

NUCLEAR REGULATORY COMMISSION

[Docket No. 40-38415; NRC-2023-0090]

Rare Element Resources, Inc.

Rare Earth Element Demonstration Plant

AGENCY: Nuclear Regulatory Commission.

ACTION: Environmental assessment and finding of no significant impact; issuance.

SUMMARY: The U.S. Nuclear Regulatory Commission (NRC) is issuing a Finding of No Significant Impact (FONSI) and accompanying Environmental Assessment (EA) for an application request from Rare Element Resources, Inc. (RER) for a source materials license accompanying the construction and operation of a rare earth element (REE) separation and processing demonstration plant near Upton, Wyoming. Based on the analysis in the EA, the NRC staff has concluded that there would be no significant impacts to environmental resources from RER's proposed facility and, therefore, a FONSI is appropriate.

DATES: The EA and FONSI referenced in this document are available on July 27, 2023.

ADDRESSES: Please refer to Docket ID **NRC-2023-0090** when contacting the NRC about the availability of information regarding this document. You may obtain publicly available information related to this document using any of the following methods:

- **Federal Rulemaking Website:** Go to <http://www.regulations.gov> and search for Docket ID **NRC-2023-0090**. Address questions about Docket IDs to Stacy Schumann; telephone: 301-415-0624; email: Stacy.Schumann@nrc.gov. For technical questions, contact the individual listed in the "For Further Information Contact" section of this document.

- **NRC’s Agencywide Documents Access and Management System**

(ADAMS): You may obtain publicly available documents online in the ADAMS Public Documents collection at <http://www.nrc.gov/reading-rm/adams.html>. To begin the search, select “Begin Web-based ADAMS Search.” For problems with ADAMS, please contact the NRC’s Public Document Room (PDR) reference staff at 1-800-397-4209, at 301-415-4737, or by email to PDR.Resource@nrc.gov. For the convenience of the reader, instructions about obtaining materials referenced in this document are provided in the “Availability of Documents” section.

- **NRC’s PDR:** The PDR, where you may examine and order copies of publicly available documents, is open by appointment. To make an appointment to visit the PDR, please send an email to PDR.Resource@nrc.gov or call 1-800-397-4209 or 301-415-4737, between 8 a.m. and 4 p.m. eastern time (ET), Monday through Friday, except Federal holidays.

FOR FURTHER INFORMATION CONTACT: James Park, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; telephone: 301-415-6954; email: James.Park@nrc.gov.

SUPPLEMENTARY INFORMATION:

I. Introduction

By letter dated September 13, 2022, RER applied for a source material license from the NRC for RER’s proposed REE separation and processing demonstration plant to be located near Upton, Wyoming. In the Demonstration Plant, RER proposes to use its proprietary process to extract and concentrate neodymium-praseodymium (NdPr) and other rare earth oxides (REOs) from an approximately 907 metric-ton (1,000-ton) exploration sample obtained from RER’s Bear Lodge site in the Black Hills National Forest in Wyoming. During processing, thorium in the exploration sample would be

concentrated to a level necessitating a source material license from the NRC in accordance with the provisions of part 40 of title 10 of the *Code of Federal Regulations* (10 CFR), "Domestic Licensing of Source Material". As required by 10 CFR 51.21, the NRC prepared an EA that documents the NRC staff's independent evaluation of the potential environmental impacts of RER's activities at its proposed Upton, Wyoming facility. Based on the analysis in the EA, the NRC staff has concluded that there would be no significant impacts to environmental resources from RER's proposed activities and, therefore, a FONSI is appropriate.

II. Summary of Environmental Assessment

Description of the Proposed Action

RER proposes to locate its proposed Demonstration Plant on an approximately 3.2-hectare (ha) (8-acre [ac]) parcel of privately owned land, approximately 3.2 kilometers (km) [2 miles (mi)] northwest of Upton, Wyoming. RER proposes to modify the existing site and site structures for its purposes in demonstrating its proprietary process for extracting NdPr and REOs from an approximately 907 metric-ton (1,000-ton) exploration sample removed previously from the Bear Lodge project site in northeastern Wyoming. RER proposes to operate its Demonstration Plant for 1 year, processing the exploration sample at a rate of 2.7 metric tons (3 tons) a day.

Facilities planned by RER to be located inside the proposed site's radiological restricted area would include a Physical Upgrade/Sample Storage Facility, a Main Process Facility, an Equipment Building, a Chemical Containment Area, and a Clean Room as well as loading and unloading areas. Ancillary facilities outside the radiological restricted area would include the office trailer, a laydown yard, access roads, and a parking area for employees and visitors.

RER's process to extract NdPr and other REOs would involve four stages. First, RER would use a jaw crusher, a cone crusher, and coarse vibrating screen units to comminute (i.e., pulverize) and screen the sample to physically separate the rare-earth fines for further processing. Next, RER would conduct its primary hydrometallurgical processing of the pulverized sample to produce a purified total REO with thorium concentrate. This stage is intended to separate a substantial portion of the natural radioactivity that is present in the exploration sample. The third stage would remove this natural radioactivity, mainly thorium and its decay products, along with cerium. The thorium/cerium-bearing radioactive waste would be treated in a separate solid waste treatment process. In the final processing stage, RER would separate out and purify NdPr and other REE concentrates into a final product.

RER's process would produce solid waste and wastewater streams. Both waste streams would be neutralized with quicklime and then combined in a batched process. RER would add bentonite as needed to absorb excess liquid in the combined tailings waste. RER expects that nearly 100 percent of the radioactive material from the processed ore sample would be contained in the tailings waste. RER would transfer the tailings waste to a 27-metric ton (30-ton) roll-off bin and store the waste onsite prior to planned weekly waste shipments by rail to the Waste Control Specialists (WCS) low-level radioactive waste disposal facility located in Andrews County, Texas.

Construction and operation of the proposed Demonstration Plant would also generate non-radiological wastes, to include both industrial and chemical wastes. RER would dispose of non-radioactive organic process-related waste at a local hydrocarbon treatment facility. Any laboratory chemicals that would be generated would be stored in containers in the onsite laboratory, prior to off-site disposal at an appropriate facility. Non-hazardous industrial waste would be disposed at the Weston County, Wyoming

transfer facility. Additionally, RER would consider recycling certain non-radioactive wastes (e.g., used oil and lubricants, packing wastes, and scrap metal) for re-use, if possible.

Need for the Proposed Action

REEs include the lanthanide series of elements from lanthanum (atomic number 57) to lutetium (atomic number 71) along with yttrium (atomic number 39) and scandium (atomic number 21). REEs are essential elements in many applications in today's economy, including electric automobiles, smart phones, camera lenses, advanced wind turbines, computer hard drives, fluorescent and light-emitting-diode bulbs, magnets, additives in ceramics and glass, and military systems.

Several U.S. governmental agencies have identified the growing need and reliance in the United States for REEs. The Department of Energy has identified the REEs as strategic resources for economic prosperity and national defense of the United States. The U.S. Department of the Interior published an updated final list of critical minerals that includes many of the REEs, and the U.S. Department of Defense has identified REEs as critical to future defense applications.

Environmental Impacts of the Proposed Action

The NRC staff has assessed the potential environmental impacts from RER's proposed Demonstration Plant at the Upton, Wyoming site. The NRC staff assessed the impacts of the proposed action on land use; historical and cultural resources; visual and scenic resources; climatology, meteorology and air quality; geology and soils; water resources; ecological resources; socioeconomics; noise; traffic and transportation; public and occupational health and safety; and waste management. The NRC staff determined that impacts to these environmental resource areas would be minimal and not significant. With respect to ecological resources, the NRC staff determined that the

proposed action would have no effect on listed endangered or threatened species or their critical habitat. The NRC staff also determined that no historical properties would be affected by the undertaking (i.e., RER's proposed action).

Environmental Impacts of the Alternatives to the Proposed Action

As an alternative to the proposed action, the staff considered denial of the proposed action (i.e., the “no-action” alternative). Under the no-action alternative, the NRC would not grant a source material license to RER. RER would not be authorized to either construct or operate its Demonstration Plant near Upton, Wyoming. No ground-disturbing activities would take place and no buildings would be constructed or modified. Processing of REEs would need to occur elsewhere. The NRC staff concluded that environmental impacts from the no-action alternative would be minimal and not significant.

Agencies and Persons Consulted

On May 25, 2023, the staff provided a copy of the draft EA to the Wyoming Department of Environmental Quality (WDEQ) for its review and comment. On June 26, 2023, the State provided its comments on the draft document.

III. Finding of No Significant Impact.

Based on its review of the proposed action, in accordance with 10 CFR part 51, the NRC staff has determined that issuance of a source material license to RER, and subsequent construction and operation of an REE Demonstration Plant at the proposed facility site near Upton, Wyoming, would not significantly affect the quality of the human environment. Approval of the proposed action would be expected to result in minimal impacts and RER's operational activities would be conducted to keep occupational radiological doses and radiological doses to members of the public below the applicable limits in 10 CFR part 20. On the basis of the EA, the NRC finds that there are no

significant environmental impacts from the proposed action, and that preparation of an environmental impact statement is not warranted. Accordingly, the NRC has determined that a FONSI is appropriate. In accordance with 10 CFR 51.32(a)(4), this FONSI incorporates the EA set forth in this notice by reference.

IV. Availability of Documents.

The documents identified in the following table are available to interested persons through ADAMS.

DOCUMENT DESCRIPTION	ADAMS ACCESSION NO.
Rare Element Resources, Inc., Source Material License Application, dated September 13, 2022	ML22256A319 (Package)
Rare Element Resources, Inc., Submittal of Supplemental Information for its Source Material License Application, dated December 1, 2022	ML22333B028
Rare Element Resources, Inc., Response to NRC Request for Additional Environmental Information, dated March 21, 2023	ML23082A306
Rare Element Resources, Inc., Response to NRC Request for Additional Information – Safety Evaluation, dated April 7, 2023	ML23097A072
NRC Request to Wyoming Department of Environmental Quality to Review the Draft EA, dated May 25, 2023	ML23171B109
Wyoming Department of Environmental Quality Response to NRC Request for Review of Draft EA, dated June 26, 2023	ML23178A214

NRC letters to Tribal nations initiating consultation under Section 106 of the National Historic Preservation Act, dated May 11, 2023.	ML23130A320 (Package)
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Dated: July 24, 2023.

For the Nuclear Regulatory Commission.

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Jill S. Caverly, Acting Chief,
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