

July 10, 2003

TO: Internal File

THRU: Daron R. Haddock

FROM: Gregg A. Galecki, Environmental Scientist III, Hydrology

RE: Abandonment of Underground Mining Equipment, Canyon Fuel Company, LLC, Skyline Mine, C/007/005-AM03F, Task ID #173

SUMMARY:

The following technical memo reviews information submitted to the Division of Oil, Gas, and Mining (Division) on June 11, 2003. The information was submitted in response to a letter sent to Canyon Fuel Company (CFC) by Daron R. Haddock (Permit Supervisor for the Division) on May 13, 2003, requesting additional information on the proposed abandonment of mining equipment. The review addresses the information provided solely from a hydrologic prospective, and includes a brief evaluation of probable impacts to the hydrologic balance in the area from the abandonment of the equipment.

The proposed equipment to be abandoned will be located in Mine 2 in the 6 Left "B" Longwall Panel. The submitted information includes the following: 1) a map designating the location of the abandonment; 2) a letter describing the equipment and its condition; and 3) a modification to the Probable Hydrologic Consequence (PHC) addressing the potential for any hydrologic impacts. The provided list of equipment is 'all-inclusive', and mining personnel hope to safely recover a good portion of the equipment listed. The Division will be notified what equipment was abandoned following the mining of the 6 Left "B" panel. The information adequately addresses the minimum requirements of the regulations and incorporation into the existing MRP is recommended.

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TECHNICAL ANALYSIS:

ENVIRONMENTAL RESOURCE INFORMATION

Regulatory Reference: Pub. L 95-87 Sections 507(b), 508(a), and 516(b); 30 CFR 783., et. al.

HYDROLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 701.5, 784.14; R645-100-200, -301-724.

Probable Hydrologic Determination

On page 2-51c of the MRP the Operator provides a brief discussion making a commitment that any equipment left under ground will be drained of hazardous materials and lubricating fluids prior to being abandoned when possible. The following statement is also provided: "Since the equipment is steel and not too different compositionally from the roof supports throughout the mine, contamination to the ground water from abandoned equipment is not anticipated."

Findings:

The information provided adequately addresses the minimum requirements of the Hydrologic Resource Information section of the regulations.

OPERATION PLAN

SPOIL AND WASTE MATERIALS

Regulatory Reference: 30 CFR Sec. 701.5, 784.19, 784.25, 817.71, 817.72, 817.73, 817.74, 817.81, 817.83, 817.84, 817.87, 817.89; R645-100-200, -301-210, -301-211, -301-212, -301-412, -301-512, -301-513, -301-514, -301-521, -301-526, -301-528, -301-535, -301-536, -301-542, -301-553, -301-745, -301-746, -301-747.

Analysis:

Disposal Of Noncoal Mine Wastes

In a letter received June 11, 2003, at the Division, the mining equipment to potentially be abandoned includes:

- .1) 118 (approx.) longwall roof supports (approx. 14-tons each – new in March 1995)
- 2) 3 (approx.) headgate end roof supports (approx. 19-tons each)

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- 3) 1 longwall face conveyor tail drive (20-tons)
- 4) 1 longwall face conveyor head drive and crossframe (30-tons)
- 5) 115 (approx.) longwall face conveyor line pans (2-tons each)
- 6) 1 longwall stage loader (50-tons)
- 7) 1 longwall double-ended ranging drum shearing machine (50-tons)

The above-listed equipment is all the equipment that could potentially be left underground. Longwall personnel anticipate being able to safely recover items 2, 4, 6, and 7. Following mining, the Division will be notified which equipment was retrieved.

Hazardous substances include emulsion fluid, lubricating oil, hydraulic fluid, and dry cell batteries. All of these substances will be drained prior to abandonment. In the case of the emulsion fluid (normally 95 % water, 5% neat soluble oil), Skyline will operate on water near the end of production. It is anticipated that this will reduce the concentration of oil from 5 percent to approximately 3 percent when abandoned.

A considerable tonnage of ferrous materials - such as steel roof bolts, wire mesh, and cans used in support pillars - is routinely abandoned in underground coal mines because the materials cannot be removed without endangering the lives of miners. The amount of steel in the equipment to be abandoned is on the order 2000 tons, but this additional steel is probably not significant considering the amount routinely abandoned during underground mining operations during the life of a mine. At the Genwall Crandall Canyon Mine, room-and-pillar mining requires approximately 400 tons of steel be placed and abandoned underground to produce each million tons of coal; however, longwall mining, as at Skyline, would be expected to use steel at a considerably lower rate. (From 1996 to 1999, production at Skyline was on-the-order of 4 million tons/year.) The potential 2,000-tons of equipment abandonment would be somewhat high for a room-and-pillar operation, and significantly above what Skyline normally leaves. However over the life of the mine, the total amount that Skyline will leave underground is still anticipated to be less than a standard room-and-pillar operation.

Findings:

The information provided adequately addresses the minimum requirements of the Operation Plan – Spoils and Waste Materials section of the regulations.

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

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Analysis:

General

The Division is currently updating a Cumulative Hydrologic Impact Assessment (CHIA) for Mud Creek and upper Huntington Creek basins, which includes the Skyline Mine. The document was last updated in November 2002. Abandonment of equipment underground was not covered in this CHIA. Consequences from abandoned mining machinery and fluids were not included in the Probable Hydrologic Consequences (PHC) determination in the Skyline Mine MRP.

Water encountered in the mine has little communication with the surface and is not subject to annual recharge events. Due to conditions encountered in the 10-left portion of the mine, it is currently anticipated that the abandoned equipment will eventually be flooded.

Assuming the mine were to flood and the abandoned equipment were to be covered with water, several probable results and impacts can be evaluated:

- Flooding of the abandoned mine might be relatively rapid, but once flooded, flow of ground water into, through, and out-of the void spaces of the mine should be slow;
- If steel or other metals in the equipment were to oxidize, it would be at a very slow rate and the amount of iron and other metals added to the ground water at any one time would be very small;
- Oxides of most metals are insoluble or slightly soluble in water (anions in solution in the water could increase solubility, but this is not anticipated based on typical ground-water chemistries of the region). At temperatures expected in the mine, metal oxides would tend to precipitate as solids within the mine rather than flow in solution in the ground water. If any metal were to go into solution, concentrations would be highest near the abandoned equipment, but the volume of water in the flooded mine would dilute concentrations outside the immediate vicinity of the equipment.
- Because of dilution and dispersion, natural seasonal fluctuations, and the limits of accuracy of analytical methods, changes in water quality would not be expected to be large enough to be detected at the surface at springs, ground-water baseflow to streams, or in discharges from the mine.

Finding:

Abandoning the longwall equipment and roof supports will cause minimal, if any, disturbance to the hydrologic balance within the permit and adjacent areas and is not expected to cause material damage outside the permit area. Any potential adverse impacts will be observed in surface- and groundwater monitoring currently being conducted. No additional information is required to address the minimum regulatory requirements.

MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-512, -301-521, -301-542, -301-632, -301-731, -302-323.

Included in the submittal is an update to Drawing No. 2.3.6-3 – Mine 3 Levels 2 & 3 Abandoned Mining Equipment Locations that includes the proposed abandonment of equipment. The location of the equipment to be left in the 6 Left B section is identified as a ‘potential’ site, and the equipment list in the legend of the map is also identified as ‘potential’. The provided information adequately addresses the minimum requirements of the regulations.

Finding:

The information provided adequately addresses the minimum requirements of the Operation Plan – Maps, Plans, and Cross Sections section of the regulations.

RECOMMENDATION

The Division should approve abandonment of the equipment listed. Monitoring of surface and ground waters should continue as stated in the Skyline Mine MRP.