COLORADO
Division of Reclamation, Mining and Safety
Department of Natural Resources

December 9, 2022

Ben Moline, PE
Senior Manager, Water Resources & Environmental Compliance
Coors Energy Company
P.O. Box 4030
Golden, CO 80402

**Re: Keenesburg Strip Mine, Permit C-1981-028**
**Adequacy Review of 2021 Annual Hydrology Report (AHR)**

Dear Mr. Moline:

The Division of Reclamation, Mining and Safety (Division) received the 2021 AHR for the Keenesburg Strip Mine on March 21, 2022. The Division reviewed this AHR in the context of Rules 4.05.1, 4.05.6, 4.05.11, and 4.05.13 (Regulations of the Colorado Mined Land Reclamation Board for Coal Mining).

Table 1 lists important logistical requirements of the Keenesburg Strip Mine water monitoring plan.

**Table 1. Requirements of the Keenesburg Strip Mine Water Monitoring Plan**

| Requirement | Source of Requirement (Rule or Page in PAP) | Requirement met for 2021? |
|---|---|---|
| Filing frequency of AHR - annually | Rule 4.05.13(4)(c) | Yes |
| Timely filing of AHR – submitted by end of February each year | Page 117 of PAP | No[1] |
| Surface water monitoring | Not required | NA |
| Groundwater monitoring - sites sampled and sampling frequency | Page 56 of PAP | Yes |
| Groundwater monitoring - parameters sampled | Page 57 of PAP | Yes |

1. An extension was granted by the Division.

Two down gradient wells were assessed for mining impacts:

- PC-6, which is northeast and down gradient of the B Pit area
- DH-96, which is approximately 0.7 mile north of the facilities area.

Regarding Total Dissolved Solids (TDS), the 2021 data did not reveal that the Keenesburg Strip Mine is causing negative impacts on groundwater quality. Concentrations at upgradient wells PC-1 and PC-2 are higher than downgradient concentrations at wells PC-6 and DH-96. PC-2 concentrations (10,800 mg/L in both April 2021 and September 2021) are much higher than the downgradient concentrations.

To analyze other possible issues with mining impacts on groundwater quality (for parameters other than TDS), data in the 2021 AHR for the Keenesburg Strip Mine were compared to water quality standards. The groundwater regulations used for this AHR review are Regulation 41 (Colorado Department of Public Health and Environment (CDPHE), revised June 2020). These regulations include domestic supply and agricultural standards. The following table lists parameters and concentrations from these wells that are exceedances of Regulation 41 standards.

**Table 2. Exceedances in 2021 Data at Downgradient Wells (concentrations in mg/L)**

| | | **Manganese, dissolved** | **Selenium, dissolved** | **Sulfate** |
|---|---|---|---|---|
| *Regulation 41 Standard:* | | *0.05* | *0.020* | *250* |
| **Sample Location** | **Month of Sampling** | | | |
| **PC-6** | April | | 0.067 | 1,170 |
| **PC-6** | September | | 0.060 | 1,300 |
| **DH-96** | April | 0.491 | | 776 |
| **DH-96** | September | 0.536 | | 750 |

The data from the two down gradient wells was compared to data from two upgradient wells: PC-1 and PC-2. Table 3 lists the data for these upgradient wells.

**Table 3. 2021 Data for Upgradient Wells (concentrations in mg/L)**

| | | **Manganese, dissolved** | **Selenium, dissolved** | **Sulfate** |
|---|---|---|---|---|
| **Sample Location** | **Month of Sampling** | | | |
| **PC-1** | April | ND | 0.0795 | 2,010 |
| **PC-1** | September | ND | 0.818 | 1,910 |
| **PC-2** | April | 2.08 | ND | 5,500 |
| **PC-2** | September | 2.09 | 0.0186 | 5,960 |

Because some upgradient values are greater than downgradient values for all three parameters, mining impacts from the Keenesburg Strip Mine do not appear to be causing an issue with any parameters in groundwater at or near the site.

If you have any questions, please do not hesitate to contact me at Rob.Zuber@state.co.us or 720.601.2276. I look forward to your response.

Regards,

Robert D. Zuber, P.E.
Environmental Protection Specialist