

HANFORD ADVISORY BOARD

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

Advising:

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

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September 5, 2014

Doug Shoop, Acting Manager
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Dennis Faulk, Manager
U.S. Environmental Protection Agency, Region 10
309 Bradley Blvd., Suite 115
Richland, WA 99352

Re: Remedial Investigation/Feasibility Study and Proposed Plan for the 100-FR-1, 100-FR-2, 100-FR-3, 100-IU-2 and 100-IU-6 Operable Units; DOE/RL-2012-41, Rev 0

Dear Messrs. Shoop and Faulk,

The Hanford Advisory Board (Board) has greatly appreciated all of the opportunities that have been extended by the Tri-Party Agreement (TPA) agencies to allow early comment on the 100-F Area Proposed Plan. On June 7 2013, the Board adopted Advice #268 concerning the initial 100-F Area Remedial Investigation/Feasibility Study (RI/FS) and Proposed Plan (Draft A), and the Board continues to support that advice.

The Board would like to continue our dialogue by submitting attached Advice #268 for the record, during the 100-F Area Proposed Plan (Rev. 0) public comment period, since little of the 100-F Proposed Plan has changed from Draft A. As stated in our advice, "Final Hanford River Corridor cleanup decisions are important because inadequate cleanup actions could potentially impact the Columbia River."

A core Board value is attaining a cleanup level that allows unrestricted use of the land and water on the River Corridor in a reasonable time frame. The Board is very concerned about the extremely long time that the proposed Institutional Controls (ICs) will have to be maintained and enforced.

The Board further notes that due to the contamination that will remain at the site, the length of 100-F IC enforcement has been revised from 175 years to 264 years (in the *RI/FS and Proposed Plan for the 100-FR-1, 100-FR-2, 100-FR-3, 100-IU-2 and 100-IU-6 Operable Units; DOE/RL -2012-41, Rev. 0*), which makes the issue all the more important and relevant. The Board repeats its advice that this time period is longer than what is considered to be reasonable, and that the TPA agencies should, at the least, remove, treat and dispose (RTD) the contamination under waste site 118-F-8:3 to reduce the overall time of exclusion and protection, instead of relying on Monitored Natural Attenuation (MNA). The Board notes an indefinite IC period prohibiting irrigation on waste site 116-F-14 (Liquid Retention Basin) as another cause for concern.

HAB Consensus Advice # 280

Subject: 100-F/IU Area Proposed Plan

Adopted: September 5, 2014

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The TPA agency response to advice point one of #268 that “when evaluating all of the balancing criteria, the proposed Alternative (GW-2) is similar to GW-4 in long-term effectiveness and permanence and short term effectiveness” is insufficient. The Board believes that this statement belies the alternative comparison which, when comparing the time-until-clean periods for each alternative, identifies that the pump-and-treat times are generally shorter. Pump-and-treat alternatives, as soon as they are applied, reduce contaminants and reduce the overall time needed until cleanup goals are attained. Because pump- and-treat alternatives remove contaminants from the aquifer, they are permanent solutions. The 100-F Area alternative evaluation by balancing criteria appeared to be driven, for the most part, by cost. Cost of remediation should not be a determining criterion which denies TPA agencies the ability to attain unrestricted use of the river corridor, a core Board value.

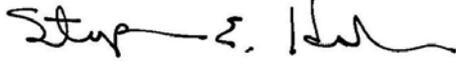
The RI/FS and Proposed Plan fail to analyze the probability of failure of ICs over this extended time period, and the potential risks resulting from failure at various time periods. Presenting this information and adopting a Plan which prevents excess risk due to reasonably foreseeable failures of ICs is a substantive requirement of federal and state cleanup laws.

The Board has found that in addition to Advice #268, further advice is warranted.

- The Board advises the TPA agencies to take remedial action as appropriate to significantly reduce the time for cleanup goals to be attained. The Board advises that the periods proposed for the use of ICs in the 100-F Proposed Plan (Rev.0) are far too long, therefore the currently proposed MNA is not acceptable for 100-F.
- The Board advises the TPA agencies to reconsider the relative value of removing contaminants when evaluating balancing criteria for the Proposed Plan alternatives, as described in the background.
- The Board advises the TPA agencies to perform additional RTD at waste site 118-F-8:3 to reduce the lengthy duration of ICs at 100-F.
- The Board advises that the RI/FS and Proposed Plan and future documentation should discuss the indicators of failures of MNA and define triggers to require future detailed evaluation during the CERCLA five-year reviews. Especially with a need for ICs to be maintained over 264 years, the consequences of events (500-year flood, probable maximum flood and catastrophic failure of Grand Coulee Dam), should also be considered.
- The RI/FS and Proposed Plan should discuss the likelihood of failures of ICs over the hundreds of years proposed. The Board advises that the TPA agencies should describe the potential

consequences in terms of the risk-based standards for the populations likely to be exposed should ICs fail or be terminated at different time frames.

Sincerely,



Steve Hudson, 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: Jeff Frey, Deputy Designated Official, U.S. Department of Energy Richland Operations Office
David Borak, U.S. Department of Energy, Headquarters
The Oregon and Washington Delegations

Attachment: HAB Advice #268

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June 7, 2013

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Dennis Faulk, Manager
U.S. Environmental Protection Agency, Region 10
309 Bradley Blvd., Suite 115
Richland WA 99352

Re: 100-F Area Remedial Investigation/Feasibility Study (RIFS) and Proposed Plan (Draft A)

Dear Messrs. McCormick and Faulk,

Background

The Hanford Advisory Board (Board) appreciates the opportunity to provide comments and advice for the *Remedial Investigation/Feasibility Study and Proposed Plan for Remediation of the 100-FR-1, 100-FR-2, 100-FR-3, 100-IU-2 and 100-IU-6 Operable Units 100-FR-1, 100-FR-2, 100-FR-3, 100-IU-2 and 100-IU-6 Operable Units, Draft A* (Proposed Plan). Final Hanford River Corridor cleanup decisions are important because inadequate cleanup actions could potentially impact the Columbia River. The 100-F/IU Remedial Investigation and Feasibility Study (RI/FS) and Proposed Plan will provide a template for subsequent River Corridor decisions that follow. It is important to the Board that these decisions are dependable, protective, defensible, and well supported.

The Proposed Plan, as the culmination of the RI/FS process, presents remediation alternatives designed by the U.S. Department of Energy (DOE) and its contractors to address the identified contamination and selects one of the alternatives as the best solution.

The 100-F Operable Units make up the 100-F reactor site adjacent to the Columbia River just upstream from the Hanford Townsite. The 100-F reactor was one of the single-pass, plutonium-producing operations that also included laboratories that conducted a number of

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Subject: 100-F Area RIFS & Proposed Plan

Adopted: June 7, 2013

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animal studies. The site contained the usual surface and groundwater contaminants associated with a River Corridor reactor site, as well as added impacts from the animal housing. Like 100-KE, but smaller in magnitude, the 100-F reactor now in Interim Safe Storage has a groundwater plume of spent fuel-related contaminants beneath it.

The Board offers no advice for the IU-2 and IU-6 Operable Units at this time.

The draft Proposed Plan for Remediation of the 100-FR-1, 100-FR-2 and 100-FR-3 Operable Units consists of four alternatives, one alternative with no action except for the completion of source removal of waste sites at the surface, one that relies on institutional controls and monitored natural attenuation (MNA) for groundwater cleanup (basically the same), and two that include pump-and-treat remediation for the groundwater plumes. The first pump-and-treat remediation alternative (GW-3) remediates the hexavalent chromium plume as well as the northern half of the nitrate plume, uses bio-augmentation, and uses air stripping to treat trichloroethylene (TCE). The final pump-and-treat remediation alternative (GW-4) adds treatment for the entire nitrate plume and does not include bio-augmentation.

Advice:

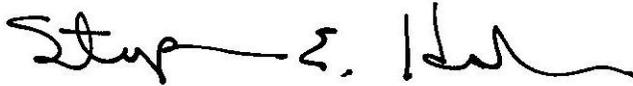
- The Board advises that DOE identify Groundwater Alternative GW-4 as the preferred alternative that as pointed out in the Balancing Criteria discussion in the Proposed Plan, “provides the highest reduction of toxicity, mobility or volume through treatment.” More importantly, (also in the Balancing Criteria) the GW-4 alternative was deemed better due to the fact that “Groundwater extraction and injection wells are also used to contain the Contaminants of Concern plumes, preventing their migration into other uncontaminated areas (like the Columbia River).” Clearly this alternative addresses both the northern and southern parts of the plume, and provides the most protectiveness of any of the alternatives.
- The Board advises that the Tri-Party Agreement (TPA) agencies choose Alternative GW-4 instead of the current preferred Alternative GW-2, which only includes the use of institutional controls (IC) and MNA for remediation of the site. There is no reasonable way to ensure that ICs will effectively protect human health for the projected 175 years that the Proposed Plan projects will be required for natural attenuation of the 16 waste sites with deep vadose zone contamination

(Table 2). These 16 sites contain vadose zone cesium-137, cobalt-60, europium-152 and -154, nickel-63 and strontium-90 contamination at levels considered dangerous to human health. If the MNA alternative were to be selected, the worst offender of these sites (118-F-8:3, with 175 years to reach cleanup levels under MNA) should be considered for removal, treatment and disposal to reduce the overall projected time needed for protective ICs. The remaining sites require less time to decay to acceptable levels (13 to 75 years) and here ICs could be considered protective over this more reasonable monitoring period.

- The Board advises that a more proactive solution, like a permeable reactive barrier, is required to prevent the 100-F strontium-90 groundwater plume from entering the Columbia River. Samples from several aquifer tubes immediately adjacent to the Columbia River have detected rising strontium-90 levels. The preferred alternative's 150 years of MNA is not a reasonable timeframe for remediation of the strontium-90 plume. Allowing strontium-90 to decay is inappropriate when tested technology is available to address the plume. This strontium-90 groundwater plume should be addressed with the tested and apparently successful apatite Permeable Reactive Barrier like that used at 100-N.
- The Board advises the TPA agencies to base cleanup decisions/actions on the goal of restoring Hanford groundwater to its highest beneficial use (per the Model Toxics Control Act [MTCA]) to protect human health, the environment, and the Columbia River as stated in MTCA regulations (see the Proposed Plan, page 24 and reference to the Comprehensive Environmental Response, Compensation, and Liability Act [CERCLA]; and the National Oil and Hazardous Substances Pollution Contingency Plan [NCP, 40 CFR 300]).
- The Board advises the TPA agencies to choose alternatives that meet the goal of unrestricted use along the River Corridor. Language in the Proposed Plan and selected preferred alternatives indicates that DOE is not considering cleanup to unrestricted use standard and is moving toward a less stringent cleanup based on the Comprehensive Land-Use Plan. The Board believes it is misleading to the public for the Proposed Plan to state "Where the toxicity and mobility of source material combine to pose a potential human health excess lifetime cancer risk (ELCR) greater than one in a thousand (1×10^{-3}), treatment alternatives should be identified (A guide to Principal Threat and Low Level Threat Wastes [EPA

1991]).”¹ The point of departure for CERCLA remediation is stated as 1×10^{-6} and the Board believes that every effort should be made to meet this standard (EPA 1997). The cleanup exposure scenario needs to be protective of children, including Native Americans exercising their treaty rights to “live along and fish” the Hanford Reach. MTCA requires use of permanent remedies when practicable and cleanup of carcinogens to meet a risk level of 1×10^{-5} for carcinogens.

Sincerely,



Steve Hudson, 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: Jeff Frey, Deputy Designated Official, U.S. Department of Energy, Richland Operations Office
Jane Hedges, Washington State Department of Ecology
Catherine Alexander, U.S. Department of Energy, Headquarters
The Oregon and Washington Delegations

¹ From the Proposed Plan, referencing 1991 EPA guidance