



State of Utah

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

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September 19, 1990

Mr. Kimly C. Mangum, P. E.
Mangum Engineering Consultants
388 East Boynton Road
Kaysville, Utah 84037

Dear Mr. Mangum:

Re: Technical Deficiency Document, Bear Canyon Mine Five-Year
Renewal, Bear Canon Mine, Co-Op Mining Company, ACT/015/025
#2, Emery County, Utah

Enclosed please find the technical deficiency review document attendant to the five-year renewal for the Bear Canyon Mine. There are issues requiring a comprehensive approach to re-evaluate the existing conditions.

Several general comments are:

- All references in the Permit Application Package must be made to the rewritten coal rules.
- The Table of Contents must be updated.
- The average annual depletion of surface water in acre-feet must be stated.

The permit expires November 1, 1990 and therefore, all information must be submitted to the Division by October 19, 1990. I recommend that a meeting be arranged to clarify any questions that arise to expedite the review.

Sincerely,

Pamela Grubaugh-Littig
Permit Supervisor

jb

cc: Eldon Kingston
Lowell Braxton
"A" Team

BTACT15025.1

TECHNICAL DEFICIENCY
FIVE-YEAR RENEWAL
BEAR CANYON MINE
ACT/015/025

Co-Op Mining Company
September 17, 1990

EDITORIAL COMMENTS

Page 3-44 is missing. Please submit.

Page 9-8, 8 lines down, change "from" to "form".

Page 9-16, the first sentence should be deleted.

Page 9-16, the last sentence is not complete.

Page 9-21, seed mixture, correct Agropyron spelling, realign Rosa woodsie in column and correct Rhus spelling.

Page 9-22, correct total pounds on seed mixture.

Page 9-23, correct "Punus" to read "Pinus".

Page 2A-3, NOV 89-32-4-1 is not included on the violation list.

Page 9A-5, Astragalus spp. should be listed under forbs.

Pages 2F-9 through 2F-14, This appears to be a duplication of 2F-3 through 2F-8. If so, please remove them.

Plate 3-1 According to cross section D-D, the Bear Canyon Coal Seam will remain exposed after reclamation. This is unacceptable, in accordance with the statutes set forth by the Mine Safety and Health Administration and R614-553.300. Please rectify as needed.

Appendix 2E is missing. Please check the Appendices in Chapter 2 for numbering sequence.

Page 3D-3 The last paragraph is fragmented and contradictory. Please rewrite said paragraph to clearly describe the operator's intent.

The same paragraph regarding ripping spoil material appears on pages 3-64 and 3-65 and on pages 3-78 and 3-79. Please rectify this redundancy.

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R614-301-100 General Contents - (SMW)

113.310. - 113.350. Please identify the issuing agency of violations, description of violation, and actions taken to abate violation (page 2A-2).

116.100. Pages 2-9 and 3-28 state an estimate of 22 years (2012) for mining operations. Page 3-85 states that demolition and reclamation will not begin until the year 2033. Please explain why a delay of 21 years is needed between end of mining operations and reclamation.

R614-301-200. Soils (HS)

221. Prime Farmland Investigation. The operator must obtain written verification from the State Soils Scientist (Soil Conservation Service) regarding negative prime farmland determination for the lands within Section T.16S., R7E, SLM. Section 13, W1/2.

222. Soil Survey. On page 8-1 of the PAP, statements are made which indicate that the entire area encompassed by the original soil survey "...had been disturbed from previous mining activities." This statement is only partially true. Therefore, as an aid in determining the present extent of disturbance at the Bear Canyon Mine and fulfilling Division requirements, the operator must submit an Order I Soil Survey (U.S.D.A./Soil Survey Manual, Title 430) of the "bonded area" as depicted on Plate 2-4. All soil surveys shall be conducted or approved by a qualified professional soil scientist.

232. The operator must clearly commit to salvaging all topsoil prior to surface disturbance. This may be accomplished by amending the following sentences on pages 3-62 and 8-19: "Prior to the start of all new construction, topsoil will be analyzed (i.e., constituents found in the Division Guidelines for Management of Topsoil and Overburden, Table 1) in accordance with Division recommendations to determine the extent and depth of suitable plant growth medium and will be separately salvaged and stockpiled".

232.100. On page 3-8 the operator states that "...topsoil removed as needed." This is not acceptable (R614-232.100) and should be deleted.

233. Topsoil Substitutes and Supplements. The proposal to utilize downcast material along the upper access road as a plant growth medium for final reclamation (Appendix 8-D) is unacceptable. The material in question is not stable and consideration as a plant growth medium cannot be considered until the operator can demonstrate its stability.

Additionally, topsoil medium within the Ballpark Storage Area is of marginal quality and has not shown revegetation potential. Furthermore, soil surveys conducted adjacent to the disturbed area indicate pre-disturbance topsoil depth (A horizons) of 10-16 inches. Therefore, the Division determined that the plans for redistribution of 6 inches of topsoil does not closely parallel the premining soil conditions and will not be consistent with the approved postmining land use. The operator must fulfill the requirement of this section and demonstrate that adequate quantities of good quality topsoil material exist.

234. Topsoil Storage. The as-built survey (Plate 8-2) of the topsoil stockpile adjacent to the scale house is incorrect and must be revised (i.e., resurveyed). The survey indicates a concentric pile which has equal slope length on the east and west sides. Through field observation and preliminary surveys, it was determined that the pile has been placed on an incline and the east side of the pile is substantially shorter than the west side of the pile.

Page 3-45 The operator employs the phrase "...relative undisturbed areas"... Please describe this, and how and where this will affect topsoil removal.

Page 3D-3 The last paragraph is fragmented and contradictory. Please rewrite said paragraph to clearly describe the operator's intent.

Page 8-24 The sentence regarding mining impacts on the soil resource should indicate that the coverage of soil by landfills "occurred pre-SMCRA" (P. L. 95-87). Additionally, the sentence regarding fertilizer applications should read as follows: "All necessary fertilizers and/or neutralizing compounds will be applied according to the results of the soil sampling and analysis program approved by the Division."

Page 8D-2 The revegetation test plots are not depicted on Plate 2-4 as indicated. However, subsequent to

NOV 90-32-3-1, test plots on this site will not be forthcoming until downcast material along the upper access road is stabilized. Please delete statement regarding test plot locations and amend Appendix 8-D and other sections describing the test plots.

242.200.

Page 3-37 The operator states "Once operations cease, the disturbed area will be scarified." The sentence should read "Once operations cease, the backfilled and regraded disturbed areas will be scarified."

Page 4-13 The operator states that "operational areas will be scarified to reduce compaction...". The sentence should read "Operational areas will be scarified after backfilling and grading prior to topsoil redistribution."

242.110. Soil Redistribution. Page 3D-3 describes the redistribution of 1 foot of topsoil material upon the "road system". This is not consistent with the mass balance calculations or any other designs or plans. Please update in accordance with the revised topsoil mass balance criteria. (R614-301-233).

The operator states on page 3-65 that redistributed topsoil will be allowed to lie undisturbed for 10 days to attain equilibrium with its natural environment. Equilibrium within redistributed soil depends on the moisture regime and other factors, and may require tens of years.

On page 3D-2, the operator states "...clump planting of adjacent vegetation (placed) on recontoured surface." If live shrub transplants are used, then specific plans to identify such transplants, areas disturbed during said operations, and specific success criteria must be specified (i.e., designs and PAP plans) and approved by the Division.

242.200. The operator alludes (page 3-59) to scarifying regraded spoils "where physically possible". This statement must be deleted and replaced by specific criteria which would warrant a variance from the scarifying requirements. Additionally, the operator states on page 3-46 "...compaction will help the returned soil remain in place." This is incorrect and must be deleted.

243. Soil Nutrients and Amendments. The operator alludes to "operation testing of soil to determine that moisture retention is necessary." Please describe operation testing and how and where it will be employed.

R614-301-300 Biology-(SMW)

321.100. Page 9A-6 lists the shrub *Guaiacum sanctum*. What is this shrub? The *Eriogonum* spp. listed, which has the highest shrub density, should be identified to the species level to determine if this should be used in revegetation.

322.100. A current raptor survey must be performed on the new lease tract additions. A recent conversation with Larry Dalton of the Division of Wildlife Resources indicated that no previous survey had been conducted in the area. The applicant must commit to a raptor survey in May, 1991.

322.220. Division of Wildlife Resources has designated the entire site as critical mule deer habitat. This designation must be corrected on Plate 10-1 and in the text.

323.100. Plate 9-1 depicts a reference area in Bear Canyon. The text refers to reference areas in Trail Canyon. Please correct this discrepancy in the text and map. If the reference areas are in Trail Canyon then the location and boundary must be delineated on Plate 9-1.

323.400. Appendix 3G-2 and page 9-6 identifies areas and methods of interim revegetation. Please identify these areas, disturbed and undisturbed areas, on a map of the scale 1" = 80' (contour interval of 10 feet), such as the surface facilities map and specify the year it was seeded.

333.300. Please describe in the PAP how vegetated areas adjacent to the disturbed areas will be protected from coal fines, waste dumping, and other disturbance associated activity (page 3-48). A monitoring program (i.e., photo points) must also be included in this plan.

341.100. Please provide a schedule for completion of each major step in the revegetation process. An example of a schedule is provided in the Division's Vegetation Guidelines.

The applicant must commit to submitting a detailed revegetation plan in the last five year permit renewal prior to

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reclamation. This plan must be detailed, on maps of sufficient scale, to show exact areas and methods of revegetation (i.e., drill seeding, terraces, netting...).

341.210. On page 9-22 please indicate that the seed mixture is expressed as pure live seed (PLS) per acre.

The applicant should realize that the forbs alone in the proposed Pinyon-Juniper Grass seed mixture will cost in excess of \$1,000.00/acre. The applicant must obtain cost estimates of both seed mixtures and develop a realistic and economical mixture.

The applicant must commit to notifying the Division two (2) weeks prior to all seeding work (interim and permanent). This will allow the Division to be on site when the work is done.

The applicant must commit to obtaining seed which complies with all state and federal seed laws. Copies of certificates for testing and poundage of seed purchased, must be submitted to the Division.

The operator should be aware that cover crops have a competition advantage for water over the perennial grasses and forbs. The operator must commit to evaluating the success of this interim seed mixture and commit to reseeding if the cover success criteria is not met. Additionally, Elymus salina should be replaced by Elymus cinerus, Great Basin Wildrye.

341.220. On page 9-15 the applicant states "The resulting terrace creates a beach effect and are spaced at 12 in. intervals down the slope." Should this read 12 foot intervals?

All hydroseeded or hand seeded areas (during final or interim revegetation), will be lightly raked to insure adequate soil/seed contact. On slopes steeper than 2:1, a two-step hydroseeding method will be used. One half the seed amount will be applied and raked and the remaining seed will be applied.

The applicant must commit to leaving a very roughened seedbed.

341.230. All drill seeded areas will be mulched with two tons per acre alfalfa, straw or grass hay. The mulch must be certified as weed free by the county agricultural agent and copies of this certification, along with weight tickets from a certified scale, submitted to the Division.

353.140. The applicant must demonstrate by test plot or interim revegetation that hydromulching slopes steeper than 2.5:1 will adequately stabilize the soil surface and is capable of re-establishing vegetative cover. Or the applicant can commit to place erosion control matting on these slopes (page 3-83, 9-14, 3D-4).

356.110. The applicant must propose and include in the PAP a vegetative sampling plan which partitions the permanently revegetated areas into 3 to 5 sample areas with similar slope and aspect. A weighted method of averaging and analyzing the data must also be proposed. The areas which will be compared to the riparian reference area must also be indicated.

The applicant must exhibit the means, standard deviations, calculated minimum sample size, and actual sample size for vegetative measurements taken in both reference areas.

Page 3-49, Quantitative Vegetation Monitoring, should occur in years 2, 3, 5, 9 and 10.

356.120. Page 3-87 of the PAP indicates cover success to be 70 percent of the reference area standard. This standard is not acceptable please refer to the new regulations for success standard.

356.230. Please clearly state in Chapter 3, under Reclamation Monitoring the shrub and ground cover success standard (1579 shrub and tree per acre and 57 and 28 percent ground cover).

356.232. Page 9-23 of the PAP the applicant states that after two years tree and shrub planting will be instigated. The applicant should be aware that doing so will restart the period of extended responsibility.

Please incorporate into the monitoring program section R601-301-356.232 of the coal regulations which refers to the 80-80 rule for shrub and tree density.

357.100. The applicant should realize that by applying one-half the fertilizer mixture the fall following seeding will set back the extended responsibility period (page 3-37 and 9-15).

357.220. The operator states on page 3-58 that "All reclaimed areas will be maintained for the entire 10 year responsibility period." This sentence should state "...maintained during the liability period for at least 10 years."

358.200. Page 10-25 is not adequate to predict the potential of subsidence and cliff failure impact to nesting raptors. The U.S. Fish and Wildlife Service has requested that the raptor nests be located on a topographic map which is suitable for overlay onto Plate 3-4 and 3-4a.

Page 10-14 and 10A-11 state that no raptor nesting sites occur within the permit area. The most recent raptor survey included in the PAP lists three nesting sites. Please include these in the text and discuss avoidance and possible impacts.

R614-301-400 Land Use-(SMW)

411.200 The applicant must provide the information required in this section for previous mining activity, i.e.: type of mining methods, coal seams mined, extent of coal removed, and dates.

421. The operator must insert into the PAP Section 11.4.2, a statement to the effect that all coal mining and reclamation operations will be conducted in compliance with the requirements of the Clean Air Act (42 U.S.C., Section 7401, et seq.) and any other applicable Utah or federal statutes and regulations containing air quality standards. (JK)

R614-301-500 Engineering-(JK)

512.100. Plate 3-2 indicates that above the Lamphouse a highwall will be retained; however, this highwall is outside the "bonded area" as depicted on Plate 2-4. Please amend discrepancy.

512.110. The operator must have the following maps certified by a qualified, registered professional engineer or land surveyor:

- (1) Plate 3-4 Bear Canyon No. 1 Mine
- (2) Plate 3-4A Bear Canyon No. 1 Mine

512.150. The operator must have the following maps certified by a qualified, registered professional engineer or land surveyor (NOTE: The maps have all been certified, but the certification stamp is illegible; please rectify to a readable quality.)

- (1) Plate 6-1 Geologic Map
- (2) Plate 6-2 Overburden Map - Bear Canyon Seam
- (3) Plate 6-3 Isopach Map - Bear Canyon Seam
- (4) Plate 6-4 Structure Contour Map - Bear Canyon Seam

- (5) Plate 6-6 Overburden Map - Hiawatha Seam
- (6) Plate 6-7 Isopach Map - Hiawatha Seam

512.200. The operator must have Plate 7-2 "Sedimentation Pond "A" certified by a qualified, registered professional engineer.

515.100. The operator must commit to notify the Division, by the fastest available means, if a slide occurs which may have a potential adverse effect on public property, health, safety, or the environment. The operator must further commit to comply with any remedial measures required by the Division in the event of such a slide.

515.320. The operator must commit to compliance with the requirements of Section 515.320.-515.322. in the event that mining and reclamation operations are to cease for 30 or more days.

521. General-Operational Plan. On pages 2-9 and 3-10, the operator indicates 12 acres of disturbance. During the Mid-Permit Review (spring of 1989), the operator indicates 10 acres of disturbance. Please explain this discrepancy.

The applicant must depict on a properly scaled surface facilities map the areal extent of the disturbed acreage. Additionally, all pre-law (i.e., Surface Mine Control and Reclamation Act, page 95-87) disturbances must be depicted and a demonstration of the pre-law nature of the disturbance be substantiated. As one option, the applicant may choose to create a buffer zone of undisturbed land surrounding all disturbed areas. Thus, minor adjacent disturbances during operations and reclamation, while required to meet applicable state and federal regulations, would not have to undergo bond revisions (R614-301-800).

521.100. Cross Sections and Maps. The operator must commit to covering all concrete, asphalt, excess spoil, acid- and/or toxic-forming material with four feet of suitable material. At this time, reasonable volume estimates of the above referenced material and cover for said material (confirmed by appropriate cross sections) must be made. Specific designs must be generated by the operator to identify particular sites of disposal of said material and areas where highwalls will be retained or reclaimed. All cut and fill calculations must be specific and include sufficient narratives, maps and plans to confirm feasibility of the backfilling and regrading plans.

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The following PAP references are unnecessary and should be deleted when the above technical deficiency is resolved.

Page 3-46

"To the maximum extent practical, surface areas will be backfilled."

"...(according to) local conditions, large scale backfilling will not be possible."

Page 3D-D

"...no alternative other than disturbance."

Page 3-75

"...material used for recontouring will be taken from side or other existing embankments within the disturbed area....taken from side slopes or embankments close enough to allow for pushing into place."

Page 3-75

"Upon abandonment, slopes will only be reduced to the amount physically possible."

Page 3-76

"...highwalls reduced to the extent practical."

"Only those highwalls that can be lessened by reaching with a backhoe will be reduced."

"Highwalls greater than 20 feet in height will be left in place."

Page 4-12

"Side hill cuts will be reduced to the maximum extent physically possible. The cuts, which are already physically stable will not be reduced."

521.141. Map 2-4, Surface Facilities, and Map 3-2, Post-Mining Topography, must be revised. Both maps must be redone using a contour interval of 10 feet rather than the present contour interval of 25 feet which will allow for finer resolution and more detail in the depiction of surface features. In addition, Map 2-4 must show the boundaries of all disturbed and undisturbed areas as

well as those areas where an alternative sediment control measure will be used (Best Technology Currently Available [BTCA's]).

The sediment control status of certain areas, such as the canyon above the coal storage area and the large undisturbed area which lies below the portal area between the upper and lower roads should be changed. These areas, though nominally undisturbed, are covered with coal fines and contain extraneous debris. Changing their status would allow for better reclamation and control for a relatively small additional reclamation cost.

521.165. Plate 8-3, which is mentioned on page 3-62 of the PAP in connection with the ball park topsoil storage area, is missing from the plan. The operator must provide the Division with a copy of Plate 8-3.

527.100. The operator must classify each road as either primary or ancillary, throughout the PAP.

533. Appendix 3-K, which deals with sediment control structures, is missing from the PAP. The operator must provide the Division with a copy of Appendix 3-K.

535.100. Disposal of Excess Spoil. All excess spoil must be disposed of in a controlled manner, in a designated area(s) within the permit area. All solid waste mentioned in the PAP must be identified (i.e., non-coal waste, excess spoil, development waste, etc.). References to removing waste (pages 3-39, 3-60, 3-70, 3-72 and 4-12) must be deleted and proper disposal sites and disposal practices must be identified (R614-521).

537. Regraded Slopes. The following discrepancies refer to the return of disturbed area surface to approximate original contour.

Fig. 3.6-2 depicts total highwall reclamation, but Plate 3-1 indicates highwall retention, and minimal backfilling. Please amend said discrepancy.

Page 3-47 "...the purpose of these operations is to return disturbed area to approximate original makeup and contour."

Page 3-64 The sentence "...the establishment of noxious plant series (should be "species") will be prevented." Please change "series" to "species".

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- Page 3-68 "...restore disturbed land and surface areas to their approximate premining conditions."
- Page 3-75 "...postmining land use achieved without return to Approximate Original Contour."
- Page 3-75 Please describe what a "3:1 safety factor" means.
- Page 3D-2 "...redistribution of road cut material to (the) approximate original contour of (the) surface."
- Page 4-12 "...Operational benches will not be removed."
- Page 4-15 "The proposed surface contour plan would allow the side hill cuts and operational benches at the mine site to be reduced so that they provide stable drainages and conform to natural contours."

542.200. Map 3-2, Post-Mining Topography, must be redone using a contour interval of 10 feet rather than the present contour interval of 25 feet (see 521.141.).

542.800. The operator must revise the estimate of reclamation costs to take into account any additional costs of reclaiming areas which are redesignated according to section 521.141.

R614-301-700 Hydrology-(TM)

722. Cross Sections and Maps. The applicant must provide sufficient contour maps to adequately represent the existing land surface configuration of disturbed areas for underground coal mining and reclamation activities. The use of a 10-foot contour interval map is considered appropriate to provide the necessary detail for the surface facilities plate and the reclamation plate. These plates must show the proper location of all structures and facilities.

724.100. (See R614-301-521.141) The applicant must provide the necessary documentation to verify that all water rights issues have been properly taken care of, in regards to a letter sent from the Division of Water Rights to Mr. Wendell Owens on July 10, 1990 by Mr. Mark Page.

731.121. Surface Water Protection. The applicant will provide a more detailed protection plan for Bear Creek expanding on future plans to insure protection of Bear Creek from water borne

and windblown coal fines in the reaches of the creek upstream from the scale house past the coal loading facilities. This response will incorporate any plans to culvert Bear Creek, or upgrade sediment control facilities.

731.210. Ground Water Monitoring The current estimates of ground water volumes intercepted in the mine are in contradiction with estimates found in the PAP on page 7-33. These numbers must be corrected to more accurately reflect current monitoring in-mine. In addition, the location of all in-mine sumps needs to be updated and accurately located on Plate 7-1A.

742.111., 112., and 113. The operator has provided a discussion of the Small Area Exemptions (SAE's) found within the Bear Canyon Mine Permit Area on page 7K-2 and 7K-3. The current rules require that the operator meet the effluent limitations under R614-301-751, and minimize erosion to the extent possible. In the text, the operator has provided an explanation of the treatment used, the size of the area, and shows the location of the area on Plate 7-1.

In addition to this verbage, the Division would like the operator to provide the following items.

- (1) calculated runoff volume for each area;
- (2) a commitment to monitor drainage for state and federal effluent limitations; and
- (3) change the verbage in the plan to reflect new terminology in the rules calling these treatment areas Best Technology Currently Available (BTCA's).

Small Area Exemptions denote a total removal of sediment control and bond release due to adequate vegetation.