SPRING AND STREAM WATER QUALITY
POWDER RIVER BASIN, MONTANA

John Wheaton, Elizabeth Meredith, and James Rose

Montana Bureau of Mines and Geology

Open-File Report 640
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MBMG
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INTRODUCTION

The purpose of this report is two-fold: (1) to present a compilation of surface-water chemistry data from sites in the Powder River Basin stored in the Montana Bureau of Mines and Geology's (MBMG) Ground Water Information Center (GWIC); and (2) to distinguish between sites that likely represent natural conditions and those that are located where they could potentially have impacted water-quality conditions.

The authors of this report have investigated various human-caused activities that may impact water resources in the Powder River Basin. From that experience, the sites listed in this report are identified as to whether they most likely represent undisturbed or natural water chemistry, or potentially represent water that has been impacted by irrigation, coal mining, or coalbed-methane activities. The approach we use to make this distinction is discussed below.

Other activities can also cause impacts to water quality. Wildfires can potentially increase recharge and raise pH and salt loads in shallow groundwater. Overgrazing can alter recharge. However, impacts other than irrigation and energy development were not considered here.

This report presents water-chemistry data for surface-water sites in the Powder River Basin that exist primarily because of nearby groundwater discharge. Large areas of semi-arid southeastern Montana are dependent on springs and streams to provide water for livestock and wildlife, and to support diverse habitats. These small water bodies are seldom sampled for water quality or quantity, unlike the large perennial rivers (i.e., Tongue and Powder Rivers, Rosebud Creek) that have been the focus of long-term monitoring and for which data are available from the U. S. Geologic Survey (USGS, http://waterdata.usgs.gov/mt/nwis/nwis)

The dataset presented in this report will be helpful for anyone interested in the highly variable natural chemistry of the many small surface-water supplies in the Powder River Basin area of Montana and northern Wyoming. Water chemistry is highly variable in this area, as is obvious in the following data. This wide range of water chemistry is the result of reactions with a wide range of geologic material and is the norm in the Powder River Basin in Montana. All data in this report are available in the MBMG GWIC database at http://mbmggwic.mtech.edu.

The samples presented here were collected by MBMG staff as well as other agencies during a period from the early 1900s to the present. There are three time periods during which sampling springs and small streams in the Powder River Basin was of specific interest. A number of sites were sampled during 1923 (USGS). From the mid-1970s through the mid-1980s many springs were sampled, likely during geologic and hydrogeologic studies in anticipation of coal-mine development. Since 1999 coalbed-methane development and renewed coal mining interests have prompted additional studies and sample collection (Donato and Wheaton, 2004a,b; Meredith and others, 2012; Wheaton and others, 2008).

Between 1999 and 2013, 688 springs and 19 streams were visited by MBMG staff in the Powder River Basin; these data are available on GWIC. Only a subset of these sites has been sampled for inorganic chemistry. The inventory data from sites on the Ashland Ranger District of the Custer National Forest are also available in two publications (Wheaton and others, 2008; Donato and Wheaton, 2004a). Site inventories include accurate locations, flow measurement, temperature, pH, and specific conductance (SC), and identifying stratigraphic positions. For the purpose of the inventories on the Ashland Ranger District, streams were defined as having a flowing reach that exceeded 100 ft in length during baseflow in the fall of the year. Most streams in the District originate at groundwater discharge points within the study area and flow only a short distance. For example, Hoover Draw, a typical small stream, has a flowing reach of about 1,000 ft and a maximum baseflow of about 0.004 cfs (2 gpm). In contrast, one of the largest streams in this dataset is Otter Creek, south of Ashland, Montana. Otter Creek has a total length of more than 40 miles, from near the Montana/Wyoming state line to its confluence with the Tongue River; however, only the 28 miles upstream of the confluence are perennial. Monthly mean flows in the perennial reach range from a low of 1.0 cfs (450 gpm) in September to a high of 14 cfs (6,500 gpm) in March (http://waterdata.usgs.gov/mt/nwis/nwis).

METHODS

Water-quality data for spring and stream sites are in appendices A and B. Samples are organized by stream, GWIC ID, and sample-collection date. The locations are shown in figure 1. Data in the appendices contain analytical results for 163 spring samples from 136 sites and 117 stream samples from 78 sites. Samples were analyzed for major and minor inorganic constituents and a few samples

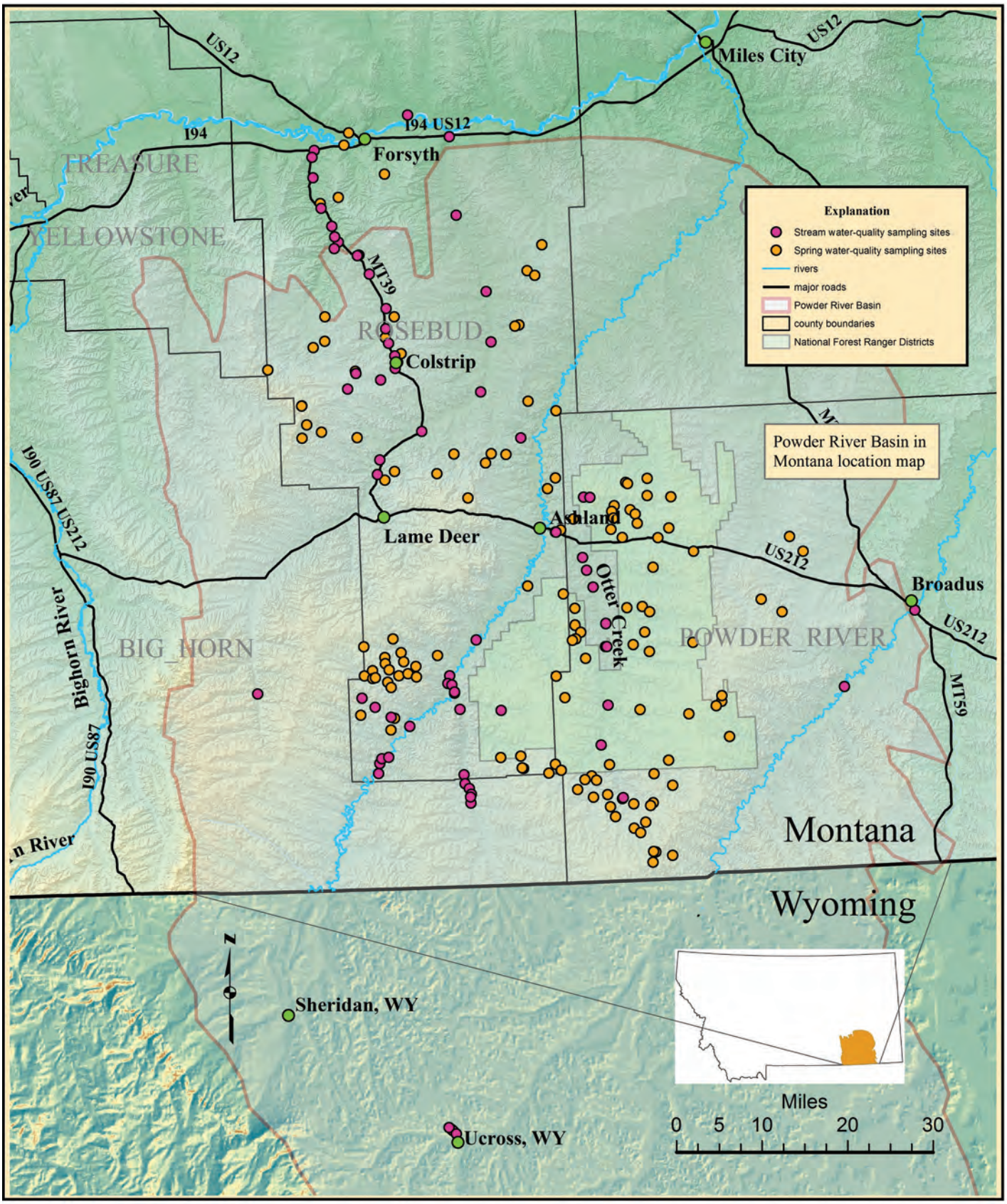

Figure 1. The location of the Powder River Basin in Montana and locations of MBMG spring and stream water-quality sampling sites.

were also analyzed for organic carbon. Isotopic analyses were run on some recent samples, but those data are not presented in this report.

To evaluate the suitability of water for irrigation, SC (µS or µmhos/cm^2) is typically considered in conjunction with sodium adsorption ratio (SAR; Hanson and others, 1999). In general, SC is a field measurement that increases with increasing dissolved constituents, and is an indicator of total salinity of the water. Not all samples include a reported SC. More samples include values for total dissolved solids (TDS, mg/L). SC can be estimated from TDS by means of linear regressions, which are shown in figures 2 and 3. For the sites identified as natural in both the spring and the stream datasets the relationship is good, yielding R^2 values of 0.94 and 0.87, respectively. Electrical conductance (EC, mmohs/cm^2) is the unit normally used by soil scientists. The conversion of SC to EC is simply a matter of dividing by 1,000. So a reported SC value of 2,300 µS converts to an EC of 2.3 mmohs/cm^2.

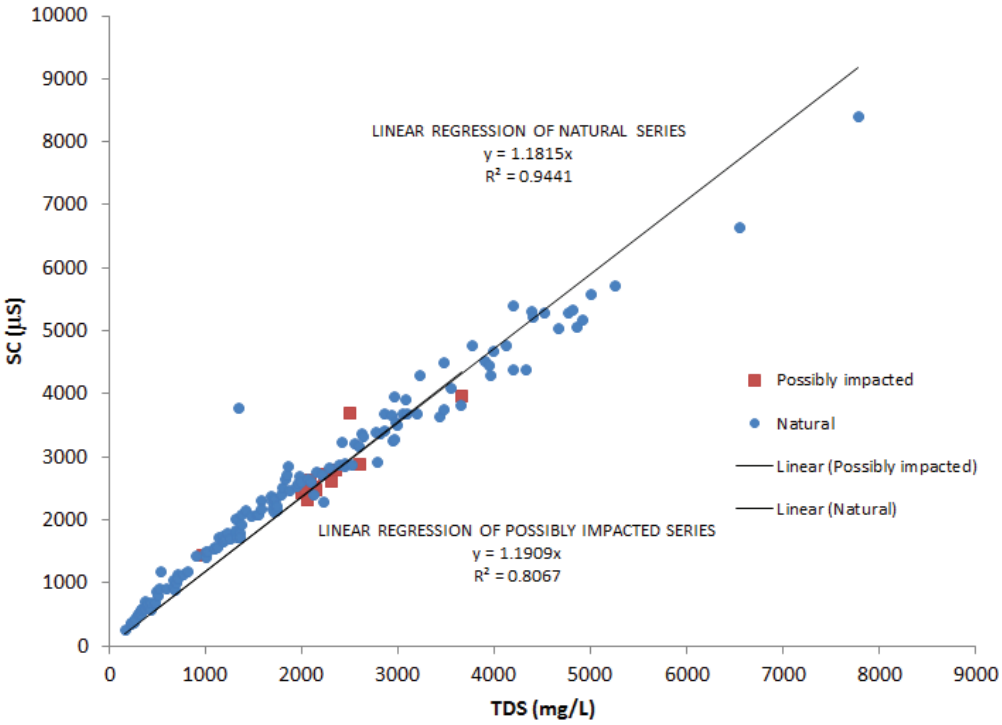

Figure 2. Specific conductance vs. total dissolved solids from spring samples. The samples from areas where human impacts may have happened fall well within the range of values from natural or 'non-impacted' areas. The correlation between TDS and SC allows SC values to be estimated from TDS if data are missing for a site.

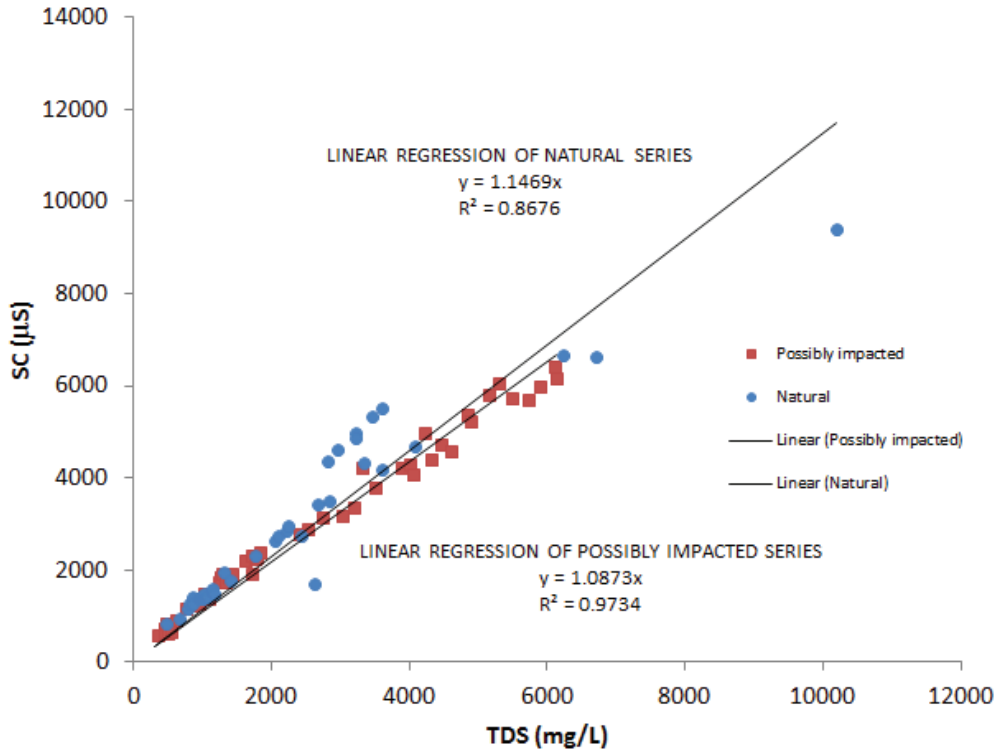

Figure 3. Specific conductance vs. total dissolved solids from stream samples. The samples from areas where human impacts may have happened fall well within the data from natural or 'non-impacted' areas. The correlation between TDS and SC allows SC values to be estimated from TDS if data are missing for a site.

SAR is one of the key parameters in this dataset due to its importance as an indicator of water usability. SAR is calculated by dividing the ionic strength of sodium by the square root of the average ionic strength of calcium and magnesium. Due to the analytical method used in 1923, results for those samples were reported with sodium and potassium (Na and K, respectively) as a single combined value and SAR cannot be calculated directly. However, sodium concentrations and SAR can be estimated from the combined values if there are data from similar sites that report Na and K individually. Using the analyses that include separate Na and K, the concentrations were summed, and then the ratio of Na and K was determined. The ratio was then used to estimate the amount of Na in the samples reporting combined values. Using this approach, SAR values were estimated for those samples where Na and K were reported as a single combined value. These are noted in the comments column of the appendices.

DISCUSSION

In the appendices, potential sources of impact to water quality by human activities for each site such as irrigation, coal mining, town development, or coalbed methane are noted. If no known potential sources were apparent, the site was marked N/A. An indication of potential sources of impact is not a statement that the water body has been impacted. These notations are based on proximity to a potential source of impact, not detailed assessment. The range of values from potentially impacted sites fall within the range of natural waters in the area as noted in figures 2, 3, 4, and 5.

The TDS concentrations for spring water ranged from 162 to 7,768 mg/L and averaged 1,981 mg/L (table 1, fig. 4, and appendix A). The minimum TDS for stream water was 248 mg/L, the maximum was 10,201 mg/L, and the average was 2,181 mg/L (table 1, fig. 5, and appendix B). Concentrations of individual constituents in analyses of natural water reflect interactions among the water and geologic and biologic materials and processes. Natural groundwater chemistry in the Powder River Basin changes predictably along flow paths (Van Voast and Reiten, 1988; Brinck and others, 2008; Wheaton and Donato, 2004). In recharge areas, water chemistry is dominated by ions of calcium (Ca^{+2}), magnesium (Mg^{+2}), and bicarbonate (HCO_3^-). Further down the flow path, sulfate (SO_4) concentrations increase due to dissolution of sulfate minerals (such as gypsum) and oxidation of sulfide minerals (such as pyrite). Cation exchange with shale increases the sodium (Na^+) concentrations while decreasing Ca^{+2} and Mg^{+2} concentrations. In deep coal aquifers sulfate reduction and carbonate precipitation produce water chemistry that is dominated by Na^+ and HCO_3^- ions, with few other constituents. There are very few human activities on the Montana part of the Powder River Basin that can influence water quality. Among the activities that can cause changes in water quality are coal mining, coalbed-methane production, and irrigation.

The minimum SAR value for spring samples was 0.2, the maximum was 38.4, and the average was 5.3 (fig. 6). For streams, the values for SAR ranged from 0.5 to 19.2 and averaged 4.7 (fig. 7). As a rule of thumb, an SAR that exceeds 10 is considered a concern for irrigators; however, the sensitivity of soil to sodium is proportional to the total salinity (measured as part of TDS) and the soil type. In general, clay in soil will be less dispersed by high SAR water if the salinity of the irrigation water is correspondingly higher (see 'infiltration' fields in-

Table 1. SAR and SC summary values for spring and stream sites in GWIC for the Montana portion of the Powder River Basin.

		Springs		Streams	
		SAR	SC (µS)	SAR	SC (µS)
Natural	Min	0.2	258	0.5	822
	Max	38.4	8,400	15.6	9,410
	Avg	5.5	2,571	4.8	2,828
	Count	147	139	46	43
Possibly impacted	Min	0.6	2,930	0.6	412
	Max	31.4	8,400	19.2	6,430
	Avg	7.8	4,480	4.6	2,672
	Count	42	41	62	57

Note. Considered on a basin-wide basis, data from sites that could possibly be impacted fall within the range of data from natural sites. The notations of "Natural" and "Possibly impacted" are based solely on proximity to a potential source of impact, such as irrigated fields, coal mines, or coalbed-methane production.

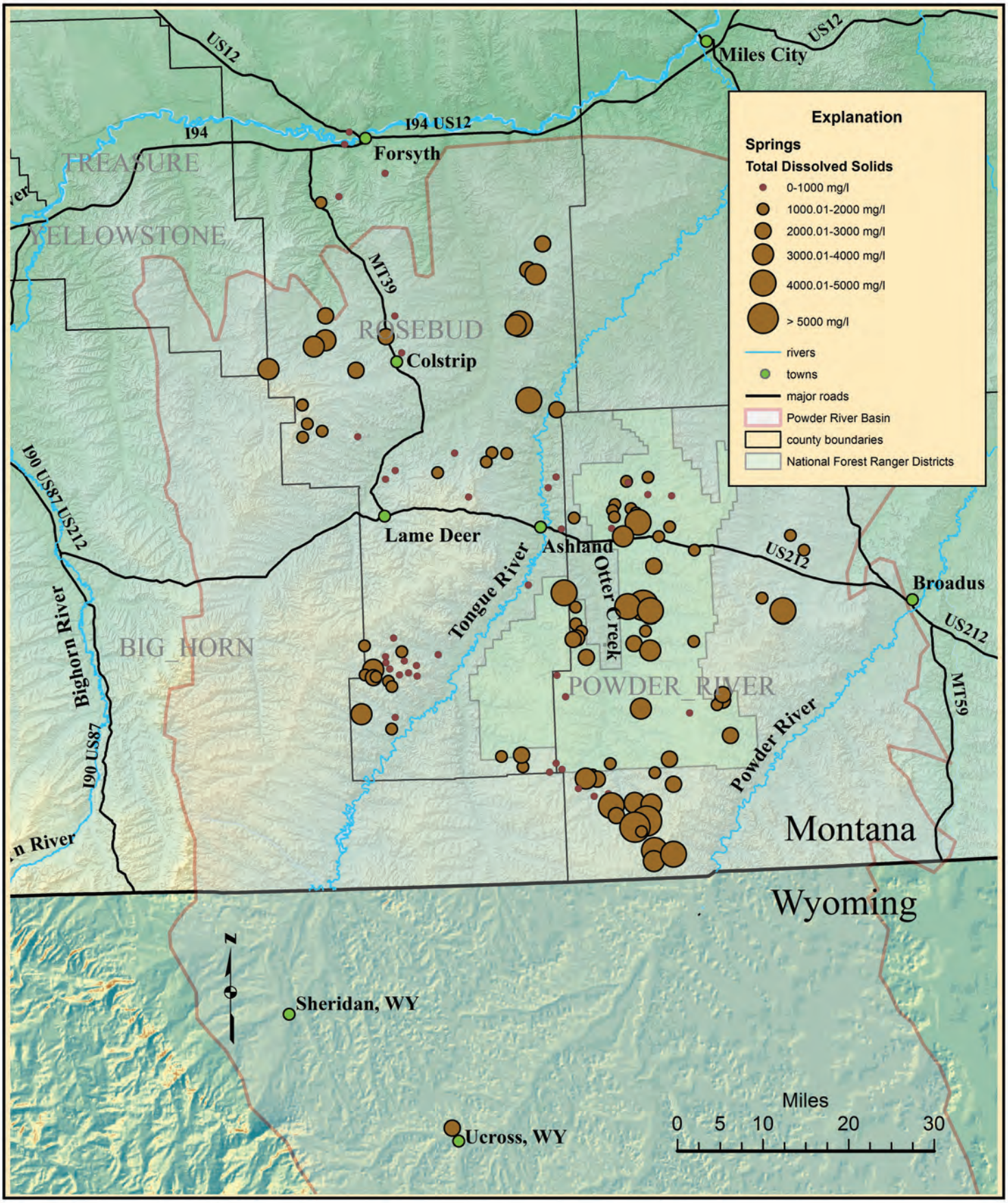

Figure 4. Total dissolved solids concentrations from spring water are highly variable, with no apparent geographical trends.

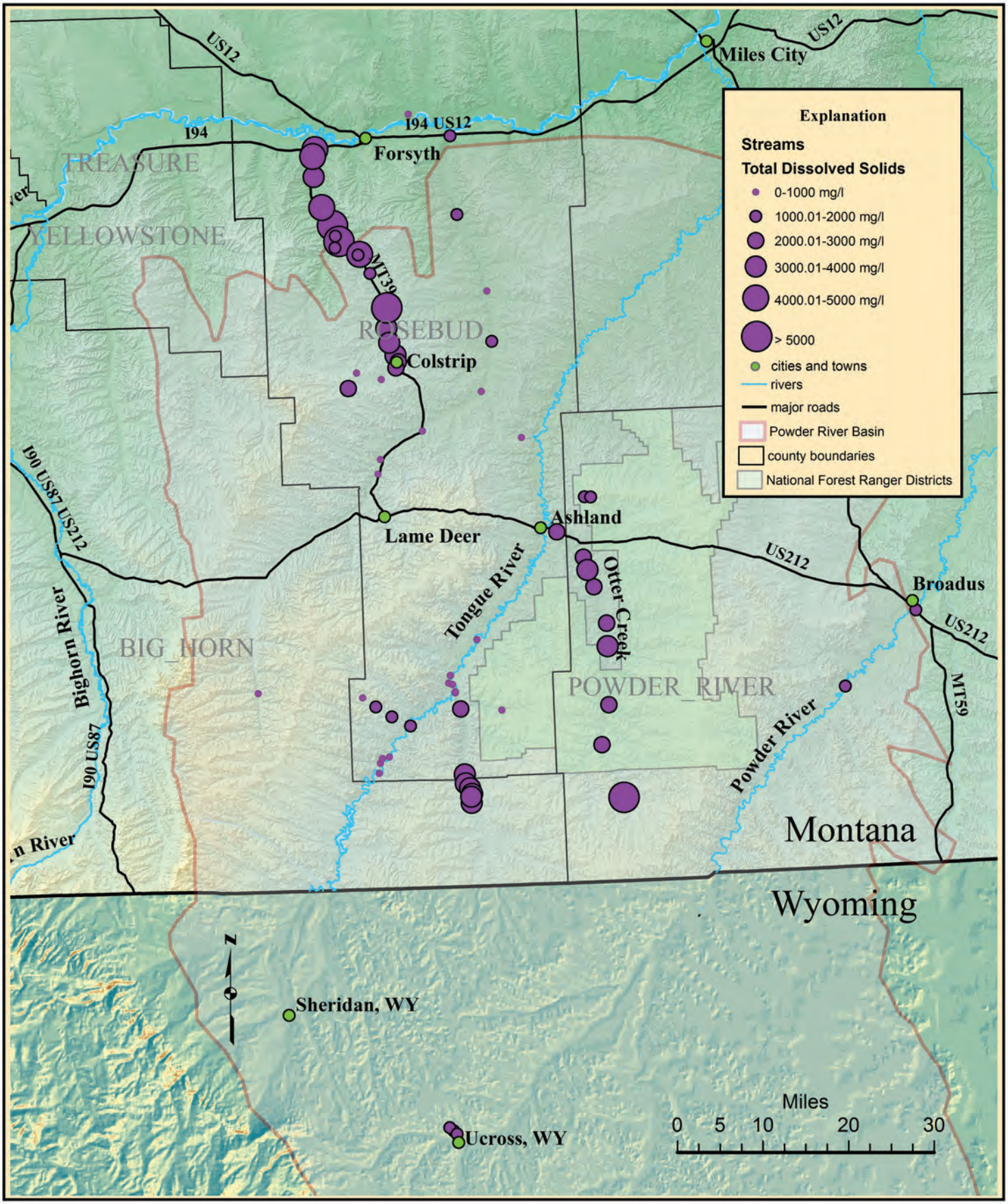

Figure 5. Total dissolved solids concentrations from stream water are generally higher in small streams and lower in the Tongue River and the Powder River.

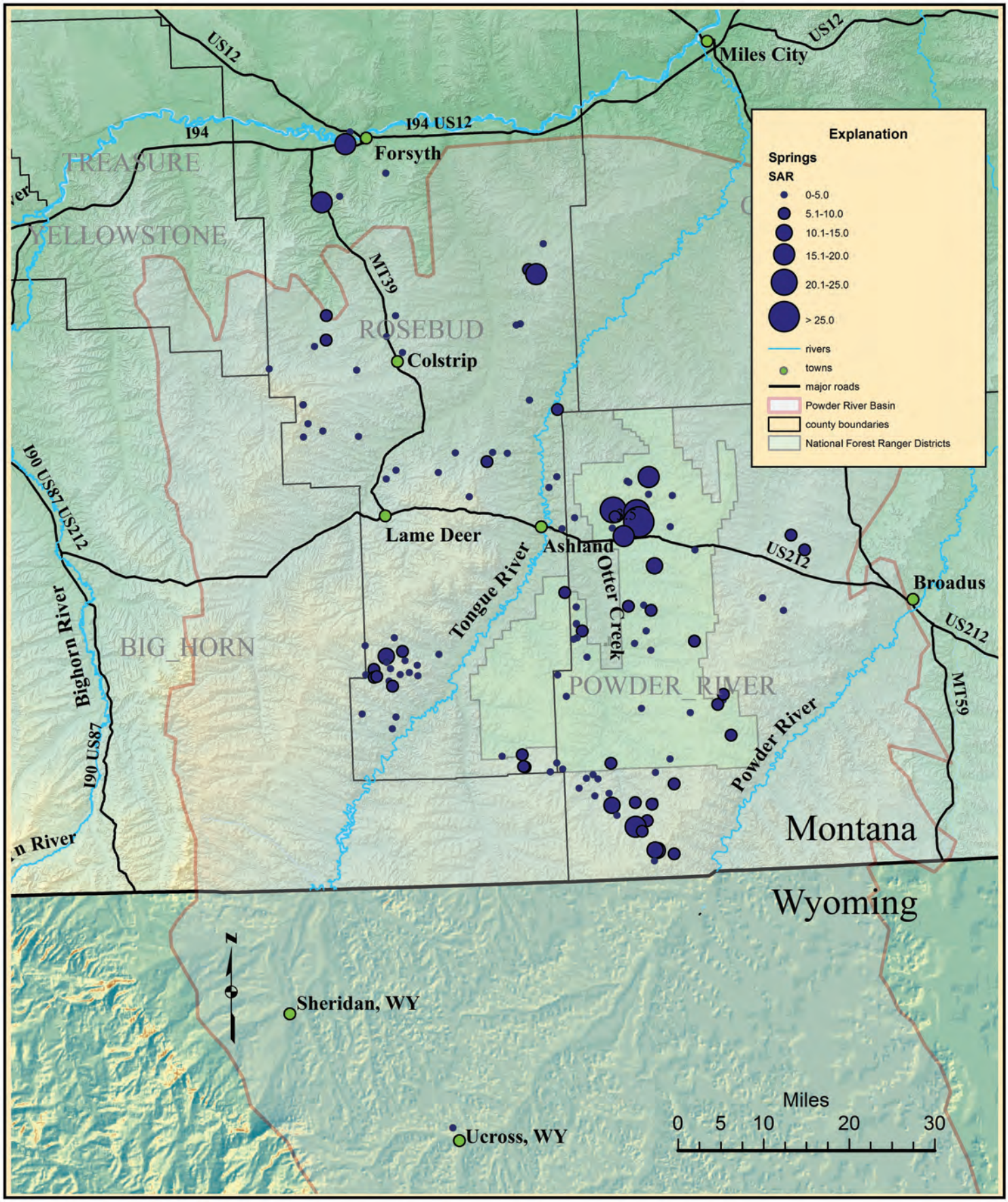

Figure 6. SAR values from spring samples are highly variable, with some areas of high values and some areas of lower values.

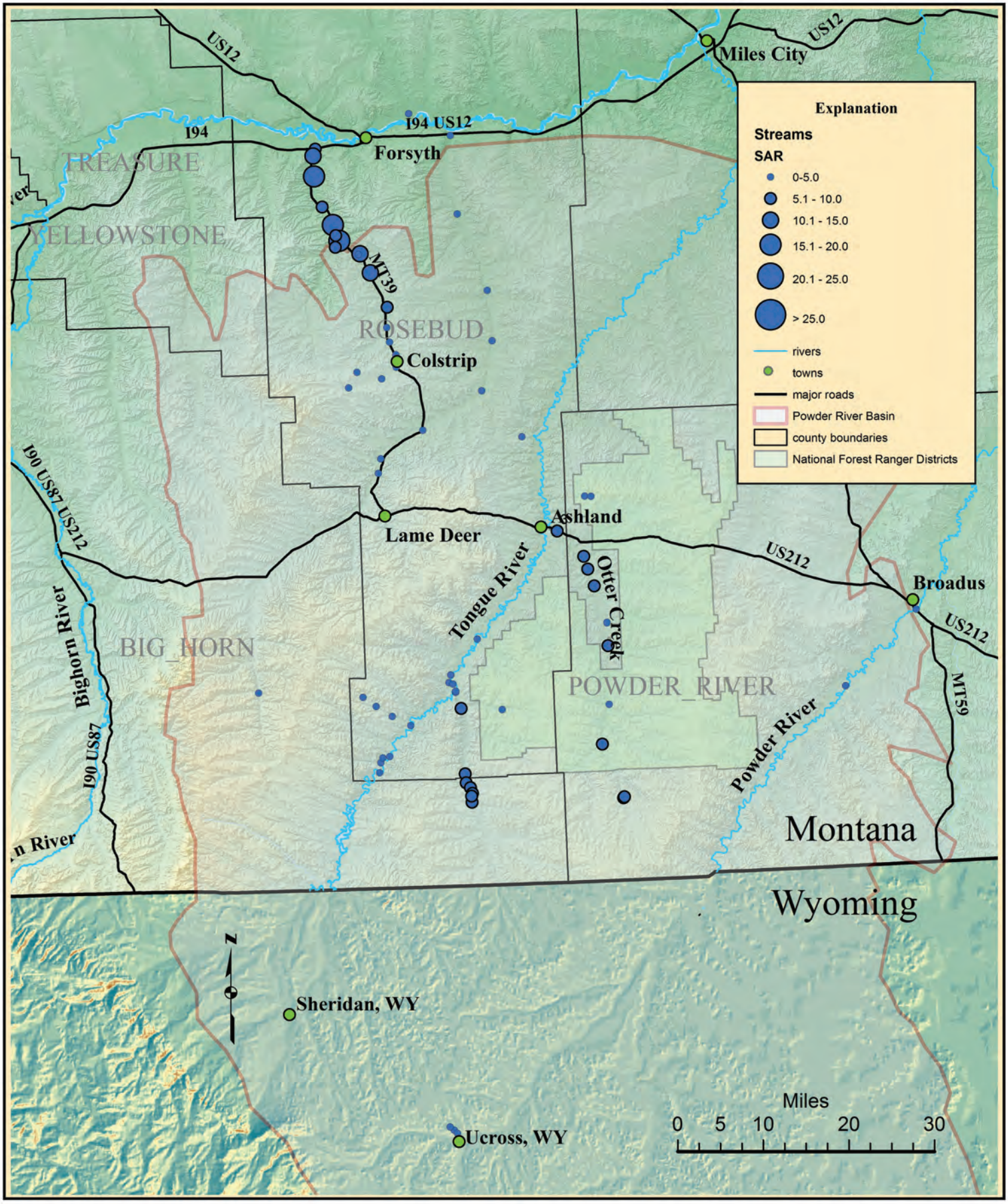

Figure 7. SAR values from stream samples are moderately variable, with the highest values being north of Colstrip.

dicated in figs. 8 and 9), although plant growth will be hindered by increased salinity depending upon species (Hanson and others, 1999). Water associated with coalbeds typically has high SAR values, and surface water or springs impacted by discharge from mines or CBM development may be expected to have an elevated SAR. The datasets presented here, however, do not indicate an increased sodium load in potentially impacted samples for surface-water sites or springs.

In this report, sites were identified as either being outside of the areas where impacts could have occurred (Natural) or being in a location where an impact could have occurred (Potentially impacted). Sources of potential impacts considered in this report were flood, sprinkler and pivot irrigation; coal mining; and coalbed-methane production. Water quality is extremely variable throughout the Powder River Basin, and in order to understand the effects of development upon the streams and

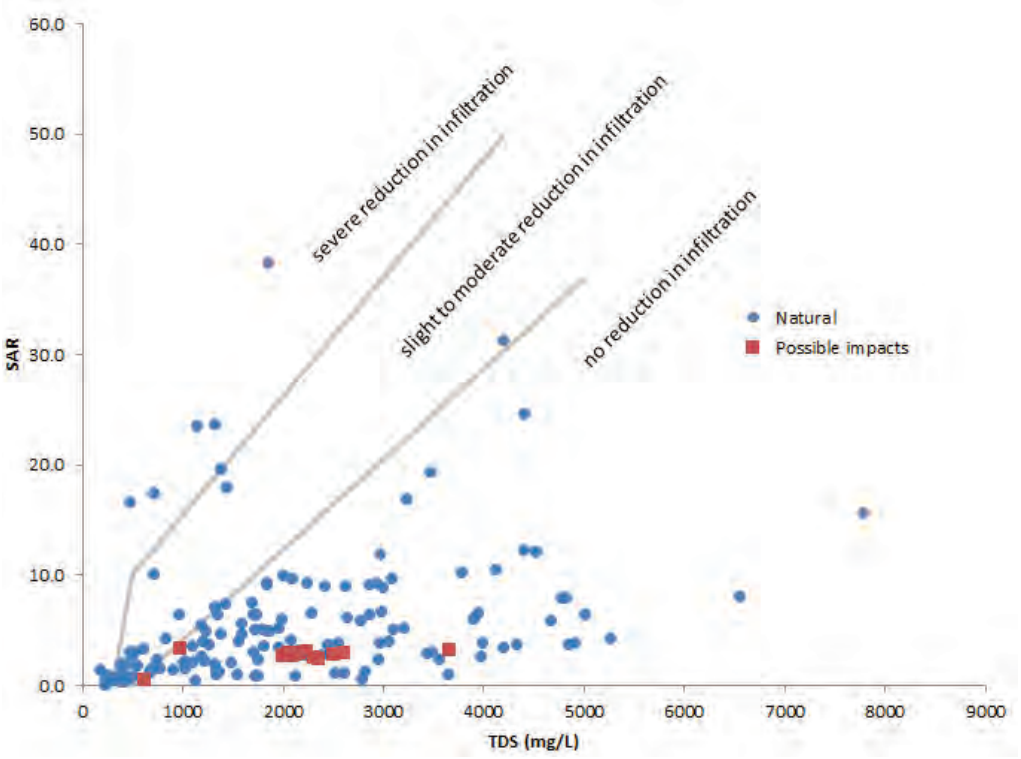

Figure 8. Sodium adsorption ratio vs. total dissolved solids from spring samples. Sodium-caused reduction in the ability of soil to infiltrate water is one measure used in agriculture to determine usability of water for irrigation (background figure modified with permission from Hanson and others, 1999). The ranges of values for natural and for possibly impacted sites are similar.

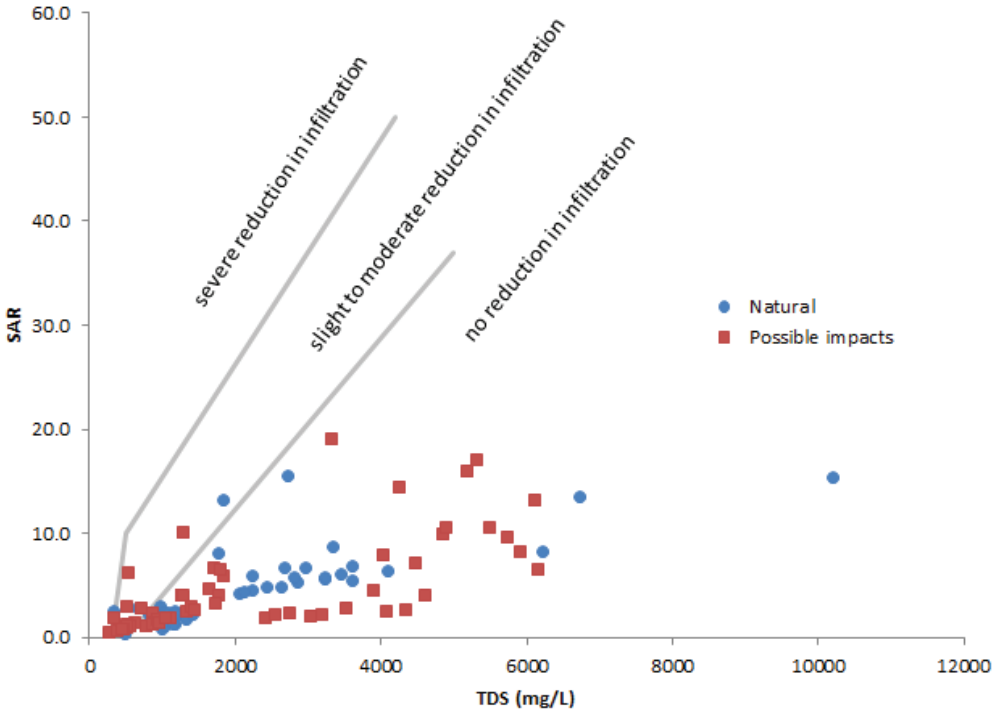

Figure 9. Sodium adsorption ratio vs. total dissolved solids from stream samples. Sodium-caused reduction in the ability of soil to infiltrate water is one measure used in agriculture to determine usability of water for irrigation (background figure modified with permission from Hanson and others, 1999). The ranges of values for natural and for possibly impacted sites are similar.

springs, upgradient and/or pre-development samples would be needed to compare to current conditions. Most of the sites in these datasets are located upgradient of any possible impact and so are marked as not impacted (N/A). Irrigation is generally near the perennial Tongue and Powder Rivers and can have an impact only on downgradient sites. Coal mines are upgradient of some streams and springs, although not many small springs or streams near mines have been identified and sampled.

REFERENCES

Brinck, E.L, Drever, J.I., and Frost, C.D., 2008, The geochemical evolution of water coproduced with coalbed natural gas in the Powder River Basin, Wyoming. Environmental Geosciences, v. 15, no. 4, p. 153–171.

Donato, T.A., and Wheaton, J.R., 2004a, Spring inventory and other water data, Custer National Forest-Ashland Ranger District, Montana (photos available on CD only): Montana Bureau of Mines and Geology Open-File Report 493A, 84 p., 1 sheet.

Donato, T.A., and Wheaton, J.R., 2004b, Spring and well inventory for the Powder River and Tongue River watersheds, southeastern Montana: Montana Bureau of Mines and Geology Open-File Report 493B, 53 p., 1 sheet.

Hanson, B., Grattan, S.R., and Fulton, A., 1999, Agricultural salinity and drainage: Davis, California, University of California Irrigation Program: Water Management Series 3375, 159 p.

Meredith, E.L., Kuzara, S.L., Wheaton, J.R., Bierbach, S., Donato, T., and Schwartz, C., 2012, 2011 Annual coalbed-methane regional groundwater monitoring report: Powder River Basin, Montana: Montana Bureau of Mines and Geology Open-File Report 614, 78 p., 6 sheets.

Wheaton, J.R., and Donato, T.A., 2004, Ground-water monitoring program in prospective coalbed-methane areas of southeastern Montana: Year One: Montana Bureau of Mines and Geology Open-File Report 508, 91 p., 3 sheets.

Wheaton, J., Gunderson, J., Reddish-Kuzara, S., Olson, J., and Hammer, L., 2008, Hydrogeology of the Ashland Ranger District, Custer National Forest, southeastern Montana: Montana Bureau of Mines and Geology Open-File Report 570, 130 p., 6 sheets.

APPENDIX A
Spring Water-Quality Data

GWIC ID	Site Name	Site Type	Potential Existing Impacts	Latitude	Longitude	Geomethod	Datum	Twn	Rng	Sec	QSec	County
194	FARLEY INC.* 12.5 MI SW COLSTRIP*	SPRING	N/A	45.818000	-106.857200	UNKNOWN	NAD27	01N	39E	22	DDDC	ROSEBUD
195	FARLEY INC. * 20.5 M NW LAME DEER MT	SPRING	N/A	45.817500	-106.857700	UNKNOWN	NAD27	01N	39E	22	DDDC	ROSEBUD
199	FADHL G. * 4.5 MI W COLSTRIP MT.	SPRING	N/A	45.873300	-106.725000	UNKNOWN	NAD27	01N	40E	2	BABD	ROSEBUD
723	HUNT RANCH * 4 MI NW BRANDENBURGH P.O.	SPRING	N/A	45.811600	-106.309400	UNKNOWN	NAD27	01N	44E	30	BDCA	ROSEBUD
727	O'BRIEN LEONARD* 15MI SW BRANDENBURG P.O.	SPRING	N/A	45.793300	-106.242700	UNKNOWN	NAD27	01N	44E	34	DBCB	ROSEBUD
1055	SLOAN STANLEY * 17 MI W COLSTRIP MT.	SPRING	N/A	45.880500	-106.936900	UNKNOWN	NAD27	02N	39E	31	CBCD	ROSEBUD
1062	DOWLIN M G * 10.5 MI NW COLSTRIP MT	SPRING	N/A	45.925800	-106.796600	UNKNOWN	NAD27	02N	40E	18	DABD	ROSEBUD
1076	3 M NW COLSTRIP MT.	SPRING	SAMPLE PRE-DATES MODERN MINING	45.928300	-106.649400	UNKNOWN	NAD27	02N	41E	17	ADAD	ROSEBUD
1080	GROUND WATER * 1 MILE NORTH OF COLSTRIP	SPRING	SAMPLE PRE-DATES MODERN MINING	45.900200	-106.612500	UNKNOWN	NAD27	02N	41E	27	A	ROSEBUD
1124	CORNWALL LAND & LVSTK CO*18 MI SW BROADUS*	SPRING	N/A	45.941300	-106.323800	UNKNOWN	NAD27	02N	43E	12	AC	ROSEBUD
1125	* BUTTE RANCH * 8.5 M SW CRAIN PLACE *	SPRING	N/A	45.939400	-106.333800	UNKNOWN	NAD27	02N	43E	12	CBAC	ROSEBUD
1223	DOWLIN MARY * 6.5 MI N CASTE ROCK MT	SPRING	N/A	45.967200	-106.793600	MAP	NAD27	03N	40E	31	DADC	ROSEBUD
1226	WIMER TOM * 5 MI N COLSTRIP MT.	SPRING	N/A	45.963300	-106.625500	UNKNOWN	NAD27	03N	41E	34	CCCD	ROSEBUD
1236	DAVIDSON V.P. * .9 MI S. CRAIN PLACE MT	SPRING	N/A	46.032500	-106.298600	MAP	NAD27	03N	44E	7	ADBA	ROSEBUD
1237	DAVIDSON V. P. * 1.75 MI S CRAIN PLACE MT	SPRING	N/A	46.024100	-106.280800	MAP	NAD27	03N	44E	8	DCAC	ROSEBUD
1348	DAVIDSON V.P. * 2.3 M NE CRAIN PLACE MT *	SPRING	N/A	46.075500	-106.260200	MAP	NAD27	04N	44E	28	ACAA	ROSEBUD
1412	HARDY W.H. (MR.) * 3 MI SW FORSYTH MT	SPRING	N/A	46.159700	-106.795800	UNKNOWN	NAD27	05N	39E	25	BC	ROSEBUD
1413	HAMARE B.M. * 3 MI E B.N. RAILROAD TRACK	SPRING	N/A	46.168800	-106.751300	UNKNOWN	NAD27	05N	40E	20	C	ROSEBUD
1417	KENEALY J. * .5 MI SE FORSYTH MT	SPRING	N/A	46.205500	-106.636900	UNKNOWN	NAD27	05N	41E	7	A	ROSEBUD
1521	COAL SPRINGS RANCH CO * 2 MI NW FORSYTH MT	SPRING	IRRIGATION	46.277500	-106.720500	UNKNOWN	NAD27	06N	40E	16	A	ROSEBUD
1525	LIONS PARK SPRING	SPRING	N/A	46.256800	-106.733100	SUR-GPS	NAD27	06N	40E	21	CBDC	ROSEBUD
1525	LIONS PARK SPRING	SPRING	N/A	46.256800	-106.733100	SUR-GPS	NAD27	06N	40E	21	CBDC	ROSEBUD
7019	BAILEY JOHN * 14 MI SW COLSTRIP MT.	SPRING	N/A	45.763000	-106.859100	UNKNOWN	NAD27	01S	39E	12	DCBA	ROSEBUD
7020	BAILEY D. * 12.5 MI SW COLSTRIP MT.	SPRING	N/A	45.785200	-106.846900	UNKNOWN	NAD27	01S	40E	6	BBDB	ROSEBUD
7022	BAILEY D*14.5 MI NW LAMEDEER MONT	SPRING	N/A	45.772200	-106.811900	UNKNOWN	NAD27	01S	40E	8	AAAC	ROSEBUD
7023	HUGH W * 10 MI SW COLSTRIP MT*	SPRING	N/A	45.760800	-106.726100	UNKNOWN	NAD27	01S	40E	12	DDD	ROSEBUD
7043	GREENLEAF LAND AND LIVESTOCK *	SPRING	N/A	45.726900	-106.493800	MAP	NAD27	01S	42E	25	BDAB	ROSEBUD
7049	GREENLEAF LAND AND LIVESTOCK	SPRING	N/A	45.723000	-106.367700	MAP	NAD27	01S	43E	25	BDDA	ROSEBUD
7050	PETERSON A. ED * 15.3 MI W ASHLAND MT	SPRING	N/A	45.725200	-106.403300	UNKNOWN	NAD27	01S	43E	27	A	ROSEBUD
7052	GREEN LEAF L & L *	SPRING	N/A	45.709700	-106.418300	MAP	NAD27	01S	43E	34	BCBC	ROSEBUD
7222	EYE ISACC * 5.4 MI NE LAME DEER MT	SPRING	N/A	45.701300	-106.638600	UNKNOWN	NAD27	02S	41E	2	BABA	ROSEBUD
7225	BAYLEY HENRY N. * 4 MI N LAME DEER MT	SPRING	N/A	45.687200	-106.662700	UNKNOWN	NAD27	02S	41E	10	BBAB	ROSEBUD
7232	GREEN LEAF L & L *	SPRING	N/A	45.695000	-106.536300	MAP	NAD27	02S	42E	3	BDCD	ROSEBUD
7234	CHEYENNE INDIANS * 10 MI NE LAME DEER MT	SPRING	N/A	45.651600	-106.463800	UNKNOWN	NAD27	02S	43E	19	ADB	ROSEBUD
7235	OWEN J. F. *6 MI N ASHLAND MT*	SPRING	N/A	45.679700	-106.250800	UNKNOWN	NAD27	02S	44E	12	BCCA	ROSEBUD
7236	OWEN J. F.*5 MI NE ASHLAND MT*	SPRING	N/A	45.662200	-106.271100	UNKNOWN	NAD27	02S	44E	14	CB	ROSEBUD
7242	* GASKILL R. * 8 M S BEAVER CREEK SCHOOL	SPRING	N/A	45.628600	-106.111900	MAP	NAD27	02S	45E	25	DAC	POWDER RIVER
7244	*GASKILL R. * 5.1 M NW HOME CREEK SCHOOL	SPRING	N/A	45.619100	-106.118600	MAP	NAD27	02S	45E	36	ACBA	POWDER RIVER
7246	USDA FOREST SERVICE - CABIN CREEK SPRING	SPRING	N/A	45.667100	-106.081600	NAV-GPS	NAD27	02S	46E	17	BBAA	POWDER RIVER
7247	USDA FOREST SERVICE - MAXWELL SPRING	SPRING	N/A	45.672400	-106.029300	NAV-GPS	NAD27	02S	46E	10	DBAD	POWDER RIVER
7248	USFS * 4.2 M S BEAVER CREEK SCHOOL	SPRING	N/A	45.665000	-106.077500	MAP	NAD27	02S	46E	17	BACA	POWDER RIVER
7249	USDA FOREST SERVICE - DARLING DRAW SPRING	SPRING	N/A	45.643100	-106.031300	NAV-GPS	NAD27	02S	46E	22	DBDB	POWDER RIVER

GWIC ID	SampleID	Agency	Sample Date	Water Temp	Fld pH	Fld SC (uS)	Lab	Lab pH	Lab SC (uS)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Fe (mg/l)	Mn (mg/l)	SiO2 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	SO4 (mg/l)	Cl (mg/l)
194	1973Q0660	USGS	7/25/73 11:30	11			MBMG	8.05	2160	121	249	76.4	12.6	0.02	0.01	15	685	0	918	5.5
195	1974Q0216	MBMG	10/1/73 0:00	11.1			MBMG	7.93	2140	103	253	77.8	13.3	<.01	<.01	14.5	622	0	930	7.5
199	1973Q0658	USGS	7/24/73 10:00	17			MBMG	7.47	2930	380	270	65.4	10.5	0.04	0.02	19	352	0	1852	13.2
723	1973Q0812	USGS	9/13/73 14:05	19.5		5000	MBMG	8.49	4400	224	449	428	24	<.01	0.02	14.7	315	6	2992	26
727	1972Q0757	USGS	9/29/72 10:30	11.5	7.2	2800	MBMG	7.9	2830	110	134	442	13	0.27	0.12	13	556	0	1278	9.2
1055	1972Q0760	USGS	10/4/72 16:30	12	7.2	3550	MBMG	7.85	3760	196	387	330	13	0.05	0.02	18	571	0	2232	11.7
1062	1972Q0761	USGS	10/6/72 11:30	13	8.2	3500	MBMG	8.02	3700	115	304	478	15	0.12	0.01	11	734	0	1884	18.6
1076	1974Q0017	MBMG	10/3/73 11:00	14			MBMG	8.49	2798	169	250	218	24	<.01	0.01	15.7	529	19	1368	21
1080	1923Q0005	USGS	1923				USGS			114	51	38 K					357		268	5
1124	1972Q0759	USGS	10/3/72 15:00	12	7.8	4400	MBMG	7.79	4390	286	422	398	17.5	0.06	0.02	20	556	0	2750	11.7
1125	1973Q0831	USGS	10/3/73 16:05	11		4000	MBMG	7.73	3660	236	345	312	17.2	0.02	0.02	18.3	501	0	2236	11.4
1223	1975Q1077	USGS	7/23/75 12:00	16		3200	MBMG	6.71	2293	51.6	108	516	6	0.01	<.01	11.7	448	0	1290	18.2
1226	1973Q0008	USGS	11/1/72 10:30	12	8.4	380	MBMG	8.11	363	38	24	4.7	1	0.02	<.01	14	198	0	36	1.3
1236	1975Q1297	USGS	8/27/75 14:30	14		3550	MBMG	6.45	3243	95.8	105	546	9.4	0.01	0.01	19	508	0	1368	12.7
1237	1975Q1298	USGS	8/27/75 15:30	15		4600	MBMG	6.71	4311	83.8	74.4	885	6.8	0.02	0.03	8.3	674	0	1807	16.9
1348	1975Q1292	USGS	8/27/75 10:15	12		3420	MBMG	6.46	3224	167	223	334	10.8	0.01	<.01	10.8	562	0	1495	17.6
1412	1923Q0009	USGS	1923				USGS			72	12	636 K					631		1022	12
1413	1923Q0050	USGS	8/22/23 0:00				USGS			90	71	131 K		1.4		19	749	0	166	8
1417	1923Q0049	USGS	8/18/23 0:00				USGS			50	32	90 K		<.1		35	398	0	114	6
1521	1923Q0078	USGS	8/13/23 0:00				USGS			49	32	125 K		0.4		16	447	0	139	8
1525	1923Q0069	USGS	9/27/23 0:00				USGS			11	3.7	260 K		0.2		16	508	0	169	8
1525	2001Q1546	MBMG	5/9/01 14:15	9.6	8.28	945	MBMG	7.96	1083	11.1	2.49	249	1.88	0.009	0.005	8.94	516	0	169	6.9
7019	1973Q0799	USGS	9/12/73 18:00	13	7.5	1900	MBMG	7.87	1834	83	147	136	5.1	0.7	0.07	14.1	644	0	596	4.8
7020	1973Q0797	USGS	9/12/73 15:30	11	7.6	1650	MBMG	8.76	1424	14.7	132	119	10.9	1.35	0.03	19.9	350	30	495	5.4
7022	1973Q0796	USGS	9/12/73 12:30	12.5	7.7	2400	MBMG	8.4	2226	54	215	180	11.9	0.33	0.03	18.2	372	19	1048	7.6
7023	1973Q0659	USGS	7/24/73 15:00	14			MBMG	7.93	692	73	27	33.2	6	<.01	<.01	35	193	0	197	5
7043	1981Q1533	USGS	8/27/81 13:15	12	7.6	920	MBMG	7.61	1047	68.5	70.1	64.6	6.1	0.051	0.13	14.9	486	0	199	2.8
7049	1981Q2026	USGS	11/17/81 9:50	5	8.1	1680	MBMG	8.09	1725	121	137	98.6	11.4	0.039	0.019	28.6	544	0	657	6.2
7050	1923Q0026	USGS	7/19/23 0:00				USGS			134	162	373 K		0.3		22	756	0	1123	9
7052	1981Q1526	USGS	8/25/81 12:15	13	7.2	2300	MBMG	7.56	2699	108	117	386	8.8	0.72	0.29	11.2	762	0	955	9.6
7222	1972Q0754	USGS	9/28/72 11:30	8			MBMG	7.66	377	28	19.5	27.4	3	0.05	<.01	24	183	0	51	3.8
7225	1923Q0022	USGS	7/16/23 0:00				USGS			28	33	77 K		<.01		21	173	12	191	4
7232	1981Q1530	USGS	8/26/81 11:15		7.4	2410	MBMG	8.19	2530	67.1	171	250	19.3	0.036	0.004	22.2	664	0	920	11.3
7234	1923Q0020	USGS	9/21/23 0:00				USGS			39	21	10	6.4	0.4		31	239	0	8.2	2
7235	1972Q0753	USGS	9/21/72 10:45	11.5			MBMG	8.05	1190	45	47	175	8.6	<.01	<.01	17	503	0	265	5.6
7236	1972Q0752	USGS	9/21/72 10:00	12			MBMG	7.99	1020	61	73	77.5	6.2	<.01	0.01	21	512	0	188	4.4
7242	1974Q0873	USGS	8/7/74 14:45	16.5		2200	MBMG	8.07	2348	77	101	373	8.9	0.01	<.01	16.4	913	0	685	7.9
7244	1974Q0868	USGS	8/7/74 16:30	21		1960	MBMG	8.54	2027	9.5	15.1	506	8.9	0.01	<.01	11	1176	24	153	4.4
7246	1974Q1067	USGS	10/24/74 0:00	9		1525	MBMG	8.09	1506	82	118	100	11.6	<.01	<.01	17.4	630	0	368	4
7247	1974Q1069	USGS	10/24/74 0:00	9.5		2060	MBMG	8.79	2093	18.4	16	478	6.2	0.32	<.01	13.1	845	33	375	5.3
7248	1974Q1066	USGS	10/24/74 0:00	10		860	MBMG	8.6	705	32	38	70	4.2	<.01	<.01	14.8	325	7	102	2.4
7249	1974Q1065	USGS	10/23/74 11:00	10		640	MBMG	8.84	600	29	40	43.6	8.5	<.01	<.01	18.3	298	8	71	3

GWIC ID	NO3 N (mg/l)	NO2 N (mg/l)	F (mg/l)	OPO4 P (mg/l)	Ag (ug/l)	Al (ug/l)	As (ug/l)	B (ug/l)	Ba (ug/l)	Be (ug/l)	Br (ug/l)	Cd (ug/l)	Co (ug/l)	Cr (ug/l)	Cu (ug/l)	Li (ug/l)	Mo (ug/l)	Ni (ug/l)	Pb (ug/l)
194	<.1		0.4																
195	0.6		0.3																
199	0.1		0.3																
723	<.1		0.1																
727	<.1		0.5																
1055	0.8		0.3																
1062	0.068		0.1																
1076	2.9		0.3																
1080																			
1124	2.49		0.3																
1125	0.75		0.1																
1223	0.9		0.3																
1226	<.1		0.2																
1236	3.3		0.6																
1237	3.2		0.8																
1348	6.5		0.3																
1412	3.16																		
1413	0.22																		
1417	0.22																		
1521	0.23																		
1525	0.29																		
1525	<.5	<.5	<.5	<.5	<1	<30	1.05	273	8.2	<2	<500	<2	<2	3.05	5.65	29.2	<10	<2	<2
7019	0.1		0.2																
7020	<.1		0.1																
7022	0.564		0.1																
7023	0.3		1.5																
7043	0.02		0.62	0.018	<2.	<30.		260				<2.		<2.	6	32	<20.	<10.	<40.
7049	0.01		0.53		<2.	<30.		510				<2.		2	12	56	<30.	<20.	<40.
7050	0.27																		
7052	<.02		0.58	0.018	<2.	<30.		520				<2.		<2.	<2.	100	30	<10.	<40.
7222	<.1		1.4																
7225	1.35																		
7232	3.38		0.98	0.036	<2.	<30.		960				<2.		22	<2.	75	<20.	<10.	<40.
7234	0.38																		
7235	0.113		1.2																
7236	<.023		1																
7242	0.3		0.7																
7244	0.5		0.4																
7246	<.1		0.3																
7247	<.1		1.3																
7248	0.5		0.3																
7249	0.8		2.3																

GWIC ID	Sb (ug/l)	Se (ug/l)	Sn (ug/l)	Sr (ug/l)	Ti (ug/l)	Tl (ug/l)	U (ug/l)	V (ug/l)	Zn (ug/l)	Zr (ug/l)	Ce (ug/l)	Cs (ug/l)	Ga (ug/l)	La (ug/l)	Nb (ug/l)	Nd (ug/l)	Pd (ug/l)	Pr (ug/l)	Rb (ug/l)
194																			
195																			
199																			
723																			
727																			
1055																			
1062																			
1076																			
1080																			
1124																			
1125																			
1223																			
1226																			
1236																			
1237																			
1348																			
1412																			
1413																			
1417																			
1521																			
1525																			
1525	<2	<1		186	<1	<5		<5	12.2	<2									
7019																			
7020																			
7022																			
7023																			
7043				1450	<1.			<1.	<4.	<3.									
7049				2360	15			5	53	<4.									
7050																			
7052				2860	1			<1.	35	<3.									
7222																			
7225																			
7232				5810	3			64	63	<3.									
7234																			
7235																			
7236																			
7242																			
7244																			
7246																			
7247																			
7248																			
7249																			

GWIC ID	Th (ug/l)	W (ug/l)	Procedure Type	Sum Diss. Const. (mg/l)	Total Diss. Solids (mg/l)	SAR	Hardness (mg/l)	Alkalinity	Discharge	Comments
194			DISSOLVED	2083	1735	0.9	1327	562		
195			DISSOLVED	2023	1707	0.9	1299	510		
199			DISSOLVED	2962	2783	0.6	2060	289		
723			DISSOLVED	4479	4319	3.8	2407	268		
727			DISSOLVED	2556	2274	6.7	826	456		
1055			DISSOLVED	3760	3470	3.1	2082	468		
1062			DISSOLVED	3560	3188	5.3	1538	602		
1076			DISSOLVED	2617	2349	2.5	1451	466		
1080			DISSOLVED	795	614	0.5	495	293		SAR ESTIMATED FROM NA+K RATIO
1124			DISSOLVED	4464	4182	3.5	2451	456		
1125			DISSOLVED	3677	3423	3.0	2009	411		
1223			DISSOLVED	2451	2223	9.4	573	367		
1226			DISSOLVED	317	217	0.2	194	162		
1236			DISSOLVED	2668	2410	9.2	673	417		
1237			DISSOLVED	3560	3218	17.0	515	553		
1348			DISSOLVED	2827	2542	4.0	1332	461		
1412			DISSOLVED	1752	1432	18.0	229	518		SAR ESTIMATED FROM NA+K RATIO
1413			DISSOLVED	1104	724	2.4	517	614		SAR ESTIMATED FROM NA+K RATIO
1417			DISSOLVED	635	433	2.1	257	326		SAR ESTIMATED FROM NA+K RATIO
1521			DISSOLVED	691	464	3.1	254	367		SAR ESTIMATED FROM NA+K RATIO
1525			DISSOLVED	716	458	16.7	43	417		SAR ESTIMATED FROM NA+K RATIO
1525			DISSOLVED	966	704	17.6	38	423		
7019			DISSOLVED	1631	1304	2.1	812	528		
7020			DISSOLVED	1178	1000	2.1	580	337		
7022			DISSOLVED	1927	1738	2.5	1020	337		
7023			DISSOLVED	571	473	0.8	293	158		
7043			DISSOLVED	914	667	1.3	460	399		
7049			DISSOLVED	1605	1329	1.5	866	446		
7050			DISSOLVED	2206	1822	5.0	1001	620		SAR ESTIMATED FROM NA+K RATIO
7052			DISSOLVED	2360	1973	6.1	751	625		
7222			DISSOLVED	341	248	1.0	150	150		
7225			DISSOLVED	463	375	2.1	206	162		SAR ESTIMATED FROM NA+K RATIO
7232			DISSOLVED	2128	1791	3.7	871	545		
7234			DISSOLVED	356	235	0.3	184	196		
7235			DISSOLVED	1068	813	4.4	306	413		
7236			DISSOLVED	944	684	1.6	453	420		
7242			DISSOLVED	2183	1720	6.6	608	749		
7244			DISSOLVED	1909	1312	23.8	86	1005		
7246			DISSOLVED	1331	1011	1.7	690	517		
7247			DISSOLVED	1790	1362	19.7	112	748		
7248			DISSOLVED	596	431	2.0	236	278		
7249			DISSOLVED	523	372	1.2	237	258		

GWIC ID	Site Name	Site Type	Potential Existing Impacts	Latitude	Longitude	Geomethod	Datum	Twn	Rng	Sec	QSec	County
7250	* HANSON D. * 5.2 M NW HOME CREEK SCHOOL	SPRING	N/A	45.620500	-106.074100	MAP	NAD27	02S	46E	32	ABCC	POWDER RIVER
7251	HANSON D. * 4.5 M NW HOME CREEK SCHOOL	SPRING	N/A	45.613000	-106.061900	MAP	NAD27	02S	46E	33	CCBA	POWDER RIVER
7253	USDA FOREST SERVICE - HOLIDAY SPRING	SPRING	N/A	45.639300	-105.974200	NAV-GPS	NAD27	02S	47E	19	CDDB	POWDER RIVER
7253	USDA FOREST SERVICE - HOLIDAY SPRING	SPRING	N/A	45.639300	-105.974200	NAV-GPS	NAD27	02S	47E	19	CDDB	POWDER RIVER
7253	USDA FOREST SERVICE - HOLIDAY SPRING	SPRING	N/A	45.639300	-105.974200	NAV-GPS	NAD27	02S	47E	19	CDDB	POWDER RIVER
7370	TRUSLER * 5 MI NW WILLOW CROSSING	SPRING	N/A	45.591300	-106.243600	MAP	NAD27	03S	44E	12	BDDA	ROSEBUD
7374	GASKILL R. * 9 M E ASHLAND MT *	SPRING	N/A	45.607700	-106.115000	MAP	NAD27	03S	45E	1	ABDD	POWDER RIVER
7379	GREEN SPRING * 6 MI SOUTH WILLOW CROSSING	SPRING	N/A	45.608800	-106.212200	MAP	NAD27	03S	45E	6	AAAD	POWDER RIVER
7384	*GASKILL R. * 9 M NE ASHLAND MONTANA	SPRING	POSSIBLE OPPORTUNISTIC IRRIGATION	45.588600	-106.122500	MAP	NAD27	03S	45E	12	BDCD	POWDER RIVER
7405	USDA FOREST SERVICE - PASS SPRING	SPRING	N/A	45.597200	-106.058100	NAV-GPS	NAD27	03S	46E	4	CDBB	POWDER RIVER
7412	*TRUSSLER INC. * 15.5 MI NE ASHLAND MT. *	SPRING	N/A	45.586900	-105.982700	MAP	NAD27	03S	46E	12	ADDC	POWDER RIVER
7414	*HANIC A. * 11.5 M E ASHLAND MT *	SPRING	N/A	45.571300	-106.010200	MAP	NAD27	03S	46E	14	DBBD	POWDER RIVER
7418	USDA FOREST SERVICE - COAL BANK SPRING	SPRING	N/A	45.574000	-106.095900	NAV-GPS	NAD27	03S	46E	18	BDAD	POWDER RIVER
7418	USDA FOREST SERVICE - COAL BANK SPRING	SPRING	N/A	45.574000	-106.095900	NAV-GPS	NAD27	03S	46E	18	BDAD	POWDER RIVER
7422	USDA FOREST SERVICE - STAFFORD SPRING	SPRING	N/A	45.521600	-106.025000	NAV-GPS	NAD27	03S	46E	34	DDDC	POWDER RIVER
7432	AYE EARL * 3.7 MI N HAYSTACK BUTTE	SPRING	N/A	45.562700	-105.692700	MAP	NAD27	03S	49E	21	BCCB	POWDER RIVER
7435	ALDERMAN C. * 2.7 MI NE HAYSTACK BUTTE	SPRING	N/A	45.536600	-105.661900	MAP	NAD27	03S	49E	34	ABCC	POWDER RIVER
7563	POWER A.J. * 7.4 MI S ASHLAND MT	SPRING	N/A	45.498600	-106.328600	UNKNOWN	NAD27	04S	44E	8	CD	ROSEBUD
7565	USDA FOREST SERVICE - PASS SPRING	SPRING	N/A	45.482700	-106.243300	NAV-GPS	NAD27	04S	44E	24	ABBB	ROSEBUD
7598	USDA FOREST SERVICE - GENE CREEK SPRING	SPRING	N/A	45.457800	-106.217200	NAV-GPS	NAD27	04S	45E	30	DDBB	POWDER RIVER
7606	USDA FOREST SERVICE - MINERAL YAGER SPRING	SPRING	N/A	45.455800	-106.054900	NAV-GPS	NAD27	04S	46E	28	DAAB	POWDER RIVER
7606	USDA FOREST SERVICE - MINERAL YAGER SPRING	SPRING	N/A	45.455800	-106.054900	NAV-GPS	NAD27	04S	46E	28	DAAB	POWDER RIVER
7607	USDA FOREST SERVICE - COAL CREEK SPRING	SPRING	N/A	45.455000	-106.091900	NAV-GPS	NAD27	04S	46E	29	CBBD	POWDER RIVER
7611	USFS * CUSTER NF * NEWCOMER SPRING	SPRING	N/A	45.446300	-106.038000	MAP	NAD27	04S	46E	34	ABDB	POWDER RIVER
7615	SPRING * 4 MI N SONNETTE MT.	SPRING	N/A	45.458800	-105.768300	MAP	NAD27	04S	48E	26	BDBD	POWDER RIVER
7626	SPRING * 7 MI E SONNETTE MT.	SPRING	N/A	45.436100	-105.719700	MAP	NAD27	04S	49E	31	DCDA	POWDER RIVER
7728	N CHEYENNE INDIAN RESERV* 15 MI NW BIRNEY*	SPRING	N/A	45.418800	-106.657200	MAP	NAD27	05S	41E	10	ACBC	ROSEBUD
7729	*BREWSTER BURTON * 12 MI W BIRNEY DAY SCHO	SPRING	N/A	45.406900	-106.728000	MAP	NAD27	05S	41E	18	BBCD	ROSEBUD
7730	*BREWSTER B. * 18 MI SW LAME DEER	SPRING	N/A	45.387500	-106.678300	MAP	NAD27	05S	41E	21	CAAA	ROSEBUD
7731	BREWSTER B. * 10 MI SW BIRNEY DAY SCHOOL	SPRING	N/A	45.395000	-106.638800	MAP	NAD27	05S	41E	23	BAAB	ROSEBUD
7732	* BREWSTER B. * 19 M S LAME DEER *	SPRING	N/A	45.395000	-106.638800	MAP	NAD27	05S	41E	23	BAAC	ROSEBUD
7733	MORELAND RANCH * 20 MI S LAME DEER MT.	SPRING	N/A	45.379100	-106.633300	MAP	NAD27	05S	41E	26	ABAC	ROSEBUD
7734	*MORELAND RANCH* 2 MI S BUSBY MT*	SPRING	N/A	45.377200	-106.677700	MAP	NAD27	05S	41E	28	ABCC	ROSEBUD
7735	*MORELAND RANCH* 22MI SE BUSBY MT*	SPRING	N/A	45.366600	-106.668800	MAP	NAD27	05S	41E	28	DDDC	ROSEBUD
7736	EBERLING B. * 22 MI SW BUSBY MT.	SPRING	N/A	45.366100	-106.708800	MAP	NAD27	05S	41E	31	AAAA	ROSEBUD
7738	*EBERLING B * 22 M SW BUSBY	SPRING	N/A	45.357700	-106.728800	MAP	NAD27	05S	41E	31	CBBC	ROSEBUD
7739	EBERLING B. * 22.5 MI SW BUSBY MT.	SPRING	N/A	45.352700	-106.709100	MAP	NAD27	05S	41E	31	DDDA	ROSEBUD
7740	* EBERLING B. * 22.5 M S BUSBY *	SPRING	N/A	45.353800	-106.702500	MAP	NAD27	05S	41E	32	CDBC	ROSEBUD
7741	* BREWSTER B. * 24.5 M SE BUSBY MT *	SPRING	N/A	45.355800	-106.646300	MAP	NAD27	05S	41E	35	CBCC	ROSEBUD
7742	* MORELAND J. * 7.5 M NW BIRNEY *	SPRING	N/A	45.358800	-106.624100	MAP	NAD27	05S	41E	36	CBBA	ROSEBUD
7746	MORELAND RANCH * 10 MI SW BIRNEY MT.	SPRING	N/A	45.387700	-106.551300	MAP	NAD27	05S	42E	21	DBAB	ROSEBUD
7749	*MORELAND J. * 6 M NW BIRNEY MT *	SPRING	N/A	45.370500	-106.604700	MAP	NAD27	05S	42E	30	CBCB	ROSEBUD
7750	EBERLING B. * 6 MI NW BIRNEY MT.	SPRING	N/A	45.352700	-106.604100	MAP	NAD27	05S	42E	31	CCCD	ROSEBUD

GWIC ID	SampleID	Agency	Sample Date	Water Temp	Fld pH	Fld SC (uS)	Lab	Lab pH	Lab SC (uS)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Fe (mg/l)	Mn (mg/l)	SiO2 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	SO4 (mg/l)	Cl (mg/l)
7250	1974Q0869	USGS	8/8/74 13:40	12		2390	MBMG	7.98	2386	76	82	403	10.5	<.01	<.01	16.3	805	0	680	6
7251	1974Q0875	USGS	8/8/74 15:50	15		1700	MBMG	8.64	1724	13.2	6.8	425	5.4	<.01	<.01	9.2	879	29	193	7.9
7253	1974Q1063	USGS	10/24/74 10:00	9		720	MBMG	8.78	640	39	58	17.1	7.6	<.01	<.01	21.4	367	22	29	3
7253	1976Q0267	USGS	4/20/76 9:30	6	7.65	670	MBMG	7.84	683	44	55	17.5	7.1	<.01	<.01	21.2	435	0	27	2.9
7253	2004Q0224	MBMG	10/21/03 15:30	11.1	7.21	650	MBMG	7.81	713	45.6	55.2	17.3	8.1	0.022	<0.001	20.9	401	0	24.2	1.9
7370	1980Q0891	USGS	6/19/80 17:15	8	7.8	505	MBMG	7.97	506	36	28.3	22.2	8.6	0.01	<.001	17.3	185	0	105	3.6
7374	1974Q0865	USGS	8/7/74 13:30	15		2300	MBMG	8.14	2420	84	136	328	10.6	<.01	<.01	15.9	709	0	850	9.2
7379	1980Q0066	USGS	4/11/80 10:00	6.5	7.2	2450	MBMG	8.32	2096	95.2	117	248	8.5	0.26	0.045	12.4	501	0	809	6.7
7384	1974Q0864	USGS	8/7/74 12:15	16		1450	MBMG	8.23	1448	50	81	170	9.3	<.01	<.01	21	508	0	385	6.7
7405	1974Q0866	USGS	8/8/74 10:05	14.5		5000	MBMG	8.29	5402	50	53	1335	12.1	<.01	<.01	10	1522	0	1969	11.3
7412	1974Q0093	USGS	12/19/73 16:00	9		1990	MBMG	8	1718	62	137	145	9.7	<.01	<.01	17.3	672	0	496	5
7414	1974Q0876	USGS	8/29/74 11:10	12.5		3000	MBMG	8.2	2870	11.2	10.3	740	7.7	7.58	0.04	56.5	1332	0	334	18.5
7418	1974Q0151	USGS	1/18/74 10:30	60		6000	MBMG	8.1	4507	103	59	1000	10.4	<.01	<.01	12.4	1117	0	1714	10.7
7418	2004Q0227	MBMG	10/21/03 17:15	16	6.93	5615	MBMG	7.91	5320	102	56.8	1253	11.3	0.631	0.187	10.2	1129	0	2385	12
7422	1974Q0877	USGS	8/22/74 14:00	16.5		3900	MBMG	7.78	3956	113	113	755	10.8	<.01	0.04	14.1	1074	0	1412	12.5
7432	1976Q1976	USGS	6/8/77 14:15	20.1	7.43	2700	MBMG	7.63	2181	113	78	325	7.7	0.01	0.09	12.6	715	0	682	8
7435	1976Q1978	USGS	6/8/77 15:50	13.7	6.73	2150	MBMG	7.08	1752	69	60	265	6.6	0.54	0.15	9	663	0	434	8
7563	1916Q0003	USGS	1916				USGS			38	42					24	183	0	238	8.5
7565	1974Q0130	USGS	1/14/74 14:40	3		5100	MBMG	7.65	5040	238	424	670	18.3	<.01	<.01	14.8	1166	0	2712	9.9
7598	1974Q0129	USGS	1/14/74 11:30	3		1900	MBMG	8.01	1791	113	161	94.7	6.3	<.01	<.01	12.3	620	0	648	5.1
7606	1974Q0138	USGS	1/16/74 9:30	7.5		5500	MBMG	7.71	5719	356	514	541	20.8	0.03	0.24	18.6	922	0	3334	8.4
7606	2004Q0230	MBMG	10/21/03 10:15	12.5	6.97	5400	MBMG	7.98	5060	318	507	466	20.1	0.142	0.145	16.4	893	0	3071	7.28
7607	1974Q0128	USGS	1/16/74 10:30	8		5750	MBMG	7.93	5596	266	416	738	20	<.01	<.01	17.7	883	0	3094	10.6
7611	1974Q0136	USGS	1/16/74 11:00	5.5		5500	MBMG	7.67	5290	196	371	823	23.6	<.01	<.01	11.8	998	0	2826	10.1
7615	1975Q1746	USGS	11/7/75 11:00	10		1850	MBMG	7.54	1775	166	141	80	4.8	<.01	0.01	12.9	741	0	550	6.15
7626	1975Q1745	USGS	11/7/75 10:00	10		5500	MBMG	7.54	5184	396	441	472	14.5	0.03	0.35	13	581	0	3271	9.55
7728	1974Q0270	USGS	3/2/74 0:00	4		1300	MBMG	7.68	1144	55	82	81.4	10	<.01	<.01	12.3	438	0	305	4.7
7729	1974Q0260	USGS	3/1/74 15:00	11		1900	MBMG	7.69	1569	95	101	126	5	<.01	<.01	10.1	537	0	478	6.2
7730	1974Q0264	USGS	3/4/74 0:00	5.5		1350	MBMG	7.53	1148	18.9	15	245	5.3	<.01	<.01	7.4	681	0	68	6.4
7731	1974Q0296	USGS	3/3/74 0:00	4		2400	MBMG	8.12	1560	48	92	189	8.2	0.05	<.01	9.9	520	0	477	9.1
7732	1974Q0295	USGS	3/3/74 0:00	3		2400	MBMG	8.74	2294	40	117	363	11.8	0.02	<.01	9.9	537	30	839	13.4
7733	1974Q0266	USGS	3/4/74 0:00	5.5		600	MBMG	7.71	510	38	28	25.9	5.9	<.01	<.01	17.5	291	0	29	3.7
7734	1974Q0267	USGS	3/4/74 0:00	3.5		700	MBMG	7.69	598	50	39	19.3	5.1	4.01	4.01	11.6	371	0	23	3.2
7735	1974Q0279	USGS	3/5/74 16:00	7		940	MBMG	7.39	925	3	44	98.8	8.1	<.01	<.01	10.5	527	0	80	4.3
7736	1974Q0280	USGS	3/4/74 15:00	1.5		4000	MBMG	7.73	4540	172	323	591	8.6	0.4	<.01	6.7	669	0	2446	11.5
7738	1974Q0288	USGS	3/4/74 18:50	3.4		1390	MBMG	7.89	1508	83	101	133	6.6	0.01	0.01	13.9	767	0	286	3.2
7739	1974Q0282	USGS	3/3/74 14:15	5.6		3000	MBMG	7.71	3330	153	149	449	25.4	<.01	<.01	12.7	293	0	1672	6.8
7740	1974Q0283	USGS	3/3/74 16:45	4.5		3500	MBMG	7.6	3790	200	170	524	30.6	<.01	<.01	14.6	357	0	200	6.7
7741	1974Q0284	USGS	3/5/74 16:45	7.5		435	MBMG	8.04	440	26	26	26.7	6.4	<.01	<.01	15.8	249	0	29	4.1
7742	1974Q0285	USGS	3/4/74 12:40	7.4		520	MBMG	8.06	544	36	39	20.7	6.2	0.6	<.01	18.5	345	0	17.8	3.3
7746	1974Q0263	USGS	3/2/74 0:00	1.5		275	MBMG	7	258	16.1	4.8	26.5	10.6	1.19	0.09	17.9	122	0	20	4.4
7749	1974Q0286	USGS	3/5/74 14:50	5.4		1360	MBMG	7.75	1433	110	95	86.5	7.5	<.01	<.01	12.9	870	0	146	7.5
7750	1974Q0265	USGS	3/4/74 0:00	7		460	MBMG	7.9	384	28	22	17.1	4.1	<.01	<.01	18	226	0	14.7	2.8

GWIC ID	NO3 N (mg/l)	NO2 N (mg/l)	F (mg/l)	OPO4 P (mg/l)	Ag (ug/l)	Al (ug/l)	As (ug/l)	B (ug/l)	Ba (ug/l)	Be (ug/l)	Br (ug/l)	Cd (ug/l)	Co (ug/l)	Cr (ug/l)	Cu (ug/l)	Li (ug/l)	Mo (ug/l)	Ni (ug/l)	Pb (ug/l)
7250	0.6		0.6																
7251	1.2		1																
7253	0.8		1.5																
7253	0.621		1.5			50	2					<10.			<10.				<50.
7253	1.47 P		1.76	<0.05	<1	<30	3.91	169	187	<2	<50	<1	<2	<2	<2	64.7	<10	2.9	<2
7370	0.8		2.5		<2.	<2.		<24.	90			7		8	96	20	21	<2.	<40.
7374	<.1		0.6																
7379	0.01		0.5		<2.	<30.		320	50			<2.		4	7	120	20	<10.	<40.
7384	1.1		0.4																
7405	2.3		0.4																
7412	<.1		0.5																
7414	1.5		1.1																
7418	1		0.5																
7418	<0.5 P		<0.5	<2.5	<10	<300	<10	430	<20	<20	<500	<10	<20	<20	<20	300	<100	<20	<20
7422	<.1		1.3																
7432	0.441		0.4													180			
7435	0.255		0.2													80			
7563	0.16																		
7565	1.7		0.2																
7598	<.1		0.4																
7606	<.1		0.3																
7606	4.03 P		<0.5	<0.5	<10	<300	<10	1436	<20	<20	<500	<10	<20	<20	<20	465	<100	<20	<20
7607	0.8		0.5																
7611	7.7		0.2																
7615	0.16		0.5																
7626	0.452		0.5																
7728	<.1		0.5																
7729	<.1		0.4																
7730	0.9		1.4																
7731	0.31		1.1																
7732	0.5		1.5																
7733	0.4		0.8																
7734	0.1		0.7																
7735	0.4		1.4																
7736	0.3		0.9																
7738	<.1		0.6																
7739	15.1		1																
7740	9.1		1.3																
7741	1.1		1.3																
7742	0.5		1.3																
7746	<.1		0.1																
7749	0.3		1																
7750	<.1		0.9																

GWIC ID	Sb (ug/l)	Se (ug/l)	Sn (ug/l)	Sr (ug/l)	Ti (ug/l)	Tl (ug/l)	U (ug/l)	V (ug/l)	Zn (ug/l)	Zr (ug/l)	Ce (ug/l)	Cs (ug/l)	Ga (ug/l)	La (ug/l)	Nb (ug/l)	Nd (ug/l)	Pd (ug/l)	Pr (ug/l)	Rb (ug/l)
7250																			
7251																			
7253																			
7253									20										
7253	<2	1.78		1426	<1	<5	2.63	20.2	9.78	<2									
7370		4.1		901	10			46	<3.	4									
7374																			
7379		0.2		2510	12			4	20	<4.									
7384																			
7405																			
7412																			
7414																			
7418																			
7418	<20	<10		5550	<10	<50	<5	<50	<20	<20									
7422																			
7432																			
7435																			
7563																			
7565																			
7598																			
7606																			
7606	<20	<10		5138	<10	<50	62.4	<50	<20	<20									
7607																			
7611																			
7615																			
7626																			
7728																			
7729																			
7730																			
7731																			
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7740																			
7741																			
7742																			
7746																			
7749																			
7750																			

GWIC ID	Th (ug/l)	W (ug/l)	Procedure Type	Sum Diss. Const. (mg/l)	Total Diss. Solids (mg/l)	SAR	Hardness (mg/l)	Alkalinity	Discharge	Comments
7250			DISSOLVED	2081	1673	7.6	527	660		
7251			DISSOLVED	1570	1124	23.7	61	769		
7253			DISSOLVED	567	381	0.4	336	338		
7253			DISSOLVED	613	392	0.4	336	357		
7253			DISSOLVED	576	372	0.4	341	329		
7370			DISSOLVED	410	317	0.7	206	152		
7374			DISSOLVED	2144	1784	5.1	770	582		
7379			DISSOLVED	1799	1545	4.0	719	411		
7384			DISSOLVED	1232	974	3.5	458	417		
7405			DISSOLVED	4964	4192	31.4	343	1248		
7412			DISSOLVED	1545	1204	2.4	719	551		
7414			DISSOLVED	2523	1847	38.4	70	1092		
7418			DISSOLVED	4028	3461	19.5	500	916		
7418			DISSOLVED	4960	4387	24.7	488	926		
7422			DISSOLVED	3506	2961	12.0	747	881		
7432			DISSOLVED	1942	1579	5.8	603	586		
7435			DISSOLVED	1516	1180	5.6	419	544		
7563			DISSOLVED	534	441	n/a	268	150		NA AND K NOT REPORTED
7565			DISSOLVED	5255	4663	6.0	2339	956		
7598			DISSOLVED	1660	1345	1.3	945	509		
7606			DISSOLVED	5715	5247	4.3	3005	756		
7606			DISSOLVED	5298	4845	3.8	2881	732		
7607			DISSOLVED	5448	5000	6.6	2376	724		
7611			DISSOLVED	5268	4762	8.0	2016	819		
7615			DISSOLVED	1703	1327	1.1	994	608		
7626			DISSOLVED	5200	4905	3.9	2804	477		
7728			DISSOLVED	989	767	1.6	475	359		
7729			DISSOLVED	1358	1086	2.1	653	440		
7730			DISSOLVED	1048	702	10.2	109	559		
7731			DISSOLVED	1354	1090	3.7	499	426		
7732			DISSOLVED	1964	1692	6.5	581	490		
7733			DISSOLVED	441	293	0.8	210	239		
7734			DISSOLVED	531	343	0.5	285	304		
7735			DISSOLVED	777	510	3.1	189	432		
7736			DISSOLVED	4230	3891	6.1	1759	549		
7738			DISSOLVED	1395	1006	2.3	623	629		
7739			DISSOLVED	2777	2628	6.2	995	240		
7740			DISSOLVED	1514	1333	6.6	1199	293		CATION/ANION BALANCE >5%
7741			DISSOLVED	385	259	0.9	172	204		
7742			DISSOLVED	490	315	0.6	250	283		
7746			DISSOLVED	224	162	1.5	60	100		
7749			DISSOLVED	1338	897	1.5	666	714		
7750			DISSOLVED	334	219	0.6	160	185		

GWIC ID	Site Name	Site Type	Potential Existing Impacts	Latitude	Longitude	Geomethod	Datum	Twn	Rng	Sec	QSec	County
7757	USFS FOREST SERVICE - CHROMO SPRING	SPRING	N/A	45.429400	-106.218100	NAV-GPS	NAD27	05S	45E	6	DABC	POWDER RIVER
7758	BR. SPRING * 20 MI SW SONNETTE MT.	SPRING	N/A	45.417500	-106.205500	MAP	NAD27	05S	45E	8	BDDD	POWDER RIVER
7766	USDA FOREST SERVICE - LITTLE BRIAN SPRING	SPRING	N/A	45.406600	-106.218600	NAV-GPS	NAD27	05S	45E	18	ACAA	POWDER RIVER
7767	USDA FOREST SERVICE - LOWER BRIAN 2 SPRING	SPRING	N/A	45.406600	-106.217700	NAV-GPS	NAD27	05S	45E	18	AACC	POWDER RIVER
7767	USDA FOREST SERVICE - LOWER BRIAN 2 SPRING	SPRING	N/A	45.406600	-106.217700	NAV-GPS	NAD27	05S	45E	18	AACC	POWDER RIVER
7767	USDA FOREST SERVICE - LOWER BRIAN 2 SPRING	SPRING	N/A	45.406600	-106.217700	NAV-GPS	NAD27	05S	45E	18	AACC	POWDER RIVER
7769	USDA FOREST SERVICE - UPPER BRIAN SPRING	SPRING	N/A	45.404500	-106.226000	NAV-GPS	NAD27	05S	45E	18	BDBD	POWDER RIVER
7788	USDA FOREST SERVICE - PAGET 2 SPRING	SPRING	N/A	45.372900	-106.196500	NAV-GPS	NAD27	05S	45E	29	DAAB	POWDER RIVER
7795	USDA FOREST SERVICE - COOMBE SPRING	SPRING	N/A	45.413100	-106.051700	NAV-GPS	NAD27	05S	46E	9	CBCC	POWDER RIVER
7796	USDA FOREST SERVICE - WILEY USE SPRING	SPRING	N/A	45.392700	-106.080900	NAV-GPS	NAD27	05S	46E	20	ABAC	POWDER RIVER
7800	USDA FOREST SERVICE - SMITH SPRING	SPRING	N/A	45.379900	-106.042500	NAV-GPS	NAD27	05S	46E	27	CADA	POWDER RIVER
7861	BREWSTER B. * 14 MI NW BIRNEY MT.	SPRING	N/A	45.345800	-106.673600	MAP	NAD27	06S	41E	2	ACCB	ROSEBUD
7866	EBELING * 7.5 MI W BIRNEY MT.	SPRING	N/A	45.336600	-106.665800	MAP	NAD27	06S	41E	11	AAAA	ROSEBUD
7874	EBELING * 1.9 MI NW 4D RANCH.	SPRING	N/A	45.284100	-106.660200	MAP	NAD27	06S	41E	25	CBDD	ROSEBUD
7880	EBELING * 5.3 MI NW 4D RANCH.	SPRING	N/A	45.291300	-106.740800	MAP	NAD27	06S	41E	29	BACB	ROSEBUD
7909	USDA FOREST SERVICE - COW CREEK 1 SPRING	SPRING	N/A	45.307900	-106.250100	NAV-GPS	NAD27	06S	45E	20	ABBC	ROSEBUD
7909	USDA FOREST SERVICE - COW CREEK 1 SPRING	SPRING	N/A	45.307900	-106.250100	NAV-GPS	NAD27	06S	45E	20	ABBC	ROSEBUD
7996	CANYON CREEK CATTLE CO * 9.4MI W BIRNEY MT	SPRING	N/A	45.264700	-106.670000	MAP	NAD27	07S	41E	2	AACC	ROSEBUD
8008	HOOVER DONALD * HOOVER NO. 02	SPRING	N/A	45.195800	-106.279400	MAP	NAD27	07S	44E	25	DDDA	ROSEBUD
8009	SNIDER WILLIAM * 7.5 MI NW QUIETUS MT	SPRING	N/A	45.190800	-106.355800	UNKNOWN	NAD27	07S	44E	33	B	ROSEBUD
8010	WILCOX SPRING * ON MARC STEVENS LAND	SPRING	N/A	45.191900	-106.359100	MAP	NAD27	07S	44E	33	BBCA	ROSEBUD
8013	USDA FOREST SERVICE - HANDLEY SPRING	SPRING	N/A	45.185200	-106.265800	NAV-GPS	NAD27	07S	45E	31	DBCA	POWDER RIVER
8183	* WHITHAM J. * 3 M N BEAR CREEK SCHOOL	SPRING	N/A	45.173600	-106.193800	MAP	NAD27	08S	45E	3	BAAB	POWDER RIVER
8184	WHITHAM J * 2.5 M N BEAR CREEK SCHOOL	SPRING	N/A	45.165800	-106.182700	MAP	NAD27	08S	45E	3	DAAC	POWDER RIVER
8186	* WHITHAM J. * 4.5 M NW BEAR CREEK SCHOOL	SPRING	N/A	45.167700	-106.210200	MAP	NAD27	08S	45E	4	ACCD	POWDER RIVER
8188	CONLEY C. * 4.5 MI NW BEAR CREEK SCHOOL.	SPRING	N/A	45.151600	-106.228600	MAP	NAD27	08S	45E	8	DBAA	POWDER RIVER
8189	MORRIS A. * 3 MI NE BEAR CREEK SCHOOL	SPRING	N/A	45.140800	-106.157200	MAP	NAD27	08S	45E	13	BCAA	POWDER RIVER
8190	CONLEY C. * 2 MI NE BEAR CREEK SCHOOL.	SPRING	N/A	45.137500	-106.191600	MAP	NAD27	08S	45E	15	DBBB	POWDER RIVER
8195	FLETCHER M. * 8 MI SW OTTER MT.	SPRING	N/A	45.120200	-106.151900	MAP	NAD27	08S	45E	24	CADD	POWDER RIVER
8196	FLETCHER SPRING	SPRING	N/A	45.120200	-106.151900	MAP	NAD27	08S	45E	24	CADD	POWDER RIVER
8205	KRAFT CHARLES * 11.7 MI SE FORT HOWES.	SPRING	N/A	45.172700	-106.044400	MAP	NAD27	08S	46E	2	AABC	POWDER RIVER
8222	MORRIS * 2.5 MI NW SAYLE HALL MT.	SPRING	N/A	45.123000	-106.096100	MAP	NAD27	08S	46E	21	CBAA	POWDER RIVER
8223	YONKEE FRED * 1 MI N SAYLE HALL MT.	SPRING	N/A	45.123600	-106.049100	MAP	NAD27	08S	46E	23	ACCC	POWDER RIVER
8224	FRANKLIN * .5 MI N SAYLE HALL.	SPRING	N/A	45.119100	-106.055800	MAP	NAD27	08S	46E	23	CCAA	POWDER RIVER
8230	BALES KEITH* SPRING IN BILLUP CR VALLEY	SPRING	N/A	45.103000	-106.140500	MAP	NAD27	08S	46E	30	CCCB	POWDER RIVER
8235	DECKER AUGUST * NO. 02	SPRING	N/A	45.091600	-106.069100	MAP	NAD27	08S	46E	34	DBCC	POWDER RIVER
8236	FTY RANCH * 5 MI SW SAYLE MT.	SPRING	N/A	45.151900	-106.000800	MAP	NAD27	08S	47E	7	BAAB	POWDER RIVER
8816	MORGAN L C*8 MI E QUIETUS POST OFFICE*	SPRING	N/A	45.081900	-106.097200	MAP	NAD27	09S	46E	4	BCAC	POWDER RIVER
8817	AXEL ESTATE * 2.5 MI SW SAYLE HALL.	SPRING	N/A	45.074100	-106.082200	MAP	NAD27	09S	46E	4	DDDB	POWDER RIVER
8856	BLISS DAVE * 5 MI S SAYLE HALL.	SPRING	N/A	45.040200	-106.048300	MAP	NAD27	09S	46E	23	ABCC	POWDER RIVER
8857	BLISS DAVID * NO. 02	SPRING	N/A	45.041100	-106.053600	MAP	NAD27	09S	46E	23	BACC	POWDER RIVER
8858	HOPE ROBERT* SMALL POOL NR DISCHARGE SEEP	SPRING	N/A	45.023000	-106.056100	MAP	NAD27	09S	46E	26	BCDA	POWDER RIVER
8861	BLISS DAVE * 7 MI SE SAYLE HALL.	SPRING	N/A	45.033300	-106.008300	MAP	NAD27	09S	47E	19	DBCC	POWDER RIVER
171909	KLUVER KIRBY	SPRING	COAL STRIP MINE	45.915800	-106.825000	UNKNOWN	NAD27	02N	39E	24	BADD	ROSEBUD

GWIC ID	SampleID	Agency	Sample Date	Water Temp	Fld pH	Fld SC (uS)	Lab	Lab pH	Lab SC (uS)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Fe (mg/l)	Mn (mg/l)	SiO2 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	SO4 (mg/l)	Cl (mg/l)
7757	1974Q0139	USGS	1/13/74 18:00	4.5		1605	MBMG	7.77	1573	133	141	37.8	4.9	0.04	<.01	18.6	693	0	427	5.9
7758	1974Q0126	USGS	1/13/74 10:31	8		1820	MBMG	7.72	1792	51	66	330	5.5	<.01	<.01	11.9	800	0	438	5.7
7766	1980Q2625	USGS	10/28/80 9:10	12	7.1	2050	MBMG	7.59	2091	129	197	82.9	7.8	0.022	0.028	18.5	664	0	750	10
7767	1974Q0142	USGS	1/12/73 12:30	1		2750	MBMG	8.07	2884	160	351	123	10.3	0.02	<.01	17.1	734	0	1474	10.1
7767	1980Q2627	USGS	10/28/80 9:10	7.5	7.05	3220	MBMG	7.56	3180	156	371	119	10.3	0.032	0.038	17.2	662	0	1580	13.6
7767	2004Q0223	MBMG	10/20/03 0:00	15.1	7.25	959	MBMG	7.35	2420	168	270	90.8	8.2	0.8	0.185	16.4	709	0	1201	8.54
7769	1980Q2626	USGS	10/28/80 9:30	5	7.3	3400	MBMG	7.55	3370	200	375	142	12.9	0.015	0.004	18.6	811	0	1640	16.5
7788	1974Q0149	USGS	1/16/74 17:15	6		2900	MBMG	8.04	2900	149	253	254	8.1	<.01	<.01	14.4	598	0	1462	11.1
7795	1974Q0127	USGS	1/16/74 13:15	4.5		2320	MBMG	7.75	2182	96	179	224	11.5	<.01	<.01	16.9	859	0	730	6.6
7796	1974Q0132	USGS	1/18/74 15:00	3.5		3000	MBMG	7.81	2854	184	205	318	8.8	0.11	<.01	14.8	864	0	1270	6.5
7800	1974Q0148	USGS	1/16/74 12:45	2			MBMG	7.51	4295	230	493	317.5	16.9	<.01	0.16	16.6	993	0	2382	11.8
7861	1974Q0268	USGS	3/3/74 18:15	3.8		1550	MBMG	7.87	1692	47	100	212	9.9	<.01	<.01	13.2	522	0	533	7.8
7866	1976Q1414	USGS	11/10/76 10:15	11		1780	MBMG	8.35	2158	26.8	90	356	12.3	0.01	<.01	19.8	793	8.2	487	12.5
7874	1976Q1416	USGS	11/9/76 10:00	8		750	MBMG	7.73	816	59	50	44.4	6.4	0.02	<.01	15	373	0	127	6.4
7880	1976Q1419	USGS	11/11/76 14:15	3		3750	MBMG	7.66	4694	288	394	442	21.7	0.13	0.02	12.3	1167	0	2229	19.5
7909	1976Q0270	USGS	4/21/76 11:30	7.5	7.8	400	MBMG	8.14	422	45.4	19	18	3.8	<.01	<.01	23	200	0	55.3	2.6
7909	2004Q0226	MBMG	10/21/03 14:00				MBMG	7.98	582	56.4	23.9	17.6	4	0.009	<0.001	25	225	0	77.1	2.09
7996	1976Q1420	USGS	11/11/76 15:20	7.5		1335	MBMG	8.16	1716	48.5	100	204	15.4	0.15	<.01	18.1	251	0	717	11.5
8008	1984Q0569	USGS	6/30/84 16:30	12	7.4	965	MBMG	7.68	918	52.4	30.3	123	7.4	0.012	0.011	16.5	501	0	113	3.3
8009	1923Q0012	USGS	9/20/23 0:00				USGS			60	56	300 K		0.2		30	625	0	481	12
8010	1980Q2556	USGS	10/7/80 14:55	11	7.9	1600	MBMG	8.03	1803	73.1	63.6	246	10	<.002	0.001	27	522	0	529	6.7
8013	1980Q1269	USGS	6/29/80 13:30	14.5	7.1	600	MBMG	7.82	621	50.7	26.3	43.9	7	0.041	0.028	26.8	279	0	92.3	5
8183	1974Q0247	USGS	2/27/74 17:00	1		2400	MBMG	7.76	2539	112	180	259	12.4	0.01	<.01	18.8	691	0	1002	16.2
8184	1974Q0245	USGS	2/27/74 18:30	6		2550	MBMG	7.07	2774	185	179	257	9.1	0.03	0.29	15	786	0	1093	18.3
8186	1974Q0244	USGS	2/27/74 17:40	2.5		2400	MBMG	7.49	3696	192	268	377	19.2	0.03	0.04	18	637	0	1834	22
8188	1974Q0167	USGS	2/2/74 17:50	6		1190	MBMG	7.88	1187	50	40	76	10.2	0.01	<.01	21.2	366	0	146	9.3
8189	1974Q0234	USGS	2/2/74 13:50	4			MBMG	7.7	949	100	41	54.5	7.9	0.01	<.01	12.4	285	0	300	2.3
8190	1974Q0166	USGS	2/2/74 10:00	0.5		385	MBMG	6.99	373	23	13.5	22.5	14.3	<.13	0.01	9.8	80	0	103	5
8195	1974Q0236	USGS	2/3/74 14:50	3.5		4500	MBMG	7.46	5296	258	150	995	12.7	0.07	0.15	11.1	766	0	2684	13.9
8196	1984Q0567	USGS	6/28/84 14:00	20	6.9	5900	MBMG	7.36	5223	249	144	990	14.4	2.88	0.32	11.5	837	0	2550	12.5
8205	1974Q0180	USGS	2/6/74 15:30	3		1800	MBMG	7.86	1658	73	116	162	10.1	0.03	0.12	12.5	642	0	474	9.3
8222	1974Q0238	USGS	2/4/74 10:40	6.5		4700	MBMG	7.73	4472	299	227	633	9	0.05	0.01	17.5	549	0	2464	13.7
8223	1974Q0181	USGS	2/6/74 17:45	0.5		2000	MBMG	7.73	1726	202	82	93.8	14	0.04	<.01	12.4	334	0	770	10.8
8224	1974Q0184	USGS	2/4/74 16:00	2.5		4000	MBMG	7.89	3688	212	232	453	10.2	0.02	0.02	15.3	678	0	1812	11.5
8230	1984Q0690	USGS	8/2/84 12:00	9	7.55	3220	MBMG	7.66	3277	284	283	237	7.3	<.002	0.035	15.6	566	0	1820	13.8
8235	1984Q0573	USGS	6/29/84 11:00	8.5	6.85	6700	MBMG	7.35	6661	424	444	1010	10.2	5.04	1.9	13.5	669	0	4270	32.7
8236	1974Q0183	USGS	2/6/74 13:25	6		3500	MBMG	7.77	3396	157	183	466	13.9	0.03	0.05	13.3	692	0	1576	9.9
8816	1974Q0175	USGS	1/29/74 13:30	8.5		8000	MBMG	5.3	8400	256	345	1640	13.9	2.77	0.41	16.4	5	0	5456	36
8817	1974Q0186	USGS	2/7/74 10:30	2		2800	MBMG	7.8	2588	112	133	348	12.8	0.03	<.01	18.4	709	0	973	6.2
8856	1974Q0195	USGS	2/3/74 12:20	3		5200	MBMG	7.88	4780	189	172	815	10.1	0.09	0.24	9.4	759	0	2186	12.7
8857	1984Q0571	USGS	6/30/84 11:00	10	7.3	5300	MBMG	7.48	4782	205	191	873	9.9	0.5	0.25	9.4	767	0	2440	12.1
8858	1984Q0581	USGS	6/27/84 16:10	15	7.1	4250	MBMG	7.51	3824	436	393	123	8.9	0.055	0.088	16.8	711	0	2260	49.4
8861	1974Q0197	USGS	2/2/74 13:00	4.5		5500	MBMG	7.55	5335	307	275	803	22.3	0.04	0.42	11	639	0	3062	8.6
171909	2000Q0121	MBMG	8/5/99 12:00				MBMG	7.59	3960	204	405	356	15.4	<.1	<.02	11	617	0	2345	19.1

GWIC ID	NO3 N (mg/l)	NO2 N (mg/l)	F (mg/l)	OPO4 P (mg/l)	Ag (ug/l)	Al (ug/l)	As (ug/l)	B (ug/l)	Ba (ug/l)	Be (ug/l)	Br (ug/l)	Cd (ug/l)	Co (ug/l)	Cr (ug/l)	Cu (ug/l)	Li (ug/l)	Mo (ug/l)	Ni (ug/l)	Pb (ug/l)
7757	<.1		0.4																
7758	0.6		1.1																
7766	0.1		0.82		<2.	40		410				<2.		4	26	89	<20.	<10.	<40.
7767	0.2		0.6																
7767	<.01		0.26		<2.	40		600				4		12	35	110	<20.	20	<40.
7767	<0.5 P		<0.5	<0.5	<1	43.2	<1	377	15.6	<2	<500	<1	<2	<2	<2	125	<10	11.3	<2
7769	0.07		0.31		4	80		730				3		12	46	140	<20.	30	<40.
7788	0.1		0.4																
7795	<.1		0.4																
7796	0.6		0.4																
7800	1.11		0.5																
7861	0.6		1.6																
7866	1.8		2.3													150			
7874	0.6		2.2													90			
7880	1.6		0.5													600			
7909	0.563		1.1			50	8.2					<10.			<10.				<50.
7909	1.23 P		<0.05		<1	<30	11.2	124	102	<2	<50	<1	<2	4.4	<2	50.4	<10	2.59	<2
7996	3.7		1.6													260			
8008	0.43		0.9	<.1							100								
8009	0.86																		
8010	0.25		1.03		<2.	<30.		60				<2.		<2.	3	73	<20.	<10.	<40.
8013	0.23		0.63		<2.	<30.		190	90			4		<2.	<2.	52	13	<10.	<40.
8183	0.3		0.5																
8184	0.5		0.5																
8186	1.4		0.6																
8188	<.1		1.3																
8189	0.023		1																
8190	<.1		0.1																
8195	4.9		0.7																
8196	0.03		0.2	<.1							200								
8205	0.2		0.6																
8222	0.4		0.7																
8223	1.5		0.4																
8224	<.1		0.5																
8230	0.02		0.2	<.1							<100.								
8235	0.04		0.1	0.2							300								
8236	1.8		0.7																
8816	0.203		0.2																
8817	0.2		0.6																
8856	1.1		0.3																
8857	0.03		0.2	0.1							100								
8858	0.81		0.1	<.1							300								
8861	0.2		0.5																
171909	<.5 P		<1.0	<1.0	<5	<150	<5	780	11.5	<10	<1000	<10	<10	<10	<10	<1000	<50	10.7	<10

GWIC ID	Sb (ug/l)	Se (ug/l)	Sn (ug/l)	Sr (ug/l)	Ti (ug/l)	Tl (ug/l)	U (ug/l)	V (ug/l)	Zn (ug/l)	Zr (ug/l)	Ce (ug/l)	Cs (ug/l)	Ga (ug/l)	La (ug/l)	Nb (ug/l)	Nd (ug/l)	Pd (ug/l)	Pr (ug/l)	Rb (ug/l)
7757																			
7758																			
7766				1730	18			11	<4.	<4.									
7767																			
7767				2570	20			15	<4.	<4.									
7767	<2	<1		2696	<1	<5	11.78	<5	4.32	<2									
7769				3440	27			22	<4.	7									
7788																			
7795																			
7796																			
7800																			
7861																			
7866																			
7874																			
7880																			
7909									10										
7909	<2	3.08		1086	<1	<5	3.88	81.6	<2	<2									
7996																			
8008																			
8009																			
8010				1530	7			28	<4.	<4.									
8013		1.5		920	<1.			28	9	<4.									
8183																			
8184																			
8186																			
8188																			
8189																			
8190																			
8195																			
8196																			
8205																			
8222																			
8223																			
8224																			
8230																			
8235																			
8236																			
8816																			
8817																			
8856																			
8857																			
8858																			
8861																			
171909	<10	<5		6540	<200	<25		<25	<10	<100									

GWIC ID	Th (ug/l)	W (ug/l)	Procedure Type	Sum Diss. Const. (mg/l)	Total Diss. Solids (mg/l)	SAR	Hardness (mg/l)	Alkalinity	Discharge	Comments
7757			DISSOLVED	1462	1110	0.5	912	568		
7758			DISSOLVED	1711	1305	7.2	399	656		
7766			DISSOLVED	1861	1524	1.1	1133	545		
7767			DISSOLVED	2880	2508	1.2	1844	602		
7767			DISSOLVED	2929	2593	1.2	1917	543		
7767			DISSOLVED	2473	2113	1.0	1531	582		
7769			DISSOLVED	3217	2806	1.4	2043	665		
7788			DISSOLVED	2749	2446	2.9	1413	490		
7795			DISSOLVED	2124	1688	3.1	976	705		
7796			DISSOLVED	2873	2435	3.8	1303	709		
7800			DISSOLVED	4464	3960	2.7	2603	814		
7861			DISSOLVED	1448	1183	4.0	529	428		
7866			DISSOLVED	1810	1407	7.4	437	664		
7874			DISSOLVED	683	494	1.0	353	306		
7880			DISSOLVED	4577	3985	4.0	2341	957		
7909			DISSOLVED	369	268	0.6	192	164		
7909			DISSOLVED	431	317	0.5	239	185		
7996			DISSOLVED	1372	1244	3.8	533	206		
8008			DISSOLVED	848	593	3.3	256	411		
8009			DISSOLVED	1265	948	6.5	380	513		SAR ESTIMATED FROM NA+K RATIO
8010			DISSOLVED	1479	1214	5.1	444	428		
8013			DISSOLVED	532	390	1.2	235	229		
8183			DISSOLVED	2292	1941	3.5	1021	567		
8184			DISSOLVED	2544	2145	3.2	1199	645		
8186			DISSOLVED	3369	3046	4.1	1583	522		
8188			DISSOLVED	719	533	1.9	289	300		
8189			DISSOLVED	804	659	1.2	418	234		
8190			DISSOLVED	272	231	0.9	113	66		
8195			DISSOLVED	4897	4508	12.2	1262	628		
8196			DISSOLVED	4812	4387	12.4	1214	686		
8205			DISSOLVED	1500	1174	2.7	660	527		
8222			DISSOLVED	4214	3935	6.7	1681	450		
8223			DISSOLVED	1521	1352	1.4	842	274		
8224			DISSOLVED	3425	3081	5.1	1484	556		
8230			DISSOLVED	3227	2940	2.4	1874	464		
8235			DISSOLVED	6881	6542	8.2	2886	549		
8236			DISSOLVED	3114	2763	6.0	1145	568		
8816			DISSOLVED	7771	7768	15.7	2059	4		
8817			DISSOLVED	2313	1953	5.3	827	582		
8856			DISSOLVED	4154	3769	10.3	1180	623		
8857			DISSOLVED	4508	4119	10.5	1298	629		
8858			DISSOLVED	3999	3638	1.0	2706	583		
8861			DISSOLVED	5129	4805	8.0	1898	524		
171909			DISSOLVED	3972	3659	3.3	2176	506		

GWIC ID	Site Name	Site Type	Potential Existing Impacts	Latitude	Longitude	Geomethod	Datum	Twn	Rng	Sec	QSec	County
191135	LITTLE BEAR CR SPR 066	SPRING	N/A	45.181220	-106.295531	TRS-SEC	NAD83	07S	44E	36	CCDA	ROSEBUD
197452	USDA FOREST SERVICE- ALKALI SPRING	SPRING	N/A	45.191400	-106.150100	NAV-GPS	NAD27	07S	46E	31	BACD	POWDER RIVER
197452	USDA FOREST SERVICE- ALKALI SPRING	SPRING	N/A	45.191400	-106.150100	NAV-GPS	NAD27	07S	46E	31	BACD	POWDER RIVER
197452	USDA FOREST SERVICE- ALKALI SPRING	SPRING	N/A	45.191400	-106.150100	NAV-GPS	NAD27	07S	46E	31	BACD	POWDER RIVER
197452	USDA FOREST SERVICE- ALKALI SPRING	SPRING	N/A	45.191400	-106.150100	NAV-GPS	NAD27	07S	46E	31	BACD	POWDER RIVER
197607	USDA FOREST SERVICE- UPPER FIFTEEN MILE SPRING	SPRING	N/A	45.392000	-105.937200	NAV-GPS	NAD27	05S	47E	16	DCDC	POWDER RIVER
197607	USDA FOREST SERVICE- UPPER FIFTEEN MILE SPRING	SPRING	N/A	45.392000	-105.937200	NAV-GPS	NAD27	05S	47E	16	DCDC	POWDER RIVER
198766	USDA FOREST SERVICE- LEMONADE SPRING	SPRING	N/A	45.545500	-105.925500	NAV-GPS	NAD27	03S	47E	28	ACAA	POWDER RIVER
199568	USDA FOREST SERVICE- HEDUM SPRING	SPRING	N/A	45.282300	-106.071000	NAV-GPS	NAD27	06S	46E	26	CDBA	POWDER RIVER
199572	USDA FOREST SERVICE- DEAD MAN SPRING	SPRING	N/A	45.290300	-105.874300	NAV-GPS	NAD27	06S	48E	29	BABB	POWDER RIVER
199573	USDA FOREST SERVICE - WILLOW SPRING	SPRING	N/A	45.283100	-105.887900	NAV-GPS	NAD27	06S	48E	30	DBBA	POWDER RIVER
204956	USDA FOREST SERVICE - CLARK DRAW 1 SPRING	SPRING	N/A	45.211100	-106.409600	NAV-GPS	NAD27	07S	43E	24	CADA	ROSEBUD
205004	USDA FOREST SERVICE- HAGEN 2 SPRING	SPRING	N/A	45.345000	-106.268800	NAV-GPS	NAD27	06S	45E	6	ACDC	POWDER RIVER
205010	USDA FOREST SERVICE- NORTH FORK SPRING	SPRING	N/A	45.299600	-105.873600	NAV-GPS	NAD27	06S	48E	20	BDCA	POWDER RIVER
205011	USDA FOREST SERVICE- JOE ANDERSON SPRING	SPRING	N/A	45.271500	-105.954700	NAV-GPS	NAD27	06S	47E	34	CABA	POWDER RIVER
205034	USDA FOREST SERVICE - WATER GAP SPRING	SPRING	N/A	45.229900	-105.859400	NAV-GPS	NAD27	07S	48E	17	AADB	POWDER RIVER
205041	USDA FOREST SERVICE- SCHOOL HOUSE SPRING	SPRING	N/A	45.194400	-106.008100	NAV-GPS	NAD27	07S	47E	32	BABA	POWDER RIVER
205049	USDA FOREST SERVICE- CHIPMUNK SPRING	SPRING	N/A	45.212000	-106.361100	NAV-GPS	NAD27	07S	44E	21	CCBB	ROSEBUD
205049	USDA FOREST SERVICE- CHIPMUNK SPRING	SPRING	N/A	45.212000	-106.361100	NAV-GPS	NAD27	07S	44E	21	CCBB	ROSEBUD
205049	USDA FOREST SERVICE- CHIPMUNK SPRING	SPRING	N/A	45.212000	-106.361100	NAV-GPS	NAD27	07S	44E	21	CCBB	ROSEBUD
205049	USDA FOREST SERVICE- CHIPMUNK SPRING	SPRING	N/A	45.212000	-106.361100	NAV-GPS	NAD27	07S	44E	21	CCBB	ROSEBUD
205049	USDA FOREST SERVICE- CHIPMUNK SPRING	SPRING	N/A	45.212000	-106.361100	NAV-GPS	NAD27	07S	44E	21	CCBB	ROSEBUD
211060	CC-MSP	SPRING	N/A	44.584700	-106.560700	NAV-GPS	NAD27	53N	81W	12	BADA	SHERIDAN, WY
211060	CC-MSP	SPRING	N/A	44.584700	-106.560700	NAV-GPS	NAD27	53N	81W	12	BADA	SHERIDAN, WY
211060	CC-MSP	SPRING	NEAR CBM INFILTRATION POND, POSSIBLE IMPACT UNKNOWN	44.584700	-106.560700	NAV-GPS	NAD27	53N	81W	12	BADA	SHERIDAN, WY
211060	CC-MSP	SPRING	NEAR CBM INFILTRATION POND, POSSIBLE IMPACT UNKNOWN	44.584700	-106.560700	NAV-GPS	NAD27	53N	81W	12	BADA	SHERIDAN, WY
211060	CC-MSP	SPRING	NEAR CBM INFILTRATION POND, POSSIBLE IMPACT UNKNOWN	44.584700	-106.560700	NAV-GPS	NAD27	53N	81W	12	BADA	SHERIDAN, WY
211060	CC-MSP	SPRING	NEAR CBM INFILTRATION POND, POSSIBLE IMPACT UNKNOWN	44.584700	-106.560700	NAV-GPS	NAD27	53N	81W	12	BADA	SHERIDAN, WY
211060	CC-MSP	SPRING	NEAR CBM INFILTRATION POND, POSSIBLE IMPACT UNKNOWN	44.584700	-106.560700	NAV-GPS	NAD27	53N	81W	12	BADA	SHERIDAN, WY
211060	CC-MSP	SPRING	NEAR CBM INFILTRATION POND, POSSIBLE IMPACT UNKNOWN	44.584700	-106.560700	NAV-GPS	NAD27	53N	81W	12	BADA	SHERIDAN, WY
211060	CC-MSP	SPRING	NEAR CBM INFILTRATION POND, POSSIBLE IMPACT UNKNOWN	44.584700	-106.560700	NAV-GPS	NAD27	53N	81W	12	BADA	SHERIDAN, WY
211060	CC-MSP	SPRING	NEAR CBM INFILTRATION POND, POSSIBLE IMPACT UNKNOWN	44.584700	-106.560700	NAV-GPS	NAD27	53N	81W	12	BADA	SHERIDAN, WY
211060	CC-MSP	SPRING	NEAR CBM INFILTRATION POND, POSSIBLE IMPACT UNKNOWN	44.584700	-106.560700	NAV-GPS	NAD27	53N	81W	12	BADA	SHERIDAN, WY
211060	CC-MSP	SPRING	NEAR CBM INFILTRATION POND, POSSIBLE IMPACT UNKNOWN	44.584700	-106.560700	NAV-GPS	NAD27	53N	81W	12	BADA	SHERIDAN, WY
	●NEAR CBM INFILTRATION POND: FIRST SAMPLES PRE-DATE POND, LATER SAMPLES COULD BE WITHIN IMPACTED TIMEFRAME AND AREA.											

GWIC ID	SampleID	Agency	Sample Date	Water Temp	Fld pH	Fld SC (uS)	Lab	Lab pH	Lab SC (uS)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Fe (mg/l)	Mn (mg/l)	SiO2 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	SO4 (mg/l)	Cl (mg/l)
191135	1982Q8000	USGS	7/23/82 12:45	10	9.2	835		8.9	868	30	39	100	8.6	27		12			270	2.9
197452	2007Q1051	MBMG	5/1/07 17:30	9.6	7.9	1881	MBMG	7.67	2650	55.8	94.3	485	9.19	0.066	0.02	10.3	1022	0	644	21.6
197452	2008Q0209	MBMG	10/3/07 12:15	11.9	7.5	2621	MBMG	7.81	2620	56	96.2	523	7.92	0.06	0.02	9.73	1191	0	782	18.3
197452	2008Q0484	MBMG	5/21/08 14:07	10.1	7.83	2728	MBMG	7.76	2720	57.1	95.5	496	8.89	0.092	0.034	7.38	1031	0	639	20.6
197452	2009Q0372	MBMG	10/30/08 18:10	9.7	7.63	2630	MBMG	7.81	2620	60.6	103	555	9.07	<0.018	<0.003	9.96	1086	0	693	22.3
197607	2006Q0684	MBMG	1/26/06 11:30	3.9	6.95	2599	MBMG	7.48	2350	112	130	335	8.9	0.013	0.01	11.1	1127	0	544	5.15
197607	2007Q0328	MBMG	8/18/06 11:00	18.5	7.03	2360	MBMG	7.28	2310	106	113	299	10.5	0.009	0.008	13.5	1045	0	515	5.16
198766	2004Q0229	MBMG	10/21/03 14:45				MBMG	7.43	2060	154	134	149	8	0.088	0.03	13.2	724	0	653	<10.0
199568	203646	MBMG	4/19/13 12:11	5.4	7.29	3994	MBMG	7.36	4090	218	435	267	53.8	<0.150 U	<0.020 U	18.4	776	0	2155	7.62
199572	201855	MBMG	6/5/12 17:26	10.4	6.83	3537	MBMG	7.01	3280	276	221	367	8.18	0.476	0.090 J	12.4	554	0	1787	14.28
199573	2007Q0694	MBMG	10/28/06 11:00	9	6.99	2647	MBMG	6.92	2480	140	111	332	8.74	0.201	0.139	11.5	766	0	879	<10.0
204956	2007Q0693	MBMG	10/28/06 14:00	9.8	6.9	1999	MBMG	6.92	1933	91.7	84	263	9.03	0.96	0.158	15.4	678	0	557	12.2
205004	200047	MBMG	5/3/11 12:53	8	7.69	1014	MBMG	7.6	900	81.9	66.3	73.6	5.72	<2.00 U	<0.001 U	14.8	530	0	160	8.25
205010	201854	MBMG	6/5/12 17:08	9.9	6.91	3538	MBMG	7.11	3420	205	157	509	8.72	1.396	0.213 J	10.7	829	0	1552	4.64
205011	200048	MBMG	5/4/11 15:29	8.5	8.32	622	MBMG	8.17	579	70.6	50.7	18.5	3.91	0.017	0.006	12.3	388	0	69	3.68
205034	2004Q0225	MBMG	10/21/03 13:15	11.3	6.91	3580	MBMG	7.29	3550	164	174	526	15.2	0.91	0.197	13.6	782	0	1685	9.22
205041	2004Q0228	MBMG	10/21/03 11:45	11.1	6.81	2656	MBMG	7.49	2660	157	147	308	8.95	0.699	0.126	14.2	809	0	1019	6.97
205049	2004Q0222	MBMG	10/20/03 16:00	11.7	7.27	3468	MBMG	8.08	3390	95.2	132	583	10.7	0.046	<0.005	12	965	0	1282	24.4
205049	2009Q0827	MBMG	6/19/09 11:14	13.2	7.51	3492	MBMG	7.89	3510	105	155	617	12	0.194	<0.007	14.6	1094	0	1505	29.0
205049	2010Q0379	MBMG	10/13/09 14:14	7.6	7.69	3550	MBMG	7.86	3680	106	149	640	11.4	<0.010	<0.001	13.1	971	0	1504	26.9
205049	2010Q0935	MBMG	5/19/10 11:30				MBMG	7.94	3700	103	156	632	11.6	<0.072	<0.003	10.7	871	0	1480	29.5
205049	2011Q0413	MBMG	9/13/10 14:00	13.3	7.38	3767	MBMG	7.88	3910	108	169	698	12.7	<0.195	<0.010	13.2	969	0	1569	29.7
211060	2004Q0542	MBMG	6/4/2004 13:35	9.8	6.82	2955	MBMG	7.81	2890	212	215	247	4.67	0.296	0.202	20.3	671	0	1352	<10.0
211060	2005Q0389	MBMG	3/3/2005 8:45	8	7.13	2841	MBMG	7.38	2730	197	194	235	4.43	0.531	0.139	19	667	0	1227	<5.0
211060	2006Q0069	MBMG	7/27/2005 16:15	13.4	7.28	2682	MBMG	7.7	2480	193	189	239	4.59	0.702	0.199	22.1	634	0	1185	<10.0
211060	2006Q0666	MBMG	1/25/2006 14:50	9.1	7.41	2730	MBMG	7.59	2520	185	184	232	4.04	0.317	0.123	18.1	628	0	1198	<25
211060	2006Q1284	MBMG	6/22/2006 10:55	17.1	7.25	2430	MBMG	7.23	2320	178	177	231	4.55	0.1	0.143	22.3	674	0	1100	5.43
211060	2007Q0878	MBMG	1/9/2007 15:32	1.4	7.58	1356	MBMG	7.4	2470	180	191	228	4.22	<0.005	0.025	16.2	586	0	1123	6.49
211060	2008Q0080	MBMG	8/6/2007 14:37	12.1	7.31	2477	MBMG	7.14	2440	178	171	215	4.24	0.152	0.172	21.2	612	0	1096	6.87
211060	2008Q0340	MBMG	1/3/2008 12:00		7.27	2540	MBMG	7.4	2640	192	188	219	4.32	<0.025	0.104	20.9	536	0	1190	6.66
211060	2009Q0471	MBMG	2/20/2009 10:00				MBMG	6.87	2610	195	211	221	<1.5	<0.215	<0.156	21.6	527	0	1398	<25.0
211060	2010Q0423	MBMG	10/19/2009 14:00	165	7.4	2815	MBMG	7.82	2880	215	201	257	4.23	0.011	0.1	19.9	632	0	1587	<10.0
211060	2010Q0976	MBMG	5/27/2010 12:53	10.8	7.38	2780	MBMG	8.08	2720	179	182	244	5.67	<0.006	0.018	18.4	574	0	1308	9.04
211060	200157	MBMG	6/8/2011 13:20	11		2599	MBMG	7.32	3691	236	215	253	4.08	0.026	0.029	18.4	562	0	1486	6.92

GWIC ID	NO3 N (mg/l)	NO2 N (mg/l)	F (mg/l)	OPO4 P (mg/l)	Ag (ug/l)	Al (ug/l)	As (ug/l)	B (ug/l)	Ba (ug/l)	Be (ug/l)	Br (ug/l)	Cd (ug/l)	Co (ug/l)	Cr (ug/l)	Cu (ug/l)	Li (ug/l)	Mo (ug/l)	Ni (ug/l)	Pb (ug/l)
191135	<.1		0.9																
197452	<1.0		1.61	<0.5	<2.5	<5	<1.0	223	10.8	<0.5	<500	<0.5	<0.5	<0.5	<1.0	162	<5	<0.5	<1.0
197452	<1.0 P		1.49	<1.0	<0.5	<2.0	0.476	180	12.2	<0.1	<1000	<0.1	0.133	<0.1	<0.2	150	<1.0	0.762	<0.2
197452	<1.0 P		1.45	<0.10	<2.5	<10.0	<1.0	234	7.84	<0.5	<200	<0.5	<0.5	<0.5	<1.0	168	<5.0	<0.5	<1.0
197452	<0.5 P		1.55	<1.0	<0.53	<26.3	<2.89	9.57	64.6	<1.48	<2500	<1.25	0.715	<0.61	31.2	726	1.4	<0.98	<0.53
197607	<0.5 P		0.726	<0.5	<5	<30	<5	379	11.9	<2	<500	<1	<2	<10	<5	175	<10	<2	<10
197607	<0.5 P		0.782	<0.5	<5	<30	<5	547	16.5	<2	<500	<1	<2	<10	<5	195	<10	<2	<10
198766	<0.5 P		<1.0	<1.0	<5	41.7	<5	231	15.5	<10	<1000	<5	<10	11.4	<10	127	<50	<10	<10
199568	10.03	<0.050 U	1.17	0.270 J	<1.000 U	<4.000 U	13.4	664	21.2	<1.000 U	<50.000 U	<1.000 U	<1.000 U	8.64	<0.400 U	377	19.3	1.850 J	<0.600 U
199572	<0.010 U	<0.010 U	0.28	<0.020 U	<1.000 U	<4.000 U	<1.000 U	105	19.6	<1.000 U	<10.000 U	<1.000 U	<1.000 U	<1.000 U	1.29 J	122	<1.000 U	3.760 J	<0.400 U
199573	<1.0 P		<1.0	<1.0	<5	<50	<5	<150	15	<10	<1000	<5	<10	<10	<10	155	<50	<10	<10
204956	<0.5 P		1.16	<0.5	<5	<30	<5	521	20.7	<2	<500	<1	<2	<10	<5	129	<10	<2	<10
205004	0.15	<0.05 U	0.78	<0.10 U	<0.50 U	9.32	0.1400 J	97.8	35.6	<0.50 U	93	<0.50 U	<0.50 U	<0.50 U	0.1500 J	52.8	1.02	0.4900 J	<0.20 U
205010	0.07	<0.010 U	0.27	<0.020 U	<1.000 U	<4.000 U	<1.000 U	110	11.2	<1.000 U	<10.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	148	<1.000 U	2.840 J	<0.400 U
205011	<0.05 U	<0.05 U	0.33	<0.10 U	<0.50 U	12.9	0.2100 J	23.6	215.3	<0.50 U	<50.00 U	0.480 J	<0.50 U	0.230 J	0.54	20.6	0.78	0.52	0.22
205034	<0.5 P		<0.5	<2.5	<10	<300	<10	481	<20	<20	<500	<10	<20	<20	<20	254	<100	<20	<20
205041	<0.5 P		<0.5	<0.5	<5	<150	<5	238	10.5	<10	<500	<5	<5	<10	<10	174	<50	<10	<10
205049	<0.5 P		4.89	<0.5	<10	<150	<10	<300	<20	<20	<500	<10	<20	<20	<20	189	<100	<20	<20
205049	0.547 P		1.14	<1.0	<4.42	<16.55	<6.42	348	15.2	<13.24	<1000	4.47	<4.37	<6.63	<7.42	186	<4.64	<7.10	<7.29
205049	0.508 P		1.7	<1.0	<0.5	<37.8	0.348	290	15.7	<0.9	<1000	<0.5	<0.3	<0.5	<2.0	161	1.35	<0.6	<2.0
205049	0.22 P		1.48	<0.25	<2.0	<23.2	<4.0	325	15.4	<2.0	261	<1.0	<1.0	<3.0	<9.1	67.3	<3.0	<3.0	<5.1
205049	0.479	<0.25	1.42	<0.5	<2.0	<20.0	<1.8	316	18.2	<2.0	276	<2.0	<1.8	<2.0	<5.0	156	<2.0	<1.8	<2.0
211060	<1.0 P		<1.0	<1.0	<5	<150	<5	444	48.9	<10	<1000	<5	<10	<10	<10	84.7	<50	13.7	<10
211060	<2.5		<0.5	<0.5	<5	<50	<5	382	13.9	<10	<2500	<5	<10	<10	<10	82.9	<50	<10	<10
211060	<1.0 P		1.26	<1.0	<5	<50	<5	380	16.3	<10	<1000	<5	<10	<10	<10	86.4	<50	<10	<10
211060	<2.5 P		<2.5	<2.5	<5	<50	<5	347	12.6	<10	<2500	<5	<10	<10	<10	80.3	<50	<10	<10
211060	<1.0 P		<0.50	<0.50	<5	<30	<5	432	16.8	<2	<500	<1	<2	<10	<5	84.2	<10	2.08	<10
211060	<1.0 P		<0.5	<0.5	<1	<30	1.6	324	13.5	<2	<500	<1	<2	3.03	<2	82	<10	4.45	<2
211060	<0.10 P		1.04	<0.63	<1.0	<1.0	1.19	294	13.4	<0.1	<630	<0.1	0.554	<0.1	0.53	81.6	3.9	2.8	<0.2
211060	<0.50 P		<0.50	<0.50	<5.0	<5.0	<1.0	336	15.4	<0.5	<1000	<0.5	0.554	<0.5	<1.0	82.9	<5.0	3.94	<1.0
211060	0.81 P		<1.0	<1.0	<1.9	<50.2	<3.3	429	22.3	<5.2	<1000	<1.5	<2.3	<1.4	27.2	84.8	4.97	14.5	<30.2
211060	0.81 P		<1.0	<1.0	<0.5	<37.8	1.03	337	17.3	<0.9	<1000	<0.5	0.735	<0.5	<2.0	77.6	3	1.48	<2.0
211060	<0.5 P		0.434	<0.25	<0.50	<5.00	1.04	346	<0.50	<0.50	<250	<0.50	<0.50	<1.00	<2.0	62.6	2.23	1.86	<0.50
211060	0.48	<0.05 U	0.31	<0.10 U	<2.50 U	157.34	<2.50 U	364	15.7	<2.50 U	<50.00 U	<2.50 U	<2.50 U	<2.50 U	<2.50 U	64.6	1.3100 J	1.8500 J	<1.00 U

GWIC ID	Sb (ug/l)	Se (ug/l)	Sn (ug/l)	Sr (ug/l)	Ti (ug/l)	Tl (ug/l)	U (ug/l)	V (ug/l)	Zn (ug/l)	Zr (ug/l)	Ce (ug/l)	Cs (ug/l)	Ga (ug/l)	La (ug/l)	Nb (ug/l)	Nd (ug/l)	Pd (ug/l)	Pr (ug/l)	Rb (ug/l)
191135																			
197452	<0.5	<2.5		1488	<1	<0.5	0.637	<0.5	<1.0	<0.5									
197452	<0.1	0.827		1489	<1.0	327	0.788	<0.1	0.45	0.287									
197452	<0.5	<2.5	<0.5	1564	<5.0	<0.5	0.389	<0.5	23.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.59	<0.5	3.59
197452	<0.50	<4.56	13.5	1557	31.7	<0.12	3.83	<0.54	36.3	1.82	0.5	<0.34	<0.61	<0.50	<0.37	<0.76	14.6	0.332	30
197607	<10	<5		2038	<1	<25	5.26	<10	<2	<2									
197607	<10	<5		2136	<10	<25	5.73	<10	2.16	<2									
198766	<10	<5		2931	<1	<25	8.68	<25	3.68										
199568	<1.000 U	30.7	<1.000 U	3706	29.6	<1.000 U	30.5	109	<0.500 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	42.9
199572	<1.000 U	4.660 J	<1.000 U	4953	15.7	<1.000 U	1.810 J	<1.000 U	<2.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	2.040 J	<1.000 U	6.86
199573	<10	<5		3648	<5	<25	1.2	<25	<10	<10									
204956	<10	<5		2078	1.49	<20	<3	<10	<2	<2									
205004	<0.50 U	1.1	<0.50 U	1620	1.27	<0.50 U	3.95	0.2600 J	2.41	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	0.72	<0.50 U	3.08
205010	<1.000 U	5.91	<1.000 U	4261	15.7	<1.000 U	<1.000 U	<1.000 U	<2.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	1.760 J	<1.000 U	7.84
205011	<0.50 U	<0.50 U	<0.50 U	650	0.63	<0.50 U	0.83	<0.50 U	245	1.53	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	0.4500 J	<0.50 U	0.69
205034	<20	<10		2266	<10	<50	<5	<50	<20	<20									
205041	<10	<5		2929	<5	<25	6.16	<25	<10	<10									
205049	<20	<10		2765	<5	<50	8.5	<50	<20	<10									
205049	<5.41	<8.27	<5.24	2709	14.4	<7.64	7.73	<5.95	<29.51	<3.82	<6.91	<5.42	<7.26	<6.49	<5.21	<8.02	<4.09	<7.10	8.79
205049	<0.5	1.71	<0.5	2788	15.6	<0.5	8.98	<0.4	<4.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.927	<0.5	9.14
205049	<4.0	<3.0	<1.0	2657	17.1	<2.0	8.88	<2.0	<11.1	3.66	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<9.1	<1.0	7.44
205049	<2.0	<1.8	<2.0	3030	10.3	<2.0	7.18	<2.0	<10.0	<1.8	<2.0	<5.0	<1.8	<2.0	<1.7	<2.0	<5.0	<2.0	10.9
211060	<10	<5		2416	<5	<25	26.8	<25	<10	<10									
211060	<10	<5		2376	<5	<25	20.7	<25	<10	<10									
211060	<10	<5		2324	<5	<25	18.7	<25	<19	<10									
211060	<10	<5		2176	<5	<2	18.8	<25	<10	<10									
211060	<10	<5		2129	<1	<25	19.4	<10	<2	<2									
211060	<2	14.7		2028	1.44	<5	47.3	<5	<2	<2									
211060	<0.1	0.671		2095	2.19	<0.1	22	0.458	1.12	0.166									
211060	<0.5	<2.5	<0.5	2421	17.7	<0.5	18.2	<0.5	1.21	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	4.96	<0.5	3.09
211060	<2.1	<5.0	<3.0	2362	16.6	<7.3	21.8	5.13	28.8	<2.0	<2.9	<2.0	<3.6	<2.1	<2.1	<2.6	<0.1	<2.5	7.79
211060	<0.5	3.54	<0.5	2206	16.8	<0.5	20.3	1.13	<4.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.896	<0.5	3.53
211060	<0.50	7.46	<0.50	2185	14.3	<0.50	20.5	0.595	<14.00	<0.50	<0.50	<0.50	<1.00	<0.50	<0.50	<0.50	0.988	<0.50	3.23
211060	<2.50 U	8.2	<2.50 U	2397	23.5	<2.50 U	18.9	<2.50 U	4.4900 J	<2.50 U	<2.50 U	<2.50 U	<2.50 U	<2.50 U	<2.50 U	<2.50 U	<2.50 U	<2.50 U	3.28

GWIC ID	Th (ug/l)	W (ug/l)	Procedure Type	Sum Diss. Const. (mg/l)	Total Diss. Solids (mg/l)	SAR	Hardness (mg/l)	Alkalinity	Discharge	Comments
191135			UNKNOWN	491	491	2.8	235	0		CATION/ANION BALANCE >5%
197452			DISSOLVED	2344	1826	9.2	527	838	0.88	BUCKET AND STOPWATCH
197452			DISSOLVED	2685	2081	9.8	536	977	1	BUCKET AND STOPWATCH
197452	<0.25	<2.5	DISSOLVED	2357	1834	9.3	536	846	0.7	BUCKET AND STOPWATCH
197452	<0.47	<0.57	DISSOLVED	2541	1990	10.1	575	891	0.75	BUCKET AND STOPWATCH
197607			DISSOLVED	2274	1702	5.1	815	924		
197607			DISSOLVED	2109	1579	4.8	730	857	0.5	VOLUMETRIC
198766			DISSOLVED	1835	1468	2.1	936	594		
199568	<1.000 U	<1.000 U	DISSOLVED	3942	3549	2.4	2335	636	2.86	BUCKET AND STOPWATCH
199572	<1.000 U	<1.000 U	DISSOLVED	3239	2958	4.0	1599	454	3.09	BUCKET AND STOPWATCH
199573			DISSOLVED	2249	1860	5.1	806	628		
204956			DISSOLVED	1712	1368	4.8	575	556		
205004	<0.50 U	<0.50 U	DISSOLVED	942	673	1.5	477	435		
205010	<1.000 U	<1.000 U	DISSOLVED	3279	2858	6.5	1160	680	0.71	BUCKET AND STOPWATCH
205011	0.1200 J	<0.50 U	DISSOLVED	618	421	0.4	385	318		
205034			DISSOLVED	3370	2973	6.8	1126	641		
205041			DISSOLVED	2471	2061	4.2	997	664		
205049			DISSOLVED	3109	2620	9.1	781	791		
205049	<7.36	<8.59	DISSOLVED	3533	2978	8.9	900	897	1.5	BUCKET AND STOPWATCH
205049	<0.5	<0.5	DISSOLVED	3423	2930	9.4	878	796	0.83	BUCKET AND STOPWATCH
205049	<1.0	<2.0	DISSOLVED	3295	2853	9.2	899	714		
205049	<2.0	<2.0	DISSOLVED	3570	3078	9.8	965	795		
211060			DISSOLVED	2722	2382	2.9	1414	550		
211060			DISSOLVED	2544	2206	2.8	1290	547		
211060			DISSOLVED	2469	2147	2.9	1260	520		
211060			DISSOLVED	2449	2130	2.9	1219	515		
211060			DISSOLVED	2392	2050	2.9	1173	553		
211060			DISSOLVED	2334	2037	2.8	1236	481		
211060			DISSOLVED	2305	1994	2.8	1148	502		
211060	<0.25	<5.0	DISSOLVED	2357	2085	2.7	1253	440		
211060	0.932	<3.1	DISSOLVED	2574	2307	2.6	1355	432		
211060	<0.5	<0.5	DISSOLVED	2916	2595	3.0	1364	518		
211060	<0.50	<0.50	DISSOLVED	2520	2229	3.1	1196	471		
211060	<2.50 U	<2.50 U	DISSOLVED	2781	2496	2.9	1473	461		

GWIC ID	Site Name	Site Type	Potential Existing Impacts
	●OPPORTUNISTIC IRRIGATION: FIELDS WITH SPREADER DIKES TO CATCH AND DISPURSE RAIN AND FLOOD WATERS ONLY.		

APPENDIX B

Stream water-quality data

GWIC ID	Site Name	Water Body	Site Type	Stream Type
201	ARMELLS CREEK TABERT HENRY * 6.5 MI SW COLSTRIP MT	ARMELLS CREEK	STREAM	P
214	* ARMELLS CREEK * 8 M SW COLSTRIP MT *	ARMELLS CREEK	STREAM	P
309	WATER HOLE IN ARMELLS CK*3 MI SW COLSTRIP	ARMELLS CREEK	STREAM	P
1071	* ARMELLS CREEK * 4 M N COLSTRIP MT *	ARMELLS CREEK	STREAM	P
1081	* ARMELLS CREEK * .5 M N COLSTRIP MT *	ARMELLS CREEK	STREAM	P
1097	* ARMELLS CREEK * .75 M N COLSTRIP MT *	ARMELLS CREEK	STREAM	P
1224	* ARMELLS CREEK * 11.5 M NW COLSTRIP MT *	ARMELLS CREEK	STREAM	P
1335	* ARMELLS CREEK * 13 M SW FORSYTH MT *	ARMELLS CREEK	STREAM	P
1336	* ARMELLS CREEK * 16 M SW OF FORSYTH MT *	ARMELLS CREEK	STREAM	P
1338	* ARMELLS CREEK * 13 M S FORSYTHE MT *	ARMELLS CREEK	STREAM	P
170710	QUINLAN LARRY* ARMELLS CREEK NEAR FORSYTH MT	ARMELLS CREEK	STREAM	P
170710	QUINLAN LARRY* ARMELLS CREEK NEAR FORSYTH MT	ARMELLS CREEK	STREAM	P
170710	QUINLAN LARRY* ARMELLS CREEK NEAR FORSYTH MT	ARMELLS CREEK	STREAM	P
170711	DECOCK DICK* ARMELLS CREEK BELOW CONFLUENCE	ARMELLS CREEK	STREAM	P
170711	DECOCK DICK* ARMELLS CREEK BELOW CONFLUENCE	ARMELLS CREEK	STREAM	P
170711	DECOCK DICK* ARMELLS CREEK BELOW CONFLUENCE	ARMELLS CREEK	STREAM	P
170713	NANSEL BOB ARMELLS CREEK	ARMELLS CREEK	STREAM	P
170713	NANSEL BOB ARMELLS CREEK	ARMELLS CREEK	STREAM	P
171906	NANSEL TOM-LOWER ARMELLS CREEK 06294994	ARMELLS CREEK	STREAM	P
171906	NANSEL TOM-LOWER ARMELLS CREEK 06294994	ARMELLS CREEK	STREAM	P
171908	ARMELLS CREEK	ARMELLS CREEK	STREAM	P
265	*EAST ARMELLS CR AT STATE HIGHWAY 39 BRIDGE	EAST FORK ARMELLS CREEK	STREAM	I
1225	EAST FORK ARMELLS CREEK NEAR COLSTRIP MT	EAST FORK ARMELLS CREEK	STREAM	P
170709	CITY OF COLSTRIP EAST FORK ARMELLS CREEK	EAST FORK ARMELLS CREEK	STREAM	P
170709	CITY OF COLSTRIP EAST FORK ARMELLS CREEK	EAST FORK ARMELLS CREEK	STREAM	P
170709	CITY OF COLSTRIP EAST FORK ARMELLS CREEK	EAST FORK ARMELLS CREEK	STREAM	P
170709	CITY OF COLSTRIP EAST FORK ARMELLS CREEK	EAST FORK ARMELLS CREEK	STREAM	P
170712	ROGERS JIM* E. FK ARMELLS CREEK TRIB NR COLSTRIP MT	EAST FORK ARMELLS CREEK	STREAM	P
170712	ROGERS JIM* E. FK ARMELLS CREEK TRIB NR COLSTRIP MT	EAST FORK ARMELLS CREEK	STREAM	P
170714	DECOCK DICK* WEST FORK ARMELLS CREEK NEAR FORSYTH MT	WEST FORK ARMELLS CREEK	STREAM	P
202185	WESTERN RESOURCES PROJECT - COAL CREEK UPPER TRIBUTARY	COAL CREEK	STREAM	I
202187	WESTERN RESOURCES PROJECT - COAL CREEK UPPER WEIR	COAL CREEK	STREAM	I
202187	WESTERN RESOURCES PROJECT - COAL CREEK UPPER WEIR	COAL CREEK	STREAM	I
202186	COAL CREEK LOWER FLUME	COAL CREEK	STREAM	I
7240	COOK CREEK * 6.5 MI SW BEAVER CK SCHOOL	COOK CREEK	STREAM	E
7241	COOK CREEK * 6.5 MI SW BEAVER CK SCHOOL	COOK CREEK	STREAM	E
250810	CROW CREEK 1	CROW CREEK	STREAM	I
250810	CROW CREEK 1	CROW CREEK	STREAM	I
7904	HANGING WOMAN CR*BELOW E. FK ABV BIRNEY	HANGING WOMAN CREEK	STREAM	P
268946	DIAMOND CROSS RANCH HANGING WOMAN CREEK * HWC C6	HANGING WOMAN CREEK	STREAM	I
268944	DIAMOND CROSS RANCH * HWC C5	HANGING WOMAN CREEK	STREAM	I
268943	DIAMOND CROSS RANCH * HWC C4	HANGING WOMAN CREEK	STREAM	I
268941	DIAMOND CROSS RANCH * HWC C3	HANGING WOMAN CREEK	STREAM	I
268905	OW RANCH * HWC C1	HANGING WOMAN CREEK	STREAM	I

GWIC ID	Potential Existing Impacts	Latitude	Longitude	Geomethod	Datum	Twn	Rng	Sec	QSec	County	SampleID
201	COAL MINE, TOWN DEVELOPMENT, POSSIBLE OPPORTUNISTIC IRRIGATION BELOW WEST FORK	45.869400	-106.723600	UNKNOWN	NAD27	01N	40E	2	BD	ROSEBUD	1923Q0002
214		45.843800	-106.745000	UNKNOWN	NAD27	01N	40E	15	BACB	ROSEBUD	1973Q0589
309		45.857200	-106.664100	UNKNOWN	NAD27	01N	41E	8	B	ROSEBUD	1923Q0001
1071		45.943600	-106.647500	UNKNOWN	NAD27	02N	41E	9	BCBC	ROSEBUD	1973Q0582
1081		45.896900	-106.627700	UNKNOWN	NAD27	02N	41E	27	BCCC	ROSEBUD	1973Q0581
1097		45.885800	-106.621300	UNKNOWN	NAD27	02N	41E	34	BBBD	ROSEBUD	1973Q0580
1224		46.036900	-106.682700	UNKNOWN	NAD27	03N	41E	6	CDCA	ROSEBUD	1973Q0584
1335		46.120200	-106.769400	UNKNOWN	NAD27	04N	40E	9	BBCA	ROSEBUD	1973Q0585
1336		46.092892	-106.754980	TRS-SEC	NAD83	04N	40E	21	AABA	ROSEBUD	1973Q0586
1338		46.069700	-106.705800	UNKNOWN	NAD27	04N	40E	25	CBDB	ROSEBUD	1973Q0587
170710		46.249700	-106.806100	MAP	NAD27	06N	39E	26	ABDB	ROSEBUD	1999Q0653
170710		46.249700	-106.806100	MAP	NAD27	06N	39E	26	ABDB	ROSEBUD	1999Q0815
170710		46.249700	-106.806100	MAP	NAD27	06N	39E	26	ABDB	ROSEBUD	2000Q0644
170711		46.102200	-106.763600	MAP	NAD27	04N	40E	16	BDBD	ROSEBUD	1999Q0652
170711		46.102200	-106.763600	MAP	NAD27	04N	40E	16	BDBD	ROSEBUD	2000Q0122
170711		46.102200	-106.763600	MAP	NAD27	04N	40E	16	BDBD	ROSEBUD	2000Q0634
170713		46.151400	-106.793900	MAP	NAD27	05N	39E	25	CCDD	ROSEBUD	1999Q0647
170713		46.151400	-106.793900	MAP	NAD27	05N	39E	25	CCDD	ROSEBUD	2000Q0645
171906		46.203400	-106.811000	SUR-GPS	NAD27	05N	39E	11	BDDB	ROSEBUD	2000Q0114
171906		46.203400	-106.811000	SUR-GPS	NAD27	05N	39E	11	BDDB	ROSEBUD	2000Q0639
171908		46.238100	-106.812200	UNKNOWN	NAD27	05N	39E	35	BABA	ROSEBUD	2000Q0120
265	COAL MINE, TOWN DEVELOPMENT, POSSIBLE OPPORTUNISTIC IRRIGATION BELOW WEST FORK	45.875662	-106.628055	TRS-SEC	NAD83	01N	41E	3	BBBB	ROSEBUD	1973Q0588
1225		45.977640	-106.644600	TRS-SEC	NAD83	03N	41E	28	CCDD	ROSEBUD	1973Q0583
170709		45.918600	-106.641700	MAP	NAD27	02N	41E	21	BABA	ROSEBUD	1999Q0649
170709		45.918600	-106.641700	MAP	NAD27	02N	41E	21	BABA	ROSEBUD	1999Q0816
170709		45.918600	-106.641700	MAP	NAD27	02N	41E	21	BABA	ROSEBUD	2000Q0123
170709		45.918600	-106.641700	MAP	NAD27	02N	41E	21	BABA	ROSEBUD	2000Q0642
170712		46.068900	-106.710000	MAP	NAD27	04N	40E	26	DADD	ROSEBUD	1999Q0650
170712		46.068900	-106.710000	MAP	NAD27	04N	40E	26	DADD	ROSEBUD	2000Q0637
170714	N/A	46.082200	-106.765300	MAP	NAD27	04N	40E	21	CACC	ROSEBUD	1999Q0648
202185		44.582200	-106.556900	NAV-GPS	NAD27	53N	81W	1	CDBA	SHERIDAN, WY	2003Q0907
202187		44.588000	-106.566400	NAV-GPS	NAD27	53N	81W	1	CCAC	SHERIDAN, WY	2003Q0909
202187		44.588000	-106.566400	NAV-GPS	NAD27	53N	81W	1	CCAC	SHERIDAN, WY	2004Q0006
202186		44.577100	-106.549400	NAV-GPS	NAD83	53N	80W	7	CBBC	SHERIDAN, WY	2003Q0908
7240	N/A	45.645000	-106.184700	MAP	NAD27	02S	45E	21	CABC	POWDER RIVER	1980Q0065
7241		45.644400	-106.170000	MAP	NAD27	02S	45E	22	CBBC	POWDER RIVER	1980Q0064
250810	N/A	45.683083	-105.122389	NAV-GPS	NAD83	02S	53E	12		POWDER RIVER	2009Q0818
250810		45.683083	-105.122389	NAV-GPS	NAD83	02S	53E	12		POWDER RIVER	2009Q0819
7904	CBM IN WYOMING	45.295200	-106.502500	UNKNOWN	NAD27	06S	43E	19	DD	ROSEBUD	1972Q0239
268946		45.1844	-106.4987	NAV-GPS	NAD83	07S	43E	32	CBBA	ROSEBUD	203007
268944		45.16894	-106.49703	NAV-GPS	NAD83	08S	43E	5	CBAD	BIG HORN	203006
268943		45.16046	-106.48747	NAV-GPS	NAD83	08S	43E	8	ABDA	BIG HORN	203005
268941		45.15075	-106.48304	NAV-GPS	NAD83	08S	43E	8	DACB	BIG HORN	203004
268905		45.13569	-106.485	NAV-GPS	NAD83	08S	43E	17		BIG HORN	203002

GWIC ID	Agency	Sample Date	Water Temp	Fld pH	Fld SC (uS)	Lab	Lab pH	Lab SC (uS)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Fe (mg/l)	Mn (mg/l)	SiO2 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	SO4 (mg/l)	Cl (mg/l)	NO3 N (mg/l)	NO2 N (mg/l)	F (mg/l)
201	USGS	1/1/23 12:00 AM				USGS			98	87	153 K					794		259	10			
214	MBMG	7/25/73 5:00 PM	26			MBMG	8.27	3130	40	403	230	19.5	0.23	2.53	14.1	584	0	1722	12	0.97		0.3
309	USGS	1/1/23 12:00 AM				USGS			106	35	146 K					497		295	7			
1071	MBMG	7/24/73 2:25 PM	23			MBMG	8.59	4230	162	395	471	26.6	0.06	0.02	1.1	282	29	2615	56	0.3		0.7
1081	MBMG	7/24/73 1:45 PM	23			MBMG	8.21	3790	228	378	310	16	0.05	0.02	3	460	0	2280	43	0.1		0.4
1097	MBMG	7/24/73 12:45 PM	25.5			MBMG	8.23	2881	136	308	211	9.9	0.16	0.09	10.3	472	0	1612	13	<.1		0.2
1224	MBMG	7/24/73 3:40 PM	27			MBMG	8.78	1770	23	44	361	3.5	0.24	0.14	1.1	425	26	594	8	0.7		0.5
1335	MBMG	7/25/73 11:45 AM	21			MBMG	8.56	6060	92	214	1310	11.4	0.05	0.03	1.7	425	24	3405	33	0.5		0.4
1336	MBMG	7/25/73 2:00 PM	22			MBMG	8.26	5790	120	203	1245	8.6	0.09	0.18	8.6	492	0	3270	33	<.1		0.3
1338	MBMG	7/25/73 2:00 PM	24			MBMG	8.06	5390	216	264	935	10.5	0.11	0.03	4.3	371	0	3165	38	<.1		0.3
170710	MBMG	4/21/99 1:00 PM	10.3	8.34	4450	MBMG	8.27	4290	170	271	727	11.3	0.374	0.277	6.59	554	0	2517	41.3	<2.5	<2.5	2.53
170710	MBMG	6/10/99 10:30 AM	17.2	8.35	2482	MBMG	7.85	2370	98.6	99.7	357	10.1	<.05	<.01	7.21	262	0	1116	17.0	<.5	<.5	1.95
170710	MBMG	1/27/00 3:00 PM	0	8.13	3355	MBMG	8.1	5240	205	245	951	11.2	<.1	0.105	7.65	832	0	3008	46.5	<.5 P		5.28
170711	MBMG	4/22/99 11:00 AM	7.1	8.61	1479	MBMG	8.02	2280	88.2	83.7	364	8.44	<.025	0.036	8.4	289	0	1080	15.1	<.5	<.5	2.04
170711	MBMG	8/6/99 12:30 PM	24.1		7290	MBMG	8.21	6430	213	300	1280	17.6	<.1	<.02	5.1	639	0	3928	46.7	<.5 P		<2.5
170711	MBMG	1/26/00 3:00 PM	0.1	8	3718	MBMG	7.94	5970	339	392	952	13.3	<.1	0.369	11.7	775	0	3729	67.3	<.5 P		6.77
170713	MBMG	4/21/99 2:30 PM	10.9	8.11	4982	MBMG	8.25	4720	197	316	706	11.6	<.025	0.404	5.24	598	0	2890	45.9	<2.5	<.5	3.25
170713	MBMG	1/27/00 1:00 PM	0.1	8.1	3899	MBMG	7.96	5680	274	321	1000	12.1	<.1	0.139	8.45	813	0	3649	54.8	<.5 P		6.23
171906	MBMG	8/7/99 11:30 AM	24.8	8.72	4573	MBMG	8.68	4210	42.5	85.3	945	9.1	<.1	0.021	3.8	723	48	1801	27.8	<.5	<.5	<2.5
171906	MBMG	1/27/00 10:00 AM	0.1	8.1	3768	MBMG	8.04	5750	251	301	1060	12.8	<.1	0.157	8.26	849	0	3377	54.3	<.5 P		6.18
171908	MBMG	8/5/99 6:00 PM	25.9	9.17	5580	MBMG	8.52	4970	81.9	179	1020	13.9	<.1	<.02	4.13	458	30	2630	46.9	<.5 P		<2.5
265	MBMG	7/25/73 3:30 PM	23			MBMG	8.11	2770	188	270	180	16.5	0.29	0.78	18.8	586	0	1426	13	0.5		0.2
1225	MBMG	7/24/73 3:00 PM	19.5			MBMG	8.18	6170	284	549	838	16.4	0.14	3.08	16.1	616	0	4100	36	<.1		0.2
170709	MBMG	4/22/99 8:00 AM	6.4	7.74	3334	MBMG	7.84	3190	198	354	222	14	0.044	0.332	11.6	419	0	1964	47.5	<1.0	<1.0	3.12
170709	MBMG	6/10/99 12:00 PM	16.6	9.1	4310	MBMG	8.13	4070	317	463	305	13.7	<.05	0.222	15.8	620	0	2587	53.9	<2.5	<2.5	<2.5
170709	MBMG	8/6/99 10:30 AM	16.7	8.03	4676	MBMG	7.97	4410	323	469	333	22.6	<.1	0.138	15	608	0	2801	55.5	.614 P		<2.5
170709	MBMG	1/26/00 11:00 AM	1.9	7.88	3354	MBMG	7.84	3350	245	344	243	13.6	<.05	0.387	17.2	467	0	2031	62.5	6.204 P		<1.0
170712	MBMG	4/22/99 9:00 AM	7.2	8.36	1480	MBMG	8.02	2240	97.2	133	267	8.82	<.025	0.085	7.92	325	0	1070	20.1	<.5	<.5	2.19
170712	MBMG	1/27/00 6:00 PM	0.1	8.17	2830	MBMG	8.09	4590	298	470	490	14.8	<.05	0.081	11.6	644	0	2926	63.8	1.814 P		5.29
170714	MBMG	4/22/99 12:30 PM	7.1	7.94	1493	MBMG	7.89	2300	80.6	67.7	411	9.01	<.025	0.058	10.1	333	0	1005	10.8	<.5	<.5	2.02
202185	MBMG	4/4/2003 13:00	11.1	8.24	1468	MBMG	8.18	1555	99.4	99.7	113	10.2	0.106	0.042	8.07	417	0	610	6.5	1.92 P		<0.50
202187	MBMG	4/4/2003 12:15	12.1	7.74	1461	MBMG	7.84	1560	130	105	89.4	12.3	0.831	0.303	8.39	543	0	531	<5.00	1.23 P		<0.50
202187	MBMG	7/1/2003 12:00	18.2	7.86	1086	MBMG	7.83	1152	93.8	74	73.9	8.57	0.048	0.048	11.6	476	0	293	<5.0	<0.5 P		<0.5
202186	MBMG	4/4/2003 14:15	8.2	8.31	1717	MBMG	7.88	1778	122	117	146	11.1	0.106	0.091	8.31	493	0	752	6.4	3.04 P		<0.50
7240	USGS	4/11/80 3:50 PM	7.5	8.46	1870	MBMG	8.25	1949	96.3	147	118	8.9	0.008	0.12	12.3	509	0	667	6.1	0.01		0.7
7241	USGS	4/11/80 3:20 PM	6	8.23	1650	MBMG	8.32	1487	104	128	91.4	8.2	0.045	0.081	15.7	509	0	565	6.1	0.34		0.7
250810	BLM	6/16/09 12:23 PM	18.9	7.5		MBMG	8.44	9410	347	555	2001	25.3	0.113	0.067	2.25	462	19.2	6972	52.1	<5.0	<5.0	<5.0
250810	BLM	6/16/09 12:23 PM	18.9	7.5		MBMG			323	478	1891	22.2	0.344	0.083								
7904	USGS	6/1/72 3:45 PM	24.5	7.9	3000	MBMG	8.28	2845	98	152	405	15	0.01	0.16	12	624	0	1212	15	<.023		1
268946	MBMG	10/29/2012 18:30	7.4	8.48	4166	MBMG	8.52	4340	106	214	686	17.32	<0.150 U	<0.020 U	4.52	527	26.66	2005	20.4	<0.050 U		0.71
268944	MBMG	10/29/2012 17:30	7.3	8.52	4220	MBMG	8.53	4500	103	219	706	16.28	<0.150 U	<0.020 U	1.82	515	26.16	2060	20.7	<0.050 U		0.69
268943	MBMG	10/29/2012 15:58	8.7	8.49	4072	MBMG	8.48	4410	112	216	672	16.09	<0.150 U	<0.020 U	3.37	540	24.14	1997	19.3	<0.050 U		0.67
268941	MBMG	10/29/2012 13:55	5.8	8.35	3836	MBMG	8.34	4170	117	196	610	15.03	<0.150 U	<0.020 U	7.09	566	18.24	1790	17.6	<0.050 U		0.7
268905	MBMG	10/30/2012 13:55	7.1	8.32	3968	MBMG	8.35	4290	137	208	633	14.11	<0.150 U	<0.020 U	7.7	551	21.14	1907	16.6	<0.050 U		0.71

GWIC ID	OPO4 P (mg/l)	Ag (ug/l)	Al (ug/l)	As (ug/l)	B (ug/l)	Ba (ug/l)	Be (ug/l)	Br (ug/l)	Cd (ug/l)	Co (ug/l)	Cr (ug/l)	Cu (ug/l)	Li (ug/l)	Mo (ug/l)	Ni (ug/l)	Pb (ug/l)	Sb (ug/l)	Se (ug/l)	Sn (ug/l)	Sr (ug/l)
201																				
214	0.29		<100.		<100.				10		20	10		<100.	<50.	100				
309																				
1071	<.1		<100.		1000				10		200	<10.		<100.	<50.	100				
1081	30		<100.		1300				10		20	<10.		<100.	<50.	150				
1097	0.03		<100.		400				10		<20.	<10.		<100.	<50.	150				
1224	0.21		<100.		200				<10.		<20.	<10.		<100.	<50.	100				
1335	0.04		<100.		500				10		<20.	<10.		<100.	<50.	100				
1336	30		<100.		600				20		<20.	10		<100.	<50.	100				
1338	30		<100.		600				10		20	10		<100.	<50.	100				
170710	<2.5	<1	515	1.59	807	77.3	<2	<2500	<2	<2	<2	5.7	<250	<10	13	<2	<2	1.76		5640
170710	<.5	<1	<30	<1	389	82.3	<2	<500	<2	<2	<2	6.39	<500	<10	6.51	<2	<2	1.41		2760
170710	<1.0	<10	<300	<10	682	30.7	<20	<1000	<20	<20	<20	<20	<100	<100	43.2	<20	<20	<10		5790
170711	<.5	<1	<30	<1	235	150	<2	<500	<2	<2	<2	7.3	<250	<10	10	<2	4.46	1.73		2860
170711	<2.5	<5	<150	<5	807	34.5	<10	<2500	<10	<10	17	17	<1000	<50	13.4	<10	<10	<5		6660
170711	<1.0	<5	<150	<5	873	24.6	<10	<1000	<10	<10	<10	<10	<100	<50	37	<10	<10	<5		9130
170713	<2.5	<1	<30	<1	633	71.7	<2	<2500	<2	<2	<2	<2	<250	<10	17.2	<2	<2	1.05		6440
170713	<1.0	<10	<300	<10	757	27	<20	<1000	<20	<20	<20	<20	<100	<100	54.6	<20	<20	<10		7650
171906	<2.5	<5	<150	15.7	687	44.5	<10	<2500	<10	<10	<10	13.7	<1000	<50	<10	<10	<10	<5		1580
171906	<1.0	<5	<150	<5	791	32.4	<10	<1000	<10	<10	<10	11.6	<100	<50	28.1	<10	<10	<5		7040
171908	<2.5	<5	<150	7.17	792	77.2	<10	<2500	<10	<10	<10	17.3	<1000	<50	<10	<10	<10	<5		2910
265	0.05		<100.		200				<10.		20	10		<100.	<50.	100				
1225	0.1				600				10		400	20		100	50	200				
170709	<1.0	<1	<30	<1	1220	27.6	<2	<1000	<2	<2	<2	2.54	<250	<10	17.6	<2	<2	2.56		5540
170709	<2.5	<1	<30	1.69	1720	23.4	<2	<2500	<2	<2	<2	<2	<500	<10	14.4	<2	<2	3.17		7730
170709	<2.5	<5	<150	<5	1540	21.7	<10	<2500	<10	<10	<10	<10	<1000	<50	23.6	<10	<10	5.17		7860
170709	<1.0	<1	<30	1.38	1070	18.5	<2	<1000	<2	<2	<2	<2	72	<10	25.3	<2	<2	2.68		5730
170712	<.5	<1	<30	<1	398	135	<2	<500	<2	<2	<2	4.21	<250	<10	10.9	<2	<2	1.25		2990
170712	<1.0	<1	<30	1.49	962	23.2	<2	<500	<2	<2	2.49	4.96	79	<10	29	<2	<2	3.1		7570
170714	<.5	<1	<30	<1	216	132	<2	<500	<2	<2	<2	10.9	<250	<10	7.81	<2	11.8	1.17		2480
202185	<0.50	<5	<150	5.94	<150	40.5	<2	<500	<2	<10	<10	<10	56.1	<50	13.6	<10	<10	6.41		1370
202187	<0.50	<5	<150	<5	<150	93.8	<2	<500	<2	<10	<10	<10	57.6	<50	<10	<10	<10	<5		1340
202187		<1	<30	1.43	175	38.8	<2	<500	<1	<2	<2	<2	51.1	<10	3.52	<2	<2	<1		997
202186	<0.50	<5	<150	<5	<150	33.6	<2	<500	<2	<10	<10	<10	60.3	<50	<10	<10	<10	<5		1470
7240		<2.	<30.		250	70			<2.		7	8	89	20	10	<40.		1.7		1760
7241		<2.	<30.		220	40			2		4	8	89	<20.	<10.	<40.		2.6		1560
250810	<5.0	<4.42	<16.55	<6.42	3.23	35.4	<13.24	<5000	<4.47	<4.37	<6.63	<7.42	1603	<4.64	<7.10	<7.29	<5.41	<8.27	<5.24	5531
250810		2.68		4.52		39.1	<1.58		<0.82	0.801	20	<7.96	1392	5.34	12.1	<2.68	2.11	4.02		5307
7904																				
268946	<0.100 U	<1.000 U	<4.000 U	<1.000 U	310	5.06	<1.000 U	<50.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	145.49	3.640 J	2.750 J	<0.400 U	<1.000 U	<1.000 U	<1.000 U	1368
268944	<0.100 U	<1.000 U	<4.000 U	<1.000 U	334	10.28	<1.000 U	<50.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	172.08	3.470 J	2.870 J	<0.400 U	<1.000 U	<1.000 U	<1.000 U	1335
268943	<0.100 U	<1.000 U	<4.000 U	<1.000 U	312	9.83	<1.000 U	<50.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	153.73	3.470 J	3.070 J	<0.400 U	<1.000 U	<1.000 U	<1.000 U	1461
268941	<0.100 U	<1.000 U	<4.000 U	<1.000 U	315	9.37	<1.000 U	<50.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	159.45	2.900 J	3.410 J	<0.400 U	<1.000 U	<1.000 U	<1.000 U	1730
268905	<0.100 U	<1.000 U	<4.000 U	<1.000 U	329	8.79	<1.000 U	<50.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	159.02	3.020 J	3.210 J	<0.400 U	<1.000 U	<1.000 U	<1.000 U	1971

GWIC ID	Ti (ug/l)	Tl (ug/l)	U (ug/l)	V (ug/l)	Zn (ug/l)	Zr (ug/l)	Ce (ug/l)	Cs (ug/l)	Ga (ug/l)	La (ug/l)	Nb (ug/l)	Nd (ug/l)	Pd (ug/l)	Pr (ug/l)	Rb (ug/l)	Th (ug/l)	W (ug/l)	Diss. Inorg. Carbon (mg/l)
201																		
214					10													
309																		
1071					20													
1081					20													
1097					20													
1224					10													
1335					20													
1336					20													
1338					20													
170710	<50	<5		<5	<15	<25												
170710	<100	<5		<5	4.08	<50												
170710	<200	<50		<50	25.1	<100												
170711	<50	<5		<5	<15	<25												
170711	<200	<25		<25	<10	<100												
170711	<200	<25		<25	18.9	<100												
170713	<50	<5		<5	<15	<25												
170713	<200	<50		<50	21.9	<100												
171906	<200	<25		<25	<10	<100												
171906	<200	<25		<25	10.7	<100												
171908	<200	<25		<25	19.1	<100												
265					10													
1225					20													
170709	<50	<5		<5	<15	<25												
170709	<100	<5		<5	5.11	<50												
170709	<200	<25		<24	<10	<100												
170709	<100	<5		<5	11.4	<50												
170712	<50	<5		<5	<15	<25												
170712	<100	<5		<5	8.62	<50												
170714	<50	<5		<5	<15	<25												
202185	<1	<25	16	<25	<10	<2												
202187	1.07	<25	13.9	<25	<10	<2												
202187	<1	<5	5.67	<5	<2	<2												
202186	1.22	<25	11.6	<25	<10	<2												
7240	9			6	4	7												
7241	12			6	<3.	<4.												
250810	71	<7.64	32.4	<5.95	<29.51	<3.82	<6.91	<5.42	<7.26	<6.49	<5.21	<6.02	<4.09	<7.10	<4.99	<7.36	<8.59	
250810	103	<1.12	37.1	1.51	<11.56	1.84	0.346	<0.49	<0.43	<0.39	<3.55	<0.62	1.67	<0.34	<3.55	<0.45	<0.49	
7904																		
268946	25.5	<1.000 U	12.9	<1.000 U	<2.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	3.300 J	<1.000 U	<1.000 U	87.5
268944	26.3	<1.000 U	14.6	<1.000 U	<2.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	5.1	<1.000 U	<1.000 U	92.5
268943	25.3	<1.000 U	14.9	<1.000 U	<2.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	2.520 J	<1.000 U	<1.000 U	88.8
268941	22.2	<1.000 U	14.8	<1.000 U	2.490 J	<1.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	4.540 J	<1.000 U	<1.000 U	98.1
268905	23.7	<1.000 U	17.2	<1.000 U	<2.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	5.000 J	<1.000 U	<1.000 U	90.6

GWIC ID	Procedure Type	Sum Diss. Const. (mg/l)	Total Diss. Solids (mg/l)	SAR	Hardness (mg/l)	Alkalinity
201	DISSOLVED	1248	845	2.5*	603	651
214	DISSOLVED	3029	2733	2.4	1759	479
309	DISSOLVED	940	688	2.9*	409	408
1071	DISSOLVED	4039	3896	4.5	2030	280
1081	DISSOLVED	3748	3515	2.9	2125	377
1097	DISSOLVED	2772	2533	2.3	1607	387
1224	DISSOLVED	1488	1272	10.2	239	392
1335	DISSOLVED	5517	5301	17.1	1111	389
1336	DISSOLVED	5411	5161	16.1	1135	404
1338	DISSOLVED	5034	4846	10.1	1626	304
170710	DISSOLVED	4302	4020	8.1	1540	454
170710	DISSOLVED	1969	1836	6.1	657	215
170710	DISSOLVED	5312	4890	10.6	1520	682
170711	DISSOLVED	1938	1791	6.7	565	237
170711	DISSOLVED	6430	6106	13.3	1767	524
170711	DISSOLVED	6286	5893	8.4	2460	636
170713	DISSOLVED	4773	4470	7.3	1793	490
170713	DISSOLVED	6138	5726	9.7	2005	667
171906	DISSOLVED	3686	3319	19.2	457	673
171906	DISSOLVED	5919	5488	10.7	1866	696
171908	DISSOLVED	4464	4232	14.5	941	426
265	DISSOLVED	2701	2404	2.0	1581	481
1225	DISSOLVED	6458	6145	6.7	2969	505
170709	DISSOLVED	3234	3021	2.2	1951	344
170709	DISSOLVED	4376	4061	2.6	2697	509
170709	DISSOLVED	4628	4320	2.8	2737	499
170709	DISSOLVED	3423	3186	2.3	2028	383
170712	DISSOLVED	1931	1766	4.1	790	267
170712	DISSOLVED	4924	4597	4.1	2679	528
170714	DISSOLVED	1929	1760	8.2	480	273
202185	DISSOLVED	1364	1153	1.9	659	342
202187	DISSOLVED	1419	1143	1.4	757	445
202187	DISSOLVED	1032	790	1.4	539	390
202186	DISSOLVED	1655	1405	2.3	786	404
7240	DISSOLVED	1565	1307	1.8	846	417
7241	DISSOLVED	1428	1170	1.4	787	417
250810	DISSOLVED	10435	10201	15.5	3151	411
250810	TOTAL RECOVERABLE	2714	2714	15.6	2774	0
7904	DISSOLVED	2534	2217	6.0	870	512
268946	DISSOLVED	3609	3341	8.8	1148	477
268944	DISSOLVED	3669	3408	9.0	1158	466
268943	DISSOLVED	3600	3326	8.6	1169	483
268941	DISSOLVED	3338	3051	8.0	1100	494
268905	DISSOLVED	3497	3217	8.0	1198	487

GWIC ID	Site Name	Water Body	Site Type	Stream Type
268912	OW RANCH * HWC C2	HANGING WOMAN CREEK	STREAM	I
223877	USFS- E. FK HANGING WOMAN CREEK WEIR	EAST FORK HANGING WOMAN CREEK	STREAM	P
223877	USFS- E. FK HANGING WOMAN CREEK WEIR	EAST FORK HANGING WOMAN CREEK	STREAM	P
223877	USFS- E. FK HANGING WOMAN CREEK WEIR	EAST FORK HANGING WOMAN CREEK	STREAM	P
223877	USFS- E. FK HANGING WOMAN CREEK WEIR	EAST FORK HANGING WOMAN CREEK	STREAM	P
223877	USFS- E. FK HANGING WOMAN CREEK WEIR	EAST FORK HANGING WOMAN CREEK	STREAM	P
223877	USFS- E. FK HANGING WOMAN CREEK WEIR	EAST FORK HANGING WOMAN CREEK	STREAM	P
223877	USFS- E. FK HANGING WOMAN CREEK WEIR	EAST FORK HANGING WOMAN CREEK	STREAM	P
223877	USFS- E. FK HANGING WOMAN CREEK WEIR	EAST FORK HANGING WOMAN CREEK	STREAM	P
223877	USFS- E. FK HANGING WOMAN CREEK WEIR	EAST FORK HANGING WOMAN CREEK	STREAM	P
7801	FIFTEEN-MILE CREEK*14 MI SW SONNETTE MT.	FIFTEEN-MILE CREEK	STREAM	E
7398	HOME CREEK * 1.1 MI NW WILLOW CROSSING.	HOME CREEK	STREAM	P
236144	LITTLE PORCUPINE CREEK	LITTLE PORCUPINE CREEK	STREAM	P
236144	LITTLE PORCUPINE CREEK	LITTLE PORCUPINE CREEK	STREAM	P
7368	OTTER CK*.25 MI E ASHLAND MT	OTTER CREEK	STREAM	P
7585	OTTER CREEK ABOVE WILLOW CROSSING	OTTER CREEK	STREAM	P
7779	OTTER CREEK * NEAR 15 MILE ROAD (2B)	OTTER CREEK	STREAM	P
7910	OTTER CREEK	OTTER CREEK	STREAM	P
7910	OTTER CREEK	OTTER CREEK	STREAM	P
7910	OTTER CREEK	OTTER CREEK	STREAM	P
8214	OTTER CR ABOVE CONFLUENCE WITH PASTURE CR	OTTER CREEK	STREAM	I
8218	MORRIS JOHN * OTTER CREEK AT WEIR *	OTTER CREEK	STREAM	I
259296	OTTER CREEK	OTTER CREEK	STREAM	P
259300	OTTER CREEK	OTTER CREEK	STREAM	P
259302	OTTER CREEK	OTTER CREEK	STREAM	P
259302	OTTER CREEK	OTTER CREEK	STREAM	P
259304	OTTER CREEK	OTTER CREEK	STREAM	P
259306	OTTER CREEK	OTTER CREEK	STREAM	P
8208	PASTURE CR NR UOP-01 * UPSTREAM FROM WEIR	PASTURE CREEK	STREAM	E
7091	POWDER RIVER* 32 MI NE BROADUS MT.	POWDER RIVER	STREAM	P
7804	POWDER RIVER*GAGING STATION NEAR BROADUS.	POWDER RIVER	STREAM	P
7914	POWDER RIVER * 13.75 MI W BROADUS MT.	POWDER RIVER	STREAM	P
7870	PRAIRIE DOG CRK AT SW CHECK POINT NO. 09	PRAIRIE DOG CREEK	STREAM	E
7871	PRAIRIE DOG CRK AT SW CHECK POINT NO 07	PRAIRIE DOG CREEK	STREAM	E
7878	PRAIRIE DOG CRK AT SW CHECK POINT NO. 04	PRAIRIE DOG CREEK	STREAM	E
7896	PRAIRIE DOG CRK AT MOUTH TO TONGUE RIVER	PRAIRIE DOG CREEK	STREAM	E
708	ROSEBUD CREEK * 34.5 MI SW COLSTRIP MT.	ROSEBUD CREEK	STREAM	P
7224	ROSEBUD CREEK * 15.3 MI SW OF COLSTRIP MT.	ROSEBUD CREEK	STREAM	P
170706	MCRAE DOUG ROSEBUD CREEK	ROSEBUD CREEK	STREAM	P
170706	MCRAE DOUG ROSEBUD CREEK	ROSEBUD CREEK	STREAM	P
170706	MCRAE DOUG ROSEBUD CREEK	ROSEBUD CREEK	STREAM	P
170706	MCRAE DOUG ROSEBUD CREEK	ROSEBUD CREEK	STREAM	P
170706	MCRAE DOUG ROSEBUD CREEK	ROSEBUD CREEK	STREAM	P
170706	MCRAE DOUG ROSEBUD CREEK	ROSEBUD CREEK	STREAM	P

GWIC ID	Potential Existing Impacts	Latitude	Longitude	Geomethod	Datum	Twn	Rng	Sec	QSec	County	SampleID
268912		45.14602	-106.48526	NAV-GPS	NAD83	08S	43E	17	AACB	BIG HORN	203003
223877		45.290900	-106.404100	NAV-GPS	NAD27	06S	43E	25	ABDD	ROSEBUD	2007Q0336
223877		45.290900	-106.404100	NAV-GPS	NAD27	06S	43E	25	ABDD	ROSEBUD	2007Q1055
223877		45.290900	-106.404100	NAV-GPS	NAD27	06S	43E	25	ABDD	ROSEBUD	2008Q0180
223877		45.290900	-106.404100	NAV-GPS	NAD27	06S	43E	25	ABDD	ROSEBUD	2008Q0486
223877	N/A	45.290900	-106.404100	NAV-GPS	NAD27	06S	43E	25	ABDD	ROSEBUD	2009Q0402
223877		45.290900	-106.404100	NAV-GPS	NAD27	06S	43E	25	ABDD	ROSEBUD	2009Q0789
223877		45.290900	-106.404100	NAV-GPS	NAD27	06S	43E	25	ABDD	ROSEBUD	2010Q0385
223877		45.290900	-106.404100	NAV-GPS	NAD27	06S	43E	25	ABDD	ROSEBUD	2010Q0975
223877		45.290900	-106.404100	NAV-GPS	NAD27	06S	43E	25	ABDD	ROSEBUD	2011Q0416
7801	N/A	45.380000	-106.079400	MAP	NAD27	05S	46E	29	ABAA	POWDER RIVER	1974Q0150
7398	N/A	45.543000	-106.193600	MAP	NAD27	03S	45E	29	DAD	POWDER RIVER	1976Q1401
236144	N/A	46.304140	-106.575080	NAV-GPS	NAD83	06N	41E	3	AD	ROSEBUD	2007Q1059
236144		46.304140	-106.575080	NAV-GPS	NAD83	06N	41E	3	AD	ROSEBUD	2007Q1060
7368		45.588300	-106.256100	MAP	NAD27	03S	44E	11	DAAD	ROSEBUD	1974Q0199
7585		45.492500	-106.171100	MAP	NAD27	04S	45E	15	BCCD	POWDER RIVER	1983Q0122
7779		45.391300	-106.147700	MAP	NAD27	05S	45E	23	BACC	POWDER RIVER	1980Q2630
7910		45.292200	-106.147200	MAP	NAD27	06S	46E	30	BAAD	POWDER RIVER	1976Q1397
7910		45.292200	-106.147200	MAP	NAD27	06S	46E	30	BAAD	POWDER RIVER	2010Q0665
7910		45.292200	-106.147200	MAP	NAD27	06S	46E	30	BAAD	POWDER RIVER	2011Q0855
8214		45.133000	-106.122200	MAP	NAD27	08S	46E	18	DADD	POWDER RIVER	1983Q1116
8218	N/A	45.133000	-106.122200	MAP	NAD27	08S	46E	18	DDAD	POWDER RIVER	1984Q0147
259296		45.225200	-106.167980	NAV-GPS	NAD83	07S	45E	13		POWDER RIVER	2011Q0856
259300		45.391380	-106.144040	NAV-GPS	NAD83	05S	45E	23		POWDER RIVER	2011Q0859
259302		45.430240	-106.144310	NAV-GPS	NAD83	05S	45E	2		POWDER RIVER	2010Q0663
259302		45.430240	-106.144310	NAV-GPS	NAD83	05S	45E	2		POWDER RIVER	2011Q0860
259304		45.521270	-106.185160	NAV-GPS	NAD83	04S	45E	4		POWDER RIVER	2011Q0857
259306		45.587880	-106.255000	MAP	NAD83	03S	45E	11		POWDER RIVER	2011Q0858
8208	N/A	45.134700	-106.120200	MAP	NAD27	08S	46E	17	CBCC	POWDER RIVER	1984Q0144
7091		45.752200	-105.087500	MAP	NAD27	01S	54E	17	CDCD	POWDER RIVER	1976Q1396
7804	IRRIGATION, AND OIL, GAS, CBM IN WYOMING	45.427500	-105.400200	MAP	NAD27	05S	51E	3	DAAC	POWDER RIVER	1976Q1395
7914		45.305200	-105.578600	MAP	NAD27	06S	50E	22	ABBA	POWDER RIVER	1976Q1398
7870		45.320000	-106.736600	MAP	NAD27	06S	41E	17	BADD	ROSEBUD	1979Q2883
7871	N/A	45.303800	-106.705500	MAP	NAD27	06S	41E	21	ADAA	ROSEBUD	1979Q2882
7878		45.286100	-106.668300	MAP	NAD27	06S	41E	26	DABB	ROSEBUD	1979Q2881
7896		45.269700	-106.624400	MAP	NAD27	06S	42E	31	DADB	ROSEBUD	1979Q2880
708		45.830359	-106.423232	TRS-SEC	NAD83	01N	43E	19	AA	ROSEBUD	1976Q1403
7224		45.697200	-106.680500	MAP	NAD27	02S	41E	4	BCB	ROSEBUD	1976Q1404
170706		45.721700	-106.673100	MAP	NAD27	01S	41E	28	DBDB	ROSEBUD	1999Q0569
170706		45.721700	-106.673100	MAP	NAD27	01S	41E	28	DBDB	ROSEBUD	1999Q0654
170706		45.721700	-106.673100	MAP	NAD27	01S	41E	28	DBDB	ROSEBUD	2000Q0115
170706	SOME IRRIGATION, TOWN	45.721700	-106.673100	MAP	NAD27	01S	41E	28	DBDB	ROSEBUD	2000Q0316
170706		45.721700	-106.673100	MAP	NAD27	01S	41E	28	DBDB	ROSEBUD	2000Q0317
170706		45.721700	-106.673100	MAP	NAD27	01S	41E	28	DBDB	ROSEBUD	2000Q0319

GWIC ID	Agency	Sample Date	Water Temp	Fld pH	Fld SC (uS)	Lab	Lab pH	Lab SC (uS)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Fe (mg/l)	Mn (mg/l)	SiO2 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	SO4 (mg/l)	Cl (mg/l)	NO3 N (mg/l)	NO2 N (mg/l)	F (mg/l)
268912	MBMG	10/29/2012 12:52	7.3	8.31	3863	MBMG	8.37	4240	122	196	603	14.35	<0.150 U	<0.020 U	7.85	563	19.12	1808	17.5	<0.050 U		0.71
223877	MBMG	8/18/06 7:00 AM	15	7.79	1270	MBMG	7.93	1430	81.8	69.6	102	13.4	0.078	0.015	22.6	577	0	272	6.66	<0.5 P		1.19
223877	MBMG	5/1/07 3:53 PM	26.9	8.06	1372	MBMG	7.06	1256	84.3	70.4	115	14.5	<0.005	0.061	18.5	434	0	335	6	<0.5 P		1.19
223877	MBMG	9/21/07 5:20 PM	14.1	8.28	1546	MBMG	7.91	1549	105	92.7	147	11.9	0.046	0.002	24.1	614	0	460	8.18	<0.5 P		1.53
223877	MBMG	5/21/08 4:20 PM	13.9	8.07	1429	MBMG	7.87	1398	97	85.8	129	9.94	<0.005	0.003	16.4	509	0	388	7.85	<0.5 P		1.21
223877	MBMG	11/13/08 12:00 AM	9.3	7.98	1346	MBMG	8.09	1424	108	87.2	137	9.43	<0.018	<0.003	22.7	559	0	417	7.56	<0.5 P		1.02
223877	MBMG	6/10/09 4:50 PM	11.6	7.96	1404	MBMG	7.83	1430	94.7	85.1	134	10.7	0.015	0.005	2.8	540	0	433	7.99	<0.5 P		1.11
223877	MBMG	10/13/09 2:07 PM	8.7	8.33	1403	MBMG	8.09	1470	100	79.1	128	10.5	0.014	0.004	22.7	543	0	411	7.45	<0.5 P		1.52
223877	MBMG	5/26/10 4:25 PM	18.2			MBMG			84.8	69.5	115	9.4	0.011	0.008	9.74	266	0	376	6.32	0.362 P		1.15
223877	MBMG	9/13/10 11:30 AM	13.6	8.26	1355	MBMG	8.28	1374	95.7	79.5	131	10.7	<0.010	<0.005	22.9	571	0	379	6.83	<0.05	<0.05	1.09
7801	USGS	1/15/74 11:45 AM				MBMG	8.01	2647	106	171	309	15.5	<.01	<.01	19.3	691	0	1071	9.6	0.9		0.5
7398	USGS	10/21/76 9:40 AM				MBMG	8.23	3433	106	191	506	20.9	0.15	0.36	15.8	860	0	1386	20.5	0.3		1.1
236144	BLM	5/8/07 12:25 PM	16.5	7.2	906	MBMG	6.63	950	67	23	106	9.2	0.633	0.01	7.18	78.7	0	384	27.3	<0.5	<0.5	0.559
236144	BLM	5/8/07 12:00 AM				MBMG			93.5	40.2	118	19.9	48.6	0.772								
7368	USGS	1/31/74 9:30 AM			1100	MBMG	8.21	1377	63	68	143.8	14.2	0.14	<.1	11.3	311	0	500	7.2	0.294		0.4
7585	USGS	3/29/83 2:30 PM	7.5	8.52	3775	MBMG	8.22	3490	126	225	439	17.8	0.03	0.11	6.1	617	0	1700	22.4	0.05		1.7
7779	USGS	10/21/80 9:40 AM	7	8.1	2920	MBMG	8.26	2961	95.4	190	337	17.5	0.015	0.05	7.7	544	0	1300	16.8	0.04		0.26
7910	USGS	10/20/76 1:30 PM	5.6		2452	MBMG	8.18	2755	119	171	324	16.8	0.05	0.05	15.2	625	0	1139	12	0		0.6
7910	MBMG	3/11/10 12:00 AM				MBMG	8.13	1710	145	207	398	17.6	0.068	0.181	14.2	767	0	1452	16.0	0.961 P		0.547
7910	MBMG	12/1/10 1:40 PM	1.8	7.98	2032	MBMG	7.99	4855	167	256	498	20.4	0.03	0.955	21.1	793	0	1854	20.5	0.083	<0.05	0.592
8214	USGS	10/21/83 10:30 AM	4	8.08	4275	MBMG	8.12	4201	181	301	529	14.5	0.008	0.003	11.2	569	0	2260	22.2	0.17		1.2
8218	USGS	5/21/84 4:30 PM	18	8.2	4950	MBMG	7.76	4679	186	333	640	14.8	0.038	0.021	5.5	690	0	2550	15.7	0.23		0.2
259296	MBMG	12/1/10 11:00 AM	2.5	7.62	1871	MBMG	7.8	4351	157	193	467	16.5	0.019	0.22	22.7	714	0	1580	17.8	0.412	<0.05	0.502
259300	MBMG	12/1/10 2:25 PM	0.6	7.95	1963	MBMG	8	4970	139	262	505	20.8	0.032	0.412	14.5	790	0	1859	21.4	0.111	<0.05	0.612
259302	MBMG	3/11/10 12:00 AM				MBMG	8.44	2740	112	184	366	18.5	0.072	0.149	12.7	520	18	1439	16.3	<0.2 P		0.505
259302	MBMG	12/1/10 3:33 PM	0.6	8.11	2087	MBMG	8.08	5328	144	282	556	21.5	0.028	0.186	12.3	847	0	1992	23.8	0.132	<0.05	0.663
259304	MBMG	12/1/10 4:20 PM	13.6	8.13	2171	MBMG	8.09	5515	127	293	622	23.2	0.027	0.026	6.41	857	0	2078	24.9	0.092	<0.05	0.669
259306	MBMG	12/1/10 5:10 PM	19	8.42	1866	MBMG	8.26	4610	103	225	539	21.9	0.019	0.049	10.3	815	0	1635	23.0	0.169	<0.05	0.729
8208	USGS	5/19/84 10:40 AM	16	7.84	7200	MBMG	7.5	6659	264	483	991	26.1	0.049	0.29	4.3	709	0	4070	30.7	0.73		0.8
7091	USGS	10/19/76 2:00 PM	3.8		1574	MBMG	8.04	1860	125	52	221	6	0.05	0.01	5.6	249	0	597	128	0.3		0.5
7804	USGS	10/18/76 2:20 PM	2.2		1450	MBMG	8.05	1750	124	51.5	221	6	0.2	<.01	5.3	247	0	588	132	0.2		0.5
7914	USGS	10/21/76 3:00 PM	7		1880	MBMG	8.1	1913	129	55.5	225	5.9	0.01	<.01	6	276	0	581	143	0.2		0.5
7870	USGS	6/6/79 12:10 PM	16		1400	MBMG	8.03	1411	73.5	137	60.6	5.5	0	0.02	8.9	493	0	449	1.4	0.255		0.3
7871	USGS	6/6/79 1:30 PM	17.5		1440	MBMG	8.06	1421	62.7	146	72.1	5.8	0.03	0.01	7.6	445	0	505	5.54	0.111		0.3
7878	USGS	6/6/79 2:30 PM	17		1500	MBMG	8.19	1536	78.8	131	104	9.9	0.02	0.02	14.6	484	0	562	5.1	0.079		0.5
7896	USGS	6/6/79 3:40 PM	15		1600	MBMG	7.8	1603	77.5	108	155	10.2	0.06	0	24.7	498	0	525	5	0.795		0.8
708	USGS	10/27/76 9:30 AM				MBMG	8.3	1282	71	99	82	10.7	0.04	<.01	15.7	510	0	336	7	0		0.6
7224	USGS	10/27/76 11:45 AM	2.5		1180	MBMG	8.24	1164	68.5	91	65	9.5	0.11	0.02	16.6	504	0	256	7	0		0.6
170706	MBMG	2/26/99 11:30 AM	0.1	7.88	390	MBMG	7.39	412	26.6	27	18.4	8.38	0.559	0.05	7.64	170	0	75	<5.0	<.5	<.5	<.5
170706	MBMG	4/20/99 3:00 PM	13.4	8.17	1207	MBMG	8.47	1230	75.7	99	73.1	10.7	<.025	0.035	8.18	498	14.9	315	6.5	<.5	<.5	<.5
170706	MBMG	8/7/99 8:00 AM	20	8.1	1361	MBMG	8.2	1333	59.5	101	100	13.5	<.05	0.024	4.35	537	0	362	10.6	<.5	<.5	0.55
170706	MBMG	9/20/99 5:00 PM	13.1	8.24	1481	MBMG	8.29	1392	75.5	132	120	15.3	<.025	0.015	6.92	567	0	463	10.8	<.5 P		0.605
170706	MBMG	9/20/99 5:00 PM	13.1	8.24	1481	MBMG			69.6	116	113	15.6	0.187	0.017		0	0					
170706	MBMG	9/20/99 12:30 PM				MBMG			89.4	168	212	19.6	0.135	<.01							<1.0	

GWIC ID	OPO4 P (mg/l)	Ag (ug/l)	Al (ug/l)	As (ug/l)	B (ug/l)	Ba (ug/l)	Be (ug/l)	Br (ug/l)	Cd (ug/l)	Co (ug/l)	Cr (ug/l)	Cu (ug/l)	Li (ug/l)	Mo (ug/l)	Ni (ug/l)	Pb (ug/l)	Sb (ug/l)	Se (ug/l)	Sn (ug/l)	Sr (ug/l)
268912	<0.100 U	<1.000 U	<4.000 U	<1.000 U	326	7.29	<1.000 U	<50.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	150.73	2.700 J	3.150 J	<0.400 U	<1.000 U	<1.000 U	<1.000 U	1854
223877	<0.5	<1	<10	1.2	210	72.5	<2	<500	<1	<2	<2	<2	79.8	<10	<2	<2	<2	<1		1309
223877	<0.5	<0.5	4.01	1.71	180	93.9	<0.1	<500	<0.1	0.299	<0.1	0.368	79	4.41	0.39	<0.2	0.173	2.91		1397
223877	<0.5	<1.0	<2.0	0.748	245	80.6	<0.1	<500	<0.1	0.147	<0.5	0.331	93.4	4.12	<0.1	<0.2	<0.1	1.69		1670
223877	<0.10	<2.5	<10.0	<1.0	106	20.9	<0.5	<200	<0.5	<0.5	<0.5	<1.0	79.9	<5.0	<0.5	<1.0	<0.5	<2.5	<0.5	1529
223877	<0.5	<0.57	<8.82	<2.34	228	75.7	<1.96	<500	<0.75	<1.38	<0.37	<4.98	61.7	3.72	1.04	<2.60	<0.49	<3.22	<0.55	1601
223877	<0.5	<0.20	<38.38	0.821	223	66.9	<1.01	<500	<0.25	<0.51	0.391	<2.02	73.7	4.43	0.815	<0.77	0.246	3.34		1479
223877	<0.5	<0.5	<37.8	0.573	214	69.2	<0.9	<500	<0.5	<0.3	<0.5	<2.0	71.1	4.25	<0.6	<2.0	<0.5	1.69	<0.5	1298
223877	<0.05	<0.10	<1.00	0.907	154	<0.10	<0.10	<50	<0.10	0.23	<0.20	0.568	45.8	3.89	0.434	<0.10	<0.10	2.83	<0.10	1339
223877	<0.1	<1.0	<10.0	<0.9	219	68.1	<1.0	75	<1.0	<0.9	<1.0	<2.5	59.2	3.09	<0.9	<1.0	<1.0	1.72	<1.0	1330
7801																				
7398													170							
236144	<0.5	<5.0	331	<2.0	196	26.4	<1.0	<500	<1.0	<1.0	<1.0	3.87	125	<10	7.93	7.3	<1.0	<5.0		753
236144		<5.0		19.4		418	2.76		<1.0	24.6	41.3	76.3	182	<10	79.5	45.5	<1.0	<5.0		1404
7368																				
7585																				
7779		<2.	30		310				<2.		<2.	19	110	<20.	<10.	<40.				1300
7910													150							
7910	<0.05	<0.51	<4.04	0.848	229	22.4	<0.51	87	<0.51	0.54	<0.51	0.621	106	3.44	1.04	<0.51	<1.01	<1.01	<0.51	1893
7910	<0.1	<1.0	<10.0	1.24	312	27.5	<1.0	117	<1.0	<0.9	<1.0	<2.5	122	2.95	2.43	<1.0	<1.0	<0.9	<2.5	2240
8214																				
8218																				
259296	<0.1	<1.0	<10.0	<0.9	315	18.8	<1.0	99	<1.0	<0.9	<1.0	<2.5	97.5	3.62	2.18	<1.0	<1.0	2.35	<2.5	2035
259300	<0.1	<1.0	<10.0	1.06	319	25.2	<1.0	107	<1.0	<0.9	<1.0	<2.5	112	4.06	3.19	<1.0	<1.0	<0.9	<2.5	2108
259302	<0.05	<0.10	2.56	0.742	53.1	67.8	<0.10	77	<0.10	0.224	<0.10	0.924	28.2	2.06	0.787	<0.10	<0.20	0.277	<0.10	713
259302	<0.1	<1.0	<10.0	1.08	344	18.1	<1.0	120	<1.0	<0.9	<1.0	<2.5	116	4.16	3.12	<1.0	<1.0	<0.9	<2.5	2260
259304	<0.1	<1.0	<10.0	1.41	408	14.9	<1.0	116	<1.0	<0.9	<1.0	<2.5	126	4.16	3.42	<1.0	<1.0	<0.9	<2.5	2223
259306	<0.1	<1.0	<10.0	1.03	461	27.1	<1.0	101	<1.0	<0.9	<1.0	<2.5	109	4.85	3.11	<1.0	<1.0	1	<2.5	2084
8208																				
7091													60							
7804													70							
7914													70							
7870																				
7871													80							
7878																				
7896													110							
708													60							
7224													60							
170706	<.5	<1	158	<1	51.3	37	<2	<500	<2	<2	2.71	<2	<50	<10	5.05	<2	<2	<1		404
170706	<.5	<1	<30	1.34	199	80.6	<2	<500	<2	<2	<2	<2	<250	<10	5.04	<2	<2	<1		1520
170706	<.5	<5	<150	<5	259	81.3	<10	<500	<10	<10	<10	<10	<500	<50	<10	<10	<10	<5		1540
170706	<.5	<1	<30	1.59	291	72.5	<2	<500	<2	<2	2.8	<2	58	<10	4.96	<2	<2	<1		1980
170706		<1		1.68		72.1	<2		<1	<2	<2	2.32	<250	<10	6.4	<2	<2	<1		1830
170706		<1		1.79		82.2	<2		<1	<2	<2	2.91	<500	<10	7.78	<2	<2	<1		2510

GWIC ID	Ti (ug/l)	Tl (ug/l)	U (ug/l)	V (ug/l)	Zn (ug/l)	Zr (ug/l)	Ce (ug/l)	Cs (ug/l)	Ga (ug/l)	La (ug/l)	Nb (ug/l)	Nd (ug/l)	Pd (ug/l)	Pr (ug/l)	Rb (ug/l)	Th (ug/l)	W (ug/l)	Diss. Inorg. Carbon (mg/l)
268912	23.0	<1.000 U	14.9	<1.000 U	<2.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	<1.000 U	4.840 J	<1.000 U	<1.000 U	97.3
223877	<1	<5	5.43	<5	<2	<2												
223877	1.66	<0.1	5.92	2.78	<0.2	0.174												
223877	1.19	<0.1	7.82	0.965	0.5	<0.1												
223877	2.14	<0.5	2.39	<0.5	2.54	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<0.5	2.56	<0.25	<2.5	
223877	4.88	<0.34	<3.30	<8.05	<4.05	<0.24	<0.37	<0.26	<1.63	<0.27	<0.51	<0.73	2.92	<0.38	9.34	<8.99	<0.45	
223877	4.43	<0.17	6.84	1.96	<4.55	<0.152	<0.10	<0.21	<0.25	<0.11	<0.20	<0.26	0.517	<0.11	8.07	<0.12	<0.25	
223877	4.72	<0.5	7.38	1.95	<4.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.477	<0.5	8.79	<0.5	<0.5	
223877	3.22	<0.10	6.46	1.79	<2.80	<0.10	<0.10	<0.10	<0.20	<0.10	<0.10	<0.10	0.559	<0.10	7.73	<0.10	<0.10	
223877	4.71	<1.0	6.48	1.59	<5.0	<0.9	<1.0	<2.5	<0.9	<1.0	<0.9	<1.0	<2.5	<1.0	7.37	<1.0	<1.0	
7801																		
7398																		
236144	8.68	<1.0	1.65	1.3	<2.0	<1.0												
236144	450	<1.0	6.28	77.2	240	11												
7368																		
7585																		
7779	12			4	<4.	<4.												
7910																		
7910	13.9	<0.51	16.7	0.672	<4.04	<0.51	<0.51	<0.51	<0.51	<0.51	<1.01	<0.51	0.631	<0.51	9.44	<0.51	<0.51	
7910	28.9	<1.0	19.1	<1.0	62.5	<0.9	<1.0	<2.5	<0.9	<1.0	<2.5	<1.0	<2.5	<1.0	12	<1.0	<1.0	107
8214																		
8218																		
259296	24	<1.0	18.9	<1.0	31.6	<0.9	<1.0	<2.5	<0.9	<1.0	<2.5	<1.0	<2.5	<1.0	12.1	<1.0	<1.0	96.2
259300	29.8	<1.0	17.2	<1.0	99.3	<0.9	<1.0	<2.5	<0.9	<1.0	<2.5	<1.0	<2.5	<1.0	10.1	<1.0	<1.0	109
259302	1.37	<0.10	3.04	0.84	<0.81	0.14	<0.10	<0.10	<0.10	<0.10	<0.20	<0.10	0.223	<0.10	4.76	<0.10	<0.10	
259302	31.7	<1.0	18.1	1.05	<2.5	<0.9	<1.0	<2.5	<0.9	<1.0	<2.5	<1.0	<2.5	<1.0	9.53	<1.0	<1.0	108
259304	33.9	<1.0	16.2	1.13	<2.5	<0.9	<1.0	<2.5	<0.9	<1.0	<2.5	<1.0	<2.5	<1.0	8.63	<1.0	<1.0	70.3
259306	26.7	<1.0	12.7	1.06	<2.5	<0.9	<1.0	<2.5	<0.9	<1.0	<2.5	<1.0	<2.5	<1.0	10.7	<1.0	<1.0	106
8208																		
7091																		
7804																		
7914																		
7870																		
7871																		
7878																		
7896																		
708																		
7224																		
170706	<10	<5		<5	7.73	<5												
170706	<50	<5		<5	<15	<25												
170706	<100	<100		<25	18.2	<50												
170706	<50	<5		<5	8.46	<25												
170706	<50	<5		<5	5.24	<25												
170706	<100	<5		<5	6.38	<50												

GWIC ID	Procedure Type	Sum Diss. Const. (mg/l)	Total Diss. Solids (mg/l)	SAR	Hardness (mg/l)	Alkalinity
268912	DISSOLVED	3350	3065	7.9	1109	493
223877	DISSOLVED	1146	854	2.0	491	473
223877	DISSOLVED	1080	859	2.2	500	356
223877	DISSOLVED	1465	1153	2.5	644	504
223877	DISSOLVED	1244	986	2.3	595	417
223877	DISSOLVED	1349	1066	2.4	629	458
223877	DISSOLVED	1310	1036	2.4	587	443
223877	DISSOLVED	1304	1029	2.3	575	445
223877	DISSOLVED	937	802	2.2	498	218
223877	DISSOLVED	1298	1008	2.4	566	468
7801	DISSOLVED	2395	2044	4.3	969	567
7398	DISSOLVED	3108	2672	6.8	1051	705
236144	DISSOLVED	704	664	2.8	262	65
236144	TOTAL RECOVERABLE	322	322	2.6	399	0
7368	DISSOLVED	1118	960	3.0	437	255
7585	DISSOLVED	3155	2842	5.4	1241	506
7779	DISSOLVED	2509	2233	4.6	1020	446
7910	DISSOLVED	2423	2106	4.5	1001	513
7910	DISSOLVED	3018	2629	5.0	1214	629
7910	DISSOLVED	3632	3230	5.7	1471	650
8214	DISSOLVED	3889	3600	5.6	1691	467
8218	DISSOLVED	4436	4086	6.5	1835	566
259296	DISSOLVED	3170	2808	5.9	1186	586
259300	DISSOLVED	3613	3212	5.8	1425	648
259302	DISSOLVED	2688	2424	4.9	1037	457
259302	DISSOLVED	3880	3450	6.2	1520	695
259304	DISSOLVED	4032	3597	6.9	1523	703
259306	DISSOLVED	3373	2959	6.8	1183	668
8208	DISSOLVED	6580	6220	8.4	2647	582
7091	DISSOLVED	1385	1259	4.2	526	204
7804	DISSOLVED	1376	1250	4.2	522	203
7914	DISSOLVED	1422	1282	4.2	549	226
7870	DISSOLVED	1230	979	1.0	747	404
7871	DISSOLVED	1251	1025	1.1	757	365
7878	DISSOLVED	1391	1145	1.7	736	397
7896	DISSOLVED	1406	1153	2.7	638	408
708	DISSOLVED	1133	874	1.5	585	418
7224	DISSOLVED	1020	764	1.2	546	413
170706	DISSOLVED	334	248	0.6	178	139
170706	DISSOLVED	1102	849	1.3	597	433
170706	DISSOLVED	1190	917	1.8	564	440
170706	DISSOLVED	1392	1104	1.9	732	465
170706	TOTAL RECOVERABLE	315	315	1.9	651	0
170706	TOTAL RECOVERABLE	489	489	3.0	915	0

GWIC ID	Site Name	Water Body	Site Type	Stream Type
170707	SNIDER JIM* ROSEBUD CREEK NEAR COLSTRIP MT	ROSEBUD CREEK	STREAM	P
170707	SNIDER JIM* ROSEBUD CREEK NEAR COLSTRIP MT	ROSEBUD CREEK	STREAM	P
170707	SNIDER JIM* ROSEBUD CREEK NEAR COLSTRIP MT	ROSEBUD CREEK	STREAM	P
1233	ROSEBUD CREEK * 22 MI S ROSEBUD MT.	ROSEBUD CREEK	STREAM	P
170708	NEUOHR ELEANOR* ROSEBUD CREEK AT MOUTH NEAR ROSEBUD MT	ROSEBUD CREEK	STREAM	P
170708	NEUOHR ELEANOR* ROSEBUD CREEK AT MOUTH NEAR ROSEBUD MT	ROSEBUD CREEK	STREAM	P
170708	NEUOHR ELEANOR* ROSEBUD CREEK AT MOUTH NEAR ROSEBUD MT	ROSEBUD CREEK	STREAM	P
170708	NEUOHR ELEANOR* ROSEBUD CREEK AT MOUTH NEAR ROSEBUD MT	ROSEBUD CREEK	STREAM	P
170708	NEUOHR ELEANOR* ROSEBUD CREEK AT MOUTH NEAR ROSEBUD MT	ROSEBUD CREEK	STREAM	P
171907	ROSEBUD CREEK	ROSEBUD CREEK	STREAM	P
199327	HOWARD PLACE ROSEBUD CREEK	ROSEBUD CREEK	STREAM	P
199327	HOWARD PLACE ROSEBUD CREEK	ROSEBUD CREEK	STREAM	P
223687	MBMG MONITORING SITE ROSEBUD CREEK RBC-4	ROSEBUD CREEK, N. CHEYENNE	STREAM	P
250811	TIMBER CREEK	TIMBER CREEK	STREAM	P
250811	TIMBER CREEK	TIMBER CREEK	STREAM	P
7562	TONGUE RIVER*7 MI S ASHLAND MT.	TONGUE RIVER	STREAM	P
191136	TONGUE RIVER AT BIRNEY DAY SCHOOL BRIDGE NEAR BIRNEY MT	TONGUE RIVER	STREAM	P
191136	TONGUE RIVER AT BIRNEY DAY SCHOOL BRIDGE NEAR BIRNEY MT	TONGUE RIVER	STREAM	P
242240	BIRNEY TOWN ON THE TONGUE RIVER	TONGUE RIVER	STREAM	P
242240	BIRNEY TOWN ON THE TONGUE RIVER	TONGUE RIVER	STREAM	P
269300	BROWN CATTLE CO. TONGUE RIVER	TONGUE RIVER	STREAM	P
269335	TONGUE RIVER W1	TONGUE RIVER	STREAM	P
269337	TONGUE RIVER W2	TONGUE RIVER	STREAM	P
269338	TONGUE RIVER W3	TONGUE RIVER	STREAM	P
269339	TONGUE RIVER W4	TONGUE RIVER	STREAM	P
269300	BROWN CATTLE CO TONGUE RIVER * TR K4	TONGUE RIVER	STREAM	P
269299	BROWN CATTLE CO. * TR K3	TONGUE RIVER	STREAM	P
269298	BROWN CATTLE CO. * TR K2	TONGUE RIVER	STREAM	P
269297	BROWN CATTLE CO. * TR K1	TONGUE RIVER	STREAM	P
	N/A: NO KNOWN DIRECT WATER QUALITY IMPACTS. ACTIVITIES MAY INCLUDE AGRICULTURAL LAND, DRY-LAND CROPS, SUB-IRRIGATED FIELDS.			
	IRRIGATION: DEVELOPED IRRIGATION UPSTREAM OF SITE. NO DISTINCTION IS MADE BETWEEN SPRINKLER, WHEEL LINE OR FLOOD IRRIGATION FIELDS.			
	CBM: COALBED METHANE DEVELOPMENT OF POSSIBLE DISCHARGE TO STREAMS OR INFILTRATION PONDS UPSTREAM OF SITE.			
	FLY ASH PONDS: SITES ARE LOCATED BELOW COLSTRIP GENERATOR PLANT FLY ASH PONDS.			
	OPPORTUNISTIC IRRIGATION: FIELDS WITH SPREADER DIKES TO CATCH AND DISPURSE RAIN AND FLOOD WATERS ONLY.			

GWIC ID	Potential Existing Impacts	Latitude	Longitude	Geomethod	Datum	Twn	Rng	Sec	QSec	County	SampleID
170707		45.767500	-106.569400	MAP	NAD27	01S	42E	8	ACDD	ROSEBUD	1999Q0566
170707		45.767500	-106.569400	MAP	NAD27	01S	42E	8	ACDD	ROSEBUD	1999Q0646
170707		45.767500	-106.569400	MAP	NAD27	01S	42E	8	ACDD	ROSEBUD	2000Q0117
1233		46.000200	-106.400000	MAP	NAD27	03N	43E	20	ADAB	ROSEBUD	1976Q1405
170708		46.264700	-106.475000	MAP	NAD27	06N	42E	21	ABC	ROSEBUD	1999Q0568
170708		46.264700	-106.475000	MAP	NAD27	06N	42E	21	ABC	ROSEBUD	1999Q0651
170708		46.264700	-106.475000	MAP	NAD27	06N	42E	21	ABC	ROSEBUD	2000Q0118
170708	SOME IRRIGATION, TOWN, FLY ASH PONDS	46.264700	-106.475000	MAP	NAD27	06N	42E	21	ABC	ROSEBUD	2000Q0314
170708		46.264700	-106.475000	MAP	NAD27	06N	42E	21	ABC	ROSEBUD	2000Q0315
171907		46.131330	-106.465685	TRS-SEC	NAD83	04N	42E	2	ADCA	ROSEBUD	2000Q0116
199327		45.914400	-106.393100	NAV-GPS	NAD27	02N	43E	21	BDBB	ROSEBUD	2000Q0119
199327		45.914400	-106.393100	NAV-GPS	NAD27	02N	43E	21	BDBB	ROSEBUD	2000Q0318
223687	N/A	45.333200	-106.986300	NAV-GPS	NAD27	06S	39E	8		BIG HORN	2010Q0664
250811	N/A	45.749115	-105.079223	NAV-GPS	NAD83	01N	55E	17		POWDER RIVER	2009Q0816
250811		45.749115	-105.079223	NAV-GPS	NAD83	01N	55E	17		POWDER RIVER	2009Q0817
7562		45.750000	-106.330500	MAP	NAD27	04S	44E	8	BDC	ROSEBUD	1976Q1399
191136		45.411670	-106.457220	UNKNOWN	NAD83	05S	43E	8	CCAC	ROSEBUD	2008Q0403
191136		45.411670	-106.457220	UNKNOWN	NAD83	05S	43E	8	CCAC	ROSEBUD	2010Q0666
242240		45.322780	-106.513950	NAV-GPS		06S	43E	7	CDC	ROSEBUD	2008Q0402
242240		45.322780	-106.513950	NAV-GPS		06S	43E	7	CDC	ROSEBUD	2010Q0662
269300		45.352672	-106.524080	MAP	NAD83	05S	42E	34	CCCC	ROSEBUD	203158
269335		45.191634	-106.703000	NAV-GPS	NAD83	07S	41E	34	BAB	ROSEBUD	203175
269337	IRRIGATION, CBM, COAL MINE	45.208440	-106.699531	NAV-GPS	NAD83	07S	41E	22	CDDB	ROSEBUD	203176
269338		45.216500	-106.694100	NAV-GPS	NAD83	07S	41E	22	ACDD	ROSEBUD	203177
269339		45.218600	-106.677270	NAV-GPS	NAD83	07S	41E	23	ABCC	ROSEBUD	203178
269300		45.352672	-106.52408	MAP	NAD83	05S	42E	34	CCCC	ROSEBUD	203158
269299		45.339979	-106.529376	MAP	NAD83	06S	42E	1	DCBA	BIG HORN	203156
269298		45.337273	-106.519785	MAP	NAD83	06S	43E	6	CCCC	BIG HORN	203155
269297		45.325002	-106.513996	MAP		06S	43E	7	CDBC	BIG HORN	203154

GWIC ID	Agency	Sample Date	Water Temp	Fld pH	Fld SC (uS)	Lab	Lab pH	Lab SC (uS)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	K (mg/l)	Fe (mg/l)	Mn (mg/l)	SiO2 (mg/l)	HCO3 (mg/l)	CO3 (mg/l)	SO4 (mg/l)	Cl (mg/l)	NO3 N (mg/l)	NO2 N (mg/l)	F (mg/l)
170707	MBMG	2/26/99 1:30 PM	0.2	7.82	549	MBMG	7.49	582	35	38.1	27	8.97	0.515	0.07	8.55	233	0	131	<5	<.5	<.5	<.5
170707	MBMG	4/20/99 4:00 PM	13.5	8.17	1287	MBMG	8.48	1272	81.4	110	91.6	11.1	0.047	0.043	8.66	507	15.8	375	6.9	<.5	<.5	<.5
170707	MBMG	8/6/99 7:30 AM	21.4	8.45	1467	MBMG	8.3	1470	57	126	116	15.9	0.066	0.016	1.11	509	0	452	<.5	<.5 P		0.541
1233	USGS	10/28/76 10:30 AM	2.5		1385	MBMG	8.42	1288	72	100	91	10.9	0.1	0.01	15.4	483	4.3	366	18	0		0.6
170708	MBMG	2/26/99 6:00 PM	0.8	8.2	913	MBMG	7.81	918	50.5	56.8	66.1	10.1	0.198	0.034	9.68	307	0	266	<5	<.5	<.5	<.5
170708	MBMG	4/20/99 6:00 PM	13.7	8.18	1760	MBMG	8.41	1724	83.4	132	165	12	<.025	0.022	7.14	484	28.8	648	9.14	<.5	<.5	<.5
170708	MBMG	8/4/99 5:30 PM	27.6	8.48	2323	MBMG	8.58	2200	65	136	293	15.6	<.05	0.023	1.08	508	40.8	814	12.6	<.5 P		0.528
170708	MBMG	9/20/99 11:00 AM	12.8	8.08	2178	MBMG	8.2	2310	77.3	99.2	386	11.9	<.05	0.017	5.14	609	0	810	14.5	<.5 P		0.66
170708	MBMG	9/20/99 11:00 AM	12.8	8.08	2178	MBMG			70.7	90.5	340	11.5	0.539	0.031		0	0					
171907	MBMG	8/6/99 3:30 PM	22.7	8.49	1905	MBMG	8.45	1844	62.6	145	195	16.6	0.063	0.012	<1	483	18	689	9.83	<.5 P		<.5
199327	MBMG	8/6/99 7:00 PM	23.1	8.62	1952	MBMG	8.38	1901	76.7	149	177	17.1	<.05	0.012	1.38	516	24	724	10.0	<.5 P		0.539
199327	MBMG	9/20/99 12:30 PM	13.3	8.09	2124	MBMG	8.33	1916	87.5	183	239	19.3	<.05	<.01	2.96	522	18	905	13.2	<.5 P		0.574
223687	MBMG	3/10/2010 15:00	1.2	8.38	396.4	MBMG	8.22	822	59.8	55.2	21.4	8.14	0.053	0.043	11.2	372	0	129	3.55	<0.2 P		0.435
250811	BLM	6/16/09 11:33 AM				MBMG	8.2	6620	273	281	1347	14.4	0.164	0.015	4.37	489	0	4502	54.3	<5.0	<5.0	<5.0
250811	BLM	6/16/09 11:33 AM				MBMG			261	271	1278	14.2	0.379	0.044								
7562	USGS	10/19/76 11:15 AM	1.7		690	MBMG	8.39	715	56.5	41.5	39.2	3.8	0.18	0.02	3.9	241	7.2	169	3.6	0		0.3
191136	MBMG	3/11/08 12:30 PM	1.2	8.41	509	MBMG	8.29	626	53.6	33.4	42.4	3	0.019	0.017	1.8	269	0	239	<5.0	<0.5	<0.5	<0.5
191136	MBMG	3/10/10 11:57 AM	0.3	8.42	375	MBMG	8.25	829	60.4	38.3	51.5	3.51	0.018	0.018	2.44	296	0	171	5.18	<0.2 P		0.306
242240	MBMG	3/11/08 3:00 PM	1.6	8.41	583	MBMG	8.28	670	57.3	36.2	44.8	3.27	0.016	0.031	2.1	275	0	250	5.05	1.53	<0.5	<0.5
242240	MBMG	3/10/10 1:13 PM	2.1	8.53	416.6	MBMG	8.18	742	62.8	40	53.5	3.61	0.014	0.026	1.79	309	0	179	5.44	<0.2 P		0.319
269300	MBMG	12/4/12 4:15 PM	1.2	8.47	369.5	MBMG	8.3	688	56.7	42.7	47.2	4.1	<0.015 U	0.010 J	4.72	242	9.7	208	4.74	0.15	<0.010 U	0.27
269335	MBMG	12/5/12 10:50 AM	1	8.59	331.1	MBMG	8.25	632	58.3	36.8	35.3	3.51	<0.015 U	0.004 J	4.48	238	3.68	180	4.52	<0.010 U	<0.010 U	0.26
269337	MBMG	12/5/12 12:00 PM	1.4	8.75	334.9	MBMG	8.36	629	58.8	37.2	36.1	3.6	<0.015 U	<0.002 U	4.26	234	5.9	183	4.61	<0.010 U	<0.010 U	0.25
269338	MBMG	12/5/12 1:10 PM	1.9	8.83	341.6	MBMG	8.43	631	58.4	37.4	35.8	3.66	<0.015 U	<0.002 U	4.22	234	7.33	183	4.59	<0.010 U	<0.010 U	0.25
269339	MBMG	12/5/12 2:30 PM	2.2	8.85	345.2	MBMG	8.46	628	57.7	36.4	35.2	3.5	<0.015 U	<0.002 U	4.41	231	7.87	177	4.65	<0.010 U	<0.010 U	0.26
269300	MBMG	12/4/2012 16:15	1.2	8.47	369.5	MBMG	8.3	688	56.7	42.7	47.2	4.1	<0.015 U	0.010 J	4.72	242	9.7	208	4.74	0.15		0.27
269299	MBMG	12/4/2012 14:10	1.5	8.57	383.2	MBMG	8.3	707	56.6	42.8	48.4	4.18	<0.015 U	0.009 J	4.72	252	4.76	209	4.77	<0.010 U		0.27
269298	MBMG	12/4/2012 13:15	1.3	8.43	368.5	MBMG	8.28	708	56.9	43.3	48.3	4.21	<0.015 U	0.009 J	4.64	238	11.5	208	4.76	<0.010 U		0.27
269297	MBMG	12/3/2012 11:15	1	8.59	366.7	MBMG	8.24	699	57.0	43.6	48.7	4.3	<0.015 U	0.009 J	4.61	253	3.64	206	4.72	<0.010 U		0.27

GWIC ID	OPO4 P (mg/l)	Ag (ug/l)	Al (ug/l)	As (ug/l)	B (ug/l)	Ba (ug/l)	Be (ug/l)	Br (ug/l)	Cd (ug/l)	Co (ug/l)	Cr (ug/l)	Cu (ug/l)	Li (ug/l)	Mo (ug/l)	Ni (ug/l)	Pb (ug/l)	Sb (ug/l)	Se (ug/l)	Sn (ug/l)	Sr (ug/l)
170707	<.5	<1	1360	1.14	66.8	48.6	<2	<500	<2	<2	6.34	<2	<50	<10	7.26	<2	<2	<1		578
170707	<.5	<1	<30	<1	154	77	<2	<500	<2	<2	<2	<2	<250	<10	7.59	<2	<2	<1		1710
170707	<.5	<5	<150	<5	270	75.8	<10	<500	<10	<10	<10	<10	<250	<50	<10	<10	<10	<5		1700
1233													60							
170708	<.5	<1	666	<1	107	64.9	<2	<500	<2	<2	6.47	<2	<50	<10	10.2	<2	<2	<1		979
170708	<.5	<1	39.6	<1	195	76.5	<2	<500	<2	<2	<2	2.25	<250	<10	8.48	<2	<2	<1		2100
170708	<.5	<5	<150	<5	381	98.9	<10	<500	<10	<10	<10	<10	<500	<50	<10	<10	<10	<5		2030
170708	<.5	<1	<30	1.06	292	126	<2	<500	<2	<2	3.06	3.62	50	<10	6.04	<2	<2	<1		2270
170708		<1		1.26		130	<2		<1	<2	<2	5.34	<500	<10	7.34	<2	<2	1.22		2070
171907	<.5	<5	<150	<5	312	81.2	<10	<500	<10	<10	<10	<10	<500	<50	<10	<10	<10	<5		1980
199327	<.5	<5	<150	<5	352	88.5	<10	<500	<10	<10	<10	<10	<500	<50	<10	<10	<10	<5		2130
199327	<.5	<1	<30	1.73	341	82	<2	<500	<2	<2	3.56	2.38	33.5	<10	6.09	<2	<2	<1		2590
223687	<0.05	<0.10	2.56	0.742	53.1	67.6	<0.10	<50	<0.10	0.224	<0.10	0.924	28.2	2.06	0.787	<0.10	<0.20	0.277	<0.10	713
250811	<5.0	<4.42	<16.55	<6.42	371	36.6	<13.24	<5000	<4.47	<4.37	<6.63	<7.42	753	<4.64	<7.10	<7.29	<5.41	<8.27	<5.24	3435
250811		<0.34		1.95		36.8	<1.58		<0.82	0.801	<0.94	<7.96	783	3.51	9.55	<2.68	<0.87	3.35		3258
7562													30							
191136	<0.5		<30	<10	53.8	51.5	<2.0	<500	<1.0	<2.0	<10.0	<5.0	23.7	<10.0	<2.0	<10.0	<10.0	<15.0		543
191136	<0.05	<0.10	<0.81	0.744	58.2	51.8	<0.10	<50	<0.10	0.159	<0.10	0.558	20.7	0.857	0.55	<0.10	<0.20	0.396	<0.10	548
242240	<0.5		<30	<10	59.1	57.8	<2.0	<500	<1.0	<2.0	<10.0	<5.0	26.4	<10.0	<2.0	<10.0	<10.0	<15.0		592
242240	<0.05	<0.10	0.878	0.781	65.8	55.1	<0.10	<50	<0.10	0.16	<0.10	0.496	22.1	0.9	0.434	<0.10	<0.20	0.406	<0.10	569
269300	<0.020 U	<0.100 U	<0.400 U	1.1	73.8	51.5	<0.100 U	<10.000 U	<0.100 U	<0.100 U	<0.100 U	0.58	17.9	1.18	1.71	<0.060 U	<0.100 U	0.84	<0.100 U	605
269335	0.050 J	<0.100 U	<0.400 U	1.2	69.7	55.5	<0.100 U	<10.000 U	<0.100 U	<0.100 U	<0.100 U	0.51	15.7	1.12	1.74	<0.060 U	<0.100 U	0.74	<0.100 U	558
269337	0.030 J	<0.100 U	<0.400 U	1.21	71.9	55.2	<0.100 U	<10.000 U	<0.100 U	<0.100 U	<0.100 U	0.5	16.5	1.1	1.74	<0.060 U	<0.100 U	0.98	0.160 J	564
269338	<0.020 U	<0.100 U	<0.400 U	1.15	72.2	55.1	<0.100 U	<10.000 U	<0.100 U	<0.100 U	<0.100 U	0.56	16.5	1.1	1.73	<0.060 U	<0.100 U	0.83	<0.100 U	561
269339	<0.020 U	<0.100 U	<0.400 U	1.21	68.7	52.9	<0.100 U	<10.000 U	<0.100 U	<0.100 U	<0.100 U	0.52	16.2	1.08	1.77	<0.060 U	<0.100 U	0.74	<0.100 U	553
269300	<0.020 U	<0.100 U	<0.400 U	1.1	73.8	51.5	<0.100 U	<10.000 U	<0.100 U	<0.100 U	<0.100 U	0.58	17.9	1.18	1.71	<0.060 U	<0.100 U	0.84	<0.100 U	605
269299	<0.020 U	<0.100 U	<0.400 U	1.12	74.2	51.9	<0.100 U	<10.000 U	<0.100 U	<0.100 U	<0.100 U	0.54	19.3	1.17	1.69	<0.060 U	<0.100 U	0.62	<0.100 U	607
269298	<0.020 U	<0.100 U	<0.400 U	1.14	75.4	52.3	<0.100 U	<10.000 U	<0.100 U	<0.100 U	<0.100 U	0.61	19.1	1.2	1.62	<0.060 U	<0.100 U	0.91	<0.100 U	608
269297	<0.020 U	<0.100 U	<0.400 U	1.15	73.9	53.0	<0.100 U	<10.000 U	<0.100 U	<0.100 U	<0.100 U	0.6	19.1	1.2	1.65	<0.060 U	<0.100 U	1.19	<0.100 U	613

GWIC ID	Ti (ug/l)	Tl (ug/l)	U (ug/l)	V (ug/l)	Zn (ug/l)	Zr (ug/l)	Ce (ug/l)	Cs (ug/l)	Ga (ug/l)	La (ug/l)	Nb (ug/l)	Nd (ug/l)	Pd (ug/l)	Pr (ug/l)	Rb (ug/l)	Th (ug/l)	W (ug/l)	Diss. Inorg. Carbon (mg/l)
170707	<10	<5		6.58	2.21	<5												
170707	<50	<5		<5	<15	<25												
170707	<50	<25		<25	<10	<25												
1233																		
170708	<10	<5		<5	<2	<5												
170708	<50	<5		<5	<15	<25												
170708	<100	<25		<25	<10	<50												
170708	<100	<5		<5	21.3	<50												
170708	<100	<5		<5	19.2	<50												
171907	<100	<25		<25	<10	<50												
199327	<100	<25		<25	<10	<50												
199327	<100	<5		<5	3.17	<50												
223687	1.37	<0.10	3.04	0.84	<0.81	0.14	<0.10	<0.10	<0.10	<0.10	<0.20	<0.10	0.223	<0.10	4.76	<0.10	<0.10	
250811	40.5	<7.64	30.1	<5.95	<29.51	<3.82	<6.91	<5.42	<7.26	<6.49	<5.21	<8.02	<4.09	<7.10	<4.99	<7.36	<8.59	
250811	57.6	<1.12	32.6	1.55	<11.56	1.17	0.534	<0.49	<0.43	<0.39	<3.55	<0.62	1.15	<0.34	<3.55	<0.45	<0.49	
7562																		
191136	1.38	<20.0		<10.0	<2.0	<2.0												
191136	1.55	<0.10	3.66	0.819	2.07	<0.10	<0.10	<0.10	<0.10	<0.10	<0.20	<0.10	0.208	<0.10	2.25	<0.10	<0.10	
242240	<1.0	32.7		<10.0	<2.0	<2.0												
242240	1.6	<0.10	3.87	0.915	<0.81	<0.10	0.11	<0.10	<0.10	<0.10	<0.20	0.128	0.208	0.123	2.29	<0.10	<0.10	
269300	2.47	<0.100 U	3.53	1.24	<0.400 U	<0.100 U	<0.100 U	<0.100 U	<0.100 U	<0.100 U	<0.100 U	<0.100 U	0.310 J	<0.100 U	2.23	<0.100 U	<0.100 U	22.5
269335	2.07	<0.100 U	3.35	1.53	0.810 J	<0.100 U	<0.100 U	<0.100 U	<0.100 U	<0.100 U	<0.100 U	<0.100 U	0.270 J	<0.100 U	1.74	<0.100 U	<0.100 U	19.6
269337	2.18	<0.100 U	3.38	1.57	0.430 J	<0.100 U	<0.100 U	<0.100 U	<0.100 U	<0.100 U	<0.100 U	<0.100 U	0.270 J	<0.100 U	1.78	<0.100 U	<0.100 U	19
269338	2.2	<0.100 U	3.31	1.67	<0.400 U	<0.100 U	<0.100 U	<0.100 U	<0.100 U	<0.100 U	<0.100 U	<0.100 U	0.270 J	<0.100 U	1.78	<0.100 U	<0.100 U	26.2
269339	2.24	<0.100 U	3.33	1.66	<0.400 U	<0.100 U	<0.100 U	<0.100 U	<0.100 U	<0.100 U	<0.100 U	<0.100 U	0.260 J	<0.100 U	1.76	<0.100 U	<0.100 U	22.4
269300	2.47	<0.100 U	3.53	1.24	<0.400 U	<0.100 U	<0.100 U	<0.100 U	<0.100 U	<0.100 U	<0.100 U	<0.100 U	0.310 J	<0.100 U	2.23	<0.100 U	<0.100 U	22.5
269299	2.84	<0.100 U	3.6	1.25	<0.400 U	<0.100 U	<0.100 U	<0.100 U	<0.100 U	<0.100 U	<0.100 U	<0.100 U	0.280 J	<0.100 U	2.23	<0.100 U	<0.100 U	9.43
269298	2.44	<0.100 U	3.63	1.27	0.630 J	<0.100 U	<0.100 U	<0.100 U	<0.100 U	<0.100 U	<0.100 U	<0.100 U	0.270 J	<0.100 U	2.22	<0.100 U	<0.100 U	6.33
269297	2.51	<0.100 U	3.6	1.29	0.520 J	<0.100 U	<0.100 U	<0.100 U	<0.100 U	<0.100 U	<0.100 U	<0.100 U	0.280 J	<0.100 U	2.21	<0.100 U	<0.100 U	18.6

GWIC ID	Procedure Type	Sum Diss. Const. (mg/l)	Total Diss. Solids (mg/l)	SAR	Hardness (mg/l)	Alkalinity
170707	DISSOLVED	484	366	0.8	244	191
170707	DISSOLVED	1208	951	1.6	656	443
170707	DISSOLVED	1278	1020	2.0	661	417
1233	DISSOLVED	1161	916	1.6	591	403
170708	DISSOLVED	767	611	1.5	360	252
170708	DISSOLVED	1569	1324	2.6	752	445
170708	DISSOLVED	1888	1630	4.7	722	485
170708	DISSOLVED	2014	1705	6.8	601	499
170708	TOTAL RECOVERABLE	514	514	6.3	549	0
171907	DISSOLVED	1620	1375	3.1	753	426
199327	DISSOLVED	1696	1434	2.7	805	463
199327	DISSOLVED	1991	1726	3.3	972	458
223687	DISSOLVED	660	471	0.5	377	305
250811	DISSOLVED	6964	6716	13.7	1838	401
250811	TOTAL RECOVERABLE	1824	1824	13.2	1767	0
7562	DISSOLVED	566	444	1.0	312	209
191136	DISSOLVED	642	506	1.1	271	221
191136	DISSOLVED	629	479	1.3	308	243
242240	DISSOLVED	676	536	1.1	292	226
242240	DISSOLVED	656	499	1.3	321	253
269300	DISSOLVED	620	498	1.1	317	215
269335	DISSOLVED	565	444	0.9	297	202
269337	DISSOLVED	568	449	0.9	300	202
269338	DISSOLVED	569	450	0.9	300	204
269339	DISSOLVED	558	441	0.9	294	203
269300	DISSOLVED	620	498	1.1	317	215
269299	DISSOLVED	627	500	1.2	318	215
269298	DISSOLVED	619	498	1.2	320	214
269297	DISSOLVED	627	498	1.2	322	214
				*SAR estim. Na+K ratio		