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TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

June 11, 2009

TO: Internal File

THRU: Jim Smith, Hydrologist, Team Lead and Permit Supervisor JS 06/17/09

FROM: Priscilla Burton, CPSSc, Environmental Scientist III PWB by SQS

RE: 2008 Midterm Review, PacifiCorp, Deer Creek Mine, C0150018, Task No. 3267

SUMMARY:

The Deer Creek permit was last issued January 19, 2007 and will expire in January 2012. A commitment to conduct substitute topsoil sampling once within each permit term is found in Section R645-301-233 of the MRP (Vol. 2, Part 4). The results of soil sampling must be provided to the Division prior to permit renewal in January 2012. This commitment has been added to the annual report review form as a result of this mid-term review.

Operational sampling taken of the waste rock upon completion of each (2) foot lift is described in the MRP, with lift completion to be identified in the quarterly engineering report. Upon further review, the 2008 4th Quarter inspection report was revised to indicate that the upper northern cell 1 was at 79% of capacity which is 468,215 cu yd. Grab samples of the waste rock were taken as described in Vol. 10, Chap VII, p. 7-4.

Administrative deficiencies previously itemized for the Trail Mountain mid-term review (Task 2878) also pertain to the Deer Creek mine, where PacifiCorp is the Permittee.

TECHNICAL ANALYSIS:

OPERATION PLAN

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR 817.22; R645-301-230.

Analysis:

Sampling of substitute topsoil in 2002 (reviewed as Task 2748) determined that the quality of the substitute soil has been degraded by road salt and has high EC and SAR values.

The Permittee believes that the sodium within the proposed substitute topsoil will either be leached out or can be amended during reclamation to provide a suitable substitute topsoil medium. With this in mind, prior to the next permit renewal in January 2012, an individual, qualified to conduct soil sampling, will undertake the sampling described on page 2-3, Section R645-301-233 (Vol. 2, Part 4) once within each permit term until such time as the soils are found acceptable for substitute topsoil use. This commitment has been added to the annual report review form as a result of this mid-term review.

Findings:

The Permittee is in compliance with the Utah Coal Rules. Soil sampling as described in the MRP Vol. 2, Part 4, Section R645-301-233 must be provided to the Division prior to permit renewal in January 2012.

RECLAMATION PLAN

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR 817.22; R645-301-240.

Analysis:

Redistribution

Reclamation will involve three disturbed areas: Deer Creek Canyon, Deer Canyon, and Elk Canyon. According to the backfilling and grading plan in Section R645-301-553 of the application, reclamation will begin at the uppermost parts of the disturbed areas and will proceed down the canyons. Various stages of the process will be occurring simultaneously. Substitute

topsoil will be excavated from the existing undisturbed drainage corridor. Substitute topsoil will be placed as shown on drawing DS-1816-D in Appendix R645-301-500C.

The MRP indicates that during reclamation, soils will be contemporaneously sampled for pH and SAR to ensure that the final graded surface is suitable (MRP, Section R645-301-233). This commitment has been added to the annual report commitment form.

Soil Nutrients and Amendments

Sampling conducted in 2002 suggests that the material in the drainage between stations 7+00 to 13+00 and from 27+00 to 31+00 is unsuitable for use as substitute topsoil due to EC and SAR and Boron values (R645-301-200 Appendix A). The biology chapter of the application says fertilizer will be applied at the rate of 40 pounds per acre of ammonium nitrate and 35 pounds per acre of triple superphosphate. Based upon the recent soil sampling information, the Division believes a better course would be to apply superphosphate (rather than treble superphosphate) since it contains approximately 50% gypsum. The value of the gypsum application would be to displace sodium from the profile. Therefore, the reclamation plan described in Section R645-301-553 of the MRP should not be instituted, unless further analyses indicates that the sodium is being leached from the profile over time or that a amendment will be used to improve the SAR value of the cover material. Section R645-301-233 in Part 4 Vol. 2 of the MRP states that a professional, qualified in soil science will formulate the soil amendment and fertilizer plan.

In addition to the fertilizer, the applicant commits to apply one ton per acre of certified noxious weed free hay, and the hay and fertilizer will be incorporated into the soil in the gouging process. This should help to increase the amount of organic matter and the fertility and structure of the substitute topsoil.

Refuse Pile Reclamation

Refuse that is cut during grading will be used as fill along cut banks and highwalls. Any acid-forming or toxic [sodic] materials will be covered with four feet of non-acid and/or nontoxic material (pp 2-3, 5-9 and 5-10 of the submittal). October 2002 sites 1 and 2 located in Elk Canyon were sampled to a depth of approximately 15 ft, with two composite samples taken from each location. These samples indicate that the waste at the 12 – 16 ft depth increment is not acid or toxic forming. This information along with the vegetation growing on the waste pile indicate that the four feet of cover may not be necessary in this location.

October 2002 samples 5 and 6 were on the Deer Creek refuse pile. Sites 5 and 7 were sampled to a depth of 16 feet. The SAR value becomes extreme in the four foot increment that will be exposed during final reclamation. This material must be covered with four feet of cover.

Findings:

The Permittee is in compliance with the Utah Coal Rules. Reclamation monitoring commitments found in Section R645-301-233 have been added to the annual report form as a result of this mid-term review.

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:

General

Acid- and Toxic-Forming Materials and Underground Development Waste

Operational sampling for acid and toxic forming materials is found in Vol. 10, Chap VII, p. 7-4, as follows: Grab samples to the depth of the lift will be taken upon completion of each (2) foot lift. Lift completion will be identified in the quarterly engineering report. Two grab samples will be taken/acre/lift. Analytical parameters are described as pH texture, EC, SAR, water extractable selenium, water extractable boron and color.

Reclamation sampling is also described when the elevation is within four feet of the final elevation at the rate of two samples per acre per lift, with additional sampling where indicated. Reclamation parameters are more extensive and are described as follows: texture, EC, pH, SAR, water extractable B, water extractable Se, rock fragments (%), CaCO3 (%), sulfur (non-sulfate, pyretic and organic) %, saturation%, Ca, Mg, and Na (all in meq/L) , Fe, Zn, SO4, Mo (all in mg/L), rock texture.

The 2007 annual report indicates that 17,037.9 cu yds of waste was hauled to the Deer Creek Waste Rock site (MSHA pile 1211-UT-09-00121-02) in 2007 and that Cell 1 holds 91% of its design capacity (460,000 cu yds). Cell 1 began the year at an elevation of 6,359.00 ft. and at the end of the year, the center of the active lift was 6359.67 ft. The final elevation of Cell 2 is 6,369 ft. Cell 2 began the year at 6,329.25 and ended the year at 6,328.62 ft. (a decline), but was reported to be at 98% of its capacity in the fourth quarter. Upon further review, the 2008 4th Quarter inspection report was revised to indicate that the upper northern cell 1 was at 79% of capacity which is 468,215 cu yd. Grab samples of the waste rock were taken as described in Vol. 10, Chap VII, p. 7-4.

Findings:

The information provided meets the requirements of the R645 Coal Rules and the MRP.

RECOMMENDATIONS:

The Permittee is reminded of the commitments to provide the results of soil sampling of the substitute topsoil prior to permit renewal in 2012 and further information on the waste rock site is requested. Administrative deficiencies previously itemized for the Trail Mountain mid-term review (Task 2878) also pertain to the Deer Creek mine.

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