

#3240  
Q

# WATER QUALITY MEMORANDUM Utah Coal Regulatory Program

---

April 15, 2010

TO: Internal File  
THRU: James D. Smith, Permit Supervisor *JDS 20 Apr 10*  
FROM: Steve Christensen, Environmental Scientist *SKC*  
RE: 2009, 1<sup>st</sup> Quarter Water Monitoring, Canyon Fuel Company (CFC), LLC, Dugout Mine, C/007/0039-WQ09-1, Task ID #3240

The Dugout Canyon Mine is currently operational in the Book Cliff Mountain range of Carbon County, UT. Water monitoring data is submitted quarterly to the Division EDI database. Beginning on page 7-40 of the approved Mining and Reclamation Plan (MRP), water monitoring protocols and sampling requirements are provided for surface water, ground water, monitoring wells and Utah Pollutant Discharge Elimination System (UPDES) outfalls. Tables 7-4 and Table 7-5 list the individual monitoring sites and their sampling protocols for ground water and surface water respectively.

**1. Was data submitted for all required sites?**

**Springs**      YES [X] NO [ ]

*The approved MRP outlines the operational and post-mining monitoring of fourteen springs (200, 203, 227, 259 259A, 260, 321, 322, 324, SC-100, SC-116, SC-14, SC-65 and SP-200). The locations of these springs are depicted on Plate 7-1, Hydrologic Monitoring Stations. Groundwater discharge from the old Gilson coal seam workings is also monitored and identified as location MD-1.*

*Spring 200 had not reported a measurable flow since the 2<sup>nd</sup> quarter of 2001. Spring 227 has never reported a measurable flow. Spring 259 last reported a measurable flow in the 3<sup>rd</sup> quarter of 2001. Spring SC-100 has not reported a measurable flow since the 2<sup>nd</sup> quarter of 2008.*

None of the 14 spring monitoring sites were accessible this quarter due to snow.

**Streams**      YES [X] NO [ ]

*The approved MRP outlines the monitoring of thirteen stream sites (323, DC-1, DC-2, DC-3, DC-4, DC-5, FAN, PC-1A, PC-2, PC-3, RC-1, SS-1 and SS-2). The locations of these streams are depicted on Plate 7-1, Hydrologic Monitoring Stations.*

Data was submitted for all spring monitoring sites with measurable flow. Three sites were inaccessible due to snow (323, PC1A and PC-3).

**Wells**            YES [X] NO [ ]

*The approved MRP outlines the sampling of three monitoring wells (GW-10-2, GW-11-2 and GW-24-1). Table 7-4 and Section 731.200 of the MRP specify that the Permittee will obtain quarterly water level measurements from the wells. Due to the ages of the wells and deterioration of the casing materials, water quality data is not collected.*

*Monitoring well GW-24-1 became blocked during the winter of 2000 and was last sampled in September of 1998. The well was removed from monitoring after the 4<sup>th</sup> quarter of 2004. Monitoring well G-11-2 was last monitored in October 2007. Since that time, the Permittee has reported that the well has appeared to have "caved in". Monitoring well GW-10-2 is still functioning and actively monitored for water level.*

*Though not required by the approved MRP, three additional monitoring wells (DH-1, DH-2 and DH-3) are monitored at the waste rock disposal site. Water levels are monitored quarterly with additional water quality sampling obtained from DH-1 during low flow periods (i.e. 3<sup>rd</sup> or 4<sup>th</sup> quarter).*

Data was submitted for all monitoring wells with measurable/accessible water levels (DH-1, DH-2 and DH-3).

**UPDES**            YES [X] NO [ ]

Operational monitoring is required monthly for six active UPDES outfalls (Permit No. UT0025593):

- **001**-Mine water discharge to Dugout Ck.,
- **002**-Sedimentation pond discharge to Dugout Ck. (disturbed area runoff),
- **003**-Storage water discharge to Dugout Ck. (30,000-gallon water tank discharge),
- **004**-Sedimentation pond (waste rock site) discharge to Grassy Trail Ck. Tributary,
- **005**-Pace Canyon fan portal breakout, mine water discharge to Pace Ck.

- **006-Sediment trap culvert discharge to Pace Creek (disturbed area runoff from Pace Canyon Fan facility).**

Specific effluent limitations and self-monitoring requirements as outlined in the UPDES permit are presented below:

<b>Effluent Characteristics</b>	<b>Effluent Limitations</b>
TDS, tons/day	1.0
Total Suspended Solids (TSS), ppm	70
Total Iron, ppm	1.1
Oil & Grease, ppm	10
Total Dissolved Solids (TDS), ppm	2,400
pH	9

3,000 parts per million (ppm) is the water quality standard for total dissolved solids (as established by the Department of Water Quality) for both Pace Creek and Dugout Creek.

Outfall 001 was the only UPDES monitoring site that produced a measurable discharge. No observable flow was reported for the remaining five sites. The average flow for Outfall 001 this quarter was 306 gpm. All required water quality data was submitted and was compliant with the established standards outlined in the Permittee's UPDES discharge permit.

**2. Were all required parameters reported for each site?**

**Springs**      YES [X] NO [ ]

For accessible springs that produced a measurable flow, the required data was submitted.

**Streams**      YES [X] NO [ ]

For accessible streams that produced a measurable flow, the required data was submitted.

**Wells**      YES [X] NO [ ]

For all accessible monitoring wells, the required parameters were submitted.

**UPDES**      YES [X] NO [ ]

The required parameters were reported when discharges took place.

**3. Were irregularities found in the data?**

---

**Springs**      YES [ ] NO [X]

Due to excessive snow conditions, none of the springs were accessible this quarter.

**Streams**      YES [X] NO [ ]

DC-1 reported a value of dissolved sodium (D-Na) that was outside of two standard deviations. This stream monitoring point has historically produced erratic D-Na values. Based upon the data set, it appears that the D-Na concentrations tend to spike during the spring and early summer, presumably as a result of snowmelt. (See Chart Below).

DC-2 also reported a D-Na concentration beyond two standard deviations from the mean.

During the 4<sup>th</sup> quarter of 2008, elevated levels of dissolved calcium (D-Ca) were reported for site PC-1A. Due to accessibility issues, the site could not be sampled.

Site PC-2 had reported elevated dissolved magnesium (D-Mg) levels the previous quarter. However, the site could not be accessed due to snow cover.

Monitoring site DC-3 reported elevated levels of dissolved potassium (D-K) during the 4<sup>th</sup> quarter of 2008. However, no observable flow was reported this quarter.

**Wells**      YES [X] NO [ ]

Elevated levels of D-Ca and Cl were reported the previous quarter (WQ 08-4) for well DH-1. As water quality data is only obtained at this well during the latter quarters of the year, it's unclear at this time what caused the elevated concentrations.

Monitoring well GW-10-2 reported a depth to water that was outside of two standard deviations (747.58') during the previous quarter (WQ 08-4). The well was inaccessible this quarter due to snow conditions.

**UPDES**      YES [ ] NO [X]

Of the six monitored UPDES outfalls, site 001 was the only one to produce a measurable flow. The average flow for the quarter was 306 gpm. The reported water quality parameters were within two standard deviations from the mean. Additionally, the reported concentrations were compliant with the standards outlined in the Permittee's UPDES discharge permit.

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

The resampling of baseline data will next be performed in July 2014. In addition, one water sample will be collected at each spring sampling point during low flow period every fifth year, during the year preceding re-permitting. These samples will be obtained for the analysis of baseline parameters (See Table 7-4).

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

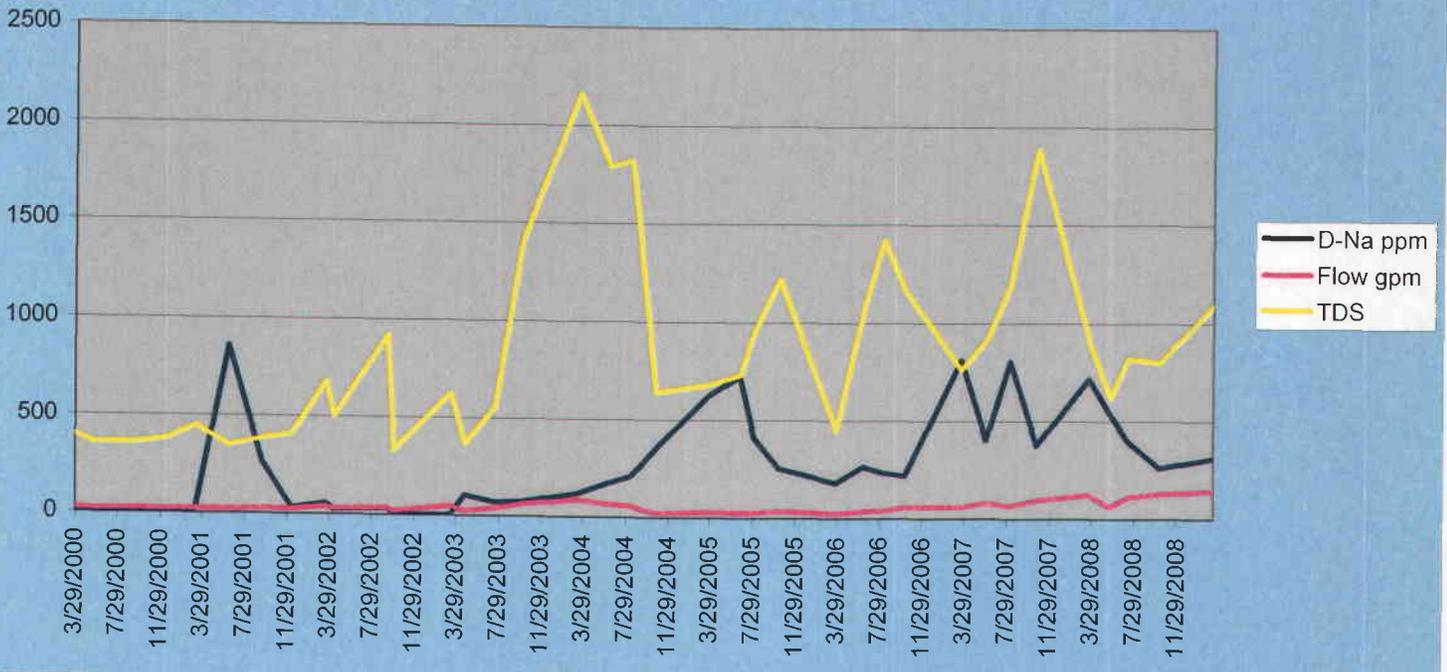
Continued monitoring of elevated concentrations at sites that were inaccessible due to snow conditions or where no observable flow was reported.

During the next mid-term review, the water-monitoring program in the approved MRP should be revised. Ground water monitoring wells GW-24-1 and G-11-2 have become impacted to the degree that obtaining measurements/samples is not possible. The MRP and Division EDI database should be revised to reflect the current condition on the ground. The approved MRP should also be revised to reflect the active monitoring of wells DH-1, DH-2 and DH-3.

**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. Did the Mine Operator submit all the missing and/or irregular data (datum)?**  Yes  No

### DC-1: D-Na, TDS and Flow vs. Time



### UPDES Outfall 001

