

Rio Algom Mining LLC

January 29, 2020

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

04008905

Re: License SUA-1473, Docket No. 40-8905
Summary of Ion Exchange Activities Related to SUA-1473 (NRC) and SUA-616 (AEC)

Dear Mr. Lancaster,

Rio Algom Mining LLC (RAML) and Nuclear Regulatory Commission (NRC) staff participated in a teleconference on December 3, 2019 to answer NRC staff questions related to the history of ion exchange (IX) activities in the Ambrosia Lake Valley, McKinley County, New Mexico. During the December 3 call, RAML staff provided a verbal summary of their understanding of the history of IX activities in the Ambrosia Lake Valley. In a subsequent call on December 12, 2019, NRC staff requested a written version of RAML's verbal summary, which is provided below. The summary was developed based on a review of the Ambrosia Lake West radioactive material licenses and amendments as of the date of this letter.

At different periods throughout its operational history, uranium milling at the Ambrosia Lake West facility has been authorized by one of three radioactive materials licenses. Two of these licenses, R-218 and SUA-616, were issued by the Atomic Energy Commission (AEC). The current license, SUA-1473, was issued by the NRC. A summary of the licenses is provided below:

- **R-218** was the first license to authorize uranium milling at the Ambrosia Lake West facility. R-218 was issued by the AEC around 1958, and due to its age, RAML knows very little about this license. It appears to have only been in effect for a short period of time.
- **SUA-616** was the second license to authorize uranium milling. It was issued by the AEC sometime in the 1960s, and the final AEC renewal occurred in 1970.
- On May 1, 1974, New Mexico became an agreement state. In November 1974, the AEC confirmed that the State of New Mexico would be the regulator responsible for renewal of the existing SUA-616. In December 1975, a renewal application was submitted to the State of New Mexico for SUA-616. The State acknowledged the timely renewal of SUA-616 and extended the license for "the period of agency consideration of [the renewal] application". Over the next 10 years, SUA-616 was amended by the State of New Mexico several times, but never renewed. SUA-616 was replaced by SUA-1473.
- **SUA-1473** is the Ambrosia Lake West facility's third radioactive materials license. It was issued in September 1986 by the NRC following NRC's assumption of authority over uranium milling in New Mexico in May 1986. SUA-1473 amendment 61 is the Ambrosia Lake West facility's current license.

It is RAML's understanding that IX activities occurred at two mines in the Ambrosia Lake Valley: the former Section 25 mine and the former Section 35 mine. Only those activities occurring at the former Section 35 mine were historically tied to the Ambrosia Lake West facility's radioactive

NM5501
NM55

materials license, which authorized the operation of IX columns aboveground as part of a mine water treatment facility and belowground in the mine. Based on reporting to NRC required by SUA-1473, it does not appear that underground IX columns related to the Ambrosia Lake West facility's license ever operated.

A summary of IX activities, as they relate to the Ambrosia Lake West facility's licenses, is provided below.

- **July 1976:** A mine water treatment facility in section 35 T14N R9W, including an IX plant, was first authorized by the New Mexico Environmental Improvement Division (NMEID) as license condition (LC) 16 to SUA-616 (in timely renewal) in July 1976.

***SUA-616 LC 16:** This amendment authorizes the operation of a Mine Water Treatment Facility located at section 35T.14N.R.9W McKinley County, New Mexico. The water treatment facility includes an ion exchange plant to remove uranium from mine waters. The radiological effluent monitoring program and the radiological safety program in effect at the Licensee's Ambrosia Lake Facility shall be expanded to include this mine water treatment facility.*

- **August 1984:** NMEID authorized uranium removal from mine water by IX at Quivira Mining Company's (QMC) former Church Rock mine as LC 37 to SUA-616 (in timely renewal). The locations of QMC's former Church Rock and Section 35 mines are provided on **Figure 1**.

***SUA-616 LC 37:** Uranium shall be removed from Quivira Mining Company's Church Rock Mine water by ion exchange, the uranium-bearing resin shall be transported to Quivira's Ambrosia Lake mill for elution, and the eluted resin shall be returned to Church Rock for reuse in accordance with the above letters [July 20, 1984] and attachments. All Department of Transportation requirements shall be followed in the transport of the resin. The resin shall be thoroughly drained at the mine prior to transport to the mill.*

- **January 1986:** IX activities at QMC's former Church Rock 1 mine ceased.
- **April 1986:** NMEID amended SUA-616 (in timely renewal) LC 16 to authorize the operation of two IX columns - previously located in and used at QMC's former Church Rock 1 mine - underground at QMC's former Section 35 mine.

***SUA-616 LC16, as amended:** This amendment authorizes the operation of a mine water uranium recovery treatment facility located at the Quivira Mining Company operations at Ambrosia Lake, New Mexico. The mine water treatment facility is an ion exchange plant to remove uranium from mine waters and includes two ion exchange columns located underground at the mine site. The radiological effluent monitoring program and the radiological safety program in effect at the licensee's Ambrosia Lake facility shall be expanded to include the mine water treatment facility.*

- **June 1986:** NRC assumed regulatory authority over uranium milling in the state of New Mexico.

- **September 1986:** NRC reissued SUA-616 as SUA-1473 in September 1986, copying SUA-616 in its entirety into SUA-1473.
- **November 1986:** NRC upgraded SUA-1473 to amendment 1. This upgrade completely restructured SUA-1473 compared to the original SUA-1473. The text of SUA-616 LCs 16 and 37 was removed from SUA-1473 as part of the restructuring, and SUA-1473 LC 13 was completely rewritten, to read:

***SUA-1473 amendment 1, LC13:** The licensee is authorized to operate mine water uranium recovery treatment facilities at Ambrosia Lake, New Mexico. These facilities include treatment plants at the main facility, Section 35-36, and individual ion exchange units located above or underground at the Quivira Mining Company mine sites. The radiological effluent monitoring and radiological safety program in effect at the licensee's mill shall include these water treatment facilities. All U.S. DOT requirements shall be followed in the transport of the ion exchange resin. A listing of the individual ion exchange units currently in operation shall be provided by January 1, 1987, and shall be updated at least annually thereafter.*

- **December 1986:** In accordance with LC13 of SUA-1473, QMC reported to NRC that there were no IX columns currently operating underground at QMC's mine sites.
- **January 1988:** In accordance with LC13 of SUA-1473, QMC reported to NRC that there were no IX columns currently operating underground at QMC's mine sites.
- Reporting of IX activities related to SUA-1473 LC13 from 1988 on indicate that no IX columns operated underground at QMC's Ambrosia Lake Valley mine sites.
- **1990:** IX activities at QMC's aboveground Section 35 water treatment facility ceased.
- **1993-1994:** The aboveground Section 35 water treatment facility was reclaimed.
- **2003:** Reference to IX activities at mines was removed from SUA-1473 by LA 52, which updated LC13 to read:

***SUA-1473 amendment 52, LC13:** The licensee is authorized to operate mine water uranium recovery treatment facilities at Ambrosia Lake, New Mexico, as part of the corrective action program required under license condition 34(C). The radiological effluent monitoring and radiological safety program in effect at the licensee's mill shall include this mine-water treatment facility. A listing of the individual ion exchange units currently in operation shall be provided by January 1, 1987, and shall be updated at least annually thereafter.*

If you have any questions or need additional information, please do not hesitate to call me at (916) 947-7637.

Sincerely,

A handwritten signature in cursive script, appearing to read "Sandra L. Ross".

Sandra L. Ross, P.G.
Site Manager
Rio Algom Mining, LLC

cc: Document Control
Kurt Vollbrecht, NMED

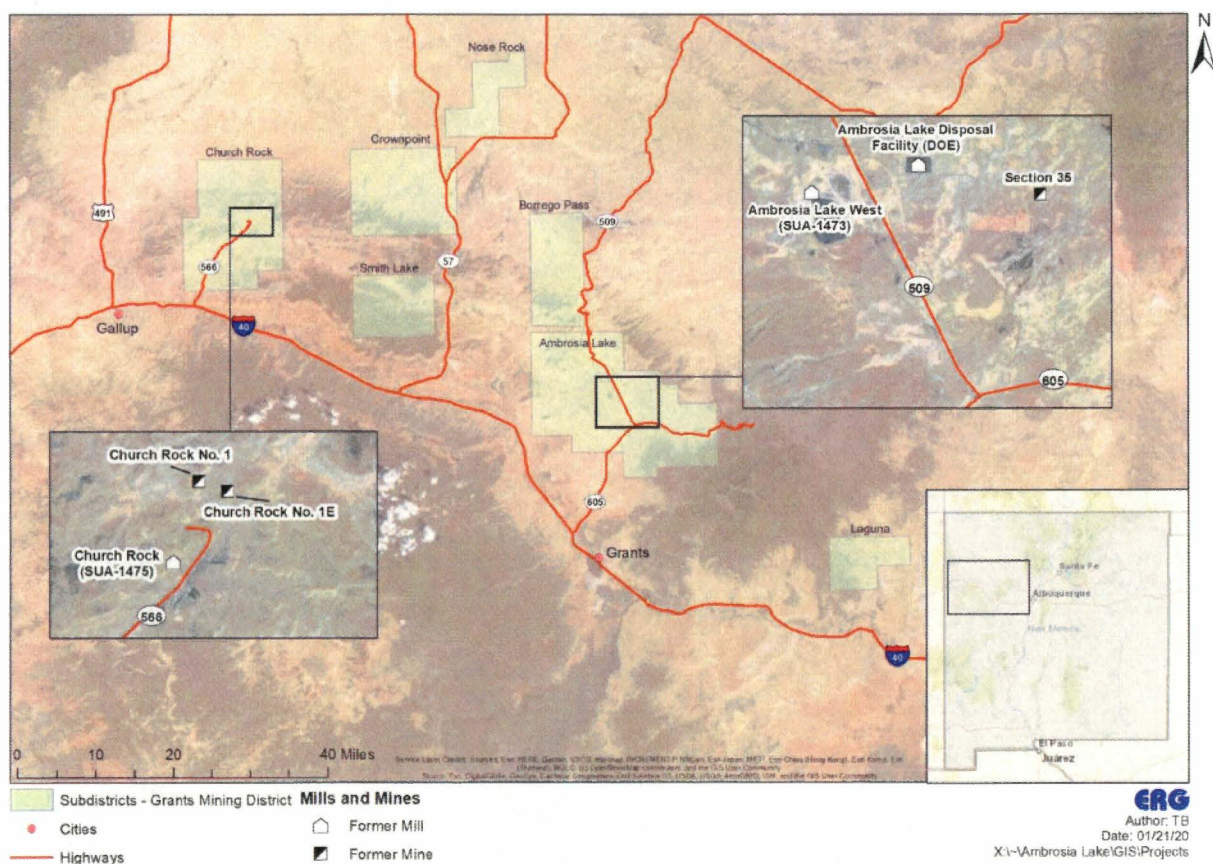


Figure 1. Map of locations relevant to historical ion exchange activities at Quivira Mining Company's Church Rock and Ambrosia Lake operations.