

#3621
K

WATER QUALITY MEMORANDUM

Utah Coal Regulatory Program

March 23, 2011

TO: Internal File

FROM: April A. Abate, Environmental Scientist III *AAA 3-23-2011*

THRU: James D. Smith, Permit Supervisor *DS 24 Mar 11*

SUBJECT: 2010 3rd Quarter Water Monitoring: Bear Canyon Mine, C/015/0025,
Task ID # 3621

The monitoring plan is described on pages 7-48 through 7-60A of the MRP. It includes Tables 7-12 through 7-17. The mine is now operating under a permit held by Castle Valley Mining, LLC.

1. Were data submitted for all of the MRP required sites?

In-mine YES NO

A total of four in-mine samples are listed in the Bear Canyon water monitoring plan: SBC-9A, 16-8-8-10, UG-1 and UG-2. UG-1 and UG-2 do not have any specified monitoring protocol.

The Mohrland Portal, sample 16-8-8-10 and SBC-9A was sampled during the 3rd quarter for operational parameters.

Springs YES NO

Most of the spring samples in and around the Bear Canyon mine are sampled for field, or either operational or baseline parameters. During the 3rd quarter, all the required springs were monitored during the months of July and August. SBC-16: Wildhorse Ridge Spg, SCC-1: Flagstaff5 No. Horn5 Price R, SBC-21, SCC-5: Gentry Mtn. Drainage, SMH-1: McCadden Hollow, SMH-5: Stockwater Trough all reported no flow.

Springs were also sampled for baseline parameters this quarter.

Streams YES NO

Stream sampling required for the 3rd quarter of each year is performed for both

operational and field parameters. No flow was reported for the following stream samples: MH-2: Upper and MH-1: Lower McCadden Hollow Creek, FC-3 Right Fork of Fish Creek at Property Line, BC-3: Lower Right Fork of Bear Creek, BC-4: Upper Right Fork Bear Creek, FC-5: Channel at Mud Spring, FC-6: Upper Left Fork Fish Creek, FC-7: Right Upper Left Fork Fish Creek and FC-8.

Streams were also sampled for baseline parameters this quarter.

UPDES YES NO

Five stations are monitored for the Bear Canyon UPDES permit on a monthly basis. None of these stations reported any monthly flow data from the five stations during the 3rd quarter of 2010 with the exception was discharge point UTG040006-004 - Mine Water to Bear Canyon Creek, which reported monthly discharges during the 3rd quarter of 2010.

Wells YES NO

Three wells are monitored at the mine. SBC-3 (Creek Well) is monitored for operational parameters on a quarterly basis. MW-114 and MW-117 are gauged for depth to water level only during the 2nd, 3rd and 4th quarters.

All wells were monitored during this quarter. SBC-3 was also sampled for baseline parameters this quarter.

2. Were all required parameters reported for each site?

In-mine YES NO

Springs YES NO

Streams YES NO

UPDES YES NO

3. Were any irregularities found in the data?

In-mine YES NO

The cation-anion balance in the sample collected from SBC-9A was above the normal range of 5% this quarter. The reason for this could be the following:

1. The analysis is poor (inaccurate)
2. Other constituents are present that were not used to calculate the balance
3. The water is very acidic and H⁺ ions were not included

4. Organic ions are presented in significant quantities (usually indicated by color in the water).

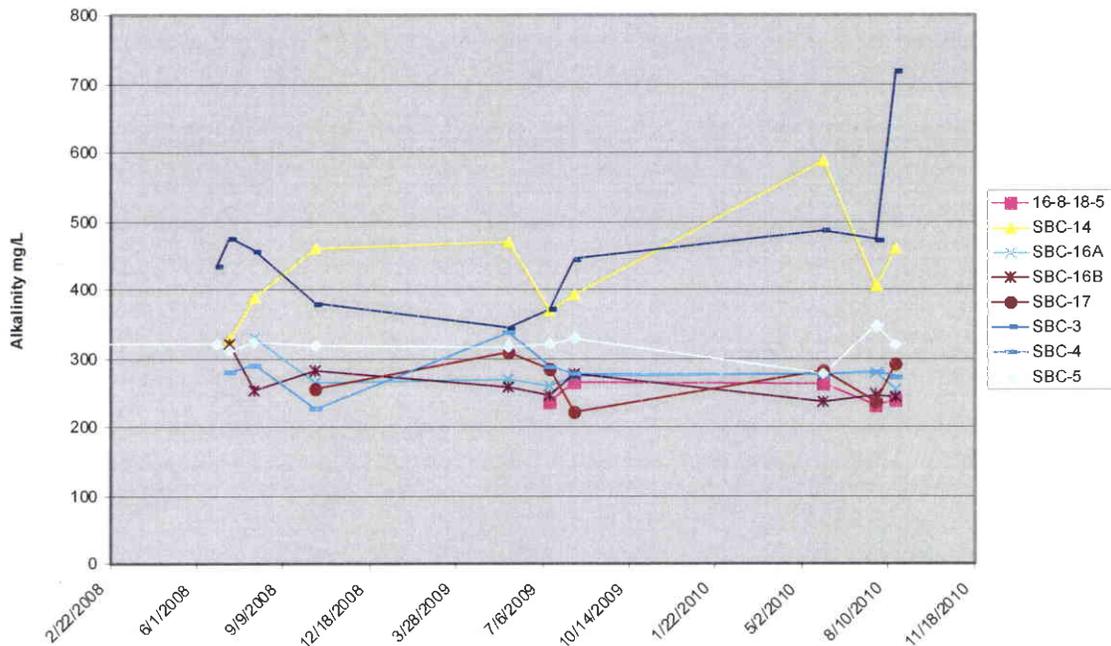
Given the pH was reported as neutral, it is not likely that acidic water is a factor.

Springs

YES NO

The Bear Creek Landslide spring was sampled for operational parameters during the 3rd quarter. This sample exhibited a significant cation-anion difference of 94% and a total iron concentration of 121 mg/L. This sample was decommissioned from the water monitoring plan and will no longer be sampled. Alkalinity was elevated in SBC-14 at a concentration of 588 mg/L. The average concentration is 409 mg/L. Typically, at pH levels below 8.5, alkalinity is a direct measurement of bicarbonate concentrations in the water. Bicarbonate levels were not outside of normal ranges this quarter.

Alkalinity Levels in Selected Spring Samples



As can be seen in the chart above, alkalinity concentrations have shown a sharp increase in samples SBC-14 and SBC-3. Continued monitoring is recommended to see if an upward trend is observable.

Streams

YES NO

All stream samples for total dissolved solids detections during this quarter were well below the state water quality standards of 1,200 mg/L.

As part of the baseline sampling analysis, streams were sampled for total metals during the 3rd quarter. The results for indicated that none of the stream samples exceeded surface water standards for metals.

UPDES

YES NO

Mine water from Bear Canyon Creek at outfall 004 was the only point that discharged this quarter. Mine water has been consistently discharging from this location since May 2009.

Wells

YES NO

4. On what date does the MRP require a five-year resampling of baseline water data.

Baseline parameters are to be taken in August of year 5 prior to each permit renewal (Table 7.14). Permit renewal date was November 02, 2010 and baseline parameters were collected in August 2010.

5. Based on your review, what further actions, if any, do you recommend?

o Sample BC-3 at the Lower Right Fork of Bear Creek and BC-2, the most downstream stream sample location evaluated have both shown a recent increase in the levels of Total Dissolved Solids (TDS) since May 2008. This indicates that excess sediment may be discharging into the creek. The operator should evaluate sediment controls in this area and determine if there is any mitigation needed to control the level of sediment entering the water body. The location of stream sample BC-3 is an important one due to the fact that it is located adjacent to the main road. A high likelihood of this area receiving sediment from the disturbed area exists.

o Alkalinity concentrations have shown a sharp increase in samples SBC-14 and SBC-3. Continued monitoring is recommended to see if an upward trend is observable.

6. Does the Mine Operator need to submit more information to fulfill this quarter's monitoring requirements?

YES NO