

July 20th, 2016

Mr. Chris Yde, Supervisor
Coal and Uranium Program
Industrial and Energy Minerals Bureau
Montana Department of Environmental Quality
PO Box 200901
Helena, MT 59620-0901

Permit ID: C1979012
Revision Type: Major Revision 6th Round Response Submittal
Permitting Action: Application
Subject: TR1; 6th Round Acceptability Deficiency Response

Dear Chris:

The purpose of this letter is to respond and address the fifth round deficiency comments on Spring Creek Mine's (SCM) major revision permitting action known as TR1 sent June 20, 2016.

The purpose of this letter is to respond to the fourth round deficiency as described below.

#1 Deficiency: ARM 17.24.314(3): List and summarize all probable hydrologic consequences of the proposed mining operation including whether acid-forming or toxic-forming materials that could result in the contamination of surface or ground water supplies.

#1 Response: *The narrative in section 4.2.1.1.2 has been revised to include discussion of acid forming or toxic forming materials.*

#2 Deficiency: ARM 17.24.314(3): The narrative on pages L-3 and L-89 discusses the potential impacts to existing uses and the viable uses designated by groundwater classification. To be consistent with the groundwater standards, please address all designated beneficial uses, rather than only existing uses or potential uses.

#2 Response: *The narrative has been revised to discuss all beneficial uses.*

#3 Deficiency: ARM 17.24.314(3): The calculated increases in spoil water TDS presented on page L-38 are inconsistent with the data presented in Table 4.2.3-2. Based on Table 4.2.3-2 data, the average spoil TDS concentration is actually 2.2 and 1.8 times higher than overburden and A/D coals and the median spoil TDS concentration is actually 2.2 and 2.5 times higher than overburden and A/D coals. Also, the spoil water quality data presented in Table 4.2.3-3 is inconsistent with the data in Table 4.2.3-2.

#3 Response: *The narrative in section 4.2.3 and Table 4.2.3-3 have been revised to be consistent with Table 4.2.3-2. Table names were also revised for sequential ordering. As a result, table 4.2.3-1 is now 4.2.3-2; table 4.2.3-2 is now 4.2.3-3, and table 4.2.3-3 is now 4.2.3-1.*

#4 Deficiency: ARM 17.24.314(3): The narrative on page L-88 incorrectly states that all spoil groundwater at SCM can be classified as Class II or Class III. The cited SC range (2,750 to 9,290 umhos/cm) and Table 4.2.3-1 indicate that all spoil groundwater at SCM can only be currently classified as Class III.

#4 Response: *Deleted "Class II".*

#5 Deficiency: ARM 17.24.314(3): The current PHC does not include a discussion of observed surface water quality in relation to DEQ-7 or DEQ-12A for aquatic or human health standards. While ephemeral stream conditions persist in the Spring Creek Mine area, recent litigation has indicated that water quality standards may in fact apply to these stream flows as well. Further, the PHC only discusses salinity in postmine water features which will be used for livestock and wildlife watering. Livestock and wildlife drinking water guidelines include other parameters which should also be discussed.

#5 Response:

Table 4.1.3-1 has been revised to include comparisons with potentially applicable water quality criteria as requested. The discussion section 4.1.3 has also been revised accordingly.

#6 Deficiency: ARM 17.24.314(3): The PHC mentions adsorption, absorption, dilution, and attenuation as processes which will diminish salt concentrations in spoil groundwater during migration down-gradient. However, no data or explanation are provided which demonstrate how these processes will reduce spoil groundwater salinity. Please provide a qualitative and quantitative discussion on how these processes would reduce the salinity of spoil groundwater.

#6 Response: *The narrative in section 5.2.2 has been revised to more specifically discuss the geochemical processes.*

#7 Deficiency: ARM 17.24.314(3): The current PHC does not discuss potential impacts to the Tongue River in regards to water quality. *Van Voast and Thompson, 1982* analyzed the probable impact of spoil water reaching the Tongue River; however, their analysis was a worst case scenario and did not include spoil ground water evolution prior to reaching the Tongue River or mixing with clinker groundwater. An updated analysis of the likely water quality impacts to the Tongue River should be included in the PHC.

#7 Response: *Discussion related to the TRR has been added in section 5.1.3.3 as requested.*

#8 Deficiency: ARM 17.24.314(3): The DEQ-7 standard for Barium is 1 mg/L, not 2 as shown in Table 4.2.3.2-2.

#8 Response: *The Barium standard of 1 mg/L has been revised in both Tables 4.2.3.2-1 and 4.2.3.2-2.*

#9 Deficiency: ARM 17.24.314(3): The five-foot drawdown contour should be shown in Plate L-1 in addition to the maximum area of drawdown influence. Since the latter is described in the text as extending the five-foot contour by a mile, both should be shown on the figure.

#9 Response: The narrative was revised to reference the groundwater model for clarification.

#10 Deficiency: ARM 17.24.314(3): Conductivity is discussed in $\mu\text{mhos/cm}$, which are an obsolete unit. The proper unit is microsiemens per centimeter ($\mu\text{S/cm}$), which are equivalent to $\mu\text{mhos/cm}$ ($1 \mu\text{mho/cm} = 1 \mu\text{S/cm}$).

#10 Response: *The units have been revised to $\mu\text{S/cm}$.*

#11 Deficiency: ARM 17.24.314(3): Page L-77 discusses the Universal Soil Loss Equation and gives the result as sediment yield. The USLE calculates erosion, which is NOT the same as sediment yield (Renard et al., 1997). Particularly in large grids, there can be a significant difference.

#11 Response: *The narrative has been revised to reference soil erosion.*

#12 Deficiency: ARM 17.24.314(3): In the Executive Summary and in paragraph 4 on page L-99, remove "Spoils groundwater quality as exhibited by". Water quality is generally thought of as increasing with decreasing TDS, therefore the "peak" of water quality could be construed as the lowest TDS. The peak of TDS concentrations over time is unambiguous.

#12 Response: *Text removed as requested.*

We look forward to working with the Department on this permit revision. Please call me at (406) 757-4236 if you have any questions.

Sincerely,



Gabe Johnson
Environmental Engineer

Enclosures – PHC in PDF and Word format
cc: CF 5.2.5 (SCM-15)