

SEP 24 1990

URFO:DLJ
Docket No. 40-8905
SUA-1473, Amendment No. 18
040089051300

Quivira Mining Company
ATTN: Marvin Freeman, V. P.
6305 Waterford Blvd., Suite 325
Oklahoma City, Oklahoma 73118

Dear Mr. Freeman:

The NRC has completed its review of your reclamation plan originally submitted October 1, 1986, and supplemented by the submittals list in Enclosure 1. This review of your submittals has identified several areas where the information you have provided is incomplete. In these situations, the NRC made conservative design assumptions so that a credible surety amount could be established. These assumptions are incorporated as license conditions pending their resolution.

Therefore, based upon this review of the available information and pursuant to Title 10, Code of Federal Regulations, Part 40, Source Material License SUA-1473 is hereby amended by modifying License Condition No. 22 and by adding License Condition No. 37 to read as follows:

- 22. By December 24, 1990, the licensee shall submit a surety instrument, acceptable to the NRC, in an amount no less than \$21,000,000. This surety amount is based on the approved reclamation plan as supplemented by the NRC assumptions identified in License Condition No. 37. This surety shall be written in favor of the NRC for the purpose of complying with 10 CFR 40, Appendix A, Criteria 9 and 10, and shall be continuously maintained until a replacement is authorized by the NRC.

Annual updates to the surety amount, required by 10 CFR 40, Appendix A, Criteria 9 and 10, shall be submitted to the NRC at least three (3) months prior to the anniversary date, which is designated as December 24 of each year. Along with each proposed revision or annual update, the licensee shall submit supporting documentation

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09/21/90

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RGonzales
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PMychaud
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DD:URFO
EHawkins
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showing a breakdown of costs and the basis for the cost estimates with adjustments for inflation, changes in engineering plans, activities performed, maintenance of a fifteen (15) percent contingency fee, and any other conditions affecting the estimated costs for decommissioning and decontamination of the mill and mill site, reclamation of the tailings and waste disposal areas, soil and water sample analysis to confirm decontamination, long-term surveillance, and ground water restoration as warranted. Reductions in the surety amount shall not be made without prior NRC approval.

37. The licensee shall reclaim the disposal area as stated in the September 24, 1990, submittal as supplemented by the following conditions. Though recognized as conservative, these conditions were assumed when evaluating the acceptability of the reclamation plan as submitted, and are identified pending submittal of acceptable design alternatives. Justification for any design alternatives must be submitted for NRC review and approval prior to implementation.
- A. The radon barrier thickness shall be 8 feet over the entire surface area of Pond 1 and Pond 2.
 - B. The radon barrier shall be constructed from material which classifies as a SM or ML material in accordance with the Unified Soil Classification System and have a maximum particle size of 3 inches and at least 35 percent passing the No. 200 sieve. The material shall be plastic.
 - C. The relocated contaminated material shall be placed in lifts not to exceed 12 inches and compacted to at least 90 percent of the maximum standard dry density after a stable work base has been established.
 - D. In place density and moisture, laboratory compaction, soil classification, and rock quality testing shall be performed in accordance with the licensee's September 24, 1990, submittal. If test procedures other than the sand cone test or oven dry moisture are used in the construction quality control, procedures that will be used to establish correlation between the tests must be submitted for NRC review and approval prior to implementation.
 - E. A detailed cover design for Ponds 11-21 must be submitted for NRC review and approval. All contaminated materials in Pond 3 that are not covered by the reclaimed Pond 1 outslope shall be relocated to Pond 2 unless an erosion protection plan is submitted for NRC review and approval.

- F. The settlement survey data shall be submitted for NRC review and approval prior to placement of the radon barrier on the interim cover.
- G. The fresh water dam (mill reservoir) must be breached during final reclamation activities.
- H. Settlement monuments shall consist of a steel bar welded to a 1-foot square steel plate, or equivalent, placed at least 3 feet below the surface.
- I. The fill associated with the Pond 1 spillway shall be constructed to the same specifications and quality control program as the radon barrier material.
- J. If a rock source is selected other than the La Cuchilla Ridge source, the licensee shall submit the results of durability tests as outlined in the draft Staff Technical Position on Design of Erosion Protection, August 1989, for NRC review and approval prior to placement of any of the material.
- K. All riprap shall be placed in a manner that prevents segregation of the material. The material placed shall be reasonably well graded and shall be within the following gradation specifications.

D₅₀ = 1"

<u>Sieve Size</u>	<u>Percent Passing (by weight)</u>
2 inch	100
1 inch	16-50
3/4 inch	2-30
1/2 inch	0-10

D₅₀ = 2"

<u>Sieve Size</u>	<u>Percent Passing (by weight)</u>
4 inch	100
3 inch	66-100
2 inch	18-50
1 inch	0-10

D₅₀ = 2.8 inch

<u>Sieve Size</u>	<u>Percent Passing (by weight)</u>
5 inch	100
4 inch	50-100
3 inch	25-58
2 inch	2-28
1 inch	0-5

D₅₀ = 3.2 inch

<u>Sieve Size</u>	<u>Percent Passing (by weight)</u>
6 inch	100
5 inch	78-100
4 inch	35-100
3 inch	12-45
2 inch	0-20

D₅₀ = 7.7 inch

<u>Sieve Size</u>	<u>Percent Passing (by weight)</u>
13 inch	100
12 inch	80-100
10 inch	49-100
8 inch	26-54
6 inch	7-32
4 inch	0-13

- L. A minimum 6-inch bedding layer with a D₅₀ of 1 inch shall be placed under all riprap on the disposal area having a D₁₀ of two (2) inches or larger. The bedding material shall be reasonably well graded to prevent migration of the base material into the riprap. The quality of the bedding material shall be equivalent to that of the riprap.
- M. A riprap filled toe trench shall be placed on the west side of Pond 2 where the existing steep slopes transition onto the flatter surface of Pond 2. The licensee shall submit a proposed design of the trench for NRC review and approval prior to construction.
- N. The spillway riprap shall be extended 45 feet onto the top of Pond 1 to prevent erosion.
- O. Riprap with a D₅₀ of one (1) inch shall be placed in all areas of the South Diversion Ditch which are not excavated in rock.

All other conditions of this license shall remain the same. This license is being reissued to incorporate the license conditions specified above.

The surety amount required by the above license condition is higher than your proposed surety amount. License Condition No. 37 contains conditions that identify NRC assumptions used to establish this amount. The NRC will reevaluate the initial surety amount stipulated in License Condition No. 22 based on any design alternatives submitted in the future.

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The amendment requires you to have a surety instrument in place by December 24, 1990. If a Parent Company Guarantee is proposed, you shall submit, for NRC approval, the information and recommended wording as detailed in Regulatory Guide 3.66. This includes the following: (1) Parent Company Guarantee, (2) letter from the Chief Financial Officer, (3) Auditor's Special Report, and (4) letter from the Chief Executive Officer. The use of a Parent Company Guarantee necessitates an annual evaluation by the NRC of the corporate parent as well as annual adjustments to the reclamation cost estimate for inflation, changes in engineering plans, activities performed, and other conditions affecting costs.

This amendment and the license conditions were discussed with you and agreed to on September 24, 1990. Questions on this matter may be addressed to D. L. Jacoby of my staff at (303) 236-2805.

Sincerely,

R. E. HALL

Ramon E. Hall
Director

Enclosures:

1. Enclosure 1: Ambrosia Lake Mill Reclamation Plan Chronology
2. Source Material License SUA-1473

bcc:

LFMB
PDR/DCS
URFO r/f
ABBeach, RIV
LLO Branch, LLWM
OB:IMNS:NMSS
DJacoby
RGonzales
PMichaud
RCPD, NM
EID, NM

Enclosure 1

Ambrosia Lake Mill Reclamation Plan Chronology

October 1, 1986 Quivira submits their reclamation plan for the Ambrosia Lake Mill.

January 8, 1987 NRC letter requesting surface water/erosion protection information.

March 16, 1987 Quivira submits responses to NRC's January 8, 1987, letter.

February 18, 1987 NRC letter requesting additional information.

March 27, 1987 Quivira submits geotechnical portion of responses to NRC's February 18, 1987, letter, including specifications.

May 5, 1987 Meeting to discuss surface water/erosion protection aspects of the proposed reclamation plan.

July 20, 1987 Quivira submits additional flood studies.

August 19, 1987 Quivira submits results of additional geotechnical testing on the proposed cover material.

August 27, 1987 NRC letter requesting additional geotechnical information.

September 14, 1987 Quivira submits additional geotechnical information including QA/QC frequency.

September 21, 1987 Quivira submits additional flood studies.

October 7, 1987 Quivira submits revised radon attenuation calculations.

March 21, 1988 NRC letter transmitting remaining open items in the reclamation plan.

April 8, 1988 Meeting to discuss the reclamation plan. Quivira indicated that a revised plan to be submitted on or about June 30, 1988.

April 21, 1988 Quivira submits information requested by NRC's March 21, 1988, letter (partial).

June 30, 1988 Quivira submits major redesign of reclamation plan.

December 20, 1989 NRC letter transmitting comments on surface water/erosion and geotechnical aspects of the revised reclamation plan.

February 28, 1990 Quivira submits responses to information requested by NRC's December 20, 1989, letter.

May 11, 1990 NRC letter transmitting request for additional information and scheduling of the response so that a surety instrument can be in place by 1991. Also requested meeting.

May 21, 1990 Meeting to discuss NRC's May 11, 1990, letter.

June 5, 1990 Rio Algom Mining Corp. (RAM) letter delaying response to NRC's May 11, 1990, letter.

June 11, 1990 NRC letter further addressing concerns discussed in the May 21, 1990, meeting.

July 18, 1990 Meeting to discuss remaining open items.

August 1, 1990 Quivira submits responses to information requested by NRC's May 11, 1990, letter.

August 23, 1990 Telephone conference call with RAM to discuss August 1, 1990, submittal and request additional information. Documented by NRC letter dated August 28, 1990. Further discussions are documented by NRC memorandum dated August 30, 1990.

September 7, 1990 Quivira submits responses to NRC's August 23, 1990, request for information (partial).

September 13, 1990 Quivira resubmits HE2-1 results.

September 14, 1990 Telephone conference call with Quivira to propose amendment. Documented by NRC letter dated September 19, 1990.

September 20, 1990 Meeting to discuss surety amount.

September 24, 1990 Quivira submits responses to September 20, 1990, meeting.