Department of Energy
Washington, DC 20585

March 20, 2019

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Deputy Director
Mail Stop T8F5
Washington, DC 20555-0001

Subject: 2017 Uranium Plumes in the Aquifers at the Bluewater, New Mexico, Disposal Site
NRC Docket No. 40-8902

To Whom It May Concern:

In a letter from the U.S. Nuclear Regulatory Commission (NRC) to the U.S. Department of Energy (DOE) Office of Legacy Management dated May 24, 2018, regarding groundwater contamination and disposal cell performance concerns at the Bluewater, New Mexico, Disposal Site, NRC requested DOE provide its planned approaches for addressing:

> "1) 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... 3) 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 enclosed report *2017 Uranium Plumes in the San Andres-Glorieta and Alluvial Aquifers at the Bluewater, New Mexico, Disposal Site*, completed in February 2019, addresses Items 1 and 3 above. The report provides an update of groundwater data and the contaminant plumes in the aquifers provided in DOE's 2014 *Site Status Report: Groundwater Flow and Transport in the Vicinity of the Bluewater, New Mexico, Disposal Site.*

All post-2012 publicly available groundwater level and uranium concentration data from the San Andres-Glorieta (SAG) aquifer and Ancestral Rio San Jose alluvial aquifer in the Grants-Bluewater valley were evaluated to determine if the plumes emanating from the Bluewater site had changed since the prior evaluation. Included are sample data from offsite SAG aquifer wells collected by the New Mexico Environment Department as part of a cooperative agreement with DOE. The permitted wells investigated for this evaluation are provided in the enclosed report. During the 2014 and current investigation, it was noted that many of the SAG aquifer wells in the Grants-Bluewater valley had multiple names and recorded locations. Well information was meticulously researched in order to use well data correctly, and a crosswalk of SAG wells in the study area was developed and is provided in Appendix A of the enclosed report.

As concluded in the enclosed report, flow directions have remained the same for the SAG aquifer and the Ancestral Rio San Jose alluvial aquifer, and the interpreted extent of the 2017 uranium plumes in both aquifers is similar to that of the interpreted plumes in DOE's 2014 site status report (based on 2013 data). The data suggests the plumes are not advancing; instead, they appear to be essentially stable, as concluded in the 2014 report. The uranium plume in the alluvial aquifer is interpreted to extend from the Bluewater site to approximately 0.7 mile northeast of Toltec, New Mexico. However, this aquifer contains contaminants from both the alluvial aquifer leaving the Bluewater site and the San Mateo Creek alluvial aquifer that has been

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contaminated by milling operations at the Homestake Mining Company site as well upgradient sources. Although the interpreted extent of the SAG aquifer plume has not changed, the eastern extent of the plume remains unknown because of the absence of SAG aquifer wells east of the Homestake site. However, the flow path of the SAG aquifer plume remains 2 miles north of the nearest drinking water supply well for the Cities of Milan and Grants and is not expected to impact municipal wells for the Cities of Milan or Grants. In fact, no wells that are permitted for domestic use are located within the SAG or Ancestral Rio San Jose uranium plumes derived from the Bluewater site.

DOE will continue to monitor groundwater at the Bluewater site, maintain a cooperative agreement with the New Mexico Environment Department for offsite private well sampling, and evaluate data collected by Homestake Mining Company. As indicated in DOE's December 21, 2018, letter to NRC, DOE is developing a white paper evaluating the impact of high-volume pumping wells in the SAG aquifer. This report in intended to address NRC's requested path forward regarding:

> "2) uncertainty in flow and contaminant transport due to pumping from high-production municipal, industrial, and irrigation wells."

Please contact me at (970) 248-6550 or Bernadette.Tsosie@lm.doe.gov, if you have any questions.
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Sincerely,

Bernadette Tsosie

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Bernadette Tsosie, Site Manager
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