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DIVISION OF OIL, GAS AND MINING

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To: File

Thru: Joe Helfrich, Permit Supervisor-Compliance

From: Peter Hess, Reclamation Specialist III PH

RE: Barn Canyon Ventilation Facility, Response to 7/13/98 Submittal, Cyprus Plateau Mining Company, Willow Creek Mine, ACT/007/038-98B, File #2, Carbon County, Utah

The following technical analysis for the referenced amendment is in response to the second submittal for the Barn Canyon ventilation shaft as prepared by Hansen, Allen and Luce, Inc., Consultants and Engineers, Salt Lake City, Utah

TECHNICAL ANALYSIS:

Coal Mine Waste.

Regulatory Reference: R645-301-536.600. Underground Development Waste

Utility Installations/Support Facilities.

Regulatory Reference: R645-301-526.220

R645-301-521.180 Submittal of Design Drawings, Cross Sections and Specifications for Support Facility to be Constructed

Analysis:

On May 1, 1998, the Division met with Mr. Ben Grimes of Hansen, Allen and Luce and Mr. Johnny Pappas of Cyprus Plateau Mining Company to discuss the initial deficiencies which were forwarded to them on April 2, 1998. Page 11, paragraph one of the Division's deficiencies response says "No description is made of the shafts dimensions, depth, geologic stratigraphy, or method of construction, etc., is made". Mr. Pappas and Mr. Grimes were verbally informed that the permittee should establish who the shaft sinking contractor would be, and have that firm submit their standard design for a concreted lined vertical air shaft. Depth and diameter considerations could have been verbally indicated in text. The shaft contractor should also be able to submit a blasting round design for the excavation process.

The only information which I can find in this response which is relative to design specifications is that shown on the drawing "Post Mining Topography, Map 32." Longitudinal cross section 6 of same shows the expandable concrete plug covered by four feet of incombustible material and the MSHA required vent pipe. The plug sits in a shaft with an inside diameter of 16 feet. This contradicts the verbal information supplied by Mr. Pappas prior to the initial submittal. I was informed that the shaft's finished size was 15 feet; the construction hole was to be 17 feet in diameter.

The permittee has responded to the issue of where the mine development waste generated during the construction of the air shaft will be placed. All waste will be placed on the School House Canyon refuse pile which is a permitted site meeting all requirements of the R645 regulations.

It appears that the information which has been provided relative to the design specifications for the air shaft is lacking or inconsistent. The second submittal does not include a basic design for a concrete lined vertical air shaft as was requested during the May 1, 1998 meeting. Although R645-301-526.220 was not specifically mentioned, there are no design drawings or specifications relative to the shaft design, concrete requirements, etc. This second submittal remains inadequate.

Findings:

The submittal does not meet the requirements of R645-301-526.220, relative to the required design drawings or specifications for the concrete lined vertical air shaft, which is a support facility.

The submittal meets the requirements R645-301-121.200, in that all mine development waste will be permanently disposed of on the School House Canyon refuse pile.

USE OF EXPLOSIVES

Regulatory Reference: R645-301-524. Blasting and Explosives.

In this submittal, the permittee commits on page 4.5-28, paragraph one to address the initial round as a surface blast as mandated by R645-301-524. This regulation requires that R645-301-524.100 through 524.700 be applied through the initial rounds of shaft sinking.

1) R645-301-524.100, 110, 120, 130, 140, Page 4.5-28 and 29 of the Willow Creek MRP commits to meeting these requirements.

2) R645-301-524.200. "Unless approved by the Division under R645-301-524.220, the blast design must be described in the permit application."

Page 4.5-29 (in paragraph at top of page) of the Willow Creek mining and reclamation plan, Cyprus commits that "if a blast will require more than five pounds of explosive, CPMC will submit specific blast design information to UDOGM prior to the blast." 524.220 says the "The blast design may be presented as part of a permit application, or at a time, before the blast, if approved by the Division.

3) R645-301-524.210 indicates that "An anticipated blast design will be submitted for all blasts if blasting operations will be conducted within 9a) 1,000 feet of any building; this reg is not applicable, and (b) 500 feet of an active underground mine; this reg may be applicable, but the timing of the development for the underground entries has not been discussed. Map 19-A, Mine Plan "D" Seam, shows that the mine will be developed around the bottom of the Barn Canyon Shaft in December 1998, but this still leaves questions, as far as timing. Will the shaft penetrate the "D" seam and then be cut into? or will the shaft break through into an already developed area? MSHA will require that ventilation controls be in place prior to the interception of the coal seam by the shaft.

4) R645-301-524.230. "The blast design will contain sketches of the drill patterns, delay periods, and decking and will indicate the type and amount of explosives to be used, critical dimensions, and the location and general description of structures to be protected, (the only structures needing protection on initial blasts will probably be the construction derrick and an engineering trailer), as well as a discussion of design factors to be used, (i.e., burden, powder factor). A review of Map 12, Regional geology map, and Map 14-A, Overburden Isopach D Seam with a correlation with Map 13A, Geologic Cross Section A-A' indicates (based on borehole data obtained from hole MC 016) that the first 85 feet of construction hole will encounter the Castlegate sandstone; the remaining 650 feet of hole to the top of the "D" seam will be developed in the Blackhawk formation. The Blackhawk formation above the "thick marginal marine sandstones generally consists of thick (10-50 foot) sequences of lenticular channel deposits interspersed with more moderate (5-15 foot) sequences of sheet sandstone deposits.

Composition consists of medium- to fine-grained with a high percentage of silica or calcite cementation; this generally has low permeability, (i.e., a very dense rock). About 35 percent of the upper Blackhawk is composed of correlatable

sandstones, (page 3.6-9, Willow Creek MRP). Based on the above geologic information, it seems that the initial blast design for penetrating the Castlegate sandstone should be very close if not the same as the design necessary to penetrate the 660 feet of upper Blackhawk (which consists of 35 percent tightly compacted lenticular sandstone deposits).

The submittal does not adequately address the requirements of R645-301-524.100 through 524.700 based on the information provided.

Based on the fact that MSHA regulations and approval for the blast design is necessary after the initial round is mucked, DOGM approval for these requirements will be achieved upon MSHA approval of the blast designs.

The blast designs for the shaft construction must first be approved by MSHA in order to meet the requirements of the R645 regulations.

Findings:

The submittal has failed to address the requirements of R645-301-524.200-230. If the MSHA approved blasting design for the shaft construction adequately addresses the R645 requirements, that portion of this submittal will be recommended for approval.

The permittee must first seek and obtain MSHA approval for a certified blast design for the shaft construction.

MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS

Regulatory Reference: R645-301-512, 521, 542, 632, 731, 323.

Analysis:

Affected Area Maps:

In the first deficiency response, Map 31, although P. E. certified, had several issues which needed clarified or changed.

Page 12 of the Division's first response to the permittee indicates that no substation or power line is shown to operate the fan at the air shaft. It has since been determined by the permittee that no fan will be installed; the air shaft will intake air only. The escape hoist will be diesel powered; a portable fuel tank will be hauled to the site for the weekly hoist checks, and during emergency evacuations.

RELOCATION OR USE OF PUBLIC ROADS

Regulatory Reference: 30 CFR Sec.784.18; R645-301-521, -301-526

Analysis:

The permittee stated in the original submittal that the Barn Canyon road is used as access by Utah Power and Light crews to the 138 KV line. However, access to Barn Canyon proper must be made across privately owned ground (ownership is Cyprus). The public generally does not use this road, as Cyprus would not want public access across MSHA regulated private ground. Also, when American Electric Power (i.e., Price River Coal Company) operated the wash plant, access was restricted for many years by the locked gate located at the scale house. Since Cyprus is upgrading the road to meet R645 requirements, and Map 33, Barn Canyon Shaft Facility Access Road shows the road and the air shaft pad within the disturbed area boundary, the road is considered private.

An increase in disturbance of 0.36 acres has been added in the MRP with the addition of the Barn Canyon access road and air shaft pad.

Although it has been rumored that the 138 KV line is to be relocated, access to upper Barn Canyon will continue to be allowed to UP &L crews.

Since the Barn Canyon road is private, the concerns of 526.116 need to be addressed. Landowners include Cyprus (for the lower Barn Canyon area) and the USBLM. As access to upper Barn Canyon is not restricted, there should be no concerns of consequence.

Findings:

As this is considered a private road, the permittee does not need Division approval to conduct mining activities. All activities will occur on surface owned by Cyprus.

PROPOSED VARIANCE FROM REGULATORY STANDARDS

Regulatory Reference: R645-301-527 Transportation Facilities.

Analysis:

Submittal reference 5.4.1.3 Proposed Variance from Regulatory Standards (Page 5.4-2)

The permittee is applying for a variance from the Division such that the reclamation of the Barn Canyon road is not necessary. As noted above, the Barn Canyon road is considered a

private road; Page 4.5-10 of this submittal classifies this pre-SMCRA road as a primary road, and Map 33 shows that drainage controls are to be implemented upon approval of this submittal, and that the road up to and including the air shaft pad is within the disturbed area boundary. On page 5.4-2, the permittee commits to reclaiming the drainage controls installed to upgrade the road to primary.

Findings

The Barn Canyon road meets the following requirements, classifying it as a primary road.

1) 301-527.121. It will be frequently used for access to provide, at a minimum, weekly inspection capability of the emergency escape hoist, most likely for the operating life of the mine.

2) 301-527.123. The portion of the Barn Canyon road that lies above the air shaft pad will remain in perpetuity; there is no logic in requiring the permittee to reclaim any length of the Barn Canyon road, with the exception of the truck passing areas utilized during the shaft construction phase.

3) 301-527.230 and 240. The submittal commits to maintaining the road throughout the intended life of mine usage (Text reference 4.5-49a).

The Barn Canyon road is classidfied as a primary road (PR-19, see page 4.5-48 of text) that will continue to provide access to the upper ridges of this area long after coal mining activities cease in the area. It should not be required to be reclaimed.

Regulatory Reference: R645-301-742.412. Locating a Road in an Ephemeral Channel

Analysis:

Submittal Reference: 4.5-6

The Barn Canyon road has been located in portions of the canyon drainage for at least 40 years; to require the permittee to relocate the road would create extensive and unnecessary environmental degradation.

The flows in this channel have been minimal for many years, as indicated by the amount of vegetation in same. Typical flows (10 yr-6 hr event) will be diverted off the road in two areas where the road is in the channel; ditches, culverts, and water bars will be constructed to do this.

Submittal Reference: 4.5-6a

The permittee is also requesting a variance from the requirements of R645-301-521.261-262, Stream Buffer Zone.

Due to the narrow steep confines of Barn Canyon, it is impossible to construct the air shaft 100 feet from the ephemeral channel. The pad will be constructed using elevation and appropriately designed methods of drainage bypass to route flows around the shaft as required by the R645 regulations. These can be found in Exhibit 13 and on Map 33.

Findings:

The permittee's request to be granted variances from the requirements of relocating a road in an ephemeral channel and those of meeting stream buffer zone requirements are justifiable because of the narrow steep confines of the Canyon. Although recent past flows appear to minimal, the 10 yr-6 hr event has been used to design the drainage control and bypass mechanisms for the shaft pad. The variances should be granted.

SUBSIDENCE CONTROL PLAN

Regulatory Reference: R645-301-521. 301-525, 301-724.

Subsidence Control Plan.

Submittal Reference: Maps 19-A through 19-D, Text reference 4.5-31

Analysis:

The Division's initial deficiency response indicates from Map 20 that the Barn Canyon area is within the subsidence zone. **This map has a P.E. certification date of 2/12/96,** and shows longwall panels on an approximate 45 degree angle to Willow Creek. Since that time, a completely new redesign of the underground entries (necessitated by adverse geologic conditions) has generated a new Map 19-A (longwall panels are now essentially perpendicular to Willow Creek). The redesign places sub-main entries (secondary extraction does not occur) in that portion of the Barn Canyon drainage where the air shaft will be located. Hence, the new Map 19-A (P.E. certification 6/24/98) shows the Barn Canyon air shaft outside of the potential subsidence area. Projected zones of impact caused by subsidence were generated using an angle of draw of 22.5 degrees.

Findings:

The redesign of the underground entries as indicated by the new Map 19-A (P. E. certification 6/24/98) places the Barn Canyon air shaft outside of the potential subsidence zone. The permittee needs to submit a new Map 20, Subsidence Monitoring Plan, which shows the correct zones of potential impact for the various coal seams relative to the redesign of the underground works. Monitoring point locations on this map will remain the same. The submittal of this update map is not necessary to achieve a recommendation for approval of this amendment.

Certified Engineering Designs

Regulatory Reference: R645-301-512 Certification.

Submittal Reference: 4.5.1.8 Certification, Inspection, Reporting, and Emergency Procedures

Analysis:

Map 31, Barn Canyon Shaft Facility and Map 32, Barn Canyon Surface Facilities-Postmining Topography have been P. E. certified by David E. Hansen, of Hansen, Allen and Luce, Inc.

Findings:

The requirements of this section of the R645 regulations have been met.

RECLAMATION PLAN

Regulatory Reference: R645-301-540. Reclamation Plan.

Submittal Reference: Page 5.4-7 Disposal of Concrete Debris

In the first submittal of this amendment, it was the permittee's intent to permit a surface disposal area for concrete construction debris. At that time, this inspector was concerned with the number of areas at the site that were to be permitted for that purpose and the shallowness of the regraded slopes upon reclamation. It is now the permittee's intent to dispose of concrete debris in the air shaft prior to sealing. It should once again be noted that the permittee will need to implement safety controls to properly conduct this disposal.

Findings:

The submittal now adequately addresses the concerns, of this inspector, regarding the disposal of shaft site construction debris.

MINE OPENINGS

Regulatory Reference: R645-301-513, 529, 551, 631, 748, 765.

Submittal Reference: Page 5.4-8, paragraph 4, Map 32, Barn Canyon Shaft Facility-Post Mining Topography

Analysis:

The permittee is committed to capping the shaft with five foot thick frustum of a concrete cone. The plug will be anchored into the shaft walls with transverse steel beams set into slots cut into the sides of the raise. The rebar inherent in the concrete plug will extend into drilled holes in the shaft lining. Four feet of incombustible material will cover the plug to protect it from frost action. This is depicted on Map 32. A two inch by fifteen foot (above the ground surface) MSHA approved vent pipe will disperse methane accumulations from the shaft, consistent with 30 CFR 1711-1.. The permittee will need to consider a support structure for the vent pipe, as well as grounding requirements (CFR 30, Part 75.700-1 (d)).

Map 32 meets the necessary requirements for P.E. certification.

Findings:

The submittal adequately addresses the requirements for the management of mine openings relative to the reclamation plan for the air shaft.

HYDROLOGIC INFORMATION

Analysis:

Protection of Surface Water Quality

Submittal Reference: Text, page 4.7-10, paragraph 5\

The permittee anticipates that the interception of groundwater during the shaft construction will be minimal, (see Section 3.7.9.1). However, if groundwater is intercepted, it will be pumped to the surface and stored in a tank, until it can either be trucked or piped (temporary line) to the raw water process pond near the preparation plant's train loadout facility. The raw water pond is a closed loop system, that will allow settling time for any suspended solids. This contingency plan is felt to be adequate.

As no design has been submitted for the air shaft, there is no method to handle ground water flows in the vicinity of the air shaft during it's operational life. Page 4.7-10 indicates that continuous flows will merely be allowed to discharge to the "D" seam workings. This is fine; however, ice buildup in air shafts or behind the concrete lining of same during the winter months can completely shut off air flow or render the escape hoist useless. If sufficient flows are encountered during the construction phase, methods of handling this water need to be incorporated into the shaft's design criteria.

Findings:

The permittee has a plan in place which is acceptable to handle a small volume of intercepted ground water. This should handle any water problems encountered during the shaft's construction phase. Surface water quality and the Barn Canyon drainage will be protected. The requirements of the R645 regulations regarding this concern have been adequately addressed.

CONCLUSION:

This submittal should have been broken into two phases (1) the environmental issues phase, and (2) the construction requirements/civil engineering phase. It appears that the consulting firm either is not aware of the requirements of R645-301-524.200, and 230 and R645-301-526.220. Support Facilities or the civil engineering and blasting designs necessary for this submittal are beyond their realm of expertise.

I would like to recommend that, pending approval of the other disciplines involved, the environmental issues portion of this submittal be approved, with the stipulation that the necessary blast and shaft designs be submitted as an addendum prior to (by no less than 72 hours) the initiation of the blasting/construction. This will enable the permittee to take care of the access road issues, prepare the site for construction, and allow time for the necessary designs to be generated.

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