

Sand and gravel aquifers (glaciated regions)

Glacial Surficial Sand & Gravel

Redwood County, MN

LOCATION.--Lat 44°29'14", long 95°18'36" referenced to North American Datum of 1927, in SW ¼ SW ¼ SW ¼ sec.21, T.112 N., R.37 W., Redwood County, MN, Hydrologic Unit 07020006, 9.5 miles west and 3.8 miles south of Redwood Falls, Minnesota. The land surface at the site is 1030 plus-or-minus 5 feet above sea level, National Geodetic Vertical Datum of 1929.

GROUND-WATER RECORDS

WELL CHARACTERISTICS.--Depth 17.82 ft. Upper casing diameter 1.25 in., top of first opening 16.32 ft, bottom of last opening 17.82 ft. The hole for well WLN02 was drilled with an 8.25-inch-diameter power auger on Oct. 25, 1977 to a depth of 20 feet. The well is constructed of a 1.5-foot-long, 1.25-inch-diameter, wire-wound steel sandpoint attached to 19.5 feet of steel casing. When drilled, this casing had a stick-up about 2.5 feet above land surface. In 1978, the stick-up was 3.4 feet. On Nov. 9, 2005, the stick-up was measured at 3.18 feet. Using the latest stick-up, the open interval of the well is 16.32-17.82 feet and the well is 17.82 feet deep.

DATUM.--Land-surface datum is 1030 ft above National Geodetic Vertical Datum of 1929. Measuring point: MP is top of casing, not protection post., 3.18 ft above land-surface datum, Nov. 9, 2005, to present. Water levels are in feet above sea level and depth below land surface. During Jun. 2, 2004 to Nov. 9, 2005, water level accuracy is unknown. After Nov. 9, 2005, absolute water-level elevations are accurate to plus-or-minus 5 feet, based on the elevation of the land surface from the USGS topographic map. Relative water-level elevations and water depths are accurate to plus-or-minus 0.01 feet.

PERIOD OF RECORD.--From Oct. 26, 1977 to Nov. 30, 2005, water levels were measured manually with a steel or calibrated electric tape, about monthly. From Jun. 2, 2004 to Oct. 06, 2004 and Feb. 12, 2005 to the present, water levels have been measured hourly with a pressure transducer and recorded with a data logger.

GAGE.--From Jun. 2, 2004 through Nov. 9, 2005, water level was measured with a Druck submersible pressure transducer of unknown accuracy. From Nov. 9, 2005 to the present, water level is measured with a KPSI submersible pressure transducer accurate to 0.01 feet. Battery voltage is measured by a Campbell Scientific, Inc. CR500 data logger, which also records all data hourly. The data logger is housed in a 14-inch X 16-inch grey fiberglass shelter attached to the well casing and is powered by a 10W solar panel.

COOPERATION.--Well WLN02 is operated as part of the U.S. Geological Survey's Collection-of-Basic-Record program.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 8.825 ft below land-surface datum on Jun. 15, 2004 at 19:00 CDT, lowest water level, 13.948 ft below land-surface datum on Aug. 18, 2007 at 11:00 CDT.

EXTREMES FOR CURRENT YEAR.--Highest water level, 10.856 ft below land-surface datum on May 14, 2007 at 8:00 CDT, lowest water level, 13.948 ft below land-surface datum on Aug. 18, 2007 at 11:00 CDT.

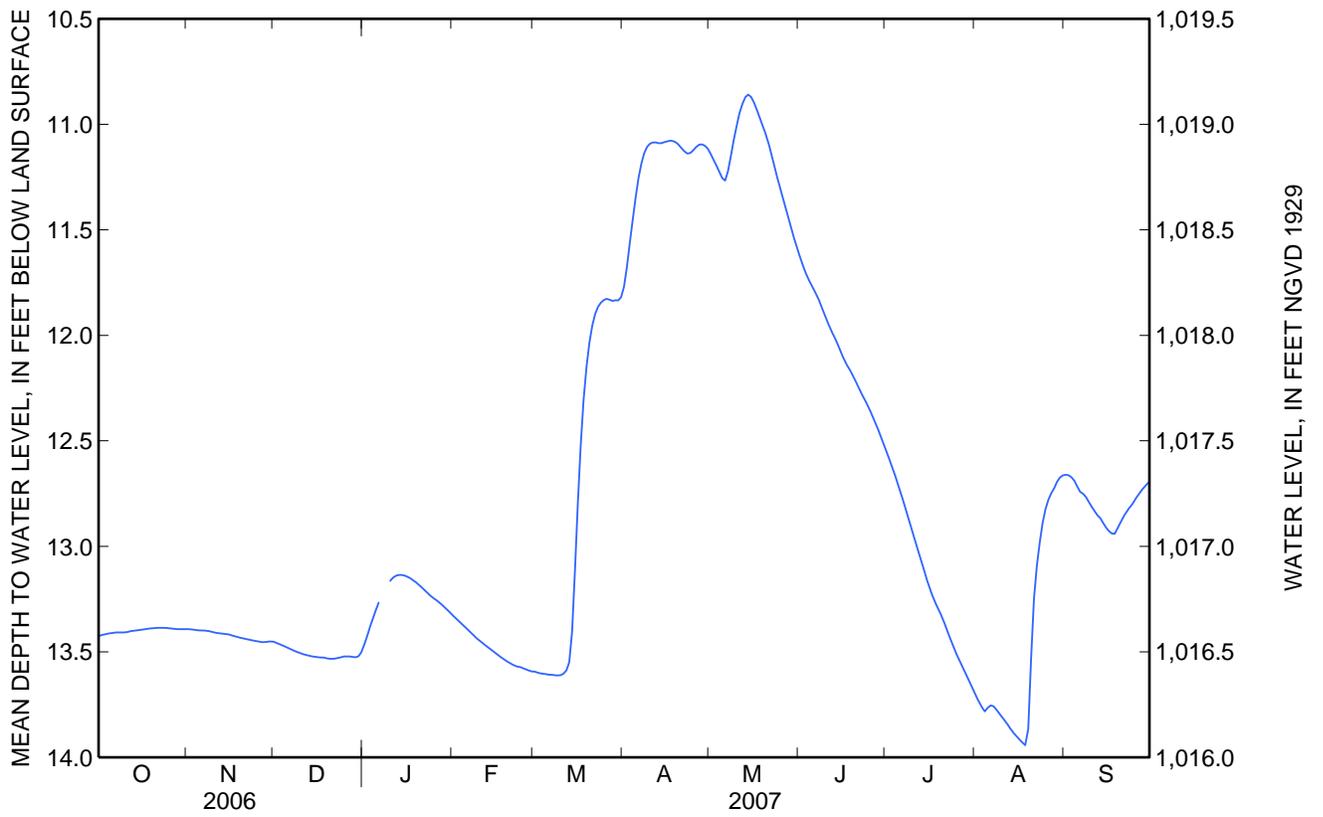
EXTREMES FOR CURRENT YEAR.--Highest water level, above NGVD29, May 14; lowest water level, 1,009.144 ft 1,006.052 ft above NGVD29, Aug 18.

DEPTH TO WATER LEVEL, FEET BELOW LAND SURFACE
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007
DAILY MEAN VALUES

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	13.425	13.392	13.454	13.467	13.331	13.594	11.770	11.140	11.632	12.553	13.710	12.661
2	13.421	13.393	13.459	13.425	13.345	13.598	11.678	11.168	11.672	12.591	13.737	12.663
3	13.417	13.395	13.465	13.381	13.357	13.602	11.565	11.195	11.706	12.630	13.763	12.672
4	13.415	13.397	13.472	13.342	13.370	13.604	11.452	11.224	11.736	12.667	13.782	12.690
5	13.412	13.398	13.477	13.303	13.384	13.606	11.348	11.255	11.765	12.708	13.765	12.717
6	13.410	13.398	13.484	13.267	13.397	13.609	11.255	11.267	11.792	12.752	13.754	12.742
7	13.408	13.400	13.490	---	13.410	13.609	11.187	11.223	11.816	12.798	13.758	12.751
8	13.408	13.401	13.496	---	13.423	13.611	11.137	11.152	11.850	12.845	13.774	12.766
9	13.408	13.404	13.502	---	13.437	13.612	11.107	11.076	11.884	12.891	13.792	12.789
10	13.408	13.407	13.506	13.164	13.448	13.611	11.092	11.010	11.920	12.935	13.810	12.812
11	13.406	13.410	13.510	13.149	13.458	13.604	11.086	10.948	11.953	12.980	13.827	12.832
12	13.402	13.413	13.516	13.139	13.470	13.588	11.086	10.903	11.983	13.025	13.847	12.853
13	13.400	13.414	13.519	13.136	13.481	13.550	11.090	10.872	12.012	13.070	13.867	12.867
14	13.399	13.415	13.522	13.135	13.492	13.404	11.089	10.859	12.043	13.116	13.885	12.890
15	13.397	13.417	13.524	13.140	13.502	13.114	11.085	10.871	12.075	13.161	13.901	12.911
16	13.394	13.422	13.524	13.145	13.511	12.796	11.081	10.896	12.108	13.204	13.915	12.928
17	13.392	13.425	13.526	13.152	13.521	12.524	11.078	10.931	12.135	13.239	13.930	12.939
18	13.391	13.428	13.527	13.160	13.531	12.307	11.080	10.968	12.158	13.271	13.943	12.941
19	13.389	13.433	13.530	13.171	13.541	12.146	11.086	11.008	12.184	13.300	13.866	12.914
20	13.387	13.437	13.533	13.184	13.549	12.034	11.100	11.046	12.212	13.331	13.530	12.885
21	13.387	13.439	13.533	13.195	13.559	11.953	11.115	11.087	12.240	13.365	13.248	12.860
22	13.387	13.441	13.531	13.209	13.566	11.899	11.129	11.139	12.269	13.401	13.093	12.838
23	13.386	13.445	13.529	13.222	13.571	11.865	11.139	11.194	12.295	13.437	12.983	12.819
24	13.387	13.447	13.525	13.235	13.572	11.845	11.136	11.248	12.321	13.471	12.890	12.802
25	13.387	13.451	13.522	13.246	13.578	11.833	11.123	11.301	12.349	13.503	12.825	12.781
26	13.389	13.452	13.522	13.255	13.583	11.827	11.108	11.349	12.380	13.536	12.780	12.759
27	13.391	13.454	13.522	13.266	13.588	11.832	11.097	11.397	12.414	13.565	12.748	12.739
28	13.392	13.453	13.524	13.279	13.593	11.837	11.095	11.449	12.448	13.593	12.724	12.723
29	13.392	13.451	13.525	13.290	---	11.834	11.102	11.495	12.481	13.622	12.694	12.708
30	13.392	13.451	13.521	13.304	---	11.835	11.116	11.544	12.516	13.652	12.674	12.694
31	13.393	---	13.502	13.317	---	11.819	---	11.589	---	13.682	12.664	---
Mean	13.399	13.423	13.509	---	13.485	12.758	11.187	11.155	12.078	13.158	13.467	12.798
Max	13.425	13.454	13.533	---	13.593	13.612	11.770	11.589	12.516	13.682	13.943	12.941
Min	13.386	13.392	13.454	---	13.331	11.819	11.078	10.859	11.632	12.553	12.664	12.661

Calendar Year 2006

Mean	12.203
High	9.562
Low	13.533



WATER-QUALITY RECORDS

PERIOD OF RECORD.--From Nov. 10, 2005 to the present, water temperatures have been measured hourly with a pressure transducer and recorded with a data logger.

PERIOD OF DAILY RECORD.--From Nov. 11, 2005 to the present, mean water temperatures have been computed daily.

INSTRUMENTATION.--Water temperature is measured with a KPSI submersible pressure transducer accurate to 0.1°C.

EXTREMES FOR PERIOD OF RECORD.--Water temperature: Maximum, 11.0°C on Nov 10, 2005-Nov. 30, 2006 during many hours, and Dec. 8, 2005 at 15:00 CST; minimum, 6.5°C on May 31, 2006 at 0:00 CDT, June 3, 2006 at 8:00 CDT, and Jun. 6, 2006 at 11:00 CDT.

EXTREMES FOR PERIOD OF DAILY RECORD.--Maximum: 10.9°C during Nov. 10 - Dec. 2, 2005; minimum: 6.6°C during May 26 - Jun. 3 and Jun. 5, 2006.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 10.5°C, Nov 9; minimum, 6.8°C, on several days.

**TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007
DAILY MEAN VALUES**

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	10.1	10.3	10.2	9.7	9.0	8.5	8.0	7.3	6.9	7.5	8.7	9.4
2	10.1	10.3	10.1	9.7	9.0	8.4	8.0	7.3	7.0	7.5	8.8	9.5
3	10.2	10.3	10.2	9.7	9.0	8.4	8.0	7.2	6.9	7.6	8.8	9.5
4	10.2	10.3	10.1	9.6	9.0	8.4	8.0	7.2	7.0	7.6	8.8	9.5
5	10.2	10.3	10.1	9.6	9.0	8.4	8.0	7.2	7.0	7.6	8.9	9.5
6	10.2	10.3	10.1	9.6	9.0	8.4	7.9	7.2	7.0	7.7	8.9	9.6
7	10.2	10.3	10.1	---	8.9	8.3	7.9	7.1	7.0	7.7	8.9	9.6
8	10.2	10.3	10.1	---	8.9	8.3	7.9	7.1	7.0	7.7	9.0	9.6
9	10.2	10.3	10.1	---	8.9	8.3	7.9	7.1	7.0	7.8	9.0	9.6
10	10.2	10.3	10.1	9.5	8.9	8.3	7.8	7.1	7.1	7.8	9.0	9.6
11	10.2	10.3	10.0	9.5	8.8	8.2	7.8	7.1	7.0	7.8	9.1	9.6
12	10.2	10.3	10.0	9.5	8.8	8.2	7.8	7.0	7.1	7.9	9.1	9.7
13	10.2	10.3	10.0	9.5	8.8	8.2	7.8	7.0	7.1	7.9	9.2	9.7
14	10.2	10.3	10.0	9.4	8.8	8.3	7.8	7.0	7.1	8.0	9.2	9.7
15	10.2	10.3	10	9.4	8.8	8.3	7.8	7.0	7.1	8.0	9.3	9.8
16	10.3	10.3	10	9.4	8.7	8.4	7.7	7.0	7.1	8.0	9.3	9.8
17	10.3	10.3	10	9.4	8.7	8.3	7.7	7.0	7.2	8.1	9.3	9.8
18	10.3	10.3	9.9	9.3	8.7	8.3	7.6	7.0	7.2	8.1	9.4	9.8
19	10.3	10.3	9.9	9.3	8.7	8.3	7.6	7.0	7.2	8.2	9.4	9.8
20	10.3	10.3	9.9	9.3	8.7	8.3	7.6	6.9	7.2	8.2	9.4	9.8
21	10.3	10.2	9.9	9.3	8.6	8.3	7.6	6.9	7.3	8.2	9.4	9.9
22	10.3	10.3	9.9	9.3	8.6	8.2	7.6	6.9	7.3	8.3	9.3	9.9
23	10.3	10.2	9.9	9.2	8.6	8.2	7.5	6.9	7.3	8.3	9.3	9.9
24	10.3	10.2	9.8	9.2	8.6	8.2	7.5	6.9	7.3	8.4	9.4	9.9
25	10.3	10.2	9.8	9.2	8.6	8.1	7.4	6.9	7.4	8.4	9.3	10
26	10.3	10.2	9.8	9.2	8.5	8.1	7.4	6.9	7.4	8.4	9.4	10
27	10.3	10.2	9.8	9.2	8.5	8.1	7.4	6.9	7.4	8.5	9.4	10.0
28	10.3	10.2	9.8	9.2	8.5	8.0	7.4	6.9	7.4	8.5	9.4	10.0
29	10.3	10.2	9.8	9.1	---	8.1	7.3	6.9	7.5	8.6	9.4	10.0
30	10.3	10.2	9.7	9.1	---	8.0	7.3	6.9	7.5	8.6	9.4	10.1
31	10.3	---	9.7	9.1	---	8.0	---	6.9	---	8.7	9.4	---
Mean	10.2	10.3	10.0	---	8.8	8.3	7.7	7.0	7.2	8.1	9.2	9.8

