

# UNC MINING AND MILLING



Division of United Nuclear Corporation  
A **UNC RESOURCES** Company

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NM-28  
PDR

September 12, 1979

Mr. Thomas E. Baca  
Director  
NM ENVIRONMENTAL IMPROVEMENT DIVISION  
P. O. Box 968  
Santa Fe, NM 87503

RECEIVED  
SEP 15 1979  
Dir's Office

REFERENCE: Uranium Tailings Dam Spill  
Church Rock Mill

Dear Mr. Baca:

On the morning of July 16, 1979, the tailings dam breached at UNC's Church Rock mill, releasing approximately 280 acre-feet of tailings solution and 1100 tons of tailings solids, which eventually flowed into the Rio Puerco and traces of the spill reached as far as Navajo, Arizona.

UNC Mining and Milling immediately initiated cleanup and monitoring operations and these are continuing to date. UNC expects to be in compliance with the EID requirements as stated in your letter dated August 13, 1979.

Although tailings spills have occurred at other mill sites in the past, there are unusual aspects associated with this incident that warrant further study. Now that the immediate and reactive cleanup effort has been largely accomplished, UNC intends to undertake a comprehensive monitoring, sampling and testing program. We feel that it is essential that certain kinds of data be developed, not only to evaluate the present impact of the spill but also to provide reference points for future study.

Routine monitoring data collected prior to the spill, as well as data collected since the spill, will be used as baseline comparatives relative to the ongoing program described in the attachment to this memo. We see several benefits in a monitoring program of this kind, not only to UNC Mining and Milling, but also to other agencies or entities who may have need of this kind of information in the future. As one example, we expect to greatly increase our efficiency in continuing cleanup operations as a result of this program.

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It is UNC's intent to implement this program, in its entirety, beginning on September 11, 1979. We propose to give a full presentation of the program and results to date to the EID and other interested parties on or about September 21, 1979.

Should you have any questions, please contact my office by Monday, September 17th. As you can see, this is a very ambitious program and we would appreciate being made aware of any comments or suggestions about the implementation or procedures outlined herein prior to our investment of the many dollars and manhours which will be required.

Sincerely,

A handwritten signature in cursive script, appearing to read "H. J. Abbiss", is written over a dark, irregular ink smudge on the left side of the page.

H. J. Abbiss, P.E.  
Vice President  
Environmental and Safety Services

Enclosure

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EXTENDED CHURCH ROCK TAILINGS DAM BREACH MONITORING PROGRAM

SAMPLING PROGRAM	SAMPLING SITES	NUMBER OF SAMPLES OR OBSERVATIONS PER SITE	TYPE AND TREATMENT OF SAMPLES	FREQUENCY	ANALYSES TO BE PERFORMED
Helicopter survey for yellow salt formations	Arroyo from NECR dam to Navajo, AZ.	Record location of all yellow salt formations present in waterway.	--	One-time sampling	--
Background sediments	100 yds. upstream in all major drainages of arroyo and Rio Puerco from NECR dam to Navajo, AZ. Average 1 sampling per section.	3 samples per site equally spaced from each bank of drainage arroyo.	Composite of 3 samples each, 1 ft. deep x 1-1/2" O.D.	One-time sampling	U natural, Ra-226, Th-230, gross gamma.
Contaminated arroyo sediments.	Arroyo and Rio Puerco from NECR dam to Navajo, AZ. Sample at each section line crossing. Additional sampling sites determined by gross gamma measurements.	3 samples per site equally spaced from each bank of waterway.	Composite of 3 samples each, 1 ft. deep x 1-1/2" O.D.	One-time sampling	U natural, Ra-226, Th-230, gross gamma.
Groundwater	Arroyo and Rio Puerco from NECR dam to Navajo, AZ. Sample at each section line crossing. Additional sampling sites determined by results.	One sample per site.	Sand points driven 2-3 ft. into bottom of waterway.	One-time sampling	Every sample-- sulfate, chloride, pH, conductivity to determine total extent of plume. Every 4th sample-- groundwater parameter list specified in 8-17-79 monitoring program to determine where plume ends.
Leach tests	Tailings pile sample, 2 contaminated arroyo sampling sites.	One sample from each site.	Prepare 4 ft. column with contaminated soils in top half and non-contaminated soils in bottom half and use treated mine water as leachate.	One-time leach testing.	U natural, Th-230, Ra-226

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SAMPLING PROGRAM	SAMPLING SITES	NUMBER OF SAMPLES OR OBSERVATIONS PER SITE	TYPE AND TREATMENT OF SAMPLES	FREQUENCY	ANALYSES TO BE PERFORMED
Livestock sampling	2 cows 2 sheep 2 goats 2 horses from area near arroyo and Rio Puerco.  1 cow 1 sheep 1 goat 1 horse from control region.	From each animal, obtain 1 hair sample 1 milk and/or urine sample	Hair samples to be washed to remove external contamination.	One-time sampling	U natural, Ra-226, Pb-210
Vegetation sampling	Livestock feed in arroyo and Rio Puerco. 10 sites.	1 kg wet weight per site. Measure area represented by plants sampled at each site.	Separate plants into tops and roots.	One-time sampling	U natural, Th-230, Ra-226, Pb-210
	Corn from one site near arroyo and Rio Puerco.	3 ears of corn.	Separate corn husks and corn kernels.		U natural, Th-230, Ra-226.
Gamma survey	Rio Puerco from 6 miles west of Gallup to Navajo, AZ. at 200 ft. intervals.	3 locations per site equally spaced from each bank.	3 ft. from bottom of Rio Puerco.	Completion of initial survey with follow-up in 6 months.	Gamma exposure in $\mu$ R/hr.
Flood waters	566 Bridge. Additional sampling sites determined by results.	1 sample per flood.	Sediment and liquid carried in flood waters.	Continue for 6 months if detectable activity is observed in sediments.	U natural, Th-230, Ra-226.
Air sampling	3 residences near arroyo and Rio Puerco. One site on Sec. 17.	1 sample per site.	High volume air sample	Once per month for 6 months, then quarterly.	U natural, Th-230, Ra-226, weight of dust collected.

SEP 1, 1979



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September 14, 1979

Mr. Thomas E. Baca  
Director  
NM ENVIRONMENTAL IMPROVEMENT DIVISION  
P. O. Box 968  
Santa Fe, New Mexico 87503

Dear Mr. Baca:

With reference to my letter of September 12, 1979, concerning the tailings spill at UNC's Church Rock mill facility, I would like to assure that the first paragraph of that letter does not leave a misimpression.

The volumes of material calculated as having escaped from the tailings impoundment did pass to the downstream side of the tailings dam, however there is a good deal of evidence that most of the solid materials were deposited in the catch basin at the base of the dam and that these materials did not flow into the Rio Puerco.

Sincerely,

H. J. Abbiss, P. E.  
Vice President  
Environmental and Safety Services

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RECEIVED  
SEP 19 1979  
RADIATION PROTECTION SECTION

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