



State of Utah

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DIVISION OF OIL, GAS AND MINING

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TO: Sue Linner, Permit Supervisor
FROM: James Leatherwood, Reclamation Soils Specialist
Re: Draft Technical Analysis, Banning Loadout, Soldier Creek
Coal Company, PRO/007/034, Folder No. 2, Carbon County, Utah

UMC 817.21 - .25 Topsoil: Management - JSL

Existing Environment and Applicant's Proposal

The soil at the Banning Loadout facility is primarily alluvium, derived from sandstone and shale. Slopes are one to three percent. The vegetation is mainly greasewood, shadscale, rabbitbrush, galleta, blue gramma, and indian ricegrass.

A torric moisture with a mesic temperature regime prevail. Average annual precipitation is between six and eight inches. The mean annual air temperature is 9° to 10° C with the average annual soil temperature higher than 8° C but less than 15° C. The topography of the area is concave-convex or single in shape. The aspect is generally south. The capability subclass is VIIIe nonirrigated.

Under native vegetation the erosion associated with the soil is moderate. The hazard of soil wind erosion is moderate. This soil is generally well drained and ranges in texture from a loam to silt loam. Permeability is moderate. The available water capacity ranges from 7.5 to 10.5 inches. Effective rooting depth is 60 inches or more. The soil is strongly alkaline and is in the Alkali Flat range site.

The only soil identified in the Banning Loadout area is the Ravola series. Ravola series is taxonomically classified as a fine-silty, mesic Typic Torrifuvent. Topsoil pH ranges from 8.3 to 9.1 while the substratum pH ranges from 8.4 to 9.7. Carbonate equivalent is 5 to 25 percent. The electrical conductivity ranges from 0.9 to 25 mmhos/cm, with the mean topsoil electrical conductivity of 5.06 mmho/cm and the subsoil mean electrical conductivity of 10.76 mmho/an. Of the three soil sample sites, one location had a low sodium adsorption ratio (SAR) of 1.4 to 3.7 while the other sample sites are strongly alkaline with the SAR ranging from 37 to 54, median of 51.3. See Table 6.2-1, page 6-6 for further details.

The SAR values are considered high and will be an important factor in revegetation efforts. Physical deterioration of the soil structure caused by high amounts of sodium should be negated by the high salts in the soil medium. The percent clay levels range from 18 to 27 percent. No slickspots (sodium dispersed soils) were evident in the Banning Loadout Facility area.

The native soil has a moderate coarse subangular blocky structure down to 23 inches of the profile. The soil structure is massive from 23 to 60 inches. Roots were noted down to 60 inches along coarse pores. The disturbed soil is contiguous with the undisturbed Ravola series. The Ravola series is ranked fair for revegetation under controlled conditions. A test plot program is being initiated at the Loadout facility to determine the correct agronomic procedure and ensure success of the proposed reclamation plan.

Removal

The Banning Loadout was disturbed prior to the promulgation of the regulations governing coal loadout facilities. The site is small in extent and covers only one soil series. The existing disturbance has destroyed the pre-existing vegetation and degraded the topsoil through compaction and contamination of coal fines. The in-situ soil material will be used as a substitute topsoil material. The in-situ soil material physio-chemical analysis (Table 6.2-1 & 6.2-2) indicates the soil has a high SAR and is highly saline. The data indicates that the in-situ soil material is comparative to the native Ravola series. As described in section 6.3, a test plot will be utilized to insure reclamability with the in-situ soil material. The test plot will be executed in the same manner as proposed in the reclamation plan, section 3.5.

Compliance

The applicant's proposal adequately addresses the requirements of the section.

Stipulations

None.

Storage

The site was historically disturbed. No topsoil materials were salvaged at the time of disturbance. The in-situ soil material will be utilized as a substitute topsoil, contingent upon the positive outcome of the proposed test plots.

Compliance

The applicant's proposal adequately addresses the requirements of the section.

Stipulations

None.

Redistribution

The applicant provides a plan which details the redistribution of the soil in section 3.5 and 6.3 of the Permit Application Package (PAP). The existing soils will be backfilled and graded to approximate the original predisturbance conditions. Soil compaction will be reduced by ripping the soil to a 18 inch depth. The soil surface will be covered with 2000 pounds per acre of alfalfa or native hay which will then be crimped-disced into the soil.

Compliance

The applicant's proposal adequately addresses the requirements of this section.

Stipulations

None.

Nutrients and Amendments

The applicant provides a nutrient management plan in section 3.5 and 3.6 of the PAP. Physio-chemical data is presented in Table 6.2-1 and 6.2-2. The applicant commits to sample the soil at the time of redistribution. The present soil analysis suggest that 40 pounds of sulfur coated urea (45-0-0) will be required as a fertilizer amendment.

Compliance

The applicant's proposal adequately addresses the requirements of this section.

Stipulations

None.

UMC 817.48 Hydrologic Balance: Acid-Forming and Toxic-Forming Materials - JSL

Existing Environment and Applicant's Proposal

Any coal processing waste produced by screening or processing will be blended into raw coal, transported to Soldier Canyon Mine approved waste disposal site, or returned to the underground workings. The primary potential for acid- or toxic-forming materials (ATFM) would be generated from the coal. A sampling and testing plan to determine any ATFM is discussed in section 2.5 and 5.3.2 of the PAP.

Compliance

The applicant's proposal adequately addresses the requirements of this section.

Stipulations

None.

UMC 817.71 Disposal of Excess Spoil and Underground Development Waste: General Requirements - JSL

UMC 817.72 Disposal of Excess Spoil and Underground Development Waste: Valley fills - JSL

UMC 817.73 Disposal of Excess Spoil and Underground Development Waste: Head-of-Hollow Fills - JSL

UMC 817.74 Disposal of Excess Spoil and Underground Development Waste: Durable Rock Fills - JSL

Existing Environment and Applicant's Proposal

The requirements of this section have been addressed in sections 2.4 and 4.2 of the PAP. All waste material generated at the proposed facility will be blended into the raw coal, transported to Soldier Canyon Mine approved waste rock disposal site, or returned to the underground workings.

Compliance

The applicant's proposal adequately addresses the requirements of these sections.

Stipulations

None.

UMC 817.81 Coal Processing Waste Banks: General Requirements - JSL
UMC 817.82 Coal Processing Waste Banks: Site Inspection - JSL
UMC 817.83 Coal Processing Waste Banks: Water Control Measures
- JSL
UMC 817.85 Coal Processing Waste Banks: Construction Requirements
- JSL
UMC 817.86 Coal Processing Waste Banks: Burning - JSL
UMC 817.87 Coal Processing Waste Banks: Burned Waste Utilization
- JSL
UMC 817.88 Coal Processing Waste Banks: Return to Underground
Workings - JSL
UMC 817.91 Coal Processing Waste: Damns and Embankments: General
Requirements - JSL
UMC 817.92 Coal Processing Waste: Damns and Embankments: Site
Preparation - JSL
UMC 817.93 Coal Processing Waste: Damns and Embankments: Design
and Construction - JSL

Existing Environment and Applicant's Proposal

Plans for the disposal of the excess spoil and development waste can be found in sections 2.4 and 4.7 of the PAP. The applicant commits to blend all waste material into the raw coal, transport to the approved Soldier Canyon Mine waste rock facility, or if the waste meets MSHA's and other agency requirements, will be returned to the underground workings.

Compliance

The applicant's proposal adequately addresses the requirements of these sections.

Stipulations

None.

UMC 817.89 Disposal of Non-Coal Waste - JSL

Existing Environment and Applicant's Proposal

Plans for the disposal of non-coal waste is found in part 2.4 of the PAP. All garbage and scrape non-coal waste will be hauled off-site by a private contractor. Oil and grease, liquid waste, hazardous wastes and other such materials shall be disposed of in accordance with local, state, and federal regulations. All salvagable materials will be sold.

Compliance

The applicant's proposal adequately addresses the requirements of this section.

Stipulation

None.

UMC 817.101 Backfilling and Grading: General Requirements - JSL

Existing Environment and Applicant's Proposal

Backfilling and grading plans can be found in sections 3.3 and 4.2 of the PAP. The final topography map and cross-sections are presented on exhibit 3.3-1 and 4.2-1. The site will be reconstructed on the contour to achieve stability, prevent slides and other erosional damage. The site is relatively flat with slopes of moderate grade. Stability will be achieved without extensive backfilling. The proposed landform configuration will conform to the existing drainage pattern and will approximate the original contour.

Compliance

The applicant's proposal adequately addresses the requirements of this section.

Stipulations

None.

UMC 817.103 Backfilling and Grading: Covering Coal and Acid- or Toxic-Forming Materials - JSL

Existing Environment and Applicant's Proposal

The applicant has addressed this regulation in sections 3.2 and 4.2 of the PAP. The coal waste covering the soil will be scraped and blended into the raw coal product. This process will continue until all of the area is devoid of the surface layer coal. Any minimal coal-soil mixtures will be removed and buried. Refer to the discussion under UMC 817.101 for further discussion.

Compliance

The applicant's proposal adequately addresses the requirements of this section.

Stipulations

None.

UMC 817.106 Regrading or Stabilizing Rills and Gullies - JSL

Existing Environment and Applicant's Proposal

The erosion hazard and runoff associated with the soils at the Banning Loadout facility are rated moderate and medium, respectively. The applicant has committed in section 3.3 to fill, grade or otherwise stabilize and reseed any rills and gullies deeper than nine inches.

Compliance

The applicant's proposal adequately addresses the requirements of this section.

Stipulations

None.

UMC 822 Alluvial Valley Floors - JSL

Existing Environment and Applicant's Proposal

Information concerning alluvial valley floors has been addressed in section 6.5 of the PAP. The permit area is located in undeveloped rangeland derived mainly from manco shale. This area consist primarily of alkali soils with non-agriculturally beneficial plant species.

Compliance

The applicant's proposal adequately addresses the requirements of this section.

Stipulations

None.

UMC 823 Prime Farmlands - JSL

Existing Environment and Applicant's Proposal

Discussion referring to prime farmland can be found under sections 2.6, 3.1 and 6.4 of the PAP. The soil mapping unit TDA (Ravola) is in the aridic or torric moisture regime and there is no irrigation water available for agriculture activities. The Soil Conservation Service has determined that the proposed loadout area is not Prime Farmland.

Compliance

The applicant's proposal adequately addresses the requirements of this section.

Stipulation

None.