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PDR

Colorado State University
Fort Collins, Colorado
80523



March 24, 1981

Ross A. Scarano
Mail Stop 4833S
Nuclear Regulatory Commission
7315 Eastern Avenue
Silver Spring, Maryland 20910

Subject: Uranium Tailings Impoundment - Long Term Stability
ref. E7.01b

Dear Ross:

Enclosed is a review which Stan Schumm has conducted with regard to the report prepared by R.S.U. Smith regarding the long term stability of the Uranium Tailings Impoundment. I have discussed this with Ray Pearson.

Very truly yours,

John D. Nelson
Professor

cc:rv
Encl:

cc: M. P. Staub
H. E. Zittel



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Full info

Dr. John Nelson
Dept. of Civil Engineering
Colorado State University

Colorado State University
Fort Collins, Colorado
80523

March 17, 1981

Dr. John Nelson
Dept. of Civil Engineering
Colorado State University

Dear John:

I have reviewed the report by R. S. U. Smith as you asked. My comments and questions relate only to the geomorphic stability of the site, and not to design of the pile. Unfortunately the photocopies of the photographs were of poor quality, and I could not use them. My comments and questions are as follows:

- 1) p. 1 - It is interesting that the bedrock surface slopes SE at 4 degrees whereas the dip is 2 degrees SE. Does this indicate some erosive mechanism acting to steepen the bedrock slope? Probably not significant.
- 2) p. 8 - Although average rates of canyon cutting are estimated to be about 0.3 ft. per 1000 years for the Colorado and Dolores Rivers, the actual rates were probably much faster and the deepening of the canyons probably took place during a fraction of the total time available. This means that canyon cutting may have ceased in these areas. However, the conclusions reached from the Dolores and Colorado Rivers may not apply to the San Miguel, although that assumption is reasonable. If the San Miguel is graded to the Dolores below the site then the river probably has ceased rapid downcutting. However if the longitudinal profile downstream is convex or contains nickpoints that do not represent resistant outcrops, the averages of canyon cutting cannot be used to estimate future incision at the site. More convincing to me would be the presence of some thickness of alluvium in the bed of the river. This would indicate a river that is transporting sediment rather than one that is incising.

In any case, it is the backwearing of the canyon walls that are a potential hazard to the site and as Smith indicates on page 9 the influence of the river on the canyon walls is minimal.

- 3) page 9, last paragraph - As the canyon walls are composed of sediments of varying resistance, it is unlikely that the slopes will retreat parallel. Rather the weaker units will erode more rapidly; therefore, erosion measured at one place need not correspond to erosion elsewhere.

