

TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

April 24, 2006

TO: Internal File

THRU: Karl R. Houskeeper, Environmental Scientist, Team Lead

FROM: Steve M. Fluke, Reclamation Hydrogeologist

RE: Midterm Review, Genwal Resources, Inc., Crandall Canyon Mine, C/015/032, Task ID #2431

SUMMARY:

The mid-term review for the Crandall Canyon Mine was initiated on February 9, 2006. The review includes a review of the MRP to ensure that the plan contains commitments for application of the best technology currently available (BTCA) to prevent additional contributions of suspended solids to stream flows outside of the permit area. A review of Chapter 7, Hydrology, revealed the following information should be updated in the MRP.

The Crandall Canyon Mine MRP contains commitments to use BTCA to prevent additional contributions of suspended solids to stream flows outside of the permit area. However, the midterm review should not be completed until the Permittee provides all required updates to the MRP to address deficiencies.

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:

TECHNICAL MEMO

Water-Quality Standards And Effluent Limitations

The Crandall Canyon Mine has two UPDES (Utah Pollution Discharge Elimination System) points permitted by the Utah Division of Water Quality (DWQ): UPDES 001 – discharge from the sediment pond; and UPDES 002 – discharge from the underground workings into Crandall Creek. Effluent limitations set by the permit include total suspended solids (TSS) limits of 70.0 mg/L for a daily maximum discharge, 35 mg/L for a 7-day average discharge, and 25 mg/L for a 30-day average discharge. The UPDES permit has been reissued for the Crandall Canyon Mine effective December 1, 2005. The new permit needs to replace the old permit in Appendix 5-14 of the MRP.

Diversions: General

All diversions within the permit area are located at the facility area, and consist of drainages (diversion ditches) and culverts. With the exception of one culvert (UD-1), all the diversions are temporary and will be removed during reclamation. The diversions consist of three undisturbed area diversions (ditch UD-2, and culverts UD-1 and UD-3); nine disturbed area drainages ditches (DD-1, DD-3, DD-4, DD-5, DD-7, DD-8, DD-11, DD-12, and DD-13); fifteen disturbed area culverts (C-1, C-3 through C-7, C-9, C-11A, and C-11 through C-17); and one perennial stream diversion (main canyon 72” culvert).

In general, upon review of the MRP, it appears all diversions have been designed, located, constructed, and used to prevent, to the extent possible, additional contributions of suspended solids to stream flow outside the permit area.

Diversions: Miscellaneous Flows

The mine’s twenty-eight diversions are partially described in Section 7.42.30 in the MRP. Design calculations and construction diagrams are presented for each of the diversions in Appendix 7-4. Undisturbed area diversions have been designed to handle the 10-year/6-hour precipitation event of 1.55 inches, disturbed area ditches have been designed to handle the 10-year/24-hour precipitation event of 2.50 inches, and disturbed area culverts have been designed to adequately pass peak flow. Diversion locations and cross-sections are shown on Plates 7-5. Diversion cross-sections are presented on Plates 7-5A and 7-5B. However, the cross-section locations are not indicated on Plates 7-5 or 5-3 as needed. The plates need to be updated to show the cross-section locations. In addition, the cross-sections and text in Section 7-42.30 need to be updated with the current design for the culvert expansion area.

Diversions: Perennial and Intermittent Streams

Crandall Creek is the only diverted perennial or intermittent stream within the permit area. The creek is diverted through a 72-inch diameter culvert (main culvert) beneath the mine facility for approximately 300 feet. The main culvert has been designed to handle the 100-year/6-hour precipitation event of 3.70 inches. The culvert design calculations and construction diagram is presented in Appendix 7-4.

Stream Buffer Zones

With the exception of the diverted section of Crandall Creek, no land within 100 feet of a perennial or intermittent stream within the permit area has been disturbed. As stated in Section 7.31.6 of the MRP, Stream Buffer Zones, the disturbed area drainage to Crandall Creek is through ephemeral streams. The Division has authorized the mine to allow the disturbed area within 100 feet of Crandall Creek with the diversion of the creek. A buffer zone has been established and marked along the stream above and below the culvert. Water quality is protected through sedimentation controls discussed in this memo below. However, to keep the MRP text current, reference to pages in Section 3 in Section 7.31.6 need to be updated.

Sediment Control Measures

Sediment control measures are designed to prevent, to the extent possible, additional contributions of sediment to stream flow or to runoff outside the permit area; meet the more stringent of applicable State or Federal effluent limitations; and, minimize erosion to the extent possible. Structures used for the run-off control plan for the permit area include disturbed and undisturbed area diversion channels, sedimentation ponds, containment berms, silt fences, and road diversion culverts.

Alternative Sediment Control Areas (ASCAs)

There are eight alternate sediment control areas (ASCAs) described in Section 7.42.21 of the MRP (ASCA-2, ASCA-5, ASCA-6, ASCA-7, ASCA-8, ASCA-9, ASCA-10, and ASCA-11). The ASCAs as described in the MRP utilize either one or a combination of silt-fencing, dikes, berms, and vegetative cover. These measures represent the Best Technology Currently Available (BTCA) in controlling sediment in areas that do not report to the sedimentation pond. However, a review of the MRP revealed several inaccuracies and incomplete information in the ASCA descriptions: 1) the ASCAs are not shown on Plates 2.3 or 7.5 as indicated; 2) for ASCA-2, Plates 7-16 and 7-5C do not appear to be relevant to the ASCA description as indicated; and 3) the size of the disturbed area associated with ASCAs 9 and 10 is not described. The MRP should be updated to correct these issues.

TECHNICAL MEMO

Siltation Structures: General

The Crandall Canyon sedimentation pond is the only siltation structures within the permit area. The sedimentation pond design calculations are presented in Appendix 7-4 of the MRP. The operation and maintenance of the sedimentation pond is described in Section 7.42.22.

Siltation Structures: Sedimentation Ponds

The Crandall Canyon Mine sedimentation pond is designed to contain the runoff from contributing watersheds from a 10-year/24-hour precipitation event, along with a minimum of three years of sediment storage.

Siltation Structures: Exemptions

There are no Small Area Exemptions (SAEs) described in Section 7.42.21 of the MRP. This section states that Genwal will apply for SAE status for ASCAs 9 and 10, the pad slope areas at both ends of the culvert expansion area, once vegetation has been successful and lasting. No application has been made to the Division.

Discharge Structures

The discharge structures within the permit area consist of the principle overflow and the emergency spillway on the sedimentation pond. The discharge structures are described in Section 7.42.22 of the MRP. Design calculations are presented in Appendix 7-4. The principle overflow consists of a 24" CMP riser pipe and oil skimmer. The inlet to the emergency spillway is lined with concrete and discharges directly to a riprap lined spillway channel below the pond. The principle and emergency spillways are designed to adequately discharge the 25-year/6-hour precipitation event.

Findings:

The SUFCO MRP contains commitments to use the best technology currently available (BTCA) to prevent additional contributions of suspended solids to stream flows outside of the permit area. BTCA means that the operator is employing the best methods available at any one time. However, a review of the Hydrologic Information of the MRP has identified needed updates and/or corrections that constitute deficiencies for this midterm review:

R645-301-731.520, -751, the current UPDES permit, effective December 1, 2005, needs to replace the old UPDES permit in Appendix 5-14 of the MRP.

TECHNICAL MEMO

R645-301-731.600, Text in Section 7.31.6 of the MRP, Stream Buffer Zones, needs to be updated with the correct reference to pages in Section 3.

R645-301-731.720, -732.300, the locations of cross-sections on Plates 7-5A and 7-5B are not indicated on Plates 7-5 or 5-3 as needed. The plates need to be updated to show the cross-section locations. In addition, the cross-sections on Plates 7-5A and 7-5B, and text in Section 7.42.30 need to be updated with the current design for the culvert expansion area and Dullenbach portals.

R645-301-742.120, The MRP should be updated to correct the following inaccuracies and incomplete information in the ASCA descriptions in Section 7.42.21: 1) the ASCAs are not shown on Plates 2.3 or 7.5 as indicated; 2) for ASCA-2, Plates 7-16 and 7-5C do not appear to be relevant to the ASCA description as indicated; and 3) the size of the disturbed area associated with ASCAs 9 and 10 is not described.

RECOMMENDATIONS:

The Crandall Canyon Mine MRP contains commitments to use BTCA to prevent additional contributions of suspended solids to stream flows outside of the permit area. However, the midterm review should not be completed until the Permittee provides all required updates to the MRP to address deficiencies.