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west virginia department of environmental protection

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Division of Mining and Reclamation  
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Earl Ray Tomblin, Governor  
Randy C. Huffman, Cabinet Secretary  
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August 5, 2011

Mr. Roger W. Calhoun  
USDOJ- Office of Surface Mining  
1027 Virginia St. East  
Charleston, WV 25301

Re: Ten Day Notice X11-112-014-00  
Marfork Coal Company Permit No. O-3015-95

Dear Mr. Calhoun:

This letter is to provide the states final response to the unresolved allegation of the referenced Ten Day Notice (TDN), specifically NOV 01, which alleged that Marfork failed to prevent liquefaction and provide safeguards against the development of liquefaction at this facility.

The TDN cites Title 38, Series 2, Section 22.3.j as being violated. This section requires that each permit application for a coal refuse site shall describe the potential for liquefaction and provide safeguards against the development of this condition.

As previously detailed in state's April 29, 2011 response, prior to authorizing the construction of a coal refuse impoundment on this permit or any subsequent revision dealing with the impoundment, the Division of Mining and Reclamation (Office of Mining and Reclamation) made the determination that the applicant had provided the information necessary to describe the potential for liquefaction and provide safeguards against the development of this condition. In this response I cited numerous evaluations conducted by this office and the Mine Safety and Health Administration (MSHA) which, in every circumstance, concluded that the design criteria included in this permit did describe the potential for liquefaction at the facility and did provide safe guards against the development of liquefaction. Additionally, in the course of investigation into this allegation, we have provided numerous inspection reports from this office as well as the findings of a field inspection of the Brushy Fork Slurry Impoundment that was conducted by engineers from MSHA that was conducted in April 2010. This report was conducted by engineers from MSHA Technical Support for the purpose of defining any possible deficiencies with the embankment stability, construction procedures, or drainage facilities. This report found that the company had followed the construction guidelines of the permit.

Promoting a healthy environment.

During the course of this investigation, you and your staff met with the design engineer for the facility and were provided direct response to any questions about the design and construction of this facility. Specifically at this meeting it was explained that the design of this impoundment was based on residual strength concept and assumed the worst case for liquefaction and the design still resulted in a factor of safety exceeding the 1.2 requirement required by regulation. There is no reason to believe the impoundment has not been constructed as designed. Consequently, regulatory compliance has been achieved.

During July, 2011 your office scheduled a meeting with the MSHA and afforded my staff the opportunity for to participate. During this meeting it was established that the concerns that your staff have expressed in regards to this facility were not justified because the facility has been designed using the most conservative design criteria possible and as previously stated, assuming the worst case for liquefaction, the facility retains the required structural integrity. Again, through years of regulatory oversight and inspection by this agency and MSHA there has been no reason to believe the impoundment has not been constructed as designed.

Your staff has also had several question related to the elevated pore pressures being observed at one of the piezometers. Pore pressure is the pressure exerted by the water present in the pore spaces of a rock or soil mass. Generally, an elevated pore pressure is any pressure that is above the desired elevation considered in the design. In the case of Brushy Fork, the piezometer with the elevated pressure is in the area of future additional phases and the purpose of the location is to ensure the fines that may serve as the foundation for these additional stages are acceptable to prevent liquefaction. This area does not currently serve as a load-bearing portion of the dam structure and will not permitted to become a load-bearing portion of the dam structure until pore pressures there drop into the appropriate ranges as contemplated in the design. It is expected that as loading increases, that is coarse refuse being placed, pore pressures will show an increasing trend initially before stabilizing and then begin to decrease over time. As you are aware, this is exactly why both my office and MSHA had put a hold on any additional stages until the pore pressures are suitable to accept additional loading and we are confident the construction designs can be achieved. No part of the current dam structure is located in the area of increased pore pressure and there is no indication that liquefaction or any other condition exist that would pose any threat of failure at this facility. It in fact, as stated in my April response, the action by this agency and MSHA illustrates that safeguards to prevent liquefaction are in place at this facility and have been used to prevent the condition.

To buttress our determination that there is not a liquefaction potential, my office requested that Marfork submit a plan to affirmatively demonstrate liquefaction safe guards exist in the entire upstream push out area. They readily agreed and have provided this plan to us for consideration. Our regional dam control engineer had discussed this plan with the design engineer before formal submittal and agreement was reached that the information is more than adequate verify that liquefaction is not occurring at the facility. The plan includes:

- Standard Penetration Testing (SPT) on 10-foot centers through the coarse refuse and into the fine refuse.

- Alternating SPT, vane shear testing, and Shelby Tube Piston Sampling will then be performed through the fine refuse.

The SPT sampling will provide a comparison of relative densities of the refuse materials and provide samples for identification purposes. The vane shear testing will enable additional residual shear strengths of the fine refuse to be obtained. The Shelby Tube Sampling will provide samples for triaxial compression testing. Unified Soil Classification System tests (i.e. grain size, Atterberg limits, and natural moisture content) will be performed on representative fine refuse samples. A three-point, consolidated-underdrain triaxial compression test with pore pressure measurements will be performed on undisturbed samples of the fine refuse obtained from the piston sampling. The field and laboratory data will then be compiled and compared to the data used in the design. If needed, additional stability analyses will be performed based on the results of the new testing.

It is clear that our review, along with requirements and expertise provided by our Regional Dam Control Engineers and MSHA Dam Control staff who we share jurisdictional authority with for these type of facilities have and continue to place the highest level of scrutiny on these facilities to ensure that they are designed under prudent engineering practices and constructed under effective regulatory standards, in accordance with the designs.

With the information that we have provided to your office we have clearly demonstrated that the regulatory requirements of the West Virginia Surface Mining Reclamation Rules, specifically 38-2-22.3.j which you alleged had been violated, have been fully complied with and no violation exist. Therefore, it is requested that you determine that our response to the TDN be determined appropriate and this matter be resolved.

Sincerely,

Harold D. Ward  
Deputy Director

