

0010



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

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411/02

*Copy Joe and Aaron  
and Lowell and*

*Citizen's Complaint*

*Need response  
by 10/11....*

*File  
ad 041/002 #5*

*Who drafts response to*

*October 12, 1994  
Citizen's?*

TO: Pamela Grubaugh-Littig, Permit Supervisor  
FROM: James D. Smith, Reclamation Specialist *JDS*  
RE: Citizen's Complaint, Southern Utah Fuel Company,  
Convulsion Canyon Mine, ACT/041/002, Working File,  
Sevier County, Utah

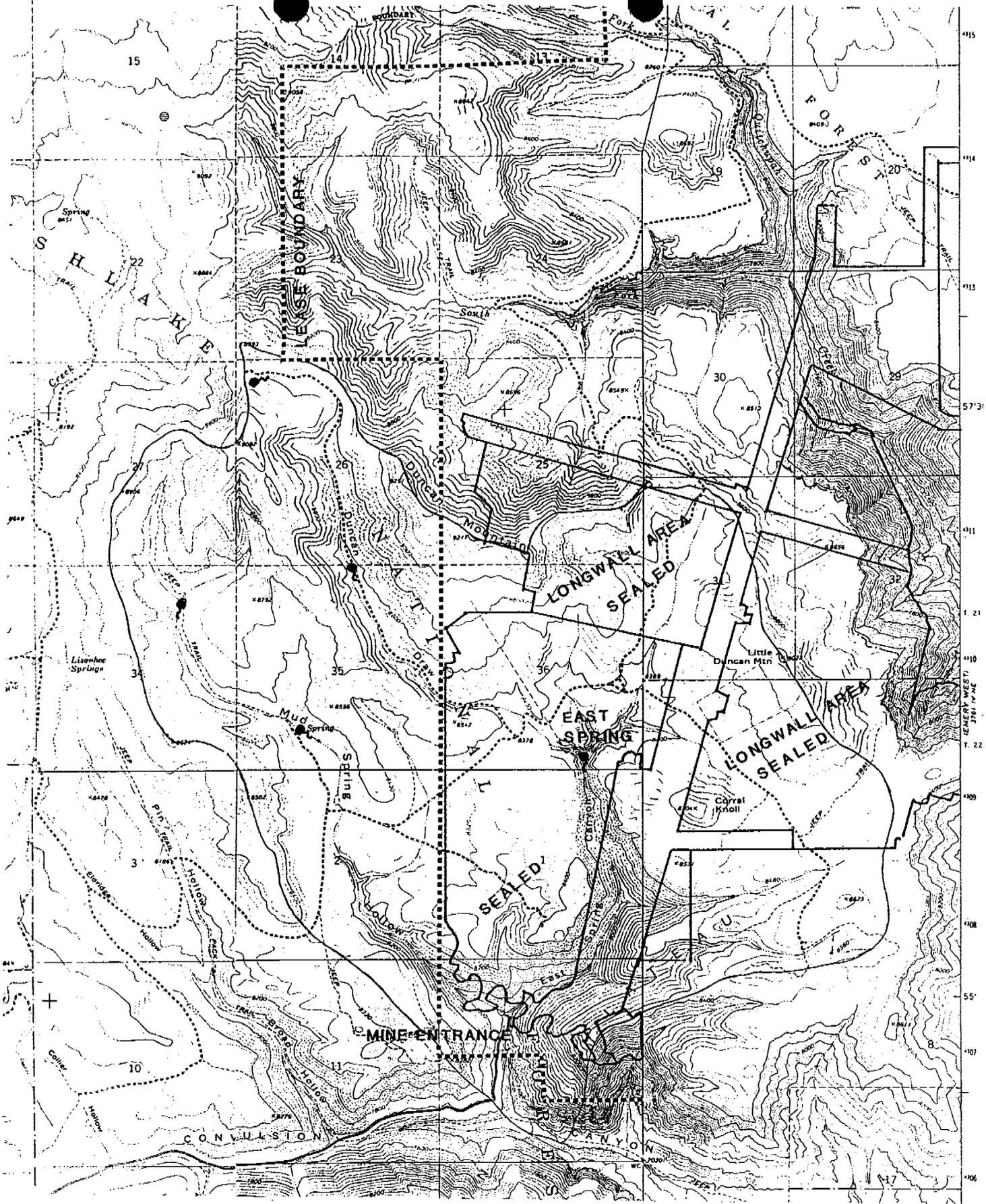
DOGM received a letter on September 26, 1994 requesting an inspection of the Convulsion Canyon Mine (Exhibit 1). It was signed by four concerned citizens, members of the Quitchupah Cattlemen's Association. Their concern is that mining activities at the Convulsion Canyon Mine, in particular pumping of water from the mine, have caused a depletion of water at the surface, loss of flow from springs, and drying of wetlands and meadows in the Duncan Draw and Mud Springs area.

An inspection was conducted by Jim Smith and Pete Hess of DOGM on September 29, 1994. Mr. J. K. Eardley, one of the petitioners, was able to attend to represent the Quitchupah Cattlemen's Assoc. Wess Sorensen and Keith Welch represented SUFCo. After examining the maps and other data in SUFCo's office, Jim Smith, Pete Hess, and Mr. Eardley continued the inspection on the ground in Mud Springs Hollow and Duncan Draw.

Mr. Eardley acknowledged that there is a prolonged drought occurring in the area. However, he and the other water users were concerned that there seems to have been a drastic change in drying in past three years in Duncan Draw and Mud Spring Hollow, more than the drought can account for. Two springs in Mud Springs Hollow and two springs in Duncan Draw are dry. Meadows in Mud Spring Hollow and Duncan Draw are drying and sagebrush are beginning to invade them. Flow is also decreasing East Spring (which issues from the Castlegate Sandstone below the end of Duncan Draw) and the meadows above that spring are going dry. Mr. Eardley contrasted these conditions with a spring on the northeast side of Duncan Mountain where the water users have not noticed any decrease in flow over the past three years. (This spring has not been identified. The USGS topographic map does not show a spring and the survey of the area for SUFCo in 1980 by Hydrometrics, Inc. does not mention a spring in that area.)

The nearest mining to Mud Spring Hollow and Duncan Draw was in Sec.'s 25 and 36, T. 21 S., R. 4 E. and Sec.'s 1 and 12, T. 22 S., R. 4 E. (Figure 1). The latest mining in this area was with longwall equipment in the northern part of Sec. 36 in 1992. The





SPRINGS

FIGURE 1

southern part of Sec. 36 was mined in 1978-1983. The south half of Sec. 25 was longwall mined in 1989-1991. The north half of Sec. 1 was mined in 1974-1978. Mining in the remainder of Sec. 1 and in Sec. 12 dates back to the 1940's and continued into the 1960's. Except for the main entries, the mine workings in these sections have been sealed. None of the mine workings directly underlie the areas of Mud Spring Hollow or Duncan Draw that are of concern.

Dip is to the northwest at approximately 2 degrees. Faults striking approximately north-northwest by south-southeast have been mapped on the surface and in the mine. Throw decreases to the southeast. There is a secondary set of fractures approximately perpendicular to the faults (Thiros and Cordy, 1991). SUFCo encountered a fault in the center of Section 31 in 1983, and monitoring since then has noted small, intermittent flows from the fault. Faults with 14 to 18 feet of throw were encountered in Sections 25 and 36, and water was pumped from Section 36 during mining. Projection of these two faults to the northwest places one along the crest of Duncan Mountain, roughly a half mile northeast of Duncan Draw and one mile from Mud Spring Hollow, and the other on the northeast side of Duncan Mountain.

SUFCo typically encounters water at working faces of the mine, but flows decrease rapidly. According to SUFCo, almost all water currently being pumped from the mine (approximately 1 million gallons per day) is coming from the Quitchupah tract located north and east of the older workings. Discharges as large as 40 to 50 gallons per minute have been encountered, but they have declined to 5 to 10 gallons per minute within a year. Dr. Alan Mayo did an evaluation of in-mine waters for SUFCo in 1993. He found tritium levels indicate that water flowing into the mine in the Quitchupah tract was recharged prior to 1952. Carbon-13 dating indicated the water is about 35,000 years old.

Mine water with a high TDS content is being disposed of by pumping it into the sealed areas west of the main entries, where it flows downdip to the northwest. The water level is expected to rise in these old workings until head becomes sufficient for water to flow from the mine into the ground water system.

Subsidence monitoring shows a vertical drop of up to 4 feet in areas underlain by the Castlegate Sandstone. In areas that extend beyond the outcrop of this structurally supportive unit, subsidence has been up to 10 feet. The lower end of Duncan Draw, in Section 36, has subsided up to 2 feet. Subsidence maps don't cover the oldest workings in Section 1. These older areas were unsealed in 1979 and Wess Sorensen entered them for exploration purposes. He found the coal pillars to be broken but not collapsed, and the area was dry. The area was resealed in 1980-1981. Wess stated that the surface over these old works has shown no evidence of subsidence since 1983, when aerial photo

monitoring began. Overburden is 800 to 1800 feet thick where full extraction mining has been done in these sections.

There was no visual evidence of subsidence cracks and no visible evidence of recent or renewed movement on faults in Mud Spring Hollow or Duncan Draw. The springs and meadows that were examined issue from or are on the Price River Formation. Two dry spring boxes were found in Mud Spring Hollow and one in Duncan Draw. The highest spring in Duncan Draw, issuing from the North Horn Formation, was not visited but is reported to be dry also. The grass in the meadows was not dead but was very dry, and sagebrush are invading. The soil was cracked because of the lack of moisture. These cracks were up to one inch wide, did not appear to be deeper than one foot, and were generally parallel to the axis of the drainage.

SUFCO's precipitation records show year to year variations, but a downward trend since 1983 is not evident. Longer term US Weather Bureau information on precipitation should be available from the station at the nearby town of Emery but these data have not been obtained yet.

SUFCO's records document a steady decline in stream and spring flows since 1983. USGS stream flow data for Muddy Creek (Figure 2) show that 1980 to 1986 was a period of above average streamflow. Flow decreased steadily from the peak in 1983 until 1990, and has been below average from 1988 to 1994.

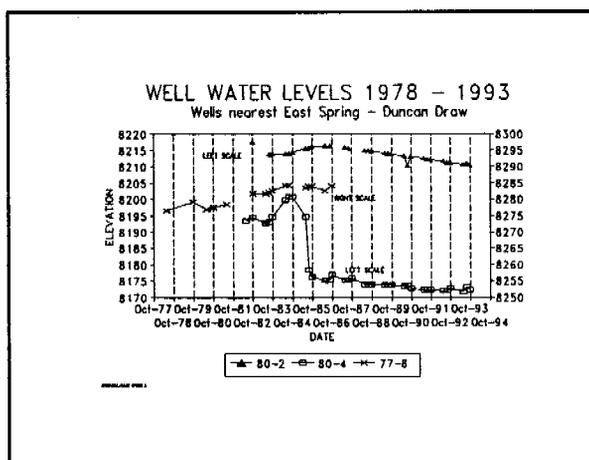


FIGURE 3

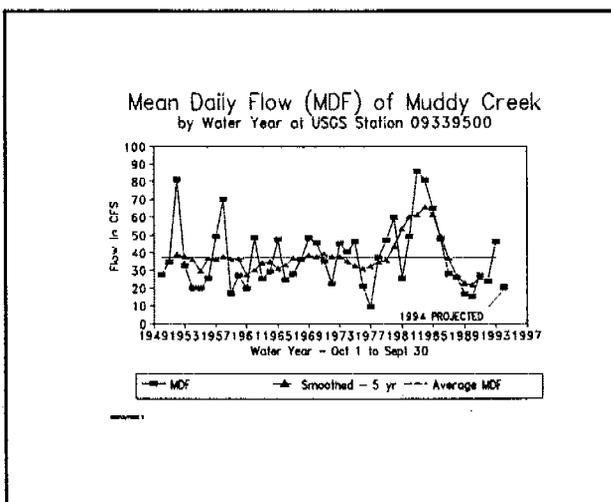
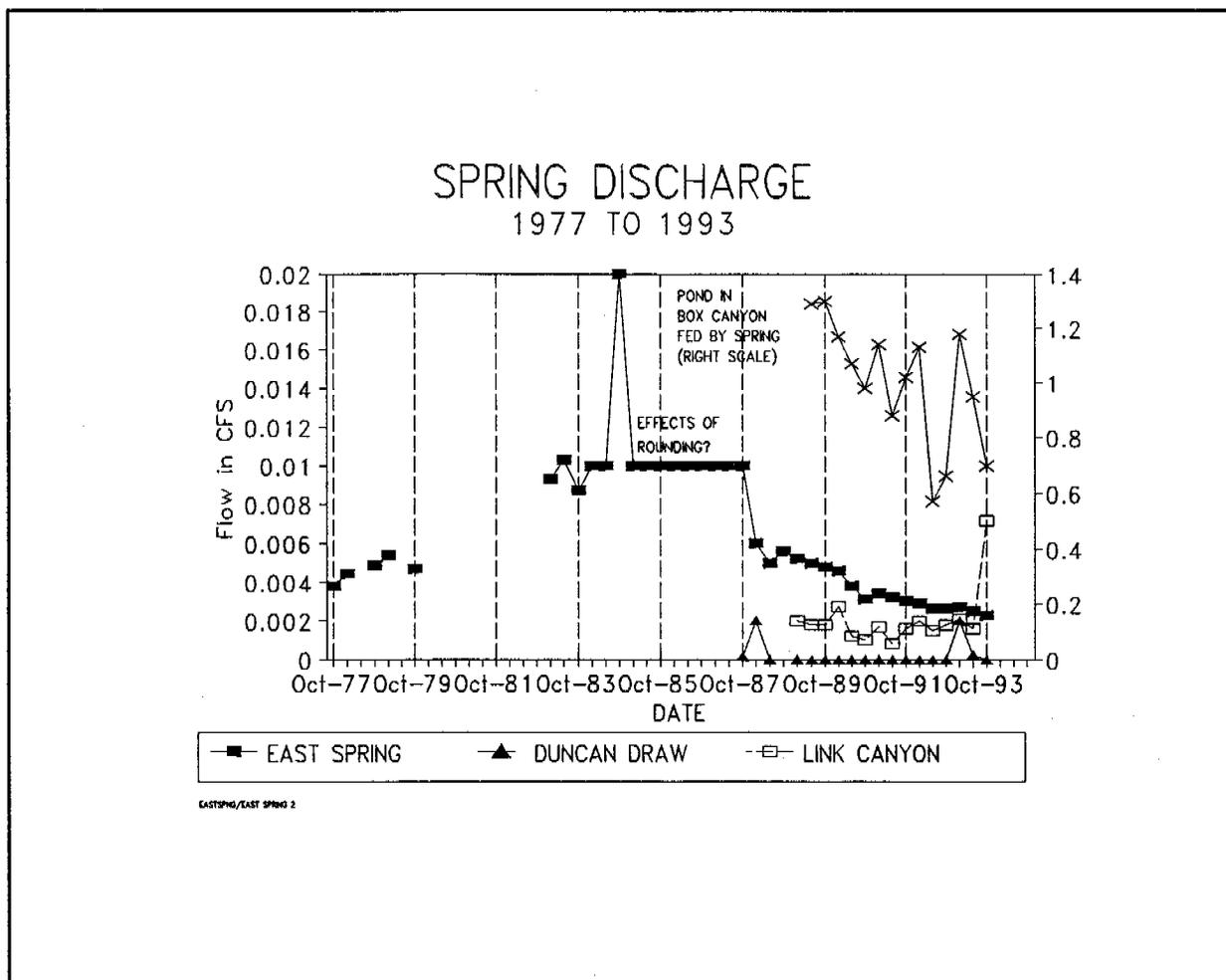


FIGURE 2

SUFCo wells that monitor the Castlegate sandstone near the bottom of Duncan Draw indicate water levels were rising in the late 1970's and earliest 1980's and have been declining since, with the maxima occurring between 1984 and 1986 (Figure 3). Likewise, data from East Spring show increasing flow

up to 1982, with discharge at a maximum between 1983 and 1987 and then decreasing from 1988 (Figure 4).



**FIGURE 4**

Thiros and Cordy (1991) found that most springs in the area discharge at or near formation contacts. Others are controlled by faults or hydraulic conductivity contrasts within a formation. Thiros and Cordy (1991) considered all observed discharges from the Castlegate sandstone to be the result of downdip flow, most of it along bedding planes. East Spring discharges from the Castlegate Sandstone, and tritium levels reported by Thiros and Cordy (1991) indicate the water from this spring is of post-1952 age. Thiros and Cordy also found that the volume of June discharge from East Spring correlates closely with the amount of water in the snowpack of the preceding winter.

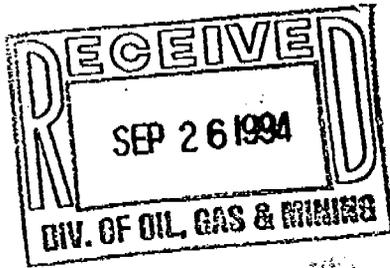
**FINDING**

## FINDING

Based on data from SUFCo and other sources and from the field inspection, the decline in spring discharges in Mud Spring Hollow and Duncan Draw appears to be the result of prolonged drought. The water currently being pumped from the mine is from areas that are several miles away from and have no direct hydrologic connection with the Duncan Draw - Mud Spring Hollow area. Old mine workings nearest the Duncan Draw - Mud Spring Hollow area are sealed and are being used to dispose of high TDS water from other areas of the mine. Water accumulating in these sealed areas may eventually flow into the regional ground water system if sufficient head is developed.

### Reference:

Thiros, S.A., and Cordy, G.E., 1991, Hydrology and potential effects of mining in the Quitchupah and Pines Coal-Lease Tracts, central Utah: U.S. Geological Survey Water-Resources Investigation Report 90-4084, 63 p.



STAS

2433 South Highway 10  
Price, Utah 84501  
(801) 637-0071  
September 8, 1994

Ms. Pamela Grubaugh-Littig  
Permit Supervisor  
State of Utah, Department of Natural Resources  
Division of Oil, Gas, and Mining  
355 West North Temple, 3 Triad Center, Suite 350  
Salt Lake City, Utah 84180-1203

*Copy Lowell, Dave, Joe, Pam*

Re: Concern, Convulsion Canyon Mine, Southern Utah Fuel Company, ACT/041/002  
Folder #2, Sevier County, Utah

*Copy to file #2 #5 Litig. Complaint file  
Original to  
city complaint  
file*

Dear Ms. Grubaugh-Littig:

We request an inspection of the Convulsion Canyon Mine, Southern Utah Fuel Company's operation in the Mud Springs and Duncan Draw area for depleting the surface water and drying up the wet lands by undermining the area. The water is being pumped out of the mine now that used to come to the surface and make the wet lands and feed the springs.

We would like to have the mine pump the water back to the surface where it could be used for livestock watering. We don't know how they will ever replace the wet lands that have dried up.

We are available if you have any questions or need additional information.

Sincerely,  
CONCERNED CITIZENS

*Morgan Robertson*  
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*Jay Lilly*  
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EMERY, UT 84522  
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J. K. Eardley  
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*George W. Lewis*  
75 East 3rd South  
Price Utah 84501 637-630  
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EXHIBIT 1