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STATE OF UTAH  
NATURAL RESOURCES  
Oil, Gas & Mining

ACT/041/002  
# 2  
Norman H. Bangerter, Governor  
Dee C. Hansen, Executive Director  
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December 24, 1986

Ms. Meg Estep-Johnston  
Office of Surface Mining  
Brooks Towers  
1020 15th Street  
Denver, Colorado 80202

Dear Ms. Estep-Johnston:

Re: Revised Technical Analysis, Southern Utah Fuel Company,  
Convulsion Canyon Mine, ACT/041/002, Folder No. 2, Sevier  
County, Utah

Enclosed are updated pages for the Convulsion Canyon Final Technical Analysis (TA). Changes have been made to section UMC 817.121 to incorporate the recent approval for mining under the escarpment in Quitchupah Canyon. Hopefully this will satisfy the Forest Service concerns. Please contact me if further changes are needed.

Sincerely,

Susan C. Linner  
Reclamation Biologist/  
Permit Supervisor

jvb  
Enclosures  
cc: L. B. Braxton  
D. Cline  
D. Darby  
0028R-59

grazing management. The seed mix consists of a diverse mixture of native grasses, forbs, shrubs and one introduced species, yellow sweet clover. This species meets the requirements of UMC 817.112 in stabilizing the area, yet allowing diverse permanent cover to be established. It was used on the sedimentation pond dam at the Convulsion Canyon mine in 1981 for interim reclamation. By 1984 all the sweet clover had died out and native grasses had become established (PAP, Vol. 8, February Stipulation Response). A mixture of native shrubs will be seeded and also planted in random clumps of 200 with at least 5 clumps per acre on the surface facilities area. This planting program is designed to enhance postmining land-use of wildlife habitat and follows recommendations made by the Utah Division of Wildlife Resources (see October 24, 1983 letter attached to TA). Break out areas will be regraded, covered with soil and seeded with the same seed mix as the surface facilities area. No shrubs will be planted on these small areas. Any reclamation work done prior to final reclamation will be accomplished similarly to final reclamation with the exception that no shrubs will be planted.

An adequate plan for monitoring the success of revegetated areas has also been submitted (PAP Volume 8, February 1984 Stipulation Response).

#### Feasibility of Reclamation

The Convulsion Canyon Mine site receives 12-16 inches of precipitation annually. There are no other mines in the area that have implemented reclamation procedures; however, the USFS has set up successful revegetation test plots in the Emery Coal Field approximately 10 miles east of the minesite. This area receives less precipitation than the minesite does.

#### Compliance

The applicant has adequately addressed all the requirements of a complete reclamation plan.

#### Stipulations

None.

UMC 817.121 Subsidence Control: General Requirements and UMC 817.124 Subsidence Control: Surface Owner Protection

#### Existing Environment and Applicant's Proposal

The effect of underground mining on surface use, primarily cattle grazing and big game hunting (there is also some snowmobiling and timber cutting of over-mature ponderosas), will be minimal. Subsidence will be gradual and eventually uniform over most of the lease, too imperceptible to affect general land-use.

Subsidence will be planned to maximize coal recovery and prevent adverse effects to renewable resources and structures. Two zones will exist over the mine property. A non-subsidence zone will exist along stream channels and along the coal outcrop where ground cover is low. A subsidence zone will exist where pillars will be extracted to allow surface subsidence. The first mining zone forms a band contiguous to the southerly Convulsion and easterly Quitchupah canyon rims where subsidence is not expected and erosion will not be facilitated. Subsidence above the second mining zone is planned to be systematic and gradual, to be restricted to the interior of the leases and away from outcrops. An uneven arching effect is expected over "full" extraction areas during mining operations, which will stabilize in uniform subsidence once the entire area is mined.

Subsidence is monitored at six month intervals by mine personnel with survey points located where settling is anticipated. A semi-annual report is currently and shall in the future be provided to State and Federal authorities, which tabulates horizontal and vertical displacements at each of the monitoring stations (vol. 8, 1983 ACR Response, p. 22).

Enough subsidence data has been acquired to develop subsidence profiles and determine the 12 degree angle of draw and subsidence characteristics for the permit area. None-the-less, additional data from other ongoing company monitored subsidence studies are currently and shall in the future be integrated with subsidence reports in order to determine more precisely the overall effects of subsidence--(1) surveys to verify the 12° angle of draw under varying overburden depths, (2) a complete subsidence study being conducted by Woodward-Clyde Consultants (sponsored by the Department of Energy), (3) surveys to determine maximum subsidence with varying overburden depths, and (4) surveys to locate the exact positions of tension cracks in relation to underground workings (see vol. 5, Subsidence, p. 3-6)

If spring 001 (East Spring Canyon) is disrupted by mining subsidence, alternatives to supplying the stock water which it supports are proposed, including: (1) drilling a water well into abandoned mine workings; (2) constructing a surface water impoundment north of the spring; (3) developing ground-water from upper Duncan Draw. If necessary, the third option given appears to be the most feasible because a spring present in section 26 supplies three stock water ponds on a year round basis in Duncan Draw. Consultation with U. S. Forest Service personnel at Fishlake National Forest in 1978 resulted in an agreement that a plastic pipeline connecting upper Duncan Draw to spring 001 would be a feasible alternative water supply (for more details see vol. 4, Hydrology, p. 53-54).

Full-extraction mining techniques have been planned and implemented on fee property. Consequently, SUFCo has obtained written permission from the owners of the fee property in regards to full-extraction methods which have resulted in subsidence (Volume 8, Stipulation Response Revision, December 9, 1983).

SUFCo has petitioned the U.S. Forest Service and the Regulatory Authority to allow subsidence along the escarpments. Permission was granted on a limited basis to allow longwall mining under the western escarpment of Quitchupah Canyon. It was determined that subsidence along the escarpment should not cause major adverse effects to the hydrologic regime or surface features. Buffer zones have been established where secondary mining will not take place. Some adverse effects that could occur from subsidence are changes in the aesthetics and potential of taking or damaging raptor nests from fracturing or cliff spawling. A review of these problems concluded that the aesthetics problem is negligible on the basis that new face exposure would be created if spawling should occur and the canyon does not attract visitors. SUFCo has committed to complete a detailed raptor survey of all cliffs (both east and west side of Quitchupah Canyon) with a potential for subsidence. This survey must be completed in late Spring of 1987 by helicopter, and in accordance with the Regulatory Authority's guidelines (to be issued in the near future). SUFCo will also monitor the escarpment area and provide an annual subsidence report including data generated with documentation of movement, displacement and type of displacement (e.g. slippage, rotation, cliff failure).

#### Compliance

- A. The applicant has committed to planning and conducting underground coal mining activities using measures consistent with known technology in order to prevent subsidence from causing material damage to the surface, to the extent technologically and economically feasible, and maintain the value and reasonable foreseeable use of surface land except in those areas where mining technology requires planned subsidence in a predictable manner (all terms are as defined by this regulation).
- B. The applicant shall and is complying with all provisions of the subsidence control plan pursuant to UMC 784.20 and approved by the Division.
- C. The applicant has a \$1,000,000 (per each occurrence) property damage insurance policy. No lessening of surface property values is anticipated and should damage occur, owners will be notified.
- D. Plans to mitigate subsidence effects for spring 001 have been proposed, agreed upon, and their feasibility have been determined.

Stipulations

None.

UMC 817.122 Subsidence Control: Public Notice

Existing Environment and Applicant's Proposal

Other than 640 acres owned by the applicant, surface lands within the permit area are owned by the U.S. Government and are either parts of the Fishlake or Mante - La Sal National Forests. Maps showing the projected sequence and dates of projected mining activities for the operation which could potentially affect the surface through subsidence caused by underground coal mining have been mailed to a respective forest supervisors.

Compliance

The applicant complies with this section.

Stipulations

None.

UMC 817.124 Subsidence Control: Surface Owner Protection

Existing Environment and Applicant's Proposal

The applicant has submitted complete subsidence control plans to the regulatory authority and forest supervisors which will utilize the best technology available and provide controlled subsidence. The applicant has cooperated with forest and regulatory officials to protect areas along escarpments and the North Fork of Quitchupah Creek so that no subsidence will take place. No secondary mining will take place in the vicinity of springs.

Compliance

The applicant complies with this section.

Stipulations

None.

UMC 817.126 Subsidence Control: Buffer Zones

Existing Environment and Applicant's Proposal

The North Mains mining section passed beneath Quitchupah Creek as an access way to reserves on the northeast side of the property. Overburden in this crossing varies between 50 to 100 feet, consisting of interbedded siltstone, sandstone and shale. Full roof

support is planned by the use of minimum-size 66 X 100 foot pillars. A 100-foot buffer zone, where there will be no second (full extraction) mining, will be maintained on either side of Quitchupah Creek. Tri-annual hydrologic monitoring for changes in flow is conducted both on the surface and underground. Should subsidence from planned underground mining interrupt or diminish it's flow the nature of the problem will be investigated by the operator and measures to correct the damamge and to prevent addition subsidence will be determined through consultation with the regulatory authority to the extent technologically and economically feasible (as defined by this regulation).

### Compliance

The Division approved Sufco's Quitchupah Creek crossing on November 4, 1982 (see UMC 817.57). Sufco has not only committed to adopt measures determined through consultation with the Division to correct damage as a result of subsidence through mining practices, but has also, committed to replace any surface water associated with this creek lost as the result of subsidence and to use the highest level of economically feasible technology to provide protection to the stream crossing at the time of abandonment. The applicant will contact the regulatory authority within a 24 hour period if catastrophic subsidence (collapse of the stream channel) should occur.

### Stipulations

None.

### UMC 817.131-.132 Cessation of Operations

Not applicable at this time.

### UMC 817.133 Postmining Land-Use

### Existing Environment and Applicant's Proposal

The Sufco lease area is predominantly U. S. Forest Service land managed under multiple use and sustained yield concepts. Present management emphasizes livestock grazing, wildlife, timber and watershed development.

The majority of the mine area is within the Old Woman Management Area, Salina Planning Unit, Fishlake National Forest. Current grazing intensity averages seven acres per AUM (animal unit month) for combined sheep and cattle grazing.

Selective timber harvesting of ponderosa pine occurs on and around the lease area. Other timber uses include posts and poles from aspen and Christmas-tree cutting.