

**U.S. NUCLEAR REGULATORY COMMISSION  
TECHNICAL EVALUATION REPORT  
STAFF VERIFICATION OF THE 2020 SURETY ESTIMATE  
RIO ALGOM MINING LLC, AMBROSIA LAKE FACILITY  
SOURCE MATERIAL LICENSE SUA-1473**

**DATE:** March 25, 2020

**DOCKET NO.:** 040-08905

**LICENSE NO.:** SUA-1473

**LICENSEE:** Rio Algom LLC

**SITE:** Ambrosia Lake Facility

**TECHNICAL REVIEWERS:** Kenneth Kline, Thomas Lancaster

**PROJECT MANAGER:** Thomas Lancaster

**SUMMARY AND CONCLUSIONS**

On June 23, 2020, Rio Algom Mining LLC (RAML) submitted its 2020 annual surety estimate update (Agencywide Documents Access and Management System Accession No. ML20192A224) for the Ambrosia Lake Facility (License SUA-1473). After a clarification call with the U.S. Nuclear Regulatory Commission (NRC) on September 1, 2020, RAML submitted a revised surety estimate by letter dated September 30, 2020 (ML20307A169). NRC staff reviewed the surety estimate and issued a request for additional information (RAI) on January 11, 2020 (ML21012A212). RAML responded to NRC's RAI by letter dated February 8, 2021 (ML211041A418).

The 2020 annual surety estimate of \$13,958,078 reflects an increase of \$9,609,143 from the 2019 annual surety estimate of \$4,348,935 that was approved by the NRC on December 17, 2019. The cost increase is mainly due to and "newly scoped reclamation costs related to windblown tailings material retrieval and construction of a new byproduct material repository [ML20307A169]" and ongoing licensed activities, operations and maintenance tasks.

The NRC staff reviewed the submission against Title 10 of the *Code of Federal Regulations* (10 CFR) 40, Appendix A, Criterion 9 and 10, and determined that the decommissioning and reclamation activities are adequately described and reasonable cost estimates for each activity were provided. In addition, RAML's 2020 surety update includes a request by the licensee to continue to maintain a surety amount of \$16,000,000, which sufficiently covers the estimated surety costs. Accordingly, the NRC staff approves RAML's request to maintain the financial surety instrument in the amount of \$16,000,000.

## **BACKGROUND**

The subject uranium mill tailings site is in the Ambrosia Lake uranium district of New Mexico. It is located approximately 25 miles north of Grants, New Mexico. The tailings impoundment contains 33 million tons of uranium ore and covers an area of approximately 370 acres.

The site status changed from standby to reclamation in August 2003 to reflect the licensee's intent to begin full demolition and reclamation of the site leading to termination of the specific license. The mill was demolished and disposed of in the tailings impoundment in late 2003. The demolition was completed in accordance with a mill demolition plan approved by NRC in October 2003. The staff issued a license amendment for alternate concentration limits for the site in February 2006 (ML060590024). Consequently, all groundwater corrective actions have been discontinued.

## **TECHNICAL EVALUATION**

The contents of the cost estimate were evaluated according to 10 CFR Part 40, Appendix A, Criteria 9 and 10 and Appendix C to NUREG-1620, Rev. 1, "Outline Recommended by the U.S. Nuclear Regulatory Commission Staff for Preparing Site-Specific Facility Reclamation and Stabilization Cost Estimates for Review." The surety estimate:

- Includes an adequate contingency factor of 15%,
- Assumes completion of all activities by a third party and includes contractor profits and overhead,<sup>1</sup>
- Includes a long-term surveillance and monitoring fee.

Section (f) of 10 CFR Part 40, Appendix A, Criterion 9 requires that the surety estimate be adjusted to recognize increases and decreases in the cost estimate resulting from eleven factors, as described below.

### **(1) Inflation**

Table 1, in RAML's RAI responses, indicates major costs were updated as of September 2020.

### **(2) Changes in engineering plans**

The September 2020 revised surety estimate's cover letter states the estimate increase from the June 2020 submittal is "primarily a result of newly scoped reclamation costs related to windblown tailings material retrieval and construction of a new byproduct material repository." For example, the revised surety estimate includes an estimated cost of \$1,477,321 for retrieval of windblown materials, compared to an estimate of \$206,513 for additional soils cleanup of windblown tailings areas included in the 2019 surety estimate. The revised surety estimate also includes a new cost of \$966,770 for the "licensing of new uranium byproduct material repository."

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<sup>1</sup> With regard to "Overhead costs for labor and equipment and contractor profit," Attachment A to the revised surety estimate states that "[r]ates are fully loaded . . . ."

**(3) Activities performed**

The surety estimate states that mill demolition is complete. The revised surety estimate states that mill demolition is complete so decommissioning equipment and building smear samples and alpha surface surveys costs are no longer applicable. The revised surety estimate states that well maintenance and replacement is assumed complete.

**(4) Spills, leakage, or migration of radioactive material producing additional contamination in onsite subsurface material that must be remediated to meet applicable remediation criteria**

RAML's RAI responses indicate RAML "has not provided the requested estimate because the facility's approved Soil Decommissioning Plan (ML18166A182) authorizes RAML to cover licensed subsurface radioactive material in excess of the concentrations stipulated in 10 CFR 40 Appendix A, as a part of the Alternate Release Criteria (ARC) remedy. RAML does not anticipate further remedial work in locations where the ARC remedy has been previously implemented. Therefore, there is no expected cost to reclaim the subsurface material where the ARC remedy has been implemented, and the volume is not relevant to the surety estimate.

During 2021, RAML will perform additional characterization to confirm the horizontal and vertical completeness of the ARC remedy. If results of the 2021 characterization show that licensed subsurface radioactive material exists outside of where the ARC remedy has been implemented, RAML's 2022 financial assurance update will provide a volume estimate and financial assurance amount to remediate licensed radioactive material at depth." The NRC site Project Manager will review the 2021 additional site characterization in determining if additional subsurface material needs to be included in the 2022 surety estimate.

Additionally, in NRC's 2019 surety approval it states that "RAML's Ambrosia Lake Facility reclamation and decommissioning has been performed with no recorded events of spills or leaks [ML19273A046, p. 3]." Table 2, in RAML's RAI responses, indicates that no change has occurred to these factors since the 2019 financial assurance calculation.

**(5) Waste inventory increasing above the amount previously estimated**

The NRC's 2019 approval of the 2019 surety estimate states that "there has been no change to the amount of waste inventory, changes to facility, or changes in its authorized possession limits [ML19273A046]." Table 2, in RAML's RAI responses, indicates that no change has occurred to this factor since the 2019 financial assurance calculation.

**(6) Waste disposal costs increasing above the amount previously estimated**

Table 2, in RAML's RAI responses indicates there is an increased financial assurance amount to account for licensing and construction of a new on-site repository.

**(7) Facility modifications**

The NRC's 2019 approval of the 2019 surety estimate states that "there has been no change to the amount of waste inventory, changes to facility, or changes in its authorized possession limits [ML19273A046, p. 3]." Table 2, in RAML's RAI responses indicates with respect to facility modifications, no change since 2019 financial assurance calculation.

**(8) Changes in authorized possession limits**

The NRC's 2019 approval of the 2019 surety estimate states that "there has been no change to the amount of waste inventory, changes to facility, or changes in its authorized possession limits [ML19273A046, p. 3]." Table 2, in RAML's RAI responses, indicates that no change has occurred to this factor since the 2019 financial assurance calculation.

**(9) Actual remediation costs that exceed the previous cost estimate**

Table 2, in RAML's RAI responses, indicates it has increased financial assurance amount to account for additional remediation of licensed radioactive material.

**(10) Onsite disposal**

Table 2, in RAML's RAI responses, indicates RAML has increased financial assurance amount to account for licensing and construction of a new on-site repository.

**(11) Any other conditions affecting costs**

The revised surety estimate does not identify other conditions that may affect costs. NRC staff confirmed the cost estimate reasonably includes current site conditions which may affect costs.

The 2020 surety update met the license requirement for a surety update to be submitted by June 30<sup>th</sup> annually, as specified in RAML's license. The costs are estimated based upon third party costs to reclaim, remediate, and decommission facilities and lands affected by past project operations. All unit costs, labor and equipment overhead, as well as contractor profit, were reasonably included. Site management costs were derived using RSMeans (<https://www.rsmeans.com>) standard cost data. Other standardized rates used in development of the cost estimate include the New Mexico Environment Department Ground Water Quality Bureau, Monitoring Well Construction and Abandonment Guidelines (<https://www.env.nm.gov/gwqb/gw-regulations/>). Also, the licensee added 15 percent for contingencies and long-term surveillance fees as required.

The instrument to be used by the licensee for the financial assurance update is an irrevocable Letter of Credit (LOC). A signed original of the LOC is currently held by NRC who is the named beneficiary on the financial instrument. The LOC amount is \$16,000,000. The LOC includes sufficient funds to cover the estimated cost to carry out the decommissioning and decontamination activities for the mill and site and any tailings or waste disposal areas. The LOC has previously been found acceptable.

Additionally, a Standby Trust Agreement is in place, pursuant to criteria in 10 CFR Part 40, Appendix A, Criterion 9, which states“. If a trust is not used, then a standby trust fund must be set up to receive funds in the event the Commission or State regulatory agency exercises its right to collect the surety.”

**Conclusion:**

RAML’s 2020 surety update submittal requests the retention of the current financial surety instrument in the amount of \$16,000,000. The NRC staff approves RAML’s request to maintain the financial surety instrument in the amount of \$16,000,000.