

June 24, 2005

Peter Luthiger, Manager
Radiation Safety and
Environmental Affairs
Rio Algom Mining, LLC
P.O. Box 218
Grants, NM 87020

SUBJECT: APPROVAL OF THE RELOCATION PLAN - LINED EVAPORATION PONDS AT
RIO ALGOM MINING, LLC'S AMBROSIA LAKE FACILITY (TAC LU0078)

Dear Mr. Luthiger:

In a letter dated November 1, 2004, Rio Algom Mining, LLC, (Rio Algom) submitted to the U.S. Nuclear Regulatory Commission (NRC), a *Closure Plan-Lined Evaporation Ponds (Relocation Plan)* for its Ambrosia Lake uranium mill facility. In a follow-up to the proposed plan, Rio Algom submitted, under letter dated January 28, 2005, a response to a request for additional information and a Revised Relocation Plan. Rio Algom requested that the Revised Relocation Plan be considered initially by NRC so that work can commence at the site. The enclosed Technical Evaluation Report documents the staff's technical review of the application. In addition, the staff has completed an environmental assessment (EA) of the proposed action as documented in a letter to you dated June 17, 2005. The EA concluded with a Finding Of No Significant Impact (FONSI). The FONSI has been published in the Federal Register. The amended license, which incorporates the findings of the technical evaluation, is also enclosed.

If you have any questions, please call Mr. Robert Nelson of my staff at (301) 415-7298 or via electronic mail at ran@nrc.gov.

P. Luthiger

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In accordance with 10 CFR 2.390 of NRC's Rules of Practice, a copy of this letter will be available electronically from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

Sincerely,

/RA/

Gary S. Janosko, Chief
Fuel Cycle Facilities Branch
Division of Fuel Cycle Safety
and Safeguards
Office of Nuclear Material Safety
and Safeguards

Docket No.: 40-8905
License No.: SUA-1473

Enclosures:

1. Technical Evaluation Report
2. License Amendment No. 55

cc: G. Cibas, NMED

**TECHNICAL EVALUATION OF
RELOCATION PLAN - LINED EVAPORATION PONDS
FOR THE RIO ALGOM MINING, LLC's, AMBROSIA LAKE FACILITY**

DOCKET NO.: 40-8905

LICENSE NO.: SUA-1473

SITE: Former Quivira uranium mill site near Ambrosia Lake, New Mexico

TECHNICAL REVIEWER: Elaine Brummett, Health Physicist

PROJECT MANAGER: None currently assigned

SUMMARY:

Rio Algom Mining, LLC (Rio Algom) submitted the "Closure Plan - Lined Evaporation Ponds" dated November 1, 2004. That plan discussed the Section 4 Ponds and Pond 9. The U.S. Nuclear Regulatory Commission (NRC) staff's review resulted in a request for additional information (RAI) on 36 items dated December 22, 2004. A partial response, the document "Soil Decommissioning Plan" (Plan), was submitted by Rio Algom's letter dated January 19, 2005. Rio Algom also submitted responses to other (but not all) Lined Ponds Closure Plan comments dated January 28, 2005. In addition, this letter requested that the approval of the Closure Plan be separated into two separate actions: (1) approval of the Soil Decommissioning Plan, which includes the final status survey plan; and (2) the Relocation Plan for the Lined Evaporation Ponds (Relocation Plan). The Relocation Plan was submitted with the RAI response. This separation would allow excavation to begin in the summer. This Technical Evaluation addresses the Relocation Plan. The staff recommends approval only of the consolidation and relocation of pond materials, as discussed below. Approval of the revised Closure Plan would be conditional to approval of the Soil Decommissioning Plan which contains the cleanup criteria and final status survey plan.

BACKGROUND:

The Rio Algom mill tailings site is located in a valley in the southeastern part of McKinley County, New Mexico, 25 road miles (40 km) from Grants, New Mexico. The Philips Petroleum Ambrosia Mill, operated 1 mile (1.6 km) to the east and was remediated under UMTRCA Title I by the Department of Energy. In addition, over 20 underground uranium mines exist in the valley. The Rio Algom mill operated between 1958 and 1985, processing approximately 33 million tons of ore via the acid leach process. The mill was on stand-by status from 1986 until it and associated structures were demolished, beginning in 2003 and completed in February 2004.

During operations, the mill tailings slurry was discharged to Ponds 1 and 2. Pond 9 was constructed near Pond 1 in 1976 for evaporation of liquid decanted from Ponds 1 and 2. The lined Section 4 Ponds are 2 miles (3 km) northwest of the mill site and across (east of) the highway. Pond 9 is also lined and is near the main tailings impoundment (Pond 1). The

Section 4 Ponds were built in 1976 (Ponds 11-15) and 1979 (Ponds 16-21) for evaporation of wastewater streams including the ion exchange backwash solutions and acidic decant solutions. The solutions were piped from the mill area to the Section 4 Ponds that had an evaporative area of 256 acres.

TECHNICAL EVALUATION:

The proposed action is the relocation of the lined evaporation ponds (Section 4 Ponds and Pond 9) at the Ambrosia Lake facility. The action includes the consolidation and removal of byproduct material, including the pond liners, transport of the material to the disposal site and disposal of material in accordance with NRC regulations. The sediments from the lined evaporation ponds at Section 4 and Pond 9 would initially be consolidated at their current location and then transported to the disposal area (previously approved by NRC) located at the north end of Tailings Impoundment 2. The total estimated volume of material to be relocated is 1,966,200 cubic yards, which amount includes the evaporation ponds, impacted berm material, sub-liner material, and a contingency for hot spots and wind blown material. A detailed discussion of this estimate is included in Section 4.3 of the Relocation Plan.

The project is anticipated to last approximately 18-24 months, depending on weather and material volumes. The contractor has projected a work force of 30 individuals would be needed to perform the relocation project in a safe and effective manner. Included within this total is a Project Manger and a full time Health and Safety Specialist.

Material consolidation would consist of a two pronged process with the objective being to reduce overall material that requires relocation and to obtain a material that will be amenable to hauling. This consists of evaporation of pond liquids and consolidation of dry contaminated materials with the high moisture content pond sediments. Evaporation of liquids is being accomplished by pumping and/or diverting liquids that are present and accessible within the pond sediment material onto the crust layer present on the ponds in order to take advantage of the 50+ inch net evaporation loss due to the desert environment.

Pond sediment consolidation would be performed using heavy equipment such as loaders and track hoes to mix the high moisture content with the low moisture content materials and allowing the material to dry out to the desired consistency for hauling. Depending on moisture content, multiple mixes may be needed. Upon achieving the desired consistency, the material will be stockpiled within the pond footprint until hauling commences.

The contractor plans on using standard construction equipment (graders, dozers, water wagons, compactors, track hoes, loaders, etc.) for the majority of the project tasks. The one exception to this is the haul trucks that would be used to transport the consolidated pond sediments. Utilizing Caterpillar 773 Trucks, which can haul approximately 40 cubic yards per load, results in fewer trips and would provide a safer transport option than typical over-the-road end dump trucks, especially during the dumping phase. Approximately 25-30 individual pieces of equipment would be available for use on the project.

A dedicated haul road would be utilized to transport the materials by truck from Section 4 to the disposal site. A highway overpass will be constructed to avoid crossing the state highway that transects the northeast corner of the site (NM 509). The overpass will be designed and

constructed to ensure safe travel for the haul trucks transporting the pond sediments from Section 4 to the disposal site. The overpass will be 150 feet wide and 700 feet long. The overpass will be in use for the duration of the project and will be removed when the hauling operation is completed. Additional information concerning the overpass is contained in Appendix F to the Closure Plan.

Once at the disposal site, the material would be disposed of in a manner that is in accordance with the site's approved reclamation plan and source materials license. Sediments and contaminated materials from Pond 9 would be moved by truck along the same dedicated haul road coming from Section 4. A short road connecting Pond 9 to the haul route would be constructed.

Rio Algom proposes to remove the pond residues and liners but to leave the deeper contamination because most of it resulted from mine drainage and is not byproduct material (NRC licensed material). This aspect of the pond closure will be addressed in a separate licensing action associated with the review of Rio Algom's Soil Decommissioning Plan.

After completion of the relocation of pond sediment and other associated soils to Tailings Impoundment 2, Rio Algom would request a license amendment to include procedures to verify that the area is no longer contaminated with byproduct material. The area would eventually be regraded and re-vegetated.

The site Health, Safety and Environment Management Program provides adequate assurances of protection of both worker and public health and safety. The Program includes: an overall project Safety Program; an As Low As Reasonably Achievable (ALARA) Program; a Health Physics Monitoring Schedule; an Environmental Monitoring Program; a Waste Management Program; and Quality Assurance. The ALARA Program addresses: management control; radiation safety administration; radiation safety training; standard operating procedures and radiation work permits; radiation monitoring; a bioassay program; personnel contamination control and protective clothing; contamination surveys and control; respiratory protection; instrument control; and security. The Health Physics Monitoring Schedule includes: airborne dust surveys; radon daughter surveys; surface contamination surveys; personnel contamination surveys; and external gamma radiation surveys. The Environmental Monitoring Program involves routine monitoring and sampling of air, water, soil, and vegetation in the vicinity of the site. The Waste Management Program addresses: gaseous effluents; liquid effluents; and solid waste. The Health, Safety and Environmental Management Program has previously been reviewed and approved by NRC.

The highway overpass has the substantive positive benefit of reducing the interaction with traffic from the general public, thereby significantly reducing the possibility of accidents involving local traffic.

CONCLUSIONS:

The proposed action will consolidate, relocate, and dispose of contaminated material in a previously approved location thereby facilitating a significant reduction in the contaminated footprint at the site. The Health, Safety and Environmental Management Program has

previously been approved by NRC and is adequate for this application. The proposed action complies with NRC's regulations and provides adequate protection of the public health and safety and the environment.

Transportation of the pond material and placement in Tailings Impoundment 2 will depend on Rio Algom obtaining all the necessary permits, including permits associated with the construction of the highway overpass.

Soil clean-up criteria will be documented in a separate licensing action (Soil Decommissioning Plan). However, consolidation and relocation of the pond materials can proceed pending this review.

The staff proposes the following new License Condition:

- 42 The licensee shall consolidate and transport evaporation pond materials and any associated soils impacted by milling related byproduct materials from the Section 4 Ponds and Pond 9 in accordance with Sections 4 and 5 of the Relocation Plan for Lined Evaporation Ponds, Rev 0.1, submitted by letter dated January 28, 2005.

REFERENCES

NUREG-1620, Rev. 1, "Standard Review Plan for Review of a Reclamation Plan for Mill Tailings Sites Under Title II of the Uranium Mill Tailings Radiation Control Act of 1978," Nuclear Regulatory Commission, Washington, DC, 2003.

[ADAMS Accession No. ML040560561]

Rio Algom Mining LLC, 2004, "Closure Plan-Lined Evaporation Ponds," submitted under cover letter dated November 1, 2004.

[ADAMS Accession No. ML050240058]

U.S. Nuclear Regulatory Commission, 2004, "Request for Additional Information for Closure Plan - Lined Evaporation Ponds at Rio Algom Mining, LLC's Ambrosia Lake Facility, dated December 22, 2004.

[ADAMS Accession No. ML043580289]

Rio Algom Mining, LLC, 2005, "Soil Decommissioning Plan," submitted under cover letter dated January 19, 2005.

[ADAMS Accession No. ML050400566]

Rio Algom Mining, LLC, 2005, "Response to Request for Additional Information - Closure Plan for Lined Evaporation Ponds at Rio Algom Mining, LLC's Ambrosia Lake Facility," submitted under cover letter dated January 28, 2005.

[ADAMS Accession Nos. ML050730258 and ML050820597]

P. Luthiger

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2. License Amendment No. 55

cc: G. Cibas, NMED

DISTRIBUTION: FCFB r/f J.Whitten, RIV J.Walker, RIV

ML051780233

*See previous concurrence

OFC	FCFB	FCFB	FCFB	
NAME	RNelson*	BGarrett	GJanosko	
DATE	06/24/05	06/24/05	06/24/05	

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