

OREGON HANFORD WASTE BOARD

Minutes

Regular Meeting

March 19-20, 2002
Best Western Columbia
River Inn, Cascade Locks

Attendees (Excluding Speakers):

Voting Board Members: Shelley Cimon, Casey Beard, Larry Clucas, Norm Dyer, Jill Eiland, Norma Jean Germond, Michael Grainey, Paige Knight, Eric Nisley,* Marc Rogelstad,* Armond Minthorn.

Legislative Members: Sen. Ferrioli.

Oregon Office of Energy: Diana Enright,** Deanna Henry, Susan Hughs, Doug Huston, Ken Niles, Sue Safford.

Nez Perce Tribe: Sandra Lilligren.

U.S. Department of Energy: Peter Bengtson.*

Public: Julia Back,* Rachel Brecheisen,* Joy Corbin,* Scott Crambleff,* Jamie Fischer,* Matt Gowen,* Amy Gunn,* Rachel Hansen,* Nolan Howell,* Tim Johnson,* Bryan Kidder, Wayne Kinney, Jillian Kononen,* Richard Krikava,* Logan Morris,* Doug Riggs,* Laura Smitz,* Bobby Young.*

MARCH 19, 2002

Working Lunch: Announcements & Administrative Business

Shelley Cimon opened the meeting by describing the new meeting format of administrative business and ongoing project updates (in lieu of committee meetings) on the afternoon of the first day and presentations regarding the Columbia River focus on the second day. Ken Niles said any general board business or voting on action items needs to take place during the first day of the meeting.

Mr. Niles reported that Governor Kitzhaber appointed Michael Grainey Director of the Oregon Office of Energy. He also reported that the Oregon Office of Energy hired a hydrogeologist, who is to begin work by May 1.

* March 20, 2002 only.

** March 19, 2002 only.

Michael Grainey moved to approve the October 2001 meeting minutes; Norm Dyer seconded the motion and the minutes were approved unanimously.

October 2001 Meeting Follow-Up Reports

1. National Environmental Compliance and the Proposal to Build New Low-Level Waste Burial Trenches at Hanford.

Sue Safford distributed copies of a letter from the U.S. Department of Energy responding to board letters on this topic. The March 8, 2002 letter responded to a board letter regarding National Environmental Policy Act compliance and seeking a clarification why the Hanford Site proposed building new low-level waste burial trenches when the U.S. Department of Energy's Headquarters Office wrote the board that there was adequate low-level burial space at Hanford for the foreseeable future. Michael Weis, Associate Deputy Assistant Secretary for Project Completion, wrote that the receipt of waste from other sites is a continuation of the ongoing program addressed in the May 1997 Waste Management Programmatic Environmental Impact Statement. He further wrote that the additional burial space referenced in earlier U.S. Department of Energy letters to the board is in the 200 Area of the Central Plateau.

2. Hanford Cleanup Funding

Ms. Safford also distributed copies of a March 11, 2002 letter from Jessie Roberson, Assistant Secretary for Environmental Management, responding to a July 16, 2001 board letter regarding Fiscal Year 2002 funding for Hanford cleanup. Assistant Secretary Roberson wrote that Hanford cleanup is important to the U.S. Department of Energy and the Bush Administration. She described Environmental Management's Fiscal Year 2003 budget request and focus on laying the groundwork for transitioning to greater risk reduction and effective cleanup.

Armand Minthorn commented that the Umatilla tribes succeeded in getting Jessie Roberson to meet with them. He also pointed out that the March 11 letter represents an opening for the board to be involved in developing the "cleanup approach" mentioned in the letter.

3. Plutonium Finishing Plant

Doug Huston reported that work to stabilize the plutonium continues. He said negotiations are underway to establish milestones for dismantling the Plutonium Finishing Plant.

4. Hanford Presentation to the Oregon Legislature's Interim Joint Committee on Natural Resources.

Ms. Safford reported that she and Michael Grainey briefed the Oregon Legislature's Interim Joint Committee on Natural Resources as suggested by Rep. Bob Jenson. Mr. Grainey reported that Oregon's efforts to obtain increased involvement in Hanford cleanup decisions have been stymied. Ms. Safford described the board's 2002 meetings focus on developing recommendations for protecting the Columbia River from Hanford's chemical and radiological wastes. Mr. Grainey said several legislators asked how the situation became so bad and he told them that, previously, waste management was not a priority. Mr. Grainey said the Committee meets on a monthly basis and focuses on issues like water rights and salmon. Senator Ferrioli chairs the Committee.

Mr. Dyer noted that Eastern Oregon University selected Shelly Cimon as one of its Women of the Year for her Hanford work. The board recognized her work and the inscription on the plaque for Ms. Cimon was read during the board meeting.

Oregon Priority Area Updates

Oregon Office of Energy Technical Priorities for Hanford Cleanup

Mr. Niles reported that the Oregon Office of Energy developed a list of six technical priorities for Hanford Cleanup. The Oregon Office of Energy has serious concerns whether the six listed issues will be addressed. The agency is following these issues closely and will keep the board advised of any progress or continued lack of progress on these issues.

He said the technical priorities list does not include several other Oregon priorities for Hanford cleanup like moving spent nuclear fuel out of the K Basins and stabilizing plutonium at the Plutonium Finishing Plant. Those projects are not listed, because they appear to be moving forward at a reasonable pace. Should progress slow, the Oregon Office of Energy will again focus additional attention on them.

1. The 618-11 Burial Ground – As reported at previous board meetings, radioactive tritium is leaking from 618-11 burial ground, which is located adjacent to Energy Northwest's Columbia Generating Station and is just three miles from the Columbia River. Tritium flows freely with groundwater, and the plume is moving towards the river. The U.S. Department of Energy completed limited sampling to define the extent of the plume. Characterization of the burial ground has not yet begun and is urgently needed.

Staff recently reviewed the report on the 618-11 tritium investigation. The preliminary review by staff indicated that additional information is needed to assess the U.S. Department of Energy's conclusion that no action to remediate the tritium plume is necessary at this time.

Ms. Cimon suggested sending a letter to the U.S. Department of Energy with all the board's questions on the 618-11 Burial Ground. Mr. Niles suggested sending a joint letter, because the Oregon Office of Energy plans to send comments and seek additional information about the tritium investigation. The U.S. Department of Energy will then be invited to the June meeting to discuss the investigation.

2. Update on Hanford Tank Issues – Mr. Huston reported that the Tank Waste Remediation System Supplemental Environmental Impact Statement (EIS) is still not out. This EIS focuses on the disposal of low activity waste. The only new information is that this EIS schedule continues to slip. The Notice of Intent is expected out in mid-March. The scoping meeting is scheduled for the end of March. The draft EIS is expected out in late summer followed by a public comment period.

Mr. Huston reported that the effort is underway to develop alternatives to sluicing technology for retrieval of high-level waste. The Oregon Office of Energy reviewed two documents and provided comments on two technologies. This includes C-104 and S-112 Alternate Retrieval Technology.

He also reported that the Office of River Protection submitted a recovery plan for returning the Tank Waste Vitrification Project to the schedule required by the Tri-Party Agreement. The Washington Department of Ecology (Ecology) and Oregon Office of Energy reviewed the recovery plan. Mr. Huston said that there is little leeway for further delays in the recovery plan .

Finally, Mr. Huston reported that Roy Schepens will replace Dr. Harry Boston as manager of the Office of River Protection.

3. Hanford Site Solid Waste Environmental Impact Statement - Mr. Niles reported that the U.S. Department of Energy plans to release this document on April 30, 2002. He said this environmental impact statement will assess impacts of actions implementing the selection of Hanford as one of two regional disposal sites for the U.S. Department of Energy's low-level and mixed low-level wastes.

Mr. Dyer asked whether low-level waste shipments from other sites to Hanford would be considered safe and follow Waste Isolation Pilot Plant protocols. Mr. Niles responded that the U.S. Department of Energy has not provided any information on the volume of low-level and mixed low-level wastes being assessed in the solid waste

EIS. He said low-level waste shipments generally do not follow the same strict transportation protocols as those used by shipments to the Waste Isolation Pilot Plant, but that they do follow state and federal regulations.

Ms. Knight said this is an issue about which there should be a request for public meetings when the environmental impact statement is released.

Mr. Minthorn said if there is increased shipping involved with this EIS, the Confederated Tribes of the Umatilla Indian Reservation needs to be involved.

4. Proposed Tri-Party Agreement Milestone Changes – Mr. Huston reported that the Tri-Parties are accepting public comments on several TPA milestones:
 - 100 Area Change Package – establishing milestones that place all the 100 Area reactor facilities in interim safe storage by 2012.
 - 300 Area Change Package – establishing dates for remediation of all 300 Area waste sites, including the 618-10 and 618-11 burial grounds.
 - Central Plateau Project – affecting cleanup schedules for the Central Plateau 200 Area non-tank farm operable units.

In general, Mr. Huston said, these change packages speed cleanup.

5. Fast Flux Test Facility Update – Mr. Huston reported that the U.S. Department of Energy has until March 19 to submit a Tri-Party Agreement change package with proposed milestones and dates for the shutdown of the facility. After that, the U.S. Department of Energy and Ecology have 120 days to negotiate the details of the change package request. He said the U.S. Department of Energy will propose a six-year, eight-month shutdown schedule for the reactor, ending in 2008 with the reactor in a minimum surveillance mode with the sodium drained. The reactor will then cost \$2 million per year to maintain, awaiting ultimate dismantlement.

Mr. Minthorn thanked the board, Oregon Office of Energy, Oregon Legislature, and others who supported shutdown of the Fast Flux Test Facility.

Proposed Hanford Budget for Fiscal Year 2003 and “Top to Bottom” Review

Mr. Niles reported that last fall Secretary Abraham ordered a complete review of how the agency does business. In February 2002, the U.S. Department of Energy released the results of this review as a report. He said the Oregon Office of Energy read the report with skepticism. Mr. Niles said his impression was that the report advocated doing less cleanup, leaving more waste in place and characterized the Tri-Party Agreement as a 12-year old agreement not reflective of today’s cleanup needs. The Oregon Office of Energy

disagrees with that assessment. The Tri-Party Agreement is a working document that continues to be updated through negotiations. It is an effective guide for Hanford cleanup. The Oregon Office of Energy's comments on the report are in the briefing notebook at the end of the materials under tab 4. Mr. Niles said that the U.S. Department of Energy has not responded to Oregon's comments.

Mr. Niles said the proposed Fiscal Year 2003 budget for Hanford is \$262 million less than the Fiscal Year 2002 budget, and perhaps as much as \$300 million short of what is needed to complete work required by the Tri-Party Agreement. The President's proposed Hanford cleanup budget for Fiscal Year 2003 is \$1.46 billion. The current Fiscal Year 2002 Hanford budget is about \$1.722 billion. Under the Fiscal Year 2003 budget request, \$124 million would be cut from the Office of River Protection's budget. The Richland Operations Office's budget would be cut by \$139 million. However, some of these cuts could presumably be restored. The budget request also seeks an \$800 million expedited cleanup account. Hanford and the other sites would compete for some of these funds.

Mr. Grainey reported that the U.S. Department of Energy, U.S. Environmental Protection Agency and Ecology agreed that Hanford will receive \$433 million of the accelerated cleanup dollars. The Oregon Office of Energy was not informed about the negotiations or the agreement until Ecology issued a press release. Mr. Grainey and Mr. Niles met subsequently with the U.S. Department of Energy, U.S. Environmental Protection Agency and Washington Department of Ecology to find out more details of the agreement and why the Oregon Office of Energy was excluded and not informed. The Tri-Parties said that the work of a Hanford group studying how to expedite cleanup (C3T) allowed Hanford to provide a proposal to the U.S. Department of Energy's Headquarters to support a request for some of the \$800 million fund.

Mr. Grainey reported that the Office of Budget and Management approved the first year of expedited funding, but has yet to approve the five-year funding agreement. Mr. Grainey said only time will tell what will happen. The first thing to do is to try and get the \$433 million through Congress' appropriations process. Senator Ferrioli said Hanford's managers need to be encouraged to think ahead and get next year's plan in place to ensure future funding for expedited cleanup at Hanford.

Ms. Knight expressed concern that there was little public involvement in these projects. Mr. Grainey said the U.S. Department of Energy's Headquarters Office did not ask for public comment.

Ms. Knight asked whether the board should write a letter about the inconsistencies in the "Top to Bottom" Review. She asked whether there will be changes in management or management practices resulting from the C3T work. Ms. Knight asked if the Oregon Office of Energy would ask the C3T to address management philosophy issues.

Ms. Knight said she sees secrecy written all over the budget process. She said the public never received a detailed itemization of the Fiscal Year 2002 budget even after the budget was released. Ms. Cimon commented that it is not looking good for Fiscal Year 2003 either. She said the Department of Energy is conducting budget meetings in the next few weeks and there is no information. Ms. Knight said this is the second year of this administration and the second year without basic budget information. Susan Hughs said the public meeting about the budget is evolving into a session to develop a work plan for accelerated cleanup.

Mr. Minthorn recommended that the Tribes coordinate a letter with the board and perhaps with Senator Ferrioli as well. Mr. Niles proposed that the board send a letter addressing the budget process and need for opportunities for public comment on the C3T work plan being developed.

Mr. Minthorn moved that the board draft a letter requesting that the Tri-Parties provide multiple opportunities for public involvement in the development of the detailed work plans to implement the letter of agreement. Ms. Knight expressed her concern that the lack of public involvement in the "Top to Bottom" Review is a sign that the administration is trying to leave out the public and stakeholders. Mr. Grainey said the Top-to-Bottom Review is done. The board needs to focus its attention on the work plans. Ms. Knight said she would agree with Mr. Grainey as long as the board's letter stresses the need for multiple opportunities for public involvement. Staff will draft the letter and Ms. Safford will circulate the draft via e-mail for review. Ms. Knight seconded Mr. Minthorn's motion. The board voted unanimously to direct staff to draft the letter.

Mr. Grainey motioned that the board send a second letter supporting the increased funding for Hanford. Mr. Dyer seconded the motion. The board voted unanimously to send the letter.

Public Involvement Issues

1. Follow-up from Previous Meetings

Ms. Hughs discussed the Oregon Office of Energy's Community Outreach Initiative. She provided the 2001 and 2002 statistics for this initiative. She asked board members to keep track of their presentations and notify her of them. Mr. Niles discussed the Oregon Museum of Science and Industry's Hanford exhibit. Doug Riggs and the Hanford Information Network spearheaded the creation of the exhibit.

Mr. Minthorn suggested making a presentation to the general assembly of the Affiliated Tribes of Northwest Indians. He said it would be a good opportunity for the Tribes and a

good opportunity to get information out about Hanford. He stated that if the Oregon Hanford Waste Board supports this, he would assist in preparing the presentation. He also suggested that the Umatilla and Morrow County Commissioners would also benefit from this presentation.

Ms. Hughs also discussed some of the various presentations and meetings attended by Oregon Office of Energy staff and board members. Deanna Henry and Casey Beard discussed their emergency preparedness work with dairies in Oregon counties near Hanford.

2. Public Outreach Activities

Ms. Hughs noted some of the recent Tri-Party activities in Oregon. Jill Eiland asked if these meetings attracted new attendance by people who had not previously attended a Hanford public meeting. Ms. Knight responded that there have been some new people showing up at these meetings.

Ms. Hughs then discussed the Fiscal Year 2003 budget meetings in Oregon. Ms. Eiland asked if there was a packet of Hanford information that could be sent to the gubernatorial candidates. Mr. Grainey said the board cannot become involved in political races. The Oregon Office of Energy has Hanford talking points and information materials that it encourages board members to distribute to whomever they wish to inform Oregonians about Hanford. Ms. Eiland, Ms. Knight and Mr. Clucas asked for five copies each of these materials.

Board members discussed other possible Hanford presentations, such as the Portland and Salem City Clubs.

Updates on Other Oregon Priorities

1. Spent Nuclear Fuel Project

Mr. Huston reported that the K Basins contain 2,300 tons of fuel from the N Reactor. The U.S. Department of Energy is moving 4 Multi-Canister Overpacks (MCO) of fuel per month. At the current rate, the Department of Energy will not meet the July 2004 milestone to remove all the fuel from both basins. The Department of Energy would have to move 14 MCOs a month to meet the July 2004 milestone. The project is working to accelerate the movement of fuel. They are hoping to move faster as they gain experience. Mr. Huston said it is a technically challenging project and it is taking more time than anticipated. The Fiscal Year 2003 budget request reduced funding for this project. It is unclear if some of the \$433 million in accelerated funds will be applied to this program.

2. Transport Safety

Ms. Henry updated the board on the transportation of transuranic waste to the Waste Isolation Pilot Plant. No shipments from Hanford are scheduled this year. She also discussed the possibility of three small sites shipping transuranic waste to Hanford to allow them to continue their closure activities.

Ms. Cimon asked if there was a proposal to send remote-handled transuranic waste to the Waste Isolation Pilot Plant in the near future. Mr. Niles replied that there was a plan to ship remote-handled transuranic waste from Oak Ridge in 2004. There was also discussion about developing Waste Isolation Pilot Plant acceptance criteria for remote-handled transuranic waste.

Ms. Cimon asked if there might be changes in the agreements for the various radioactive waste compacts. Mr. Niles replied that, except in our region, the compact system has not worked, and even our region has some problems. Norma Jean Germond commented on Sen. Wyden's efforts to get Hazmat equipment for Oregon police and fire departments. Mr. Niles discussed the effects of September 11 on emergency preparedness funding for the states.

Ms. Cimon asked for public comment, but there was none.

MARCH 20, 2002

Ms. Cimon introduced new board member Marc Rogelstad. She also briefly discussed the day's focus: gathering information on the Columbia River to put Hanford's impacts in perspective.

1. The Columbia River: Lifeblood of the Northwest

Angus Duncan of the Bonneville Environmental Foundation provided an overview of the Columbia River's importance to the region. His discussion centered on the economic, agricultural, ecological, climactic, geologic, biological, cultural and tribal history of the region and effects on the Columbia River. He said the history is a series of parabolas or waves reflecting booms in fishing, irrigation, mining, grazing and other development that successively reach a peak and then decline. These waves created prosperity for many people. He briefly noted the problems associated with the conflicting river uses.

He cited a series of statistics about the basin: It is the size of France; has ten times the runoff of the Colorado River; has two times the runoff of the Nile; Canada contains ½ the hydroelectric storage. Most of the basin is arid, but there is huge hydrologic variation.

Mr. Duncan said that water volumes in the basin vary by as much as 50 million acre feet per year. The average volume is 100 million acre feet per year. The Pacific Decadal Oscillation blunts some of this hydrologic variability. Most of the main stem Columbia River dams were built during a wet period of the Pacific Decadal Oscillation, which masked their effects. He noted that the Columbia Basin is the only place where grain was not the foundation for the native culture; salmon were the foundation.

He described the Hanford Reach as “an extremely rare stone,” because it contains the last core population of salmon in the Columbia River. He said salmon are the single most important part of the ecological system. He mentioned the preliminary findings of sex changes in Hanford Reach salmon. Mr. Dyer asked whether such changes have been observed or studied in other areas. Mr. Duncan offered to get more information on this topic.

Mr. Duncan closed by stating, “Institutions are hard to change and easy to defend.”

2. Columbia River Water Quality and Water Quality Standards

Dr. Russell Harding of the Oregon Department of Environmental Quality provided an overview of water quality standards, including how they are set, and how water quality is monitored.

He began by talking briefly about the history of water quality legislation and issues. He discussed the two parts of the act: point source discharge elimination and water quality standards. His presentation focused on water quality standards, numeric and narrative, that must prevent degradation from existing conditions (“antidegradation”). The numeric standards do not consider cumulative impacts. The agencies seek to address cumulative impacts by setting standards based on the most sensitive species.

Dr. Harding said the Oregon Department of Environmental Quality has operated an ambient water quality monitoring network since 1976. The Oregon Water Quality Index is accessible on the Internet and shows trends in water quality. The Oregon Department of Environmental Quality has four Columbia River water quality monitoring points: Cathlamet, Kalama, the mouth of the Willamette and Warrendale.

Senator Ted Ferrioli asked if the temperature standard is being keyed to salmonids (a cold water fish). He also asked whether the department considers the absence of salmonids in a particular stream or that a stream cannot physically meet a given standard when it sets standards. Dr. Harding replied that the temperature standards include narrative language allowing higher temperature standards. In response to another question, he also discussed how Total Maximum Daily Loads (TMDLs) are set.

Dr. Harding reported that the Department of Environmental Quality does not monitor the Columbia for radionuclides. Ms. Cimon asked why not. Dr. Harding responded that the Oregon Health Division was in charge of monitoring from 1960-1993.

Mr. Clucas asked why a longer stretch of the river was not monitored. Dr. Harding replied that he did not know, but would find out.

Ms. Knight asked whether the Department of Environmental Quality monitors for the presence of pesticides. Dr. Harding said that the Department of Environmental Quality does not monitor for the presence of pesticides, because its lab does not have the capability to do so, and the cost of sending samples out to be analyzed is prohibitive.

Senator Ferrioli mentioned that the Oregon Legislature passed a pesticide usage act that requires the collection of data on pesticide usage.

Ms. Cimon asked what it would take to reestablish radiological monitoring. Dr. Harding replied that it is a resource issue and that board members should contact their legislators. Mr. Dyer noted that municipal water sources must conduct limited radiological monitoring on a regular basis.

3. Uses of the Columbia River

Glen Spain, Northwest Regional Director Pacific Coast Federation of Fishermen's Associations, discussed commercial fishing uses. Mr. Spain said the members of his association are the people who make their living delivering fish that are safe to eat to the public. He said the commercial fishing industry has long stressed the need for protecting the Hanford Reach. He said he was appalled at the little to no monitoring of radionuclides in the Columbia River.

He distributed copies of the February 2002 "Hanford Radioactivity in Salmon Spawning Grounds" report by Norm Buske of the Government Accountability Project, a handout from the Pacific Coast Federation of Fishermen's Associations' website on protecting the Hanford Reach and a page from a May 1965 Scripps Institution of Oceanography report on radioactivity in mussels. He said there is data out there, you need to get it.

Mr. Niles discussed the Oregon Health Division's 30-year study. He said the Health Division stopped monitoring primarily due to a lack of funding and the fact that the study showed a significant reduction in the level of radionuclides in the river. Mr. Spain said it depends on whether you are looking at the right radionuclides. Spain said it is unknown what happened to the radionuclides and no way to verify the Health Division's assumption that the levels have dropped without the continued monitoring. Mr. Spain said a specific program to monitor for radionuclides is very different than one that looks

at chemicals. He said the sex changes in Hanford Reach salmon result from the chemical composition of the contaminants, not radioactivity. Board members said it is important to have a monitoring program for both radionuclides and chemicals and to look for cumulative impacts.

Mr. Dyer said there continues to be extensive monitoring for radionuclides on the Columbia River. He noted that there are at least two theses by Oregon State University students on radionuclide levels in the sediments behind McNary Dam. He expressed his concern that Mr. Buske's report was not peer reviewed and questioned the validity of the information in it.

Mr. Spain said what we do not know can hurt us. We are better off knowing what is there even if it is bad news.

Mr. Minthorn said the board needs to make a strong case to the Oregon Legislature that there needs to be a mechanism that holds the U.S. Department of Energy accountable for providing a monitoring program for radionuclides.

Gary Neal, Manager of the Port of Morrow, discussed transportation use of the Columbia/Snake River System. He first provided some statistics: One barge equals 600 truck loads. Approximately 22 million tons of cargo travel the river annually. Sills on the dams are the defining restriction for transportation on the river.

700,000 carloads of cargo go through the Port of Morrow each year, including \$2.2 billion of commodities. River transport is inexpensive and unmatched by any other method of transportation in terms of reliability. Materials can travel 59 miles by truck per gallon of fuel per ton of cargo, 202 miles by rail and 514 miles by barge. The Port of Morrow became involved in container transport in 1984; it is the largest inland container port in the United States. There are two wood chip reload facilities, aggregate facilities as well as solid waste container facilities for transfer to the regional landfill. The Port's grain terminals serve points from southern Idaho to Morrow County. Forty percent of the nation's grain travels through the Columbia Snake River System.

The Port was originally formed as a means to move materials to market. River transportation is a key component of the agricultural system. The Port's purposes have expanded into development of 5,700 acres of industrial land.

Dr. Darryll Olsen, an economist and consultant to Columbia/Snake River irrigators, described irrigated agricultural use of the Columbia River. Agricultural products include all row crops, like potatoes, onions, and corn as well as grapes along the Washington side of the Columbia.

He handed out a short memo and basin map. The basin map depicted areas potentially affected by Hanford. He labeled the area east of the Hanford site the Indirect Area, because the effects there are indirect. Water for irrigated agriculture is piped to this area from Grand Coulee Dam's Lake Roosevelt and the Columbia Basin Project, far upriver from Hanford. For agricultural operators in this area, the issue is perceived risk from their physical proximity to the Hanford Site. That proximity means the public may think they use water affected by the Hanford Site. He stressed that perception is as powerful as reality.

In contrast, almost all of what Dr. Olsen described as the Direct Area is in Oregon. Agricultural users in Oregon directly pump water from reservoirs created by the McNary and John Day Dams for use in their operations. These users would be directly affected because they use the Columbia River downstream from Hanford.

He said that the irrigated agriculture includes producers, an agricultural services sector and food processing businesses. The industry encompasses approximately 230,000-250,000 acres of production, the majority of which is in Oregon. The capital value of the land served by direct pumping from the Columbia River is approximately \$1.1 - \$1.2 billion generating \$480 million in annual household income (direct and indirect). Only 6 percent of the approximately 200 million acre feet in annual runoff in the Columbia Basin is used for irrigated agriculture.

Almost all of the development in the area occurred with private capital. The area has a near perfect climate for irrigated agriculture. In conclusion, Dr. Olsen said irrigators are not worried about Hanford. Irrigators' biggest concern is the perceived risk.

Mr. Niles asked if farmers monitor water coming out of the river. Dr. Olsen suggested contacting Stan Alt who has 30 years worth of monitoring data.

Mr. Minthorn expressed a concern about contamination, regardless of the source. He asked what standards irrigators use to protect the environment, especially from pesticides. Dr. Olsen said irrigators follow state laws and regulations. He said the Yakama Nation's Wapato Irrigation District has the biggest pesticide problem.

Ms. Germond asked about fish screens to keep fish from being pulled out of the river and becoming fertilizer. Dr. Olsen said there is a public perception that irrigation systems suck up smolt, but it is not a problem. The smolts would compromise the efficiency of the equipment. The irrigators' standard is that there will be no screen violations.

John Platt, Advisor to the Director of the Columbia River Intertribal Fish Commission, discussed tribal fishing rights, the Hanford Reach and the numbers of returning fish for various Columbia River fish populations. He emphasized that court cases interpreting the

treaties between the tribes and federal government give the tribes a right to fish as well as protection of the ecosystems that support fish.

He discussed how supplemental fisheries (native stock raised in hatcheries to increase their success rate) have helped restore runs. He said the runs using the Hanford Reach are supplemental runs and that is why they remain successful. He quoted Ted Strong as stating that the difference between wild fish and hatchery fish is like the difference between being born in a teepee and a hospital. He distributed copies of the executive summary for the Columbia River Intertribal Fish Commission's salmon restoration plan – Spirit of the Salmon. The plan focuses on every stage of salmon development as it relates to human impacts. For example, the plan examines how the effects of leaving the Snake River dams in place would need to be offset by reducing other impacts through supplemental fisheries, etc.

4. The Spiritual Significance of the Columbia River

Russell Jim, the scheduled speaker on this topic, was unable to attend the meeting. Instead Doug Riggs, Hanford Information Network, provided an overview of the groups' educational project for schools.

Mr. Riggs also distributed copies of Assistant Secretary Roberson's statement to the Subcommittee on Energy and Water Development Committee on Appropriations on March 14. He briefly discussed the Assistant Secretary's testimony before the subcommittee on the Department of Energy's Environmental Management Program and its Fiscal Year 2003 budget request.

5. Groundwater Contamination at Hanford: What, Where, How Much and What Else?

Dr. Dib Goswami, Washington Department of Ecology, provided an overview of groundwater contamination at Hanford. According to Dr. Goswami, Hanford has 42 percent of the nation's 1 billion curies of defense-generated radioactive wastes. Hanford has 60 percent of the nation's high-level wastes and 25 percent of the nation's waste storage and release sites. Hanford is home to 80 percent of the nation's defense-related spent fuel.

Dr. Goswami reported that the U.S. Department of Energy or its predecessor agencies released radioactive liquid wastes to the ground at Hanford through cribs (1944-1990s), French drains (1944-1980s), reverse wells (1945-1955), ponds (1944-1990s), and specific retention trenches (1944-1973). Hanford operations contaminated over 180 square miles of groundwater beneath the site. Ninety square miles are above drinking water standards. Major contaminants that have reached the Columbia River include: tritium, chromium, strontium, nitrate, and uranium.

Dr. Goswami said that the contaminants that may enter the river within 100 years are: carbon tetrachloride, technetium-99, iodine-129 and uranium from the 200 Area. Other facts Dr. Goswami cited about Hanford groundwater contamination include:

- In most areas, the vertical extent of contaminant plumes is unknown.
- Very little is known about the extent (lateral and vertical) of the vadose zone contamination.
- Little is known about contaminant behavior, migration, fate and transport.
- Past predictive studies are not reliable.
- Data gaps are extremely high.
- There is great uncertainty about waste disposal inventories.
- There is a lack of understanding about the interaction of the Columbia River and the groundwater.
- More new monitoring wells are required to track contamination at key waste units as the wells go dry.
- There is inadequate funding for monitoring wells, characterization wells, and other groundwater and vadose zone activities.

He described the three-part Interim Groundwater Strategy as: 1) controlling and containing plume expansion through proven technology to reduce contaminant masses; 2) identifying and controlling contamination sources in the vadose zone and 3) developing new containment and treatment technologies.

He described the Long-Term Groundwater Strategy as protecting the Columbia River and near shore environment. The Long-Term Strategy includes: 1) identifying and controlling contaminant sources in the vadose zone that pose an imminent threat to groundwater quality; 2) ceasing untreated discharges to soil and groundwater and 3) containing mobile contamination plumes in the 200 Area (uranium, technetium-99, nitrate, carbon tetrachloride, chloroform, trichloroethylene, cesium, strontium-90 and cobalt).

The major contaminants and containment or treatment technologies in use are:

- Strontium-90 at 100-N. Pump and treat is being used for containment only. Possible treatment methods include: monitored natural attenuation and phytoremediation.
- Chromium – In-Situ Redox Manipulation, which is still being tested for efficacy.
- Carbon Tetrachloride – Pump and treat, soil vapor extraction. Additional characterization work is necessary as well as new concepts for enhancement of removal, containment, and biodegradation.

- Technetium-99 – Pump and treat. There is a need to assess other areas of technetium-99 for possible action.
- Uranium – Pump and treat. There is a need to investigate mobility aspects and how they influence decisions about monitored natural attenuation, enhanced extraction rates, and more aggressive removal actions.

Dr. Goswami then described some of the Columbia River monitoring. He said there is a site-wide groundwater surveillance program that includes: well sampling, direct river water sampling and sampling of springs along the river shore. Samples of aquatic species and sediments are also taken. The analytes include organics, inorganics and radionuclides.

Dr. Goswami concluded by stating that there is a need for more focus on characterization (nature and extent of contamination), actual field remediation work (including an emphasis on new technology development), addressing uncertainties (about the inventory, groundwater flow, vadose zone, and interaction with the Columbia River), validation of models and assessment of impacts/risks to human health and the environment. He said there also must be care not to re-contaminate or further degrade groundwater.

6. Hydrogeology, Groundwater Flow and Cleanup

Dr. Richard Johnson of the Oregon Graduate Institute discussed groundwater and contaminant flows, and how they influence the short and long-term efficacy of pump and treat technology. He used the poem about the blind man and the elephant as a metaphor for trying to understand groundwater and contamination. He said there is no way to eliminate uncertainty. Predictive modeling is an oxymoron. However, he said, it is possible to know with reasonable confidence general tendencies and direction of flow.

He indicated that, in the short-term, pump and treat systems draw contaminants out of the high conductivity zones and get high output. Once high conductivity zones have been emptied, a pump and treat system draws from the low conductivity zones from which yields are significantly reduced. Consequently, pump and treat systems generally are good for plume containment but not for mass removal.

He concluded by sharing his four principles for advancing environmental cleanup:

- We are always limited by the amount of information we have about all sites.
- Every time, we do something, we should learn something in order to keep progressing.

- In order to be successful, we need to make improvements based on what we learn.
- Everything takes longer than we would like to think.

Mr. Beard asked if river flow affects the migration of the groundwater. Dr. Johnson replied that it might, depending on the local conditions such as gradient.

Mr. Dyer commented that contaminants generally move more slowly than the water. Dr. Johnson agreed but pointed out that dispersion can cause contaminants to move faster than the average groundwater velocity.

Eric Nisley asked if there is a confined aquifer and whether it was possible to have contamination in a confined aquifer. Dr. Johnson said it is common to find contaminants below confining layers. Mr. Nisley asked whether it was possible that back in the 1940s and 1950s, a hole was punched in the aquifer and all the contaminants “escaped” off site?

Ms. Knight asked what is the solution for removing contaminants from groundwater? Dr. Johnson said a combination of technologies. Absorption walls, hydraulic walls, pump and treat, all have a place. He said absorption walls in combination with pump and treat systems are theoretically the most effective solution.

7. Setting and Monitoring Drinking Water Standards

Dan Sander of the Washington Department of Health reviewed the chronology of establishment of drinking water standards beginning with the first federal Safe Drinking Water Act in 1914.

He said the standards are based on assumptions about consumption. The standards in a transient area (rest stop) might be lower based on an assumption that people would only have one drink as they pass through and not regularly consume from such a source.

He complemented the Oregon Health Division brochure in the meeting notebook, saying he wished that the Washington Department of Health had a similar brochure.

He discussed how standards are set, using arsenic as the example. Standards are constrained by the lab technology to measure compliance with them. Another complicated situation is radon. It is in drinking water, but the health risk is from breathing it while showering or bathing. The U.S. Environmental Protection Agency uses a cost benefit analysis, except when assessing disinfectant byproducts, to set standards.

Ms. Knight asked whether children, who may be more sensitive, are considered when the standards are set. Mr. Sanders said yes. The standard is safe for the most sensitive, such as children with compromised immune systems, transplant patients etc.

He concluded by saying that water utilities are responsible for monitoring their compliance with the standards. The agencies spot check the utilities' monitoring programs.

8. Groundwater Contamination at Hanford: What, Where, How Much and What Else?
Part II

Joe Cruz, Office of River Protection, discussed single-shell tank retrieval and leakage. He was unable to discuss how the waste leaked from the single-shell tanks will travel once it reaches the groundwater. His discussion focused on what is being done at Hanford to prevent future leaks of single-shell tank waste.

Mr. Cruz referred attendees to *Hanford Tank Clean up: A Guide to Understanding the Technical Issues* by R.E. Gephart for detailed information on material volumes and levels of radioactivity. He said there are approximately 33 million gallons of single-shell tank waste. The waste types vary from tank to tank. There are approximately 190,000 tons of chemicals and approximately 132 million curies of radionuclides. The wastes vary in consistency from liquids to materials as hard as, and including, concrete. Six chemicals constitute 90 percent of the single-shell tank waste mass. The chemicals are: nitrate, sodium, nitrite, hydroxide, phosphate, and aluminum.

The groundwater contaminants of concern are mobile and long-lived. They include the radionuclides (carbon-14, selenium-79, technetium-99, iodine-129, uranium-238) and chemicals (nitrate, nitrite, and chromium). The horizontal spread tends to dominate over vertical spread due to soil anisotropies. Geologic anomalies impede or exacerbate contaminant spread. The vadose zone characterization is underway.

He said that based on historical data, the Office of River Protection expects leak losses during retrieval to be much lower than the retrieval performance requirements. Mr. Cruz briefly discussed various methods of leak detection, such as in-tank material balances and liquid level measurements. All the methods have limitations. The goal is to retrieve 99 percent of the waste by volume and to determine the best available technology economically achievable. The Interim Stabilization Project focuses on performing the initial removal of liquids that can be pumped.

Mr. Cruz summarized the approach: retrieve the worst tanks first; use innovative approaches to reduce leakage and achieve greater efficiencies; demonstrate improved

technologies and minimize time at risk by aggressively accelerating tank waste retrieval times.

Ms. Cimon asked when the public gets to weigh in on how safe is safe. Mr. Cruz said right now. That is why the Office of River Protection is giving these presentations to the Oregon Hanford Waste Board and Hanford Advisory Board. Ms. Cimon said she was not sure what the point is for the Office of River Protection to seek public involvement. She said what the Office of River Protection will hear loudly from Oregon, her and Paige is: do not cause any more leaks and do not leave any waste in the tanks.

Ms. Cimon asked about tank infrastructure. Mr. Cruz replied that the plan is to use as little existing infrastructure as possible. Ms. Germond asked about the ultimate fate of the tank farm infrastructure. Mr. Cruz said that there has not been a lot of work done on that. He emphasized his work minimizes the use of existing infrastructure.

Greg Jones, an assistant to Office of River Protection Manager Harry Boston, discussed the Office of River Protection's budget baseline acceleration. He said that of the \$433 million from the accelerated cleanup fund, the tentative allocation is \$229 million to the Office of River Protection and \$204 million to the Richland Operations Office. He said that would provide the Office of River Protection with about \$60 million for expedited cleanup after funding all contractual obligations. He could not identify the projects that would be expedited.

Mr. Niles asked if the U.S. Department of Energy's Headquarters Office will prevent use of the expedited cleanup money to backfill the baseline. Mr. Jones said he thought that would probably happen, but the Office of River Protection needs to fund the baseline before doing anything else. Ms. Cimon asked if the regulatory agencies are involved in this. Mr. Jones said that the regulatory agencies are part of this plan, which is being implemented through the C3T process.

Mr. Jones said, in response to a question from Ms. Knight, that work to comply with the Tri-Party Agreement will occur before the accelerated work occurs. Ms. Knight said the public impression is that the entire \$433 will be used for accelerated cleanup work, not regular Tri-Party Agreement compliance work.

Mr. Dyer asked if the money has been included in the current Hanford budget. Mr. Jones said it has.

Mr. Jones addressed items in his handout. He said the Office of River Protection's focus is on sooner risk elimination, delivery of a more capable vitrification plant, early progress on waste retrieval and early closure of tanks. He discussed the concept that not all the wastes in the tanks represent the same risk. The Office of River Protection believes it is

not necessary to vitrify all the low activity waste because it is not high risk. The current plan calls for vitrification of all the initial quantity of waste. Possible alternative treatments include steam reforming. He said economics are the main reason for considering alternative technologies. The current plan costs too much.

Mr. Niles commented that the Oregon Office of Energy is uncomfortable discussing tank closure until the vitrification plant is operating. Mr. Cruz said the motivation for this is to learn on how to stabilize residuals, and that the Office of River Protection struggled with the term for this activity. Ms. Cimon said she felt the vitrification plant is being held hostage to “closing” tanks. Mr. Cruz said the discussion has to include closure. Ms. Cimon asked the cost and Mr. Cruz replied \$20 to \$40 million per tank. Mr. Niles noted that this strategy is inconsistent with a risk-based cleanup standard when these are the low risk tanks.

Ms. Knight commented that the biggest stumbling block has been management. Mr. Jones discussed how the Office of River Protection plans to avoid management problems.

Peter Bengtson of the Office of River Protection commented that there is no formal public process for the development of this work plan. Mr. Grainey commented that the Oregon Office of Energy met with the Department of Energy and asked to be involved in the work plan. Mr. Niles said the board will be sending a letter on this subject to the Department of Energy. Mr. Bengtson commented that stakeholders are planning meetings in May to discuss this budget.

Ms. Cimon asked for comments from one high school student who stayed through the afternoon. There being none, she announced the dates for the next meeting, June 18-19, 2002, in The Dalles.

The meeting adjourned at 5:20 p.m.