



2381 South Plaza Drive P.O. Box 3388 Rapid City, SD 57709
(605) 348-0111 -- www.thechemistrylab.com

Sample Site: **DC-2**
Sampled: 03/04/13 at 10:12 AM
by Mark Keenihan
Sample Matrix: Water

Lab ID#: 20130305108
Received: 03/04/13 at 02:28 PM
by Greg McDougall
Account: W1008 - DENR - Minerals & Mining

MIKE CEPAK
DENR - MINERALS AND MINING
523 E. CAPITOL AVE.
PIERRE, SD 57501

Parameter	Result	Units	DF	MDL	PQL	Method	Analyst/Date
Physical Properties							
Electrical Conductivity	5800	µmhos/cm	1	0.299	5.00	SM 2510B	JAM 03/05/13
pH	7.33	SU	1			SM 4500-H+ B	JAM 03/05/13
Total Dissolved Solids	4450	mg/L	100ml	17.1	50.0	SM 2540 C	TMN 03/05/13
Non-Metallics							
Alkalinity (CaCO3)	264	mg/L	1	0.434	10.0	SM 2320 B	JAM 03/05/13
Bicarbonate	322	mg/L	1	0.530	10.0	SM 2320 B	JAM 03/05/13
Carbonate	0.00	mg/L	1	0.217	5.00	SM 2320 B	JAM 03/05/13
Chloride (Cl-)	824	mg/L	100	27.3	50.0	SM 4500-Cl E	BLL 03/05/13
Fluoride	0.533	mg/L	1	0.003	0.050	SM 4500 F-C	PAT 03/05/13
Nitrogen, Nitrate (NO3)	< 0.050	mg/L	1	0.010	0.050	SM 4500-NO3 F	BLL 03/05/13
Sulfate (SO4)	2250	mg/L	100	68.5	100	SM 4500-SO4 E	BLL 03/05/13
Metals - Dissolved							
Arsenic (As)	< 0.005	mg/L	10	0.001	0.005	EPA 200.8	SAC 03/05/13
Barium (Ba)	0.014	mg/L	10	0.0001	0.005	EPA 200.8	SAC 03/05/13
Boron (B)	0.385	mg/L	10	0.003	0.020	EPA 200.8	SAC 03/05/13
Cadmium (Cd)	< 0.001	mg/L	10	0.0006	0.001	EPA 200.8	SAC 03/05/13
Calcium (Ca)	630	mg/L	20	1.52	20.0	SM 3111 B	TNA 03/05/13
Chromium (Cr)	0.001	mg/L	10	0.0006	0.001	EPA 200.8 DRC	SAC 03/05/13
Copper (Cu)	0.015	mg/L	10	0.0001	0.005	EPA 200.8	SAC 03/05/13
Iron (Fe)	7.00	mg/L	10	0.015	0.050	EPA 200.8	SAC 03/05/13
Lead (Pb)	< 0.001	mg/L	10	0.0009	0.001	EPA 200.8	SAC 03/05/13
Magnesium (Mg)	148	mg/L	3	0.110	1.50	SM 3111 B	TNA 03/05/13
Manganese (Mn)	2.71	mg/L	10	0.0007	0.010	EPA 200.8	SAC 03/05/13
Molybdenum (Mo)	0.005	mg/L	10	0.0009	0.001	EPA 200.8	SAC 03/05/13
Nickel (Ni)	0.020	mg/L	10	0.0009	0.005	EPA 200.8	SAC 03/05/13
Potassium (K)	7.56	mg/L	1	0.084	0.500	SM 3111 B	TNA 03/05/13
Selenium (Se)	< 0.005	mg/L	10	0.001	0.005	EPA 200.8	SAC 03/06/13
Silver (Ag)	< 0.001	mg/L	10	0.0005	0.001	EPA 200.8	SAC 03/05/13

Parameter	Result	Units	DF	MDL	PQL	Method	Analyst/Date
<u>Metals - Dissolved</u>							
Sodium (Na)	667	mg/L	30	4.59	15.0	SM 3111 B	TNA 03/05/13
Uranium (U)	0.009	mg/L	10	0.000037	0.001	EPA 200.8	SAC 04/04/13
Vanadium (V)	< 0.005	mg/L	10	0.0003	0.005	EPA 200.8	SAC 03/05/13
Zinc (Zn)	< 0.050	mg/L	10	0.0009	0.050	EPA 200.8	SAC 03/05/13
<u>Metals - Total</u>							
Mercury (Hg)	< 0.0002	mg/L	1	0.000046	0.0002	EPA 245.1	TNA 03/05/13
<u>Anion - Cation Balance</u>							
Anions	75.3	meq/L	1			Calculation	GAM 03/06/13
Anion - Cation Balance	-1.63	%	1			Calculation	GAM 03/06/13
Cations	72.8	meq/L	1			Calculation	GAM 03/06/13
<u>Radiological</u>							
Gross Alpha	7.94	pCi/L	1			EPA 900.0	EJF 04/23/13
Gross Beta	1.52	pCi/L	1			EPA 900.0	EJF 04/25/13
Lead-210	-0.111	pCi/L	1			RP280m DOE	SYS 03/13/13
Radium-226	0.814	pCi/L	1			MC Radium-226	EJF 04/25/13
Radium-228	< 1.00	pCi/L	1			MC Radium-228	EJF 04/25/13
Radon-222	834	pCi/L	1			SM 7500Rn-B	SYS 03/07/13
Thorium-230	-0.056	pCi/L	1			HSL-300m	SYS 03/11/13
<u>Precision Data</u>							
Gross Alpha precision	± 3.60	pCi/L	1			MC - Gross Alpha precision	EJF 04/23/13
Gross Beta precision	± 5.46	pCi/L	1			MC - Gross Beta precision	EJF 04/25/13
Lead-210 Precision	± 0.397	pCi/L	1			MC-Lead 210 precision	SYS 03/13/13
Radium-226 precision	± 0.171	pCi/L	1			MC-Radium 226 precision	EJF 04/25/13
Radium-228 precision	± 0.00	pCi/L	1			MC-Radium 228 precision	EJF 04/25/13
Radon-222 Precision	± 163	pCi/L	1			MC-Radon 222 precision	SYS 03/07/13
Thorium-230 Precision	± 0.041	pCi/L	1			MC-Thorium 230 precision	SYS 03/11/13
<u>MDA Data</u>							
Gross Alpha MDA	11.4	pCi/L	1			MC - Gross Alpha MDA	EJF 04/23/13
Gross Beta MDA	18.2	pCi/L	1			MC - Gross Beta MDA	EJF 04/25/13
Lead-210 MDA	0.690	pCi/L	1			MC - Lead 210 MDA	SYS 03/13/13
Radium-226 MDA	0.356	pCi/L	1			MC - Radium 226 MDA	EJF 04/25/13
Radium-228 MDA	0.031	pCi/L	1			MC - Radium 228 MDA	EJF 04/25/13
Radon-222 MDA	65.6	pCi/L	1			MC - Radon 222 MDA	SYS 04/04/13
Thorium-230 MDA	0.115	pCi/L	1			MC - Thorium 230 MDA	SYS 03/11/13

Approved By: _____



Approved On: 5/9/2013 9:38:31 AM



2381 South Plaza Drive P.O. Box 3388 Rapid City, SD 57709
(605) 348-0111 -- www.thechemistrylab.com

Sample Site: **DC-4**
Sampled: 03/05/13 at 09:45 AM
by Mark Keenihan
Sample Matrix: Water

Lab ID#: 20130307101
Received: 03/05/13 at 04:40 PM
by Bobbie Laurenz
Account: W1008 - DENR - Minerals & Mining

MIKE CEPAK
DENR - MINERALS AND MINING
523 E. CAPITOL AVE.
PIERRE, SD 57501

Parameter	Result	Units	DF	MDL	PQL	Method	Analyst/Date
Physical Properties							
Electrical Conductivity	11000	µmhos/cm	1	0.299	5.00	SM 2510B	JAM 03/07/13
pH	7.72	SU	1			SM 4500-H+ B	JAM 03/07/13
Total Dissolved Solids	10900	mg/L	100ml	17.1	50.0	SM 2540 C	TMN 03/07/13
Non-Metallics							
Alkalinity (CaCO3)	344	mg/L	1	0.327	10.0	SM 2320 B	JAM 03/07/13
Bicarbonate	420	mg/L	1	0.399	10.0	SM 2320 B	JAM 03/07/13
Carbonate	0.00	mg/L	1	0.164	5.00	SM 2320 B	JAM 03/07/13
Chloride (Cl-)	133	mg/L	20	5.46	10.0	SM 4500-Cl E	BLL 03/07/13
Fluoride	2.30	mg/L	1	0.003	0.050	SM 4500 F-C	PAT 03/07/13
Nitrogen, Nitrate (NO3)	1.92	mg/L	4	0.040	0.200	SM 4500-NO3 F	BLL 03/07/13
Sulfate (SO4)	7270	mg/L	200	137	200	SM 4500-SO4 E	BLL 03/07/13
Metals - Dissolved							
Arsenic (As)	< 0.005	mg/L	10	0.001	0.005	EPA 200.8	SAC 03/07/13
Barium (Ba)	0.006	mg/L	10	0.0001	0.005	EPA 200.8	SAC 03/07/13
Boron (B)	2.00	mg/L	10	0.003	0.020	EPA 200.8	SAC 03/07/13
Cadmium (Cd)	< 0.001	mg/L	10	0.0006	0.001	EPA 200.8	SAC 03/07/13
Calcium (Ca)	589	mg/L	20	1.52	20.0	SM 3111 B	TNA 03/08/13
Chromium (Cr)	< 0.001	mg/L	10	0.0006	0.001	EPA 200.8 DRC	SAC 03/07/13
Copper (Cu)	0.033	mg/L	10	0.0001	0.005	EPA 200.8	SAC 03/07/13
Iron (Fe)	< 0.050	mg/L	10	0.015	0.050	EPA 200.8	SAC 03/07/13
Lead (Pb)	< 0.001	mg/L	10	0.0009	0.001	EPA 200.8	SAC 03/07/13
Magnesium (Mg)	662	mg/L	25	0.917	12.5	SM 3111 B	TNA 03/07/13
Manganese (Mn)	< 0.010	mg/L	10	0.0007	0.010	EPA 200.8	SAC 03/07/13
Molybdenum (Mo)	0.003	mg/L	10	0.0009	0.001	EPA 200.8	SAC 03/08/13
Nickel (Ni)	0.016	mg/L	10	0.0009	0.005	EPA 200.8	SAC 03/07/13
Potassium (K)	11.6	mg/L	2	0.168	1.00	SM 3111 B	TNA 03/07/13
Selenium (Se)	0.048	mg/L	10	0.001	0.005	EPA 200.8	SAC 03/07/13
Silver (Ag)	< 0.001	mg/L	10	0.0005	0.001	EPA 200.8	SAC 03/07/13

Parameter	Result	Units	DF	MDL	PQL	Method	Analyst/Date
<u>Metals - Dissolved</u>							
Sodium (Na)	1890	mg/L	90	13.8	45.0	SM 3111 B	TNA 03/07/13
Uranium (U)	0.015	mg/L	10	0.000037	0.001	EPA 200.8	SAC 03/07/13
Vanadium (V)	< 0.005	mg/L	10	0.0003	0.005	EPA 200.8	SAC 03/07/13
Zinc (Zn)	< 0.050	mg/L	10	0.0009	0.050	EPA 200.8	SAC 03/07/13
<u>Metals - Total</u>							
Mercury (Hg)	< 0.0002	mg/L	1	0.000046	0.0002	EPA 245.1	TNA 03/07/13
<u>Anion - Cation Balance</u>							
Anions	162	meq/L	1			Calculation	GAM 03/08/13
Anion - Cation Balance	1.20	%	1			Calculation	GAM 03/08/13
Cations	166	meq/L	1			Calculation	GAM 03/08/13
<u>Radiological</u>							
Gross Alpha	2.27	pCi/L	1			EPA 900.0	EJF 04/26/13
Gross Beta	10.1	pCi/L	1			EPA 900.0	EJF 04/26/13
Lead-210	0.652	pCi/L	1			RP280m DOE	SYS 03/28/13
Radium-226	0.344	pCi/L	1			MC Radium-226	EJF 04/30/13
Radium-228	< 1.00	pCi/L	1			MC Radium-228	EJF 04/30/13
Radon-222	1140	pCi/L	1			SM 7500Rn-B	SYS 03/07/13
Thorium-230	0.010	pCi/L	1			HSL-300m	SYS 03/18/13
<u>Precision Data</u>							
Gross Alpha precision	± 6.66	pCi/L	1			MC - Gross Alpha precision	EJF 04/26/13
Gross Beta precision	± 10.9	pCi/L	1			MC - Gross Beta precision	EJF 04/26/13
Lead-210 Precision	± 0.365	pCi/L	1			MC-Lead 210 precision	SYS 03/28/13
Radium-226 precision	± 0.116	pCi/L	1			MC-Radium 226 precision	EJF 04/30/13
Radium-228 precision	± 0.00	pCi/L	1			MC-Radium 228 precision	EJF 04/30/13
Radon-222 Precision	± 213	pCi/L	1			MC-Radon 222 precision	SYS 03/07/13
Thorium-230 Precision	0.076	pCi/L	1			MC-Thorium 230 precision	SYS 03/18/13
<u>MDA Data</u>							
Gross Alpha MDA	23.0	pCi/L	1			MC - Gross Alpha MDA	EJF 04/26/13
Gross Beta MDA	36.1	pCi/L	1			MC - Gross Beta MDA	EJF 04/26/13
Lead-210 MDA	0.648	pCi/L	1			MC - Lead 210 MDA	SYS 03/28/13
Radium-226 MDA	0.242	pCi/L	1			MC - Radium 226 MDA	EJF 04/30/13
Radium-228 MDA	0.028	pCi/L	1			MC - Radium 228 MDA	EJF 04/30/13
Radon-222 MDA	53.2	pCi/L	1			MC - Radon 222 MDA	SYS 03/07/13
Thorium-230 MDA	0.174	pCi/L	1			MC - Thorium 230 MDA	SYS 03/18/13

Approved By: _____



Approved On: 5/9/2013 9:42:00 AM



2381 South Plaza Drive P.O. Box 3388 Rapid City, SD 57709
(605) 348-0111 -- www.thechemistrylab.com

Sample Site: **BC-3**
Sampled: 03/05/13 at 11:15 AM
by Mark Keenihan
Sample Matrix: Water

Lab ID#: 20130307102
Received: 03/05/13 at 04:40 PM
by Bobbie Laurenz
Account: W1008 - DENR - Minerals & Mining

MIKE CEPAK
DENR - MINERALS AND MINING
523 E. CAPITOL AVE.
PIERRE, SD 57501

Parameter	Result	Units	DF	MDL	PQL	Method	Analyst/Date
Physical Properties							
Electrical Conductivity	3170	µmhos/cm	1	0.299	5.00	SM 2510B	JAM 03/07/13
pH	7.49	SU	1			SM 4500-H+ B	JAM 03/07/13
Total Dissolved Solids	3000	mg/L	100ml	17.1	50.0	SM 2540 C	TMN 03/07/13
Non-Metallics							
Alkalinity (CaCO3)	250	mg/L	1	0.327	10.0	SM 2320 B	JAM 03/07/13
Bicarbonate	305	mg/L	1	0.399	10.0	SM 2320 B	JAM 03/07/13
Carbonate	0.00	mg/L	1	0.164	5.00	SM 2320 B	JAM 03/07/13
Chloride (Cl-)	19.3	mg/L	4	1.09	2.00	SM 4500-Cl E	BLL 03/07/13
Fluoride	0.475	mg/L	1	0.003	0.050	SM 4500 F-C	PAT 03/07/13
Nitrogen, Nitrate (NO3)	< 0.050	mg/L	1	0.010	0.050	SM 4500-NO3 F	BLL 03/07/13
Sulfate (SO4)	1790	mg/L	100	68.5	100	SM 4500-SO4 E	BLL 03/07/13
Metals - Dissolved							
Arsenic (As)	< 0.005	mg/L	10	0.001	0.005	EPA 200.8	SAC 03/07/13
Barium (Ba)	0.012	mg/L	10	0.0001	0.005	EPA 200.8	SAC 03/07/13
Boron (B)	0.537	mg/L	10	0.003	0.020	EPA 200.8	SAC 03/07/13
Cadmium (Cd)	< 0.001	mg/L	10	0.0006	0.001	EPA 200.8	SAC 03/07/13
Calcium (Ca)	502	mg/L	30	2.28	30.0	SM 3111 B	TNA 03/08/13
Chromium (Cr)	< 0.001	mg/L	10	0.0006	0.001	EPA 200.8 DRC	SAC 03/07/13
Copper (Cu)	< 0.005	mg/L	10	0.0001	0.005	EPA 200.8	SAC 03/07/13
Iron (Fe)	0.496	mg/L	10	0.015	0.050	EPA 200.8	SAC 03/07/13
Lead (Pb)	< 0.001	mg/L	10	0.0009	0.001	EPA 200.8	SAC 03/07/13
Magnesium (Mg)	148	mg/L	3	0.110	1.50	SM 3111 B	TNA 03/07/13
Manganese (Mn)	0.521	mg/L	10	0.0007	0.010	EPA 200.8	SAC 03/07/13
Molybdenum (Mo)	0.007	mg/L	10	0.0009	0.001	EPA 200.8	SAC 03/08/13
Nickel (Ni)	0.021	mg/L	10	0.0009	0.005	EPA 200.8	SAC 03/07/13
Potassium (K)	10.1	mg/L	2	0.168	1.00	SM 3111 B	TNA 03/07/13
Selenium (Se)	< 0.005	mg/L	10	0.001	0.005	EPA 200.8	SAC 03/07/13
Silver (Ag)	< 0.001	mg/L	10	0.0005	0.001	EPA 200.8	SAC 03/07/13

Parameter	Result	Units	DF	MDL	PQL	Method	Analyst/Date
<u>Metals - Dissolved</u>							
Sodium (Na)	140	mg/L	8	1.22	4.00	SM 3111 B	TNA 03/07/13
Uranium (U)	0.019	mg/L	10	0.000037	0.001	EPA 200.8	SAC 03/07/13
Vanadium (V)	< 0.005	mg/L	10	0.0003	0.005	EPA 200.8	SAC 03/07/13
Zinc (Zn)	< 0.050	mg/L	10	0.0009	0.050	EPA 200.8	SAC 03/07/13
<u>Metals - Total</u>							
Mercury (Hg)	< 0.0002	mg/L	1	0.000046	0.0002	EPA 245.1	TNA 03/07/13
<u>Anion - Cation Balance</u>							
Anions	42.8	meq/L	1			Calculation	GAM 03/08/13
Anion - Cation Balance	0.942	%	1			Calculation	GAM 03/08/13
Cations	43.6	meq/L	1			Calculation	GAM 03/08/13
<u>Radiological</u>							
Gross Alpha	11.9	pCi/L	1			EPA 900.0	EJF 04/25/13
Gross Beta	15.6	pCi/L	1			EPA 900.0	EJF 04/25/13
Lead-210	0.647	pCi/L	1			RP280m DOE	SYS 03/28/13
Radium-226	0.279	pCi/L	1			MC Radium-226	EJF 05/01/13
Radium-228	0.932	pCi/L	1			MC Radium-228	EJF 05/01/13
Radon-222	468	pCi/L	1			SM 7500Rn-B	SYS 03/07/13
Thorium-230	-0.002	pCi/L	1			HSL-300m	SYS 03/18/13
<u>Precision Data</u>							
Gross Alpha precision	± 3.70	pCi/L	1			MC - Gross Alpha precision	EJF 04/25/13
Gross Beta precision	± 5.50	pCi/L	1			MC - Gross Beta precision	EJF 04/25/13
Lead-210 Precision	± 0.384	pCi/L	1			MC-Lead 210 precision	SYS 03/28/13
Radium-226 precision	± 0.103	pCi/L	1			MC-Radium 226 precision	EJF 05/01/13
Radium-228 precision	± 0.422	pCi/L	1			MC-Radium 228 precision	EJF 05/01/13
Radon-222 Precision	± 96.0	pCi/L	1			MC-Radon 222 precision	SYS 03/07/13
Thorium-230 Precision	0.076	pCi/L	1			MC-Thorium 230 precision	SYS 03/18/13
<u>MDA Data</u>							
Gross Alpha MDA	11.2	pCi/L	1			MC - Gross Alpha MDA	EJF 04/25/13
Gross Beta MDA	17.6	pCi/L	1			MC - Gross Beta MDA	EJF 04/25/13
Lead-210 MDA	0.693	pCi/L	1			MC - Lead 210 MDA	SYS 03/28/13
Radium-226 MDA	0.216	pCi/L	1			MC - Radium 226 MDA	EJF 05/01/13
Radium-228 MDA	0.852	pCi/L	1			MC - Radium 228 MDA	EJF 05/01/13
Radon-222 MDA	52.9	pCi/L	1			MC - Radon 222 MDA	SYS 03/07/13
Thorium-230 MDA	0.195	pCi/L	1			MC - Thorium 230 MDA	SYS 03/18/13

Approved By: _____



Approved On: 5/9/2013 9:42:00 AM



2381 South Plaza Drive P.O. Box 3388 Rapid City, SD 57709
(605) 348-0111 -- www.thechemistrylab.com

Sample Site: **BC-1**
Sampled: 03/05/13 at 12:45 PM
by Mark Keenihan
Sample Matrix: Water

Lab ID#: 20130307103
Received: 03/05/13 at 04:40 PM
by Bobbie Laurenz
Account: W1008 - DENR - Minerals & Mining

MIKE CEPAK
DENR - MINERALS AND MINING
523 E. CAPITOL AVE.
PIERRE, SD 57501

Parameter	Result	Units	DF	MDL	PQL	Method	Analyst/Date
Physical Properties							
Electrical Conductivity	3630	µmhos/cm	1	0.299	5.00	SM 2510B	JAM 03/07/13
pH	7.51	SU	1			SM 4500-H+ B	JAM 03/07/13
Total Dissolved Solids	3510	mg/L	100ml	17.1	50.0	SM 2540 C	TMN 03/07/13
Non-Metallics							
Alkalinity (CaCO3)	298	mg/L	1	0.327	10.0	SM 2320 B	JAM 03/07/13
Bicarbonate	363	mg/L	1	0.399	10.0	SM 2320 B	JAM 03/07/13
Carbonate	0.00	mg/L	1	0.164	5.00	SM 2320 B	JAM 03/07/13
Chloride (Cl-)	24.9	mg/L	4	1.09	2.00	SM 4500-Cl E	BLL 03/07/13
Fluoride	0.511	mg/L	1	0.003	0.050	SM 4500 F-C	PAT 03/07/13
Nitrogen, Nitrate (NO3)	< 0.050	mg/L	1	0.010	0.050	SM 4500-NO3 F	BLL 03/07/13
Sulfate (SO4)	2640	mg/L	100	68.5	100	SM 4500-SO4 E	BLL 03/07/13
Metals - Dissolved							
Arsenic (As)	< 0.005	mg/L	10	0.001	0.005	EPA 200.8	SAC 03/07/13
Barium (Ba)	0.008	mg/L	10	0.0001	0.005	EPA 200.8	SAC 03/07/13
Boron (B)	0.751	mg/L	10	0.003	0.020	EPA 200.8	SAC 03/07/13
Cadmium (Cd)	< 0.001	mg/L	10	0.0006	0.001	EPA 200.8	SAC 03/07/13
Calcium (Ca)	702	mg/L	20	1.52	20.0	SM 3111 B	TNA 03/08/13
Chromium (Cr)	< 0.001	mg/L	10	0.0006	0.001	EPA 200.8 DRC	SAC 03/07/13
Copper (Cu)	< 0.005	mg/L	10	0.0001	0.005	EPA 200.8	SAC 03/07/13
Iron (Fe)	0.197	mg/L	10	0.015	0.050	EPA 200.8	SAC 03/07/13
Lead (Pb)	< 0.001	mg/L	10	0.0009	0.001	EPA 200.8	SAC 03/07/13
Magnesium (Mg)	235	mg/L	8	0.294	4.00	SM 3111 B	TNA 03/07/13
Manganese (Mn)	0.030	mg/L	10	0.0007	0.010	EPA 200.8	SAC 03/07/13
Molybdenum (Mo)	0.005	mg/L	10	0.0009	0.001	EPA 200.8	SAC 03/08/13
Nickel (Ni)	0.020	mg/L	10	0.0009	0.005	EPA 200.8	SAC 03/07/13
Potassium (K)	11.1	mg/L	2	0.168	1.00	SM 3111 B	TNA 03/07/13
Selenium (Se)	< 0.005	mg/L	10	0.001	0.005	EPA 200.8	SAC 03/07/13
Silver (Ag)	< 0.001	mg/L	10	0.0005	0.001	EPA 200.8	SAC 03/07/13

Parameter	Result	Units	DF	MDL	PQL	Method	Analyst/Date
<u>Metals - Dissolved</u>							
Sodium (Na)	161	mg/L	8	1.22	4.00	SM 3111 B	TNA 03/07/13
Uranium (U)	0.082	mg/L	10	0.000037	0.001	EPA 200.8	SAC 03/07/13
Vanadium (V)	< 0.005	mg/L	10	0.0003	0.005	EPA 200.8	SAC 03/07/13
Zinc (Zn)	< 0.050	mg/L	10	0.0009	0.050	EPA 200.8	SAC 03/07/13
<u>Metals - Total</u>							
Mercury (Hg)	< 0.0002	mg/L	1	0.000046	0.0002	EPA 245.1	TNA 03/07/13
<u>Anion - Cation Balance</u>							
Anions	61.7	meq/L	1			Calculation	GAM 03/08/13
Anion - Cation Balance	0.021	%	1			Calculation	GAM 03/08/13
Cations	61.7	meq/L	1			Calculation	GAM 03/08/13
<u>Radiological</u>							
Gross Alpha	58.8	pCi/L	1			EPA 900.0	EJF 04/29/13
Gross Beta	41.1	pCi/L	1			EPA 900.0	EJF 04/29/13
Lead-210	0.162	pCi/L	1			RP280m DOE	SYS 03/28/13
Radium-226	0.400	pCi/L	1			MC Radium-226	EJF 05/03/13
Radium-228	< 1.00	pCi/L	1			MC Radium-228	EJF 05/03/13
Radon-222	580	pCi/L	1			SM 7500Rn-B	SYS 03/07/13
Thorium-230	-0.017	pCi/L	1			HSL-300m	SYS 03/18/13
<u>Precision Data</u>							
Gross Alpha precision	± 5.37	pCi/L	1			MC - Gross Alpha precision	EJF 04/29/13
Gross Beta precision	± 6.09	pCi/L	1			MC - Gross Beta precision	EJF 04/29/13
Lead-210 Precision	± 0.327	pCi/L	1			MC-Lead 210 precision	SYS 03/28/13
Radium-226 precision	± 0.138	pCi/L	1			MC-Radium 226 precision	EJF 05/03/13
Radium-228 precision	± 0.00	pCi/L	1			MC-Radium 228 precision	EJF 05/03/13
Radon-222 Precision	± 115	pCi/L	1			MC-Radon 222 precision	SYS 03/07/13
Thorium-230 Precision	0.073	pCi/L	1			MC-Thorium 230 precision	SYS 03/18/13
<u>MDA Data</u>							
Gross Alpha MDA	11.5	pCi/L	1			MC - Gross Alpha MDA	EJF 04/29/13
Gross Beta MDA	17.8	pCi/L	1			MC - Gross Beta MDA	EJF 04/29/13
Lead-210 MDA	0.639	pCi/L	1			MC - Lead 210 MDA	SYS 03/28/13
Radium-226 MDA	0.285	pCi/L	1			MC - Radium 226 MDA	EJF 05/03/13
Radium-228 MDA	0.031	pCi/L	1			MC - Radium 228 MDA	EJF 05/03/13
Radon-222 MDA	52.5	pCi/L	1			MC - Radon 222 MDA	SYS 03/07/13
Thorium-230 MDA	0.140	pCi/L	1			MC - Thorium 230 MDA	SYS 03/18/13

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2381 South Plaza Drive P.O. Box 3388 Rapid City, SD 57709
(605) 348-0111 -- www.thechemistrylab.com

Sample Site: **BC-2**
Sampled: 03/05/13 at 02:45 PM
by Mark Keenihan
Sample Matrix: Water

Lab ID#: 20130307104
Received: 03/05/13 at 04:40 PM
by Bobbie Laurenz
Account: W1008 - DENR - Minerals & Mining

MIKE CEPAK
DENR - MINERALS AND MINING
523 E. CAPITOL AVE.
PIERRE, SD 57501

Parameter	Result	Units	DF	MDL	PQL	Method	Analyst/Date
Physical Properties							
Electrical Conductivity	3820	µmhos/cm	1	0.299	5.00	SM 2510B	JAM 03/07/13
pH	7.55	SU	1			SM 4500-H+ B	JAM 03/07/13
Total Dissolved Solids	3650	mg/L	100ml	17.1	50.0	SM 2540 C	TMN 03/07/13
Non-Metallics							
Alkalinity (CaCO3)	232	mg/L	1	0.327	10.0	SM 2320 B	JAM 03/07/13
Bicarbonate	283	mg/L	1	0.399	10.0	SM 2320 B	JAM 03/07/13
Carbonate	0.00	mg/L	1	0.164	5.00	SM 2320 B	JAM 03/07/13
Chloride (Cl-)	22.6	mg/L	4	1.09	2.00	SM 4500-Cl E	BLL 03/07/13
Fluoride	0.617	mg/L	1	0.003	0.050	SM 4500 F-C	PAT 03/07/13
Nitrogen, Nitrate (NO3)	0.056	mg/L	1	0.010	0.050	SM 4500-NO3 F	BLL 03/07/13
Sulfate (SO4)	2410	mg/L	50	34.2	50.0	SM 4500-SO4 E	BLL 03/07/13
Metals - Dissolved							
Arsenic (As)	< 0.005	mg/L	10	0.001	0.005	EPA 200.8	SAC 03/07/13
Barium (Ba)	0.007	mg/L	10	0.0001	0.005	EPA 200.8	SAC 03/07/13
Boron (B)	0.523	mg/L	10	0.003	0.020	EPA 200.8	SAC 03/07/13
Cadmium (Cd)	< 0.001	mg/L	10	0.0006	0.001	EPA 200.8	SAC 03/07/13
Calcium (Ca)	596	mg/L	30	2.28	30.0	SM 3111 B	TNA 03/08/13
Chromium (Cr)	< 0.001	mg/L	10	0.0006	0.001	EPA 200.8 DRC	SAC 03/07/13
Copper (Cu)	< 0.005	mg/L	10	0.0001	0.005	EPA 200.8	SAC 03/07/13
Iron (Fe)	0.054	mg/L	10	0.015	0.050	EPA 200.8	SAC 03/07/13
Lead (Pb)	< 0.001	mg/L	10	0.0009	0.001	EPA 200.8	SAC 03/07/13
Magnesium (Mg)	211	mg/L	7	0.257	3.50	SM 3111 B	TNA 03/07/13
Manganese (Mn)	0.036	mg/L	10	0.0007	0.010	EPA 200.8	SAC 03/07/13
Molybdenum (Mo)	0.013	mg/L	10	0.0009	0.001	EPA 200.8	SAC 03/08/13
Nickel (Ni)	0.019	mg/L	10	0.0009	0.005	EPA 200.8	SAC 03/07/13
Potassium (K)	11.6	mg/L	2	0.168	1.00	SM 3111 B	TNA 03/07/13
Selenium (Se)	< 0.005	mg/L	10	0.001	0.005	EPA 200.8	SAC 03/07/13
Silver (Ag)	< 0.001	mg/L	10	0.0005	0.001	EPA 200.8	SAC 03/07/13

Parameter	Result	Units	DF	MDL	PQL	Method	Analyst/Date
<u>Metals - Dissolved</u>							
Sodium (Na)	231	mg/L	9	1.38	4.50	SM 3111 B	TNA 03/07/13
Uranium (U)	0.022	mg/L	10	0.000037	0.001	EPA 200.8	SAC 03/07/13
Vanadium (V)	< 0.005	mg/L	10	0.0003	0.005	EPA 200.8	SAC 03/07/13
Zinc (Zn)	< 0.050	mg/L	10	0.0009	0.050	EPA 200.8	SAC 03/07/13
<u>Metals - Total</u>							
Mercury (Hg)	< 0.0002	mg/L	1	0.000046	0.0002	EPA 245.1	TNA 03/07/13
<u>Anion - Cation Balance</u>							
Anions	55.4	meq/L	1			Calculation	GAM 03/08/13
Anion - Cation Balance	1.81	%	1			Calculation	GAM 03/08/13
Cations	57.4	meq/L	1			Calculation	GAM 03/08/13
<u>Radiological</u>							
Gross Alpha	6.47	pCi/L	1			EPA 900.0	EJF 04/28/13
Gross Beta	17.8	pCi/L	1			EPA 900.0	EJF 04/29/13
Lead-210	0.436	pCi/L	1			RP280m DOE	SYS 03/28/13
Radium-226	1.17	pCi/L	1			MC Radium-226	EJF 05/06/13
Radium-228	< 1.00	pCi/L	1			MC Radium-228	EJF 05/06/13
Radon-222	747	pCi/L	1			SM 7500Rn-B	SYS 03/07/13
Thorium-230	-0.028	pCi/L	1			HSL-300m	SYS 03/18/13
<u>Precision Data</u>							
Gross Alpha precision	± 3.51	pCi/L	1			MC - Gross Alpha precision	EJF 04/28/13
Gross Beta precision	± 5.98	pCi/L	1			MC - Gross Beta precision	EJF 04/29/13
Lead-210 Precision	± 0.319	pCi/L	1			MC-Lead 210 precision	SYS 03/28/13
Radium-226 precision	± 0.210	pCi/L	1			MC-Radium 226 precision	EJF 05/06/13
Radium-228 precision	± 0.00	pCi/L	1			MC-Radium 228 precision	EJF 05/06/13
Radon-222 Precision	± 144	pCi/L	1			MC-Radon 222 precision	SYS 03/07/13
Thorium-230 Precision	0.080	pCi/L	1			MC-Thorium 230 precision	SYS 03/18/13
<u>MDA Data</u>							
Gross Alpha MDA	11.3	pCi/L	1			MC - Gross Alpha MDA	EJF 04/28/13
Gross Beta MDA	19.1	pCi/L	1			MC - Gross Beta MDA	EJF 04/29/13
Lead-210 MDA	0.587	pCi/L	1			MC - Lead 210 MDA	SYS 03/28/13
Radium-226 MDA	0.434	pCi/L	1			MC - Radium 226 MDA	EJF 05/06/13
Radium-228 MDA	0.031	pCi/L	1			MC - Radium 228 MDA	EJF 05/06/13
Radon-222 MDA	51.9	pCi/L	1			MC - Radon 222 MDA	SYS 03/07/13
Thorium-230 MDA	0.213	pCi/L	1			MC - Thorium 230 MDA	SYS 03/18/13

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2381 South Plaza Drive P.O. Box 3388 Rapid City, SD 57709
(605) 348-0111 -- www.thechemistrylab.com

Sample Site: DC-1
Sampled: 03/06/13 at 10:00 AM
by Mark Keenihan
Sample Matrix: Water

Lab ID#: 20130307110
Received: 03/06/13 at 03:30 PM
by Bobbie Laurenz
Account: W1008 - DENR - Minerals & Mining

MIKE CEPAK
DENR - MINERALS AND MINING
523 E. CAPITOL AVE.
PIERRE, SD 57501

Parameter	Result	Units	DF	Method	Analyst/Date
Radiological					
Gross Alpha	2.62	pCi/L	1	EPA 900.0	EJF 04/28/13
Gross Beta	9.47	pCi/L	1	EPA 900.0	EJF 04/30/13
Lead-210	0.447	pCi/L	1	RP280m DOE	SYS 03/28/13
Radium-226	0.741	pCi/L	1	MC Radium-226	EJF 05/07/13
Radium-228	< 1.00	pCi/L	1	MC Radium-228	EJF 05/07/13
Radon-222	538	pCi/L	1	SM 7500Rn-B	SYS 03/07/13
Thorium-230	0.399	pCi/L	1	HSL-300m	SYS 03/18/13
Precision Data					
Gross Alpha precision	± 3.92	pCi/L	1	MC - Gross Alpha precision	EJF 04/28/13
Gross Beta precision	± 6.09	pCi/L	1	MC - Gross Beta precision	EJF 04/30/13
Lead-210 Precision	± 0.336	pCi/L	1	MC-Lead 210 precision	SYS 03/28/13
Radium-226 precision	± 0.195	pCi/L	1	MC-Radium 226 precision	EJF 05/07/13
Radium-228 precision	± 0.00	pCi/L	1	MC-Radium 228 precision	EJF 05/07/13
Radon-222 Precision	± 106	pCi/L	1	MC-Radon 222 precision	SYS 03/07/13
Thorium-230 Precision	± 0.194	pCi/L	1	MC-Thorium 230 precision	SYS 03/18/13
MDA Data					
Gross Alpha MDA	13.3	pCi/L	1	MC - Gross Alpha MDA	EJF 04/28/13
Gross Beta MDA	19.9	pCi/L	1	MC - Gross Beta MDA	EJF 04/30/13
Lead-210 MDA	0.621	pCi/L	1	MC - Lead 210 MDA	SYS 03/28/13
Radium-226 MDA	0.399	pCi/L	1	MC - Radium 226 MDA	EJF 05/07/13
Radium-228 MDA	0.031	pCi/L	1	MC - Radium 228 MDA	EJF 05/07/13
Radon-222 MDA	45.1	pCi/L	1	MC - Radon 222 MDA	SYS 03/07/13
Thorium-230 MDA	0.197	pCi/L	1	MC - Thorium 230 MDA	SYS 03/18/13

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