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of Ecology

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June 17, 2005

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Re: Considerations for Barrier Application

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

Background

During the March, 2005 meeting of the Hanford Advisory Board (Board), the Board provided the Department of Energy (DOE) and the regulators with a value-based decision-making tool for Central Plateau remediation. The tool communicated the Board's three primary biases:

- The Board's ideal for remedial action at all Central Plateau waste sites is to first characterize, then retrieve, treat and dispose of all wastes.
- The waste that remains must be left in a facility or configuration that will be protective of human health and the environment for generations to come.
- Engineered barriers should be a last resort remedy. The term "engineered barrier" is synonymous with others terms commonly used to describe methods of protecting waste sites from long-term water infiltration (caps, covers, barriers, etc.).

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Subject: Considerations for Barrier Application
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The Board recognizes there are instances when retrieval, treatment and disposal may be impractical, and an engineered barrier may be necessary. Undiscounted life-cycle cost of the engineered barrier needs to be considered and appropriately included in all instances when engineered barrier application is considered. This piece serves to provide additional advice on policy considerations for instances when engineered barrier application is considered.

Advice

When an engineered barrier is proposed, the Board advises the following:

- An engineered barrier is a last resort remedy. An engineered barrier should be considered only after characterization and analysis, assessments of technologies, etc., of the waste site proposed to be covered, as outlined in the value-based decision-making tool. (Advice #173)
- Engineered barriers should not be considered permanent. Risk assessments should examine the magnitude of barrier failure, the likelihood of failed Institutional Controls, and the resulting consequences to human health and the environment.
- For instances where the engineered barrier will protect human health and the environment over the life of the contaminants (e.g., the engineered barrier's life is undoubtedly longer than the time the contaminants remain hazardous), the decision to proceed with an engineered barrier may be the final decision for the waste site.
- Protection of human health and the environment should be balanced with the ability for future waste retrieval for instances where the engineered barrier will not be protective for the life span of the hazards. In these cases, engineered barriers should not be the final decision for a waste site. Records of decision (RODs) should allow for research, development and future application of new retrieval, treatment and disposal technologies.
- Monitoring of each engineered barrier's performance criteria should be required for sites with engineered barriers to provide early detection of contaminants before they reach groundwater.
- There should always be a public review process associated with ongoing reviews, including input on exposure scenarios, future use restrictions, and

failure of institutional controls. This public process should be adequately funded by the responsible federal agency.

- The Board acknowledges that the federal government will maintain responsibility for sites with engineered barriers. Given that engineered barrier failures are inevitable, provisions (readily accessible funding, organizational infrastructure, etc.) should be established to expeditiously address failures.
- The federal government should maintain Long-Term Stewardship responsibility for sites with engineered barriers including: life-cycle cost, public involvement, monitoring, public safety, repair, legacy records, design integrity life, and costs for future retrieval, treatment and disposal. These requirements should be included in RODs and other applicable decision documents
- A site with engineered barriers must be monitored more closely than an engineered landfill facility due to the lack of engineered controls in the barrier site to establish behavior expectations. After an engineered barrier is placed, ongoing reviews should be conducted, including barrier monitoring, actions to be taken if failure occurs or appears imminent, new technologies for possible remediation, U.S. Environmental Protection Agency 5-year reviews, Hanford environmental changes or other changes to assumptions made in selecting the engineered barrier, groundwater monitoring results, and possibility of interaction of two or more adjacent engineered barriers.

Sincerely,



Todd Martin, Chair
Hanford Advisory Board

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

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