

# WATER QUALITY MEMORANDUM

## Utah Coal Regulatory Program

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March 14, 2014

TO: Internal File

THRU: Steve Christensen, Permit Supervisor



FROM: Ken Hoffman, Hydrologist KH

RE: Third Quarter of 2013 Water Monitoring, PacifiCorp, Deer Creek Mine.  
C/015/0018, Task ID #4419

The Deer Creek Mine monitoring plan is described in Appendix A of Volume 9 of the MRP.

1. **Were data submitted for all of the MRP required sites?** YES  NO
2. **Were all required parameters reported for each site?** YES  NO
3. **Were any irregularities found in the data?**

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

**Springs** YES  NO

79-10 July – temperature, dissolved potassium

79-2 July – temperature, dissolved calcium, bicarbonate

79-28 July – temperature

79-29 July – temperature, bicarbonate

79-35 July – bicarbonate, total dissolved solids

80-47 July – bicarbonate, cation-anion balance

80-50 July – temperature, dissolved magnesium, bicarbonate, total alkalinity

89-60 July – temperature, specific conductivity, dissolved potassium, dissolved sodium, bicarbonate, chloride, total dissolved solids, total iron

89-65 July – temperature

89-67 July – temperature, specific conductivity

91-72 July – total iron

Elk Spring July – bicarbonate

Em Pond July – pH

Grant Spring July – temperature, bicarbonate, total alkalinity

MF 213 July – temperature, dissolve sodium  
MF 219 July – temperature  
MF 7 July – dissolved sodium  
MFR-10 July – pH  
NEWUA Meter-3 September – dissolved magnesium, bicarbonate, total alkalinity, total dissolved solids  
RR 23A July – bicarbonate, total alkalinity, cation-anion balance  
RR 5 July – temperature  
SP1-26 July – temperature, pH  
Ted’s Tub July – temperature, dissolved potassium  
UJV 101 July – temperature, specific conductivity  
UJV 206 – temperature

**Streams**

YES  NO

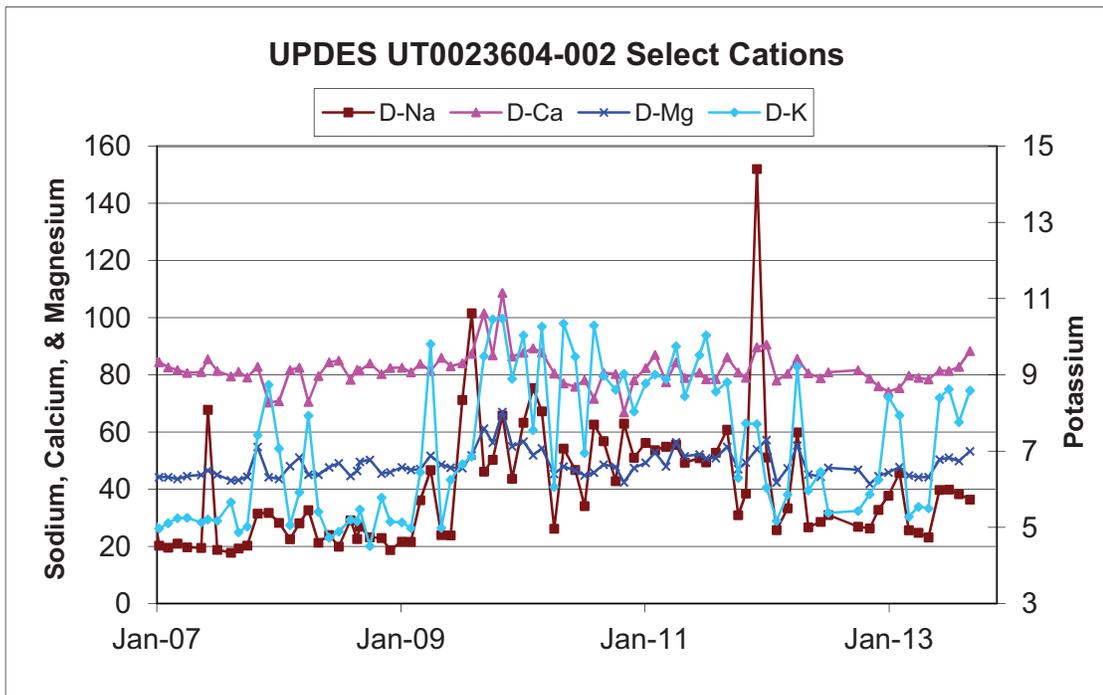
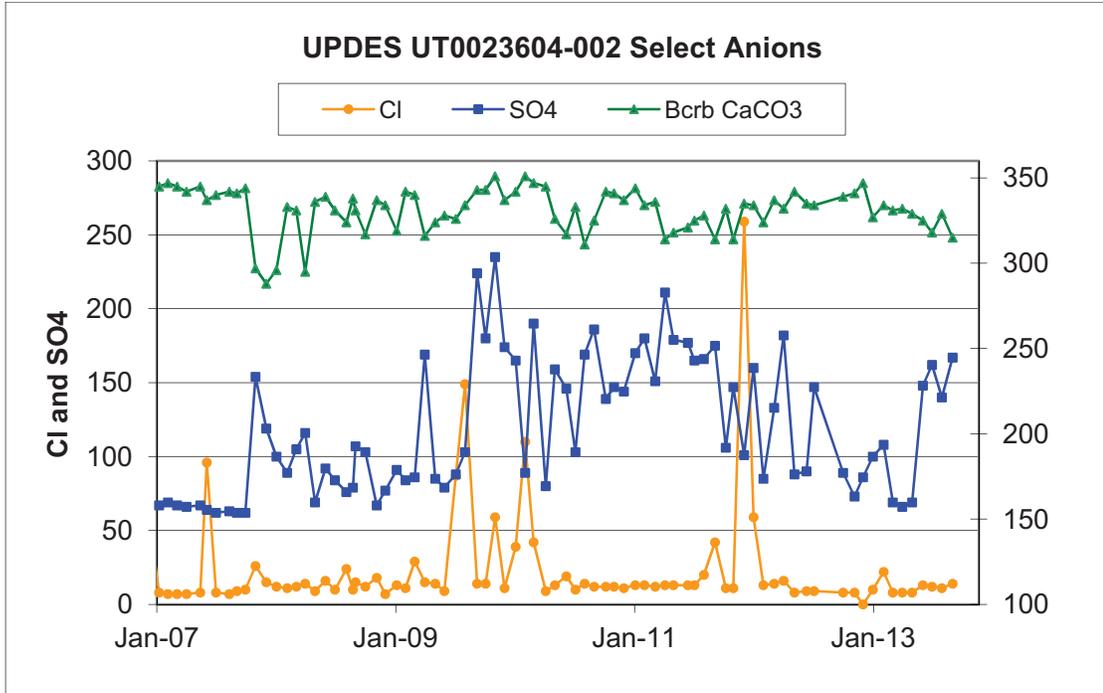
DCR04 September – bicarbonate, cation-anion balance  
DCR06 September – temperature, bicarbonate, cation-anion balance  
RCF-1 September – total suspended solids, total dissolved solids, cation-anion balance, total iron  
RCF-3 September – total suspended solids, cation-anion balance  
RCW4 September – cation-anion balance

**UPDES**

YES  NO

Recently, potassium values have frequently been outside two standard deviations from the mean at UT0023604-002, but – as can be seen on the following charts – with the exception of bicarbonate and dissolved potassium, major ion concentrations have tended to fluctuated upwards in recent years.

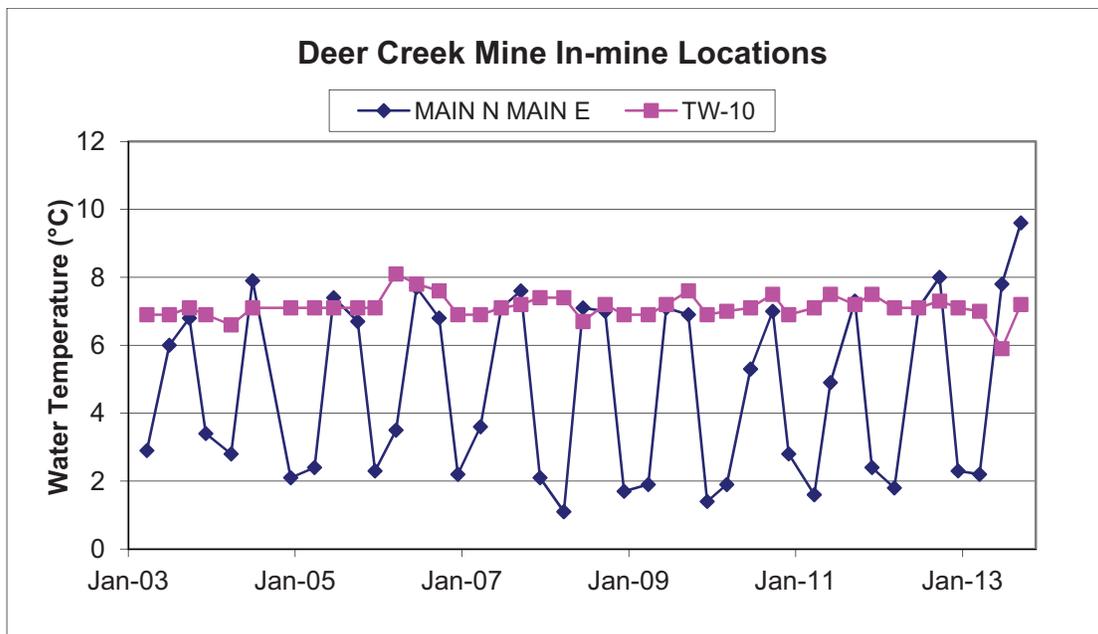
UPDES 001 September – dissolved calcium, bicarbonate



**In-mine**

YES  NO

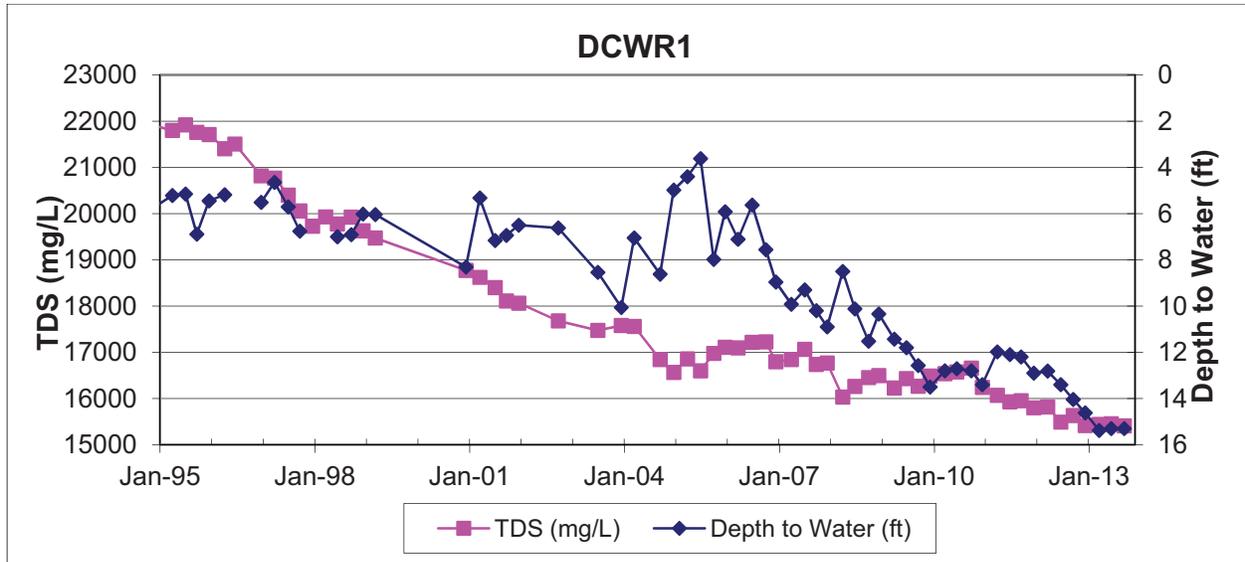
Dissolved sodium, bicarbonate, and total alkalinity were more than two standard deviations from the mean at Main N Main E during September. The water temperature at Main North Main East varies seasonally year-after-year (see following chart), indicating that this in-mine source is most likely fed by infiltration of surface water rather than draining surrounding strata. The temperature at TW-10 shows some seasonal variation but it is not as definitive as at Main North Main East.



**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). TDS was dropping at a similar rate, but now appears to have stabilized. 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. Baseline analyses will next 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. However, the operator has requested to cease monitoring at numerous monitoring locations. The Division is evaluating this request and will conduct field visits during the 2014 field season for a selection of locations.

**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.