

June 9, 1988

TO: FILE

FROM: Randy Harden, Reclamation Engineer 

RE: Technical Analysis, Waste Rock Disposal Site, Southern Utah Fuel Company, Convulsion Canyon Mine, ACT/041/002, Folder #2, Sevier County, Utah

The following are review comments regarding the technical analysis for the waste rock disposal site for Southern Utah Fuel Company's Convulsion Canyon Mine:

UMC 817.13 Casing and Sealing of Exposed Underground Openings:

General Requirements - JRH

UMC 817.14 Casing and Sealing of Exposed Underground Openings:

Temporary - JRH

UMC 817.15 Casing and Sealing of Exposed Underground Openings:

Permanent - JRH

Existing Environment and Applicant's Proposal

Information regarding these sections of the regulations is found in Section 4.2 of the plan.

The operator indicates that the monitoring bore hole will be closed as part of Phase II reclamation. The shallow pipes will be pulled from the ground and the wells buried. These areas will then be reseeded by hand broadcasting.

Compliance

The operator is not considered to be in compliance with the requirements of this section. The operator does not indicate that the wells are to be sealed in accordance with State regulations for the casing and sealing of water wells.

In accordance with the State Division of Water Rights, under the Administrative Rules for Water Rights, Part I.1.3, "In order to provide for protection of the water resources of the state and obtain valuable information on the aquifers of the state, the "Rules" have been extended to include the drilling of monitoring wells."

Under Part II, Section 12.2; Any well that is to be permanently abandoned shall be completely filled in such a manner to prevent vertical movement of water within the borehole as well as preventing the annular space surrounding the well casing from becoming a conduit for possible contamination of the groundwater supply.

Well construction and abandonment shall be accomplished under the direct supervision of a currently licensed water well driller who shall be responsible for verification of the procedures and materials used.

Materials to be used shall be in compliance with the requirements of the water well drillers rules.

The casings of the wells to be abandoned shall be severed a minimum of 2 feet below either the natural ground surface adjacent to the well or at the collar of the hole, whichever is the lower elevation. A minimum of 2 feet of compacted native material shall be placed above the abandoned well upon completion.

Any additional monitoring wells drilled on the site must be in compliance with the Administrative Rules for Water Well Drillers, State of Utah, Division of Water Rights. Refer to these rules for additional licensing and procedural requirements for the drilling and reclamation of wells.

Stipulations

Stipulation UMC 817.13-.15 - (1) - JRH

Prior to the the construction or abandonment of any water monitoring wells, or, within 30 days from the date of approval for the waste rock disposal facilities, the operator shall commit to and incorporate into the plan, a commitment to construct and abandon all water monitoring wells in compliance with the Administrative Rules for Water Well Drillers, Division of Water Rights.

UMC 817.71 Disposal of Excess Spoil and Underground Development Waste:
General Requirements - JRH

Existing Environment and Applicant's Proposal

- (a)(1) The operator has indicated on page 25 of the mining and reclamation plan that all surface precipitation falling directly on and infiltrating the underground development waste fill shall be channeled into a sedimentation pond. The sedimentation pond is designed to handle the 10 year - 24 hour event. Design criteria for the pond are presented in Section 2.4.2.

All surface drainage from above the location of the fill will be diverted away from the fill by the installation of diversion ditches.

- (a)(2) On page 26 of the plan, the operator indicates that a stability analysis of the fill was accomplished. Analysis of the fill was performed by Sargent, Hauskins and Beckwith and is included in the plan as Appendix II.
- (a)(3) Suitability for reclamation is described in the soils and revegetation sections of the plan.
- (b) Design parameters and methodology for construction of the fill are outlined in Section 4 and in Appendix II of the plan.
- (c) Site preparation and removal of organic material is described in Section 3.1.2 of the plan. Clearing and grubbing and topsoil protection are included as a part of this description. This methodology is also in accordance with those recommendations found in the consultant's report in Appendix II.
- (d) Refer to comments made under UMC 817.43 for discussion regarding the design of diversions required for slope protection.
- (e)(1) The location of the disposal area is provided on the maps provided with the plan.
- (e)(2) Slope criteria as described in this section of the regulations is not found within the limits of the waste disposal site. This section is considered to be not applicable.
- (f) Placement of waste material is found in Section 3.2.5 of the plan. The operator indicates that material will be placed in horizontal lifts not to exceed 3 feet in thickness and compacted with suitable equipment for both grading and compaction. Stability analysis is found in Appendix II of the plan.
- (g) Suitability for postmining land use is discussed under UMC 817.133.
- (h) Terracing is utilized in the final construction of the waste fill. These terraces consist of "V"-ditches at 1-2% grades in approximately the middle of 10 foot wide benches. These benches are to be spaced vertically at 20 feet. This information is found in the plan in section 3.2.5.
- (i) Inspections for both the fill and the sediment pond have been committed to by the operator in accordance with this section and section UMC 817.46(r). This information is found in section 3.2.7 of the plan.

- (j) This section regarding the disposal of coal processing waste in the fill is considered to be not applicable to the operator's plan.
- (k) The operator has indicated in Section 3.1.1 that there are no seeps or springs within the proposed fill area at the time of the investigation which would require special treatment. The operator also indicates that no underdrains or rock core chimney drains will be required.
- (l) Analysis of the foundation and abutment materials is found in the consultant's report in Appendix II of the plan.
- (m) This facility deals with the disposal of excess spoils and underground development waste on the surface. Information regarding the disposal of materials underground is pertinent to the mining and reclamation plan and is not applicable to the technical analysis of the waste rock disposal facility.

Compliance

- General Due to the determination that 2.5 feet of cover material will be required over the waste material, much of the design details provided by the operator are not considered to be sufficient.
- (a)(1) Refer to technical comments made under UMC 817.42.
 - (a)(2) This section is considered to be technically adequate. The stability analysis provided by SHB indicates that the proposed configuration has a long term static factor of safety of approximately 2. Although the amount of cover material which is required to be placed on the waste material may vary from 12 inches to 2.5 feet, the overall configuration and stability of the fill as design will not change appreciably.
 - (a)(3) Refer to comments made under the soils and revegetation sections of the technical review.
 - (b) This section is considered to be technically adequate. The design drawings and the consultants reports provide the mark of a registered professional engineer and therefore meet the requirements of this section.
 - (c) This section is considered to be technically adequate. The operator has provided sufficient detail in the design for clearing and grubbing of the site.
 - (d) Refer to comments made under UMC 817.43 for discussion regarding the technical adequacy of design of diversions required for slope protection.

- (e)(1) This section is considered to be technically adequate. The operator has located the site in a moderately sloping area. The construction and development is adjacent to an existing road fill and the material is planned to blend in with the surrounding area and up to the road fill. The area is considered to be stable.
- (e)(2) This section is considered to be not applicable.
- (f) This section is considered to be technically adequate. The operator has committed to place the material in a manner that will achieve long term stability. Due to the nature of coal waste materials, the operator has indicated that density and compaction parameters will be accomplished by visual methods rather than by physical or mechanical testing of the material during placement. This determination is reasonable since the material to be place will consist of poorly graded shales and sandstone with a low percentage of fine materials. Routine soil testing for compaction is not ammenable to this type of material.
- Slopes of the fill will be initially constructed at 2h:1v, with final slopes to be regraded to 3h:1v to facilitate revegetation. The operator has committed to place a minimum of 12" to topsoil material over the refuse, with the top 6" to be scarified in preparation for revegetation. Refer to comments elsewhere in this review regarding the total amount of cover material to be required.
- (g) Suitability for postmining land use is discussed under UMC 817.133.
- (h) This section is considered to be technically adequate. The terraces described by the operator in the construction of the final fill configuration are more oriented toward surface runoff erosion control than for overall fill stability. These terraces serve as water bars with the ditches employed to carry water along the contours of the slopes to the perimeter for the fill. Ditches skirting the fill are used to collect the water from these terraces and carry it below the fill.
- (i) This section is considered to be technically adequate. Inspections for both the fill and the sediment pond have been committed to by the operator in accordance with this section and section UMC 817.46(r).

- (j) This section of the regulations can be considered as technically adequate. Although coal processing waste is not a consideration for disposal in the waste rock disposal facility, the operator has provided the methodology for disposal of similar materials in the fill. Such materials are to include non-cemented soft shales, clay spoil, or fine-grained material which are to be mixed with the coarser materials to limit concentrations of these fines in the fill. Most notable of these waste materials is the sediment pond waste materials which have a high amount of sand and silt materials as well as a considerable amount of clay. By the operator's commitment to mix and blend these materials with the coarse refuse, it is considered acceptable to allow the disposal of sediment pond waste in the waste rock disposal site.
- (k) This section could be considered to be complete. However refer to hydrologic comments in this review regarding groundwater evaluation.
- (l) This section is considered to be complete. The information presented in the consultant's report indicated that the foundation material is suitable. The operator further indicates the specifications for recompaction of the foundation material once the topsoil materials have been removed.
- (m) This section is not applicable, this facility does not deal with returning of waste materials to the underground workings. Refer to the mining and reclamation plan for descriptions regarding returning materials to underground workings.

UMC 817.72 Disposal of Underground Development Waste and Excess Spoil:
Valley Fills - JRH

Existing Environment and Applicant's Proposal

This section of the regulations is considered to be not applicable. The waste rock disposal site does not meet the criteria to be considered as a valley fill.

UMC 817.73 Disposal of Underground Development Waste and Excess Spoil:
Head-of-Hollow Fills - JRH

This section of the regulations is considered to be not applicable. The waste rock disposal site does not meet the criteria to be considered as a head-of-hollow fill.

- (e)(1) This section is considered to be technically adequate. The operator has located the site in a moderately sloping area. The construction and development is adjacent to an existing road fill and the material is planned to blend in with the surrounding area and up to the road fill. The area is considered to be stable.
- (e)(2) This section is considered to be not applicable.
- (f) This section is considered to be technically adequate. The operator has committed to place the material in a manner that will achieve long term stability. Due to the nature of coal waste materials, the operator has indicated that density and compaction parameters will be accomplished by visual methods rather than by physical or mechanical testing of the material during placement. This determination is reasonable since the material to be place will consist of poorly graded shales and sandstone with a low percentage of fine materials. Routine soil testing for compaction is not ammenable to this type of material.
- Slopes of the fill will be initially constructed at 2h:1v, with final slopes to be regraded to 3h:1v to facilitate revegetation. The operator has committed to place a minimum of 12" to topsoil material over the refuse, with the top 6" to be scarified in preparation for revegetation. Refer to comments elsewhere in this review regarding the total amount of cover material to be required.
- (g) Suitability for postmining land use is discussed under UMC 817.133.
- (h) This section is considered to be technically adequate. The terraces described by the operator in the construction of the final fill configuration are more oriented toward surface runoff erosion control than for overall fill stability. These terraces serve as water bars with the ditches employed to carry water along the contours of the slopes to the perimeter for the fill. Ditches skirting the fill are used to collect the water from these terraces and carry it below the fill.
- (i) This section is considered to be technically adequate. Inspections for both the fill and the sediment pond have been committed to by the operator in accordance with this section and section UMC 817.46(r).

UMC 817.74 Disposal of Underground Development Waste and Excess Spoil:
Durable Rock Fills - JRH

This section of the regulations is considered to be not applicable. The waste rock disposal site does not meet the criteria to be considered as a durable rock fill.

UMC 817.89 Disposal of Non-Coal Wastes - JRH

Existing Environment and Applicant's Proposal

No information regarding the disposal of non-coal waste materials was found in the text.

Compliance

This section is not considered to be complete. The operator must at least indicate that no non-coal waste materials will be disposed of in the refuse material. As indicated in this section of the regulations, "At no time shall any solid waste material be deposited at refuse embankments or impoundment sites". Additionally, the operator shall commit to disposing of non-coal waste material in accordance with the requirements of this section.

Stipulations

Stipulation UMC 817.89 - (1) - JRH

Within 30 days from the date of approval, the operator shall incorporate into the plan for the waste rock disposal facility, a commitment not to dispose non-coal waste materials within the refuse embankment and to dispose of non-coal waste materials in accordance with the requirements of this section.

UMC 817.101 Backfilling and Grading: General Requirements - JRH

Existing Environment and Applicant's Proposal

Information regarding backfilling and grading of the site during the operation as well as reclamation can be found in the plan in sections 3.2.5 and 4.4.

The operator has indicated that waste rock materials are to be placed in lifts not to exceed three feet in thickness. Compaction of the fill will be accomplished by routing loaded equipment over the fill in a manner to cover the fill area uniformly. Final slopes of the fill are not to exceed 2h:1v and will be regraded upon completion of the reclamation to an exterior slope of 3h:1v.

The operator has indicated that topsoil material will be placed over the waste rock material in segments or strips which are approximately 300 feet long and 200 feet wide. Topsoil will be spread to a minimum depth of 12 inches.

Compliance

This section of the regulations could be considered to be complete pending modification of the cover requirements for the waste rock disposal facility. Upon modification of the plan to increase the depth of the cover material, this section can be considered complete.

Construction of the waste rock disposal facilities is to be accomplished in a manner that will involve reclamation of the site throughout the life of the facility. Once a portion of the waste fill has reached capacity, sufficient cover material can be placed over the area and reclamation of that particular area can be accomplished. In order to determine the worst case based on the information presented by the operator, it should be assumed by the operator that 2.5 feet of suitable cover material will be required over the coal waste rather than the 12 inches as indicated in the existing proposal.

The operation plan should reflect this contingency in the design and operation of the facility. In other words, the initial borrow area and removal of topsoil from the area in which waste material will first be placed should be increased in depth to account for the 2.5 feet of cover material that may be required.

By maintaining sufficient cover material that may be required to cover acid and toxic forming materials, the operator will not have a shortfall in the amount of cover materials that may be required.

Additionally, 12" of cover material is not considered sufficient from the standpoint of surface erosion of the site. As previously mentioned in earlier reviews, the allowable depth in which rills and gullies would have to be reduced in order to ensure sufficient cover of the waste materials. By increasing the amount of cover from 12" to 2-2.5 feet, the allowable depth for rills and gullies could remain at 9 inches.

Stipulations

Stipulation UMC 817.101 - (1) - JRH

Within 30 days from the approval date, the operator shall revise the plan to increase the amount of cover material required in accordance with the requirements of Stipulation UMC 817.22-(1)- JSL and UMC 817.48-(1) - JSL. Accordingly all drawings text and calculations relevant to this change in the amount of cover material shall also be modified and resubmitted into the plan.

UMC 817.150-.156 Class I Roads - JRH
UMC 817.160-.166 Class II Roads - JRH
UMC 817.170-.176 Class III Roads - JRH

Existing Environment and Applicant's Proposal

Plate 4 indicates that a haul road will be constructed on which the waste rock material is to be transported for disposal.

Compliance

The operator is considered to be in compliance with the requirements of this section. The haul road indicated on map 4 serves to facilitate the conceptual use of the site only. Temporary haul roads will be constructed as the fill progresses and will be incorporated into the fill area and covered or removed as required.

All of the area in which these temporary haul roads will be constructed will report to the sediment pond for the facility. All of these roads are considered to be only a part of the construction of the fill itself and are not required to meet the criteria for roads as described in these sections of the regulations.

Stipulations

None.

UMC 817.180 Other Transportation Facilities - JRH

Existing Environment and Applicant's Proposal

No other transportation facilities other than the haul roads are to be installed at the waste rock disposal site. This section of the regulations is considered to be not applicable.

Compliance

The operator is considered to be in compliance with the requirements of this section.

Stipulations

None.

UMC 817.181 Support Facilities and Utility Installations - JRH

Existing Environment and Applicant's Proposal

No other support facilities or utility installations are proposed in conjunction with the waste rock disposal facility.

Compliance

The operator is considered to be in compliance with the requirements of this section. This section is considered to be not applicable.

Stipulations

None.

RJH/as
cc: **B** Team
1384R/93-102