

FINAL MEETING SUMMARY

**HANFORD ADVISORY BOARD
RIVER AND PLATEAU COMMITTEE MEETING
August 12, 2008
Richland, WA**

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This is only a summary of issues and actions in this meeting. It may not represent the fullness of ideas discussed or opinions given, and should not be used as a substitute for actual public involvement or public comment on any particular topic unless specifically identified as such.

Welcome and Introductions

Maynard Plahuta, River and Plateau Committee (RAP) Chair, welcomed everyone and introductions were made. The committee approved the May meeting summary. Susan Hayman conducted the committee leadership selection process. The committee confirmed Maynard as Chair of the committee. Bob Suyama was selected as the Vice Chair earlier in the year.

PW 1/3/6

John Morse, Department of Energy – Richland Operations Office (DOE-RL), said DOE held workshops in the spring on PW 1/3/6 to get advice from the Hanford Advisory Board (HAB or Board) on the draft document. John said DOE-RL sent a letter to the Board on July 22 providing a schedule for draft B. John said they plan to incorporate the ideas from the Board and suggestions made by the Environmental Protection Agency (EPA) into draft B. By the end of February or early March the draft will go to EPA for review. John thought that after EPA has a chance to review the document it would go out to the public for additional comments and discussions. John said it will take from now until February/March for the engineers to revise the document.

Regulator Perspectives

- Dennis Faulk, EPA, read a section from EPA’s July 30 response to the HAB letter about how DOE is revising the document based on HAB advice. Dennis said he will be most interested in what the draft alternative will be in the next draft of the

document. DOE previously proposed to cap these sites which Dennis said was not acceptable to EPA. Dennis said EPA did not propose an alternative approach, but suggested DOE consider a change in approach. Dennis added that the cleanup of this waste site will be a difficult decision and DOE is going through contractor transition so there is a lot going on.

Committee Discussion

- Maynard commended DOE on the workshop they held. John promised to keep an open process but also said they have to keep contractors to task and get the document completed in a timely manner.
- Shelley Cimon said Washington State University (WSU) received a \$1 million grant to study plutonium movement. Shelley thought that the decision process for this waste site seemed disconnected from this money. John said any decision will involve additional field verification and work up front which will take a number of years to evaluate. John said one alternative might include doing more research. He said as DOE moves forward they will take advantage of everything going on including the information that the WSU work may provide. John said this document will be reviewed every five years and DOE will have the chance to reevaluate at that point if new information is available.
- Maynard thought that if the decision is to cap this site it would be harder to reevaluate after the review and change the approach. John said it would be many years before anything gets capped on site. Dennis added that if the decision is to dig up the contamination then the work needs to start soon because it will take time to remediate. If the decision is to cap, however, it does not need to be done right away because the capacity at the Waste Isolation Pilot Plant (WIPP) for transuranic (TRU) waste will not change anytime soon.
- Susan Leckband said there is a Site Specific Advisory Board (SSAB) meeting in September at headquarters (HQ) where the HAB will share accomplishments from the past year. Susan said one accomplishment the Board is planning to highlight is the PW 1/3/6 workshop. Susan congratulated the agency for the involvement. Susan said the Board will also report on the 200 Area flow chart issued last year which is intended to help transfer technical information into public decision making processes.
- Dennis said a decision has been made on a final remedy for the subsurface area at Idaho and DOE is planning to remove 5.7 acres of material. Dennis said he will distribute the record of decision (ROD) for this work to the committee. Maynard asked what depth the contamination is at in Idaho. Dennis said the pits are 10-12 feet deep and will be dug out to the bottom.
- Harold Heacock said the Environmental Impact Statement (EIS) will be out someday and the results of the EIS are important in making a decision on this site. Harold said there are no numbers currently available to evaluate the risk of this site. Dennis said that there are risk assessments for this area. Dennis said from a purely risk perspective there are various alternatives to choose from. The EIS will include all of

the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) decisions.

- Dick Smith said he recently reviewed the ZP1 groundwater feasibility study (FS), and found no connection between that plan and the issue of the vadose zone feeding the groundwater. Dick asked how John's team is dealing with this issue. John said the carbon tetrachloride is covered under the PW 1/3/6 ROD. John said DOE has conducted studies to see how the vadose zone is contributing to groundwater contamination, and the studies have indicated that it is not contributing in a meaningful way. John said generally it does not look like there is a continuing source of contamination to the groundwater; there is just a lot of contamination in the groundwater. John said DOE is working on some interim actions for the vadose zone as well. John agreed that it is odd that they are separated by area but said they are keeping an eye on this issue. Dennis added that there was a report issued that concludes that carbon tetrachloride is not leaching into the groundwater. However, there is a concern about the technetium in the groundwater and the agency will need to decide on a technology to deal with it.
- Wade Riggsbee asked how the transition of contracts will impact the schedule. John said inevitably a little time and knowledge will be lost while getting people up to speed, but DOE is hoping for a seamless transition.
- John Gear asked if the timeframe for the ZP1 evaluation will be 1000 years. Dennis said that, in general at Hanford, 1000 years has been used in the evaluations. ZP1 is written differently because the agencies believe drinking water standards will be met in 150 years. John agreed that drinking water standards could be met, but said if the analysis is only run for 150 years, it will miss catching potential recontamination. Dennis clarified that while the analysis is just for 150 years it is assumed that there will be groundwater monitoring in perpetuity. John Morse added that ZP1 is designed to clean up groundwater contamination and there are other decision processes for dealing with recontamination of the groundwater.
- Dick said he had trouble finding in the ZP1 FS any detailed calculations that showed how the levels would be achieved in 150 years. John said it assumes a-biotic degradation; he said the calculations are in there but they are estimates. Dick clarified that he did not find anything in the FS that convinced him a-biotic degradation would take care of the contamination. He said the many contaminants at this site will be removed at different rates through natural attenuation. Dennis said the premise is that all the other contaminants will be wiped out and the attenuation is for the carbon tetrachloride at 5%. John added that at other sites with similar organics, this type of degradation is seen and the rate DOE is using is conservative.
- Susan asked what the schedule is for PW 1/3/6. John said EPA will get draft B in February. Dennis said he is hoping to see a preliminary draft in December. He said if it is a great proposed plan, it would take a few months to get through and then go out to the public. However, if EPA still has issues with the plan it could take longer. John suggested that DOE come back to the committee in March to brief them on the proposed plan and FS.

- Maynard asked what the committee follow-up action should be. Dennis said the agencies could plan come back to the committee in March to discuss the proposed plan and FS. Maynard said if there is any possibility of early discussions on this topic the committee would appreciate the opportunity to participate. Dennis said it will depend on when the contractors have a draft available that is acceptable.
- Susan asked if there are other waste sites that will go through the decision process while this report is being revised. Susan was concerned that other decisions would be made in the meantime that may have a cumulative impact on the cleanup decisions of the site as a whole. Dennis said CW5 (including Z ditches) is the next one up and is currently in regulatory review. Susan suggested the committee track this in their work plan so it does not get lost. Dennis offered to brief the committee at the next meeting on CW5.
- Ken Gasper asked where the progress report on the expanded pump and treat for carbon tetrachloride removal comes in to this. John said DOE is upgrading the current system and the changes are reported annually. John offered to provide a status update on ZP if the committee would like to hear about the pump and treat work. Maynard thought that an update in November might be appropriate. Ken clarified that the committee is interested in learning how this data collection tracks with the decisions in DOE's planning.
- John said there will be a workshop held on November 18th to talk about BXBY data that has been collected over the last year. John said the workshop is open to everyone and will be an opportunity to learn about the work and comment on it.
- Shelley asked what the status is for the data quality objective (DQO) process for reactors. John said that is ongoing and they are getting close to finished with 100 D Area. John explained the work was an assessment of the additional data needed to complete the ROD. John said the work for K Area has started as well. Maynard said that Todd Martin suggested that the committee have a presentation on Vista next month. John said Vista is a program that allows the team to superimpose the data they found with the vadose zone data. John said the presentation on Vista would take a half hour or so.

Technology Development Efforts

Mike Thompson, DOE-RL, provided the presentation on the technology development efforts DOE-RL is working on. Mike said \$10 million was allocated for technology development projects related to the protection of the Columbia River in 2006. Mike said DOE-RL reviewed the key contaminants and selected projects based on risk; half of funds were applied to hexavalent chromium. Mike described the chromium testing that is being conducted in the 100-D & 100-K Areas:

- Injection of micron size Iron into deteriorating portions of the In Situ Redox Manipulation (ISRM) barrier: Began on Friday with injection into a single well test

- Electro-coagulation for accelerated cleanup of the northeastern plume in the 100-D Area: used iron plates to convert chromium 6 to chromium 3.
- Accelerated bioremediation: Used to eliminate recharge using oxygenated water.
- Geochemical/mineralogical study of chromium in the vadose zone: Includes uranium remobilization using molasses and vegetable oil.
- Refining the location of the chromium source in the 100-D Area: Narrowed the concentrations down to an area the size of a hectare which will allow a broadcast remediation technology.

Mike also discussed the technology tests for strontium 90 (sr-90) in the 100-N Area, uranium in the 300 Area, and carbon tetrachloride in the 200 Area. The sr-90 tests include sequestration of subsurface contamination by surface infiltration of an apatite solution and phytoremediation along the riparian zone. Mike said the phytoremediation research needs to show that within a reasonable amount of time an amount of sr-90 would be removed. Mike briefly discussed the polyphosphate injection work in the 300 Area to test the treatability of uranium. Mike said the technology injected phosphate into the ground to get autunite formation. The test was successful at forming autunite, but the velocity of the groundwater in this area was so fast that the injections did not allow mixture in the primary groundwater flow.

Mike said initial feedback from HQ provided good marks on all technologies except electro-coagulation. Mike said HQ will recommend that the technologies that showed maturity in testing be picked up by the RL-30 baseline and not be funded out of HQ anymore. Mike said there is a handoff that happens between technology development and technology deployment. Mike also said that any additional funding through Environmental Management 20 (EM-20) would have to be justified through the technology roadmap process. Mike said if additional funding was allocated his preference would be to apply the money to address chromium in the vadose zone, groundwater to vadose zone uranium testing, and the transport of uranium in the 300 Area.

Regulator Perspectives

- Dib Goswami, Washington State Department of Ecology (Ecology), said Ecology did a peer review workshop on the treatment technologies. Dib said Ecology will be looking at electro-coagulation in particular to see what went wrong. Dib said he was glad to see progress on some of the other technologies like the sr-90 and phytoremediation. Dib said these technologies take time and suggested that DOE look at a broader approach to implementing these technologies so that results can be produced in a shorter period. Dib thought the 300 Area testing was a good demonstration over a short time period. DOE is moving on to look at other alternatives and ways to achieve the remediation goals, but Dib was unsure of how much funding they had to do this work.
- Dennis agreed with Mike's priorities for additional funding. He said EPA is very happy with where the groundwater program has been going. He said DOE has focused on this program over the past few years and said this focus needs to continue.

Dennis thought the vadose zone will be the key to long term groundwater treatment. Dennis said it is important to make sure the money is there to support these programs.

Committee Discussion

- Shelley asked what went wrong with equipment selected for the electro-coagulation test. Mike said the problem with the test was that the system could not be run consistently without a lot of manpower; the crew had to be out there constantly manipulating the concentrations. Mike said the test did not prove as well as they would have liked it to. Mike also said there were only two companies that could prove to use this technology effectively. DOE's competitive bid process resulted in a contractor that was great at setting the system up, but not at getting it to run effectively. Mike said it might have turned out better if they could have gone through a sole source procedure to get a better qualified company to perform the work. Dennis added that given the situation at Hanford, probably even the best company could not build something that will be cost effective and better than what is already being done.
- Pam Larsen asked Mike to elaborate on the goal of the uranium testing. Mike said they had hoped to put phosphate in the groundwater to make autunite; autunite binds to the soil and does not re-dissolve. They were successful at making autunite, but the groundwater came back in and recontaminated the area. In the secondary part of the test, Mike said they hoped to use calcium and phosphate to form apatite which has an affinity for uranium and would bind it in place. This part of the test was only moderately successful because the apatite only occurred in the edges of the area and not in the main flow. The effectiveness of this technology is compromised because of the river flow.
- Pam asked what the process is for putting Mike's priorities for additional funding for new technologies forward to the roadmap. Mike said he will work with Mark Gilbertson's organization at EM and will make sure they know what DOE-RL's preferences are for technologies to pursue. Mike said he is also working with Terry Stewart from the Pacific Northwest National Laboratory (PNNL) on the roadmap.
- Dib asked how this work fits into DOE priorities and the overall roadmap. John said DOE-RL is on a fast track to design, procure, and build the final remediation alternatives for D and K Areas. John said DOE-RL will incorporate everything that has been learned through these demonstrations in the final remediation. However, the window for using new technologies will shrink soon because of the cleanup timeframe. John said they will need to take the best of what is available from industry and put it into action.
- Shelley said there has been advice from the Board and from the SSAB to reinstitute a Site Technology Coordination Group (STCG) in some form. Shelley reported that Jim Rispoli, DOE-EM, said he would be willing to see Hanford be a test site for that. Shelley asked why this does not seem to be moving forward. Mike suggested the committee follow up with Matt McCormick on this topic.
- Pam said the STCG provided a transparent process for new technologies. It helped prioritize technologies so groups could fight for the money at HQ. Pam said everyone

knows there are concerns along the river, but she challenged the agencies to think about what else is out there that new technologies will be needed for. Pam said the Office of Science has a new way of funding projects based on block grants and Hanford should think about how to secure more of that money.

- Dick asked if the additional testing will cost a lot of money and if the DOE-RL budget has funding available for this work. John said the DOE-RL baseline has the money, but it is dependent on whether the funding will be allocated by Congress. Mike said DOE-RL priorities are the river first, so the 100 and 300 Area work will keep going; if they do not get funding the 200 Area work will have to be cut.
- Susan asked if the \$10 million allocated in 2006 has been spent. Mike clarified, \$10 million was received in 2006, another \$2 million in 2007, and additional money from the DOE-RL budget was allocated in 2008. Mike said they have spent virtually all of the \$10 million
- Susan asked how much molasses and oil is going in the soil and what this material will do in the soil. Mike said both the molasses and oil is mixed with water; they use tanker trucks full of the material and inject it into one well and monitor how far it spreads and how far the reaction occurs. He said the area they are trying to affect is about the size of today's meeting room. Mike explained that the molasses feeds the microorganisms. He said they are providing the microorganisms with an abundance of food, and then when you stop feeding them they all decay. The decay process uses up the oxygen in the water and without oxygen the chromium 6 changes to chromium 3. The chromium 3 can be left in the soil and will not go back to chromium 6 in the natural environment. The vegetable oil would do the same thing.
- Susan asked Mike to elaborate on the apatite barrier concept. Mike said the apatite barrier is not a true barrier that stops flow. The barrier acts like a treatment zone in the soil, so when groundwater flows through it, a chemical reaction occurs. The reaction makes the contaminants bind to the soil and stay there. Under natural conditions the contamination should not leave again. Every thirty years, half of the contamination is eliminated.
- Nancy Uziemblo, Ecology, said she is following the roadmap work and would be willing to provide an update on that work at the next committee meeting. Nancy said she could speak to what the National Academy of Science is saying about the roadmap. Mike suggested having Terry Stewart from PNNL attend that meeting as well.
- Bob asked that an update on the groundwater field challenge also be presented at the next committee meeting. Mike offered to bring the lead engineer to talk about this work.

Follow-up on Recent Responses to Advice

Advice #202

Maynard said he personally felt the agencies took this advice to heart, and DOE sent it to

their contractors to follow as well. Maynard said given the positive response, he did not feel that any additional follow-up on this piece of advice was necessary. Dick agreed and said the documents he has seen recently are amazingly better and do a good job of following the advice. John Gear said the State of Oregon included a note in the ZP1 response complimenting the agency on the well written draft. Dennis explained that CERCLA proposed plans are often easier to understand because they go through review at EPA HQ and therefore do not use the jargon that reports at Hanford often do. Susan said Flour Hanford (FH) adopted the Board's advice and attached it to their documents when releasing them. Susan recommended that DOE issue this advice to their new contractors as well. Kim Ballinger, DOE-RL, said she has already made a note to make sure this happens.

Advice #197

Maynard said the Board asked for a plume registry in this advice; Nick Ceto, EPA, previously responded to the advice saying that he would like to talk more about this with the committee. Maynard said Rob Davis was the advocate for this, and asked if the rest of the committee thought that a registry was needed. Dennis clarified that EPA thinks the annual groundwater report serves the function of a registry. He said the report is a requirement of the Hanford site-wide permit so it will not go away. Dennis was not sure what a plume registry would do differently than the annual report. Maynard said many members of the Board agreed with Dennis on this. Maynard said his personal view is that the committee does not need to push this any further. Shelley agreed; she said the annual report serves her needs.

Wade said the regulators and tribes have a chance to review the annual groundwater report every year, but never have enough time to review the draft. Dennis said the reason the turn around is so quick is that the report is a permit condition. Dennis suggested checking to see what the condition is for the turn around time when the new permit comes out for review; the Board may be able to comment on that schedule. Maynard supported the idea of commenting to extend the due date. Wade suggested that it would be good to sit with Rob and talk through this issue. Dennis said someone from the committee should look at the letter and the annual report and see if the needs are being met. If not, the committee could suggest ways to augment the annual report. Wade agreed to be the issue manager for the annual groundwater report.

Kim said DOE's response will hopefully be signed today and will be distributed to the committee as soon as it is ready. Maynard suggested deferring any other discussion on this until the committee gets the response from DOE.

Maynard suggested that the committee continue to plan time in the meeting agenda to address responses to advice as they are available. He said the sooner the committee addresses a response the more timely it will be. Dennis thought that it would be good if everyone could commit to looking at the responses online so there is not a need to print so much paper at each meeting. Susan Leckband agreed with Maynard and Dennis's suggestions; she said the Board has fallen down on looking at responses and all the

committees should be doing it regularly. John Gear suggested including a link in the agenda if there is something that committee members should review to prepare for before a meeting. The committee supported this idea.

Work Plan Review / Action Items / Commitments

Maynard asked committee members to review the work plan and prioritize work for this year.

Susan suggested adding M91 regarding treating remote handled waste; she said the project has been delayed and there may be issues that committee members are concerned about. Susan suggested that this could fall under the first topic of TRU. Susan said the committee should ask DOE to report on where the money is and how long it will be pushed out. Dennis said the federal project directors for this work have changed; Larry Romine is the new director.

Dick said the committee needs an update on the deep vadose zone treatability plan. Dennis said the regulators can brief the committee on the schedule and milestones for this work anytime. He said the topic is ready for a briefing but it is not time critical; they will get out in the field next fiscal year.

Dennis said the chromium in D and H Areas will be a big topic; DOE is on a fast track to come up with a strategy. Maynard thought the D and H Area work should fall under the groundwater topics. Shelley suggested renaming the categories and having one overarching groundwater task for the committee work plan.

Pam asked if the committee needs to be updated on institutional controls (IC). Dennis thought it would be good to have the Board hear the same discussion the committee had on ICs last year. Pam also suggested putting ICs on the list for a future committee meeting to ask for a report on how ICs are being managed so far. Susan said the flow charts that the Board has created have been very successful. She asked the committee to consider doing a flow chart for ICs.

Susan suggested that Shelley provide an update on the complex-wide vision on waste disposition from the SSAB meeting in October so it can be brought to the Board in November.

Susan Hayman suggested that committee leadership spend some time updating the work plan and bring it back to the committee at the next meeting. Shelley, Maynard, and Bob will work together to refine the work plan. Kim and Dennis offered to help as well.

Action items:

- Status of PW 1/3/6 (November update)
- D & H Areas update (next committee meeting)

- ZP1
- BXBY workshop
- Follow up on technology roadmap (Nancy Uziemblo & Terry Stewart)
- CTGC follow up with Matt
- Wade working on groundwater report
- M91 briefing
- Complex-wide waste disposition report (Shelley in October)
- Institutional Controls report / potential flowchart
- Surveillance and maintenance of cocooned reactors (when time allows)
- Groundwater field challenge (Kim Ballinger)
- CW5 briefing (offered by Dennis and John Morse)
- Vista presentation (suggested by Todd Martin, offered by John Morse)

Handouts

NOTE: Copies of meeting handouts can be obtained through the Hanford Advisory Board Administrator at (509) 942-1906, or tholm@enviroissues.com

- Technology Development Efforts, Mike Thomson DOE-RL, August 12, 2008.

Attendees

HAB Members and Alternates

Shelley Cimon	Susan Leckband	Dave Rowland
Ken Gasper	Larry Lockrem	Dick Smith
John Gear	Gary Peterson	Stan Sobczyk
Harold Heacock	Maynard Plahuta	Bob Suyama
Paige Knight	Mike Priddy	Steve White
Pam Larsen	Wade Riggsbee	

Others

Kim Ballinger, DOE-RL	Dib Goswami, Ecology	Susan Hayman, EnviroIssues
John Morse, DOE-RL	Nancy Uziemblo, Ecology	Emily Neff, EnviroIssues
Mike Thompson, DOE-RL	Ginger Wireman, Ecology	Kathy Davis, FH
Jeff Tyree, DOE-RL	Dennis Faulk, EPA	Barb Wise, FH
		Janice Williams, FH
		Annette Cary, Tri-City Herald
		Peter Bengston, WCH