

## INTEROFFICE MEMORANDUM

**Date:** 26 August 2013

**From:** Marcia L. Talvitie, P.E. 

**To:** Susan Burgmaier, Lead Specialist

**Subject:** Bowie No. 2 Mine – C-1996-083  
TR-81 – Coal Mine Waste Disposal Areas – Topo Update  
Adequacy Review – Geotechnical

As requested in your Email dated 08 August 2013, I have reviewed the application for TR-81 submitted by J.E. Stover and Associates (Stover) on behalf of Bowie Resources, LLC (Bowie). With TR-81, Bowie is proposing modifications to the final topography of combined Coal Mine Waste Disposal Areas No. 2 and No. 4 (Gob Piles #2 and #4).

A significant change to the configuration of Gob Piles #2 and #4 was previously approved with TR-76 in January 2013. The heights of the two piles were increased, and they were effectively combined into a single disposal area for coal mine waste. With TR-81, the modifications proposed are comparatively minor: variations in the levels between benches between 50 and 60 feet, development of a permanent Haul Road across the face of the pile, and an increase in steepness for certain lower portions of Gob Pile #2 from 3.0h:1v to 2.5h:1v.

The application includes a Stability Analysis of the new pile configuration, prepared by Buckhorn Geotech. Buckhorn's analysis demonstrates that the minimum factor of safety will range between 1.533 and 1.562, which exceeds the minimum F.S. of 1.5 required by Rule 4.10.4(2). The proposed configuration appears to meet the requirements of our rules, and the permit text on Volume IX Page 17 has been revised to incorporate Buckhorn's recommendations for construction of the pile.

I do have a number of adequacy comments that are not directly related to the changes proposed with TR-81, but might be termed "housekeeping" of Volume IX of the permit.

1. The Table of Contents for Volume IX was last updated with PR-12 in November 2010. The page numbers listed are largely outdated, and the list of Stability Analyses does not include the Buckhorn studies for TR-75, TR-76 and TR-81. I believe it would be appropriate to update this page with the current revision.
2. The Professional Certification provided with Volume IX was last updated with TR-64 in December 2009. There have been a number of changes made to this volume since 2009, and the list of Buckhorn engineers should be expanded to include Dan Quigley. Please request that this certification be updated as part of the current revision.

3. On Page 1 of Volume IX, the second paragraph should be revised to reflect the approval of TR-76. I suggest that the “current approved design” sentence in the middle of the paragraph be updated, moved into a separate paragraph, and placed at the end of the history narrative.
4. On Page 4 of Volume IX, the “West Expansion” entries under the “Slopes” category should be updated to reflect that with TR-75, the “as-built” configuration with slopes as steep as 2h:1v was approved.
5. Also on Page 4, there should be a page break inserted after the Haul Road section, pushing the Diversion Ditches entry to Page 5, where it currently resides.
6. On Page 17 of Volume IX, the first full paragraph makes mention of the September 5, 2012 Buckhorn analysis (for TR-75). This paragraph should be revised to also include the November 20, 2012 analysis that was done in response to the Division’s adequacy comments.
7. On Page 18 of Volume IX, the last sentence states that the six working piezometers are shown on Figure 1. This does not appear to be the case – perhaps this layer has been turned “off” on Figure 1. Please revise the plan view on Figure 1 to illustrate the locations of the piezometer installations.
8. On Figure 1 Section A-A’, a cut slope had been shown on the version approved with TR-76. That line has been removed from the current version. Unless that information was somehow in error, please restore the line to this section.
9. On Figure 1 Section D-D’, please revise the label for the orange line to read, “Permitted Top of Pile (TR-76)” so that it is clear no changes are being proposed to this section with TR-81.
10. On Figure 1 Section E-E’, the line colors vary from the system used on the other sections. Although not required, it would be helpful to have the color scheme be consistent for all of the sections. Please revise the label for the green line to read, “Permitted Top of Pile (TR-76)” so that it is clear no changes are being proposed to this section with TR-81.
11. On Figure 1 Section F-F’, please revise the label for the purple line to read, “Permitted Cut Slope (TR-76)” so that it is clear this slope is not being revised with TR-81.
12. In the Legend for Figure 1, there is a solid black circle symbol referring to Lambert sample locations. The circle does not appear on the map, and is no longer needed. Please delete this symbol from the legend. Please add a symbol for the piezometers.

This concludes my adequacy review for TR-81. Please let me know if you have any questions.