

FINAL MEETING SUMMARY

**HANFORD ADVISORY BOARD
RIVER AND PLATEAU COMMITTEE MEETING**

*February 15, 2012
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 & Introductions

Pam Larsen, River and Plateau Committee (RAP) chair, welcomed the committee and visitors, and introductions were made. The committee adopted the January meeting summary.

Larry Gadbois, United States Environmental Protection Agency (EPA) said he wanted to remind RAP that EPA will be meeting with the National Remedy Review Board in the last week of March to discuss the 300 Area, K Area, and 200-UP-1. While this meeting is not open to the public, the Hanford Advisory Board (Board or HAB) is invited to provide input to EPA prior to this meeting. Larry noted that the Board could simply attach past advice or have Susan Leckband, Board chair, draft a letter referring to previous Board advice. Pam said the 200-UP-1 topic had originally been on the RAP agenda for today, but it had been removed at the United States Department of Energy’s (DOE) request, due to a lack of available

information. Larry said the Board should keep pushing agencies to ensure the Board is able to receive information in a timely manner.

Liz Mattson asked Larry to explain what the meeting is about. Larry said that there have been concerns in the past that EPA is too stringent on protective remedies. Therefore, any project above a certain cost threshold must be reviewed to determine if the right policy decisions are being made and to be consistent across the country.

The committee agreed to ask Susan Leckband to draft a letter to EPA referencing past advice. Dale Engstrom and Shelley Cimon will help draft the letter.* EPA would like to receive the letter by February 26.

Site-wide Permit (joint with PIC)*

Liz, Lead Issue Manager (IM) for this topic, reviewed progress to date by the Issue Manager Team and Ecology on preparing for the public release of the Hanford Resource Conservation Recovery Act (RCRA) Site-wide Permit (Permit) (Attachment 2). She outlined areas of the Permit where the Board might want to focus. Liz said there is a discussion underway as to whether a May 3 information workshop targeted at HAB members (but open for public attendance, as well) should be designed as a Committee of the Whole (COTW) or principally as a public workshop. This would make a difference in both whose budget supported the workshop, and how the workshop was framed. If it was convened as a HAB COTW, the HAB budget would pay for the facilitation and notetaking. If it was convened as a public workshop, the references in the afternoon session to “HAB issues” and “HAB discussion” may need to be restated without distinction between the Board and the public.

After some discussion, it was agreed that Ecology would host a public workshop, instead of the HAB convening a COTW. Ecology will provide facilitation and note-taking services. Though Ecology expressed some concern about the perception of their objectivity when notetaking, RAP members noted that Dieter Bohrmann, Ecology, has done a good job notetaking during the Permit issue manager group/Ecology meetings over the past several months; the committee is not concerned about Ecology’s ability to objectively facilitate or summarize the workshop.

Jean Vanni, IM, said there are topic areas in the Permit that will be of interest to different Board members. She brought examples of topic-specific posters that could be available for viewing at the meeting.

Jean led the committee in review of the draft agenda developed collaboratively between the IMs and the Washington State Department of Ecology (Ecology) for the Permit workshop (Attachment 3).

* Please see Attachment 1 – Transcribed Flip Chart Notes for key points/follow up actions recorded during the committee discussion.

The draft agenda was edited with tracked changes during the discussion, and will be further refined by the IMs and Ecology. The following suggestions were made during the discussion of the draft workshop agenda:

- The 12:30 p.m. agenda item is intended for HAB members with special interest or expertise in certain topic areas to provide the Board's perspective on these topics. The public will hear the Board's perspective, and they can use that information as they choose. IMs will identify the issues/topics to be addressed at the workshop by HAB members, and to suggest who would be knowledgeable and interested in presenting on these. The April IM meetings would be a good time to meet with potential HAB speakers. Ecology reminded the committee that it is important that any topics presented by HAB members remain pertinent to the Permit.
- The committee agreed that the agenda should include an open discussion from 2:30-4:00 p.m. followed by a discussion of Board next steps from 4:00-4:30 p.m.
- The "gallery of units" would consist of informational posters around the room with knowledgeable people stationed next to them. There are 39 units under three main categories: operating, closing, and closed/post-closure monitoring. These could be binned another way, such as by area.
- Ecology is considering having portions of the workshop available on WebEx to make it more accessible to the public. The only issue would be access to the gallery of units. It might be possible to put the gallery online as well, although some of the interactivity would be lost.

Pam Larsen noted that Hanford Communities is interested in developing a public television program to inform and promote the public review of the draft Permit. She asked for suggestions from the RAP in structuring this program.

Committee members suggested that all committees schedule time during their May committee meetings or committee calls to what was heard at the Permit workshop. Board advice would likely be issued in September.

The committee thanked all the IMs, especially Liz and Jean, for working so hard on organizing this workshop. They also thanked Ecology for working productively with the Board. The IMs will continue working with Ecology on the workshop agenda, and will begin thinking about recruiting potential HAB presenters for the workshops. Ecology will share their presentation materials with the committee for review and comment at the March RAP meeting.

300 Area Remedial Investigation/Feasibility Study (joint with PIC)*

Issue Manager perspective

Dale Engstrom, RAP vice-chair and IM for the 300 Area Remedial Investigation/Feasibility Study (RI/FS) and Proposed Plan (Draft A) (Proposed Plan), said the Board recently provided advice on the 100-K Area RI/FS and Proposed Plan (Draft A). Now the Board has the opportunity to offer advice on the draft 300 Area RI/FS and Proposed Plan. The 300 Area was used to dispose of a large quantity of materials. One particular area of concern involves a uranium plume that developed from the liquid waste disposal trenches. Dale added that the decision document from the 300 Area Proposed Plan will be the Record of Decision (ROD).

Agency presentation

Mike Thompson, DOE-Richland Operations Office (DOE-RL), presented an overview of the 300 Area RI/FS and Proposed Plan (Attachment 4). James Hansen, DOE-RL was also present to answer questions.

Mike said the process started in 1989 with an initial RI/FS. There have since been separate investigations to address issues such as uranium and organic contaminants in the 300 Area. A final ROD was issued for 300-FF-1 and interim RODs for 300-FF-2 and 300-FF-5. Mike then focused the discussion on the draft Proposed Plan resulting from the RI/FS process; the draft Proposed Plan is currently under review by the regulating agencies. EPA provided comments on the initial draft earlier in the week. Ecology will also be providing comments. Mike said the 300 Area has been the center of research and development at the Hanford Site for a long time and Pacific Northwest National Laboratory (PNNL) is committed to remain in the area for at least 25 more years.

Mike said the 300-FF-2 interim action ROD assumption was the level of uranium in the groundwater would return to drinking water standards in 10 to 12 years if all the uranium above groundwater level was removed. That assumption was incorrect because the conceptual models originally did not consider the river levels moving up and down in response to the dam. The size of the uranium plume varies and it moves throughout the year based on whether the water level is high or low. The plume is stabilized, but it is very dynamic based on river stage. Mike said EPA wants DOE to improve the preliminary remediation goals (PRGs), which DOE is looking at. Mike said it will take four decades for the uranium to move out of the system if no action is taken. Mike said the remove/treat/dispose (RTD) process in the 300 Area is similar to processes elsewhere on the Hanford Site. The Preferred Alternative is Alternative 3, RTD (complete the on-going remediation of 300-FF-2), uranium sequestration and groundwater monitoring.

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Mike said DOE met with the City of Richland and received feedback that the City finds the industrial land use clean-up goal to be acceptable for those areas that are currently used for industrial purposes.

Regulator perspective

Larry Gadbois provided EPA's perspective (Attachment 5). Larry said the focus is on remedies, institutional controls (ICs) and RTD that everyone is familiar with. He said the plume has been bathing the area in uranium for several decades while it discharges. The uranium is not only in the groundwater, but radiating out. EPA does agree with DOE that Alternative 3 (with a few tweaks) should be the preferred alternative. Larry contrasted Alternative 3 with Alternative 5, which is the "big dig." He said the issue with the digging technology is that uranium is not only concentrated in the waste sites, but has spread laterally. If DOE was going to dig, it would have to continue digging away from the waste sites. Using phosphate provides the opportunity to treat a much broader area and address the radiating plume. He added that the injection would occur when the river and groundwater are at a high stage.

John Price, Ecology, presented Ecology's perspective on the 300 Area (Attachment 6). He said Ecology believes DOE did a good job cleaning up the 300 Area. He provided two specific suggestions for the Proposed Plan, water infiltration assumptions and land use. The zoning for this area is business/research park. While PNNL does plan to be at the site for the next 25 years, North Richland consists of high density residences. He said that more water reaches the groundwater when people water their lawns or when asphalt combined with storm sewers concentrate runoff after storm events. He suggested the 300 Area conceptual site model relook at its water infiltration assumptions. John said the trend is for development to move out toward the 300 Area. John said traditional industrial use is unlikely in the 300 Area so the ROD should allow for high-density residential use. John concluded by again noting the excellent cleanup work DOE has done to date in the 300 Area. The cleanup is suitable in most locations for unrestricted use and there is not a large difference between unrestricted use and high density use.

Committee Questions and Response

Note: This section reflects individual questions, comments, and agency responses, as well as a synthesis where there were similar questions or comments.

Q: What is the source of the uranium contamination?

R: Most of the contamination has been removed, but there is a sufficient amount remaining to provide a continuing source of contamination. Washing machine action will continue moving uranium out of the system until it reaches drinking water standards. The source of the uranium plume could be related to pipelines (that may have leaked) going out to the facilities.

C: Some with Richland City government seem to agree with current industrial areas remaining industrial. Some of the fill used in early cleanup efforts would not meet unrestricted use requirements.

R: Ecology believes these areas would not support unrestricted use, but high-density residential use would be safe. In high-density residential areas people would not be farming nor doing extensive

gardening so there would not be a concern about people consuming contamination from the soil. There could also be ICs in place that would further protect people in high-density residential areas.

A small portion of PNNL is industrial. The land currently industrialized will be cleaned up to industrial standards; the remainder of the 300 Area will have cleanup goals consistent with the 100 Area. The cleanup would lead to a small industrialized zone that will remain industrial. PNNL is expanding and there is some interest in developing other areas as industrial.

C: Water flow through the 300 Area is high. The injected phosphate needs to stay in the area in order for it to be effective.

R: Water velocities are high when the water level is low and draining. The Hanford Site is extremely porous. Phosphate would be injected when the river is rising and stabilizing, which would be an integral part of the design.

C: Portions of the 100 K Proposed Plan are being used to build this document. There is controversy over the 100 K Proposed Plan and the supporting risk assessment documents are not yet available for review.

Q: What is the schedule for removing uranium in the pipelines?

R: The uranium will be removed over the next several years. Some pipelines in the immediate vicinity of the building will be injected with a fixative and filled with grout.

C: The slide on implementation of Alternative 3 states if it is not effective, DOE will continue groundwater monitoring under Alternative 2. Why would monitoring continue with RTD?

R: If there is no additional action other than continuing with existing commitments, groundwater goals will be reached in four decades. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) requires contaminated sites be returned to required conditions within a reasonable timeframe. The conditions identified for the 300 Area are industrial with minimal impact to the Columbia River. There has been tremendous investment in science and remediation technology to date. One could take the position that taking no action and allowing groundwater to return to standards in the next 40 years is reasonable. However, DOE is not taking that position and is trying to accelerate the process.

C: The actual impact on the Columbia River is minimal; the only concern is the potential use of groundwater for drinking water.

R: The goal under CERCLA is to restore an aquifer resource within a reasonable period of time. One could argue 40 years is good enough, but we have the technology that could potentially speed up the process. Part of the CERCLA criteria is to examine whether the investment is worth the return. This type of question would be considered when writing the ROD.

C: Ecology stated that the ROD should include the possibility that this site could be used for high-density residences, which would imply no single family homes. The land use scenarios imply further expansion

of industrial areas. The tribes in the area would have a view about industrial expansion. There are other land managers that will need to be consulted if the land is no longer dedicated to the purpose it was originally intended. Is anything in the Proposed Plan going to affect the RCRA permit for the 300 Area, specifically in terms of post-closure groundwater monitoring?

R: Ecology's position is that the 300 Area trenches are already in post-closure, which only requires additional groundwater monitoring, no additional remediation.

C: The Board discussed how the 100 K decision would be precedent setting. What are the implications or concerns for the 300 Area RI/FS and Proposed Plan?

R: Some of the key concerns that are being resolved with 100 K would apply to the 300 Area as well. There are concerns about the development of the PRG, specifically determining a soil cleanup number and what the infiltration rate is going to be, and the orchard lands. These points are still under discussion.

C: The pre-conceptual site model is good. However, there are problems with the inventory numbers and the data for the vadose zone is not well-supported by documents and there is a high degree of uncertainty. New materials were created in the initial dig. The uncertainty means the monitored natural attenuation may extend out to 100 years, rather than 40 years. If you determine during a Five-Year CERCLA Review that uranium in the groundwater is not naturally attenuating, you will be in the same position as a few years ago.

R: We all have to recognize the uncertainty in numbers. A number of the uranium estimates are out-of-date based on flow rates. There are many bore holes throughout the Hanford Site that provide distribution estimates of uranium. There is a wide distribution of uranium throughout the site that can never be fully remediated. The highly concentrated uranium under the waste sites can be remediated.

C: We have to consider whether we really believe the estimate of 40 years for groundwater to return to drinking water standards without further remediation. EPA does not think that number is accurate. There is not a good technical modeling basis for the next 40 years. That does not affect the remedies proposed at this point, however, since the plan is to inject phosphate. EPA supports sequestration, accelerating the natural process.

C: There are a number of concerns with the technology being proposed in the 300 Area RI/FS. When polyphosphate technology was first injected, it did not produce the minerals that were expected. PNNL wrote several reports on polyphosphate and whether it will infiltrate or not. There are problems obtaining a stable form. Injecting phosphate when groundwater is rising has never been done; this is a proposed idea rather than something we know will work. We do not know if the phosphate will flow up into the ground like DOE is proposing. Further investigation is necessary.

C: There are number of additional RI/FSs that will be issued over the next six months. RAP should evaluate these documents as possible using the same approach as for the 100-K RI/FS and Proposed Plan.

Dale thanked Mike, John, and Larry for their presentations. The committee next steps include: 1) issue managers meet to review potential issues for HAB/committees; 2) bring back to the committee in March with recommended actions, if any; 3) discuss potential April advice for Proposed Plan (Draft A) in March.

CERCLA Cumulative Risk (joint with PIC)*

Agency presentation

Larry presented on general cumulative risk in CERCLA and how that specifically applies to Hanford (Attachment 7).

Agency perspective

Beth Rochette, Ecology, said the regulations require total site risk to not exceed 10^{-5} , with a hazard index of one, for all contaminants. When a contaminant is a threat to groundwater or might already exist in groundwater, Ecology considers an up-gradient. Human receptors should not be exposed.

Committee Questions and Response

Note: This section reflects individual questions, comments, and agency responses, as well as a synthesis where there were similar questions or comments.

Q: Do you ever look at the validity of the risk assessment models being used on the Hanford Site?

R: EPA has been evaluating modeling approaches for risk assessments at a national level. It is an ever-evolving process. When the Hanford Site begins the risk assessment for 100-K, we will use the latest modeling approach available.

C: DOE has developed site-specific models that have been a concern in the 100-K Proposed Plan. These concerns have not been resolved yet, but Ecology said they approve the new approach because it is consistent with regulations. We have concerns about the parameters. There is no agreement on risk assessment modeling, which is a huge concern for resolving other basic elements for cleanup decisions.

R: EPA has to sign the RODs. The major test is whether these issues make a difference when selecting a remedy. Issues need to be resolved if they affect the remedy, but if the remedy will remain the same regardless, then the issue may not need to be resolved.

* Please see Attachment 1 – Transcribed Flip Chart Notes for key points/follow up actions recorded during the committee discussion.

The committee thanked Larry for his presentation. The committee asked Susan Hayman to work with Jean and Larry on framing Larry's presentation on CERCLA Cumulative Risk for a future Board meeting.

105 K East Reactor*

Agency presentation

Tom Teynor, DOE-RL, presented information on the 105-K East Reactor interim safe storage enclosure (Attachment 8). He said DOE decided on a total enclosure of the reactor instead of a partial re-work that would require using the existing structure. DOE feels this is a safer approach. Tom said there is some contamination in the area from a leak in the basin. This contamination will be examined further before full enclosure of the reactor; its characterization will help determine what type of protective cap will be allowed. Tom said construction of the enclosure will begin in 2014.

Tom also handed out a fact sheet titled "DOE to Use Interim Safe Storage Complete Enclosure Approach for 105-K East Reactor" (Attachment 9).

Agency perspectives

Larry said EPA is supportive of the approach. Madeleine Brown, Ecology, said Ecology is also supportive.

Committee Questions and Response

Note: This section reflects individual questions, comments, and agency responses, as well as a synthesis where there were similar questions or comments.

Q: What is "minimal asbestos removal?"

R: This refers to minimal removal of external asbestos. The internal asbestos removal process will be consistent with that use for any other building. There is some piping that cannot be reached so asbestos in those areas will be left in place. All asbestos remaining in the building will be documented.

Q: Will rainwater be captured?

R: We are trying to integrate capture of rainwater with the south side of the building. Right now there are no plans for a collection system, but it will be part of the considerations.

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Q: What is the square footage surface area for this design? Has there been any consideration of water coming off the proposed stainless steel structure (e.g. from condensation)? Water should be routed around the east and west walls, away from down gradient and around the plumes.

R: DOE is concerned about planning for water runoff so that there will not be future problems. DOE is conducting confirmatory sampling and developing verification plans to determine whether DOE should continue digging. This is an interim decision. A future decision needs to be made on whether to remove the building and/or the core. DOE is following the CERCLA process.

Q: We do not know what the final ROD cleanup values are going to be. Do the waste sites that are going to be covered already have closure verification packages?

R: The waste sites are not being closed out. They are being cleaned up as much as possible and will be classified under interim closure actions. We have some sense of what the final cleanup values will be and always work toward meeting those.

C: The Interim Safe Storage (ISS) cocooning approach was documented in an interim ROD. This decision can be changed before going to the final ROD.

C: The design and idea are good, especially since workers will be protected. The frustrating aspect is the amount of money spent to develop and analyze a proposal last year to remove the reactor and relocate it upriver to clean up and keep plumes away from the Columbia River. Without further discussion, we have returned to ISS. There is still a plume of contamination that has not been dealt with.

R: DOE can present the sampling results to RAP. French drains and other similar elements have been taken out. The entire area has been dug out to 40 feet below grade. DOE is currently characterizing the contamination that is present. This is not going to be done quickly. DOE is willing to meet with you to discuss characterization data.

C: If DOE builds a steel structure and paints over it, 75 years from now it will be a very rusty building on the side of the Columbia River. What is DOE doing to ensure it does not become an eyesore?

R: The building will be made of stainless steel, and will be coated with a special paint by the manufacturer. There may be a need to repaint as well.

Q: Original rooftop cocooning used the reactor to hold up the roof. With this building built as a stand-alone around the reactor itself, how will this gigantic structure be held up?

R: This shell-like building will use steel bracing for support.

RAP asked the IMs (Dick Smith, Harold Heacock, Shelley Cimon, Bob Suyama) to follow up with Tom on characterization, collection/rerouting of water off roof/condensation, overall design review, and plume source remediation, and to keep the committee advised. Tom offered to provide CD copies of the design at 90 percent to the issue managers.

Remediation Technologies for Vertical Pipe Units (VPUs) at 618-10 and 11*

Agency presentation

Cathy Louie, DOE-RL, introduced herself. She also introduced Warren Grant, Washington Closure Hanford (WCH) and Jamie Zeisloft, DOE-RL. Cathy, Warren and Jamie provided a presentation on VPU remediation (Attachment 10).

Regulator perspectives

Larry said this remediation approach is being taken because of radioactive items. If these items are removed from the ground, workers could be exposed to a large dose of radiation; this approach is dose management. A lot of material was disposed of in lead containers. Grouting adds an element of safety.

Madeleine said Ecology approves of this remediation approach.

Committee Questions and Response

Note: This section reflects individual questions, comments, and agency responses, as well as a synthesis where there were similar questions or comments.

Q: Will the material be removed from the VPUs as a monolith, or through a general excavation?

R: WCH is recommending an excavation, but DOE is still deciding whether to go with a general excavation or a monolith approach.

Q: The overall volume of contaminated material that will be removed increases considerably when going from the diameter of the VPUs to the proposed diameter of the larger drill and over-casing. Does DOE expect that some of the VPUs will be crooked, and is compensating for this by using substantially larger over-casing?

R: Yes – we do not know if the VPUs were installed plum. The larger diameter over-casing is a compensation measure.

Q: Does DOE determine whether material goes to the Environmental Restoration and Disposal Facility (ERDF) before auguring occurs? Slide 6 appears to show that a sample is taken at the beginning of the procedure. Then there is an over-casing of 48 inches and an enclosure with HEPA filters. At this point we do not know if waste is TRU or if it should go to ERDF.

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R: A VPU is augured and then a core is taken from the top and bottom to obtain a sample that will guide decisions. Waste with the potential to be TRU is moved into drums and transported to the Central Waste Complex for radiological determination. The remaining waste that meets the waste acceptance criteria for ERDF is transported there.

Q: How well does DOE know the inventory of the VPUs?

R: DOE and WCH have extensively examined the VPU inventory. The records provide the best knowledge available, but there are also controls in place in the event that workers encounter something that the records do not indicate.

Q: Is there a risk of chemical reaction in the VPUs?

R: There is. However, any chemical reactions would occur underground. We are looking at any theoretical safety basis that might occur based on what we know is present and what we know about waste in general. The safest approach is to mix materials underground with grout to stabilize it.

Q: Why doesn't DOE simply auger the VPUs out to the 48 inch wall so that there is a concrete grouted column that has a casing on it. When pieces are broken apart, they expose radioactive elements that would be a hazard to people.

R: DOE considered this, but there are significant problems such as transportation issues around hot spots in those areas. The safest approach is conventional remediation.

C: 618-10 is being cleaned up to unrestricted standards. Why is 618-11, which shares the same issues, only being cleaned up to industrial standards?

R: 618-11 is adjacent to a nuclear reactor. The original intent was to clean up 618-10 to industrial standards, but DOE subsequently decided to clean the area to unrestricted use standards along with five other sites. 618-11 was probably not included because it is unlikely to be used for residences.

C: Neither the Nuclear Regulatory Commission (NRC) nor DOE have any basis for decision or pathways for blending. Is there a regulatory issue with creating more radioactive waste through blending?

R: There is not an issue. DOE and EPA are determining the best method for remediation, which forms the basis for classification, characterization and disposal. This approach appears to be the best path forward.

The committee said they appreciated this briefing. RAP will put the issue in their holding bin and will likely discuss the issue again in the coming months. DOE offered to return to RAP to explain the final decision regarding whether material should go to ERDF as a monolith or as excavated material.

Barriers Workshop – Round Robin

Issue manager introduction

Dale, IM for the Barriers Workshop topic, said he is part of the Ecology groundwater working group. This group discusses current groundwater concerns and issues. As the Hanford Site progresses through cleanup activities, the time is approaching to begin installing barriers. Dale said the question is how much confidence can be placed in barriers. The workshop provided information on case histories – what worked well, what were some of the problems – and what barriers will look like in the future. Dale asked those who attended the workshop to share their impressions and offer suggestions for RAP next steps.

Round Robin – Committee and Agency Perspectives

C: This was an excellent workshop in many respects. One thing not discussed at all was the fact that most of the Hanford Site barriers are going to be open on the bottom.

C: There were a lot of landfill scenarios. Some scenarios included buried waste unconfined on the bottom with a barrier on top. Plant roots penetrate deeper than the constructed depth. Some of these scenarios were not applicable to the Hanford Site.

C: The workshop was a great opportunity for us to learn and participate. One question from the workshop is how monitoring can be effective. One presenter was attempting to develop a way to make barriers more acceptable to the public. Monitoring wells need to be close to the site instead of way down gradient. We should confirm that this is actually working with the placement of barriers to track infiltration. If questions such as these are resolved, the public would feel more comfortable with barriers. There is a consistent reliance on ICs. ICs are pervasive on every decision made at the Hanford Site. The regulations require remediation first and then ICs as a last option. At the end of the workshop, there was some discussion on barrier failures. Monitoring wells at a site in Oregon showed that the barriers were not really protecting groundwater.

C: This workshop included three tribal nations, the state of Oregon, EPA and DOE. It was not easy to bring all of these experts in for the workshop from the East Coast. We appreciate everyone who participated, especially since about 90% of the people paid their travel with their own money. This workshop is completely different than many workshops that have been done at the Hanford Site; many of the speakers were discussing issues not specifically Hanford-related. Overall, the workshop went very well and there were excellent panel discussions. There is a videotape of the workshop that could be made available to the Board. Presentation slides are available on the Ecology website. Ecology is also considering podcasts.

C: The workshop speakers were very practical and clearly articulated information we needed to know. It is a given that we are going to build some barriers on the site and that there is not a lot of public acceptance. After the workshop, I have more confidence that some barriers will be protective in the future. There were several take-home messages from the workshop: 1) Kids are going to be smarter and should be able to take care of the problem 500 years from now. The goal should be to be protective over

the next several years until better solutions can be developed; 2) Not all soil is created equal. There are many ways to engineer around this problem. There is not going to be a lot of high-quality barrier material at the Hanford Site. That can be combated by building bigger barriers; 3) Plants are a very important part of barriers; even cheat grass will limit percolation. Gravel covers are not the most effective solution.

C: Barriers at the Hanford Site have been an uphill battle. There have been two public workshops. Barriers are monitored through monitoring wells that can indicate if water is getting through the barriers. The real issue is leaving the waste in place and having public acceptance. The technical issue is not barriers; it is leaving the waste in place. We need to have realistic discussions about this, recognizing that there are limited options. The best technology available is in the form of evapotranspiration (ET) barriers. From a soil science perspective, it appears ET barriers will last a long time. The barrier issue should be discussed in conjunction with ICs. Some of the workshop presentations were not necessarily appropriate for the Hanford Site, like discussions about areas that receive 60 inches of rainfall per year. There are over 17 years of data on ET barriers at the Hanford Site, which is probably more data than any other ET barrier in the world.

C: This was a tremendous workshop. I am more convinced that the ETA barrier has merit. I now have less respect for rock barriers and other similar barriers. These should not be considered for the Hanford Site. Barriers have not been established around the world for very long. There are still many open questions about the 100 year life for an ET barrier. We cannot afford to dig up all the material and move it to ERDF, which is the other choice. The focus should be on ET barriers. I am more concerned about what will happen in the next 100 years than the next 500 years. There will likely be new solutions and technologies in the future.

C: It was frustrating that there were not more examples similar to the Hanford Site. Plants can be very effective; the problem is that they haven't been planted at the most effective time of year. The Hanford Site has lost a lot of money because of planting at inappropriate times. Gravel tied with ET will likely not be effective. Pavement is also not effective. Cheat grass should not be on the site, but that is what we have currently.

C: There were a number of interesting discussions at the workshop that would be interesting for the Board to follow up on, such as new models to predict performance. RAP should pay attention to the issues around not having liners underneath and using engineered materials on the top. The membrane life expectancy is 1,400 years. We have an obligation to future generations to clean the site up properly. Caps require maintenance and ICs must be monitored forever. How can we plan for that?

C: The Board has previously advised DOE to only use barriers if there is a really compelling reason. If there is not a compelling reason, the Board should challenge DOE's decision to use barriers.

C: ET barriers appear to work better than initially thought. There is still a question about what to do about erosion. Too much runoff from rainfall can lead to significant problems. Data is only available for the previous 20 years. This data can be projected into the future, but there are serious questions about how

adequate it will be when models need to project thousands of years into the future. As more data is obtained, it will be possible to make better estimates about future barrier performance.

C: Kevin Leary and Craig Benson are writing a primer on ET barriers. There are many misconceptions about barriers and many concerns from the public.

Those who attended the workshop agreed it was a great learning experience. Some of the information from the workshop can be applied when RAP starts talking about barriers in U-Canyon. Ecology requested that the Board submit a letter summarizing how they felt about the workshop to help with future workshop development and planning. The letter would provide evidence that people want these types of workshops. Maynard Plahuta and Shelley will draft a letter for Susan Leckband to send.

Committee Business

The committee reviewed potential March meeting topics and filled in the March potential meeting topics table. There are a number of topics that are not time sensitive and can be discussed anytime over the next six months. Susan Hayman said she will update the six month work plan based on today's discussion.

Susan announced that the RAP committee call placeholder has moved to Tuesday at 1:30 p.m. during committee call week (from Tuesday at 9:00 a.m.). The committee decided not to have a call in February.

Attachments

Attachment 1: Transcribed flip chart notes

Attachment 2: Resource Conservation and Recovery Act Site-Wide Permit – Board progress to date

Attachment 3: RCRA Site-wide Permit Draft Agenda

Attachment 4: Overview – 300 Area RI/FS Report and Proposed Plan (Draft A)

Attachment 5: EPA Perspective – 300 Area

Attachment 6: Ecology Perspective – 300 Area

Attachment 7: Cumulative Risk in CERCLA Generically and a Hanford Model

Attachment 8: 105-K East Reactor Interim Safe Storage Enclosure

Attachment 9: DOE to use Interim Safe Storage Complete Enclosure Approach for 105-K East Reactor

Attachment 10: Vertical Pipe Unit Remediation

Attendees

Board Members and Alternates

David Bernhard	Floyd Hodges	Maynard Plahuta
Tom Carpenter	John Howieson (phone)	Dick Smith
Shelley Cimon	Steve Hudson (phone)	Bob Suyama
Dale Engstrom	Pam Larsen	Gene Van Liew
Laura Hanses	Liz Mattson	Jean Vanni

Others

Briant Charboneau, DOE-RL	Dieter Bohrmann, Ecology	Martin Doornbos, CHPRC
J.D. Dowell, DOE-RL	Madeleine Brown, Ecology	Sonya Johnson, CHPRC
James Hansen, DOE-RL	Dib Goswami, Ecology	Joy Shoemake, CHPRC
Kevin Leary, DOE-RL	Brenda Jentzen, Ecology	George Klinger, CTUIR
Cathy Louie, DOE-RL	John Price, Ecology	Alex Nazarali, CTUIR
Tiffany Nguyen, DOE-RL	Beth Rochette, Ecology	Nicole Addington, EnviroIssues
Greg Sinton, DOE-RL	Dennis Falk, EPA	Susan Hayman, EnviroIssues
Tom Teynor, DOE-RL	Larry Gadbois, EPA	Barb Wise, MSA
Mike Thompson, DOE-RL		Shannon Cram, Public
Jamie Zeisloft, DOE-RL		Stuart Luttnell, Public
		Peter Bengtson, WCH
		Warren Bryan, WCH
		Joe Curcio, WCH
		Mark McKenna, WCH