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July 15, 1981

Mr. Dave Chenoweth
Beaver Creek Coal Company
Atlantic Richfield Company
1860 North Lincoln Street
Denver, Colorado 80217

RE: Huntington #4
Gordon Creek #2
Beaver Creek Coal Co.
ACT/015/004--Emery
ACT/007/016--Carbon

Dear Mr. Chenoweth:

The Division understands that on May 20, 1981, Beaver Creek Coal Company requested OSM to evaluate the vegetation information submitted in the permanent program mine applications. An Apparent Competeness Review (ACR) was conducted on the vegetation data for these mines. Following is a consolidated review from both OSM and the Division. The areas cited below may require some additional field work as discussed in our meeting with you on July 7, 1981.

1. Reference Areas

At both mines, vegetation sampling was conducted in both reference areas and affected area vegetation communities. However, since the affected area is previously disturbed at both minesites, sampling is not required in affected areas, and similarity tests are not needed. A minimum of two acres per vegetation community is generally recommended as being adequate to provide revegetation success criteria. The reference area should be sampled for cover (by species) and woody plant density. Production can be represented either from sampling or from Soil Conservation Service range site information for the specific range sites concerned. An estimate of range condition based on production is needed. No sampling adequacy is required from production sampling since statistical comparisons are not needed. Sample adequacy for cover and shrub density should be computed using a two-tailed t-value at 80 percent confidence for shrub-dominated communities, and 90 percent for non-shrublands. For setting up reference areas only, a .2d value used in the Snedecor and Cochran (1967) formula is sufficient for sample adequacy.

Vegetation communities on south-facing slopes in the area of the Gordon Creek #2 mine are oakbrush and sagebrush/grassland, while Douglas fir and aspen are on the north-facing slopes. A reference area should be established on a south-facing slope containing oakbrush and sagebrush.

Beaver Creek Coal Company should understand that reference areas must be resampled at the time of bond release. During bond release sampling, production (collected on the site), cover, and shrub density must meet sample adequacy at a .1d-value and 80 percent confidence (two-tailed t) for shrublands and 90 percent for non-shrublands unless the area is to be developed for fish and wildlife management or forestland (UMC 817.116(b)(3)(iv). Most important, reference areas should be chosen as a representative and reasonable standard to be used in measuring success of reclamation at the sites.

2. Sample Adequacy

Sample adequacy for cover and shrub density was not shown for the pinyon-juniper community at Huntington #4. Sample adequacy for cover in the oak-shrubland community at Gordon Creek #2 did not include the low shrub and herbaceous component of the community--only canopy cover was used.

In computing cover sample adequacy, cover values for all strata beneath the tree strata should be combined and sampling adequacy determined.

Please note that a maximum of 40 samples per vegetation type should be considered adequate.

3. Cover Sampling

Page 9.8 of the Huntington Canyon #4 mine plan states that the cover for the ground layer stratum was sampled by the method outlined by Daubenmire. An estimation of actual vegetative cover is required, rather than a cover class system represented by such large classes. Cover collected using the Daubenmire method has an accuracy which is no greater than the intervals between the midpoints of each cover class, and can provide a grossly inaccurate estimation of the sample mean and variance. Interspaces between leaves and branches within the perimeter of the canopy area of each plant should be considered when collecting cover data, so that cover is not overestimated.

4. Maps

Both vegetation maps for Huntington #4 and Gordon Creek #2 need to be revised to accurately depict existing disturbance, vegetation communities and revised reference areas. Reclamation maps should depict the proposed vegetation communities as being in accord with the postmining land-use.

5. Revegetation

On page 3-33 of the Huntington Canyon #4 Mine Plan (Section 3.4.5) it is stated that "diverse, effective and permanent vegetation cover" will be established "which will be capable of supporting the uses which the land was capable of supporting before mining." Premining land uses are mainly livestock grazing, wildlife habitat and dispersed recreation. The seed mixture given on the same page consists totally of grass species, which are neither diverse nor conducive to postmining land-uses other than grazing. It is, therefore, strongly suggested that the applicant provide a more complete species list, including both common and scientific names of all grasses, forbs and shrubs or trees to be used, as well as the rates of seeding and stocking.

It was a pleasure to meet Mickey Stewart and Warren Keammerer and we look forward to working with Ms. Stewart on these matters. Should you have further vegetation sampling questions, please contact Lynn Kunzler (for the Gordon Creek #2 mine) or Sue Linner (for the Huntington #4 mine) of the Division staff.

Sincerely,

MARY ANN WRIGHT
RECLAMATION BIOLOGIST

Enclosure

cc: J. Ratzloff, OSM
Lynn Kunzler, DOGM
Susan Linner, DOGM

MAW/btm