

# TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

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September 29, 2006

TO: Internal File

THRU: Priscilla W. Burton, Environmental Scientist/Soils, Team Lead *PWB by an*

FROM: *SKC* Steve K. Christensen, Environmental Scientist/Hydrology

RE: Subsoil Pile #2 Berm Calculations, Canyon Fuel Company, LLC., Dugout Canyon Mine, C/007/0039, Task ID #2550

## SUMMARY:

On March 28<sup>th</sup>, 2006, the Division of Oil, Gas and Mining (the Division) received berm enclosure calculations for the #2 subsoil pile at the Dugout waste rock site.

A berm surrounding the subsoil pile is currently in place. However, the berm was deemed inadequate by Division staff and a request was made of Canyon Fuel to design an adequately sized berm to minimize erosion and contain sediment loss from the subsoil pile per state regulations. The subsoil pile was produced upon the installation of a drainage ditch adjacent to the refuse pile.

The berm will be constructed around the entire subsoil pile. The berm will be 1.5 feet high around the majority of the subsoil pile with it reaching its maximum height of 2.5 feet at the lowest elevation of the subsoil pile. The surface runoff generated from the subsoil pile will flow along the 1.5 foot sections of berm till it reaches the low point and corresponding 2.5 foot section of berm. Based on the submitted calculations and design information, the berm will provide total runoff containment of the design rainfall event.

The hydrologic information provided in the submittal meets the requirements of the Coal Mining Rules. As the berm installation does not represent a substantive change to the MRP, the Master TA does not need to be modified. The submitted berm design for the #2 subsoil pile at the Dugout waste rock site should be approved and incorporated into the Dugout Canyon Mine's Refuse Pile Amendment.

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**TECHNICAL ANALYSIS:**

**OPERATION PLAN**

**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.

**Analysis:**

**Siltation Structures: Other Treatment Facilities**

The submitted berm design for subsoil pile #2 at the Dugout Mine Waste Rock Site meets the hydrologic information requirements for Siltation Structures: Other Treatment Facilities as provided in R645-301-742.230.

The berm will be constructed around the entire subsoil pile. The berm will be 1.5 feet high around the majority of the subsoil pile with it reaching its maximum height of 2.5 feet at the lowest elevation of the subsoil pile. The surface runoff generated from the subsoil pile will flow along the 1.5-foot sections of berm till it reaches the low point and corresponding 2.5-foot section of berm.

The berm was designed by utilizing the Soil Conservation Service (SCS) method for calculating peak flows. The SCS method incorporates generalized loss-rate and runoff relationships developed from watershed studies in the United States. A total runoff volume of 1,343 cubic feet was calculated for the entire area of the subsoil pile utilizing a 10-year, 24-hour rainfall event as required by state regulations (Other Treatment Facilities--R645-301-742.230). The berm has been designed to provide total containment of the 1,343 cubic feet of runoff.

The design assumes the subsoil pile has a slope of 4 to 1. Upon visiting the site and inspecting the subsoil pile, that assumption appears to be reasonable. Utilizing the assumed slope and elevation data at the subsoil pile's low point, a total berm volume of 1,528.5 cubic feet was calculated, thus providing total containment of the 1,343 cubic feet of runoff produced from the design rainfall event.

**Findings:**

The hydrologic and design information provided meets the Hydrologic Information requirements of the State regulations.

**RECOMMENDATIONS:**

Hydrologic information provided in the submittal meets the requirements of the Coal Mining Rules. The proposed berm design for subsoil pile #2 should be approved and incorporated into the Dugout Canyon Mine's Refuse Pile Amendment.