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COLORADO

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## Review AHR 2022 WF

1 message

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**Reilley - DNR, Robin** <robin.reilley@state.co.us>

Tue, Jan 2, 2024 at 10:18 AM

To: "Kawcak, Miranda" &lt;MKawcak@peabodyenergy.com&gt;, Robin Reilley - DNR &lt;robin.reilley@state.co.us&gt;

Good Morning Miranda,

Please find DRMS's review of the 2022 Williams Fork Annual Hydrology Report. I'm available to clarify any questions or concerns.

Thank you

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## Review: Annual Hydrology Report

Mine: Williams Fork Mines  
Permit No.: C1981044

Date of review: 3 January 2024  
DRMS reviewer: R. Reilly

Report Year: 2022 Calendar Year  
Submitted by: Moffat County Mining (MCM)  
Date received by Division: 5 May 2022

Requirement	Citation	Comment
1. Hydrology Report filing frequency	CDRMS regulation 4.05.13(4)(c)	Section 2.05.6 of the permit requires MCM to submit the AHR by March 30 <sup>th</sup> each year. The Division received MCM's 2022 AHR on 5 May 2023 and the annual Stormwater Report on 9 February 2022.
2. Timely filing of hydrology report	March 30, Section 2.05.6 of the permit.	Extension of submittal dates were requested by the operator and granted by DRMS.
3. Filing frequency of NPDES Discharge Monitoring Reports	NPDES permit CO-0034142	<i>Throughout 2022 filing dates were only intermittently met.</i>
4. Timely filing of Discharge Monitoring Reports	NPDES permit CO-0034142	<i>Inadequate, at a minimum a correspondence to DRMS of no discharge is required.</i> All filing dates were not met. The Division received DMR's for Q1, Q2 and Q3, September of 2022.
5. NPDES outfall sampling frequency	NPDES permit CO-0034142	Two gaging stations one each on the Yampa and the Williams for Rivers WF1 and WF2 measure flow. Three NPDES discharge points are regularly monitored, comprised of two outfalls on the Williams Fork River (WF1, 003 and WF2, 024), and one spring (1SP). It appears from the AHR that frequency for sampling was complied with. Point #022 (1SP), is a spring that flows sporadically during spring snow melt, March through June.  Figures 19 and 20 present water year monitoring data for the spring. The spring was sampled on a bi weekly basis. Monthly sampling occurred as required for other outfalls.
6. Parameters to be sampled for NPDES Reporting	NPDES permit CO-0034142	Sampling parameters and frequency are presented on Table 3B, and Table 4 occurred as per outlined.  Tables 20 through 21 A provides 2022 water year monitoring data for the site.  TDS concentrations appeared consistent with historic data, with recoverable iron showing a slight upward trend within historic ranges.  Seasonal discharge occurred at 1SP. No recorded discharge from any on site sediment pond occurred during 2022 as per DMR's records received by DRMS.

Requirement	Citation	Comment
7. NPDES discharge limitations	NPDES permit CO-0034142	<p>The mine water discharge points Eagle Mine No 5 and 7NA well (003 or 5D and 024 or 9P3 respectively), did not discharge in 2022 and no active pumping has occurred since 2013. No future discharges are expected.</p> <p>The Williams Fork River points WF1 and WF2 are monitored for filed parameters monthly.</p> <p>Based on a Memorandum of Understanding between the Division of Reclamation, Mining and Safety and the Water Quality Control Division (WQCD), the WQCD enforces CDPS permit conditions.</p>
8. Basic Standards for Surface Water	CWQCC Regulation 31; Antidegradation standard Reg 38.1	The receiving waters (Segment 13b) are designated “Use-Protected”.
9. Instream Numeric Standards	CWQCC Regulations 31 and 37	<p>The Williams Fork Mines are located on Segment 13b of the Lower Yampa/Green River Sub-basin of the Lower Colorado River Basin. CWQCC lists numeric standards for Segment 13b in its regulation 37. The permittee monitors water in the Williams Fork River at a site upstream of the mine (WF1), as well as downstream from the mine (WF2).</p> <p>Data over time from the upstream site indicate the Williams Fork River naturally exceeds the numeric standard for iron, and occasionally the lead and manganese standards.</p> <p>Comparisons of the upstream and downstream data indicate mining and reclamation operations at the Williams Fork Mines do not cause the exceedances.</p>
10. Surface water monitoring sampling frequency.	Exhibit 29; CDRMS mining permit C-1981-044	<p>The WF1 and WF2 sites were monitored in accordance with the approved sampling plan. Additional monitored surface water sites comprise mine discharge points (NPDES #003 and #024) and spoil spring 1SP (NPDES #022).</p> <p>MCM appears to be sampling the surface water NPDES discharge monitoring sites in accordance with their permit. <b><i>MCM needs to be timely in submitting surface water monitoring information to The Division.</i></b></p>

Requirement	Citation	Comment
11. Parameters sampled at surface water sites	Exhibit 29 CDRMS mining permit C-1981-044	All required parameters were sampled.
12. Prevention of impacts to surface water that adversely impact the post mining land use	CDRMS regulation 4.05.1(2)	Surface water features in the permit area consist of the Williams Fork and Yampa Rivers. The post mining land uses of rangeland/wildlife, pastureland and cropland can be expected to use water for watering of wildlife and livestock. Mining and reclamation operations at the Williams Fork Mines do not appear to have impaired surface water for these uses.
13. Pond Report filing frequency	CDRMS regulation 4.05.9(17)	<i>All filing dates were eventually met.</i>
14. Timely filing of pond reports	CDRMS regulation 4.05.9(17)	<i>Inadequate, at a minimum a note to DRMS of no discharge is required.</i>
15. Pond report content	CDRMS regulation 4.05.9(17)	The sediment ponds associated with Williams Fork Mine in 2021 comprise 5P1, 5P2, 5P3 (outfall 007); 9AP1 (018); 9AP2 (019); 9AP3 (020); 9AP4 (021); 9P1 (024), 9P2, 9P3 (024); 904 (014); 9P5 (017), 9P6 (015), 9P7 (013), 9P8 (016); HRP1A, HRP1B (004); SHP1 (011), SHP2 (012); 5AP1 (009). Recently reclaimed outfalls comprised 5P5, 5P6, 5P7 (outfall 003), wastewater (023) reclaimed. Other discharge monitored is spring 1SP (022). When submitted, content is adequate. There was no recorded discharge from sediment ponds in 2022.
16. Interim Narrative Standard for Ground Water	CWQCC regulation 41.5.C.6	Not reviewed
17. Sampling frequency of groundwater monitoring wells	Table 1; Exhibit 29 of CDRMS mining permit C-1981-044	<p>Three aquifers exist beneath the site: Trout Creek Sandstone (No 5 Mine well), Middle Sandstone (Wells TR4, TR7a, 81-01, 83-02, 83-03), and Twenty Mile Sandstone (Wells 259, 84-01, 9 Mine well).</p> <p>The groundwater monitoring wells were sampled at the required frequency, quarterly for flow and field parameters, and annually for the full suite of water quality parameters.</p> <p>Groundwater well, the No. 5 Mine Well (Trout Creek Sandstone), had power cut to it in July 2013. The well was sampled over four quarters and not sampled in 2021.</p> <p>For the shallow alluvial wells AVF-3, 5, and 6 and well 9BF analyte and water level sampling occurred on a quarterly basis.</p> <p>All groundwater monitoring wells that were sampled during 2021 had their respective samples analyzed for the correct constituents with water quality within historic levels.</p>

Requirement	Citation	Comment
18. Parameters to be analyzed in groundwater samples	Table 1; Exhibit 29 of CDRMS mining permit C-1981-044	<p>Table 1B of the AHR presents annual analyte monitoring for parameters and the associated frequency required.</p> <p>No. 5 Mine Well, was measured for water level and has not been sampled for analytes since July 2013 as power has been shut off.</p>
19. Basic Standards for Ground Water	CWQCC regulations 41.4 and 41.5	<p>The Division compared the 2022 monitoring results for each well with the Basic Standards of Ground Water and the Baseline Water data tables provided in Tables 15 to 20 in the Williams Fork Mine permit.</p> <p>In the Trout Creek Sandstone Unit, elevated conductivity was recorded as compared to historical values. The Middle Sandstone Unit is stable as compared to recent historic values with a slight upward trend and major ion concentrations on a downward trend, with iron concentrations showing considerable variations. Overall water quality does not indicate mine related impacts.</p> <p>Well TR-4; conductivity, sodium, sulfate, chloride, and boron concentrations were lower than in 2020 yet elevated compared with baseline levels and are below the maximum levels recorded at the site. The pH levels were above the drinking water standards and within baseline levels.</p> <p>Well TR-7a is within the expected flow path of mine leachate. Well TR-7a data indicates the parameters monitored at this well are within their baseline water quality levels. The pH levels at this well were above and below the drinking water standard and within the baseline levels.</p> <p>Well 81-01 sulfate, manganese concentrations were above the baseline water quality levels for this well and are also above the basic standards of groundwater. Iron levels are trending down. Calcium and chloride concentrations were above the baseline levels and below the basic standards for groundwater. Sodium levels are also above the baseline water quality levels. Magnesium concentrations were high. Conductivity ranged from 1380 to 1450 UMHOS/CMS, higher readings than in 2020.</p> <p>Regarding the Twenty Mile Sandstone; concentrations in Well 259 and the 9 Mine Well are within historic ranges and consistent with baseline water quality concentrations. Conductivity in these two wells fluctuates. Well 259 trends slightly up while the #9 well spiked in 2020 at 1130 UMHOS/CMS, and retreated in 2021. No measurements were recorded in 2022 due to an obstruction in the well.</p> <p>Sodium and calcium showed lower concentrations than in 2019 and 2020 for the No. 9 Mine Well, while chloride, boron, sulfate Magnesium were higher in than in 2020.</p> <p>Williams Fork alluvial wells comprise wells AVF-3, AVF-5 and AVF-6 and require quarterly monitoring. Regarding the</p>

		<p>Williams Fork Alluvium well AVF-3, concentrations were within the baseline water quality levels with the exception of Manganese, which fluctuates widely over the course of the year.</p> <p>Well AVF-5 exhibited sulfate concentrations trending downward and within historical ranges. In 2020 Manganese concentrations were the highest (2000 UG/L), measured in AVF-5. In 2022 the highest reading was 1040 UG/L. Only manganese was found to be above the basic standard for groundwater. However, the baseline levels were also above the standard. Well AVF-6 water quality was within historic concentration ranges. The MCM report states that no impact on alluvial water quality or water levels has occurred.</p> <p>MCM did not provide an explanation for any of the higher concentrations observed in the wells mentioned above and the cause of the elevated concentrations remains unclear.</p> <p><b><i>Additional analysis may be warranted by MCM in the future to determine if they are mine related.</i></b></p> <p>Section 4.05.13(1) of the Regulations requires the establishment of one or more ground water points of compliance (wells), for an operation possessing the potential to negatively impact ground water quality. It does not appear that ground water points of compliance wells have been established for this site. However, the Middle Sandstone (well TR-7a), and the Williams Fork alluvium (well AVF-5), are monitored. Well TR-7a is within the expected bedrock flow path of mine leachate, should the mine discharge leachate to bedrock units. The AVF-5 well is within the expected alluvial flow path of leachate, should the mine discharge leachate to Williams Fork River alluvium. Both wells meet the qualifications of a compliance point as per qualifications listed in Section 4.05.13(1)(b) of the Rules.</p> <p>Monitoring data from both wells indicate the mine has likely not caused an exceedance of the Basic Standards for Ground Water. According to section 2.04.7 of the permit, for the Williams Fork Alluvium; dissolved solids, iron, lead, manganese and sulfate often exceed the drinking water standards naturally. Monitoring data does indicate that manganese levels in AVF-5 often exceed the drinking water limit.</p>
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Requirement	Citation	Comment
20. Restoration of ground water recharge to approximate pre-mining rate	CDRMS regulation 4.05.12(3)	<p>MCM turned off the mine pumps in July of 2013. Some wells reacted to the pumps being turned off. Water levels increased or have remained stable in recent years. However, water levels in well 83-03 continue to decrease.</p> <p>Water levels in Trout Creek Sandstone 5 Mine Well appear to be trending upward. This comprises the only well monitored in the Unit.</p> <p>Water levels in Middle Sandstone formation are measured in wells TR-4, TR-7, TR-7A, 81-01, 83-01, 83-02, and 83-03 and show a general rising trend, with the exception of well 83-03, which dropped in 2016 and has remained stable at its new level. Over time fluctuations have been recorded in all wells. Seasonal fluctuations are also noted.</p> <p>Twenty Mile Sandstone exhibited no apparent change in water levels attributable to mining as per the Annual Hydrology Report. Water levels in Well 84-01, #9 Mine Well appear stable since monitoring began. In 2022 the 9 Mine well was not sampled.</p>
21. Prevention of adverse impacts to ground water systems outside the permit area	CDRMS regulation 4.05.11	Comparisons with the Basic Standards for ground water and the baseline water data are discussed in item 19 above. MCM believes that no significant impacts from mining occurred in the groundwater system as a result of mining.
22. Impacts to ground water that adversely impact the post mining land use within the permit area	CDRMS regulations 4.05.1(2) and 4.05.11	The post mining land uses comprise rangeland/wildlife and pastureland. See items 19, 20, and 21 above.
23. Minimization of disturbance to the hydrologic balance within and adjacent to the permit area	CDRMS regulation 4.05.1(1)	MCM reports that no significant, unpredicted, or adverse impacts were noted during groundwater hydrologic monitoring for 2022.
24. Prevention of material damage to the hydrologic balance outside the permit area	CDRMS regulation 4.05.1(1)	Comparisons with the Basic Standards for ground water and the baseline water data are discussed in item 19 above. MCM believes that no significant impacts from mining have occurred on the groundwater system as a result of mining.
25. Agreement of observed hydrologic impacts with PHC projected in permit	CDRMS regulation 2.05.6(3)	Section 2.05.6 of the permit discusses the probable hydrologic consequences of the mining operation at the Williams Fork Mines. This section primarily discusses monitoring results and trends from the 80's and early 90's. The possible impacts discussed are very general and predict that mining should have no significant impact on the hydrologic balance. MCM reports that no significant, unpredicted, or adverse impacts were noted during hydrologic monitoring for 2022.

26. Adequacy of groundwater monitoring program	CDRMS regulation 4.05.13(1)	The ground water monitoring program appears adequate currently.
27. Adequacy of surface water monitoring program	CDRMS regulation 4.05.13(2)	The surface water monitoring program appears adequate currently.