

GLO2773-11

PRELIMINARY LIST OF THERMAL SPRINGS IN MONTANA
 BY THE MONTANA BUREAU OF MINES AND GEOLOGY
 (Compilation by R. N. Bergantino and J. L. Sonderegger, November, 1977)

NAME	LOCATION				TEMPERATURE		FLOW l/min	FLOW gpm	FLOW cfs	TOPOGRAPHIC MAP	ALTITUDE		APPARENT SOURCE OF WATER	SAMPLED BY		WATER CHEM. DATA			
	T	R	S	tract	°C	°F					meters	feet		agency	date	sc @ 25°C	pH	Stan.	Anal.
Alhambra	8N	3W	16	ACAA	56.5	131	40			Clancy 15'	1330	4360	Boulder batholith	USGS*	08-23-74	929	7.23	Yes	
								150-250						MBMG	09-01-72	192	7.83	Yes	
Anaconda	3 miles east of Anaconda ?									Anaconda 15'									
Andersons	3S	13E	29	ABAB'		77				McLeod Basin 7.5'	1690	5540	Madison	MBMG	07-25-72	414	7.84	Yes	
Andersons Pasture	13S	2W	18	ACD	23.5-28			2.0		Lower Red Rock Lake 15'	2085	6840	Pleistocene volcanics	2 springs	MBMG*	10-03-77	609	7.4	Yes
Apex	5S	9W	10	AADADD						Glen 7.5'	1600	5240							
Barkells	2S	6W	1	CBD	71.5	162	150			Twin Bridges 15'	1430	4700	Boulder bath.	USGS*	08-18-74	808	8.17	Yes	
								150						MBMG	07-10-72	847	8.40	Yes	
Bear Creek	9S	9E	19	DB		90		30		Gardiner 15'	1700	5600	Madison						
Bearmouth 1	11N	14W	11	DCCCD						Bearmouth 15'	1170	3840	Madison						
Bearmouth 2	11N	13W	18	AB	15					Bearmouth 15'	1173	3850	Madison	USGS	03-18-72	610	7.69	Yes	
Beartrap (see Norris)																			
Beaverhead Rock	5S	7W	22	ABBD		81		100		Beaverhead Rock 7.5'	1470	4810	Tertiary sed. over Madison (?)						
Bedford	7N	1E	23	ABBC		74		1200-1500		Townsend 15'	1180	3880	Precambrian Spokane Fm.	Health	12-09-64	TDS 266	N.D.	No	
Big Hole (see Jackson)																			
Big Warm Springs (see Lodgepole 1,2,3)																			
Big Warm Springs (see Brooks)																			
Birch Creek (see Apex)																			
Blue Joint 1	2S	23W	1	A		84		0.6		Painted Rocks Lake 15'	1535	5040	Idaho bath.; Precambrian Ravalli	MBMG	08-11-72	162	8.12	Yes	
Blue Joint 2	2S	22W	6	BA		85		0.5		Painted Rocks Lake 15'	1505	4940	Idaho bath.; Precambrian Ravalli	MBMG	08-11-72	180	8.22	Yes	
Boulder	5N	4W	10	C	62; 76	100		250		Boulder 15'	1480	4850	Boulder bath.	USGS*	08-22-74	523	8.50	Yes	
														Health	11-24-64	TDS 388	N.D.	No	
Bozeman	2S	4E	14	DOBAA	50			inactive		Bozeman 15'	1443	4735	pre-Belt	USGS*	08-25-74	624	8.58	Yes	
						130-135		(former flow 60 gpm)						Health	1964	TDS 428	N.D.	No	
Brewers (see White Sulphur Springs)																			
Broadwater	10N	4W	28	A	62	138	< 50	75		Helena 15'	1250	4100	Belt and Boulder bath.	USGS*	08-24-74	796	8.53	Yes	
														Health	09-17-64	TDS 563	N.D.	No	

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	T	R	S	tract	°C	°F					meters	feet		agency	date	sc @ 25°C	pH	stan. anal.
Brooks	17N	18E	19	DBDBB		70		80000		Lewistown 15'	1145	3760	Kootenai; Madison	Health	08-19-64	TDS 670	N.D.	No
						68								MBMG	08-17-73	1754	7.92	Yes
						19.5				151				USGS	09-23-75	882	7.68	Yes
Browns	8S	9W	30	DCB	23			7.6	Dalys 7.5'	1700	5575	Madison; Tert. volc.	MBMG	09-06-77	618	N.D.	No	
Byrnes (see Nimrod)						110-114							MBMG	11-24-64	TDS 270	N.D.	No	
Camas	21N	24W	3	BBB	45		> 200			Hot Springs 7.5'	860	2830	Piegan; Diorite sill	USGS*	07-03-75	367	9.39	Yes
					44							USGS		09-15-75	394	9.11	Yes	
Chico	6S	8E	1	CDCD	42		> 500			Emigrant 15'	1610	5280	Tert. sed. w/Tert. granite and Madison	USGS*	08-25-74	379	7.38	Yes
						119						MBMG		11-24-64	TDS254	N.D.	No	
Clarks (see Potosi 1)																		
Cliff Lake (see W. F.k. Swimming Hole)																		
Corwin (see La Duke)																		
Diamond Bar Inn (see Jackson)																		
Diamond S (see Boulder)																		
Durfee Creek 1	12N	22E	13	DDD		66		.75		Roundup 1° x 2°	1400	4600	Madison; Pennsylvanian	MBMG	08-15-73	2535	8.08	Yes
Durfee Creek 2	12N	23E	19	BB		71		15000		Roundup 1° x 2°	1550	5100	Madison; Pennsylvanian					
Elkhorn	4S	12W	29	ACAD	48.5		400			Polaris 15'	2190	7200	Boulder bath.	USGS*	08-20-74	209	8.94	Yes
						114		450				MBMG		07-27-72	219	8.49	Yes	
Emigrant Gulch (see Chico)																		
Ennis	5S	1W	28	DCAD		172		15		Ennis 15'	1500	4920	Tert. sed. over pre-Belt (T.R. Stock?)	Health(?)	02-06-69	TDS 310	N.D.	No
Fairmont (see Gregson)																		
Ferris (see Bozeman)																		
Flat Mountain	15N	20E	6						stopped flowing in the early 1900's	Judith Peak 15'	1675	5500						
Gallatin Canyon	6S	4E	33							Garnet Mountain 15'	1830	6000	Madison					
Gallogly	1S	19W	15	BCCCAC	100			120		Lost Trail Pass 7.5'	1645	5400	Idaho bath	Health	08-05-64	TDS 144	N.D.	No
						120		120				MBMG		08-10-72	202	7.81	Yes	

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	T	R	S	tract	°C	°F					meters	feet		agency	date	sc @ 25°C	pH	Stan. Anal	
Garrison	10N	9W	19	A		77				Garrison 15'	1495	4900	Cretaceous-near Madison	MBMG	08-08-72	737	7.30	Yes	
Giant Springs	21N	4E	33	BDAC		53		605		Northeast Great Falls 7.5'	988	3240	Kootenai; Madison	N.D.	03-20-53	TDS 410	7.5	No	
Granite	11N	23W	7	ABDBA		126		50		Lolo Hot Springs 7.5'	1275	4180	Wallace; Idaho bath.						
Green Springs	20N	24W	33	ADDD		66				Perma 15'	860	2820	Alluvium; Precambrian Piegan	MBMG	1984	TDS 162	N.D.	No	
Gregson	3N	10W	2	BDCA	70		1000			Anaconda 15'	1565	5130	Tert. volc.; Boulder bath.	USGS*	08-19-74	761	8.41	Yes	
						154								Health(?)	04-08-65	TDS 560	N.D.	No	
Haggood (see Norris)																			
Helena (see Boradwater)																			
Hunters	1S	12E	9	CCADC	59 (low)		5000			Hunters Hot Springs 7.5'	1335	4380	Livingston; Cret. volc.; Tert. granite	USGS*	07-02-75	354	9.13	Yes	
						150		1500						MBMG	07-25-72	387	8.52	Yes	
Jackson	5S	15W	25	CBBB		134				Jackson (advance) 7.5'	1970	6470	Alluvium; Tert. sed.; Missoula	MBMG	08-06-64	TDS 662	N.D.	No	
						58	>1000							MBMG	07-28-72	1020	9.04	Yes	
														USGS*	08-16-74	972	6.77	Yes	
Jardine (see Jackson)																			
Kimpton (see Warner)																			
La Duke	8S	8E	32	CDBA	65		500			Miner 15'	1610	5280	Madison	USGS*	07-02-75	2460	6.52	Yes	
						151		500						MBMG	07-26-72	2400	7.62	Yes	
La Hood Park	1N	3W	12	ACA		66		4		Jefferson Island 15'	1430	4700	Precambrian near Madison						
Landusky 1	25N	24E	32	DABCC		70		600		Hays 7.5'	1130	3710	Madison; Jurassic	MBMG	08-16-73	801	8.03	Yes	
Landusky 2	25N	24E	32	DACAAA						Hays 7.5'	1130	3710	Madison; Jurassic						
Landusky Plunge	24N	24E	12	CDDAB		76		3000		Hays SE 7.5'	1125	3690	Madison; Jurassic	MBMG	08-16-73	1262	8.09	Yes	
Lithia (see Andersons)																			
Little Warm Springs 1	26N	26E	30	DABD						Bear Mountain 7.5'	1085	3560	Madison; Jurassic						
Little Warm Springs 2	26N	26E	32	ACAAA		79		1200		Bear Mountain 7.5'	1025	3360	Madison; Jurassic	MBMG	08-16-73	2082	8.06	Yes	
						72		5000						MBMG	05-1977	N.D.	N.D.	No	
Little Warm Springs 3	26N	26E	32	ADB	22.5					Bear Mountain 7.5'	1025	3360	Madison; Jurassic	USGS	10-04-73	1823	7.92	Yes	
Lodgepole 1	26N	25E	24	CAAD						Bear Mountain 7.5'	1100	3600	Madison						
Lodgepole 2	26N	25E	24	CABD		26		2700		Bear Mountain 7.5'	1125	3700	Madison						
Lodgepole 3	26N	25E	24	DBC						Bear Mountain 7.5'	1100	3600	Madison						

} analysis by USGS & MBMG--
identification of spring not clear

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		R	S	tract	°C	°F	meters					feet	agency		date	sc @25°C	pH	Stan. Anal		
Lolo	11N	23W	7	ADCCC	44	112	100	50		Lolo Hot Springs 7.5'	1266	4155	Wallace; Idaho bath.	USGS*	08-17-74	225	9.27	Yes		
														MBMG	08-09-72	234	7.87	Yes		
Lost Trail (see Gallogly)																				
Lovells	8S	9W	28	BD		72		1125		Gallagher Mountain 7.5'	1675	5490	Tert. sed.; Tert. volc.; Madison							
Mc Menomey Ranch	9S	10W	29	AAA						Dalys 7.5'	1660	5449								
Matthews (see Bozeman)																				
Medicine	1N	20W	12	CCA		120		100		Medicine Hot Springs 7.5'	1355	4440	Idaho bath.	Health	08-05-64	TDS 170	N.D.	No		
								100						MBMG	08-09-72	377	8.08	Yes		
					45			400						USGS*	08-16-74	343	8.59	Yes		
Medicine (see Gallogly)																				
Medicine (see Sun River)																				
Medicine Lodge	12S	11W	7	ABDDD						Deer Canyon 7.5'	2010	6595	Madison							
Medicine Rock (see Sleeping Child)																				
Mockels (see Plunkets)																				
Montanapolis	6S	10E	29	AAC						Emigrant 15'	1805	5920	Tert. granite; Madison; Cambrian	MBMG	1964	TDS 3264	N.D.	No		
Morrison Butte (see Landusky Plunge)																				
Naves (see Plunkets)																				
New Biltmore	4S	7W	28	BDA		126		100		Beaverhead Rock 7.5'	1458	4783	Madison	MBMG	08-06-64	TDS 2004	N.D.	No		
						130		100						MBMG	07-10-72	2140	7.34	Yes		
					53			> 100						USGS*	08-17-74	2160	6.76	Yes		
New Biltmore "Cold Spring"	4S	7W	28	ACBC		62		8		Beaverhead Rock 7.5'	1458	4783	Madison							
Nimrod	11N	15W	14	CDA A		72		200		Bearmouth 15'	1160	3800	Cambrian; Madison	Health	08-03-64	TDS 722	N.D.	No		
					19									USGS	03-18-72	856	7.63	Yes		
Nissler Junction	3N	8W	19	BA					stopped flowing circa. 1920	Butte North 15'	1640	5375	Tert. Sed.; Boulder bath.							
Norris	3S	1W	14	DAB		52.5		400		Norris 15'	1465	4805	Pre-Belt; Tobacco Root Stock	USGS*	08-21-74	903	7.58	Yes		
														MBMG	11-1964	TDS 620	N.D.	No		
								88						Private	05-04-70	TDS 700	N.D.	No		

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		R	S	tract		°C	°F					meters	feet		agency	date	sc @ 25°C	pH	Stan. Anal
Paradise (see Quinns)																			
Pipestone 1&2	2N	5W	28	BDDD	57	134	300			Dry Mountain 7.5'	1380	4530	Boulder bath.	USGS*	08-18-74	455	8.72	Yes	
														MBMG	08-06-64	TDS 328	N.D.	No	
Plunkets	4N	1E	27		62		4000			Radersburg 15'	1275	4180	Precambrian-Spokane						
Polaris (see Elkhorn)																			
Potosi 1	3S	2W	7	CABA	100		550			Harrison 15'	1860	6100	Tobacco Root Stock	MBMG 1964 TDS320 N.D. No (Can not determine which Potosi Spring)					
Potosi 2	3S	2W	6	CACC						Harrison 15'	1865	6120	Tobacco Root Stock						
Potosi 3	3S	2W	6	CBD	49.5	> 200				Harrison 15'	1870	6130	Tobacco Root Stock		USGS*	08-21-74	471	8.63	Yes
														Possibly Potosi 3					
Pullers 1	8S	5W	1	AACC	95; 108		150			Metzel Ranch 7.5'	1670	5485	Tert. Sed.; pre-Belt						
Pullers 2	7S	5W	25	DACDD						Metzel Ranch 7.5'	1655	5435	Tert. sed.; pre-Belt						
Quinns	18N	25W	9	CDADA	109		20			Plains 15'	780	2560	Precambrian Piegan	?	04-08-65	TDS 192	N.D.	No	
														MBMG	08-09-72	205	7.91	Yes	
Renova	1N	4W	32	C						Vendome 7.5'									
Ross' Hole (see Gallogly)																			
Ryan Canyon (see Browns)																			
Silver Spring	5S	5W	14	CCCCA						Sheridan 7.5'	1505	4935							
Silver Star (see Barkells)																			
Siparyann 1&2 (see Landusky 1&2)																			
Sleeping Child	4N	19W	7	DCDDBB	124		115			Deer Mountain 7.5'	1450	4750	Idaho bath.; 2 sources	Health	08-04-64	TDS 400	N.D.	No	
					108		115							MBMG	08-10-72	568	7.98	Yes	
					45	>2000								USGS*	08-15-74	538	8.20	Yes	
Sloan Cow Camp	12S	1E	19	CDA	29.5-30				0.77	Cliff Lake 15'	2000	6560	Alluvium; Pleistocene volc.(?)	MBMG*	09-29-77	410	10.05	Yes	
State Hospital (see Warm Springs)																			
Staudenmeyer Ranch	13S	2W	17	CBA	28				4.0	Lower Red Rock Lake 15'	2055	6750	Pleistocene rhyolite, 5 springs	MBMG*	10-03-77	646	7.5	Yes	
Sunnyside	8N	3W	16	ACAA						Clancy 15'	1325	4350	Boulder bath.						
Sun River	22N	10W	26	CAB	84		500			Arsenic Peak 7.5'	1465	4800	Kootenai; Jurassic, Madison						
Symes	21N	24W	4	AAD	115					Hot Springs 7.5'	865	2830	Precambrian	MBMG	08-09-72	394	8.42	Yes	

NAME	LOCATION				TEMPERATURE		FLOW			TOPOGRAPHIC MAP	ALTITUDE		APPARENT SOURCE OF WATER	SAMPLED BY		WATER CHEM. DATA		
	T	R	S	tract	°C	°F	l/min	gpm	cfs		meters	feet		agency	date	sc @25°C	pH	Stan. Anal
Thexton (see Ennis)																		
Toston	4N	3E	6	DADC		57			20	Toston 15'	1205	3960	Pennsylvanian; Madison	MBMG	11-24-64	TDS 238	N.D.	No
Trudeau	7S	4W	7	DCACCC						Metzel Ranch 7.5'	1730	5675						
Tyler 1&2 (see Durfee Creek 1&2)																		
Vigilante	9S	3W	22	BDDD		> 90			500-1500	Varney 15'	1890	6200	Madison; Kootenai					
Warm Springs-State Hospital	5N	10W	24		77		600			Anaconda 15'	1470	4820	Boulder bath. (?)	USGS*	08-19-74	1510	6.46	Yes
						160		60						MBMG	04-08-65	TDS 1308	N.D.	No
Warm Springs (see Medicine Lodge)																		
Warm Springs (see Landusky Plunge)																		
Warner	5N	1E	22	DBBC		65				Radersburg 15'	1250	4100	Alluvium; Tert. sed.; Precambrian	MBMG	08-29-72	929	8.84	Yes
Weeping Child (see Sleeping Child)																		
West Fork Swimming Hole	12S	1E	18	CAD		25-28			1.1	Cliff Lake 15'	2040	6700	Alluvium, Pleistocene volc. (?)	MBMG*	09-29-77	322	8.30	Yes
White Sulphur Springs	9N	7E	18	BB		95-125?		500		White Sulphur Springs 7.5'	1530	5025	Tert. sed.; Precambrian	MBMG	09-01-61	TDS 1450	N.D.	No
					46		> 1500							USGS*	08-17-74	2220	6.8	Yes
Wolf Creek	10S	1E	9	BBBA		54-66			0.7	Cliff Lake 15'	1860	6100	Tert. sed.; Precambrian	MBMG*	09-30-77	494	11.03	Yes
Ziegler (see Apex or New Biltmore)																		

*Symbol after analysis indicates a preferred analysis, conducted for geothermal evaluation, with a field (rather than laboratory) pH measurement.

A standard analysis includes: Ca, Mg, Na, K, Fe, Mn, SiO₂, CO₃, HCO₃, SO₄, Cl, F, NO₃, pH, and specific conductance.

Flow values and chemistry for some springs may not agree because of multiple sampling; some questionable values have been included.

Abbreviations: Health, Montana State Board of Health
 MBMG, Montana Bureau of Mines and Geology
 USGS, United States Geological Survey
 N.D., Not determined
 T.R., Tobacco Root