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State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

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December 17, 1997

TO: File

THRU: Daron Haddock, Permit Supervisor 

FROM: Michal Sufлита, Reclamation Hydrologist 

RE: Slurry System NOV Abatement NOV N97-39-5-1 Canyon Fuel Co., LLC, Skyline Mine, ACT/007/005-97K-1, Folder #2, Carbon County, Utah.

SUMMARY:

On June 17, 1997 Skyline Mine began operating a slurry system to dispose of underground development waste. This was not part of the MRP. The DOGM Inspector discussed the matter with them on June 23 and the Division Hydrologist was involved on June 25. On July 18, 1997 a Notice of Violation (NOV) was issued for failure to seek approval of an underground slurry system. The Operator appealed the NOV and a hearing was held on September 3, 1997. On September 24 the NOV was upheld with abatement being the approval of the permit change. On October 17 the Operator submitted an MRP amendment that was inadequate. Additional submittals were sent to complete the information needed to evaluate the permit change and this TA is done on the completed package.

TECHNICAL ANALYSIS:

OPERATION PLAN

Discharges

Regulatory Reference R645-301-731.500 through .520

Analysis

The amendment contains a description of the slurry operation which basically entails grinding of the underground development waste rock into a less than one-inch size. This ground rock is then mixed with water and discharged through a pipe into a previously mined-out area. The water is taken from the sediment pond located above ground in the mine disturbed area. In turn, water in the sediment pond is derived about 95% from water pumped from the mining

operation. The operation was necessitated by the mining operations in Mine 3 encountering a sandstone block area which has to be removed in order to continue mining coal beyond the sandstone. It is anticipated that the system would be used for about ten months for this situation and in the future if similar situations are encountered.

The amendment contains a supplement to the Probable Hydrologic Consequences, both of which were prepared by Mayo & Associates, a consultant to the Operator. In the supplement an explanation is given of how underground water flows from the slurry line discharge will not adversely impact the hydrologic balance of the mine area. This conclusion is based on two lines of reasoning. First, the maximum elevation of the underground water is below the elevation of the surrounding terrain in all directions except for the region to the northeast. This area is about 48 feet lower and over three miles away from the discharge area. Second, the tilting or dip of the rock strata is away from this area of lower elevation. In addition, the rock strata are discontinuous and lenticular in nature with extremely slow water transmission rates. The result is that, even if the water could reach the surface, (which is highly unlikely) it would take on the order of thousands of years.

The water used in the slurry system is the same as that being discharged from the NPDES discharge point. The same quality limitations apply to the water quality, except that Total Suspended Solids (TSS) do not apply. It is hardly necessary to limit solids in the water when it will be used to convey a slurry comprised of 30% to 40% solids. There is a testing plan for the slurry water that corresponds to the testing plan for the NPDES discharge. The tested parameters and limits remain the same for both.

The quantity of water pumped from the mine depends on how much water is encountered, but is estimated at 300,000 gallons per day. Similarly, water pumped from the pond into the mine varies according to the slurry to be disposed of, but flows at 500 gallons per minute when operating. Estimating operation at 80% of a day yields 576,000 gallons per day. The mine does not operate on weekends.

The Operator provided letters from them to MSHA and MSHA letters to the Operator which indicate MSHA is aware of the project, concerns with the project had been reviewed and appeared adequate, and, further, that the "project is not subject to MSHA approval". This is considered sufficient for paragraph R645-301-731.511.4 "Meet with the approval of MSHA." purposes.

Discharges into the mine are limited to water. Also, inside the mine the discharge will contain development waste from underground that will be left underground. Thus, the regulatory limitations on types of discharge are met.

There no gravity discharges from an underground mine associated with this operation.

The rock waste has been tested and shown to have no potential for producing acidic or toxic products. The rock is alkaline with an acid base potential of 80 tons of limestone equivalent per 1000 tons of rock. A level of -5 or above is considered good in the Division guidelines. An Underground Mine Waste monitoring plan is included which tests the rock every 450 lineal feet through the sandstone block and when variations in the rock are encountered. Tested parameters include pH, Conductance, Selenium, Boron, and Acid/Base Potential. Test results are provided and all are within prescribed limits.

Surface water impacts are not of consequence since the water is discharged underground. However, it's worth noting that a positive consequence of the slurry operation is a significant reduction of the NPDES water discharges from the sediment pond into Eccles Creek. No changes to the surface or groundwater monitoring are considered necessary as a result of this slurry operation.

Findings:

The proposed MRP amendment to include a slurry pumping system at the mine meets the regulatory requirements cited above and can be approved. Disturbance to the hydrologic balance is minimized and there appears to be no material damage outside the permit area. There appear to be no public hazards. The water is discharged into the mine at known rates and the water quality meets NPDES requirements. The Division should approve exceeding total suspended solids limits since they have no impact for this system. Effective MSHA approval has been obtained. Discharges into the mine are limited to water. Water diverted from underground workings are being indirectly diverted into other underground workings only after minimizing acidic, toxic, or other harmful infiltrations into the groundwater system. There are no gravity discharges from the mine.

Underground Disposal

Regulatory Reference R645-536.520 and 513.300

Analysis:

The amendment contains a description of the slurry operation which basically entails grinding of the underground development waste rock into a less than one-inch size. This ground rock is then mixed with water and discharged through a pipe into a previously mined-out area. The water is taken from the sediment pond located above ground in the mine disturbed area. In turn, water in the sediment pond is derived about 95% from water pumped from the mining operation. The operation was necessitated by the mining operations in Mine 3 encountering a sandstone block area which has to be removed in order to continue mining coal beyond the sandstone. It is anticipated that the system would be used for about ten months for this situation and in the future if similar situations are encountered.

Included is a flow diagram of the system with quantities of water and waste rock. The location where the material will be finally stowed is shown to be in the seven right tailgate.

This is a closed area that has been previously mined out. The backfilled material will reduce subsidence, but the amount was not quantified.

The Operator provided letters from them to MSHA and MSHA letters to the Operator which indicate MSHA is aware of the project, concerns with the project had been reviewed and appeared adequate, and, further, that the "project is not subject to MSHA approval". This is considered sufficient for paragraph R645-301-731.511.4 "Meet with the approval of MSHA." purposes.

Findings:

The proposed MRP amendment to include a slurry pumping system at the mine meets the regulatory requirements cited above and can be approved. The underground waste handling process is adequately described and has received effective MSHA approval.

Regulatory Reference 30 CFR 944.30

Analysis:

The plan has been reviewed and by the United States Forest Service, the Federal land management agency, and they have consented to the slurry system as presented in the amendment.

Findings:

The proposed MRP amendment to include a slurry pumping system at the mine meets the regulatory requirements cited above and can be approved.

RECOMMENDATION:

The amendment to change the permit can be approved, which will also abate the NOV 97-39-5-1.