

**FINAL MEETING SUMMARY**

**HANFORD ADVISORY BOARD**  
RIVER AND PLATEAU COMMITTEE MEETING  
*November 13, 2008*  
*Richland, WA*

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

**Welcome and Introductions**

Maynard Plahuta, River and Plateau (RAP) Committee Chair, welcomed everyone and introductions were made. The committee approved the October meeting summary.

**ZP-1 Record of Decision**

Dennis Faulk, Environmental Protection Agency (EPA), said ZP-1 is the first comprehensive record of decision (ROD) on the Central Plateau. ZP-1 is a groundwater operable unit near Z Plant in the 200 West Area. Dennis summarized some of the ongoing activities at ZP-1, which include 100 active monitoring wells and 16 groundwater extraction wells. The groundwater extraction wells are pumping mostly organics, but two wells are pumping a small technetium plume. Dennis said the current system will continue to operate until the new system comes online, which is expected to be complete by 2011. The current system does not meet the reinjection standards. Dennis said technetium is the main concern in this operable unit but the plume also contains tritium, trichloroethylene, chromium, nitrate, and iodine. Dennis said the cleanup levels for chemicals used in the ROD are specified by the Model Toxics Control Act (MTCA).

Dennis said the risk is clear for the basis of action; the excess cancer risk from drinking water exposure for carbon tetrachloride is 200 in 10,000 at pre-cleanup levels. Dennis

reviewed the remedial action objectives: 1) Restore groundwater to highest beneficial use, 2) Prevent people from getting into the water in the near term with institutional controls (IC) and 3) Protect the Columbia River which is the main receptor for the groundwater. There are four main components to the remedy including a groundwater pump and treat system, monitored natural attenuation, flow-path control and ICs. Dennis said the overarching requirement is to meet groundwater cleanup levels within 125 years. The groundwater pump and treat is designed to capture and treat groundwater to reduce contaminants of concern by 95 percent within 25 years. Monitoring will be done to evaluate the performance of the pump and treat and will help refine the design of the program. Natural attenuation will continue to bring the levels down over the following 100 years. Flow path control will be used in the northeast and north portion of the aquifer as well.

Dennis distributed a handout that details the IC component of the ROD. He said it is likely that the same type of requirements will be made for every decision on the site. Dennis reviewed the ICs outlined in the ROD. Dennis said every time the ROD is updated, they have to review the IC plan. Dennis said the multiple programs at Hanford have different objectives and the regulators want to make sure that projects happening in the same vicinity will not affect the groundwater program. Dennis reviewed each bullet under the monitoring parameters. Dennis said the IC plan includes elements from Department of Defense (DOD) sites which are often located next to towns. Dennis said the DOD ICs may not be as relevant to the Hanford site but are applied anyway.

Dennis said the next step for the ZP-1 ROD is the Remedial Design/Remedial Action work plan which is due six months after ROD is issued (March 2009). Dennis said all of the elements of the plan will not be ready by March 2009, but the plan will include placeholders for all of the elements that need to be included. Dennis said all of the pieces will come together over the next year. The program needs to be operational by the end of 2011.

John Price, Washington State Department of Ecology (Ecology), said when a final ROD is issued the State has to step forward and say if it meets state requirements. John said the State supports this remedy and believes it to be consistent with their standards. John reviewed the state acceptance criteria as outlined in the handout. John reiterated that this is the first decision which implements the ROD strategy. The state acceptance criteria outlines where the state intends to go with monitoring requirements. John said Ecology is happy with the remedy and looks forward to seeing it implemented. Ecology believes the timeframe is reasonable to protect health and the environment.

### *Agency Perspectives*

- Arlene Tortoso, Department of Energy – Richland Operations Office (DOE-RL), said DOE-RL has started work on the design for the pump and treat system. They have put the system out for proposals and received three pre-conceptual designs. Arlene said DOE-RL will look at the proposals and will decide the path forward for determining

the design for the treatment system. DOE is also currently working on the sampling and analysis plan for putting in the wells for FY09 and the work is moving forward.

- Paula Call, DOE-RL, said bullet ten under the IC monitoring parameters says that if DOE wants to do a land transfer they have to give EPA six months notice. Paula asked if this applies to leasing of land as well. Dennis said leasing would also fall under this requirement. If DOE wants to lease land they have to notify EPA. Dennis explained that under a lease, DOE is still ultimately responsible for controls because they are the land owners. Dennis said there are no enforcement mechanisms included in the ROD, but the concept is that DOE would involve EPA in any land transfer or lease discussions. Craig Cameron, EPA, elaborated that every five years during the ROD review, someone would check to make sure the land is not being used in a way that is inconsistent with the remedy.

### Committee Discussion

- Harold Heacock asked if access would still be restricted to this area in a hundred years if the pump and treat is still operating. Dennis said the ROD could go through a formal process to be amended if at some point it was determined that the site could include a surface use, but drilling would still be restricted.
- Maynard said the second bullet under the monitoring parameters says that no intrusive work is allowed. Maynard asked if this means that DOE has to submit a work plan for every maintenance task they plan to do. Dennis said this restriction is only for the ZP-1 Area and work can be performed as long as it does not go into the saturated groundwater in 200 North. Maynard asked if crews would be allowed to dig a two foot hole. Dennis said that would be allowed, but added if this were a soil ROD the requirement might be different.
- Ken Gasper asked how the ROD would deal with any remediation on the soils above the operable unit that could result in more source terms moving into the operable unit. Dennis said theoretically any activity on the surface that has an impact on groundwater can be addressed through the ROD. Dennis said the monitoring system needs to be set up so it can detect any contaminants moving into the groundwater as well. Dennis said this issue has been addressed at PW 1, 3, 6 where there currently is a vapor extraction system and the ROD will expand that. If in the future the tanks are remediated, it will be important to know if any adverse things are happening below.
- Dick Smith asked if each groundwater unit will have its own ROD. Dennis said it would. Dick asked how all of the RODs interact to deal with the effluent that is pumped. Dennis said the expectation is that DOE has one treatment system and they will inject the effluent however they need to in order to control flow. Dennis said until the feasibility study (FS) is completed on the 200 UP-1 operable unit they will not know if they will be able to use the central facility.
- Harold asked Dennis to elaborate on the conceptual well network. Dennis said until the modeling is completed they will not know the exact locations of the wells. However, they are envisioning several lines of defense. They are currently planning to put wells in during 2009 ahead of the design. The first goal is to reduce the mass of

contamination, so the first wells will be put down in the heart of the plume. The flow path requirements of the ROD will ultimately end up with wells in the periphery as well.

- Ken asked about the bullet that addresses future day care facilities located on site. Dennis said this bullet is one that is typically included in the ROD language but may need to be amended because it may be reasonable that an office building located in this area in the future could have a day care in the bottom. They would have to achieve cleanup levels first and show there is no risk before this requirement could change.
- Maynard asked who at the local Ecology office is responsible for the RODs. John said Jane Hedges, Ecology, has signature authority on the ROD locally.
- Susan Leckband asked how the 125 year timeframe was decided. Dennis said there are two parts of the remedy, the first is to reduce the mass by 95 percent in 25 years; the second part is the 125 years for natural attenuation which was determined by a conservative calculation of hydraulics. Dennis said the five percent of contamination remaining will take that long to attenuate.
- Vince Panesko asked who is responsible 25 years from now to watch the contamination level and make sure it actually dropped 95 percent. Dennis said the responsibility will be a staff person at EPA or Ecology. Vince thought there would be an issue with who in reality would be around and have the authority to regulate this remedy. John said under Superfund, EPA will make a remedy and operate it for two years, and then it will get turned over to the State. John said it is not unusual for a remedy to be turned over to the State and run for 25 years or longer [NOTE, this is for Superfund sites and does not apply at Hanford]. Arlene said the interim action has been happening for a long time already. Matt McCormick, DOE-RL, said the pump and treat activities will go under Hanford minimum safe facilities. There have been facilities under that designation for 50 years and have not been compromised. Matt said minimum safe facilities are the first part of work that is funded and gets engineering support. Dennis said the requirements in the ROD are placed upon DOE and if DOE chooses not to do them, EPA and Ecology have enforcement authority.
- Vince asked how long the State has had active RODs. John said some have been around for 15 years and other Superfund sites have been around 20 years. The RODs have to be reviewed every five years to see if they are effective and if any changes need to be made. John said the last five year review that was done on site produced action items that DOE has been working on.
- Vince thought that the decision to separate the groundwater sites from the soil sites for remediation was a strange choice. He said this groundwater site is in motion while the soil sites are static and it would seem to make sense to address them together. Dennis said the major source contributors in the area are the Z cribs which were on the same schedule but were delayed because of the plutonium issues at those sites. Dennis also thought it would be too complicated to combine the soil sites and groundwater because if you had to factor in all of the tank farm issues the ROD would not be implementable. Dennis thought that the groundwater system proposed in the ROD would be effective at capturing the contamination.

- Briant Charboneau, DOE-RL, clarified that the five year review is only required for final RODs; DOE exceeded the requirement for the last five year review by including interim actions. Briant added that there are hundreds of release points in the ZP-1 Area and a 200 West ROD would have to be comprehensive and include everything. Briant agreed with Dennis and said he did not know how to implement a ROD that big.
- Bob Suyama asked what the process is for getting the ROD signed. Dennis said the proposed plan was sent out in July to solicit public comment. Based on that, the ROD was developed and all comments were responded to. Dennis said none of the comments changed the proposal, however sometimes the public's reaction is so adverse the remedy does need to be changed; in this case it did not. The process to get the ROD signed is an internal process.
- Bob asked how much the remedy will cost. Dennis said it will cost approximately two hundred million dollars over the lifecycle of the remedy.
- Paul Shaffer asked if the remedy suggests that the site will be in an active pump and treat mode for 25 years and then the system will rely on natural attenuation. John said that is true, provided the contamination levels are below the 95 percent mass reduction at the end of 25 years. Dennis added that they will make sure over the next 10-15 years that the pump and treat can achieve that level.
- Paul asked if there are interim criteria set up so if the remedy is not accomplishing what it is supposed to it can be changed. Dennis said they should see results from the monitoring system within 5-10 years. John said the groundwater model will allow them to plug in numbers as they begin operation of the system so they can look at actual numbers once the pumping starts. Briant said they will have to constantly monitor pump and treats because at some point they might start pumping clean water.
- Dick asked if the public has any other opportunities to weigh in now that the ROD has been issued. Dennis said under the regulation there are no more opportunities for public input. Dennis suggested that in April or May he come back to the committee to provide a briefing on the system design. Susan suggested that the committee continue to track the work plan as it is released in March as well.

### **Overall ROD Strategy**

Joe Franco, DOE-RL, said under the new contracts he is now responsible for the whole River Corridor. There were discussions with regulators a year and a half ago to determine the best approach for River Corridor RODs. Joe said they came up with six decision units for the RODs that will coordinate with the groundwater units. The six units are BC, K, N, DH, F Areas and IU 2 & 6.

Joe said they will develop a Remedial Investigation/Feasibility Study (RIFS) for each decision unit, and for the groundwater piece and source units on their own, and then combine them during the proposed plan phase so the final RODs include everything. Joe said that the River Corridor Baseline Risk Assessment (RCBRA) that came out a year

ago will feed into the RIFS. The Columbia River component of the RCBRA was implemented already to fill a gap in the data analysis. Joe said if there are changes or modifications as a result from the additional sampling, DOE will work with stakeholders on any changes. Joe said they want to make sure they have all the sampling needed to get to final decisions. Joe said they will do two RIFSs per decision unit; they are working on the RIFSs for D, H and K Areas currently. Joe said he expects the work plans to start coming out in May of 2009. The others will be ready sometime in 2009-2010.

Joe explained that the RIFSs will feed into the proposed plans which will include the groundwater and source units as well. There will be integration efforts before then, but administratively that is the point that everything will connect. Joe said formal comments will be received in the proposed plan. Joe said they would like to have the final RODs done 2012. The work is currently being done to the interim RODs and Joe thought that the cleanup identified in the final RODs would not be changing much from interim to final.

### **Regulator Perspectives**

- Dennis commented that the plan has been to get off the river and the agencies have been working towards the 2012 deadline to get all of the soil sites done. Dennis said they need to wrap up the decisions and execute the plan that has been in process for a long time.
- John said he thinks this is a good thing that the department has a strategy and is implementing it.

### **Committee Discussion**

- Maynard asked if all of the RODs would be issued in 2012 or if they would be staggered. Joe said they will be staggered and released as they are ready.
- Greg deBruler asked how it will work if the RIFSs are done separately for groundwater but connected in the proposed plan. Matt said the RODs will include the final decision on the groundwater. The ROD will codify the remedies for groundwater and soils. Greg said he was concerned about the groundwater being separate because he felt the analysis needs to be truly integrated from surface to subsurface to groundwater. Joe reiterated that the proposed plan will tie it all together to show the analysis from the source through the groundwater. John suggested that the agencies come back to the committee next May to discuss what is being investigated and why.
- Greg asked when the first plan is coming out. Joe said the first plan is the RIFS work plan for D and H Area will come out in May. Joe said they do not have an approved schedule yet. Greg suggested that the agencies allow ample opportunity for public comment on these plans. Greg asked to see a schedule of when the RIFSs and the RODs are coming out so stakeholders can plan public involvement.

- Greg said the interim actions called for unrestricted use, but it has been determined that only surface use will be allowed. Greg felt this was a big change from the original intent. Greg said these decisions and the analysis seems detached from the original goal of taking the resource back to unrestricted use. Greg was concerned that the agencies are creating a system that justifies restricted use. Greg thought that DOE should be looking at the whole site as a source term to determine if they will achieve the end state of unrestricted use.
- Dennis said the RIFS work plan will lay out data that needs to be collected to fill gaps. Dennis said the Hanford Advisory Board (HAB or Board) will have the opportunity to comment on that. The RIFS will ultimately lead to the FS that includes alternatives. Dennis said when they do the interim action clean-ups they have to show they can be protective of groundwater. Dennis said the rural residential scenario is what drove the interim actions. There will have to be ICs on some of these sites because there is contamination in the vadose zone below 20 feet. Dennis said the agencies talked with the Board about this when the initial RODs were issued and the Board developed advice for ICs. Right now the groundwater systems are only dealing with one contaminant and will have to look at all of the contaminants in the final RODs.
- Paul said he is concerned the boundaries for these decision units have not been factored into past decisions. Joe said they are looking at the full nature and extent of each area. Joe explained that the RCBRA was a snapshot in time and the RIFS will look at that data and make sure the full nature and extent is covered for that area.
- Paul said cleanup that is acceptable for risk may or may not be sufficient to terminate injury as determined by the Natural Resource Damage Assessment (NRDA). Paul thought that if the injury assessment was done sequentially and pulled in now it would be beneficial to the trustees. Paul said any time contamination is left in place it will allow for an injury; Paul thought the cleanup decisions should consider the damage assessment.
- Greg said if DOE assumes that there will be long term ICs then the analysis can be limited to the fate and transport to show that contamination will not move. Greg felt that if an integrated ROD were used the goal would be to remove, treat and dispose (RTD) soil sites and cleanup groundwater so there would be no other future obligation. Greg said this is why he thinks it is important for stakeholders to provide input on the RIFS because if the assumption is that ICs will be used it may limit the data that is collected. Dennis said there is a process set up for people to look at the work plan and provide input on any missing pieces. Dennis said this will happen in the May timeframe with the first release of the work plan.
- Maynard said in May the committee will look at the RIFS work plans for D, H and K Areas and have additional dialogue on this topic.

## **Fiscal 2009 Funding**

Matt McCormick, DOE-RL, said the fiscal year (FY) 2009 budget request was done in spring of 2007. In 2007, DOE put together the request to DOE headquarters (HQ) in accordance with the Tri-Party Agreement (TPA). DOE-RL submitted their request to Environmental Management (EM) in July 2007 for \$1.4 billion to meet the TPA milestone. DOE-RL prioritized cleanup activities and included over target items as well. Matt reviewed the work that was above target. HQ and the Executive branch went through a process with the Office of Management and Business (OMB) and then the President released his budget on the first Tuesday of February 2008. The budget was consistent with target funding, approximately \$930 million. Then, in 2009, DOE-RL was appropriated money from the President under a continuing resolution that directed DOE-RL to spend at 2008 funding levels. The 2008 funding was at \$983 million; \$50 million more than the President specified for RL in 2009.

Matt said since DOE-RL was allocated additional funding they were able to recognize efficiencies and remove some of the missed milestones from the funding deficiency list. Matt said there are no River Corridor impacts in terms of funding; the contractor is fully funded through 2009. The groundwater pump and treat and the overall ROD strategy are funded and moving forward as well. Matt said DOE was required to notify regulators of impacts from the continuing resolution; Matt distributed the letter DOE sent to EPA and Ecology regarding the funding shortfalls and missed milestones. Matt said DOE spoke with the regulators yesterday about what changes might be made to the allocations in 2009. Matt said DOE received advice from the regulators and HAB in FY09 regarding retrieval of transuranic (TRU) waste. Matt said DOE will continue this work in 2009 but not at the level it was at previously; therefore they will not be able to meet the volume requirements in the TPA for that milestone.

### **Regulator Perspectives**

- Ron Skinnarland, Ecology, said Ecology is trying to deal with the realities of the budget decisions. Ron said Ecology is encouraged by DOE trying to keep activity going. Ecology would like to look at the cleanup schedule for RL which includes finishing the River Corridor, K Basins, and the Plutonium Finishing Plant (PFP). Ron said active cleanup work will continue in these areas. On M91, the goal was to get all the waste out by 2010, but because of the financial reality it looks like the project is going to need additional money from Congress. Ron said the agencies need to work together to determine how to spend the money that the site now has. Ron said it is important to prioritize work so that if DOE does find more money they can actively pursue cleanup on the Central Plateau. Ron thought this would be a good time for stakeholders to weigh in on how to prioritize cleanup work.
- Dennis said there are processes in place in the TPA for prioritizing work and that DOE did not follow them, and instead, made this decision unilaterally. The regulators and DOE are talking and will come up with a way to move forward.

### Committee Discussion

- Gary Peterson said this is one of the most confusing budget years that he has ever seen. The continuing resolution gives RL an excess of \$12 million per quarter. Matt confirmed that it provides funding at \$50 million over the President's allocation. Gary said if the continuing resolution lasts the whole year there could be a situation where RL is spending at a rate higher than what they may be allocated. Matt said they looked at the appropriations process and the support in the Senate and House and are being as optimistic as possible so they can avoid stopping work. Matt said they are assuming they will get more than the \$983 million from 2008. Gary felt that the Board needs to support the additional funding needed for 2009. Gary said the 2010 budget is already submitted but will not be announced until February; the overlap in Congress will be confusing. Gary complimented RL for being optimistic about funding. Gary suggested that the Board issue advice at the December Board meeting to support the budget allocations.
- Ken said he feels good with the process Matt described for the 2009 budget and appreciated the opportunity to participate in the budget workshops. Ken said the budget development process has been a high point in collaboration and cooperation with stakeholders. Ken also voiced support for Gary's suggestion to provide input on the budget from the Board.
- Susan Leckband suggested that Maynard work with the Budgets and Contracts Committee (BCC) on any draft advice. Susan said the advice will have to be finalized via email before the Board meeting; Susan asked that all Board members support this effort. Gary and Harold offered to work with Gerry to support this advice. Larry Lockrem offered to coordinate on the Office of River Protection (ORP) side for the Tank Waste Committee (TWC).
- Keith Smith asked how the work on retrieval will continue without Waste Receiving and Processing Facility (WRAP) money. Matt said retrieval does not need WRAP; the boxes are removed from storage, determined safe and sent to the Central Waste Complex. All of the repackaging is done at T Plant. Matt said there is funding in 2009 to repackage waste at T Plant but at a slower rate. Matt clarified that WRAP did some of the certification process for waste going to Waste Isolation Pilot Plant (WIPP).
- Greg said there was a request made at the recent State of the Site meetings that the State of Washington take the lead in defining priorities and the direction the cleanup should go. Greg said the public said if the State could do that, then stakeholders could put energy behind the State to support their priorities. Ron said the comments he provided earlier were in support of coming up with priorities for an integrated cleanup plan for the Central Plateau. Ron said without the TPA negotiations being complete, there are still many blanks. Ron said the priorities in the letter Matt distributed includes a lot of the work on the Central Plateau and Ecology supports looking at the funding to determine how much of that work can really get done.
- Gary and Harold said they would work with TWC and BCC to draft language for budget advice for the December Board meeting.

### **Aquifer Tube Sampling**

Jim Hanson, DOE-RL, said the aquifer tubes have been a unique way for DOE-RL to measure the quality of the groundwater interfacing with the Columbia River. DOE-RL started using the tubes in 1995 and there are over 200 tubes being sampled currently. DOE-RL is monitoring the groundwater interface at three different levels and can get measurements 30 feet below the surface. Jim said the tubes are a general indicator of water quality, and are not considered monitoring wells.

Jane Borghese, CH2M Hill Plateau Remediation Company (CHPRC), passed around an example of an aquifer tube for the committee to look at. She said they have installed tubes all along the shoreline of the Hanford site. DOE funded an additional 51 sites last year to make sure there was good coverage along the shoreline. Jane said they met with EPA and Ecology to get approval for the additional sampling locations, conducted a culture and environmental review for each site and then sent the team out to install the tubes. Jane said the tubes are installed by using a hard rod and a handheld hydraulic system to drive the tube down into the ground. Jane said the tubes are covered with rocks and are surveyed with a geographic positioning system (GPS) unit so they can be located for sampling. Jane said they do not want the tubes to be too visible to the public. The tubes are installed at low river stages, but some of the tubes have extra long tubing so they can be sampled at high river levels too. Jane thought that they have pretty good coverage of the tubes, especially around the plumes. A sampling team is going out now to do the sampling for 2009.

Mary Hartman, CHPRC, said the results for the aquifer tubes are included in the annual groundwater report. She said since 1995, there have been 531 aquifer tubes installed; 10-15 percent of those can no longer be sampled. In 2008, they sampled 297 tubes at 155 different locations. Mary said they expect to sample the same amount in FY09. Mary said unlike a well, the chemistry of the tubes varies more from year to year. Mary said the sampling results are pretty much what they expected; they are seeing some hexavalent chromium in the tubes similar to what they see in the wells. They also see strontium 90, tritium and uranium in tubes at the same measurements as previous years. Mary said they have been able to see some effect from the apatite barrier in the 100-N Area. They have also seen some reduction in contamination around the pump and treat locations.

### **Committee Discussion**

- Susan asked how the agencies view the data that comes from the tubes. Dennis said for the most part, in the BC Area, the tubes are viewed as part of the well monitoring network. Dennis said the tubes were installed as a research project in 1995 because they did not think they would have the durability to last multiple years. The idea at the time was to get a snapshot of what was flowing to the river. It turned out that the tubes are durable and have become part of the monitoring program.

- Paul said it is often difficult to evaluate risk because of the variability of the river and groundwater seasonally. Paul asked if there are any tubes that are being sampled continuously to evaluate some of the yearly lags and variability. Mary said they have not done any continuous sampling yet. However, the tubes in the 300 Area are sampled twice a year during low and high river levels and the tubes in the 100-N Area were sampled more frequently during the injections of the apatite barrier. Paul asked if there was any plan to do continuous sampling, he said the trustees would like to have a better picture of the real exposure risk, which you cannot do with samples at just the low and high river stages. Paul said looking at conductivity would be a good surrogate. Mary thought this was a good suggestion. She said they are trying out an automated sampler which may produce additional sampling results if it is effective.
- Maynard asked if the sampling is labor intensive. Jim said the sampling is time consuming in terms of scheduling and staffing. The sampling takes over 2,000 well trips per year plus over 300 aquifer tubes samples. Mary said an automated system would involve some maintenance as well.
- Harold asked if they found any surprises in the sampling. Mary said the chromium found in the 100 D Area was a surprise at the time. She also said it was surprising to find in the 100 N Area that there was no dilution of contamination when the river went up. Mary reiterated that the apatite injection results were noteworthy but not surprising. Jim said the tubes are a good indicator that helps to prioritize work.
- Dick thought that continuous monitoring would help determine if there was any confidence level that could be achieved in the single point measurements. Jim said they are currently monitoring at low river stages because that is when the highest velocities and maximum concentrations are present. Jim said when they design the remedial action alternatives they use a conservative approach so that they take into account the maximum concentration.
- Paul asked Mary to elaborate on the results of the 100 N with apatite barrier. Mary said when they injected the solution into the wells they expected to see increases in strontium as the solution displaced the contamination. She said they did see this in some places, but in some of the aquifer tubes the level was higher than in the wells. Mary said this was surprising because the apatite effects take longer to get into the tubes. Mary said the levels have peaked and come down since then.
- Mary said the FY 2008 report should be available within a few weeks. She offered to send a link to the committee once it was available.

### **CW-5 Briefing**

Greg Sinton, DOE-RL, said the Z ditches were a series of open flow ditches in 200 West Area which was operated in sequence between 1944-1995. Over 400 soil samples were collected at this site between 1959-2002. Greg reviewed the main contaminants of concerns for the area which include plutonium, cesium, radium, thorium, americium and polychlorinated biphenyl (PCB). Greg said the main hazard is to industrial workers, but there is some risk to wildlife as well. Greg said DOE-RL submitted a draft B of the FS

and proposed plan to EPA at the end of July. Greg said EPA and Ecology provided comments on the draft B document which is a primary document under the TPA. DOE needs to respond with a plan of how to fix the document or with a new plan within 30 days (by November 17). Greg said they are planning to create a plan to resolve the issues the comments raised. Greg reviewed the alternatives included in draft B that met the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) threshold criteria:

- RTD work areas 1, 2 and 3
- Isolation barrier work areas 1, 2 and 3
- RTD work areas 1, and 3, ET barrier work area 2
- RTD work area 2, ET barrier work areas 1 and 3
- In situ vitrification (ISV) work area 2, RTD work areas 1 and 3
- ISV work area 2, ET barrier work areas 1 and 3

Greg said RTD of areas 1 and 3 and ET barrier in area 2 was selected as the preferred alternative. Greg said the main reason this alternative was selected was because it meets the remedial action objectives while providing a cost effective balance between long term protection and permanence and short term worker risk. Greg said the regulators provided a lot of comments on the alternative, and for the most part they did not support the preferred alternative identified. Greg said EPA had comments about the costs included for waste disposal based on how much actual TRU waste might be generated by excavation of the ditches. Also, there was a question of whether the Environmental Restoration Disposal Facility (ERDF) costs were accurate based on possible efficiencies that could be found in that process. Greg said if the amount of TRU waste is in fact lower, it would dramatically affect the cost and could affect the preferred alternative. Greg said they need to resolve all of these issues with EPA. Once the issues are resolved, DOE-RL will produce a Rev. 0 which will go out for public review. Greg said the project is impacted by the FY09 funding situation and discussions will start next week to prioritize projects and they will know more where this work falls in the priority of work to be done.

### **Regulator Perspectives**

- Craig clarified that part of EPA's comments concerned the costs at ERDF and potential generation for TRU waste. Craig said EPA is confident the RTD option could be cheaper than DOE-RL's estimates. Craig said there are no contaminants below 20 feet in the ditches so the contamination is very shallow. Craig said EPA asked DOE-RL to look at areas that might be treated differently due to hot spots. DOE-RL conducted an engineering study to investigate this possibility and the results were consistent with having the preferred alternative be to excavate the whole site. Craig said he hopes DOE can keep money going to work towards a decision on this site. Craig also clarified that there used to be a larger grouping of waste sites including ponds in this operable unit, but because some of those sites needed additional characterization they were moved into a different operable unit. Craig said

characterization on those sites continues and if information becomes available about the areas surrounding the Z ditches (e.g., U Pond delta where the Z-Ditches drained to) it may shed some additional light on CW-5.

- John said it was unclear to the State how DOE-RL would meet the threshold requirements in this plan. John said capping remedies are not consistent with state remedies. The State believes that capping should be a last resort if cleanup cannot be achieved for some technical reason. John said Greg worked on M91 previously and has some great experience that he will bring to this project. John suggested that DOE-RL look at how to do the excavation to minimize the amount of TRU.

### *Committee Discussion*

- Susan said the preferred alternative would not meet the requirements of the Board. Susan said the Board has gone on record to say that if RTD is possible it should be used instead of a cap. Susan said the Board developed the Central Plateau Flow Chart Advice #174 that shows these values. Susan said the waste sites in this operable unit have waste located in the first 20 feet and the preferred alternative seems strange given the circumstances. Susan said if this document was brought out for public comment it would not meet the needs of all the stakeholder organizations.
- Bob asked how bad the contamination is in this area. Greg said the highest concentrations of transuranic constituents are located around the bottom of the trench which is why there is a higher risk of retrieval. Greg said for that reason and because of the cost, the preferred alternative was identified. Greg said if they are off by an order of magnitude about the amount of TRU it could have a significant impact on the cost of the remedy.
- Dick asked how this site compares with the BC cribs. Greg said BC had cesium contamination; this site has plutonium. John said comparing the sites is like comparing apples and oranges. Dick said it seems like it would be easier to protect against inhalation at this site.
- Bob asked how the costs of ICs were determined for this remedy. Greg said they used an assumption of 150 years for long term monitoring. Greg said they received a comment from EPA that they should have used 1000 years. Greg said they wanted to look at this site in tandem with other activities on the Central Plateau and if other sites would require intrusion prevention, then this site could be added into that larger piece.
- Dick asked when the new revision of the plan will be available. Greg said the schedule depends on what is decided in terms of priorities for funding. Greg said he is hopeful that the decision making process can continue.
- Paul said he supported the letter Craig wrote to DOE-RL regarding this document. Paul felt this site clearly falls into a decision where RTD should be the clear remedy. Paul said a cap is an injury and the NRDA process should be factored into this decision.

- Susan said this discussion speaks to something the Tri-Party agencies have asked the Board to consider: looking at the Board's values for ICs and creating a flow chart for making decisions.
- Maynard suggested that the committee follow up on this topic after DOE prepares a work plan and the agencies have discussions regarding the budget. Susan said the Board looks forward to a document that they can comment on.

### **Institutional Controls**

Boyd Hathaway, DOE-RL, said he has been involved with land management for 25 years but ICs are a new responsibility for him and he is still getting up to speed. Boyd said DOE-RL recently reorganized and his work is now under the mission support contract. Boyd said he is in charge of the Comprehensive Land Use Plan (CLUP), real property asset management, and coordinating long term stewardship (LTS) for the Hanford site. At some point in time, sites will be cleaned up and will be under Hanford's LTS program until they are transferred to DOE – Legacy Management (DOE-LM). Boyd said in the River Corridor sites could be transferred as early as 2013 into Hanford's LTS program. The plan is to transfer all land to DOE-LM by 2050; DOE will remain ownership and caretaking of the property.

Boyd said LTS became important to DOE in the 1990s and DOE created a legacy management department. Since then other sites have been cleaned up and transferred, such as Mound and Fernald. Boyd said he is currently working on updating Hanford's LTS plan. Boyd described the lifecycle of how DOE views land use from acquisition, build out, use, disposition and LTS. Boyd said once cleaned up the site would go to the Mission Support Contract (Hanford LTS program) until the land is transferred to DOE-LM in the future. Boyd said there are provisions in every contract at Hanford for LTS and land management. Mission Support Contract is responsible for LTS and land management to integrate the program; all contractors must participate in this program. Boyd said he is the lead coordinator and will provide oversight. Boyd outlined the next steps for his program which included updating the LTS plan, Institutional Control Plan (ICP), and conducting the third CERCLA five year review (due in 2011).

Bob distributed a handout he developed that summarizes each piece of HAB advice that deals with ICs or LTS. Bob said since he has only been on the Board for one year, it was a major project to go back and understand all of the past advice issued on ICs and LTS. Bob explained that the table shows which topics the Board has issued advice on, and which topics the Board has discussed during their meetings but has not issued formal advice on yet. Bob said the Board has not yet spent time looking at other sites and other areas where ICs have been used to get a sense of what worked and did not work and why. Bob said there are many examples of sites that have used ICs the Board could learn from; Gerry Pollet recently brought up the example of Harbor Island and Dirk Dunning brought up a Portland example. Bob said he drafted some potential advice to bring to the Board to reiterate some of the past advice the Board has issued on ICs and LTS. Bob said it has

been ten years since the Board started to issue advice on ICs and there are a lot of new Board members that have not had the benefit of looking at past Board advice. Bob said the previous advice provides a lot of guidance for what has been said in the past to ensure that future advice is consistent. Bob felt that the committee should continue to look at this issue during the next few meetings and decide if issuing this new advice is worthwhile.

### **Regulator Perspectives**

- John reviewed some differences in DOE's approach to ICs from other organizations. John distributed a handout that compares DOE's approach to some proven effective approaches to ICs and LTS. John said there are cultures that have lived near volcanoes and survived mudslides after eruptions by using an oral tradition. John said it has been shown that an oral tradition can be effective in tribal communities over thousands of years. Other organizations effective at implementing ICs and LTS include museums, financial trusts and national parks. John said DOE has said 2050 is the date for legacy management to take over. Every 16 years, there has been a transfer in organization within DOE which has resulted in some loss of knowledge and has caused anxiety. Other organizations use trust funds, annuity and insurance policies for engineered barriers. Government agencies are self-insured and therefore do not use these traditional funding mechanisms, which also causes anxiety because it is counter to the traditional way of doing this. DOE contracts for services and has to re-contract every ten years at the maximum which creates a transition time for work and knowledge. John quoted some of his research that said what is needed is a collaborative approach to ICs; John said HAB advice has also expressed this sentiment. The research also says that substantial public value is being lost due to differentiation rather than collaboration which is politically driven not based on technical issues. John said he thought a good topic for the Board to address is how to encourage a more collaborative approach.
- Dennis said he was glad that Boyd was now the point person for ICs. Dennis said the Board has a long history with this issue and as the site gets closer to decisions along the river this topic will become of greater importance. Dennis said the site needs to better understand how ICs will play a role and be disciplined about how ICs are put in place. Dennis said the first decisions on the Central Plateau will be an opportunity to get this right.

### **Committee Discussion**

- Harold said when the monument was established, the plan was to turn over that area to the U.S. Fish and Wildlife Service (USFWS). Harold asked if this was still the plan for the monument area. Boyd said the monument agreement does not say the land will be transferred, but that USFWS will manage it for DOE as a National Wildlife Refuge. Boyd said DOE has no plans to transfer the land at this point.
- Vince said he previously served as an issue manager on this topic. Vince said while doing research on the topic he found a stewardship plan that said LTS could begin by 2035. Vince said he could not find anyone in DOE that had heard of the stewardship

plan. Vince said the plan was written in 2003 and is a great document. Vince reviewed some issues that the plan deals with. Vince asked what work has been done on some of the issues identified in the plan since 2003. Matt said DOE's policy of legacy management is to not transfer land until the whole site is cleaned up. Boyd said one of his jobs will be to update the stewardship plan. He said because he is new, he was not sure what work had been done on it since 2003 but would look into it.

- Gerry thought that revising the stewardship plan would be a waste of money and time because the plan would not be implemented for at least 30 years and is not relevant to anyone now. Gerry said the 2003 plan did not affect any decisions that were made since and he had little faith that if additional time was spent on it that it would affect any future decisions. Dirk thought the stewardship plan is an important part of LTS and legacy management because it says what DOE intends to do. Dirk said the plan was put in place, and the issue is whether the plan goes forward. Dirk said there have been cases where the plan was not followed which reduces people's confidence in the plan.
- Greg said the Board has said in the past that ICs are an unfunded mandate. Greg said he has made a request publicly at that State of the Site meetings that DOE create a nation-wide system to track the potential decisions and ICs. Greg said there is currently no money and no insurance that ICs will be covered. Greg said if the sites are cleaned up now it could cost less in the long term, but the true costs of ICs are not factored into the decisions being made. Greg thought DOE should have a LTS office that oversees potential decisions that are happening at each site. Greg felt it was important to have someone independent oversee this process. Dennis commented that it is the regulatory agencies responsibility to ensure that DOE looks at ICs in the decisions that they make.
- Dennis said the HAB put together a white paper that was attached to Advice #62. Dennis thought that it was important to reevaluate if the things in the white paper are true today as the site gets ready to issue final RODs. Dennis said he thought what Bob did to summarize past advice was very useful. Dennis thought that consistency is important in HAB advice and if the Board could synthesize the advice into three or four messages it would be helpful.
- Greg said DOE has said that ICs will be relied on but the Board has never seen the analysis done for the length of time the hazards will remain. Greg said this issue needs to be addressed as the RIFS for the final RODs are developed. Greg said the bigger issue is that money is being obligated but there is no accountability for the future commitments. With the current financial crises all agencies are going to be scrutinized for their funding commitments. Greg felt the Board should put pressure on DOE to get a system put in place to deal with ICs.
- Susan said this issue originally came up because the Board was concerned that cleanup decisions were being made without considering long-term costs. The Board decided that the best stewardship is none needed and that sentiment is expressed in the advice. There are now three DOE sites that have been closed, Susan suggested that the Board ask for input on what has and has not worked for ICs at those sites.

Susan said she did not agree the LTS plan is irrelevant, she thought it helped everyone look at the idea of how much it will cost in the long term.

- Maynard said the committee still needs to follow up with Jay Pendegrass and Mike Bellot from EPA about what has and has not worked elsewhere. Maynard thought the Board should also talk with other sites and people from legacy management. Dennis offered to give the committee a contact for Rocky Flats and Fernald. Gerry said the Environmental Compliance Assurance (ECA) report has a section about Rocky Flats ICs and cleanup levels. John said there is a ROD that came from the CLUP that the committee should look at as well.
- Harold said Rocky Mountain had groundwater issues that were far worse than Hanford's. Harold said they have managed to close that site and it would be important to look at how they did that. Matt said there are other Department of Defense sites that would be good to look at as well.
- Greg supported the idea of looking to Mound and Rocky Flats for lessons learned. Greg suggested taking a close look at the analysis that was done for the plutonium at Rocky Flats. Greg thought that if you look at the tribal scenario at Hanford and apply the same cleanup that was done at Rocky Flats there would be damages. Greg said the Board needs to look at costs over long term and the implications of leaving contamination in place.
- Dirk said when he did some searching on the internet for LTS plans at DOE HQ he found a bunch of blank or missing website pages. Dirk thought it might be hard to find answers on these issues. Dirk thought that whatever the site decides to do for ICs and LTS, it needs to be static enough that will stick around and have permanence so it does not fail.
- Bob suggested the committee review the advice he put together and decide if it is worth putting forward as advice or a white paper. Bob said all of the previous HAB advice stayed away from defining a good IC or identifying acceptable ones. Bob said he was not sure if the Board could find enough information to issue specific advice, but thought the committee should at least do the research to find out what has worked. Maynard said the topic should be brought to the Board as well because it is an issue that is bigger than just this committee.
- Vince asked if anybody has looked into a baseline cost document that could be used as a template for costing ICs. Vince said the thought it would be important for the people writing the RODs to use the same baseline approach for addressing the costs. Maynard agreed that it might be good to have a guideline but thought there is too much variation between the RODs. Dennis said they are working on what Vince described. Dennis said they have run into trouble on the Central Plateau where there are many shared services. Dennis said the agencies will get better at this work every time a decision is issued that includes ICs.
- Greg thought DOE should come back to the committee to address how they have done the analysis on ICs in decision documents in the past. Dennis said EPA just signed a ROD that has includes natural attenuation and thought DOE could come in and tell the committee how they did that analysis. Matt said LTS in their baseline and

recognizes that there will be controls on site for a long time. Matt said these plans are reviewed by independent auditors to make sure the risk is captured. Matt said the risk is included in DOE's liability cost in the out years, but the number of years included it irrelevant until the decision processes are completed and they actually know the true length of time the site will be under DOE control. Matt said the issue has not been forgotten or covered up but is included as a placeholder until the decision process is completed.

### **Review HAB Advice #207 and agency response**

Maynard asked committee members to read through the DOE and regulator responses and determine if the committee needs to respond or follow up.

Dennis said he would like DOE to come back to the committee when draft B comes out to see if it is something everyone can support. Dennis said he thought it was important for the three agencies and the community to be in agreement.

Dirk asked what happened with the EPA response about extending ICs to 1000 years. Dennis said 1000 years is as far out as the agencies could envision carrying costs, past that it gets too uncertain. The risks from plutonium actually lasts hundreds of thousands of years but how you carry the risk out that far is debated. Dennis thought 1000 years seemed like a reasonable timeframe to be able to choose among the alternatives in the FS. Dirk said when the risk calculations are done for what remains at 1000 years the assumption should probably be that there are no ICs and no management anymore. Dennis said this issue has been discussed when the agencies have talked about barriers and how to protect the environment even when humanity is forgotten. Dirk said the question then becomes how the controls will be achieved in 1000 years. Dirk said if the analysis shows that the ICs do not make it 1000 years then that alternative should be screened out based on risk.

Harold said the Board's advice said to remove pre 1970's material and none of the agencies responded to that. Maynard suggested that the committee wait to see if draft B addresses that concern.

Gerry asked if the work plan is at risk for the 2009 budget. Dennis said it is not.

### **Announcements and Action Items / Commitments**

#### **618 Burial Ground Update**

Peter Bengtson, Washington Closure Hanford (WCH), gave an update on the cylinders found in the 618 burial grounds. Peter said about 20 corroded compressed gas cylinders were found and two were the shape and size of a container that could have contained highly corrosive chemicals used during WWI. Peter said they took precautions and assumed that there was material in the cylinders. They sent the cylinders to ERDF to get

them as far away of the river and public as possible. They brought in an international expert who has dealt with this material in the past to open up the cylinders and deal with the material if anything was found. Peter said when they opened the cylinders they found that all of the material had been disposed of and what was left was small amounts of nitrogen gas used to purge the cylinders. The cylinders will be chopped up grouted and disposed of in ERDF. Peter said they completed excavation in the burial ground and began backfilling yesterday. Peter said they hope to complete the milestone by the end of December, which includes backfilling and planting native plants. Peter said the results from the sampling are positive and look like the site is complete. Peter said they do not expect to run into any more surprises.

Maynard said during the October site tour there was a comment about the possibility of recontouring the terrain instead of digging up another site to completely backfill this one. Dennis said the 300 Area is residential and requires 15 feet of material on top for protection. Dennis said recontouring would be better suited for a site with limited to no contamination in place and a different level of access.

Paul asked how the cylinders were opened. Peter said the crew that was brought in had specialized equipment; they used a drill to open the cylinders while they were in a sealed, pressurized vacuum system so the material could drain through piping and go to a treatment chamber with reagents. They had immediate sampling devices to tell them what was in the cylinders before they added a reagent. Peter said they had a suitcase full of reagents to address the material that typically shows up in the specialized cylinders.

### **Agreement in Principle Negotiation for Central Plateau Facility Disposition**

Al Farabee, DOE-RL, announced that an agreement was signed in August 2008 for negotiations between Tri-Parties on the Central Plateau. The agreement said the agencies would begin negotiations before October 31 of this year on Central Plateau facilities. The agencies agreed the negotiations would address discussions held previously on the Central Plateau and would be in accordance with U Plant and other facilities. Al said they did begin negotiations and were supposed to have six months to complete the negotiations unless the agencies agreed it would take longer. Al said DOE is hoping to have a new performance management baseline by the end of January for new contracts. DOE thought it would make sense to wait until those baselines were available to continue negotiations and the agencies agreed they would not meet the six months deadline.

Susan asked how many milestones have been missed. Matt said five the canyons already have one decision, but other key facilities include U Plant, Redox, Purex, B Plant, and B which could be milestones. Dick asked if the implementation of the ROD on U Plant will be deferred. Matt said that is part of the negotiations discussion.

Gerry thought this was counter to the prior discussions said that schedule needs to be set by regulators. The Board hoped the baseline from the contractor would reflect any changes in the TPA, not the other way around. Gerry asked if DOE is saying they are having the contractor put forward a preferred plan and then the Tri-Party agencies will

discuss it. Dennis said the site is just beginning to put firm plans in place to get off the river. On the Central Plateau, the agencies are just now starting to put together cleanup and closure strategy. Dennis said each agency has an idea of how this will work, but they did not want the soil and groundwater discussions going forward without forgetting the buildings. The contractors will provide the information needed on the buildings and facilities. Dennis said the priority was on the river first, now the agencies need to start thinking about the buildings and try to identify the key ones. Dennis said he does not want to see DOE spending a lot of time on buildings that nobody cares about. Dennis said at some point the agencies need to develop a strategy for how to tackle the 200 Area and the buildings have to be a part of it.

Gerry said DOE will not meet the goal for the soils sites without dealing with buildings. He said the agencies know how many years it will take to do a soil site and how many years it will take to do a canyon. If the deadline is 2024 for soil sites, the negotiations should be based on what you have to do to deal with the soil sites and how the buildings play into that. Gerry did not think the negotiations should be held up by the contractors. John said there are different ways to do negotiations. John said one party is uncomfortable negotiating without all the information and the other agencies did not want to have to come back and do it again after that information was available.

Dennis said depending on the remedy at PW 1/3/6, there could be dollar and schedule implications for work. Dennis said if they have a good idea of how these bigger projects will go it will allow them to know how to accomplish the rest of the work. Dennis said he is interested to see what DOE says about what they have planned.

Gerry said the committee should plan to follow up on this topic at the next meeting with a full presentation and discussion. Dennis said the new contractor will produce a deliverable to execute their contract and the regulators are watching to make sure they implement it to the TPA. Sometime after they produce the deliverable the agencies could talk about this with the Board. Barb Wise, CHPRC, said the deliverables are due at the end of January and may be appropriate for discussion in February or March.

#### **Committee follow-up topics:**

- Groundwater Integration
- Follow up K-Basin Sludge (January)
- Plutonium toxicity (January)
- Overview of Science/technology roadmap (January)
- Zp-1 (April/May)
- ROD (May)
- Funding milestones (December – potential advice BCC)
- CW-5 (March)
- ICs (Ongoing)

- Central Plateau pathway – implementation plan for 2024 (February/March)
- Baseline workshop – implications to RAP (January)

**Handouts**

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

- Record of Decision Briefing for 200-ZP-1 Groundwater Operable Unit, Dennis Faulk, EPA, November 13, 2008.
- 4.3.4 Institutional Controls Component & 10.8 State Acceptance (related to the ZP-1 ROD), distributed by Dennis Faulk, EPA, November 2008.
- 2009 Funding and Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement) Milestone, David Brockman, DOE, November 5, 2008.
- Proposed Plan for the 200-CW-5 Operable Unit (Z-Ditches), Greg Stinton, DOE-RL, November 13, 2008.
- Long-Term Stewardship and Institutional Controls Briefing to the HAB River Plateau Committee, Boyd Hathaway, DOE-RL, November 13, 2008.
- Institutional Control – Long Term Stewardship Focus Areas discussed during the 10/8/08 RAP Committee Meeting mapped to Existing HAB Advice, Bob Suyama, RAP Issue Manager, November 13, 2008.
- HAB Consensus Advice Related to Institutional Controls and Long Term Stewardship, Bob Suyama, RAP Issue Manager, November 13, 2008.
- Draft Advice on Long Term Stewardship and Institutional Controls, Bob Suyama, RAP Issue Manager, November 13, 2008.
- Institutional Controls table summarizing recommended best technologies and DOE approach, distributed by John Price, Ecology, November 2008.
- HAB Advice #207 Criteria for Development of the Proposed Plan for 200-PW-1, 3 and 6, Hanford Advisory Board, June 6, 2008.
- Response to Advice #207, Criteria for Development of the Proposed Plan for 200-PW-1, 3, and 6, Nick Ceto, EPA, July 30, 2008.
- Response to Advice #207, Criteria for Development of the Proposed Plan for 200-PW-1, 3, and 6, Jane Hedges, Ecology, July 9, 2008.
- 618-7 Burial Ground – Progress Update Excavation Complete – Sampling Hazardous Cylinders Begins, WCH, October 2008.

**Attendees**

**HAB Members and Alternates**

Greg deBruler (phone)	Vince Panesko	Dick Smith
Dirk Dunning (phone)	Gary Petersen	Keith Smith
Ken Gasper	Maynard Plahuta	Bob Suyama
Harold Heacock	Gerry Pollet	Steve White
Susan Leckband	Mike Priddy	
Larry Lockrem (phone)	Paul Shaffer	

**Others**

Paula Call, DOE-RL	Rick Bond, Ecology	Jane Borghese, CHPRC
Briant Charboneau, DOE-RL	Sharon Braswell, Ecology	Mary Hartman, CHPRC
Al Farabee, DOE-RL	Madeleine Brown, Ecology	Moses Jaraysi, CHPRC
Joe Franco, DOE-RL	John Price, Ecology	Janice Williams, CHPRC
Boyd Hathaway, DOE-RL	Craig Cameron, EPA	Barb Wise, CHPRC
Jim Hanson, DOE-RL	Dennis Faulk, EPA	Barbara Harper, CTUIR
Matt McCormick, DOE-RL		Susan Hayman, EnviroIssues
John Sands, DOE-RL		Emily Neff, EnviroIssues
Greg Sinton, DOE-RL		Michele Gerber, FH
Arlene Tortoso, DOE-RL		Mark Triplett, PNNL
Geoff Tyree, DOE-RL		Annette Cary, Tri-City Herald
Jamie Zeisloft, DOE-RL		Peter Bengtson, WCH
		Dale Bignell, WCH
		Wayne Johnson, WCH
		Jeff Lerch, WCH