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State of Utah

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

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December 1, 1992

Mr. Wendell Owen
Co-Op Mining Company
P.O. Box 1245
Huntington, Utah 84528

Dear Mr. Owen:

Re: Huntington Spring and Birch Spring Sampling, Co-Op Mining Company, Bear Canyon Mine, ACT/015/025, Folder #2, Emery County, Utah

Subsequent to findings from the informal hearing in May 1991, Co-Op Mining Company has been performing monthly **baseline** monitoring of Huntington and Birch Springs which commenced at the beginning of the third quarter in 1991. Previously, Co-Op performed quarterly **operational** monitoring for SBC-4 and SBC-5 (Huntington and Birch Springs respectively). Review of monthly baseline monitoring data since that date does not indicate significant changes in parameters from month to month or violations of any parameter. Therefore, the Division has determined that a revision in Co-Op's water monitoring schedule is justified.

The revision would be as follows:

Quarterly monitoring of SBC-4 and SBC-5 may begin with the first quarter of 1993 and proceed until further notice from the Division. Samples are to be analyzed according to the approved **baseline** parameter list.

After monitoring SBC-4 and SBC-5, as set forth above, for a period of at least one year, the Division will assess the possibility of returning to the original frequency and parameters (quarterly operational) for monitoring these two springs.

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If Co-Op wishes to change the monitoring schedules as described above, it must first revise its Permit Application Package (PAP) as outlined above. The change should be submitted in the form of an amendment to the PAP for approval by the Division. If you have any questions or concerns, please contact Lowell Braxton, Associate Director, Mining.

Best regards,

Dianne R. Nielson
Director

jbe
cc: Darrel Leamaster
Pamela Grubaugh-Littig
PGLGHOST.6

- operational

- no detection or below detectable limits

X - not on either list

WATER MONITORING REPORT

Property: Co-op
Station: SBC-4
Location: Huntington Springs
Type: Spring
Frequency: Monthly – Baseline

Field Measurements	Date Sampled 02/28/91	05/28/91	07/29/91	08/08/91	09/13/91	10/25/91	11/26/91	12/27/91
Sampled by:	E.I.S.	E.I.S.	E.I.S.	E.I.S.	E.I.S.	CT&E	CT&E	CT&E
Flow (gpm)	130	119	119	113	114	114	121	122
pH	8.3	7.9	7.9	8	7.9	7.7	7.0	6.7
Sp. Cond. (ohms)	800	360	460	300	340	N/S	510	610
Temp (C)	2	8	9	10	8	10	8	9.5
Diss. O. (ppm)	N/A	N/A	N/A	N/A	N/S	7.86	N/S	7.52

Lab Measurements								
Analyzed by:	IML	IML	IML	IML	IML	CT&E	CT&E	CT&E
TDS (mg/L)	512	396	382	366	376	326	349	343
TSS (mg/L)	11	<1.0	24	<1	<1	<1	N/S	1
O & G (mg/L)	N/A	N/A	5.7	<5	<5.0	3.6	1.8	1.7
Al CaCO3	291	304	300	300	288	265	307	269
Hd CaCO3	442	364	347	346	340	291	347	301
Ac CaCO3	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
HCO3	338	371	365	360	351	323	378	328
CO3	8.1	0	0	2.7	0	0	0	0
Cl	12.3	4.46	3.85	4.06	3	10	15	10
SO4	160	75.3	58	57	50.4	39	44	38
Ca	94.5	86.3	82.7	87.3	85.8	74.3	90.1	67.1
Mg	50.1	36.2	34.2	31.2	30.5	25.6	29.6	32.4
K	2.63	1.46	1.55	1.43	0.78	N/D	3.45	4.52
Na	6.3	4.9	5	5.3	5.06	3.88	3.75	4.68
Cat/An	1.86	1.87	0.8	0.86	1.05	2.37	1.03	1
Al	0.22	N/D	N/D	N/D	N/D	0.5	N/D	N/D
As	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Ba	0.18	N/D	0.19	0.16	N/D	0.14	N/D	N/D
B	0.08	0.01	0.04	N/D	0.02	0.02	0.09	0.01
Cd	N/D	N/D	N/D	N/D	N/D	0.005	N/D	N/D
Cr	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Cu	0.01	0.02	0.01	N/D	0.01	N/D	N/D	N/D
Fl	1.19	0.18	N/S	0.19	0.16	0.06	0.06	0.2
Pb	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Hg	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Mo	N/D	N/D	0.02	N/D	N/D	0.16	N/D	N/D
Ni	N/D	N/D	N/D	N/D	N/D	N/D	N/D	0.02
NH3	0.27	0.05	0.33	0.04	0.08	N/D	0.63	0.13

Lab Measurements								
NO2	0.25	0.6	0.19	0.27	<0.02	<0.01	N/D	N/D
NO3	<0.04	<0.04	<0.02	<0.02	<0.02	<0.01	N/D	N/D
P	N/D	0.14	N/D	N/D	0.1	0.02	0.03	0.01
Se	N/D	N/D	N/D	N/D	N/D	0.007	N/D	N/D
H2S	0.08	0.38	N/D	N/D	N/D	N/D	12.5	3
Zn	0.04	0.06	0.02	N/D	0.11	0.07	N/D	0.05
Fe	0.3	0.21	0.27	N/D	0.08	0.36	N/D	N/D
Mn	N/D	N/D	N/D	N/D	N/D	0.04	N/D	N/D

WATER MONITORING REPORT

Property: Co-op
Station: SBC-4
Location: Huntington Springs
Type: Spring
Frequency: Jan - May, Aug, Oct

Field Measurements	Date Sampled 01/31/92	02/28/92	03/26/92	04/24/92	05/29/92	07/23/92	08/28/92	09/24/92
Sampled by:	CT&E	CT&E	CT&E	CT&E	CT&E	CT&E	CT&E	CT&E
Flow (gpm)	126	128	121	125	124	123	112	107
pH	6.1	7.7	7.8	7.12	7.63	6.6	7.15	6.7
Sp. Cond. (ohms)	500	470	1500	450	500	480	360	700
Temp (C)	9	9	11	9	9.8	12	11.5	10
Lab Measurements								
Analyzed by:	CT&E	CT&E	CT&E	CT&E	CT&E	CT&E	CT&E	CT&E
TDS (mg/L)	314	312	357	320	368	289	344	350
Hardness (CaCO3)	348	374	477	338	326	363	348	391
Aluminum (Al)	0	0	0	0	0.0	0.0	0.0	0.0
Arsenic (As)	0	0	0	0.002	0.0	0.0	0.0	0.0
Barium (Ba)	0	0	0	0	0.0	0.03	0.0	0.0
Boron (B)	0	0	0.19	0	0.08	0.12	0.1	0.08
Carbonate (CO3)	0	0	0	0	0.0	0.0	0.0	0.0
Bicarbonate (HCO3)	348	398	337	283	345	352	344	330
Cadmium (Cd)	0	0	0	0	0.0	0.0	0.0	0.0
Calcium (Ca)	85.1	102.6	123.5	97.4	78.0	78.4	80.9	106.3
Chloride (Cl)	10	5	10	20	15.0	15.0	25.0	20.0
Chromium (Cr)	0	0	0	0	0.0	0.0	0.0	0.0
Copper (Cu)	0	0.015	0	0	0.018	0.0	0.016	0.008
Fluoride (F)	0.08	0.05	0.13	0.3	0.23	0.19	0.18	0.22
Iron (Fe)	0	0	0	0	0.08	0.02	0.03	0.0
Lead (Pb)	0	0	0	0	0.0	0.0	0.0	0.0
Magnesium (Mg)	32.8	28.7	40.9	23	31.9	40.68	35.4	30.5
Manganese (Mn)	0	0	0	0	0.0	0.0	0.0	0.0
Mercury (Hg)	0	0.001	0	0	0.0	0.0	0.0	0.0
Molybdenum (Mo)	0	0	0	0	0.0	0.0	0.0	0.0
Nickel (Ni)	0	0.02	0.02	0	0.02	0.04	0.0	0.0
Nitrogen (NH3)	0.12	0.07	0.55	0	0.0	0.02	0.0	0.0
Nitrite (NO2)	0	0	0.01	0	0.0	0.01	0.02	0.36
Nitrate (NO3)	0	0	0.05	0	0.32	0.27	0.34	0.23
Potassium (K)	0	2.35	0	0	0.0	0.0	0.0	0.0
Phosphate (PO4)	0.01	0	0.01	0.01	0.0	0.01	0.0	0.0
Selenium (Se)	0	0	0	0	0.0	0.0	0.0	0.0
Sodium (Na)	4.55	4.55	2.19	3.58	2.13	5.02	3.97	1.15
Sulfate (SO4)	50	49	50	70	70.0	38.0	30.0	32.0
Sulfide (S)	1.8	0	0.01	3.4	4.6	5.0	4.40	0.0
Zinc (Z)	0.53	0.21	0	0.03	0.0	0.07	0.02	0.28
Oil & Grease	0	0.4	0	0.2	0.6	0.1	1.5	0.2
Anions	6.91	7.55	8.83	6.55	6.78	6.85	6.83	6.52
Cations	7.14	7.74	9.57	6.91	6.61	7.47	7.12	7.87

WATER MONITORING REPORT

Property: Co-op
Station: SBC-5
Location: Birch Springs
Type: Spring
Frequency: Monthly - Baseline

Field Measurements	Date Sampled 03/01/91	06/17/91	07/29/91	08/08/91	09/27/91	10/28/91	11/26/91	12/27/91
Sampled by:	33	E.I.S.	E.I.S.	E.I.S.	CT&E	CT&E	CT&E	CT&E
Flow (gpm)	7.9	33	36	33	29	29	29	29
pH	680	7.9	7.9	738	7.7	6.9	6.9	6.8
Sp. Cond. (ohms)	2	640	690	390	700	N/S	610	700
Temp (C)	N/A	6	6	10	N/S	11	11	10
~~Diss. O. (ppm)~~	~~N/A~~	~~N/A~~	~~N/A~~	~~N/A~~	~~6.3~~	~~7.5~~	~~N/S~~	~~8.34~~
Lab Measurements								
Analyzed by:	IML	IML	IML	IML	CT&E	CT&E	CT&E	CT&E
TDS (mg/L)	484	500	508	480	473	465	487	482
TSS (mg/L)	1	3	<1	1	<1.0	<1.0	N/S	1
O & G (mg/L)	<5.0	N/R	<5.0	<5.0	1.5	N/S	0.6	0.8
Al CaCO3	308	328	325	325	<1	330	290	302
Hd CaCO3	426	442	436	441	462	499	447	366
Ac CaCO3	N/R	N/R	N/R	N/R	<1	N/S	N/S	N/S
HCO3	376	400	397	397	366	402	353	368
CO3	0	0	0	0	N/S	N/S	N/S	N/D
Cl	8.17	6.64	6.59	5.78	15	10	20	25
SO4	129	123	124	121	140	140	140	90
Ca	101	101	99	101	106.3	117.8	108.5	82
Mg	42.5	46.5	46	45.8	47.8	49.8	42.7	39.26
K	2.09	2.64	2.28	2.2	0.3	0.95	4.37	4.19
Na	6.1	7	7.1	7	6.34	6.96	5.59	5.68
Cat/An	1.33	0.53	0.94	0.03	1.66	3.26	0.71	0.9
Al	N/D	N/D	0.2	N/D	0.21	0.5	N/D	N/D
As	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Ba	0.13	0.13	0.13	0.11	N/D	0.07	N/D	N/D
B	0.1	0.02	0.07	N/D	0.06	0.12	0.16	0.11
Cd	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Cr	N/D	N/D	N/D	N/D	0.06	N/D	N/D	N/D
Cu	N/D	N/D	0.01	N/D	0.047	N/D	N/D	N/D
Fl	0.65	0.17	N/R	0.16	0.06	0.05	0.05	0.17
Pb	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Hg	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Mo	N/D	N/D	0.02	N/D	N/D	N/D	N/D	N/D
Ni	N/D	N/D	N/D	N/D	0.29	N/D	N/D	0.02
NH3	0.13	0.12	0.3	0.03	0.19	N/S	0.4	0.09
NO2	<0.04	0.05	0.02	0.03	N/D	N/D	N/D	N/D
NO3	<0.04	<0.01	0.02	<0.02	N/D	N/D	N/D	N/D
NH3	N/D	N/D	N/D	N/D	0.06	0.02	0.05	N/D

Lab Measurements								
Se	N/D	N/D	N/D	N/D	N/D	0.003	N/D	N/D
Sulfide	<0.01	N/R	0.1	<0.1	3	5.5	N/D	5.5
Zn	N/D	N/D	0.01	0.01	N/D	0.05	0.02	N/D
Fe	0.1	0.12	0.25	N/D	N/D	N/D	N/D	N/D
Mn	N/D	0.02	0.02	N/D	N/D	N/D	N/D	N/D

WATER MONITORING REPORT

Property: Co-op
Station: SBC-5
Location: Birch Springs
Type: Spring
Frequency: Monthly - Baseline

Field Measurements	Date Sampled 01/31/92	02/28/92	03/26/92	04/27/92	05/29/92	07/23/92	08/28/92	09/24/92
Sampled by:	CT&E	CT&E	CT&E	CT&E	CT&E	CT&E	CT&E	CT&E
Flow (gpm)	29	29	29	29.9	28	28	28	28
pH	7.7	7.3	7.7	7.15	7.71	7.8	6.9	7.4
Sp. Cond. (ohms)	730	600	1100	550	800	610	550	500
Temp (C)	10.5	8.8	10.0	10.9	11.5	12.0	13.3	14.8
Lab Measurements								
Analyzed by:	CT&E	CT&E	CT&E	CT&E	CT&E	CT&E	CT&E	CT&E
TDS (mg/L)	436	437	448	541	490	455	495	467
Hardness (CaCO3)	435	424	331	476	420	342	471	466
Aluminum (Al)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Arsenic (As)	0.0	0.0	0.003	0.0	0.0	0.0	0.0	0.0
Barium (Ba)	0.0	0.0	0.0	0.0	0.0	0.03	0.0	0.0
Boron (B)	0.07	0.0	0.09	0.13	0.04	0.12	0.16	0.11
Carbonate (CO3)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bicarbonate (HCO3)	353	356	320	337	340	267	384	370
Cadmium (Cd)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Calcium (Ca)	95	99.2	90.8	130.5	92.2	82.3	105.8	99.1
Chloride (Cl)	10	5	10	20	10	15	25	20
Chromium (Cr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Copper (Cu)	0.0	0.0	0.0	0.0	0.0	0.0	0.014	0.0
Fluoride (F)	0.0	0.04	0.14	0.27	0.2	0.17	0.17	0.21
Iron (Fe)	0.03	0.0	0.0	0.0	0.06	0.06	0.14	0.0
Lead (Pb)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Magnesium (Mg)	48	42.9	25.2	36.4	46.1	33.2	50.2	53
Manganese (Mn)	0.0	0.0	0.0	0.0	0.0	0.0	0.05	0.0
Mercury (Hg)	0.0	0.001	0.0	0.0	0.0	0.0	0.0	0.0
Molybdenum (Mo)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nickel (Ni)	0.0	0.02	0.02	0.0	0.02	0.1	0.0	0.0
Nitrogen (NH3)	0.14	0.09	0.55	0.0	0.0	0.01	0.0	0.0
Nitrite (NO2)	0.0	0.0	0.01	0.0	0.0	0.0	0.0	0.0
Nitrate (NO3)	0.0	0.0	0.13	0.05	0.09	0.12	0.2	0.34
Potassium (K)	0.0	4.8	0.0	0.0	0.0	0.0	1.36	0.0
Phosphate (PO4)	0.31	0.0	0.01	0.02	0.0	0.01	0.0	0.0
Selenium (Se)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sodium (Na)	6.12	8.13	0.94	5.88	5.87	2.1	6.93	3.07
Sulfate (SO4)	150	110	150	180	140	130	150	140
Sulfide (S)	18.0	0.0	0.01	1.8	4.2	4.2	6.2	1.0
Zinc (Z)	0.0	0.02	0.0	0.04	0.0	0.06	0.08	0.0
Oil & Grease	0.6	0.4	0.0	0.4	0.1	0.6	0.3	0.3
Anions	9.09	8.14	6.46	9.74	8.66	7.42	9.99	9.43
Cations	8.95	8.95	6.7	9.76	8.64	6.93	9.74	9.43