0019

~~Memo File~~

041/002 # 2

December 7, 1987

Memo to File

To: Sue Linner, Permit Supervisor

From: David W. Darby, Geologist DWD

Re: Ground Water Monitoring Program, Convulsion Canyon Mine, ACT/041/002, Southern Utah Fuel Company, Coastal States Energy Company, Folder No. 2, Sevier County, Utah,

Synopsis

Stipulation UMC 817.52-1-DD attached to Southern Utah Fuel Company's mining permit requires the operators of SUFCo to implement an in-mine ground water monitoring program to supplement the current ground water monitoring program.

The stipulation was imposed on SUFCo to gain definitive information on ground water sources in the vicinity of the mine. Information obtained from this monitoring will be extrapolated to future mining areas. SUFCo currently intercepts and discharges over 2.3 cubic feet per second (1038 gallons per minute as of October 1986). It is expected that future mining will intercept ground water at greater rates proportional to mined areas.

Several factors initiated the in-mine monitoring stipulation. It is expected that in-mine ground water monitoring will reflect site specific details of ground water sources and characteristics. Information gained from in-mine monitoring should help predict ground water sources and characteristics for future mining areas.

1. Ground water discharge has increased from 140,000 gallons per day (gpd) in 1977 to 433,000 gpd in 1980 and to 1,550,000 gpd in 1987. The continuous increase of ground water inflow to the mine indicates that the source is not necessarily from a perched aquifer as indicated by the operator.

2. The area surrounding SUFCo is highly jointed. Joints act as conduits for ground water movement. In mining through these joints more ground water will be produced. In-mine monitoring will show the relationship of ground water inflow to joint pattern.

3. The Division has information pertaining to seven wells. Of the seven wells only 2 wells present information that was reliable and useful. Information provided by wells could be limited due to the influence the joint systems that exist in the area.

4. Subsidence could interfere or change water flow patterns. Fracturing caused during subsidence could create conduits to intercept recharge to the regional aquifer which the U.S. Geological Survey has determined to be the Starpoint Sandstone and Blackhawk Formation. Evaluating the inflows from subsided areas would be indicative of the type of aquifer that exists and can be used to predict future inflows from future mined areas.

5. The discharge of intercepted ground water into Quitchupah Creek has a potential of changing the riparian habitat of the creek. As discharge increases with mine expansion it is expected that the continuous flows exceeding the normal baseline level will have alternative effects to the stream channel characteristics, aquatic life and vegetation. There is also a potential that the intercepted ground water is the recharge source for other streams and a transfer of water is occuring from one basin to another.

On August 11, 1987 Ken May, Lowell Braxton and David Darby from the Division of Oil, Gas and Mining (DOGM) met with Vernal Mortensen, Ken Payne, John Garr, Keith Welch, Kerry Frame, Wess Sorensen and Mike Davies representing Southern Utah Fuel Company to discuss stipulations and conditions to SUFCo's mining permit issued on May 19, 1987.

During the meeting SUFCo represenatives presented their reasons for not wanting to implement an in-mine monitoring program. SUFCo contended that their present monitoring stations and information is sufficient to describe ground water conditions. SUFCo also presented information from 13 additional wells located in the north-west area of their property, which the Division did not have. The Division presented reasons for wanting the in-mine monitoring program implemented as stated above.

In light of the information presented during the meeting by SUFCo a decision was reached, whereby SUFCo would summarize all ground water information in a report. In accordance with our agreement the report was to demonstrate that the use of ground water monitoring wells is sufficient to identify and characterize ground water conditions on and adjacent to the minesite throughout the mining process in lieu of implementing an in-mine ground water monitoring program.

SUFCo's submitted their report, Hydrologic Assessment (1977-1987), on September 28, 1987. It was reviewed by me, David Darby, Geologist for the Utah Division of Oil, Gas and Mining.

The report was suppose to summarize the data from all ground water monitoring sites and show that the data collected from the all ground water monitoring sites reflects current and future ground water sources with respect to mining plans and the amounts of ground water being intercepted and discharged from the mine.

The report is lacking information agreed upon and necessary to assess and summarize the sources of ground water conditions in relation to mining. The report does not show or discuss the additional 13 well sites presented in our meeting or any data pertaining to them. There has been no correlation established between the monitoring sites and the amount of ground water discharged from the mine. And, there has been no comparison or correlation established between the mining sequence, subsidence areas, fracture zones and monitoring wells.

Conclusion

The report lacks the information to summarize overall ground water sources and characteristics . It is unlikely that the data and material SUFCo can assemble will provide the Division with sufficient information to analyze the relationship of ground water sources to monitoring locations without implementing an in-mine monitoring plan.

Recommendations

I recommend that SUFCo be required to submit plans for an in-mine ground water monitoring program for the Convulsion Canyon Mine within 30 days to avoid issuance of a Notice of Violation for not meeting the conditions of the stipulation.

UMC 817.52(a)(3) gives the authority to request additional hydrologic tests when underground coal mining activities may affect ground water systems which serve as aquifers. The Division is also mandated under UMC 817.41(a) and UMC 817.50(b)(1)(ii) to maintain the prevailing hydrologic balance.

Implementation of an in-mine ground water monitoring program by SUFCo is necessary for site specific, analytical and predictive measures which will insure minimal changes to the prevailing hydrologic balance.

dwd
cc.
L. Braxton
R. Summers
K. Wheeler