

WATER QUALITY MEMORANDUM

Utah Coal Regulatory Program

June 12, 2012

TO: Internal File

THRU: Daron Haddock, Permit Supervisor

FROM: Steve Christensen Environmental Scientist SC

RE: 2011 4th Quarter Water Monitoring, Consolidation Coal Company, LLC,
Emery Deep Mine, C/015/0015, WQ11-4, Task ID #3964

The Emery Deep Mine is currently an in-active coal mine. The coal mining operation previously utilized room and pillar mining techniques with the use of a continuous miner machine. The coal reserves were fully extracted (thus falling into the planned subsidence category).

The approved Mining and Reclamation Plan (MRP) outlines the water monitoring requirements beginning on page VI-28. Table VI-17, *Emery Mine Hydrologic Monitoring Program* contains a comprehensive list of all groundwater (springs/seeps), surface water, groundwater monitoring wells and Utah Pollutant Discharge Elimination System (UPDES) outfalls. Plate VI-4, *Ground Water Monitoring Well and Surface Water Monitoring Site Location Map* depicts the locations of the various ground and surface water monitoring sites (including the UPDES discharge/outfall points).

On September 15th, 2011, the Division received an amendment from the Permittee. The amendment outlined revisions of the ground-water monitoring plan (Task ID #3898). The amendment was submitted in response to a notice of violation issued on June 30th, 2011 (NOV #10088). NOV #10088 was issued for failing to provide required water monitoring data as outlined in Table VI-17 of the approved Mining and Reclamation Plan (MRP). In order to abate the violation, the Permittee was directed to revise the water monitoring plan to reflect the conditions on the ground. The condition of numerous water monitoring wells had been reported as being either broken, inaccessible or impacted. The revision to the MRP was to address these conditions and determine whether the wells could be repaired, and if not, propose alternative data collection measures that would effectively detect any potential impacts to the hydrologic balance as a result of mining activity. With the submission of the water monitoring revision and the subsequent adherence to the approved plan, NOV #10088 was terminated on September 15th, 2011.

After completing its review of the amendment, the Division issued a deficiency letter (dated November 14th, 2011) to the Permittee. The review identified outstanding deficiencies that were primarily focused on a number of wells that the Permittee had reported as being

impacted by oil (AA-M, AA-U, H-B, H-L, H-M, H-U, I-B, I-L, I-M, Lewis-U and R2-U). The Permittee was directed to address the potential for hydrocarbon contamination. The Permittee re-submitted the amendment on March 23rd, 2012 after conducting a field investigation of the impacted monitoring wells. Upon completing its review of the re-submitted amendment, the Division granted final approval to the ground-water monitoring revisions on May 24th, 2012 (Task ID #4055).

The approved amendment outlined the elimination of 31 monitoring wells from the previously approved water monitoring plan. Beginning 3rd quarter of 2012, these wells will no longer be required for monitoring. The eliminated monitoring wells include:

1. Monitoring Wells Completed in Quaternary Alluvium- RDA1, RDA 3, RDA5, SM1-1, SM1-2, SM1-4
2. Monitoring Wells Completed in the Bluegate Shale (Kmb)- AA-B, H-B, I-B, T2-B, USGS 3-1
3. Monitoring Wells Completed in the Upper Ferron Sandstone (Kmf[u])- Bryant, AA-U, I2, Lewis, Muddy #2, T2-U, TP-U, USGS 1-2,
4. Monitoring Wells Completed in the Middle Ferron Sandstone (Kmf[m])- AA-M, H-M, I-M
5. Monitoring Wells Completed in the Lower Ferron Sandstone (Kmf[l])- AA-L, H-L, I-L
6. Monitoring Wells Completed in Mutiple Zones- WW1, ZZ, EMRIA #1, EMRIA #2, EMRIA #3 and FC346WW.

1. Was data submitted for all of the MRP required sites? YES NO

Springs

The MRP outlines the sampling of 5 springs within the permit and adjacent area. Flow and field parameters are sampled quarterly with water quality samples collected in the 2nd and 3rd quarters.

The Permittee reported a measurable flow for spring monitoring site SP-14. Spring monitoring sites, SP-10, SP-11, SP-13 and SP-15 did not produce a measurable flow this quarter.

Streams

The MRP outlines the sampling of 8 surface water monitoring stations within the permit and adjacent area.

Surface water monitoring sites (SWMS) 8, 9 and 10 did not report an observable flow. SWMS's 1A, 2, 3, 4 and 5 did report measurable flow.

Wells

The MRP outlines the sampling of 33 ground water monitoring wells within the permit and adjacent area. Of the 33 wells, 14 are monitored quarterly for water level only. The remaining 19 wells are sampled for water quality on a quarterly basis with the exception of wells RDA-1, RDA-2, RDA-3, RDA-4, RDA-5 and RDA-6 (sampled annually in the second quarter for both field parameters and water quality).

Six of the 33 well installations (AA, H, I, R2, T1 and T2) contain clusters of casing completed to different depths within the underlying strata. Well AA contains four completions (AA-B, AA-L, AA-M and AA-U). Wells H and I contain four completions as well (H-B, H-L, H-M, H-U and I-B, I-L, I-M and I-U respectively). Well R2 contains three completions (R2-B, R2-M and R-U). Well T1 contains two completions (T1-B and T1-U). Well T2 contains two completions as well (T2-B and T2-U).

Data was submitted for all of the water monitoring wells.

UPDES

The Emery Deep Mine's UPDES Permit, #UT0022616, identifies 9 outfalls (001, 002, 003, 004, 005, 006, 007, 008 and 009). The discharges from each of the outfalls ultimately report to Quitcupah Creek, a tributary of Muddy Creek. The receiving waters are designated according to Utah Administrative Code (UAC) R317-2-13.1 as 2B, 3C and 4. Historically, only Outfalls 001 and 003 have ever recorded a discharge. UPDES Outfall 008 is no longer active.

The Water Quality Board for the Division of Water Quality (DWQ) has approved a rule change that would allow for a site specific, in-stream standard for the Emery Deep's effluent limitations. The modified standard will establish an allowable TDS concentration of 3,800 parts per million (ppm) and a 2,000-ppm concentration of sulfate. DWQ representatives have indicated that they are waiting for Environmental Protection Agency (EPA) approval before the permit is modified from its current standard of 2,600-ppm (the 2,600 ppm standard became effective on November 30th, 2011). The previous standard for TDS was 3,500 ppm).

DWQ has been in negotiations with the Permittee for several years regarding a modification to their existing UPDES permit. The Permittee has entered into a compliance schedule as allowed under the rules of the Clean Water Act to modify their permit. The compliance schedule would produce a site-specific standard for the Emery Deep UPDES permit.

UPDES Parameter	Established Limit
TSS	70 ppm (daily maximum)

T-Fe	2.1 ppm
Oil/Grease	10 ppm
pH	6.5-9.0
TDS	2,600 ppm as of November 30 th , 2011
SO4	2,000 ppm

The Permittee submitted data for all required UPDES sites. Outfall 003 was the only monitoring point to report a discharge for this quarter.

2. Were all required parameters reported for each site? YES NO

Spring Monitoring Sites

All required data was submitted for the five spring monitoring sites (as outlined in Table VI-17). Of the five spring sites, SP-14 was the only site to report a measurable flow.

Surface Water Monitoring Sites

The Permittee submitted all required water quality data this quarter. Of the eight surface water monitoring sites, all but SWMS-8 reported a flow.

Water Monitoring Wells

The Permittee submitted the required data for all wells that are accessible.

UPDES Monitoring Sites

All required data was submitted for the outfalls that produced a discharge (Outfall 003).

3. Were any irregularities found in the data? YES NO

The following samples were reported outside of two standard deviations from the mean:

Spring Monitoring Sites

Sample ID	Date	Parameter	Value	STD. Deviations
SP-14	12/09/11	Flow	153 gpm	9.9

Monitoring Well Sites

Sample ID	Date	Parameter	Value	STD. Deviations
EMRIA 2	12/12/11	Depth	100'	3.61
H-U	12/12/11	Depth	90'	2.65

UPDES Sites

Historically outfalls 002, 004, 005, 006, 007, 008 and 009 do not produce a discharge. These outfalls did not report a flow again for this quarter. Outfalls 001 and 003 are the primary outlets for discharging the ground water encountered within the mine works.

However, only Outfall 003 reported a flow this quarter. Outfall 001 did not report a flow this quarter. The TSS and T-Fe values reported for Outfall 003 were well within the established UPDES limits of 70 ppm and 2.1 ppm respectively. The reported sulfate concentrations were all within the established limit of 2,000 ppm (average of 1,700.5 ppm).

The compliance schedule process (that is ongoing with the Division of Water Quality) has identified a future compliance standard for Emery Deep discharge water into Quitchupah Creek of 2,000 ppm for SO4.

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

There is no commitment in the MRP to resample for baseline parameters.

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

Continue to monitor the compliance schedule process currently underway between the Permittee and DWQ.

Work with the Permittee to evaluate the impacted water monitoring wells. Several wells have either been buried or been obstructed.

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

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

Work to insure that the Permittee understands the water monitoring requirements as outlined in the approved Mining and Reclamation Plan (MRP).