



State of Utah

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TO: File

THRU: Joe Helfrich, Permit Supervisor 

FROM: Susan M. White, Senior Reclamation Biologist 

RE: Phase III Bond Release, Mountain Coal Company, Huntington #4 Mine, ACT/015/004, Folder #3, Emery County, Utah

Summary

Mountain Coal Company submitted Application for Phase III Bond Release for the above referenced mine; date received April 2, 1996. Supplement A to the Application for Phase III Bond Release was received March 20, 1997. A bond release site inspection was conducted June 27, 1996. Mountain Coal Company completed reclamation at its Huntington Canyon No. 4 Mine in the fall of 1985, thus meeting the minimum 10 year liability period in the fall of 1995. On June 27, 1996 the reclaimed sediment pond area did not have established vegetation. The below Technical Analysis is a review of the Application and Supplement.

TECHNICAL ANALYSIS:

VEGETATION

Regulatory Reference: 30 CFR Sec. 785.18, 817.111, 817.113, 817.114, 817.116; R645-301-244, -301-353, -301-354, -301-355, -301-356, -302-280, -302-281, -302-282, -302-283, -302-284.

Analysis:

Standards for Success.

The Application for Phase III Bond Release and Supplement A presented information from vegetation sampling in 1994 and 1995. Vegetative cover, production, diversity, and shrub densities were sampled as required by the permit and Division's Vegetation Information Guidelines. Minimum samples sizes were obtained during vegetation sampling. The regulations, for areas previously disturbed by mining that were not reclaimed, are that the vegetative ground cover will be not less than the ground cover existing before redisturbance and will be adequate to control erosion and achieve the approved postmining land use. The Division's current interpretation is that continuously mined sites also apply to this standard.

R645-301-357 states that the vegetation parameters will equal or exceed the approved success standard during the growing seasons for the last two years of the responsibility period and that, in areas of less than 26 inches or less average annual precipitation, the period will be for not less than ten full years.

The Huntington No. 4 Mine was continuously mined. The site has been reseeded and has met the 10 year period of responsibility requirement. The operator has also sampled the agreed vegetation parameters for the last two years of the growing season, 1994 and 1995. The permit states (page 3-67a) that the reclamation will be considered successful if the upper and lower reclaimed areas are at least equal to or greater than the pinyon-juniper reference areas when cover, production, and shrub density are compared.

The reclaimed pumphouse and pond area disturbance is less than 1 acre in size. No reference area was established for this riparian area, instead a transect 100 feet above and 100 feet below the disturbance was used as a cover comparison area. Density of woody species will meet a technical requirement of 2000 woody species per acre along the riparian corridor.

A separate diversity success standard is proposed (page 3-67b) for the riparian and pinyon -juniper reclaimed areas. The standard for the riparian area is based on the average number of species found in the meter square quadrats and compared to the comparison area. The MacArthur index ($1/\sum p_i^2$) will be used to compare diversity to the reference area for the pinyon-juniper community. This index integrates the number of species and the degree to which frequency of occurrence was equitably distributed among those species.

Table 1: Success standard comparisons for the pinyon-juniper area at the Huntington No. 4 Mine.

	Cover (%)	Production (lbs./acre)	Density (# shrubs/acre)	Diversity ($1/\sum p_i^2$)
Reclaimed 1994	41	467	2283	9.57
Reference 1994	38	253	279	2.49
Reclaimed 1995	48	747	2325	10.46
Reference 1995	31	208	430	2.57

Table 2: Success standard comparisons for the riparian area at the Huntington No. 4 Mine.

	Cover (%)	Density (# shrubs/acre)	Diversity (# species/m ²)
Reclaimed 1994	64	3340	4.20
Reference 1994	57	2000	2.45
Reclaimed 1995	70	2352	4.80
Reference 1995	71	2000	4.30

The 1994 and 1995 cover data meets the requirements of the permit and the regulations for both the reclaimed pinyon-juniper and riparian comparison areas. Total vegetation cover in 1994 of the reclaimed pinyon-juniper areas was 41 percent and in 1995, 48 percent. The pinyon-juniper reference area had a total vegetative cover of 38 percent and 31 percent in 1994 and 1995, respectively. Vegetation cover of the reclaimed riparian area was 64 and 70 percent respectively for 1994 and 1995. The comparison area cover was 57 and 71 percent for 1994 and 1995, respectively.

The production of the reclaimed pinyon-juniper area in 1994 (467 lbs./acre) and 1995 (747 lbs./acre) was significantly greater than the total annual biomass from the associated reference area in 1994 (253 lbs./acre) and 1995 (208 lbs./acre). The permit commits to meeting the reference area standard for production only on the reclaimed pinyon-juniper and not the riparian area. The regulations do not require previously mined sites to meet a production standard. A demonstration of meeting and exceeding the undisturbed vegetative productivity is an indication of the site conditions meeting the postmining land use.

The reclaimed site woody plant density meets the requirements of the permit and the regulations. Woody species densities were greater on the reclaimed pinyon-juniper area in 1994 (2283 plants/acre) and 1995 (2325 plants/acre) than in the associated reference area in 1994 (279 plants/acre) and 1995 (430 plants/acre). The reclaimed riparian area was small enough so that all woody species could be counted, thus eliminating the need to meet a minimum sample size requirement. The reclaimed riparian area also met and exceeded the technical standard of 2000 woody plants/acre in 1994 (3340 plants/acre) and 1995 (2352 plants/acre).

The MacArthur's diversity index indicates that diversity is greater in the reclaimed pinyon-juniper for both 1994 and 1995 (9.57 and 10.46, respectively) than in the reference area for 1994 and 1995 (2.49 and 2.57, respectively). Table 2 shows that the numbers of species per meter square was also greater in the riparian area for 1994 and 1995 than the

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comparison area for the same years.

A site inspection was conducted by the Division on June 27, 1996 to assess the site for the Phase III bond release. The site appeared to be meeting the post mining land use of grazing and wildlife. While most of the site had been fenced to exclude cattle, elk use had been heavy especially on the upper area. Cattle had not been excluded from the reclaimed riparian area and the site appears in good condition.

The sediment pond was removed in the summer of 1995 and the area seeded. At the time of the June 27, 1996 site inspection seedling density appeared good. The reseeded area of sediment pond removal does not have to meet the 10 year liability period, however, it does need to meet other standards of being diverse, effective and permanent. In other words, the area should look like the rest of the site prior to release. The reclaimed pond area did not look like the surrounding area, seedlings were not considered established. Therefore, bond may not be released. Vegetation establishment in this area will again be reassessed in June of 1997.

Findings:

The vegetation on the reclaimed sediment pond area does not appear to be established and therefore the bond may not be released.

RECOMMENDATION:

Do not approve Phase III Bond Release. The sediment pond area should be reassessed in June of 1997 for vegetation establishment.