.97
4- 2-79	25.96	9- 3-79	25.31	4- 1-80	25.71
4-17-79	26.27	10- 1-79	25.97	4-17-80	25.04
5- 3-79	24.57	11- 2-79	25.55	5- 2-80	24.04
5-16-79	24.51	12- 2-79	25.68		

Table 3.—Pumping-test data

[Depth to water, in feet below measuring point, in the pumped well, and in observation wells at a distance r in feet from the pumped well]

Township:		Scambler		Location:		137.43.15ac		Pumping rate:		1342 gal/min		Date pumped:		November 10-11, 1979	
Time in	Pumping	Well	Well	Well	Well	Well	Well	Time in	Pumping	Well	Well	Well	Well	Well	Well
minutes	well	E1	E2	E3	E4	E5	E6	minutes	well	E1	E2	E3	E4	E5	E6
since		(r =	(r =	(r =	(r =	(r =	(r =	since		(r =	(r =	(r =	(r =	(r =	(r =
pumping		40)	45)	50)	190)	195)	200)	pumping		40)	45)	50)	190)	195)	200)
began								began							
0.0	63.15	63.95	31.75	52.72	34.62	52.99	63.50	90.0	85.49	72.64	31.73	52.71	—	—	68.76
0.083	63.55	64.15	31.75	52.72	—	—	63.50	120.0	85.85	73.03	31.73	52.71	34.59	—	68.90
0.167	63.80	64.43	31.75	52.72	—	—	63.51	150.0	86.10	73.71	31.72	52.71	34.59	52.98	69.09
0.25	64.05	64.59	31.75	52.72	—	—	63.51	180.0	86.33	73.53	31.71	52.71	34.58	—	69.28
0.33	64.25	64.80	31.75	52.72	—	—	63.52	240.0	86.64	73.85	31.70	52.70	34.58	52.97	69.63
0.417	64.50	64.92	31.75	52.72	—	—	63.52	300.0	86.89	74.09	31.70	52.70	34.58	—	69.90
0.5	64.70	65.12	31.75	52.72	—	—	63.53	360.0	87.05	74.27	31.70	52.70	34.58	52.97	70.16
0.667	65.15	65.40	31.75	52.72	—	—	63.54	420.0	87.22	74.41	31.70	52.70	34.58	52.96	70.32
0.833	65.55	65.70	31.75	52.72	—	—	63.56	480.0	87.33	74.53	31.70	52.70	34.58	—	70.48
1.0	66.00	66.05	31.75	52.72	—	—	63.58	540.0	87.42	74.64	31.70	52.70	34.59	—	70.62
1.5	67.40	67.02	31.75	52.72	—	—	63.72	600.0	87.55	74.74	31.70	52.70	34.59	52.96	70.75
2.0	68.60	67.68	31.75	52.72	—	—	63.88	720.0	87.66	74.85	31.70	52.71	34.60	—	70.90
2.5	—	68.10	31.75	52.72	—	—	64.05	840.0	87.84	75.02	31.70	52.73	34.61	—	71.12
3.0	—	68.35	31.75	52.72	—	—	64.20	960.0	87.29	75.14	31.70	52.74	34.61	52.95	71.27
3.5	—	68.55	31.75	52.72	—	—	63.37	1080.0	88.06	75.24	31.71	52.75	34.62	—	71.38
4.0	—	68.70	31.75	52.72	—	—	64.51	1200.0	88.14	75.33	31.71	52.16	34.62	—	71.49
5.0	—	68.95	31.75	52.72	—	—	64.69	1320.0	88.20	76.40	31.72	52.77	34.62	52.97	71.58
6.0	—	69.15	31.75	52.72	—	—	64.85	1440.0	88.28	75.48	31.72	52.78	34.63	—	71.67
7.0	82.40	69.31	31.75	52.72	—	—	64.97	1560.0	88.60	75.53	31.72	52.79	34.64	—	71.73
8.5	82.50	69.52	31.75	52.72	—	—	65.18	1680.0	88.63	75.59	31.72	52.80	34.64	53.01	71.78
10.0	82.76	69.74	31.75	52.72	—	—	65.401	1800.0	88.69	75.65	31.72	52.81	34.64	—	71.84
12.0	82.86	69.91	31.75	52.72	—	—	65.49	1920.0	88.76	75.72	31.73	52.82	34.64	—	71.89
15.0	83.10	70.18	31.75	52.72	34.62	—	65.71	2040.0	88.81	75.77	31.73	52.83	34.65	53.05	71.94
20.0	83.45	70.53	31.75	52.72	—	—	65.96	2160.0	88.89	75.84	31.73	52.85	34.65	—	71.98
25.0	83.73	70.83	31.75	52.72	34.61	—	66.23	2340.0	88.97	75.92	31.75	52.86	34.65	53.09	72.05
30.0	83.93	71.08	31.74	52.72	34.61	—	66.47	2520.0	89.03	76.00	31.75	52.87	34.66	53.11	72.12
40.0	84.37	71.51	31.74	52.72	34.60	—	67.11	2700.0	89.13	76.07	31.75	52.88	34.66	53.14	72.17
50.0	84.66	71.80	31.74	52.72	—	—	67.73	2850.0	89.15	76.12	31.75	52.89	34.66	53.17	72.22
60.0	84.90	72.07	31.74	52.72	34.60	52.98	67.99								

Table 3.--Pumping-test data--Continued
 [Depth to water, in feet below measuring point, in the pumped well, and
 in observation wells at a distance r in feet from the pumped well]

Township: Scambler				Location: 137.43.15acb			
Date recovered: November 11-12, 1979							
Time in minutes since pumping began	Pumping well	Well E1 (r = 40)	Well E6 (r = 200)	Time in minutes since pumping began	Pumping well	Well E1 (r = 40)	Well E6 (r = 200)
0.00	88.48	76.20	72.24	240.0	63.99	66.18	65.25
0.083	---	76.03	72.24	300.0	63.76	65.95	65.03
0.167	---	75.74	72.24	330.0	---	---	64.95
0.25	---	75.41	72.24	340.0	---	65.86	64.95
0.33	---	75.15	72.24	350.0	63.58	---	---
0.417	---	74.88	72.24	474.0	---	---	64.62
0.5	---	74.62	72.24	556.0	---	65.55	---
0.667	---	74.45	72.22	618.0	---	---	64.48
0.883	85.50	73.83	72.19	762.0	---	---	64.38
1.0	85.10	73.52	72.17	774.0	---	65.35	---
1.5	83.90	72.80	72.09	906.0	---	---	64.29
2.0	82.63	72.32	72.01	992.0	---	65.21	---
2.5	81.35	71.99	71.91	1050.0	---	---	64.22
3.0	80.10	71.75	71.81	1194.0	---	---	64.15
3.5	78.83	71.56	71.71	1210.0	---	65.11	---
4.0	77.55	71.43	71.61	1338.0	---	---	64.10
5.0	74.98	71.18	71.41	1428.0	---	65.03	---
6.0	72.28	70.98	71.21	1482.0	---	---	64.06
7.0	69.55	70.81	71.00	1626.0	---	---	64.01
8.5	68.31	70.58	70.66	1646.0	---	64.97	---
10.0	68.12	70.40	70.36	1770.0	---	---	63.96
12.0	67.93	70.19	70.01	1864.0	---	64.90	---
15.0	67.65	69.91	69.54	1914.0	---	---	63.91
20.0	67.30	69.54	69.95	2058.0	---	---	63.87
25.0	67.00	69.28	68.53	2082.0	---	64.83	---
30.0	66.75	68.97	68.21	2202.0	---	---	63.84
40.0	66.35	68.56	67.75	2300.0	---	64.76	---
50.0	65.98	68.17	67.34	2346.0	---	---	63.81
60.0	65.75	67.95	67.10	2490.0	---	---	63.78
90.0	65.28	67.38	66.50	2518.0	---	64.70	---
120.0	64.81	66.99	66.10	2634.0	---	---	63.75
150.0	64.50	66.69	65.78	2736.0	---	64.64	---
180.0	64.30	66.48	65.58	2778.0	---	---	63.73

Table 4.--Chemical analyses of ground water

Well Number 224

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	HARD- NESS (MG/L AS CACO3)	IRON, DIS- SOLVED (UG/L AS FE)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)
DEC , 1978									
12...	63	1.9	.1	24	240	350	21	20	1.0
MAY , 1979									
03...	63	2.2	.1	16	240	200	19	30	1.8
SEP									
20...	65	2.3	.1	35	240	140	20	140	5.1

DATE	PH (UNITS)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	SODIUM AD- SORP- TION RATIO	SILICA, DIS- SOLVED (MG/L AS SIO2)	SODIUM, DIS- SOLVED (MG/L AS NA)	SULFATE DIS- SOLVED (MG/L AS SO4)	SPE- CIFIC CON- DUCT- ANCE (UMHOS)	TEMPER- ATURE (DEG C)
DEC , 1978									
12...	7.8	.010	1.8	.0	24	.9	9.2	455	8.0
MAY 1979									
03...	7.3	.040	1.7	.0	23	.7	7.7	270	4.0
SEP									
20...	7.2	<.010	1.6	.0	26	.8	3.9	455	9.5

Well Number 229

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	HARD- NESS (MG/L AS CACO3)	IRON, DIS- SOLVED (UG/L AS FE)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)
DEC , 1978									
12...	110	12	.2	140	470	960	48	340	12
MAY , 1979									
03...	83	12	.1	82	370	1100	40	560	5.8
SEP									
19...	110	13	.1	140	480	1200	50	580	8.3

Table 4.--Chemical analyses of ground water--Continued

Well Number 229--Continued

DATE	PH (UNITS)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	SODIUM AD- SORP- TION RATIO	SILICA, DIS- SOLVED (MG/L AS SIO2)	SODIUM, DIS- SOLVED (MG/L AS NA)	SULFATE DIS- SOLVED (MG/L AS SO4)	SPE- CIFIC CON- DUCT- ANCE (UMHOS)	TEMPER- ATURE (DEG C)
DEC , 1978									
12...	7.5	<.010	3.5	.1	23	6.8	100	855	6.8
MAY , 1979									
03...	7.9	.010	3.6	.1	16	6.1	100	595	7.2
SEP									
19...	7.7	<.010	3.4	.1	17	6.0	80	850	13.5

Well Number 235

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	HARD- NESS (MG/L AS CACO3)	IRON, DIS- SOLVED (UG/L AS FE)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)
DEC , 1978									
12...	67	13	.1	82	260	270	23	120	11
MAY , 1979									
03...	58	11	.1	47	230	30	20	200	4.1
SEP									
20...	64	14	.1	66	250	70	21	40	5.2

DATE	PH (UNITS)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	SODIUM AD- SORP- TION RATIO	SILICA, DIS- SOLVED (MG/L AS SIO2)	SODIUM, DIS- SOLVED (MG/L AS NA)	SULFATE DIS- SOLVED (MG/L AS SO4)	SPE- CIFIC CON- DUCT- ANCE (UMHOS)	TEMPER- ATURE (DEG C)
DEC , 1978									
12...	7.8	.010	2.8	.0	19	1.4	31	520	7.0
MAY , 1979									
03...	7.9	<.010	2.8	.0	17	1.4	29	305	10.0
SEP									
20...	7.2	.020	2.1	.0	22	.8	22	440	9.0

Table 4.—Chemical analyses of ground water—Continued

Well Number 247

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	HARD- NESS, NONCAR- BONATE (MG/L CAO3)	HARD- NESS (MG/L AS CAO3)	IRON, DIS- SOLVED (UG/L AS FE)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)
DEC , 1978									
13...	56	8.2	.3	2	220	180	20	510	<.10
MAY , 1979									
02...	70	6.2	.2	4	270	1200	24	670	.09
SEP									
20...	47	6.1	.2	10	200	120	20	330	.02

DATE	PH (UNITS)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	SODIUM AD- SORP- TION RATIO	SILICA, DIS- SOLVED (MG/L AS SIO2)	SODIUM, DIS- SOLVED (MG/L AS NA)	SULFATE DIS- SOLVED (MG/L AS SO4)	SPE- CIFIC CON- DUCT- ANCE (UMHOS)	TEMPER- ATURE (DEG C)
DEC , 1978									
13...	8.7	<.010	3.8	.5	13	17	21	420	6.9
MAY , 1979									
02...	7.5	.010	4.2	.3	19	9.8	27	360	6.5
SEP									
20...	8.0	.010	3.6	.3	8.5	10	14	328	12.5

Well Number 300

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	HARD- NESS, NONCAR- BONATE (MG/L CAO3)	HARD- NESS (MG/L AS CAO3)	IRON, DIS- SOLVED (UG/L AS FE)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)
DEC , 1978									
13...	43	7.0	.2	0	350	5900	58	130	<.10
MAY , 1979									
02...	38	5.3	.2	0	340	540	59	100	.01
SEP									
19...	19	5.6	.2	0	290	80	59	40	.13

Table 4.--Chemical analyses of ground water--Continued

Well Number 300--Continued

DATE	PH (UNITS)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	SODIUM AD- SORP- TION RATIO	SILICA, DIS- SOLVED (MG/L AS SIO2)	SODIUM, DIS- SOLVED (MG/L AS NA)	SULFATE DIS- SOLVED (MG/L AS SO4)	SPE- CIFIC CON- DUCT- ANCE (UMHOS)	TEMPER- ATURE (DEG C)
DEC , 1978									
13...	7.8	.040	6.2	.3	23	13	19	675	6.1
MAY , 1979									
02...	6.3	.020	7.2	.3	26	14	27	541	7.1
SEP									
19...	8.4	.020	6.3	.4	12	14	14	490	10.5

Well Number 240

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	HARD- NESS (MG/L AS CACO3)	IRON, DIS- SOLVED (UG/L AS FE)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)
DEC , 1978									
12...	15	1.7	.1	17	110	230	18	160	.09
MAY , 1979									
02...	50	1.2	.1	7	210	<10	20	40	1.4
SEP									
19...	47	1.7	.1	20	200	30	20	60	1.3

DATE	PH (UNITS)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	SODIUM AD- SORP- TION RATIO	SILICA, DIS- SOLVED (MG/L AS SIO2)	SODIUM, DIS- SOLVED (MG/L AS NA)	SULFATE DIS- SOLVED (MG/L AS SO4)	SPE- CIFIC CON- DUCT- ANCE (UMHOS)	TEMPER- ATURE (DEG C)
DEC , 1978									
12...	8.6	<.010	2.4	.1	.5	2.5	15	200	5.0
MAY , 1979									
02...	7.9	.020	2.5	.1	20	2.3	13	265	6.0
SEP									
19...	7.7	.010	2.0	.0	18	1.1	12	380	10.0

Table 4.--Chemical analyses of ground water--Continued

Well Number 250

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	HARD- NESS (MG/L AS CACO3)	IRON, DIS- SOLVED (UG/L AS FE)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)
DEC , 1978									
13...	87	2.3	.2	1	360	2600	35	240	<.10
MAY , 1979									
02...	85	4.4	.2	0	350	9500	33	220	.04
SEP									
19...	92	2.4	.2	34	390	9300	40	200	.03

DATE	PH (UNITS)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	SODIUM AD- SORP- TION RATIO	SILICA, DIS- SOLVED (MG/L AS SIO2)	SODIUM, DIS- SOLVED (MG/L AS NA)	SULFATE DIS- SOLVED (MG/L AS SO4)	SPE- CIFIC CON- DUCT- ANCE (UMHOS)	TEMPER- ATURE (DEG C)
DEC , 1978									
13...	7.5	.010	3.7	.2	25	7.1	22	680	6.7
MAY , 1979									
02...	7.5	.070	3.8	.1	26	6.3	25	505	8.0
SEP									
19...	7.0	.060	3.5	.2	28	7.4	19	730	9.5

Well Number 252

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	HARD- NESS (MG/L AS CACO3)	IRON, DIS- SOLVED (UG/L AS FE)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)
DEC , 1978									
13...	85	1.9	.3	12	420	1900	51	830	<.10
MAY , 1979									
02...	75	1.4	.3	0	370	980	44	820	.01
SEP									
19...	76	2.0	.3	22	390	1400	49	720	<.10

Table 4.--Chemical analyses of ground water

Well Number 252--Continued

DATE	PH (UNITS)	PHOS- PHORUS DIS- SOLVED (MG/L AS P)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	SODIUM AD- SORP- TION RATIO	SILICA, DIS- SOLVED (MG/L AS SIO2)	SODIUM, DIS- SOLVED (MG/L AS NA)	SULFATE DIS- SOLVED (MG/L AS SO4)	SPE- CIFIC CON- DUCT- ANCE (UMHOS)	TEMPER- ATURE (DEG C)
DEC , 1978									
13...	7.8	<.010	4.5	.1	21	5.8	20	730	5.1
MAY , 1979									
02...	7.2	.010	4.2	.1	24	5.2	22	535	7.0
SEP									
19...	7.0	.020	3.8	.1	25	5.6	17	690	10.0

Well Number 244

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	HARD- NESS (MG/L AS CACO3)	IRON, DIS- SOLVED (UG/L AS FE)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)
DEC , 1978									
13...	250	3.9	.1	270	900	1500	67	440	6.2
MAY , 1979									
02...	53	4.1	<.1	4	330	2900	49	130	5.8
SEP									
19...	250	3.8	.1	420	950	5400	78	610	74

DATE	PH (UNITS)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	SODIUM AD- SORP- TION RATIO	SILICA, DIS- SOLVED (MG/L AS SIO2)	SODIUM, DIS- SOLVED (MG/L AS NA)	SULFATE DIS- SOLVED (MG/L AS SO4)	SPE- CIFIC CON- DUCT- ANCE (UMHOS)	TEMPER- ATURE (DEG C)
DEC , 1978									
13...	7.2	<.010	3.3	.1	20	6.2	330	1550	6.9
MAY , 1979									
02...	7.3	.010	3.7	.2	7.2	9.4	190	1010	6.5
SEP									
19...	6.8	.010	2.8	.1	17	6.8	140	1530	14.0

Table 4.—Chemical analyses of ground water—Continued

Well Number 245

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	HARD- NESS, NONCAR- BONATE (MG/L CACO ₃)	HARD- NESS (MG/L AS CACO ₃)	IRON, DIS- SOLVED (UG/L AS FE)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	NITRO- GEN, NO ₂ +NO ₃ DIS- SOLVED (MG/L AS N)
SEP , 1979 19...	97	2.5	.3	0	430	3900	45	150	.01
DATE	PH (UNITS)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	SODIUM AD- SORP- TION RATIO	SILICA, DIS- SOLVED (MG/L AS SIO ₂)	SODIUM, DIS- SOLVED (MG/L AS NA)	SULFATE DIS- SOLVED (MG/L AS SO ₄)	SPE- CIFIC CON- DUCT- ANCE (UMHOS)	TEMPER- ATURE (DEG C)
SEP , 1979 19...	7.6	.210	4.4	.4	27	21	2.5	820	8.0

Well Number 347

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	HARD- NESS, NONCAR- BONATE (MG/L CACO ₃)	HARD- NESS (MG/L AS CACO ₃)	IRON, DIS- SOLVED (UG/L AS FE)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	NITRO- GEN, NO ₂ +NO ₃ DIS- SOLVED (MG/L AS N)
NOV , 1979 23...	5.5	120	.6	0	20	30	1.5	2	.08
DATE	PH (UNITS)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	SODIUM AD- SORP- TION RATIO	SILICA, DIS- SOLVED (MG/L AS SIO ₂)	SODIUM, DIS- SOLVED (MG/L AS NA)	SULFATE DIS- SOLVED (MG/L AS SO ₄)	SPE- CIFIC CON- DUCT- ANCE (UMHOS)	TEMPER- ATURE (DEG C)
NOV , 1979 23...	10.2	.080	6.0	20	.9	200	120	940	7.0