FINAL MEETING SUMMARY

HANFORD ADVISORY BOARD
March 4, 2010
Richland, WA

Topics in This Meeting Summary

This is only a summary of issues and actions in this meeting. It may not fully represent the ideas discussed or opinions given. Examination of this document cannot equal or replace attendance and public participation.

Executive Summary

Board action
The Board adopted advice regarding the draft Tank Closure and Waste Management Environmental Impact Statement.

Board business
The Board will meet again on April 8-9 in Portland, Oregon (Jantzen Beach).

Presentations and updates
K.D. Auclair and Associates presented their review of and findings from the draft Tank Closure and Waste Management Environmental Impact Statement, "Independent Review of the Draft Tank Closure and Waste Management Environmental Impact Statement, Preliminary Assessment, March 3, 2010." The Board heard perspectives from the Tri-Party Agreement agencies as well on the topic.

Public comment
Daniel Serres with Columbia RiverKeeper provided comment.

Susan Leckband, Non-Union, Non-Management Employees (Hanford Work Force) and Board chair, called the meeting of the Hanford Advisory Board (HAB or Board) to order. The meeting was open to the public and offered ongoing opportunities for public comment.

Board members in attendance are listed at the end of this summary, as are agency and contractor representatives and members of the public.

Nine seats were not represented: City of Pasco (Local Government), City of West Richland (Local Government), Franklin and Grant Counties (Local Government), Central Washington Building Trades (Hanford Work Force), University of Washington (University), Hanford Watch of Oregon (Regional Environmental/Citizen), Physicians for Social Responsibility (Regional Environmental/Citizen), Nez Perce Tribe (Tribal Government), Washington State Department of Health (Ex-Officio), and the Confederated Tribes of the Umatilla Indian Reservation (Ex-Officio).

Welcome, introductions and announcements

Steve Pfaff, U.S. Department of Energy – Office of River Protection (DOE-ORP), introduced Cate Brennan, the designated federal official for the DOE Environmental Management Site Specific Advisory Board (EM-SSAB).

Susan Leckband reviewed the goal of the meeting: To discuss draft advice regarding the draft Tank Closure and Waste Management Environmental Impact Statement (TC&WM EIS or EIS). She said the EIS will provide the basis for decisions in the 200 Area. She emphasized that the Board operates by consensus and needed to adopt the advice by consensus. The advice, when adopted, will also be submitted as part of the public comment record. The public comment period ends March 19, 2010.

Cathy McCague, EnviroIssues, commended the Board on its work developing this comprehensive and difficult piece of advice. She encouraged the Board to work together. Cathy reviewed Board meeting ground rules.

The Board meeting was audio-recorded.

Independent review of the draft TC&WM EIS and final report

Kim Auclair, president and CEO of K.D. Auclair and Associates, the Board's contracted independent reviewer, shared their preliminary assessment report with the Board. An early, draft assessment had been shared with Board members at the Committee of the Whole (COTW) meeting on February 16-17, which helped inform the draft advice that was considered today.

The following summary is from Kim's presentation. The presentation will be an appendix to the final report. The full presentation and report can be found at www.hanford.gov. The report was not ready for Board review prior to the Board meeting (Revision A, March 3, 2010).

Kim reviewed the "exculpatory language:" Presentation material and views expressed may not reflect the views of DOE, prime contractors, or regulators. Personal views are based on past experience and "prima facia" review of the TC&WM EIS materials as provided in publicly available documents and resources.

Kim emphasized that review was *not* a full and independent technical review of the full TC&WM EIS. It *was* a limited, targeted review of select aspects and perspectives of the TC&WM EIS based upon the statement of work.

Method and approach

1. Evaluated the fundamental reliability of the EIS analytical basis; checked the model and the data
2. Checked the EIS using HAB designated criteria
3. Used simple tests that one would assume would be conducted by an originating organization [e.g. DOE] to assure reasonable accuracy and fidelity of data

External independent review team summary of observations and conclusions

The following sub-header numbers correspond to report sections.

1.2.1. Did the draft TC&WM EIS analyses adhere to reasonable standards of practice?

- The EIS appears to be sufficient for the purposes of evaluating tank farms, solid waste, and Fast Flux Test Facility (FFTF) alternatives, based on industry and regulatory norms
- It does not address all elements set forth for itself, it has internal inconsistencies, and it does not address all offered stakeholder alternatives

1.2.2. Did the draft TC&WM EIS analyses adhere to the methodologies and practices as defined in the scope of the EIS, inclusive of risk?

- The EIS is not sufficiently precise to be relied upon for any final decision on a "preferred alternative"
    - Conservative estimates were made for many of the important parameters in the risk calculations
    - There were uncertainties described in the various chapters and appendices, and there was a lack of documented quality assurance/quality control (QA/QC) activities
- Cumulative risk analysis overall methodology was flawed
    - There are 99 possible combinations of alternatives that need to be evaluated for cumulative risk
    - With all the variations given for each of these alternatives, the combinations of the variations become several hundred
    - The draft EIS chose only three of the possible combinations to evaluate - one of which is the baseline "no action" alternative
    - This leaves only two of the possible 98 remaining alternatives that were evaluated
- The cumulative analysis is not adequate
    - In chapters 4 and 6 of the EIS, discussion and evaluation is for short-term consequences only
    - It states that for final selection, it might be necessary to evaluate different combinations of various alternatives
    - This is not a complete analysis of the cumulative effects for all the alternatives
- The vadose zone and groundwater remediation alternatives have not been considered in this EIS
    - Groundwater influences of various alternatives for tank closure, FFTF decommissioning, and solid waste management are considered
    - Ongoing decisions concerning groundwater operable units are not evaluated
    - Raises the question of how groundwater remediation will affect the various alternatives by altering the groundwater flow patterns
    - Conflicts with a summary statement of "long-term impact analysis indicates that the largest potential impact on human health may be due to past-practice discharges to cribs and trenches (ditches) and past leaks from single-shell tanks"

- The Optimization Strategy for Central Plateau Closure, WMP-18061, Rev. 0, September 2003, evaluated the relative risks from contamination from various sources on the Hanford Site
    - It was concluded that the BC Area cribs and trenches had the highest impact on the concentrations of technetium in the groundwater and on health risk assessments for the Hanford Site; it appears that this area has not been explicitly mentioned in the EIS
- It is not clear how any of the past practice releases are handled in the draft TC&WM EIS except for those associated with the tank farms, solid waste disposal, and FFTF

1.2.3. Did the draft TC&WM EIS analyses address or incorporate recommendations from the Hanford Advisory Board?

- The alternatives evaluated in the draft EIS appear to mostly reflect HAB advice
- There are several issues that may require further HAB action to ensure they are addressed
    - The draft EIS did not address alternatives for groundwater remediation, using the full extent of the Groundwater Decision Flowsheet (HAB Advice #197)
    - Further site characterization
    - Development of new technologies to address groundwater issues
    - Clarify fundamental assumptions for remediation of past practice releases to the groundwater (relevant to HAB Advice #173)
    - Remediation of past practice waste sites have not been evaluated in this draft EIS

1.2.4. Conclusions and findings

- In the opinion of the independent review team, the draft TC&WM EIS appears to be sufficient for the purposes of an EIS that evaluates the tank farms, solid waste, and FFTF alternatives, based on industry and regulatory norms (pending further review of the accuracy issue)
- There are no apparent adequately referenced and/or documented QA/QC procedures or protocols
- Uncertainties are not adequately quantified, with specific exceptions (further discussed in the body of the report)
- The EIS did not evaluate cumulative risk in a rigorous way and the overall methodology described is flawed
    - Specifically, only two of ninety-eight combination of alternatives were evaluated for cumulative risk (plus the base case of no action)
- The EIS has insufficient precision to make decisions among the combinations of alternatives
- In the context of cumulative risk, this draft EIS fails to deal with all the remediation options for the Hanford Site.
    - It does not present alternatives for remediation of past-practice discharges, and is unclear how the alternatives for these discharges might affect the analysis of the alternatives considered
- The modeling was deterministic and based on judgment as to what to include or exclude; it did not benefit from a rigorous Features, Events and Processes protocol for determining important parameters
- There appears to be the potential for serious and fundamental data error based on a simple check of conversion factors in chapter two of the EIS

External independent review team summary of observations and conclusions in regard to the individual treatment alternatives

3.2. Tank farm alternatives

- Alternative 2A: Existing Waste Treatment Plant (WTP) vitrification – no closure
    - This option does not seem to support HAB Advice #214 in part because single-shell tanks are not closed and the technetium stays on site
    - Not closing single-shell tanks would mean that HAB Advice #132 would be less likely to be met because more institutional controls would be needed over longer periods of time and would limit human occupation of the site
- Alternative 2B: Expanded WTP vitrification – landfill closure
    - This option seems to better support HAB Advice #214 because technetium is removed in the pretreatment process and incorporated into glass for shipment off-site
    - Of the two options under Alternative 2, 2B seems to support HAB Advice #197 better because it would leave less technetium on site, which would eventually contaminate groundwater
- Alternatives 3A-C: Existing WTP vitrification with supplemental treatment technology – landfill closure
    - Alternative 3A: Existing WTP vitrification with thermal supplemental treatment (bulk vitrification)
        - All storage forms are glass, resulting in a less mobile waste form (supported by HAB Advice #197)
    - Alternative 3B: Existing WTP vitrification with non-thermal supplemental treatment (cast stone)
        - Cast stone can be considered more leachable than glass (less supported by HAB Advice #197)
    - Alternative 3C: Existing WTP vitrification with thermal supplemental treatment (steam reforming)
        - Steam reforming could be viewed as less protective of groundwater in the long-term (less supported by HAB Advice #197)
- Alternative 4: Existing WTP vitrification with supplemental treatment technologies – selective clean closure/landfill closure
    - Some of the tanks are clean-closed and may encourage greater human use of the site (better supported by HAB Advice #132)
    - Retrieving 99.9% of the waste (better supported by HAB Advice #197)
- Alternative 5: Expanded WTP vitrification with supplemental treatment technologies, landfill closure
    - Only retrieves 90% of the waste from the tanks, which goes against all previous HAB advice on tank retrieval
- Alternative 6A-C: All waste as vitrified high-level waste
    - Alternative 6A: All vitrification/no separations, clean closure (base and option cases)
        - All waste being treated to form immobilized high-level waste means there could be less homogeneity in the resulting glass waste forms (less supported by HAB Advice #214)

        - Supported by HAB Advice #214 by providing clean closure, leaving a smaller residual contamination footprint; also provides for removal of 99.9% of tank waste
    - Alternative 6B: All vitrification with separations – clean closure (base and option cases)
        - Segregation of waste types provides for possibly more homogeneous glass forms (supported by HAB Advice #214); also provides for removal of 99.9% of tank waste
    - Alternative 6C: All vitrification with separations – landfill closure
        - Same as 6B above except 99% of the waste is removed from the tanks

3.3. Waste management alternatives

- Alternative 1: No Action
    - Complies with HAB Advice #133, which recommends full cost of imported waste must be recovered
- Alternative 2: Disposal in one Integrated Disposal Facility (IDF), 200-East Area only
    - The cost of imported waste seems to have been somewhat accounted for (HAB Advice #133) because the imported waste has to be treated before coming to Hanford; the Solid Waste EIS did not account these costs
- Alternative 3: Disposal in two IDFs, 200-East and 200-West Areas
    - The cost of imported waste seems to have been somewhat accounted for (HAB Advice #133) because the imported waste has to be treated before being imported to Hanford; the previous Solid Waste EIS did not account these costs

3.4. FFTF decommissioning alternatives

In general, since FFTF is not on the Central Plateau, HAB Advice #173 and its accompanying flow chart do not apply.

- Alternative 1: No action
    - With regard to the disposition of the sodium, this option satisfies HAB Advice #214 to keep large amounts of sodium out of WTP
    - Does not agree with HAB Advice #214 with respect to minimizing the area of contamination
    - Does not agree with HAB Advice #197 for remove, treat, and dispose as the preferred option
- Alternative 2: Entombment
    - This option has several ways of converting sodium, but it ends up in WTP, which does not agree with HAB Advice #214
    - This alternative anticipates an engineered barrier, which does not agree with HAB Advice #174 (only use engineered barriers as last resort)
- Alternative 3: Removal
    - This option considers the same ways of converting sodium, but it ends up in WTP, which does not agree with HAB Advice #214
    - HAB Advice #132, which recommends encouragement of human presence on the site, seems to best served by this option

External independent review team summary of observations and conclusions in regard to HAB advice to DOE

- The HAB advice did not appear to be uniquely applicable to many of the individual alternatives
- A number of items of HAB advice were no longer relevant to the draft EIS reviewed. These pertained to:
    - Complying with all regulatory requirements including the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), Resource Conservation and Recovery Act (RCRA), National Environmental Policy Act (NEPA), DOE orders, and the Nuclear Waste Policy Act as amended
    - Addressing, where practical, stakeholder recommendations
    - Working with that required scope of exposure scenarios as defined in the NEPA process
    - Advice on specific remediation alternatives to be evaluated, such as HAB Advice #180 on BC cribs, focused feasibility study (FS), and proposed plan
- Specific outdated HAB Advice related notes:
    - HAB Advice #166, U Plant Closure Plan, was out of scope for this EIS
    - HAB Advice #180, 200 BC Cribs, focused FS and proposed plan are implicitly covered as part of tank closure options; it is not treated separately in the tank closure alternatives
    - Contains detailed feedback from the Washington State Department of Ecology (Ecology), which present an alternative viewpoint on the HAB advice; feedback is based both on regulatory focus/limitations and Ecology priorities
    - Advice regarding public comment periods for the EIS is no longer relevant since the EIS draft had been issued
- HAB advice did not appear to clearly distinguish between the more limited scope/purpose of the EIS process (NEPA) and the more specific, and at times more detailed, RCRA/CERCLA permitting and closure process
    - No mention in HAB advice of working with DOE's performance assessments and their associated with long terms effects
- The independent review team added HAB Advice #185 to the list of items evaluated because it not only served as an excellent summary of HAB concerns, but also detailed Ecology's responses to those concerns

Kim noted that last night, he found a data error in the draft TC&WM EIS and subsequently found additional errors. He thought it was concerning because it shows a quality assurance trend. Kim said they are simple but needless errors that cast undo credibility concerns about the EIS, if in fact they are simple, editorial errors. He said if they are errors that are carried forward in the analysis, which is beyond his scope, they could be significant. Because Kim just discovered the errors, an additional section was created and distributed separately from the current draft report. Kim will include this in the final report (that was available on March 11, 2010).

Kim thought DOE and/or the Board should consider soliciting a more detailed, independent technical assessment of the EIS. He thought a normal QA/QC process should have found the errors.

Discussion

Pam Larsen, City of Richland (Local Government), commented that it would have been more helpful if Kim had provided a copy of the final report before today.

Pam asked if Kim thought the Board's draft advice about the EIS was on the right track. Kim did not want to violate his neutrality, but though the advice was generally consistent with past advice. Kim said the advice requested an additional comment period, review and explanations the layperson can understand. He

said it is a complex document, even for experts, and the current summary of the EIS is organized differently from the EIS, making it difficult to use the summary to move through the document. He suggested that the Board consider advising DOE to create a summary document that shows a better "roadmap" for reviewing the draft TC&WM EIS. He also suggested that someone thoroughly review the EIS for its technical accuracy, specifically for unit conversion.

Pam asked why Kim thought it inappropriate for the Board's request to use regulatory compliance as a guiding factor. Kim said he did not mean that. He said the EIS process if designed to be broad in order to lay the framework for cleanup. Kim thought some of the Board's advice is better offered in a different "venue," such as during a RCRA/CERCLA process [records of decision (RODs)] that is more detailed and constrained. Kim said EISs are bounded to certain areas, to gain understanding and move toward a decision. He commented that he has seen many processes result in a stalemate with no action, which is not desirable.

Dick Smith, City of Kennewick (Local Government), commented that he too had thought there were a number of issues in the draft advice that are better addressed later in the process (e.g. ROD development). He found Kim's comment useful.

Ken Niles, Oregon Department of Energy (Oregon DOE), said he was struggling with the timing of the report and advice development. He appreciated the report but thought the Board could have used it earlier in advice development. Ken thought the Board should think about how to include the report's key points that are currently not in the draft advice. Board members could work during lunch to draft advice bullets that incorporate key findings from the independent report.

Kim noted that he was not available after his scheduled agenda time, but other staff members would be available. He thought except for the accuracy issue, the draft advice captured the key points.

Jeff Luke, Non-Union, Non-Management Employees (Hanford Work Force), noted that the Board should be careful how they utilize Kim as a resource, since he is in a neutral role. Jeff asked why the review looked at FFTF. Kim said they reviewed it because it was part of the EIS. Dennis Faulk, U.S. Environmental Protection Agency (EPA), said plans are in place to decommission FFTF through the CERCLA process, using provisions for the TPA. There are milestones in the TPA for FFTF.

Gerry Pollet, Heart of America Northwest (Regional Environmental/Citizen), commented that the Solid Waste EIS, which led to the development of the TC&WM EIS, was flawed. He asked what could be done to resolve the three major areas that were found to be inadequate in the Solid Waste EIS. Kim said they did a fundamental review checking for words like "quality" and "QA/QC." Kim said he was sure that DOE actually conducted QA/QC reviews, but it was not referenced. He emphasized that the TC&WM EIS was probably suitable for industry practice, but QA/QC methods and work should be better referenced in the report.

Jeff said NEPA requires a description of a reasonable range of alternatives; he asked how many alternatives are adequate. Kim said in principle, the alternatives they selected to evaluate could have been sufficient, but he did not find enough evidence to understand, which is why the report said looking at two out of 98 possibilities was insufficient. He said DOE should explain why they did what they did.

Advice on the draft TC&WM EIS

The draft advice under consideration was first developed at the February 16-17 COTW meeting, where many in-depth discussions were held about the draft TC&WM EIS. From that meeting, the draft was developed by several authors, who wrote different sections of the advice. Most sections contained a background sub-section followed by comments and advice points. The discussion summarized below reflects conversations that ranged from substantive to editorial to organizational. Interested readers should see the final Advice #229 *Tank Closure and Waste Management Environmental Impact Statement* and the attached independent report *Independent Review of the Draft Tank Closure and Waste Management Environmental Impact Statement, Preliminary Assessment, Final Rev.0, March 6, 2010.*

Overarching comments
Susan Leckband described this section as a compilation of what the COTW attendees thought were overarching topics. It provides an introduction or background, and then goes into overarching advice points.

Tanks
Dirk Dunning, Oregon DOE (State of Oregon), and Harold Heacock, TRIDEC (Local Business), reviewed and revised draft advice points about tanks and tank waste that were developed through the COTW.

Waste management
Gerry and Shelley Cimon, Public-at-Large, authored this section which dealt with groundwater, waste importation, retrieval/capping, chemical inventory, modeling, and applicable law.

Public involvement
Gerry authored the section on public involvement. Seven of eight hearings have been held for the EIS. He noted that the Public Involvement and Communications Committee (PIC) collaborated on the hearings, but late in the process. He noted that the advice called for another round of notice, comment and hearings for a re-issued draft EIS.

Susan Leckband encouraged the Board to provide constructive comments on the draft advice. She said launching an objection requires providing a proposed language change.

Agency perspective

DOE-ORP
Mary Beth Burandt, DOE-ORP, emphasized that the draft TC&WM EIS is a planning tool. Agencies complete EISs to identify priorities, move forward, go through permitting processes and reach treatment. The EIS evaluates alternatives, some of which DOE does not want to occur. Mary Beth hoped that people will become more focused on how to get through the EIS process to an acceptable end point. She asked the Board to cite a specific example or document when it discusses waste inventory levels in the advice.

Ecology
Suzanne Dahl, Ecology, said Ecology agrees that the goal of any remediation should be to protect against further soil and groundwater contamination. Groundwater cleanup and monitoring will occur no matter what happens with the TC&WM EIS. The cumulative analysis was based on the Central Plateau Strategy. Suzanne said capping without removing and treating waste is unacceptable and further mitigation is essential in any Central Plateau decision. She said caps do not work in some of the most significantly contaminated areas.

Suzanne said Ecology agrees that the EIS does not include an alternative that brings contamination to a level below a variety of standards. She said the state will require mitigations that are enforceable to address such issues. One example may be a site-wide cumulative impact assessment that the TPA agencies could use when budgeting, and to use to ensure total contamination does not worsen. She thought a TPA milestone would be a good way to direct the work. She noted that Ecology believes performance assessments are needed for every landfill. Suzanne said retrievals should be maximized – the difference between 99% or 99.9% retrieval makes a difference in risk. The TPA requires that as much tank waste should be retrieved as technically possible, at least 99% or more if possible.

Suzanne said the mitigation action plan that comes after an EIS will need to identify distinct approaches for all impacts, near- to long-term. Permit conditions will be included to address such issues; the RCRA Site-Wide Permit will be used to cover corrective actions.

Suzanne noted that Ecology accepting the TC&WM EIS is contingent on a vadose zone and groundwater mitigation plan. Ecology agreed with the Board that a preferred alternative should not result in the permanent loss of an aquifer. The deep vadose zone is an issue; peak concentrations occur at the Central Plateau boundary in 2050. Suzanne said mitigation options should be developed soon. She noted that another EIS is not needed on the vadose zone or groundwater.

Additionally, Suzanne stated that single-shell tank retrievals need to continue regardless of any WTP delays. The recent negotiations have identified a contingency plan if WTP is delayed. Ecology is also concerned about supplemental treatment. Suzanne said Ecology believes the best supplemental treatment option is a second low-activity waste facility (LAW). She did not think it wise or necessary to develop other solutions when a viable solution exists now.

Suzanne emphasized that offsite waste poses a significant impact. It needs to be mitigated, treated or the inventory changed, or it should not be accepted at Hanford. She said Ecology would like to see in the final TC&WM EIS a preferred alternative that does not include the importation of offsite waste.

EPA

Dennis said EPA has a statutory role in the TC&WM EIS development and is currently reviewing the draft document. EPA will provide comments to DOE by March 19. Dennis noted they are seeing some of the same issues the Board highlighted in the draft advice, particularly with transparency related to modeling work.

Dennis said the EIS is huge and attempts to cover an immense amount of cleanup. He said it is trying to evaluate three distinct programs, which is difficult and could be the source of many of the problems. He said the majority of the actual cleanup will be done under CERCLA or RCRA. Dennis commented that the EIS is good because it highlights that substantial work is needed for the vadose zone and groundwater to avoid significant environmental impacts.

Dennis cautioned against "paperwork paralysis;" ultimately, the agencies must get on with cleanup. He asked the Board to consider what the EIS and subsequent RODs need to support, and then work collaboratively to achieve it.

He provided some comments on the advice, and noted that the Board should be careful about how it describes its desires for groundwater. He thought instead of referring to points of compliance that are usually located at the boundary of a waste site (not the boundary of the plume), the Board might want to refer to entire groundwater plumes.

Dennis said the concept of cumulative impacts can be a double-edged sword. Holistic risk assessment is valuable, but it can, at times, overshadow significant risks. He said that is why EPA likes to make narrower CERCLA decisions, looking at each waste site to fully understand its contribution to overall risk.

Dennis said EPA does not think a separate EIS should be done for groundwater and the vadose zone. EPA believes that its work, analyses and decisions should be completed under CERCLA. He said EPA does not have as much control over an EIS, its findings and alternative selection. He thought that is what Kim meant when saying some advice points were better suited at different decision-making situations.

Discussion

Dick asked if Dennis felt the EIS should include an analysis of possible remediation actions for groundwater and the vadose zone. Dennis thought it would helpful if the EIS acknowledged that there are other programs making decisions for groundwater and the vadose zone. Mary Beth noted that the EIS does that, but they can work on describing it better, without predetermining the outcome of the CERCLA process. Dick commented that the EIS does not attempt to consider any remediation possibilities for the vadose zone and groundwater; as a result, the cumulative impacts from groundwater turn out to be excessive in terms of risk, and are not useful for making decisions.

Shelley asked why most of the waste sites were being cleaned up under interim actions, not final RODs. She asked if that should be discussed in the EIS. Dennis said a final ROD was issued for 200-ZP-1. He said in the 1990s, the agencies made a choice to continue with cleanup, which meant using interim actions. They are in the final RI/FS process for areas along the Columbia River and will eventually select final actions.

Jeff asked if cribs and ponds are outside the scope of the EIS because they are not in the tank farms. Dennis said yes, those decisions will be made under CERCLA or the state's corrective action program. Suzanne

said there are places where cribs and trenches are adjacent to tank farms, so particular decisions at a tank farm (like building a cap), would affect nearby cribs and trenches. She said even though they are past practice and addressed under state law or CERCLA, they are not strictly part of the EIS, but are affected by its decisions.

Gerry disagreed and said according to NEPA, it is part of the scope if it is a related or connected action. He said one of the Board's main concerns is DOE failed to recognize this. He was concerned about not integrating the State Environmental Policy Act (SEPA) and the potential for needing to redo the EIS at the state level. He said SEPA is more specific about incorporating mitigation and remediation activities. He said adjacent cribs and trenches are part of the EIS scope and decision-makers should not ignore public comments made on the topic.

Al Boldt, Hanford Challenge (Hanford Work Force), said the Council on Environmental Quality (CEQ) defined cumulative effects as the impacts on the environment that result from the incremental impact from actions from past, present and reasonably foreseeable actions – regardless of what agency or person undertakes the action. He said the EIS might not make a decision for the vadose zone and groundwater, but they should be covered. Al added that pre-1970 transuranic (TRU) waste and the U.S. Ecology landfill should be included in the EIS. Dennis said pre-1970 TRU waste is not covered by the TPA, but is in operable unit decisions.

Mike Korenko, Public-at-Large, commented that protecting the vadose zone from sources of contamination is good, but CERCLA only "keeps the horses in the barn; the stampede is in the vadose zone." He said there should be specific alternatives in the EIS that identify how to clean up the vadose zone. Mike thought the agencies should consider thinking the vadose zone as a whole that needs a specific remedy, rather than trying to apply a waste site remedy to the vadose zone that was affected by that waste site.

Jeff wanted to ensure that all statements in the advice are true. Does this EIS meet SEPA requirements? Does the EIS appropriately discuss connected actions? Suzanne said Ecology is in the process of deciding if it will adopt all or part of the EIS as a SEPA document. If they do, they would insist on enforceable mitigations and permit conditions. She noted that the quality of the EIS is an issue; Ecology anticipated there being QA/QC questions and concern about the quality of the document. SEPA does look at connected actions. Ecology hopes to adopt at least portions of the document so they can move forward with cleanup actions.

Jeff wanted to say "most" tank closure and waste management alternatives lack necessary actions to ensure soil and groundwater are not further contaminated. Gerry disagreed and said no alternatives do that. Jeff said Alternative 6A and 6B require clean closure. Mary Beth agreed that 6A and 6B require removing all tanks, digging out all contaminated soil, and removing ancillary equipment. Suzanne added that 6A and 6B still show a peak core zone boundary above drinking water standards in the year 2050. She said it appears that contamination will result from contaminated soil that is currently located above the groundwater level, and DOE cannot get to it quickly enough before it gets into the groundwater. She thought Jeff and Gerry were both right, in a sense.

Emmett Moore, Washington State University (University), said the EIS contains many technical errors. He proposed the Board advise that these errors should be corrected. Dirk added that there are conversion errors as well. The Board decided to reference the independent report in the draft advice.

Steve Pfaff thought the Board should review all advice points to ensure they are clear and directive.

Overarching section

Gerry said in the Overarching section, the Board should advise DOE to read the independent report, and attach the report to the final advice. It should also be submitted as a comment.

Tony James, Benton-Franklin Public Health (Local/Regional Public Health), thought the advice should include a summary of how the state regulates cancer risk. The advice should be clear if it is referencing individual risk or collective dose. Maximum risk to an individual should reflect the state's regulatory limits on exposure. Tony thought the EIS should put those risks in perspective. He thought the outcomes of the

alternatives should be expressed in a manner understandable to the public, and the Board should remove some unnecessary details. Tony thought the EIS should comment on Washington State's view of acceptable risk. Barry Beyler, Oregon Hanford Cleanup Board (State of Oregon), added that when they discuss levels acceptable to stakeholders, the advice should identify specific stakeholder groups. Dick thought the risk analysis in the EIS is not understandable. The Board decided to split this advice point into multiple points and clarify.

Maynard Plahuta, Benton County (Local Government), said the lifecycle report [the report that will be required by the TPA to identify cost and schedules for particular cleanup activities] should include analyses that do not use discounted dollars.

Steve Pfaff commented that the EIS does not deal with natural resource restoration costs. Ken Niles said a full lifecycle cost cannot be evaluated without considering natural resource damage assessment costs.

Dick proposed that mitigation actions should be identified in the EIS but not evaluated; he thought that would take a number of years and cause delays to the finalization of the EIS. Suzanne said she has seen that done. Susan Leckband thought that is what Dennis meant by identifying future requirements that may be required for future actions. Jeff said he would want to know the mitigation actions if DOE selects an alternative that is not as protective as the Board would like. The Board thought mitigation actions need to be identified in the EIS.

Dirk suggested an advice point to request that as part of the cumulative risk analysis, DOE should present alternatives that are based on the anticipated remediation actions for the vadose zone and groundwater conducted under CERCLA and RCRA. Jeff commented that groundwater is not addressed nor part of the scope of the EIS. He thought it seemed like the Board wanted to advise that the EIS scope should include groundwater. He cautioned that if DOE does that, there was the possibility that EIS development could drag on and result in potential cleanup delays. He asked the Board to consider that possible consequence. Ken Niles said the EIS discusses groundwater many times. He did not think the proposed bullet expanded the scope of the EIS.

Tanks section

Steve Pfaff clarified that billions of gallons of water were not discharged from tanks into the ground. He said it was more accurate to say that hundreds of millions of water was discharged. He also noted that using the term "overflow" to describe this would not be accurate; "discharge" is a deliberate action whereas "overflow" is not. Tony noted that an overflow would be similar to a leak, which would be more likely to be contaminated. Purposeful discharges were most likely treated to some extent.

Floyd Hodges, Citizens for a Clean Eastern Washington (Regional Environmental/Citizen), wanted to add T-19 crib to the paragraph regarding the amount of waste particular areas received. The Board was concerned that this and other problems may indicate a more systemic problem of underestimating the amount of vadose zone contamination.

Jeff was uncomfortable with the statement that says "leak estimates probably understate the real size of the releases." The Board decided to provide a reference and to refer to estimates in general, not "leak" estimates.

Referring to the advice that the EIS should provide a reasonable alternative for providing additional tank capacity or other new facilities to allow for continued retrieval of waste from single-shell tanks prior to WTP beginning full operation, Barry asked if the Board should provide a definition for what they think that should be. For example, he did not think it reasonable to propose that DOE use single-shell tanks to store waste. The Board debated advising DOE to consider blending tank waste. Shelley was concerned that blending can lead to increased tank waste volume. Gerry thought the whole point of providing a reasonable alternative is to examine if DOE should consider building more double-shell tanks or blend tank waste.

Regarding the advice point that DOE should evaluate an alternative for tank waste management that results in compliance with all applicable standards, Steve said DOE intends to treat all waste in tanks and meet applicable standards. He asked what, specifically, the Board wanted DOE to do differently. Gerry said it

referred to long-term results, and thought there was not one alternative that did not contain a "poison pill." Dick thought the bullet could be deleted, but would not oppose keeping it. The Board decided to keep the bullet.

The Board changed terms regarding "unknown" leaks to "undated" leaks.

Floyd said DOE should revisit discharge estimates for cribs, tile fields and all tank farms, not just T, TX and TY tank farms.

Waste management section

Betty said some of the background content read like advice, and suggested moving some parts to the advice section.

Jeff noted that NEPA requires a range of reasonable alternatives to be evaluated, not *all* reasonable alternatives.

Dirk provided language to revise some of the background section into advice points.

The Board revised the language about using a disposal facility to not specifically say "licensed," as that could be interpreted as using IDF.

Groundwater section

Shelley thought they should recognize what Dennis said earlier, that groundwater should be restored to beneficial use throughout the contaminated groundwater plume. Ken thought it should be simplified and brought back to a typical, Board values level by saying that Hanford groundwater should be returned to its highest beneficial use. The Board decided to keep the specific language about the plume.

Betty suggested moving the advice bullet about withdrawing the 2000 ROD about importing waste to the Waste Management section.

Dirk provided new advice bullets to capture information presented in the independent report. One included a statement that all actions analyzed individually should meet regulatory requirements. Jeff commented that each analysis does not have to meet a regulatory compliant end. A mitigation plan would need to be presented for those that do not. He said that is what the Board has previously advised DOE. The Board agreed.

Waste Importation section

Jeff commented that the Board often criticizes DOE for using unit-less numbers, so it should follow its own advice and provide units and references instead of describing increasing contamination levels in groundwater as "tenfold."

Susan Leckband took a time check; the Board was close to losing its quorum, so it verbally approved the advice up to the end of the Waste Importation section.

Retrieval/Capping section

Board members discussed minor edits to this section.

Chemical Inventory section

Jeff requested references for statements such as "certain chemicals are missing or under-reported from the non-tank inventories." He said the Board asks DOE to provide references for many things, so they should do the same. The Board will find a reference for this statement.

Modeling section

Floyd suggested including a statement about the need to consider the impacts from global climate change. The Board rearranged advice bullets form the section of Applicable Law to the Modeling section.

Bob Suyama thought the advice should reference Black Rock Dam as having the potential to increase water flow and filtration through the Central Plateau, similar to the potential impacts from global warming. Maynard commented that increased water flow can result from many things; an increase in infiltration could be a result of climate change, but it could also result from something as simple as multiple years of heavy snowfall. The Board rearranged some advice bullets to capture all comments and organize different advice points in the best place possible.

Jeff said the Board should include that the Board believes the EIS model is not conservative. It was added to the advice.

Applicable Law section

Emmett commented that the Board should not speak for Ecology and whether or not they will use the TC&WM EIS to fulfill SEPA EIS requirements. He thought it was inappropriate. Gerry said the Board advises Ecology just as it advises DOE. He thought the draft EIS was not adequate to meet SEPA requirements, and the Board should state that. Emmett agreed that it was appropriate to advise Ecology, but not to speak for them. The advice bullet was revised.

Public Involvement section

Jeff asked about the statement that DOE presentations discouraged public input. He asked if it were true that DOE said they did not want to recombine alternatives. Dick said it was true. Maynard thought that was the heart of the problem – DOE does not want to mix and match to come up with a suitable alternative.

The Board moved around many bullets, moving statements from the comment portion to the advice portion, and ensuring that comments are properly captured in the comment section.

Ken said that he did not like that at the public hearings, the public had to choose between listening to a DOE presentation and alternative perspective presentations. The two presentations were held at the same time. He thought that was an unnecessary conflict and PIC should look at advising to make them more compatible.

Tony commented that it was important to show the long-term impacts as well as benefits from preferred alternatives. He thought the public needed to see the balance.

Emmett asked if the Board meant that the draft EIS should be revised and reissued for public comment. Susan Leckband said yes, it was identified in the beginning of the advice that was what the Board wanted.

The advice was adopted. It will be sent to Ecology, DOE-ORP, DOE-RL, DOE-HQ and EPA. Pam asked if sending it to DOE-HQ affected DOE-RL and DOE-ORP's ability to respond to the advice. Steve said no, the detailed response will come through the EIS comment response.

The advice will also be submitted as part of the official comment period on the draft TC&WM EIS. The K.D. Auclair report will be included as an attachment to the advice.

Public comment

Daniel Serres is the conservation director for Columbia RiverKeeper (CRK). He said the TC&WM EIS is critical, and CRK has hundreds of people engaged and concerned about impacts to the Columbia River. CRK has attended hearings and recently attended a successful panel in Eugene, Oregon. Daniel commented that the overwhelming reaction is that the TC&WM EIS is inadequate. He said it was a "jaw dropper" that there is no alternative that does not include importing new toxic and radioactive waste to Hanford. He

questioned the legality of not providing such an alternative. Daniel said it did not make sense and thought it was a clear violation of NEPA. He supported the Board in advising DOE to broaden alternatives to ban the importation of offsite waste. Daniel also commented that digging down 15 feet below a tank was not deep enough; there could be significant space and impacts between 15 feet under a tank and before reaching groundwater. He said the EIS should review more vadose zone excavation, particularly in areas where capping is planned.

Daniel thanked the Board for letting him provide comment, and he looked forward to being seated on the Board as the representative for Columbia RiverKeeper.

Board business

The Board will meet in April. Specific committee meeting dates were not identified.

Attendees

HAB MEMBERS AND ALTERNATES

Barry Beyeler, Member	Maynard Plahuta, Member	Floyd Hodges, Alternate
Tom Carpenter, Member	Gerald Pollet, Member	Tony James, Alternate
Norma Jean Germond, Member	Keith Smith, Member	Mike Korenko, Alternate
Harold Heacock, Member	Bob Suyama, Member	Liz Mattson, Alternate
Becky Holland, Member	Gene Van Liew, Member	Emmett Moore, Alternate
Pam Larsen, Member		Nancy Murray, Alternate
Susan Leckband, Member	Al Boldt, Alternate	Wade Riggsbee, Alternate
Jeff Luke, Member	Shelley Cimon, Alternate	Dave Rowland, Alternate
Rick Jansons, Member	Sam Dechter, Alternate	Dick Smith, Alternate
Ken Niles, Member	Dirk Dunning, Alternate	Betty Tabbutt, Alternate (phone)
	Ken Gasper, Alternate	Steve White, Alternate
	Laura Hanses, Alternate	

AGENCY, CONTRACTOR, AND SUPPORT STAFF

Paula Call, DOE-RL	Madeleine Brown, Ecology	K.D. Auclair
	Rick Bond, Ecology	
Stacy Charboneau, DOE-ORP		Tammie Gilley, EnviroIssues
Lori Gamache, DOE-ORP	Dennis Faulk, EPA	Susan Hayman, EnviroIssues
Steve Pfaff, DOE-ORP	Robin Paul, EPA	Hillary Johnson, EnviroIssues
		Cathy McCague, EnviroIssues
Cate Brennan, DOE	Sharon Braswell, MSA	
	Jane Campbell, MSA	
Mike Priddy, WDOH	Barb Wise, MSA	

MEMBERS OF THE PUBLIC

Kathryn Pedrew, GAO	Daniel Serres, Columbia Riverkeeper	Jean Vanni
Nancy Kinter-Meyer, GAO	Harry Babad, Auclair and Associates	