

**U.S. NUCLEAR REGULATORY COMMISSION  
TECHNICAL EVALUATION REPORT  
2021 SURETY UPDATE  
RIO ALGOM MINING LLC, AMBROSIA LAKE FACILITY  
SOURCE MATERIAL LICENSE NO. SUA-1473**

**DATE:** January 13, 2022

**DOCKET NO.:** 040-08905

**LICENSE NO.:** SUA-1473

**LICENSEE:** Rio Algom LLC

**SITE:** Ambrosia Lake Facility

**TECHNICAL REVIEWERS:** Steve McCarthy, Thomas Lancaster

**PROJECT MANAGER:** Thomas Lancaster

**SUMMARY AND CONCLUSIONS**

On June 25, 2021, Rio Algom Mining LLC (RAML) submitted its 2021 annual surety estimate update (Agencywide Documents Access and Management System Accession [ADAMS] No. [ML21181A169](#)) for the Ambrosia Lake Facility (License No. SUA-1473). The annual submission of the surety estimate is required under Title 10 of the *Code of Federal Regulations* (10 CFR) Appendix A, II. Financial Criteria, Criterion 9 and Criterion 10, and License Condition (LC) 22 of License No. SUA-1473. The RAML also requested an amendment to LC 22 to reflect the increase amount of the financial surety in the 2021 update (ADAMS Accession No. [ML21343A035](#)). The 2021 annual surety estimate of \$19,932,824 reflects an increase of \$5,974,746 from the 2020 annual surety estimate of \$13,958,078 (ADAMS Accession No. [ML20307A168](#)). The cost increase is mainly due to facility decommissioning activities (e.g., excavation of areas of surficial contamination), ground-water sampling, and radiological monitoring.

The U.S. Nuclear Regulatory Commission (NRC) staff evaluated the surety estimate to determine whether the surety meets the financial assurance and financial test requirements in 10 CFR Section 40.36 and 10 CFR Part 40, Appendix A. The NRC staff finds the updated financial assurance estimate includes funds sufficient to cover the estimated costs to decommission the RAML, as required by the regulations in Part 40. The NRC staff also finds the decommissioning and reclamation activities are adequately described and that reasonable cost estimates for each activity were provided. Therefore, the financial surety and financial test for the current surety period are acceptable. The NRC staff also determined that RAML's updated Irrevocable Letter of Credit, which reflects an increase from \$4,500,000.00 to \$20,500,000.00, will provide adequate funding for its 2021 annual surety estimate increase amount of \$19,932,824.

## **BACKGROUND**

The RAML uranium mill tailings site is located in the Ambrosia Lake uranium district of New Mexico, 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; it is the licensee's intention 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 the mill demolition plan approved by NRC in October 2003 (ADAMS Accession No. [ML032890811](#)). The staff issued a license amendment for alternate concentration limits for the site in February 2006 (ADAMS Accession No. [ML060380387](#)). Prior to 2006, RAML completed all corrective groundwater actions (ADAMS Accession No. [ML060380387](#)), and groundwater contamination remains below the alternative concentration limits. For these reasons remediation at the site has been discontinued.

## **REGULATORY AND LICENSE REQUIREMENTS**

The RAML's license was issued under 10 CFR Part 40, "Domestic Licensing of Source Material." The regulations at 10 CFR Section 40.36 provide the requirements of financial assurance and recording keeping for decommissioning. 10 CFR Section 40.36(d)(1)(A) requires that decommissioning plan be updated annually and provide a cost estimate that reflects the cost of an independent contractor to perform all decommissioning activities. 10 CFR Section 40.36(e) provides the requirements for use of a letter of credit. 10 CFR Part 40, Appendix A, II. Financial Criteria, Criterion 9 and LC 22 of the Materials License No. SUA-1471 require the licensee to maintain an NRC-approved financial surety arrangement to cover estimated costs for the RAML decommissioning and decontamination activities. Criterion 9(e) provides that the Commission will review the surety mechanism to assure, that sufficient funds would be available for completion of reclamation if the activities had to be performed by a third party. The LC 22 also requires that the cost estimates be calculated based on completion of all activities by a third party and that the cost estimate must be updated annually to the NRC by June 30.

In addition, 10 CFR Part 40, Appendix A, II. Financial Criteria, Criterion 10, requires that a minimum charge of \$250,000 (1978 dollars) must be paid by each mill operator to the general treasury or appropriate State agency, prior to uranium mill license termination, to account for costs associated with long-term surveillance.

The NRC staff reviewed RAML's annual financial assurance update using the guidance in NUREG-1620, Rev. 1, Appendix C, "Standard Review Plan for the Review of a Reclamation Plan for Mill Tailings Sites Under Title II of the Uranium Mill Tailings Radiation Control Act of 1978," dated June 2003.

10 CFR Section 40.36(d)(1)(A) requires that decommissioning plan be updated annually and provide a cost estimate that reflects the cost of an independent contractor to perform all decommissioning activities.

## TECHNICAL EVALUATION

The information in the 2021 financial surety submission, including the decommissioning cost estimate, were evaluated according to 10 CFR Part 40, Appendix A, II. Financial Criteria, Criterion 9 and Criterion 10 and Appendix C to NUREG-1620, Rev. 1, "Outline Recommended by the NRC Staff for Preparing Site-Specific Facility Reclamation and Stabilization Cost Estimates for Review." The submission also addressed requirements at 10 CFR Section 40.36(e)(2) for the licensee's use of a letter of credit as surety mechanism. The NRC staff notes the surety estimate:

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

Section (f) of 10 CFR Part 40, Appendix A, II. Financial Criteria, Criterion 9(f) requires that the surety estimate be adjusted to include increases and decreases in the eleven factors that make up the cost estimate. The RAML's surety update recognizes the cost increases in the eleven factors described below.

### **(1) Inflation**

Table 7 in RAML's 2021 financial assurance update indicates that costs were updated with an inflation adjustment from September 2020. The cost indicated RAML's 2021 financial assurance update was confirmed for accuracy by NRC staff on the U.S. Bureau of Labor Statistics (BLS) Consumer Price Index (CPI) Inflation Calculator. Accessed January 19, 2022. [https://www.bls.gov/data/inflation\\_calculator.htm](https://www.bls.gov/data/inflation_calculator.htm).

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

Table 7 in the RAML's 2021 financial assurance update indicates "New location and geotechnical details for surety repository."

### **(3) Activities performed**

The surety estimates states that: "New scope for soil cleanup and application of alternate activities performed release criteria remedy based on more current characterization data."

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

Table 7 in the RAML's 2021 financial assurance update indicates that no change has occurred to these factors since the 2020 financial assurance calculation.

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

Table 7 in RAML's 2021 financial assurance update indicates that no change has occurred to this factor since the 2020 financial assurance calculation.

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

Table 7 in RAML's 2021 financial assurance update indicates that no change has occurred to this factor since the 2020 financial assurance calculation.

**(7) Facility modifications**

Table 7 in RAML's 2021 financial assurance update indicates with respect to facility modifications, no change since 2020 financial assurance calculation.

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

Table 7 in RAML's 2021 financial assurance update indicates that no change has occurred to this factor since the 2020 financial assurance calculation.

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

Table 7, in RAML's 2021 financial assurance update indicates it has "Increased financial assurance amount to account for additional remediation of licensed radioactive material."

**(10) Onsite disposal**

Table 7 in RAML's 2021 financial assurance update indicates RAML has "Increased financial assurance amount to account for new location for surety repository and addition of new areas for alternate release criteria remedy."

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

Table 7 in RAML's 2021 financial assurance update indicates RAML has increased financial assurance amount to account for change in projected decommissioning timeline including license termination from 2025 to 2030 and the transition to the U.S. Department of Energy for long-term care.

The specific increases to estimates costs are described in Section 3(VIII) and Table 7 of the 2021 Financial Assurance Update (ADAMS Accession No. [ML21181A169](#)). Table 7 summarizes the factors primarily responsible for the surety adjustments.

- Facility decommissioning costs increasing from \$4,103,091 to \$8,514,309, primarily to include the cost of excavating areas with surface contamination,
- Increases in the costs of analyzing ground-water samples and of decommissioning wells OR well from \$1,223,862 to \$1,937,741,

- Increases in the salary of a project manager and miscellaneous costs from \$3,788,804 to \$4,383,950, and
- An increase in the Contingency Cost from \$1,820,619 to \$2,599,934.

The NRC staff finds the costs in the 2021 surety cost estimate are estimated based upon third party costs to reclaim, remediate, and decommission facilities and lands affected by past project operations found in Appendix A, of RAML's 2021 financial assurance submission to be acceptable. All unit costs, labor, and equipment overhead, as well as contractor profit, were included. Staff concluded labor rates to be reasonable based on information found at [https://www.bls.gov/oes/current/oes\\_nm.htm#otherlinks](https://www.bls.gov/oes/current/oes_nm.htm#otherlinks). Also, the licensee added 15 percent for contingencies. The RAML also included the long-term surveillance as required by 10 CFR Part 40, Appendix A, II. Financial Criteria, Criterion 10. The RAML's long-term surveillance fee of \$250,000 in 1978 dollars, was adjusted to \$1,015,633 in 2021 dollars using the U.S BLS CPI Inflation Calculator (BLS, 2021a). Therefore, NRC staff has determined that the cost estimate is based upon third party costs, includes an adequate contingency factor of 15 percent, and accounts for long-term surveillance fees as required by 10 CFR Section 40.36 and 10 CFR Part 40, Appendix A, II. Financial Criteria, Criterion 9 and Criterion 10.

The RAML submitted its annual financial assurance update on June 25, 2021. The regulatory requirements that are relevant to the RAML financial surety are memorialized in LC 22 of the Materials License No. SUA-1473. The NRC staff has determined that the submittal meets the requirement for an annual update to the surety as required by 10 CFR Section 40.36(d)(1) and LC 22. The NRC staff finds the 2021 surety update met the requirement in LC 22 for a surety update to be submitted annually by June 30, as specified in RAML's license.

On November 17, 2021, RAML advised the NRC that it updated and increased the value of the final financial assurance mechanism, which is in the form of an Irrevocable Standby Letter of Credit (ADAMS Accession No. [ML21343A035](#)). The updated Irrevocable Letter of Credit reflects an increase from \$4,500,000.00 to \$20,500,000.00 to funding adequate to cover the 2021 annual surety estimate, of \$19,932,824, plus funds for inflation.

## **CONCLUSION**

The NRC staff has determined that RAML's 2021 updated surety estimate of \$19,932,824 in the surety cost estimate is adequate to cover decommissioning and reclamation activities at the Ambrosia Lake site. The NRC staff finds RAML's updated Irrevocable Letter of Credit, which reflects an increase from \$4,500,000.00 to \$20,500,000.00, will provide adequate funding for its 2021 annual surety estimate increase amount of \$19,932,824.

## **ENVIRONMENTAL REVIEW**

A license amendment to reflect an update in the amount of financial assurance or corrective revisions belongs to a category of actions that the NRC has determined do not individually or cumulatively have a significant effect on the environment. Such actions qualify for a categorical exclusion under 10 CFR Section 51.22(c) and do not require an environmental assessment. Specifically, the NRC staff has determined that the financial assurance (surety) update is categorically excluded from further environmental review under 10 CFR Section 51.22(c)(10)(i).

## **AGENCIES AND PERSONS CONSULTED**

The NRC staff has determined that the proposed action will not affect listed species or critical habitat. Therefore, no further consultation is required under Section 7 of the Endangered Species Act. Likewise, the NRC staff has determined that the proposed action is not the type of activity that has the potential to cause effects on historic properties. Therefore, in accordance with 36 CFR Section 800.3(a)(1), no further obligation is required under Section 106 of the National Historic Preservation Act.

## **PROPOSED LICENSE AMENDMENT**

Revise LC 22 to change the required surety amount to read: to \$20,500,000.00.

## **REFERENCES**

BLS, 2021a. *CPI Inflation Calculator*. U.S. Bureau of Labor Statistics. Accessed April 13, 2021. [https://www.bls.gov/data/inflation\\_calculator.htm](https://www.bls.gov/data/inflation_calculator.htm).