



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
WASHINGTON, D.C. 20555-0001

April 3, 2020

Bernadette Tsosie, Project Manager
U.S. Department of Energy
Office of Legacy Management
2597 Legacy Way
Grand Junction, CO 81503

SUBJECT: U.S. NUCLEAR REGULATORY COMMISSION STAFF REVIEW OF U.S. DEPARTMENT OF ENERGY'S 2017 URANIUM PLUMES IN THE SAN ANDRES-GLORIETA AND ALLUVIAL AQUIFERS AT THE BLUEWATER, NEW MEXICO, DISPOSAL SITE, DOCKET 040-08902

Dear Ms. Tsosie:

By letter dated March 20, 2019, the U.S. Department of Energy (DOE), Office of Legacy Management, provided to the U.S. Nuclear Regulatory Commission (NRC) a report entitled, *2017 Uranium Plumes in the San Andres-Glorieta [SAG] and Alluvial Aquifers at the Bluewater, New Mexico, Disposal Site*, dated February 2019 (DOE Report).¹ DOE provided the report to address the NRC staff's request for information associated with two of the five comments in the "Requested Path Forward" section of the NRC staff's letter dated May 24, 2018.² The requested information from the May 24, 2018, letter consisted of DOE's planned approaches for addressing the following two comments:

- uncertainty in the location of the leading edge of the uranium plume, which could be farther advanced towards areas north of Grants than currently estimated; and
- uncertainty in potential contamination of drinking water wells as DOE was not able to sample all wells in the immediate vicinity of the Bluewater site.

The DOE Report is an update to the assessment of groundwater plumes provided in DOE's previous study, entitled *2014 Site Status Report: Groundwater Flow and Contaminant Transport in the Vicinity of the Bluewater, New Mexico, Disposal Site*,³ dated November 2014. The 2014 and 2019 DOE reports presented uranium groundwater plume maps representing 2013 and 2017 plumes, respectively, in both the SAG aquifer and the Ancestral Rio San Jose alluvial aquifer at the Bluewater site and surrounding area. The updated data and information in the DOE Report includes groundwater levels, groundwater uranium concentrations, and information concerning water wells in the vicinity of the Bluewater site.

¹ Agencywide Documents Access and Management System (ADAMS) Package Accession No. ML19081A147

² ADAMS Accession No. ML18017A708

³ ADAMS Package Accession No. ML14332A314

Regarding the above-referenced information requested in the NRC staff's letter dated May 24, 2018 (refer to bulleted items above), the following presents the NRC staff determinations from their review of the DOE Report.

The NRC staff has determined that DOE has provided a general update to DOE's 2014 Site Status Report, including updated monitoring results for uranium in the SAG and alluvial aquifers, as well as updated monitoring results in SAG drinking water wells that were sampled. In general, the NRC staff agrees that available uranium concentration data shows signs of stability of the groundwater uranium concentrations in the SAG and alluvial aquifers.

Location of the Leading Edge of the Uranium Plume

The NRC staff has determined that there are an insufficient number of groundwater monitoring locations, as shown in DOE Report, Figure 12, to adequately define the leading edge of the eastern portion of the uranium plume. Additionally, the NRC staff observes that monitoring well 928 within this portion of the plume has been abandoned. According to DOE Report, Table A-1, well 928 was abandoned in late 2017 due to an integrity test conducted in 2015 that indicated well 928 was compromised and likely not representative of groundwater in the SAG. The NRC staff has determined that additional monitoring wells in the eastern portion of the plume at the Bluewater site would reduce uncertainty of the uranium plume's leading edge and direction of migration.

The NRC staff has determined that the leading edge of the southern portion of the SAG plume from the area of well 14(SG) to the area between 18(SG) and 13(SG), as shown in DOE Report, Figure 12, has not been adequately defined. The plume's southern boundary has relatively high groundwater concentrations of 0.088, 0.228, and 0.104 mg/L uranium in wells 14(SG), 18(SG), and 13(SG) respectively. The NRC staff notes that page 27 of the DOE Report states, "uranium concentrations appear to increase from 2012 to 2017 in the southwest corner of the site at well 14(SG)." The NRC staff also notes that Well 14(SG), with its apparent increasing level of uranium shown in DOE Report, Figure 15, also appears to be depicted as an upgradient well in DOE Report, Figures 8 and 9. The NRC staff has determined that additional monitoring wells in the southern portion of the plume at the Bluewater site would reduce uncertainty of the uranium plume's leading edge and direction of migration.

It is the NRC staff's understanding that DOE and NMED are working on a cooperative agreement related to the installation of additional SAG monitoring wells. The NRC staff supports this initiative and will review information related to the installation of additional monitoring wells, including the number and location of these wells.

Potential Contamination of Drinking Water Wells

The NRC staff has determined that uncertainty remains regarding potential contamination of drinking water wells due to the uncertainty of the SAG uranium plume boundary. The NRC staff notes that the DOE report did not include 2017 groundwater quality data for all of the wells listed in Table 1 and Table A-1. The NRC staff requests DOE provide a written explanation for the absence of this data for each of these water wells (i.e., specific access issues). The NRC staff understands that the DOE will continue its efforts to monitor the SAG drinking water wells, and the NRC staff supports this effort; however, DOE should clearly indicate the reason each well could not be sampled.

The NRC staff recognizes that Appendix A in the DOE Report contains much of the data that would be expected in an enhanced land-use survey as requested by the NRC staff in its May 24, 2018, letter. The NRC staff requests that DOE provide a land ownership map in the vicinity of the Bluewater site to supplement this data and that DOE continue to update the information found in Appendix A of the DOE Report. As discussed in the NRC staff's letter dated May 24, 2018, the development, as well as the ongoing updating, of an enhanced land-use survey in the vicinity of the Bluewater site will help ensure the protection of public health and safety, consistent with Title 10 *Code of Federal Regulations* (10 CFR) 40.28.

Path Forward

The DOE Report focused on the following two comments that were requested in the NRC staff's May 24, 2018, letter (i.e., Requested Path Forward comments No. 1), and No. 3)):

- uncertainty in the location of the leading edge of the uranium plume, which could be farther advanced towards areas north of Grants than currently estimated; and
- uncertainty in potential contamination of drinking water wells as DOE was not able to sample all wells in the immediate vicinity of the Bluewater site.

While the DOE Report provided additional data and updated the general characterization of the site, the uncertainties identified in the NRC staff letter dated May 24, 2018, remain (i.e., Requested Path Forward comments No. 1 and No. 3). The NRC staff has determined that uncertainty remains regarding the leading edge of the plume in the eastern and southern portions of the plume. The NRC staff also has determined uncertainty remains regarding potential contamination of drinking water wells.

The NRC staff requests that DOE provide the following information by October 1, 2020, or other date mutually agreeable to the NRC and DOE:

(1) planned approaches and ongoing efforts to better define the leading edge of the uranium plume in the SAG, that may include installing additional monitoring wells, in coordination with NMED and the NRC;

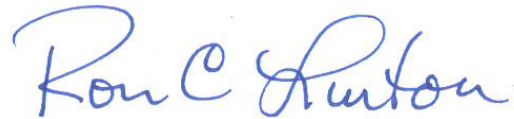
(2) a written explanation for the missing groundwater quality data for wells listed in Table 1 and Table A-1; and

(3) a land ownership map and any known updates to its enhanced land use survey.

In accordance with 10 CFR 2.390 of the NRC's "Agency Rules of Practice and Procedure," a copy of this letter will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

If you have any questions regarding this letter, please contact me at (301) 415-7777, or by e-mail at ron.linton@nrc.gov.

Sincerely,

A handwritten signature in blue ink that reads "Ron Linton". The signature is written in a cursive style with a large initial "R".

Ron Linton, Project Manager
Uranium Recovery and Materials
Decommissioning Branch
Division of Decommissioning, Uranium Recovery
and Waste Programs
Office of Nuclear Material Safety
and Safeguards

Docket No.: 040-08902

cc: via ListServ
M. Purcell, EPA
K. Vollbrecht, NMED
C. Burrus, OSE

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DATE April 3, 2020

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ADAMS Accession No.: ML20066F283

***via e-mail**

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