



SCOTT M. MATHESON
Governor

GORDON E. HARMSTON
Executive Director,
NATURAL RESOURCES

CLEON B. FEIGHT
Director

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS, AND MINING
1588 West North Temple
Salt Lake City, Utah 84116
(801) 533-5771

OIL, GAS, AND MINING BOARD

CHARLES R. HENDERSON
Chairman

JOHN L. BELL
C. RAY JUVELIN
THADIS W. BOX
MAXILIAN A. FARBMAN
EDWARD T. BECK
E. STEELE McINTYRE

April 30, 1981

Mr. John Nadolski
Office of Surface Mining
Region V
Brooks Towers
1020 Fifteenth Street
Denver, Colorado 80202

RE: Boron Monitoring
C. V. Spur
Beaver Creek Coal Co.
ACT/007/022
Carbon County, Utah

Dear John:

In regard to a recent conversation with Ken Wangerud (ARCO) and Dan Guy (Beaver Creek Coal Company) concerning the ACR for Beaver Creek Coal Company's C.V. Spur, the following became apparent.

OSM granted permit approval for the C.V. Spur with the stipulation that monitoring for boron be included in the ground water baseline analysis. The discussion in OSM's ACR emphasized the toxicity of boron to surrounding croplands, should significant concentrations enter irrigation water. The application contains water quality data from ground water wells which included boron in the analysis. There is also boron data on the Price River, Carbon Canal and other geographically similar points (Table 1).

Table 1. Water Quality Data

<u>Sample</u>	<u>Date Sampled</u>	<u>B mg/l</u>	<u>pH</u>	<u>EPA Standard for Boron = .750 mg/l</u>
French Drain at Pump House	11-29-77	1.1	7.87	
	3-8-78	.88	7.72	
	4-21-79	.10	7.72	
	8-20-80	.016	7.60	

Mr. John Nadolski
ACT/007/022
April 30, 1981
Page two

Table 1. (continued)

<u>Sample</u>	<u>Date Sampled</u>	<u>B mg/l</u>	<u>pH</u>	<u>EPA Standard for Boron = .750 mg/l</u>
French Drain East Boundary Permit Area Well #9	8-20-80	.25	7.5	
Price River	--	.48		
Carbon Canal	--	.65	7.9	
<u>Storm Runoff</u>				
Drunkards Wash	--	.41	7.4	
Miller Creek	--	.28	8.0	

Mr. Wangerud described a recent discussion of this ACR comment with OSM where the boron monitoring requirement was put under different terms. Mr. Wangerud stated that OSM found the monitoring necessary since boron may act as a mechanism for clay dispersal thereby causing clay pans to form below the soil surface within the permit area.

From research on this subject, we found the following characteristics to be true:

1. The soils within the permit area are mainly silt and clay loams with a high percentage of clay in the subsoils. Where fine textured soils exist along with a high pH (as evident in C.V. Spur's ground water) there is a decrease in boron uptake by vegetation, therefore, a decreased likelihood of plant toxicity.
2. The high background levels of boron evidenced in the french drain samples on the west and north boundaries draining ground water to the west of the permit boundary along with the high concentrations found in the Price River and Carbon Canal water, would indicate that these concentrations are a result of the naturally high boron content of the soils (page 2-27 of permit). Also, the surrounding cultivated areas are mainly producing alfalfa which is dependant on boron for nutrition. Whatever amount the crops don't get naturally must be amended through borate fertilizer applications.

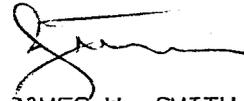
Mr. John Nadolski
ACT/007/022
April 30, 1981
Page three

3. The underground drain sample #9 taken from the east property boundary just off the refuse disposal area, had a significantly low boron concentration (.25 mg/l). This well sample is representative of ground water flow through both operational and refuse disposal areas (Figure #4, Rollins, Brown & Gunnel, Inc., Hydrology Report).

In light of these facts, the Division does not find it necessary for Beaver Creek to carry out further analysis on the refuse disposal material or ground water in the permit area. This OSM stipulation was included in the Division's ACR, but at this time, we do not find adding boron to the monitoring program necessary to Beaver Creek's environmental compliance at C.V. Spur.

If you have further concerns in this regard, please contact Sally Kefer of my staff.

Sincerely,



JAMES W. SMITH, JR.
COORDINATOR OF MINED
LAND DEVELOPMENT

cc: Ken Wangerud

JWS/SK/btm