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W. J. Smith VB
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 Fay to Loomer, Plateau



United States Department of the Interior

GEOLOGICAL SURVEY

WATER RESOURCES DIVISION
 Room 1016 Administration Building
 1745 West 1700 South
 Salt Lake City, Utah 84104

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September 26, 1989

Mr. Lowell Braxton
 Utah Division of Oil, Gas, and Mining
 3 Triad Center, Suite 350
 Salt Lake City, Utah 84180-1203

DIVISION OF
 OIL, GAS & MINING

Dear Mr. Braxton:

The following is a review of events concerning the subsidence project since the June 13, 1989 meeting with Utah Division of Oil, Gas, and Mining, Cyprus Plateau Mining, and United States Geological Survey.

June

On June 16, 1989, the pressure transducer was removed from the inmine monitor well (3 East X-cut 25) to prevent its loss as the longwall mining approached the vicinity of the monitor well.

A surface crack 1/4 inch wide and several inches deep was observed during the June 16th field reconnaissance on the south canyon slope; the first surface crack seen on the south canyon slope. The surface crack was below a sandstone outcrop, 100 feet west of the inmine monitor well, along the trail. Within several weeks a portion of the sandstone outcrop separated from the outcrop and slid down the slope into Miller Creek. The landslide/rock fall encompassed an area 50 feet wide.

A surface crack about 2 feet wide and 20 feet deep was found on the north canyon slope, at the base of the Castlegate Sandstone, northeast of the outcrop where the major landslide occurred.

July

In late July, it was decided not to drill the proposed surface drill holes above the Third seam because, unbeknownst to the USGS, three water wells in the vicinity of the proposed monitor wells had penetrated the perched sandstone aquifer. These wells were likely dewatering the perched sandstone aquifer above the Third seam, thus getting a true pre-mining water level was impossible.

August

A field reconnaissance to map surface fractures was conducted on August 2, 1989. Numerous cracks were mapped with varying widths and depths ranging from several inches wide and several inches deep to 4.5 feet wide and over 100 feet in depth on the north slope of the study area. The larger surface fractures were found at the base of the Castlegate Sandstone. The lateral extent of the fractures is unknown.



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On August 3, 1989 a vertical 2-inch exploratory hole was drilled from Main West, inside the Cyprus Plateau Mine, to locate the perched sandstone aquifer above the Third seam. The perched sandstone aquifer, 20 feet thick, was located 100 feet above the the Third seam. The initial flow from the 2-inch hole was 8.5 gallons per minute; the hole has been plugged to prevent further dewatering of the aquifer. I am currently reviewing methods to measure water levels in the perched aquifer from within the mine.

September

On September 23, 1989 an investigation of the stream flow was conducted to determine if any changes had occurred since late May 1989 field reconnaissance of Miller Creek. Water continues to go below the ground surface across from the drill pad with no noticeable change. However, the location at which water was going below surface farther upstream changed; it has migrated upstream approximately 10 feet.

Water pumped from the Cyprus Plateau Mine, approximately 25 gallons per minute, is being added to Miller Creek (as per Ben Grimes) approximately 100 feet down stream from the mine breakthrough.

A 90 degree weir will be installed on September 27, 1989 to better monitor the low stream flow and ensure good water-flow data in the winter months; it will replace the rectangular weir currently monitoring the stream.

There are several problems that have occurred since our last meeting that need to be addressed. Cyprus Plateau wants to utilize the water in the perched aquifer above the Third seam while monitoring the water levels. If Cyprus Plateau were allowed to utilize the water in the perched aquifer above the Third seam, water-level changes which may occur could not be definitely related to mining.

Secondly, I was informed on September 20, 1989 by Ben Grimes that the Third seam mining has been moved up to approximately September 1990 from the previously planned January or February 1991. This may jeopardize the study by not allowing enough time to establish "pre-mining" ground-water characteristics.

Cecil Slaughter
Hydrologist

Copy to: Joe Gates, Chief of Investigations, WRD