

HAB Advice on the Tank Closure and Waste Management Environmental Impact Statement, and DOE responses.



Issue Manager Presentation – February 9, 2013

Overarching Issues

HAB: The HAB advises DOE to issue a revised draft EIS before finalizing the EIS.

DOE: *DOE has satisfied the requirements by responding to comments and making changes where needed. DOE has done a supplementary analysis and there was early stakeholder participation in the EIS. Chapter 8 contains the process and outcomes for these interactions.*

HAB: The EIS is complicated, HAB doesn't support total EIS package, and will engage with the TPA to provide this advice.

DOE: *DOE has previously looked at previous HAB advice 144, 184 and 185; has accepted all but 3 pieces from them.*

HAB: The EIS should support Ecology and EPA in their full analyses.

DOE: *Ecology has been a cooperating agency and wrote the forward to this EIS.*

HAB: Most tank closure actions seem to lack actions to prevent further contamination due to remediation.

DOE: *Appendix U provides information on activities done to date and future actions related to CERCLA operable units. The regulatory process of closure is described in Chapter 7 (sect. 7.1); irreversible and irretrievable commitments of resources are in sect. 7.3.*

HAB: Decision on cribs-trenches-tile fields should follow the CERCLA-RCRA processes; the points of compliance should be at boundaries of the waste management unit.

DOE: *These non-tank farm areas are addressed in the EIS, but cleanup of these is under CERCLA-RCRA in the SST closure process. Points of analysis are established in the Technical Guidance Document.*

HAB: Transparency of QA/QC in the EIS is either lacking or not presented.

DOE: *The EIS was prepared in compliance with DOE Order 414.1D, Quality Assurance; Ecology conducted its own QA reviews of the draft and final EIS to ensure that QA processes were in place and being followed. Appendix S has the QA process followed for the cumulative effects inventory development.*

HAB: The EIS should discuss Washington's environmental exposure standards.

DOE: *DOE revised the EIS graphs of radiological risk in the Summary, Chapter 5 to clarify "unitless". Washington State regulations are found in Chapter 8.*

HAB: The EIS should discuss Washington's regulatory philosophy for limiting cancer risk.

DOE: *Ecology's forward tells about Ecology's role as a cooperating agency. The State laws are found in Chapter 8.*

HAB: DOE should focus on maximum likely drinking water contamination and radiation dose in order to rank each cleanup alternative.

DOE: *DOE disagrees. Under NEPA, agencies must do comparative analyses of alternatives, consider cumulative impacts, and identify mitigations to offset impacts. NEPA does not require selection of the most environmentally preferred alternative or ranking based on potential health risk. The Summary and Chapter 2, sect. 2.10, describe key findings that were used in alternative analysis.*

HAB: DOE should use consistent exposure scenarios in all of their EISs.

DOE: *The same exposure scenarios were used consistently for all alternatives.*

HAB: The EIS should contain life cycle analyses.

DOE: *Chapter 2 compares relative costs of continued operation of existing facilities, construction of new facilities, and other activities within the proposed actions for the purpose of understanding the relative costs of alternatives; but that is not life-cycle costs.*

HAB: DOE should include a two-three page high-level EIS summary.

DOE: *Given the number of alternatives, 2-3 pages of short- and long-term impacts would be at too high a level to be valuable. The EIS provides a Summary (sect. S.5), including a Summary of Short-Term Impacts (sect. S.5.3), Summary of Long-Term Impacts (sect. S.5.4), Key Environmental Findings (sect. S.5.5), and a Reader's Guide to help locate what you are looking for.*

HAB: DOE should have included an alternative that actually meets environmental standards.

DOE: *The alternatives were developed to address essential components of three sets of proposed actions (tank closure, FFTF decommissioning, and waste management), to understand potential impacts of actions in each of a range of alternatives.*

HAB: The EIS should present alternatives that include the results of remediation actions (e.g., pump-and-treat).

DOE: *Appendix S, describes waste sites included as part of past-present-foreseeable future actions in the cumulative impacts analysis.*

HAB: The EIS should consider a broader range of (the 98 possible) combinations of alternatives for cumulative risk.

DOE: *Chapter 5 describes hundreds of impact analyses from combinations of the 11 tank closure, 3 FFTF decommissioning, and 3 waste management alternatives. DOE believes the three evaluated alternative combinations adequately represent the possible range of impacts.*

HAB: There appears to be a number of unit conversion data errors.

DOE: *DOE did a thorough review of the draft EIS and corrected the errors.*

Tanks

HAB: It is urgent that the wastes in SSTs be removed as expeditiously as possible.

DOE: *SSTs have now been interim stabilized, and all work required to be performed under the Interim Stabilization Consent Decree (No. CT-99-5076-EFS, September 30, 1999, as amended) has been completed and confirmed.*

HAB: **There is uncertainty in the composition of the waste in SSTs** (Limited sampling data; Low confidence in estimates of tank waste compositions; Model presumes same composition as the tank waste had, with no change over time). **Need more conservative analysis. DOE should evaluate the actual composition (both radionuclides and hazardous constituents), mass and volume in each tank heel (and between the inner steel tank and the concrete shell of each tank) on a tank by tank basis.**

DOE: *We lack a technical basis for making more-specific assumptions about the expected compositions of the tank waste “heels”. Not much is known about the behavior of, or ability to remove, small volumes of residual waste from SSTs.*

The tank closure process requires detailed performance assessments and a closure plan. These will provide the information and analysis necessary to make specific decisions on acceptable levels of residual tank waste.

HAB: Characterization of vadose zone below tanks is limited. Estimates are needed of tank overflows, tank leaks, other planned and unplanned releases, as well as other liquid discharge areas.

DOE: *DOE revised the inventory of unplanned releases (Appendix D). DOE believes the best available data was used in the EIS, with some uncertainty. There is uncertainty regarding the volume of tank waste leaked due to lack of data (Appendix D). DOE performed a sensitivity analysis to evaluate the potential impacts, provided in Appendix U and in Chapter 7 (Section 7.5).*

HAB: Because some liquid discharge estimates used in the EIS are in error (Tc-99 in TX trenches was 200 Ci not 1.62), the EIS should reassess discharge estimates.

DOE: *DOE used the latest, most credible and referenceable inventory data available in preparing this EIS. Without a referenceable document, DOE cannot evaluate the HAB's estimates further..*

HAB: DOE will likely have to treat soil below the tanks to remove various contaminants.

DOE: *The tank closure process is extensive, involving checks and balances. The tank residuals will be tested to determine levels to be left. Appendix N analyzes vadose zone travel time to see if waste can be left in the soil below tanks with lowered infiltration.*

HAB: DOE should consider providing additional tank capacity and/or other new facilities to allow for continued retrieval of SSTs prior to the WTP beginning full operation.

DOE: *DOE does not believe that construction of additional DSTs prior to WTP operation is warranted. Construction of additional DSTs is only considered where the existing DST capacity is insufficient to support the proposed treatment schedule or design life (see Tank Closure Alternatives 5, 2A and 6A).*

Waste Management

HAB: HAB opposes importation of off-site low-level waste and mixed waste. Draft EIS doesn't have proper range of alternatives that: use Hanford for disposal (LLW), and remove waste from Hanford. The EIS should have an alternative that does not use Hanford as the national LLW repository. DOE should withdraw the 2000 ROD naming Hanford as a repository.

DOE: *DOE will defer the decision about importing waste.*

HAB: The EIS should have an alternative to exhume and dispose long-lived waste (e.g., pre-70 TRU waste).

DOE: *The EIS does not include evaluation with remediation of burial grounds. Appendix S has information about long-term cumulative impacts, including the burial grounds.*

HAB: HAB has a long held value for returning groundwater to its highest beneficial use.

DOE: *Not all actions related to cleanup are addressed in the EIS. Chapter 1 (sect. 1.4.2) tells how groundwater contamination (from cribs-burial grounds-trenches) is addressed under CERCLA. Vadose zone contamination from tank farm leaks will be addressed in SST closure.*

Groundwater

HAB: Comments include restoration of groundwater to highest beneficial use despite contamination from existing waste, future vadose zone contributions, secondary WTP waste disposal, with Tc-99 and I-129 as drivers of elevated impacts, and possible added off-site waste.

DOE: *The goal of the TC&WM EIS is evaluating the proposed alternatives for their impact. Not all actions related to cleanup were addressed in the EIS. Non-tank farm contamination (burial grounds, cribs, trenches) will be taken care of by CERCLA. Contamination cleanup of vadose zone will be considered in SST closure process.*

HAB: EIS should provide current concentrations and estimate future maximums for all COCs, not just those which maximums occurred in the past.

DOE: *Table 6-11 shows the peak concentrations of the COPCs. (some occurred in the past). Time-vs-concentration plots in Chapter 6 show past-to-future cumulative concentration trends.*

HAB: Points of analysis should be at unit boundaries.

DOE: *Points of analysis were agreed to and provided by Technical Guidance Document.*

HAB: EIS should examine additional waste treatment to remove or immobilize technetium.

DOE: *Tank Closure 2B and 3C analyze immobilization in IHLW; recycling Tc into primary waste stream to capture more in Chapter 7; Appendix E discusses Secondary Waste workshop developed a roadmap.*

HAB: The EIS should do an evaluation of groundwater Impacts without pre-1970 TRU wastes and with removal of tank gear (to be treated as GTCC-like wastes).

DOE: *The EIS does not include actions related to cleanup of non-tank farm contamination (burial grounds, cribs, trenches) to be done under CERCLA. (Appendix U has the cumulative impact analyses).*

HAB: EIS should report all chemical inventories from all disposal sites to ensure credible analysis.

DOE: *Appendix Q identifies COPCs that contribute 99% of impacts; reduced list to 26, which were used in EIS analyses (including non-DOE facilities like US Ecology).*

HAB: The EIS shows that use of caps exceeds groundwater standards; HAB advises the use RTD.

DOE: *DOE is working with CERCLA to contain groundwater plumes; Section 8.1 addresses requirements for closing waste tank systems, and Tank Closure Alternatives 2B, 3A, 3B, 3C, 4 and 6C address removal of 15 feet of tank farm soil before the barrier is installed.*

HAB: DOE should evaluate how remediation will alter groundwater flow.

DOE: *DOE agrees and revised the EIS to reflect short-term influences and long-term consequences of remediation.*

HAB: DOE should emphasize the impacts from the largest sources: BC Cribs, trenches, ponds and releases.

DOE: *Chapter 6 (and Append. S) provide the long-term impacts due to releases from non-EIS sources, and Chapter 5 discusses the long-term alternative analyses for these.*

HAB: The EIS shows that use of caps exceeds standards; the HAB advises the TPA to use RTD methods (as in HAB Advice 197).

DOE: *DOE is working with CERCLA to contain groundwater plumes; Section 8.1 addresses requirements for closing waste tank systems, and Tank Closure Alternatives 2B, 3A, 3B, 3C, 4 and 6C address removal of 15 feet of tank farm soil before the barrier is installed.*

HAB: DOE should evaluate how remediation may alter groundwater flow.

DOE: *DOE agrees and revised the draft EIS to reflect short-term influences of remediation and long-term consequences.*

HAB: DOE should emphasize impacts from largest sources: BC cribs, trenches, ponds, and releases.

DOE: *Chapter 6 (Append. S) provides long term impacts due to releases from non-EIS sources, and Chapter 5 discusses the long-term alternatives analysis for these.*

HAB: DOE should not portray lesser impacts that fail regulatory standards as “insignificant.”

DOE: *The EIS provides DOE’s analysis and compares those with existing standards (e.g., the drinking water standard).*

HAB: The EIS should include anticipated new technology to use for groundwater and vadose zone contamination.

DOE: *New technologies will be evaluated in the Vadose Zone Remediation program. This EIS analyses impacts of proposed actions currently known to be effective to retrieve and treat Hanford tank waste.*

Waste Importation

HAB: HAB wants an overall ban on import of off-site waste, and cites negative impacts shown in the EIS as rationale.

DOE: *DOE agrees there are potential negative impacts of disposing of off-site waste at Hanford.*

HAB: Fundamental difference in position – DOE will not agree to total ban, instead offers potential ways to mitigate impact, such as restricting certain radionuclides .

DOE did not address HAB comment that EIS should have included an alternative that did not include import of waste.

HAB asked for additional transportation analysis; it appears DOE did most or all of that additional analysis.

Retrieval / Capping

HAB: Concern is the difficulty of doing adequate fate and transport analysis on wastes previously disposed in soils to ascertain the effectiveness of a surface barrier to prevent or attenuate the transmittal of wastes to the groundwater (i.e., how to do an adequate performance assessment on unknown quantities and species of contaminants).

DOE: *Did not speak directly to this question but mentioned ongoing analyses, mentioning four possible residual levels in tanks that have been retrieved. DOE also did not speak about the State's requirements to have appropriate knowledge of contaminant quantities in the subsurface before applying a surface barrier.*

HAB: Issue is future risks to the public from contaminants already buried or proposed to be buried on the Hanford site that would exceed regulatory standards, and HAB requests to know remediation actions that could result in avoiding this problem.

DOE: *DOE's has a similar concern and suggested some possible paths of action. Selection of the appropriate action will depend upon how certain processes within the WTP are finalized, and which cannot be finally selected today. No discussion of the early waste disposal trenches was provided.*

HAB: The HAB suggested the possibility of separating long-lived contaminants (Tc, I) from the waste stream for separate packaging and disposal in deep geologic repositories.

DOE: *DOE pointed out the dilemma of not having a repository available in the foreseeable future, but did not discuss any of the pros and cons of that as related to the construction and operation of the WTP.*

Modeling

HAB: EIS modeling was based on one model, limited model runs and lack of documentation.

DOE: *More than 6000 Base Case models were run using Monte Carlo optimization, and doing uncertainty analysis (Appendix L); these were used to narrow the model to be used to 26 (those with the lowest amount of error to field-observed well heads). The 26 runs were evaluated with particle tracking modeling compared to the tritium plume from PUREX. Sensitivity analyses were used to evaluate a variety of transport parameters (in Appendix O).*

HAB: The EIS should document uncertainties between parts of the EIS to quantify their consequences.

DOE: *Appendices L, N, and O contain uncertainty analyses about inventory, vadose zone flow and transport, groundwater flow and transport, and some of the factors governing the degree of agreement were identified.*

HAB: Because new sampling data shows higher contamination levels (like chromium upwellings, tank leaks, etc.) HAB believes the EIS model is not conservative.

DOE: *The point of NEPA analysis is to compare the alternatives and provide information for decisions. Conservative parameters and assumptions may weaken the analysis by muting the differences between alternatives. The EIS actually does predict upwelling (Append. U) and the impacts of 1M gallons of tank waste (Append. M).*

HAB: The EIS should be more transparent about modeling development, input/output controls and uncertainty.

DOE: *Input and output data has been expanded in Appendix L which details the development process.*

HAB: The EIS should include more recent sampling data and inventory.

DOE: *The draft EIS were based on data up to 2006. The final EIS updates the data base through 2010.*

HAB: DOE should revise the draft EIS to use Features-Events-Processes analyses.

DOE: *The F-E-P approach is being used through the site-specific tank closure process (currently at Waste Management Area-C).*

HAB: The EIS should report uncertainty in tank waste composition.

DOE: *Appendix D contains the Uncertainty in Best-Basis Inventories (for tank waste used in this EIS).*

HAB: The potential effects of increased water recharge from the Black Rock dam or Climate Change should be considered in the EIS

DOE: *The EIS was revised to include analysis of increased water infiltration from either the cancelled Black Rock Dam or Climate Change (Appendix O).*

Applicable Law

HAB: The EIS does not use state cleanup standards (MTCA) for comparison to projected contamination levels (using benchmark standards instead). The EIS should show results of proposed actions compared to MTCA standards.

DOE: *The benchmark standards correspond to human health effects, and were agreed to between DOE and Ecology as the basis for comparison. This is consistent with MTCA A.*

HAB: HAB recommends reissuance of the EIS to identify mitigation that would bring landfills and other W.M. units into compliance with state-federal standards.

DOE: *Ecology, as a cooperating agency, independently reviewed the EUS to ensure it meets SEPA needs. Permits to implement the actions require a separate public comment opportunity.*

HAB: The EIS should conform to the draft CEQ guidance requiring long-term impacts from climate change.

DOE: *DOE revised its analyses on the effects of climate change. Chapter 6 has a discussion of effects of climate change. Appendix O (sect. O.6.2) describes effects of increased infiltration. Appendix V looks at rising water tables from increased recharge, including sensitivity analyses of potential impacts. Appendix G contains the impacts of the alternatives on climate change.*

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Public Involvement

HAB: DOE didn't do enough to engage the public on the draft TC&WM EIS.

DOE: *DOE says they did plenty*

DOE: *DOE said they did the best they could with a large, complex document (in terms of making it understandable for the public to comment on).*

HAB: Provided a number of suggestions for how to better engage the public in review of a new draft EIS. Since DOE did not write a new draft, those suggestions became somewhat moot (at least for this topic).