

**FINAL MEETING SUMMARY**

**HANFORD ADVISORY BOARD  
RIVER AND PLATEAU COMMITTEE**

*February 11, 2004  
Richland, Washington*

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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.*

**Introductions and Welcome**

Susan Leckband, committee vice-chair, opened the meeting and welcomed the committee. Introductions were made.

**Monitored Natural Attenuation Workshop**

Maynard Plahuta welcomed the committee and guests to both the workshop and meeting. He stated that the goal of the workshop is to provide committee members with a good understanding of monitored natural attenuation (MNA). This workshop only covers the basic MNA activity; passive remediation is a step beyond this material. Each agency will discuss how and when they decide to use MNA. The agencies will also discuss the methods employed to ensure the process stays on track.

Maynard explained that MNA is the use of naturally occurring processes to achieve some site-specific remediation objective within a time frame that is reasonable compared to that offered by active remediation methods. MNA is best used when degradation phenomena is known and can be monitored. MNA is most applicable when the source is stabilized and the resulting plume is static or shrinking, or the groundwater flow rates are low.

MNA has been applied across the country at several sites. It has been used in low flow environments, sites with few contaminants, sites with well-understood characteristics,

and on sites with easily monitored degradation products. At some of these sites, MNA has worked well and at others it has not accomplished the remediation objective.

MNA is a remedial alternative that should be evaluated as part of a feasibility study (FS). It requires a well thought out, action oriented approach to verify onsite processes. Following these processes, MNA can be an effective tool.

Greg deBruler discussed MNA processes. MNA works through;

Biological Decay: Naturally occurring processes that render a contaminant harmless due to a biological process.

Radioactive Decay: Naturally occurring process that renders a radioactive contaminant non-radioactive due to emission phenomena.

Chemical Degradation: Naturally occurring processes in the subsurface that render a contaminant harmless due to one or more chemical reactions.

Media Adsorption: Adsorption of a contaminant onto or into the mineral substrate that prevents further migration

Dilution: The mixing of uncontaminated groundwater with contaminated groundwater.

Diffusion: The movement of a contaminant from a high concentration into a lower concentration.

MNA transforms contaminants to a less toxic form through a destructive process such as biodegradation or abiotic transformation. It reduces contaminant concentrations whereby potential exposure levels may be reduced. MNA can also reduce contaminant mobility and bioavailability through sorption onto the soil and rock matrix.

The use of MNA presents a variety of issues. Secondary contaminants are not reduced and can prevent MNA processes from occurring. It is possible that transformation of some contaminants may increase the risk level at the site. Even when MNA is used, source control measures are almost always necessary.

Several factors are monitored to ensure that MNA processes are occurring.

- Amendment concentrations and consumption rates
- Byproduct concentration and production rates
- Transformation product concentrations and production rates
- Contaminant concentration and change rates
- Primary and secondary drinking water parameters
- Reaction front propagation rates

MNA does provide advantages. Because MNA uses naturally occurring processes there are fewer maintenance requirements than with active treatment systems. Additionally,

less facility construction is required which results in a smaller facility footprint. However, there are potential disadvantages associated with MNA. More extensive and costly characterization is needed. The long-term monitoring requirements for MNA can be very extensive. An increased amount of complex institutional controls and additional public outreach may also be necessary.

To determine if MNA is an appropriate tool, the following questions should be answered.

- Is the plume static or shrinking?
- Can the source term be effectively remediated?
- Can the process be described and monitored?
- Is the time frame acceptable?
- Can monitoring and institutional controls be effectively implemented?
- Is a contingency plan developed with corresponding trigger points?

#### Environmental Protection Agency Perspective

Mike Goldstein, Environmental Protection Agency (EPA), discussed the EPA's MNA guidance with the committee. He commented that the biggest accomplishment of the policy is that prior to its development, there were no standard definitions or guidelines about how or when to make a decision to use MNA, or how to proceed once the decisions were made. This policy provides standard definitions and has laid out a framework of expectations. It is a policy document rather than technical guidance.

The key point in the definition of MNA is the timeframe expectation. No matter the remediation technique used there is always a timeframe in which the remediation goals are achieved. The development of this policy recognizes that there are natural processes that can achieve remediation goals in a reasonable timeframe.

This policy describes natural processes that are considered useful and lays out the favorable conditions for their use. When these processes are employed, data must be gathered to verify they are working. The EPA clearly states that they prefer those processes that can degrade or destroy contaminants as a result of the remedy. Generally MNA is intended for use in conjunction with an active remedy. MNA is not an active remedy but it is not a "no action" remedy.

Several pieces of information are reviewed to aid in the selection of a MNA remedy.

- Historical groundwater and/or soil chemistry data should demonstrate a trend of declining concentration/mass.
- Hydrogeologic and/or geochemical data demonstrates NA processes and rates.
- Field or microcosm studies have been completed.
- Conceptual site model should be used to integrate data and guide remedy decisions.

- The estimated rates of attenuation should include level of confidence.
- The effect of other remedial activities on MNA processes should be considered.

The time frame for MNA processes to work should generally be “comparable” to active methods. If the time required to restore groundwater is excessive, even with aggressive methods, this may indicate technical impracticability. Even where restoration is practicable using active methods, the longer time required by MNA may still be reasonable.

If MNA is selected as the remedy, a monitoring program must be put in place to verify the processes are actually occurring. The EPA is working on technical guidance, due in the next few months, outlining the required monitoring processes. The monitoring should be adequate to demonstrate that MNA is occurring as expected, determine any change in attenuation rates over time, detect plume migration, and detect changes in site conditions. The frequency of monitoring may be reduced over time as appropriate but should continue until the remediation objectives are achieved and the site no longer poses a threat.

Any time a MNA remedy is chosen, contingency remedies are required. These remedies function as a “backup” in the event MNA fails to perform as anticipated. The EPA encourages triggers be established to indicate when contingency measures should be implemented.

In summary, the EPA does not consider MNA to be a “no action” or “default” remedy. Selection of MNA should be based on thorough site characterization and comparison with other cleanup methods. Generally MNA is used in conjunction with other remediation measures. The progress of a MNA remedy must be carefully monitored and contingency measures put in place in the event of MNA failure. A remedy is not completed until the cleanup objectives have been met.

#### Environmental Protection Agency Overview of the 300 Area

Mike Goldstein briefly reviewed the use of MNA in the 300 Area. The path in the 300 Area was chosen before the EPA issued MNA guidance in 1999. The decision was made to focus work on the liquid discharge sites and the groundwater contamination caused by those sites. The highly concentrated residuals were scraped from the process ponds and sent to the Environmental Restoration Disposal Facility (ERDF). These ponds were discharged to until 1994. The downward trends in key indicator wells around the ponds were used to gauge groundwater quality in the 300 Area. A modeling effort for the 300 Area indicated that drinking water standards could be met within 3 to 10 years. According to documentation, this time frame was comparable to that of other remedies. The EPA has very clearly stated in a review of this remedy that it did not perform as intended. This was not stated in the last 5-year review because at that time, active remediation was still occurring. Milestones are currently being negotiated with the Department of Energy (DOE) for the FS to be redone and to make a remedy change.

### Ecology Perspective

Dib Goswami, Washington State Department of Ecology (Ecology), reiterated that MNA is not a “do nothing” alternative. It is an effective knowledge based remedy. Proper and thorough engineering analysis expand the understanding, predicting, and monitoring of natural process that reduce risk of exposure to unacceptable contaminant levels. Under Washington Administrative Code (WAC) 173-340-370(7), natural attenuation (NA) is appropriate when source control has been conducted to the maximum extent practicable. Leaving contaminants on-site during the restoration time frame does not necessarily pose an unacceptable risk to human or environmental health. However, a reasonable time frame must be established for the complete removal of the contaminants. This time frame is impacted by many balancing factors such as public acceptance.

Ecology is in the process of developing statewide guidance for the use of NA for petroleum-contaminated groundwater.

- The first draft was completed in October 2003
- The second draft based on comments received from Ecology regional staff and other selected internal reviewers will be issued in April 2004
- The draft will be delivered in May 2004 to the Science Advisory Board (SAB)
- The third draft incorporating SAB comments will be released for public comment via the Ecology website in June 2004. Comments will be taken through July 2004.
- The guidance will be finalized in September 2004 and a training workshop will be held at this time.

Ecology’s goal is to develop a technical and regulatory guidance document that addresses residual contamination following source zone treatment of chlorinated solvents through MNA and enhanced passive remediation (EPR). The state is seeking how to define a successful completion of site closure by using MNA/EPR remedies for chlorinated solvent sites. Ecology wants to fully define what MNA is and how and where it should be used.

Dib assured that Ecology is closely monitoring those sites where MNA has been implemented. There are opportunities during the five-year record of decision (ROD) review to put forth comments about these activities. During the upcoming review, there are several important issues related to technical and practicability that Ecology will have to address.

### Tribal Perspectives

#### Confederated Tribes of the Umatilla Reservation

Rico Cruz, Confederated Tribes of the Umatilla Reservation (CTUIR), stated that the tribe is not generally accepting of MNA mainly because it results in a loss of many tribal traditions. It is important to consider the resources lost and the resulting damage to the tribal life style. MNA does not consider the effect of some receptors such as invertebrates that might migrate into the groundwater. The migration of these contaminated invertebrates could cause a decline in the food supply of the salmon population and therefore a decline in the populations. He added his personal opinion is it is possible to use MNA but it must be used in conjunction with other activities. If this was done the tribes may have more confidence in the use of MNA.

Ted Repasky, CTUIR, stated there are concerns over what a reasonable time frame is based on the rate of decay for some contaminants. It is imperative that active actions are used in conjunction with MNA. There is concern that over time, institutional memory regarding the purpose and goal of the monitoring will fade. He clarified that the invertebrates are moving from the river into the groundwater and carry contaminants with them through the active zone where the fish migrate. These contaminants are then transferred into the river system.

#### Nez Perce

Sandra Lilligren, Nez Perce, stated that the definition of MNA must be very clear, as must the method used with MNA to address the underlying risk. This is a struggle between the politics and science of risk and how suitable risk levels are defined and measured. Whoever controls these definitions holds the power. The tribe understands that MNA is one of many tools available for possible remediation at some of the sites at Hanford. The effectiveness of MNA is dependent upon many things such as planning for contingencies. If it is used it must be shown to be protective of human and environmental health. It should never be considered a default or presumptive remedy. Native people have an inherent distrust of the capability or will of the federal government to maintain a monitoring system over a long period of time. There is a lack of faith that maintenance and controls can be maintained over a long period of time.

John Stanfill, Nez Perce, stated that MNA is a very useful tool if used in the right way and under the right conditions. The use of dilution is of concern because the tribe recognizes that DOE would like to see the source terms removed and then let the rest run into the river. Again, if MNA is used in conjunction with other actions it is a useful tool. The tribe will not dismiss MNA use entirely.

#### Yakama Nation

Wade Rigsbee, Yakama Nation, stated that Hanford was developed on land ceded from the Yakama Nation under a treaty. The Yakama have various treaty rights to the site and there is dispute with DOE over the interpretation of those rights. Many tribal members are dependent upon the river and surrounding land for sustenance. There are currently issues with the accelerated cleanup and future land transfer. The tribe is trying to look at the future use and intent of all the activities to define reasonable uses the tribe can

anticipate. Under MNA the tribe sees issues with the removal of structures that could be used to monitor sites, covers being placed over the land, and source terms not fully being addressed. It is important to focus on those sources that are not contained across the landscape. For these sources, engineered cleanups and controls must be considered. The tribe wants to see programs that engulf the whole attenuation issue. The tribe recognizes there are incredible technological opportunities and is encouraged that a lot of energy and focus is headed towards those. The tribe would like to see that integration and focus drawn into the accelerated cleanup program. The tribe is concerned that they have not been engaged or involved in the development of the MNA processes. They hope the communication lines will be more open in the future.

### *Committee Discussion*

- Debra McBaugh, Washington Department of Health (WDOH), asked if source controls are always necessary and what those are. Mike Goldstein replied that the overall remedial action, which requires contaminated soils to be removed, is source control. MNA is envisioned to be only part of the overall remedial action picture.
- A committee member asked if MNA has been used at other sites. Mike Goldstein replied that the EPA studied RODs issued over a 17-year period within the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) program. 989 of the RODs addressed groundwater contamination at 787 sites. Pump and treat actions were the most frequently selected remedy. The second and third most frequently selected remedies were MNA and in-situ treatment, and a purely MNA option respectively. Statistics from this report indicate that the use of a pure MNA option declined after the issuance of the EPA's MNA guidance. Statistics from this report indicate that the use of a pure MNA option declined after the issuance of the EPA's MNA guidance, however, the data collection effort for this particular study ended in the same year the policy was issued, so this is not indicative of any long-term trend. An updated data collection effort is supposed to be completed this year. This should track remedy trends through 2002.
- Several committee members asserted it is critical to understand the economics of MNA. This is especially important in light of the impending land transfers from the Department of Environmental Management (EM) to the Office of Legacy Management (LM). Maynard replied this session was more to provide an understanding of MNA and therefore the material today does not touch on economics. However he agreed it is an important issue.
- Mike Thompson, Department of Energy Richland Operations (DOE-RL), commented that any remedial action at Hanford will have an MNA component in addition to other actions.
- Dick Smith asked if NA is necessary in an area that is already unrestricted. In other words, if the site is not acceptable after the initial remediation actions have been completed does the site need to be restricted until MNA processes are complete? Dib and Mike Thompson both answered it would, but, for example, groundwater use could be restricted while there is unrestricted surface use.

- Tyler Gilmore, Pacific Northwest National Laboratory (PNNL), stated that results from MNA use in Europe and at Savannah River were reviewed to obtain an idea of how effective it was and where it was used. A supplement to the resulting document is being produced to bring the information up to date as of last year.
- Greg asked Mike Goldstein how he can be sure long-term stewardship funding will be available. Mike replied the ROD establishes a process and associated monitoring requirement. The EPA ensures the bar is set high. All that can be done is to establish a remedy to be completed in a specified time frame. This is similar to how plans for pump and treat are approached. MNA is treated no differently than an active remedy. If the process is not performing the decision will be revisited. He added that he agrees with the concerns raised on maintaining institutional controls. Any contract turnover at the site creates a loss of institutional memory. The EPA is developing enforceable decision documents and primary milestones that demonstrate how a remedy will be implemented. These programs must still be implemented even if DOE-RL leaves. Nick Ceto, EPA, clarified that MNA does not inherently take longer. Its time frame is supposed to be comparable to that of other options.
- Dirk Dunning asked if MNA will monitor the vadose zone. Nick replied that vadose zone monitoring would be a potential part of MNA monitoring.
- Ted asked what would happen if a 100-year rain event occurs and the contamination remobilizes. Nick replied if a decision was susceptible to that type of event, it may not be chosen.
- Nick stated that the EPA policy is constantly evolving, as is science. New information is gathered everyday. Looking at other sites is only good to a point because decisions for Hanford will be based on site-specific information. MNA is not a panacea nor is it a replacement for active remediation. The EPA is working on papers to describe the physical and biological pathways for contaminants to assist in determining when MNA should be used. Monitoring plans, contingency plans, and associated triggers must be in place if MNA is used.
- Wade commented it is important to be open to the development and evolution of MNA and other new technologies.
- Mike Thompson stated it is important not to confuse the use of MNA in risk assessments versus the application of MNA remediation decisions, which is well defined through EPA and Ecology guidance and policy. Results in the latter case must be proven through monitoring and must perform as well as active treatment options. MNA will be used in conjunction with active remediation and source term removal. It doesn't appear at this time that DOE will be jumping to MNA. Evaluations will be done of active remediation systems to provide a baseline to compare MNA to. He noted that even if active systems are used for groundwater, it is possible contamination will remain and NA processes will still be needed.
- Rob Yasek, Department of Energy – Office of River Protection (DOE-ORP), stated that DOE-ORP is continuing to characterize the tank farms for past leaks. It is premature to even begin thinking about MNA applicability. This would most likely

be addressed in the 2007 rollup along with the suite of remediation options being reviewed.

- Keith Smith asked if Mike Goldstein believes the source of the plume in the 300 Area has been cut off. Mike replied that monitoring data indicates with a high degree of confidence that the source was the process trenches. The cleanup of the trenches and ponds is now substantially completed.
- Mike Goldstein stated the new 300 Area conceptual model is greatly improved. The first actions in the 300 Area were expedited in order to remove the uranium mass. That portion of the work was very successful. Actions were taken to primarily protect surface users on the site and to protect groundwater in the future. Those actions were well founded and resulted in a good return on investment. Surface exposure will be substantially cut down. A small percentage of the uranium is mobile but it is clear that levels are decreasing over time. However, the rate of decrease is not quite what was hoped. Because of that, a FS will be completed to look at alternatives for active remediation. Hopefully one of those actions will be more successful in achieving the remediation goals.
- Several committee members commented that because a lot of ideas come full circle, it is important to understand why the original idea did not work. It is important to document what the conceptual model, expectations, and reality were.
- Gerry Pollet asserted the notion that MNA would work in the 300 Area was never reasonable. Documentation at the time demonstrated the soil between the trench and the river was like a “dirty sponge saturated with uranium”. The EPA ignored both the state applicable and relevant appropriate requirements (ARARs) and the Model Toxics Control Act (MTCA) scientific validity requirements. Gerry expressed concern that the EPA’s new guidance will still ignore the state’s ARARs. Nick replied there is no ARAR waiver for MNA. The ARAR goals must be met through remediation. The new guidance will require proof of the effectiveness of MNA for particular contaminants. He assured that when the remedy is re-opened, another look will be taken at the ARAR.
- Gerry noted that the agencies had rejected the Hanford Advisory Board’s (Board) past advice suggesting the use of triggers. Jane Hedges, Ecology, stated the advice had sounded as if specific trigger levels were required and at that time, the document was not that specific. The strategy did call for developing a reference to determine when a remedy was not working. The department felt specific numeric levels belonged in the ROD. Gerry clarified that the Board had intended to ask for the development of trigger criteria.
- Wade suggested a 300 Area focus group or workshop to review the direction of this FS. Mike asked that for that to be held after the milestones are put in place and DOE has begun work so there is information to share. He added that the 300 Area is a good example of how issues are re-visited. He stated that if he were reviewing the ROD he would expect to see specific trigger levels, contingency plans, and a more specific discussion about identified processes. This all needs to be part of the FS process.

- Greg asserted there needs to be a more thorough review of the applicability of MNA along the riverfront. It is important to look at the long-term effectiveness of MNA in that type of environment to ensure it is truly protective.
- Dirk encouraged DOE to remove the operable unit distinction in the 300 Area and study the area as a whole. He noted the next major MNA document is for U Plant closure. He has not seen time frames or contingent actions outlined in that document. Mike Thompson explained that is only a conceptual model and it will not have boundaries on it.
- Dirk asserted that a remedial action is not complete until target levels have been met. It would be advisable within DOE to have clear criteria from Department of Energy Headquarters (DOE-HQ) about how work transitions so there is a clear indication of what is being done and where. If the timeframes are extended as a result of MNA a plan must be established to keep the monitoring network in place. He noted the monitoring network is in itself a transport path.
- Several committee members expressed concern that LM is often referred to as a caretaker department because those are the last pieces to be funded. DOE needs to make the responsibilities of the LM office clear. Mike Thompson suggested the committee ask for a presentation on the LM office.
- Gerry asked if the new remedial investigation/feasibility study (RI/FS) will take a fresh look at the maximum reasonable exposure levels. Mike Goldstein stated it will look at the groundwater issues in the 300 Area and make decisions associated with remedies for that area. It will not make cleanup decisions within the 300 Area fence line. If the conceptual groundwater cleanup model appears to be at odds, that will be re-evaluated.
- Greg, Maynard, and Dirk will pull together definitions of points to evaluate when talking about MNA and bring them to the next meeting.
- Dirk suggested that the committee look at the MNA synopsis handout and give suggestions of things to add, clarify etc.
- At the next committee meeting a summary of the workshop and a proposed path forward will be presented.

### **Risk Assessment**

John Morse, DOE-RL, briefly reviewed Hanford Risk Assessments. The use of Risk Assessments (RA) is driven by regulatory requirements such as CERCLA, the Resource Conservation and Recovery Act (RCRA) corrective action, the National Environmental Protection Act (NEPA), RCRA permitting, Tri-Party Agreement (TPA) Milestones, and DOE Order 435.1.

Information from these assessments is used for several purposes. One is to evaluate possible routes of exposure of contaminants to humans and ecological receptors. It can also be used to develop actual or hypothetical exposure pathways for humans and ecological receptors. The information is used to determine if contamination poses a

sufficient risk to humans and the environment to warrant cleanup. Risk assessments may be used to assist in the development of cleanup levels or demonstrate compliance with cleanup levels.

Risk assessment activities are integral to the regulatory processes for CERCLA and RCRA as well as past practice and RCRA compliant treatment, storage, and disposal (TSD) facility unit closures. Each of these processes have different components for completion though some of the components are part of all processes such as collecting site specific data, and identifying contaminants of concern. As the risk assessments are worked into a remedial investigation (RI) report, a baseline assessment is also completed. The process then moves to a feasibility study and proposed plan (FS/PP) process. Confirmatory work is completed during the remedial design and ROD phases. These processes are important to ensure what is in fact found is what was expected. There are opportunities for public review and comment in all of these processes.

Several risk assessments are currently underway or planned at Hanford.

#### 200 Area Operable Unit

- o Waste Site Operable Units
- o Groundwater Operable Units

#### Tank System

- o RCRA Corrective Action (e.g., T-TX-TY field investigation)
- o Closure Risk Assessments

#### River Corridor Baseline

- o 100/300 Areas with some near-shore aquatic
- o Columbia River

#### NEPA

- o Solid Waste Environmental Impact Statement (EIS)
- o Tank Closure EIS

Information is shared between all of the risk assessments. As part of DOE order 435.1 the composite analysis for these assessments must be updated every five years. The work done in each individual operable unit is folded into the other work on site. Every effort is made to share information. Each problem on site is owned by one of the contractors. The contractor is responsible for obtaining and providing data as well as for understanding the conditions of the problem. DOE-RL depends on the contractor to provide this data for site-wide assessments. DOE-RL is responsible for maintaining the site-wide groundwater model, which incorporates the information from the contractors.

Many forums are employed to maintain a credible and consistent composite or “holistic” assessment of the total site risk. The Inter-Agency Management Integration Team (IAMIT) workgroup on Risk Coordination meets routinely to address the scope and coordination of Hanford Site risk assessment efforts. Participants of the risk assessments

meet bi-weekly to monthly to maintain open communication on technical aspects of risk assessments. The Site-Wide Risk Assessment (composite analysis) is maintaining an active interface with all on-going risk assessment activities and provides a consistency check for inventory, waste form release, and vadose zone transport assumptions. As a result of continuous monitoring the site-wide groundwater model is routinely updated. The composite analysis is the starting point for a tool that will maintain a comprehensive “risk baseline” for Hanford. This will be updated as detailed risk assessments are conducted for individual waste sites and projects.

The risk assessments will attempt to analyze interactions between current and potential future contaminants. The 200 Area risk assessments will calculate the potential future concentrations from 200 Area sources to reach the River Corridor Areas. The River Corridor Baseline Risk Assessment will evaluate this information. The Composite Analysis (Site Wide Risk Assessment) will identify the total impacts from all sources and will identify where “overlapping” impacts could occur.

Consistency in risk assessment assumptions, exposure scenarios, and models is maintained a variety of ways.

- All Central Plateau risk assessments are now required to apply the Risk Framework as specified in the response to Hanford Advisory Board (HAB) Advice #132.
- The IAMIT Workgroup on Risk Coordination meets routinely to address the scope and coordination of Hanford Site risk assessment efforts.
- The composite analysis is maintaining an active interface with all on-going RA activities and provides a consistency check for inventory, waste form release, and vadose zone transport assumptions.
- The Hanford Site Groundwater Model is used as the underlying basis for all risk assessments with a groundwater pathway.

A Data Quality Objective (DQO) was initiated to identify the requirements for a comprehensive Central Plateau ecological assessment. This approach builds upon the ongoing ecological assessment within the River Corridor. Discussions have begun with DOE-ORP to determine the need for and approach to integrating ecological assessments for the tank farms.

The following risk assessment products will be available in the near future.

- o Winter/Spring 2004: Technical scope and approach documents for the 2004 composite analysis
- o Fall 2004: Public comment on the CW-1 waste site FS/PP
- o Spring 2004: Public comment on the U Area FS/PP
- o Summer 2004: Canyon Disposition Initiative
- o Summer 2004: River Corridor Risk Assessment DQO

### *Committee Discussion*

- Several committee members asked if the impacts of imported waste are factored in to the risk assessments. John replied that is required by the DOE order. All the items in the baseline are factored into the baseline. If the baseline changes so will the risk assessment.
- Susan Leckband asked when the Composite Analysis will be delivered to DOE-HQ. John replied it will be delivered in July 2005. A document has been developed that describes the technical approach for the analysis. This document is being updated and will be available for presentations in the near future.
- Susan asked if this is a step towards a cumulative site wide risk assessment. Rick Bond, Ecology, replied it is a good first step and it would feed into a cumulative assessment.
- Greg asked how the ecological risk in N Area will be addressed. John stated that will be included as part of the River Corridor Contract work.
- Greg asked when the site-wide risk assessment will be finished. John replied a draft is due in September and the radiation absorbed dose (RAD) portion will be delivered to DOE-HQ in July 2005.
- Dirk asked what will happen with the materials below the fifteen-foot level on the Central Plateau since the risk assessment addresses the materials at fifteen feet and above. John replied the material below fifteen feet will be part of the River Corridor Contract because of potential migration issues in the vadose zone. The Central Plateau assessment will be completed in 2005 to provide data for the plumes that may be headed to the river.
- Dirk asserted it is important to be confident that the models are correct. He suggested that additional sampling or drilling of wells may be needed as part of the DQO. John responded that the 200 Area will be part of the River Corridor risk assessment. The ecosystem study will look at the surface area in the 200 Area. Data will be taken from each site and fed into the model. This process assures the same data is not collected twice. He explained that the System Assessment Capability (SAC) will use the results from the tank farm analysis that shows the contamination reaching the groundwater.
- Dirk asked why the committee should believe the model is working in one area when it did not work in another. Bob Peterson, PNNL, stated the data from the 200 and 300 Area is being included in the vadose zone component of the model. Conceptually the problems are understood and actions are being taken to address those.
- John asked to speak with Dirk about technical questions in advance of the next committee meeting to ensure the right people are available to answer those.
- Leon Swenson volunteered to attend the IAMIT workgroup meetings.

### **Regulator Perspectives**

- Mike Goldstein stated the EPA has been involved in this process through the IAMIT workgroup. The EPA has also provided input on the move away from operable units. The EPA is generally supportive of anything DOE can do to coordinate the work
- Rick Bond, Ecology, stated that John provided an excellent summary. He reiterated that the model is an excellent tool that is not always accurate.

### **Committee Business**

- The January meeting summary was adopted.
- The committee decided to present a risk assessment piece at the June Board meeting.
- At the March meeting, the MNA sub-committee will present next steps and any possible advice. It remains to be seen if the Hanford Solid Waste EIS will be available for discussion. John Price, Ecology, also has an item regarding biota that he would like to discuss with the committee.
- Mike Goldstein announced the explanation of significant differences (ESD) in land use designation change for the 300 Area will have an upcoming comment period. He suggested an hour for this piece in March.
- It was suggested that the committee discuss the proposed plans in the 300 Area and perhaps recommend a different path. Gariann Gelston and Greg will work on this piece.
- Maynard suggested the committee look at a 300 Area piece in March. Mike replied that details might not be available. He added the plan has always been to tear down the buildings in this area but it is likely this is only beginning to resonate due to the impending River Corridor Contract.
- A committee call is needed and is scheduled for February 17, 2004.

### **K Basin Sludge**

Jim Todd, DOE-RL, is the Project Lead for the K Basin Sludge project. He updated the committee on the project's status. On 12/31/03, DOE-RL reduced Fluor's conditional payment of fee by 3 million dollars. Fluor will have the opportunity to earn back two million dollars of that fee. To earn one million dollars of this fee, they will have to begin moving sludge from the North Load Out Pit. This material is highly radioactive but can be separated from the rest of the sludge and handled as contact handled transuranic waste (TRU) which will allow it to be shipped off-site more quickly. Fluor has been challenged to develop a way to expedite removal of the material off-site in a contact handled TRU

low-level form and safely dispose of it. Fluor is incentivized to begin sludge removal by 3/15/2004. The current focus is on ensuring Fluor is ready operationally and has the right documents to proceed.

Fluor has also been asked to disconnect the Argon system from the argon trailer and move the argon trailer to storage. The sludge material will be placed in large diameter containers (LDCs) for transport to Bldg. 325 where it will be grouted into 55 gal drums, then transported to the Central Waste Complex in the 200 West Area for interim storage. Fluor will start this work on 4/1/2004. This material accounts for 20% of the waste but would normally have been treated as remote handled TRU waste even though it is not. Fluor will need to remove the sludge from the basin floor and put it into containers. The chunks and pieces of fuel will be segregated to allay concerns of hydrogen generation. The goal is to get the sludge all in one area because it would be difficult to sample such an enormous basin. This method will provide a smaller area of material that is relatively homogeneous to sample. The intended outcome is a reduction in safety controls and fewer storage criteria. If Fluor can do this by 8/31/2004, they will earn back the other million dollars of their fee.

### *Committee Discussion*

- Maynard asked if there have been any leaks in the basin. Dirk asserted it is continuing to leak. Jim stated a coffer dam had been put in place between the basin and the reactor discharge chute to prevent the movement of water in or out of it. Dirk expressed doubt that the dam could be 100% tight. He explained that there is a Masonite seal between the pad of the basin and the basin itself that was designed to leak. This has been the source of some of the cesium and strontium contamination. Dirk stated this should have been done ten years ago. Jim stated that if the work should have been done 10 years ago, or five years ago, then certainly the work should still be now. The rationale now is that the reactor discharge chute is the biggest vulnerability related to a leak from a seismic event, and should be addressed. Talks are in progress with the EPA to obtain their approval of this project.
- Dirk asked how debris will be separated from the sludge. Jim replied a screen will be used to collect the pieces. The TRU debris will eventually be shipped to the Waste Isolation Pilot Project (WIPP), and fuel fragments will be collected and shipped in MCOs to the Canister Storage Building in the 200 East Area for interim storage.
- Jim explained that moving forward on this project is the most important thing Fluor is doing. Several of Fluor's managers have been moved to this project solely for the sludge piece. DOE has challenged Fluor to look at broader scope issues related to engineering, operations and managements problems on the Spen Nuclear Fuels Project.

### *Regulator Perspectives*

- Mike Goldstein stated the EPA is disappointed that sludge movement has not begun. The biggest issue is the lack of commitment from DOE in addressing how sludge will be handled and then dispositioned off site. The move away from the T Plant storage option is a problem because it impacts the previously negotiated sludge milestones. These are issues faced by any project that creates a waste stream with no place to disposition the material. The EPA believes it has the regulatory authority to define and evaluate when a CERCLA action and associated milestones are completed. This would include the final disposition of waste associated with implementing the CERCLA remedy.

### **Risk Based End States**

Shirley Olinger, DOE-RL, was assigned to this project to demonstrate senior management attention to risk-based end states (RBES). This is a very challenging project. For the entire complex, there is 7.4 billion in EM cleanup money for Jessie Roberson, Assistant Secretary of Environmental Management, to manage. A session will be held for regulators and contractors from across the country to engage in a dialogue about RBES.

The intent is to deliver the second draft of the document to DOE-HQ by this evening. As Mike Thompson discussed last month, DOE-HQ provided additional guidance as a result of comments from the first draft of the document. The document is intended to be more visionary in regards to technical risk rather than presenting “business as usual”. The intent is to base decisions on technical risk and not only site wishes. This is a vision document not a decision document. It identifies other alternatives based upon future anticipated land use. It notes the difference, or variance, between those alternatives that are based on technical risk versus the current paths. Shirley noted that many of the things the department has done are not based on risk but it is important to recognize if the decision is based on politics or technical criteria.

The next step in the process is to solicit regulatory and public input on the draft. This has not been done since the first draft was sent to DOE-HQ. Meetings have been scheduled to begin having discussions with regulators on the draft. Discussions with this committee would also be helpful. The high-level points of the document were given to DOE-HQ to see if the document was on the right track. It would not be worthwhile to give this draft to the regulators and public if DOE-HQ was intending to discount it. The team will be meeting with Jessie on February 23. The National Academy of Sciences (NAS) will be at the site on March 10 and 11, and is interested in seeing how RBES is being applied.

The variances are what end-states are currently planned versus what other end-states are based on future land use risk analysis. Once the variances are identified, they are fleshed out. It is important to validate if the alternative is feasible or cost effective and whether it can be pursued. If the department wants to follow one of these alternatives, the usual processes such as Environmental Impact Statements (EIS), and baseline changes, must be followed. These are not actions that will occur right after the March 31 final submittal date.

The Comprehensive Land Use Plan EIS (CLUP/EIS) was used as the basis for reasonably anticipated future land uses. The permanent remedy was chosen as a 1000-year period with institutional controls as needed. There will be no residential or groundwater use at the sites. Shirley discussed the high points of the vision for the 100, 200, 300, and 400 Areas. She described what the anticipated land use would be, potential receptors at each site, and what the anticipated risk range of the site will be.

### *Committee Discussion*

- Leon asked if the risk ranges are cumulative over the life of a receptor. Shirley replied that they are.
- Several committee members noted that state regulation does not allow for a 10-4 risk level but rather for carcinogens the levels are 10-5 for an individual and 10-6 for each individual carcinogen. Mike replied they will meet the ARARs.
- Dirk noted this draft states the land uses are based on the CLUP but that only has a 50-year time frame not 1000 years. No matter the restrictions, planned land use has changed long before the end of a 1000-year period. Additionally there is no indication of the ecological risks. He asserted that the agency picked to take over the land needs to agree that this is an acceptable end state. He added that a tribal gatherer scenario should be added. Shirley replied that all of this information will be included.
- Keith stated that the Purex tunnels need to be included as part of the major inventory contributors. Shirley stated that PNNL will include those.
- Harold Heacock asked if US Fish and Wildlife Service (USFWS) has been consulted on this. He noted the agency is in the process of developing their land use plan. Mike stated they are required to do so as USFWS are the probable land-keepers.
- Maynard noted the CLUP identifies an industrial use in the 300 Area. He asked if any other use would be considered. Shirley replied that for perspective it would be irresponsible not to look at other possibilities. The reasonably bounding scenario would be consistent with the land use and would be bounding on both ends. The idea is to look at how different the risk is based on a residential versus conservation scenario.
- Barbara Harper stated she believes there are many flaws in this document. First and foremost, the CLUP did not eradicate treaty rights. She sees regulatory process issues, TPA enforceability issues, cumulative risk goal issues, problems with risk assessment methods and acceptability. It is the question of how risky can the site be in order to receive the most cleanup dollars without being hazardous to workers?
- Gariann stated that removing groundwater as an option from the beginning is not acceptable to the Board and is the deciding factor in a lot of cases. Mike replied that there are no variances to groundwater cleanup and the protection of the Columbia River is maintained. The CERCLA processes will be used to reach groundwater cleanup goals.

- A committee member asked when this draft will be approved by DOE-HQ. Shirley stated there is not a date yet. Mike added they don't know if they will receive additional comments. Comments so far indicate the site is headed in the right direction but there is a lot of work to finish. The primary purpose is to ensure the entire complex is speaking the right language. Shirley added that she does not believe anything will change in the near future. The site was not directed to stop any further negotiation on final RODs or interim actions.
- Leon stated that he appreciates Shirley sharing this information and that he appreciates the exposure to the process. He noted that many of the things she has mentioned such as the 1000 year timeframe, institutional controls, and no groundwater use, do not jive with the guidance from the public, Board, and regulators. Mike had previously stated the site would not deviate from what is currently being done. Mike interjected that the guidance from DOE-HQ requires that the CLUP and presidential land use designation are used as the basis for this document. None of those specify there will be full time residences or use of groundwater. However, CERCLA processes must still be utilized for groundwater and RCRA enforcement will continue. Under the guidance from DOE-HQ the site must continue to obey the laws and regulations. The goal of CERCLA is to return the aquifer to a state of beneficial use. The RBES does not relieve the site of that. The processes under CERCLA will be utilized for the final RODs. There will be some alternate concentration limits but these must be under provision from CERCLA.
- A committee member asked if costs will be addressed as part of this process. Mike responded that it is a situation of what will provide the most "bang for the buck". Cost will be a factor but not the focus.
- Gerry asked why there won't be a public meeting outside Richland. Shirley replied she was given that advice due to low turnout at previous RBES meetings. Gerry noted there was good turnout at the Portland meeting.
- Susan observed that there does not appear to be an opportunity for the Board to see the draft before it is sent to DOE-HQ. She asked if the public meeting will be of a "this is what we are going to do" nature. Shirley replied the intent is to get regulator feedback and then release it to the public for comment before the final draft is sent to headquarters. Shirley stated the intent is to integrate feedback. Susan explained that there is very little time then to provide quality feedback.

### *Regulator Perspectives*

- Mike Goldstein stated that EPA has not yet had a chance to review the revised draft, but had an overview briefing from DOE, which was quite spirited. EPA will reserve judgment on the revised document until it is officially transmitted for official comment.
- John Price, Ecology, commented that this draft was a big contrast to the last, which was part of the IAMIT process and had many opportunities for input. Hanford's draft was unique across the complex because it wasn't highly criticized by the regulators

and public. This time the process is much more compressed and there is little opportunity for DOE to make changes based on public and regulator input.

- Max Power, Ecology, expressed great frustration that DOE continues to insist that using a residential scenario assumes there will be houses on site. This scenario was chosen as the best way to bound several items on the site. This misrepresentation continues to be propagated in documents from DOE-HQ. This is not true and was never the case.

### **Solid Waste EIS Advice**

Susan introduced reviewed the concepts in the draft Solid Waste EIS advice. The EIS purports to have massive new analysis in response to the Board's advice and input from agencies, states, tribes, and regulators. Normally those responses would be found in a draft EIS. However, brand new information with new assumptions and models are in this final draft. There is nothing to prevent DOE from opening it up for further review. This EIS will be the basis for multiple decisions to come and it would be beneficial to have an independent/expert panel review the groundwater assumptions and models to ensure they are reasonable. If some items have not been characterized, how can a cumulative risk analysis be developed?

The advice asks for additional time before any action is taken to ensure further review by the Board and public and to allow Ecology and EPA to establish a review panel. This would validate the use of the document in the future.

### **Committee Discussion**

- Susan stated that in order for this advice to have any impact it would need to be sent to the agencies before the next Board meeting. Otherwise, the flavor needs to change dramatically. She asked if this is important enough for another full Board meeting.
- Gerry asserted there is so much new information that the EIS couldn't be reviewed in a timely fashion even if there was an additional Board meeting.
- Susan asked if these are all fundamental issues the committee can agree on. Harold stated that the preferred alternative in the EIS will be adopted before the Board has a chance to finalize any advice. He asserted a different approach should be taken. If subsequent RODs are adopted under this, they should go through the normal review process. The Board could recommend that if Ecology and EPA have questions they develop a panel. However, it is the prerogative of the technical agencies to decide if they want further review.
- Barbara noted the advice says DOE is reviewing the ROD. She asked who issues the RODs? Gerry replied that DOE issues the RODs. The independent review panel was requested to ensure the document is adequate to suit the regulators needs in the future.

- Dirk stated the advice should request the EIS be held open for comment. He noted that there is a 30-day cooling off period after the EIS is issued before DOE can issue a ROD.
- Mike Collins, DOE-RL, stated comments received between the issuance of the EIS and the RODs may be addressed but it is not required. Dirk noted this would put the Board on record for any legal challenge. He added that the difficulty is the RODs cannot be commented on. If the Board is going to comment it has to happen now or a request needs to be submitted to extend the 30-day period and accept comments during that time. Gerry commented that unless DOE decides to ignore public comment there is some chance they would find it is reasonable to not move forward on this immediately. Gerry asked Mike if RODs are already written and ready to go. Mike replied that RODs are being drafted.
- Todd Martin agreed with Gerry that some parts of the EIS appear to be an entirely new draft. As a result, the simple concepts in the draft advice make sense. He offered to poll the other Board members on their acceptance of these concepts and then have a discussion with Keith Klein, DOE-RL Site Manager, and Roy Schepens, DOE-ORP Site Manager, about the Board's concerns. This could be done within the next couple of days. The Board's desires can be heard without formal advice but it will still be important to go forward with advice in April.
- The committee was polled for acceptance of these concepts and Harold dissented. Harold asserted that the Board should not ask for the RODs to be delayed. Gerry stated a delay would provide an opportunity to understand what is in the draft and the basis for the RODs. The advice is asking that no decisions are made until there has been adequate time to review the EIS. Susan agreed that the advice is only asking for time to understand the new information in the EIS. It may be that the RODs are perfectly appropriate but sufficient time is needed to review the data. Todd added it makes sound public policy sense for the Board to have time to review the document.
- Gariann asked what the Board can do if it cannot comment on the RODs. Gerry stated the Board has an opportunity to issue advice about some of the issues that are missing or that the Board does not agree with before the decisions are made. The opportunity to comment is not in the ROD but in the review of the EIS. It may be possible that a ROD could be changed based on advice. Gerry noted there was just a discussion about DOE's CLUP/EIS. DOE would have been well advised and the Board well served if there had been an opportunity for Board review and comment of the CLUP/EIS. Board comments were never formalized and now the CLUP/EIS is being used as the basis of RBES.
- Gariann asked what the timing issue for April is. Susan replied the RODs are being written for issuance as soon as the 30-day period ends.
- Harold stated that DOE wants mixed waste shipped here and if the Board fights this, its credibility will be hurt in many circles. This disposal path makes sense in the national picture as long as it's done properly. Gerry clarified that Harold believes developing an expert review panel and consensus makes sense but holding off on the RODs does not. Dirk asked what the point of technical review is if the RODs are issued beforehand. Harold stated the regulators can use it for permitting decisions.

- Mike stated they any RODs issued after the end of the 30-day period will most likely follow the preferred alternative.
- Todd will poll the Board for consensus on him having a conversation with senior management about what their plans are for the RODs. This conversation will also be used to express Board members' concerns about RODs being issued before opportunity for adequate review of the EIS.
- Susan will re-draft the advice for discussion in March.

**Regulator Perspectives**

- Max Power commented that Ecology just received a copy of the EIS this week. There is a lot of additional analysis. Ecology has not determined how much is actually based on previous work and how much is completely new. Staff will continue to look at that. At this time he can't say for sure if Ecology wants independent analysis. Ecology has continued to maintain that when DOE needs a permit, Ecology will determine if this EIS provides sufficient coverage under the State Environmental Protection Act (SEPA). He personally believes that if convening an expert panel, particularly in relation to cumulative impacts and fate transport, would resolve some public concern, it would be worthwhile.

**Handouts**

- River and Plateau Committee Meeting Agenda, February 11, 2004.
- Risk Based End State Vision, Shirley Olinger DOE-RL, February 11, 2004.
- EPA use of Monitored Natural Attenuation, EPA, February 11, 2004
- River and Plateau subcommittee meeting agenda, February 11, 2004
- Synopsis of monitored natural attenuation, River and Plateau Committee, February 11, 2004.
- Draft Advice, Susan Leckband and Gerry Pollet, February 11, 2004.
- Backup Slides of Major Risk Assessments, John Morse DOE-RL, February 11, 2004.
- Overview of Hanford Risk Assessments, John Morse DOE-RL, February 11, 2004.

**Attendees**

**HAB Members and Alternates**

Allyn Boldt	Rick Jansons	Wade Riggsbee
Madeleine Brown	Susan Leckband	Dave Rowland
Greg deBruler	Sandra Lilligren	Keith Smith
Dirk Dunning	Todd Martin (by phone)	Richard Smith
Gariann Gelston	Maynard Plahuta	John Stanfill
Harold Heacock	Gerry Pollett	Leon Swenson

**Others**

Mike Collins, DOE-RL	Rick Bond, Ecology	Michael Connelly, CH2MHill
Bryan Foley, DOE-RL	Dib Goswami, Ecology	Tony Knapp, CH2MHill

John Morse, DOE-RL	Jane Hedges, Ecology	Rico Cruz, CTUIR
Shirley Olinger, DOE-RL	Max Power, Ecology	Barbara Harper, CTUIR
John Sands, DOE-RL	John Price, Ecology	Ted Repasky, CTUIR
Yvonne Sherman, DOE-RL	Mike Goldstein, EPA	Liana Herron, EnviroIssues
Mike Thompson, DOE-RL	Debra McBaugh, WDOH	Penny Mabie, EnviroIssues
Jim Todd, DOE-RL	Mike Priddy, WDOH	Murphy Fatel, FH
Robert Yasek, DOE-ORP		Tom Fogwell, FH
		Vern Johnson, FH
		Rob Piippo, FH
		Barb Wise, FH
		Kim Ballinger, Nuvotec
		Mark Freshley, PNNL
		John Fruchter, PNNL
		Tyler Gilmore, PNNL
		Stuart Luttrell, PNNL
		Thomas Page, PNNL
		Bob Peterson, PNNL
		Mark Triplett, PNNL