C/025/005

#3746
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WATER QUALITY MEMORANDUM
Utah Coal Regulatory Program

September 15, 2011

TO: Internal File

THRU: Steve Christensen, Permit Supervisor SLC

FROM: April A. Abate, Environmental Scientist III 9/15/2011

RE: 2011 First Quarter Water Monitoring, Alton Coal Development LLC, Coal Hollow, C/025/0005, WQ11-1, Task ID #3746

The Coal Hollow mine is an active surface mine. The permit application was approved on October 15, 2009 and a Permit was issued to Alton Coal Development, LLC (ACD) on November 8, 2010. Mining activity commenced in November 2010. Surface mining of coal at the Coal Hollow mine is expected to continue for approximately three years.

The water monitoring program for the Coal Hollow mine is described in Section 731.200 of the MRP. Water monitoring locations are listed in Table 7-5 and shown on Drawing 7-10. Monitoring protocols are described in Table 7-4 and the specific protocol(s) assigned for each location are listed in Table 7-5. Operational/Reclamation and Baseline monitoring parameters are listed for surface water on Table 7-6A and Table 7-6B, respectively, and for groundwater on Table 7-7A and 7-7B, respectively. Special Condition No. 4 of the mine Permit requires the Permittee to monitor for selenium where water leaves the minesite, during operational and reclamation phases.

This report was prepared from monitoring data queried from the UDOGM database. The data that support this report were collected and submitted to the database by Alton Coal Development (ACD). The data were downloaded into file O:\025005.COL\WATER QUALITY\SPREADSHEETS Coal Hollow 11-1.xls for this review.

1. Were data submitted for all required sites?

Springs YES [X] NO [ ]

Twelve springs are monitored quarterly (Table 7-5). All of the spring locations except one (SP-3) are located in Sink Valley Wash (Drawing 7-10). Spring location SP-19 is not shown on Drawing 7-10, but is shown on Drawing 7-1 (Spring and Seep Locations). Eight springs are monitored for field parameters only: Sorensen Spring, SP-3, SP-14, SP-16, SP-19, SP-20, SP-22 and SP-23. Four springs are monitored for field parameters and laboratory analyses: SP-4, SP-6, SP-8 and SP-33.

All but three springs were monitored during the 1st quarter 2011. Spring locations SP-3 and SP-19 were all inaccessible due to snow. SP-6 was not monitored due to it being inundated with surface water. Flow measurements were recorded at the following spring sites:

SAMPLE	SITE	Flow
SORENSON SPRING	Alluvial spring Sink Valley	0.39
SP-14	Alluvium - Sink Valley	2.11
SP-16	(Teal Spring) - Alluvium - Sink Valley	1.43
SP-19	(Sorenson Pond)- Alluvium - Sink Valley	No Access
SP-20	Alluvium - Sink Valley	11.6
SP-22	Alluvium - Sink Valley	1.16
SP-23	Alluvium - Sink Valley	0.56
SP-3	Pediment Alluvium - Lwr Sink Valley Wash	No Access
SP-33	(Johnson Spring) - Alluvium - Sink Vlly	37.3
SP-4	Alluvium/Fault? - Lwr Sink Valley Wash	0.87
SP-6	Alluvium - seep in Sink Valley	No Access
SP-8	Alluvial spring at Dames Ranch	16.9

Notes: Data were collected from March 26-28, 2011. Regional Palmer Hydrologic Index Value: 3.39

Streams YES [X] NO [ ]

Ten stream sites are monitored quarterly. Field parameters and laboratory analyses are performed for SW-2 (Kanab Creek below Robinson Creek); SW-3 (Kanab Creek above permit area); SW-4 and SW-5 Lower Robinson Creek [LRC] above permit area and above Kanab Creek, respectively); SW-6 (Sink Valley wash at permit boundary); SW-8 (Swapp Hollow Creek above permit area); and SW-9 (Sink Valley Wash below permit area). Field parameters only are measured at locations BLM-1 (LRC adjacent to mined areas); RID-1 (irrigation ditch in Robinson Creek); and SW-101 (LRC in permit area).

All required stream sites were monitored for the quarter during March 26-28, 2011. No flow was reported for stream monitoring sites SW-4. Flows reported for Lower Robinson Creek averaged 67 gpm. Flow ranges from Kanab Creek averaged 4,479 gpm; Swapp Hollow 36.1 gpm; and Sink Valley Wash at 435 gpm.

Wells YES [X] NO [ ]

Table 7-5 identifies 32 wells which will be monitored quarterly when accessible. Wells will be monitored for water elevation only except for five wells, which will be monitored for water elevation and laboratory parameters: Y-61 (artesian Sink Valley alluvium above mining), LR-45 (LRC alluvium below mining), LS-85 (artesian Sink Valley alluvium below mining), SS-30 (Sink Valley alluvium below mining) and UR-70 (LRC alluvium above mining). Several wells are expected to be destroyed or rendered inoperable due to mining activities (MRP page 7-59). These wells are to be monitored quarterly until they are destroyed or rendered inoperable.

All groundwater wells were monitored during first quarter 2011 including well LS-28 which was sampled for analytical parameters where only gauging was required.

UPDES YES [ ] NO [X]

Discharges from the Coal Hollow mine are authorized under UPDES General Permit for Coal Mining application number UTG040027. The UPDES permit, which expires on April 30, 2013, authorizes discharges from five outfalls: 001, 001B, 002, 003 and 004. These outfalls correspond to sediment ponds 1, 1B, 2, 3 and 4. Sediment pond locations are shown on Drawing 5-25. The UPDES permit identifies monitoring frequency and required parameters, effluent limitations, and storm water requirements. To date sediment ponds 1, 1B, 2 and 3 have been constructed.

The Operator has submitted discharge monitoring report (DMR) data electronically to the Division's water database this quarter. Special Condition No. 1 of the mine Permit requires the Operator to submit water quality data for the Coal Hollow Mine in an electronic format through the Electronic Data Input web site. All UPDES locations were monitored monthly during the first quarter 2011. Ponds 2 and 3 discharged and effluent waters were sampled on March 16, 2011.

2. Were all required parameters reported for each site?

Springs YES [X] NO [ ]

Streams YES [X] NO [ ]

Stream samples were analyzed for the required operational monitoring parameters specified in the MRP. Special Condition No. 4 of the mine Permit requires the Permittee to monitor for selenium where water leaves the minesite, during operational and reclamation phases. Samples from stream sites SW-2, SW-3, SW-5, SW-6. SW-8, SW-9 were analyzed for dissolved selenium. No sample was collected at stream site BLM-1 because this location is specified for field measurements only during operational monitoring. However, site BLM-1 is located in LRC outside the permit area and downstream of mining activities, therefore this location may be considered to designate as a location "where water leaves the minesite". The

Operator should update the water monitoring section of the MRP to clearly indicate the locations and frequencies where dissolved selenium monitoring will be performed to comply with Permit Condition No. 4.

Wells **YES [X] NO [ ]**

UPDES **YES [ ] NO [X]**

The Operator has submitted discharge monitoring report (DMR) data electronically to the Division's water database. In addition to the monitoring requirements established by the UPDES permit, Special Condition No. 4 of the mine Permit requires the Permittee to monitor for selenium where water leaves the minesite, during operational and reclamation phases. The operator analyzed the sample for total selenium, not dissolved selenium from discharge samples collected on March 16, 2011, as required by Permit Condition No. 4.

3. Were irregularities found in the data?

Springs **YES [X] NO [ ]**

Teal Spring SP-16 had a higher then normal conductivity measurement of 932 µS/cm differing by 3.57 times the standard deviation. Alluvium spring SP-22 also had a higher than normal conductivity ready of 932 µS/cm differing by 3.04 times the standard deviation. Alluvium spring SP-23 reported a lower than normal temperature of 2.9 deg C and higher than usual conductivity measurement of 907 µS/cm differing by 3.24 times the standard deviation. Johnson Spring sample SP-33 reported higher than normal conductivity measurement of 1,407 µS/cm differing by 2.21 times the standard deviation. Total dissolved solids (TDS), dissolved magnesium, sulfate, chloride, hardness were all reported at elevated concentrations at the SP-4 sample located at the alluvium/fault interface in Lower Sink Valley Wash. In this sample, TDS and sulfate were reported at concentrations of 719 mg/L differing by 3.02 times the standard deviation and 187 mg/L differing by 3.50 times the standard deviation, respectively. The high conductivity readings in the spring samples were attributed to heavy snow melt rates that may have influenced conductivity readings.

Streams **YES [X] NO [ ]**

Stream location BLM-1 was reported with conductivity of 2,540 µS/cm and a flow of 55.6 gpm, which is greater than the previous conductivity and flow values reported for this site. The conductivity measurement differs from the standard deviation by 3.09 times and flow differed by 3.16 times. Flow and total suspended solids (TSS) were reported higher than normal rates at SW-2 a sampling point along Kanab Creek. Flow was reported at 4,414 gpm, differing 2.28 times the standard deviation. TSS was reported at 112 mg/L, differing 2.19 times the standard deviation. Flow was also reported high at 4,544 gpm at Kanab Creek stream sample SP-3. Dissolved calcium in Robinson Creek sample SW-5 was reported at a concentration of

107.75, differing by 2.70 times the standard deviation. SW-8 at Swapp Hollow had several parameters flagged outside of at least two standard deviations: TDS, conductivity, D-Ca, D-Mg, SO4, Cl, D-Na, hardness.

Wells YES [X] NO [ ]

The dissolved sodium result for well LR-45 in Lower Robison Creek was reported at 104.685 mg/L was flagged as differing by less than 2.03 times the standard deviation. Dissolved sodium was also lower in Y-61 screened in the alluvium in sink valley differing by less than 2.01 times the standard deviation.

UPDES YES [X] NO [ ]

Dissolved iron was reported at a concentration of 1.6 mg/L from effluent originating from Sediment Pond #3. The permit limit for dissolved iron is 1.0 mg/L. Total Dissolved Solids (TDS) was reported at concentrations exceeding the 500 mg/L, 30-day average rate for both samples during this period.

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

Re-sampling for baseline parameters is due every five years during the third or first quarter. Baseline parameters for surface water and groundwater monitoring are listed in Table 7-6B and Table 7-7B, respectively. Assuming that the five-year baseline resampling will coincide with permit renewal, the next baseline resampling is due during third or fourth quarter 2015.

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

The Operator should submit the following changes as an amendment to the MRP:

- UPDES samples should be monitored for ***dissolved*** Selenium, not ***total*** Selenium, in accordance with Permit Condition No. 4.

Please be aware that with the impending permitting action of expanding the mine into the Federal coal lease areas, it is imperative that baseline data collection for those areas begin to a minimum of two years prior to permit revision approval. The regulations under R645-301-724.100 and 724.200 require that groundwater and surface water data be gathered to assess seasonal quality and quantity. Division guidance document Tech-004 recommends a minimum of two years of baseline data collection be completed prior to permit issuance or revision. Please update the Division as to the status of the baseline data collection activities for proposed expansion areas.

Does the Mine Operator need to submit more information to fulfill this quarter's

monitoring requirements? YES [ ] NO [X]

6. Follow-up from last quarter, if necessary.

- Revise MRP Drawing 7-10 (Water Monitoring Locations) to show spring monitoring location SP-19; and

- Revise the monitoring discussion in the MRP and associated tables to specify the locations and frequencies where selenium monitoring will be performed in accordance with Permit condition No. 4.

- The Operator needs to submit UPDES monitoring data for fourth quarter 2010 to the DOGM water database.

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