

**U.S. NUCLEAR REGULATORY COMMISSION  
RECORD OF DECISION  
FOR THE RENO CREEK IN SITU RECOVERY PROJECT  
IN CAMPBELL COUNTY, WYOMING**

Introduction

The U.S. Nuclear Regulatory Commission (NRC) staff prepared this record of decision (ROD) for the proposed Reno Creek In Situ Recovery (ISR) Project in Campbell County, Wyoming (Reno Creek ISR Project). This ROD satisfies Section 51.102(a) of Title 10 of the *Code of Federal Regulations* (10 CFR), which states that “a Commission decision on any action for which a final environmental impact statement has been prepared shall be accompanied by or include a concise public ROD.”

In December 2016, the NRC staff issued a final Supplemental Environmental Impact Statement (final SEIS) (NRC, 2016b) in support of the NRC’s review of the AUC LLC’s (AUC or “applicant”) license application (AUC, 2012a, AUC 2012b). AUC’s application, which was submitted in October 2012, is for a new source and byproduct materials license for the Reno Creek ISR Project. The Reno Creek ISR Project SEIS is Supplement 6 to the NRC staff Generic Environmental Impact Statement for In-Situ Leach Uranium Milling Facilities (NUREG-1910) (known as the GEIS) (NRC, 2009).

This ROD has been prepared pursuant to NRC regulations at 10 CFR § 51.102(b) and § 51.103(a)(1)-(4). Additionally, pursuant to 10 CFR § 51.103(c), this ROD incorporates by reference materials contained in the final SEIS.

On August 5, 2013, the NRC staff notified the public of the NRC’s acceptance of the Reno Creek ISR Project application. In the *Federal Register* (FR) notice, the NRC staff informed members of the public that they could request a hearing in connection with the AUC’s application. The notice of license application request; opportunity to request a hearing and to petition for leave to intervene for the Reno Creek ISR Project was published in the FR (78 FR 47427). The NRC did not receive any requests for hearing from the stakeholders. The NRC staff also published a notice of intent to prepare this final SEIS on August 21, 2013 in a FR (78 FR 51753).

The Decision

This ROD documents the NRC staff’s decision to issue a material license to AUC for a proposed Reno Creek ISR Project in Campbell County, Wyoming (Material License SUA-1602: NRC 2017). The license will authorize AUC to possess uranium source and byproduct material at the Reno Creek ISR Project facility. Under its license, AUC will be able to construct and operate its facility as proposed in its license application and under the conditions in its NRC license.

The proposed Reno Creek ISR Project would be located in Campbell County, Wyoming, within the Pumpkin Buttes Uranium District (NRC, 2009). The proposed project area would be located between the communities of Wright, Edgerton, and Gillette. The total land area of the proposed Reno Creek ISR Project is 2,451 hectares (ha) [6,057 acres (ac)] of mostly private land. Approximately 2,192 ha [5,417 ac] is privately owned land and 259 ha [640 ac] is State of Wyoming owned land. The subsurface mineral rights are owned by the federal and state governments and various private entities (NRC, 2016b).

The proposed Reno Creek ISR Project would consist of processing facilities and sequentially developed wellfields. Planned facilities associated with the proposed project include buildings associated with a central processing plant; wellfields and their associated infrastructure (e.g., wells, header houses, and pipelines); Wyoming Department of Environmental Quality-permitted Underground Injection Control (UIC ) Class I deep disposal wells for disposal of liquid wastes; and access roads. The applicant estimated that the land surface area that would be affected by proposed ISR operations would be approximately 62 ha [154 ac] (NRC, 2016b).

During the ISR process, an oxidant-charged solution, called a lixiviant, is injected into the production zone aquifer (uranium orebody) through injection wells. Typically, a lixiviant uses native groundwater (from the production zone aquifer), carbon dioxide, and sodium carbonate/bicarbonate, with an oxygen or hydrogen peroxide oxidant. As the lixiviant circulates through the production zone, it oxidizes and dissolves the mineralized uranium, which is present in a reduced chemical state. The resulting uranium-rich solution is drawn to production wells (i.e., recovery wells) by pumping and then transferred to a processing facility via a network of pipelines, which may be buried just below the ground surface. At the processing facility, the uranium is removed from solution (typically via ion exchange). The resulting barren solution is then recharged with the oxidant and reinjected to recover more uranium(NRC, 2016b).

During production, the uranium recovery solution continually moves through the aquifer from injection wells to production wells. These wells can be arranged in a variety of geometric patterns depending on the location and orientation of the orebody, aquifer permeability, and operator preference. Wellfields are typically designed in a five-spot or seven-spot pattern, with each production well located inside a ring of injection wells (AUC proposes to use a five-spot pattern). Monitoring wells are installed in the production zone aquifer and surround the wellfield pattern area. Monitoring wells are screened (i.e., open to allow water to enter) in the appropriate stratigraphic horizon to detect the potential migration of lixiviant away from the production zone. Monitoring wells are also installed in the overlying and underlying aquifers to detect the potential vertical migration of lixiviant outside the production zone. The uranium that is recovered from the solution is processed, dried into yellowcake, packaged into NRC and U.S. Department of Transportation-approved 208 L [55 gal] steel drums, and trucked offsite to a licensed conversion facility (NRC, 2016b).

#### Alternatives Considered in Reaching the Decision

The NRC staff analyzed in detail the Proposed Action and the No-Action alternative which would result in AUC not constructing or operating the proposed Reno Creek ISR Project in detail before deciding to issue AUC a license. After weighing the impacts of the proposed action and comparing those impacts to the No-Action Alternative, the NRC staff, in accordance with 10 CFR 51.91(d), sets forth its NEPA recommendation regarding the proposed action (granting the request for an NRC license for the proposed Reno Creek ISR Project). In the final SEIS (NRC, 2016b), the NRC staff describes the alternative (Section 2.1) and compares their potential environmental impacts (Section 2.3).

The NRC staff considered a number of other alternatives when evaluating the Proposed Action. However, the staff eliminated these alternatives from detailed analysis for reasons discussed in Section 2.2 of the final SEIS (NRC, 2016b). These alternatives included recovery of uranium by conventional uranium mining and milling (Section 2.2.1), convention mining and heap leaching (Section 2.2.2) alternative lixiviant chemistry (Section 2.2.3), and alternative locations of the central processing plant (Section 2.2.4).

After weighing the impacts of the Proposed Action and comparing to the No-Action Alternative, the NRC has determined that issuing the license is the environmentally preferable option. This conclusion was based on (i) the license application, including the ER and supplemental documents the applicant submitted and responses to the NRC staff requests for additional information; (ii) consultation with federal, state, tribal, and local agencies; (iii) the NRC staff independent review; and (v) the assessments summarized in the SEIS.

Preferences Among Alternatives Based on Relevant Factors

In Chapter 4 of the final SEIS (NRC, 2016b), the NRC staff assessed the potential environmental impacts from the construction, operation, aquifer restoration, and decommissioning of the proposed Reno Creek ISR Project. The NRC staff also assessed the potential impacts of the No-Action Alternative. The NRC staff assessed the impacts of both the Proposed Action and the No-Action Alternative on the following resource areas: land use, transportation, geology and soils, water resources, ecology, air quality, noise, historical, cultural and paleontological resources, visual and scenic resources, socioeconomics, environmental justice, public and occupational health and safety, and waste management. The NRC staff compared the potential environmental impacts of the two alternatives in Section 2.3 of the final SEIS (NRC, 2016b). In Chapter 5 of the final SEIS, the NRC staff evaluated the potential for cumulative impacts associated with the Proposed Action and other past, present, or reasonably foreseeable future actions. Additionally, in Chapter 7 of the final SEIS, the NRC staff summarized the costs and benefits associated with the Proposed Action and the alternative. In preparing the final SEIS, the NRC staff also considered, evaluated, and addressed the public comments received on the draft SEIS noticed on July 7, 2016 (81 FR 44333).

After weighing the impacts of the Proposed Action, comparing the alternative, and evaluating safety issues associated with the Proposed Action, the NRC staff determined that the NRC should issue a source materials license for the proposed Reno Creek Project. The NRC staff based its decision on: (i) the license application, including the applicant's environmental report (AUC, 2012a), and the applicant's supplemental submissions and responses to the NRC staff requests for additional information (RAIs) [(AUC, 2016),(AUC, 2015),(AUC, 2014a),(AUC, 2014b),(AUC, 2014c)]; (ii) the NRC staff's consultations with Federal, State, and local agencies and with Native American Tribes; (iii) independent NRC staff review; (iv) the NRC staff's consideration of comments received on the draft SEIS (see Appendix D in the final SEIS (NRC,2016b)); (v) the assessments in the NRC staff's final SEIS (NRC, 2016) and in the GEIS (NRC, 2009); and (vi) the assessments in the NRC staff's Safety Evaluation Report (NRC, 2016a) for the Reno Creek ISR Project. In summary, the environmental impacts of the proposed action, issuance of the license, are not so great as to make issuance of a source material license an unreasonable licensing decision.

Measures to Avoid or Minimize Environmental Harm from the Alternative Selected:

In its license application [(AUC, 2012a), (AUC, 2012b), (AUC, 2012c)] and in its supplemental submissions and responses to NRC staff (RAIs), (AUC, 2016), (AUC, 2015), (AUC, 2014a), (AUC, 2014b),(AUC, 2014c)], the applicant identified mitigation measures that are intended to either minimize or avoid potential adverse environmental impacts from construction, operation, aquifer restoration, and decommissioning of the Reno Creek ISR Project. The applicant also identified environmental measurements and monitoring programs to verify compliance with the applicable standards and requirements for the protection of worker health and safety in active uranium recovery areas (i.e., both the facility and the wellfields) and for the protection of the public and the environment beyond the licensed facility's boundary. The commitments made by the applicant are listed by resource area in the final SEIS Table 6-1.

Administrative Condition 9.2 of Materials License SUA-1602 (NRC, 2017) requires AUC to conduct operations in accordance with the commitments, representations, and statements contained in the license application and supplementary submissions. License Condition 9.2 incorporates by reference AUC approved application and the supplements to its application. AUC's commitments, representations, and statements include the mitigation measures and monitoring programs described above.

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### References:

- 10 CFR Part 51. Code of Federal Regulations, Title 10, Energy, Part 51, “Environmental Protection Regulation for Domestic Licensing and Related Regulatory Functions.”
- 78 FR 47427. “Notice of Opportunity for Hearing, License Application Request of AUC, LLC. Reno Creek In-Situ Uranium Recovery Facility in Campbell County, WY.” Federal Register. Vol. 78, No. 150. pp. 47,427–47,431. Washington, DC: U.S. Nuclear Regulatory Commission. 2013.
- 78 FR 51753. “AUC LLC, Reno Creek Project, New Source Material License Application, Notice of Intent to Prepare a Supplemental Environmental Impact Statement.” Federal Register. Vol. 78, No. 162. pp. 51,753–51,754. Washington, DC: U.S. Nuclear Regulatory Commission. 2013.
- 81 FR 44333. Draft supplemental environmental impact statement; request for comment. Federal Register. Vol. 81, No. 130 pp. 44,333–334. Washington, DC: U.S. Nuclear Regulatory Commission. 2016.
- AUC. “Reno Creek In-Situ Uranium Recovery (ISR) Project, Supplement to the Generic Environmental Impact Statement for In-Situ Leach Uranium Milling Facilities, Campbell County, Wyoming.” ML16250A020. Lakewood, Colorado: AUC LLC. 2016.
- AUC. “Responses to Open/Confirmatory Items.” ML15119A314. Lakewood, Colorado: AUC LLC. 2015.
- AUC. “The Reno Creek ISR Project, Campbell County, Wyoming, RAI Response Package: Environmental Report Round 1.” ML14169A450 and ML14169A449. Lakewood, Colorado: AUC LLC. 2014a.
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- AUC. “The Reno Creek ISR Project, Campbell County, Wyoming, RAI Response Package: Environmental Report Round 2.” ML15002A082. Lakewood, Colorado: AUC LLC. 2014c.
- AUC. “The Reno Creek ISR Project, Campbell County, Wyoming, License Application, Environmental Report.” ML12291A332 and ML12291A335. Lakewood, Colorado: AUC LLC. 2012a.
- AUC. “The Reno Creek ISR Project, Campbell County, Wyoming, License Application, Technical Report.” ML12291A009 and ML12291A010. Lakewood, Colorado: AUC LLC. 2012b.
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- NRC. “Materials License SUA-1602, Reno Creek ISR Project in Campbell County, Wyoming.” ML16364A219. Washington, DC: U.S. Nuclear Regulatory Commission. 2017.

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NRC. "Safety Evaluation Report for AUC LLC, Reno Creek In Situ Recovery Project." ML16364A227. Washington, DC: U.S. Nuclear Regulatory Commission. 2016a.

NRC. NUREG-1910, "Environmental Impact Statement for the Reno Creek ISR Project in Campbell County, Wyoming. Supplement to the Generic Environmental Impact Statement for In-Situ Leach Uranium Milling Facilities Final Report. Supplement 6." ML16342A973. Washington, DC: U.S. Nuclear Regulatory Commission. 2016b.

NRC (U.S. Nuclear Regulatory Commission). NUREG-1910, "Generic Environmental Impact Statement for In-Situ Leach Uranium Milling Facilities." ML091480244 (Volume 1) and ML091480188 (Volume 2). Washington, DC: U.S. Nuclear Regulatory Commission. 2009.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

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/RA/

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