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June 3, 2014

Mr. D. Randall Crooke
Environmental Manager
Falkirk Mining Company
P.O. Box 1087
Underwood, ND 58576-1087

Dear Mr. Crooke:

The Reclamation Division has conducted a technical review of Falkirk Mining Company's application for Revision No. 35 to Surface Coal Mining Permit NAFK-8705 for the Falkirk Mine. Included in our review are items associated with the Post-Mining Hydrologic Assessment (PHA) of the West Mine Area that was submitted as a stand-alone document as part of the application for Revision No. 35. You are reminded that a prompt response by June 13 will be necessary as this revision must be approved at the June 25th Commission meeting. The following items must be satisfactorily addressed before the Reclamation Division will recommend Commission action on this application:

Revision No. 35

Section 2.0 – Environmental Resources Information

1. Follow-up to Item No. 11 of our letter dated January 9th. Please revise the new language that has been added on page 10 of Section 2.4.2, Wildlife Monitoring Plan, to specifically state when and where Dakota Skipper ground surveys were conducted within this permit's wildlife monitoring plan area, and, as originally requested, please clarify if this permit or lands adjacent to this permit contains any suitable habitat for this species. (GAW)
2. Please update Section 2.6.5a, Pre-Mining Watersheds PHC, and Section 2.6.5b, Post-Mining Watersheds PHC maps to identify the tracts that were bond released with Final Bond Releases 3, 4 and 5 to correspond with the stand-alone post-mining hydrologic assessment of the West Mine Area submitted with this application. (RLK)

Section 3.0 – Operations Plans

3. Please provide the information requested in item No. 15 of our January 9, 2014 pre-renewal review for Permit NAFK-8705. Even though no mining is planned in this permit until 2037, Section 3.1.3 should list 0 tons of production for each year of the permit term. (BAJ)

Section 4.0 – Reclamation Plans

4. Follow-up to item No. 28: Please review Section 4.1.3, Pre- and Post-Mining Land Use Acreage Comparison Table. Revising the following items will change the total bond released acreage in the Table to 608.6 acres, which is consistent with our records for this permit. NDAC 69-05.2-05-02(1) (ZAB)
 - a. Please record Bond Release no. 4 and 5 land use acreages in the same manner as previous bond releases. The acreage for BR 4 in Section 1 should be changed from 40.1 acres cropland *to* 37.4 acres cropland and 2.7 acres County roads/trails. The acreage for BR 5 in Section 20 should be added as 130.7 acres cropland and 6.9 acres County roads/trails, which will bring the Section 20 total cropland to 326.3 acres of cropland (BR 3 195.6 ac + BR 5 130.7 ac) and 19.9 acres County roads/trails (BR 3 13.0 ac + BR 5 6.9 ac).
 - b. Please review acreages bond released in Section 31 with BR 2. It appears the 7 acres of roads and trails were recorded in the table twice, both in the Fish & Wildlife Habitat/grasslands and in County roads and trails. Please change the Section 31 value for Fish & Wildlife Habitat/grasslands to 140.4 acres. The 7.0 acres County roads and trails and the 46.0 acres Fish and Wildlife Habitat (Wetlands) recorded for Section 31 are correct.
 - c. The table currently includes 81.1 acres in the NW1/4 of Section 5, T145N, R82W, that were bond released for an ash disposal facility August 4, 1987 from Permit NAFK-8104. The remaining acreage in NAFK-8104 was transferred to NAFK-8705 in 1989. The table also includes 169.3 acres of recreational land use in the E1/2 of Section 20, T146N, R82W, that were bond released May 5, 1987 from Permit NAFK-8005. As discussed by phone on April 3, 2014, this bond release information has historical reference value and should be retained within the permit, but the acreage should not be included in Section 4.1.3. We suggest revising the Post-Mining Land Use Map, Section 4.1.2, to include the permit from which the acreage was released, thus clarifying the acreage was not part of Permit NAFK-8705 and providing historical reference. The 81.1 industrial acres in Section 5 and the 169.3 recreational acres in Section 20 should be removed from Section 4.1.3, Pre- and Post-Mining Land Use Acreage Comparison Table so the table only reflects the total 608.6 acres bond released from Permit NAFK-8705.

West Mine Area Post-Mining Hydrologic Assessment

Section 1- Introduction

1. The first paragraph in Section 1 – Introduction, provides a listing of North Dakota Century and Administrative Codes referencing hydrologic protection performance standards of which the hydrologic assessment addresses; however, NDAC 69-05.2-12 is listed twice in the sentence and it appears the intent was to list NDAC 69-05.2-14, which contains drill hole casing and sealing requirements that are required to be evaluated and have been adequately addressed in the assessment. Please review and update as necessary. (BEB/RLK)

Section 2 – Ground Water Resources

2. The last paragraph in Section 2.1, Geohydrologic Background, indicates that the report includes data from both the Underwood and Riverdale Fields because of overlap to the west and south of the study area. We recommend adding a brief description to the narrative discussing the location of those separate, named coal fields or the location of the dividing line between those coal fields. Alternatively, Falkirk's map showing locations of the two coal fields as provided in the Preface of both the Underwood and Riverdale Ground Water Hydrology documents could be placed in the report. (BEB)
3. Section 2.2.1 describes construction of the Coal Creek Station ash pit in Sections 25 and 26; however, the ash pit is located wholly within the N1/2 of Section 26 and no portions of it are located within Section 25. Please review and update. (BEB)
4. To provide all reviewers with a general sense of scale regarding acreages within the West Mine Area-PHA, we ask that you add a short sentence to the first paragraph of Section 2.2.1 to describe that, in addition to the 1700-acre reclaimed spoils block in the WMA as described, that the total acreage of the WMA report/assessment area contains approximately 4650 acres, or whatever the correct acreage total is. (BEB)
5. Because of the potential for others to review this report either now or in the future, please specify the definition of the acronym SMCRA that is provided on page 3 of Section 2.2.2, Ground Water Effects. (BEB)
6. The last sentence in the second paragraph of Section 2.3.1, Introduction to ground water level response on page 10, describes that "*All ground levels and quality analyses from wells used in this study...*" For clarification this sentence should be changed to state "*All ground water levels and quality analyses,*" etc. Please make this simple addition to the sentence as this appears to have been the author's intention. (BEB)
7. The hyperlink that is provided in the first paragraph of Section 2.3.2 is intended to take the reader to Table 2, Ground Water Level Statistics by Mining Phases; however, the link takes the reader to All PHA Well Quality Data that is also listed in its heading as Table 2. Additionally, we have been unable to find a Figure, Table or any other section of the report that provides the water level statistical information that is described, summarized, and referenced in the report. Please incorporate the water level statistical information spreadsheet into the report and direct or redirect applicable bookmarks and hyperlinks to their intended locations. (BEB)
8. Narrative in Section 2.3.5 and in other sections of the report describes the WMA Section 26 GRE/CCS ash pit and it is likely that this large, 40-acre structure will be retained on the landscape for many years. We suspect this structure has the tendency to serve as a ground water sink, localized recharge zone, and ground water flow-through area depending on precipitation trends, timing and design and construction of the pit. We request that water quality information collected from the five CCS ground water monitoring wells surrounding the pit be added to the report. Since Falkirk has been provided with water level data for the CCS wells and have incorporated that data into the assessment, we presume water quality information is also available. As the Regulatory Authority of the structure and its contents, a letter placed in the assessment from the State Health Department stating that they have not detected any evidence of pollution or contamination of ground water resources based on the ground water monitoring

system that surrounds the Section 26 ash pit would be considered an acceptable alternative to providing the raw water quality data from those wells. (BEB)

9. Upon review of the PHA, other permit data and as noted above, we are unable to accurately determine the hydraulic role of the Section 26 ash pit within the localized ground water flow system. Based on overburden thickness and lithologic information available in Permit NAFK-8705, the base/floor of the Section 26 ash pit is at an elevation of approximately 1880' AMSL and although uncertain, we are assuming the elevation of the pit floor is generally the same elevation as the base of the Hagel B seam. Static water levels of surrounding CCS base of spoils ground water monitoring wells average about 1980', a full 100' above the base of the Hagel B seam and are equivalent to the water level elevation of adjacent wetland R-26-01. The four base of spoils monitoring wells around the ash pit are only located about 100-150' outside of the ash pit proper and we ask that the report further, 1) assess and describe collected water level data in the spoils surrounding the pit in relation to the elevation of the pit floor, 2) to provide a general synopsis of as-built construction details of the ash pit, and 3) provide Falkirk's assessment of the hydrologic function of the Section 26 ash pit within the local ground water flow system. Special Use Permit SP-174 for the ash pit has been placed in the permit but does not contain construction specifications of the pit. Please provide the requested data. (BEB)
10. A link is provided in the narrative of Section 2.4 intended to take the reader to Table 2 "PHA Well Levels and Quality Data"; however, Table 2 only contains water level data for the PHA monitoring wells. Please revise the name of the hyperlink to eliminate the inference that Quality data is also provided in the table. (BEB)
11. Please revise the name of the last hyperlink that is provided in the first paragraph of Section 2.4 from Table 4 "Ground Quality Statistics by Mining Phases" and change to "Ground Water Quality Statistics by Mining Phases." (BEB)
12. The last sentence in Section 2.4.2, Post-mining ground water quality suitability for post-mining land uses, states that "Nitrate concentrations are low and well within the 10 mg/l limit set for human consumption" and based on review of the water quality data provided in the report, this statement will need to be revised. (BEB)

Section 3 – Surface Water Resources

13. Water quality of post-mining wetlands narrative on page 33 describes the recommended level of total dissolved solids for watering livestock ranges between 0 and 1000 mg/l; however, earlier ground water quality narrative in Section 2.4.2 describes that 2000 mg/l is considered a safe concentration of TDS for livestock. Please review to provide consistent information in the report, or otherwise describe that different literature sources may provide differences of opinion regarding safe consumption concentrations of TDS for livestock. (BEB)
14. The last sentence in the second to last paragraph on page 23 appears to need punctuation or may be missing additional text. Please correct as necessary. (RLK)
15. On page 26 it appears that Section 6, T145N, R82W should be included in the description of the area covered by the runoff analysis provided in Permit NAFK-8705. The similar narrative listing on page 7 of the Section 2.6.5 is also missing Section 6, T145N, R82W. Please revise the listing

or refer to the area delineated on the PHC maps to describe the area considered in the hydrologic assessment. (RLK)

16. The last paragraph of Section 3.3.1 on page 32 discusses the sedimentation pond discharge quality for 123 discharge events in the West Mine Area. Please provide the time frame for the events included in the assessment of the NDPDES discharges from the West Mine Area. (RLK)

Figures

17. Figure 1 – WMA PHA water level hydrographs depict water level information for listed reclamation monitoring wells RP-141-1 and RP-141-2, but it appears the intention was to list wells RP-144-1 and RP-144-2, both are reclamation monitoring wells located within Section 30 of the WMA. Wells 141-1 and 141-2 are destroyed premine monitoring wells that were formerly located in Section 28 of the Center Mine Area. Please review and revise as necessary. (BEB)
18. All Tavis Creek water level hydrographs provided in Figure 1 are labeled as Travis Creek. Please correct this misspelling for wells 121-2, 337-2, 343-2, 344-2, and 347-2. Also, monitoring wells 343-1 and 344-1 are labeled as Cole Lake Coulee and should be changed to Coal Lake Coulee. Please correct. (BEB)
19. Figure 3 provides a water quality hydrograph for Hagel B monitoring well 100-2 and we ask that you incorporate the well location and other information for this well into Table 1, PHA Wells, and also depict the location of the well into Map 3, Location of PHA Wells. Upon review of other permit information, it appears the well is located in the NW1/4 of Section 20, T146N, R82W. Please review and update. (BEB)
20. Water quality of post-mining base-of-spoils ground water monitoring wells RP-26-2 and RP-27-2 is considered exceptional, in particular because of the interior locations of the wells within spoils blocks that were mined-out some 30-years ago. RP-144-2 demonstrates what appears to be more “typical” water quality in the base of spoils of mined lands in the state. In addition to the balanced selection of water quality information as currently provided, we ask that you please add TDS water quality hydrographs for all three of these base-of-spoils wells into Figure 3, WMA PHA Quality Plots. (BEB)

Tables

21. Table 1 – PHA Wells, lists many of the monitoring well data periods ending in 2009; however, most of the water level and water quality hydrographs provide data for these same wells up to, and including 2012. Do not eliminate any of the provided data on the hydrographs, but if Table 1 needs to be updated to reflect the longer runs of data as they are provided in the hydrographs, please revise accordingly. (BEB)
22. Table 3, PHA All Well Quality Data, is incorrectly labeled as Table 2 at the top of the table/spreadsheet. Perhaps this mislabeling can account for hyperlink issues as noted in a previous deficiency. Please review and address. (BEB)
23. Table 8, Water Quality of Nearby and Reclaimed Wetlands, includes data for a Jones Lake but the water body location could not be found in the permit or the post-mining assessment. Please clarify. (RLK)

Mr. D. Randall Crooke

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Maps

24. Because of the necessary overlap in report descriptions for details regarding both the West Mine Area and Permit NAFK-8705, we ask that you please add the current boundary of Permit NAFK-8705 onto Map 1, Post Mine Hydrologic Assessment Areas. (BEB)
25. Considering that development of recharge capacity and maintenance and recovery of ground water systems are reclamation requirements in the post-mining hydrologic environment, we ask that you please provide a potentiometric surface map with the most recently acquired water level data of the base of spoils saturated zone. Since all mined-through areas have essentially been converted to an unconfined, or water table "aquifer", we ask that this map be developed to depict height of total hydraulic head from the base of spoils, as opposed to depicting static water level elevation based on MSL datum. Although this mapping request is not a specific requirement, the depiction on a map of water level rebound in the base of spoils will serve as a visual aid in support of the excellent water level recovery data that is analyzed and described in the report, including the hydraulic head data provided in Table 2. (BEB)
26. Please depict the wetland locations and identifying numbers for those wetlands that are included and described in the WMA-PHA report by placing those post-mining DWR features on the Surface Water Features and Monitoring Sites Map which is Map 8 in the report, or on a separate map of your choosing. (BEB)

If you have any questions, please contact this office.

Sincerely,



James R. Deutsch
Director
Reclamation Division

cc: McLean County Auditor