

WATER QUALITY MEMORANDUM

Utah Coal Regulatory Program

April 24, 2015

TO: Internal File

THRU: Steve Christensen, Permit Supervisor 

FROM: Keenan Storrar, Hydrologist 

RE: Fourth Quarter 2014 Water Monitoring, PacifiCorp, Deer Creek Mine.
C/015/0018, Task ID #4739

The Deer Creek Mine monitoring plan is described in Appendix A-1 of Volume 9 of the MRP. The Deer Creek Mine ceased mining operations indefinitely January 7th, 2015. PacifiCorp's subsidiary Energy West will begin immediate reclamation of the mine. The current plan is to prevent Mill Fork Lease in-mine gravity discharge from flowing out the Rilda right portals by damming it in the mountain with the first set of inby bulkheads. If these Mill Fork Access #2 inby bulkheads fail/leak, the water will flow down dip to the second set of 1st Rilda outby bulkheads. These outby bulkheads will build hydraulic head from between 10 ft to 50 ft before water will crest the hydraulic divide in the mine and flow to the Deer Creek portals. If the inby bulkheads achieve full containment of in-mine water, then from the hydraulic divide at 4th North the rest of the in-mine gravity discharge will flow south to the Deer Creek portals and discharge at the outfall at ~300 gpm at UPDES Point 002. If discharge at this outfall increases or iron levels become elevated, it may indicate the inby bulkheads are leaking or have failed. At which point it will be important to investigate safety precautions to be taken regarding the high pressure system of the dammed water and an active or passive treatment system will need to be installed at the outfall.

- | | | | |
|----|---|---|-----------------------------|
| 1. | Were data submitted for all of the MRP required sites? | YES <input checked="" type="checkbox"/> | NO <input type="checkbox"/> |
| 2. | Were all required parameters reported for each site? | YES <input checked="" type="checkbox"/> | NO <input type="checkbox"/> |
| | Missing data are as follows: | | |
| | In-mine | YES <input checked="" type="checkbox"/> | NO <input type="checkbox"/> |
| | Springs | YES <input checked="" type="checkbox"/> | NO <input type="checkbox"/> |
| | NEWUA meter-2 not monitored— NEWUSSD controls these meters | | |
| | Streams | YES <input checked="" type="checkbox"/> | NO <input type="checkbox"/> |
| | Wells | YES <input checked="" type="checkbox"/> | NO <input type="checkbox"/> |

UPDES YES NO

3. Were any irregularities found in the data?

Listed parameters are more than two standard deviations above the mean.

In-mine YES NO

Springs YES NO

80-48 Oct – Cond

JV-34 Oct – TDS

MF-7 Oct – Values are probably off from the mean, however Cat-Ani >5, sample invalid

MF-219 Oct – Bcrb CaCO₃, SO₄

RCF3 Oct – D-Na

SP1-26 Oct – D-Mg, D-K, Bcrb CaCO₃, T-Alk

UJV-101 Oct – TDS

Grant Spring Oct – D-Ca

Streams YES NO

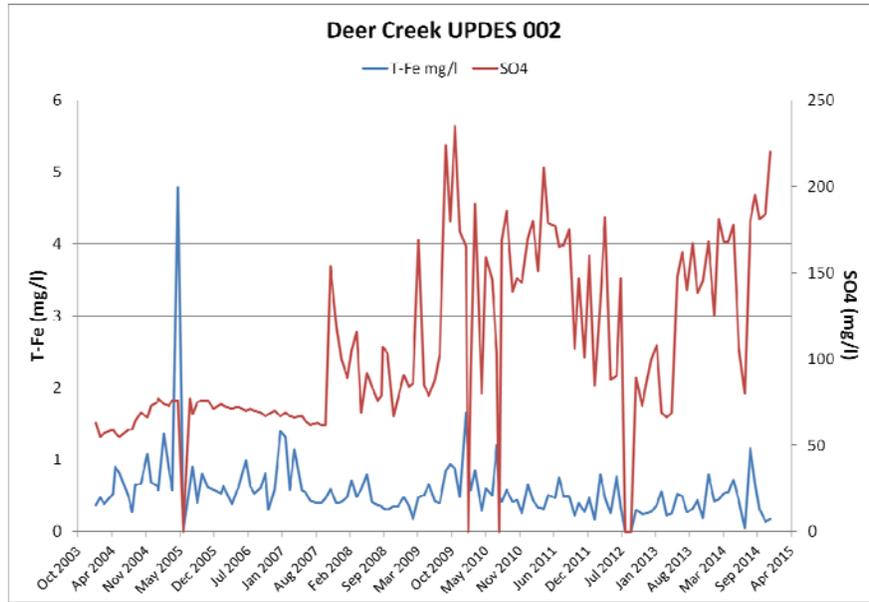
HCC01 Oct – Cond, D-K, D-Na, SO₄, L-Sp Cond, TDS, T-Anis

HCC02 Oct – Cond, D-K, D-Na, SO₄, L-Sp Cond, TDS, T-Anis

RCF3 – D-Na

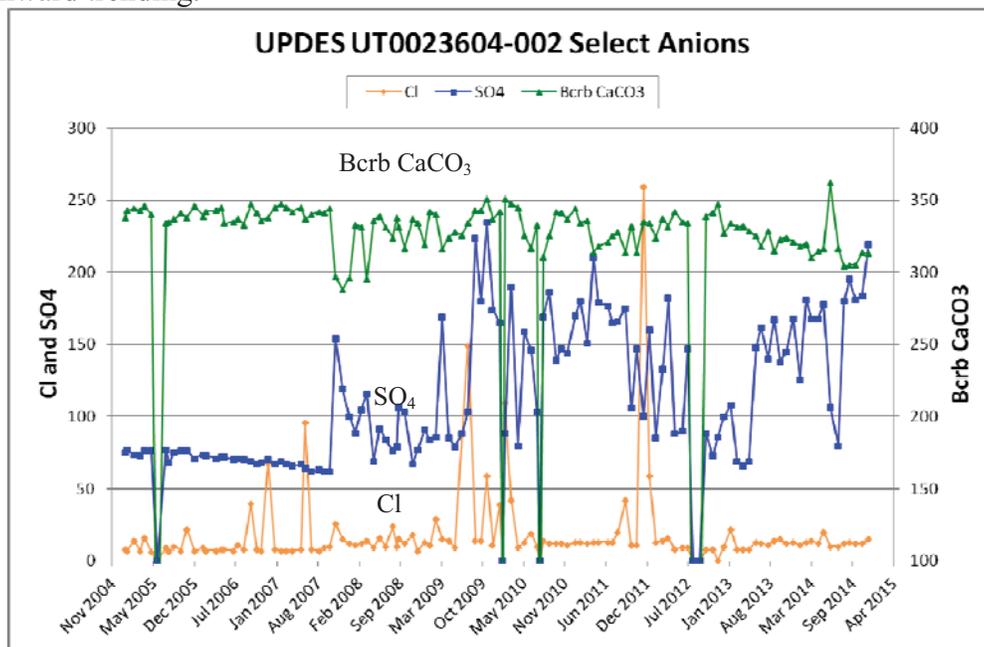
Wells YES NO

UPDES YES NO



SO₄, T-Fe and D-Fe will need to be monitored closely over time.

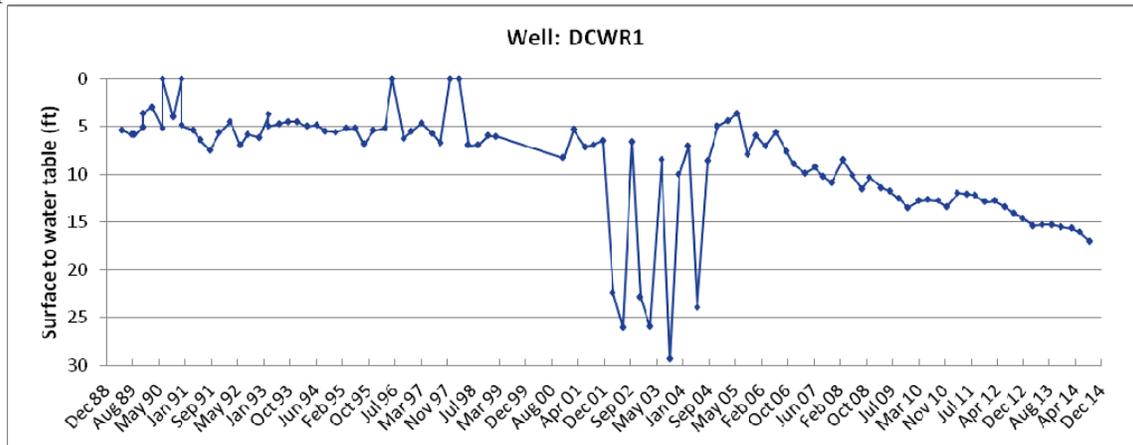
Recently, potassium values have frequently been outside two standard deviations from the mean at UT0023604-002. The following charts show Cl, D-Na, D-Ca, D-Mg ion concentrations have been trending upwards in recent years, while bicarbonate and D-K have been downward trending.



Wells

YES NO

Although it hasn't been flagged as varying from the mean by more than two standard deviations, water level at DCWR1 has been dropping since 2006 (following a small rise in 2004-2005). These changes are probably from factors other than disposal of waste rock at this site: a similar drop in water level is seen at WCWR1 at the Cottonwood/Wilberg Mine Waste Rock Disposal Site.



4. **On what date does the MRP require a five-year resampling of baseline water data.**
 Baseline analyses were performed in 2001, 2006 and 2011 and are to be repeated every 5 years. The next baseline analyses will be conducted in 2016.
5. **Based on your review, what further actions, if any, do you recommend?**
 There is no indication of trends or extremes in any of the parameter values. No further action recommended at this time.
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.**
 None.
8. **Did the Mine Operator submit all the missing and/or irregular data (datum)?**
 NA.