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April 16 , 2001

TO: [redacted]

THRU: Susan M. White, Project Team Lead (initialize) SMW

FROM: Priscilla B. Burton, Soils Reclamation Specialist (initialize) PB

RE: Upper Pad Reclamation Appendix 14, Energy West Mining, Des Bee Dove Mine, [redacted] AM01A

SUMMARY:

This amendment covers the reclamation of 3.85 acres of the Little Dove/Beehive pad, the substation and water storage area and the access road down to the Desert pad. Approximately 20,500 cubic yards of material will be redistributed against the cut slopes. The area is pre-SMCRA. The MRP, Volume 2 indicates that the top eighteen inches of soil from the outslope of the pad will be utilized as topsoil. The salvage and storage of substitute topsoil is not included in this submittal.

This amendment proposes to use "suitable valley fill" material from the on-going excavation of the coal mine waste beneath the storage yard. Thus far, the material that has been sampled has not been suitable for use in the top four feet due to its texture (sand), organic carbon content (70 – 90%) and elevated SAR values. This material could, however, be buried in the fill.

TECHNICAL ANALYSIS:

ENVIRONMENTAL RESOURCE INFORMATION

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

SOILS RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.21; 30 CFR 817.22; 30 CFR 817.200(c); 30 CFR 823; R645-301-220; R645-301-411.

Analysis:

Elevation is 7,800 feet on a south to southeast exposure and slopes of 1 ½ H:1V to 2H:1V. The plant community is Utah juniper and pinyon pine. Plants within this community include Salina wildrye, western wheatgrass, and Indian ricegrass.

Soils have been described in the MRP as either

- Typic Ustochrepts (50%) which are characterized by a 35 cm thick (13 inches) sandy loam surface layer with 25% coarse fragments. Underlying this layer is a stony loam layer 100 cm thick (39 inches) with up to 50% coarse fragments.

or

- Lithic Ustorthents (25%) which are characterized by rock within 50 cm or 19 inches.

Also present are small areas of Mollisols on the north and east facing slopes. In general, Mollisols are deep, well drained, with a well developed A horizon. See the General Soil Map of the Permit Area, Drawing #CE-10502-DS.

In this amendment, Dr. Southard, Soil Scientist, Utah State University is attributed with classifying the soils in the vicinity of the Des-Bee-Dove mine area as $\frac{\text{I-E-R}}{\text{E}}$ which is the symbol for Typic Ustochrepts-Lithic Ustorthents-Rock Outcrop Loamy-Skeletal, Shallow 40-60% Slopes. This designation comes from the SCS Order III soil survey which is printed in Volume 1, Part 2 of the MRP.

In section 220 of this submittal, a statement from the MRP is repeated "Nowhere in the vicinity is there a source of material...." and attributed to Dr. Southard. Several conclusions are are also re-stated and attributed to Dr. Southard, "1. Basically, no topsoil exists...to warrant stockpiling (based on undisturbed adjacent areas)." (See Volume 1, Part 2 of the approved MRP).

The Division objects to the repetition of this information for several reasons:

1. The first statement was found within Volume 1, Part 2 of the MRP (page 2-170), but it was not attributed to Dr. Southard.

2. None of the conclusions attributed to Dr. Southard and itemized on page 2 of Section 220 of the submittal could be found within the MRP.

3. Furthermore, the mine operation has cultivated suitable growth material which should be salvaged and utilized.

The Division would prefer that this submittal deal positively with site specific information gained from the soil sampling in the year 2001. A cursory reference could be made to the location of Des Bee Dove soils information within the MRP, but there is no need to repeat the information out of context as has been done on pages 2 & 3 of the submittal. Just dive right into the discussion of recent soil sampling information (page 4 of the submittal).

Findings:

Information in the proposed amendment is not considered adequate to meet the requirement of this section. Prior to approval, the permittee must provide the following in accordance with:

R645-301-2222.200, Please remove from the submittal the repetition of general soils information and inaccurate generalized statements (pages 2 & 3) and concentrate on soils information gained by recent sampling.

CLIMATOLOGICAL RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.18; R645-301-724.

Analysis:

The average annual precipitation is 6 – 8 inches (page 2-153, Volume 1).

Findings:

The requirements of this section of the regulations are considered adequate.

SOILS RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.21; 30 CFR 817.22; 30 CFR 817.200(c); 30 CFR 823; R645-301-220; R645-301-411.

Analysis:

The approved MRP recognizes the importance of the top eighteen inches of soil from the outslope of the Little Dove/Beehive pad as substitute topsoil. Sampling of this substitute topsoil was conducted in March of 2001. No field notes are available. The site is represented by sample SS8 in Table 3 and on Plate CS1814D. The soil is a loam or sandy loam, with a near neutral pH, saturation of approximately 30%, Electrical Conductivity less than 1.0 and SAR less than 1.0.

Appendix A contains a data file for the soil analysis results (samples taken in 2001). This data file was created by the Permittee. Appendix A does not contain the original laboratory reports or field sampling information. Attaching to this appendix a list of the analytical procedures used would greatly enhance understanding of the numbers. For instance, there is a column for the Exchangeable Sodium and Available Sodium Percent. With the information provided, the Division is at a loss to determine the Exchangeable Sodium Percentage. Usually, Exchangeable Sodium Percentage (ESP) is calculated as a percentage of the cation exchange capacity[1]. In this case, the total cation exchange capacity was not reported. Exchangeable Sodium is known and Soluble Sodium is reported. It is unclear how the Available Sodium Percentage has been calculated. It is also unclear what extractant (water? Ammonium acetate?) was used to extract the cations.

The best characterization of a soil can be had by determining the Cation Exchange Capacity in meq/L, the Exchangeable Sodium in meq/L, the saturation extract Soluble Sodium in meq/L, and then calculating the Exchangeable Sodium Percentage.

As mentioned in the submittal, seeding of this outslope has been very successful and the resulting growth medium is among the best in the permit area due to its microbial activity, nutrient status and organic matter. If 18 inches were salvaged from this area (150 feet x 150 feet), approximately 1,250 cubic yards of substitute topsoil could be gained.

The Little Dove/Beehive area is 2.13 acres. If the entire 2.13 acres were covered with six inches of substitute topsoil, 1,718 cubic yards would be required.

Other useful soil within the area to be reclaimed is represented by SS9. This soil is also equivalent to the undisturbed native soils in chemistry (Table 3). This soil is not shown as being disturbed during the reclamation, but inevitably will be disturbed when the access road is reclaimed. Therefore, plans must be made for salvage of this topsoil as well.

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[1] United States Salinity Laboratory Staff. 1954. Diagnosis and Improvement of Saline and Alkali Soils. USDA Handbook #60. Method 20a.

The Permittee initially wanted to utilize the bermed soil material at sample location SS7 on Plate SC1814D, however this material has a higher sand content and much higher EC and SAR values than the undisturbed soil and the fill slopes (see Table 3, page 8 of the submittal). The Permittee was going to resample the bermed soil at a different location and at deeper intervals. Until the results of that sampling are known, the Division requests that this bermed material is buried within the fill.

Unfortunately, the Little Dove/Beehive pad soils were not sampled. If they are to become the substitute topsoil for the site, then they must be sampled.

Findings:

Information provided in the proposed amendment is not considered adequate to meet the requirement of this section. Prior to approval, the Permittee must provide the following in accordance with:

R645-301-233, Salvage the top eighteen inches of soil from the outslope of the Little Dove/Beehive pad for use as substitute topsoil. Likewise, salvage the top 18 inches of soil from the slope between soil sample location SS8 and SS9 before disturbance for use as substitute topsoil. Or demonstrate that there is other suitable material within the Little Dove/Beehive pad.

R645-301-233.300, List in Appendix A the laboratory and analytical procedures used during analysis of soils and provide pertinent field notes taken during sampling.

R645-301-233.200, Bury the bermed material represented by soil sample SS7 within the fill.

RECLAMATION PLAN

BACKFILLING AND GRADING

Regulatory Reference: 30 CFR Sec. 785.15, 817.102, 817.107; R645-301-234, -301-537, -301-552, -301-553, -302-230, -302-231, -302-232, -302-233.

Analysis:

Approximately 20,500 cubic yards of fill will be required for the entire 3.85 acre site. A trackhoe will transfer the soil from the outslope to the pad and a dozer will be used to move the material against the cut slopes.

Berms will be utilized as fill.

In case of a shortfall, this amendment proposes the use of "suitable valley fill" material from the on-going excavation of the coal mine waste beneath the storage yard (Section 200, page 15 and Section 500, page 13 of the submittal). The valley fill was sampled in 2000 and the results of the sampling are included in Appendix A, Soil Analysis 2000. Sample locations are shown on a figure included in the appendix. The main limiting factors of this valley fill are its texture (sand) and organic carbon content (70 – 80%), and elevated SAR values. This material is not suitable for use in the top four feet of the fill.

Findings:

Information provided in the proposed amendment is not considered adequate to meet the requirement of this section. Prior to approval, the Permittee must provide the following in accordance with:

R645-301-234, Include salvage and redistribution of the top eighteen inches of substitute topsoil from the outslope (represented by soil samples SS8 and SS9) in the backfilling plan.

R645-301-536.300 and 553.252, Valley fill material must be buried four feet deep within the backfill.

TOPSOIL AND SUBSOIL

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

Analysis:

Redistribution

	2.13 acres Little Dove/Beehive	15,000 cy fill
	0.75 acres substation and access road	2,500 cy fill
	0.97 acres access road	3,000 cy fill
TOTAL	3.85 acres	20,500 cy fill

Topsoil substitute replacement depth is not mentioned in this submittal. For a cover of 6 inches over the entire site, 3,105 cubic yards would be required. No topsoil has been identified for salvage during the reclamation.

Findings:

Information provided in the proposed amendment is not considered adequate to meet the requirement of this section. Prior to approval, the Permittee must provide the following in accordance with:

R645-301-233, Identify substitute topsoil for salvage during reclamation and outline temporary storage and replacement practices.

STABILIZATION OF SURFACE AREAS

Regulatory Reference: 30 CFR Sec. 817.95; R645-301-244.

Analysis:

Slopes will be 1 ½ H: 1V or 2H:1V. Large boulders will be used as riprap. The site will be left extremely rough by deep gouging. One ton per acre of certified weed free alfalfa hay will be incorporated into the soil with pocking. A soil tackifier will be applied according to manufacturers specifications.

If hydroseeding is used, 1500 lbs/acre of wood fiber mulch will be added to the hydroseeder for cover and protection.

The area will be monitored annually for rills and gullies.

Findings:

The information provided is adequate.

RECOMMENDATION:

No provisions have been made in this submittal to ensure that the best available material within the permit area are utilized as substitute topsoil. The deficiencies outlined in this analysis are aimed at identifying and salvaging the best available material.

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