



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

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April 14, 1994

Mr. Wendell Owen
Co-Op Mining Company
P.O. Box 1245
Huntington, UT 84528

RE: Review of March 9, 1994 Response for Tank Seam Proposal,
Co-Op Mining Company, Bear Canyon Mine, ACT/015/025-93B,
Folder #2, Emery County, Utah

Dear Mr. Owen:

The permittee responded on March 9, 1994 to the Division's denial letter of the proposal to construct an access road and portal facility to mine the Tank Seam.

The February 23, 1994 Division letter emphasized that the reclaimability of the road had not been demonstrated, especially in light of the fact that the reclaimed slopes had **not** been found suitable for topsoil adherence and re-establishment of vegetative cover or erosional stability. Additionally, the reclaimed drainages associated with the portal access road did not support a finding that the drainages were designed, located, constructed and, especially, maintained to be stable. The proposal also failed to meet the engineering design and performance standards due to the material being compacted in three-foot lifts.

The March 9, 1994 response changed the lifts to eighteen inches and presented additional hydrologic information, but provided no more information relative to the reclaimability of the access road.

There have been ongoing discussions between Co-Op Mining Company staff and Division staff about these issues. Following are specific problems that have been discussed previously and during the meeting held at the Division on April 13, 1994.

SOILS ANALYSIS

R645-301-242. Soil Redistribution & R645-301-244. Soil Stabilization

The permittee has not adequately demonstrated that redistribution and protection of the soils resource on the regraded surfaces is feasible. The geotechnical report by Dames and Moore regarding the surface stability of the constructed road



fills states the following: "During thunderstorms or other wet periods, small localized minor slides and sloughs should be anticipated along the slopes". Topsoil slides, sloughs and surface erosion would likely be similar to that described above and/or of greater magnitude with uncompacted topsoil placed on constructed reclamation fills. The proposed topsoil redistribution plan does not meet the requirements of these sections of the Utah Coal Mining Rules and R645-301-553.230, R645-301-535 et. seq.

The proposed topsoil stockpile design (Plate 8-6) depicts 1H:1V side slopes. The stockpile design does not meet the requirements of this section of the Utah Coal Mining Rules.

R645-301-537. Regraded Slopes

According to the soil survey information provided by the permittee (Plate 8-1, Appendix 8-B), the following profile conditions exist within the excavated portion of the proposed access road and the Tank Seam portal pad.

- 1) Approximately 3 acres of disturbance will be created.
- 2) Approximately 0.8 acres of the proposed disturbance is within the Travessilla-Rock Outcrop-Strych Complex (TR).
 - i) Seventy-five percent of this map unit is composed of talus, rock outcrop or shallow soils (i.e. Travesilla - very bouldery fine sandy loam, 14 inches deep) over bedrock.
 - ii) Fifteen percent of this map unit is composed of deep soils (i.e. Strych - very bouldery loam, 60 inches deep) of which 10 % (by volume) of the profile is composed of particles greater than 3 inches in diameter (i.e. cobble size or greater).
- 3) Approximately 2.2 acres of the proposed disturbance is within the Podo-Datino-Rock Outcrop Complex (PDR).
 - i) Fifty five percent of this map unit is composed of rock outcrop or shallow soil (i.e. Podo - very stony fine sandy loam, 12 inches deep).
 - ii) Thirty-five percent of this map unit is composed of deep soils (i.e. Datino - very stony fine sandy loam, rock outcrop is present below 60 inches) of which 26 % (by volume) of the profile is composed of particles greater than 3 inches in diameter.

R645-301-553. Backfilling and Grading

The proposed post-mining topography map (Plate 3-2E) depicts topographic features which currently exist. Numerous portions of the reclaimed surface as depicted on Plate 3-2E would be nearly vertical. Sections of the proposed post-mining topography are

equal to or steeper than the constructed road fills. The proposed post-mining topography does not meet the requirements of this section of the Utah Coal Mining Rules.

BIOLOGICAL ANALYSIS

The conditions under which the reclaimed road and portal would be stable requires compaction of the fill material in eighteen-inch lifts. This requirement for compaction is contrary to topsoil adhesion and will inhibit plant root penetration. Additionally, surface roughness for water holding and erosion control is unattainable by the compaction requirement. The operator has addressed the mass stability of the slopes but fails to discuss ripping commitments, topsoiling, surface roughness, and other conditions specific to the Tank Seam in relation to surface stability.

This application for permit change is at the technologic limit for successful revegetation as required by R645-301-350. In the professional opinion of Division staff (over 14 years of practical reclamation experience), a finding in accordance with R645-300-133.710 cannot be made that the operator has demonstrated that reclamation as required by the State Program can be accomplished according to information given in the application for permit change. The Division suggests finding a comparable site to visit to demonstrate that the steep slope revegetation effort in this type of area can be accomplished. In accordance with R645-300-131.200, the burden of establishing compliance with all the requirements of the State Program rests with the operator.

HYDROLOGIC ANALYSIS

The Tank Seam access road is 3000 feet long, 9-16 percent, page 3D-7. The slopes in the area are generally steeper than 20 degrees and the average natural slope angle of the slopes that the Tank Seam access road must traverse is 35 degrees. Drainages are in excess of 100 percent. The material to be excavated consists of fine to coarse gravel, cobble, and boulder-sized pieces of sandstone in a matrix of sand and clayey silt. These are the general environmental parameters found in the Tank Seam Area.

BTCA Plans

The whole disturbance is treated by other "BTCA" and not siltation structures. The majority of BTCA areas described in the PAP are provided treatment as follows, "erosion and sediment will be controlled by the placement of erosion control matting on the slope until a good vegetative cover is established",

(Proposed BTCA areas-H, I, J, K, L, M, N, O). It has not been determined how successful the operator will be at establishing a good vegetative cover in appendix 7-K. When the average cover is more than 80 percent, vegetation and rock are an acceptable erosion treatment. But this ignores an assessment of stability regarding erosion on reclaimed areas. This assessment will be made at the time the vegetative criteria is met, and the formal proposal is submitted to the Division for removal of supplemental structures.

According to Charles Reynolds, Susan White approved vegetative criteria for BTCA areas in 1992. This is found in Appendix K, pages 7K-2 and 3. According to Susan White, Hugh Klein approved the BTCA procedure in the existing PAP for removal of supplemental structures. The use of silt fence in other BTCA areas is acceptable only on flat areas at the toe of the slope due to storage and treatment of runoff. But it is not prudent from an engineering standpoint on extremely steep slopes.

Reclaimed Drainages

The plan does not address the portal access road reclaimed drainages in enough detail to make a finding that they will be designed, located, constructed, and maintained to be stable. The plan states that designs for reclaimed drainages RC-1 through 6 found in Appendix 7-h will suffice for an entire watershed drainage. The plan ignores site specific criteria and uses globally applied criteria on a watershed by watershed basis.

The steepest slope of the installed culverts taken from the table which lists culvert characteristics on page 7G-24A is 100 percent. Five culverts are installed with outlet protection varying from 30-inch riprap to 15-inch riprap. This is not stable engineering design. Any riprapped, reclaimed channel in this environment has a strong probability of failure because of the forces which affect the riprap. The existing channels are steep-sloped gullies. The operator's proposal to establish a riprap channel on the steep slope is outside standard stable engineering practices. A return to the original channel configuration is more realistic and stable in this environment. But it has to be based on documentation of the existing channel to recreate the configuration without adversely affecting reclaimed fills adjacent to the channel.

The plan presents many questions regarding **stability**. Reclaimed slopes greater than the angle of repose and reclaimed drainages at 1:1 slopes are very questionable from a stability standpoint. If the operator designs a plan which addresses these unique issues adequately, a permit might be granted. It is my opinion that slopes of this nature are not stable in their native

state and certainly not when they are disturbed and then replaced without vegetation.

If the vegetation can be established, will it be adequate to stabilize these extremely steep reclaimed slopes? The question has not been adequately answered. The Division should consider this permitting action outside the boundaries of standard engineering practice and require additional assurances of technical adequacy.

Additional deficiencies must also be addressed:

1) Indicate that erosion control matting will be maintained until a good vegetative cover is established.

2) Describe what criteria will be used to determine at which point riprap can be maintained in the channel at a culvert outlet.

3) Clarify the cross sections of channels RC-1A and RC-1B to show material of the side slopes or indicate that the channels are cut into bedrock. Also indicate on Plate 7-7 at which point these cross sections will be typical i.e., where the channel crosses the road or along the entire length of the channel.

4) Provide information/calculations to support the decision to place rock energy dissipators on bedrock in channels with slopes greater than 15%, or revise the section to show a clear channel.

5) Provide a drawing that details the transition between the constructed reclamation channels and the natural drainage channels.

6) If the reclaimed channels are not cut into the bedrock as shown on the typical cross sections, provide information regarding the material to be used for the side slopes of the channels and show that the side slopes will be stable.

7) Plate 7-7, Post Mining Watershed, needs to be revised to show what occurs when culvert C-17U is removed, to clarify the route of channel RC-1B, and to show how culverts C-22U, C-23U, and C-24U are being reclaimed using only two channels RC-1A and RC-1B. A map scale of 1" = 50" would be more appropriate to show the detail required.

8) Provide information that shows the existing profile and existing cross sections of the channels affected. This information is required to make a determination as to whether or not the plan is adequate to restore natural drainage patterns and

compliment the drainage pattern of the surrounding terrain as required by the regulations.

9) Clarify outlet condition and flow from culvert C-12D across the pad shown on Plate 7-1E.

10) The engineer's report identifies water on engineered slopes as a problem. Please clarify how this will be handled.

11) A commitment to establish and a description of the sediment control prior to construction must be included in this proposal.

ENGINEERING ANALYSIS

1) Page 3H-2 says that "care will be taken to prevent disturbed material from migrating downslope." But the plan contains no description of how such "care" is to be exercised. The plan submitted in 1993 contained provisions for a wooden barrier below all fills to contain the fill and prevent its migrating downslope. Such a barrier, the necessity of and the design for which have been discussed by the Division and the permittee, must be included in the plan. As discussed during the April 13, 1994 meeting, this barrier could be maintained during operations to contain all disturbance within the area outlined as the surface disturbance. If the disturbance is exceeded, a compliance situation may arise.

2) The cross-sections located on page 3H-4 and shown on pages 3H-6 through 3H-36 do not jibe with the cut-and-fill summary of Table 3H-1 (page 3H-5). In particular, cross-sections 12+00, 13+00, and 21+00 show fill, but Table 3H-1 shows no fill at the same stations; cross-sections 4+00, 5+00, 10+00, and 26+00 show no fill, but Table 3H-1 shows fill at the same stations; cross-sections 8+00 and 15+00 show no cut, where Table 3H-1 shows cut at the same stations.

3) The blasting plan in Appendix 3-M fails to discuss compliance with the requirements of R645-301-524.500 which have to do with blasting signs, warnings, and access control.

4) Needless to say, the present reclamation cost estimate does not take into account the preceding deficiencies. The reclamation cost estimate will have to be revised to reflect the correction of these deficiencies, especially 1, 2, 4, and 5.

As stated during the meeting, upon submittal of your response to these issues and the subsequent Division review,

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additional information may be required. If you have questions or require any further clarification, please call me or Daron Haddock.

Sincerely,


Pamela Grubaugh-Littig
Permit Supervisor

cc: Daron Haddock