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GEOHERMAL RESOURCES
OF
MONTANA

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Submitted to:

Oregon Institute of Technology
Geo Heat Center

and

University of Utah Research Institute

Submitted by:

John Metesh
Montana Bureau of Mines and Geology

June, 1994

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GEOTHERMAL RESOURCES OF MONTANA

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ABSTRACT

Montana's Geothermal Resources

The Montana Bureau of Mines and Geology has updated its inventory of low- and moderate temperature resources for the state and has assisted the Oregon Institute of Technology - GeoHeat Center and the University of Utah Research Institute in prioritizing and collocating important geothermal resource areas.

The database compiled for this assessment contains information on location, flow, water chemistry, and estimated reservoir temperatures for 267 geothermal wells and springs in Montana. For this assessment, the minimum temperature for low-temperature resource is defined as 10° C above the mean annual air temperature at the surface. The maximum temperature for a moderate-temperature resource is defined as greater than 50° C. Approximately 12% of the wells and springs in the database have temperatures above 50° C, 17% are between 30° and 50°C, 29% are between 20° and 30°C, and 42% are between 10° and 20° C. Low- and moderate-temperature wells and springs can be found in nearly all areas of Montana, but most are in the western third of the state. Information sources for the current database include the MBMG Ground Water Information Center, the USGS statewide database, the USGS GEOTHERM database, and new information collected as part of this program.

Five areas of Montana were identified for consideration in future investigations of geothermal development. The areas identified are those near Bozeman, Ennis, Butte, Boulder, and Camas Prairie. These areas were chosen based on the potential of the resource and its proximity to population centers.

1.0 INTRODUCTION

Previous Geothermal Assessments

Two state-wide geothermal assessments have been conducted in the past. Allen (1980) collocated geothermal resources and cities for eight western states including Montana. Allen's study focused on resource temperatures greater than 50°C and did not include low-temperature resources. Sonderegger and others (1981) produced a 1:1,000,000-scale map and associated table of geothermal resource areas in Montana based on a compilation of various published reports and theses. Although the compilation included temperatures below 50°C, these data were not stored in a digital format because electronic databases were not available then for retrieval or storage. These reports, however, provided a good basis for updating information which has now been stored in a digital format.

Overview of Program

The Montana Bureau of Mines and Geology (MBMG) entered into a cooperative agreement with the Oregon Institute of Technology GeoHeat Center (OIT-GHC) and the University of Utah Research Institute (UURI) to conduct several tasks related to Montana's geothermal resources. These tasks included:

- ▶ preparation of a comprehensive digital geothermal-resources database containing temperature, location (latitude/longitude, Township/Range/Section/tract, and county) and chemistry (pH, TDS, and selected chemistry). The minimum temperature for a low-temperature resource was defined to be 10°C above the mean annual air temperature at the surface.
- ▶ preparation of a 1:1,000,000-scale map of occurrences within Montana. The map was compiled in a digital format.

- ▶ collecting samples from areas lacking information; analyses of the samples were conducted by UURI Earth Science Laboratory.
- ▶ a final summary report describing all tasks and their results.
- ▶ assisting OIT-GHC and UURI to prioritize low- and moderate-temperature resource areas.

Funding for this program was provided by the Department of Energy through a task agreement with OIT GHC and UURI. The tasks performed under this agreement may be considered Phase I of the Low-Temperature Geothermal Resources and Technology Transfer Program. Phase II, if funded, will include a detailed study of priority sites.

2.0 DATA SOURCES

References Used and Selection Criteria

Ground Water Information Center

The criteria for selecting sites that were to be included in the database depended on the source of the data. For the initial search of the Montana Bureau of Mines Ground Water Information Center (GWIC) database, a minimum temperature of 13^o Celsius was used (10^o degrees above the lowest mean annual temperature officially reported anywhere in Montana) to ensure that all low-temperature sites were included. This query produced approximately 600 records. Each record included any information that was available on location, site name, well depth, flow, temperature, and chemistry. These records were then transferred to a PARADOX database where more restrictive queries could be made that would eliminate records while allowing for a review of the eliminated records. For example, after sorting and separating the data into five geographic areas for which the mean annual air temperature was better defined and running a query based on that temperature, approximately 250 sites were eliminated, leaving approximately 350 sites to be considered further. Each of the remaining 350 sites was assigned a 3-digit identification number with a prefix of MGEOT. The rejected records were reviewed for other geothermal indicators such as high chloride, silica, and/or arsenic concentrations and close proximity to known geothermal areas.

GEO THERM

A digital version of the GEO THERM database was obtained from the Department of Energy Geothermal Division. These data had been compiled in an earlier, region-wide inventory (Reed and others, 1983). Although no new records were added to the MGEOT database, the GEO THERM records were compared to those in the MGEOT database for accuracy and completeness. Since there were few changes, it was not necessary to merge the databases; any necessary changes to the MGEOT database were made manually.

Published Data

The tables of geothermal wells and springs produced by Mariner and others (1976), Leonard and others (1978), and Sonderegger and others (1981), were also used to ensure the completeness and accuracy of the MGEOT database. Any additional sites or information from these reports were entered manually into the database. The same approach was taken with other published sources.

Twelve Master's theses were reviewed for additional information on geothermal resource areas. Many of the investigations focused on the geologic or geophysical aspects of a known geothermal area. Little chemistry data was gleaned from these reports; however, temperature and location of many sites were verified as a result of the review.

Error and Duplicate Records

The most common error encountered was high temperatures reported for wells and springs in areas where geothermal sources are known *not* to exist. The most probable cause for the high temperature is "warm-day" sampling or improper purging of shallow wells. These sites were eliminated based on the personal knowledge of the investigators or on data collected at that same site at another time. Another common error was in the units used for concentration data. Trace-metals such as boron, arsenic, and lithium were often in error as a result of converting between parts-per-billion ($\mu\text{g/L}$) and parts-per-million (mg/L). The original publication was used, if possible, to correct these. In other cases, a calculation of ionic balance was used to determine if a problem existed.

With some exceptions, duplicate records in the form of data for two or more samples from the same site were eliminated and the most recent, most complete data were used. The exceptions were the site that had been re-sampled as part of this inventory (Symes Hotel, MGEOT352) and sites where samples had been collected several years apart. The intent was to provide information on changes in temperature and chemistry over time. The other exception were those sites where

information was limited with respect to chemistry. In these cases, two data sets provided more useful information on the site. There is a total of 24 duplicate sites.

Reference/Bibliography

A reference is given for each record in the database. The reports published by Mariner and others (1976), Leonard and others (1978), and Sonderegger and others (1981) provided most of the information for previously identified geothermal areas. The GWIC database provided more recent data for previously identified sites. GWIC also provided information for areas near previously identified resource areas and for low-temperature sites in geothermal areas not previously identified.

The references/bibliography listed in Section 8.0 also includes the theses and other publications that pertain to geothermal resource areas in Montana. As noted in Section 2.0, some of these references provided confirmation of location and temperature. Rautio and Sonderegger (1980) also provided a bibliography of geothermal resources in Montana. This is reproduced in this report as a useful supplement to the bibliography.

3.0 DATA FORMAT

Organization of Tables

The data fields used in the database were recommended by program leaders at OIT-GHC and UURI, and agreed upon by state team members. The final version of the data was exported from the PARADOX database to a LOTUS-123 format. The spreadsheet enabled an evaluation of the distribution of sites, the calculation of reservoir temperature, and provided a means of graphical output.

State Geothermal Resource Map

The location (latitude/longitude), temperature, resource type (well or spring), and ID number of all sites in the database were imported from the spreadsheet to an ARC/INFO based Geographical Information System. The data were then plotted at 1:1,000,000 scale with county boundaries. Each data-point indicated the ID-number, the temperature range (by color), and resource type (well or spring, by symbol) as well as location. This initial plot was used to verify the accuracy of the location, to give an indication of the density of sites in a given area, and to identify any sites that were plotted in areas where geothermal resources are known not to exist. The final map uses the same format and presents each of the individual sites listed in the database. A listing of selected fields for all sites is presented in Appendix I. The large number of sites in the Camas-Lonepine area made it impractical to plot the ID number for each site; these are repeated in a separate table in Appendix I.

Procedures for using the data

The database listing in Appendix I is sorted by location (ascending latitude). This format is also used in the listing of maximum temperatures based on selected geothermometers in Appendix II. The information for each site is listed with reference to the ID number on the 1:1,000,000-scale map.

In the repetitive process of adding and deleting sites based on a multitude of criteria, it was found that maintaining the database in a PARADOX (or similar)

format was best. This format enables searches using the an ID-number or location from the map or general information, such as site name, and is contained in a single database-table. This single table can be separated into several tables as the need arises.

4.0 FLUID CHEMISTRY

Samples collected in this assessment

Eight water samples were collected from five areas in Montana; seven of these sample sites had not been sampled previously or had only limited information prior to this investigation. The eighth site was selected to provide a comparison of data collected approximately 10 years apart.

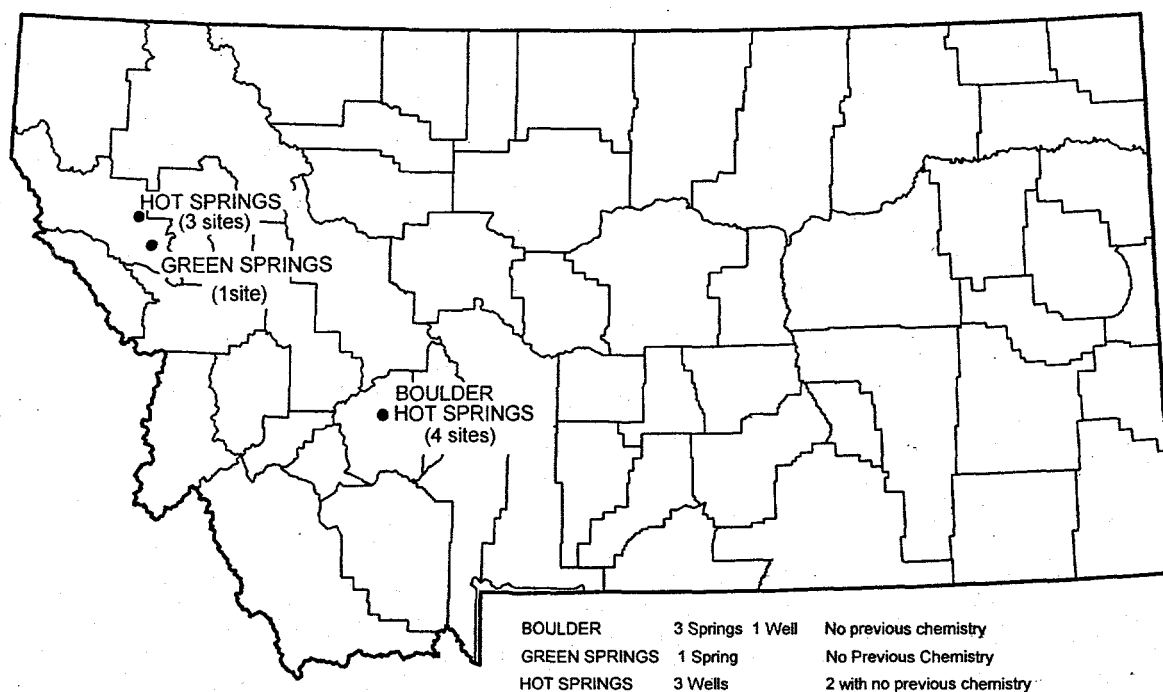


Figure 1 Eight samples were collected from three areas of Montana. Seven of the sites had little or no chemistry data.

Boulder Hot Springs, south of Boulder, MT

The Boulder Hot Springs resort is approximately 3 miles south of the town of Boulder within the Boulder Hot Springs KGRA. Previous owners of the resort would not grant access for sample collection during previous investigations. The

current owners, however, kindly allowed access, and each of the three springs near the resort were sampled (MGEOT349, MGEOT350, and MGEOT351). A fourth sample (MGEOT356) was collected from a well that had been intended as a drinking-water supply for the hotel, but produced "hot water" according to the owner.

Symes Hotel, Hot Springs, MT

The Symes Hotel uses a well for domestic water use. This well had been sampled in previous investigations, the sample date being 1980. The area has since undergone a moderate amount of development, and several additional wells have been completed in the area. Thus, this site (MGEOT352) was chosen to provide a comparison.

Koepling Well (MGEOT355) and Ostranger Well (MGEOT 354) , north of Hot Springs, MT

These wells are in the Little Bitterroot Valley 3 to 5 miles north of the town of Hot Springs. Although previously identified to be within a geothermal resource area, these wells had not been sampled in previous investigations.

Green Springs Area (MGEOT353), southwest of Camas Prairie, MT

Local residents identified 3 to 4 "hot" springs in the area south of the town of Camas Prairie. Nearby, Green Springs had been identified by Sonderegger and others (1981) as a geothermal area, but only limited data were available.

Sample collection/analytical methods

Water samples were collected from wells and springs in accordance with the Standard Operating Procedures provided by UURI (Kroneman, 1992). Each sample consisted of a 60-ml bottle filtered and preserved with 20% HNO₃, and 250-ml bottle filtered and preserved with 1% HCL, and a 500-ml bottle filtered with no

preservative. Upon collection of each sample, specific conductance, pH, water temperature and air temperature were obtained at the sample source. Spring samples were collected as close as possible to the source. Wells were sampled after pumping or bailing a minimum of three casing volumes and after field-parameters (pH, SC, Eh, and temperature) had stabilized to a range of less than 10%.

Samples were shipped within 48-hours of collection, via overnight delivery, to the UURI Analytical Laboratory in Salt Lake City, Utah. The samples were analyzed for major cations, major anions, and selected trace-metals.

Reservoir Temperatures

Several methods to estimate the reservoir temperature have been proposed; the most widely used are those using dissolved concentrations of silica (as SiO_2), Na-K-Ca, Na-K-Ca with a correction for Mg, and Na-K and are summarized by Fournier (1981). These methods represent empirical, equilibrium equations for which the water temperature at the reservoir is calculated. As noted by the authors of the methods, these calculations should be interpreted in consideration of the geologic and hydrogeologic setting.

Analytical Results

The analytical results for selected analytes are presented in Table 1. These sites are also included in the listing in Appendix I, in the listing of temperatures from geothermometers in Appendix II, and in the MGEOT database.

TABLE 1
ANALYTICAL RESULTS
1993 SAMPLING

ID	Site Name	Temp (°C)	Flow (L/m)	TDS (mg/L)	pH	Cl (mg/L)	SO ₄ (mg/L)
MGEOT349	BOULDER (UPPER)	54.0	340*	419.5	8.89	21.0	76.0
MGEOT351	BOULDER (LOWER)	64.5	75.7*	401.4	8.80	22.0	73.0
MGEOT350	BOULDER (MIDDLE)	74.0	75**	421.1	8.89	22.0	80.0
MGEOT356	BOULDER (WELL)	34.5		373.1	8.46	16.0	54.0
MGEOT352	SYMES HOTEL	33.3		297.2	9.66	11.0	30.0
MGEOT355	WELL 138	26.5		275.0	8.23	10.0	5.1
MGEOT354	WELL 56	17.2		290.9	8.05	14.0	3.8
MGEOT353	GREEN SPRINGS	23.7	2000**	208.4	9.86	12.0	17.0

* Flow measured with bucket/stopwatch **Flow estimated

ID	Site Name	F* (mg/L)	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)	Fe** (mg/L)
MGEOT349	BOULDER (UPPER)	11.8	2.7	0.4	122.0	3.8	ND
MGEOT351	BOULDER (LOWER)	11.0	3.2	ND	111.4	6.1	0.31
MGEOT350	BOULDER (MIDDLE)	11.1	2.0	0.3	118.2	ND	0.08
MGEOT356	BOULDER (WELL)	5.7	4.09	ND	108.2	3.7	0.09
MGEOT352	SYMES HOTEL	5.6	0.6	0.7	89.4	2.2	ND
MGEOT355	WELL 138	3.4	4.5	ND	95.6	2.9	0.06
MGEOT354	WELL 56	5.4	5.5	2.5	109.3	ND	0.39
MGEOT353	GREEN SPRINGS	2.1	0.8	1.2	57.1	2.1	0.27

* The drinking water standard (primary) for fluoride is 4mg/L.

** The drinking water standard (secondary) for iron is 0.3 mg/L; the aquatic life standard (acute) is 1mg/L.

TABLE 1 - Continued

ID	Site Name	SiO ₂ (mg/L)	As (mg/L)	B (mg/L)	Li (mg/L)
MGEOT349	BOULDER (UPPER)	93.2	0.7*	0.6	0.23
MGEOT351	BOULDER (LOWER)	90.0	ND	0.5	0.22
MGEOT350	BOULDER (MIDDLE)	98.5	ND	0.5	0.23
MGEOT356	BOULDER (WELL)	86.55	ND	0.49	0.21
MGEOT352	SYMES HOTEL	73.08	ND	0.2	0.04
MGEOT355	WELL 138	36.64	ND	0.4	0.04
MGEOT354	WELL 56	12.96	ND	0.3	ND
MGEOT353	GREEN SPRINGS	55.8	ND	0.1	ND

* Because of the high As concentration, this spring was re-sampled and analyzed by MBMG. The second analysis indicated a concentration of 0.02ug/L As.

ND = Not Detected

Boulder Hot Springs

The Boulder Hot Springs area lies approximately 3 miles south of the town of Boulder near the Interstate 15 highway. The area lies within the Boulder Batholith about 4 miles from its eastern edge. Until this investigation, only limited chemistry data and field parameters were publicly available for this area (Robertson and others, 1976, published limited chemistry and a reservoir temperature, but the location of the sample was not made clear). Other hot-springs and warm-water wells are known to exist in the area around Boulder; however, access was not gained either because the owner denied access or could not be contacted.

The samples were collected from three springs that have been developed to supply the Boulder Hot Springs resort. At present, the primary use of the hot water is a naturally heated swimming pool. As renovation of the hotel continues, the water may also be used for space heating as was the case in the past. Samples were collected at the supply pipe at each spring-box. Water-flow, which was difficult to measure because of the structures, was measured at two of the

springs using a bucket and stopwatch; the flow of the middle springs could only be estimated. The combined flow of all three springs is on the order of 490 L/min.

The field-temperatures of the springs vary by 20°C; the upper spring had the lowest temperature (54°C) and the middle spring, which was not being used, had the highest temperature (74°C). The variance in temperature suggests that the water supplying the springs is undergoing mixing. Conversely, the chemistry of the waters from each of the three springs is similar (all are strongly a sodium-potassium type water) and the estimated reservoir temperature for each of the springs tend to agree regardless of the geothermometer used (Table 2). Thus, the variance in temperature may result from the way the spring was developed and fed to the spring boxes.

TABLE 2
Selected Geothermometer Temperatures*
Boulder Hot Springs

ID	Site Name	Na-K-Ca (corrected)	Na-K-Ca (uncorr.)	Qtz (no steam)	Qtz (steam)
MGEOT349	BOULDER (UPPER)	110°C	134°C	133°C	129°C
MGEOT351	BOULDER (LOWER)		158°C	131°C	128°C
MGEOT350	BOULDER (MIDDLE)	120°C	141°C	136°C	132°C
MGEOT356	BOULDER (WELL)		134°C	129°C	126°C

*Geothermometer temperatures for all sites are presented in Appendix II.

The well, with a depth of 37.5 meters and a static-water-level of 0.85 meters, is downhill from the resort and the springs. The chemistry of its water (Table 1) is similar to that of the springs; and the geothermometer temperatures (Table 2) are in good agreement with those calculated for the springs. The water temperature (34.5°C) was 20°C lower than the spring with the lowest temperature. A small pond near the well had a temperature of 21°C.

Hot Springs Area

Three water samples were collected from the Hot Springs area: two from wells north of Hot Springs and one from a well in Hot Springs. As noted previously, temperature and chemistry data were not available for three of these sites, and the fourth, the Symes Hotel, had a sample collected in 1972.

The Koepling well and the Ostranger well are completed in the Lonepine aquifer approximately 1.5 miles apart and approximately 5 miles northeast of Hot Springs. The Symes Hotel is located in Hot Springs.

Water temperature and the concentration of several of the dissolved constituents varies between the three wells (Table 1). The geothermometer temperatures (Table 3) also indicate a range of temperatures wider than would be expected for a system with little or no mixing. Donovan (1985) suggested that the chemistry (and geothermometers) reflected the relative position of the well in a deep-circulating flow system.

TABLE 3
Selected Geothermometer Temperatures*
Hot Springs Area

ID	Site Name	Na-K-Ca (corrected)	Na-K-Ca (uncorr.)	Qtz (no steam)	Qtz (steam)
MGEOT352	SYMES HOTEL	35°C	131°C	120°C	118°C
MGEOT355	KOEPLING (WELL 138)			48°C	55°C
MGEOT354	OSTRANGER (WELL 56)		126°C	88°C	90°C

*Geothermometer temperatures for all sites are presented in Appendix II.

A time-comparison of geothermometer temperatures for the Symes Hotel well (Table 3) suggests a 3 to 5°C drop in temperature, perhaps the result of continued development of ground-water resources in the area. None of this

development, however, has been of the geothermal resources. This area could easily provide for applications of heat-transfer technology.

Green Springs

Green Springs is approximately 12 miles south of Hot Springs and approximately 2.5 miles southwest of Camas Prairie. Green Springs consists of 3 to 4 thermal springs feeding a wetlands/pond area. Elsewhere in the area, several small springs have been described by local citizens. A sample was collected from the largest of the springs at its source (Table 1). Although the site was documented by Sonderegger and others (1981), only a few chemical parameters were measured. The new data enabled a calculation of geothermometer temperatures (Table 4).

TABLE 4
Selected Geothermometer Temperatures*
Green Springs Area

ID	Site Name	Na-K-Ca (corrected)	Na-K-Ca (uncorr.)	Qtz (no steam)	Qtz (steam)
MGEOT353	GREEN SPRINGS		140°C	107°C	107°C

*Geothermometer temperatures for all sites are presented in Appendix II.

The differences between geothermometer temperatures suggests that mixing may be occurring and the difference in surface temperature and the geothermometer temperatures suggests either a high heat transfer or a slow circulation rate for this area.

Observations From Other Database Entries

Incorporating low-temperature sites in the inventory produced a new perspective of geothermal resources in the state. Areas such as Butte became more important with respect to potential development. The same may be true for the area near the city of Great Falls in Cascade County where wells 128- to 366-meters deep in the Madison Group produce water that ranges from 15 to 19°C; the water is used for irrigation and public water supply. Wells 274- to 396-meters deep in southern Treasure County and northern Big Horn County produce water whose temperatures range from 16.5°C to nearly 20°C.

The lower temperatures used in the selection criteria also had the effect of enlarging some of the areas identified by Sonderegger and others (1981). An example of this is in southern Broadwater County and northwestern Gallatin County where wells and springs had been identified in previous investigations. Updating the database provided additional information that may indicate a larger area for potential development.

5.0 DISCUSSION

Resource Potential

There are 291 records in the current database; these represent 267 individual sites (wells and springs). Approximately 71% of these sites exhibit water temperatures between 10 and 30° Celsius (Figure 2).

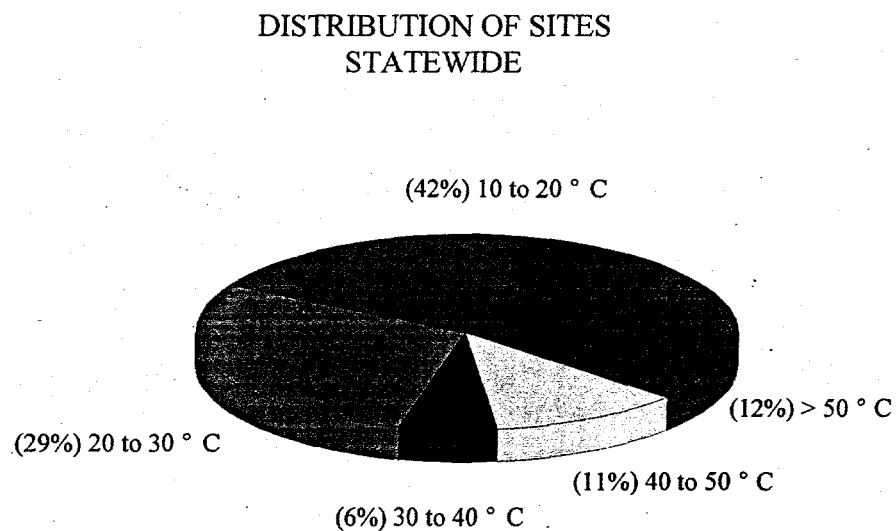


Figure 2 About 77% of the geothermal sites in Montana have water temperatures less than 40° Celsius; 12% of the sites have temperatures greater than 50° Celsius.

Collocation of Resources and Users

Montana's population centers are generally small (<50,000 people) and

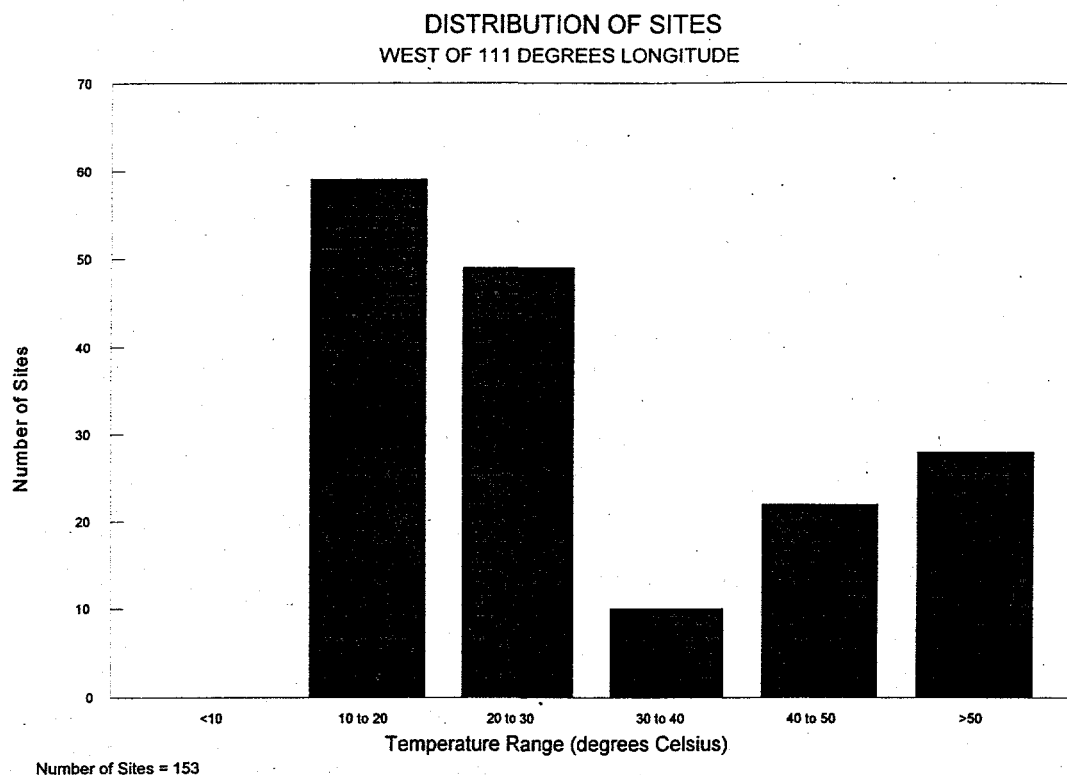


Figure 3 The western third of the state has 153 sites. About a third of those (approximately 100) have temperatures greater than 30°C.

widely distributed. The western third of the state has more of the larger population centers and a slightly higher overall population than the eastern two-thirds.

The distribution of geothermal resources mimics, but does not correlate, to that of the population; 152 of the 267 sites occur in the mountainous area of the western third (generally west of 111° longitude) whereas 115 sites are in the plains area of the eastern two-thirds of the state. Similarly, the number of warm and hot springs is much higher in the west.

A comparison of the distribution within the western (Figure 3) and eastern (Figure 4) parts of the state shows that the western third has a larger number of sites with temperatures greater than 30°C.

Collocation of population centers, albeit small, and geothermal resources are most likely to occur in the western third of the state. It should be noted, however, that deep wells into the Madison Formation in the eastern part of Montana have the potential to produce low- to moderate-temperature water as demonstrated in Treasure County and northern Big Horn County.

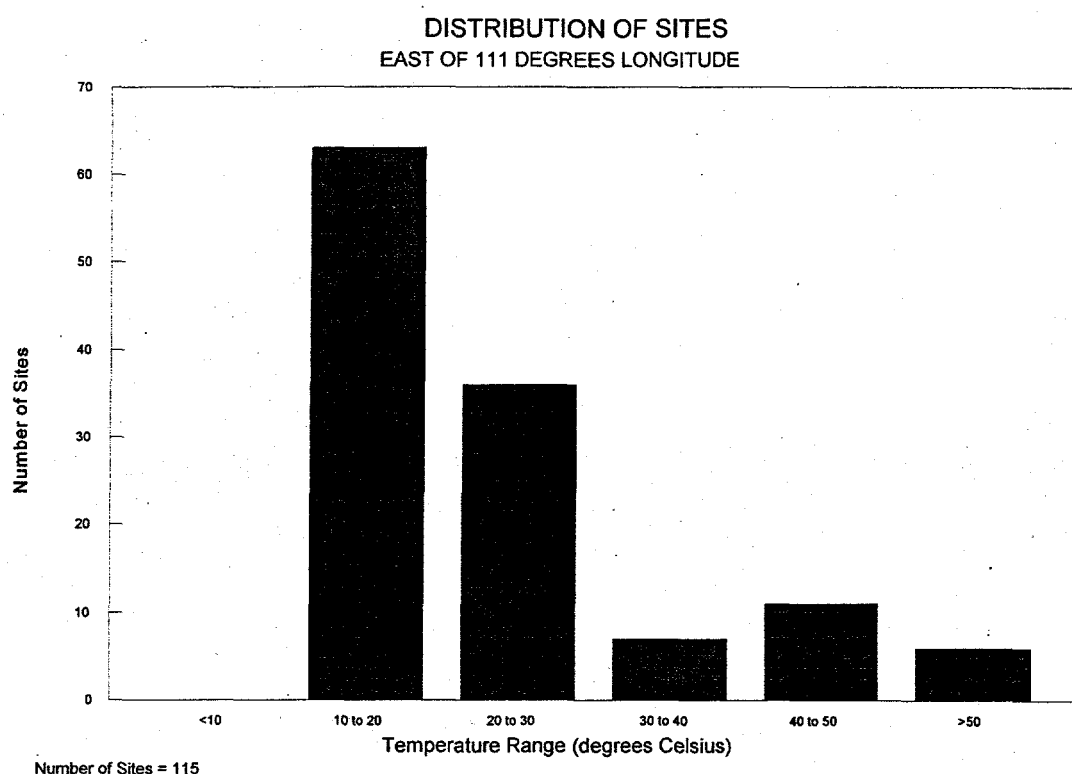


Figure 4 Most of the sites in the eastern third of the state. About 20 sites have temperatures greater than 30°C.

6.0 SUMMARY

Each of the tasks outlined in the agreement between the Montana Bureau of Mines and Geology and the Oregon Institute of Technology / University of Utah Research Institute have been completed. The database described here represents the most current information on geothermal resources in the state of Montana. The database also contains the information collected from eight sites that lacked information prior to this inventory. A 1:1,000,000 scale map, which accompanies this report, shows the location, temperature group, distribution, and type of geothermal resources in the state.

The distribution of geothermal resources and population in Montana suggests a good potential for development of these resources. Although Montana has only a few large population centers, smaller cities and towns near the resources could benefit from development. Although the low temperature of the resources (most are less than 50°C) restricts the type of development, small-scale direct-heat or heat-pump applications, aquaculture, and other development may be economical in some areas.

Whereas the information presented in this report reflects the current knowledge and information on geothermal resources across the state, funding and time limitations would not permit an evaluation of each site. Individuals or groups with the intention of developing any of the sites or areas identified in this assessment should conduct a more thorough investigation and confirm the temperatures, chemistry, and flows.

7.0 RECOMMENDATIONS

Priority Areas for Phase II Studies

The dominant consideration in selecting areas in Montana for future studies is the proximity of the resource area to transportation and population centers. Although there are several resource areas with a relatively high potential for development, limited past and/or current use and low population in the area likely prohibit development. The areas that have the highest potential and are nearest population centers (Figure 5) and transportation routes are as follows:

Bozeman

The Gallatin valley near Bozeman has experienced a steady population growth over the last decade. Data for the Bozeman Hot Springs just west of the city of Bozeman indicates a surface temperature of approximately 55°C and an estimated reservoir temperature of 80°C. The springs are currently used to heat a swimming pool at a commercial campground. Although little resource development has occurred in the area over the last ten years, the Gallatin valley was identified by Sonderegger and others (1981) as an area expected to contain geothermal resources suitable for development. Geophysical exploration and deep drilling would better define the source and extent of this resource area.

Butte

The Butte Mining District was extensively mined over a period of nearly 100 years. At the cessation of underground mining in the early 1980's, dewatering of the bedrock was discontinued and water-levels were allowed to rise. Soon after the mines were shut down, the area was listed in the National Priorities List and is designated as a Superfund site. The rising water, which has a low pH and a high dissolved-metals content, is of much to concern to local, state, and federal agencies, and it has been recognized that water-levels will need to be controlled by pumping to prevent discharge into the Clark Fork River drainage.

With respect to geothermal development, the Butte area offers several avenues for low-to-moderate temperature resources. The underground workings were notoriously hot areas to work in while operating and recent data collected from the mines show water temperatures ranging from 13° to 33°C. Monitoring wells completed in the bedrock aquifer at depths less than 183 meters indicate temperatures of 10 to 18°C, and water quality is quite good (for example, see MGEOT341 and MGEOT342). Diamond drill holes with depths up to 610 meters and open mine shafts may provide access to the deeper, warmer waters. An evaluation of depth, temperature, and potential applications of heat-pump technology is needed.

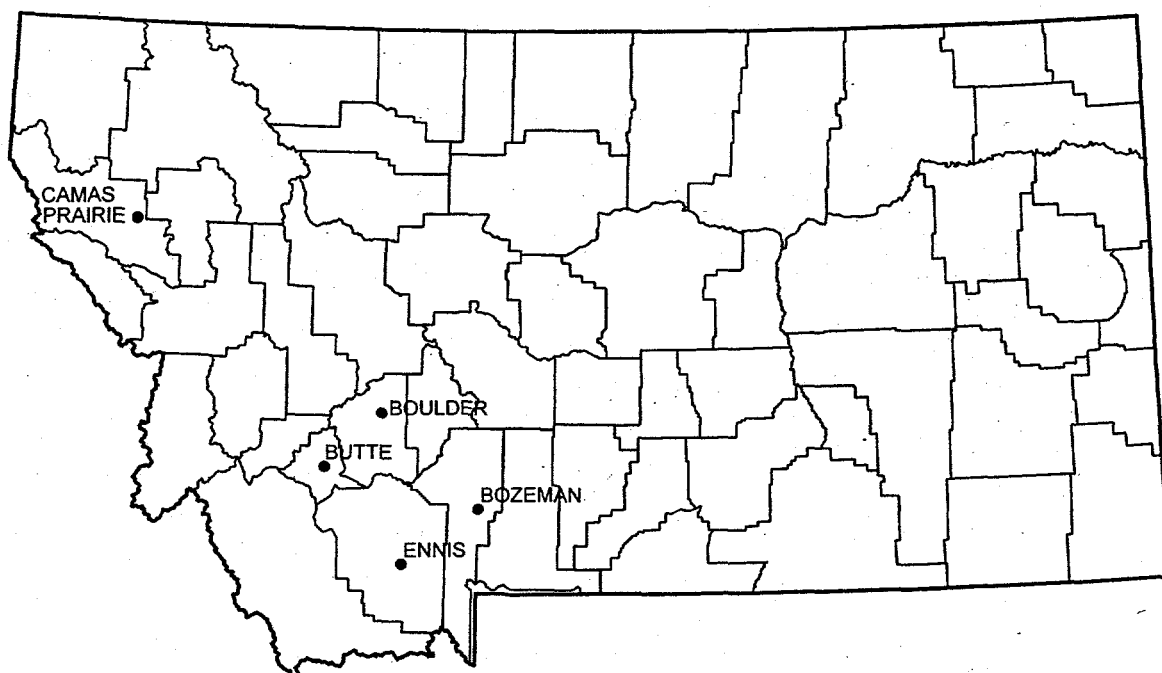


Figure 5 Five areas have been selected as potential areas for additional studies relating to application of direct-use technology.

Ennis

Several studies of the geothermal resources near Ennis have been conducted in the past; however, a deep drilling project is needed to fully understand the nature of this resource area. Recently, one of the areas in which wells were completed was offered for sale to the county government. Application of the information derived from previous studies to an investigation of potential direct-heat applications may also be warranted.

Boulder Hot Springs

The Boulder Hot Springs is within a few miles of Interstate-highway 15 and the town of Boulder is only 1/2 mile from it. Larger cities, Butte to the south and Helena to the north, are within 30 miles. The surface temperatures at the three springs sampled range from 54 to 74°C, and flow is approximately 340 L/min. at the larger spring. The site is currently undergoing renovation. The likelihood of other geothermal resources in the area is high. An inventory of springs and wells throughout the valley and a deep drilling project is needed to better define this potential resource area.

Camas Prairie

There are several previously un-recorded springs in this area; one site was sampled recently (MGEOT353). Although the area is not near any of the larger population centers, there are some recreational facilities in the area. This particular area of Montana has been especially popular for cottage-industry development. A more complete well and spring inventory, coupled with a water-chemistry sampling program is needed to better define the occurrence and potential development in this area.

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APPENDIX I
DATABASE LISTING
GEOTHERMAL RESOURCES OF MONTANA

AND

SEPARATE LIST OF 33 SITES
IDENTIFIED ON MAP AS THE CAMAS-LONEPINE AREA

MGDOT DATABASE

ID	Site name	Reference	Type	Flow (l/min)	Latitude	Longitude	Temp (deg c)	Status/use	SWL (M)	Sample Depth (M)	Date	Chloride mg/l	Sulfate mg/l	Fluoride mg/l
MGDOT209	TARGHEE SULPHUR SPRING* 6MI W W YELLOWSTONE	Sonderogger et al. 1981	SPRING	44,677.5	111.2180	18.0	18.0	STOCK			23 AUG 1979	1.70	156.0	1.1
MGDOT177	UPPER WEST SPRING - STAUDENMEYER RANCH	BMGM - GWC	SPRING	44,698.8	111.8780	28.0	28.0	STOCK			02 OCT 1978	16.00	107.9	1.6
MGDOT123	UPPERMOST SPRING - STAUDENMEYER RANCH	Sonderogger et al. 1981	SPRING	44,698.8	111.8780	28.0	28.0	OTHER			04 OCT 1977			
MGDOT125	UPPER - EAST SPRING - STAUDENMEYER RANCH	BMGM - GWC	SPRING	44,698.8	111.8780	29.0	29.0	OTHER			04 OCT 1977			
MGDOT126	LOWER WEST SPRING - STAUDENMEYER RANCH	BMGM - GWC	SPRING	44,698.8	111.8780	31.0	31.0	OTHER			04 OCT 1977	9.35	118.0	1.8
MGDOT127	LOWER EAST SPRING - STAUDENMEYER RANCH	BMGM - GWC	SPRING	44,698.8	111.8780	28.0	28.0	OTHER			04 OCT 1977	9.80	114.0	1.8
MGDOT124	UPPER WEST SPRING - STAUDENMEYER RANCH	BMGM - GWC	SPRING	44,698.8	111.8780	29.0	29.0	OTHER			03 OCT 1977	9.80	114.0	1.8
MGDOT121	ANDERSON'S PASTURE SPRING #1	BMGM - GWC	SPRING	44,702.5	111.8855	23.0	23.0	STOCK			03 OCT 1977			
MGDOT122	ANDERSON'S PASTURE SPRING #2	BMGM - GWC	SPRING	44,703.0	111.8855	23.0	23.0	STOCK			03 OCT 1977	9.00	118.0	1.8
MGDOT110	USFS BAKERS HOLE* 3MI N WEST YELLOWSTONE	Sonderogger et al. 1981	WELL - FLOWING	44,703.0	111.8855	23.0	23.0	PUBLIC SUPPLY	5.6		18.75 22 AUG 1979	17.00		3.7
MGDOT115	SLOAN COW CAMP SPRING	Sonderogger et al. 1981	SPRING	1306.0	44.7668	111.6487	29.5	OTHER			29 SEP 1977	9.00	4.0	3.1
MGDOT120	WEST FORK SWIMMING HOLE	Sonderogger et al. 1981	SPRING	1890.0	44.7863	111.6550	23.5	OTHER			29 SEP 1977	2.75	11.8	0.4
MGDOT118	CURLEW CREEK WARM SPRING	BMGM - GWC	SPRING	44,873.0	111.6455	23.0	23.0	UNUSED			09 SEP 1977	49.20	80.8	14.4
MGDOT119	WALL CANYON WARM SPRING	Sonderogger et al. 1981	SPRING	44,873.0	111.6455	24.0	24.0	UNUSED			13 SEP 1977	19.00	43.0	10.0
MGDOT129	WOLF CREEK HOT SPRING	Leonard et al. 1978	SPRING	20.0	44.9838	111.6155	19.6	STOCK			29 SEP 1978	16.15	19.0	0.7
MGDOT116	LOWELL HILDRETH SPRING* 19 MI SW DILLON	BMGM - GWC	SPRING	45,027.5	112.8452	24.0	24.0	DOMESTIC			24 MAR 1978			
MGDOT132	BEAR CREEK SPRINGS	Sonderogger et al. 1981	SPRING	39.0	45.0353	110.6553	24.0	UNUSED			24 MAY 1978	1.90	174.0	0.9
MGDOT133	VIGILANTE WARM SPRING	Sonderogger et al. 1981	SPRING	6330.0	45.0369	111.9522	23.5	OTHER						
MGDOT141	LA DUKE HOT SPRINGS	Madner et al. 1976	SPRING	500.0	45.0930	110.7737	65.0	OTHER						
MGDOT112	BROWNS SPRINGS	Sonderogger et al. 1981	SPRING	4160.0	45.1047	112.7508	23.7	UNUSED						
MGDOT110	PULLER HOT SPRINGS	Leonard et al. 1978	SPRING	189.0	45.1717	112.1520	44.4	UNUSED						
MGDOT119	TRUDAU SPRINGS	Sonderogger et al. 1981	SPRING	680.0	45.2350	112.1347	22.7	UNUSED						
MGDOT140	CHICO HOT SPRINGS	Madner et al. 1976	WELL	500.0	45.3370	110.6913	42.0	OTHER						
MGDOT132	GROUNDWATER* 4.7 MI NE FT SMITH MT	BMGM - GWC	WELL	0.5	45.3447	107.6827	20.0	STOCK	314.86	24 AUG 1980		11.55	135.0	0.8
MGDOT174	BROWN CATTLE COY* 3.1 MI N. BIRNEY MT	BMGM - GWC	WELL	0.5	45.3663	106.5322	15.5	STOCK			11 NOV 1975	7.00	125.0	1.4
MGDOT176	JARDINE HOT SPRINGS* 0.25 MI E OF JACKSON	BMGM - GWC	SPRING	45.3675	113.4053	80.0	80.0	DOMESTIC			30 MAY 1981	4.55	79.4	2.0
MGDOT289	BMGM GEOTHERMAL TEST* THEXTON TX - 12	BMGM - GWC	WELL	28.6	45.3677	111.7247	87.0	RESEARCH						
MGDOT293	JACKSON HOT SPRINGS	Madner et al. 1976	SPRING	1000.0	45.3702	111.7252	87.0	INDUSTRIAL/COMM	291.39	30 JUN 1982		118.00	224.0	10.0
MGDOT227	PRIVATE GEOTHERMAL TEST* ENNIS HOT SPRINGS*	BMGM - GWC	WELL	45.3702	111.7252	17.0	17.0	DOMESTIC	371.86	06 JAN 1983		111.00	203.0	10.9
MGDOT117	LAPHAM DOMESTIC WELL 1 MI NW JACKSON, MT.	BMGM - GWC	WELL	45.3825	111.7788	81.0	81.0	UNUSED	30.48	31 MAY 1981		7.80	40.4	1.4
MGDOT108	ENNIS HOT SPRINGS	BMGM - GWC	WELL	0.2	45.3869	106.5330	16.5	STOCK	252.99	01 MAR 1974		9.00	71.0	2.3
MGDOT109	BEAVERHEAD ROCK SPRINGS	Sonderogger et al. 1981	SPRING	380.0	45.3918	112.4512	27.0	IRRIGATION						
MGDOT133	APEX WARM SPRING	Sonderogger et al. 1981	SPRING	2840.0	45.4205	112.6911	25.0	DOMESTIC			25 MAY 1978	1.55	135.0	0.8
MGDOT292	ELKHORN HOT SPRINGS	Madner et al. 1976	SPRING	400.0	45.4576	113.1087	48.5	DOMESTIC			22 SEP 1982	0.70	216.0	0.6
MGDOT326	MARTIN, KITH	BMGM - GWC	SPRING	1589.8	45.4584	109.8758	20.5	DOMESTIC				46.00	1100.0	3.3
MGDOT308	NEW BILTMORE HOT SPRINGS	BMGM - GWC	WELL	280.0	45.4620	112.4750	53.0	DOMESTIC			07 AUG 1984	15.20	2820.0	0.2
MGDOT280	ANDERSON SPRING	BMGM - GWC	SPRING	169.9	45.5530	110.1422	25.0	RECREATIONAL	70.3		06 OCT 1981	0.10	128.0	0.5
MGDOT096	ANDERSON'S SPRING	Sonderogger et al. 1981	SPRING	280.0	45.5530	110.1422	25.0	RECREATIONAL				1.00	139.0	0.4
MGDOT145	NORRIS HOT SPRINGS	Leonard et al. 1978	SPRING	424.0	45.5760	111.6833	50.0	OTHER			25 JUN 1979	22.00	130.0	8.1
MGDOT105	POTOSI HOT SPRINGS	Madner et al. 1976	SPRING	197.0	45.5892	111.6987	49.5	DOMESTIC			19 NOV 1984	8.00	146.0	6.1
MGDOT187	GROSS, PETE* 4 MI S PONY MT	BMGM - GWC	SPRING	84.4	45.6016	111.9002	37.5	UNUSED				5.20	166.0	8.1
MGDOT111	MCERRAN, EUGENE* BILLINGS, MT	BMGM - GWC	WELL	45.6033	108.4019	15.0	15.0	DOMESTIC	92.5		22 DEC 1978	39.80	71.7	5.8
MGDOT179	CARTER'S BRIDGE* 4 MI SE LIVINGSTON MT.	Sonderogger et al. 1981	SPRING	45.6031	110.6886	28.0	28.0	UNUSED						
MGDOT111	AVON WARM SPRING	BMGM - GWC	WELL	91.0	45.6103	112.5547	25.5	RESEARCH						
MGDOT284	BOZEMAN HOT SPRINGS* OWNER - CHARLES PAGE	BMGM - GWC	WELL	11.5	45.6602	111.1861	59.0	RESEARCH	164.59	16 DEC 1980		50.00	131.0	10.1
MGDOT286	BOZEMAN HOT SPRINGS* OWNER - CHARLES PAGE	BMGM - GWC	WELL	1000.0	45.6602	111.1861	55.0	RESEARCH	140.21	17 DEC 1980		50.30	133.0	10.2
MGDOT285	BOZEMAN HOT SPRINGS* OLD WELL	BMGM - GWC	WELL	45.6602	111.1861	54.0	54.0	RECREATIONAL	164.59	17 DEC 1980		50.00	132.0	10.1
MGDOT283	BOZEMAN HOT SPRINGS* ORIGINAL SPRING	BMGM - GWC	SPRING	45.6605	111.1861	54.0	54.0	RECREATIONAL				49.70	130.0	9.9
MGDOT289	RANCA* MCLEOD	Leonard et al. 1978	WELL	284.0	45.6647	110.1141	49.0	UNUSED				48.00	120.0	12.0
MGDOT289	SCOTT FEED LOT	Sonderogger et al. 1981	WELL	45.6647	110.1141	49.0	49.0	UNUSED			02 APR 1981	2.00	133.0	2.8
MGDOT289	BLUE JOINT CREEK HOT SPRING	Sonderogger et al. 1981	WELL	45.6619	108.1566	43.0	43.0	DOMESTIC			25 NOV 1980	60.30	119.0	7.1
MGDOT289	BRIDGE CANYON WARM SPRING	Sonderogger et al. 1981	SPRING	50.0	45.6936	108.1552	44.0	DOMESTIC			25 NOV 1980	72.00	83.4	9.0
MGDOT334	LOVE, MELVIN* THREE FORKS, MT	BMGM - GWC	WELL	649.0	45.6963	114.3653	29.4	DOMESTIC				3.00	5.0	0.5
MGDOT033	GROUNDWATER* 3.3 MI W HARDIN MT	BMGM - GWC	WELL	378.0	45.7073	110.9755	20.2	DOMESTIC				1.00	80.0	0.5
MGDOT336	SHPTON, HAROLD* THREE FORKS MT	BMGM - GWC	WELL	45.7269	111.4997	15.9	15.9	OTHER	18.59	11 MAY 1989		20.50	18.4	1.4
MGDOT332	HERMAN, T.E.* ROCKY RANCH* 7.4 MI W HARDIN	BMGM - GWC	WELL - FLOWING	45.7305	107.7311	39.4	39.4	OTHER	1219.20	17 NOV 1980		4.00	1080.0	4.0
MGDOT344	GALLOGLY HOT SPRING	Sonderogger et al. 1981	SPRING	2000.0	45.7309	107.7347	42.0	DOMESTIC	54.68	09 MAY 1989		32.00	24.9	1.4
MGDOT345	LOST TRAIL* WARM AND HOT SPRINGS	BMGM - GWC	SPRING	454.0	45.7497	113.9394	41.7	RECREATIONAL	1203.96	25 NOV 1980		4.30	2180.0	3.1
MGDOT089	CAN MIKE* 6 MI S VOLBERG	BMGM - GWC	WELL	2.2	45.7533	105.7283	18.0	RECREATIONAL			07 OCT 1980	51.00	12.0	8.8
MGDOT18	HUNTERS HOT SPRINGS	Madner et al. 1976	SPRING	5000.0	45.7572	110.2572	60.0	DOMESTIC	54.9		01 JUL 1976	18.00	11.0	5.6
MGDOT328	JORGENSEN, JACK* THREE FORKS MT	BMGM - GWC	WELL	151.0	45.7736	111.4686	50.0	IRRIGATION	16.78	20 MAY 1988		34.00	200.0	3.0
MGDOT346	RENOVA HOT SPRINGS	Leonard et al. 1978	SPRING	45.7917	112.1263	16.0	16.0	INDUSTRIAL			24 AUG 1990	20.10	996.0	2.7
MGDOT339	WESTMORELAND* 9.1 MI W SARPY SCHOOL	BMGM - GWC	WELL	0.1	45.8027	107.0827	37.7	STOCK	-0.5			20.10	996.0	2.7
MGDOT095	USCOM RANCH* 5.3 MI NW OF N STACY SCHOOL	BMGM - GWC	WELL	45.8144	105.9705	15.5	15.5	DOMESTIC	228.60	21 JUL 1975		61.3	1.0	1.0
MGDOT331	TINDER, L. MARIE* THREE FORKS MT	BMGM - GWC	WELL	45.8219	111.4672	21.9	21.9	DOMESTIC	32.92	05 MAY 1989		18.90	40.4	2.2
MGDOT327	WILCOX, RALPH* THREE FORKS MT	BMGM - GWC	WELL	45.8269	111.4638	16.5	16.5	DOMESTIC	22.25	19 MAY 1988		25.00	60.5	2.4
MGDOT347	RICHARDSON, DERRIE* THREE FORKS	BMGM - GWC	WELL	45.8300	111.4594	16.8	16.8	UNUSED	17.68	10 MAY 1988		7.00	33.0	14.0
MGDOT347	MEDICINE HOT SPRINGS	Madner et al. 1976	SPRING	400.0	45.8458	114.0347	45.0	OTHER			06 MAY 1976	79.00	736.9	4.9
MGDOT092	WESTERN ENERGY* 2 MI N COLSTRIP MT.	BMGM - GWC	WELL	18.6	45.8863	106.6194	96.1	DOMESTIC	170.7	2845.61	09 JUL 1976	20.00	94.0	5.3
MGDOT093	PIESTONE HOT SPRINGS DEVELOP	BMGM - GWC	SPRING	300.0	45.9147	113.7608	57.0	OTHER						
MGDOT082	FRED BETSEON SPRING	Madner et al. 1976	SPRING	45.9147	113.7608	19.0	19.0	DOMESTIC	16.76	04 MAY 1989				
MGDOT063	HART, FRANK* THREE FORKS, MT	BMGM - GWC	WELL	45.9188	111.4975	15.9	15.9	UNUSED	781.51	17 JUN 1974		7860.00	30.0	0.7
MGDOT133	ANDARKO PROD* 6 MI E FOSTER MT	BMGM - GWC	WELL	45.9463	107.4588	28.7	28.7	STOCK			03 SEP 1973			
MGDOT128	UN- NAMED SPRING* 29 MI NE OF FOSTER MT	BMGM - GWC	SPRING	45.9580	107.0625	23.0	23.0	STOCK			28 AUG 1977			
MGDOT128	COWAN SPRING* 6MI NW THREE FORKS MT	BMGM - GWC	SPRING	45.9608	111.7227									

NOTE: A negative value for concentration indicates the detection limit for that analyte. A negative value for SWL (static water level) indicates head above ground surface (meters).

NGEOT DATABASE

ID	Site name	Reference	Type	Flow (l/min)	Latitude	Longitude	Temp (deg c)	Status/Use	SWL (M)	Depth (M)	Date	Chloride mg/l	Sulfate mg/l	Fluoride mg/l
MGEO178	WOLF CREEK HOT SPRING	MBMG - GWC	SPRING	45.9539	111.6155	60.0	17.4	STOCK			29 SEP 1978			
MGEO179	WILLIAMSBURG SPRING	MBMG - GWC	SPRING	15.1	45.9916	112.5611	69.0	RESEARCH	176.4	244.14	29 MAY 1991	3.50	336.0	1.2
MGEO180	OIL WELL (TENSLEEP FORMATION)	Sonderger et al. 1981	WELL	1100.0	46.0082	109.3977	69.0	RESEARCH		236.22	31 MAY 1991	5.80	652.0	1.0
MGEO181	MONTANA RESOURCES MONITORING WELL C	MBMG - GWC	WELL	46.0086	112.4875	17.8	23.0	STOCK			25 JUN 1991	36.00	1516.0	0.2
MGEO182	MONTANA RESOURCES MONITORING WELL D2	MBMG - GWC	WELL	46.0161	112.4902	18.0	23.0	STOCK			25 JUN 1991	36.00	1516.0	0.2
MGEO183	HOWARD SPRING * 25 M SE OF BIGHORN MT	MBMG - GWC	SPRING	15.0	46.0233	112.4875	23.9	DOMESTIC	30.8	91.44	08 OCT 1980	4.90	17.4	1.1
MGEO184	WENOT, FRED * 75 M S GREGSON (FAIRMONT)	Sonderger et al. 1981	WELL	30.1	46.0322	112.8116	23.9	RESEARCH	10.2	190.75	26 SEP 1980	18.70	214.0	2.0
MGEO185	MBMG RESEARCH WELL - FAIRMONT HOT SPRINGS	MBMG - GWC	WELL	30.1	46.0383	112.8094	16.0	DOMESTIC	45.7	182.88	26 SEP 1980	56.00	1562.0	1.6
MGEO186	NELSON, HARVEY * 5 M S BROADVIEW MT	MBMG - GWC	WELL	6.9	46.0411	109.8822	32.9	STOCK	-0.0		11 OCT 1974	197.00	1736.0	3.8
MGEO187	BRADSHAW * 10 M S BROADVIEW MT	MBMG - GWC	WELL	946.3	46.0425	112.8111	61.5	INDUSTRIAL/COMM			29 SEP 1981	21.00	48.5	0.6
MGEO188	FAIRMONT HOT SPRINGS, ANACONDA	MBMG - GWC	SPRING	151.4	46.0508	112.7691	15.5	STOCK			08 OCT 1980	11.00	30.0	0.8
MGEO189	SPANGLER, HAZEL * 2 M E - NE GREGSON MT	Sonderger et al. 1981	SPRING	9.9	46.0530	111.5011	24.5	DOMESTIC	45.7	91.14	23 SEP 1978	15.10	1600.0	1.4
MGEO190	MONT. HIGHWAY DEPT * 75 M SE WACO MT.	MBMG - GWC	WELL	46.0744	111.5844	17.0	17.0	IRRIGATION			17 JUL 1979	8.90	96.9	0.7
MGEO191	PLUNKET LAKE WARM SPRINGS	Sonderger et al. 1981	SPRING	46.0750	111.5833	17.0	16.5	IRRIGATION	46.8		23 SEP 1978	23.90	615.0	0.1
MGEO192	SPRINGS FROM JOINTS IN MISSOYN-SW PLUNKET	MBMG - GWC	WELL	5.0	46.0891	107.6111	16.5	STOCK	21.9		12 JUN 1979	9.60	34.1	1.5
MGEO193	MONTANA DEPT HIGHWAYS * 23 M NE WACO MT	Sonderger et al. 1981	SPRING	17.1	46.1022	111.5230	15.0	STOCK			23 JUN 1978	7.00	1362.0	2.5
MGEO194	HUNSAKER, MAURICE	MBMG - GWC	WELL	11.0	46.1047	112.7772	43.0	UNUSED				9.00	81.0	14.0
MGEO195	SLEEPING CHILD HOT SPRINGS	MBMG - GWC	WELL	2000.0	46.1048	114.0042	18.0	IRRIGATION	44.0	100.58	02 MAY 1980	21.70	133.0	0.3
MGEO196	TOSTON WARM SPRING	MBMG - GWC	SPRING	160.9	46.1198	111.5972	48.5	INDUSTRIAL/COMM			07 MAY 1983	6.00	50.0	0.7
MGEO197	BRUCE, NORMAN	Sonderger et al. 1981	SPRING	46.1258	111.3911	15.5	18.0	IRRIGATION	35.9		29 JUN 1979	59.20	850.0	1.2
MGEO198	KIMPTON SPRING	MBMG - GWC	WELL	46.1300	111.3911	18.0	18.0	UNUSED			16 JUN 1979	1.80	16.4	0.2
MGEO199	STEEL, WILLIAM * 12.5 M SE PINEVIEW MT.	Sonderger et al. 1981	SPRING	46.1725	111.5855	18.0	18.0	IRRIGATION	65.5	112.78	06 OCT 1978	124.70	1679.0	1.7
MGEO200	WARM SPRINGS	MBMG - GWC	WELL	0.5	46.1769	107.7380	77.0	RESEARCH	4.0	92.66	17 FEB 1982	6.00	622.0	3.0
MGEO201	WARM SPRINGS STATE HOSPITAL	MBMG - GWC	WELL	600.0	46.1787	112.7942	67.0	RESEARCH	6.1		16 APR 1980	7.10	665.0	3.7
MGEO202	BOULDER HOT SPRINGS - UPPER SPRING	MBMG - GWC	WELL	2.3	46.1808	112.7930	54.0	RESEARCH	6.1		04 APR 1980	5.00	670.0	3.9
MGEO203	BOULDER HOT SPRINGS - LOWER SPRING	MBMG - GWC	WELL	2.2	46.1808	112.7930	54.0	RESEARCH	6.1		04 APR 1980	5.00	665.0	3.7
MGEO204	BOULDER HOT SPRINGS - MIDDLE SPRING	MBMG - GWC	WELL	340.0	46.1981	112.0947	64.5	RECREATION	38.10		02 NOV 1993	21.00	73.0	11.8
MGEO205	BOULDER HOT SPRINGS - LOWER SPRING	MBMG - GWC	WELL	75.7	46.1981	112.0947	64.5	RECREATION	38.10		02 NOV 1993	22.00	73.0	11.8
MGEO206	WARM SPRINGS STATE HOSPITAL * SPRING	MBMG - GWC	SPRING	68.9	46.2000	112.8833	70.0	RECREATION	20.4		02 APR 1980	10.30	19.8	0.4
MGEO207	M - 8 NO. 12 * 5 M NE HAMILTON MT	MBMG - GWC	WELL	3.2	46.2236	114.0658	18.5	STOCK	328.18	30.70	07 OCT 1978	997.90	9.4	2.1
MGEO208	GRISON, J.B. * 25 MI NE RANCHER'S CEMETARY.	MBMG - GWC	WELL	0.5	46.3342	112.8872	26.0	OTHER			27 MAR 1978	5.00	33.0	7.5
MGEO209	PRISON RANCH SPRING SITE NO. 4	Sonderger et al. 1981	WELL	57.0	46.3342	112.8872	26.0	OTHER				5.00	103.0	0.7
MGEO210	DEER LODGE PRISON RANCH	Sonderger et al. 1981	WELL	5690.0	46.3542	111.5667	23.6	DOMESTIC	9.1	33.22	10 AUG 1976	92.00	1696.3	2.5
MGEO211	BEDFORD SPRINGS	MBMG - GWC	WELL	2.5	46.3852	107.6394	15.6	RESEARCH	64.3		10 MAR 1981	43.00	952.0	4.3
MGEO212	GRISON, J.B. * 23 MI NW HYSHAM MT	MBMG - GWC	WELL	46.3952	107.7819	17.0	18.0	STOCK	60.9		11 MAR 1981	54.70	1017.0	3.8
MGEO213	MBMG RESEARCH WELL * WEED CREEK - 1B	MBMG - GWC	WELL	46.3952	107.7819	17.0	18.0	STOCK	285.12		31 OCT 1980	6.80	20.6	1.4
MGEO214	HANSEN, BILL * 3 MI SW TWO DOT MT	Sonderger et al. 1981	WELL - FLOWING	200.0	46.4156	110.1384	19.0	STOCK	216.41		31 OCT 1980	2.40	31.4	0.5
MGEO215	FOX INC * 1.5 MI W - SW TWO DOT MT	Sonderger et al. 1981	WELL - FLOWING	3.0	46.4208	110.0713	19.0	STOCK	274.32		31 OCT 1980	18.10	87.9	1.2
MGEO216	HOMER, RAY * TWO DOT WATER SUPPLY	MBMG - GWC	WELL	143.8	46.4344	108.6325	15.6	PUBLIC SUPPLY	260.72		25 MAY 1983	25.00	170.0	8.7
MGEO217	HARLOWTON * SOUTH MUNICIPAL WELL	MBMG - GWC	WELL	57.0	46.4478	111.9872	30.0	IRRIGATION				11.00	88.0	6.9
MGEO218	HILLSBROOK FLOWING WELL	Leonard et al. 1978	WELL	110.0	46.4480	111.9805	55.6	IRRIGATION	4.6	76.20	21 JUL 1981	10.00	89.0	8.4
MGEO219	ALHAMBRA HOT SPRINGS NORTH	MBMG - GWC	SPRING	380.0	46.4497	111.9805	55.6	OTHER	53.34			827.00	1332.0	7.7
MGEO220	TOWNS END HER * 2.5 MI SW WHITE SULPHUR SPR	MBMG - GWC	WELL	180.1	46.5055	110.9347	48.5	OTHER	2.0	100.58	08 DEC 1981	147.00	211.0	6.3
MGEO221	RALPH, JOHNSON P O BOX 65 WHITE SULPHUR SPR	MBMG - GWC	WELL	180.1	46.5444	110.9081	15.3	DOMESTIC	259.08		08 AUG 1979	61.40	0.4	1.7
MGEO222	WHITE SULPHUR SPRINGS	MBMG - GWC	SPRING	1500.0	46.5477	110.9083	43.3	OTHER	829.97		23 JUL 1979	34.3	34.3	0.6
MGEO223	WHITE SULPHUR SPRINGS BANK WELL	MBMG - GWC	WELL	5.1	46.5477	110.9083	43.3	OTHER				34.00	190.0	11.0
MGEO224	WATTS, JAMES * 16 MI NE KINSEY MT	MBMG - GWC	WELL	0.4	46.5722	114.0363	18.3	DOMESTIC	63.7			12.00	84.0	0.7
MGEO225	M - 5 NO 8 WELL * 25 MI SE CORVALLIS MT	MBMG - GWC	WELL	227.0	46.5955	112.1117	65.5	UNUSED				3.00	335.0	1.3
MGEO226	BROADWAY HOT SPRINGS WELL	Leonard et al. 1978	WELL	49.0	46.5958	112.1042	19.4	DOMESTIC	23.16		17 JUL 1980	14.30	14.30	0.2
MGEO227	GLOEGE WELL	Sonderger et al. 1981	SPRING	204.0	46.6088	112.7747	25.0	RESEARCH	11.1	13.92	05 SEP 1979	59.00	44.5	0.2
MGEO228	GARRISON WARM SPRINGS	MBMG - GWC	WELL	46.6169	111.9863	15.0	15.0	STOCK	18.5		17 JUL 1980	16.00	20.1	3.1
MGEO229	USGS OBS WELL * 4 MI SW EAST HELENA, MT.	MBMG - GWC	WELL	46.6177	111.9861	25.0	15.0	STOCK	2.1		23 OCT 1986	40.10	288.0	11.5
MGEO230	MUELLER BUZZ	MBMG - GWC	WELL	46.6308	112.1025	15.0	37.0	STOCK	89.72		12 OCT 1978	19.00	509.0	10.8
MGEO231	FLORENCE TEST WELL A	Sonderger et al. 1981	WELL	1.1	46.6461	114.0825	15.0	RECREATIONAL	-0.3		20 NOV 1980	2060.00	1380.0	5.3
MGEO232	SVIRTE MYSSIE * BOX 316 * INGOMAR MT 50039	MBMG - GWC	WELL	1.1	46.6819	107.2030	37.0	UNUSED			30 JUL 1987	3.00	340.0	0.8
MGEO233	CHERRY CK SHEEP CO * 1.3 MI SE HAGEN RANCH.	MBMG - GWC	WELL	120.1	46.6860	105.3225	20.5	DOMESTIC	53.64		19 JUL 1980	75.20	18.0	6.4
MGEO234	MOORE, THOMAS * 0.5 MI SW ANGELA MT	Sonderger et al. 1981	WELL - FLOWING	120.1	46.7057	113.4368	20.5	UNUSED	161.5	2069.59	29 AUG 1975	51.00	176.0	20.0
MGEO235	BYRNE WARM SPRING * WEST OF BEARMOUTH	MBMG - GWC	SPRING	1200.0	46.7057	113.4368	20.5	UNUSED	90.2		14 OCT 1978	240.00	2469.0	3.4
MGEO236	BEARHOUT SPRINGS	Sonderger et al. 1981	SPRING	4190.0	46.7168	113.3032	20.2	DOMESTIC			28 SEP 1978	1.65	228.0	1.5
MGEO237	GARRICK GALEN	MBMG - GWC	WELL	100.0	46.7191	112.0536	15.0	STOCK	-40.3		15 AUG 1979	3.70	275.0	0.6
MGEO238	LOLO HOT SPRINGS	MBMG - GWC	WELL	46.7252	114.5328	44.0	24.5	STOCK	518.16		30 SEP 1978	12.30	477.0	1.4
MGEO239	MARTY CREEK DEEP WELL DEPTH 5750	Sonderger et al. 1981	WELL	23.0	46.7675	106.9194	44.0	STOCK	886.05		09 FEB 1979	11.30	475.0	0.9
MGEO240	CHERRY CREEK SHEEP CO * 28 MI N VANANDA MT	MBMG - GWC	WELL	23.0	46.7675	106.9194	44.0	STOCK	644.35		29 OCT 1980	57.20	620.0	10.0
MGEO241	OLSEN, JONAS * 9 MI NE FLATWALLOW MT.	MBMG - GWC	WELL	1.9	46.8958	108.5397	27.0	STOCK						
MGEO242	CLSEN, JONAS * 14 MI NE BAR RANCH	MBMG - GWC	WELL	2.3	46.8983	108.6122	16.0	STOCK						
MGEO243	REYNOLDS, KETH * 6 MI NE FLATWALLOW MT.	MBMG - GWC	WELL	0.6	46.9141	108.3602	24.5	STOCK						
MGEO244	HILL FOLDS * 7 MI N FLATWALLOW MT.	MBMG - GWC	WELL	1.6	46.9330	108.3825	16.0	STOCK						
MGEO245	M - 8 (BUTLER CK) * 6 MI NW MISSOULA MT	MBMG - GWC	WELL	1.1	46.9597	114.0844	16.0	STOCK						
MGEO246	KING, JOE & SONS INC. * 5 MI SSW WINNET MT.	MBMG - GWC	WELL	0.2	46.9677	108.4500	16.0	STOCK						

NOTE: A negative value for concentration indicates the detection limit for that analyte. A negative value for SWL (static water level) indicates head above ground surface (meters).

MGEO DATABASE

ID	Site name	Reference	Type	Flow (l/min)	Latitude	Longitude	Temp (deg c)	Status/use	SWL (M)	Depth (M)	Date	Chloride mg/l	Sulfate mg/l	Fluoride mg/l
MGEO189	SHAW, BUD * 1.7 MI SW MOSSBY MT.	MBMG-GWC	WELL	21.0	48.9866	107.9158	29.0	DOMESTIC	-35.2	550.16	01 OCT 1978	16.35	337.0	3.2
MGEO190	EAGER, REX * 2 MI SW WINNETT MT.	MBMG-GWC	WELL	2.3	47.0008	108.3997	15.5	DOMESTIC	-42.2	518.16	30 SEP 1978	18.60	207.0	1.4
MGEO191	BRATTON, WAYNE * 2 MI SE WINNETT MT.	MBMG-GWC	WELL	0.8	47.0022	108.3244	24.2	DOMESTIC		643.74	01 OCT 1978	16.00	495.0	1.5
MGEO192	BURLY VISTA TRACTS	MBMG-GWC	WELL	6.8	47.0237	109.3691	46.0	DOMESTIC	10.7	120.40	26 NOV 1963	0.80	95.1	0.4
MGEO193	TEIGEN, PETER * 9 MI E GRASSRANGE MT.	MBMG-GWC	WELL	1.3	47.0347	108.6100	17.9	DOMESTIC		310.80	26 SEP 1978	26.50	552.0	0.8
MGEO194	MATOVICH * 4.5 MI E GRASSRANGE MT	MBMG-GWC	WELL	0.9	47.0491	108.7083	21.8	STOCK		312.72	15 AUG 1979	6.40	90.0	0.6
MGEO195	HOLE NO 2 M-B DRILLING PROJECT	MBMG-GWC	WELL	1.1	47.0525	114.2816	15.0	UNUSED	47.2	768.57	03 MAY 1979	2.10	16.9	0.4
MGEO196	MSU AG EXPERIMENT STATION * MOCCASIN MT	MBMG-GWC	WELL	0.8	47.0561	108.9516	15.0	IRRIGATION	21.9	493.78	31 JUL 1980	9.00	203.0	0.3
MGEO197	BRADY, EARL * 4 MI NW WINNETT, MT.	MBMG-GWC	WELL	0.8	47.0575	108.3375	15.8	STOCK	-14.1	297.16	15 AUG 1979	9.00	203.0	0.3
MGEO198	GERDUM, RONALD * 3 MI NE GRASS RANGE, MT.	MBMG-GWC	WELL	2.6	47.0788	108.7450	15.0	DOMESTIC	91.4	547.47	26 SEP 1978	16.45	331.0	2.8
MGEO199	CENEX * 15 MI NE WINNETT MT	MBMG-GWC	WELL	0.2	47.1233	108.6736	17.0	STOCK	-28.2	572.12	07 MAY 1974	1.70	117.0	0.5
MGEO200	BASSETT, EARL * 7.5 MI TEIGEN MT.	MBMG-GWC	WELL	30.5	47.1416	108.5953	19.2	STOCK	-50.3	572.72	25 SEP 1978	3.20	240.0	0.7
MGEO201	HEDEMAN, J. * 40 MI NE LEWISTOWN MT.	MBMG-GWC	WELL	1.7	47.1577	108.7322	19.2	STOCK	-14.1	572.72	25 SEP 1978	2.20	240.0	0.7
MGEO202	FOX, DENNIS * 7 MI NW GRASSRANGE MT	MBMG-GWC	WELL	0.4	47.1717	108.9486	15.0	STOCK	15.5	527.61	16 JUL 1980	1.20	186.0	0.3
MGEO203	LAURENCE, HESS * 1 MI NW MOCCASIN MT.	MBMG-GWC	WELL	0.8	47.2059	109.3563	15.0	STOCK	28.8	335.28	16 AUG 1979	30.20	141.0	0.9
MGEO204	DELANEY, DOUGLAS * 7 MI NW (WILD HORSE UNIT)	MBMG-GWC	WELL	1.2	47.2105	108.7277	23.0	STOCK		426.72	16 AUG 1979	12.80	342.0	2.9
MGEO205	BROOKS, WARM SPRING * 2.5 MI NW BROOKS MT.	MBMG-GWC	WELL	0.3	47.2333	108.7994	21.3	STOCK		803.20	23 SEP 1978	18.80	60.0	6.1
MGEO206	DELANEY, DOUGLAS * 1 MI NW ROY MT.	MBMG-GWC	WELL	0.3	47.2486	108.1394	19.5	STOCK		1392.84	10 APR 1972	63.40	1.9	6.7
MGEO207	KELLER RANCH * 14 MI SE VALENTINE MT.	MBMG-GWC	WELL	7.0	47.2991	108.4208	26.7	STOCK	-45.8	637.64	20 SEP 1978	3.00	29.0	2.1
MGEO208	CARDINAL PET CO * 10 MI E HILGERT MT.	MBMG-GWC	WELL	284.0	47.3300	114.7872	43.3	INDUSTRIAL/COMM	11.4	44.20	16 JAN 1981	2.30	28.8	2.3
MGEO209	QUINN'S HOT SPRINGS	MBMG-GWC	WELL	0.6	47.3333	109.1836	15.0	STOCK	0.9	258.47	17 AUG 1979	6.20	450.0	0.5
MGEO210	FINLEY, R.S. * 1 MI NW ST. IGNATIUS	MBMG-GWC	WELL	0.6	47.3350	114.1175	19.0	DOMESTIC	8.7	16.15	05 MAR 1978	3.50	15.6	0.1
MGEO211	SPROCK, FRANK * 9 MI EAST ROY, MT.	MBMG-GWC	WELL	0.5	47.3402	108.7872	19.0	DOMESTIC	7.9	638.42	16 AUG 1979	2.60	280.0	0.4
MGEO212	HORYNA, JAMES * 9 MI E ROY MT	MBMG-GWC	WELL	5.5	47.3533	108.8513	18.4	DOMESTIC	36.6	611.12	19 AUG 1979	4.30	415.0	0.4
MGEO213	CORPS OF ENGINEERS SOUTH WELL AFTER PERFS	MBMG-GWC	WELL	24.9	47.3611	114.3119	15.0	UNUSED	0.1	56.39	03 MAY 1978	83.80	1.2	4.9
MGEO214	BYRON, HAROLD * 1 MI W MOISE MT	MBMG-GWC	WELL	0.3	47.3730	114.2850	15.5	STOCK	33.7	91.44	01 JUL 1978	36.95	1.2	2.0
MGEO215	YARGER, ROBERT * 13 MI W CIRCLE MT	MBMG-GWC	WELL	0.3	47.3830	108.8597	25.0	STOCK	30.5	30.5	23 JUL 1975	3.30	670.7	0.1
MGEO216	SAND COULEE MTR USERS BENCH W ABV SAND COU	MBMG-GWC	WELL	0.3	47.3972	110.1763	15.0	PUBLIC SUPPLY	45.7	64.01	19 JUN 1982	12.30	642.0	1.1
MGEO217	TAYLOR, JAMES * 8 MI E CHRISTINA MT	MBMG-GWC	WELL	3.0	47.4005	109.1400	21.0	STOCK	36.9	435.86	19 JUN 1979	5.40	642.0	0.5
MGEO218	CHARLES ENTSMINGER * TOWN OF NUMBER SEVEN	MBMG-GWC	WELL	1.0	47.4038	110.1547	16.0	DOMESTIC	9.8	56.39	22 JUN 1982	4.00	132.0	0.4
MGEO219	CUSTER, EVERETT * EDEN RT, GREAT FALLS, MT	MBMG-GWC	WELL	1.0	47.4081	111.2605	16.0	PUBLIC SUPPLY	27.4	60.86	15 OCT 1983	5.90	145.0	0.6
MGEO220	TOWN OF TRACY	MBMG-GWC	WELL	0.4	47.4153	111.1553	16.0	STOCK	39.6	54.86	12 SEP 1979	29.00	1154.0	0.1
MGEO221	SCGSVOLD, A. K. * 17 M SE RITCHIEY MT	MBMG-GWC	WELL	1.2	47.4211	105.1947	17.5	DOMESTIC	6.7	140.21	23 AUG 1979	18.30	360.0	1.0
MGEO222	GOVER * 2.5 MI TRAVIS SCHOOL	MBMG-GWC	WELL	1.5	47.4308	111.5052	18.5	PUBLIC SUPPLY	15.9	101.19	13 SEP 1983	2.50	6.6	2.3
MGEO223	VILLAGE INN * 2.5 MI NE TRAVIS SCHOOL	MBMG-GWC	WELL	0.4	47.4355	111.5016	25.0	DOMESTIC		101.19	28 NOV 1973	6.40	57.0	0.8
MGEO224	STONE, GENE	MBMG-GWC	WELL	47.4411	114.8500		20.0	UNUSED		793.70	02 NOV 1983	12.00	17.0	2.1
MGEO225	WEBB RES * 17.3 MI SE GERALDINE MT.	MBMG-GWC	WELL	47.4469	110.3044		23.7	UNUSED		168.25	21 AUG 1979	125.00	575.0	2.3
MGEO226	HOLLAND, JIM - GREEN SPRINGS	MBMG-GWC	WELL	47.4513	114.8478		28.0	DOMESTIC	35.4	259.69	07 JUN 1985	143.00	582.0	2.6
MGEO227	GREEN SPRINGS * HOLLAND RANCH	MBMG-GWC	WELL	47.4513	114.8478		28.0	STOCK		159.50	06 OCT 1978	14.05	1337.0	2.1
MGEO228	TACKLE, ROBERT * 2 MI SW GREAT FALLS MT	MBMG-GWC	WELL	6.0	47.4605	111.3475	15.0	DOMESTIC	111.9	202.89	15 OCT 1984	8.80	10.3	0.6
MGEO229	PAUL, MICHAEL (ROBINSON) * 3 MI SW GREAT FALLS	MBMG-GWC	WELL	34.1	47.4619	111.3516	17.0	DOMESTIC	35.4	526.39	10 JUL 1980	10.60	85.9	1.3
MGEO230	BUTTE CREEK SPRING * SQUARE BUTTE	MBMG-GWC	WELL	764.6	47.4650	110.2000	18.8	RESEARCH	17.8	39.62	23 AUG 1979	4.20	735.0	0.2
MGEO231	BUTTE CREEK SPRING - NORTH * SQUARE BUTTE	MBMG-GWC	WELL	47.4650	110.2000		17.0	STOCK	28.5	136.07	05 MAR 1976	49.10	1220.0	0.6
MGEO232	CHAMBERLAIN, CURTIS * 2 MI W LUTHER SCHOOL	MBMG-GWC	WELL	1.0	47.4686	107.4780	16.0	DOMESTIC	146.3	159.50	06 OCT 1978	1.70	0.5	0.1
MGEO233	MELTON, LARUE * LOWER AQUIFER	MBMG-GWC	WELL	47.4691	114.4033		18.0	UNUSED		27.43	22 SEP 1976	13.00	511.3	0.8
MGEO234	USGS - MELTON, LEON	MBMG-GWC	WELL	3.7	47.4763	114.6091	18.5	DOMESTIC	197.2	328.57	24 OCT 1980	14.70	210.0	0.9
MGEO235	USGS OBS WELL * 3.5 MI SE SQUARE BUTTE	MBMG-GWC	WELL	3.9	47.4897	110.1591	21.8	PUBLIC SUPPLY	152.4	496.82	26 OCT 1980	15.90	71.0	1.9
MGEO236	EDEL * 3 MI S SUNSET MEMORIAL CEMETARY	MBMG-GWC	WELL	4.0	47.5441	114.1563	21.5	UNUSED	71.0	84.12	04 MAR 1976	6.00	8.1	0.6
MGEO237	WEBSTER, BONITA * BOX 443 RONAN MT	MBMG-GWC	WELL	20.0	47.5952	114.5302	22.5	DOMESTIC	-0.0	60.86	17 AUG 1978	17.45	8.6	3.5
MGEO238	DEWARS, TOM * 10 MI W OF WINIFRED MT.	MBMG-GWC	WELL	9.1	47.6063	114.6736	21.0	PUBLIC SUPPLY	116.74	116.74	31 MAY 1984	3.10	10.7	0.2
MGEO239	HOMESTEAD ACRES COUNTY WATER DISTRICT	MBMG-GWC	WELL	10.1	47.6075	114.6713	18.5	PUBLIC SUPPLY	116.74	27 AUG 1975	2.20	12.1	1.6	
MGEO240	HOMESTEAD ACRES COUNTY WATER DISTRICT	MBMG-GWC	WELL	6.5	47.6147	114.6555	51.5	DOMESTIC	128.02	03 DEC 1979	7.80	21.2	5.2	
MGEO241	COLLUM, JIM * 10 MI NW MATRIGNON RANCH	MBMG-GWC	WELL	20.0	47.6147	114.6558	44.0	RECREATIONAL	9.90	19 AUG 1982	15 SEP 1975	9.90	9.6	5.7
MGEO242	CARR, FRANK * BOX 488 HOT SPRINGS MT	MBMG-GWC	WELL	787.1	47.6155	114.6477	43.0	RECREATIONAL			19 APR 1976	9.00	38.0	5.6
MGEO243	* RYFEL BRGS * 3 MI S & 1 MI E HIGHWOOD	MBMG-GWC	WELL	200.0	47.6155	114.6463	45.0	DOMESTIC	11.00	305.41	15 JAN 1981	34.80	21.5	3.1
MGEO244	CHRISTIANSON, BOB * HOT SPRINGS MT.	MBMG-GWC	WELL	76.0	47.6163	114.6763	38.0	DOMESTIC						
MGEO245	HOT SPRINGS CITY	MBMG-GWC	WELL	76.0	47.6163	114.6763	38.0	DOMESTIC						
MGEO246	TOWN OF HOT SPRINGS * MAIN WELL BY CHURCH	MBMG-GWC	WELL	76.0	47.6163	114.6763	38.0	DOMESTIC						
MGEO247	LEWIS, LAURA * CENTRAL AVE/HOT SPRINGS	MBMG-GWC	WELL	76.0	47.6163	114.6763	38.0	DOMESTIC						
MGEO248	SOUTH EAST OF CAMP AQUA	MBMG-GWC	WELL	76.0	47.6163	114.6763	38.0	DOMESTIC						
MGEO249	CORN HOLE * CAMAS HOT SPRINGS	MBMG-GWC	WELL	76.0	47.6163	114.6763	38.0	DOMESTIC						
MGEO250	HOT SPRINGS MONTANA	MBMG-GWC	WELL	76.0	47.6163	114.6763	38.0	DOMESTIC						
MGEO251	CAMAS HOT SPRINGS	MBMG-GWC	WELL	76.0	47.6163	114.6763	38.0	DOMESTIC						
MGEO252	SYMES HOTEL WELL	MBMG-GWC	WELL	76.0	47.6163	114.6763	38.0	DOMESTIC						
MGEO253	MGEO3352	MBMG-GWC	WELL	76.0	47.6163	114.6763	38.0	DOMESTIC						
MGEO254	MGEO3353	MBMG-GWC	WELL	76.0	47.6163	114.6763	38.0	DOMESTIC						
MGEO255	MGEO3354	MBMG-GWC	WELL	76.0	47.6163	114.6763	38.0	DOMESTIC						
MGEO256	MGEO3355	MBMG-GWC	WELL	76.0	47.6163	114.6763	38.0	DOMESTIC						
MGEO257	MGEO3356	MBMG-GWC	WELL	76.0	47.6163	114.6763	38.0	DOMESTIC						
MGEO258	MGEO3357	MBMG-GWC	WELL	76.0	47.6163	114.6763	38.0	DOMESTIC						
MGEO259	MGEO3358	MBMG-GWC	WELL	76.0	47.6163	114.6763	38.0	DOMESTIC						
MGEO260	MGEO3359	MBMG-GWC	WELL	76.0	47.6163	114.6763	38.0	DOMESTIC						
MGEO261	MGEO3360	MBMG-GWC	WELL	76.0	47.6163	114.6763	38.0	DOMESTIC						
MGEO262	MGEO3361	MBMG-GWC	WELL	76.0	47.6163	114.6763	38.0	DOMESTIC						
MGEO263	MGEO3362	MBMG-GWC	WELL	76.0	47.6163	114.6763	38.0	DOMESTIC						
MGEO264	MGEO3363	MBMG-GWC	WELL	76.0	47.6163	114.6763	38.0	DOMESTIC						
MGEO265	MGEO3364	MBMG-GWC	WELL	76.0	47.6163	114.6763	38.0	DOMESTIC						
MGEO266	MGEO3365	MBMG-GWC	WELL	76.0	47.6163	114.6763	38.0	DOMESTIC						
MGEO267	MGEO3366	MBMG-GWC	WELL	76.0	47.6163	114.6763	38.0	DOMESTIC						
MGEO268	MGEO3367	MBMG-GWC	WELL	76.0	47.6163	114.6763	38.0	DOMESTIC						
MGEO269	MGEO3368	MBMG-GWC	WELL	76.0	47.6163	114.6763	38.0	DOMESTIC						
MGEO270	MGEO3369	MBMG-GWC	WELL	76.0	47.6163	114.6763	38.0	DOMESTIC						
MGEO271	MGEO3370	MBMG-GWC	WELL	76.0	47.6163	114.6763	38.0	DOMESTIC						
MGEO272	MGEO3371	MBMG-GWC	WELL	76.0	47.6163	114.6763	38.0	DOMESTIC						
MGEO273	MGEO3372	MBMG-GWC	WELL	76.0	47.6163	114.6763	38.0	DOMESTIC						
MGEO274	MGEO337													

MGEOI DATABASE

ID	Site name	Reference	Type	Flow (l/min)	Latitude	Longitude	Temp (deg c)	Status/use	SWL (M)	Depth (M)	Date	Chloride (mg/l)	Sulfate (mg/l)	Fluoride (mg/l)
MGEOI226	KOPP, ARVID * 25 MI S CAMPAQUA MT	MBMG-GWC	WELL	100	47.6361	114.5750	32.6	IRRIGATION		73.15	20 NOV 1979	16.00	1.3	7.6
MGEOI221	KEMP * 3 MI SE CAMPAQUA MT	MBMG-GWC	WELL	30.0	47.6372	114.5811	28.8	IRRIGATION		79.25	05 DEC 1979	34.80	0.6	4.2
MGEOI286	JACKOLA AP 100 FT E OF CAMP AQUA BATH SPA	MBMG-GWC	WELL	418.5	47.6411	114.5700	51.0	INDUSTRIAL/COMM	1.8	79.55	04 JUN 1982	34.00	0.6	5.0
MGEOI027	CAMP AQUA AREA TEST WELL	Sonderger et al. 1981	WELL - FLOWING	1300.0	47.6422	114.5713	50.0	RESEARCH		98.78	18 DEC 1980	33.00	4.0	3.9
MGEOI262	MBMG GEO. TEST WELL #1 * CAMPAQUA AREA	MBMG-GWC	WELL	75.0	47.6422	114.5713	43.7	RESEARCH		98.78	18 DEC 1980	33.00	0.7	4.3
MGEOI202	OLSEN, EDWIN * 8.4 MI NE WINIFRED MT	MBMG-GWC	WELL	0.1	47.6425	109.3113	22.0	STOCK		495.00	19 AUG 1979	2850.00	2.0	2.0
MGEOI251	SMELSER, JAMES A. * POWER MT	MBMG-GWC	WELL	20.0	47.6427	111.5630	16.0	STOCK	137.2	369.72	24 OCT 1980	765.00	13.8	1.5
MGEOI223	KEMP * 0.3 MI E CAMPAQUA MT	MBMG-GWC	WELL	20.0	47.6433	114.5638	30.6	IRRIGATION		76.20	02 DEC 1979	35.50	0.6	4.5
MGEOI225	KEMP * 25 MI N CAMPAQUA MT	MBMG-GWC	WELL	94.8	47.6438	114.5741	38.9	IRRIGATION		82.30	20 NOV 1979	31.30	1.3	7.8
MGEOI224	KEMP RR WELL (RUNAWAY) * 3 MI N CAMPAQUA	MBMG-GWC	WELL	40.0	47.6452	114.5688	32.5	IRRIGATION		76.20	02 DEC 1979	30.90	0.6	5.0
MGEOI173	KEMP, ANNA * 5 MI N HOT SPRINGS, MT	MBMG-GWC	WELL	47.6472	114.5701		34.4	DOMESTIC		71.63	07 SEP 1978	23.10	2.1	4.6
MGEOI091	HUGHES, RAY * HOT SPRINGS, MT	MBMG-GWC	WELL	0.4	47.6516	114.5836	24.0	STOCK		02 JUL 1976		28.25	1.2	6.1
MGEOI174	BAXTER, C * 1.5 MI N CAMPAQUA MT	MBMG-GWC	WELL	94.9	47.6519	114.5838	25.8	IRRIGATION		06 SEP 1978		10.90	1.8	4.4
MGEOI175	WELSH, CHARLES * HOT SPRINGS, MT	MBMG-GWC	WELL	35.1	47.6700	114.5860	20.3	IRRIGATION		79.25	06 SEP 1978	19.00	2.1	4.8
MGEOI223	LUCKY HUNTER RANCH * 3 MI SE LONEPINE MT	MBMG-GWC	WELL	114.6027		114.5860	22.8	IRRIGATION		06 SEP 1978		2.20	5.9	3.2
MGEOI149	MATOVICH JOHN * 23 MI SW SUN PRAIRIE MT	MBMG-GWC	WELL	0.8	47.6930	108.0702	23.6	DOMESTIC	18.3	91.44	30 NOV 1979	7.80	5.8	3.4
MGEOI222	GAIL PATTON RANCH * 1 MI SW LONEPINE MT	MBMG-GWC	WELL	0.6	47.7141	114.6477	16.5	STOCK	71.1	95.71	15 SEP 1978	56.80	521.0	3.7
MGEOI075	LONEPINE OBSERVATION WELL	MBMG-GWC	WELL	0.6	47.7141	114.6477	16.5	STOCK	33.2	95.71	06 MAR 1976	6.30	12.2	0.9
MGEOI110	STREIT, GEORGE * 4 MI E - 1 MI S FT BENTON MT.	MBMG-GWC	WELL	0.6	47.8030	101.5769	15.0	STOCK	16.0	61.631	16 JAN 1977	94.00	1164.0	3.0
MGEOI243	WHITMAYER ASSOC * 4.5 MI SE SUN PRAIRIE 8CH	MBMG-GWC	WELL	1.0	47.8194	107.6284	18.8	STOCK	22.9	583.88	13 SEP 1980	920.00	102.0	2.7
MGEOI109	CLARK, BRAD * 23 MI LEFT, BENTON MT.	MBMG-GWC	WELL	110.1708		110.1708	16.6	STOCK	152.4	148.01	15 JAN 1977	148.00	1174.0	1.2
MGEOI114	LANDUSKY PLUNGE SPRINGS	Sonderger et al. 1981	WELL	11000.0	47.8432	108.5987	24.0	DOMESTIC		146.81	16 AUG 1973	10.00	620.0	1.6
MGEOI072	LANDUSKY * 16.5 MI S HAYS, MONTANA	Sonderger et al. 1981	WELL	2378.0	47.8763	108.5572	20.3	IRRIGATION		23 SEP 1975		13.63	871.0	1.5
MGEOI046	BLACK COULEE * E OF TEST AREA	MBMG-GWC	WELL	28.8	47.9069	110.6586	25.0	UNUSED		03 AUG 1972		276.00	8230.0	0.4
MGEOI313	ALZHEIMER, PAUL * SW OF BRADY, MT	MBMG-GWC	WELL	56.8	47.9097	111.9400	25.0	DOMESTIC		53.34	14 JAN 1985	25.20	646.0	0.6
MGEOI032	REVERE, LEE	MBMG-GWC	WELL	47.9261		111.9533	25.0	DOMESTIC	0.3		16 AUG 1973	12.40	61.2	0.6
MGEOI142	LITTLE WARM SPRINGS * 9 MI SE LODGE POLE	Sonderger et al. 1981	WELL	4542.4	47.9391	108.3963	26.1	DOMESTIC			16 AUG 1973	59.00	1144.0	1.4
MGEOI324	LODGE POLE WARM SPRINGS	Sonderger et al. 1981	WELL	10200.0	47.9938	108.4443	30.0	DOMESTIC			16 AUG 1973	57.00	1060.0	1.1
MGEOI048	BIG WARM SPRINGS * 4 MI NE ZORTMAN MT	MBMG-GWC	WELL	47.9935		108.4466	30.6	DOMESTIC		04 OCT 1973		37.00	650.0	0.9
MGEOI051	BIG WARM SPRINGS * 4 MI NE ZORTMAN MT	MBMG-GWC	WELL	47.9958		108.4509	28.0	IRRIGATION		09 SEP 1963		38.00	650.0	0.9
MGEOI082	KIRKALDIE, BRUCE * 7 MI SW LODGE POLE MT	MBMG-GWC	WELL	10383.7	47.9963	108.4491	24.5	OTHER		32.00	22 OCT 1963	50.00	893.0	0.7
MGEOI037	LARGE CAPACITY WELL * 4 MI SW WOLF POINT, MT	MBMG-GWC	WELL	100.1	48.0313	105.7422	51.0	OTHER		32.00	22 OCT 1963	50.00	893.0	0.7
MGEOI024	CITY OF WOLF POINT * WELL IN WOLF POINT	MBMG-GWC	WELL	6.6	48.0647	105.6433	18.3	DOMESTIC		335.28	10 OCT 1947	9.20	281.0	1.0
MGEOI023	SHERMAN HOTEL * WELL IN WOLF POINT	MBMG-GWC	WELL	9.4	48.0936	105.6363	17.2	DOMESTIC		300.23	10 OCT 1947	2050.00	5.9	5.9
MGEOI038	USGS TEST WELL * 1 MILE SOUTH POPLAR, MT	MBMG-GWC	WELL	0.9	48.1116	104.7975	16.1	OTHER		208.48	07 SEP 1963	116.00	5.8	4.8
MGEOI025	FOSS ELMER * 3.9 MI SE BROCTON	MBMG-GWC	WELL	2.6	48.1463	104.1969	17.9	STOCK		14.94	01 MAY 1985	242.00	-0.2	5.2
MGEOI317	LANDTCH WATER DISPOSAL SERVICE	MBMG-GWC	WELL	48.2013		104.2452	15.0	INDUSTRIAL/COMM	10.7		25 MAY 1985	9.50	640.0	0.5
MGEOI315	THORNES, RICK * 4 MILES NW OF BAINVILLE	MBMG-GWC	WELL	48.3325		110.0288	15.0	DOMESTIC		72.24	14 JAN 1977	156.00	617.0	1.9
MGEOI108	CLAWITER, MALT * 4 MI N - 4 MI E BIG SANDY MT.	MBMG-GWC	WELL	48.3325		105.4552	15.0	DOMESTIC	6.1		10 SEP 1985	4.20	34.8	0.1
MGEOI303	SIMS SPRING	MBMG-GWC	WELL	48.3325		105.4552	15.0	INDUSTRIAL/COMM	-8.1		10 SEP 1985	4.20	34.8	0.1
MGEOI140	TEXACO INC * 1.7 MI NW CENTRAL SCHOOL	MBMG-GWC	WELL	9.1	48.4619	109.2083	35.5	RECREATIONAL		973.36	27 OCT 1980	307.00	5.8	6.5
MGEOI252	MATOVACH, MARTIN * 17 MI E MALTA NEAR SAGO	MBMG-GWC	WELL	0.9	48.4617	107.5275	42.0	RECREATIONAL		1027.48	21 AUG 1976	183.00	2120.0	1.9
MGEOI111	SLEEPING BUFF REC AREA * 4 MI NW ASHFIELD	Sonderger et al. 1981	WELL	0.4	48.4852	107.5327	41.3	RECREATIONAL		971.70	10 MAY 1977	195.50	2147.0	2.9
MGEOI145	SHIRLEY, WALTER * 3 MI S FRESNO DAM.	MBMG-GWC	WELL	0.4	48.5563	109.3288	17.5	DOMESTIC	52.7	65.53	02 SEP 1976	182.80	865.0	1.8
MGEOI106	PIMLEY, DON * 4 MI NW JOPLIN MT.	MBMG-GWC	WELL	48.5994		110.1665	15.0	DOMESTIC	54.9	85.34	05 DEC 1976	184.00	2668.0	0.4
MGEOI105	GADY, ELWIN * 7.5 MI NW JOPLIN MT.	MBMG-GWC	WELL	48.6747		110.7855	25.0	DOMESTIC	24.4	30.48	05 DEC 1976	18.00	1060.0	0.1
MGEOI309	FRANCIS, CLARA	MBMG-GWC	WELL	48.6975		104.4552	29.0	IRRIGATION	7.6	29 SEP 1964		85.90	1400.0	0.9
MGEOI107	WELSH, ORVILLE * 13 MI N - 3 MI E HINGHAM MT.	MBMG-GWC	WELL	3.2	48.7405	104.4552	29.0	IRRIGATION	41.8	02 AUG 12 JAN 1977		47.00	1657.0	0.4
MGEOI039	EDWARDS, MARVIN * MIKE DUSTERHOFF	MBMG-GWC	WELL	48.7694		112.4555	16.0	DOMESTIC		24.36	18 NOV 1984	44.00	1010.0	0.3
MGEOI130	BIG WEST OIL CO * 2 MI NE MTN VIEW SCHOOL	MBMG-GWC	WELL	48.8387		112.0869	46.0	DOMESTIC	38.1		34 SEP 1983	8.00	190.0	0.3
MGEOI104	RYGH, KEN * 22 MI N - 3 MI W JOPLIN MT.	MBMG-GWC	WELL	48.8783		110.8813	21.0	UNUSED		140.33	04 DEC 1978	14.50	823.0	2.3
MGEOI142	BRADBURY, ALFRED * 11 MI E WILD HORSE MT	MBMG-GWC	WELL	2.8	48.9130	110.1058	15.5	STOCK	12.2	56.74	07 SEP 1978	312.0		2.6
MGEOI144	NAGEHUS, ORVILLE * 3 MI N SIMPSON MT.	MBMG-GWC	WELL	0.8	48.9068	110.2102	15.5	STOCK	21.3	59.74	04 SEP 1978	312.0		2.6

NOTE: A negative value for concentration indicates the detection limit for that analyte. A negative value for SWL (static water level) indicates head above ground surface (meters).

MGEO DATABASE

ID	Site name	Std dev balance	Lab pH	Sc mmols	Tds mg/l	Hco3 mg/l	Alkalinity	Sample type	Calcium mg/l	Magnesium mg/l	Sodium mg/l	Potassium mg/l	Iron mg/l	Silica (as2) mg/l	Arsenic ug/l
MGEO200	TARGHEE SULPHUR SPRING*MI W W YELLOWSTONE	-10.57	8.03	305.5	316.11	63.3	249.0	Disolved	72.9	72.9	7.1	4.5	0.01	14.4	15.1
MGEO217	UPPER WEST SPRING - STAUDENMEYER RANCH	0.51	8.29	607.0	395.15	249.0		Disolved	27.5	27.5	25.0	6.9	0.02	20.8	
MGEO233	UPPERMOST SPRING - STAUDENMEYER RANCH							Disolved	67.3	67.3	25.0	25.0	0.01	20.1	
MGEO236	UPPER - EAST SPRING - STAUDENMEYER RANCH							Disolved	67.5	67.5	25.0	25.0	0.01	20.1	
MGEO237	UPPER - EAST SPRING - STAUDENMEYER RANCH	0.32	7.44	625.5	400.95	251.0		Disolved	25.2	25.2	25.0	7.4	-0.01	22.7	
MGEO242	UPPER WEST SPRING - STAUDENMEYER RANCH	0.22	7.48	626.3	400.37	251.0		Disolved	24.8	24.8	27.0	7.2	-0.01	23.3	
MGEO244	UPPER WEST SPRING - STAUDENMEYER RANCH	0.55	7.52	617.2	395.24	249.0		Disolved	67.0	67.0	24.0	7.2	0.02	20.8	
MGEO247	ANDERSONS PASTURE SPRING #1							Disolved	66.5	66.5	24.0	7.3	-0.01	21.4	
MGEO250	USF* BAKERS HOLE* 3MI N WEST YELLOWSTONE	-0.08	7.47	627.0	400.75	247.0		Disolved	71.0	71.0	24.0	7.3	0.01	21.1	21.0
MGEO251	WEST FORK SWIMMING HOLE	0.20	7.76	310.8	256.84	152.0	215	Disolved	6.0	6.0	48.0	7.0	0.01	79.9	
MGEO252	CURLEW CREEK WARM SPRING	-0.36	7.88	320.6	179.02	194.0		Disolved	19.0	19.0	4.8	1.1	0.17	50.9	
MGEO259	WOLF CREEK HOT SPRING	-0.09	8.06	1097.0	703.41	493.0		Disolved	12.3	12.3	1.3	1.2	1.11	19.7	
MGEO260	WOLF CREEK HOT SPRING	0.83	8.81	442.9	331.67	157.0		Disolved	6.6	6.6	200.0	6.0	0.06	41.7	
MGEO261	LOWELL HILDRETH SPRING* 15 MI SW DILLON	0.17	7.44	727.0	460.7	217.0		Disolved	8.0	8.0	104.0	1.8	-0.01	50.7	
MGEO262	BEAR CREEK SPRINGS							Disolved	86.0	86.0	27.5	4.5	-0.01	17.5	
MGEO263	VIGILANTE WARM SPRING	-0.49	7.74	617.7	403.41	182.0		Disolved	64.5	64.5	27.0	3.1	-0.01	15.5	
MGEO264	LA DUKE HOT SPRINGS							Disolved	320.0	320.0	58.0	23.0		4.0	
MGEO265	BROWNS SPRINGS							Disolved	56.0	56.0	330.0	24.0		33	
MGEO266	PULLER HOT SPRINGS							Disolved	70.0	70.0	30.0	11.1		19	
MGEO267	TRUDAU SPRINGS							Disolved	34.2	34.2	8.8	35.0		34	
MGEO268	CHICO HOT SPRINGS							Disolved	825.0	825.0	0.0	0.0	0.23	10	
MGEO269	GROUNDWATER*4.7 MI NE FT SMITH MT	-0.20	8.00	1020.0	619.1	519.7		Disolved	1.9	1.9	0.4	250.0		10.1	
MGEO270	BROWN CATTLE CO* 3.1 MI N, BIRNEY MT	-0.70	6.53	1020.0	619.1	519.7		Disolved	10.3	10.3	3.0	8.5	0.02	49.3	53.2
MGEO271	JARDINE HOT SPRINGS 0.25 MI E OF JACKSON	1.99	7.73	927.5	655.43	615.0		Disolved	5.2	5.2	0.2	33.10		107	22.4
MGEO272	MBMG GEOTHERMAL TEST * THEXTON TX - 12	2.27	6.77	1338.0	1030.15	449.0	614	Disolved	10.0	10.0	3.7	240.0		32	
MGEO273	JACKSON HOT SPRINGS							Disolved	5.0	5.0	0.2	314.0		108	22.7
MGEO274	PRIVATE GEOTHERMAL TEST*ENNIS HOT SPRINGS*	0.84	7.84	1442.0	965.38	404.0		Disolved	27.3	27.3	3.4	9.0	0.89	16.2	37.0
MGEO275	LAPHAM DOWESTC WELL 1 MI NW JACKSON, MT.	0.54	7.63	953.3	575.1	558.0		Disolved	2.2	2.2	0.1	243.0		1.4	
MGEO276	ENNIS HOT SPRINGS	-0.64	8.28	992.0	600.36	531.0		Disolved	62.0	62.0	16.2	3.2	-0.01	19.8	
MGEO277	BROWN CATTLE CO* 9.5MI SW BIRNEY DAY SCH.							Disolved	1.9	1.9	0.1	48.0		55	
MGEO278	BEAVERHEAD ROCK SPRINGS	-0.33	7.78	519.5	340.92	140.0	85	Disolved	94.5	94.5	33.4	1.7	-0.00	10.7	
MGEO279	ELKHORN HOT SPRINGS	-1.03	7.87	866.1	443.87	170.8	232	Disolved	20.1	20.1	12.9	24.0		7.8	
MGEO280	MARTIN, KIEH							Disolved	489.0	489.0	1520.0	2.7	-0.00	11.5	
MGEO281	NEW BILTMORE HOT SPRINGS	-0.99	7.72	8184.0	459.66	489.0		Disolved	47.0	47.0	23.0	1.3	-0.00	12.2	
MGEO282	NEWMAN, JOHN * JOLIET, MT	0.32	7.67	324.9	328.33	179.5	88	Disolved	19.0	19.0	3.2	11.0		46	
MGEO283	ANDERSON SPRING							Disolved	10.0	10.0	0.1	94.6		47.7	
MGEO284	ANDERSON HOT SPRINGS							Disolved	0.9	0.9	0.3	47.10		9.1	
MGEO285	NORRIS HOT SPRINGS							Disolved	120.0	120.0	35.4	7.3	-0.01	19.4	1.1
MGEO286	POTOSI HOT SPRINGS							Disolved	2.3	2.3	0.1	115.0		71.2	
MGEO287	GROSS, PETE * 4 MI S PONY MT	1.29	8.36	474.4	366.76	67.3		Disolved	2.7	2.7	-0.0	136.0		70.2	
MGEO288	MCFERRAN, EUGENE * BILLINGS, MT	0.85	7.36	1864.0	1140.2	1098.0		Disolved	1.3	1.3	-0.0	144.0		70.3	
MGEO289	CARTER'S BRIDGE * 4 MI SELVINGSTON MT.							Disolved	5.1	5.1	0.6	135.0		69.3	
MGEO290	AVON WARM SPRING							Disolved	7.0	7.0	2.4	130.0		57	
MGEO291	BOZEMAN HOT SPRINGS * OWNER - CHARLES PAGE	6.43	9.41	715.1	434.4	52.5	113	Disolved	454.0	454.0	79.1	11.5	0.70	30.6	
MGEO292	BOZEMAN HOT SPRINGS * OWNER - CHARLES PAGE	1.73	9.41	716.8	455.88	55.1		Disolved	1.2	1.2	0.2	512.0		19.4	
MGEO293	BOZEMAN HOT SPRINGS * OLD WELL	0.11	9.43	713.9	482.34	53.7		Disolved	0.2	0.2	0.2	550.0		20	
MGEO294	BOZEMAN HOT SPRINGS * ORIGINAL SPRING	0.73	9.20	711.9	455.41	62.5		Disolved	2.6	2.6	0.1	36.0		54	
MGEO295	BOZEMAN HOT SPRINGS							Disolved	2.6	2.6	0.1	36.0		54	
MGEO296	RANCA * MCLEOD	-0.41	7.58	2221.0	1983.42	118.3		Disolved	13.8	13.8	22.7	4.0	0.00	32.1	28.0
MGEO297	SCOTT FEED LOT	0.86	8.93	2001.0	1289.15	106.0	67	Disolved	665.0	665.0	136.0	14.0	-0.00	50.7	45.0
MGEO298	SCOTT FEED LOT	0.82	8.78	2521.0	1363.91	1169.0		Disolved	143.0	143.0	27.0	5.2	-0.00	50.7	
MGEO299	BLUE JOINT CREEK HOT SPRING							Disolved	3.0	3.0	43.0	0.7	0.32	17.2	
MGEO300	LOVE, MELVIN*THREE FORKS, MT	2.09	7.82	396.5	317.3	284.7	209	Disolved	54.8	54.8	22.7	4.0	0.00	32.1	
MGEO301	GROUNDWATER*5.3 MI W HARDIN MT	-1.55	7.60	3040.0	2935.17	180.0		Disolved	62.1	62.1	13.8	4.5	0.00	32.1	
MGEO302	SHIPTON, HAROLD * THREE FORKS MT	-0.43	8.07	993.9	369.54	284.9		Disolved	25.0	25.0	27.0	5.2	-0.00	50.7	
MGEO303	HERMAN, T.E. * ROCKY RANCH 7.4 MI W HARDIN	0.18	7.76	3294.0	3081.89	150.1	89	Disolved	669.0	669.0	143.0	14.6	0.32	17.2	
MGEO304	GALLOGLY HOT SPRING							Disolved	3.0	3.0	43.0	0.7	0.32	17.2	
MGEO305	LOST TRAIL * WARM AND HOT SPRINGS							Disolved	3.0	3.0	43.0	0.7	0.32	17.2	
MGEO306	CAIN MIKE*6 MI S VOLBERG	-0.39	8.30	1472.0	898.02	894.0	227	Disolved	0.8	0.8	574.0	1.4	0.22	43.7	0.8
MGEO307	HUNTERS HOT SPRINGS							Disolved	0.9	0.9	0.1	65.0		65	
MGEO308	JORGENSEN, JACK * THREE FORKS MT							Disolved	13.0	13.0	150.0	13.0		37	
MGEO309	RENOVA HOT SPRINGS	0.77	7.67	1637.6	1526.37	80.8	310	Disolved	44.8	44.8	48.3	53.0	0.23	21	
MGEO310	WESTMORELAND * 9.1 MI W SARY SCHOOL	-0.71	8.61	1140.0	709.03	638.7		Disolved	0.9	0.9	291.0	1.4	0.05	7.7	
MGEO311	LISCOMB RANCH * 5.5 MI NW OF STACY SCHOOL	0.34	7.84	658.6	421.53	334.0		Disolved	48.5	48.5	13.0	11.3	-0.00	48.5	118.0
MGEO312	TINDER, L. MARIE * THREE FORKS MT							Disolved	56.5	56.5	14.7	12.0	-0.00	50.2	
MGEO313	WILCOX, RALPH * THREE FORKS MT	0.31	8.05	754.1	485.04	360.0	126	Disolved	0.1	0.1	80.0	1.4	2.29	60	
MGEO314	RICHARDSON, DEIRDRE * THREE FORKS							Disolved	25.0	25.0	131.0	65.8		56.6	
MGEO315	MEDICINE HOT SPRINGS	0.75	7.45	1800.0	1394.9	162.5	108	Disolved	0.1	0.1	95.8	2.3	-0.01	59.5	
MGEO316	WESTERN ENERGY * 2 MI N COLSTRIP MT.							Disolved	87.0	87.0	29.0	16.9	0.06	12.3	
MGEO317	PIPESTONE HOT SPRINGS							Disolved	40.8	40.8	40.8	1.6	-0.01	1.6	
MGEO318	FRED WEITSTEON SPRING DEVELOP							Disolved	14.5	14.5	6.8	3.0	0.12	3	
MGEO319	HART, FRANK * THREE FORKS, MT							Disolved							
MGEO320	ANADARKO PROD*6 MI E FOSTER MT							Disolved							
MGEO321	UN-NAMED SPRING * 29 MI NE OF FOSTER MT							Disolved							
MGEO322	COWAN SPRING*9MI NW THREE FORKS MT	-2.31	8.75	22150.0	13237.2	0.0		Disolved							

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MGDOT DATABASE

ID	Site name	Std dev balance	Lab ph	Sc mmo/h	Tds mg/l	Hco3 mg/l	Alkalinity	Sample type	Calcium mg/l	Magnesium mg/l	Sodium mg/l	Potassium mg/l	Iron mg/l	Silica (as SiO2) mg/l	Arsenic ug/l
MGDOT178	WOLF CREEK HOT SPRING							Disolved							
MGDOT179	WILLIAMSBURG SPRING							Disolved							
MGDOT180	OIL WELL (TENSLEEP FORMATION)							Disolved							
MGDOT181	MONTANA RESOURCES MONITORING WELL C							Disolved							
MGDOT182	MONTANA RESOURCES MONITORING WELL D2							Disolved							
MGDOT183	HOWARD SPRING * 25 M SE OF BIGHORN MT							Disolved							
MGDOT184	WENDT, FRED * 7.5 MI S GREGG (FAIRMONT)							Disolved							
MGDOT185	MBMG RESEARCH WELL * FAIRMONT HOT SPRINGS							Disolved							
MGDOT186	NELSON, HARVEY * 5 MI S BROADVIEW MT							Disolved							
MGDOT187	BRADSHAW * 10 M S BROADVIEW MT							Disolved							
MGDOT188	FAIRMONT HOT SPRINGS, ANCONDA							Disolved							
MGDOT189	SPANGLER, HAZEL * 2 MI E-NE GREGGON MT							Disolved							
MGDOT190	HUNSAKER SPRING							Disolved							
MGDOT191	MONT. HIGHWAY DEPT * 7.5 MI SE WACO MT							Disolved							
MGDOT192	PLUNKET LAKE WARM SPRINGS							Disolved							
MGDOT193	SPRINGS FROM JOINTS IN MISS CYN-SW PLUNKET							Disolved							
MGDOT194	MONTANA DEPT HIGHWAYS * 2.5 MI NE WACO MT							Disolved							
MGDOT195	HUNSAKER, MAURICE							Disolved							
MGDOT196	ANCONDA RED TRAVERTINE MOUND - GEYSER							Disolved							
MGDOT197	SLEEPING CHILD HOT SPRINGS							Disolved							
MGDOT198	BRUCE, N * IRRIGATION WELL WITH BOOSTER							Disolved							
MGDOT199	TOSTON WARM SPRING							Disolved							
MGDOT200	TOSTON WARM SPRING							Disolved							
MGDOT201	BRUCE, NORMAN							Disolved							
MGDOT202	KIMPTON SPRING							Disolved							
MGDOT203	WARM SPRINGS							Disolved							
MGDOT204	WARM SPRINGS STATE HOSPITAL							Disolved							
MGDOT205	WARM SPRINGS STATE HOSPITAL							Disolved							
MGDOT206	BOULDER HOT SPRINGS - UPPER SPRING							Disolved							
MGDOT207	BOULDER HOT SPRINGS - LOWER SPRING							Disolved							
MGDOT208	BOULDER HOT SPRINGS - MIDDLE SPRING							Disolved							
MGDOT209	WARM SPRINGS STATE HOSPITAL * SPRING							Disolved							
MGDOT210	M-8 NO. 12 * 5 MI NE HAMILTON MT							Disolved							
MGDOT211	GRIERSON, J.B. * 2.5 MI NE RANCHERS CEMETARY.							Disolved							
MGDOT212	PRISON RANCH SPRING SITE NO. 4							Disolved							
MGDOT213	DEER LODGE PRISON RANCH WELL							Disolved							
MGDOT214	BEDFORD SPRINGS							Disolved							
MGDOT215	GRIERSON, J.B. * 23 MI NW HYSHAM MT							Disolved							
MGDOT216	MBMG RESEARCH WELL * WEED CREEK - 1B							Disolved							
MGDOT217	MBMG RESEARCH WELL * WEED CREEK - 1A							Disolved							
MGDOT218	HANSEN, BILL * 3 MI SW TWO DOT MT							Disolved							
MGDOT219	FOX INC * 1.5 MI W-SW TWO DOT							Disolved							
MGDOT220	FOX INC * 1.5 MI W-SW TWO DOT							Disolved							
MGDOT221	HOWER, RAY * TWO DOT WATER SUPPLY							Disolved							
MGDOT222	HARLOWTON * SOUTH MUNICIPAL WELL							Disolved							
MGDOT223	HILLBROOK FLOWING WELL							Disolved							
MGDOT224	WALLS HOT SPRING							Disolved							
MGDOT225	ALHAMBRA HOT SPRINGS NORTH							Disolved							
MGDOT226	TOWNSHIP HERB * 2.5 MI SW WHITE SULPHUR SPR							Disolved							
MGDOT227	RALPH JOHNSON P.O. BOX 63 WHITE SULPHUR SPR							Disolved							
MGDOT228	WHITE SULPHUR SPRINGS							Disolved							
MGDOT229	WHITE SULPHUR SPRINGS BANK WELL							Disolved							
MGDOT230	WATTS, JAMES * 16 MI NE WINSEY MT							Disolved							
MGDOT231	M-8 NO. 8 WELL * 2.5 MI SECORVILLE MT							Disolved							
MGDOT232	BROADWATER HOT SPRINGS WELL							Disolved							
MGDOT233	GLOBE WELL							Disolved							
MGDOT234	GARRISON WARM SPRINGS							Disolved							
MGDOT235	CHADWICK, GREG							Disolved							
MGDOT236	USGS OBS WELL * 4 MI SW EAST HELENA, MT.							Disolved							
MGDOT237	MUELLER BUZZ							Disolved							
MGDOT238	FLORENCE TEST WELL A							Disolved							
MGDOT239	SVRTE MYSSIE * BOX 315 * INGOMAR MT 50039							Disolved							
MGDOT240	CHERRY CK SHEEP CO * 1.35 MI SE HAGEN RANCH.							Disolved							
MGDOT241	MOORE, THOMAS * 6.5 MI SW ANGELA MT							Disolved							
MGDOT242	BYRNE WARM SPRING * WEST OF BEARMOUTH							Disolved							
MGDOT243	NIMROD SPRINGS							Disolved							
MGDOT244	BEARMOUTH SPRINGS							Disolved							
MGDOT245	GARRICK GALEN							Disolved							
MGDOT246	LOLO HOT SPRINGS							Disolved							
MGDOT247	MARYSVILLE DEEP WELL DEPTH 5750							Disolved							
MGDOT248	CHERRY CREEK SHEEP CO * 25 MI N VANANDA MT							Disolved							
MGDOT249	OLSEN, JONAS * 9 MI NW FLATWILL MT.							Disolved							
MGDOT250	OLSEN, JONAS * 14 MI NE N-BAR RANCH							Disolved							
MGDOT251	REYNOLDS, KEITH * 6 MI NE FLATWILL MT.							Disolved							
MGDOT252	HILL FLOYD * 7 MI N FLATWILL MT.							Disolved							
MGDOT253	M-8 * 4 BUTLER CQ * 4 MI NW MISSOULA MT							Disolved							
MGDOT254	KING, JOE & SONS INC. * 5 MI SSW WINNET MT							Disolved							

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MGDOT DATABASE

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MGDOT159	SHAW, BUD * 1.7 MI SW MOSBY MT.	-0.02	8.40	1512.0	995.54	509.0		Dissolved	3.9	0.9	353.0	2.1	0.35	13.8	
MGDOT160	EAGER, REX * 2 MI SW WINNETT MT.	-0.77	8.27	1334.0	727.86	429.0		Dissolved	6.0	2.0	267.0	2.7	0.02	11.9	
MGDOT161	BRATTON, WAYNE * 2 MI SE WINNETT MT.	0.37	8.30	1650.0	1226.06	411.0		Dissolved	6.9	2.0	387.0	2.7	0.02	14.2	
MGDOT162	BURLY VISTA TRACTS	0.46	7.51	602.1	355.09	280.6		Dissolved	73.4	29.9	5.7	4.4	0.42	6.7	
MGDOT163	TEGEN, PETER * 9 MI E GRASSRANGE MT.	-0.64	7.59	1571.0	138.23	411.0		Dissolved	162.0	74.8	96.1	11.2	0.83	9.5	
MGDOT164	MATOWICH * 4.5 MI E GRASSRANGE MT.	-0.46	7.96	592.3	365.71	267.0		Dissolved	51.2	20.9	50.1	4.7	-0.01	10.2	
MGDOT165	HOLE NO 2 M - B DRILLING PROJECT	-0.62	7.86	675.6	435.76	450.0		Dissolved	1.1	1.1	171.0	5.7	2.0	0.35	16.6
MGDOT166	MSU AG EXPERIMENT STATION * MOCCASIN MT.	0.14	7.69	443.9	256.92	450.0		Dissolved	51.5	14.4	16.3	4.3	1.86	9.1	
MGDOT167	BRADY, EARL * 4 MI NW WINNETT, MT.	-0.31	8.30	1125.0	703.94	444.0		Dissolved	3.1	232.0	3.4	0.82	14.6		
MGDOT168	GERDUM, RONALD * 3 MI NE GRASS RANGE, MT.	-0.15	8.72	780.0	503.98	334.0		Dissolved	24.7	10.0	148.0	3.5	0.34	11.5	
MGDOT169	CENEX * 15 MI NE WINNETT MT.	0.98	8.63	1451.0	953.62	426.0		Dissolved	2.6	4.6	347.0	1.3	0.17	13.5	
MGDOT170	HEDMAN, J. * 7.5 MI NW TEGEN MT.	-0.21	8.29	643.0	400.64	251.0		Dissolved	9.1	0.4	130.0	2.4	1.57	9.7	
MGDOT171	HARRIS, FLOYD * 11 MI NW TEGEN MT.	-0.17	8.13	725.0	432.21	209.0		Dissolved	18.0	7.3	154.5	3.2	1.35	9.6	
MGDOT172	FOX, DENNIS * 7 MI NW GRASSRANGE MT.	-1.02	8.19	1167.0	747.06	429.0		Dissolved	60.8	17.9	60.4	3.0	0.27	12.1	
MGDOT173	LAURENCE, HESS * 1 MI NW MOCCASIN MT.	-1.07	8.14	615.5	434.82	188.0		Dissolved	20.6	17.9	60.4	3.0	0.27	12.1	
MGDOT174	DELANEY, DOUGLAS * 7 MI NW (WILD HORSE UNIT)	-0.55	7.78	578.5	330.32	276.0		Dissolved	10.9	3.6	176.0	2.0	0.26	10.3	
MGDOT175	BROOKS, WARM SPRING * 2.5 MI NW BROOKS MT.	0.30	8.29	662.0	532.05	309.0		Dissolved	114.0	39.0	5.8	1.4	-0.01	10.7	
MGDOT176	DELANEY, DOUGLAS * 11 MI NW ROY MT.	-0.93	8.41	1373.0	877.78	374.0		Dissolved	9.6	4.0	305.0	2.4	0.44	11.1	
MGDOT177	MILLER, RANCH * 14 MI SE VALENTINE MT.	0.57	8.22	7335.0	4329.88	1630.0		Dissolved	5.9	2.1	1770.0	5.3	0.10	18.3	
MGDOT178	CARDINAL PET CO * 10 MI E HILGERT MT.	0.77	8.32	1017.0	577.63	467.0		Dissolved	7.1	1.6	219.0	5.4	4.09	1.3	
MGDOT179	BUSENBAK, MERLIN * 1 MI S VALENTINE MT.	-0.63	8.43	2567.0	1608.34	1639.0		Dissolved	1.4	0.3	688.0	2.1	-100.00	16.5	
MGDOT180	QUINN'S HOT SPRINGS * JIM AND DONNA BROWN	0.71	8.70	206.1	165.68	51.2		Total Recoverable	3.6	0.2	39.0	1.5	0.09	76.6	0.6
MGDOT181	YEAGER * 8 MI EAST MOULTON, MT.	1.05	8.29	1510.0	985.7	359.0		Dissolved	2.7	-0.1	39.3	2.5	0.01	73.5	
MGDOT182	FINLEY, R.S. * 1 MI NW ST. IGNATIUS	0.32	7.82	519.6	293.17	322.3		Dissolved	10.7	6.0	322.0	0.7	-0.01	10.9	
MGDOT183	SROKY, FRANK * 9 MI EAST ROY, MT.	-0.05	9.12	1274.0	828.12	381.0		Dissolved	72.0	18.8	12.2	0.6	0.02	11	
MGDOT184	HORYNA, JAMES * 6 MI E ROY MT.	1.08	9.18	1566.0	1036.58	398.0		Dissolved	1.9	0.4	304.0	1.1	0.02	16.6	
MGDOT185	CORPS OF ENGINEERS SOUTH WELL AFTER PERFS	0.30	8.17	1101.0	648.15	574.0		Dissolved	24.6	10.1	221.0	6.6	3.05	8.9	
MGDOT186	BYRON, HAROLD * 1 MI W MOISE MT.	-1.06	7.60	950.9	553.38	553.8		Dissolved	15.2	14.4	167.0	3.8	2.04	16.8	
MGDOT187	YARGER, ROBERT * 13 MI W CIRCLE MT.	-0.87	8.38	1818.0	1280.09	410.4		Dissolved	69.9	17.2	17.2	2.9	0.01	7.5	
MGDOT188	SAND COULEE WTR USERS BENCH W ABV SAND COU	0.31	7.69	789.2	453.57	444.0		Dissolved	2.4	0.2	476.0	1.2	0.06	11.5	
MGDOT189	TAYLOR, JAMES * 8 MI CHRISTINA MT.	-0.82	9.01	2032.0	1340.39	399.0		Dissolved	70.6	28.7	30.7	2.5	-0.00	12.3	
MGDOT190	CHARLES ENTSMINGER * TOWN OF NUMBER SEVEN	0.41	7.94	506.3	393.48	246.0		Dissolved	100.0	36.1	11.4	4.4	0.00	14.1	
MGDOT191	CUSTER, EVERETT * EDEN RT, GREAT FALLS, MT.	0.49	7.48	808.0	557.4	255.0		Dissolved	82.2	29.1	12.4	2.3	0.02	11.6	0.2
MGDOT192	TOWN OF TRACY	0.23	7.57	623.8	407.36	1014.0		Dissolved	382.0	28.0	32.0	7.9	0.01	13.2	0.9
MGDOT193	SLCGSVQD, A. K. * 17 MI SE RITCHIEY MT.	0.23	7.54	2770.0	2402.46	1014.0		Dissolved	57.9	34.2	274.0	7.5	1.37	20.6	1.7
MGDOT194	GOVER * 2.5 MI TRAVIS SCHOOL	-0.04	7.95	1557.0	1048.74	574.0		Dissolved	8.2	-0.1	50.9	0.6	-0.00	56.4	
MGDOT195	VILLAGE INN * 2.5 MI NE TRAVIS SCHOOL	0.81	8.16	1295.0	798.12	660.0		Dissolved	0.8	13.6	36.0	5.7	0.01	10.3	
MGDOT196	STONE, GENE	-0.88	9.01	448.2	285.10	157.0		Dissolved	47.0	0.8	57.1	1.2			
MGDOT197	WEBB RES * 17.5 MI SE GERALDINE MT.	-0.11	8.20	195.0	208.38			Dissolved	0.8						
MGDOT198	HOLLAND, JIM - GREEN SPRINGS	0.20	7.57	623.8	407.36	1014.0		Dissolved	57.9	34.2	274.0	7.5	1.37	20.6	1.7
MGDOT199	GREEN SPRINGS * HOLLAND RANCH	-0.55	7.57	1775.0	1260.1	348.0		Dissolved	182.0	75.4	132.0	13.5	3.37	1.1	
MGDOT200	TACKLE, ROBERT * 2 MI SW GREAT FALLS MT.	-0.39	7.97	1775.0	1260.1	348.0		Dissolved	224.0	71.9	124.0	13.4	2.22	20.6	
MGDOT201	PAUL, MICHAEL (ROBINSON) * 3 MI SW GREAT FALLS					365.0		Dissolved	36.6	7.9	23.9	3.6	0.03	18.1	0.6
MGDOT202	BUTTE CREEK SPRING * SQUARE BUTTE					32.2		Dissolved	8.4	2.0	26.5	2.9	0.01	10.8	0.4
MGDOT203	BUTTE CREEK SPRING * NORTH * SQUARE BUTTE					10.2		Dissolved	1.1	1.1	83.5	6.6	0.85	15.5	
MGDOT204	CHAMBERLAIN, CURTIS * 2 MI W ILLER SCHOOL	-0.41	8.43	3653.0	2587.91	640.0		Dissolved	11.1	5.2	81.4	1.2	-0.00	21.1	
MGDOT205	MELTON, LARUE * LOWER AQUIFER	-1.07	7.34	399.2	259.61	244.9		Dissolved	12.2	5.2	81.4	1.2	-0.00	21.1	
MGDOT206	USGS - MELTON, LEON	0.06	8.18	367.4	215.58	191.8		Dissolved	45.8	14.2	126.0	7.7	0.33	11	
MGDOT207	SCHMIDT, LLOYD * 3.5 MI SE SQUARE BUTTE	0.19	7.85	910.0	524.17	365.0		Dissolved	210.0	151.0	43.4	11.9	0.14	10.6	2.0
MGDOT208	USGS OBS WELL * 5 MI S VALLEY SCHOOL	-13.71	8.12	1656.0	1294.72	232.0		Dissolved	112.0	114.0	523.0	11.9	0.14	10.6	
MGDOT209	EDEL * 5 MI S SUNSET MEMORIAL CEMETARY	-1.24	7.90	1862.0	2362.2	166.3		Dissolved	29.8	10.9	17.6	4.1	0.03	7.9	-2.0
MGDOT210	WEBSTER, BONITA * BOX 443 RONAN MT.	-0.15	7.81	286.4	173.21	166.3		Dissolved	163.5	57.5	94.5	4.1	0.03	7.9	
MGDOT211	DEMARS, TOM J. * 10 MI W OF WINIFRED MT.	0.89	7.51	1463.0	1045.4	390.4		Dissolved	86.0	36.1	26.4	4.4	0.33	10.6	
MGDOT212	HOMESTEAD ACRES COUNTY WATER DISTRICT	-0.03	7.76	813.0	503.57	250.0		Dissolved	83.2	39.0	27.7	4.8	0.21	10.2	
MGDOT213	HOMESTEAD ACRES COUNTY WATER DISTRICT	-0.89	8.35	777.0	501.93	223.0		Dissolved	1.2	0.2	401.0	1.0	0.05	11	
MGDOT214	MCOLLUM, JIM * 10 MI NW MATHISON RANCH	-0.85	8.97	962.79	602.79	807.0		Dissolved	32.3	13.0	19.9	1.4	-0.01	16.2	
MGDOT215	CARR, FRANK * BOX 456 HOT SPRINGS MT.	0.09	7.96	330.2	195.28	196.9		Dissolved	57.0	19.0	52.0	3.6	0.02	29	
MGDOT216	* RYFFEL BROS. * 3 MI S & 3 MI E HIGHWOOD					366.9		Dissolved	20.0	9.4	113.0	3.5	0.02	17.5	
MGDOT217	CHRISTIANSON, BOB * HOT SPRINGS MT.	0.95	7.83	623.3	374.62	149.3		Dissolved	17.2	4.0	32.0	3.1	0.07	26.1	
MGDOT218	HOT SPRINGS CITY	0.76	7.99	255.6	172.15	149.3		Dissolved	3.6	3.6	33.0	3.0	0.17	22	
MGDOT219	TOWN OF HOT SPRINGS * MAIN WELL BY CHURCH	-0.46	8.74	245.6	156.07	127.8		Dissolved	0.9	-0.1	92.3	0.0	0.81	67	-1.0
MGDOT220	LEISTNER, LAURA * CENTRAL AVE, HOT SPRINGS	-0.63	9.46	365.5	286.58	84.6		Dissolved	1.1	0.3	83.0	1.8	-0.01	69.6	-1.0
MGDOT221	SOUTH EAST OF CAMP AQUA	-0.59	9.34	361.8	270.89	109.3		Dissolved	0.8	0.1	85.0	1.8	-0.01	56	
MGDOT222	CORN HOLE * CAMAS HOT SPRINGS					1.1		Dissolved	0.9	0.1	85.0	1.8	-0.01	56	
MGDOT223	HOT SPRINGS MONTANA					1.0		Dissolved	0.8	0.1	85.0	1.8	-0.01	56	
MGDOT224	CAMAS HOT SPRINGS					0.6		Dissolved	0.8	0.1	85.0	1.8	-0.01	56	
MGDOT225	SYMES HOTEL WELL	-0.01	8.68	286.0	297.16	399		Dissolved	13.1	0.7	95.4	2.2	-0.02	73.09	-0.5
MGDOT226	SYMES HOT SPRINGS WELL					367		Dissolved	1.2	0.2	91.0	1.7	0.07	66	
MGDOT227	HOT SPRING GEOTHERMAL WELL - UNNAMED	-0.67	7.08	341.3	220.43	101.0		Dissolved	16.4	5.2	43.2	5.6	0.07	32.8	
MGDOT228	KOERLING, DELBERT * WELL 186	0.04	8.23	266.0	275.02	4.5		Dissolved	-0.2	-0.2	95.6	2.9	0.06	36.64	-0.5
MGDOT229	OSTRANGER, DAVID * WELL 56	-0.07	8.05	312.0	200.91	260.3		Dissolved	5.5	2.5	109.3	0.6	0.39	12.96	-0.5
MGDOT230	VERNER, ROSEB * 7.5 MI W PALO MT	-0.78	8.06	728.8	436.13	472.3		Dissolved	33.7	36.1	88.5	3.1	0.01	14.8	
MGDOT231	IRRIGATION EQUIPMENT SALES * HOT SPRINGS	-0.76	7.51	471.8	283.29	264.5		Dissolved	37.0	11.9	46.0	3.9	5.80	21.9	
MGDOT232	JACOBSEN, R * HOT SPRINGS MT	-0.67	8.06	592.9	375.46	324.0		Dissolved	6.6	1.0	136.0	2.1	0.28	35	19.5
MGDOT233	KOPP, ARVID * HOT SPRINGS, MT	-0.29	8.12	404.8	244.61	221.0		Dissolved	1.6	1.6	86.1	1.9	0.39	14.3	100.0
MGDOT234	SUN RIVER SPRINGS					800		Dissolved	15.5	2.8	129.0	3.8	0.16	36.8	2.6
MGDOT235	MBMG GEOTHERMAL TEST WELL #1 * CAMP AQUA AREA	0.62	8.32	665.9	405.72	321.0		Dissolved							

NOTE: A negative value for concentration indicates the detection limit for that analyte. A negative value for SWL (static water level) indicates head above ground surface (meters).

MGDOT DATABASE

ID	Site name	Std dev balance	Lab ph	Sc mmoths	Tds mg/l	Hco3 mg/l Alkalinity	Sample type	Calcium mg/l	Magnesium mg/l	Sodium mg/l	Potassium mg/l	Iron mg/l	Silica (sio2) mg/l	Arsenic ug/l
MGDOT226	KOPP, ARVID * 25 MI S CAMPAQUA MT	-0.06	8.71	472.4	304.15	237.0	Dissolved	2.1	0.3	0.3	117.0	1.5	0.22	32.4
MGDOT221	KEMP * 5 MI SE CAMPAQUA MT	0.99	7.89	656.7	403.19	348.0	Dissolved	4.0	0.7	0.7	147.7	2.8	0.26	34.9
MGDOT266	JACKOLA AP. 100 FT. E. OF CAMP AQUA BATH SPA	0.53	8.53	651.2	413.14	327.0	Dissolved	2.9	0.2	0.2	152.0	3.1	-0.00	43.2
MGDOT027	CAMP AQUA AREA TEST WELL							3.2	0.3	0.3	152.0	4.0	0.11	42.2
MGDOT262	MBMG GEO. TEST WELL #1 * CAMPAQUA AREA	2.03	8.21	655.6	390.02	343.0	Dissolved	12.6	2.4	2.4	127.0	3.3	0.11	35.3
MGDOT202	OLSEN, EDWIN * 8.4 MI NE WINIFRED MT	-2.48	8.09	9117.0	5325.18	608.0	Dissolved	10.0	3.3	3.3	2141.0	4.7	0.12	12.4
MGDOT251	SMELSER, JAMES A. * POWER MT	0.37	7.83	3559.0	1981.91	807.0	Dissolved	23.6	9.5	9.5	750.0	10.8	0.06	-7.8
MGDOT225	KEMP * 0.3 MI E CAMPAQUA MT	0.38	8.28	668.4	419.84	354.0	Dissolved	3.3	0.4	0.4	154.4	2.6	0.13	43.6
MGDOT224	KEMP * 25 MI N CAMPAQUA	-0.38	8.36	593.7	394.41	314.0	Dissolved	4.4	1.0	1.0	144.0	2.6	0.05	41.4
MGDOT173	KEMP RB WELL (RUNAWAY) * 5 MI N CAMPAQUA	0.32	8.40	633.6	394.72	328.0	Dissolved	4.4	0.4	0.4	142.0	2.1	0.12	36.6
MGDOT091	KEMP, ANNA * 5 MI N HOT SPRINGS, MT	-0.87	8.63	693.6	395.26	326.0	Dissolved	3.6	0.6	0.6	150.0	3.4	0.02	36.5
MGDOT174	HUGHES, RAY * HOT SPRINGS, MT	0.49	8.18	617.2	381.08	331.8	Dissolved	5.7	0.6	0.6	139.0	3.7	0.11	32.9
MGDOT129	BAXTER, C * 1.5 MI N CAMPAQUA MT	-0.21	8.48	470.6	338.76	280.0	Dissolved	4.6	0.4	0.4	127.0	2.7	0.03	29.3
MGDOT175	LUCKY, CHARLES * HOT SPRINGS, MT	-0.89	8.16	597.0	345.3	287.0	Dissolved	3.3	0.4	0.4	134.0	1.7	0.09	28.6
MGDOT223	LUCKY, HOWSER RANCH * 3 MI SE LONEPINE MT	-0.54	9.45	442.3	273.01	188.0	Dissolved	5.8	0.7	0.7	101.0	2.3	0.20	21
MGDOT149	MATOVICH, JOHN * 23 MI SW SUN PRAIRIE MT	-0.95	7.90	446.7	276.24	255.0	Dissolved	5.7	0.7	0.7	105.0	1.3	0.17	19.5
MGDOT243	GAIL PATTON RANCH * 1 MI SW LONEPINE MT	0.90	8.50	2496.0	1637.93	845.0	Dissolved	2.4	0.6	0.6	608.0	1.6	0.07	10.5
MGDOT222	LONGPINE OBSERVATION WELL	-0.59	7.89	289.7	174.8	164.0	Dissolved	28.4	7.8	7.8	23.6	2.2	0.30	15.9
MGDOT075	STREIT, GEORGE * 4 MI E - 1 MI S FT BENTON MT.	-0.25	7.93	396.8	240.03	235.9	Dissolved	39.8	11.6	11.6	32.8	1.7	-0.01	18.2
MGDOT110	WHITMAYER, ABBOC * 4 MI SE SUN PRAIRIE SCH	-0.25	7.88	2862.0	2252.84	620.0	Dissolved	207.0	18.0	18.0	253.0	34.4	0.09	11.8
MGDOT109	CLARK, BRAD * 25 MI E FT. BENTON MT.	-3.15	6.90	4649.0	2046.37	889.0	Dissolved	11.6	3.2	3.2	1075.0	6.7	0.04	10.5
MGDOT114	LANDUSKY PLUNGE SPRINGS	-0.59	8.45	3757.0	2068.24	702.0	Dissolved	19.4	6.0	6.0	863.0	7.5	0.03	7.5
MGDOT072	LANDUSKY, 19.5 MI S HAYS, MONTANA	-0.07	7.88	1724.0	1366.89	170.5	Total Recover	161.0	65.0	65.0	24.0	6.7	0.01	14.7
MGDOT046	BLACK COULEE * E OF TEST AREA	1.20	8.24	14300.0	13094	451.0	Dissolved	529.0	56.8	56.8	352.0	24.8	6.1	6.1
MGDOT313	ALZHEIMER, PAUL * SW OF BRADY, MT	0.42	7.78	1678.0	1219.1	328.0	Dissolved	118.0	56.0	56.0	193.0	3.2	4.82	4.82
MGDOT312	REVERE, LEE	0.69	7.85	744.8	459.4	402.0	Dissolved	42.9	22.8	22.8	89.4	1.7	2.36	6.3
MGDOT049	LITTLE WARM SPRINGS * 9 MI SE LODGEPOLE	0.53	8.08	2082.0	1734.56	101.0	Dissolved	268.0	96.0	96.0	72.0	13.3	0.10	16
MGDOT324	LODGEPOLE WARM SPRINGS	0.51	8.08	1980.0	1628.32	81.0	Dissolved	15.0	36.0	36.0	402.0	11.1	-0.01	14.1
MGDOT048	BIG WARM SPRINGS * 6.4 MI NE ZORTMAN MT	-0.90	7.96	1430.0	1096.15	153.0	Dissolved	24.0	5.2	5.2	1330.0	10.0	0.13	13
MGDOT051	KIRKALDIE, BRUCE * 7 MI SW LODGEPOLE MT	0.66	7.14	1800.0	1433.87	148.0	Dissolved	54.0	31.0	31.0	1500.0	1.6	0.05	13
MGDOT052	LARGE CAPACITY WELL * 4 MI SW WOLF POINT, MT	0.22	7.80	1900.0	1234.47	627.0	Dissolved	6.8	2.0	2.0	214.0	4.7	0.67	9.9
MGDOT037	CITY OF WOLF POINT * WELL IN WOLF POINT	-0.25	7.80	6510.0	3552.21	544.0	Dissolved	2.3	0.6	0.6	463.0	5.2	0.10	16
MGDOT024	SHERMAN HOTEL OF WOLF POINT	-0.19	8.30	7080.0	3892.29	482.0	Dissolved	2.3	0.6	0.6	593.0	1.4	0.08	15.7
MGDOT023	USGS TEST WELL * 1 MILE SOUTH POPLAR, MT	-1.00	6.50	1950.0	1114.67	884.0	Dissolved	70.6	92.8	92.8	337.0	5.5	0.17	24.4
MGDOT028	FOSS, ELMER * 5.8 MI SE BROXTON	-0.25	7.62	2028.0	1426.16	1121.0	Dissolved	25.4	25.4	25.4	710.0	7.1	0.06	21.4
MGDOT315	LANDTECH WATER DISPOSAL SERVICE	-0.23	7.82	2028.0	1426.16	598.0	Dissolved	25.4	25.4	25.4	710.0	7.1	0.06	21.4
MGDOT108	THORNESS, RICK * 4 MILES NW OF BAINVILLE	-1.33	8.36	5076.0	2011.26	912.0	Dissolved	49.5	23.3	23.3	17.1	1.7	-0.00	16.7
MGDOT309	CLAWITER, MILT * 4 MI N - 4 MI E BIG SANDY MT.	0.04	7.63	463.0	280.28	263.0	Dissolved	2.3	0.7	0.7	809.0	4.3	0.33	23.3
MGDOT140	TEXACO INC * 1.7 MI NW CENTRAL SCHOOL	-0.76	8.29	3296.0	1918.59	151.0	Dissolved	521.0	156.0	156.0	254.0	25.1	0.46	17.1
MGDOT140	MATOVACH, MARTIN * 17 MI E MALTA NEAR SAGO	0.53	8.35	4046.0	3333.97	112.5	Dissolved	174.0	174.0	174.0	293.0	2.5	0.03	7.4
MGDOT111	SLEEPING BUF REC AREA * 4 MI NNW ASHFIELD	0.79	7.38	3915.0	3419.37	151.0	Dissolved	6.2	2.5	2.5	922.0	3.8	0.06	7.5
MGDOT145	SHRLE, WALTER * 3 MI S FRESNO DAM.	-0.58	8.37	3756.0	2500.21	1005.0	Dissolved	26.0	11.2	11.2	1370.0	4.4	0.05	13
MGDOT106	PIMLEY, DON * 4 MI NW JOPLIN MT.	-0.10	8.02	6323.0	4792.08	588.0	Dissolved	518.0	192.0	192.0	138.0	8.2	0.02	19.1
MGDOT105	CADY, ELWIN * 7.5 MI NW JOPLIN MT.	0.59	7.85	5936.0	4245.74	3065.0	Dissolved	17.4	4.8	4.8	1095.0	3.4	0.05	9.6
MGDOT309	FRANCIS, CLARA	-0.73	7.65	3288.0	2608	851.0	Dissolved	7.1	1.8	1.8	715.0	1.1	5.72	6.4
MGDOT107	WELSH, ORVILLE * 13 MI N - 3 MI E HINGHAM MT.	0.85	8.09	4544.0	3249.73	642.0	Dissolved	32.0	37.0	37.0	365.0	1.0	0.03	8.7
MGDOT310	EDWARDS, MARVIN / MIKE DUSTERHOFF	0.87	8.24	3044.0	2077.47	506.0	Dissolved	0.6	0.9	0.9	640.0	2.6	0.03	7.3
MGDOT039	BIG WEST OIL CO * 2 MI NE MTH VIEW SCHOOL	27.89		483.06	483.06	427.0	Dissolved	7.8	1.6	1.6	640.0	2.6	0.03	7.3
MGDOT104	RYGH, KEN * 22 MI N - 5 MI W JOPLIN MT.	0.77	8.15	2708.0	1845.46	730.0	Dissolved	5.5	1.3	1.3	394.0	1.8	0.01	9
MGDOT142	BRADBURY, ALFRED * 11 MI E WILD HORSE MT	1.67		1055.12	1055.12	652.0	Dissolved							
MGDOT144	NAGEHUS, ORVILLE * 3 MI N SIMPSON MT.	0.07	8.38	1650.0	1055.12	652.0	Dissolved							

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MGEOI DATABASE

ID	Site name	Boron ug/l	Lithium ug/l	H ₂ S	Location	County
MGEOI209	TARGHEE SULPHUR SPRING* 0.1 MI W YELLOWSTONE	60.0	30.0		13S 04E 27 AAC	GALLATIN
MGEOI177	UPPER WEST SPRING - STAUDENMEYER RANCH				13S 02W 17 CBD	BEAVERHEAD
MGEOI123	UPPERMOST SPRING - STAUDENMEYER RANCH				13S 02W 17 CBD	BEAVERHEAD
MGEOI125	UPPER - EAST SPRING - STAUDENMEYER RANCH				13S 02W 17 CBD	BEAVERHEAD
MGEOI126	LOWER WEST SPRING - STAUDENMEYER RANCH				13S 02W 17 CBD	BEAVERHEAD
MGEOI127	LOWER EAST SPRING - STAUDENMEYER RANCH				13S 02W 17 CBD	BEAVERHEAD
MGEOI121	ANDERSONS PASTURE SPRING #1				13S 02W 17 CBD	BEAVERHEAD
MGEOI122	ANDERSONS PASTURE SPRING #2				13S 2W 18AC	BEAVERHEAD
MGEOI210	USFS BAKERS HOLE* 3 MI N WEST YELLOWSTONE	120.0	150.0		13S 02E 15 ABAB	GALLATIN
MGEOI115	SLOAN COW CAMP SPRING	0.2			12S 1E 19CDA	MADISON
MGEOI120	WEST FORK SWIMMING HOLE				12S 01E 18 CB	MADISON
MGEOI118	CURLEW CREEK WARM SPRING				11S 01E 19 DEC	MADISON
MGEOI119	WALL CANYON WARM SPRING				10S 01E 07 CAB	MADISON
MGEOI229	WOLF CREEK HOT SPRING				10S 01E 9 B8BB	MADISON
MGEOI129	LOWELL HILDRETH SPRING* 1.5 MI SW DILLON				08S 10W 20 AAC	BEAVERHEAD
MGEOI116	BEAR CREEK SPRINGS				08S 09W 22 BDD	PARK
MGEOI132	VIGILANTE WARM SPRINGS				08S 09W 22 BDD	MADISON
MGEOI133	LA DUKE HOT SPRINGS	0.5		1.0	05S 0E 32 CDBA	BEAVERHEAD
MGEOI141	BROWNS SPRINGS				05S 0W 30CDB	BEAVERHEAD
MGEOI110	PULLER HOT SPRINGS	0.7			05S 5W 1AAC	MADISON
MGEOI119	TRUDAU SPRINGS				7S 4W 7DCAD	MADISON
MGEOI140	CHICO HOT SPRINGS	0.1		0.6	05S 0E 1CDCD	PARK
MGEOI132	GROUNDWATER* 4.7 MI NEFT SMITH MT	80.0			05S 31E 35 CCC2	BIG HORN
MGEOI174	BROWN CATTLE CO* 3.1 MI N, BIRNEY MT				05S 15W 25 CBAA	ROSEBUD
MGEOI276	JARDINE HOT SPRINGS 0.25 MI E OF JACKSON	-20.0	200.0		05S 01W 28 DCA	BEAVERHEAD
MGEOI289	MBMG GEOTHERMAL TEST* THENTON TX-12	600.0	230.0		05S 15W 25CB8B	MADISON
MGEOI288	JACKSON HOT SPRINGS	0.8		0.6	05S 01W 28 DBAA	BEAVERHEAD
MGEOI293	PRIVATE GEOTHERMAL TEST* ENNIS HOT SPRINGS*	620.0	230.0		05S 15W 23 CABA	MADISON
MGEOI277	LAPHAM DOMESTIC WELL 1 MI NW JACKSON, MT.				05S 01W 21 BB	BEAVERHEAD
MGEOI117	ENNIS HOT SPRINGS				05S 42E 22 DBBC	MADISON
MGEOI096	BROWN CATTLE CO* 9.5 MI SW BRINEY DAY SCH.				05S 7W 22AB8D	ROSEBUD
MGEOI093	BEAVERHEAD ROCK SPRINGS				05S 09W 11 AADAD	BEAVERHEAD
MGEOI133	APEX WARM SPRING				4S 12W 29ACAD	BEAVERHEAD
MGEOI323	ELKHORN HOT SPRINGS	60.0	6.0	0.9		SWEET GRASS
MGEOI292	MARTIN, KIETH	0.9		1.1	4S 7W 28BDA	MADISON
MGEOI326	NEW BILTMORE HOT SPRINGS				04S 22E 23 CCDB	CARBON
MGEOI308	NEWMAN, JOHN* JOULET, MT.			-2.0	3S 13E 29ABA	SWEET GRASS
MGEOI280	ANDERSON SPRING				3S 13E 29ABA	SWEET GRASS
MGEOI096	ANDERSON'S SPRING				3S 1W 14DA8	MADISON
MGEOI043	NORRIS HOT SPRINGS	0.1		0.5	3S 2W 8CAC	MADISON
MGEOI15	POTOSI HOT SPRINGS	30.0	56.0		03S 02W 06 CBDD	MADISON
MGEOI187	GROSS, PETE* 4 MI S PONY MT				03S 27E 04 BCDD	YELLOWSTONE
MGEOI311	MCERRAN, EUGENE* BILLINGS, MT					PARK
MGEOI179	CARTER'S BRIDGE* 4 MI SE LIVINGSTON MT.	110.0	30.0		10N 0W 24B8C	POWELL
MGEOI111	AVON WARM SPRING				02S 04E 14 DAD	GALLATIN
MGEOI284	BOZEMAN HOT SPRINGS* OWNER - CHARLES PAGE	260.0	36.0		02S 04E 14 DAD	GALLATIN
MGEOI266	BOZEMAN HOT SPRINGS* OWNER - CHARLES PAGE	250.0	38.0		02S 04E 14 DAD	GALLATIN
MGEOI265	BOZEMAN HOT SPRINGS* OLD WELL	200.0	37.0		02S 04E 14 DAD	GALLATIN
MGEOI263	BOZEMAN HOT SPRINGS* ORIGINAL SPRING	280.0			2S 4E 14DDBAA	GALLATIN
MGEOI335	BOZEMAN HOT SPRINGS	0.2				SWEET GRASS
MGEOI268	RANGA* MCLEOD	1850.0	65.0	110.0	2S 13E 15 BCB	YELLOWSTONE
MGEOI299	SCOTT FEED LOT	2200.0	74.0		2S 23W 1AB8	RAVALLI
MGEOI260	BLUE JOINT CREEK HOT SPRING				13 0E 34BCDD	GALLATIN
MGEOI230	BRIDGER CANYON WARM SPRING				01S 02E 20 AAC	BIG HORN
MGEOI334	LOVE, MELVIN* THREE FORKS, MT	220.0	110.0		01S 32E 23 BD	GALLATIN
MGEOI033	GROUNDWATER* 3.3 MI W HARDIN MT	140.0	130.0		01S 02E 21 DBDB	GALLATIN
MGEOI332	SHIPTON, HAROLD* THREE FORKS MT	190.0	420.0		01S 32E 14 CCDD	BIG HORN
MGEOI256	HERMAN, T.E.* ROCKY RANCH 7.4 M W HARDIN	0.1			01S 19W 13BCCCA	RAVALLI
MGEOI344	GALLOGLY HOT SPRING	50.0	90.0		15 02E 03 DCC	PARK
MGEOI245	LOST TRAIL* WARM AND HOT SPRINGS				01N 4W 32DBC	GALLATIN
MGEOI099	CAIN MIKE* 6 MI S VOLBERG	0.7		5.9	01N 48E 28 AC8B	CUSTER
MGEOI18	HUNTERS HOT SPRINGS				01N 02E 22 CABD	GALLATIN
MGEOI328	JORGENSEN, JACK* THREE FORKS MT	0.5			01N 02E 22 CA	GALLATIN
MGEOI346	RENOVA HOT SPRINGS	261.0	309.0		01N 20W 12CCA	RAVALLI
MGEOI339	WESTMORELAND* 0.1 MI W SAPPY SCHOOL				02N 41E 34 BADC	ROSEBUD
MGEOI095	LISCUM RANCH* 5.5 MI NW OF N STACY SCHOOL	300.0	190.0		02N 17W 19 ABB	JEFFERSON
MGEOI331	TINDER, L. MARIE* THREE FORKS MT	750.0	0.1	0.6	02N 02E 17 DCCC	GALLATIN
MGEOI327	WILCOX, RALPH* THREE FORKS MT				02N 34E 2 CACD	BIGHORN
MGEOI333	RICHARDSON, DERRIE* THREE FORKS				02N 01W 04 AAD	JEFFERSON
MGEOI347	MEDICINE HOT SPRINGS					
MGEOI092	WESTERN ENERGY* 2 MI N COLSTRIP MT.					
MGEOI020	PIPESTONE HOT SPRING					
MGEOI062	FRED WESTEON SPRING DEVELOP					
MGEOI330	HART, FRANK* THREE FORKS, MT					
MGEOI083	ANADARKO PROD* 6 MI E FOSTER MT					
MGEOI053	UN- NAMED SPRING* 29 MI NE OF FOSTER MT					
MGEOI128	COWAN SPRING* 9 MI NW THREE FORKS MT			-10.0		

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MGEOI DATABASE

ID	Site name	Bore ugi	Lithium ugi H ₂ S	Location	County
MGEOI178	WOLF CREEK HOT SPRING	350.0	70.0	10S 01E 9 B88B	MADISON
MGEOI343	WILLIAMSBURG SPRING	-100.0	12.0	03N 08W 23 CDBD	SILVER BOW
MGEOI330	OIL WELL (TENSLEEP FORMATION)	-100.0	13.0	03N 07W 17 DAD	STILLWATER
MGEOI342	MONTANA RESOURCES MONITORING WELL C	-100.0	33.0	03N 07W 17 AAC	SILVER BOW
MGEOI342	MONTANA RESOURCES MONITORING WELL D2	-100.0	33.0	03N 07W 17 AAC	TREASURE
MGEOI055	HOWARD SPRING * 25 M SE OF BIGHORN MT	70.0	36.0	03N 10W 11 B8BD	SILVER BOW
MGEOI246	WENDT, FRED * 75 M S GREGSON (FAIRMONT)	240.0	600.0	03N 10W 02 CAD	SILVER BOW
MGEOI298	MBMG RESEARCH WELL * FAIRMONT HOT SPRINGS	930.0	110.0	03N 23E 4 CBBC	YELLOWSTONE
MGEOI061	NELSON, HARVEY * 5 M S BROADVIEW MT	40.0	960.0	3N 10W 28DCA	STILLWATER
MGEOI061	BRADBROOK * 10 M S BROADVIEW MT	90.0	28.0	04N 09W 31 CDAC	SILVER BOW
MGEOI279	FAIRMONT HOT SPRINGS, ANACONDA	100.0	110.0	04N 2E 30DBDB	BROADWATER
MGEOI247	SPANGLER, HAZEL * 2 M E - NE GREGSON MT	100.0	32.0	04N 32E 35 BABA	YELLOWSTONE
MGEOI214	HUNSAKER SPRING	120.0	20.0	04N 1E 27AA	BROADWATER
MGEOI190	MONT. HIGHWAY DEPT * 75 MI SE WACO MT.	160.0	23.0	04N 01E 27 ABDD	YELLOWSTONE
MGEOI237	PLUNKET LAKE WARM SPRINGS	100.0	60.0	4N 2E 18ACAC	BROADWATER
MGEOI267	SPRINGS FROM JOINTS IN MISS. CYN-SW PLUNKET	120.0	20.0	04N 11W 13 AADA	DEER LODGE
MGEOI161	MONTANA DEPT. HIGHWAYS * 2.5 MI NE WACO MT	160.0	0.3	04N 10W 70CDD	RAVALLI
MGEOI216	HUNSAKER, MAURICE	100.0	20.0	04N 01E 10 BC8B	BROADWATER
MGEOI195	ANACONDA RED TRAVELINE MOUND - GEYSER	120.0	47.0	04N 03E 06 DAD	BROADWATER
MGEOI325	SLEEPING CHILD HOT SPRINGS	360.0	70.0	04N 1E 4ADD	BROADWATER
MGEOI236	BRUCE, N * IRRIGATION WELL WITH BOOSTER	-20.0	5.0	05N 01E 22 DBB	BROADWATER
MGEOI294	TOSTON WARM SPRING	110.0	370.0	05N 32E 20 AAAC	YELLOWSTONE
MGEOI217	BRUCE, NORMAN	110.0	70.0	05N 10W 24 ABAD	DEER LODGE
MGEOI215	KIMPTON SPRING	110.0	0.1	5N 1E 22 DBBC	DEER LODGE
MGEOI154	WARNER WARM SPRING	110.0	0.1	5N 10W 24ABBD	DEER LODGE
MGEOI172	STEELE, WILLIAM * 12.5 MI SE PINEVIEW MT.	110.0	0.1	5N 10W 24A	JEFFERSON
MGEOI284	MBMG TEST WELL * WARM SPRINGS STATE HOSPITAL	170.0	0.6	05N 04W 10CBA	JEFFERSON
MGEOI099	WARM SPRINGS	170.0	0.5	05N 04W 10CBA	JEFFERSON
MGEOI233	WARM SPRINGS STATE HOSPITAL	170.0	0.5	05N 04W 10CBA	JEFFERSON
MGEOI231	BOULDER HOT SPRINGS - UPPER SPRING	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI349	BOULDER HOT SPRINGS - MIDDLE SPRING	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI350	BOULDER HOT SPRINGS - LOWER SPRING	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI232	WARM SPRINGS STATE HOSPITAL * SPRING	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI185	M-B NO. 12 * 5 MI NE HAMILTON MT	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI171	GRIERSON, J.B. * 2.5 MI NE RANCHERS CEMETARY.	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI190	PRISON RANCH SPRING SITE NO. 4	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI113	DEER LODGE PRISON RANCH WELL	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI044	BEEDFORD SPRINGS	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI101	GRIERSON, J.B. * 23 MI NW HYSHAM MT	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI275	MBMG RESEARCH WELL * WEED CREEK - 1B	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI274	MBMG RESEARCH WELL * WEED CREEK - 1A	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI255	HANGER, BILL * 3 MI SW TWO DOT MT	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI257	FOX INC * 1.5 MI W - SW TWO DOT MT	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI297	HOMER, RAY * TWO DOT WATER SUPPLY	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI296	HARLOWTON * SOUTH MUNICIPAL WELL	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI013	HILLBROOK FLOWING WELL	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI014	WALLS HOT SPRING	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI001	ALHAMBRA HOT SPRINGS NORTH	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI276	TOWNSEND, HERB * 2.5 MI SW WHITE SULPHUR SPGS	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI290	RALPH JOHNSON, P.O. BOX 65, WHITE SULPHUR SPR	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI004	WHITE SULPHUR SPRINGS	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI262	WHITE SULPHUR SPRINGS BANK WELL	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI188	WATTS, JAMES * 16 MI NE KINSEY MT	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI164	M-B NO 8 WELL * 2.5 MI SE CORVALLIS MT	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI007	BROADWATER HOT SPRINGS WELL	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI008	GLOEIE WELL	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI003	GARRISON WARM SPRINGS	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI337	CHADWICK, GREG	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI208	USGS OBS. WELL * 4 MI SW EAST HELENA, MT.	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI336	MUELLER BUZZ	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI242	FLORENCE TEST WELL A	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI329	SHYBIE MYSSIE * BOX 515 * INGOMAR MT 50039	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI167	CHERRY CK SHEEP CO * 1.35 MI SE HAGEN RANCH.	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI201	MOORE, THOMAS * 6.5 MI SW ANGELA MT	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI322	BYRNE WARM SPRING * WEST OF BEARMOUTH	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI116	NIMROD SPRINGS	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI026	BEARMOUTH SPRINGS	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI338	GARRICK GALEN	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI345	LOLO HOT SPRINGS	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI069	MARYSVILLE DEEP WELL DEPTH 5750	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI170	CHERRY CREEK SHEEP CO * 26 MI N VANANDA MT	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI162	OLSEN, JONAS * 9 MI NW FLATWILLOW MT.	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI201	OLSEN, JONAS * 14 MI NE N - BAR RANCH	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI164	REYNOLDS, KETH * 6 MI NE FLATWILLOW MT.	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI163	HILL, FLOYD * 7 MI N FLATWILLOW MT.	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI160	M-B 4 (BUTLER CO) * 6 MI NW MISSOULA MT	170.0	0.5	05N 10W 24 ABBD	RAVALLI
MGEOI284	KING, JOE & SONS INC. * 5 MI SW WINNET MT	170.0	0.5	05N 10W 24 ABBD	RAVALLI

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MGEOT DATABASE

ID	Site name	Boron ug/l	Lithium ug/l	H ₂ S	Location	County
MGEOT159	SHAW, BUD * 1.7 MI SW MOSBY MT.			200.0	14N 30E 09 DADC	PETROLEUM
MGEOT160	EAGER, REX * 2 MI SW WINNETT MT.			170.0	14N 26E 02 CAD	PETROLEUM
MGEOT161	BRATTON, WAYNE * 2 MI SE WINNETT MT.			230.0	14N 27E 05 DDB	PETROLEUM
MGEOT162	BURLY VISTA TRACTS	40.0		23.0	15N 19E 30 CCDD	FERGUS
MGEOT163	TEIGEN, PETER * 9 MI E GRASSRANGE MT.			220.0	15N 23E 30 BBC	PETROLEUM
MGEOT164	MATOVICH * 4.5 MI E GRASSRANGE MT	96.0		91.0	15N 24E 20 DDB	FERGUS
MGEOT165	HOLE NO 2 M - 8 DRILLING PROJECT			-10.0	15N 21W 17 DCCC	MISSOULA
MGEOT166	MSU AG EXPERIMENT STATION * MOCCASIN MT	60.0		33.0	15N 14E 16 DCCD	JUDITH BASIN
MGEOT167	GRADY, EARL * 4 MI NW WINNETT, MT	170.0		200.0	15N 23E 14 BCA	FERGUS
MGEOT168	CENEX 15 MI NE WINNETT MT	109.0		150.0	16N 24E 28 AAC	PETROLEUM
MGEOT169	BASSETT, EARL * 7.5 MI NW TEIGEN MT.	270.0		260.0	16N 25E 19 DDB	PETROLEUM
MGEOT170	HEDMAN, J. * 4.0 MI NE LEWISTOWN MT.	97.0		69.0	16N 24E 7 CC	PETROLEUM
MGEOT171	FOX, DENNIS * 7 MI NW GRASSRANGE MT			63.0	17N 14E 28 DAAD	JUDITH BASIN
MGEOT172	LAURENCE HESS * 1 MI N MOCCASIN MT	-20.0		123.0	17N 23E 25 ABB	FERGUS
MGEOT173	DELANEY, DOUGLAS * 2.5 MI NW BROOKS MT.	159.0		20.0	17N 18E 19 DDB	FERGUS
MGEOT174	DELANEY, DOUGLAS * 11 MI NW ROY MT			149.0	17N 23E 15 D8A	FERGUS
MGEOT175	MILLER RANCH * 14 MI SE VALENTINE MT.			290.0	17N 29E 09 DB	PETROLEUM
MGEOT176	CARDINAL PET CO * 10 MI SE VALENTINE MT				18N 20E 34 BCAC	FERGUS
MGEOT177	BUSENBARK, MERLIN * 1 MI S VALENTINE MT*				18N 20E 29 AAA	PETROLEUM
MGEOT178	QUINN'S HOT SPRINGS	250.0		-2.0	18N 25W 09 DCBB	SANDERS
MGEOT179	QUINN'S HOT SPRINGS * JIM AND DONNA BROWN	133.0		120.0	18N 20E 16 BBB	SANDERS
MGEOT180	YEAGER * 8 MI EAST MOULTON, MT.			-10.0	18N 20W 10 ADD	LAKE
MGEOT181	FINLEY, R.S. * 1 MI NW ST. IGNATIUS	70.0		28.0	18N 23E 10 ABA	FERGUS
MGEOT182	SPOCKY, FRANK * 9 MI EAST ROY, MT.	140.0		54.0	18N 22E 01 AAC	FERGUS
MGEOT183	HORYNA, JAMES * 6 MI E ROY MT			150.0	18N 21W 31 DAB	LAKE
MGEOT184	CORPS OF ENGINEERS SOUTH WELL AFTER PERFS				18N 21W 28 CCA	MCCONE
MGEOT185	BRYSON, HAROLD * 13 MI W MOISE MT				19N 04E 14 DADA	CASCADE
MGEOT186	YARGER, ROBERT * 13 MI W CIRCLE MT	50.0		42.0	19N 02E 5 ACBC	CASCADE
MGEOT187	SAND COULEE WTR USERS BENCH W ABV SAND COU	120.0		55.0	19N 02E 5 ABAA	CASCADE
MGEOT188	TAYLOR, JAMES * 8 MI E CHRISTINA MT	240.0		16.0	19N 04E 13 AADD	CASCADE
MGEOT189	CHARLES ENTSMINGER * TOWN OF NUMBER SEVEN	120.0		67.0	19N 05E 07 CBBD1	CASCADE
MGEOT190	CUSTER, EVERETT * EDEN RT, GREAT FALLS, MT	90.0		19.0	19N 02E 5 ACBC	DAWSON
MGEOT191	TOWN OF TRACY				19N 02E 5 ABAA	CASCADE
MGEOT192	SLUGSOLD, A. K. * 17 MI SE RITCHIEY MT				19N 24W 04 AAD8	SANDERS
MGEOT193	GOVER * 2.5 MI TRAVIS SCHOOL				20N 11E 35 BCDA	CHOUTEAU
MGEOT194	VILLAGE INN * 2.5 MI NE TRAVIS SCHOOL	120.0		12.0	21N 24W 04AD8	SANDERS
MGEOT195	WEBB RES * 17.5 MI SE GERALDINE MT.				20N 03E 27 BCBB	CASCADE
MGEOT196	HOLLAND, JIM - GREEN SPRINGS				20N 03E 28 AACD	CASCADE
MGEOT197	TACKER, ROBERT * 2 MI SW GREAT FALLS MT				20N 12E 27 BBAC	CHOUTEAU
MGEOT198	PAUL, MICHAEL (ROBINSON) * 3.5 MI SW GREAT FALLS	90.0		5.0	20N 12E 27 BBAC	CHOUTEAU
MGEOT199	BUTTE CREEK SPRING * SQUARE BUTTE	90.0		4.0	20N 33E 20 BA	GARFIELD
MGEOT200	CHAMBERLAIN, CURTIS * 2 MI W LILLER SCHOOL				20N 22W 28 ABCB	SANDERS
MGEOT201	MELTON, LARUE * LOWER AQUIFER	90.0		-2.0	20N 22W 21 CBDA	SANDERS
MGEOT202	USGS - MELTON, LEON	160.0		12.0	20N 12E 19 BCDB	CHOUTEAU
MGEOT203	SCHMIDT, LLOYD * 3.5 MI SE SQUARE BUTTE	-20.0		47.0	20N 54E 1 DCCD	DAWSON
MGEOT204	USGS OBS WELL * 5 MI S VALLEY SCHOOL	241.0		251.0	20N 02E 3 BAAD	CASCADE
MGEOT205	EDEL * 3 MI S SUNSET MEMORIAL CEMETARY				21N 20W 33 AAA	LAKE
MGEOT206	WEBSTER, BONITA * BOX 443 RONAN MT	220.0		110.0	21N 17E 30 BOBA	FERGUS
MGEOT207	DEWARS, TOM J. * 10 MI W OF WINIFRED MT.	150.0		56.0	21N 03E 14 AABC	CASCADE
MGEOT208	HOMESTEAD ACRES COUNTY WATER DISTRICT	150.0		53.0	21N 03E 14 AABC	CASCADE
MGEOT209	HOMESTEAD ACRES COUNTY WATER DISTRICT	890.0		35.0	21N 23E 13 CB8B	FERGUS
MGEOT210	MCCOLLUM, JIM * 10 MI NW MATHISON RANCH			-10.0	21N 23W 14 ACB	SANDERS
MGEOT211	CARR, FRANK * BOX 456 HOT SPRINGS MT			20.0	21N 09E 11 CB	CHOUTEAU
MGEOT212	* RYFFEL BROS. * 3 MI S & 3 MI E HIGHWOOD			20.0	21N 23W 10 BDB	SANDERS
MGEOT213	CHRISTIANSON, BOB * HOT SPRINGS MT.			20.0	21N 24W 04 DBDA	SANDERS
MGEOT214	TOWN OF HOT SPRINGS * MAIN WELL BY CHURCH	70.0		13.0	21N 24W 04 DBDA	SANDERS
MGEOT215	LEISTNER, LAURA * CENTRAL AVE HOT SPRINGS	460.0		18.0	21N 24W 04 DABD	SANDERS
MGEOT216	SOUTH EAST OF CAMP AQUA	350.0		51.0	21N 24W 03 BBB	SANDERS
MGEOT217	CORN HOLE * CAMAS HOT SPRINGS				21N 24W 03 BBB	SANDERS
MGEOT218	HOT SPRINGS MONTANA				21N 24W 03 BBB	SANDERS
MGEOT219	CAMAS HOT SPRINGS	0.3		0.0	21N 24W 38BDB	SANDERS
MGEOT220	SYMES HOTEL WELL	0.2			21N 24W 04AD8	SANDERS
MGEOT221	SYMES HOT SPRINGS WELL				21N 24W 4ADCA	SANDERS
MGEOT222	HOT SPRING GEOTHERM WELL - UNNAMED	0.4		0.0	22N 24W 13DADD	SANDERS
MGEOT223	KOEPLING, DELBERT * WELL 138	0.3		-0.0	22N 23W 17BBC	SANDERS
MGEOT224	OSTRANGER, DAVE * WELL 56			-10.0	22N 20W 31 CDD	LAKE
MGEOT225	VERNER, ROSE * 7.5 MI W PABLO MT			30.0	22N 24W 36 BBB	SANDERS
MGEOT226	IRRIGATION EQUIPMENT SALES * HOT SPRINGS	844.0		61.0	22N 23W 33 BABB	LAKE
MGEOT227	JACOBSEN, R * HOT SPRINGS MT	990.0		20.0		
MGEOT228	KOPPEL, ARVID * HOT SPRINGS, MT					
MGEOT229	SUN RIVER SPRINGS					
MGEOT230	MBMG GEOTHERMAL TEST WELL #1 CAMP AQUA AREA	500.0		73.0	22N 10W 20CAB	LEWIS AND CLARK
MGEOT231					22N 23W 29 DADD	SANDERS

NOTE: A negative value for concentration indicates the detection limit for that analyte. A negative value for SWL (static water level) indicates head above ground surface (meters).

MGEOI DATABASE

ID	Site name	Boron ug/l	Lithium ug/l	H ₂ S	Location	County
MGEOI220	KOPP, ARVID * 25 MI S CAMPAQUA MT	914.0	90.0		22N 23W 29 CACA	LAKE
MGEOI221	KEMP * 5 MI SE CAMPAQUA MT	968.0	80.0		22N 23W 28 CBBB	LAKE
MGEOI226	JACKOLA AP 100 FT E OF CAMP AQUA BATH SPA	540.0	78.0		22N 23W 28 ACAB	LAKE
MGEOI227	CAMP AQUA AREA TEST WELL #1 * CAMPAQUA AREA	0.6			22N 23W 28 AC	LAKE
MGEOI228	MBMG GEO. TEST WELL #1 * CAMPAQUA AREA	550.0	59.0		22N 23W 28 BADD	LAKE
MGEOI229	OLSEN, EDWIN * 8.4 MI NE WINIFRED MT	121.0	128.0		22N 19E 32 ABBC	FERGUS
MGEOI230	SMELSER, JAMES A. * POWER MT	1000.0	450.0		22N 01E 22 DDAC	CASCADE
MGEOI231	KEMP * 0.3 MI E CAMPAQUA MT	934.0	80.0		22N 23W 28 AADB	LAKE
MGEOI232	KEMP * 0.3 MI E CAMPAQUA MT	910.0	81.0		22N 23W 28 BAAC	LAKE
MGEOI233	KEMP RR WELL (RUNAWAY) * 5 MI N CAMPAQUA	885.0	74.0		22N 23W 28 DCDB	LAKE
MGEOI234	KEMP, ANNA * HOT SPRINGS, MT	870.0	100.0		22N 23W 28 CDBC	LAKE
MGEOI235	KEMP, ANNA * 5 MI N HOT SPRINGS, MT	710.0	80.0			SANDERS
MGEOI236	HUGHES, RAY * HOT SPRINGS, MT	640.0	65.0		22N 23W 18 DDAD	SANDERS
MGEOI237	BAXTER, C * 1.5 MI N CAMPAQUA MT	540.0	40.0		22N 23W 18 BBAB	SANDERS
MGEOI238	BAXTER, CHARLES * HOT SPRINGS, MT	511.0	110.0		22N 24W 10 ABAB	PETROLEUM
MGEOI239	LUCKY HUNTER RANCH * 3 MI SE LONEPINE MT	91.0	-10.0		24N 09E 28 DDA	CHOUTEAU
MGEOI240	MATOVICH, JOHN * 23 MI SW SUN PRARIE MT		170.0		24N 32E 29 AAAC	VALLEY
MGEOI241	GAIL PATTON RANCH * 1 MI SW LONEPINE MT				24N 12E 22 AAAD	CHOUTEAU
MGEOI242	LONEPINE OBSERVATION WELL				24N 24E 12CDDA	BLAINE
MGEOI243	STREIT, GEORGE * 4 MI E - 1 MI S FT BENTON MT.				25N 24E 32 DBAD	PHILLIPS
MGEOI244	WHITMAYER ASSOC * 4.5 MI SE SUN PRARIE SCH					CHOUTEAU
MGEOI245	CLARK, BRAD * 23 MI EFT. BENTON MT.				25N 03W 24 BBAB	TETON
MGEOI246	LANDUSKY PLUNGE SPRINGS				25N 03W 14 BAAB	TETON
MGEOI247	LANDUSKY, IRENE * 5 MI S HAYS, MONTANA				26N 25E 24CABD	BLAINE
MGEOI248	BLACK COULEE * E OF TEST AREA				26N 25E 24 BCD	BLAINE
MGEOI249	ALZHEIMER, PAUL * 8W OF BRADY, MT				26N 25E 24 BCD	BLAINE
MGEOI250	REVERE, LEE				26N 25E 24 BCD	BLAINE
MGEOI251	LITTLE WARM SPRINGS * 9 MI SE LODGE POLE				26N 25E 24 BCD	BLAINE
MGEOI252	LODGE POLE WARM SPRINGS				26N 25E 24 BCD	BLAINE
MGEOI253	BIG WARM SPRINGS * 4 MI NE ZORTMAN MT				26N 25E 24 BCD	BLAINE
MGEOI254	BIG WARM SPRINGS * 4 MI NE ZORTMAN MT				26N 25E 24 BCD	BLAINE
MGEOI255	KIRKALDIE, BRUCE * 7 MI SW LODGE POLE MT				26N 25E 24 BCD	BLAINE
MGEOI256	LARGE CAPACITY WELL * 1 MI SW WOLF POINT, MT				26N 25E 24 BCD	BLAINE
MGEOI257	CITY OF WOLF POINT * 1 MI SW WOLF POINT, MT				26N 25E 24 BCD	BLAINE
MGEOI258	SHERMAN HOTEL OF WOLF POINT				26N 25E 24 BCD	BLAINE
MGEOI259	USGS TEST WELL * 1 MI S SOUTH POPLAR, MT				26N 25E 24 BCD	BLAINE
MGEOI260	FOSS, ELMER * 5.9 MI SE BROCKTON				26N 25E 24 BCD	BLAINE
MGEOI261	LANDTECH WATER DISPOSAL SERVICE				26N 25E 24 BCD	BLAINE
MGEOI262	THORNESS, RICK * 4 MILES NW OF BAINVILLE				26N 25E 24 BCD	BLAINE
MGEOI263	CLAWITER, MILT * 4 MI N - 4 MI E BIG SANDY MT.				26N 25E 24 BCD	BLAINE
MGEOI264	SIMS SPRING				26N 25E 24 BCD	BLAINE
MGEOI265	TEXACO INC * 1.7 MI NW CENTRAL SCHOOL.				26N 25E 24 BCD	BLAINE
MGEOI266	MATOVICH, MARTIN * 17 MI E MALTA NEAR SAGO				26N 25E 24 BCD	BLAINE
MGEOI267	SLEEPING BUF REC AREA * 4 MI NNW ASHFIELD				26N 25E 24 BCD	BLAINE
MGEOI268	SHIRLE, WALTER * 3 MI S FRESNO DAM.				26N 25E 24 BCD	BLAINE
MGEOI269	PIMLEY, DON * 4 MI NW JOPLIN MT.				26N 25E 24 BCD	BLAINE
MGEOI270	CADY, ELWIN * 7.5 MI NW JOPLIN MT.				26N 25E 24 BCD	BLAINE
MGEOI271	FRANCIS, CLARA				26N 25E 24 BCD	BLAINE
MGEOI272	WELSH, ORVILLE * 13 MI N - 3 MI E HINGHAM MT.				26N 25E 24 BCD	BLAINE
MGEOI273	EDWARDS, MARVIN / MIKE DUSTERHOFF				26N 25E 24 BCD	BLAINE
MGEOI274	BIG WEST OIL CO * 2 MI NE MTN VIEW SCHOOL				26N 25E 24 BCD	BLAINE
MGEOI275	RYGH, KEN * 22 MI N - 5 MI W JOPLIN MT.				26N 25E 24 BCD	BLAINE
MGEOI276	BRADBURY, ALFRED * 11 MI E WILD HORSE MT				26N 25E 24 BCD	BLAINE
MGEOI277	NAGEHUS, ORVILLE * 3 MI N SIMPSON MT.				26N 25E 24 BCD	BLAINE

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CAMAS - LONEPINE AREA (33 Sites)

ID	Site name	Reference	Type	Flow (l/min)	Latitude	Longitude	Temp (deg c)	Status/use	SWL (M)	Date	Chloride mg/l	Sulfate mg/l	Fluoride mg/l
MGEO7017	CAMAS HOT SPRINGS	Mariner et al. 1976	SPRING	200.0	47.6155	114.6663	45				9.0	38.0	5.6
MGEO7029	SYMES HOT SPRINGS	Sonderger et al. 1981	WELL	78.0	47.6183	114.6763	36		2.74	27 AUG 1975	9.0	40.0	5.9
MGEO7068	TOWN OF HOT SPRINGS * MAIN WELL BY CHURCH	MBMG - GWC	WELL		47.6063	114.6744	18.5	PUBLIC SUPPLY		15 SEP 1975	2.2	12.1	1.6
MGEO7071	CORN HOLE * CAMAS HOT SPRINGS	MBMG - GWC	SPRING		47.6147	114.6658	44	RECREATIONAL		04 MAR 1976	6.3	12.2	0.9
MGEO7073	LONEPINE OBSERVATION WELL	MBMG - GWC	WELL		47.7141	114.6477	16.5	DOMESTIC	33.22	04 MAR 1976	6.0	8.1	0.6
MGEO7076	CARR, FRANK * BOX 486 HOT SPRINGS MT	MBMG - GWC	WELL		47.5927	114.5063	21.5	UNUSED		19 APR 1976			
MGEO7080	HOT SPRINGS MONTANA	MBMG - GWC	SPRING		47.6155	114.6477	43	RECREATIONAL		02 JUL 1976	28.3	1.2	6.1
MGEO7091	KEMP, ANNA * 5 MI N HOT SPRINGS, MT	MBMG - GWC	WELL	0.4	47.6516	114.5936	24	STOCK		17 AUG 1976	25.3	0.3	0.8
MGEO7098	IRRIGATION EQUIPMENT SALES * HOT SPRINGS	MBMG - GWC	WELL		47.6297	114.6236	19.5	DOMESTIC		07 SEP 1978	23.1	2.1	4.6
MGEO7173	KEMP, ANNA * HOT SPRINGS, MT *	MBMG - GWC	WELL		47.6472	114.5761	34.4	DOMESTIC		08 SEP 1978	10.9	1.8	4.4
MGEO7174	HUGHES, RAY * HOT SPRINGS, MT	MBMG - GWC	WELL		47.6536	114.5813	25.8	IRRIGATION		08 SEP 1978	2.4	14.0	5.4
MGEO7176	KOPP, ARVID * HOT SPRINGS, MT	MBMG - GWC	WELL		47.6311	114.5813	15.2	IRRIGATION		02 DEC 1979	19.0	2.1	4.8
MGEO7219	BAXTER, C * 1.5 MI N CAMPAGUA MT	MBMG - GWC	WELL	94.9	47.6619	114.5838	20.3	IRRIGATION		04 DEC 1979	27.0	1.4	4.3
MGEO7220	JACOBSEN, R * HOT SPRINGS MT	MBMG - GWC	WELL	40.0	47.6302	114.555	19	IRRIGATION		05 DEC 1979	34.8	0.6	4.2
MGEO7221	KEMP * 5 MI SEC CAMPAGUA MT	MBMG - GWC	WELL	30.0	47.6372	114.5611	28.8	DOMESTIC	22.86	06 DEC 1979	2.1	12.0	1.2
MGEO7222	GAIL PATTON RANCH * 1 MI SW LONEPINE MT	MBMG - GWC	WELL		47.668	114.6538	16.8	DOMESTIC	18.28	06 DEC 1979	7.8	5.8	3.4
MGEO7223	LUCKY HOWSER RANCH * 3 MI SE LONEPINE MT	MBMG - GWC	WELL		47.6736	114.6027	23.8	IRRIGATION		02 DEC 1979	35.5	0.6	4.5
MGEO7224	KEMP RR WELL (RUNAWAY) * 5 MI N CAMPAGUA	MBMG - GWC	WELL	40.0	47.6433	114.5888	32.5	IRRIGATION		29 NOV 1979	31.3	1.3	7.8
MGEO7225	KEMP * 0.3 MI E CAMPAGUA MT	MBMG - GWC	WELL	20.0	47.6433	114.5888	30.6	IRRIGATION		18 DEC 1980	34.0	0.6	5.0
MGEO7227	KOPP, ARVID * 25 MI S CAMPAGUA MT	MBMG - GWC	WELL	10.0	47.6361	114.575	32.6	RESEARCH	1.83	04 JUN 1982	33.0	4.0	3.9
MGEO7228	KEMP * 25 MI N CAMPAGUA MT	MBMG - GWC	WELL	75.0	47.6422	114.5741	43.7	RESEARCH		17 AUG 1976	17.5	8.6	3.5
MGEO7262	MBMG GEO. TEST WELL #1 * CAMPAGUA AREA	MBMG - GWC	WELL	1300.0	47.6422	114.5713	50	UNUSED	-0.01	08 SEP 1978	2.2	6.9	3.2
MGEO7267	CAMP AGUA AREA TEST WELL	MBMG - GWC	WELL		47.5952	114.5302	22.5	IRRIGATION		03 DEC 1979	7.8	21.2	5.2
MGEO7097	CHRISTIANSON, BOB * HOT SPRINGS MT.	MBMG - GWC	WELL	35.1	47.67	114.568	22.6	DOMESTIC		15 JAN 1981	34.8	21.5	3.1
MGEO7175	BAXTER, CHARLES * HOT SPRINGS, MT	MBMG - GWC	WELL	9.1	47.6075	114.6713	29.8	RESEARCH	-0.08	19 AUG 1982	9.9	9.6	5.7
MGEO7287	LEISTNER, LAURA * CENTRAL AVE. HOT SPRINGS	MBMG - GWC	WELL	303.1	47.6347	114.5619	42.7	PUBLIC SUPPLY		02 NOV 1983	11.0	30.0	5.2
MGEO7291	MBMG GEOTHERMAL TEST WELL #1 * CAMPAGUA AREA	MBMG - GWC	WELL	10.1	47.6147	114.655	51.5	IRRIGATION		03 NOV 1983	10.0	5.1	3.4
MGEO7307	SOUTH EAST OF CAMP AGUA	MBMG - GWC	WELL		47.6083	114.6736	21	IRRIGATION		03 NOV 1983	14.0	3.6	5.4
MGEO7307	HOT SPRINGS CITY	MBMG - GWC	WELL		47.6163	114.6763	33.3	IRRIGATION					
MGEO7352	SYMES HOTEL WELL	MBMG/UURI	WELL		47.6170	114.6781	26.5	IRRIGATION					
MGEO7355	KOEPLING, DELBERT * WELL 138	MBMG/UURI	WELL		47.6171	114.6775	17.2	IRRIGATION					
MGEO7354	OSTRANGER, DAVE * WELL 56	MBMG/UURI	WELL					IRRIGATION					

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CAMAS - LONEPINE AREA (35 Sites)

ID	Site name	Std dev balance	Lab pH	SC nmohs	TDS mg/l	Hco3 mg/l	Alkalinity	Sample type	Calcium mg/l	Magnesium mg/l	Sodium mg/l	Potassium mg/l	Iron mg/l	Silica (SiO2) mg/l	Arsenic ug/l
MGEOT017	CAMAS HOT SPRINGS		9.40		399.00		189		0.9		0.1	85.0	1.7		70.0
MGEOT029	SYMES HOT SPRINGS WELL		9.80		367.00		158		1.2		0.2	91.0	1.7		68.0
MGEOT069	TOWN OF HOT SPRINGS * MAIN WELL BY CHURCH	-0.46	6.74	245.00	156.07	127.8			15.2		3.6	33.0	3.0	0.17	22.0
MGEOT071	CORN HOLE* CAMAS HOT SPRINGS								1.1		0.3	83.0	1.6	-0.01	58.0
MGEOT075	LONEPINE OBSERVATION WELL	-0.25	7.93	398.00	240.03	235.9		Dissolved	39.8		11.6	32.8	1.7	-0.01	18.2
MGEOT076	CARR, FRANK* BOX 458 HOT SPRINGS MT	0.09	7.96	330.20	195.26	199.9		Dissolved	32.3		13.0	16.9	1.4	-0.01	16.2
MGEOT080	HOT SPRINGS MONTANA								1.0		0.1	83.5	1.6	0.01	59.0
MGEOT091	KEMP, ANNA* 5 MIN HOT SPRINGS, MT	0.49	8.18	617.20	391.08	331.8			5.7		0.6	139.0	3.7	0.11	32.9
MGEOT098	IRRIGATION EQUIPMENT SALES*HOT SPRINGS	-0.78	7.51	471.80	283.29	264.3		Dissolved	37.0		11.9	46.0	3.9	5.80	21.9
MGEOT173	KEMP, ANNA * HOT SPRINGS, MT *	-0.87	8.63	633.60	395.26	326.0		Dissolved	3.6		0.6	150.0	3.4	0.02	36.5
MGEOT174	HUGHES, RAY * HOT SPRINGS, MT *	-0.21	9.16	470.60	338.76	280.0		Dissolved	4.6		0.7	127.0	2.7	0.03	29.3
MGEOT176	KOPP, ARVID * HOT SPRINGS, MT	-0.29	6.12	404.60	244.61	221.0		Dissolved	6.6		1.6	88.1	1.9	0.39	14.3
MGEOT178	BAXTER, C * 1.5 MI N CAMPAGUA MT	-0.89	8.48	537.00	345.30	297.0		Dissolved	3.3		0.4	134.0	1.7	0.09	26.6
MGEOT220	JACOBSEN, R * HOT SPRINGS MT	-0.87	8.06	592.90	375.46	324.0		Dissolved	5.5		1.0	139.0	2.1	0.26	35.0
MGEOT221	KEMP * 5 MI SE CAMPAGUA MT	0.99	7.89	656.70	403.19	346.0		Dissolved	4.0		0.7	147.7	2.2	0.30	34.9
MGEOT222	GAIL PATTON RANCH * 1 MI SW LONEPINE MT	-0.69	7.89	289.70	174.80	164.0		Dissolved	28.4		7.8	105.0	1.3	0.17	19.5
MGEOT223	LUCKY HOWSER RANCH * 3 MI SE LONEPINE MT	-0.95	7.90	446.70	276.24	255.0		Dissolved	5.7		0.7	105.0	2.1	0.12	36.6
MGEOT224	KEMP RR WELL (RUNAWAY) * 5 MI N CAMPAGUA	0.52	8.40	635.60	384.72	328.0		Dissolved	4.4		0.4	142.0	2.6	0.13	43.6
MGEOT225	KEMP * 0.3 MI E CAMPAGUA MT	0.38	8.28	608.40	419.64	354.0		Dissolved	3.3		0.3	117.0	1.5	0.22	32.4
MGEOT227	KOPP, ARVID * 25 MI S CAMPAGUA MT	-0.38	8.71	472.40	304.15	237.0		Dissolved	2.1		1.0	144.0	2.8	0.65	41.4
MGEOT228	MBMG GEO. TEST WELL #1 * CAMPAGUA AREA	2.03	8.39	593.70	394.41	314.0		Dissolved	12.6		2.4	127.0	3.3	0.11	35.3
MGEOT266	JACKOLA AP 100 FT E. OF CAMP AGUA BATH SPA	0.53	8.53	651.20	413.14	327.0	351	Dissolved	2.9		0.2	132.0	3.1	-0.00	43.2
MGEOT027	CAMP AGUA AREA TEST WELL								3.2		0.3	152.0	4.0		42.2
MGEOT097	CHRISTIANSON, BOB*HOT SPRINGS MT	0.56	7.83	622.30	374.62	360.9		Dissolved	20.0		9.4	113.0	3.5	0.02	17.5
MGEOT175	BAXTER, CHARLES * HOT SPRINGS, MT	-0.54	9.45	442.30	273.01	186.0		Dissolved	5.8		0.7	101.0	2.3	0.20	21.0
MGEOT228	LEISTER, LAURA * CENTRAL AVE*HOT SPRINGS	-0.63	9.46	383.50	286.58	64.6		Dissolved	0.9		-0.1	92.3	0.0	0.61	67.0
MGEOT287	MBMG GEOTHERMAL TEST WELL #1 * CAMPAGUA AREA	0.62	8.32	663.90	405.72	321.0		Dissolved	15.5		2.8	129.0	3.8	0.16	36.8
MGEOT291	SOUTH EAST OF CAMP AGUA	-0.59	9.34	381.80	270.89	109.3		Dissolved	0.6		-0.1	85.8	1.7	-0.00	68.6
MGEOT307	HOT SPRINGS CITY	0.76	7.99	253.60	172.15	149.3		Dissolved	17.2		4.0	32.0	3.1	0.07	28.1
MGEOT332	SYMES HOTEL WELL	-0.01	9.66	280.00	297.16		131	Dissolved	0.6		0.7	89.4	2.2	-0.02	73.1
MGEOT355	KOEPLING, DELBERT * WELL 138	0.04	8.23	266.00	275.02		236	Dissolved	4.5		-0.2	95.6	2.9	0.06	36.6
MGEOT354	OSTRANGER, DAVE * WELL 58	-0.07	8.05	312.00	290.91		278	Dissolved	5.5		2.5	109.3	-0.6	0.39	13.0

NOTE: A negative value for concentration indicates the detection limit for that analyte. A negative value for SWL (static water level) indicates head above ground surface (meters).

CAMAS - LONEPINE AREA (33 Sites)

ID	Site name	Boron ug/l	Lithium ug/l H ₂ S	Location	County
MGEO0107	CAMAS HOT SPRINGS	300.0	7.4	21N 24W 38DB	SANDERS
MGEO0129	SYMES HOT SPRINGS WELL			21N 24W 4DCA	SANDERS
MGEO0168	TOWN OF HOT SPRINGS MAIN WELL BY CHURCH			21N 24W 04 DBDA	SANDERS
MGEO0171	CORN HOLE CAMAS HOT SPRINGS			21N 24W 03 BBB	SANDERS
MGEO0175	LONEPINE OBSERVATION WELL		- 10.0		SANDERS
MGEO0176	CARR, FRANK BOX 456 HOT SPRINGS MT		- 10.0		SANDERS
MGEO0180	HOT SPRINGS MONTANA			21N 23W 14 ACB	SANDERS
MGEO0191	KEMP, ANNA 5 MI N HOT SPRINGS, MT				SANDERS
MGEO0198	IRRIGATION EQUIPMENT SALES HOT SPRINGS				SANDERS
MGEO0173	KEMP, ANNA * HOT SPRINGS, MT *	870.0	30.0	22N 24W 38 88B	SANDERS
MGEO0174	HUGHES, RAY * HOT SPRINGS, MT *	710.0	100.0	22N 23W 20 CDBC	LAKE
MGEO0176	KOPP, ARVID * HOT SPRINGS, MT	690.0	80.0		SANDERS
MGEO0179	BAXTER, C. * 1.5 MI N CAMPAGUA MT	840.0	20.0		LAKE
MGEO0220	JACOBSEN, R * HOT SPRINGS MT	844.0	65.0	22N 23W 18 DDAD	SANDERS
MGEO0221	KEMP * 5 MI SE CAMPAGUA MT	968.0	61.0	22N 23W 33 88BB	LAKE
MGEO0222	GAIL PATTON RANCH * 1 MI SW LONEPINE MT	91.0	80.0	22N 23W 28 CBBB	LAKE
MGEO0223	LUCKY HUNTER RANCH * 3 MI SE LONEPINE MT	511.0	- 8.0	22N 24W 10 ABAB	SANDERS
MGEO0224	KEMP #R WELL (RUNAWAY) * 5 MI N CAMPAGUA	885.0	24.0	22N 23W 18 BBBB	SANDERS
MGEO0225	KEMP * 0.3 MI E CAMPAGUA MT	934.0	74.0	22N 23W 20 DCDB	LAKE
MGEO0226	KOPP, ARVID * 25 MI S CAMPAGUA MT	914.0	80.0	22N 23W 29 AADB	LAKE
MGEO0227	MBMG GEO. TEST WELL #1 * CAMPAGUA AREA	910.0	81.0	22N 23W 29 CACA	LAKE
MGEO0262	JACKOLA AP 100 FT E. OF CAMP AQUA BATH SPA	550.0	59.0	22N 23W 29 BADD	LAKE
MGEO0267	CAMP AQUA AREA TEST WELL	540.0	78.0	22N 23W 29 ACAB	LAKE
MGEO0297	CHRISTIANSON, BOB * HOT SPRINGS MT.	640.0		21N 23W 10 BOD	SANDERS
MGEO0175	BAXTER, CHARLES * HOT SPRINGS, MT	540.0	20.0		SANDERS
MGEO0228	LEISTNER, LAURA * CENTRAL AVE. HOT SPRINGS	400.0	40.0	21N 24W 04 DABD	SANDERS
MGEO0267	MBMG GEOTHERMAL TEST WELL #1 * CAMPAGUA AREA	500.0	18.0	22N 23W 29 DADD	SANDERS
MGEO0291	SOUTH EAST OF CAMP AQUA	350.0	73.0	21N 24W 03 88B	SANDERS
MGEO0307	HOT SPRINGS CITY	70.0	51.0	21N 24W 04 DBDA	SANDERS
MGEO0352	SYMES HOTEL WELL	0.2	18.0	21N 24W 04DB	SANDERS
MGEO0355	KOERLING, DELBERT * WELL 138	0.4	0.0	22N 24W 19DADD	SANDERS
MGEO0354	OSTRANGER, DAVE * WELL 56	0.3	-0.0	22N 23W 17B8C	SANDERS

NOTE: A negative value for concentration indicates the detection limit for that analyte. A negative value for SWL (static water level) indicates head above ground surface (meters).

APPENDIX II

GEOTHERMOMETER TEMPERATURES FOR SELECTED SITES

TEMPERATURES BASED ON SELECTED GEOTHERMOMETERS

[illegible]

TEMPERATURES BASED ON SELECTED GEOTHERMOMETERS

Site name	Surface Temp	K (B=4/3)	Ca (B=1/3)	Mg CORRECTION Log(sqrCa/Na)	Temperature Corrected Coefficient	R	Delta T (Mg Cor)	Na-K-Ca Corrected	Na-K-Ca Uncorrected	Quartz (no steam)	Quartz (steam loss)	Quartz Chalcedony a-Cristobalite	B-Cristobalite	Amorphous Silica	Published Estimates
MGEO128 COWAN SPRING 9MI NW THREE FORKS MT	23	53.30	152.04	1.02	63.30	40.69	8.10	55.21	152.04						
MGEO178 WOLF CREEK HOT SPRING	60									38.28	46.38				
MGEO1343 WILLIAMSBURG SPRING	17.4	30.83	192.20	1.80	30.83	29.31	-67.60	30.83	192.20						
MGEO1343 OIL WELL (TENSLEEP FORMATION)	69									103.29	103.89	73.47	52.86		
MGEO1341 MONTANA RESOURCES MONITORING WELL C	17.8	53.38	210.53	1.64	53.38	23.57	-41.16	53.38	210.53	107.69	107.62	78.21	57.19		
MGEO1342 MONTANA RESOURCES MONITORING WELL D2	16	62.65	218.39	1.55	62.65	34.66	-3.88	62.65	218.39	38.94	46.98				
MGEO1055 HOWARD SPRING * 25 MI SE OF BIGHORN MT	23.9	76.61	101.34	0.31	76.61	86.99	66.11	101.34	101.34	95.01	96.67	64.60	44.76		
MGEO1246 WENDT, FRED * 75 MI S GREGG (FAIRMONT)	20	46.09	148.63	1.25	46.09	6.93	-63.27	46.09	148.63						
MGEO1298 WBMG RESEARCH WELL * FAIRMONT HOT SPRINGS	20	83.88	111.99	0.34	83.88	2.86	-23.61	83.88	111.99						
MGEO1165 NELSON, HARVEY * 5 MI S BROADVIEW MT	16	98.25	53.63	0.51	98.25	29.94	-28.79	53.63	53.63	35.89	44.21				
MGEO1061 BRADDOCK * 10 MI S BROADVIEW MT	32.9	98.03	184.48	0.84	98.03	29.04	34.40	98.03	184.48	58.71	64.74				
MGEO1279 FAIRMONT HOT SPRINGS, ANACONDA	61.5	115.66	125.30	0.14	125.30	7.33	1.04	125.30	125.30	122.83	122.83	79.39	74.84		
MGEO1247 SPANGLER, HAZEL * 2 MI E-NE GREGGON MT	15.5	66.77	125.40	1.25	66.77	30.65	-5.60	66.77	125.40	107.85	107.76	37.45	57.36		
MGEO1214 HUNSAKER SPRING	24.5	59.99	223.82	1.64	59.99	28.09	-20.17	59.99	224.82	69.28	74.13				
MGEO1150 MONT. HIGHWAY DEPT * 75 MI SE WACO MT.	15.5	63.47	60.04	0.32	60.04	34.83	-7.58	60.04	60.04	28.55	37.54				
MGEO1213 PLUNKET LAKE WARM SPRINGS	17	29.41	144.77	1.30	29.41	49.38	-32.00	29.41	144.77	54.13	60.65	19.31	21.74		
MGEO1237 SPRINGS FROM JOINTS IN MISS CYN * SW PLUNKET	17	28.82	148.12	1.54	28.82	43.44	-43.52	28.82	148.12	50.80	57.66				
MGEO1151 MONTANA DEPT HIGHWAYS * 2.5 MI NE WACO MT	16.5	62.23	61.83	-0.01	61.83	50.88	21.34	40.50	61.83	30.21	39.06				
MGEO1216 HUNSAKER, MAURICE	15	46.07	130.57	1.08	46.07	47.39	-7.99	46.07	130.57	79.27	85.93	47.91	29.48		
MGEO1135 ANACONDA RED TRAVERTINE MOUND - GEYSER	21.7	40.53	136.37	1.23	40.53	18.86	-70.75	40.53	136.37	68.27	73.23	36.39			
MGEO1325 SLEEPING CHILD HOT SPRINGS	43	81.09	115.74	0.41	81.09	4.19	-28.48	81.09	115.74	110.51	110.05	81.26	59.98		
MGEO1236 BRUCE, N * IRRIGATION WELL WITH BOOSTER	18	48.74	145.18	1.18	48.74	35.18	-25.00	48.74	145.18	100.30	101.25	70.26	49.94		
MGEO1218 TOSTON WARM SPRING	15.5	51.42	173.66	1.77	51.42	39.72	-45.88	51.42	173.66	63.07	68.62	30.98			
MGEO1294 TOSTON WARM SPRING	45.5	24.75	155.61	1.60	24.75	39.30	-58.65	24.75	155.61	60.34	66.19				
MGEO1217 BRUCE, NORMAN	18	51.66	116.11	1.17	51.66	1.73	-25.96	51.66	116.11	81.96	85.29	50.75	32.08		
MGEO1215 KIMPTON SPRING	18	0.75	141.59	2.04	0.75	31.18	-122.90	0.75	141.59	57.86	63.80	25.37			
MGEO1134 WARMER WARM SPRING	18	3.33	140.44	2.03	3.33	30.08	-119.85	3.33	140.44	55.26	61.66	22.80			
MGEO1172 STEEL, WILLIAM * 12.5 MI SE PINVIEW MT.	16	34.50	69.17	-0.33	69.17	26.58	-10.71	69.17	69.17	28.12	37.15				
MGEO1294 BLMG TEST WELL * WARM SPRINGS STATE HOSPITAL	48	80.29	101.17	1.11	80.29	15.43	-21.47	80.29	101.17	107.17	107.18	45.70			
MGEO1009 WARM SPRINGS	77	79.49	194.96	1.15	79.49	15.43	-26.80	79.49	194.96	89.09	91.52	58.29			
MGEO1233 WARM SPRINGS STATE HOSPITAL	67	85.73	200.59	1.17	85.73	14.82	-16.33	85.73	200.59	84.14	87.20	53.05			
MGEO1350 BOULDER HOT SPRINGS - LOWER SPRING	54	88.83	200.44	1.12	88.83	14.68	-13.93	88.83	200.44	131.37	127.80	104.05	80.71		
MGEO1348 BOULDER HOT SPRINGS - MIDDLE SPRING	74	120.10	157.93	0.96	120.10	16.73	0.00	120.10	157.93	136.34	131.99	109.54	85.70		
MGEO1348 BOULDER HOT SPRINGS - UPPER SPRING	54	115.54	141.13	0.24	141.13	10.85	21.54	115.54	141.13	136.34	131.99	109.54	85.70		
MGEO1232 WARM SPRINGS STATE HOSPITAL * SPRING	79	76.20	185.23	0.79	76.20	12.64	-29.92	76.20	185.23	107.00	107.03	105.20	82.67		
MGEO1185 M-B NO. 12 * 5 MI NE HAMILTON MT	18.5	34.29	172.45	1.66	34.29	21.64	-76.40	34.29	172.45	109.94	109.56	80.64	59.41		
MGEO1171 GRIERSON, J.B. * 2.5 MI NE RANCHERS CEMETARY.	21	116.09	67.49	-0.60	67.49	18.28	-30.12	67.49	67.49	46.38	53.70				
MGEO1130 PRISON RANCH SPRING SITE NO. 4	26	34.21	80.00	0.69	34.21	3.82	-58.24	34.21	80.00	97.76	99.06	67.54	47.45		
MGEO1119 DEER LODGE PRISON RANCH WELL	26	34.25	79.90	0.69	34.25	3.82	-58.21	34.25	79.90	97.76	99.06	67.54	47.45		
MGEO1044 BEDFORD SPRINGS	23.6					38.89				23.55	32.97				
MGEO1011 GRIERSON, J.B. * 23 MI NW HYSHAM MT	15.6	93.90	71.33	-0.29	71.33	43.35	24.47	46.86	71.33	30.21	39.06				
MGEO1274 BLMG RESEARCH WELL * WEED CREEK - 1A	17	119.32	68.93	-0.62	68.93	41.89	18.57	50.96	68.93						
MGEO1275 BLMG RESEARCH WELL * WEED CREEK - 1B	20	112.81	65.98	-0.59	65.98	25.78	-17.76	65.98	65.98						
MGEO1255 HANSEN, BILL * 3 MI SW TWO DOT MT	19	95.31	66.32	-0.38	66.32	17.44	-35.02	66.32	66.32	46.66	53.94				
MGEO1256 FOX INC. * 1.5 MI W- SW TWO DOT	19	77.08	53.12	-0.35	53.12	0.00	-54.82	53.12	53.12	50.55	57.44				
MGEO1257 HOMER, RAY * TWO DOT WATER SUPPLY	20	70.27	58.54	-0.17	58.54	10.84	-10.84	58.54	58.54	48.32	55.62				
MGEO1298 HARLOWTON * SOUTH MUNICIPAL WELL	15.6	35.61	27.84	-0.14	27.84	7.27	-84.36	27.84	27.84	47.85	47.85				
MGEO1213 HILLBROOK SPRING	30	100.93	69.89	0.28	69.89	17.94	67.79	69.89	69.89	114.73	114.73	87.19	65.38		
MGEO1014 WALLS HOT SPRING	55.6	111.67	147.60	0.37	147.60	19.97	53.64	85.96	110.51	110.05	114.08	81.26	59.98		
MGEO1276 TOWNSEND, HERB * 2.5 MI SW WHITE SULPHUR SPR	46.5	16.27	157.17	1.06	16.27	33.88	-85.02	16.27	157.17	55.04	61.46	86.37	64.64		
MGEO1290 RALPH JOHNSON P.O. BOX 65, WHITE SULPHUR SPR	15.3	259.05	122.38	-1.07	122.38	31.42	69.60	52.77	122.38	95.84	97.48	65.59	45.67		
MGEO1004 WHITE SULPHUR SPRINGS	46	126.78	147.27	0.30	147.27	26.73	84.76	62.50	147.27	102.74	103.36	72.88	52.33		
MGEO1282 WHITE SULPHUR SPRINGS	43.3	121.76	144.81	0.23	144.81	23.87	73.83	70.98	144.81	95.63	97.21	65.26	45.37		
MGEO1188 WATTS, JAMES * 16 MI NE KINSEY MT	18.5	85.25	51.90	-0.47	51.90	20.14	-50.45	51.90	51.90	39.26	47.27				
MGEO1184 M-B NO 8 WELL * 2.5 MI SE CORVALLIS MT	19.3	66.33	181.30	1.32	66.33	27.27	-22.50	66.33	181.30	118.19	116.62	89.60	67.58		
MGEO1007 BROADWATER HOT SPRINGS WELL	65.5	98.03	130.98	0.96	98.03	7.61	-19.47	98.03	130.98	133.18	129.33	106.05	82.53		
MGEO1008 GLOEGE WELL	19.4	30.72	136.24	1.43	30.72	24.86	-76.67	30.72	136.24	76.58	80.57	45.09	26.89		
MGEO1003 GARRISON WARM SPRINGS	25	39.21	59.25	1.57	39.21	42.01	-30.80	39.21	59.25	59.83	65.83	27.73			
MGEO1208 USGS OBS WELL * 4 MI SW EAST HELENA, MT.	25	39.21	59.25	1.57	39.21	42.01	-30.80	39.21	59.25	59.83	65.83	27.73			
MGEO1242 FLORENCE TEST WELL A	15	126.78	141.90	0.15	141.90	11.71	26.53	115.35	115.35	72.65	72.65				
MGEO1167 CHERYCK SHEEP CO. * 1.35 MI SE HAGEN RANCH.	36	117.14	67.99	-0.61	67.99	21.81	-23.10	67.99	67.99	64.19	69.61				
MGEO1299 SIVBETE NYSE * BOX 315 * INGOMAR MT 59039	37	109.43	60.76	-0.53	60.76	17.37	-42.84	60.76	60.76	66.71	71.85				
MGEO1261 MOORE, THOMAS * 6.5 MI SW ANGELA MT	82	138.97	174.41	0.13	174.41	16.18	84.02	90.39	174.41	102.55	103.20				
MGEO1322 BYRNE WARM SPRING * WEST OF BEARMOUTH	20	12.77	186.78	2.04	12.77	29.56	-101.51	12.77	186.78	64.74	70.10	32.72			
MGEO1116 NIMROD SPRINGS	20.5	16.51	162.80	1.91	16.51	31.73	-99.43	16.51	162.80	65.29	70.59	33.28			
MGEO1026 BEARMOUTH SPRINGS	20.2	9.20	157.08	2.13	9.20	33.93	-111.70	9.20	157.08	55.26	61.66	22.90			
MGEO1345 LOLO HOT SPRINGS	46.7	74.00	119.07	0.47	74.00	6.39	-36.98	74.00	119.07	119.63	117.84	91.17			
MGEO1069 MARYSVILLE DEEP WELL DEPTH 5750	99	136.70	155.51	0.19	155.51	4.82	8.00	148.51	155.51	117.09	115.68				
MGEO1170 CHERYCK CREEK SHEEP CO. * 26 MI N VANANDA MT	44	124.20	183.90	0.54	183.90	25.13	113.90	69.99	183.90	66.18	71.38				
MGEO1162 OLSEN, JONAS * 9 MI NW FLATWALLOW MT.	27	74.75	116.42	0.51	74.75	36.18	-20.78	53.97	116.42	46.26	55.38				
MGEO1201 OLSEN, JONAS * 14 MI NE N-BAR RANCH	16	52.65	165.23	1.28	52.65	43.70	-3.43	52.65	165.23	39.61	46.68				
MGEO1164 REYNOLDS, KEITH * 6 MI NE FLATWALLOW MT.	24.5	95.66	85.39	-0.14	85.39	26.73	12.43	72.96	95.39	49.29	56.31				
MGEO1167 HILL, FLOYD * 7 MI N FLATWALLOW MT.	15	99.00	91.62	-0.09	91.62	36.13	19.20	72.32	91.62	47.99	55.15	15.44			
MGEO1180 M-B 4 (BUTLER CO) * 6 MI NW MISSOULA MT	16	123.77	143.22	0.19	143.22	37.23	105.41	73.82	143.22	132.53	128.78	105.33			
MGEO1254 KING, JOE & SONS INC. * 5 MI SSW WINNET MT	16	114.09	85.32	-0.34	85.32	31.59	22.64	62.68	85.32	46.93	54.19				
MGEO1159 SHAW, BUD * 1.7 MI SW MOSBY MT.	29	98.14	81.79	-0.20	81.79	22.97	-1.32	81.79	81.79	50.05	50.05				

Site name	Surface Temp	Na-K-Ca ($\beta = 4/3$)	Na-K-Ca ($\beta = 1/3$)	Mg CORRECTION Log(sqr(Ca/Na))	Temperature Corrected Coefficient	R	Delta T (Mg Corr.)	Na-K-Ca Corrected Uncorrected	Na-K-Ca Uncorrected	Quartz (no steam)	Quartz (steam loss)	Chalcedony a-Cristobalite	B-Cristobalite	Amorphous Silica	Published Estimates
MGEO1160 EAGER, REX * 2 MI SW WINNETT MT.	15.5	93.19	95.04	0.02	39.19	30.87	32.17	61.02	95.04	45.00	52.45				
MGEO1161 BRATTON, WAYNE * 2 MI SE WINNETT MT.	24.2	94.27	95.61	-0.11	85.61	16.70	85.61	61.02	95.61	45.00	57.88				
MGEO1305 BURLY VISTA TRACTS	46	22.81	22.76	2.24	22.81	42.37	-61.88	221.76	221.76	26.81	35.95				
MGEO1577 TEIGEN, PETER * 9 MI E GRASSRANGE MT.	17.9	57.78	59.95	1.17	57.78	42.37	2.44	55.35	150.85	39.90	46.08				
MGEO1196 MATOVICH * 4.5 MI E GRASSRANGE MT	21.8	48.68	48.65	1.21	48.68	39.13	-17.71	48.68	148.85	39.90	47.85				
MGEO1181 HOLE NO 2 M - B DRILLING PROJECT	15	79.09	96.24	0.20	79.09	21.24	9.11	79.09	96.24	36.24	62.84				24.27
MGEO1240 MSU AG EXPERIMENT STATION * MOCCASIN MT	15	36.41	102.25	1.70	36.41	30.66	-54.91	36.41	102.25	36.24	44.53				
MGEO1155 BRADY, EARL * 4 MI NW WINNETT, MT.	15.8	91.37	102.46	0.13	91.37	32.46	33.08	58.30	102.46	52.02	58.76				19.56
MGEO1203 GERDUM, RONALD * 3 MI NE GRASS RANGE, MT.	16	64.48	110.59	0.39	64.48	39.75	6.98	58.20	110.59	43.85	51.42				
MGEO1152 CENEX * 15 MI NW WINNETT MT.	16	95.18	70.64	-0.32	70.64	19.25	-25.17	70.64	70.64	49.28	56.31				16.76
MGEO1158 BASSETT, EARL * 7.5 MI NW TEIGEN MT.	21	70.90	105.48	0.44	70.90	41.19	20.33	50.57	105.48	38.28	46.38				
MGEO1059 HEDMAN, J * 40 MI NE LEWISTOWN MT.	17	85.37	95.29	0.12	85.37	43.49	44.67	40.69	95.29	37.94	46.08				
MGEO1156 HARRIS FLOYD * 11 MI NW TEIGEN MT.	19.2	68.55	80.04	0.29	68.55	38.31	11.36	56.77	90.04	45.00	52.45				
MGEO1194 FOX, DENNIS * 7 MI NW GRASSRANGE MT.	20.8	35.44	122.35	1.17	35.44	32.13	-53.47	35.44	122.35	43.56	52.95				
MGEO1239 LAURENCE HESS * 1 MI N MOCCASIN MT.	15	46.67	106.09	1.40	46.67	37.19	-24.59	46.67	106.09	33.34	41.90				
MGEO1204 DELANEY, DOUGLAS * 7 MI NW (WILD HORSE UNIT)	23	74.05	99.87	0.33	74.05	43.02	27.90	46.15	99.87	40.22	48.14				
MGEO1050 BROOKS WARM SPRING * 2.5 MI NW BROOKS MT.	20	-9.89	168.12	2.53	-9.89	35.92	-195.23	52.25	168.12	41.47	49.27				
MGEO1195 DELANEY, DOUGLAS * 11 MI NW ROY MT.	21.3	80.00	85.13	0.07	80.00	37.85	27.75	72.58	85.13	42.38	50.09				
MGEO1154 MILLER RANCH * 14 MI SE VALENTINE MT.	19.5	146.52	75.27	0.80	75.27	29.67	2.70	72.58	75.27	55.93	62.25				23.59
MGEO1045 CARDINAL PET CO * 10 MI E VALENTINE MT*	26.7	112.37	125.93	0.15	125.93	21.10	45.93	80.01	125.93	56.35	62.65				
MGEO1268 QUINN'S HOT SPRINGS	43.1	65.79	125.22	0.68	65.79	73.49	-16.65	64.25	125.22	122.82	120.69				70.05
MGEO1005 QUINN'S HOT SPRINGS	43.1	65.79	125.22	0.68	65.79	73.49	-16.65	64.25	125.22	122.82	120.69				
MGEO1197 YEAGER * 6 MI EAST MOULTON, MT.	15	79.55	84.69	0.07	79.55	45.23	7.02	40.40	84.68	42.08	49.82				
MGEO1079 FINLEY, R.S. * 1 MI NW ST. IGNATIUS	19	81.86	53.55	-0.40	53.55	29.99	-18.28	53.55	53.55	59.53	65.47				27.31
MGEO1205 SROKY, FRANK * 9 MI EAST ROY, MT.	18.4	95.34	67.59	-0.36	67.59	20.78	-25.90	67.59	67.59	56.58	62.84				24.27
MGEO1192 HORYNA, JAMES * 6 MI E ROY MT.	15.5	60.88	108.31	0.41	60.88	40.33	3.25	49.54	108.31	35.53	43.99				24.71
MGEO1090 BRYSON, HAROLD * 1 MI W MOISE MT.	25	98.01	148.92	0.94	98.01	86.19	90.69	57.63	148.92	37.01	63.23				
MGEO1070 YARGER, ROBERT * 13 MI W CIRCLE MT.	15	27.18	189.02	1.08	27.18	88.43	-8.62	27.18	189.02	39.06	53.20				
MGEO1287 SAND COULET WTR USERS BENCH W ABV SAND COU	21	92.92	61.16	-0.43	61.16	9.98	-52.08	61.16	61.16	43.85	51.42				
MGEO1193 TAYLOR, JAMES * 8 MI E CHRISTINA MT.	16	41.20	165.56	1.95	41.20	14.10	-83.47	41.20	165.56	46.11	53.45				
MGEO1288 CHARLES ENTSMINGER TOWN OF NUMBER SEVEN	15.5	51.23	155.98	1.57	51.23	36.80	-51.86	31.23	155.98	50.80	57.66				18.31
MGEO1295 CUSTER, EVERETT * EDEN RT, GREAT FALLS, MT	16	12.44	155.43	1.92	12.44	36.53	-87.52	12.44	155.43	44.71	52.19				
MGEO1297 TOWN OF TRACY	21.1	25.05	173.33	1.83	25.05	56.30	-87.52	25.05	173.33	48.52	55.62				
MGEO1054 SLOESVOLD, A.K. * 17 MI SERTCHEY MT	17.5	76.83	118.91	0.31	76.83	47.74	98.43	98.08	118.91	64.92	70.27				32.91
MGEO1211 VILLAGE * 2.5 MI TRAVIS SCHOOL	18.5	96.94	124.94	0.30	96.94	32.89	41.02	55.97	124.94	41.77	49.54				
MGEO1200 GLOVE INN * 2.5 MI NE TRAVIS SCHOOL	23	69.96	92.80	0.34	69.96	0.00	0.00	92.80	92.80	107.51	107.47				57.02
MGEO1299 WEBB, GENE	20	52.54	165.93	1.34	52.54	31.00	-27.05	52.54	165.93	40.22	48.14				
MGEO1292 WEBB RES * 17.5 MI SE GERALDINE MT.	23.7	116.03	159.80	0.24	159.80	51.73	123.24	16.56	159.80	107.00	107.03				56.52
MGEO1353 HOLLAND, JIM - GREEN SPRINGS	26	63.90	158.35	1.07	63.90	39.69	7.30	56.61	158.35	64.56	69.84				
MGEO1248 GREEN SPRINGS * HOLLAND RANCH	17	58.99	158.33	1.14	58.99	33.68	-11.45	58.99	158.33	59.99	64.56				
MGEO1191 TACKLE, ROBERT * 2 MI SW GREAT FALLS MT	17	58.99	158.33	1.14	58.99	33.68	-11.45	58.99	158.33	59.99	64.56				
MGEO1288 MICHAEL (ROBINSON) * 3 MI SW GREAT FALLS	18.8	40.96	162.57	1.48	40.96	25.31	-57.89	40.96	162.57	59.73	65.65				
MGEO1319 BUTTE CREEK SPRING * SQUARE BUTTE	17	98.47	145.75	1.39	98.47	28.14	-57.89	98.47	145.75	57.01	63.23				24.71
MGEO1169 CHAMBERLAIN, CURTIS * 2 MI W ILLER SCHOOL	16	92.13	63.42	-0.38	63.42	22.31	-38.59	63.42	63.42	32.96	41.56				
MGEO1321 MELTON, LARUE * LOWER AQUER	16	96.64	161.09	0.66	96.64	11.13	-19.96	96.64	161.09	54.15	60.65				21.74
MGEO1314 USGS - MELTON, LEON	18.5	39.51	96.88	0.82	39.51	40.09	31.05	39.51	96.88	63.47	70.75				33.47
MGEO1238 SCHMIDT, LLOYD * 3.5 MI SE SQUARE BUTTE	21.8	74.66	143.59	0.78	74.66	32.01	8.85	68.61	143.59	42.38	50.09				
MGEO1190 USGS OBS WELL * 5 MI S VALLEY SCHOOL	27.1	33.68	162.99	1.38	33.68	53.62	-16.07	33.68	162.99	63.07	68.62				30.98
MGEO1078 WEBSTER, BONITA * BOX 443 RONAN MT	15	11.59	113.96	0.37	11.59	11.59	-87.73	20.06	115.71	61.13	66.90				26.97
MGEO1099 DEMARSH, TOM J. * 10 MI W OF WINFRED MT.	17	30.65	113.22	1.19	30.65	36.41	-53.66	30.65	113.22	31.81	40.51				
MGEO1240 HOMESTEAD ACRES COUNTY WATER DISTRICT	15	32.47	162.17	1.81	32.47	41.59	-40.57	32.47	162.17	41.16	48.99				
MGEO1250 HOMESTEAD ACRES COUNTY WATER DISTRICT	15	35.58	165.22	1.58	35.58	35.58	-32.85	35.58	165.22	39.90	47.85				
MGEO1241 MCCOLLUM, JIM * 10 MI NW WATHISON RANCH	18.8	100.95	62.56	-0.90	62.56	16.15	-42.71	62.56	62.56	50.09	50.09				
MGEO1076 CARR, FRANK * BOX 456 HOT SPRINGS MT	21.5	18.67	125.63	1.22	18.67	39.37	-69.72	125.63	125.63	55.70	62.06				23.36
MGEO1047 RYFFEL BROS. * 3 MI S & 3 MI E HIGHWOOD	18.6	40.02	134.81	1.32	40.02	54.74	-40.50	40.02	134.81	78.01	81.83				46.59
MGEO1097 CHRISTIANSON, BOB * HOT SPRINGS MT.	22.5	66.02	119.13	0.66	66.02	41.56	13.68	52.34	119.13	58.50	64.55				26.24
MGEO1068 TOWN OF HOT SPRINGS * MAIN WELL BY CHURCH	18.5	54.84	150.35	1.13	54.84	26.18	-33.36	54.84	150.35	67.06	72.16				35.13
MGEO1307 HOT SPRINGS CITY	21	53.15	151.90	1.17	53.15	25.98	-36.45	53.15	151.90	76.73	80.70				27.03
MGEO1228 LEISTNER, LAURA * CENTRAL AVE, HOT SPRINGS	29.8	119.21	120.98	0.02	120.98	0.00	0.00	119.21	120.98	115.98	114.73				65.38
MGEO1291 SOUTH EAST OF CAMP AQUA	44	105.48	120.10	0.16	120.10	19.65	35.28	84.82	120.10	108.86	116.37				67.29
MGEO1071 CORN HOLE * CAMAS HOT SPRINGS	45	108.70	118.49	0.11	118.49	8.52	-2.85	118.49	118.49	116.62	116.62				58.35
MGEO1080 CAMAS HOT SPRINGS	43	107.98	120.58	0.14	120.58	7.90	-2.85	120.58	120.58	109.59	109.59				59.17
MGEO1351 SYMES HOTEL IN HOT SPRINGS	33.3	132.13	130.82	-0.01	130.82	39.49	95.70	35.12	130.82	120.59	118.49				66.76
MGEO1029 SYMES HOTEL SPRINGS WELL	38	102.51	114.73	0.14	114.73	13.73	-10.78	103.97	114.73	114.73	114.73				66.12
MGEO1081 HOT SPRING GEOTHERM WELL - UNNAMED	15	74.60	147.81	1.03	74.60	30.79	6.55	68.25	147.81	83.13	86.31				51.98
MGEO1144 KOEPLING, DELBERT * WELL 138	15.5	90.98	125.34	0.41	90.98	0.00	0.00	125.34	125.34	87.85	90.44				35.21
MGEO1147 KOPPEL, DAVE * WELL 56	17.5	50.10	117.31	0.88	50.10	42.78	-86.53	50.10	117.31	47.89	55.05				
MGEO1077 VERNER, ROSE * 3.75 MI W PABLO MT	19.5	48.72	145.33	1.18	48.72	33.47	-26.35	48.72	145.33	52.49	59.18				20.05
MGEO1098 IRRIGATION EQUIPMENT SALES * HOT SPRINGS	15	79.21	102.28	0.32	79.21	20.05	-11.84	79.21	102.28	66.69	72.01				34.95
MGEO1220 JACOBSEN, R * HOT SPRINGS MT	19.2	67.39	108.85	0.92	67.39	25.84	-14.97	67.39	108.85	85.88	88.72				54.89
MGEO1176 KOPP, ARVID * HOT SPRINGS, MT	15.2	67.39	108.85	0.92	67.39	25.84	-14.97	67.39	108.85	85.88	88.72				18.82
MGEO1042 SUN RIVER SPRINGS	30.4	75.25	120.61	0.54	75.25	20.93	-15.03	75.25	120.61	88.04	90.60				57.18
MGEO1267 MBM GEOTHERMAL TEST WELL #1 CAMP AQUA AREA	42.7	75.25	120.61	0.54	75.25	20.93	-15.03	75.25	120.61	88.04	90.60				

TEMPERATURES BASED ON SELECTED GEOTHERMOMETERS

Surface Temp	Na-K-Ca Na-K-Ca (B=4/3) (B=1/3)		Mg CORRECTION Log(a/cr/(Na))		R Corrected Coefficient	Delta T (Mg Corr.)	Na-K-Ca Corrected	Na-K-Ca Uncorrected	Quartz (no steam)	Quartz Chalcedony (steam loss)	a-Cristobalite	B-Cristobalite	Amorphous Published Silica Estimates
	32.6	37.52	100.02	0.15									
MGEOT226 KOPP, ARVID * 25 MI S CAMPAQUA MT	32.6	97.92	100.02	0.15	87.52	14.71	-14.78	87.52	100.02	82.61	65.86	51.43	32.71
MGEOT221 KEMP * 5 MI SE CAMPAQUA MT	28.9	97.10	113.78	0.19	97.10	17.52	3.62	113.78	85.76	86.61	54.75	35.76	
MGEOT286 JACKALO AP 100 FT. E OF CAMP AQUA BATH SPA	51	109.25	119.23	0.11	119.23	6.84	-6.36	119.23	95.11	96.76	64.71		100
MGEOT027 CAMP AQUA AREA TEST WELL	50	116.70	129.16	0.13	129.16	8.61	-5.82	123.93	94.06	95.85	63.59		
MGEOT262 MBMG GEO. TEST WELL # 1 * CAMPAQUA AREA	43.7	74.99	116.72	0.51	74.99	21.69	-13.60	74.99	116.72	86.25	89.04	55.28	
MGEOT202 OLEN, EDWIN * 8.4 MI NW WINIFRED MT	22	128.37	64.87	-0.77	64.87	30.48	61.05	64.87	46.38	53.70	13.79		
MGEOT251 S.M.B.E.S.R., JAMES A. * POWER MT	16	121.58	111.36	-0.11	111.36	33.55	61.05	50.31	111.36	31.42	40.15		
MGEOT225 KEMP * 0.3 MI S CAMPAQUA MT	30.6	99.61	110.97	0.15	99.61	10.97	95.53	97.12	85.15	92.68	43.01		
MGEOT227 KEMP * 25 MI N CAMPAQUA MT	39.9	92.46	118.25	0.24	92.46	20.36	7.26	85.20	113.25	93.21	95.11	52.68	
MGEOT224 KEMP RR WELL (RUNAWAY) * 5 MI N CAMPAQUA	32.5	84.39	103.13	0.23	84.39	10.75	-28.72	84.39	103.13	87.80	90.40	37.75	
MGEOT173 KEMP ANNA * HOT SPRINGS, MT	34.4	107.11	121.90	0.16	121.90	15.92	23.95	97.95	121.90	87.68	90.29	37.69	
MGEOT091 KEMP ANNA * 5 MI N HOT SPRINGS, MT	24	97.92	124.33	0.29	97.92	11.52	-11.78	97.92	124.33	85.25	86.42	52.11	
MGEOT174 HUGHES, RAY * HOT SPRINGS, MT	25.8	90.72	115.41	0.29	90.72	16.17	-7.38	90.72	115.41	78.44	82.20	47.04	28.68
MGEOT219 BAXTER, C * 1.5 MI N CAMPAQUA MT	20.3	89.98	99.53	0.19	99.53	13.65	-22.26	89.58	98.53	77.45	81.39	46.00	27.73
MGEOT175 LUCKY, CHARLES * HOT SPRINGS, MT	22.8	77.35	113.58	0.44	77.35	14.19	-27.52	77.55	113.58	65.29	70.59	39.28	
MGEOT223 LUCKY HOWSER RANCH * 3 MI SE LONELINE MT	23.6	60.70	91.51	0.42	60.70	15.35	-46.68	60.70	91.51	62.49	68.11	30.38	
MGEOT224 MATOVICH JOHN * 23 MI SW SUN PRAIRIE MT	16	105.44	84.86	-0.53	84.86	23.50	-23.85	64.86	84.86	40.85	48.71		
MGEOT222 GAIL PATTON RANCH * 1 MI SW LONELINE MT	18.6	32.66	141.52	1.41	32.66	30.34	-62.21	32.66	141.52	55.04	61.45	22.67	
MGEOT110 STREIT, GEORGE * 4 MI E - 1 MI S BENTON MT.	16.5	23.73	118.66	1.34	23.73	31.99	-75.26	23.73	118.66	59.93	65.83	27.73	
MGEOT075 WHITMAYER ASSOC * 4.5 MI SE SUN PRAIRIE SCH	15	99.19	183.56	0.81	99.19	55.92	79.55	18.64	183.28	44.71	52.19		
MGEOT109 CALK, BRAD * 25 MI EFT, BENTON MT.	15.6	129.50	90.43	-0.44	90.43	35.96	37.05	73.06	90.43	40.85	48.71		
MGEOT114 LANDUSKY PUNGES SPRINGS	20	86.84	68.69	-0.24	68.69	55.57	37.05	31.63	89.69	30.21	39.06		
MGEOT072 LANDUSKY PUNGES SPRINGS	24	31.75	182.91	1.78	31.75	39.46	-45.90	31.75	182.91	59.12	65.10	26.89	
MGEOT072 LANDUSKY PUNGES SPRINGS	20.3	95.17	180.75	1.71	95.17	35.90	-46.95	35.17	180.75	52.25	58.97		
MGEOT046 BLACK COULEE * E OF TEST AREA	29.8	107.18	99.94	-0.19	99.94	71.03	78.79	90.94	24.03	33.42			
MGEOT313 ALZHEIMER, PAUL * SW OF BRADY, MT	25	35.78	94.16	0.81	94.16	44.13	29.70	91.16	33.34	41.90			
MGEOT312 REVERE, LEE	25	30.48	92.90	0.92	30.48	46.21	-35.70	30.48	92.90	35.34	41.90		
MGEOT049 LITTLE WARM SPRINGS * 9 MI SE LODGE POLE	26.1	48.88	92.90	0.92	30.48	46.21	-35.70	30.48	92.90	35.34	41.90		
MGEOT324 LODGE POLE WARM SPRINGS	30	48.82	171.25	1.43	48.88	38.01	-19.43	48.88	174.25	55.26	61.66		
MGEOT048 BIG WARM SPRINGS * 8.4 MI NE ZORTMAN MT	30.6	50.01	172.58	1.41	48.82	35.10	-25.01	48.82	171.71	55.93	62.25		
MGEOT051 BIG WARM SPRINGS * 8.4 MI NE ZORTMAN MT	26	41.95	165.73	1.48	41.95	36.56	-20.28	50.01	172.28	55.93	62.25		
MGEOT052 KIRKADIE, BRUCE * 7 MI SW LODGE POLE MT	24.5	46.53	168.88	1.43	41.95	37.29	-32.47	41.85	165.73	51.77	58.54		
MGEOT037 LARGE CAPACITY WELL * 4 MI SW WOLF POINT, MT	51	174.23	123.93	-0.48	46.53	35.59	-27.85	46.53	168.86	50.80	57.66		
MGEOT024 CITY OF WOLF POINT * WELL IN WOLF POINT	18.3	64.71	37.56	-0.43	123.93	70.59	117.01	123.93	47.99	55.15			
MGEOT023 SHERMAN HOTEL OF WOLF POINT	17.2	64.71	37.56	-0.43	37.56	70.59	117.01	37.56	47.99	55.15			
MGEOT098 USGS TEST WELL * 1 MILE SOUTH POPLAR, MT	13.9	61.38	107.46	0.60	61.38	25.09	-62.97	61.38	107.46	38.94	46.98		
MGEOT025 FOSS ELMER * 5.9 MI SE BROCTON	16.1	122.02	104.85	-0.19	104.85	25.84	35.26	69.59	104.85	55.26	61.66	22.90	
MGEOT317 LANDTECH WATER DISPOSAL SERVICE	17.9	102.22	61.52	-0.53	61.52	21.69	-20.23	61.52	61.52	54.58	61.05	22.20	
MGEOT315 THORNES, RICK * 4 MILES NW OF BAINVILLE	15	65.27	100.32	0.46	65.27	58.32	35.39	29.88	100.32	71.09	75.72	39.33	21.61
MGEOT108 CLAWITER, MILT * 4 MI N - 4 MI E BIG SANDY MT.	16	105.28	97.71	-0.09	97.71	42.47	59.78	97.71	66.01	71.23	34.03	16.74	
MGEOT303 SIMS SPRING	15	15.54	139.47	1.67	15.54	43.27	-67.72	15.54	135.47	62.88	68.45	30.78	
MGEOT140 TEXACO INC * 1.7 MI NW CENTRAL SCHOOL	35.5	156.81	92.89	-0.66	92.86	20.04	5.43	87.43	92.66	72.83	77.26	41.15	
MGEOT252 MATOVACH, MARTIN * 17 MI E MALTA NEAR SAGO	42	68.06	158.77	1.01	68.06	32.32	0.16	67.90	158.77	57.68	63.80		
MGEOT111 SLEEPING BUF REC AREA * 3 MI NNW ASHFIELD	41.3	71.17	155.20	0.94	71.17	36.32	12.18	59.02	155.20	57.66	63.80		
MGEOT145 SHIRLE, WALTER * 3 MI S FRESNO DAM.	17.5	104.64	65.18	-0.51	65.18	35.53	1.87	65.91	85.18	28.81	38.69		
MGEOT106 PIMLEY, EDWIN * 7.5 MI NW JOPLIN MT.	15	91.58	99.99	-0.43	59.98	37.79	1.44	59.99	99.99	30.21	39.06		
MGEOT105 CADY, EDWIN * 7.5 MI NW JOPLIN MT.	25	96.12	63.76	-0.43	63.76	37.75	-48.83	51.68	63.76	47.99	55.15		
MGEOT309 FRANCIS CLARA	29	31.69	128.42	1.28	31.69	37.75	-48.83	31.69	128.42	61.72	67.42	29.59	
MGEOT107 WELSH, ORVILLE * 19 MI N - 3 MI E HINGHAM MT.	16	92.96	65.82	-0.36	65.82	27.82	-11.79	65.82	38.61	46.68	34.71		
MGEOT310 EDWARDS, MARVIN / MIKE DUSTERHOFF	25	70.51	48.04	-0.37	48.04	27.82	-44.01	46.04	46.04	25.45	34.71		
MGEOT039 BIG WEST OILCO * 2 MI NE MTN VIEW SCHOOL	46	110.67	65.40	-0.57	65.40	53.07	29.37	36.02	85.40	34.82	43.24		
MGEOT104 RYGH, KEN * 22 MI N - 5 MI W JOPLIN MT.	15.5	95.99	72.73	-0.30	72.73	22.41	-15.08	72.73	29.39	38.31	72.73		
MGEOT142 BRADBURY, ALFRED * 11 MI E WILD HORSE MT	15.5	85.64	73.17	-0.17	73.17	25.02	-8.42	73.17	35.89	44.21			
MGEOT144 NAGEHUS, ORVILLE * 3 MI N SIMPSON MT.													