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TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

April 27, 2011

TO: Internal File

THRU: Steve Christensen, Team Lead *SKC*

FROM: Priscilla Burton, CPSSc, Environmental Scientist III *pub by SQS*

RE: Phase III Bond Release – Old Coarse Refuse Road Reclamation, Sunnyside Cogeneration Associates, Sunnyside Refuse/Slurry, Permit # C/007/0035, Task ID # 3718

SUMMARY:

I was not assigned to review this task, however the final bond release of the Old Coarse Refuse Road ends a long story that began in 1993, and provides a Utah success story for the reclamation of acid forming coal mine waste. Hence, I have presented the history of this site for the record.

The Old Coarse Refuse Road (OCRR) is located on surface owned by SCA. The OCRR is located at an elevation of 6,400 ft on the south facing slope of the ridge which borders the south side of excess spoil disposal area #1. Surface Facilities Plate 5-1 shows Roads R and B providing access to the OCCR from the west and east, respectively. Plates 10-A through 10-C illustrate the road reclamation.

The OCCR was the subject of NOV 93-32-5-2 No. 1 of 2 mailed on September 22, 1993 which was written in response to a Ten Day Notice (TDN X93 020 370 003 TV1) issued 9/13/1003 (found in the electronic files attached to Hugh Klein's inspection Report dated 9/15/1993). According to a letter from Sunnyside Cogeneration Associates dated October 20, 1993, the chemical quality of the refuse is provided in Appendix 6-3, "Special Coarse Refuse Use Study Report." This Appendix does not include acid/base accounting analysis. I could not find electronic copies of any Division laboratory analysis or OSM analysis specific to the NOV (although OSM referenced sampling of the area on 8/13/1993). However, Appendix 6-5 includes the results of sampling from the West Slurry Cell and the Coarse Refuse Pile. The ten samples analyzed had very little neutralizing capacity as a group. Six of the ten were very likely to become acid forming (based upon the total sulfur content). In a memo dated September 6, 1994, Henry Sauer states, "an acidic, metal enriched precipitate layer has formed at the base of the refuse/lithological interface at the base of the coal refuse pile" and the Old Coal Refuse

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Haulroad, and the East Embankment of the East Slurry Cell. (Similar mention is made in a memo letter date May 19, 1994.)

Removal of refuse from the OCRR was approved on July 6, 1994. Grading of the remainder of the refuse into the cut on the road was completed as described in MRP Section 10.4.1 and 10.5.1, with refuse materials placed on the inside cut of the road, in one foot lifts, and covered with four feet of borrow material* obtained from within the permit area. The out-slopes of the road were first sampled (MRP Appendix 2-10) and then covered with six inches of borrow material, and treated with 1 T/ac mulch (MRP Section 10.8.1). Due to elevated selenium and high sodium adsorption ratios in 3 of the 5 samples, greater cover on the outslopes was requested by the Division (Henry Sauer memo dated 10/26/1994 and outgoing letter dated 9/16/1994). In fact, the record indicates that one foot of soil was placed over the outslopes (letter from SCA dated 8/22/1994. Burning coal mine waste on the road was referred to in the latter document and made the situation more immediate (letter from the Division 8/15/1994).

*[The borrow area was graded to a 3h:1v slope and seeded with an interim mix.]

Fertilizer was applied (16-16-8) at a rate of 210 lbs/ac (MRP Section 10.8.1) just prior to broadcast seeding with the Atriplex/grass seed mix (found at the end of Appendix 3-3). Finally, the slope was again mulched with 2 T/ac wood fiber hydromulch or 1.5 T straw mulch /ac. (Steep sections (1h:1v) were treated with erosion control matting. Phase I portion of the bond (60%) was released for the 5.35 acre site in 1994.

Quantitative analysis of the OCRR vegetation was compared with the adjacent atriplex/grass reference area in September 2006 and in August 2007 (see Annual Reports). A bond release inspection to the site on April 26, 2011 confirms that the reclaimed site has greater diversity than the reference area. The reference area is dominated by grass species, whereas on the reclaimed area a variety of shrubs predominated. Cheat grass is evident and plays an important role in erosion control on steeper slopes.

Sheet erosion on steeper slopes is evidenced by accumulations of soil against silt fences (approximately 1 foot deep) and exposed shrub roots. However vegetation has established and total living cover exceeds that of the reference area. Soil sample locations shown on Plate 2-1 with elevated SAR and/or selenium values recorded in App. 2-10 could not be distinguished from their surroundings by the vegetation.

The silt fence will be removed, prior to Phase III bond release. In the future, similar sites should use a berm/ditch at the base of the reclamation area, rather than a silt fence, so that sediments will be captured, but over time the ditch will fill in and become vegetated and the boundary will be blurred.