

Rio Algom Mining LLC

May 27, 2022

Mr. Tom Lancaster
United States Nuclear Regulatory Commission
Mail Stop T5-A10
Washington, DC 20555-0001

**Re: Rio Algom Mining LLC – Ambrosia Lake West Mill
License SUA-1473, Docket No. 40-8905
Request for Amendment to SUA-1473 Regarding the Replacement of Alluvial Monitoring
Well 5-04 ALL**

Dear Mr. Lancaster,

This letter is to propose to the Nuclear Regulatory Commission (NRC) a path forward for licensed alluvial well 5-04 ALL at the Ambrosia Lake West mill site (Radioactive Source Materials License SUA-1473 [the License]). Well 5-04 ALL was inundated with sediment during a storm event in July 2021, and the well casing collapsed during re-development activities in December 2021. The last groundwater sample from this well was collected on February 16, 2021, during the first semi-annual monitoring event in 2021.

Semi-annual monitoring and compliance with alluvial Alternate Concentration Limits (ACLs) at 5-04 ALL (an alluvium compliance well) has been a requirement of License Condition 34 since NRC approved ACLs, via Amendment 56, in 2006. In the Technical Evaluation Report regarding the amendment of Source Materials License SUA-1473 for ACLs (ML060380387), NRC staff recommended 5-04 as an alluvial compliance well based on their technical review of the Application for Alternate Concentration Limits in the Alluvial Materials at Quivira Mill Facility (ML011690068).

The location of well 5-04 ALL and proposed location of replacement well 5-04 ALL-R are shown on **Figure 1**. Photographs of the damaged 5-04 ALL well casing are included in **Figure 2**.

Rio Algom Mining LLC (RAML) intends to replace well 5-04 ALL and respectfully requests to amend License Condition 34 to replace reference to well “5-04 ALL” with “5-04 ALL-R” (the intended replacement well). RAML’s proposed “red-line” tracked changes of License Condition 34 are included as **Attachment 1**.

The proposed location for replacement alluvial monitoring well 5-04 ALL-R is at the approximate location shown on **Figure 1**, far enough from 5-04 ALL to avoid potential localized chemical or hydraulic influences associated with abandonment of the original well (for example, pH changes related to a grout plug). 5-04 ALL-R will be screened in the alluvial material. A proposed construction diagram is included as **Figure 3**. Abandonment of well 5-04 ALL and installation of well 5-04 ALL-R will be performed in accordance with permits issued by the New Mexico Office of the State Engineer.

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RAML plans to plug, abandon, and replace well 5-04 ALL in time for the replacement well to be in service and sampled for the first half of 2023 sampling event. RAML will provide a construction summary report to NRC documenting the installation and development of well 5-04 ALL-R within 30 days of completing well development and filing of well installation documentation with the New Mexico Office of the State Engineer. Well 5-04 ALL-R will be sampled quarterly for a period of 2 years following installation and development, moving to semi-annual sampling after the 2-year period, per License Condition 34.

If you have any questions regarding this letter, please contact me at (916) 947-7637.

Sincerely,

Rio Algom Mining LLC



Sandra L. Ross, P.G.
Manager US Legacy Assets

cc: Document Control
Anne Maurer (NMED), by email to anne.maurer@state.nm.us

Attachments As stated

Figures





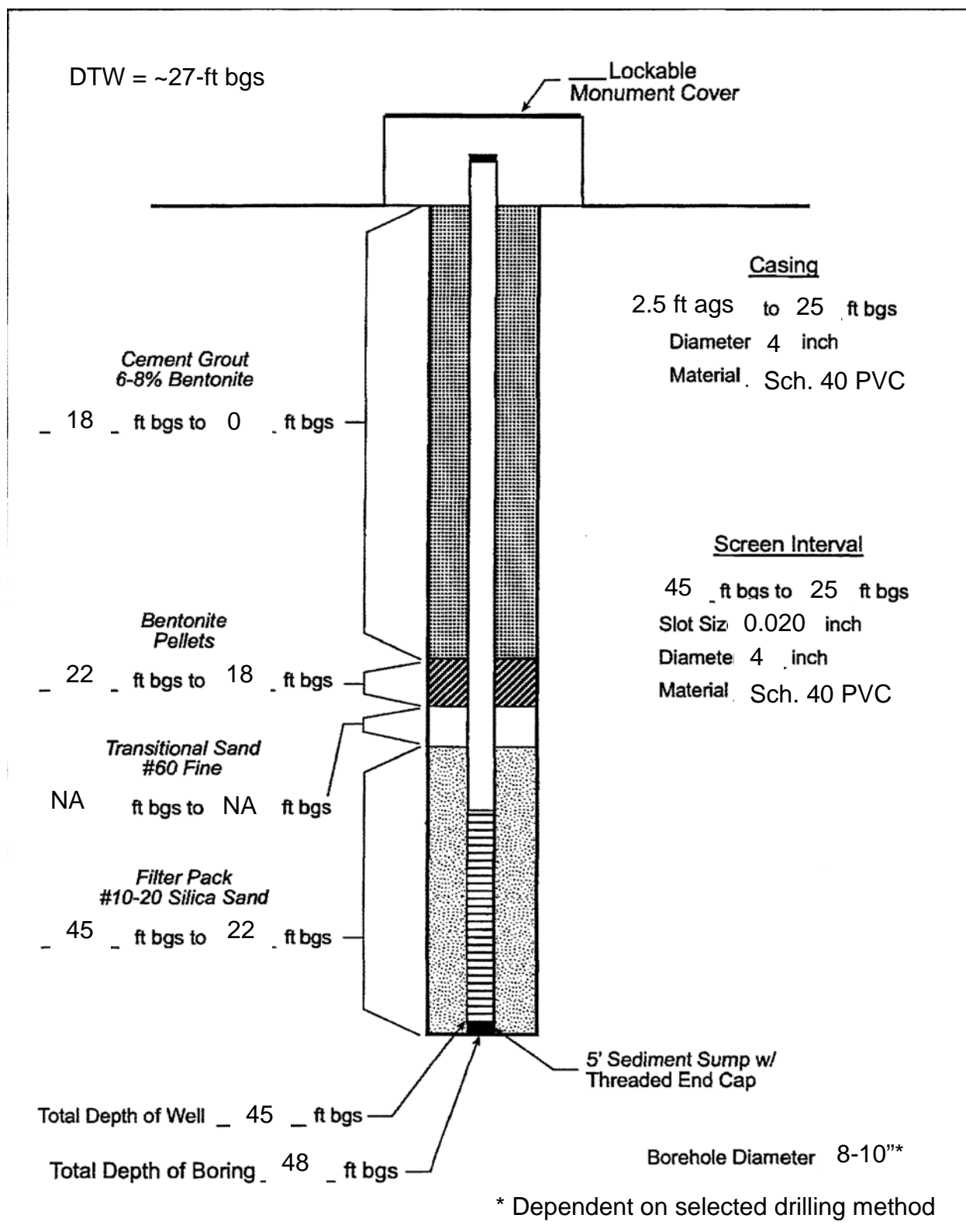


Figure 3: Proposed Well Design for 5-04 ALL-R

Attachment 1

Proposed Changes for New Mexico Source Materials
License SUA-1473, Condition 34

34. The licensee shall implement a groundwater compliance monitoring program. The monitoring wells presented in Paragraph A of this License Condition shall be sampled quarterly for the first two years if a replacement well is installed or following approval of the alternate concentration limits contained in Paragraph B of this License Condition. The licensee shall sample the aforementioned monitoring wells semiannually thereafter, until license termination. Wells in the monitoring network that have been replaced are designated with an "R" after the original name. The ground water compliance monitoring program shall consist of the following:

- A. Sample Dakota Sandstone wells 17-01 KD, 30-02 KD, 30-48 KD-R, 32-45 KD-R, 36-06 KD, and 5-02 KD for antimony, arsenic, beryllium, cadmium, chloride, cyanide, lead, lead-210, molybdenum, nickel, nitrate, radium-226 & -228, selenium, sulfate, thorium-230, total dissolved solids, natural uranium, pH, electrical conductivity, and water level.

Sample Tres Hermanos A wells 31-01 TRA-R, 30-01 TRA, & 33-01 TRA for chloride, cyanide, lead-210, molybdenum, nickel, nitrate, radium-226 & -228, selenium, sulfate, thorium-230, total dissolved solids, natural uranium, pH, electrical conductivity, and water level.

Sample Tres Hermanos B wells 19-77 TRB, 31-02 TRB-R, 31-67 TRB, 36-01 TRB, and 36-02 TRB for chloride cyanide, lead-210, molybdenum, nickel, nitrate, radium-226 & -228 selenium, sulfate, thorium-230, total dissolved solids, natural uranium, pH, electrical conductivity, and water level.

Sample alluvium wells 5-03 ALL-R, 5-04 ALL-R, 5-08 ALL-R, 5-73 ALL-R, 32-59 ALL, 31-61 ALL, 31-65 ALL, and MW-24 ALL, for chloride, lead-210, molybdenum, nickel, nitrate, radium-226 & -228, selenium, sulfate, thorium-230, total dissolved solids, natural uranium, pH, electrical conductivity, and water levels.

- B. Comply with the following ground water protection standards at Dakota Sandstone compliance wells 30-02 KD (old POC), 30-48 KD-R, 5-02 KD, 32-45 KD-R, and 36-06 KD: antimony = 0.05 mg/l; arsenic = 0.1 mg/l, beryllium = 0.01 mg/l; cadmium = 0.01 mg/l; cyanide = 0.04 mg/l; lead = 0.14 mg/l; molybdenum = 0.06 mg/l; and selenium = 0.04 mg/l. Comply with the following alternate concentration limits at the same compliance wells: lead-210 = 62 pCi/l; nickel = 6.8 mg/l; radium-226 & -228 = 218 pCi/l; natural uranium = 1.6 mg/l; thorium-230 = 945 pCi/l; chloride = 3,200 mg/l; nitrate (as N) = 22.8 mg/l; sulfate = 6,480 mg/l; total dissolved solids = 14,100 mg/l. The lead-210 compliance limit is lowered to account for polonium-210 unless or until a compliance limit is developed and approved for polonium-210, at which time lead-210 reverts back to 88 pCi/l. Background is recognized at well 17-01 KD.

Comply with the following ground water protection standards at Tres Hermanos A compliance wells 31-01 TRA-R (old POC) and 30-01 TRA: cyanide = 0.01 mg/l; molybdenum = 0.03 mg/l; nickel = 0.05 mg/l; selenium = 0.03 mg/l; and natural uranium = 0.01 mg/l. Comply with the following alternate concentration limits at

the same compliance wells: lead-210 = 62 pCi/l; radium-226 & -228 = 218 pCi/l; thorium-230 = 945 pCi/l; chloride = 1,070 mg/l; nitrate (as N) = 9.2 mg/l; sulfate = 2,584 mg/l; total dissolved solids = 6,400 mg/l. The lead-210 compliance limit is lowered to account for polonium-210 unless or until a compliance limit is developed and approved for polonium-210, at which time lead-210 reverts back to 88 pCi/l. Background is recognized as well 33-01 TRA.

Comply with the following ground water protection standards at Tres Hermanos B compliance wells, 31-02 TRB-R, 31-67 TRB, 36-01 TRB, and 36-02 TRB: cyanide = 0.01 mg/l; molybdenum = 0.08 mg/l; and selenium = 0.04 mg/l. Comply with the following alternate concentration limits at the same compliance wells: nickel = 6.8 mg/l; radium-226 & -228 = 218 pCi/l; natural uranium = 1.6 mg/l; thorium-230 = 945 pCi/l; lead-210 = 62 pCi/l; chloride = 2,810 mg/l; nitrate (as N) = 7.7 mg/l; sulfate = 4,760 mg/l; and total dissolved solids = 11,700 mg/l. The lead-210 compliance limit is lowered to account for polonium-210 unless or until a compliance limit is developed and approved for polonium-210, at which time lead-210 reverts back to 88 pCi/l. Background is recognized as well 19-77 TRB.

Comply with the following alternate concentration limits at alluvium compliance wells 32-59 ALL, 31-61 ALL, 31-65 ALL, MW-24 ALL, 5-04 ALL-R, 5-08 ALL-R, and 5-73 ALL-R: molybdenum = 176 mg/l; nickel = 98 mg/l; selenium = 49 mg/l; radium-226 & -228 = 3,167 pCi/l; thorium-230 = 13,627 pCi/l; natural uranium = 23 mg/l; lead-210 = 891 pCi/l; chloride = 7,110 mg/l; nitrate (as N) = 351 mg/l; sulfate = 12,000 mg/l; total dissolved solids = 26,100 mg/l. The lead-210 compliance limit is lowered to account for polonium-210 unless or until a compliance limit is developed and approved for polonium-210, at which time lead-210 reverts back to 1,274 pCi/l. Background is recognized as well 5-03 ALL-R.

Alternate concentration limits were specified in the technical evaluation report dated February 26, 2006 (ML060380387).

C. [DELETED by Amendment 56]

Submit, by February 1 and August 1 of each year ground water monitoring reports to include a minimum of the following: potentiometric surface maps for each aquifer; time vs. concentration plots for all parameters for which ACLs have been issued, hydrographs for the downgradient most trend well or POE well in each aquifer, hydraulic gradient calculations, and tabulated analytical data for each ACL parameter for each well.

D. [DELETED by Amendment 42]

- E. If the laboratory results indicate that the concentration of any constituent exceeds its associated ground water protection standard or ACL, the licensee shall collect a second sample within 7 calendar days of becoming aware of the aforementioned exceedance. If the results of this second sample confirm the aforementioned exceedance, the licensee shall increase the monitoring

frequency to monthly and submit to NRC staff quarterly reports documenting the exceedance. If the exceedances continue for three consecutive months, the licensee shall submit to NRC staff a ground water corrective action designed to regain compliance with ground water protection standards and ACLs.

[Applicable Amendments: 9, 11, 13, 15, 25, 35, 40, 42, 56, 62, ##]