Table DR2. Whole-rock geochemical data for sedimentary and metamorphic rocks (from GSA SPE522-11 Mueller)

SAMPLE	**BLH_1**	**BLH_3A**	**BLH_3B**	**BLH_4A**	**BLH_4B**	**BLH_5A**	**BLH-5B**	**BLH_5C**	**BLH_5E**	**BLH_5F**	**BLH_5H**	**BLH_5I**	**BHT-1**	**BHT-3**	**BDC-1**	**BDC-2**	**BDC-3**	**BDC-4**	**BDC-5**	**BDC-6**	**AA03-1**	**AA03-2**	**AA-1**	**AA-2**
Unit	LaHood	LaHood	LaHood	LaHood	LaHood	LaHood	LaHood	LaHood	LaHood	LaHood	LaHood	LaHood	MLG	MLG	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lithology	matrix	sandstone	shale	sandstone	shale	matrix	cobble	cobble	cobble	cobble	cobble	cobble	gneiss	gneiss	mig. gneiss	ga. schist	Amphb.	gneiss	leucosome	gneiss	leucogneiss	amphb.	gneiss	Metased.
Location	JC	HH	HH	HH	HH	JC	JC	JC	JC	JC	JC	JC	Beaverhead	Beaverhead	Tendoy	Tendoy	Tendoy	Tendoy	Tendoy	Tendoy	Armstead	Armstead	Armstead	Armstead
Latitude	45.50.207	45.564.036	45.564.036	45.53.365	45.53.365	45.50.207	45.50.207	45.50.207	45.50.207	45.50.207	45.50.207	45.50.207	44.49.899	44.42.452	44.59.823	44.59.823	45.59.638	45.59.638	44.59.774	45.00.052	44.59.922	44.59.922	44.59.922	44.59.922
Longitude	111.54.351	111.19.472	111.19.472	111.20.008	111.20.008	111.54.351	111.54.351	111.54.351	111.54.351	111.54.351	111.54.351	111.54.351	113.04.918	113.02.018	113.19.990	113.19.990	113.20.341	113.20.341	113.20.936	113.21.382	112.53.943	112.53.943	112.53.943	112.53.943
Major Elements (XRF)																								
SiO_2	64.95	68.54	37.53	60.70	40.62	61.34	74.73	72.28	71.10	72.11	66.62	70.11	67.64	71.45	67.27	37.65	48.30	67.48	66.85	61.27	72.10	51.98	74.47	76.69
TiO_2	0.60	0.44	0.07	0.60	0.06	0.76	0.07	0.16	0.12	0.26	0.36	0.19	0.69	0.57	0.69	3.24	1.50	0.69	0.42	0.75	0.09	0.44	0.32	0.20
Al_2O_3	11.21	10.97	3.98	13.69	2.98	11.55	12.92	13.99	11.88	13.59	15.84	14.92	13.81	12.59	12.90	15.36	13.21	13.84	17.25	15.55	15.11	14.98	10.93	11.73
Fe_2O_3*	6.65	5.49	3.16	7.20	2.37	8.25	0.91	1.61	1.33	1.47	3.73	1.38	5.61	4.69	6.61	22.67	13.76	5.94	3.49	7.79	0.61	5.95	5.53	1.80
MnO	0.12	0.07	0.38	0.04	0.17	0.16	0.02	0.02	0.03	0.03	0.08	0.02	0.07	0.05	0.08	0.29	0.23	0.09	0.04	0.14	0.01	0.27	0.03	0.01
MgO	3.45	3.84	3.38	5.12	2.68	4.31	0.23	0.41	0.54	0.38	2.15	0.46	0.74	1.18	2.86	9.93	7.87	2.14	0.90	3.04	0.25	2.89	4.42	0.01
CaO	5.16	2.04	26.23	2.69	25.77	5.55	1.31	1.93	3.78	1.91	2.87	2.93	1.97	0.38	1.36	0.46	10.89	1.88	3.27	3.46	0.23	17.98	0.35	0.44
Na_2O	3.45	2.78	0.04	2.63	0.07	3.21	3.99	4.29	4.09	3.58	4.86	5.36	3.30	3.28	2.55	0.05	1.73	2.49	4.42	2.37	2.86	1.07	1.11	2.76
K_2O	1.20	1.28	0.46	1.59	0.50	1.23	4.36	3.68	2.94	4.99	1.19	2.39	5.04	4.52	2.52	4.27	0.85	2.66	1.54	2.68	7.84	1.18	1.05	5.41
P_2O_5	0.06	0.07	0.03	0.13	0.02	0.10	0.02	0.05	0.05	0.06	0.13	0.06	0.17	0.14	0.18	0.21	0.14	0.06	0.15	0.10	0.07	0.08	0.03	0.01
LOI	3.02	4.02	24.85	6.01	24.97	3.62	0.90	0.58	3.29	1.27	1.74	1.79	0.85	1.22	1.76	4.62	1.56	1.30	1.53	1.73	0.63	2.73	1.13	0.25
TOTAL	99.87	99.55	100.11	100.39	100.20	100.08	99.46	99.01	99.14	99.65	99.57	99.61	99.88	100.08	98.78	98.75	100.04	98.57	99.86	98.88	99.80	99.55	99.37	99.30
Trace Elements in ppm (ICP)																								
Li7(MR)	16	62	45	99	24	29	4	6	12	5	32	10	14	7	20	60	8	25	20	32	2	16	50	0
Sc45(MR)	17	11	1	14	9	20	bdl	1	0	1	6	bdl	7	6	16	58	51	14	4	21	bdl	13	3	bdl
Ti49(MR)	3528	3095	396	3602	475	4161	503	1102	913	1564	2117	1207	4186	3374	4307	20303	8498	4080	2668	4982	661	2279	1769	1198
V51(MR)	122	87	8	111	24	133	3	14	12	10	50	14	30	17	86	487	302	78	14	127	10	73	2	0
Cr52(MR)	115	135	4	116	5	134	1	5	7	6	23	3	4	5	69	350	186	66	-2	63	9	121	bdl	bdl
Co59(MR)	18	9	2	13	3	20	1	2	3	2	8	3	7	6	14	57	53	14	4	21	2	16	10	2
Ni60(MR)	50	67	8	41	9	60	3	4	6	7	20	8	5	6	34	148	86	27	2	26	7	53	6	1
Cu63(MR)	53	56	6	44	6	27	5	14	8	28	5	12	19	19	34	33	29	10	35	57	5	16	2	5
Zn66(MR)	68	57	28	101	14	80	7	27	11	25	56	31	81	40	80	468	137	185	51	230	4	79	42	148
Ga69(MR)	13	15	3	15	2	14	15	17	13	15	18	16	23	20	18	29	18	17	21	20	11	19	19	25
Rb85(MR)	41	45	22	69	31	43	103	74	64	153	60	65	184	95	98	200	16	105	55	100	160	68	30	204
Sr88(MR)	131	147	100	150	222	123	92	499	220	157	389	476	101	45	143	21	187	216	430	283	81	132	29	19
Y89(MR)	24	21	16	10	13	24	5	7	7	8	12	3	91	67	38	76	27	30	9	14	6	30	80	171
Zr90(MR)	69	126	26	114	19	97	75	123	119	206	105	99	527	462	152	519	48	161	116	55	36	114	491	505
Nb93(MR)	6	7	2	8	1	7	6	1	4	7	5	2	46	31	16	35	8	12	7	14	1	9	19	47
Cs133(MR)	1	1	2	4	1	1	0	1	1	1	1	1	1	1	1	3	0	1	1	2	1	4	0	0
Ba137(MR)	278	792	94	398	64	317	800	1782	3450	1572	578	796	1087	1608	948	1280	248	921	640	1053	1563	445	156	224
La139(MR)	8.0	21.7	12.8	10.4	10.1	10.9	16.2	25.1	18.7	18.2	21.9	7.4	116.5	61.8	60.8	104.7	8.7	59.5	20.5	56.1	20.0	24.0	80.2	108.9
Ce140(MR)	16.9	40.4	27.3	20.0	19.2	24.0	27.3	43.3	31.2	36.5	39.5	12.8	232.0	124.6	123.8	185.2	20.9	112.4	36.4	111.0	45.0	49.3	151.1	203.4
Pr141(MR)	2.3	4.9	3.1	2.3	2.5	3.0	2.7	4.6	3.0	3.8	4.4	1.3	26.5	14.3	14.3	23.0	3.1	12.8	4.1	12.8	4.6	5.9	17.1	24.7
Nd143(MR)	10.1	18.5	12.2	8.6	9.9	12.8	8.8	15.0	9.8	11.7	16.1	4.7	96.8	53.6	51.9	81.6	14.3	46.6	14.7	45.7	17.3	22.7	63.8	87.5
Sm149(MR)	2.7	3.7	2.6	1.7	2.0	3.3	1.6	2.3	1.5	1.7	2.8	0.8	17.2	11.2	9.5	12.3	4.0	7.9	2.6	7.4	3.2	4.6	12.8	22.4
Eu153(MR)	0.9	0.9	0.4	0.4	0.5	0.9	0.4	0.9	0.9	0.6	0.9	0.4	2.2	2.2	1.5	1.0	1.3	1.6	1.0	1.2	1.8	1.1	2.2	1.0
Gd157(MR)	2.9	3.5	2.4	1.6	1.9	3.5	1.3	1.9	1.6	1.4	2.4	0.7	16.3	11.2	8.1	11.5	4.5	6.6	2.2	5.8	2.5	4.3	12.6	23.8
Tb159(MR)	0.5	0.5	0.4	0.3	0.3	0.6	0.2	0.3	0.2	0.2	0.4	0.1	2.5	1.9	1.2	1.8	0.8	0.9	0.3	0.6	0.3	0.7	2.0	4.5
Dy163(MR)	3.7	3.3	2.5	1.6	1.9	4.1	0.8	1.3	1.1	1.2	2.0	0.5	16.0	12.0	7.1	12.0	4.9	5.2	1.6	2.7	1.2	4.1	13.3	32.4
Ho165(MR)	0.8	0.6	0.5	0.3	0.4	0.8	0.2	0.2	0.2	0.3	0.4	0.1	3.2	2.4	1.3	2.7	0.9	1.1	0.3	0.4	0.2	0.8	2.6	6.1
Er166(MR)	2.3	1.8	1.4	0.9	1.1	2.5	0.4	0.6	0.6	0.8	1.1	0.2	9.7	7.3	3.9	8.7	2.7	3.2	0.8	1.1	0.5	2.5	8.3	18.4
Tm169(MR)	0.4	0.3	0.2	0.1	0.2	0.4	0.1	0.1	0.1	0.1	0.2	0.0	1.5	1.1	0.6	1.4	0.4	0.5	0.1	0.1	0.1	0.4	1.2	2.7
Yb172(MR)	2.4	1.6	1.5	0.9	1.1	2.5	0.4	0.5	0.6	0.8	1.2	0.2	9.3	7.3	3.6	9.3	2.4	3.3	0.7	0.9	0.5	2.4	7.9	15.5
Lu175(MR)	0.3	0.2	0.2	0.1	0.2	0.4	0.1	0.1	0.1	0.1	0.2	0.0	1.4	1.1	0.5	1.5	0.3	0.5	0.1	0.1	0.1	0.4	1.2	2.1
Hf178(MR)	2.0	3.5	0.8	3.1	0.6	2.9	2.5	3.7	3.3	5.4	2.8	2.7	14.4	12.2	4.3	14.3	1.7	4.6	2.9	1.6	1.1	3.2	13.3	19.0
Ta181(MR)	0.5	0.5	0.1	0.6	0.1	0.5	0.5	0.0	0.3	0.4	0.4	0.1	2.9	2.0	0.8	1.4	0.5	0.5	0.4	0.9	0.2	0.8	0.8	2.3
Pb208(MR)	8.7	60.5	2.1	27.8	16.9	9.9	19.0	18.1	16.0	36.8	11.3	22.2	31.3	14.8	103.1	16.5	79.0	55.0	25.1	1248.2	42.2	13.6	8.9	30.4

Th232(MR)	2.6	7.6	1.5	9.2	2.3	3.6	18.0	13.0	10.3	25.7	7.0	3.5	43.5	16.6	26.2	38.4	1.3	22.1	5.1	27.7	14.2	10.3	26.6	33.1
U238(MR)	1.1	1.3	1.2	4.2	1.8	1.2	1.6	0.6	1.3	1.5	1.0	0.5	4.5	2.5	2.9	4.1	1.3	2.2	0.7	1.3	0.5	4.0	4.0	5.0
La.n	25.0	68.1	40.3	32.7	31.5	34.0	50.9	78.8	58.6	56.9	68.6	23.1	365.2	193.7	190.7	328.2	27.4	186.5	64.3	176.0	62.6	75.1	251.3	341.2
Ce.n	20.6	49.3	33.3	24.4	23.4	29.3	33.3	52.9	38.0	44.6	48.2	15.6	282.9	152.0	151.0	225.8	25.5	137.1	44.4	135.4	54.9	60.2	184.2	248.0
Pr.n	18.9	40.3	26.0	18.8	20.5	24.9	22.1	38.0	24.8	31.3	36.2	11.0	219.3	118.2	118.1	189.9	25.6	105.8	33.8	106.0	38.1	48.5	141.5	204.1
Nd.n	16.4	30.1	19.9	14.0	16.0	20.9	14.3	24.4	15.9	19.1	26.2	7.7	157.4	87.2	84.4	132.6	23.2	75.8	23.9	74.3	28.1	37.0	103.7	142.3
Sm.n	13.7	18.7	13.2	8.5	10.2	16.3	8.2	11.5	7.7	8.4	14.0	3.9	86.0	55.9	47.4	61.5	19.8	39.5	13.1	37.0	16.1	23.1	64.1	112.0
Eu.n	11.9	12.1	5.8	5.8	5.9	12.0	4.6	12.3	11.6	7.8	11.2	5.1	29.3	28.7	19.4	13.5	17.2	20.5	12.8	16.3	23.8	14.2	29.0	13.3
Gd.n	10.9	13.1	9.1	5.9	7.1	12.9	4.7	7.3	5.9	5.3	9.1	2.6	61.2	41.8	30.2	43.1	16.7	24.7	8.1	21.7	9.2	16.0	47.2	89.0
Tb.n	11.1	11.0	8.0	5.4	6.6	12.6	3.6	5.4	4.0	4.2	7.2	2.2	51.7	38.6	24.7	36.2	15.9	18.2	6.3	12.7	5.7	13.3	40.2	90.8
Dy.n	11.4	10.0	7.5	4.7	5.9	12.3	2.6	3.8	3.2	3.7	6.1	1.4	48.4	36.5	21.6	36.4	14.9	15.7	4.8	8.1	3.7	12.4	40.2	98.3
Ho.n	10.3	8.2	6.4	4.3	5.2	11.0	2.1	3.2	2.9	3.6	5.1	1.3	42.8	31.9	17.6	35.3	12.5	14.2	3.8	5.9	2.8	10.7	34.5	81.0
Er.n	10.9	8.2	6.6	4.2	5.2	11.4	1.9	2.8	2.9	3.8	5.2	0.9	44.9	33.8	18.0	40.4	12.3	15.0	3.6	5.3	2.5	11.4	38.2	85.1
Tm.n	11.2	8.2	6.7	4.3	5.4	11.5	2.0	2.6	2.9	3.9	5.4	1.0	45.9	34.4	17.7	42.9	11.9	15.6	3.4	4.4	2.5	11.3	37.9	81.8
Yb.n	10.7	7.4	6.6	4.0	5.2	11.1	1.7	2.3	2.8	3.7	5.2	0.7	42.3	33.2	16.3	42.2	10.7	14.9	3.0	3.9	2.2	10.7	35.8	70.3
Lu.n	10.5	7.4	6.5	4.3	5.2	11.2	1.9	2.4	3.0	4.0	5.2	0.7	4.3	3.3	1.6	4.6	1.1	1.6	0.3	0.4	0.2	1.2	3.7	6.6
La/Yb(n)	2.3	9.2	6.1	8.1	6.1	3.1	29.2	35.0	20.6	15.3	13.1	32.1	8.6	5.8	11.7	7.8	2.6	12.5	21.2	45.0	27.9	7.0	7.0	4.9
Eu/Eu*	0.0	-0.2	-0.5	-0.2	-0.3	-0.2	-0.3	0.4	0.7	0.2	0.0	0.6	-0.6	-0.4	-0.5	-0.7	-0.1	-0.3	0.2	-0.4	0.9	-0.3	-0.5	-0.9
Sm	2.74		2.63			3.25					2.80		17.20	11.19	9.49	12.30	3.96	7.89	2.62	7.40	3.23	4.62	12.82	22.40
Nd	10.11		12.21			12.83					16.13		96.78	53.63	51.89	81.58	14.26	46.62	14.69	45.67	17.30	22.74	63.77	87.49
Sm/Nd	0.271		0.216			0.254					0.174		0.178	0.209	0.183	0.151	0.277	0.169	0.178	0.162	0.187	0.203	0.201	0.256
147Sm/144N	0.163		0.130			0.153					0.104		0.107	0.126	0.110	0.091	0.167	0.102	0.107	0.097	0.112	0.122	0.121	0.154
143Nd/144N	0.51170		0.51172			0.51160					0.51056		0.51110	0.51131	0.51138	0.51130	0.51248	0.51132	0.51151	0.51135	0.51103	0.51179	0.51100	0.51176
εNd (0)	-18.0		-17.8			-20.1					-40.4		-29.8	-25.7	-24.4	-25.9	-2.9	-25.6	-21.8	-25.0	-31.2	-16.4	-31.8	-17.0
Tbse	4.29		2.09			3.59					3.42		2.61	2.84	2.21	1.92	0.79	2.11	1.92	1.97	2.9	1.73	3.29	3.15
Tdm	4.35		2.57			3.83					3.58		2.9	3.15	2.58	2.27	2.15	2.47	2.33	2.34	3.16	2.25	3.5	3.52
εNd(t)													-1.8	-3.6	-3.4	-0.3	4.2	-2.6	-1.4	-2.2	-2.2	9.3	-5.8	-2.4

Notes:
Locations: JC=Jefferson Canyon, HH=Horseshoe Hills
b.d.l. = below detection limit
Fe_2O_3* = total Fe as Fe_2O_3
Trace element entries contain the element symbol, followed by the mass measured, followed by the mass resolution setting of the Element-2 ICP-MS used (MR = medium resolution)
".n" values are chondrite normalized abundances using the values of Korotev et al. (2003).
εNd are relative to 0.51211 for the JNdi reference material
Tdm are calculated using a linear evolution model from primordial bulk silicate earth values at 4.56 Ga (Bouvier et al., 2008) to modern mid-ocean ridge basalt (0.51153)