

FINAL MEETING SUMMARY

HANFORD ADVISORY BOARD

April 8-9, 2015

Richland, WA

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This is only a summary of issues and actions presented at 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.

Executive Summary

Hanford Advisory Board (HAB or Board) Action

The Board adopted one piece of advice regarding the Central Plateau Inner Area Guidelines.

Board Business

The Board reviewed an EMSSAB letter, reviewed the HAB annual survey results, and identified preliminary June Board meeting topics.

Presentations and Updates

The Board heard presentations on:

- Panel of Hanford Contractors
- One System and Direct-Feed LAW
- Primer: Understanding Radiological Terms

Public comment

Two public comments were provided.

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April 8-9, 2015 Richland, WA

Steve Hudson, Hanford Watch 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 opportunity for public comment.

The Board meeting was audio-recorded.

Welcome, Introductions, and Announcements

Jeff Frey, U.S. Department of Energy – Richland Operations Office (DOE-RL), welcomed everyone and noted that the Board is meeting in accordance with the Federal Advisory Committee Act. He said he is looking forward to the evening session devoted to educating the public about radiological terminology and work on the Hanford Site.

Joni Grindstaff, DOE – Office of River Protection (ORP), said the One System presentation will share how to implement the Direct-feed Low Activity Waste (DFLAW) initiative, including the LAW Facility, and to see how other components like the Waste Treatment Plant (WTP) and contractors are integrated.

Cathy McCague, EnviroIssues Facilitator, reviewed the meeting agenda and objectives. She confirmed the adoption of the November Board meeting summary. She reminded Board members to have their photos taken for the HAB manual.

Steve introduced Don Bouchey, new Board member for TRIDEC (Local Business), who has replaced Harold Heacock.

Steve spoke to the DOE – Environmental Management Site-specific Advisory Board (EMSSAB) letter, indicating that EMSSAB has agreed to allow their draft advice to review and accept edits from other advisory boards prior to voting on it with an up or down vote. Any edits from the HAB will be taken back to the EMSSAB for consideration.

Ken Niles, Oregon DOE (State of Oregon), offered additional copies of ODOE's 25-year Hanford Report to Board members and alternates. He also remarked that he recently read comments from the Woods Hole Oceanographic Institute in reporting findings that some Fukushima radiation has turned up on the West Coast that referred to cesium's 30-year half-life to be long, while it is often referred to at Hanford as a short half-life. He asked the Board to remember that Hanford is not the norm.

Jeff congratulated EnviroIssues on the HAB Annual Report, the first in four years. He said it is a great product that he has already shared with others.

Joni announced that the community open house for the DOE/National Park Service Manhattan Project Sites Special Resource Study kickoff will be held at the Red Lion Hanford House on April 15, 4:30 p.m. – 6:30 p.m.

Panel of Hanford Contractors

Introduction

Steve said DOE and Board leadership are trying a different approach to only having Tri-Party Agreement (TPA) agency presentations at two Board meetings a year, rather than five, to allow others to report on Hanford from a different perspective. The agencies will still provide their annual reports during the

September Board meeting. Today's presentations will be from several Hanford contractors' perspectives, and questions to be asked following the presentations have already been submitted by Executive Issue Committee (EIC) issue managers and reviewed by DOE.

Steve encouraged Board members to use the blank cards at their seats to provide feedback on the presentation and format as well as pose questions and/or comments.

Susan Leckband, Washington League of Women Voters (Regional Environmental/Citizen) and Board vice-chair, introduced the panel members and thanked them for participating. She noted that questions were crafted based on the Board's concerns over time that are relevant today.

Introductory remarks

Scott Sax, Washington Closure Hanford (WCH), provided an overview of the WCH project. Scott said:

- WCH's contract is to cleanup 351 sites in the River Corridor.
- WCH has a "cost plus, incentive fee" contract, which means they are held accountable to the bid they made to conduct the work, as well as earn incentive-based fees. Fees are rewarded based on schedule, performance, and efficiency. WCH has earned significant fees for completing work ahead of schedule and under budget.
- WCH is \$285 million under budget, and has completed their work a year and a half early. They have not missed a TPA milestone and are ranked high for safety.
- The Environmental Restoration Disposal Facility (ERDF) has seen good progress since WCH took over the facility in 2005, receiving 11.8 million tons of waste. Scott thanked the Board for their advice supporting waste disposal at ERDF. ERDF also processes and treats waste, like 240,000 pounds of chromium from burial sites in the River Corridor.
- WCH will complete removal of all waste and nine facilities from the 300 Area in summer 2015. Only the 324 Building will remain.
- The 618-10 Burial Ground is a complex site containing buried experimental waste from the 300 Area. WCH is actively retrieving the waste and will complete the trench portions in the next year, leaving the Vertical Pipe Units (VPUs) to be retrieved next.
- WCH has cleaned up and re-vegetated a number of reactors, including the reactors at 100 H, 100 D, 100 N, and 100 B/C.
- WCH is proud of their workforce, with 96 percent of former employees finding jobs before their contract ended.

John Ciucci, CH2M HILL Plateau Remediation Company (CHPRC), provided an overview of CHPRC's work on site, noting:

- CHPRC is in the seventh year of a 10-year cost-plus, incentive fee contract. They have 1,380 employees, teamed with the Hanford Atomic Metals Trades Council (HAMTEC) workforce.
- The Plutonium Finishing Plant (PFP) is CHPRC's priority project, where they have removed 221 out of 232 glove boxes, which range in size from a small car to a double-decker bus. Some glove boxes can be cleaned and shipped to the Waste Isolation Pilot Plant (WIPP), while others are put into large containers to be treated at Hanford down the line. The larger glove boxes must be cleaned and reduced in size before other actions are taken.
- CHPRC has removed 195 of 196 pencil tanks.
- After an accident in the McCluskey Room where a glove box exploded, CHPRC brought in better equipment from the Idaho National Laboratory and trained 100 workers on how to work using

bigger protective suits. Workers also have breathing masks for additional protection. The glove box that exploded has since been put into a waste container.

- PFP will be completely demolished and cleaned up by September 30, 2016.
- 100-K Area is ready for the final stages of completion, though there is still sludge in the K East Reactor. The sludge will be moved off the River Corridor and onto the Central Plateau by the end of CHPRC's contract in 2018.
- The two groundwater treatment systems in the River Corridor are working better than anticipated. The pump and treat systems prevented chromium from getting into the Columbia River in 2012, and by 2029, all the chromium will be gone. Injection and contraction wells help prevent the chromium from moving anywhere else.
- The 200 West Pump and Treat is the biggest in the United States, treating 2,000 gallons of groundwater per minute. 200 West will exceed 2.1 billion gallons of groundwater treated in 2015. The two systems have treated 5.4 billion gallons of groundwater since being placed.
- CHPRC has treated 1,400 tons of waste and shipped 2,700 tons to WIPP, as well as shipped 1.4 million tons of LAW to ERDF.
- Almost 2,000 cesium-strontium capsules are stored at the Waste Encapsulation and Storage Facility (WESF), and they are safely contained for now, but CHPRC hope to be able to move the capsules to dry storage before the end of their contract period.

Bob Wilkinson, Mission Support Alliance (MSA), said MSA is the site services contractor, making sure the other contractors have what they need to be successful. Bob said:

- MSA maintains and upgrades site infrastructure, including site security, emergency systems, electricity, water lines, sewers, 400 miles of roads, and information systems, including secure wifi, computers, and electronic records management. Bob noted that site emergency services provide mutual aid to the surrounding communities.
- MSA serves as the site-wide integrator for DOE and contractors, ensuring the fluid dynamics of work on site. Some site-wide programs include the recycling and sustainability programs.
- MSA provides user-based systems that all contractors need and can use, but do not need on a continual basis, including trades and construction workers, employee trainings, and safety standards to help balance safety as workers move between contractors. MSA supports the Site Stewardship Program, which helps the contractors transition sites to the community or other purposes, to free up funding and keep cleanup moving forward.
- MSA has created \$220 million in cost savings throughout their contract, which provides for rightsizing the Hanford infrastructure and contractor risk reduction.

Mark Lindholm, Washington River Protection Solutions (WRPS), provided an overview of WRPS services at Hanford. Mark said:

- WRPS manages the Tank Farms mission for DOE-ORP and is a joint effort between AECOM (formerly URS), Energy Solutions, and sub-contractors Areva. They have a 10-year cost plus, incentive fee contract that will end in 2018. WRPS has 2,000 employees on site, having hired 600 in the last year. They will hire an additional 300 employees in the upcoming year and will take advantage of HAMMER Training Facilities to maintain safety.
- Retrieval of C Farm is WRPS's number one priority, including the retrieval of double-shell tank (DST) AY-102. Other priorities include maximizing space in the DSTs, improving Tank Farm aging infrastructure, and integrating with the Waste Treatment Plant (WTP).
- Thirteen of 16 C Farm tanks have been retrieved. 43 gallons of waste remain in C-102, which is 81 percent retrieved. The 130,000 gallons of waste in C-105 will be retrieved using the Mobile

Arm Retrieval System (MARS). C-111 will be the last tank retrieved after replacing a failed sluicer pump.

- WRPS is preparing to begin retrieval of the 150,000 gallons in AY-102 by March 2016. Currently, the DST is leaking from the primary tank into the annulus.
- WRPS removed 1.2 million gallons of waste from the 242-A Evaporator in Fiscal Year (FY) 2014 and plans to do the same this year.
- A consolidated control room in Tank Farms allows workers to collect readings from one centralized location, providing flexibility and the ability to respond to alarms faster.
- The next nine single-shell tanks (SST) for retrieval are in the A/AX Farms. There will be challenges, as the SSTs are radiologically hotter than in C Farm. WRPS is taking a holistic approach to building all needed infrastructure around the tanks before beginning retrieval.
- DOE's One System organization works in conjunction with WTP management to help integrate the two sides of the DOE-ORP mission, Tank Farms and WTP.
- WRPS will staff the Effluent Treatment Facility (ETF) with 44 workers and will hire an additional 35 to ensure the facility is ready to operate within the calendar year. Major equipment repairs are necessary.
- WRPS has been working with the Tank Vapor Assessment Team from Savannah River (TVAT) since chemical vapor exposures were reported in 2014. WRPS had state-of-the-art monitoring capabilities for chronic exposures, but the TVAT Report said there was still potential for acute exposures. WRPS has taken immediate action to protect the workforce from acute exposures, issuing an implementation plan in February 2015 that has been approved by DOE. Tank vapor controls will be evaluated farm by farm, starting with A/AX. WRPS will begin by reviewing data of what is in the tanks that could cause vapors. The implementation plan will be WRPS's prime focus in the upcoming year.
- A WRPS employee raised a concern about hydrogen building up as sludge tank depths go deeper, so WRPS worked with experts from Pacific Northwest National Laboratory (PNNL) to experiment. The experiment proved that hydrogen did not retain in the sludge, so tank retrieval moved forward. Mark noted this activity demonstrated how seriously WRPS takes employees' concerns.
- WRPS used stimulus funding to improve the aging infrastructure in Tank Farms, and will continue to maintain upgrades for facilities to support their long-term mission.
- WRPS is committed to continual improvement in their relationship with the workforce, as well as work and safety culture.

Questions for the Panel

Cathy prompted panelists' responses to the HAB's prepared list of questions.

Q. As cleanup progress continues at the Hanford site, funding often shifts from completed projects to ongoing work which results in significant shifts in the specific skills and the number of workers needed on a given project. How do you maintain a stable workforce with the right skills and abilities in place when you need them?

R. John Ciucci: The skills needed to be compliant will continually change, so we must ensure we have the right workforce trained before the work even starts.

Scott Sax: It is our job to be able to transition staffing between projects, so communication is key. Our supervisors are in the field with their teams every day to ensure communication is connected. We try to give each employee as much control as possible when it comes to their employment, so

we make sure they are aware of their assignment end dates, and we stick to it so they can plan their work and their lives.

Q. What other challenges do you face related to shifts in funding and priorities as work is completed?

R. John Ciucci: As projects are executed year by year, we need a well-trained workforce and experienced leaders in order to work safely and compliantly.

Scott Sax: We maintain a safe work environment by keeping employees well-informed and their morale high. We make few mistakes and momentum is high when trained workers are doing the same work, so if there is a change in work or the workforce we slow down to operate at a deliberate speed. Changes in the funding profile makes it harder to both maintain safety and save money.

Q. What technical skills are currently or expected to soon be in short supply at Hanford? What are you doing about it?

R. John Ciucci: Subject matter experts for certain disciplines are in high demand, like nuclear safety, health physics, and fire protection. Project control experts are hard to acquire because planning is essential for each project.

Scott Sax: WCH has reduced its workforce by 200 people over the past 18 months, and will continue to reduce over the next six months. Their former workforce is available to support other contractors, as closure contractors work themselves out of the job. Closure contractors feel great pride that their job is coming to an end, as it means they have done valuable work. WCH has been successful in placing employees in new jobs, so employees are not fearful for their assignment's end.

Mark Lindholm: WRPS has the need to hire 300 employees in the next year and can hire workforce from other contractors as they downsize. Managing attrition will be a challenge, as 50 percent of the workforce will be ready for retirement in the next three years. HAMMER's support to adequately train a new workforce will be vital.

Q. Cocooning of the K Reactors has been delayed – and may continue to be delayed for an extended period. How difficult will it be to incorporate lessons learned from those other reactor projects when you may have few, if any workers that actually were involved with the cocooning of the other reactors when it is finally time to do the K Reactors?

R. John Ciucci: Integrated Safety Management (ISM) requires extensive planning, documentation of the work being done, and lessons learned at project completion. Before cocooning can be done for the next project, an integrated team is put together to plan the work based on what has been successful before. New tools will be available once cocooning is feasible for K Reactor.

Scott Sax: Each phase for the reactors is thoroughly documented and photographed. Cocooning is very hands on, and each hazard is identified. It is important for the existing and new work force to be trained and be able to perform the important work. WCH is confident they can set their teams up for success.

Q. The relationship between Hanford's unions and Hanford's contractors has at time been strained. How would you characterize the current relationship?

R. John Ciucci: The relationship is good, following a collective bargaining agreement finalized in 2014. It has resulted in great work.

Bob Wilkinson: There has been a shift in how Hanford does business with the unions, so trust is coming back. MSA has a very strong union agreement with the site-protected workforce, and it will be renegotiated next year. All the contractors have made progress in standardizing protocols, ensuring a stable, collective approach to how Hanford does business.

Scott Sax: WCH has a good relationship with the unions, having created a separate contract with the trade unions to supply direct-hire trades as well as HAMTEC trades. Being a closure contract, the construction trade workers have helped other employees understand the matter-of-fact nature of jobs being finished.

Q. It seems as though the “fee” structure that is used at Hanford is often confusing to the public. Granted, while the public usually hears more about on-going problems than the progress, they are often confused when they hear that a contractor earned tens of millions of dollars in fee even though the main project that contractor is responsible for did not make substantive forward progress during that period. How do you respond when the public says, “why are the contractors being rewarded for not getting the job done?”

R. John Ciucci: Fees are typically a very small percentage of the amount the contractor is spending on a high-risk project. For example, a \$400 million project may earn \$10 million in fees, which is only 2.5 percent of the contract award. It is a healthy contract relationship to provide high-risk projects rewards for safety, compliance, and being on time and budget.

Scott Sax: Companies exist to make a profit, or earn fee. The challenge is defending what the public has asked DOE and the contractors to do.

Q. The tank vapor problem has necessitated that workers be in protective equipment, which is the right step. But that comes with serious problems and added safety risks. How soon will you have in place systems to prevent vapor releases into the worker environment so they can reduce use of protective equipment?

R. Mark Lindholm: Vapors is a complex problem, and WRPS and DOE-ORP are committed to protecting employees, the public, and the environment. The implementation plan, in response to the TVAT Report, will be conducted in two phases. The first phase will be data collection, evaluation, and equipment selection over the next few years, followed by institutionalization of the first phase findings. Hanford is working to make sure workers are protected now while increasing protections for the future. For example, we are currently conducting Tank Farm by Tank Farm evaluations that could result in tailored or additional controls based on the findings.

Q. Much of the work at PFP, as an example, is very hazardous work that – strictly from a worker safety standpoint – is probably work that we would just as soon not have to do. But it has to be done. So it costs more, and takes longer, but Hanford’s workers have proven it can be done safely. Is there any specific work at Hanford that even with use of robotics or protective clothing or other safeguards, is simply too hazardous to be done?

R. John Ciucci: Nothing is too hazardous to do. It is important to follow the ISM system for high-hazard work. High-hazard work requires planning and training, which is why CHPRC had an integrated team preparing and practicing to remove glove boxes from the McCluskey Room before any work started.

Scott Sax: The contractors at Hanford specialize in high-risk, high-hazard work. When needed, we bring in the right expertise to work with existing teams, and the workers who built Hanford are the best to take it down.

Q. During the past decade or more, many techniques have been developed to remove sludge and salt cake from Hanford's tanks. As you move forward with preparations for removing waste from AY-102, are these lessons and tools sufficient to get this done in a relatively straightforward manner once retrieval begins?

R. Mark Lindholm: We believe the lessons and tools are sufficient. We used the lessons learned from C Farm to down-select for retrieving AY-102, and we are removing obsolete equipment to be able to solve with new technologies.

Q. Hanford's infrastructure continues to age. Are we losing ground in maintaining the infrastructure that will be needed to support cleanup over the next several decades?

R. Bob Wilkinson: We are not losing ground; we are trying to ensure the correct infrastructure services are provided without over- or under-spending. Alignment planning helps ensure safety and identifies risk for liability on aging infrastructure, as well as the best place to spend funding. Cost savings are re-allocated to reduce risk elsewhere on site.

Mark Lindholm: The Infrastructure Stewardship Management Program will help identify and prioritize infrastructure upgrades over the next five years. It will help plan what is needed to support the long-term mission for tank waste.

Q. Historically there has been some concerns regarding conflicting requirements for various jobs when union workers switch companies on site. Has implementation of standardized requirements been completed across contractors?

R. John Ciucci: Each contractor has different programs and relies on other contractors, like MSA, to be successful. Establishing site-wide standards has made it easier for workers to move amongst the different contractors and still feel safe and efficient. Individual contractor programs have been executed correctly in the past, but now the contractors are working together.

Bob Wilkinson: The site-wide programs have contributed to progress on site as the contractors work together to make efficiencies. The site-wide standards also provide for similarities between training programs to be consistent between contractors. The contractors are making an effort to better communicate between each other at the lower levels to share and gain trust.

Q. What efforts are contractors implementing to recycle? Examples: paper, cans, ink cartridges, old computers, non-contaminated equipment of all kinds, etc.

R. Bob Wilkinson: One of MSA's roles is to better prevent material creation, so to minimize the need for recycling. In addition, we have a 50 percent waste reduction goal, and 80 percent of the waste on site can be recycled, including printer ink, paint, and chemicals. We are transitioning to more electronic systems to reduce paper needs and waste.

Scott Sax: WCH tries to relay the importance of recycling to every worker, from the janitor, to the engineer, to the project manager. We provide incentive bonuses for the ability to save money, which can be from just ordering the right amount of chemicals to not ordering too much in the

first place. Leftover materials are moved from one project site to another. There are subcontractors who will pay us to remove transformers on site because they want the oil inside. The earnings are then invested in our other work.

John Ciucci: Our workforce lives and breathes environmental management, so they are proud to have goals like a zero waste discharge at company events. At our President Safety Council meetings, we vote for the project that did the best for environmental protections, trophy included. The 100 K Area won the most recent award.

Mark Lindholm: We have sustainability requirements to meet, and we are involved in site-wide recycling. We created the “greenlink” communication tool to distribute emails about best recycling practices for work and home. We re-use as much equipment as possible.

The Board thanked the contractors for their participation in the panel.

After the meeting, EIC members and agency representatives discussed a list of questions and comments that resulted from the contractor panel at the April Board meeting. DOE staff agreed to consider questions and provide available responses during the agency updates at the June Board meeting. The list of questions and comments is provided as Attachment 1.

Draft Advice: Central Plateau Inner Area Principles

Issue manager introduction

Shelley Cimon, Columbia Riverkeeper (Regional Environmental/Citizen), said the draft advice was developed based on the Central Plateau Inner Area Principles presentation given at the February Board meeting, as well as questions and comments provided by Board members. Shelley noted that the Inner Area principles, or guidelines, are the foundation for evaluating waste sites to guide development of the Remedial Investigation / Feasibility Study (RI/FS) process. The principles will help the TPA agencies ensure consistency between processes and decisions. Decisions for the Inner Area will not be formal until the Record of Decision (ROD), but it is influenced by the principles. The Inner Area is very complex, and the waste is organized by Operable Units (OU); decisions will be made at the OU level. The principles address five areas for consideration, and the proposed Inner Area future scenario will be for industrial land use, with no tribal scenario. DOE plans to develop the RI/FS process in sections to define parameters and develop a template for other work plans. Preliminary Remediation Goals for human health, as well as future RODs, will be risk-based, which is lower than dose-based. Cleanup will be based on Model Toxic Control Act Level C, and ecological preceptors will be the same as in the River Corridor. DOE may choose to evaluate an interim point of compliance for ecological protection.

Shelley said the draft advice has an addendum attached which captures the richness of the committee conversations during the draft advice process. She said there are multiple ways to include the captured dialogue, which is not a consensus product, if the Board does not feel it should be attached to the advice, such as including it as an attachment to the Board meeting summary.

Agency perspectives

Jim Hansen, DOE-RL, provided some clarification on the conditional point of compliance for groundwater, noting that it is only a proposal, and the regulators have not agreed to it yet. DOE may still determine not to propose it. Jim said the process for determining how to clean up the Central Plateau has been going on a long time, and it still has far to go. The advice is timely and relevant as DOE starts to

develop work plans for the OUs, and they will try to respond to the advice point by point. Draft A of a few of the work plans are currently being reviewed by the Washington State Department of Ecology (Ecology), and the principles are subject to change.

John Price, Ecology, said the advice is unusual in that it deals with many complicated and controversial issues at one time. He said the issue managers did a great job of making the advice short and demonstrative of the HAB's values. He thanked them for the clarity and conciseness.

Emy Laija, U.S. Environmental Protection Agency (EPA), thanked the Board for input and the issue managers for their work. EPA will be able to respond clearly to the advice and looks forward to continuing the conversation.

Board discussion

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

- The Board discussed the format of the advice bullets, noting that some could be distinguished from their supplemental information for clarity. For consistency with previous advice, the Board determined to leave the bullets as is.
- One Board member noted difficulties with references to “true risk” and “risk driver,” saying that “true” risk indicates there is a “false” risk, and risk is the only driver for cleanup, so the Board should not indicate there could be other drivers where risk is absent. The Board changed the reference to “true risk” and clarified that the principles indicate DOE will not clean up areas in the Inner Area without a risk driver, but the Board wishes to ask that they do, especially where there are obvious hot spots of contamination. Assessing the risk of a contamination area should not prevent cleanup, and DOE should go after all hot spots.
- The Board discussed how point of compliance is measured when an area has been backfilled. The advice is asking DOE to measure points of compliance from the bottom of fill that has been placed on top of contaminated areas, and to continue to mark the point of compliance depth at 15 feet, rather than the newly proposed 10 feet. Jim said he would have trouble understanding how to implement the reference to backfill and point of compliance. The Board determined to remove the specific example in the advice, with one Board member noting that being too specific with points of compliance would not allow flexibility should new technologies or lessons learned inform better analysis.
- The Board discussed whether or not to include the addendum with the advice, determining that non-consensus based products should not be connected with the Board's consensus advice. The addendum is hard to follow and would need to be edited before becoming a final product. One option is to include the addendum with the meeting summary, but there would be a 45-day delay between issuing the advice and issuing the summary. Jim said he would not know how to present the addendum with the advice, as it is not a part of the normal advice package sent to DOE-Headquarters. The Board determined that the agencies need only respond to the advice, but encouraged the agencies to refer to the addendum for more information. Some Board members expressed discomfort with the information in the addendum as it only presents selected portions of the discussion, not all of it.
- One Board member suggested the Board be more specific as to what they would like done with the advised sensitivity analyses on contaminants in the Inner Area. The addendum includes specific information on this point, as it is complicated and in-depth. The point is to ask the agencies to run sensitivity analyses for long-lived contaminants should there be a full year of rain, for example, to demonstrate how much infiltration it would take to drain those contaminants into

groundwater. Jim said the current level of specificity is appropriate for policy level advice, and the technical information or challenges will be brought forward by EPA and Ecology. He said DOE may not do all of the analyses people want, but they will be conducting a lot of sensitivity analyses. Emy confirmed that EPA understands the advice as is.

- The Board discussed their support of Applicable or Relevant and Appropriate Requirements (ARAR) and whether to include background information that they do not support ARAR waivers but understand they may be necessary in certain circumstances. John Price said he supports the reference to ARARs in the advice, as a risk-based approach to cleanup is different than what is required for ARARs. Jim said whether or not to comply with ARARs is very specific, and it is very difficult to get a waiver. There are a small number of waivers in effect at Hanford, but receiving more is not DOE's goal.
- Emy clarified that the Comprehensive Environmental Response, Compensation, and Liability Act requires risk characterization, but the advice makes it sound it is not already being done.
- Jeff asked the Board how they expect the agencies to respond to advice requesting the Inner Area be reduced to less than 10 square miles, as it is a difficult issue to respond to. The Board said it is important for them to go on record that they believe the agencies should consider further reducing the Inner Area in the future, whether or not DOE responds.

Presentation: One System and Direct-Feed Law

Introduction

Bob Suyama, Public-at-Large, said the Tank Waste Committee (TWC) has been briefed on DFLAW, the process for which is expected to be operational within the next 10 years. Given the number of facilities and plans needed to work together for the process, TWC asked to be briefed on how all the components will work together. For glass to be made from the waste, the waste has to be transferred safely from the tanks to the new staging and pumping facility, after which it will be sent to the Pretreatment (PT) Facility where high-level waste (HLW) components will be removed before shipping LAW to the glass facility. The One System presentation demonstrates how teams are organized and working to ensure it all comes together at the appropriate time.

Agency presentation

Briant Charboneau, DOE-ORP, is the Director of WTP Startup, Commissioning, and Integration, as well as the Program Office Manager for the DFLAW System. Briant provided an overview of the One System (Attachment 2). In addition to his presentation, Briant noted:

- The One System Charter has strategic objectives for WTP and treating all of the waste. The One System was created four years ago to help complete the individual contractors' scope, and a management team was gathered in early 2014 to ensure the facilities match up. The management team is made up of the DOE-ORP manager and leads from Bechtel National, Inc. (BNI) and WRPS. They ensure the correct policies are developed, implemented, and executed accurately.
- Tanks contain liquid, soluble solids, and insoluble solids. Once the waste has been retrieved, the majority will be liquid, only a little will be insoluble.
- The technical issues that have slowed WTP have dealt with the insoluble solids, which were an issue for the PT, HLW, and Vitrification Facilities. The new facility, LAW Pretreatment System (LAWPS), will provide filtration to ensure no solids remain in the waste stream, using ion exchange to remove cesium. DOE has high confidence in the technology. There are no significant technical issues for DFLAW, but there are some options left to be selected.
- 30 metric tons of glass will be treated per day once everything is up and running.

- The One System team has created an integrated flow sheet to demonstrate how waste gets to its final destination, followed by an integrated schedule for construction and startup. The strategic plan focuses on activities in the next 10 years, and the risk and opportunity plan looks at the hard technical issues surrounding insoluble solids, like corrosion, erosion, and gas generation.
- The One System performance metrics look at how the One System is achieving integration activities and their assigned scope, as well as how well DOE-ORP is moving toward startup.

Bill Condon, WRPS, reviewed the integrated flow sheet, noting:

- The project management approach to the DFLAW program is to combine the individual project's schedules and tools into a larger program, an approach that allows the team to look at risk and opportunities across the entire program, as well as provide oversight on how to deal with problems, risks, or budget shortfalls. Five major contractors are involved in One System to ensure the coordination of components at the right time to make DFLAW successful.
- The integrated flow sheet helps make project decisions that are in balance with the rest of the system. The flow sheet has 80 different flow streams, each with as many as 60 components and subject to 40 different requirements. The flow sheet has been proven to work, and no technical adjustments are needed. Enhancements can be incorporated as the process moves forward, but no changes will be made if it will delay startup.

Mike Hughes, BNI, provided an overview of the integrated schedule, noting:

- The management team reviews monthly the level 1 schedule which is logic-tied to illustrate how DFLAW will be ready for startup in 2022.
- Level 2 is the common work break-down schedule for DFLAW, a combination of individual project, detailed work schedules.
- There is also a permitting schedule to outline all the permits needed for DFLAW from Ecology and the Washington State Department of Health (WDOH). There are 32 permits total, and DOE wants to work with the permitting agencies to plan for the permitting processes.
- The necessary readiness assessments and operational readiness assessments have been outlined to examine them from an integrated perspective. The One System team is working with the individual projects to provide support at the program level.

Regulator's perspective

Dan McDonald, Ecology, said DFLAW is a process that has to be well choreographed before it will all fit together. The One System team is a staff organization that does not have direct authority, and he hopes they will be able to become a management structure for decision-making. One System is about reconfiguring facilities, anticipating processes, and looking at existing infrastructure to anticipate needed infrastructure. Dan said it is yet to be determined whether the LAWPS and EFT will prevent waste from going back to the tanks. In addition to the scope, cost, and schedule for DFLAW, contracts should also be brought together for the integrated perspective. Dan noted that One System should be presented to the larger Hanford community so they understand what needs to be done, when, and how. He hopes the One System view of DFLAW can inform other efforts on site.

Board discussion

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

Q. DFLAW focuses on cesium risk, but there are other long-lived mobile constituents as well. How does DFLAW address technetium? Will it go into the Integrated Disposal Facility (IDF)?

R. [DOE]: DFLAW will return the cesium to the tank farms to be incorporated into the high level waste glass. DFLAW treats technetium just like it will be treated in during full operations of the waste treatment plant. Only a portion of the technetium within the waste stream being feed into the LAW melter will be incorporated into the glass. The current flow sheet shows that the waste streams coming off the melter operations containing significant amounts of technetium will either be recycled into the LAW melter feed stream or returned back to the tank farms. The LAW glass containing the technetium will be disposed of at IDF. We are looking at options to prevent sending waste back to the tank farms. A performance assessment for IDF is under development to verify it is acceptable to send LAW waste to IDF.

C. BNI has equipment that can remove technetium, and though it has been taken out of the process, we at least know it is possible. LAWPS has extra room in case equipment needs to be added. There is also a path to send technetium and iodine offsite to a facility in Texas if it can be captured and grouted. Captured cesium could also potentially be sent there. There are possibilities that can save us money, even if it includes some redesign.

R. [DOE] We are aware and considering it.

C. The complexity of putting together and streamlining a permitting schedule is difficult, and air permits for construction will be especially tedious. I hope the One System approach is successful at it.

R. [DOE] Ecology will work with us to help bundle permits, and will help us be both smart about permitting and regulatory compliant.

Q. When will the flow sheet be available to demonstrate volume flow through the different parts of the system? It will be hard to determine if the process actually works until you know how much is going in and out. The LAWPS project director has said we can offer improvements if we think of them, but we do not have the information to review.

R. [DOE] Looking at volume is in the work plan, but we do not have the performance specifics yet. The work plan can be amended if needed. This will be a good topic for TWC to consider.

Primer: Understanding Radiological Terms

Introduction

Richard Bloom, City of West Richland (Local Government), introduced Tom Rogers and Crystal Mathey from WDOH, and Tony Brooks, Benton-Franklin Public Health (Local/Regional Public Health), who will be supporting the radiological (RAD) terms primer. He invited the Board to visit the example air testing equipment at the back of the room. He said the purpose of the presentation is for everyone to find a common understanding of RAD terminology, and he provided a handout for easy reference (Attachment 3).

In addition to the presentation (Attachment 4), Richard and Tony specifically noted:

- Radon is a noble gas derivative of the decay series; it is not chemically reactive. Radon can be inhaled and it highly ionizing. Scientists know more about radon than any other environmental pollutant, so there is a lot of information on the effects of radiation.
- Radiation doses depend on elevation; higher elevation means less atmosphere to be able to break it down.
- The units used to measure radiation are different in the United States than internationally. Tony reviewed the different measurement terms as outlined in the presentation and handout. He noted that everyone in the world is naturally exposed to at least 310 millirems of radiation a year, and then more if subject to radiological scans in hospitals, etc. Some areas of the country have more pockets of radon than others, for example, Spokane, WA has more than the Tri-Cities, WA. There is a difference between doses found naturally in the environment and doses that will cause harm.
- Dose rates and measurements are different. Tony reviewed the Dose Range Chart, and offered printed placemats for Board members to take home. Radioactivity in an area is measureable, while radon exposure to humans or animals is analyzed by dose.
- MSA and WDOH both have air sampling stations placed at the Hanford Site to take bi-weekly samples. WDOH also takes high-volume samples when a vapor event occurs.

Richard and Tony provided examples of nuclear testing and radiological doses, including atomic testing in Nevada and the dose rates for people living in nearby Utah, and a spike in doses in the Portland area when Chernobyl exploded.

Tom said WDOH is made up of professionals from across the sciences, making them uniquely qualified to work on environmental and radiological issues at Hanford. He also encouraged Board members to visit the sampling equipment at the back of the room. Crystal provided an example test using a high-sensitivity gamma detector, a dose-rate meter that measures in micro-rem per hour.

Tom said WDOH conducts two types of sampling at Hanford for air quality, and his task is to ensure WDOH oversight of the Hanford long term monitoring programs. Samples test the same air in the same location, but results are sent to different labs for analysis. WDOH issues licenses for the use of radioactive materials throughout the state, and they support Ecology's Air Operating Permit (AOP) at Hanford. Every six months, Mike Priddy, WDOH, has to certify that Washington State produce is free from Chernobyl contamination.

Crystal said that due to research at WDOH, a locally specific radon decay curve has been developed to extrapolate radon from alpha contaminants. Background levels always have to be subtracted.

Tom said WDOH recently sampled the 618-10 Burial Ground and noted Energy Northwest activities near the site that would have an effect on the site measurements. He said he hopes the Board has a better understanding of what it takes to go from testing, to doses, to determining risk.

Board discussion

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

Q. Are alpha, beta, and gamma all measured equally?

R. [Tony] Curies and becquerel are disintegration measurements, whether measuring alpha, beta, or gamma. Different substances give off different levels, so you would have to do a conversion.

C. Radiation is extremely detrimental for the heart, and women have died from heart disease caused by the radiation they received for cancer treatments. It is irresponsible not to address heart disease when talking about radiation doses and risk.

R. [Tony] There is no question that cancer therapy affects other parts of the body; there are studies being done to better target radiation and prevent damage to the heart. Heart effects were not included in the presentation because cancer is a bigger risk, and studies on radiation effects to the heart are relatively new compared to all the work that has been done for cancer. There is no evidence that low doses of radiation have an effect on the heart, but it certainly does in high doses.

Q. Why is Technetium 99 important to the waste management and cleanup effort?

R. [Tony] Technetium 99 has a very long half-life, whereas strontium and cesium will decay in a 30-year half-life. The size of the mass of the contaminant is important to consider for cleanup.

[Richard] A long half-life means the contaminant could reach the Columbia River. It would not be a huge dose, but it cannot be allowed to happen since we are cleaning up for drinking water standards.

[DOE] Immobilizing Technetium 99 means we want to be able to hold it within the glass form for a long time, due to its long half-life. Other contaminants, like Plutonium, prefer to stick to the soil, while Technetium 99 moves to water.

Public Comment

Roy Gephart, Retired, asked if the Board has an understanding of the estimated cost for the new DFLAW facility. If the facility is for staging LAW in order to bypass the PT Facility, what will the additional cost be?

Dana Ward, Lower Columbia Basin Audubon Society, provided the Board with an overview of items to consider in order to better address human and wildlife issues at the Hanford Reach National Monument and other areas on site. He specifically addressed the lack of stakeholder involvement in DOE's development of their Area Management Plan, including no involvement from the U.S. Fish and Wildlife Service (FWS). He asked them to support efforts to place Hanford Reach where it can best be managed by the U.S. Department of the Interior, FWS, and the NPS. Dana provided copies of his written statement, which is provided as Attachment 5.

Board and Committee Reports

Health, Safety, and Environmental Protection (HSEP)

Becky Holland, HSEP chair, said she is happy to be back from her three-month absence. HSEP has a joint meeting with TWC in March to discuss the Tank Vapor Implementation Plan. HSEP will have a call on April 28, at 9:00 a.m. to plan for a May meeting, where they may discuss the upcoming corrective action plan for beryllium. Becky noted that she and Richard Bloom were re-elected to their respective leadership positions for another term.

Budget and Contracts Committee (BCC)

Ed Revell, BCC vice-chair, said the committee is preparing to draft advice on the FY2017 budget priorities for Hanford. DOE's workshop will be held at 5:30 p.m. on April 28 at the Richland Library, and BCC will have a call that morning to prepare for it. BCC will meet in May to craft the advice. He asked for input from other committees given the short timeframe to complete advice before the June Board meeting. Ed noted his concern for issues that could affect the budget, including the Consent Decree, Consortium for Risk Evaluation with Stakeholder Participation (CRESP) report, and carry over projects like the 324 Building.

Public Involvement and Communications Committee (PIC)

Liz Mattson, PIC chair, said PIC had their usual pre-Board meeting on Tuesday, April 7, from 12:00 p.m. – 5:00 p.m., which allowed people to travel for the meeting that morning. The meeting started with the TPA Quarterly Update, followed by review of the TPA public involvement calendar and recent TPA public involvement survey. The survey received 169 responses. PIC also worked with TWC to develop a WTP Communications Strategy and brainstormed lessons learned from past outreach activities. PIC was able to review the handout for the upcoming budget meeting during an open forum to discuss general public involvement issues. They also discussed PIC progress in FY 2015 and brainstormed topics for the FY 2016 work plan to inform the upcoming Leadership Workshop. PIC will have a call in May to plan for the June meeting.

Susan said it is every Board member's responsibility to conduct outreach on behalf of the Board, noting that HanfordLearning.org's filming of the Rad Primer was an excellent opportunity to engage the public for free.

River and Plateau Committee (RAP)

Pam Larsen, RAP chair, said Gary Garnant has been elected as the new vice chair, and she will continue as chair. Pam thanked Dale Engstrom for years of service as vice-chair. The March RAP meeting was dedicated to drafting the Central Plateau Inner Area Principles advice, as well as discussing the Hanford Lifecycle Scope, Schedule and Cost Report (Lifecycle Report) and Hanford budgets with BCC and receiving a briefing on PFP. The next meeting is scheduled for April 14 at 1:00 p.m. RAP will discuss River Corridor cleanup progress and VPU testing and remediation, as well as plan RAP's input to the Leadership Workshop. Pam noted her concern for budget patterns, especially for the River Corridor, as low funding years has great impacts on projects being completed. She noted that CRESP will not help prioritize work at Hanford, and the Board should provide input on the budget.

Tank Waste Committee (TWC)

Bob Suyama, newly elected TWC chair, thanked Dirk Dunning for his work as chair and recognized Melanie Myers-Magnussen as the new vice-chair. TWC has been focusing on the DFLAW system and the One System approach. DOE has asked for the Board's analysis of cesium treatment and disposition, and TWC would like to look at the options that would prevent waste from being sent back to the tanks. TWC will also be working on the WTP Communications Strategy, tank vapor issues, and the Tank Vapor Implementation Plan. The next meeting is scheduled for 9:00 a.m. – 4:00 p.m. at the Richland Library, where they will be briefed on C Farm closure activities, the PHOENIX Tank Farms application, and a briefing from Mark Triplet on activities at Fukushima.

Executive Issues Committee (EIC)

Steve said the EIC will see some change in the upcoming months, as multiple new chairs and vice-chairs join the committee. The EIC will be gaining great new knowledge and experience. He asked the Board to

thank their committee leadership, old and new, for their outstanding work. EIC is currently determining which issues to take to the EMSSAB meeting at the end of April, as well as discussion the budget, WIPP interim surface storage, and student involvement in the Board. EIC will be planning the Leadership Workshop, which will include topics for consideration on the FY 2016 work plan and the meeting schedule for the FY 2016 Board calendar.

Ken noted that outgoing committee leadership, Dirk Dunning and Dale Engstrom, ODOE, will continue to be very involved with their respective committees and as issue managers.

National Liaison

Pam spoke to the recent Waste Management conference, which was based around opportunities to send waste to Waste Control Specialists in Texas. She said there is desire for an alternative to Yucca Mountain, though the politics surrounding the selection for another site is frustrating. It would involve looking into a consent-based process for communities interested in hosting a new facility. Pam said she was very proud of the Hanford DOE representatives who spoke at the conference about tank waste and WTP.

Ken reported that he will be attending three upcoming meetings, including the April 29 Bi-partisan Policy Forum to be held in the Tri-Cities and attended by Steve and Susan. The meeting will examine HLW disposition issues. The meeting is open to the public in the evening, with a closed-door meeting during the day. Ken will also attend a meeting in Albuquerque in May with states and tribes to talk about nuclear transportation issues. The National Governors' Association and State and Tribal Government Working Group will have meetings in Richland the week of May 18. Both groups involve state regulators from throughout the DOE complex. STGWG also includes Tribal representatives. He noted most of those sessions are open to the public.

Environmental Management Site-Specific Advisory Board (EMSSAB)

Steve said he and Susan will attend the April 21 – 23 EMSSAB meeting in Augusta, Georgia. The first day is a tour of the Savannah River Site, followed by business topics the next two days, including the DOE budget and EMSSAB budget advice for dealing with shortfalls, carry over projects, and funding for public involvement. The advice is only draft for now, and Steve will take any Board's comments to the EMSSAB. The EMSSAB will also discuss Susan's outline for engaging high school and college students; Steve will provide the Board with an update.

Board Business

Review draft EMSSAB letter

Steve said the draft letter comes from the Northern New Mexico Citizen Advisory Board (NNM CAB) and reflects comments from other Boards who were concerned about the previous draft. The letter has a bigger effect on sites that were shipping transuranic (TRU) waste to WIPP prior to the accident. Steve expressed reservation that the Board would not be able to approve the letter based on outstanding concerns. He will provide any comments from the Board to the EMSSAB for their consideration.

The draft letter is provided as Attachment 6.

Board discussion

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

- The letter says the NNM CAB wants their TRU waste sent to WIPP as soon as possible, which would be detrimental to WIPP's recovery. When WIPP closed, DOE attempted to still meet their milestone for Los Alamos TRU waste by sending it to a facility in Texas, but have since realized there could be issues with the waste stream that caused the WIPP accident, so shipments have ceased. The letter asks for an alternative for shipping Los Alamos waste, no matter what it is. WIPP recovery is not fully funded, so progress will be slow. Taking money from WIPP to fund alternative storage would be even more detrimental. Any advice concerning WIPP should be to ask DOE to do whatever they need to get WIPP back online as soon as possible, and then to invest in a backup plan down the road. The bigger picture should be solved before any individual site needs.
- The Board discussed the NNM CAB's concerns with leaving the waste on site, including the potential for fire so close to a large population. While their board may issue advice asking for the waste to be shipped as soon as possible, it is not necessary for the EMSSAB to endorse it if it means further delay for WIPP. The Board discussed supporting the NNM CAB while still looking at issues from a complex-wide perspective.
- The Board reviewed inaccuracies in the letter, including asking DOE to provide their plans for restoring WIPP, which they have already done, as well as a reference to PNNL that should be to the Oak Ridge National Laboratory, as PNNL does not handle TRU waste.
- The Board determined to provide comments on the letter recommending it first ask DOE to proceed with restoring WIPP to full operations before using funding to prepare a viable backup plan. The EMSSAB can recommend more generic advice to the NNM CAB's specific advice.

Steve and Susan will take the Board's comments to the EMSSAB. Board members were encouraged to provide any additional comments to them.

HAB annual survey results

Cathy reviewed the results of the HAB Annual Survey. Her presentation is provided as Attachment 7. The survey is conducted annually to assess the facilitation team, leadership, and agency support. Full survey results are available on the back table, as well as on SharePoint.

The Board discussed the survey results, noting that a year-to-year comparison of responses would be helpful to see if assessments improve through the years. Eighty-five percent of respondents find the meeting summaries helpful, but some Board members noted that they do not always capture the appropriate context or verbiage. A few Board members find the summaries very helpful for when they are not able to attend a meeting, but find they are difficult to share with non-Board members interested in committee topics. The Board noted that there is not enough funding to provide the more detailed summaries of the past, which a few found much more useful.

Liz suggested finding an alternative for an independent HAB website for more efficient content management. EnviroIssues could manage the site, and it would be a valuable outreach tool, as well as beneficial for helping HAB members finding necessary documents.

Preliminary June Board meeting topics

Cathy reviewed the following tentative meeting topics for the June 10-11, 2015 Board meeting:

- Agency/committee reports
- Budget advice
- Preliminary FY 2016 work plan topics
- Debrief of the Leadership Workshop
- CRESP update
- Debrief on contractor panel

Bob Suyama suggested other stakeholders be asked to share their perspectives on work at the Hanford Site, in the same format the contractors' provided theirs.

Closing remarks

Jonathan Mathews, Nez Perce Tribe (Tribal Government), provided observations on the CRESP process and subsequent report due at the end of April. He said the tribes have worked with CRESP before, when they were contracted by DOE to create a tribal scenario in conjunction with the local tribes. He said it was a positive experience because CRESP served as the tribes' advocate; CRESP is invested in positive stakeholder engagement in the production of their final products. He noted that seems to have not been the Board's experience, as they were not asked to be involved in the development of the scope for the project, so there is a negative perception of CRESP's work and involvement at Hanford. He acknowledged that the Board is concerned what the report will mean for Hanford, but noted that DOE is the decision maker for how the information is used, not CRESP. He asked the Board to have an open mind to CRESP's report.

Pam asked Jonathan how CRESP responded to specific technical questions at the recent CRESP meeting in the Tri-Cities, as she heard they said they do not think the 324 Building provides any risk. Jonathan said CRESP answered many questions by saying they have all the necessary information analyzed but are still determining their evaluation process, so specifics will need to wait to be addressed in the report.

Jane Hedges, Ecology, noted that the next iteration of the report may be delayed, as was the first draft. CRESP is planning on returning to speak with each stakeholder group who saw the draft plan. Jane said they have a draft schedule of their meetings, and she assumes they will first work with the committees and then the full Board.

Mecal Seppalainen invited Board members to attend the June 1-2 meeting of the Oregon Hanford Cleanup Board at the Port of Morrow in Boardman, Oregon.

Steve thanked Board members for their participation. The meeting was adjourned.

Attachments

Attachment 1: Contractor Panel Questions and Comments

Attachment 2: One System presentation

Attachment 3: Rad Terminology Primer handout

Attachment 4: Rad Terminology Primer presentation

Attachment 5: Dana Ward, public comment

Attachment 6: EMSSAB draft letter

Attachment 7: HAB Annual Survey presentation

Attendees

HAB MEMBERS AND ALTERNATES

Tony Brooks, Member	Jerry Peltier, Member	Larry Lockrem, Alternate
Dan Bouchey, Member	Maynard Plahuta, Member	Jonathan Matthews, Alternate
Janice Catrell, Member	Mecal Seppalainen, Member	Liz Mattson, Alternate
Shelley Cimon, Member	Bob Suyama, Member	John Martell, Alternate
Sam Dechter, Member	Art Tackett, Member	Peggy Maze Johnson, Alternate
Robert Davis, Member	Gene Van Liew, Member	Kristen McNall, Alternate
Gary Garnant, Member		Emmett Moore, Alternate
Floyd Hodges, Member	Richard Bloom, Alternate	Edward Pacheco, Alternate
Becky Holland, Member	Eric Clements, Alternate	Mike Priddy, Alternate
John Howieson, Member	Dirk Dunning, Alternate (phone)	Ed Revell, Alternate
Steve Hudson, Member	Dale Engstrom, Alternate (phone)	Dan Serres, Alternate
Pam Larsen, Member	Jeff Hunter, Alternate	Richard Smith, Alternate
Melanie Myers-Magnuson, Member	Mike Korenko, Alternate	Margery Swint, Alternate
Ken Niles, Member		Steve White, Alternate

AGENCY, CONTRACTOR, AND SUPPORT STAFF

Jeff Frey, DOE-RL	Dieter Bohrmann, Ecology	Sharon Braswell, Northwind/ DOE-ORP
Jim Hansen, DOE-RL	Heather John, Ecology	Rich Marshall, Northwind/ DOE-ORP
Karen Lutz, DOE-RL	Dan McDonald, Ecology	Patrick Conrad, MSA
Steve Pfaff, DOE-RL	John Price, Ecology	Carolyn Noonan, MSA
Kristen Skopect, DOE-RL	Tammie Gilley, EnviroIssues	Jennifer Copeland, MSA
JD Dowell, DOE-ORP	Cathy McCague, EnviroIssues	Rob Piippo, MSA
Joni Grindstaff, DOE-ORP	Melissa Thom, EnviroIssues	Sonya Johnson, CHPRC
Carrie Meyer, DOE-ORP	Peter Bengston, WCH	Don Moak, CHPRC
Emy Laija, EPA	Rochelle Twomey, WCH	Dee Millikin, CHPRC
Jane Hedges, Ecology	Todd Nelson, Bechtel	Mark Lindholm, WRPS
		Rob Roxburgh, WRPS

MEMBERS OF THE PUBLIC

Emily Bays, Hanford Challenge	Laura Hanses	Stephanie Waggener
Annette Cary, Tri-City Herald	Alan Nielson	Dana Ward
Roy Gephart	Andrew Pitman, Hanfordlearning.o9rg	Linnea Williams
	Chrissy Swartz, Heart of America Northwest	