

Rio Algom Mining LLC

February 8, 2021

Mr. Thomas Lancaster
U.S. Nuclear Regulatory Commission
Mailstop T5-A10
Washington DC 20555-0001

Subject: Response to NRC Requests for Additional Information – 2020 Financial Assurance Update

Rio Algom Mining LLC – Ambrosia Lake Facility
Radioactive Materials License No. SUA-1473, Docket No. 40-8905

Dear Mr. Lancaster:

This letter is in response to requests for additional information (RAIs) from the Nuclear Regulatory Commission (NRC) regarding RAML's 30 September 2020 resubmission (ML20307A169, ML20307A171) of the Ambrosia Lake West facility's 2020 annual financial assurance update (ML20192A224).¹ RAML received the following three RAIs by email dated 11 January 2021 (ML21012A212):

RAI 1. Update the revised surety estimate to include sources of unit costs and adequate information to confirm costs are presented in current dollars (Paragraph (b)(3) of 10 CFR Part 40, Appendix A, Criterion 9; Paragraph (f)(1) of 10 CFR Part 40, Appendix A, Criterion 9; Appendix C, NUREG-1620)

[...]

To allow the NRC to fully evaluate and confirm the reasonableness of the unit costs relied on in the revised surety estimate, the licensee needs to provide a documented source for all costs. Furthermore, clarification of the source(s) of these costs is needed to determine if the costs represent current dollars or need to be adjusted for inflation.

To resolve this RAI, RAML has updated **Attachment A** to the 2020 surety resubmission. The updated version indicates, per-line item, the source of each of RAML's cost estimates. **Table 1** provides further specific details about the sources identified in **Attachment A**.

¹ Pursuant to SUA-1473 license condition 22.

RAI 2. Update the revised surety estimate to include an estimate of the amount of radioactive contamination in onsite subsurface material (Paragraph (b)(2) of 10 CFR Part 40, Appendix A, Criterion 9)

Paragraph (b)(2) of 10 CFR Part 40, Appendix A, Criterion 9 states that each cost estimate must contain an “estimate of the amount of radioactive contamination in onsite subsurface material.” The revised surety estimate does not include an estimate for the amount of radioactive contamination in onsite subsurface material. In accordance with the regulatory requirement, provide an estimate of the amount of radioactive contamination in onsite subsurface material.

RAML has not provided the requested estimate because the facility’s approved Soil Decommissioning Plan (SDP, 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.

RAI 3. Provide an explicit statement that there has been no change in various costs or facility conditions since the previous surety estimate (Section (f) of 10 CFR Part 40, Appendix A, Criterion 9)

[...]

In order to assess the reasonableness of the surety estimate and in accordance with section (f) of 10 CFR Part 40, Appendix A, Criterion 9, provide explicit statements on whether conditions have changed related to factors four through ten (spills, waste inventory, waste disposal, facility modifications, changes in authorize possession limits, actual remediation costs, onsite disposal, other conditions affecting costs) since the 2019 surety estimate.

Table 2 provides the requested information consistent with 10 CFR Part 40, Appendix A, Criterion 9 factors four through ten.

If you have any questions or require additional information, please contact me at (916) 947-7637 or by email at Sandra.Ross@bhp.com.

Respectfully submitted,
Rio Algom Mining, LLC

A handwritten signature in cursive script, reading "Sandra L. Ross".

Sandra L. Ross, P.G.
Site Manager

Attachment A – Updated summary tables for line items in NUREG-1620 Appendix C

cc: NRC Document Control

Table 1. Specific details concerning estimate sources for SUA-1473 2020 Surety resubmission.

| Table Identifier | Company Name | Location | Comments | Cost estimate calculated |
|------------------|--|-------------------|---|--------------------------|
| RAML Legal | Rio Algom Mining, LLC | Houston, TX | Manager Legal provided estimate based on previous work performed in-house | September 2020 |
| RAML O&M | Rio Algom Mining, LLC | Grants, NM | Site staff based these estimates on historical spend. | September 2020 |
| Ecosphere | Ecosphere Environmental Services | Durango, CO | None | September 2020 |
| GHD | GHD Group Pty Ltd | Niagara Falls, NY | None | September 2020 |
| H3 | H3 Environmental, LLC | Albuquerque, NM | None | September 2020 |
| INTERA | INTERA Incorporated | Albuquerque, NM | None | September 2020 |
| SEAS | Stratified Environmental & Archaeological Services | Durango, CO | None | September 2020 |

Table 2. Summary of changes in site conditions relative to factors four through ten 10 CFR Part 40, Appendix A, Criterion 9.

| Factor | Factor | RAML Comment |
|---------------|---|--|
| (4) | Spills, leakage or migration of radioactive material producing additional contamination in onsite subsurface material that must be remediated to meet applicable remediation criteria | No change since 2019 financial assurance calculation. |
| (5) | Waste inventory increasing above the amount previously estimated | No change since 2019 financial assurance calculation. |
| (6) | Waste disposal costs increasing above the amount previously estimated | Increased financial assurance amount to account for licensing and construction of a new on-site repository. |
| (7) | Facility modifications | No change since 2019 financial assurance calculation. |
| (8) | Changes in authorized possession limits | No change since 2019 financial assurance calculation. |
| (9) | Actual remediation costs that exceed the previous cost estimate | Increased financial assurance amount to account for additional remediation of licensed radioactive material. |
| (10) | Onsite disposal | Increased financial assurance amount to account for licensing and construction of a new on-site repository. |

Attachment A

Updated summary tables for line items in NUREG-1620 Appendix C

| NUREG-1620 | | | | | | |
|------------------------------|--|----------------|-------------|--------------------|-----------------|---|
| Line Item | Title | Status | Amount | Estimate Line Item | Estimate Source | Notes |
| (I) Facility Decommissioning | | | | | | |
| (A) | Salvageable building equipment and equipment decontamination. Provide: | Scope complete | | FD.A | | Mill demolition is complete. |
| (B) | Non-salvageable building and equipment demolition and disposal: | Scope complete | | FD.B | | Mill demolition is complete. |
| (C) | Cleanup of contaminated areas | In estimate | | FD.C | | |
| | Cleanup of windblown materials (e.g., volume and area, unit cost per cubic yard) | In estimate | \$1,477,321 | FD.C.1 | GHD | Volume of material to be excavated was calculated using the assumptions in the approved <i>Soil Decommissioning Plan</i> . Resulting volume of material is 75,000 CY. |
| | Placement of borrow materials removal (e.g., rental rate, cost/cubic yard) | In estimate | | FD.C.2 | | Costs included in FD.C.1. |
| | Dust suppression and site maintenance | In estimate | \$581,625 | FD.C.3 | GHD | |
| | Monitoring and testing of construction | In estimate | | FD.C.4 | | Costs included in FD.C.1. |
| | Regrading | In estimate | | FD.C.5 | | Costs included in FD.C.1. |
| | Placement of the frost barrier | In estimate | \$243,619 | FD.C.6 | GHD | |
| | Placement of the radon barrier | In estimate | \$589,368 | FD.C.7 | GHD | |
| | Installation of erosion protection and armor | In estimate | \$813,055 | FD.C.8 | GHD | |
| | Installation of any vegetative cover | NA | | FD.C.9 | | No vegetative cover is required or used. |
| | Design and construction of drainage ditches | NA | | FD.C.10 | | Estimate assumes no changes to site diversion channels are required. |
| | Recontouring of land surfaces | In estimate | \$23,103 | FD.C.11 | GHD | |
| | Revegetation | In estimate | \$375,000 | FD.C.12 | GHD | |

| NUREG-1620 | | | | | | |
|---|--|-------------|-------------|--------------------|-----------------|---|
| Line Item | Title | Status | Amount | Estimate Line Item | Estimate Source | Notes |
| (II) Groundwater Cleanup & Well Decommissioning | | | | | | |
| (A) | Method of Cleanup | NA | | NA | | RAML has alternate concentration limits and does not intend to engage in aquifer treatment. ACL activities are accounted for in item GWC-WD.C, below. |
| (B) | Volume of aquifer to be restored, area and thickness of aquifer, number of required pumping cycles, and cycling time | NA | | NA | | |
| (C) | Verification sample analysis | In estimate | \$1,102,338 | GWC-WD.C | INTERA | Assumptions described in Attachment B. |
| (D) | Well decommissioning | In estimate | \$121,524 | GWC-WD.D | INTERA | Details requested as sub-items GWC-WD.D.1-3 are provided within the backup documentation for GWC-WD.D. |
| | Number of drill holes to be plugged | In estimate | | GWC-WD.D.1 | | |
| | Depth and size of each drill hole | In estimate | | GWC-WD.D.2 | | |
| | Material to be used for plugging including acquisition, transportation, and plugging | In estimate | | GWC-WD.D.3 | | |

| NUREG-1620 | | | | | | |
|--|--|----------------|-------------|--------------------|-----------------|--|
| Line Item | Title | Status | Amount | Estimate Line Item | Estimate Source | Notes |
| (III) Radiological Survey and Monitoring | | | | | | |
| (A) | Soil samples for radium (and uranium and thorium, if needed) (e.g., number, cost to collect, and analyze) | In estimate | \$270,798 | RSM.A | H3 | Assumes final status survey is performed as described in the approved <i>Soil Decommissioning Plan</i> . |
| (B) | Decommissioning equipment and building smear samples and alpha surface surveys | Scope complete | | NA | | Mill demolition is complete. |
| (C) | Gamma survey frequency, location, and techniques (e.g., type, number, unit cost) | In estimate | \$552,734 | NA | H3 | The only surveys remaining are remedial support surveys - funding for these surveys are scoped under task RSM.E. |
| (D) | Environmental monitoring | In estimate | \$65,720 | RSM.D | H3 | |
| (E) | Personnel monitoring | In estimate | \$1,092,778 | RSM.E | H3 | |

| NUREG-1620 | | | | | | |
|---|---|------------------|-----------|--------------------|-----------------|--|
| Line Item | Title | Status | Amount | Estimate Line Item | Estimate Source | Notes |
| (IV) Project management and Miscellaneous | | | | | | |
| None given | Project management | In estimate | \$385,700 | PMCM.1 | H3 | Half-time project manager for 5 years. |
| None given | Engineering design, review, and change | In estimate | \$966,770 | PMCM.2 | INTERA | Licensing of new uranium byproduct material repository. |
| None given | Mobilization | In estimate | | PMCM.3 | | Included in line-item costs - not a separate line item. |
| None given | Legal expenses | In estimate | \$100,000 | PMCM.4 | RAML Legal | Assumptions described in Attachment B. |
| None given | Power during reclamation | In estimate | \$27,400 | PMCM.5 | RAML O&M | Assumptions described in Attachment B. |
| None given | Quality control | In estimate | | PMCM.6 | | Quality control related to radiation surveys (e.g., development of a Quality Assurance Project Plan) is included in RSM.A <i>Soil samples for radium</i> . Quality control for geotechnical work is included in PMCM.8 <i>Construction completion report</i> . |
| None given | Radiological safety | In estimate | | PMCM.7 | | Included in RSM.E <i>Personnel Monitoring</i> . |
| None given | Construction completion report | In estimate | \$403,457 | PMCM.8 | INTERA | Assumptions described in Attachment B. |
| None given | License termination activities | In estimate | \$90,685 | PMCM.9 | H3 | |
| None given | Well maintenance & replacement | Assumed complete | | PMCM.10 | | |
| None given | Other (describe): | In estimate | | PMCM.11 | | |
| None given | NEPA | In estimate | \$380,000 | PMCM.12 | Ecosphere | Assumptions described in Attachment B. |
| None given | Section 106 compliance | In estimate | \$750,000 | FD.C.13 | SEAS | Assumptions described in Attachment B. |
| None given | Section 4 ponds | In estimate | \$157,328 | PMCM.13 | H3 | Completion of the section 4 ponds supplemental characterization work plan. |
| None given | O&M - Misc | In estimate | \$66,000 | PMCM.14 | RAML O&M | Assumptions described in Attachment B. |
| None given | ACL revision & licensing | In estimate | \$396,664 | GWC-WD.E.1 | INTERA | Assumptions described in Attachment B. |
| None given | Develop LTSP | In estimate | \$64,800 | PMCM.15 | H3 | Assumptions described in Attachment B. |

| NUREG-1620 | | | | | | |
|---------------------------------|---|-------------|-------------|--------------------|-----------------|---|
| Line Item | Title | Status | Amount | Estimate Line Item | Estimate Source | Notes |
| (V) Overhead, Contractor Profit | | | | | | |
| NA | Overhead costs for labor and equipment and contractor profit | NA | | LEOCP.1 | | Rates are fully loaded, so this line item is out of scope. |
| (VI) Long-term surveillance fee | | | | | | |
| NA | The fee required for 10 CFR Part 40, Appendix A, Criterion 10 | In estimate | \$1,039,672 | LTSF.1 | | The fee from 10 CFR 40 Appendix A, adjusted to 2020 dollars using the US Bureau of Labor & Statistics inflation calculator. |
| (VII) Contingency | | | | | | |
| NA | Contingency (15%) | In estimate | \$1,820,619 | CONT.1 | NA | As described in NUREG-1620 |
| (VIII) Annual Adjustments | | | | | | |
| NA | Annual updates. | NA | | ASA.1 | NA | First year - no adjustments |