HEALTH & ENVIRONMENT department

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Environmental Improvement Division
Radiation Protection Section

August 3, 1978

G. Wayne Kerr, Chief
U. S. Nuclear Regulatory Commission
Office of Nuclear Material
Safety and Safeguards
Agreements & Export Branch
Washington, D.C. 20555

Dear Mr. Kerr:

This office has recently received an application for a Radioactive Material License from Bokum Resources Corporation for a proposed uranium mill to be constructed near Marquez, Sandoval County, New Mexico. The company has supplied plans and other material related to public health and safety. A public notice has been recently published in several newspapers allowing the public access to examine the application in the EID offices at Santa Fe, Grants, and Albuquerque.

It is envisioned that the construction and operation of such a mill may have important consequence to your activities. Consequently, you are invited to examine the application and comment as you desire. Copies of the application are available for your examination at the following locations:

Santa Fe:

1) EID Central Office, Radiation Protection Section, Crown Building
725 St. Michael's Drive. Hrs. Mon-Fri 8:00 a.m. - 5:00 p.m.

Albuquerque:

1) EID Region 1 Office, 4159 Montgomery Boulevard, N.E.
Hrs. Mon-Fri 8:00 a.m. - 5:00 p.m.

Grants:

1) EID Region 1 Office, 708 Uranium Avenue, Milan, NM
Hrs. Mon-Fri 8:00 a.m. - 5:00 p.m.

If you have any questions or comments regarding the license application, please submit them in written form to this office and they will be addressed

in the application evaluation process. In the interest of a timely evaluation, the receipt of your comments and questions before October 1, 1978 is requested. If you have a major problem in responding within the above time period, please contact me.

I would also be pleased to answer any questions that you might have regarding the evaluation process. My telephone number is 827-5271 Extension 341.

Sincerely,

Patrick F. Donahoe

Patrick F. Donahoe
Environmental Scientist

emm

Note: Wayne, we would appreciate NRC review and comments on the specific areas of tailings management, siting, dose assessment, and alternatives. We are sending the application in a separate container.

Pat

John D. Nelson, Ph.D., P.E.
707 Boltz Drive, Fort Collins, Colorado 80521 Ph. (303) 226-4611

September 21, 1978

Mr. H. E. Zittel
Environmental Statement Project
Energy Division
Oak Ridge National Laboratory
P.O. Box X
Oak Ridge, Tennessee 37381

SUBJECT: Bokum Resources Corporation
Proposed Tailings Management Plan
Near Marquez, New Mexico

Dear Mr. Zittel:

We have reviewed the following documents:

1. Report on Geotechnical Service for Bokum Resources Corporation, by Woodward-Clyde Consultants for Stearns-Roger, Inc., April, 1978.
2. Position Statement, Diversion Channel-Tailing Disposal System, Marquez Uranium Mill, Bokum Resources Corporation by Stearns-Roger, Inc.
3. Letter to Mr. John Strycker, Stearns-Roger, Inc. and Mr. Bill Biava, Bokum Resources dated September 15, 1978 from B. Moare, Mine Tailings International.
4. Letter to Stearns-Roger Incorporated dated September 15, 1978 from Wesley G. Holtz and Frank J. Holliday, Woodward-Clyde Consultants.

We also visited the site or September 18, 1978 with Ross A. Scarano, Steve Manger and Bill Bivens of the Nuclear Regulatory Commission and Pat Donohoe and Ed Stokes of the State of New Mexico. Personnel from Stearns-Roger, Woodward-Clyde and Bokum Resources Corporation were also present. On the basis of the report review, the site visit, and discussions with above personnel during the site visit and the following day the following represents our conclusions regarding the long-term stability of the proposed impoundment.

Natural phenomena of concern with regard to long-term stability include earthquakes and potential for damage from floods. The report by Woodward-Clyde Consultants indicates the area to be of low seismic potential. A fault exists to the east of the proposed embankment but is considered by Woodward-Clyde Consultants to be inactive. The presence of the drain in the embankment would cause the proposed impoundment to drain within a relatively short time period after abandonment (less than 100 years). The potential for dispersion of tailings due to the occurrence of a major earthquake is therefore expected to be low.

It is not stated, however, how seepage from the drain in the embankment will be disposed of after reclamation. Methods of disposing of seepage from the embankment should be included in the proposed reclamation plan.

The proposed impoundment would be located directly in the channel of the Canon de Marquez and the Arroyo Hondo. The watershed upstream from the proposed site has an area of approximately 12 square miles. The proposed tailings management plan would include a diversion ditch intercepting both the Arroyo Hondo and the Canon de Marquez to divert flows into the Santa Rosa drainage nearby. The diversion structure as proposed would be subject to cumulative damage due to recurrence of major storms and will be subject to blockage by windblown sediments, waterborn sediments and vegetation. It consequently has a high likelihood of failure over long-term periods. It is evident, therefore, that the diversion ditch would be ineffective within a period of only a few years unless an ongoing maintenance program is employed to insure its effectiveness.

The proposed impoundment will be placed on the Mancos Shale with a cut-off constructed into the unweathered bedrock. Seepage is not considered to be a problem even without a liner providing the overlying alluvium and zones of weathered bedrock having relatively high permeability are removed. In addition the tailings will be dewatered through the drain in the embankment within a short period of time after abandonment, thereby minimizing the potential for seepage to occur.

The structural integrity of the embankment over long-term perioids is considered to be adequate.

In view of the dry climate and the potential for severe storms, surface erosion of the cap and embankment may be a problem. The reclamation plans should ensure that an adequate surface stability program is provided for. Gullying is evident in the area. It is questionable whether a stable vegetative cover adequate to prevent gullying can be established on the steep slopes of the embankment. Surface stability plans should not rely on vegetative cover unless successful revegetation schemes can be demonstrated during the life of the project prior to implementation in a reclamation plan. If the surface stabilization is adequate to prevent gullying and water sheet erosion it will also provide adequate protection against wind erosion.

Because the proposed embankment and impoundment would be located on the Mancos Shale and the alluvium will be removed the potential for differential settlement to occur is considered to be minimal.

The above presents our opinions concerning the proposed tailings management plan for the Bokum Resources Corporation. If you have any further questions please call.

Very truly yours,

John D. Nelson, P.E.

Thomas A. Shepherd

JDN:dn
cc: Ross A. Scarano
Steve Manger