

**REQUESTS FOR ADDITIONAL INFORMATION
FOR RENEWAL AND AMENDMENT OF
SOURCE MATERIAL LICENSE SUC-1591
FOR
WATER REMEDIATION TECHNOLOGY, LLC
DOCKET 40-9059**

1. **Comment:** Additional information is needed to understand the purpose of amending the scope of WRT's licensed activities to include activities beyond drinking water treatment.

Basis: WRT requests approval to amend the scope of its licensed activities to treat water resources other than those used for drinking water. In Section 1.3 of the Environmental Report (WRT, 2016) accompanying the request under the definition of "Licensed Activity" and "Water Treatment," WRT has identified the following non-drinking water applications that would be added to its licensed activities including, but not limited to, removal from water resources that are impacted by mining operations, removal from drilling fluids or other solutions resulting from oil and gas exploration operations, and removal from other groundwater or surface water resources as part of a remediation or general water treatment operation.

It is not clear to U.S. Nuclear Regulatory Commission (NRC) staff whether the identified activities defined in Section 1.3 of the Environmental Report (WRT, 2016) clearly delineate the purpose of the uranium removal (i.e., is the primary purpose of the activities to treat water resources or to concentrate uranium to generate source material). The principal activities allowed under the license, particularly the expanded scope, can affect the requirements for issuance of a specific license (e.g., 10 CFR 40.32).

Path Forward: Provide additional information to clarify the primary purpose of the licensed activities proposed under the request for an expanded scope.

2. **Comment:** Additional justification is needed to extend the scope of WRT's uranium water treatment technologies for uranium removal from other types of groundwater or surface water sources such as mines requiring de-watering, pit lakes, and other groundwater sources.

Basis: WRT requests approval to amend License Condition 20 of SUC-1591 to include water treatment sites other than for drinking water treatment. Currently, License Condition 20 describes the requirements for registration of community drinking water systems that operate under a general license and the reporting requirements for systems that operate under a specific license. WRT requests approval to amend the scope of its licensed activities to treat water resources other than those used for drinking water. In Section 1.3 of the Environmental Report (WRT, 2016) accompanying the

request under the definition of “Licensed Activity” and “Water Treatment,” WRT has identified the following non-drinking water applications that would be added to its licensed activities including, but not limited to, removal from water resources that are impacted by mining operations, removal from drilling fluids or other solutions resulting from oil and gas exploration operations, and removal from other groundwater or surface water resources as part of a remediation or general water treatment operation.

In its request, WRT identified that it is obliged by License Condition 20 of SUC-1591 to register community water system facilities operating under a general license pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 40.22 and those sites that are operating under WRT’s specific license. The requirements at 10 CFR 40.22(a)(3) allow for persons that possess no more than 15.4 pounds (7 kilograms) of uranium source material, *removed during the treatment of drinking water*, at any one time or 154 pounds (70 kilograms) in any calendar year to operate under a general license. However, when not treating drinking water, the general license in 10 CFR 40.22(a)(1) specifies limits of 3.3 pounds (1.5 kilograms) at any one time or 15.4 pounds (7 kilograms) in any calendar year if the chemical or physical form of the material containing the source material has been altered. The activities proposed under WRT’s expanded scope could be subject to the limits in 10 CFR 40.22(a)(1).

Path Forward: WRT should provide additional information to address registration of non-drinking water treatment sites that is consistent with the quantity limits for general licenses in 10 CFR 40.22.

3. **Comment:** Additional justification is needed to amend the requirement to lease-back uranium removal systems (URS) that have been sold to clients.

Basis: WRT requests that the NRC amend License Condition 10 of SUC-1591, which requires WRT to contractually possess the uranium source material contained within the URS, including the ion exchange vessels. License Condition 10 also requires WRT to execute a contract with the community water system (CWS) if a URS is sold or otherwise transferred to the CWS by WRT to retain possession of the source material. Finally, License Condition 10 states that if the URS is not leased back to WRT, the CWS will be required to obtain an NRC specific license or comply with another future regulatory option, such as a general license, promulgated or endorsed by the NRC.

WRT indicates that the lease-back provision provides no additional safeguards that protect public health and safety, because WRT’s typical water treatment agreement states: (1) WRT owns the treatment media at all times and takes ownership of the uranium source material as it loads on such media; (2) WRT’s clients are obliged to grant and provide WRT full access to the treatment system and associated equipment at all times; and (3) WRT will have access to the URS and associated equipment in the event of an accident or upset condition.

More specifically, in Section 2.3.3 of the Environmental Report (WRT, 2016), WRT indicates that the operation of the URS will be controlled by WRT pursuant to commercial terms in a water treatment agreement between WRT and the client, including but not limited to the following items:

- WRT at all times owns the Z-92® treatment media and takes ownership of the uranium as it loads onto the media.
- WRT is involved with and monitors the installation of the treatment system by the client's general construction contractor, and WRT is responsible for the startup of the system to ensure its proper operation.
- The client is required to provide WRT access to the client's facility and the treatment system at all times, especially for WRT to respond to an upset situation.
- As part of this public water supply facility, the client will ensure that the uranium treatment system is contained within a secured site.
- During the operation of the system WRT is responsible for all service activities that have the potential for coming in contact with the licensed material.
- WRT is responsible for all spent media exchanges, including the removal of the final charge of media at the termination of the operation.

Further, in Section 3.18 of the Environmental Report (WRT, 2016), WRT indicates that it will perform all decontamination and decommissioning of all uranium recovery system equipment and the [client's water] treatment site.

However, it is not clear to NRC staff whether *all* water treatment agreements include these terms to ensure that WRT has adequate title and possession of the licensed material and ensure that WRT is responsible for transfer, long-term care, delivery and disposal, or if there are water treatment agreements that do not contain one or more of these terms.

Path Forward: Provide additional information to identify whether there are instances where the terms identified above, and in the Environmental Report (WRT, 2016), are not included in a water treatment agreement or confirm that all water treatment agreements will include the aforementioned terms. This information is needed to assess whether WRT's water treatment agreements ensure compliance with 10 CFR 40.3.

4. **Comment:** Additional justification is needed to amend the requirement to obtain properly executed contracts with properly licensed facilities for final disposition.

Basis: WRT requests that the NRC amend License Condition 35 of SUC-1591, which requires WRT to transfer uranium-laden (spent or fully-loaded) treatment media only to properly licensed or permitted facilities for final disposition. License Condition 35 also

requires WRT to: (1) obtain properly executed contracts with these facilities before initiating licensed activities; (2) designate a set of final disposition locations for spent treatment media at each CWS uranium water treatment program; and (3) select a final disposition location from the designated set of location before transferring each set of spent treatment media.

WRT indicates that it has obtained a contract with an NRC-licensed In-Situ Uranium Recovery facility and requests the provision to obtain a properly executed contract be removed as this condition has been satisfied. However, it is not clear to NRC staff whether the terms of WRT's contract ensure continued access to a final disposition path for uranium-laden (spent or fully-loaded) treatment media for the entirety of the licensing period.

Path Forward: Provide additional information to support that WRT will have assured continuing access to a final disposition path for uranium-laden (spent or fully-loaded) treatment media until the expiration of the renewed license. Additionally, provide an explanation of what actions WRT will take if the contract is broken. This information is needed to assess whether WRT's water treatment agreements ensure compliance with 10 CFR 20.2001 and 10 CFR 40.31.

5. **Comment:** Additional justification is needed for approval to dispose of bag filters in a municipal landfill.

Basis: WRT requests in Section 3.16.11 of the Environmental Report (WRT, 2016), approval to dispose of bag filters with exposure rates less than 50 microRoentgens per hour ($\mu\text{R/hr}$) in local municipal landfills. WRT indicated their 50- $\mu\text{R/hr}$ threshold is consistent with the screening level that is used in a number of states such as Texas (25 T.A.C. 289.259, Licensing of Naturally Occurring Radioactive Material [NORM]), to exempt material and equipment used in the recycling process and surface equipment used in oil and gas production material and equipment that are contaminated with NORM.

The State regulations cited by WRT govern NORM material that is not regulated under the Atomic Energy Act (AEA) of 1954, as amended. For material subject to regulation under the AEA, NRC regulations specify a threshold for source material below which the material is exempt from licensing in 10 CFR 40.13(a). If the material deposited on the bag filters exceeds the threshold specified in 10 CFR 40.13(a), the material must be disposed in accordance with the requirements specified in 10 CFR 20.2001, which can include alternative disposal methods approved by NRC under 10 CFR 20.2002. Guidance on submitting requests for 10 CFR 40.13(a) exemptions and alternate disposal under 10 CFR 20.2002 is available in Regulatory Information Summary 2016-11 (NRC, 2016) and "Review, Approval, and Documentation of Low-Activity Waste Disposals in

Accordance with 10 CFR 20.2002 and 10 CFR 40.13(a),” EPPAD 3.5, Rev. 0 (NRC, 2009).

Path Forward: Provide additional information to demonstrate that the material collected on the bag filters is exempt from licensing per 10 CFR 40.13(a). If the material is not exempt per 10 CFR 40.13(a), WRT can revise the Environmental Report to indicate that disposal of the filters will comply with all NRC regulations and dispose of the bag filters in accordance with waste disposal requirements in 10 CFR Part 20, Subpart K, which may include WRT seeking, at a later date, NRC approval for alternative disposal under 10 CFR 20.2002. This information is needed to ensure compliance with 10 CFR 20.2001.

6. **Comment:** Provide additional information on operational impacts.

Basis: In its license renewal application, WRT discusses data and refers to reports that address impacts over the past 10 years of licensed operations:

- In Section 3.15, Audits and Inspections, of the Environmental Report (WRT, 2016), WRT references site-specific inspections that are completed under appropriate circumstances, such as URS malfunction, release of treatment media, transportation accident, and as low as reasonably achievable (ALARA) audits.
- In Section 3.16.6.3.1, Summary of WRT Support Personnel Dosimetry, of the Environmental Report (WRT, 2016), WRT provides summary data of WRT Support Personnel Doses.
- In Section 3.14.3, Recordkeeping, of the Environmental Report (WRT, 2016), WRT references records that will be kept of any actions taken or authorized by the safety and environmental review panel (SERP), including written safety and environmental evaluations made by the SERP as part of its analysis for determining if applicable changes were made consistent with the license. WRT states they will maintain and retain such records in accordance with 10 CFR 40.61(b) requirements and that the SERP will document and maintain all decisions and determinations and make such documentation available to the NRC or relevant Agreement States for inspection. WRT will provide the NRC with annual reports of all such decisions and determinations.

Path Forward: Please provide summaries of the following information and data:

- Site-specific inspections that are referenced in Section 3.15
- Inspection reports conducted by Agreement States
- ALARA audit reports

- Specific details of incidents/accidents (e.g., spills, pipe breaks), if any, and discussion of WRT's response to such incidents/accidents
- End-of-year dosimetry reports for the past five years of operation that provide personnel and area badge dose data

The NRC requests this information to support its independent evaluation of potential impacts of the proposed action and its determination pursuant to 10 CFR 51.31(a).

7. **Comment:** Additional information is needed to support the description of the proposed actions and assessment of potential impacts.

Basis: In Section 1.1, "General Overview," of its Environmental Report (WRT, 2016), WRT states that "[a]t the time that WRT contracts with a Client to provide water treatment, WRT will register/inform the NRC of new uranium treatment systems and will provide the NRC with specific site information for the Client's water treatment/well site(s) where the radioactive material will be removed from the feed water and stored in the treatment vessel(s). The site-specific information will include the Client physical address, the Client point of contact, and the sizes (flow rates, activity loading(s) for the system(s). Additional information will also be included in the site-specific information packages."

Elsewhere in its application (e.g., Section 3.16.6.3.1 of the Environmental Report [WRT, 2016]), WRT states that it has obtained licenses in NRC Agreement States for its URS, and in Table 3-3, Examples of Dose Rates in the Vicinity of WRT Uranium Removal Systems, WRT provides examples of dose rates around various URS that it has installed in Agreement States.

Path Forward: Provide a list of sites that WRT currently contracts its uranium water treatment technology in both Agreement and non-Agreement states, including Client physical address, Client point of contact, when the site was licensed, the current state of the license, and the sizes (flow rates, activity loading(s) for the system(s), as well as any additional information included in the site-specific information packages. The NRC will use this information in its description of the proposed action and assessment of potential impacts. This information is needed to ensure compliance with 10 CFR 51.45(b).

REFERENCES

NRC, 2009. "Review, Approval, and Documentation of Low-Activity Waste Disposals in Accordance with 10 CFR 20.2002 and 10 CFR 40.13(a)," Draft for Interim Use, EPPAD 3.5 (ADAMS Accession No. ML092460058), Washington, DC: Division of Waste Management and Environmental Protection, Environmental and Performance Assessment, U.S. Nuclear Regulatory Commission. August, 2009.

NRC, 2016. "Requests to Dispose of Very Low-Level Radioactive Waste Pursuant to 10 CFR 20.2002," RIS 2016-11(ADAMS Accession No. ML16007A488), Washington, DC: Office of New Reactors, Office of Nuclear Reactor Regulation, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission. November 13, 2013.

WRT, 2016. "Environmental Report in Support of a Multi-Site, Performance-Based License Renewal Application," (ADAMS Accession No. ML16358A447) Arvada, CO: Water Remediation Technology LLC, December 21, 2016.