

October 31, 2005

Mr. Peter Luthiger
Manager, Radiation Safety and Environmental Affairs
Rio Algom Mining LLC
P.O. Box 218
Grants, NM 27020

SUBJECT: RIO ALGOM MINING LLC, AMBROSIA LAKE, NONHAZARDOUS
CONSTITUENT ALTERNATE CONCENTRATION LIMITS
REQUEST FOR ADDITIONAL INFORMATION, SOURCE MATERIALS
LICENSE SUA-1473 (TAC L51921)

Dear Mr. Luthiger:

By letter dated July 7, 2005, Rio Algom Mining, LLC (RAM) submitted to U.S. Nuclear Regulatory Commission (NRC) staff a response to a February 10, 2005, request to provide alternate concentration limits (ACLs) for nonhazardous constituents, as part of RAM's ACL license amendment application. Included on the list of nonhazardous constituents are chloride, nitrate, sulfate, and total dissolved solids (TDS). By letter dated August 31, 2005, RAM provided isoconcentration maps for the aforementioned nonhazardous constituents in response to an informal NRC staff request. NRC staff has reviewed both submittals and is providing the enclosed request for additional information (RAI). Please provide a response or a schedule for responding to this RAI within 30 days of receipt of this letter. If you have any questions, please contact me at 301-415-6334 or at mgr@nrc.gov.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter will be available electronically for public inspection in the NRC Public Document Room or 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/NRC/reading-rm/adams.html>.

Sincerely,

/RA/

Michael G. Raddatz, Project Manager
Uranium Processing Section
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

Enclosure: Request for Additional Information

cc: B. Law, Rio Algom Mining, LLC
K. Myers, New Mexico Environment Department

P. Luthiger

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**RIO ALGOM MINING LLC
LICENSE AMENDMENT FOR ALTERNATE CONCENTRATION LIMITS
NONHAZARDOUS CONSTITUENTS
REQUEST FOR ADDITIONAL INFORMATION**

By letter dated July 7, 2005, Rio Algom Mining, LLC (RAM) submitted to U.S. Nuclear Regulatory Commission (NRC) staff a response to a February 10, 2005, request to provide alternate concentration limits (ACLs) for nonhazardous constituents, as part of RAM's ACL license amendment application. Included on the list of nonhazardous constituents are chloride, nitrate, sulfate, and total dissolved solids (TDS). By letter dated August 31, 2005, RAM provided additional information in response to a staff informal request. NRC staff has reviewed both submittals and is providing the following request for additional information (RAI).

1. RAM calculated nonhazardous constituent ACLs using data from ground-water monitoring wells obtained prior to the enactment of New Mexico's water quality regulations in 1977. NRC staff understands that RAM used this approach to address difficulties in developing nonhazardous ACLs due to extensive mining in the Ambrosia Lake area. This extensive mining resulted in many sources of ground-water contamination that are contributing to current pollution problems. Also, RAM is attempting to meet both NRC and New Mexico Environment Department (NMED) regulations with these ACLs.

However, NRC staff identified the following issues with the proposed nonhazardous constituent ACLs:

- a. RAM proposes a nitrate ACL of 1,627 mg/l. A review of the July 7, 2005, submittal indicates that only five data points were available to calculate the nitrate ACL. Five data points do not appear to provide a sufficient basis on which to base an ACL.
- b. Regarding the above nitrate ACL, according to Figure 2 of the August 31, 2005, submittal, the highest nitrate concentration is approximately 310 mg/l. The location of the highest concentration appears to be an isolated hotspot. Therefore, the proposed nitrate ACL does not appear to be appropriate when compared to current concentrations.
- c. RAM proposes a TDS ACL of 13,511 mg/l; however, according to Figure 4 of the August 31, 2005, submittal, the highest TDS concentration is 14,800 mg/l. This concentration appears to be located near the point of compliance. Therefore, the proposed TDS ACL may not be high enough to allow for long-term compliance.
- d. NMED has stated on multiple occasions that they would not accept ACLs based on the pre-1977 data. NMED's rationale is that the pre-1977 data does not appear to represent true background. Wells used to calculate the proposed ACLs could have been impacted by tailings contamination, which would not comply with the definition of background according to the 20 NMAC 6.2.7.

Enclosure

To meet both NRC and NMED requirements, NRC staff recommends that RAM recalculate its proposed ACLs based on current nonhazardous constituent concentrations.

Basis: 10 CFR 40, Appendix A, Criterion 5B(6), states that the proposed ACL must be as low as reasonably achievable (ALARA). Current nonhazardous constituent values would better represent ALARA concentrations than would proposed ACLs computed from 1977 data.

2. RAM should provide an assessment of the nonhazardous constituent concentrations in ground water at the point of exposure (POE) and the methods used in this assessment.

Basis: 10 CFR 40, Appendix A, Criterion 5B(6), states that the proposed ACLs cannot pose a substantial present or potential hazard to human health or the environment, as long as the proposed ACL is not exceeded. NRC staff requires the requested information to assess these hazards.

3. RAM mentions that extensive mining in the Ambrosia Lake area caused the dewatering of the Westwater Canyon Member of the Morrison Formation, which is the mined unit in this area. Extensive dewatering has formed a cone of depression that is expected to affect ground water for approximately 600 years. Please confirm the location of this cone of depression.

Basis: 10 CFR 40, Appendix A, Criterion 5B(6), states that the NRC must consider adverse effects on ground-water quality when reviewing ACL applications. The requested information is necessary for NRC staff to make such an evaluation.

4. According to RAM's review of well completion records, well S-9 was installed in 1962 and its completion is not documented. RAM states that the integrity of this well is suspect because it is constructed of thin metal pipe in an acidic subsurface environment. RAM should state its future plans for this well.

5. RAM states that the nonhazardous ACLs will be the same for both the alluvial and bedrock aquifers. This does not appear to be technically defensible. Although ground water would migrate from the alluvial to the bedrock aquifers, attenuation to some degree would likely occur. This is evident by the proposed ACLs for the hazardous constituents, which are lower for the bedrock aquifers than for the alluvial aquifer. RAM should present its rationale for proposing similar bedrock and alluvial ACLs.

Basis: 10 CFR 40, Appendix A, Criterion 5B(6), states that the NRC must consider adverse effects on ground-water quality when reviewing ACL applications. The requested information is necessary for NRC staff to make such an evaluation.