

# HANFORD ADVISORY BOARD

A Site Specific Advisory Board, Chartered under the Federal Advisory Committee Act

**Advising:**

June 17, 2005

US Dept of Energy  
US Environmental  
Protection Agency  
Washington State Dept  
of Ecology

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Washington State Department of Ecology  
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Re: 200-UW-1 Waste Sites Proposed Plan

Dear Messrs. Klein, Schepens, Kreizenbeck, and Manning,

**Background:**

The 200-UW-1 Operable Unit contains 30 soil waste sites and one treatment, storage and disposal (TSD) unit (216-U-12 crib) in the vicinity of the 221-U Plant Facility (U Plant) chemical processing plant. Liquid effluent was managed and/or disposed of in cribs, trenches, french drains, septic systems and one underground settling tank. There is also contamination from leaks and spills. The primary contaminants of concern are radioactive cesium-137, uranium and technetium-99, and non-radioactive nitrate. There is deep vadose zone contamination, in some cases extending to the water table at 270 feet below ground surface.

This is the first soil site operable unit cleanup on the Central Plateau and is therefore of great interest to the public and bears very close scrutiny. Decisions made and lessons learned from this process will influence subsequent operable unit closure actions in the Central Plateau. Therefore, the Hanford Advisory Board

(Board) has looked at this Proposed Plan closely and offers the following comments and advice.

#### **Comments**

- **The Proposed Plan document is well organized and the presentation is excellent.**
- **The agencies should pursue cost-effective integration of Resource Conservation and Recovery Act (RCRA) and Comprehensive Environmental Response Compensation and Liability Act (CERCLA) requirements by consolidating all 31 waste sites under one "blanket" RCRA permit.**
- **An alternative analyzing limited excavation (e.g., approximately 50 feet) combined with subsequent surface barrier application should be included in the Proposed Plan. Currently, the Proposed Plan analyzes only "all-or-nothing" approaches. In other words, the Proposed Plan analyzes application of a surface barrier without excavation or excavation to a depth of 200 feet.**

This analytical approach is not consistent with the Board's Central Plateau Remedial Decision Flow (Advice #173). This advice outlined the Board's bias for retrieve, treat and dispose remedial actions in the Central Plateau. Where full retrieval, treatment and disposal is not feasible, partial retrieval, treatment and disposal should be considered. The Proposed Plan does not currently consider a partial retrieval, treatment and disposal alternative.

Over and above the values outlined in the Central Plateau Remedial Decision Flow, the partial retrieval alternative offers several apparent advantages: (1) it raises the possibility of reducing the footprint of barriers; (2) it lessens the Institutional Control requirements by reducing potential human and ecological exposure pathways, and; (3) it appears to effectively address many of CERCLA's nine decision criteria.

- **The Proposed Plan should not assume application of barriers to 221-U and surrounding waste sites (under the Canyon Disposition Initiative). Currently, the Proposed Plan assumes application of barriers to these sites although that decision has not yet been made.**
- **The Proposed Plan analyses should include the following:**

- **Evaluation of life-cycle costs for alternatives should use and sum both discounted and undiscounted life-cycle costs when comparing the financial viability of alternatives that may or may not require long-term monitoring and periodic restoration.** Currently, discounting the long-term costs for barrier monitoring, maintenance and repair biases the analysis against retrieval, treatment and disposal.
- **Additional sensitivity analyses modeling uranium groundwater contamination for varying diffusion coefficients ( $K_d$  values in the 1 to 3 range).** Initial modeling results indicate significant differences in when, where and how much uranium migrates to groundwater over time. Relatively minor changes in the diffusion coefficient can alter the modeled arrival of uranium in the groundwater by hundreds of years. Because of this, the Board recommends additional analyses in order for the agencies and stakeholders to better understand the potential impact on, and arrival time of, uranium on the groundwater.
- **Data (e.g., characterization data) should be presented to substantiate the similarity of waste sites when applying the "Plug-In" approach.** The Board supports reasonable application of the "Plug In" approach. However, its application should be limited to waste sites where data clearly demonstrates a similarity between waste sites.
- **The excavation model and contaminant distribution model should be consistent.** These two models are utilized to analyze the movement of contaminants through the soil. The excavation model assumes contaminants move through the soil in a vertical rectangular column. On the other hand, the contaminant distribution model shows contaminant movement spreading laterally over a large area. This difference, between a dense solid contaminant mass and a disperse area of contamination casts doubt on the validity of the modeling, and the cost and dose calculations based thereon.

#### **Advice**

1. All 31 U Plant Area waste sites should be consolidated under one "blanket" RCRA permit.

2. The proposed plan should be withdrawn and revised to include a fifth alternative analyzing limited excavation combined with subsequent surface barrier application. The revised plan should be re-released for public comment.
3. The Proposed Plan should not assume application of barriers to 221-U and surrounding waste sites (under the Canyon Disposition Initiative).
4. The Proposed Plan analyses should use and sum both discounted and undiscounted life-cycle costs when comparing the financial viability of alternatives that may or may not require long-term monitoring and periodic restoration.
5. Additional sensitivity analyses modeling uranium groundwater contamination for varying diffusion coefficients ( $K_d$  values in the 1 to 3 range) should be performed.
6. Data (e.g., characterization data) should be presented to substantiate the similarity of waste sites when applying the "Plug-In" approach.
7. The excavation model and contaminant distribution model should be consistent.

Sincerely,



Todd Martin, Chair  
Hanford Advisory Board

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*This advice represents HAB consensus for this specific topic. It should not be taken out of context to extrapolate Board agreement on other subject matters.*

cc: Howard Gnann, Deputy Designated Federal Official, U.S. Department of Energy  
Nick Ceto, Environmental Protection Agency  
Michael Wilson, Washington State Department of Ecology  
Melissa Nielson, U.S. Department of Energy Headquarters  
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