

WATER QUALITY MEMORANDUM

Utah Coal Regulatory Program

October 20, 2014

TO: Internal File

THRU: Steve Christensen, Permit Supervisor 

FROM: Keenan Storrar, Hydrologist *Keenan Storrar*

RE: Fourth Quarter of 2013 Water Monitoring, Alton Coal Development LLC, Coal Hollow, C/025/0005, Task ID #4469

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.

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 mine site, 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).

1. Were data submitted for all required sites?

Springs YES 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). Six springs are monitored for field parameters only: Sorensen Spring, SP-3, SP-16, SP-22 and SP-23. Six springs are monitored for field parameters and operational analyses: SP-4, SP-6, SP-8, SP-14, SP-20, and SP-33. Sorensen spring, SP-8, SP-14, SP-20, and SP-22 have weekly measurements beginning one month prior to highwall mining and continuing until one month after highwall mining in the area, followed by monthly measurements for a period of six months. SP-3 is a control spring discharge measurement for the area.

All springs were monitored during the Fourth Quarter of 2013. Flow measurements were recorded at the following spring sites:

SAMPLE	SITE	Flow (gpm)
SORENSEN SPRING	Alluvial spring Sink Valley	0.256
SP-14	Alluvium - Sink Valley	1.72
SP-16	(Teal Spring) - Alluvium -Sink Valley	1.07
SP-19	(Sorenson Pond)- Alluvium - Sink Valley	n/a
SP-20	Alluvium - Sink Valley	9.26
SP-22	Alluvium - Sink Valley	0.918
SP-23	Alluvium - Sink Valley	0.23
SP-3	Pediment Alluvium - Lower Sink Valley Wash	No flow
SP-33	(Johnson Spring) - Alluvium - Sink Valley	7.66
SP-4	Alluvium/Fault? - Lower Sink Valley Wash	0.665
SP-6	Alluvium - seep in Sink Valley	n/a
SP-8	Alluvial spring at Dames Ranch	19.7

Notes: Data were collected on December 14,20,21, 2013

Streams YES [X] NO []

Ten stream sites are monitored quarterly. Operational analyses are performed for BLM-1, 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 RID-1 (irrigation ditch in Robinson Creek) and SW-101 (LRC in permit area). BLM-1, SW-5, SW-6, and SW-9 are monitored quarterly for total and dissolved selenium.

All required stream sites were monitored for the Q4 of 2013. No flow was present for stream monitoring sites RID-1, SW-101, SW-4, SW-5, and SW-9. Flows reported for Lower Robinson Creek averaged 0.3 gpm. Flows in Kanab Creek averaged 1169 gpm, Swapp Hollow was 17 gpm, and Sink Valley Wash averaged 14 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 six wells, which will be monitored for water elevation and operational parameters: Y-61 (artesian Sink Valley alluvium above mining), LR-45 (LRC alluvium below mining), LS-28, 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. Wells C0-18 and C0-54 were

destroyed Fourth Quarter of 2011. C9-15, C9-25, C9-40 were destroyed in Q3 of 2013 and Y-38 was destroyed in Q4 of 2013.

All groundwater wells were monitored during Q4 2013.

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

Discharges from the Coal Hollow mine are authorized under UPDES General Permit for Coal Mining application number UTG040027. The UPDES permit expires on July 31, 2018 and authorizes discharges from six outfalls: 001, 001B, 002, 003, 004, and . These outfalls correspond to sediment ponds 1, 1B, 2, 3 and 4 and discharge location 005. 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, 3, and 4 have been constructed.

The Operator has submitted 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.

No UPDES Outfalls discharged during Q4 2013.

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 mine site, during operational and reclamation phases. Samples from stream sites SW-2, SW-3, SW-8, SW-9, and BLM-1 are analyzed for dissolved selenium (no flow was present at RID-1, SW-101, SW-4, SW-5 and SW-9).

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

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

The Operator has submitted 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 mine site, during operational and reclamation phases.

3. Were irregularities found in the data?

Listed parameters were more than two standard deviations from the mean.

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

SP-14 December – T-Alk, Bcrb CaCO₃, D-CA, D-MG, T-Cats
SP-20 December – total alkalinity, bicarbonate, total anions, cation-anion balance
SP-33 December– T-Se is fairly high at 60 ug/l

SP-4 December –dissolved calcium
SP-8 December –total alkalinity, Bcrb CaCO₃,

Streams YES [X] NO []

BLM-1 December – dissolved calcium
SW-2 December – T-Alk, Bcrb CaCO₃, T-Se at 80 ug/l
SW-3 December – T-Se at 80 ug/l

Wells YES [X] NO []

LR-45 December – total alkalinity, Bcrb CaCO₃, total cations
LS-28 December – T-Se at 70 ug/l
SS-30 December – dissolved calcium, dissolved sodium
UR-70 December – total dissolved solids
Y-61 December – T-Alk, Bcrb CaCO₃, T-Anions, Cat-Ani, T-Se at 70 ug/l

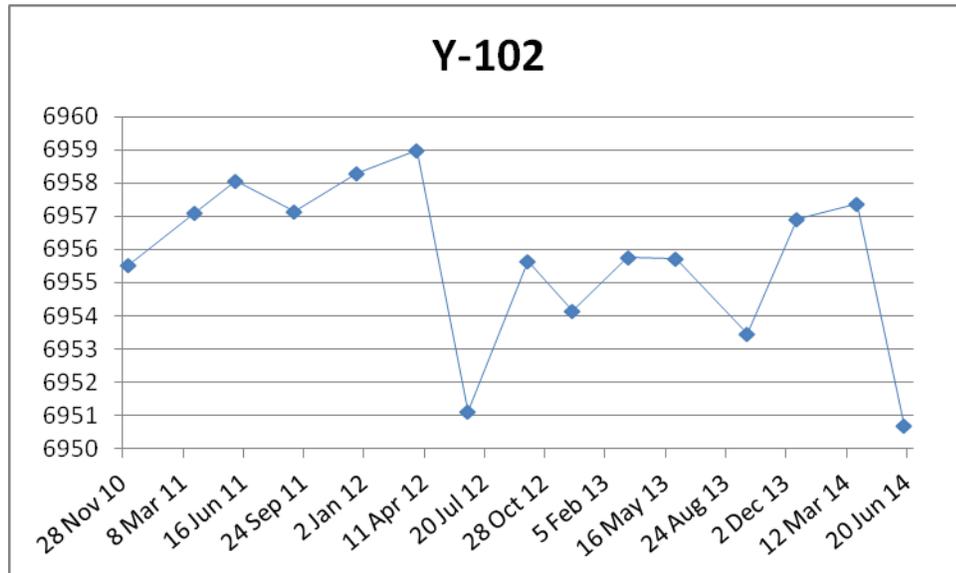


Figure 1. Well Y-102: Alluvial well in upper Sink Valley to the east of pit 9 in permit area.

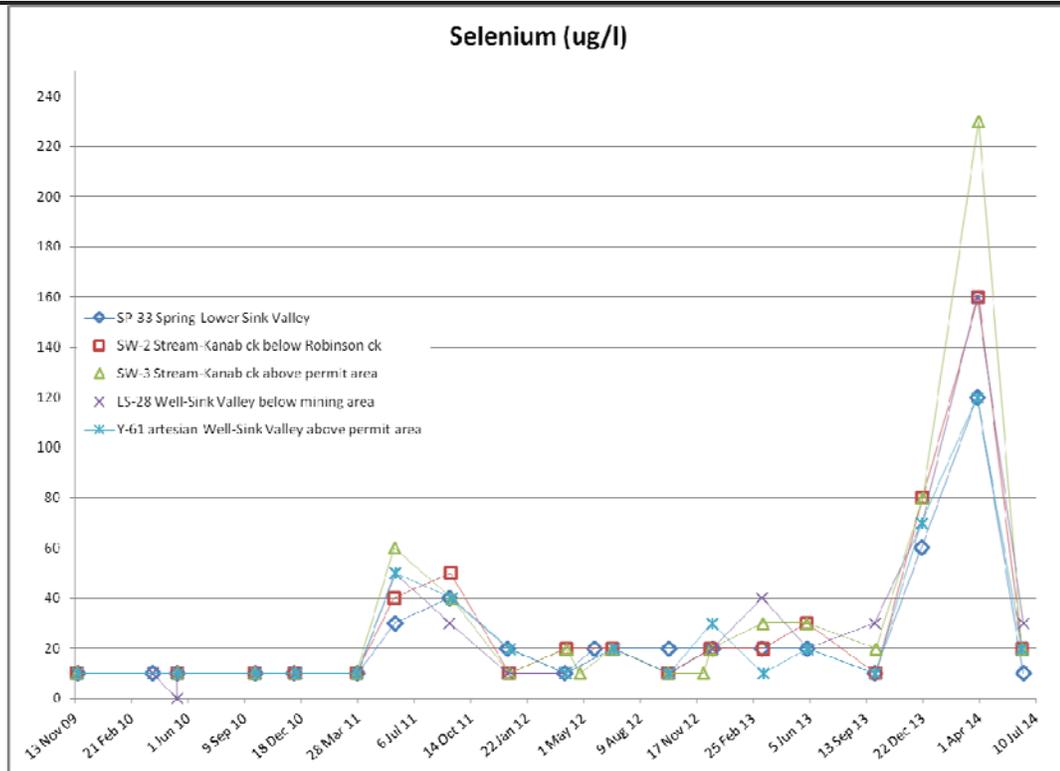


Figure 2. Elevated Selenium levels at five sampling locations in Q4 2013 and Q1 2014. (Values of 10 ug/l were entered at >20 ug/l into the monitoring database. They were given a consistent low value in order to graph the data.)

UPDES YES [] NO [X]

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? YES [] NO [X]

None, however tracking the water elevation in well Y-102 would be worth continued examination. Monitor elevated selenium in SP-33, SW-2, SW-3, LS-28, and Y-61.

6. Does the Mine Operator need to submit more information to fulfill this quarter's monitoring requirements? YES [] NO [X]

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

None