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

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Re: 100-K Proposed Plan (Draft A)

Dear Messrs. McCormick, Faulk and Ms. Hedges,

Background

In the spirit of cooperation and early disclosure, the Tri-Party Agreement (TPA) agencies provided the Hanford Advisory Board (Board or HAB) the opportunity to examine the Remedial Investigation / Feasibility Study (RI/FS) for the 100-KR-1, 100-KR-2 and 100-KR-4 Operable Units (DOE/RL-2010-97, Draft A) and the Proposed Plan for Remediation of the same Operable Units (DOE/RL-2011-82, Draft A, received on September 29, 2011). The Board appreciates the early opportunity to review these documents. Our advice, bulleted below, focuses on our concern with the process that developed these documents. In addition, the Board has also identified issues within the documents that we feel need to be addressed.

Review of these documents shows that of the 165 waste sites at 100-K, the path forward for remediation of 116 waste sites has not been determined. Forty-six¹ of these 116 waste sites have completed interim cleanup actions that may not meet final preliminary remediation goals (PRGs) for cesium-137, strontium-90, arsenic, boron, and polychlorinated biphenyls

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¹ Pre-record of decision to-go sites

(PCBs). Sixty-six² waste sites will not have had a quantitative risk assessment performed before the final record of decision (ROD). The remaining four sites are carried forward with ecological risk from mercury after interim remediation.

RI/FS Process

According to the Comprehensive Environmental Response and Liability Act (CERCLA) Decision Process (Figure 1-3, page 1-8, DOE/RL-2010-97, Draft A), Step 2, the remedial investigation (RI), includes separate risk evaluations for human health and the environment. The RI, containing the risk assessments, feeds development of the feasibility study (FS) where preliminary remediation goals (PRGs) are identified and remediation alternatives are developed and investigated. The products of the RI/FS support the development of a proposed plan, with identification of a preferred alternative upon which the ROD is written. This process is intended as a sequential, multi-step process, with the completion of each document providing information necessary to develop the next document.

The Board believes that this step-wise procedure is not working properly, since the risk assessments associated with the RI have not been agreed upon and finalized, and yet the proposed plan has been written and is being negotiated between the TPA agencies. The Board believes that impacts from changes made in the risk assessment documents (River Corridor Baseline Risk Assessment (RCBRA), Columbia River Component Risk Assessment (CRCRA), Tier 1 and 2, etc.) should feed the FS PRGs, should support remediation choices, and should be the foundation of the 100-K Proposed Plan (Proposed Plan). The Board believes it makes no sense to look at finishing the Proposed Plan when the first step in the process, the risk assessment documents, is not yet completed.

RI/FS Report, Proposed Plan

The RI/FS risk assessment documents and their supporting documents, the RCBRA, CRCRA, and the risk assessments contained within the 100-K RI/FS report, are in a variety of stages of completeness, but none are approved and finalized. The Board previously requested (HAB Advice 246) that a workshop describing the combined risk assessment processes and cumulative risk results could be given once the risk assessments are finalized. Since such a workshop has not yet occurred, we repeat that request here.

The Board notes that the Proposed Plan is incomplete, since not all 100-K contaminants are considered (per HAB Advice 236). The 100-K Operable Unit was used for decades to store spent fuel in the 105-KE fuel storage basin. Gamma radiation contamination (¹³⁷Cs) has been identified below the 105-KW reactor which will require further characterization and remediation consideration. Also, there has been recent concern about the existence of a mixed contaminants plume (UPR-100-K-1) that will require the removal of the 105-KE

² Post-record of decision to-go sites

reactor for soil characterization and remediation. The remediation of these plumes of contaminants has not been included in the alternatives within the Proposed Plan. While the Board has been assured that the arsenic-lead contamination of the orchard lands will be dealt with separately, the Board strongly believes that identification of probable remediation technologies for these contaminants should also be part of this Proposed Plan.

The Proposed Plan suggests that “The groundwater contaminants-of-concern lay largely within the extent of the hexavalent chromium plumes. The extraction well network installed for the pump-and-treat systems for remediating hexavalent chromium plumes will capture these contaminants” (p. 32, lines 19-22). The Board notes that nothing is identified in the Proposed Plan to address the actual capture, control and disposal of each of the non-chromium contaminants. Remediation of known contaminate plumes under the reactors has also not been factored into the Proposed Plan. The Proposed Plan further identifies injection wells for use as compliance monitoring wells, rather than installing new wells. The use of injection wells for monitoring purposes has the potential for creating uncertainties because of dilution causing measurements, that may not accurately reflect the level of contamination. The Board urges the TPA agencies to revise the Proposed Plan for Remediation of 100-KR-1, 100-KR-2 and 100-KR-4 Operable Units so that it better addresses these issues.

As stated in previous HAB Advice (e.g., HAB Advice 246), the Board supports the Resident future use scenario and urges the U. S. Department of Energy (DOE) to select and use the more conservative PRGs for irrigated conditions in the 100-K Proposed Plan (Table 8-3. Summary of 100-K Operable Unit Human Health, Groundwater protection, Surface Water Protection, and Ecological Soil PRGs; PRGs Protective of Groundwater and Surface Water; 100:0 Contaminant Source Model GWP SSL).

In the 100-K Waste Site Map (Proposed Plan, Figure 10), the Groundwater Operable Unit (OU) is depicted as much smaller than the 2012 modeled extent of contaminant plumes shown in Figure 14 or 16. The Board suggests that, at the least, the Groundwater OU should encompass the extent of the known (or suspected) plume.

Alternatives Comparison

The Board urges the TPA agencies to support Alternative 3, which promotes more rapid deployment, quicker cleanup, and better results. This alternative, though not the preferred alternative in the Proposed Plan, employs remove, treat, and dispose (RTD) to exhume contaminants from those waste sites yet to be sufficiently remediated. It also expands the pump-and-treatment of groundwater with 65 additional wells and installation of an expanded pump-and-treat facility. Proposed Plan Figures 16 and 18 provide projected contaminant plumes, which show that Alternative 3 will require less time and be more effective at groundwater cleanup than the preferred Alternative 2. The Board has

consistently advised a preference for removal of contaminants, especially near the river, whenever possible (e.g., HAB Advice 243, 226 and 173).

The Board recognizes there will be places that are culturally sensitive where it may be difficult to site wells or excavate. The TPA agencies need to ensure any proposed remedy is protective of these areas.

Advice

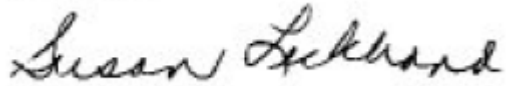
- The Board advises the TPA agencies to follow the CERCLA process, finishing the documents in appropriate sequence in order to reach the ROD. The Board notes that none of the risk evaluations developed in the CRCRA appears in the 100-K RI/FS and Proposed Plan. Impacts from changes made to Risk Assessments should feed the FS PRGs, and should support the Proposed Plan and ROD.
- The Board advises the 100-K Proposed Plan be amended to include identification of contamination upwelling locations in the Columbia River bed that are or could be associated with 100-K waste site source(s).
- The Board advises DOE to select a remedy for each waste site in the Proposed Plan and indicate where the details of the characterization used to support each decision can be found.
- The Board advises that, given the incompleteness and uncertainties identified in supporting documents, the TPA agencies ensure that all contaminants of concern (COCs) identified in the risk assessment and other supporting documents are evaluated within the Proposed Plan.
- The Board advises the TPA agencies to expand the Proposed Plan to consider the risk and remediation of all groundwater COCs in the 100-K Operable Unit.
- The Board advises the TPA agencies to revise the Proposed Plan to address:
 - The specific capture, control and disposal of non-chromium groundwater COCs.
 - The remediation of known contaminant plumes under reactors, including both the recently identified gamma radiation contamination (¹³⁷Cs) below 105-KW reactor and the mixed contaminants plume (UPR-100-K-1).
 - The use of injection wells for monitoring purposes, which has the potential for creating uncertainties from dilution and causing measurements that may not accurately reflect the level of contamination.

- The Board advises DOE to select and use more conservative PRGs for irrigated conditions in the 100-K Proposed Plan³ based on the Board's support of the Resident future use scenario as stated in Advice 246.
- The Board advises DOE to modify the boundaries of the Groundwater OU to encompass the extent of the known or suspected plume. The 100-K Waste Site Map (Proposed Plan, Figure 10) depicts the Groundwater OU as much smaller than the 2012 modeled extent of the contaminant plume.
- The Board advises the agencies to include in the Proposed Plan a proposed remedy for the orchard sites to address arsenic-lead contamination, and provide details of the integration of such remedies with co-located waste site remediation activities.
- The Board reiterates its request (HAB Advice 246) for a workshop describing the combined risk assessment processes and cumulative risk results, once the risk assessments are finalized.
- The Board advises the TPA agencies to support Alternative 3, using expanded RTD and pump-and-treat.
- The Board advises DOE if any institutional controls are prescribed as a portion of the remedy, or are needed following completion of cleanup actions, they should be clearly spelled out in the ROD as an ongoing commitment of DOE.

The Board appreciates the early opportunity to review these documents, and understands they are at an early stage of development. The Board expects the TPA agencies to consider these points to improve the RI/FS and develop a more comprehensive and defensible Proposed Plan.

³ Table 8-3. Summary of 100-K Operable Unit Human Health, Groundwater protection, Surface Water Protection, and Ecological Soil PRGs; PRGs Protective of Groundwater and Surface Water; 100:0 Contaminant Source Model GWP SSL.

Sincerely,



Susan Leckband, Chair
Hanford Advisory Board

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

cc: Scott Samuelson, U.S. Department of Energy, Office of River Protection
Stacy Charboneau, Deputy Designated Official, U.S. Department of Energy
Catherine Brennan, U.S. Department of Energy, Headquarters
The Oregon and Washington Delegations