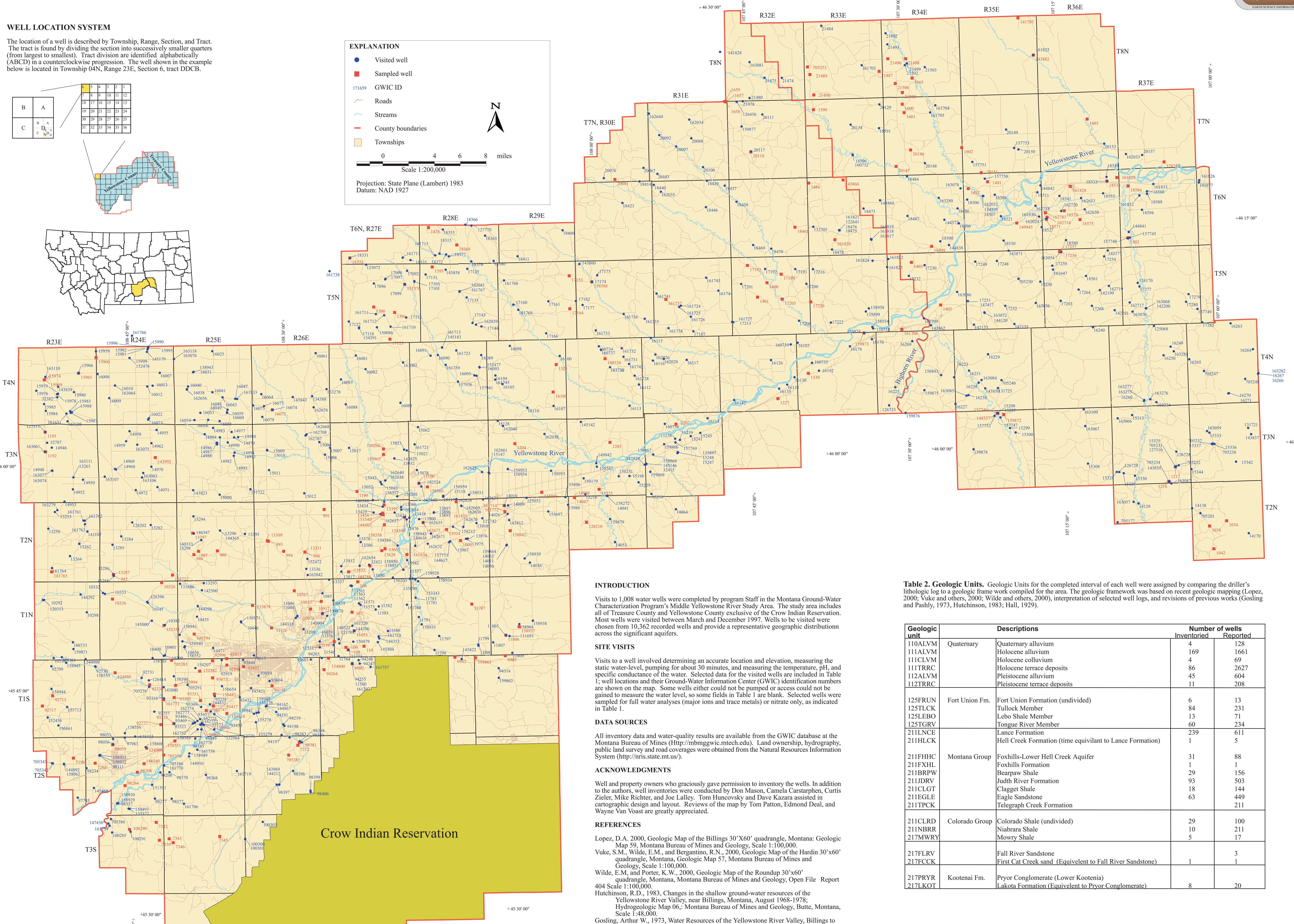
Data for Water Wells Visited during the Middle Yellowstone River Area Ground-Water Characterization Study: Treasure and Yellowstone Counties, Montana

by John L. Olson and Jon C. Reiten

WELL LOCATION SYSTEM

The location of a well is described by Township, Range, Section, and Tract. The tract is found by dividing the section into successively smaller quarters (from largest to smallest). Tract division are identified alphabetically (ABCD) in a counterclockwise progression. The well shown in the example below is located in Township 04N, Range 23E, Section 6, tract DDCB.



INTRODUCTION

Visits to 1,008 water wells were completed by program Staff in the Montana Ground-Water Characterization Program's Middle Yellowstone River Study Area. The study area includes all of Treasure County and Yellowstone County exclusive of the Crow Indian Reservation. Most wells were visited between March and December 1997. Wells to be visited were chosen from 10,362 recorded wells and provide a representative geographic distributionn across the significant aquifers.

SITE VISITS

Visits to a well involved determining an accurate location and elevation, measuring the static water-level, pumping for about 30 minutes, and measuring the temperature, pH, and specific conductance of the water. Selected data for the visited wells are included in Table 1; well locations and their Ground-Water Information Center (GWIC) identification numbers are shown on the map. Some wells either could not be pumped or access could not be gained to measure the water level, so some fields in Table 1 are blank. Selected wells were sampled for full water analyses (major ions and trace metals) or nitrate only, as indicated in Table 1.

DATA SOURCES

All inventory data and water-quality results are available from the GWIC database at the Montana Bureau of Mines (Http://mbmggwic.mtech.edu). Land ownership, hydrography, public land survey and road coverages were obtained from the Natural Resources Information System (http://nris.state.mt.us/).

ACKNOWLEDGMENTS

Well and property owners who graciously gave permission to inventory the wells. In addition to the authors, well inventories were conducted by Don Mason, Camela Carstarphen, Curtis Zieler, Mike Richter, and Joe Lalley. Tom Huncovsky and Dave Kazara assisted in cartographic design and layout. Reviews of the map by Tom Patton, Edmond Deal, and Wayne Van Voast are greatly appreciated.

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Table 2. Geologic Units. Geologic Units for the completed interval of each well were assigned by comparing the driller's lithologic log to a geologic frame work compiled for the area. The geologic framework was based on recent geologic mapping (Lopez, 2000; Vuke and others, 2000; Wilde and others, 2000), interpretation of selected well logs, and revisions of previous works (Gosling and Pashly, 1973, Hutchinson, 1983; Hall, 1929).

Geologic unit	Descriptions		Number of wells Inventoried	Reported
110ALVM	Quaternary	Quaternary alluvium	4	128
111ALVM		Holocene alluvium	169	1661
111CLVM		Holocene colluvium	4	69
111TRRC		Holocene terrace deposits	86	2627
112ALVM		Pleistocene alluvium	45	604
112TRRC		Pleistocene terrace deposits	11	208
125FRUN	Fort Union Fm.	Fort Union Formation (undivided)	6	13
125TLCK		Tullock Member	84	231
125LEBO		Lebo Shale Member	13	71
125TGRV		Tongue River Member	60	234
211LNCE		Lance Formation	239	611
211HLCK		Hell Creek Formation (time equivilant to Lance Formation)	1	5
211FHHC	Montana Group	Foxhills-Lower Hell Creek Aquifer	31	88
211FXHL		Foxhills Formation	1	1
211BRPW		Bearpaw Shale	29	156
211JDRV		Judth River Formation	93	503
211CLGT		Clagget Shale	18	144
211EGLE		Eagle Sandstone	63	449
211TPCK		Telegraph Creek Formation		211
211CLRD	Colorado Group	Colorado Shale (undivided)	29	100
211NBRR		Niabrara Shale	10	211
217MWRY		Mowry Shale	5	17
217FLRV		Fall River Sandstone		3
217FCCK		First Cat Creek sand (Equivelent to Fall River Sandstone)	1	1
217PRYR	Kootenai Fm.	Pryor Conglomerate (Lower Kootenia)		
217LKOT		Lakota Formation (Equivelent to Pryor Conglomerate)	8	20

Table 1. Well Inventory Data. Data are arranged in ascending order of Township, Range and Section (South Townships first). Blank lines separate Township blocks; GWIC ID= Ground-Water Information Center identification number; Location = Township-Range-Section-Tract (see well location system); Geologic Unit refers to codes listed in Table 2; TD= total well depth (ft); SWL= static water level below the measuring point (ft); MPE= measuring point elevation (ft-AMSL); Temp= water temperature (C°); SC= water specific conductance (umhos/cm); pH = -log of hydrogen activity; NO_3 = field nitrate concentration (mg/l as N). An "F" in the Lab field indicates that a full analayses is available and an :N: indicates that only nitrate analyses is available. A hyphen indicates that data were not collected.

GWIC ID	Location	Geologic Unit	TD	SWL	MPE	Temp	SC	pH	NO3	Lab
158945	01S-23E-2-ABCC	211EGLE	135	61.75	3762	-	-	-	-	-
92709	01S-23E-3-BDDC	211JDRV	85	44.41	3710	-	-	-	-	-
158944	01S-23E-15-BADC	211EGLE	28	4.03	3711	8.6	3580	7.3	1.1	-
92715	01S-23E-15-CDAA	211EGLE	159	121.19	3836	12	2850	7.3	0.4	F
92717	01S-23E-21-DBAA	211CLGT	159	123.96	3991	11.3	5700	7.4	5.3	F
155713	01S-23E-23-DBCA	211EGLE	360	99.17	3935	12.5	2400	7.3	-	-
152456	01S-23E-27-BDDB	211EGLE	308	173.69	3492	-	-	-	-	-
156861	01S-23E-34-AAAC	211EGLE	400	-	3986	-	-	-	-	-
158555	01S-24E-6-DAAB	111CLVM	18	17.06	3434	8.4	327	7.5	1.1	-
92730	01S-24E-6-DABA	111CLVM	50	18.85	3441	9	3230	7.5	0.4	-
124880	01S-24E-9-BAAB	211NBRR	47	28.44	3421	12	1837	7.49	5.1	F
92731	01S-24E-11-BDDC	211NBRR	300	31.56	3371	-	-	-	-	-
126414	01S-24E-11-DAAD	211NBRR	130	29.06	3358	-	-	-	-	-
92738	01S-24E-12-CCCC	111ALVM	50	21.56	3319	9.6	2490	7.12	2.3	F
92757	01S-24E-25-BABA	111TRRC	50	27.43	3319	13.2	1562	7.3	0.5	-
158556	01S-24E-34-CBCB	211NBRR	90	71.28	3476	11.3	2750	7.6	2.2	-
145415	01S-24E-34-DDCD	111ALVM	55	-	3380	12.7	1569	7.3	2.9	-
92777	01S-24E-36-AABA	111TRRC	38	6.87	3297	10.2	1330	6.3	3.9	N
92833	01S-25E-1-BBBB	111TRRC	45	10.11	3236	10	2520	7.3	0.1	F
92840	01S-25E-1-CBBB	111TRRC	27	9.38	3231	-	-	-	-	F
92919	01S-25E-2-ABCA	111TRRC	45	11.35	3240	10.9	2510	7.2	5.5	-
92996	01S-25E-3-AADA	111TRRC	45	5.41	3262	10.9	2650	7.2	5.2	N
154207	01S-25E-4-DBCD	111TRRC	78	-	3285	6.8	1625	7.4	0.7	-
151382	01S-25E-4-DDDC	111TRRC	65	13.39	3276	11	1591	7.3	2.7	N
705285	01S-25E-6-AABB	111ALVM	16	6.45	3356	9.2	2110	7.3	1.2	N
158590	01S-25E-7-ADAC	111ALVM	38	33.42	3322	-	-	-	-	-
93073	01S-25E-10-ADDC	111TRRC	42	11.5	3251	11.1	1293	7.4	6.1	N
156654	01S-25E-14-ABCA	111TRRC	36	-	3241	-	-	-	-	-
150483	01S-25E-14-CBCC	211CLRD	200	13.63	3247	12.4	1801	7.5	1.4	F
93258	01S-25E-14-CCCB	211CLRD	150	18.54	3246	-	-	-	-	-
705291	01S-25E-17-AAAA	111TRRC	42	7.32	3271	-	-	-	-	-
143994	01S-25E-17-BBBB	111TRRC	48	10.11	3292	11.5	1602	7.4	0.8	F
143880	01S-25E-18-BBCA	211NBRR	66	12.64	3314	-	-	-	-	-
93305	01S-25E-18-DDDC	111TRRC	49	13.77	3293	10.6	1781	7.4	3.4	F
93316	01S-25E-19-BBAB	111TRRC	57	21.66	3305	11.4	1217	7.3	2.7	-
161771	01S-25E-19-BBBD	111TRRC	55	21.24	3302	-	-	-	-	N
93351	01S-25E-21-AADD	111TRRC	30	20.12	3255	10.6	788	7.5	2.9	N
93369	01S-25E-21-DADD	211NBRR	37	17.04	3245	10.5	833	7.4	3.1	-
162747	01S-25E-22-CDCD	111TRRC	35	18.85	3231	14.8	451	7.7	1.6	N
93417	01S-25E-22-DADA	111TRRC	45	22.74	3216	11.6	710	7.5	4.7	-
144832	01S-25E-22-DBAB	111TRRC	72	24.71	3228	14.5	779	7.7	0.9	-
93432	01S-25E-24-AAAA	111ALVM	49	18.75	3191	12.5	1662	7.5	0.8	-
154210	01S-25E-26-AADD	111TRRC	38	20.3	3196	10.8	1853	7.2	8.7	F
93457	01S-25E-27-ABAD	111TRRC	42	17.8	3221	13.5	661	7.5	2.8	-
93453	01S-25E-27-ADAA	111TRRC	38	19.6	3210	11.6	954	7.2	3.4	-
132564	01S-25E-27-CCCC	111TRRC	28	12.73	3208	-	-	-	-	-
162752	01S-25E-28-CDCD	111TRRC	30	4.01	3220	12.3	613	7.8	2.3	-
93469	01S-25E-28-CDDA	111TRRC	-	-	-	-	-	-	-	-
93486	01S-25E-28-CDDD	111TRRC	29	5.35	3216	8.5	619	7.8	1.6	-
162774	01S-25E-28-DADB	111TRRC	13	4.45	3215	11.7	673	7.8	4.2	-
162777	01S-25E-28-DCAB	111TRRC	18	2.32	3211	11.2	507	7.7	1.2	-
93523	01S-25E-30-DDDC	111TRRC	26	-	3285	10.2	1173	7.4	0.5	-
93528	01S-25E-30-DDDC	111TRRC	20	4.83	3285	-	-	-	-	F
93549	01S-25E-33-AAAC	111TRRC	24	10	3206	11.9	1268	7.4	4.9	-
158589	01S-25E-33-ACDA	111ALVM	25	8.65	3208	-	-	-	-	-
162770	01S-25E-33-ADDA	111TRRC	12	5.39	3201	16	1517	7.2	6.1	-
162779	01S-25E-34-ADDD	111TRRC	10	0.74	3185	15.1	849	7.1	5.9	-
93573	01S-25E-34-BBAC	111TRRC	23	12.51	3200	12	1257	7.5	4.6	-
158946	01S-25E-34-BBBB	111TRRC	24	11.7	3207	-	-	-	-	N
158960	01S-25E-34-BBBB	111TRRC	22	-	3205	10.7	1180	7.6	2.2	N
162721	01S-25E-34-BBBB	111TRRC	22	9.25	3206	12.2	630	7.7	1.7	-
162772	01S-25E-34-BBBD	111TRRC	25	10.64	3200	12	1270	7.5	3	-