

TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

November 4, 2005

TO: Internal File

THRU: Wayne Western, Team Lead

FROM: Steve Fluke, Reclamation Hydrogeologist

RE: Longwall Extraction of Panel #7, West Ridge Resources, Inc., West Ridge Mine, C/007/0041, Task ID #2328

SUMMARY:

The Division of Oil, Gas and Mining (the Division) received an application for approval to conduct longwall (full extraction) mining in panel #7 from West Ridge Resources, Inc. (West Ridge) on September 9, 2005. The application has been assigned Task ID #2328 by the Division. Currently the Permittee has approval to conduct development mining in panel #7 that was approved by the Division on April 15, 2005 as Task ID #2172. The approval to longwall mine into this area was pending the completion of a seismic analysis report that includes the hydrology and geology of the area around the Grassy Trail Reservoir. The current application includes a seismic report (August 2005) and a Phase II dam safety study (July 2005) prepared by RB&G Engineering, Inc. (RB&G). The seismic report also contains a subsidence report prepared by Agapito Associates, Inc. (November 2004) as an appendix. A review of these reports involved the coordination of several agencies including the Utah Division of Water Rights Dam Safety (DWRi Dam Safety), the U.S. Bureau of Land Management (BLM), and the Division of Oil, Gas and Mining (the Division), and discussions with the cities of East Carbon and Sunnyside. This memo addresses the hydrology section of the application.

Hydrologic information provided is sufficient to meet the requirements of the Coal Mining Rules. The proposed amendment should be approved.

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TECHNICAL ANALYSIS:

ENVIRONMENTAL RESOURCE INFORMATION

Regulatory Reference: Pub. L 95-87 Sections 507(b), 508(a), and 516(b); 30 CFR 783., et. al.

HYDROLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 701.5, 784.14; R645-100-200, -301-724.

Analysis:

Sampling and Analysis

The application meets the hydrology Environmental Description for Sampling and Analysis as provided in **R645-301-723**. The Division finds that these standards are met because, as stated on page 7-3, Sampling and Analysis, of the mine's existing M&RP, "water quality sampling and analyses have been and will be conducted according to the "Standard Methods for the Examination of Water and Waste Water" or EPA methods listed in 40 CFR parts 136 and 434".

As a condition of longwall mining of panel #7, premining baseline and weekly and monthly flow monitoring will be conducted of the east abutment seep, west abutment seep (SP-15), and the toe drain. The flow monitoring will be conducted as long as seismic events continue to be recorded. RB&G will compile and submit the weekly and monthly monitoring reports to the Division. No additional monitoring locations are to be included into the existing water monitoring program.

Probable Hydrologic Consequences Determination

The application meets the hydrology Environmental Description for Probable Hydrologic Consequences (PHC) Determination as provided in **R645-301-728**. The PHC was not initially updated to include reference to longwall mining panel #7 and potential effects to Grassy Trail Reservoir. At the request of the Division, the Permittee submitted an update to the PHC on November 4, 2005. The PHC update briefly discusses the proximity of Panel #7 with the reservoir and references the RB&G and Agapito Associates seismic and subsidence reports included in the MRP as Appendices 5-9 and 5-9A. These reports discuss hydrologic and geologic information related to the Grassy Trail Reservoir and potential subsidence and seismic effects to the reservoir during full extraction mining of Panel #7. As stated in the PHC update, the reports conclude that risk to the dam and reservoir are minimal, and that even the maximum

probable seismic event or subsidence scenario would be well within the safety factor of the dam. In addition, the reports show that there are no known faults or potential jointing that the mine could encounter that trend toward the reservoir. Based on the information provided in the reports, dewatering of the reservoir due to the interception of faults and/or joints, or the propagation of subsidence fractures appears to be unlikely. The subsidence and seismicity reports have been reviewed by engineers for the Division, DWRi Dam Safety, and BLM. The science and methodology used to support the report conclusions have been found by the agencies to be sound and within current engineering standards.

Groundwater Monitoring Plan

The application meets the hydrology Environmental Description for Groundwater Monitoring Plan as provided in **R645-301-724.100**. No additional spring or seep monitoring is needed for the existing groundwater monitoring plan to adequately represent the groundwater hydrology potentially affected by the longwall mining of panel #7. According to Map 7-5, Seep/Spring Survey Map, four seeps or springs have been inventoried within the Penta Creek Fee Lease area as part of the October 1985 inventory. One of these springs, SP-15, is located at the northwest corner of the Penta Creek Fee Lease area and is included in the existing water monitoring program to be sampled quarterly for field and laboratory parameters. A seep located near the east abutment of the Grassy Trail Dam has been developed by the Permittee to facilitate monitoring during the mining of panel #7. The east abutment seep is believed to be from reservoir leakage because it is located updip and because of its proximity to the reservoir. The seep was not listed in either the 1985 or 1986 seep and spring inventories.

Temporary groundwater monitoring will be conducted as a condition of longwall mining of panel #7. Premining baseline and weekly and monthly flow monitoring will be conducted of the east abutment seep, west abutment seep (SP-15), and the toe drain of the Grassy Trail Dam. The flow monitoring will be conducted as long as seismic events continue to be recorded. RB&G will compile and submit the weekly and monthly monitoring reports to the Division.

Surface-Water Monitoring Plan

The application meets the hydrology Environmental Description for Surface-Water Monitoring Plan as provided in **R645-301-724.200**. No additional surface monitoring sites are needed for the existing surface-water monitoring plan to adequately represent the surface water hydrology potentially affected by the longwall mining of panel #7. Grassy Trail Reservoir is located outside of the permit area and has been determined to be outside of the area affected by subsidence and seismicity due to longwall mining of panel #7 (see PHC discussion above). Temporary monitoring of Grassy Trail Reservoir levels will be conducted weekly as a condition of longwall mining of panel #7. The reservoir level monitoring will be conducted as long as seismic events continue to be recorded. RB&G will compile and submit the weekly and monthly monitoring reports to the Division. In addition, the existing surface monitoring plan includes

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quarterly stream monitoring of Grassy Trail Creek, including site ST-8 located approximately one mile downstream of the lease area.

State Appropriated Water Rights

The application meets the hydrology Environmental Description for State Appropriated Water Rights as provided in **R645-301-724.100, -724.200**. The State Appropriated Water Rights for the existing permit area are shown on Map 7-3, Water Rights. The ownership, description, and usage of the water rights are summarized in Appendix 7-5 of the MRP. The water rights information is consistent with the water rights listed on the Division of Water Rights website. Water rights for the Grassy Trail Reservoir are owned by East Carbon City, Sunnyside City, and Sunnyside Cogeneration.

Findings:

The information provided meets the minimum hydrology requirements of the Hydrologic Resource Information of the State regulations.

MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.24, 783.25; R645-301-323, -301-411, -301-521, -301-622, -301-722, -301-731.

Analysis:

Monitoring and Sampling Location Maps

The application meets the hydrology Maps, Plans, and Cross Sections of Resource Information for Monitoring and Sampling Location Maps as provided in **R645-301-722.300**. Plate 7-5, Seep/Spring Survey Map, Plate 7-6, Hydrologic Monitoring Map (Historical Monitoring Locations), and Plate 7-7, Operational Monitoring Locations, have all been updated to include the boundaries of the 50-acre Penta Creek Fee Lease area (Task ID #2172). No additional hydrologic monitoring or sampling locations are needed to update the maps. Temporary monitoring sites during the longwall mining of panel #7 are described in Section 301-114.100 of the MRP and in the reports of Appendices 5-9 and 509A.

Subsurface Water Resource Maps

The application meets the hydrology Maps, Plans, and Cross Sections of Resource Information for Subsurface Water Resource Maps as provided in **R645-301-722.100**. Plate 7-3, Water Rights, has been updated to include the 50-acre Penta Creek Fee Lease area (Task ID #2172).

Surface Water Resource Maps

The application meets the hydrology Maps, Plans, and Cross Sections of Resource Information for Surface Water Resource Maps as provided in **R645-301-722.200**. The Division finds that these standards are met because the location of surface-water bodies within and adjacent to the permit area is presented on Map 7-3, Water Rights. Plate 7-3, Water Rights, has been updated to include the 50-acre Penta Creek Fee Lease area (Task ID #2172).

Findings:

The information provided meets the minimum hydrology requirements of the Maps, Plans, and Cross Sections of Resource Information of the State regulations.

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:

Groundwater Monitoring

No additional spring, seep, or well monitoring is needed to adequately represent the groundwater hydrology potentially affected by the additional mining.

Surface Water Monitoring

No additional stream monitoring sites are needed to adequately represent the surface water hydrology potentially affected by the additional mining.

Diversions: Perennial and Intermittent Streams

No new disturbed surface areas are proposed for the longwall mining of panel #7.

Stream Buffer Zones

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No underground mining within 100 feet of a perennial stream is proposed for the longwall mining of panel #7.

Findings:

The information provided meets the minimum hydrology requirements of the Hydrologic Information of the Operation Plan of the State regulations.

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

No update to the existing hydrologic reclamation plan was submitted because no new surface disturbance is planned for the longwall mining of panel #7.

Findings:

The information provided meets the minimum hydrology requirements for the Reclamation Plan of the State regulations.

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT

Regulatory Reference: 30 CFR Sec. 784.14; R645-301-730.

Analysis:

The application meets the requirements of the Cumulative Hydrologic Impact Assessment (CHIA) as provided in **R645-301-729**. The Division will update the Book Cliffs Area – III Cumulative Hydrologic Impact Assessment (CHIA) to incorporate the longwall

mining of panel #7 and potential effects to the Grassy Trail Reservoir. The hydrologic information provided in the application is adequate to update the CHIA.

Findings:

The information provided meets the minimum hydrology requirements for the Cumulative Hydrologic Impact Assessment Information of the State regulations.

RECOMMENDATIONS:

Hydrologic information provided in the application meets the requirements of the Coal Mining Rules. The proposed amendment should be approved.