

# TECHNICAL MEMORANDUM

## Utah Coal Regulatory Program

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June 2, 2006

TO: Internal File

THRU: Pamela Grubaugh-Littig, Permit Supervisor  
Wayne H. Western, Team Lead

FROM: Dana Dean, P.E., Senior Reclamation Hydrologist

RE: Mine Facilities Area - Phase I and Phase III Bond Release, Task No. 2521, Plateau Mining Corporation, Willow Creek Mine, C0070038

### **SUMMARY:**

Foundation Coal Company applied for Phase I bond release for 20.8 acres associated with the overland conveyor corridor in Willow Creek and Price Canyons, and Phase III bond release for 36.4 acres associated with the mine buildings in Willow Creek Canon on May 5, 2006. They completed reclamation of the areas in the summer and fall of 2004.

This technical memorandum discusses the hydrology related issues pertaining to the application.

The bond release application meets the requirements of the relevant hydrology regulations. The Division should approve it and incorporate it into the MRP.

### **TECHNICAL ANALYSIS:**

## RECLAMATION PLAN

## 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**

The Permittee met the requirements of R645-301-731. The bond release application includes maps and descriptions, indicating how they met the relevant hydrology requirements. The approved reclamation plan takes into account site specific hydrologic conditions, and contains the steps the Permittee took during coal mining and reclamation operations, to meet the minimum requirements for Phase I (conveyor corridor) and Phase III (facilities) bond release, by:

- Minimizing disturbance to the hydrologic balance within the permit and adjacent areas.
- Preventing material damage outside the permit area.
- Supporting approved post mining land use in accordance with the terms and conditions of the approved permit and performance standards of R645-301-750.
- Complying with the Clean Water Act (33 U.S.C. 1251 et seq.)
- Meeting applicable federal and Utah water quality laws and regulations.

The plan also includes the measures the Permittee took to:

- Avoid acid or toxic drainage.
- Prevent, to the extent possible (using the best technology currently available.) additional contributions of suspended solids to stream flows.
- Provide water treatment facilities when needed.
- Control drainage.

The approved reclamation plan (MRP) specifically addresses any potential adverse hydrologic consequences identified in the PHC, and includes preventative and remedial measures.

The Division has not required additional preventative, remedial or monitoring measures to assure that material damage to the hydrologic balance outside the permit area is prevented.

The following sections of this technical memo discuss the specific ways in which the Permittee has met the regulations, as they pertain to the application.

### **Diversions: Miscellaneous Flows**

The Permittee met the requirements of R645-301-742.330 and subsections by designing all permanent diversions for ephemeral flows (WCRD-1 through WCRD-6B, and WCRC1 through WCRC6) to safely pass the runoff from a 10-year, 6-hour precipitation event. They present all design calculations and other pertinent information in Attachment 1 of Exhibit 23.

### **Sediment Control Measures**

The Permittee met the requirements of R645-301-742 and relevant subsections by using the best technology currently available (BTCA) to prevent, to the extent possible, additional

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contributions of sediment to stream flow or to runoff outside the permit area, meet the applicable effluent limitations, and minimize erosion to the extent possible.

The sediment control measures the Permittee used include (Sec. 5.5.2.5 of Exhibit 23, and Section 4.5.2 of Attachment 1, Exhibit 23):

- Incorporation of hay mulch (or suitable substitute) into the soil.
- Deep gouging.
- Seeding.
- Mulching after seeding.
- Chemically anchoring the final mulch layer.
- Leaving Sedimentation Pond UTG040012-001 in place to control possible sediment contribution from the facilities area.

#### **Siltation Structures: Sedimentation Ponds**

The Permittee met the requirements of R645-301-742.220 *et seq* by designing the sedimentation pond (UTG040012-001) to:

- Be used individually.
- Be located as near as possible to the disturbed area and out of perennial streams.
- Provide adequate sediment storage volume.
  - Pond 001 was designed to contain 0.89 acre-ft/day mine discharge in addition to the 10-year 24-hour storm event of 3.36 acre-feet (Attachment 4 of Exhibit 23). There is no mine water discharge, and none is anticipated, so the pond should be more than adequate to treat a 10-year 24-hour storm.
- Provide adequate detention time to allow the effluent from the ponds to meet Utah and federal effluent limitations.
  - Since the capacity of Pond 001 is 11.5 acre-feet, and the design storm event is 3.36 acre-feet, the pond should contain the entire event with no discharge, allowing more than adequate settling time (the water should evaporate before any discharge occurs).
- Contain or treat the 10-year, 24-hour precipitation event.
  - As discussed above the pond is more than adequate to contain this design storm.
- Provide a nonclogging dewatering device adequate to maintain the detention time.
- Minimize, to the extent possible, short-circuiting.
- Provide periodic sediment removal sufficient to maintain adequate volume for the design event.
- Ensure against excessive settlement.
- Be free of sod, large roots, frozen soil, and acid- or toxic forming coal-processing waste.
- Be compacted properly (See Exhibit 13 of the MRP for design and construction details).

This pond does not meet the size or other criteria of the MSHA, 30 CFR 77.216(a), and therefore is not held to the requirements of such ponds.

The Permittee met the requirements of R645-742.223 by building the principal spillway such that it will safely pass the 25-year, 6-hour design storm volume. The emergency spillway is also designed to safely pass a 25-year, 6-hour design storm volume.

Design calculations and other pertinent information can be found in Exhibit 13 of the Willow Creek MRP.

### **Impoundments**

The Permittee met the R645-301-552.200, concerning permanent impoundments (in regard to Pond 001) as described below.

The Permittee met the requirements of R645-301-512.240 by having Pond 001 designed by a professional engineer, who used current, prudent, engineering practices and who is experienced in the design and construction of impoundments. The professional engineer certified the design of the impoundment according to R645-301-743 (See Exhibit 13, Appendix C and Addendum to Appendix C).

The Permittee met the requirements of R645-301-514.300 by having Pond 001 inspected at least yearly by a professional engineer who certified each inspection. They will continue this practice until bond release, as required, they have noted no instabilities or hazards to date.

The Permittee met the requirements of R645-301-515.200 by incorporating into the MRP a description of notification when potential impoundment hazards exist. No notification to the division of potential impoundment hazards has been necessary for Pond 001.

The Permittee met the requirements of R645-301-533.100 through 533.600 by

- Designing Pond 001 with a minimum static safety factor of 1.3 for a normal pool with steady state seepage saturation conditions (Appendix A of Exhibit 11, MRP).
- Ensuring that the foundations and abutments for an Pond 001 were stable during all phases of construction and operation and were designed based on adequate and accurate information on the foundation conditions (Appendix A of Exhibit 11).
- Removing all vegetative and organic materials; and excavating and, preparing the foundations to resist failure.
  - Some coal fines were mixed into the southern embankment, under the direction of a professional engineer to ensure that stability would not be compromised in any way (Exhibits 11 and 13 of the MRP).
- Providing slope protection against surface erosion at the site, and sudden drawdown (Exhibit 13).
- Vegetating faces of embankments and surrounding areas, and rip-rapping faces where water is impounded.

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No highwalls are in the near vicinity of Pond 001, and it does not meet the criteria of MSHA, 30 CFR 77.216(a), or NRCS Class B or C.

The Permittee met the requirements of R645-301-542.400 by properly maintaining Pond 001, and ensuring that it meets the requirements of the approved reclamation plan for permanent structures and impoundments. No renovations are necessary to meet the requirements of the R645 Rules and to conform to the approved reclamation plan.

The Permittee met the requirements of R645-301-733.220 through 224 by gaining approval from the Division (in this amendment) to leave Pond 001 as a permanent impoundment based upon the following demonstration:

- The size and configuration of Pond 001 is more than adequate for its intended purposes (Exhibit 13, Attachment 4 of Exhibit 23, Attachment 5 of Exhibit 23).
- When the Division grants Foundation Coal Phase III bond release, their UPDES permit for Pond 001 becomes obsolete. Since Pond 001 is over-designed for the required storm event, the new landowner may see it as a total containment pond (no water is anticipated to be discharged), and DWQ will not require a new UPDES permit. However if the pond ever does discharge, they would be in violation and DWQ would take action, possibly requiring a permit. Whether or not to permit the pond will be at the discretion of the new landowner.
- The intended use for Pond 001 is sediment control from the mine facilities site, not water supply.
- The Permittee has delivered a letter to the Division accepting responsibility for maintenance of the pond until other arrangements (acceptable to the Division) are made for maintenance of the pond.

The Permittee met the requirements of R645-301-743 by

- Designing and certifying Pond 001 as described under R645-301-512.
- Ensuring Pond 001 has adequate freeboard to resist overtopping by waves and by sudden increases in storage volume (Exhibit 13).
- Designing Pond 001 with a combination of principal and emergency spillways, both of which can safely pass a 25-year, 6-hour design precipitation event (Exhibit 13).
- Inspecting Pond 001 at least yearly, certifying the inspection, and notifying the Division of all inspection results.

Pond 001 is suitable for the approved postmining land use of industrial, and will be used to control sediment from the facilities area.

**Findings:**

The Permittee has met the requirements of the Reclamation Plan: Hydrologic Information section of the Regulations.

## **MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS**

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

### **Analysis:**

#### **Final Surface Configuration Maps**

The Permittee met the requirements of R645-301-542.300 by depicting the as-built final surface configuration (including cross-sections, profiles and watershed maps) for the conveyor corridor and facilities areas on Maps 21A-AB through 21E-AB, and 22A-AB through 22B-AB.

#### **Reclamation Treatments Maps**

The Permittee met the requirements of R645-301-731.720 by depicting all diversions and treated areas on Map 21G-AB.

#### **Certification Requirements.**

The Permittee met the requirements of R645-301-542.310, R645-301-731.720, and R645-301-512 by having a professional engineer certify Exhibits 21A-AB through 22B-AB.

### **Findings:**

The Permittee has met the requirements of the Maps, Plans, and Cross-Sections of Reclamation Operations section of the Regulations.

### **RECOMMENDATIONS:**

The application meets the requirements of the relevant hydrology regulations. The Division should approve Phase I and Phase III bond release for the mine facilities area.