

Oregon Hanford Cleanup Board

Tamastlikt Cultural Institute – Mission, Oregon

Monday, May 9, 2016

Board Members in Attendance:

Kristen McNall, Chair

Ted Taylor, Vice-Chair

John Howieson

Steve March

Dan Solitz

Lori Brogoitti

Dave Ripma

Bryan Wolfe

Justin Iverson (Oregon Water Resources Dept.)

Ken Niles (Oregon Department of Energy)

Rep. Greg Baretto

Sen. Bill Hansel

Tri-Party Agencies:

U.S. Department of Energy, Office of River
Protection

- Steve Pfaff

- Dieter Bohrman (North Wind)

Washington Department of Ecology

- Alex Smith

- Suzanne Dahl

U.S. Environmental Protection Agency

- Dennis Faulk

ODOE Staff:

Mark Reese

Dirk Dunning

Dale Engstrom

Paul Shaffer

Public:

Shelley Cimon

Maxine Hines

Shitaro Ito

George Plaven

Joan Pfaff

Patrick Mills

Sharon Monteiro

Eileen Laramor

Rod Skeen, CTUIR

Armand Minthorn, CTUIR

Cole Miller, KOIN TV

Administrative

Chair Kristen McNall opened the meeting at 1:05 p.m. and welcomed Board members and guests.

Kristen opened the meeting with a statement to the Board as the new Chair. She asked everyone to keep in mind that cleanup will take many more decades to complete. As Chair, she wanted to remind the Board members that the only way this will be accomplished is if the public stays involved and stays committed to Hanford cleanup. Kristen said that she would like the Board to think about how this will be accomplished and how Board members can leverage each other collectively in this process throughout the year, and not just at meetings. She challenged everyone to think about how we can keep the energy going and keep the public involved.

The January Board meeting minutes were approved with a motion by Steve March and second by Bryan Wolfe.

Review of Activities/Events since January Meeting

Ken Niles, Oregon Department of Energy (ODOE) provided a review of relevant Hanford and Board related activities since the Board's last meeting in January.

Ken said that since the January meeting, there has been a lot going on within the agency that has kept staff very busy. This caused a delay in getting the January meeting minutes completed and out for review and comment.

Staff spent considerable time preparing a detailed briefing on the Division's work for a joint legislative oversight committee which is examining the Oregon Department of Energy. The committee is co-chaired by Senator Lee Beyer and Representative Paul Holvey, both from the Eugene-Springfield area. Each of the five divisions within the Department of Energy will have an opportunity to explain all the work they do and the responsibilities they have. The Nuclear Safety Division was first, and gave its presentation in late March. Ken covered the nuclear programs. Deanna Henry, an Emergency Preparedness Manager for the Division, explained the work done on Liquefied Natural Gas emergency planning and petroleum planning in the event of a shortage. Between the two of them, they spoke to the committee for about three hours. Steve March testified in support of the Division, as did former Washington Department of Ecology Hanford Program Manager Jane Hedges, who was less than a month into her retirement.

As part of this process, the Division and the Cleanup Board also received numerous letters of support for the work we do related to Hanford. These were included in the meeting packet.

After they have heard testimony from all five agency divisions, the oversight committee will determine whether they want to make recommendations to the 2017 Legislative session to restructure the Oregon Department of Energy. Ken pointed out that the scrutiny of the agency was not the result of any of the Division's Hanford or other work.

On the two days following the oversight committee presentation, Division staff were involved with a two-day graded nuclear emergency exercise involving the Columbia Generating Station nuclear power plant. Staff also had a two-day dress rehearsal in February. During the March exercise, FEMA evaluators watched and listened to the decision-making and staff actions. Ken said the FEMA evaluators told us that we performed well and we expect to receive their formal written report within the next few months.

Oregon Senator Ron Wyden visited the Hanford site last week and met with U.S. Department of Energy (DOE) officials. Ken participated in the meeting and the tour. Senator Wyden toured several tank farms and received briefings on double-shell tanks AY-101 and AY-102, and on tank vapors.

After the tour, Senator Wyden joined Washington State Attorney General Bob Ferguson in a media availability, which mostly focused on tank vapor issues. Senator Wyden said that he wanted to consider the information he heard during the day before announcing some type of recommendations. He was particularly concerned about the time it is taking to get tank waste treatment started.

Ken provided a new update on efforts to re-open the Waste Isolation Pilot Plant (WIPP), a deep underground repository for DOE's transuranic waste. The facility has been shut down since a radiation release occurred in February 2014.

WIPP has installed an interim ventilation system which will provide sufficient air flow to allow the resumption of waste placement. The intent is still to eventually add a new ventilation shaft over the next few years.

DOE has also completed its "Documented Safety Analysis," a required document in which WIPP details potential scenarios, like fire or radiological releases, and the plan of action that will be taken should a situation arise.

After some additional training, workers will begin to conduct normal waste emplacement procedures using weighted waste containers that do not contain waste to demonstrate their ability to resume operations. Actual placement of waste is still expected to begin late this year.

For the past few years, Ken has provided the Board with updates on litigation involving schedules for Hanford tank waste retrieval and treatment. That litigation is now resolved. Federal District Court Judge Rosanna Malouf Peterson issued her Third Order and amended Consent Decrees on March 11.

Ken said he was very impressed with the Order. The judge found some middle ground on many of the issues that didn't really seem to be that obvious. She also included in her Order her rationale for each of her decisions. Ken said that both the State of Washington and DOE could claim some victories and neither should be too upset with their losses.

One issue that was very important to the State of Washington was to have enforceable milestones. The judge agreed. She did not, however, add additional pacing milestones, as Washington recommended. She did not impose milestones beyond the 19 included in the original Consent Decree.

As far as resolving the technical problems that have plagued the Pre-Treatment Facility and to a lesser degree, the High-Level Waste Facility, the judge gave DOE about three and a half years to resolve these issues. Further, if DOE finds they cannot resolve these issues by the end of 2019, they have an avenue to go back to the court to request additional time.

The judge did provide DOE with about 18 additional months to complete retrieval of the 19 single-shell tanks that were part of the original Consent Decree. The retrievals must be complete by March 31, 2024. She also gave DOE the leeway to determine the proper sequencing for how to get that work done.

Whether to build new double-shell tanks was perhaps the most contentious issue of the litigation. Washington was advocating for several new tanks, while DOE strongly resisted any new tank construction. The judge linked the issue to retrieval progress. If DOE fails to complete certain tank waste retrievals by the end of 2020, Washington can petition the Court to mandate the beginning of construction of additional double-shell tank capacity.

The judge was harsh on DOE for its lack of transparency and did mandate enhanced reporting requirements. She modified the Consent Decree between DOE and Washington, and the separate Consent Decree between DOE and Oregon, to include more detailed and stringent reporting requirements.

Even though the judge had previously indicated that she would not modify the Consent Decree and establish deadlines for direct-feed low-activity waste (LAW), deadlines that she did institute for completion and hot commissioning of the LAW facility will allow DOE to meet its goal to begin that treatment in 2023. DOE must have the LAW facility substantially complete by the end of 2020. Cold commissioning must begin by the end of 2022, and hot commissioning must be complete by the end of 2023.

For the High-Level Waste (HLW) facility, construction must be substantially complete by the end of 2030. Cold commissioning must begin by June 30, 2032, and hot commissioning must be completed by the end of 2033.

Milestones for the pre-treatment facility are slightly later: construction substantially complete by the end of 2031; cold commissioning beginning by the end of 2032; and hot commissioning complete by the end of 2033.

The Waste Treatment Plant (WTP) complex must achieve initial plant operations by December 31, 2036.

Overall, Washington got specific, enforceable milestones; Washington and Oregon got more stringent reporting requirements placed on DOE; DOE avoided having to build additional double-shell tanks – at least for the next few years.

Waste Control Specialists, which operates a low-level waste disposal site in West Texas, submitted an application to the Nuclear Regulatory Commission (NRC) for a license to construct and operate a Consolidated Interim Storage Facility for commercial spent nuclear fuel. The application is being led by Waste Control Specialists, along with its partners AREVA and NAC International. Both AREVA and NAC are global industry leaders in the transportation and storage of used nuclear fuel.

Waste Control Specialists are hoping to have an operational storage facility by 2021. A site in east New Mexico is expected to also submit a license application to the NRC at the end of this year.

Before they would open, both commercial ventures would need Congress to amend the Nuclear Waste Policy Act to require DOE to take ownership of the fuel at a commercial storage site, and allow DOE to pay them for the storage.

Ken said he wouldn't be covering much in terms of cleanup progress around the site. The Board has received briefings on much of this work during recent meetings. There is also a transition in progress from the River Corridor Cleanup Contractor – Washington River Protection Solutions – whose contract is ending.

Progress is continuing at the 618-10 burial ground, which is located a few miles north of the 300 Area. Waste from the 300 Area was disposed at this site. The work involves retrieval of about 1,900 waste drums from trenches. That work is expected to be complete by the end of May. Hotter waste was disposed in vertical pipe units (VPUs), which were mostly five 55-gallon drums without tops or bottoms that were welded together to form a disposal pipe into the ground. Steel overcasings had previously been pounded into the ground around most of the VPUs. Hanford workers have been using a giant auger to mix the waste, tear up the drums, and mix surrounding soil all together. So far, 48 of the VPUs have been augered, and waste has been retrieved from four of the VPUs. The waste is being mixed with grout and disposed in the Environmental Restoration Disposal Facility.

Ken said there have been just two agency letters issued since the last Board meeting. One letter involved a concern about the level of funding for Oregon's Hanford program. The other letter was related to the potential import of waste to Hanford. Oregon had requested that a 2004 Record of Decision that designated Hanford to receive extensive amounts of waste be amended or withdrawn as it is not likely this will occur. Ken said he did get a response to that second letter which came too late to get into the Board packet. The response was a bit confusing, and he will follow up.

Ted Taylor, Board, asked for more details about Oregon's letter to DOE about Oregon's Hanford funding. Ken said he and ODOE Director Mike Kaplan met with DOE-Richland (DOE-RL) Manager Stacy Charbonneau a few months ago to discuss our funding. He said Stacy was supportive of Oregon's work and potentially some increased funding, but at the moment there is not sufficient funds available in the specific funding source that Oregon's funding comes from. Stacy is exploring some ideas to see if more flexibility can be gained.

DOE-ORP Update

Steve Pfaff, U.S. Department of Energy's Office of River Protection (DOE-ORP), provided the Board with an update on a number of tank waste related issues.

Steve began his update by focusing on tank waste retrievals. Of the fifteen tanks retrieved so far, 14 are in the C Tank Farm, which is in the 200 East area. Two C Farm tanks remain, C-111 and C-105. C-111 contains some very hard material which has made retrieval difficult. Through use of different retrieval technologies, workers have removed more than 28,000 gallons of the 36 thousand gallons of sludge in

the tank. The Washington Department of Ecology is reviewing whether DOE has satisfied Tri-Party Agreement requirements for retrieval of waste from the tank. Although the amount of waste remaining in the tank is above the desired amount, DOE believes it has reached the limit of technology to retrieve more.

C-105 has also been a challenge for DOE. That tank still holds about 67 thousand gallons of sludge.

Steve said the C Tank Farm has become somewhat of a research and development project as they learned how to effectively conduct retrieval operations. He said there have been important lessons from every tank. Those lessons will be taken to the A and AX farms, which are next to be retrieved.

Steve reviewed the amended Consent Decree deadlines for getting various facilities in the WTP complex operational. Construction work continues in the LAW facility as DOE continues to move forward with its plans for direct-feed LAW.

Work is also underway to resolve the eight outstanding technical issues associated with the pre-treatment facility. One of the most challenging issues is waste mixing. Steve said testing of a half-scale pulse jet mixer vessel has demonstrated that the design is now ready for full-scale testing.

Considerable progress was made in removing waste from double-shell tank AY-102. The inner shell of this tank was determined to be leaking in 2012. It took just a few days to remove more than half a million gallons of supernate (liquid) from the tank. Within the next few weeks, DOE was able to remove an additional 150,000 gallons of waste – including about 112,000 gallons of sludge. During the sludge retrieval, the leak rate from the inner shell dramatically increased, filling the annulus between the two tanks with about eight inches of supernate. That amount declined and leveled off, as DOE assumed some of the waste was settling into the refractory channels beneath the inner tank. They have no indications that there has been any leak to the environment.

About 40,000 gallons of waste remains in the tank. It will take about four months for DOE to change out some of the retrieval equipment so they can remove the remainder of the waste. Waste removal should resume in late summer or early fall.

DOE has increased its inspections of tank AY-101, after a filter paper sample showed a positive reading in the annulus for low levels of cesium, americium and plutonium. A video survey of the annulus showed no indications of a leak. Steve said DOE can't conclusively say that the tank is not leaking, but there is no evidence that it is and the elevated readings have since gone away.

Steve reviewed problems that are again occurring related to tank farm vapors, after a number of workers reported smells and asked for medical evaluations. DOE is currently requiring use of Self-Contained Breathing Apparatus in a number of the tank farms. They are also working to implement a number of recommendations from a tank vapor assessment team. Steve said it is frustrating that they continue to have problems with tank vapors.

Ken asked both Steve and Suzanne Dahl of the Washington Department of Ecology about DOE's stated intent to put AY-102 back into service if possible. Ken asked how the state could certify a once-leaking tank was now compliant. Steve said that they still need to determine where the leak is and if the tank can be repaired.

Suzanne said the regulations are pretty clear that you have to identify the problems and fix them. Then, you also need to show that the repairs are working. Finally, the tank would have to be certified all over again with testing. In Suzanne's opinion, she believes it would be very difficult to get a double-shell tank back into service after it has leaked.

Dirk Dunning, ODOE staff, asked Steve about the refractory underneath the tank that has been now saturated with high-level waste. He asked Steve how you would certify the refractory is supposed to work as intended. Steve said that is a good question and he doesn't have an answer right now.

Maxine Hines, public, asked Steve about the expected life expectancy of the double-shell tanks. Steve said all of the tanks are at or near the end of their expected lives. Some had twenty to thirty years; some had projections of fifty years.

Direct Feed Law Low-Activity Waste Update

Steve next provided an update on DOE's efforts to move forward with getting a portion of the WTP operational, through direct-feed LAW.

Given the delays with portions of the WTP, DOE believes it can begin vitrifying some tank waste by late 2023. DOE's contractor is in the process of designing a LAW pre-treatment system, which would take supernate from the double-shell tanks, remove the cesium through an ion exchange column system and also remove the solids. The cesium and solids would be sent back to the double-shell tanks as there doesn't appear to be a better option at this point. The remaining liquid waste stream would go to the LAW melter to be vitrified. The vitrified waste would be disposed of on site in the Integrated Disposal Facility. Work would continue to resolve the technical issues with the pre-treatment facility with the intent to eventually operate the entire WTP complex.

Under the amended Consent Decree, DOE is required to complete hot commissioning of the LAW facility by December 31, 2023. A portion of the laboratory facility will be used to ensure the right mixtures of waste are being used to feed the melters.

Steve said DOE is preparing several documents for the Washington Department of Ecology to expedite the permitting process for the facilities needed for direct-feed LAW.

Steve showed the Board a video that depicted the process.

Introduction to new Ecology Program Manager

Alex Smith, the new Hanford Program Manager for the Washington Department of Ecology, introduced herself to the Board. She recently replaced Jane Hedges, who retired.

Alex is an attorney by training and she has been practicing environmental law for several years. She has worked on numerous environmental cleanups under both CERCLA and Washington's Model Toxics Control Act, as well as corrective actions under RCRA and the Hazardous Waste Management Act. As director of environmental programs for the Port of Olympia from 2011 through 2015, Alex managed the design, permitting, contracting and construction of several Port projects. She also developed the strategy for and negotiated orders and consent decrees with regulatory agencies, and settlement agreements with liable parties at cleanup sites.

Other experience includes representing clients on site cleanups and natural resource damage claims throughout the Puget Sound region for a private legal firm. She also has served as an assistant attorney for both the U.S. Department of Justice and the Washington State Attorney General's Office.

Alex said in the past week she attended the meeting of the State and Tribal Government Working Group in New York, and was on-site with Senator Wyden.

Alex said that she has been spending time with her staff to learn as much as she can about the large role Ecology plays at the Hanford Site. She looks forward to working closely with Oregon.

The Board welcomed Alex and thanked her for coming to the meeting.

Public Comment/Adjourn

There was no public comment offered. The meeting was adjourned at 4:55 p.m.

Tour of CTUIR Laboratory Facilities and Greenhouses

Rod Skeen then led the Board on a tour of the Confederated Tribes of the Umatilla Indians' Laboratory and Greenhouses.

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- Steve Pfaff

- Dieter Bohrman (Northwind)

Washington Department of Ecology

- John Price

- Stephanie Schleif

U.S. Environmental Protection Agency

- Dennis Faulk

Bob Wilkinson, Mission Support Alliance

ODOE Staff:

Mark Reese

Dirk Dunning

Dale Engstrom

Paul Shaffer

Public:

Maxine Hines

Eileen Laramore

Sharon Monteiro

Cole Miller, KOIN-TV

Tri-Party Agencies:

U.S. Department of Energy Richland Office

- Jon Peschong

- Stacy Charbonneau

- Rich Buel

- Erik Olds

Kristen called the meeting to order at 8:35 a.m.

Hanford Tank Waste Treatment: How We Got To Where We Are Now

Dirk provided the Board with a detailed presentation about previous attempts to treat Hanford's tank waste, and how that all influenced where we are today.

In summary, there have been numerous attempts through the years to develop tank waste treatment capability at Hanford. Dirk said these efforts were often derailed by attempts to find something cheaper and faster and that the full technical and financial requirements have consistently been underestimated. Dirk listed the major attempts in the past to build waste processing facilities:

- around 1952, there was a plan to turn Hanford waste into granular solids called calcine
- in 1989, there was the original plan from the Tri-Party Agreement to use a combination of vitrification and grout for double-shell tank waste only
- between 1991 and 1993, a new technical strategy was developed to again use a combination of vitrification and grout – but for all the tank waste. A pilot plant would be built to treat about 18 percent of the waste, and a larger plant later on to do the rest
- In 1995 – DOE began to pursue privatization – that process came to an end in 2000
- In 2002, ground was finally broken for the current WTP – which is not scheduled to be fully operational until 2036

In the 1940s there were three approaches to Hanford’s high-level liquid waste: store the waste in tanks, concentrate the waste in tanks, or dispose of the waste to the ground. As noted in a 1958 Hanford document, disposal to the ground was a “major cost savings over tank storage.”

In the 1950s, a number of technologies were considered, including many types of calcination, vitrification, steam reforming and others. It was determined that the \$50 million price tag for calcination was too expensive, and continued tank storage was selected.

In 1978, the National Research Council conducted a technical review on the radioactive wastes at Hanford. Three options were proposed: bury the waste in basalt several hundred meters below Hanford; bury the waste in basalt at the end of a tunnel in the Rattlesnake Hills; or, convert the waste to a stable solid, put it back in the tanks and cover it with an impermeable cap.

In April 1980, DOE published a supplement to a 1965 Environmental Impact Statement (EIS) that recommended the construction of seven additional double-shell tanks at Hanford. The recommendation was to use higher strength carbon steel; provide adequate corrosion allowance; stress relieve the primary tank after fabrication; increase dome strength; and use more comprehensive non-destructive examination of the tanks. Eight new tanks were built based on this recommendation – Hanford’s AP Tank Farm.

In 1987, the Defense Waste EIS was completed. The Preferred Alternative for Hanford’s tank was to:

- vitrify essentially all present and future high-level waste in double-shell tanks and send this waste to a commercial deep geologic repository
- dispose of the low-activity fraction of waste in grout in near-surface RCRA vaults covered by a protective barrier and marker system
- send strontium and cesium capsules to a commercial geologic repository
- dispose of retrievably stored and future transuranic wastes at WIPP
- dispose of pre-1970 transuranic waste and transuranic waste in the 618-11 burial ground at WIPP
- defer all other waste disposal decisions
- install protective barriers over tank residuals and grout vaults

Borosilicate glass was considered the preferred waste form.

In 1988, DOE issued a Record of Decision on disposal of high-level waste to implement the EIS. This included beginning grout operations by 1998; building and operating the Hanford Waste Vitrification Plant (HWVP); completing all grouting and vitrification of double-shell tank waste by 2016; and developing and completing evaluations for the single-shell tank waste by about 2015.

While Hanford was determining its plans, two other sites were moving forward with vitrification. At the West Valley Site in New York, they selected glass in 1983 and began vitrifying their relatively small amount of waste in 1996, completing in 2002. They have 275 ten foot high stainless steel canisters of vitrified waste awaiting disposal in a deep repository.

The Savannah River Site in South Carolina also chose glass. That was in 1982. Their facility began operation in 1996 and continues operating today. It produced its 2,000th canister in January of this year.

At Hanford, glass was selected in 1987 and the plan was to begin operations of the vitrification facility in December 1999. That schedule carried forward into the Tri-Party Agreement, when it was signed in May 1989. In November 1989, DOE awarded a \$550 million dollar construction contract to begin building the HWVP.

One of Hanford's original processing canyons – B Plant – was to be used to pre-treat the waste. The HLW stream would be vitrified and the LAW stream would be grouted and disposed in million gallon grout vaults. Fourteen were to be constructed by 1994.

It didn't take long for things to go wrong. In September 1990, DOE informed Washington State that tank safety issues might delay the start of the vitrification plant. Over the next year or so, additional safety concerns were raised with the tanks, and Oregon Congressman Ron Wyden proposed legislation that created a safety "Watch List" of tanks.

By May 1991, Energy Secretary James Watkins announced the delay of HWVP construction until April 1992. The plant would be redesigned to handle all tank waste. The start date of December 1999 was retained. In December, DOE dropped consideration of B Plant for pre-treatment under pressure from Washington State as it would not meet regulatory requirements.

Problems with the grout program also begin to be revealed. By late 1992, consideration of using grout was dropped because of serious technical problems and concerns that some of the more highly mobile contaminants such as technetium would not be retained in the grout. Dirk showed a graphic that illustrated plans for 80 grout vaults within the current footprint of the WTP complex.

By 1993, the HWVP plans were stalled. DOE initially proposed delaying vitrification until 2020, and a Government Accountability Office report endorsed the delays due to major technical issues.

Energy Secretary Hazel O'Leary met with Governor Lowery to assure him that DOE stood by their plans. The Tri-Party agencies agreed to a six month delay.

In May 1993, the Tri-Parties convened the Hanford Tank Waste Task Force. They met four times to expand on and reinforce the cleanup principles recommended by the Future Site Uses Working Group and to identify specific values related to tank waste treatment.

DOE formally proposed changes to the Tri-Party Agreement (TPA). Dirk said there was a robust public involvement process which helped lead the Tri-Party agencies to focus initial cleanup along the Columbia River in order to protect the river.

By October, new TPA milestones were agreed to by the agencies. The changes delayed the start of tank waste vitrification; added a low-activity waste vitrification plant to replace the grout program; extended cleanup by 10 years, and set a 2028 date as the target for completion.

In 1994, DOE released the Tank Waste Remediation System EIS. This mostly validated and endorsed what DOE was planning to do. Vitrification was now planned in a two-stage process. A pilot plant would process 18 percent of the waste, followed by a second facility to vitrify the rest. Later, concerns that money would not be forthcoming for a second plant largely influenced the change to just one set of facilities.

Dirk noted that among technical options evaluated, one was to vitrify the waste with no separation of waste stream. This option was discarded because the anticipated disposal costs were so much greater than any other option. However, going forward with the separation of waste streams through a pre-treatment process is the major cause of the current technical problems.

It wasn't long before DOE had yet another plan.

In September 1995, Energy Secretary O'Leary announced a new approach – privatization. DOE was optimistic that private industry would compete to gain the contract to finance, design, build and operate their own treatment facility. DOE would then pay a company for the vitrified waste. DOE was hopeful that privatization would speed the process and reduce the overall cost. DOE estimated that it would cost \$40 billion to treat all the tank waste.

Fourteen companies initially expressed interest, but only two bids came forward, one from a consortium led by British Nuclear Fuels Limited and one from a consortium led by Lockheed Martin.

In a Report to Congress, DOE estimated the cost of constructing a facility through privatization would be about \$6.9 billion and that it could begin by 2007. Waste from 11 tanks was expected to be vitrified by 2018.

The competitive aspect of privatization went away when DOE determined that the Lockheed Martin concept was technically not viable. BNFL was awarded a contract in August 1998 to develop a 30 percent design, obtain permits, and secure financing.

Eighteen months of failed negotiations between DOE and the State of Washington on new tank waste treatment schedules resulted in early 2000 in Ecology Director Tom Fitzsimmons issuing a final determination and setting new milestones. Construction was to begin on vitrification facilities by July 1, 2001; operational testing was to begin by December 31, 2009; and 10 percent of the tank waste was to be treated by December 31, 2018.

In April 2000, BNFL submitted their cost estimate. Due to more than \$9 billion in private financing costs, BNFL estimated the cost at \$15.2 billion. Energy Secretary Bill Richardson proclaimed the price unacceptably high and not fundable. In May, he terminated the contract, and DOE moved quickly to seek a new contractor. DOE also issued its “fair cost” estimate for the project. They calculated \$5.8 billion in private financing and \$3.6 billion in design and construction costs for a total cost of about \$9.5 billion.

In December 2000, DOE awarded a 10 year, \$4 billion contract to Bechtel Hanford group and Washington Closure (which later filed Chapter 11 bankruptcy). DOE was no longer pursuing privatization – the project would be built with federal funds.

DOE-ORP Manager Harry Boston raised the issue of whether there were acceptable alternatives to vitrifying all of Hanford’s tank waste. He said the hope was to save tens of billions of dollars and complete the treatment decades ahead of schedule. He mentioned the vitrification plant design was such that more waste could be treated than originally envisioned, possibly eliminating the need for an additional, larger plant. Boston also said that increasing the budget to the \$3 to \$4 billion annually to complete both plants was undoable.

DOE Assistant Secretary Jessie Roberson also endorsed the concept of alternatives to vitrification – saying that as much as 75 percent of the tank waste could possibly be treated through other technologies.

One of those alternate technologies that was studied was bulk vitrification. It would mix waste and glass forming materials in small metal boxes – about the size of a dumpster. Electrodes would be inserted to provide an electrical charge to melt the material to form glass. It was touted as a faster and cheaper solution. However, technical problems and cost overruns demonstrated it was not a viable solution.

Dirk concluded by briefly mentioning some of the major occurrences in the past decade – the seismic re-evaluation that delayed most construction by nearly two years; identification of technical issues which are still unresolved; cost escalations; and litigation due to continued delays in the schedule.

The WTP was originally scheduled to begin operations in 2007. That schedule was repeatedly pushed back, until now we have the amended Consent Decree deadline of 2036.

Dirk also highlighted what he called “Dirk’s Laws of Hanford:”

- Grout is dead! Long live grout.
- Cheaper, better, faster is almost never any of these.
- Saving money is really, really expensive and time consuming, especially at the start.
- Magic bullets aren’t:
 - Corollary: cheap fixes aren’t either!
 - Corollary: Neither are ‘temporary solutions,’ or ‘quick fixes.’
- Real neat ideas never are.
 - Corollary: They tend to be really expensive, time consuming, and immensely profitable.
- There is never enough time or money to do the job right.
 - Corollary: There is ample of both to do it over, and over and over...
- Temporary is temporary—until it becomes permanent.
 - Corollary: Everything at Hanford is “temporary.”
- Whenever things get hard—start over.
 - Corollary: Things always get hard.

John Howieson, Board, noted that the longer we go, the farther the deadline seems to stretch. He said at that rate, the tortoise will never catch the hare.

Ken added that in hindsight, it seems as though when privatization failed, that would have been an opportune time to step back and reconsider the plans. Many were critical of DOE pursuing privatization and DOE was under intense pressure from the State of Washington and others to move forward once privatization failed. To DOE’s credit, they did move quickly. But that also led to many of the technical challenges – such as black cells and other problems – in the current design.

Ted also noted privatization came at the start of Fiscal Year 1996 as part of push to reduce the deficit. There were also large cuts in DOE staff and contractors. Ted believes the consequences were very serious for cleanup.

Dale Engstrom, ODOE staff, pointed out that once again there seems to be a rush towards showing progress with direct-feed-LAW and more deferral of schedule for HLW.

Representative Greg Barreto, Board, asked whether calcining is a good solution for Hanford’s tank waste. Dirk replied that the caustic in Hanford waste does not work well with calcining.

Kristin asked why the single-shell tank waste was viewed as less dangerous. Dirk said that he wasn’t able to find a definitive answer to that. Steve Pfaff noted that as the plutonium extraction processes evolved,

the waste stream became more concentrated with more heat and more radioactivity. Since that waste stream predominantly went into the double-shell tanks, that may have led to the thought that waste in the single-shell tanks was less hazardous.

Public Influence on the Recent TPA Change Package

Jon Peschong, DOE-RL, provided information to the Board about how public comment influenced some recent changes to the TPA. He said the Tri-Party agencies don't always clearly explain how public input helps shape the decision making at Hanford. In the case of this recent TPA Change Package, Jon said the public comments resulted in many changes.

Jon said that TPA milestones related to much of the Central Plateau cleanup were simply not possible to achieve given a funding level of around \$1 billion per year for the Richland Office. To meet the milestones, DOE-RL would have needed closer to \$1.8 billion annually.

Late last year, the Tri-Party agencies developed revised schedules that pushed back much of the work on the Central Plateau by a decade or more. The proposed changes were released for public comment late last year.

The public comment period was originally scheduled from October 26 to December 11. Based on public requests, it was extended to February 12. Public meetings were held in Seattle, Portland, Hood River, and Richland.

Jon said the Tri-Parties received many comments critical of the public comment period – primarily that the public meetings were held too early in the process.

Public comment, as expected, was not favorable about the extent of the proposed delays. Jon said that the Tri-Party agencies really had no alternative given expected funding.

One proposed major milestone had a "To Be Determined" date for a milestone. The public strongly opposed not having a specific date for the milestone. Jon said that in response, the Tri-Party agencies have agreed to a date – though it is not until 2042.

The public also commented strongly that DOE should not delay removal of highly concentrated waste beneath the 324 Building in the 300 Area. Jon said in response to the public comments, the Tri-Parties established a new milestone to complete excavation of the high rad portion of the waste site by September 30, 2019.

The Tri-Parties also moved up a milestone to initiate characterization of the unlined disposal trenches. That milestone is September 30, 2018 – about two years earlier than what had been proposed.

The Tri-Parties received a number of comments that recommended delaying some of the canyon work and capping of waste sites. The public viewed these as a lower priority. In response, the Tri-Parties agreed to delay demolition of the U Canyon and capping of B and S Ponds.

The original TPA Change Package did not include any milestones related to the PUREX tunnels. In recent months there was a concern identified about the integrity of one or both of the tunnels, and many comments were provided that recommended an evaluation of the tunnels. Jon said the Tri-Parties did add a milestone for a preliminary evaluation to be completed by September 30, 2018.

Ken asked Jon about what lessons have been learned that will assist the Tri-Party agencies the next time major changes are proposed in the TPA.

Jon said he would put more 'public friendly' information out sooner. The Tri-Parties realized that they might have put out too much information that included 'Hanford speak' in it, and that didn't help the process. It was hard for the public to digest. Jon said they met the requirements for public involvement, but know they can do better next time.

John Howieson said he was under the impression that having more immediate milestones put pressure on DOE to request sufficient funding from Congress to meet those deadlines. He wanted to know whether the relaxation of the milestones weakens DOE's argument for more funding.

Jon said DOE is required to ask for all necessary funding every year to complete cleanup work. However, Jon said that the Congress isn't obligated to appropriate what is requested by DOE to complete their work at Hanford.

Dennis Faulk, U.S. Environmental Protection Agency, added that they have set a reasonable schedule that can be funded to get the work done on this schedule.

Kristen posed a question: why do I need to come to public meetings? Doesn't DOE know what they need to do? Jon replied by saying that public comment does matter. As an example, he said that DOE could go out and use their annual budget to do work DOE thought was a priority. The recent public involvement demonstrated that in some cases, the public has other priorities. Jon reiterated that this was a good process and it made a difference.

Dennis added that he would hate to see the attitudes and policies of the past come back where DOE did what they wanted to. He likes this process and change. Dennis said that we have come a long way from the 1980s.

Cesium/Strontium Capsules at the Waste Encapsulation Storage Facility

Jon next provided the Board with an update on DOE's plans to move Hanford's 1,936 cesium and strontium capsules from pool storage to dry storage.

In the 1970s, some of the cesium and strontium was removed from the tank waste to reduce heat in the tanks. The cesium and strontium was put into double-walled, stainless steel canisters. Some were then leased for commercial irradiation purposes. After one developed a pin-hole leak at a commercial facility, DOE brought all the capsules back to Hanford for indefinite storage.

The capsules are stored under water in a small building adjacent to Hanford's B Plant, called the Waste Encapsulation Storage Facility (WESF). The 1,335 cesium capsules and 601 strontium capsules contain about 94 million curies of radioactivity – about one third of all the radioactivity at Hanford.

DOE is currently replacing an existing exhaust ventilation system within WESF, which is necessary to continue safe and compliant operation of the facility.

In recent years, concerns were raised about possible degradation of the concrete in the storage pools due to the high radioactivity from the capsules. The concern is that the concrete has weakened, and that an earthquake could drain the cooling water from the pools. That could cause a major accident.

As a result, DOE has begun the process towards moving the capsules into a passive dry storage system, which would be much safer. DOE received approval of the "Mission Need" to move the capsules. The anticipated approach is to use storage casks similar to those used for commercial spent nuclear fuel.

In March, DOE issued a request for proposal for the design and construction of the cask storage system. The projected start date of capsule transfer is 2022.

Ken urged Jon to see whether the 2022 start date could be accelerated. He said building the storage casks and custom racks to hold the capsules is fairly straightforward.

Hanford Infrastructure Needs

Bob Wilkinson, the Chief Operations Office for Mission Support Alliance (MSA), provided the Board with a presentation on Hanford's infrastructure challenges. Bob said it is the responsibility of MSA to ensure that the site infrastructure can support the cleanup activities. Their goal is to "right-size" the infrastructure so that it is aligned with contractor requirements and there are no shortages or excesses.

MSA maintains water, sewer, electrical, emergency management and some administrative duties. Bob said to think of Hanford as a city. The goal is to ensure that the water lines, electrical infrastructure and roads – some of which date back to the 1940s – as well as the information technology and emergency services, are upgraded and maintained because cleanup will take decades to finish.

Bob said it is crucial that MSA coordinate with the other site contractors and with DOE so they understand what's coming up and what will be needed.

Bob said that MSA has developed an Infrastructure and Service Delivery Plan. This plan has several goals: integrate all missions needing Hanford Site services to optimize productivity; transform site services infrastructure for energy efficient operations; protect the assets and employees of the site; modernize the infrastructure to ensure reliable service to all projects; serve the diverse needs of the cleanup mission; and right-size the site infrastructure.

Bob said his office is also involved with employment forecasting for current projects and site needs.

Bob explained the water needs of the site as one example of the infrastructure challenges. There are more than 50 miles of buried piping – much of it decades old. There are six pump houses and six main reservoirs on-site. The pump houses have a combined 130,000 gallon per minute pumping capacity. The Hanford Site uses 400 million gallons of raw water annually.

Senator Bill Hansell, Board, asked about Hanford's use of water from the Columbia River and whether it involved a Water Right. Bob believed they did have a Water Right. However, John Price from Ecology clarified that DOE has a Registered Point of Diversion for use of Columbia River water, not a legal registered Water Right. John also added that the State of Washington isn't stopping Hanford from using water that is needed for site operations as they can't complete work without it.

Dan Solitz, Board, asked Bob about how much unique equipment is needed at Hanford. Bob responded that probably less than most people would think. A lot of the equipment they use is off the shelf. Sometimes only a small part of the equipment needs to be modified for use at Hanford. In some cases though, some completely unique equipment is necessary.

Ken asked Bob about the REDOX Facility. While it is not in use and eventually will be demolished, it is not a priority. At the same time, substantial improvements to the roof and elsewhere are needed to safely maintain the facility. Ken asked MSA's role versus that of DOE in making those determinations. Bob said MSA provides to DOE the overall picture of costs and risks and competition with other facilities and needs.

Greg asked Bob if they buy or lease the numerous cranes that are used on site. Bob said MSA does both. Most are purchased, but when they need to add one or two it is cheaper than to lease one.

Paul Shaffer, ODOE staff, asked Bob if MSA assimilates employees from other contractors as their contracts end. Bob said when contractors finish their work, that scope transitions to MSA and sometimes that brings people as well. MSA is responsible for the long-term stewardship.

Board Business

The Board recognized Paul, who will retire at the end of the month.

Kristen asked whether any Board members were interested in becoming the Board's alternate representative to the Hanford Advisory Board (HAB). Dan asked about what that would involve. John, who previously served on the HAB representing Physicians for Social Responsibility, said the purpose of the HAB is to develop formal advice to DOE and its regulators. Much of the work is done with the committees – many of which meet monthly. Both Kristen and John said the HAB is more of a time commitment than the Cleanup Board.

Ted mentioned that we have gained some members onto the Board and that it's probably time to update the Board bios that are on the Board's web site. Ken said staff is working on those updates.

As an action item, Ken proposed that the Board send a letter to DOE-ORP Manager Kevin Smith, acknowledging that the end of the tank waste litigation provides an opportunity for ORP to be more open about what it is doing. The letter would say that the Cleanup Board looks forward to a more open and transparent process. The Board agreed. Kristen said that she would like to draft the letter.

The Board set the next meeting dates for September 26 and 27 in Hood River.

Kristen adjourned the meeting at 12:30 p.m.