



U.S. DEPARTMENT OF
ENERGY

Nuclear Energy

Analysis of Postclosure Groundwater Impacts 2009 and 2014

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Rockville, MD
April 7, 2014

2008 Supplemental Environmental Impact Statement

- In July 2008, the DOE published the “Final Supplemental Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada” (DOE/EIS-0250-S1, July 2008) (Repository Final SEIS).
- The NRC staff concluded in September 2008 that the 2008 environmental impact statement did not address adequately all of the potential repository-related impacts on groundwater, or from surface discharges of groundwater
- NRC therefore requested that DOE prepare a supplement to the Yucca Mountain Repository Final SEIS.
- July 2009, the Department submitted a report to the NRC that analyzed the potential repository-related impacts on groundwater and from surface discharges of groundwater.

NRC Memorandum and Order

- **November 2013, the NRC issued a memorandum and order consistent with the U.S. Court of Appeals mandamus decision.**
- **The order directed the NRC staff, among other things, to complete the Safety Evaluation report.**
- **The NRC also requested DOE to prepare a groundwater supplement to the Environmental Impact Statement (EIS) that the NRC staff has determined is needed for purposes of its review of the application under the National Environmental Policy Act.**

DOE Activities to Support the NRC on Groundwater

- On February 28, the DOE wrote to the NRC and said it would provide an updated version of the technical report that had been submitted to NRC in July 2009
- The updated report will provide the NRC with substantially all the technical information necessary to create a draft Groundwater SEIS
- The DOE defers to the NRC the preparation of the Groundwater SEIS

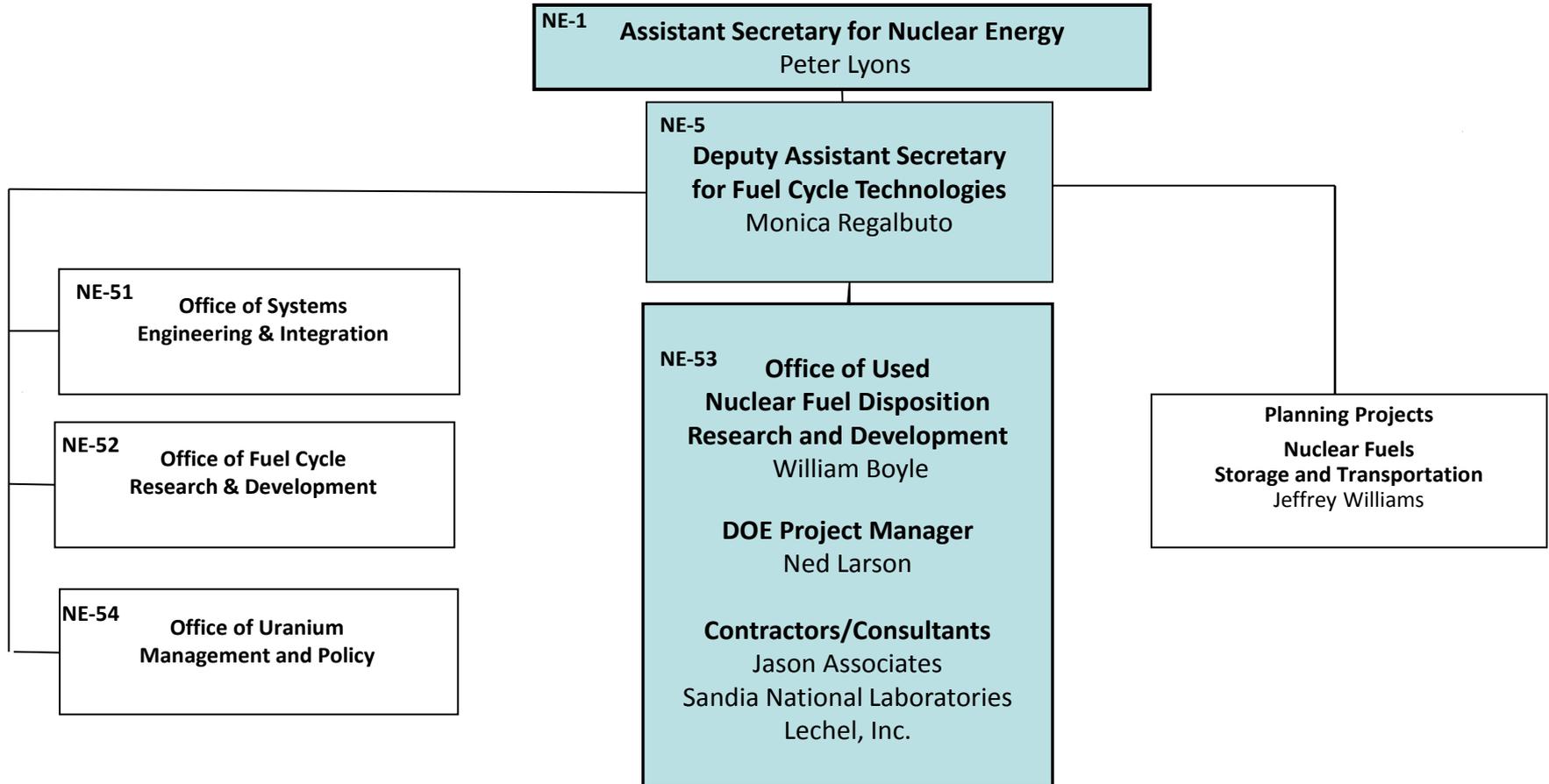
March 19 NRC staff request to DOE

- On March 19, NRC staff wrote to DOE and requested information to be presented at a public meeting, including:
 1. The organization that the DOE has established to generate the report
 2. What kinds of new information the DOE has gathered
 3. How DOE might modify the information in the 2009 report
 4. When the DOE plans to provide the revised report to the NRC



DOE Organization

- Work will be performed using existing DOE organizational units
- Contractors who performed the previous work are being used again





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DOE Points of Contact for Questions on Technical Content

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Postclosure Groundwater Report Content 2009 and 2014

■ The report will include the following analyses:

- A description of the full extent of the volcanic-alluvial aquifer, particularly those parts that could become contaminated, and how water (and potential contaminants) could leave the flow system;
- An analysis of the cumulative amount of radiological and non-radiological contaminants that could be reasonably expected to enter the aquifer from the repository, and the amount that could reasonably remain over time;
- Estimates of contamination in the groundwater, given potential accumulation of radiological and non-radiological contaminants;
- A description of the locations of potential natural discharge of contaminated groundwater for present and expected future, wetter periods;
- A description of the physical processes at the surface discharge locations that could affect accumulation, concentration, and potential remobilization of groundwater-borne contaminants; and
- Estimates of the amount of contaminants that could be deposited at or near the surface

- Explain and update reference to the USGS's 2010 re-issue of the Death Valley Regional Groundwater Flow System model report - no substantive changes
- Minor updates of pumping data and clarifications of text



- **Minor changes in the Yucca Mountain TSPA-LA biosphere model methodology applied at the location of the RMEI, arising from a response to an NRC RAI (RAI Volume 3, Chapter 2.2.1.3.9, First Set, Number 1, DOE # 562) . Incorporation of sorption disequilibrium between decay chain daughters via correction factors applied to biosphere dose conversion factors. This created no impact on previous results.**
- **SNL has modified the irrigation recycle model that was used in 2009. The changes in this model were reviewed for impact to the analysis and it was determined that they would have no impact to the results. These conclusions will be documented in the updated technical report.**
- **Updated international research on sorption of non-radiological contaminants onto soil. It was decided not to alter the original conservative values in the report**
- **Updated oral reference doses for non-radiological contaminants. Increase in Vanadium ORfD, however, the analytical result is much less than the ORfD.**

New Information (cont.)

- **Considering all the new information that has been reviewed, the DOE concludes:**
 - No material physical changes at the site have happened since 2009
 - Nothing has been learned that would invalidate any of the numerical models that were used
 - The input data used in the numerical modeling were conservative in 2009 and still are
 - There are no significant differences from the previous report
- **All the conclusions from the 2009 report are the same for the 2014 report**

Modifying 2009 Report

■ DOE evaluated several alternatives

- Writing an Addendum, Prologue or other feature
- Inserting a new chapter discussing differences
- Issuing a new edition of the existing report

■ DOE will issue a new edition of the existing report

- Reduces Repetition
 - Many issues would have to be drawn from the current report and then addressed again in any new chapter. This could cause a significant amount of repetition as explanations for the new discussions would occur in the new chapter also.
- Timing
 - Changes will be quickly seen because the report will have change bars in the margins of the document that will show what has changed.
- Allows for Report Improvements
 - Improvements in clarity

Schedule

- The Department intends to issue the next version of the Analysis of Postclosure Groundwater Impacts Report this quarter
- The report with all non-copyrighted information will be made available to any interested parties on a DOE website
- The 2009 report and its references are available at:

<http://www.id.energy.gov/GroundWater/>