

TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

November 16, 2004

OK

TO: Internal File

THRU: Gregg A. Galecki, Team Lead 

FROM: Steve Fluke, Reclamation Hydrogeologist
STW

RE: IBC- Crandall Canyon Mine Modification to Lease U-68082, Genwal Resources, Inc., Crandall Canyon Mine, C/015/0032, Task ID #2057

SUMMARY:

The Division of Oil, Gas and Mining (the Division) received an Incidental Boundary Change (IBC) application on October 22, 2004 from Genwal Resources, Inc. (Genwal) for the Crandall Canyon Mine. The IBC requests a modification of their mining and reclamation plan to include a 120-acre area to Lease U-68082. The 120-acre addition is for underground mining with no associated surface disturbance.

This memo addresses the hydrology section of the IBC. The proposed additional mining due to the 120-acre area will consist of at least two new longwall panels if it is determined that the coal seam thickness is adequate. The mining will not go outside of the existing Cumulative Hydrologic Impact Area (CHIA) boundary but it will enter into the No-Name Canyon watershed that had previously not been undermined by longwall mining. No-Name Canyon Creek is an intermittent creek that is fed in part by seven identified seeps and springs located within the 120-acre addition. Portions of the left and right fork of No-Name Creek and three seeps and springs will be undermined or within the 20° angle-of-draw. The mining will take place beneath between approximately 90 to 900 feet of overburden.

The proposed amendment should not be approved at this time. Additional hydrologic information is needed to meet the requirements of the Coal Mining Rules.

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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

No additional monitoring locations are to be included into the existing water monitoring program.

Baseline Information

Baseline information of the premining groundwater and surface water features within and adjacent to the 120-acre addition is included as Appendix 7-64, Baseline Information for the U-68082 Lease Mod Area. Appendix 7-64 identifies and shows the locations of seeps, springs, surface water, and drainages that have been monitored within and adjacent to the lease area since 1985. Baseline monitoring of the seeps and springs was collected during June and October 1985, June and September/October 1993, and May 2004. No-Name Creek was monitored during May, June, and July of 2004. The tabulated baseline data presents discharge, flow, and field parameter (including temperature, pH, and conductivity) data available for each monitoring site.

Appendix 7-64 references annotated photographs of selected springs, seeps, and surface monitoring sites (page 2) and surface water laboratory analytical results (page 4) that are not included in the baseline data report.

In Section 7.24.1 Groundwater Information, Methodology, the last paragraph references a seep and spring survey conducted in the area around the IBC area. This IBC needs to be identified further to avoid confusion with the IBC for the U-68082 Lease Modification.

The listing of water rights in and adjacent to the 120-acre addition, as obtained from the Utah Division of Water Rights (DWRi), is included on the groundwater and surface water rights maps (Plates 7-14 and 7-15, respectively), and the tabulated listing of surface water rights

(Table 7-6). Appendix 7-1, Water Rights Information, includes the water rights information obtained from the DWRi for the 120-acre addition.

Baseline Cumulative Impact Area Information

The Division needs to update the East Mountain CHIA to incorporate the expansion of the Crandall Canyon Mine into the U-68082 Lease Mod Area. Hydrogeologic information provided by the amendment is adequate for the Division to complete this update.

Modeling

No hydrogeologic modeling is provided for the 120-acre addition.

Probable Hydrologic Consequences Determination

The Probable Hydrologic Consequences Determination (PHC) has been updated to include reference to the U-68082 lease mod area. No new information describing the probable hydrologic consequences of mining within the 120-acre area is presented except to mention that the drainages in the U-68082 lease mod area are all ephemeral or intermittent. The PHC Determination adequately describes the surface and groundwater conditions of the 120-acre addition.

Groundwater Monitoring Plan

According to Map 7-12, Seep and Spring Locations, and Appendix 7-64, Baseline Information for the U-68082 Lease Mod Area, eight seeps and springs have been inventoried within the 120-acre addition as part of the 1985 inventory. Three of these seeps and springs (SP-15, SP-22, and SP-23) are located in the Blackhawk Formation within the potential subsidence area of the 120-acre addition. The baseline data indicates that none of these three springs and seeps are considered significant. In addition, spring SP-22 is the only spring of the three with measurable flow in May 2004 and is located approximately 400 feet above the Hiawatha coal seam (greater than sixty times the estimated coal seam thickness of five feet). Springs SP-15 and SP-22 appear to be located at the east boundary of the potential subsidence area. Based on the low flow reported for the springs in the area, because the springs do not appear to discharge from a significant groundwater system, and the low likelihood that the groundwater discharging to at the springs would be diverted to the mine workings through mine-induced fractures, no additional groundwater monitoring is recommended.

Surface-Water Monitoring Plan

No-Name Canyon Creek is an intermittent creek that branches into a right and left fork at the east boundary of the 120-acre addition. The right and left forks are steep with an estimated

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2:1 gradient. Monitoring during spring runoff in May 2004 is reported in Appendix 7-64 and shows the right and left forks of No-Name Creek flowing at 1.69 gpm and 24.4 gpm, respectively. Flow near the confluence of No-Name Creek with Huntington Creek was measured at 17.8 gpm the same day indicating that No-Name Creek is likely a losing stream. As reported in Appendix 7-64, field observations and the meager spring discharge at the time of surface monitoring indicate that much of the measured flow in No-Name Creek is due to surface runoff from spring snowmelt. Because No-Name Creek is intermittent, and only a portion of the upper reaches of the right and left forks flows within the potential subsidence area, no additional surface water monitoring is recommended.

Findings:

Hydrologic Resource Information is not sufficient to meet the requirements of the Coal Mining Rules. Before the proposed amendment can be approved, the Permittee needs to provide the following information:

R645-301-725.100, the Permittee needs to include in Appendix 7-64, Baseline Information for the U-68082 Lease Mod Area, the referenced annotated photographs of selected springs, seeps, and surface monitoring sites (page 2) and surface water laboratory analytical results (page 4).

R645-301-725.100, the Permittee needs to further identify the IBC referenced in the last paragraph in Section 7.24.1 Groundwater Information, Methodology.

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

Plate 7-12 shows the seep and spring locations for the Crandall Canyon mine and surrounding area. The baseline seep and spring locations for the U-68082 Lease Mod Area are shown on this plate as well as in Appendix 7-64. No additional hydrologic monitoring or sampling locations are needed to update Plate 7-12.

Subsurface Water Resource Maps

Plate 7-14, Groundwater Rights, includes the boundary of the U-68082 Lease Mod Area. No groundwater right is shown on the plate for the 120-acre addition.

Surface Water Resource Maps

Plate 7-15, Surface Water Rights, includes the water rights and boundary of the U-68082 Lease Mod Area. One surface right (93-1180) is shown for No-Name Creek (Shingle Creek) within the 120-acre addition. The right is for the USA Forest Service for the purpose of stockwatering.

Well Maps

No water monitoring wells are proposed for the U-68082 Lease Mod Area.

Findings:

The Maps, Plans, and Cross Sections of Resource Information provided in the IBC adequately addresses the minimum requirements of the 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.

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Diversions: Perennial and Intermittent Streams

No new disturbed surface areas are proposed for the U-68082 Lease Mod Area.

Stream Buffer Zones

No underground mining within 100 feet of a perennial stream is proposed for the U-68082 Lease Mod Area.

Findings:

The Hydrologic Information of the Operation Plan provided in the IBC adequately addresses the minimum requirements of the 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 U-68082 Lease Mod Area.

Findings:

The permittee has submitted sufficient information to address this section.

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT

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

Analysis:

The Division needs to update the East Mountain Cumulative Hydrologic Impact Assessment (CHIA) to incorporate the expansion of the Crandall Canyon Mine into the U-68082 Lease Mod Area. Hydrogeologic information provided by the amendment is adequate for the Division to complete this update.

Findings:

The information reported meets the minimum CHIA requirements of the Regulations.

RECOMMENDATIONS:

The proposed amendment should not be approved at this time. Additional hydrologic information is needed to meet the requirements of the Coal Mining Rules.