

June 11, 2003

TO: Internal File

THRU: Joe Helfrich, Team Lead

FROM: Jerriann Ernstsens, Environmental Scientist, Biology

RE: Reformat and Digitization, CO-OP Mining Company, Bear Canyon Mine, Permit C/015/025 AM03A

SUMMARY:

The Permittee submitted an electronic copy on December 3, 2002 and hard copy of the reformatted Mining and Reclamation Plan (MRP) on February 12, 2003. The Public Information Center has filed both electronic and hard formats of the Bear Canyon Mine MRP. The reformatted MRP can also be accessed at the following location:

M:\FILES\COAL\PERMITS\015\C0150025\2002\INCOMING\PLAN\12032002

The Bear Canyon Mine should be given a significant amount of credit for submitting the first electronic copy of their MRP to the Division. This innovative step forward should set a positive example for the rest of the mining community to follow. Providing the Division with an electronic format should help expedite the reviewing process. A few helpful functions include:

- Easily viewed maps
- Search (find) functions
- Hyperlinks to tables, figure, and maps.

The Permittee consolidated information from Chapters 9 and 10 in the hardcopy MRP into Chapter 3 in the electronic copy MRP (eMRP). All related vegetation and wildlife tables, figures, plates, and appendices in chapter 3 have a number "3" prefix.

One suggestion for the eMRP is to modify the internal paths leading to the main bookmark menu. Currently, the reviewer must click "go to previous page" sometimes several times to return to the main bookmark menu.

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TECHNICAL ANALYSIS:

GENERAL CONTENTS

PERMIT APPLICATION FORMAT AND CONTENTS

Regulatory Reference: 30 CFR 777.11; R645-301-120.

The following table shows the new and old appendix numbers as well as the appendix title:

NEW	OLD	TITLE
Appendix 3-A	Appendix 9-A	Vegetation analysis of reference areas
Appendix 3-B	Appendix 9-B	Miscellaneous data
<i>Not included</i>	<i>Appendix 9-C</i>	<i>Vegetation monitoring</i>
Appendix 3-C	Appendix 9-D	Shower house pad veg. reference area
Appendix 3-D	Appendix 9-E	Tank seam access road vegetation
Appendix 3-E	Appendix 9-F	Vegetation studies for the fed. lease area
Appendix 3-F	Appendix 9-G	Vegetation sampling in the wild horse “ride” area
Appendix 3-G	Appendix 9-H	Vegetation sampling in the wild horse tank seam area
<i>Appendix 3-H</i>	<i>New submittal</i>	<i>Morland vegetation study</i>
Appendix 3-I	Appendix 10-A	Fish and wildlife resource information
Appendix 3-J	Appendix 10-B	Mitigation and impact avoidance procedure, general to all
Appendix 3-K	Appendix 10-C	Vertebrate species of southeastern Utah
<i>Appendix 3-L</i>	<i>New submittal</i>	<i>Wildlife survey information</i>

Appendix 3-A contains several sections:

- Vegetation analysis of reference areas.
- Vegetation “sapling” of tank seam access road.
- Letter from USDA Soil conservation service – production evaluation.

The Permittee must correct the misused word in the title “Vegetation sapling of tank seam access road” and remove the duplicated letter in Appendix 3-B (R645-301-121.200). Appendices 3-E, G, H, and L are currently unopenable (R645-301-121.200). The hardcopy MRP states that Appendix 9-C would be incorporated after 1991 (pg. 9-10A), however, this appendix/information is not included in either the hardcopy MRP or eMRP. The Permittee must clarify the reason for the omission of *Vegetation monitoring survey* in either format (R645-301-121.200).

The following table shows the new and old table numbers as well as the table title:

NEW	OLD	TITLE
Table 3-1	Table 9.3-1	Vegetation types
Table 3-2	Table 9.2-1	Vegetation reference areas
<i>Table 3-3</i>	<i>New submittal</i>	<i>Recommended seed mix for interim reclamation</i>

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Table 3-4	Table 9.5-2	Suggested ratios of tack to fiber for hydroseeding
Table 3-5	Table 9.5-1	Revegetation schedule
Table 3-6	Table 9.5-2	Recommended seed mix for riparian-creek bottom
Table 3-7	Table 3-7	Recommended seed mix for pinyon juniper grass
Table 3-8	Table 3-8	Suggested ratios of tack to fiber

The Permittee must correct the misspelled word in the table menu (R645-301-121.200). Note, that there are two – Table 9.5-2 in the hardcopy MRP. Tables 3-3, -7, and -8 are new submittals. Table 3-4 and 3-8 are similar. The Permittee must clarify the reason for this repeated insert (R645-301-121.200).

The following table shows the new and old figure numbers as well as the figure title:

NEW	OLD	TITLE
Figure 3-1	Figure 10-1	Endangered mammalian species in relation to permit area
Figure 3-2	Figure 9-19	Correct planting procedures
Figure 3-3	Figure 9-20	Seedling storage

The following table shows the new and old plate numbers as well as the plate title:

NEW	OLD	TITLE
Plate 3-1	Plate 9-1	Vegetation map
Plate 3-2	Plate 10-1	Wildlife use area
Plate 3E-1	Plate 9F-1	Vegetation resources map for federal lease area

Findings

Information provided in the application is not considered adequate to meet the minimum Permit Application Format and Contents section of the General Contents regulations. Prior to approval, the Permittee must act in accordance with the following:

- R645-301-121.200**, The Permittee must (1) Correct misspelled and misused words (appendix and table) (2) Remove duplicated submittals (appendix and table) (3) Adjust unopenable hyperlink functions (5) Address concerns with appendix 9-C.

ENVIRONMENTAL RESOURCE INFORMATION

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

VEGETATION RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.19; R645-301-320.

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Analysis:

The Permittee provides a vegetation community-type survey conducted under the guidance of Mel Coonrod in 1983. The hardcopy MRP also provides surveys conducted by Patrick Collins for the shower house pad reference area, tank seam access road reference area, and the wildhorse ridge references area. The presentation of these surveys in the hardcopy MRP is disconnected, but somewhat provides scope, methods, equations, and results. The eMRP does not include Coonrod's methods or equations (pgs. 9-1 through 9-6). The eMRP, however, includes that the Collins' study was conducted in 1996. The Permittee must include in the eMRP the missing methods and equations used by Coonrod and Collins' (R645-301-131).

The hardcopy MRP states that aerial photographs will be taken every five years to evaluate the effects of subsidence on vegetation – as required by a lease stipulation (pg. 9-10A). The Permittee committed to incorporating the results of the evaluation in Appendix 9-C after 1991. Neither the hardcopy MRP nor eMRP include this appendix/information. The Permittee must clarify the reason for the omission of *Vegetation monitoring* from either format. (refer to R645-301-121.200 under Permit Application Format and Contents).

Currently, the eMRP section “Mohrland Vegetation” was left intentionally blank (pg. 3-8).

Findings:

R645-301-131, The Permittee must include in the eMRP the survey methods and equations as provided in the hardcopy MRP.

FISH AND WILDLIFE RESOURCE INFORMATION

Regulatory Reference: 30 CFR 784.21; R645-301-322.

Analysis:

The hardcopy MRP refers to a wildlife surveys that included input from DWR. The consultants that managed the surveys and the dates of the surveys, however, were not included (pg. 10-1). The surveys included methodology for aquatic resources, and results for terrestrial resources, wildlife resources, threatened and endangered species, raptors, as well as expected impacts of mining operations on fish and wildlife.

The eMRP did not address matters relating to the deficiencies found in the hardcopy MRP. The eMRP did not incorporate many related sections from the hardcopy MRP including the methodology for aquatic resources, or most of the results for terrestrial resources, wildlife

resources , and threatened and endangered species (pgs. 10-2 through 10-13). The Permittee must include, in the eMRP, all the omitted sections (R645-301-131).

Findings:

R645-301-131, The Permittee must include, in the eMRP, the methodology for aquatic resources, and all of the results for terrestrial resources, wildlife resources , and threatened and endangered species.

OPERATION PLAN

FISH AND WILDLIFE INFORMATION

Regulatory Reference: 30 CFR Sec. 784.21, 817.97; R645-301-322, -301-333, -301-342, -301-358.

Analysis:

The eMRP included some of the hardcopy MRP descriptions for expected impacts of mining on fish and wildlife (pgs. 10-15 through 1-21). Descriptions were complete, partial, or omitted from the eMRP. The Permittee included partial descriptions for the following species: aquatic wildlife, mule deer, black bear, mountain and desert cottontails, snowshoe hare, birds, amphibians, and reptiles. The Permittee omitted description for the following species: cougar, bobcat, small mammals. The Permittee must include all the descriptions for expected impacts of mining on fish and wildlife that was presented in the hardcopy MRP (R645-301-322).

The Permittee explains that there is no impact to perennial waters of the permit area (pg. 10-22). The eMRP further addresses possible impacts to perennial waters. Page 3-28 states that there are no “high quality streams” in the surface operation areas, hence the Permittee expects little impact to aquatic life. The Permittee supports this expectation with the following:

- Huntington Creek is the closest high quality stream to the permit area.
- Huntington Creek is 1.5 miles from the nearest surface operation site.
- Co-Op’s sediment control structure serves to protect impact to Huntington Creek.

The Permittee informs that no mitigation plan for Bear Creek will be submitted at this time (pg. 3-28).

The eMRP provides a brief agenda for annual employee training on coal mining and its possible impacts to wildlife as well as mitigation practices.

The eMRP discusses steps to take in the event of escarpment failure (pg. 3-52).

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Findings:

R645-301-322, The Permittee must include, in eMRP, all the descriptions for expected impacts of mining on fish and wildlife presented in the hardcopy MRP.

VEGETATION

Regulatory Reference: R645-301-330, -301-331, -301-332.

Analysis:

Table 3-3 provides a list of the interim seed mix species with planned application rates. The rates are in units of pure live seed - pounds per acre. The Permittee must provide a planned application rate in pure live seed per square foot (R645-301-341.210). Seed weight differs among species, therefore, the unit pounds per acre does not provide an accurate number of plants that may actually develop. Providing PLS per square foot is much more descriptive, which helps the Division determine if planned seeding rate is adequate for coverage.

The interim seed mix includes grasses, a forb, and a cover crop. The Division considers the grasses acceptable, but the forb – alfalfa is not acceptable. This species typically spreads and out competes other plants. The Permittee must resubmit an alternative for alfalfa –a nitrogen-fixing forb (R645-301-333)

The Permittee stated that vegetated areas adjacent to the disturbed areas are protected from coal fines by a variety of mitigation methods (pg. 22). However, one area within an undisturbed area below the Upper Storage Pad is apparently accumulating coal fines. The Permittee has not evaluated the impact of these coal fines on vegetation. The Division plans to visit the mine to determine the need to evaluate the impact of the coal fines on this area.

Findings:

R645-301-341.210, The Permittee must provide a planned application rate in pure live seed per square foot.

R645-301-333, The Permittee must resubmit the interim seed mix with an alternative for alfalfa –a nitrogen-fixing forb.

RECLAMATION PLAN

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:

Overall, the sequence of methods and application rates of mulch, fiber, and tackifier are confusing. The Permittee must clearly present reclamation methods, steps, and application rates. The Division itemizes the deficiencies below and the deficiencies are listed under the regulations: R645-301-121.200 and R645-301-341.200.

The eMRP provides details of a three-phase interim reclamation plan that includes: earthwork, hydroseed and mulch, and vegetation monitoring. The hardcopy MRP and eMRP provides details of a four-phase final reclamation plan that includes: backfilling and grading, site preparation, seed and mulch application, and seedling plantings (pgs. 9-11, 9-13 through 9-23; pgs. 3-30 through 3-41).

The interim and final reclamation plan, in both MRP formats, are lacking the use of deep gouging and noxious weed-free hay/straw. The final reclamation plan mentions the application of hay following seeding (pg.3-41). The goal of this method, however, differs from the goal of incorporating hay/straw during gouging. Gouging and incorporation of hay/straw during gouging are currently considered standard treatments used for soil stability. The Permittee must include the use of deep gouging with incorporation of noxious weed-free hay/straw in both MRP formats to bring the interim and final reclamation plans to current standards (R645-301-333). The Permittee may refer to the Vegetation Guidelines for methods and application rate.

Note: that the goal of the hay/straw mulch application following seeding is to provide surface protection from rain and wind. The Permittee may decide to also use hay or some other type of surface protecting mulch.

The eMRP interim reclamation plan includes the following steps:

- Earth moving.
 - Recontouring of area.
 - Smooth contouring of existing soil.
 - Creating small indentations with a grouser.
- Seeding and mulching: Drill or broadcast seeding.
- Monitoring.

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Table 3-3 shows the recommended seed mix for interim reclamation. The mix includes grasses, a forb, and a cover crop. The Division considers the grasses acceptable, but the forb – alfalfa – is not acceptable. This species typically spreads and out competes native plants. The Permittee must resubmit an alternative for this nitrogen-fixing forb. (Refer to the finding written under Operations). The eMRP states that the interim seed mix for mitigating impacts on vegetation includes wheatgrass, salina wildrye, sagebrush, pinyon and juniper (pg. 3-23). Table 3-3, however, does not list wheatgrass, salina wildrye, sagebrush, pinyon, or juniper. The Permittee must clarify the inconsistency between species listed on page 3-23 and Table 3-3 (R645-301-121.200). Note: these species listed on page 3-23 are also not part of the final seed mix or the seedling list.

Table 3-4 shows the suggested ratios of tackifier for interim hydroseeding. The amount of tackifier varies with slope from 14 to 64 degrees and ranges from 60 to 160 pounds. There is a reference to the use of mulch at rate of 1,500 to 2000 pounds per acre (Table 3-4), but it is unclear of the application timing or method. (Refer to the finding R645-301-333 above in this section).

The hardcopy MRP and eMRP final reclamation plan includes the following steps:

- Backfilling and grading.
- Preparing the site.
- Seeding and mulching.
- Planting seedlings.

Page 3-32 states that riparian areas will not receive a separate seed mix. Rather, these sites will receive the pinyon-juniper-grass seed mix and woody plant seedlings. Table 3-6 provides the seed mix recommended for riparian areas. The mix consists solely of woody species. The Table heading is most likely incorrect and should read “Seedlings”. The Permittee must clarify the inconsistency between statements written on page 3-32 and Table 3-6 (R645-301-121.200). Table 3-5 suggests that mulching follows seeding.

The final reclamation seed mix is called Mountain brush/conifer (Table 3-7). The eMRP, however, refers to the final mix as pinyon-juniper-grass seed mix (pg.3-32). The Permittee must provide a consistent name for the final reclamation seed mix (R645-301-121.200). The table provides a list of the native species and planned application rates. The rates are in units of pure live seed - pounds per acre. The Permittee must provide a planned application rate in pure live seed per square foot. The total should not exceed 100-150 pure live seed per square foot. (R645-301-341.210).

The Permittee plans to broadcast seed and plant seedlings using the following methods:

- Broadcast seeding either by hand or using the hydroseed method.
- Planting seedlings in the spring or fall within two years following seeding.

The Permittee provides a detailed description of planting methods for seedlings. One suggestion is to prepare hole size following current recommended practices:

- Width: approximately 2-3 times the width of the root ball.
- Depth: approximately equal to the length of the root ball.

The MRP states that application rate of fiber mulch will be a minimum of 120 pounds per acre (pg. 9-14; pg. 3-36). Page 3-41, however, states that wood fiber will be applied at a rate of 2,000 to 2,500 pounds per acre. It is unclear what procedure and rate the Permittee intends to follow (R645-301-121.200). Table 3-8 shows the suggested ratios of tackifier for final hydroseeding. The amount of tackifier varies with slope from 14 to 64 degrees and ranges from 60 to 160 pounds per ton fiber. The Permittee plans to use erosion control matting for slopes greater than 2:1 (pg. 9-14).

The Vegetation Guidelines recommends the following:

- Hay/straw: noxious weed free
 - Usually applied at time of gouging.
 - Applied at a rate of 0.5 to 1 ton per acre.
- Wood fiber mulch:
 - Applied during hydroseeding.
 - Applied at a rate of 0.5 to 1 ton per acre.
- Tackifier: Applied according to manufacturer instructions.
- Control matting: Follow manufacture recommendations.

The Permittee must include, in both MRP formats, the use of adequate hay/straw, wood fiber mulch, and tackifier to bring the four-phase plan up to current standards (R645-301-333).

The eMRP states that certified weed free mulch will be applied (pg. 3-41). It is unclear whether the referenced mulch is hay/straw or the wood fiber mulch. Furthermore, authorities can certify mulches as noxious weed free, but not weed free. The Permittee must clarify mulch type and certification (R645-301-121.200).

Pages 9-22 and 9-23 of the hardcopy MRP are the same. The Permittee must remove one of the repeat pages and number sequential pages appropriately (R645-301-121.200).

Findings:

Overall, the sequence of methods and application rates of mulch, fiber, and tackifier are confusing. The Permittee must clearly present reclamation methods, steps, and application rates. The Division itemizes the deficiencies below and the deficiencies are listed under the regulations: R645-301-121.200 and R645-301-341.200.

R645-301-121.200, The Permittee must (1) Clarify the inconsistency between species listed on page 3-23 and Table 3-3 (2) Clarify the inconsistency between

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statements written on page 3-23 and Table 3-6 (3) Clarify the inconsistency between statements written on page 3-32 and Table 3-7 (4) Clarify the inconsistency between statements written on page 3-36 and 3-41 (5) Remove one of the repeat pages and number sequential pages appropriately (6) Clarify mulch type and certification.

R645-301-333, The Permittee must include the following to bring both MRP formats up to current standards: The use of deep gouging with incorporation of noxious weed-free hay/straw; The use of adequate mulch.

R645-301-341.210, The Permittee must provide a planned application rate in pure live seed per square foot.

RECOMMENDATIONS:

Do not approve the electronic MRP until all deficiencies have been addressed.