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From: Priscilla Burton
To: OGMCOAL
Date: 3/11/2010 3:22 PM
Subject: 0070038 Internal File Willow Creek Phase I bond release Task 3467
Attachments: E_Ware 04302007 status.txt; General Scope of Work 04192007 Crandall Canyon Shaft #2.doc; pgl050407CrandallshaftNo2MTG.doc; 082007 E_Darby re Dennis Ware Communication shaft no 2.doc; 02062007CrandallshaftNo2MTG.doc; 10232001 BLM shaft closure letter.wpd

The attached documents were referenced in my technical memo for Phase 1 bond release, task 3467.

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Crandall Canyon # 2 Shaft Project

Current Situation

The water level in the shaft is 50 feet below the surface. The fill material in the shaft is 437 feet below the surface. The depth of the water in the shaft is 387 feet and, with a diameter of 20 feet, the current volume of water in the shaft is 909,015 gallons.

Backfilling Project - General Scope of Work

- 1- A safety platform will be constructed over a portion of the shaft.

- 2- The water will be pumped from the shaft with a 40 hp submersible well pump that will be lowered to a depth of 10 feet above the fill bottom. The pumping rate will not exceed 225,000 gallons per day. The discharge line will be placed in the Crandall Canyon drainage and a flow meter will be attached to the discharge line. Water samples will be taken in compliance with the discharge permit. During the pumping process a camera will be lowered into the shaft to determine if there is water inflow. If water inflow exists it is estimated to be inflowing somewhere between a depth of 70 to 130 feet below the current surface level.

- 3- Immediately after the water has been pumped from the shaft, Contractor will begin backfilling the shaft with the following materials:
 - a. First, approximately 95 tons of dry cement will be mixed with equal parts of Contractor supplied 3" to 4" drain rock and dumped into the shaft.
 - b. Secondly, approximately 3,700 yards of fill material from the State Road pile on HWY 6 near the mouth of Crandall Canyon will be placed in the Shaft until it is filled to point 20 feet below the level of water inflow into the shaft or, if there is no water inflow, at a point 120 feet below the surface elevation.

- c. Thirdly, 1,160 yards of bentonite will be placed in the shaft on top of the fill material for a distance of 100 feet starting at a point 20 feet below the level of water inflow into the shaft or, if there is no water inflow at a point 120 feet below the surface elevation.
 - d. Lastly, additional fill material from the State Road pile on HWY 6 near the mouth of Crandall Canyon will be placed atop the bentonite and brought up to the surface elevation and mounded a minimum of 5 feet above the surface elevation
- 4- The surface of the area disturbed during the winter of 2006 and any additional area disturbed by this pumping and backfilling project will be reclaimed consistent with past reclamation practices including seeding.
 - 5- The Crandall Canyon access road and road drainages from the reclaimed site down to the point at which the Crandall Canyon road intersects with HWY 6 will be repaired.

The chain link fence will be left in place to protect wildlife and the public.

UTAH OGM COAL PROGRAM MEETING NOTES

Date: May 4, 2007
Time: 8:30 AM
Location: DOGM Office, A Conference Room, Teleconference with Pete Hess, PFO.

To: Internal File, Willow Creek Mine / Castle Gate #3 and #5 Mines, Crandall Canyon Air Shafts Reclamation Area, C/007/0038

From: David Darby, DOGM

Attendees: Wayne Hedberg, DOGM
(PMC)PMC

Jeff Studenka, DWQ	Dennis Ware, <u>Plateau Mining Company</u>
Richard White, EarthFax	Wayne Western, DOGM
Pete Hess, DOGM, (phone)	Pam Grubaugh-Littig, DOGM
Steve Rigby, BLM/FS	Jeff McKenzie, BLM
	Stan Perkes, BLM

PURPOSE: Update Information on Crandall Canyon Shaft

Mr. Ware provided an update of the current activities at the #2 Return Air Shaft. A turn of events resulted in a change of plans when the 10 to 15 yards of the alluvial embankment on the south side slid into the shaft, knocking out the pump when?. With assistance from EarthFax Engineering, plans were initiated to backfill the shaft with material excavated for a sedimentation pond, before the shaft filled with ground water. Mr. Ware had calculated groundwater inflow into the shaft at a rate between 7 and 8 gpm. The earthen fill in the shaft is now 166 ft. from the surface. It displaced the water in the shaft which resides at a level 10 feet from the below the collar of the shaft, a column 156 feet above the fill.

In the mean time the sedimentation pond was constructed during the week of April 30. It can contain a volume of 256,000 gallons with a 1.5 ft. freeboard. The volume of water in the shaft is approximately 367,000 gallons. Mr. Ware stated that the water level in the shaft has stabilized since material was pushed into the shaft, and is now slowly dropping. The difference in volume means that the some of the water in the shaft will have to settle to a point so that it can be discharged in accordance with the UPDES permit. The muddy water will be treated in the pond. More rock and earth will be pushed into the shaft after the water has been pumped out.

Mr. Ware stated that the material placed in the shaft is expected to settle, and questioned the use of the bentonite plug to seal the zone of groundwater inflow. It is thought that the plug could expand and bridge as the other material below settles. Messrs. Ware and White proposed no bentonite plug be installed. After discharging the settled water and pumping the muddy water to the pond, PMC proposes to fill the shaft to the top with earthen materials, so it can be observed for settling. Any settling could be refilled until it stabilized.

The BLM stated that they want to review the proposal and get the opinion of Mr. Roger Duckworth's (an expert on shaft plugging who works for Consol) opinion on the bentonite plug.

The change in plans from? presented a concern to DOGM. Adjacent effects should be evaluated, since no seal components will be in place. All underground openings are required to be backfilled to prevent vertical migration of acid and toxic fluids to other strata and water bodies, R645-301-551. The BLM proposed a TCLP (Toxicity Characteristic Leaching Procedure) test on the water percolating through the material to be placed in the shaft. The Division should draft a findings of impacts for this proposed change.

MEETING SUMMARY:

- 1) Dennis Ware presented the current status of #2 Return Air Shaft activities.
- 2) Water in the shaft will have to settle before it is discharged. Muddy water will be pumped and held in the sedimentation pond.
- 3) BLM will obtain Mr. Duckworth's opinion and let the group know their final decision on the issue.
- 4) The DOGM will evaluate the influence to adjacent resources if a plug is not installed and draft a findings.

PROPOSED ACTION ITEMS:

- 1) Contact and forward detail drawings to Mr. Duckworth
- 2) Schedule a future meeting on this issue.

From: David Darby
To: Pam Grubaugh-Littig
Date: Monday, August 06, 2007 4:12 PM
Subject: Dennis Ware Communication

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Crandall Canyon Shaft

I called Dennis Ware this morning to check the status of the Crandall Canyon shaft. He stated that the clean water has been discharged to the stream channel. Analysis of samples shows the discharged water meets UPDES water standards. The more sediment laden water was pumped to the pond. The shaft was filled (165 feet) with stockpiled fill material. A thick muddy layer rose to the top of the shaft. It was too thick to pump so a trench was dug from the shaft to the pond, the trackhoe excavated the mud from the shaft surface and place it in the trench where it flowed to the pond. Steve Demezak, the new inspector for the mine, visited the site with Dennis Ware to observe the operation. (Steve is at training in Denver, unable to relay this information for this mornings meeting.) Dennis mentioned the water in the pond is evaporating at a good rate, and if they have no problems with heavy rain storms, he feels they can reclaim the site this fall.

Star Point Mine

Dennis stated they had completed backfilling the large subsidence fracture above the Star Point Mine. Now that the fracture had been filled and Spring 971 has been mitigated, he plans to submit an application for Phase II bond release for the Star Point Mine this fall.

UTAH OGM COAL PROGRAM MEETING NOTES

Date: February 6, 2007
Time: 8 AM
Location: Teleconference with BLM (PFO & SLO), DOGM, Mr. Dennis Ware of Foundation Coal Company, and Mr. Roger Duckworth of CONSOL

To: Internal File, Willow Creek Mine / Castle Gate #3 and #5 Mines, Crandall Canyon Air Shafts Reclamation Area, C/007/038

From: Peter Hess, DOGM

Attendees: Mr. Stan Perkes, BLM
Mr. Jeff McKenzie, BLM
Mr. Gregg Hudson, BLM
Mr. Steve Rigby, BLM
Wayne Hedberg, DOGM
Wayne Western, DOGM
Peter Hess, DOGM
Mr. Roger Duckworth, CONSOL

Purpose: On November 27, 2006, Mr. Dennis Ware observed that the material in the #2, or lower air shaft backfill area in Crandall Canyon had settled; water could be heard running into the shaft void. A rock was thrown into the void, and Mr. Ware has stated that he counted 3 to 4 seconds before he heard a splash. The DOGM and the BLM were notified, and a site visit was made on the same day by both agencies. A decision was made to backfill the #2 shaft. ~~The #2 shaft was to be backfilled, and~~ At least 4000 yards of native(?) material were estimated to have been removed from the reclaimed pad area to accomplish this backfilling.

This Division has expressed to the BLM that the current method of reclamation, i.e., continued backfilling of the shaft(s), is not working, and that the DOGM and the BLM must determine what plan and/or goals need to be addressed by the Permittee to bring this issue to an acceptable closure and protect the Federal coal resource.

MEETING SUMMARY:

- 1) Dennis Ware will contact Laine Adair to determine if the #2 shaft had a lining, concrete or otherwise.
- 2) Shaft Design / Detail drawings will be procured and forwarded to Mr. Roger Duckworth for his recommendations.
- 3) Mr. Duckworth indicated that there were two possibilities relative to handling the sub-surface inflow to the #2 shaft. The Division (Peter Hess) concurred ~~indicated that~~ agreed with Mr. Duckworth's suggestion to drilling a series of vertical boreholes about the shaft, (either half or full circumference) and grouting the sub-strata to seal

off the water's flow path, in order to re-direct it down Canyon of the void. PETE, what was the second possibility (to construct a water ring, or something else)??

- 4) The Division stated that any planned discharge of water from the Crandall Canyon disturbed area would probably require a modification to the current UPDES permit, and that any such discharge must meet all Utah and Federal water quality standards. The BLM stated that DWQ has indicated that once it is determined what is to be done, the UPDES permit modification can occur quickly. The ~~DOG~~M Division stated that it might be necessary to re-install a mine water pond to effectively treat any water which is to be discharged, (based upon anticipated mine flow volume, flow in the receiving waters, and sediment loading / dilution factors / PHH).
- 5) The Division made four comments prior to the end of the conference call ~~meeting~~;
 - a. ~~The DOGM agrees~~ Concurrence with the grout curtain concept to re-direct the sub-surface flow from the shaft void, to an area down gradient of the #2 shaft.
 - b. ~~The Division stated~~ Our opinion that the stabilization of the material column in the shaft (#2) or shafts, (both #1 and #2) may not ~~was not going to~~ occur until the #3 Mine was de-watered.
 - c. ~~The Division stated that the~~ Our concern that continued use of the pad material ~~to continue to~~ backfill the shaft void would no longer be supported. ~~was not going to be allowed.~~ It has been determined that this material is suitable for revegetation, and ~~is thus~~ is considered the usable growth medium. An acceptable substitute growth medium would need to be imported to the site, before we would support continued use of the pad material as backfill.

PROPOSED ACTION ITEMS:

- 1) Contact Laine Adair
- 2) Forward shaft detail drawings to Mr. Duckworth
- 3) Schedule a future meeting on this issue.

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Enc (agenda or other information given or received)

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United States Department of the Interior

Utah State Office
BUREAU OF LAND MANAGEMENT
Salt Lake City, UT 84145-0155

IN REPLY REFER TO:
3484
(UT-932)

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Lowell P. Braxton, Director
Division of Oil, Gas and Mining
P.O. Box 145801
1594 West North Temple, Suite 1210
Salt Lake City, UT 84114-5801

RE: Crandall Canyon Shaft

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Dear Mr. Braxton:

In discussions with UDOGM on the leases in the Meadowlark LMU, the capped shaft in Crandall Canyon has been brought to our attention. Due to the increased number of incidents over the past number of years, BLM requires that the shaft be filled to protect the coal resource and public safety. 43 CFR 3484.2 states:

“Upon permanent abandonment of mining operations, the authorized officer will require that the unmined recoverable coal reserves and other resources be adequately protected. Upon completion of abandonment, the authorized officer will inform the responsible office of the surface managing agency and regulatory authority as to whether the abandonment has been completed in compliance with the rules of this part“.

BLM has compiled a list of previous incidents involving shafts and explosions. They are as follows:

1. CONSOL Coal Company reported that an explosion blew off three caps on shafts that had been sealed for approximately 10 years. In personal conversations with personnel from CONSOL they indicated that this incident was caused by lightening. (Shaft Sealing with Fly Ash/cement Non-Flowable Fill at Consol Coal Group Mines, Attachment 1)
2. MSHA reported that a cap was blown off at Blacksburg WVA when welding was being performed over a shaft. (Personal Communication with MSHA, 16 Sept 1997).
3. MSHA reported that caps have fallen off shafts in VA (Personal Communication 16 Sept 1997)

- D** 4. An explosion occurred when a shaft filling project began in 1986 in PA. The shaft had been unventilated for approximately 6 months. It appears that the cause of the incident was the sparks created by the rocks falling into the shaft and a build up of gases that were not monitored.
5. An explosion at the WROS in Utah occurred when welding was performed over a capped shaft in 1995.
6. A cap was blown off a shaft at Soldier Creek Coal Company at the mouth of Nine Mile Canyon near Price, Utah on July 1, 2000 during a suspected lightning strike.
- R** 7. A shaft at the WROS project in Utah blew the chain link fencing off during an apparent lightning strike and methane ignition in August 2001.

There seems to be discrepancies in the literature about shaft closures and sealing. Some references state that caps are permanent such as the National Coal Boards publication entitled "The Treatment of Disused Mine Shafts and Adits, 1982. Other publications from the Bureau of Mines entitled Mine Closure Concept MC8.1 Concrete Shaft Cap, 1994 (Attachment 2) states the application is for medium term closure (30 years). The Pennsylvania Bureau of Mining and Reclamation states "Final closure will generally be by mounding over and fencing in the filled shaft area. In particular situations, this may not be suitable and capping or other **A**rranged methods may be better." In their bonding procedures they state for a capped shaft that this design (capping shafts) is acceptable under very **rare** circumstances and the maintenance of the site is for 50 years.

In communication with MSHA on the WROS shaft, MSHA stated in a letter to the BLM Utah State office on February 15, 1996 (Attachment 3) that, "We do not recommend the same approach to capping the 30-ft-diam shaft be reattempted, although, with proper monitoring and sampling, we believe it could be safely accomplished. . . . Resealing the shafts by capping will expose the government to liability for site safety for decades into the future." (Emphasis added). The WROS mine was designated as gassy (just like coal mines are) and then put under the new MSHA methane standards of Subcategory I-A under the new MSHA regulations. Because this coal mine had history of methane gas we will follow the MSHA recommendation for filling shafts.

Sincerely,

Sally Wisely
State Director

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Attachments (3)

D J. Cohle jan:10/23/01

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