

**NUCLEAR REGULATORY COMMISSION**

**[Docket No. 40-9068; NRC-2008-0391]**

**Lost Creek *In Situ* Uranium Recovery Project;  
Underground Injection Control Class V Wells**

**AGENCY:** Nuclear Regulatory Commission.

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

**SUMMARY:** The U.S. Nuclear Regulatory Commission (NRC) is considering a license amendment request for Source Material License: SUA-1598, for the Lost Creek *In Situ* Uranium Recovery (ISR) Project located in Sweetwater County, Wyoming. The NRC staff is issuing an environmental assessment (EA) and finding of no significant impact (FONSI) associated with the proposed action.

**DATES:** The EA and FONSI referenced in this document are available September 6, 2016.

**ADDRESSES:** Please refer to Docket ID **NRC-2008-0391**, 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 Web Site:** Go to <http://www.regulations.gov> and search for Docket ID **NRC-2008-0391**. Address questions about NRC dockets to Carol Gallagher; telephone: 301-415-3463; or via e-mail: [Carol.Gallagher@nrc.gov](mailto:Carol.Gallagher@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 “ADAMS Public Documents” and then 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, 301-415-4737, or via e-mail to: [pdr.resource@nrc.gov](mailto:pdr.resource@nrc.gov). The ADAMS accession number for each document referenced (if that document is available in ADAMS) is provided the first time that a document is referenced.

- **NRC’s PDR:** You may examine and purchase copies of public documents at the NRC’s PDR, Room O1-F21, One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852.

**FOR FURTHER INFORMATION CONTACT:** Kellee Jamerson, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; telephone: 301-415-7408, e-mail: [Kellee.Jamerson@nrc.gov](mailto:Kellee.Jamerson@nrc.gov).

**SUPPLEMENTARY INFORMATION:**

**I. Introduction**

The NRC is considering issuance of a license amendment for Source Materials License SUA-1598 for the Lost Creek ISR Project located in Sweetwater County, Wyoming (ADAMS Accession No. ML15076A380). The licensee, Lost Creek ISR, LLC (LCI), proposes by this

request to inject treated wastewater into Underground Injection Control (UIC) Class V disposal wells at the Lost Creek ISR Project site.

The NRC staff has prepared a final EA as part of its review of this proposed license amendment in accordance with the requirements in part 51 of title 10 of the *Code of Federal Regulations* (10 CFR). Based on the final EA, the NRC staff has determined that a FONSI is appropriate. The NRC is also conducting a safety evaluation of the proposed license amendment pursuant to 10 CFR part 20, "Standards for Protection Against Radiation," and 10 CFR part 40, "Domestic Licensing of Source Material," and the results will be documented in a separate Safety Evaluation Report (SER). If LCI's request is approved, the NRC will issue the license amendment following publication of this final EA and FONSI and completion of the SER.

## **II. Environmental Assessment**

### *Description of the Proposed Action*

The Lost Creek site uses the ISR process to recover uranium, which involves two primary processes: mobilization and recovery. First, LCI mixes a solution, known as lixiviant, from native ground water, oxygen, and bicarbonate, and injects the lixiviant through wells drilled into the subsurface uranium orebody. The lixiviant then mobilizes uranium found in the orebody to create a uranium-laden solution that is pumped from the production wells and through pipelines to the central processing plant. In the processing plant, uranium is recovered from the solution through ion exchange systems, and then concentrated, filtered, and dried in preparation for offsite shipment. The dried product is a solid form of mixed uranium oxides and hydroxides known as yellowcake. The lixiviant is again pumped into the orebody to continue the mobilization and recovery process. Uranium mobilization at the Lost Creek site produces excess water, referred to as production bleed, which contains byproduct material. The

production bleed and other liquid wastewater is currently disposed of via UIC Class I deep disposal wells in accordance with LCI's NRC license.

If approved, the proposed license amendment would allow LCI to inject treated wastewater into UIC Class V disposal wells at the Lost Creek site. Per the UIC program, Class V wells are defined as wells used to inject non-hazardous fluids underground. The treatment method proposed by LCI consists of the following phases: (1) ion exchange, (2) filtration, (3) reverse osmosis, (4) sodium hydroxide addition, and (5) radium removal. During the treatment process, wastewater is separated into two streams: (1) a relatively clean fluid [commonly referred to as permeate], in which most of the total dissolved solids, radionuclides, and trace materials in the fluid are removed; and (2) a concentrated fluid, commonly referred to as brine, in which the salts from the fluid are concentrated. The treated permeate would then be pumped directly to the Class V wells for disposal.

#### *Need for the Proposed Action*

Under the existing NRC source materials license SUA-1598, liquid effluents generated from operations and aquifer restoration at the Lost Creek ISR site are currently licensed for wastewater disposal via UIC Class I deep disposal wells. The proposed action would allow LCI to also treat wastewater onsite and dispose of the treated liquid effluents using UIC Class V wells. If approved, LCI's use of the UIC Class V wells would allow for decreased ground water consumption and an increased future ground water restoration rate. This is because LCI proposes instead to treat and return to the Battle Spring Formation the ground water currently disposed of in Class I deep disposal wells. Additionally, because of the accompanying option for managing wastewater, the use of Class V wells will significantly shorten the time required for ground water restoration.

### *Environmental Impacts of the Proposed Action*

The NRC has assessed the potential environmental impacts associated with the proposed action of amending materials license SUA-1598, and has documented the results in the final EA (ADAMS Accession No. ML16216A273). In conducting the environmental review, the NRC staff considered information in the license amendment application (ADAMS Accession No. ML15076A380); information in LCI's response to the NRC's request for additional information (ADAMS Accession No. ML15239A726); and comments from the Bureau of Land Management (BLM) and the Wyoming Department of Environmental Quality (WDEQ) (ADAMS Accession No. ML16197A216).

The NRC staff used the Supplemental Environmental Impact Statement (SEIS) prepared for the original license application for the Lost Creek ISR Project as the baseline for its EA. As documented in the EA, specific environmental resource areas are not expected to be impacted by the injection of treated wastewater into UIC Class V wells. Other environmental resource areas were analyzed and the NRC staff concluded that the impacts resulting from the proposed action are small and not significant. Therefore, the NRC concluded that the proposed action will not result in a significant effect on the quality of the human environment.

### *Environmental Impacts of the Alternatives to the Proposed Action*

As an alternative to the proposed action, the NRC staff considered denial of the proposed action (i.e., the "no-action" alternative). Under the no-action alternative, NRC would not approve LCI's request to amend materials license SUA-1598 to utilize UIC Class V wells for disposal of treated wastewater. The no-action alternative will result in LCI's continued use of UIC Class I deep disposal wells as their only wastewater disposal method. Impacts from the use of the UIC Class I wells were previously assessed by the NRC in its SEIS for the Lost Creek ISR Project (ADAMS Accession No. ML11125A0006).

### *Agencies and Persons Consulted*

On May 9, 2016, the NRC staff consulted with the WDEQ and the BLM, regarding the environmental impact of the proposed action. The federal and state agency officials provided comments on the EA and concurred on the FONSI.

### **III. Finding of No Significant Impact**

Based on its review of the proposed action, in accordance with the requirement in 10 CFR part 51, the NRC has concluded that the proposed action of amending Source Materials License SUA-1598 for the Lost Creek ISR Project located in Sweetwater County, Wyoming, will have no significant impact on the quality of the human environment. Therefore, the NRC has determined, pursuant to 10 CFR 51.31, that preparation of an environmental impact statement is not required for the proposed action and a FONSI is appropriate.

Dated at Rockville, Maryland, this 29th day of August, 2016.

For the U. S. Nuclear Regulatory Commission.

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