**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**

**REGION 8**

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Ref: 8ARD

Mr. Mike Griffin

Vice President of Permitting, Regulatory and Environmental Compliance

Strata Energy, Inc.

2929 New Haven Road

Oshoto, Wyoming 82721

mgriffin@stratawyo.com

SENT BY ELECTRONIC MAIL – RECEIPT CONFIRMATION REQUESTED

**Re: Determination and Approval of Modification for the Ross Basin Uranium In-Situ Recovery Facility Acidic Lixiviant Operations**

**Crook County, Wyoming**

Dear Mr. Griffin:

The U.S. Environmental Protection Agency (EPA) is granting approval to Strata Energy, Inc. (Strata), in accordance with provisions of the Clean Air Act, as amended (42 U.S.C. et seq.), to modify operations at the facility to permit the use of both alkaline or acidic lixiviant within the two previously approved non-conventional impoundments at the Ross Basin In-Situ Recovery (ISR) Uranium Project (henceforth “Ross Basin ISR”) in Crook County, Wyoming.

This approval is based on the original request for determination of modification that Strata’s consultant submitted to the EPA by email on November 7, 2019, the information provided to the EPA during three teleconferences on December 18, 2019, January 13, 2020, and May 8, 2020, the letters Strata sent to the EPA on January 23, 2020 and May 4, 2020, and the supplemental data provided on radium activity concentrations associated with alkaline lixiviant operations on May 8, 2020. All the above information was provided to the EPA pursuant to 40 CFR 61.06, 40 CFR 61.07 and 40 CFR 61.15, for the Ross Basin ISR in Crook County, Wyoming.

As discussed on our call on May 20, 2020, the EPA initially reviewed the information provided in the context of an “Application for Determination of Construction or Modification,” pursuant to 40 CFR 61.06. Given the operational changes taking place at the facility during the testing phase, along with the likely incremental increase in radon flux associated with increased radium 226 loading in the pregnant lixiviant, the EPA determined that a modification was required, in accordance with 40 CFR 61.06. As such, the EPA considers the above documents and information provided by Strata (collectively “Application”) as an “Application for Approval of Modification,” pursuant to 40 CFR 61.07, to conduct operations in existing and previously approved but not yet constructed, non-conventional impoundments using either acidic or alkaline lixiviant.[[1]](#footnote-2)

The EPA review of the submitted Application provides the following summary information about the proposed operational changes at the Ross Basin ISR and the nature of likely sources of radon emissions subject to 40 CFR part 61, subpart W, as required by 40 CFR 61.07(b) and (c), et seq.:

***(b)(1) – The name and address of the applicant:***

Strata Energy, Inc., 2929 New Haven Road, Oshoto, Wyoming 82721;

***(b)(2) – The location or proposed location of the source:***

Section 18, T53N, R67W (latitude 44.576 N, longitude 104.944 W) in Crook County, Wyoming

***(b)(3) – Technical information describing the proposed nature, size, design, operating design capacity, and method of operation of the source:***

As previously approved by EPA on May 5. 2015, Strata operates Ross Basin ISR as an in-situ recovery operation for uranium using alkaline lixiviant from a series of injection and recovery well patterns. The pregnant alkaline lixiviant is immediately processed through a reverse-osmosis (RO) unit where uranium is extracted and concentrated into yellowcake. Following recovery, the used lixiviant fluids are then pH-adjusted and recycled back into the injection loop for additional recovery cycles, while the RO brine waste solutions and other byproduct materials (all other radioactive uranium and thorium daughter products) are sent for disposal via a permitted underground injection well or temporarily to a non-conventional impoundment on site for evaporation prior to injection well disposal. Besides the radon emissions from the well header houses and RO unit, which are regulated by the NRC agreement state radiological materials license, the byproduct material in the non-conventional impoundments is the primary source term for radon emissions. These emissions are controlled by maintaining adequate liquid cover to mitigate the radon flux. Provided data from alkaline waste solutions that could be stored in the non-conventional impoundments at Ross Basin ISR revealed an average radium-226 activity concentration of 118 picocuries/liter (pCi/L), as documented in the Application.

***(c)(1) – The precise nature of the proposed changes:***

The operational changes outlined in the Application include testing uranium recovery rates when using sulfuric acid solutions as the lixiviant and allowing solids to settle out of the pregnant lixiviant within a non-conventional impoundment prior to RO processing. Provided data from acidic solutions from the Field Leach Trial (FLT) that could be stored in the non-conventional impoundments at Ross Basin ISR revealed an average radium-226 activity concentration of 501 pCi/L, as documented in the Application.

***(c)(2) – The productive capacity of the source before and after the changes are completed:***

The productive capacity of the source before and after the changes are completed is dependent upon the surface area of the non-conventional impoundments, both existing and previously approved but not yet constructed, and upon facility compliance with the requirement to maintain the liquid level in the impoundments above any solid materials therein. The source term also depends upon the dissolved radium-226 concentration in solution within the ponds.

***(c)(3) – Calculations of estimates of emissions before and after the changes are completed, in sufficient detail to permit assessment of the validity of the calculations:***

Using alkaline lixiviant with an average radium-226 activity concentration of 118 pCi/L, as documented in the Application, the calculated radon flux under expected meteorological conditions for the Ross Basin ISR is 0.29 pCi/m2-sec. Using acidic lixiviant with an average radium-226 activity concentration of 501 pCi/L, as documented in the Application, the calculated radon flux under expected meteorological conditions for the Ross Basin ISR is 1.23 pCi/m2-sec. These radon flux estimates were derived using the methodology outlined in the *EPA Risk Assessment Revision for 40 CFR Part 61 Subpart W*: *Risk Assessment Radon Emissions from Operating Mill Tailings – Task 5 – Radon Emission from Evaporation Ponds* document associated with the rulemaking. These estimated radon emission rates assume compliance with the liquid cover provisions in 40 CFR part 61, subpart W.

The EPA has also determined that the non-conventional impoundments will be in compliance with 40 CFR 192.32(a). The EPA approves the construction of up to two non-conventional impoundments and the storage of alkaline or acidic lixiviant solutions therein, as described in the Application.

This approval, which is enclosed, contains conditions to ensure that the ISR project is in compliance with the National Emission Standards for Hazardous Air Pollutants, 40 CFR part 61, subparts A and W (National Emission Standards for Radon Emissions from Operating Mill Tailings). Failure to comply with any condition or term set forth in this approval or in the regulations, or failure to meet this standard, will be considered grounds for enforcement action pursuant to Section 113 of the Clean Air Act.

This Approval shall become effective immediately upon Strata’s receipt of the original signed Approval of Modification. If you have any questions, or for further discussion on the technical review, please contact Mr. Steven Merritt at (303) 312-6146 or at [merritt.steven@epa.gov](mailto:merritt.steven@epa.gov).

Sincerely,



Carl Daly

Acting Director

Air and Radiation Division

Enclosure

Ross Basin ISR Uranium Project Approval of Modification, with Conditions

cc: Ryan Schierman, WYDEQ Land Quality Division – by email [ryan.schierman@wyo.gov]

Bill VonTill, Chief – Uranium Recovery and Materials Decommissioning Branch, U.S. Nuclear Regulatory Commission – by email [bill.vontill@nrc.gov]

**ENCLOSURE**

Ross Basin In-Situ Recovery (ISR) Uranium Project

Approval of Modification

Two Non-Conventional Impoundments under

40 CFR Part 61, Subpart W

National Emission Standards for Radon Emissions from Operating Mill Tailings

In compliance with the provisions of the Clean Air Act, as amended (42 U.S.C. §7401 et seq.), Strata Energy, 2929 New Haven Road, Oshoto, Wyoming, is granted Approval of Modification to operate up to two non-conventional impoundments at the Ross Basin ISR Uranium Project. The project, located in Section 18, T53N, R67W (latitude 44.576 N, longitude 104.944 W) in Crook County, Wyoming, will operate in accordance with the plans submitted with the Application and with the Federal regulations governing the National Emissions Standards for Hazardous Air Pollutants (40 CFR part 61) and any conditions attached to this document and made part of this approval. The prior Construction Approval issued by the EPA on May 5, 2015, indicated that the size of Holding Pond 1, which has been constructed and is in use, is 3 acres, and that the proposed Holding Pond 2, which has not yet been constructed, would be 9.6 acres. This approval is to construct and operate two non-conventional impoundments with either acidic or alkaline lixiviant, as described in the Application.

This approval does not prevent the Administrator from implementing or enforcing applicable provisions in 40 CFR part 61, subparts A and W (Subpart W). This Approval of Modification grants no relief to the owner or operator from the legal responsibility for compliance with any applicable provisions of 40 CFR part 61, subparts A and W, or any other applicable federal, state, or local requirement. This approval shall be effective immediately upon receipt of the signed Approval of Modification by the applicant.



Carl Daly

Acting Director

Air and Radiation Division

CONDITIONS

1. **General Approval**
   1. The facility is approved to construct up to two non-conventional impoundments, as described in the original Application and Application for Modification.
   2. During operation and until final closure begins, the liquid level in the impoundment(s) shall be maintained so that solid materials in the impoundment(s) are not visible above the liquid surface, verified by daily inspections documented through notations and by digital photographic evidence collected at least weekly. Should inspection reveal that solid materials in the impoundment(s) are visible above the liquid surface, the owner or operator must correct the situation within seven days, or other such time as specified by the Administrator. (40 CFR 61.252(b)).
   3. The owner or operator of Ross Basin ISR must maintain records that confirm that the non-conventional impoundment(s) subject to Subpart W at the facility meet the requirements in 40 CFR 192.32(a)(1). These records shall include, but not be limited to, the results of liner compatibility tests. (40 CFR 61.255(a)).
   4. The owner or operator of Ross Basin ISR with non-conventional impoundments must maintain written records from daily inspections and other records confirming that any sediments have remained saturated in the non-conventional impoundments at the facility. Periodic digital photographic evidence, with embedded date stamp and other identifying metadata, shall be collected no less frequently than weekly to demonstrate compliance with the requirements of §61.252(b). Should inspection reveal that a non-conventional impoundment is not in compliance with the requirements of §61.252(b), the owner or operator shall collect photographic evidence before and after the non-compliance is corrected. (40 CFR 61.255(b)).
   5. The records required by 40 CFR 61.255(a) and (b) must be kept at the uranium recovery facility for the operational life of the facility and must be made available for inspection by the Administrator, or his authorized representative. (40 CFR 61.255(c)).
   6. Digital photographs taken to demonstrate compliance with the requirements of §61.252(b) shall be submitted electronically using the Subpart W Impoundment Photographic Reporting (SWIPR) system that is accessed through the EPA's Central Data Exchange (CDX) (cdx.epa.gov) at least monthly. Owners and operators must also submit information identifying the facility and facility location, the name or other designation of each impoundment, and the date and time of each photograph. If the reporting form specific to this subpart is not available in SWIPR, the owner or operator must retain the digital photographs at the facility and provide them to the EPA or authorized state upon request, along with the supporting information required above. (40 CFR 61.255(c)(1)).
   7. The owner or operator of Ross Basin ISR shall advise the EPA of the final resolution of any Wyoming Department of Environmental Quality’s Uranium Recovery Program license conditions pertaining to the construction, operation, maintenance, and closure of the non-conventional impoundments, as mentioned in the Application.
2. **Approval Limitations**
   1. This Approval will remain in effect as long as the Ross Basin ISR Uranium Project non-conventional impoundments approved herein are being used for the continued placement of new tailings/uranium byproduct or are in standby status for such placement. An impoundment is in operation from the day that tailings/uranium byproduct are first placed in the impoundment until the day that final closure begins. If ownership of the Ross Basin ISR Uranium Project is transferred from Strata Energy to a new company, this Approval of Modification will be transferred to the new owner only if operation continues as approved by the EPA. Any change made at the ISR project by the new owner that constitutes a modification or construction requires the submittal of a Modification/Construction Approval request to the EPA and prior approval by the EPA, as required by 40 CFR 61.07.
   2. The owner or operator may submit to the Administrator a written application for a determination of whether actions intended to be taken by the owner or operator constitutes construction or modification, or commencement thereof, of a source subject to Subpart W, pursuant to 40 CFR 61.06. The Administrator will notify the owner or operator of a determination within 30 days after receiving sufficient information to evaluate the application. (40 CFR 61.06).
   3. If an intended action to be taken by the owner or operator is determined by the Administrator to constitute construction or modification which affects an existing source, the new approval and conditions shall supersede and/or amend the existing Approval.
   4. Updates in notification and phone contacts will not affect the conditions of this Approval.
3. **Notification of Commencement of Construction and Startup**
   1. The owner or operator shall furnish the Administrator with written notification as follows:
      * 1. A notification of the anticipated date of initial startup of the source not more than 60 days nor less than 30 days before that date (40 CFR §61.09(a)(1)); and
        2. A notification of the actual date of initial startup of the source within 15 days after that date (40 CFR 61.09(a)(2)).
   2. If any state or local agency requires a notice which contains all the information required in the notifications in paragraph III(a), sending the Administrator a copy of that notification will satisfy paragraph III(a).
4. **Severability**

The provisions of this Approval of Modification are severable, and, if any provision of this Approval of Modification is held invalid, the remainder of this Approval of Modification shall not be affected thereby.

1. **Other Applicable Regulations**

This approval does not prevent the Administrator from implementing or enforcing all applicable provisions in 40 CFR part 61, subparts A and W, and any other applicable regulation.

1. **Agency Correspondence**

All correspondence and notifications as required by this Approval of Modification shall be sent to:

Branch Chief, Air and Toxics Enforcement Branch

Enforcement and Compliance Assurance Division

Mail Code: 8ENF-AT

U.S. Environmental Protection Agency, Region 8

1595 Wynkoop Street

Denver, CO 80202-1129

A courtesy copy shall be sent to:

Director, Air and Radiation Division

Mail Code: 8ARD-IO

U.S. Environmental Protection Agency, Region 8

1595 Wynkoop Street

Denver, CO 80202-1129

1. **Effective Date of Approval**

EPA’s Approval of Construction, in accordance with 40 CFR 61.08 for the Ross Basin ISR Uranium Project located in Section 18, T53N, R67W (latitude 44.576 N, longitude 104.944 W) in Crook County, Wyoming, shall be effective immediately upon receipt of the original signed Approval of Modification by the Applicant.

1. **Paperwork Reduction Act**

Any requirements established by this Approval for the gathering and reporting of information are not subject to review by the Office of Management and Budget (OMB) under the Paperwork Reduction Act because this Approval is not an “information collection request” within the meaning of 44 U.S.C. §§ 3502(4), 3502(11), 3507, 2512, and 3518. Furthermore, this Approval and any information-gathering and reporting requirements established by this Approval are exempt from OMB review under the Paperwork Reduction Act because it is directed to fewer than ten persons, 44 U.S.C. §§ 3502(4) and 2502(11); 5 CFR §1320.5(a).

1. On May 5, 2015, EPA issued a Construction Approval under the National Emission Standards for Hazardous Air Pollutants (NESHAPs) at 40 CFR Part 61, subpart W, to Strata Energy, Inc., for the Ross In Situ Recovery (ISR) Uranium Project in Crook County, WY. https://www.epa.gov/sites/production/files/2015-10/documents/ross\_isr\_final\_rad\_neshap\_approval.pdf [↑](#footnote-ref-2)