



State of Utah
 DEPARTMENT OF NATURAL RESOURCES
 DIVISION OF OIL, GAS AND MINING

1594 West North Temple, Suite 1210

PO Box 145801

Salt Lake City, Utah 84114-5801

(801) 538-5340 telephone

(801) 359-3940 fax

(801) 538-7223 TTY

www.nr.utah.gov

Michael O. Leavitt
 Governor

Robert L. Morgan
 Executive Director

Lowell P. Braxton
 Division Director

August 29, 2002

OK

TO: Internal File

THRU: *PB* Priscilla Burton, Project Lead

FROM: Paul Baker, Reclamation Biologist *PAB*

RE: Phase II Bond Release for Sowbelly Gulch, Castle Gate Holding Company, Castle Gate Mine, C/007/004-BR02A

SUMMARY:

Castle Gate Holding Company has requested Phase II bond release for the reclaimed portions of Sowbelly Gulch. The area meets the requirements for revegetation and achieving the postmining land uses of wildlife habitat and grazing.

TECHNICAL ANALYSIS:

RECLAMATION PLAN

POSTMINING LAND USES

Regulatory Reference: 30 CFR Sec. 784.15, 784.200, 785.16, 817.133; R645-301-412, -301-413, -301-414, -302-270, -302-271, -302-272, -302-273, -302-274, -302-275.

Analysis:

The postmining land uses are wildlife habitat and grazing. The area contains critical elk winter range, so grasses, particularly tall grasses, are important for the postmining vegetation. Grasses are also important for grazing.

TECHNICAL MEMO

The permittee has met the Phase II bond release requirement for land use. The site is being used as wildlife habitat, but it has not yet been grazed. Although the vegetation cover is dominated by grasses, there is a good mix of forbs and shrubs included. The utility of these species for the postmining land uses is discussed in further detail in other sections of this analysis.

Findings:

Information provided in the application is adequate to meet the requirements of this section of the regulations.

PROTECTION OF FISH, WILDLIFE, AND RELATED ENVIRONMENTAL VALUES

Regulatory Reference: 30 CFR Sec. 817.97; R645-301-333, -301-342, -301-358.

Analysis:

The mining and reclamation plan says wildlife habitat enhancement will be created by the development of micro-topographic features, such as swales and rises created during regrading; using the species in the seed mixes; creating snags and roosts where materials are available; and by making wetland areas wherever topography and hydrology lend themselves to their creation.

In Sowbelly Gulch, it was not possible to create as many habitat features as originally envisioned. Materials for roosts and snags did not become available, and there were no continually-available water sources that could be used to create wetlands. Some large rocks were intentionally placed on the surface, and much of the site was gouged which helps to enhance vegetation.

In general, the species that have become established are more desirable for wildlife forage than the species in adjacent undisturbed areas. The dominant species in surrounding undisturbed areas are Salina wild rye and sagebrush, and while sagebrush is used extensively by big game, Salina wild rye is not palatable. By contrast, the dominant species in the reclaimed area are all rated as having fair or better palatability.

Adjacent undisturbed areas have, in addition to those areas dominated by sagebrush and Salina wild rye, patches of oak, maple and conifers that provide good cover for wildlife. The reclaimed area does not have this same small tree component, but this is not critical because the reclaimed area is relatively small and narrow with good cover nearby. The reclaimed area does have areas of taller shrubs and grasses, especially rabbitbrush and basin wild rye. The Division considers that the area has been enhanced as wildlife habitat.

Findings:

The Permittee has met the minimum requirements of this regulation for Phase II bond release.

REVEGETATION

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:

Revegetation: Standards For Success

Standards

According to the mining and reclamation plan, revegetation success will be judged by comparing vegetation life forms in the reclaimed and reference areas using the Motyka index. The Motyka index is a similarity index, and the calculated similarity between the reclaimed area and the reference area must be at least 70 percent or the percent similarity calculated between samples in the reference area, whichever is less. The reclaimed area is considered to have met the diversity standard if it meets this criterion.

Other performance standards in the rules include erosion control, seasonality, and utility for the postmining land use. The species must be native to the area and capable of regeneration and succession. Some of the revegetation success standards that would normally be applied, such as production, woody plant density, and cover, are not included as success standards because the site was previously disturbed. For this same reason, the reference area used is not an undisturbed area but is a site successfully reclaimed by the Utah Abandoned Mine Land Reclamation program.

Cover, Similarity, and Diversity

The calculated similarity between the reclaimed and reference areas is 89.73 percent. This meets the success standard. In addition, the applicant presents information showing that the cover in the reclaimed area is not statistically different from the cover in the reference area and that diversity in the reclaimed area is greater than the diversity in the reference area.

The mining and reclamation plan contains baseline vegetation cover data from 1981 for two undisturbed reference areas in Sowbelly Gulch that are no longer part of the success standards. Although a comparison of cover values between the reclaimed area and these undisturbed areas is not required by the plan, the reclaimed area has more cover (47.33%) than

TECHNICAL MEMO

the Sowbelly grass-sage reference area (38.9%) and very similar cover to the Sowbelly mixed brush reference area (47.7%). Therefore, even if this was a post-law site where topsoil had been salvaged and comparison to undisturbed areas was required, the reclaimed area would meet the bond release vegetation cover requirements.

The required minimum sample sizes were 12 and 14 for the reclaimed and reference areas, and the Permittee took 80 and 40 samples in these areas, respectively.

Species Composition and Seasonality

The section of this analysis titled "Protection of Fish, Wildlife and Related Environmental Values" discusses utility of the vegetation for the wildlife habitat postmining land use. The same principles of forage palatability discussed in that section apply to the grazing land use.

During the bond release inspection on August 22, 2002, no noxious weeds were found on the site. Some noxious weeds have been found in the reclaimed area in the past, but the Permittee has worked actively to eradicate them. The rules allow continued efforts to control these weeds through the entire period of extended responsibility for successful revegetation.

Although the vegetation study included with the application for bond release shows some species that are not native to the area, cover from these species was, for the most part, minor. Except for yellow sweet clover, total cover from these species was 2.32 percent and relative cover 4.90 percent. Cover from yellow sweet clover was 7.48 percent, higher than any other species, but under the environmental conditions found at this site, yellow sweet clover should not persist. There is evidence sweet clover is dying out: the vegetation measurements were taken in 2000, but during the bond release inspection two years later, we found little or no yellow sweet clover.

The only warm season species found in either the reclaimed area or the reference area was fourwing saltbush although some of the cool season species, such as Indian ricegrass and Salina wild rye, display some warm season characteristics without actually having the C₄ metabolic pathway. There was substantially more fourwing saltbush in the reference area than the reclaimed area (6.25% compared to 0.44%), but the similarity in seasonality between the two areas was still high (89.85%) using the Motyka Index to calculate the comparison. Although the plan does not include a seasonality success standard, the Division considers this degree of similarity to be adequate.

Erosion Control

During the bond release inspection, we found no rills, gullies, or other signs of accelerated erosion. This is due to several factors including some of the reclamation practices the Permittee used. Most of the site was gouged or contour furrowed, and these roughening

techniques have been very effective in preventing runoff, erosion, and sedimentation. In addition, three of the dominant species in the reclaimed area, western wheatgrass, thickspike wheatgrass, and blueleaf aster, are rhizomatous and very effective at controlling erosion.

Findings:

The Permittee has met the minimum revegetation requirements for Phase II bond release.

RECOMMENDATIONS:

The permittee has met the revegetation, land use, and wildlife habitat reclamation requirements for Phase II bond release.