



THE HANFORD SITE

***Discussion of Analysis of
Approaches for Supplemental
Treatment of
Low-Activity Waste at
Hanford Nuclear Reservation***

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DOE is committed to the Direct-Feed Low-Activity Waste program in addition to exploring options for parallel treatment to accelerate progress of Hanford's cleanup mission. DOE is also committed to dialogue related to ongoing work and studies for alternative waste treatment, tank waste characterization and capture mechanisms (ion exchange and getters), environmental cleanup, and new disposal opportunities.

Objectives for today:

- Describe the congressional mandate for the National Academy of Sciences (NAS) review of the Federally Funded Research and Development Centers (FFRDC) report
- Present FFRDC results
- Address questions related to the FFRDC report

The 2017 *National Defense Authorization Act* mandates an NAS review of an FFRDC report, to include the following:

- Analyze treatment approaches to the supplemental treatment of low-activity waste
 - Vitrification, grouting, steam reforming, and other identified alternatives
 - Further pretreatment of waste to remove long-lived constituents such as technetium-99 (Tc-99) and iodine-129 (I-129)
- Further Analysis
 - Risks related to treatment and disposition
 - Benefits and costs
 - Anticipated schedules
 - Regulatory compliance
 - Any obstacles that would inhibit pursuit

- FFRDC team briefed the NAS in seven public meetings as the FFRDC report was being developed, providing multiple opportunities for public involvement and comment
- NAS reviewed FFRDC report in parallel, such that its recommendations were used to improve the quality of the FFRDC analysis
- FFRDC report was submitted to Congress in October 2019
- NAS review report was released in February. The NAS concluded the following:
 - The FFRDC report informs a decision on treatment approach, but other information may be needed to form a complete technical basis
 - Waste form assessment is linked to disposal location
 - The risk of further delay is not adequately defined in the FFRDC report
 - The amount of pretreatment needed should be determined based on requirements
 - Multiple, parallel, smaller-scale technologies should be used

Presentation from FFRDC Team

- Drinking water iodine standard basis review (NAS)
- Lysimeter long-term testing
- Capture mechanisms (e.g., getters, ion-exchange resins) for Tc-99 and I-129 (National Labs)
- Tool for risk ranking of waste tanks by constituents and viability for treatment through various technologies (Pacific Northwest National Laboratory and Mission Support Alliance)
- Single-shell tank organics data review (Washington River Protection Solutions)

- Direct-Feed Low-Activity Waste vitrification remains DOE Office of River Protection's (ORP) priority
- ORP wants to process more waste, and sooner, with proven and demonstrative parallel treatment in order to safely accelerate the cleanup mission
- Seeking the HAB's support to provide an understanding of these options and communicate their benefits to the key stakeholders the HAB represents