

July 8, 2003

TO: Internal File

THRU: Daron Haddock, Permit Supervisor

FROM: Peter Hess, Environmental Scientist III, Engineering

RE: MSHA Approved Backfilling Plan / Crandall Canyon Air Shafts, Plateau Mining Corporation, Willow Creek Mine, C/007/0038, Task ID # 1625

**SUMMARY:**

In April 2002, the U.S. Department of the Interior, Bureau of Land Management, Utah State Office informed the Utah Division of Oil, Gas and Mining that the “temporary” caps which had been approved through permitting action in 1991 to temporarily seal the Mines were inadequate to protect the unmined Federal coal reserves associated with the lease, and that the approval of the permanent abandonment of mining operations on that Federal coal could not be approved until adequate protection had been provided. Although the approved plan called for the placement of secondary caps which were much more substantial in design for final sealing, the BLM made the determination that same was still inadequate to protect the resource. It was concluded that “adequate protection” could only be provided by the complete backfilling of the shafts.

As the shafts had been temporarily capped by AMAX Coal Company in 1991, serious concerns developed with the DOGM relative to the safety aspects involved with the proposed backfilling of the shafts, (based upon the amount of combustible gases which the associated mines had been known to generate). The DOGM, in conjunction with the BLM, felt it was necessary to involve the U.S. Department of Labor, Mine Safety and Health Administration in order to develop a plan which could safely accomplish the backfilling of the shafts.

The air shafts, (#1, intake, 26 foot diameter and #2, return, 22 foot diameter) have both flooded, along with the Mines and contain water to depths in excess of four hundred feet.

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These conditions, plus the safety concerns developed by the DOGM as well as the permittee prompted numerous meetings with the BLM, and MSHA. The permittee agreed to backfill the shafts, and agreed to submit a plan to MSHA to backfill same. After several revisions, MSHA approved the Crandall Canyon air shafts backfilling plan on June 12, 2003. Prior to the approval, the permittee had agreed to submit a copy of the approved MSHA plan to the Division for incorporation into the approved mining and reclamation plan.

On July 7, 2003, the permittee submitted the approved MSHA backfilling plan, along with revisions to the text of the Mining and Reclamation Plan, which would incorporate the MSHA plan into the permit document.

This technical memorandum will not address the adequacy of the MSHA plan, but will merely address the incorporation of that document into the Mining and Reclamation for the Willow Creek Mine.

**TECHNICAL ANALYSIS:**

**RECLAMATION PLAN**

**MINE OPENINGS**

Regulatory Reference: 30 CFR Sec. 817.13, 817.14, 817.15; R645-301-513, -301-529, -301-551, -301-631, -301-748, -301-765, -301-748.

**Analysis:**

As noted in the summary, the U.S. Department of the Interior, Bureau of Land Management, Utah State Office had previously informed the Utah DOGM that the temporary caps which had been installed on the Crandall Canyon air shafts in hopes that the Mines intercepting the shafts would see future development were determined to be inadequate relative to their ability to protect the unmined Federal coal reserves. As such, the approval of final abandonment of those Federal reserves could not occur until a more effective means of protecting the resource had been implemented.

After numerous meetings with the Division, and the BLM, the Permittee agreed that the backfilling of the Crandall Canyon shafts was the most effective means of protecting the resource and eliminating any long-term liability, which would exist if the shafts were reclaimed with caps only. Although the original plan approved for the installation of heavier concrete caps over the temporary caps, that plan was still considered to be inadequate.

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Due to the large volumes of combustible mine gases which had been known to liberate from the Castlegate #3 and #5 Mines, and the existing conditions within them (water, steel structure, etc.), the Division developed concerns relative to the methods and the safety measures necessary to backfill the shafts. It was determined that it was necessary to involve the U.S. Department of Labor, Mine Safety and Health Administration to review the backfilling process.

In developing the backfilling plan, it was agreed that the Permittee would provide a copy of the approved plan to the Division.

After several meetings, and revisions to the initial document, the Permittee received an approval for the backfilling plan from MSHA on June 13, 2003 (the approval letter was dated 6/12/2003).

The Permittee submitted a copy of the approved MSHA plan to the Division on July 7, 2003 (Price Office), with five copies received by the Salt Lake Office on July 8, 2003.

In addition to the MSHA plan, the Permittee provided revisions to several pages of the mining and reclamation plan to incorporate the backfilling plan into the MRP. Page 3.7-vi, **LIST OF APPENDICES** revises the title of Appendix 3.7N to read **CRANDALL CANYON SHAFT BACKFILLING/SEALING PROJECT PLAN**.

The text revision on page 3.7-33, Section **3.7-5(3)(2) Permanent Sealing of Shafts**, paragraph 2, references the MSHA plan in Appendix 3.7N, and states that "the shaft(s) will be backfilled from bottom to top as discussed in the "Crandall Canyon Shaft Backfilling/Sealing Project Plan" and approved by MSHA (Appendix 3.7N)."

The text revision on page 3.7-34 merely revises the approved text to reflect the removal of the temporary caps, such that the measurement of the water in each can be determined prior to initiation of backfilling.

The text revision of page 3.7-35, section **3.7-5(3)(3) Backfilling and Grading** merely revises the text of 2 to add "and backfilling of shafts".

Page 3.7-43 under the previously mentioned section, paragraph two adds verbiage to indicate that the sample soils in the lower pad area will be used as backfill for the shafts as it is the same material which came from them during their excavation, (See Sections 3.7-3(1) and 3.7-4(4)). The text revision also includes verbiage indicating that these soils will be sampled if the soils within the pad are to "be used as substitute topsoil." This text addition merely reconfirms what has been approved previously by the Division.

Due to the fact that the currently approved plan intends to place backfill material into the shafts without dewatering them, the Division has developed the concern that an exceptional

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amount of settling of the material within the shaft will occur. The permittee has submitted a revision to page 3.7-44, which indicates that the settling of material within the shafts is expected. This is primarily based upon the Permittee's experience with the settling of material in the fan raise at the Willow Creek main mine facilities. Page 3.7-44 commits the Permittee as follows;..... "will delay final backfilling, grading, topsoil re-distribution and revegetation activities until the following year to allow as much time as possible for settling to stabilize and avoid redistributing reclaimed areas." The Division is concerned that the backfilling activities may develop a material deficit due to the water in the shafts. The Permittee has stated "should additional backfill material be required to augment the available material onsite as a result of settling, the Permittee will address the issue in accordance with the coal rules."

"Access to the shafts, following the backfilling, by wildlife and humans will be precluded by fencing the areas and posting the appropriate signage." The shafts will then be monitored over the winter of 2003-2004, and additional material will be placed as needed to maintain the surface configuration over the shafts as close as possible to approximate original contour. Page 3.7-55 commits the Permittee to monitor the area for weaknesses in the erosion / sediment control regime and to make repairs in an expedient manner in order to prevent additional contributions of sediment to the undisturbed drainage. This will occur when an erosion gully greater than nine inches in depth has developed. "Corrective action will consist of regrading of the ground surface only as necessary to fill in the gullies, followed by reseeding and mulching."

**Findings:**

The minimum regulatory requirements of R645-301-551 have been met.

**HYDROLOGIC INFORMATION**

Regulatory Reference: 30 CFR Sec. 784.14, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-301-512, -301-513, -301-514, -301-515, -301-532, -301-533, -301-542, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-733, -301-742, -301-743, -301-750, -301-751, -301-760, -301-761.

**Analysis:**

**Hydrologic Reclamation Plan**

Page 3.7-55 of C/007/038-AM03E received on July 7, 2003, section **3.7-5(5)** contains struck text which refers to spring/groundwater monitoring point B-22-1. The permittee has submitted the revised page to clean up the existing text only. B-22-1 has already been approved for deletion from the Willow Creek ground water monitoring regime via C/007/038-AM02-A. This analysis was necessary to clarify that the reclamation of the Crandall Canyon site was not deleting the ground water monitoring point without Division approval.

The amendment contains no significant changes to the reclamation plan.

Water, from the flooding of the mine after it was sealed, fills the shafts for about 450 feet to just below the top of the "D Seam." The MSHA approved backfilling plan (new Appendix 3.7N) states that the Permittee will use bentonite to form a water seal 20 feet above the "D Seam" workings.

No problems with acid/toxic drainage should occur, since the Permittee will use the excavated shaft material as backfill. The Permittee has removed all coal from that material.

The Permittee will delay final backfilling, grading, etc. until one year after the shafts have been backfilled, to account for settling. This will allow them to adequately shape final hydrologic features.

The Permittee will continue to maintain surface diversions, as needed, through bond release.

**Findings:**

The Permittee has previously met the minimum regulatory requirements to delete the ground water monitoring point B-22-1 from the Willow Creek plan.

Information found in the application is adequate to meet the minimum requirements of this section of the regulations.

**RECOMMENDATION:**

C/007/0038, Task ID # 1625 should be approved for incorporation into the Willow Creek mining and reclamation plan.